



Your technology partner for cost-effective machining

BORE MACHINING

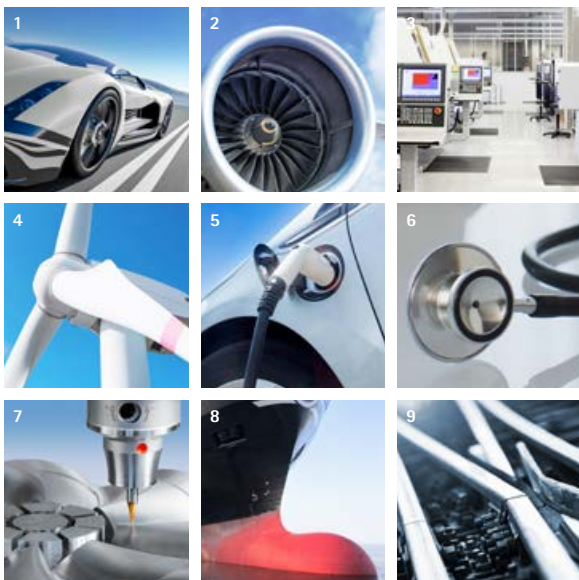




Tool and process solutions combined with comprehensive services

We see ourselves as a technology partner ready to support you in the development of efficient and resource-saving manufacturing processes with standard tools, individual tool concepts and tool detail optimisation. Our tools meet the requirements for process reliability, offer high levels of precision and are easy to handle. How do we achieve this? Through advanced development and construction methods and production at state-of-the-art manufacturing facilities.

You're looking for the perfect tool for your task but also want to find a partner who can take over and manage the entire planning stage of your process? If that sounds familiar, we're here for you. We support you during all phases of production and keep your manufacturing processes at the highest level – by being highly productive, economical and process-reliable. We also offer you complete networked solutions for all peripheral tasks related to the actual machining process.



Sectors

- 1 Automotive
- 2 Aerospace
- 3 Machine engineering
- 4 Energy production
- 5 Electric mobility
- 6 Medical technology
- 7 Die & mould sector
- 8 Shipbuilding
- 9 Rail transport



Over
5,000
employees worldwide

No. 1
technology leader for the
machining of cubic parts



Product lines

- 1 Reaming and fine boring
- 2 Drilling from solid, boring und countersinking
- 3 Milling
- 4 Turning
- 5 Actuating
- 6 Clamping
- 7 Setting, measuring and dispensing
- 8 Services



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EXPERTISE IN BORE MACHINING

The optimum tool for every application

Based on experience gathered manufacturing custom tools for customer-specific machining solutions, MAPAL has developed an extensive standard range for bore machining.

MAPAL is one of the largest suppliers worldwide in the field of drilling with solid carbide tools. The range of solid carbide drills includes solutions for reliable and economical machining of almost every workpiece material and is augmented by modern replaceable head systems for maximum economic efficiency.

For fine bore machining, the portfolio includes fixed multi-bladed reamers as well as tools

with guide pads, single-bladed reamers, the EasyAdjust system (EA system) as well as precision-ground indexable inserts and solutions for large diameters up to 400 mm.

Tools with indexable inserts take a leading role when it comes to boring. The positive indexable inserts for boring and turning are particularly economical. Tangential indexable inserts are available for the highest boring demands.



Drilling from solid



MAPAL offers an extensive standard range of solid carbide drills for all machining tasks. In addition to two- and three-flute tools for drilling from solid, the portfolio also includes pilot drills, step drills, deep drills, and drill reamers for drilling and reaming in one machining step. Solid drills with a replaceable head system and indexable inserts are also available. Regardless of the workpiece material, whether cast materials, non-ferrous metals, steels, modern lightweight materials or materials that are difficult to machine, MAPAL offers the right drill.

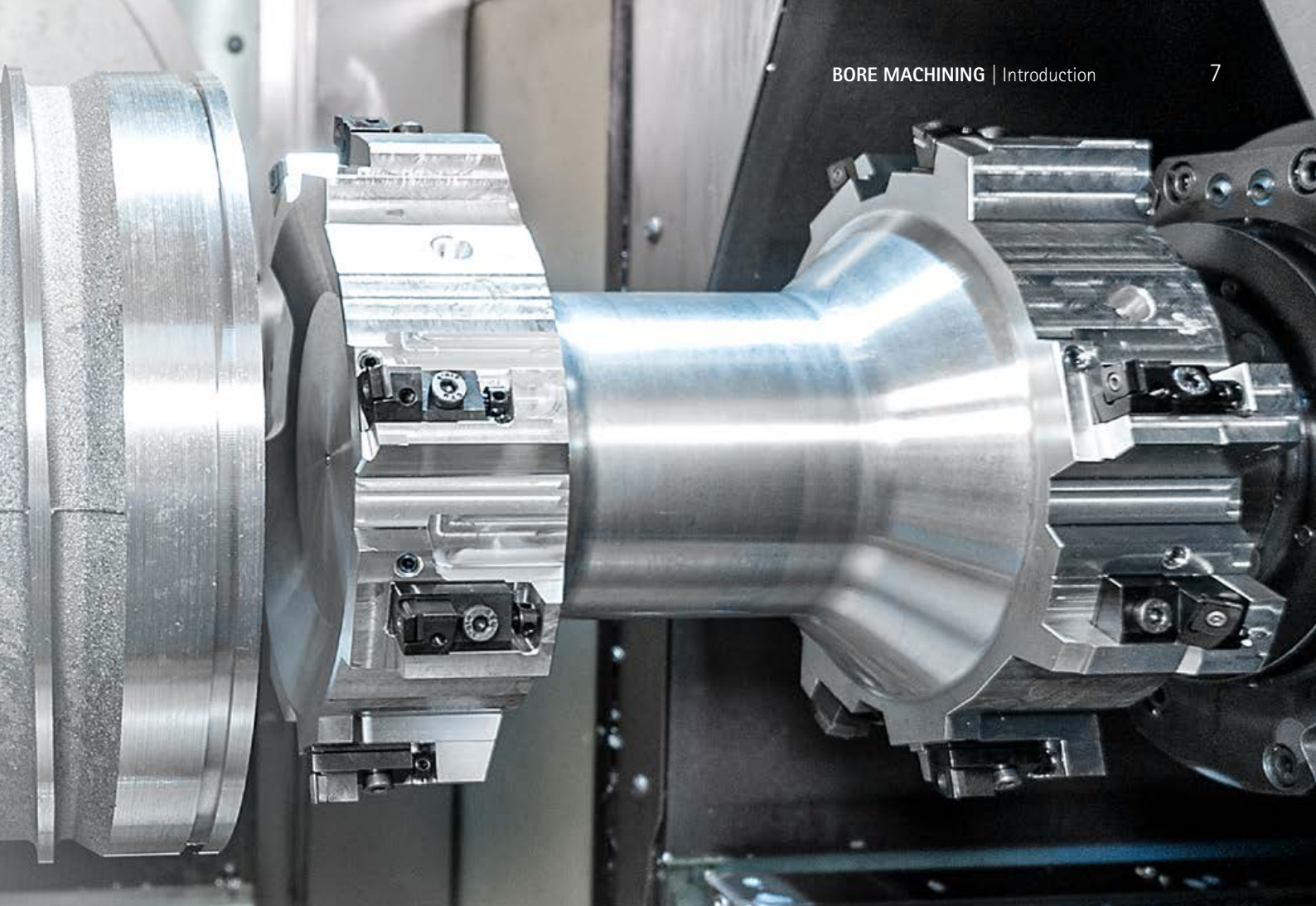
Reaming and fine boring



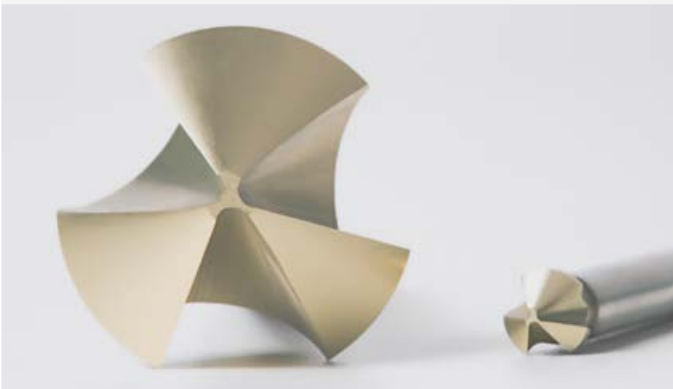
Reaming and fine boring are the most common methods for the fine machining of bores, yielding impressive, precise results. Depending on the complexity of the machining and the requirements for precision and surface finish, MAPAL offers the right solution.

Fixed multi-bladed reamers enable high feed rates and reduce machining time enormously. The portfolio includes monoblock reamers produced of carbide, cermet or HSS as well as HPR replaceable head reamers with high-precision HFS connection. A modular HPR range is available for machining large diameters up to 400 mm.

Tools with guide pads ensure the highest precision. Besides single-bladed reamers, the standard range includes the EasyAdjust system to set tools quickly and easily as well as precision-ground indexable inserts.



Countersinking



With extremely unequally spaced countersinks, MAPAL has established a new standard in this field. The countersinks, which are available as HSS and solid carbide variants, work with significantly reduced axial and radial forces compared to conventional countersinks. The resulting advantages are a better surface finish, long tool life, and optimum screw and rivet bore connections.

Boring and turning



MAPAL offers different concepts and tool solutions for boring and turning. They are optimised for different requirements and offer flexibility, economic efficiency and process reliability even for demanding machining operations. The portfolio includes cartridges, radial and tangential indexable inserts, individual solutions with PCD cutting edges or inserts, and the ModulBore range for boring, which is specifically adapted to the respective customer requirements.

OVERVIEW OF THE RANGE



1 | Drilling from solid

- 1.1 Drilling from solid using solid carbide (from page 29)
- 1.2 Drilling from solid using a replaceable head system (from page 183)
 - Drilling from solid using indexable inserts (from page 239)
- 1.3 Tapping (from page 245)
- 1.4 Stepped drilling (from page 257)
- 1.5 Deep drilling (from page 267)
- 1.6 Drill reaming (from page 289)

2 | Reaming and fine boring

- 2.1 High-performance reamer | FXR (from page 316)
- 2.2 Replaceable head reamer | HPR (from page 368)
 - Tipped high-performance reamer | MOR/MRF (from page 350)
- 2.3 Single bladed reamer (from page 478)
- 2.4 EasyAdjust system (from page 514)
- 2.5 Solutions for large diameters (from page 560)



3 | Countersinking

3.1 Countersinks (from page 586)

4 | Boring and turning

4.1 Custom solutions using PCD (from page 598)

4.2 Custom solutions using indexable inserts (from page 604)

4.3 ModulBore (from page 613)

4.4 Cartridges (from page 643)

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DRILLING FROM SOLID

Optimal drills for almost all applications and workpiece materials





PRODUCT OVERVIEW

For drilling from solid, MAPAL offers a comprehensive standard range of solid carbide drills and replaceable head drills for almost all machining tasks. The range includes universal drills as well as tools for machining cast iron, non-ferrous metals, steels, lightweight or difficult to machine workpiece materials. Solutions for high-speed and high-feed machining with three cutting edges form part of the range.

MAPAL offers specially designed PCD-tipped drills for specific customer requirements. The solid carbide and replaceable head drill can also be individually customised. A worldwide service to re-grind tools to original quality guarantees the highest economic efficiency for all tools.







Basic Line:
Universal tools, wide range of applications, low acquisition costs






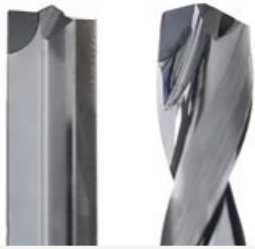
Performance Line:
High-performance tools, broad field of application, high productivity in series production



Expert Line:
Specialist tools for selected applications, maximum precision and productivity

| Solid drills | | | Pilot drills | |
|--|--|---|---|--|
|  |  |  |  | |
| <p>Drilling from solid with solid carbide</p> <p>Solid carbide drills for almost all workpiece materials in three different performance classes.</p> <ul style="list-style-type: none"> - MEGA Drill: Double edged solid drills with coating and geometry matched to the respective workpiece material - Tritan-Drill: Triple-edge solid drills for maximum feed with self-centring chisel edge for difficult drilling situations - ECU-Drill: Extremely economical range with a good price-to-performance ratio <p>ø range: 0.50 - 25.00 mm Drilling depth: 3xD 4xD 5xD 6xD 8xD 12xD</p> <p>P M K N C S H</p> | <p>Drilling from solid with a replaceable head system</p> <p>Drilling from solid with minimised use of carbide, maximum stability and precision.</p> <ul style="list-style-type: none"> - QTD indexable insert drill: Cost-effective system with indexable inserts that can be swapped out - TTD replaceable head drill: Double edged replaceable head drill with five different drill heads - TTD-Tritan replaceable head drill: Up to twice the feed rate of double edged replaceable head drills. High process reliability and stability even in difficult drilling situations <p>ø range: 9.00 - 50.00 mm Drilling depth: 1xD 1.5xD 3xD 5xD</p> <p>P M K N C S H</p> | <p>Drilling from solid using indexable inserts</p> <p>Drilling aluminium from solid with CVD-diamond-coated indexable inserts.</p> <ul style="list-style-type: none"> - CVD-diamond-coated indexable inserts with three cutting edges for highest productivity and economic efficiency - Drilling AISi1 to AISi12 from solid - With internal cooling, MQL also possible - Customer-specific solutions for: ø 16 - 54.9 mm <p>ø range: 16.00 - 54.90 mm Drilling depth: Up to 3xD</p> <p>N</p> | <p>Tapping</p> <p>Production of centring holes according to DIN.</p> <ul style="list-style-type: none"> - Tritan-Spot-Drill: Triple-edge pilot drill for demanding pilot drilling situations, specially adapted to triple-edge drills - ECU-Centre-Drill: Production of DIN-compliant centring holes in rotationally symmetrical parts - CPD-Spot-Drill: Double edged centring drill with CFS connection <p>ø range: 0.50 - 20.00 mm</p> <p>P M K</p> | |
| <p>Page 29</p> | <p>Page 183</p> | <p>Page 239</p> | <p>Page 245</p> | |



| Step drills | Deep drills | Drill reamers | Special solutions |
|---|---|--|--|
|  |  |  |  |
| <p>Stepped drilling</p> <p>Production of core bores and chamfers for metric threads.</p> <ul style="list-style-type: none"> - Tritan-Step-Drill: Triple-edge step drill with self-centring chisel edge for machining threaded core bores without oscillating movement - MEGA-Step-Drill: Double edged step drill for the production of threaded core bores <p>Ø range: 2.50 - 17.50 mm</p> <p>P M</p> | <p>Deep drilling</p> <p>Process-reliable and efficient production of deep bores up to 40xD.</p> <ul style="list-style-type: none"> - MEGA-Deep-Drill: Deep drill with internal cooling for process-reliable machining of deep bores up to 40xD - MEGA-Pilot-Drill: Pilot drill specifically designed for the MEGA-Deep-Drill <p>Ø range: 1.00 - 16.00 mm Drilling depth:</p> <p>12xD 20xD 25xD 30xD 40xD</p> <p>P M K N</p> | <p>Drilling reaming</p> <p>Drilling and reaming in one machining step.</p> <p>Tritan-Drill-Reamer:</p> <ul style="list-style-type: none"> - Most accurate solution for drilling reaming - Three cutting edges and six guiding chamfers - Self-centring chisel edges for improved tapping - High degree of positional accuracy - Optimal roundness - With internal cooling - Tolerance versions: ±0.003 mm and H7 <p>Ø range: 3.80 - 20.05 mm Drilling depth:</p> <p>3xD 5xD</p> <p>P K N</p> | <p>Special solutions</p> <ul style="list-style-type: none"> - Application-specific special solutions in the range of solid carbide drills - PCD-tipped drills optimally designed for machining aluminium and CFRP - The portfolio ranges from the simple straight-fluted PCD-tipped drill to the twisted PCD-tipped step drills - World-leading Centre of Competence for PCD tools in Pforzheim |
| <p>Page 257</p> | <p>Page 267</p> | <p>Page 289</p> | <p>Page 300</p> |

OVERVIEW OF SERIES

Drilling from solid with solid carbide

MEGA DRILL

Double edged solid drills with coating and geometry matched to the respective workpiece material.



MEGA Drill

- Coating and geometry individually adapted to each workpiece material
- Wide range of applications
- Includes deep drills, step drills and micro drills for every application

| | | |
|----------------------------|--------------------------------|---------------------------------------|
| Product category: | Material suitability: | Drilling depth: |
| Performance LINE | P M K N C S H | 3xD 4xD 5xD 8xD 12xD |
| ø range: 0.50 - 25.00 mm | | |



MEGA-Speed-Drill

- High-speed drill with two cutting edges
- Finely ground groove profile for fast chip removal
- Three guiding chamfers reduce friction and vibration

| | | |
|--------------------------|--------------------------|-----------------------------------|
| Product category: | Material suitability: | Drilling depth: |
| Expert LINE | P M K S | 3xD 8xD 8xD 12xD |
| ø range: 3.00 - 20.00 mm | | |



MEGA-Quadro-Drill

- Four guiding chamfers for maximum bore quality, concentricity and positioning accuracy
- Optimal roundness and diameter tolerances

| | | |
|----------------------------|-----------------------|-------------------------------|
| Product category: | Material suitability: | Drilling depth: |
| Performance LINE | P K | 5xD 8xD 12xD |
| ø range: 3.00 - 20.00 mm | | |



MEGA 180° Drill

- Drilling from solid with a flat bottom of the bore
- Low radial forces when tapping on inclined surfaces up to 45°

| | | |
|--------------------------|--------------------------|--------------------------|
| Product category: | Material suitability: | Drilling depth: |
| Expert LINE | P M K N | 3xD 5xD |
| ø range: 3.00 - 20.00 mm | | |



TRITAN-DRILL

Triple-fluted solid drills for maximum feed with self-centring chisel edge for difficult drilling situations.



ECU DRILL

Extremely economical range with a good price-to-performance ratio.



Tritan-Drill

- Robust tool with stable cutting edges
- No oscillating movements during machining
- Optimum chip removal



Product category:



Material suitability:



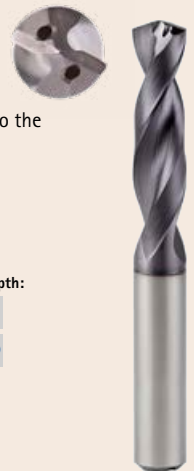
Drilling depth:

| | |
|-----|------|
| 3xD | 8xD |
| 8xD | 12xD |

ø range: 5.00 - 20.00 mm

ECU Drill

- Economical range
- Cutting material und coating specially suited to the workpiece material



Product category:



Material suitability:



Drilling depth:













| | |
|-----|------|
| 3xD | 5xD |
| 8xD | 12xD |

ø range: 3.00 - 20.00 mm

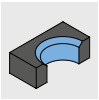
SELECTING A DRILL

Step-by-step guide to selecting the right drill

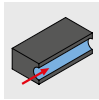
Say you're looking for a solid drill to machine hardened steel. This selection guide will show you how to pick the right drill step by step.

| | | | | | | | |
|---|-----------------------------|---|---|---|--|---|---------------------------------|
| 1 | Application | Select the main use for your new drill. | ➤ |  | Drilling from solid |  | Tapping |
| 2 | Design | Select your preferred tool design. | ➤ |  | Monolithic |  | QTS connection |
| 3 | Product category | Choose a product category. | ➤ |  | Basic Line: Universal tools, wide range of applications, low acquisition costs | | |
| 4 | Material suitability | Select your workpiece according to the MAPAL machining groups (MMG). You'll find the MMG chart on the fold-out page at the end of the catalogue. | ➤ |  | Steel |  | Stainless steel |
| 5 | Part features | Check the demands the bore properties will place on your tool. | ➤ |  | High-feed machining |  | High-speed machining |
| | | | ➤ |  | Achievable bore tolerance |  | Achievable bore tolerance of H7 |
| 6 | Design | Check that the geometric features meet your requirements. | ➤ | Diameter range | Number of cutting edges | | |
| 7 | Product | Select the drill you need. Products of the stocked preferred series are available at short notice, while products with configurable features can be freely configured within predefined limits. | ➤ |  | Stocked preferred series | | |

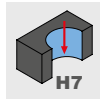




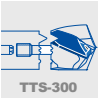
Stepped drilling



Deep drilling



Drilling reaming



TTS connection



CFS connection



With indexable insert



Performance Line:
High-performance tools, broad field of application, high productivity in series production



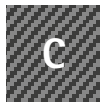
Expert Line:
Specialist tools for selected applications, maximum precision and productivity



Cast iron



Non-ferrous metals and plastics



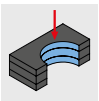
Composite materials



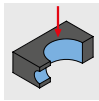
Super alloy und titanium



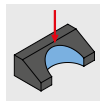
Hardened steel and cast steel



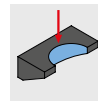
Drilling in packages



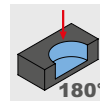
Cross bore



Inclined bore entrance



Inclined bore exit



Flat bottom of the bore



Tool grinding diameter tolerance



Maximum drilling depth

Number of guiding chamfers



Coolant supply



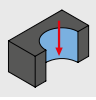
Product with configurable features

BORE MACHINING | Drilling from solid 19

Step 1: Application Step 2: Design Step 3: Product category Step 4: Material suitability Step 5: Part features Step 6: Design

| Design | | | | Product | | | |
|------------|---|-------|---|-------------------------|---------------|--|------|
| ø [mm] | z | flgc* | | Product name | Specification | | Page |
| 3 - 25 | 2 | 2 | ✓ | MEGA-Drill-Steel-Plus | SCD600, 601 | | 51 |
| 2 - 20 | 2 | 2 | ✓ | MEGA-Drill-Inox | SCD120, 121 | | 129 |
| 2,8 - 20 | 2 | 2 | ✓ | MEGA-Drill-Alu | SCD131 | | 151 |
| 1,55 - 5,2 | 2 | 2 | | MEGA-Drill-Hardened | SCD141 | | 82 |
| 0,5 - 12 | 2 | 2 | | MEGA-Drill-Composite-UD | SCD250 | | 156 |
| 0,8 - 2,99 | 2 | 2 | ✓ | MICRO-Drill-Steel | SCD371 | | 79 |

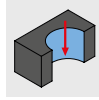
Annotations: A blue circle with '5.2' is placed over the diameter '1,55 - 5,2'. A blue circle with '6' is placed over the product name 'MEGA-Drill-Hardened'. Blue arrows point from these circles to the corresponding columns in the table above.








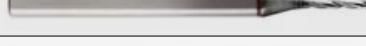
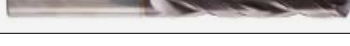

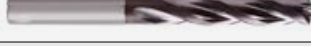

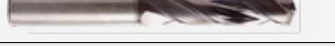







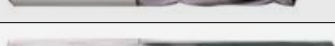


Drilling from solid (1/2)

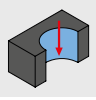
| Design | Product category | Material suitability | | | | | | | Bore features | | | | | | | Drilling depth | | | | | | |
|------------------|------------------|----------------------|---|---|---|---|---|---|---------------|-----|---|---|---|------|-----------|----------------|-----|-----|-----|-----|------|---|
| | | P | M | K | N | C | S | H | HFC | HSC | W | B | U | 180° | Tolerance | 3xD | 4xD | 5xD | 6xD | 8xD | 12xD | |
| Performance LINE | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | ✓ | ✓ | | | IT9 | ✓ | | ✓ | | ✓ | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | IT9 | ✓ | | ✓ | | ✓ | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | IT9 | ✓ | | ✓ | | ✓ | ✓ |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | IT9 | | ✓ | | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | IT9 | | | ✓ | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | IT9 | | | ✓ | | ✓ | ✓ |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | ✓ | | | | IT9 | | | ✓ | | ✓ | ✓ |
| Expert LINE | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ✓ | | ✓ | ✓ | ✓ | ✓ | IT9 | | | ✓ | | ✓ | ✓ | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ✓ | | ✓ | ✓ | ✓ | ✓ | IT9 | ✓ | | ✓ | | ✓ | ✓ | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ✓ | | | | | IT9 | ✓ | | ✓ | | ✓ | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ✓ | | | | | IT9 | ✓ | | ✓ | | ✓ | ✓ | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ✓ | | | | | IT9 | | | ✓ | | ✓ | ✓ | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ✓ | | | | | IT9 | | | ✓ | | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | ✓ | IT9 | ✓ | | ✓ | | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | ✓ | IT9 | ✓ | | ✓ | | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | IT9 | | | ✓ | | | | |
| Basic LINE | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | IT9 | | ✓ | | ✓ | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | IT9 | ✓ | | ✓ | | ✓ | ✓ | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | IT9 | | | ✓ | | ✓ | | |

■ highly suitable ■ suitable in some situations

Step 1:
ApplicationStep 2:
DesignStep 3:
Product categoryStep 4:
Material suitabilityStep 5:
Part featuresStep 6:
Design

| | Design | | | | Product | | | |
|--|------------|---|-------------------|---|--------------------------|---------------|--|------|
| | ø [mm] | z | n _{GC} * |  | Product name | Specification |  | Page |
| | 3 - 25 | 2 | 2 | ✓ | MEGA-Drill-Steel-Plus | SCD600, 601 |  | 51 |
| | 2 - 20 | 2 | 2 | ✓ | MEGA-Drill-Inox | SCD120, 121 |  | 129 |
| | 2,8 - 20 | 2 | 2 | ✓ | MEGA-Drill-Alu | SCD131 |  | 151 |
| | 2,55 - 20 | 2 | 2 | | MEGA-Drill-Hardened | SCD140 |  | 82 |
| | 0,5 - 12 | 2 | 2 | | MEGA-Drill-Composite-MD | SCD250 |  | 156 |
| | 0,8 - 2,99 | 2 | 2 | ✓ | MICRO-Drill-Steel | SCD371 |  | 79 |
| | 3 - 20 | 2 | 4 | ✓ | MEGA-Quadro-Drill-Plus | SCD610, 611 |  | 70 |
| | 4 - 20 | 3 | 3 | ✓ | Tritan-Drill-Uni-Plus | SCD631 |  | 30 |
| | 4 - 20 | 3 | 3 | ✓ | Tritan-Drill-Steel | SCD661 |  | 85 |
| | 3 - 20 | 2 | 3 | ✓ | MEGA-Speed-Drill-Uni | SCD221 |  | 36 |
| | 3 - 20 | 2 | 3 | ✓ | MEGA-Speed-Drill-Steel | SCD621 |  | 95 |
| | 3 - 20 | 2 | 3 | ✓ | MEGA-Speed-Drill-Inox | SCD411 |  | 142 |
| | 3 - 20 | 2 | 3 | ✓ | MEGA-Speed-Drill-Iron | SCD421 |  | 150 |
| | 3 - 20 | 2 | 4 | ✓ | MEGA-180°-Drill | SCD231 |  | 105 |
| | 3 - 20 | 2 | 4 | ✓ | MEGA-180°-Drill-Alu | SCD241 |  | 160 |
| | 3 - 12 | 2 | 2 | | MEGA-Drill-Composite-UDX | SCD270, 271 |  | 158 |
| | 3 - 20 | 2 | 2 | ✓ | ECU-Drill-Uni | SCD350, 351 |  | 42 |
| | 3 - 20 | 2 | 2 | ✓ | ECU-Drill-Steel | SCD360, 361 |  | 111 |
| | 4,8 - 11,6 | 2 | 4 | ✓ | ECU-G-Drill | SCD211 |  | 164 |

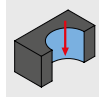
* n_{GC} = Number of guiding chamfers

















Drilling from solid (2/2)

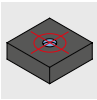
| Design | Product category | Material suitability | | | | | | Bore features | | | | | | | Drilling depth | | | | | | | | | |
|--------------------|---------------------|----------------------|---|---|---|---|---|---------------|-----|--------|---------------|---------------|---------------|------|----------------|------|-------|-----|-----|-----|------|---|---|--|
| | | P | M | K | N | S | H | HFC | HSC | Fluted | Double-fluted | Single-fluted | Double-fluted | 180° | Tolerance | 1xD | 1.5xD | 3xD | 5xD | 8xD | 12xD | | | |
| TTS-300 | Performance LINE | ■ | | ■ | | | | | | | | | | | | IT9 | ✓ | | ✓ | ✓ | ✓ | ✓ | | |
| | | ■ | | ■ | | | | | | | | | | | | | IT9 | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| | | ■ | ■ | ■ | ■ | | ■ | | | | | | | | | | IT9 | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| | | | | | ■ | | | | | | | | | | | | IT9 | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| | | | | | | ■ | | | | | | | | | | | IT9 | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Expert LINE | Performance LINE | ■ | | ■ | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | | IT9 | | | ✓ | ✓ | ✓ | | | | |
| | | ■ | | ■ | | | | | | | ✓ | ✓ | | | | IT10 | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | | ■ | | ■ | | | | | | | | | | | | IT10 | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | | ■ | | ■ | | | | | | | | | | | | IT10 | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | | ■ | ■ | ■ | ■ | | ■ | | | | | | | | | IT10 | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | | | | | ■ | | | | | | | | | | | IT10 | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | | | | | | ■ | | | | | | | | | | IT10 | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Standard | Performance LINE | | | | ■ | | | | | | | | | | IT9 | ✓ | ✓ | ✓ | | | | | | |

■ highly suitable □ suitable in some situations

Step 1:
ApplicationStep 2:
DesignStep 3:
Product categoryStep 4:
Material suitabilityStep 5:
Part featuresStep 6:
Design

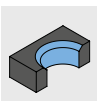
| | Design | | | | Product | | | |
|--|------------|---|-------------------|---|---------------------------------------|---------------|---|------|
| | ø [mm] | z | n _{GC} * |  | Product name | Specification | | Page |
| | 12 - 45 | 2 | 4 | ✓ | TTD Uni-Plus replaceable drill head | 01P-Uni-Plus |  | 206 |
| | 12 - 45 | 2 | 3 | ✓ | TTD Steel replaceable drill head | 04-Steel |  | 207 |
| | 12 - 45 | 2 | 3 | ✓ | TTD Inox replaceable drill head | 02-Inox |  | 209 |
| | 12 - 45 | 2 | 4 | ✓ | TTD Iron replaceable drill head | 05-Iron |  | 211 |
| | 12 - 45 | 2 | 4 | ✓ | TTD Alu replaceable drill head | 03-Alu |  | 212 |
| | 12 - 32,49 | 3 | 3 | ✓ | TTD-Tritan Uni replaceable drill head | 01-Uni |  | 230 |
| | 9 - 50 | 2 | 2 | ✓ | QTD Steel Indexable Insert | 01-Steel |  | 186 |
| | 14 - 32 | 2 | 2 | ✓ | QTD Steel-Pyramid Indexable Insert | 05-Pyramid |  | 188 |
| | 10 - 33 | 2 | 2 | ✓ | QTD Uni EK-Shaped Indexable Insert | 10-Uni |  | 190 |
| | 9 - 50 | 2 | 2 | ✓ | QTD Inox Indexable Insert | 02-Inox |  | 191 |
| | 9 - 50 | 2 | 2 | ✓ | QTD Iron Indexable Insert | 04-Iron |  | 193 |
| | 9 - 50 | 2 | 2 | ✓ | QTD Alu Indexable Insert | 03-Alu |  | 194 |
| | 16 - 54,9 | 1 | 4 | ✓ | WOGT Indexable Insert | WOGT-X40 |  | 241 |

* n_{GC} = Number of guiding chamfers



Tapping

| Design | Product category | Material suitability | | | | | | Bore features | | | | | | | Drilling depth | | | | | | | | | | |
|--------|------------------|----------------------|---|---|---|---|---|---------------|-----|--------|---------------|---------------|---------------|---------------|----------------|-----------|-----|-------|-----|-----|-----|------|--|--|--|
| | | P | M | K | N | S | H | HFC | HSC | Fluted | Double-fluted | Single-fluted | Double-fluted | Single-fluted | 180° | Tolerance | 1xD | 1.5xD | 3xD | 5xD | 8xD | 12xD | | | |
| | Expert LINE | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | |
| | Basic LINE | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | |
| | Basic LINE | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | |



Stepped drilling

| Design | Product category | Material suitability | | | | | | Bore features | | | | | | | Drilling depth | | | | | | | | | | |
|--------|------------------|----------------------|---|---|---|---|---|---------------|-----|--------|---------------|---------------|---------------|---------------|----------------|-----------|-----|-------|-----|-----|-----|------|--|--|--|
| | | P | M | K | N | S | H | HFC | HSC | Fluted | Double-fluted | Single-fluted | Double-fluted | Single-fluted | 180° | Tolerance | 1xD | 1.5xD | 3xD | 5xD | 8xD | 12xD | | | |
| | Expert LINE | ■ | ■ | ■ | ■ | ■ | ■ | ✓ | | | | | | | | IT9 | | | | | | | | | |
| | Performance LINE | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | IT9 | | | | | | | | | |



Deep drilling

| Design | Product category | Material suitability | | | | | | Bore features | | | | | | | Drilling depth | | | | | | | | | | |
|--------|------------------|----------------------|---|---|---|---|---|---------------|-----|--------|---------------|---------------|---------------|---------------|----------------|-----------|------|------|------|------|------|--|--|--|--|
| | | P | M | K | N | S | H | HFC | HSC | Fluted | Double-fluted | Single-fluted | Double-fluted | Single-fluted | 180° | Tolerance | 15xD | 20xD | 25xD | 30xD | 40xD | | | | |
| | Performance LINE | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | ✓ | IT9 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | ✓ | IT9 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |

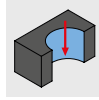






Drilling reaming

| Design | Product category | Material suitability | | | | | | Bore features | | | | | | | Drilling depth | | | | | | | | | | |
|--------|------------------|----------------------|---|---|---|---|---|---------------|-----|--------|---------------|---------------|---------------|---------------|----------------|-----------|-----|-------|-----|-----|-----|------|--|--|--|
| | | P | M | K | N | S | H | HFC | HSC | Fluted | Double-fluted | Single-fluted | Double-fluted | Single-fluted | 180° | Tolerance | 1xD | 1.5xD | 3xD | 5xD | 8xD | 12xD | | | |
| | Expert LINE | ■ | ■ | ■ | ■ | ■ | ■ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | IT7 | | | ✓ | ✓ | | | | | |



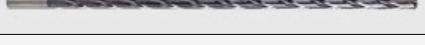
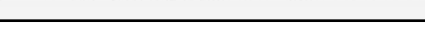
■ highly suitable



▣ suitable in some situations

Step 1:
ApplicationStep 2:
DesignStep 3:
Product categoryStep 4:
Material suitabilityStep 5:
Part featuresStep 6:
Design

| Design | | | | | Product | | | |
|-------------|---|------------|---|-------------------------|---------------|--|------|--|
| ϕ [mm] | z | n_{GC}^* |  | Product name | Specification | | Page | |
| 4 - 20 | 3 | 0 | | Tritan-Spot-Drill-Steel | SCD670 |  | 246 | |
| 0,5 - 2,5 | 2 | 2 | | ECU-Centre-Drill | SCD450 |  | 248 | |
| 8 - 20 | 2 | 0 | | CPD-Spot-Drill | CPD100 |  | 249 | |

| Design | | | | | Product | | | |
|--------------|---|------------|---|----------------------------|---------------|--|------|--|
| ϕ [mm] | z | n_{GC}^* |  | Product name | Specification | | Page | |
| 3,98 - 17,50 | 3 | 3 | ✓ | Tritan-Step-Drill-Steel | SCD561 |  | 258 | |
| 2,5 - 14 | 2 | 2 | ✓ | MEGA-Step-Drill-Steel-Plus | SCD590, 591 |  | 259 | |

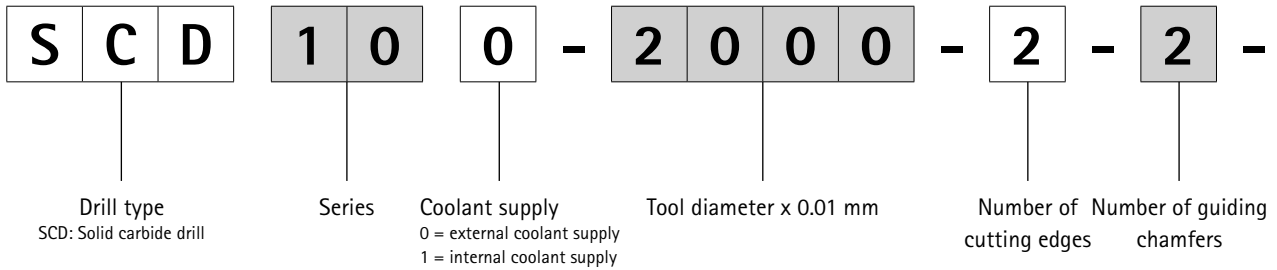
| Design | | | | | Product | | | |
|-------------|---|------------|---|---------------------|---------------|--|------|--|
| ϕ [mm] | z | n_{GC}^* |  | Product name | Specification | | Page | |
| 1 - 3 | 2 | 2 | ✓ | MEGA-Pilot-Drill | SCD581 |  | 268 | |
| 1 - 16 | 2 | 4 | ✓ | MEGA-Deep-Drill | SCD171 |  | 269 | |
| 3 - 12 | 2 | 4 | ✓ | MEGA-Deep-Drill-Alu | SCD181 |  | 278 | |

| Design | | | | | Product | | | |
|--------------|---|------------|---|---------------------|---------------|--|------|--|
| ϕ [mm] | z | n_{GC}^* |  | Product name | Specification | | Page | |
| 3,80 - 20,05 | 3 | | ✓ | Tritan-Drill-Reamer | SDR301 |  | 292 | |

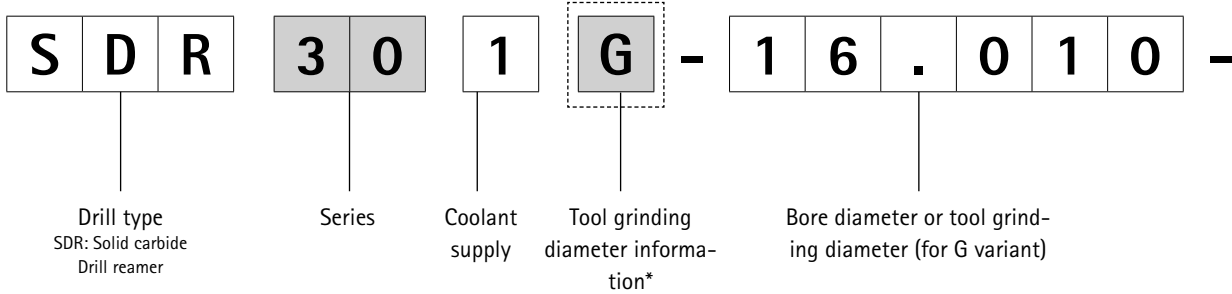
* n_{GC} = Number of guiding chamfers

Product ID codes

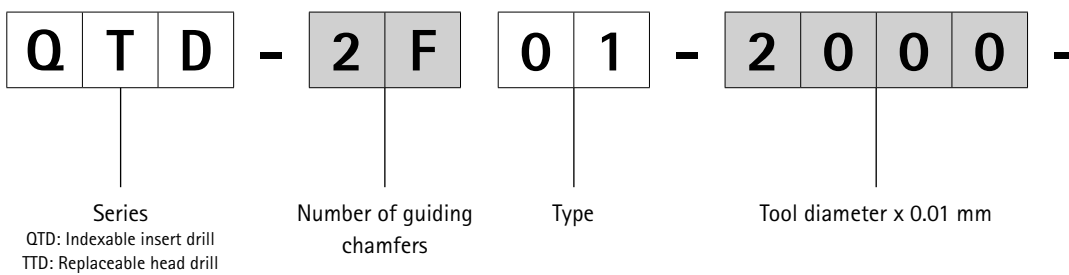
Solid carbide drill



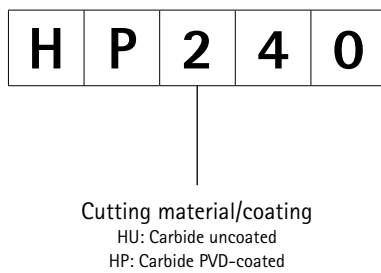
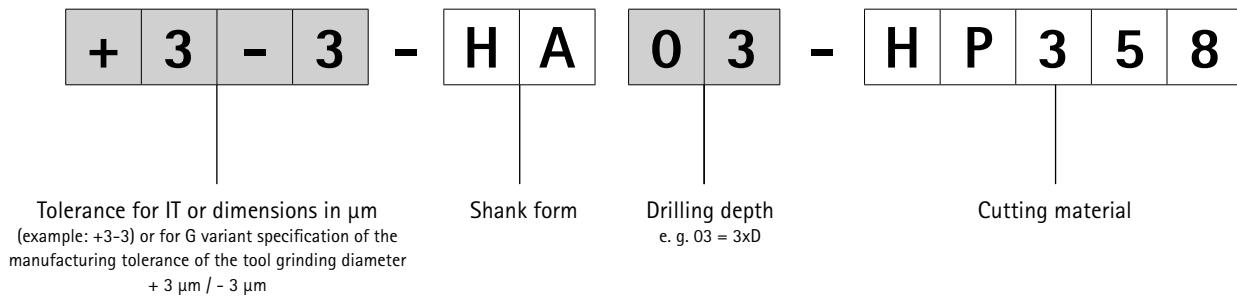
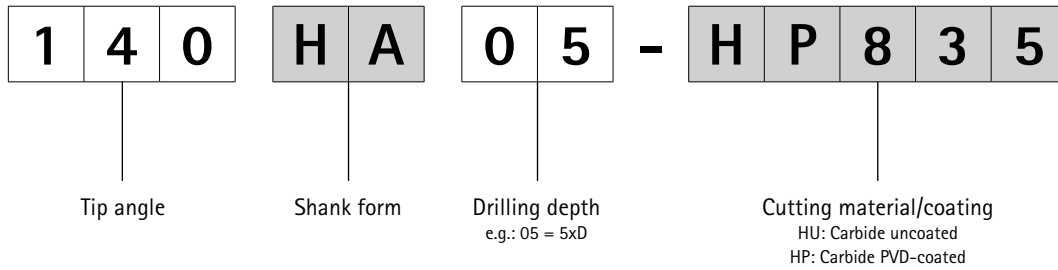
Drill reamers



QTD and TTD changing systems

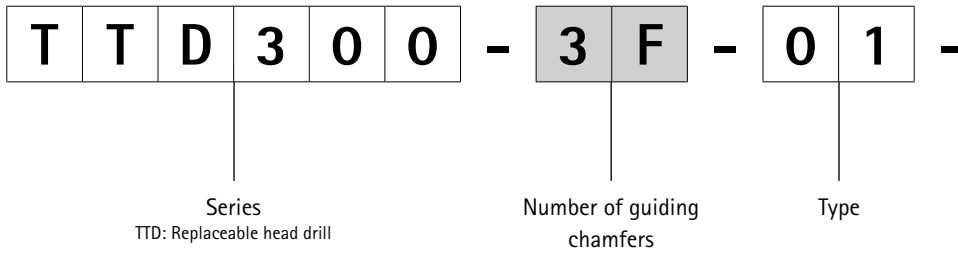


* Letter is only included for G variants

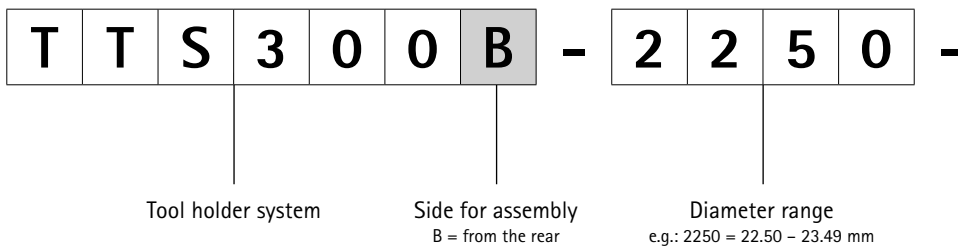


Product ID codes

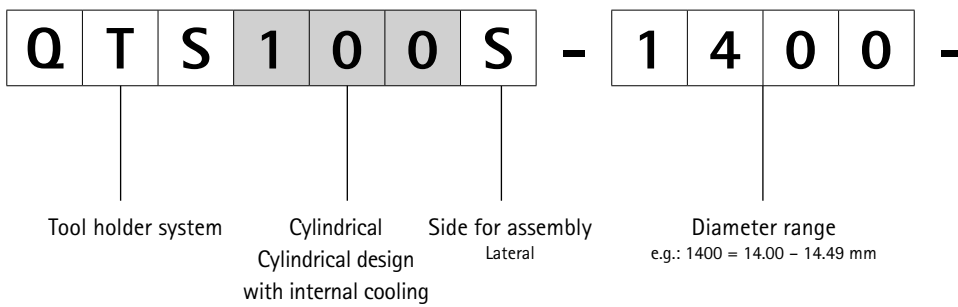
TTD-Tritan changing system



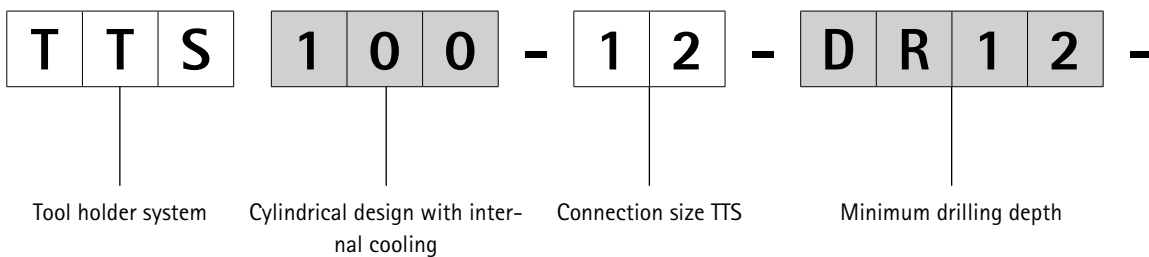
Holder Range TTS for TTD-Tritan

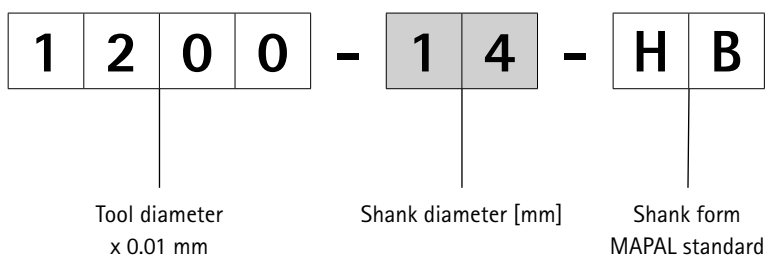
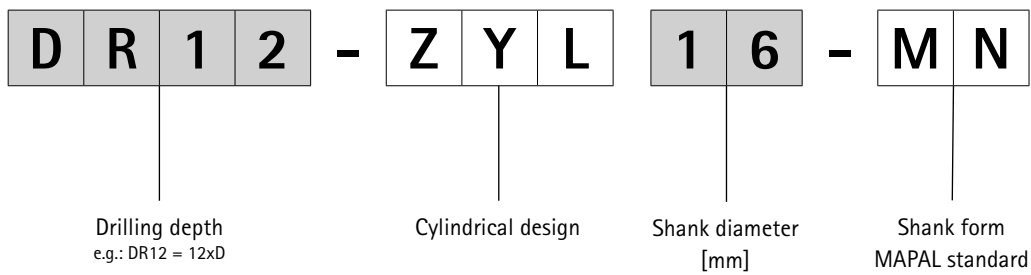
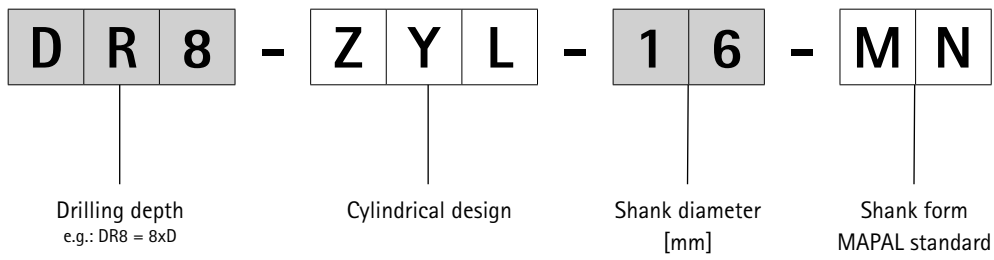
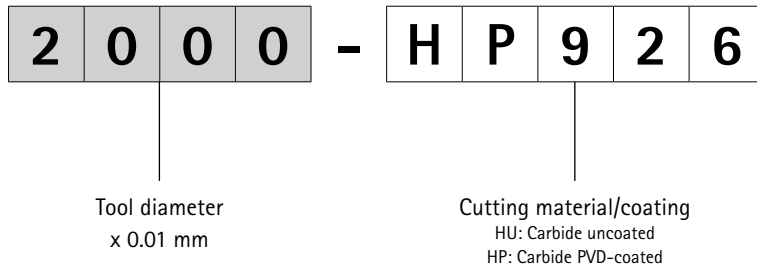


QTS for QTD holder range



TTS for TTD holder range







DRILLING FROM SOLID WITH SOLID CARBIDE

Universal application

| | |
|-----------------------------|----|
| Tritan-Drill-Uni-Plus | 30 |
| MEGA-Speed-Drill-Uni | 36 |
| ECU-Drill-Uni | 42 |

Steel and hardened steel

| | |
|------------------------------|-----|
| MEGA-Drill-Steel-Plus | 51 |
| MEGA-Quadro-Drill-Plus | 70 |
| MICRO-Drill-Steel | 79 |
| MEGA-Drill-Hardened | 82 |
| Tritan-Drill-Steel | 85 |
| MEGA-Speed-Drill-Steel | 95 |
| MEGA 180° Drill | 105 |
| ECU-Drill-Steel | 111 |

Inox and cast iron

| | |
|-----------------------------|-----|
| MEGA-Drill-Inox | 129 |
| MEGA-Speed-Drill-Inox | 142 |
| MEGA-Speed-Drill-Iron | 150 |

Aluminium and composite materials

| | |
|--------------------------------|-----|
| MEGA-Drill-Alu | 151 |
| MEGA-Drill-Composite-MD | 156 |
| MEGA-Drill-Composite-UDX | 158 |
| MEGA-180°-Drill-Alu | 160 |
| ECU G Drill | 164 |

Technical appendix

| | |
|------------------------------------|-----|
| Cutting data recommendations | 166 |
|------------------------------------|-----|



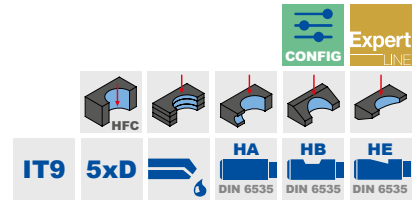
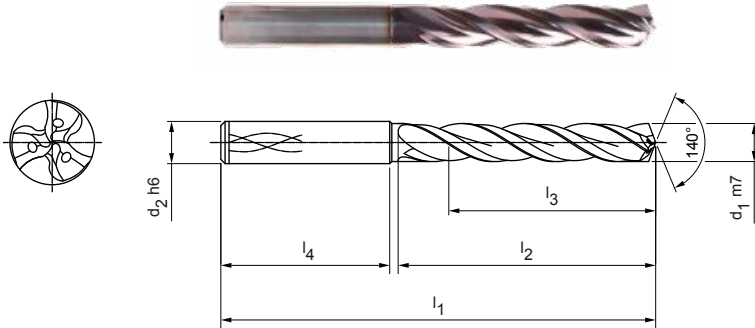
Tritan-Drill-Uni-Plus

Solid carbide twist drill

SCD631 (5xD), internal coolant supply, follow-up product to the Tritan-Drill-Uni (SCD44)

Design:

Drill diameter: 4.00 – 20.00 mm
 Bore tolerance: IT 9 (achievable)
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD631-0400-3-3-140HA05-HP358 | 31037282 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD631-0410-3-3-140HA05-HP358 | 31037283 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD631-0420-3-3-140HA05-HP358 | 31037284 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD631-0430-3-3-140HA05-HP358 | 31037285 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD631-0450-3-3-140HA05-HP358 | 31037287 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD631-0480-3-3-140HA05-HP358 | 31037290 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD631-0500-3-3-140HA05-HP358 | 31037292 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD631-0510-3-3-140HA05-HP358 | 31037293 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD631-0520-3-3-140HA05-HP358 | 31037294 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD631-0530-3-3-140HA05-HP358 | 31037295 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD631-0550-3-3-140HA05-HP358 | 31037297 |
| 5,55 | 6 | 82 | 44 | 35 | 36 | SCD631-0555-3-3-140HA05-HP358 | 31307521 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD631-0560-3-3-140HA05-HP358 | 31037298 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD631-0570-3-3-140HA05-HP358 | 31037299 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD631-0580-3-3-140HA05-HP358 | 31037300 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD631-0590-3-3-140HA05-HP358 | 31037301 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD631-0600-3-3-140HA05-HP358 | 31037302 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD631-0610-3-3-140HA05-HP358 | 31037303 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD631-0620-3-3-140HA05-HP358 | 31037304 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD631-0630-3-3-140HA05-HP358 | 31037305 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD631-0640-3-3-140HA05-HP358 | 31037306 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD631-0650-3-3-140HA05-HP358 | 31037307 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD631-0670-3-3-140HA05-HP358 | 31037309 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD631-0680-3-3-140HA05-HP358 | 31037310 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD631-0690-3-3-140HA05-HP358 | 31037311 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD631-0700-3-3-140HA05-HP358 | 31037312 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD631-0740-3-3-140HA05-HP358 | 31037316 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD631-0750-3-3-140HA05-HP358 | 31037317 |
| 7,70 | 8 | 91 | 53 | 43 | 36 | SCD631-0770-3-3-140HA05-HP358 | 31037319 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD631-0780-3-3-140HA05-HP358 | 31037320 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD631-0790-3-3-140HA05-HP358 | 31037321 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD631-0800-3-3-140HA05-HP358 | 31037322 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD631-0810-3-3-140HA05-HP358 | 31037323 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD631-0850-3-3-140HA05-HP358 | 31037327 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD631-0860-3-3-140HA05-HP358 | 31037328 |

Tritan-Drill-Uni-Plus | Solid carbide twist drill SCD631 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD631-0880-3-3-140HA05-HP358 | 31037330 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD631-0900-3-3-140HA05-HP358 | 31037332 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD631-0930-3-3-140HA05-HP358 | 31037335 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD631-0950-3-3-140HA05-HP358 | 31037337 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD631-0980-3-3-140HA05-HP358 | 31037340 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD631-0990-3-3-140HA05-HP358 | 31037341 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD631-1000-3-3-140HA05-HP358 | 31037342 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD631-1020-3-3-140HA05-HP358 | 31037344 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD631-1050-3-3-140HA05-HP358 | 31037347 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD631-1100-3-3-140HA05-HP358 | 31037352 |
| 11,20 | 12 | 118 | 71 | 56 | 45 | SCD631-1120-3-3-140HA05-HP358 | 31037354 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD631-1150-3-3-140HA05-HP358 | 31037357 |
| 11,70 | 12 | 118 | 71 | 56 | 45 | SCD631-1170-3-3-140HA05-HP358 | 31037359 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD631-1180-3-3-140HA05-HP358 | 31037360 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD631-1200-3-3-140HA05-HP358 | 31037362 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD631-1250-3-3-140HA05-HP358 | 31037364 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD631-1300-3-3-140HA05-HP358 | 31037366 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD631-1350-3-3-140HA05-HP358 | 31037368 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD631-1380-3-3-140HA05-HP358 | 31037369 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD631-1400-3-3-140HA05-HP358 | 31037370 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD631-1450-3-3-140HA05-HP358 | 31037372 |
| 14,80 | 16 | 133 | 83 | 63 | 48 | SCD631-1480-3-3-140HA05-HP358 | 31037373 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD631-1500-3-3-140HA05-HP358 | 31037374 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD631-1550-3-3-140HA05-HP358 | 31037376 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD631-1600-3-3-140HA05-HP358 | 31037378 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD631-1700-3-3-140HA05-HP358 | 31037382 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD631-1750-3-3-140HA05-HP358 | 31037384 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD631-1800-3-3-140HA05-HP358 | 31037386 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD631-1850-3-3-140HA05-HP358 | 31037388 |
| 19,80 | 20 | 153 | 101 | 77 | 50 | SCD631-1980-3-3-140HA05-HP358 | 31037393 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD631-2000-3-3-140HA05-HP358 | 31037394 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

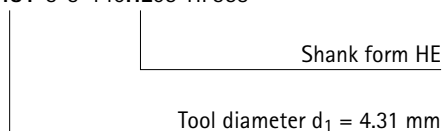
SCD631-[diameter]-3-3-140[shank form]05-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 4,00 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:

SCD631-0431-3-3-140HE05-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

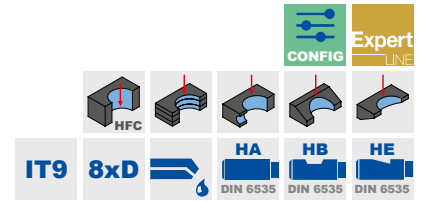
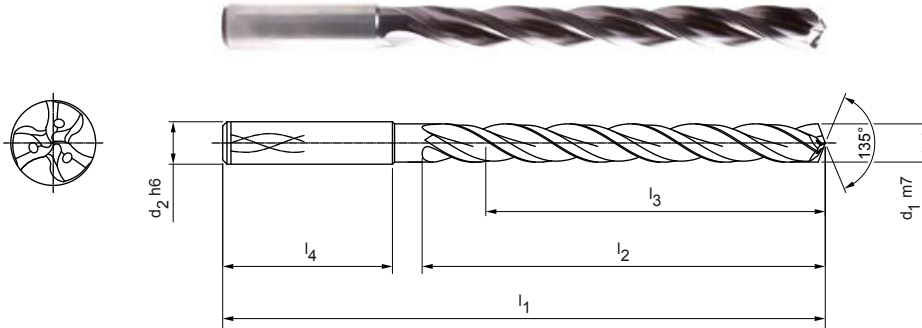
Tritan-Drill-Uni-Plus

Solid carbide twist drill

SCD631 (8xD), internal coolant supply, follow-up product to the Tritan-Drill-Uni (SCD44)

Design:

Drill diameter: 4.00 – 20.00 mm
 Bore tolerance: IT 9 (achievable)
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD631-0400-3-3-135HA08-HP358 | 31037395 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD631-0410-3-3-135HA08-HP358 | 31037396 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD631-0430-3-3-135HA08-HP358 | 31037398 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD631-0450-3-3-135HA08-HP358 | 31037400 |
| 4,60 | 6 | 81 | 43 | 36 | 36 | SCD631-0460-3-3-135HA08-HP358 | 31037401 |
| 4,70 | 6 | 81 | 43 | 36 | 36 | SCD631-0470-3-3-135HA08-HP358 | 31037402 |
| 4,90 | 6 | 95 | 57 | 48 | 36 | SCD631-0490-3-3-135HA08-HP358 | 31037404 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD631-0500-3-3-135HA08-HP358 | 31037405 |
| 5,03 | 6 | 95 | 57 | 48 | 36 | SCD631-0503-3-3-135HA08-HP358 | 31266415 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD631-0510-3-3-135HA08-HP358 | 31037406 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD631-0520-3-3-135HA08-HP358 | 31037407 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD631-0550-3-3-135HA08-HP358 | 31037410 |
| 5,60 | 6 | 95 | 57 | 48 | 36 | SCD631-0560-3-3-135HA08-HP358 | 31037411 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD631-0580-3-3-135HA08-HP358 | 31037413 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD631-0600-3-3-135HA08-HP358 | 31037415 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD631-0610-3-3-135HA08-HP358 | 31037416 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD631-0650-3-3-135HA08-HP358 | 31037420 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD631-0680-3-3-135HA08-HP358 | 31037423 |
| 6,90 | 8 | 114 | 76 | 64 | 36 | SCD631-0690-3-3-135HA08-HP358 | 31037424 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD631-0700-3-3-135HA08-HP358 | 31037425 |
| 7,10 | 8 | 114 | 76 | 64 | 36 | SCD631-0710-3-3-135HA08-HP358 | 31037426 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD631-0750-3-3-135HA08-HP358 | 31037430 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD631-0780-3-3-135HA08-HP358 | 31037433 |
| 7,90 | 8 | 114 | 76 | 64 | 36 | SCD631-0790-3-3-135HA08-HP358 | 31037434 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD631-0800-3-3-135HA08-HP358 | 31037435 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD631-0850-3-3-135HA08-HP358 | 31037440 |
| 8,80 | 10 | 142 | 95 | 80 | 40 | SCD631-0880-3-3-135HA08-HP358 | 31037443 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD631-0900-3-3-135HA08-HP358 | 31037445 |
| 9,10 | 10 | 142 | 95 | 80 | 40 | SCD631-0910-3-3-135HA08-HP358 | 31037446 |
| 9,40 | 10 | 142 | 95 | 80 | 40 | SCD631-0940-3-3-135HA08-HP358 | 31037449 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD631-0950-3-3-135HA08-HP358 | 31037450 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD631-0980-3-3-135HA08-HP358 | 31037453 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD631-1000-3-3-135HA08-HP358 | 31037455 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD631-1100-3-3-135HA08-HP358 | 31037465 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD631-1180-3-3-135HA08-HP358 | 31037473 |

Tritan-Drill-Uni-Plus | Solid carbide twist drill SCD631 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD631-1200-3-3-135HA08-HP358 | 31037475 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD631-1250-3-3-135HA08-HP358 | 31037477 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD631-1300-3-3-135HA08-HP358 | 31037479 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD631-1350-3-3-135HA08-HP358 | 31037481 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD631-1400-3-3-135HA08-HP358 | 31037483 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD631-1500-3-3-135HA08-HP358 | 31037487 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD631-1600-3-3-135HA08-HP358 | 31037491 |
| 17,00 | 18 | 222 | 171 | 144 | 48 | SCD631-1700-3-3-135HA08-HP358 | 31037495 |

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

Shank form: HB | HE

Specification:

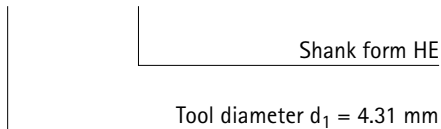
SCD631-[diameter]-3-3-140[shank form]08-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 4,00 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Example:

SCD631-0431-3-3-140HE08-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

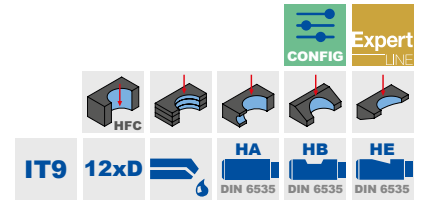
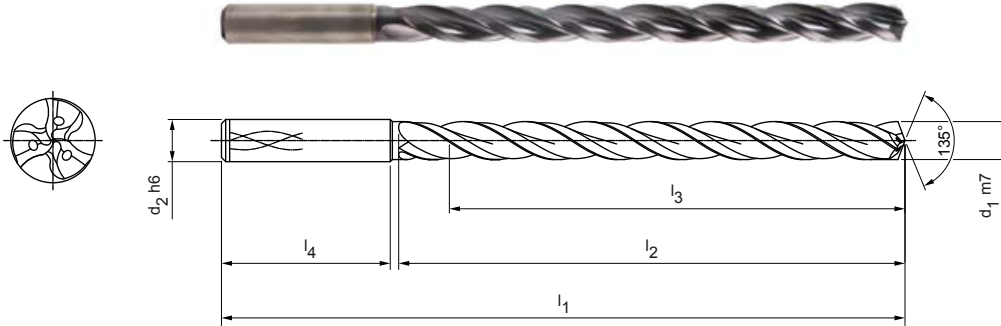
Tritan-Drill-Uni-Plus

Solid carbide twist drill

SCD631 (12xD), internal coolant supply, follow-up product to the Tritan-Drill-Uni (SCD44)

Design:

Drill diameter: 4.00 – 20.00 mm
 Bore tolerance: IT 9 (achievable)
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 102 | 64 | 58 | 36 | SCD631-0400-3-3-135HA12-HP358 | 31035357 |
| 4,10 | 6 | 102 | 64 | 58 | 36 | SCD631-0410-3-3-135HA12-HP358 | 31035358 |
| 4,20 | 6 | 102 | 64 | 58 | 36 | SCD631-0420-3-3-135HA12-HP358 | 31035359 |
| 4,30 | 6 | 102 | 64 | 58 | 36 | SCD631-0430-3-3-135HA12-HP358 | 31035360 |
| 4,50 | 6 | 102 | 64 | 58 | 36 | SCD631-0450-3-3-135HA12-HP358 | 31035362 |
| 4,60 | 6 | 102 | 64 | 58 | 36 | SCD631-0460-3-3-135HA12-HP358 | 31035363 |
| 4,70 | 6 | 102 | 64 | 58 | 36 | SCD631-0470-3-3-135HA12-HP358 | 31035364 |
| 4,80 | 6 | 116 | 78 | 70 | 36 | SCD631-0480-3-3-135HA12-HP358 | 31035365 |
| 5,00 | 6 | 116 | 78 | 70 | 36 | SCD631-0500-3-3-135HA12-HP358 | 31035367 |
| 5,10 | 6 | 116 | 78 | 70 | 36 | SCD631-0510-3-3-135HA12-HP358 | 31035368 |
| 5,20 | 6 | 116 | 78 | 70 | 36 | SCD631-0520-3-3-135HA12-HP358 | 31035369 |
| 5,40 | 6 | 116 | 78 | 70 | 36 | SCD631-0540-3-3-135HA12-HP358 | 31035371 |
| 5,50 | 6 | 116 | 78 | 70 | 36 | SCD631-0550-3-3-135HA12-HP358 | 31035372 |
| 5,80 | 6 | 116 | 78 | 70 | 36 | SCD631-0580-3-3-135HA12-HP358 | 31035375 |
| 6,00 | 6 | 116 | 78 | 70 | 36 | SCD631-0600-3-3-135HA12-HP358 | 31035377 |
| 6,10 | 8 | 146 | 108 | 94 | 36 | SCD631-0610-3-3-135HA12-HP358 | 31035378 |
| 6,20 | 8 | 146 | 108 | 94 | 36 | SCD631-0620-3-3-135HA12-HP358 | 31035379 |
| 6,50 | 8 | 146 | 108 | 94 | 36 | SCD631-0650-3-3-135HA12-HP358 | 31035382 |
| 6,60 | 8 | 146 | 108 | 94 | 36 | SCD631-0660-3-3-135HA12-HP358 | 31035383 |
| 6,80 | 8 | 146 | 108 | 94 | 36 | SCD631-0680-3-3-135HA12-HP358 | 31035385 |
| 7,00 | 8 | 146 | 108 | 94 | 36 | SCD631-0700-3-3-135HA12-HP358 | 31035387 |
| 7,50 | 8 | 146 | 108 | 94 | 36 | SCD631-0750-3-3-135HA12-HP358 | 31035392 |
| 7,80 | 8 | 146 | 108 | 94 | 36 | SCD631-0780-3-3-135HA12-HP358 | 31035395 |
| 8,00 | 8 | 146 | 108 | 94 | 36 | SCD631-0800-3-3-135HA12-HP358 | 31035397 |
| 8,50 | 10 | 162 | 120 | 110 | 40 | SCD631-0850-3-3-135HA12-HP358 | 31035402 |
| 9,00 | 10 | 162 | 120 | 110 | 40 | SCD631-0900-3-3-135HA12-HP358 | 31035407 |
| 9,50 | 10 | 162 | 120 | 110 | 40 | SCD631-0950-3-3-135HA12-HP358 | 31035412 |
| 9,80 | 10 | 162 | 120 | 110 | 40 | SCD631-0980-3-3-135HA12-HP358 | 31035415 |
| 9,90 | 10 | 162 | 120 | 110 | 40 | SCD631-0990-3-3-135HA12-HP358 | 31035416 |
| 10,00 | 10 | 162 | 120 | 110 | 40 | SCD631-1000-3-3-135HA12-HP358 | 31035417 |
| 10,20 | 12 | 204 | 156 | 142 | 45 | SCD631-1020-3-3-135HA12-HP358 | 31035419 |
| 10,50 | 12 | 204 | 156 | 142 | 45 | SCD631-1050-3-3-135HA12-HP358 | 31035422 |
| 11,00 | 12 | 204 | 156 | 142 | 45 | SCD631-1100-3-3-135HA12-HP358 | 31035427 |
| 11,30 | 12 | 204 | 156 | 142 | 45 | SCD631-1130-3-3-135HA12-HP358 | 31035430 |
| 11,80 | 12 | 204 | 156 | 142 | 45 | SCD631-1180-3-3-135HA12-HP358 | 31035435 |

Tritan-Drill-Uni-Plus | Solid carbide twist drill SCD631 (12xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00 | 12 | 204 | 156 | 142 | 45 | SCD631-1200-3-3-135HA12-HP358 | 31035437 |
| 12,50 | 14 | 230 | 182 | 166 | 45 | SCD631-1250-3-3-135HA12-HP358 | 31035439 |
| 13,00 | 14 | 230 | 182 | 166 | 45 | SCD631-1300-3-3-135HA12-HP358 | 31035441 |
| 13,50 | 14 | 230 | 182 | 166 | 45 | SCD631-1350-3-3-135HA12-HP358 | 31035443 |
| 13,80 | 14 | 230 | 182 | 166 | 45 | SCD631-1380-3-3-135HA12-HP358 | 31035444 |
| 14,00 | 14 | 230 | 182 | 166 | 45 | SCD631-1400-3-3-135HA12-HP358 | 31035445 |
| 15,00 | 16 | 260 | 208 | 192 | 48 | SCD631-1500-3-3-135HA12-HP358 | 31035449 |
| 15,80 | 16 | 260 | 208 | 192 | 48 | SCD631-1580-3-3-135HA12-HP358 | 31035452 |
| 16,00 | 16 | 260 | 208 | 192 | 48 | SCD631-1600-3-3-135HA12-HP358 | 31035453 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

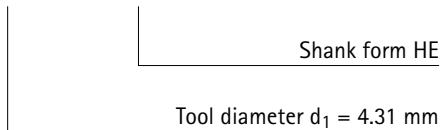
SCD631-[diameter]-3-3-140[shank form]12-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 4,00 | 4,70 | 6 | 102 | 64 | 58 | 36 |
| 4,71 | 6,00 | 6 | 116 | 78 | 70 | 36 |
| 6,01 | 8,00 | 8 | 146 | 108 | 94 | 36 |
| 8,01 | 10,00 | 10 | 162 | 120 | 110 | 40 |
| 10,01 | 12,00 | 12 | 204 | 156 | 142 | 45 |
| 12,01 | 14,00 | 14 | 230 | 182 | 166 | 45 |
| 14,01 | 16,00 | 16 | 260 | 208 | 192 | 48 |
| 16,01 | 18,00 | 18 | 285 | 234 | 216 | 48 |
| 18,01 | 20,00 | 20 | 310 | 258 | 240 | 50 |

Example:

SCD631-0431-3-3-140HE12-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

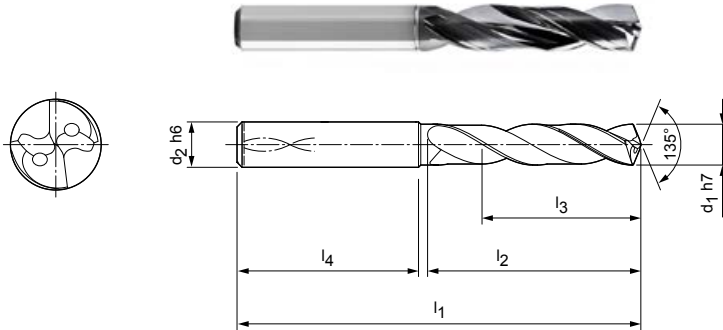
Special designs and other coatings available upon request.

MEGA-Speed-Drill-Uni

Solid carbide twist drill
SCD221 (3xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP374
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°

Application:
 For high-speed machining.



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD221-0300-2-3-135HA03-HP374 | 30404127 |
| 3,10 | 6 | 62 | 20 | 14 | 36 | SCD221-0310-2-3-135HA03-HP374 | 30404128 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD221-0320-2-3-135HA03-HP374 | 30404129 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD221-0330-2-3-135HA03-HP374 | 30404130 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD221-0340-2-3-135HA03-HP374 | 30404131 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD221-0350-2-3-135HA03-HP374 | 30404132 |
| 3,70 | 6 | 62 | 20 | 14 | 36 | SCD221-0370-2-3-135HA03-HP374 | 30404134 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD221-0400-2-3-135HA03-HP374 | 30404137 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD221-0420-2-3-135HA03-HP374 | 30404139 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD221-0430-2-3-135HA03-HP374 | 30404140 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD221-0450-2-3-135HA03-HP374 | 30404142 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD221-0500-2-3-135HA03-HP374 | 30404148 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD221-0510-2-3-135HA03-HP374 | 30404149 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD221-0520-2-3-135HA03-HP374 | 30404150 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD221-0550-2-3-135HA03-HP374 | 30404153 |
| 5,55 | 6 | 66 | 28 | 20 | 36 | SCD221-0555-2-3-135HA03-HP374 | 30404154 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD221-0560-2-3-135HA03-HP374 | 30404155 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD221-0580-2-3-135HA03-HP374 | 30404157 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD221-0600-2-3-135HA03-HP374 | 30404159 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD221-0630-2-3-135HA03-HP374 | 30404162 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD221-0650-2-3-135HA03-HP374 | 30404164 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD221-0680-2-3-135HA03-HP374 | 30404167 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD221-0690-2-3-135HA03-HP374 | 30404168 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD221-0700-2-3-135HA03-HP374 | 30404169 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD221-0740-2-3-135HA03-HP374 | 30404173 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD221-0750-2-3-135HA03-HP374 | 30404175 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD221-0780-2-3-135HA03-HP374 | 30404178 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD221-0800-2-3-135HA03-HP374 | 30404180 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD221-0850-2-3-135HA03-HP374 | 30404185 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD221-0860-2-3-135HA03-HP374 | 30404186 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD221-0880-2-3-135HA03-HP374 | 30404188 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD221-0900-2-3-135HA03-HP374 | 30404190 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD221-0950-2-3-135HA03-HP374 | 30404195 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD221-0980-2-3-135HA03-HP374 | 30404198 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD221-0990-2-3-135HA03-HP374 | 30404199 |

MEGA-Speed-Drill-Uni | Solid carbide twist drill SCD221 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD221-1000-2-3-135HA03-HP374 | 30404200 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD221-1020-2-3-135HA03-HP374 | 30404202 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD221-1030-2-3-135HA03-HP374 | 30404203 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD221-1050-2-3-135HA03-HP374 | 30404205 |
| 10,60 | 12 | 102 | 55 | 40 | 45 | SCD221-1060-2-3-135HA03-HP374 | 30404206 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD221-1100-2-3-135HA03-HP374 | 30404210 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD221-1150-2-3-135HA03-HP374 | 30404215 |
| 11,60 | 12 | 102 | 55 | 40 | 45 | SCD221-1160-2-3-135HA03-HP374 | 30404216 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD221-1180-2-3-135HA03-HP374 | 30404219 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD221-1200-2-3-135HA03-HP374 | 30404221 |
| 12,50 | 14 | 107 | 60 | 43 | 45 | SCD221-1250-2-3-135HA03-HP374 | 30404222 |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD221-1300-2-3-135HA03-HP374 | 30404224 |
| 13,50 | 14 | 107 | 60 | 43 | 45 | SCD221-1350-2-3-135HA03-HP374 | 30404225 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD221-1400-2-3-135HA03-HP374 | 30404227 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD221-1450-2-3-135HA03-HP374 | 30404228 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD221-1500-2-3-135HA03-HP374 | 30404230 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD221-1600-2-3-135HA03-HP374 | 30404233 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD221-1700-2-3-135HA03-HP374 | 30404236 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD221-1750-2-3-135HA03-HP374 | 30404237 |
| 17,80 | 18 | 123 | 73 | 51 | 48 | SCD221-1780-2-3-135HA03-HP374 | 30404238 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD221-1800-2-3-135HA03-HP374 | 30404239 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD221-1850-2-3-135HA03-HP374 | 30404240 |
| 19,50 | 20 | 131 | 79 | 55 | 50 | SCD221-1950-2-3-135HA03-HP374 | 30404243 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD221-2000-2-3-135HA03-HP374 | 30404245 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

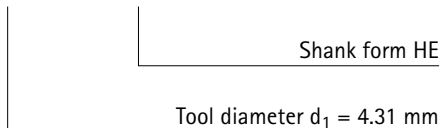
SCD221-[diameter]-3-3-140[shank form]03-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 62 | 20 | 14 | 36 |
| 3,71 | 4,70 | 6 | 66 | 24 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 8,00 | 8 | 79 | 34 | 24 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 55 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 60 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Example:

SCD221-0431-3-3-140HE03-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

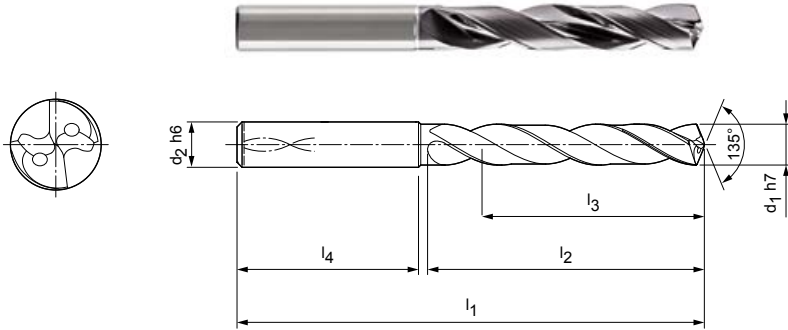
Special designs and other coatings available upon request.

MEGA-Speed-Drill-Uni

Solid carbide twist drill
SCD221 (5xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP374
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°

Application:
 For high-speed machining.




Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD221-0300-2-3-135HA05-HP374 | 30392925 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD221-0310-2-3-135HA05-HP374 | 30392926 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD221-0320-2-3-135HA05-HP374 | 30392927 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD221-0330-2-3-135HA05-HP374 | 30392928 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD221-0340-2-3-135HA05-HP374 | 30392929 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD221-0350-2-3-135HA05-HP374 | 30392930 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD221-0370-2-3-135HA05-HP374 | 30392932 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD221-0400-2-3-135HA05-HP374 | 30392935 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD221-0420-2-3-135HA05-HP374 | 30392937 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD221-0430-2-3-135HA05-HP374 | 30392938 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD221-0450-2-3-135HA05-HP374 | 30392940 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD221-0500-2-3-135HA05-HP374 | 30392946 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD221-0510-2-3-135HA05-HP374 | 30392947 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD221-0520-2-3-135HA05-HP374 | 30392948 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD221-0550-2-3-135HA05-HP374 | 30392951 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD221-0560-2-3-135HA05-HP374 | 30392953 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD221-0580-2-3-135HA05-HP374 | 30392955 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD221-0600-2-3-135HA05-HP374 | 30392957 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD221-0650-2-3-135HA05-HP374 | 30392962 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD221-0660-2-3-135HA05-HP374 | 30392963 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD221-0680-2-3-135HA05-HP374 | 30392965 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD221-0690-2-3-135HA05-HP374 | 30392966 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD221-0700-2-3-135HA05-HP374 | 30392967 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD221-0740-2-3-135HA05-HP374 | 30392971 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD221-0750-2-3-135HA05-HP374 | 30392972 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD221-0780-2-3-135HA05-HP374 | 30392975 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD221-0800-2-3-135HA05-HP374 | 30392977 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD221-0850-2-3-135HA05-HP374 | 30392982 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD221-0860-2-3-135HA05-HP374 | 30392983 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD221-0880-2-3-135HA05-HP374 | 30392985 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD221-0900-2-3-135HA05-HP374 | 30392987 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD221-0950-2-3-135HA05-HP374 | 30392992 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD221-0970-2-3-135HA05-HP374 | 30392994 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD221-0980-2-3-135HA05-HP374 | 30392995 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD221-1000-2-3-135HA05-HP374 | 30392997 |


MEGA-Speed-Drill-Uni | Solid carbide twist drill SCD221 (5xD), internal coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD221-1020-2-3-135HA05-HP374 | 30392999 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD221-1030-2-3-135HA05-HP374 | 30393000 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD221-1050-2-3-135HA05-HP374 | 30393002 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD221-1100-2-3-135HA05-HP374 | 30393007 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD221-1150-2-3-135HA05-HP374 | 30393012 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD221-1180-2-3-135HA05-HP374 | 30393015 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD221-1200-2-3-135HA05-HP374 | 30393017 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD221-1250-2-3-135HA05-HP374 | 30393018 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD221-1300-2-3-135HA05-HP374 | 30393020 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD221-1350-2-3-135HA05-HP374 | 30393021 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD221-1380-2-3-135HA05-HP374 | 30393022 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD221-1400-2-3-135HA05-HP374 | 30393023 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD221-1450-2-3-135HA05-HP374 | 30393024 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD221-1500-2-3-135HA05-HP374 | 30393026 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD221-1550-2-3-135HA05-HP374 | 30393027 |
| 15,80 | 16 | 133 | 83 | 63 | 48 | SCD221-1580-2-3-135HA05-HP374 | 30393028 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD221-1600-2-3-135HA05-HP374 | 30393029 |
| 16,80 | 18 | 143 | 93 | 71 | 48 | SCD221-1680-2-3-135HA05-HP374 | 30393031 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD221-1700-2-3-135HA05-HP374 | 30393032 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD221-1750-2-3-135HA05-HP374 | 30393033 |
| 17,80 | 18 | 143 | 93 | 71 | 48 | SCD221-1780-2-3-135HA05-HP374 | 30393034 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD221-1800-2-3-135HA05-HP374 | 30393035 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD221-1850-2-3-135HA05-HP374 | 30393036 |
| 18,80 | 20 | 153 | 101 | 77 | 50 | SCD221-1880-2-3-135HA05-HP374 | 30393037 |
| 19,00 | 20 | 153 | 101 | 77 | 50 | SCD221-1900-2-3-135HA05-HP374 | 30393038 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD221-2000-2-3-135HA05-HP374 | 30393041 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable





Shank form:
Shank form: HB | HE

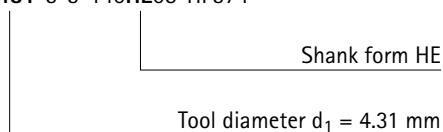
Specification:
SCD221-[diameter]-3-3-140[shank form]05-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:

SCD221-0431-3-3-140HE05-HP374



Dimensions in mm.

For cutting data recommendations, see end of chapter.

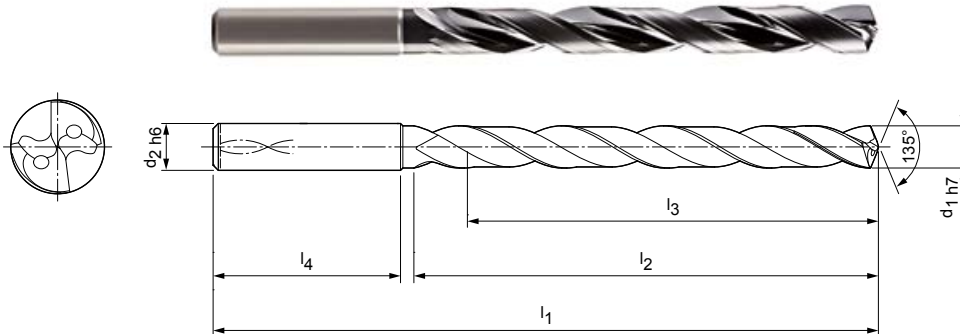
Special designs and other coatings available upon request.

MEGA-Speed-Drill-Uni

Solid carbide twist drill
SCD221 (8xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP374
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°

Application:
 For high-speed machining.



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD221-0300-2-3-135HA08-HP374 | 30404000 |
| 3,20 | 6 | 72 | 34 | 29 | 36 | SCD221-0320-2-3-135HA08-HP374 | 30404002 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD221-0330-2-3-135HA08-HP374 | 30404003 |
| 3,40 | 6 | 72 | 34 | 29 | 36 | SCD221-0340-2-3-135HA08-HP374 | 30404004 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD221-0350-2-3-135HA08-HP374 | 30404005 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD221-0370-2-3-135HA08-HP374 | 30404007 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD221-0400-2-3-135HA08-HP374 | 30404010 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD221-0410-2-3-135HA08-HP374 | 30404011 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD221-0420-2-3-135HA08-HP374 | 30404012 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD221-0430-2-3-135HA08-HP374 | 30404013 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD221-0450-2-3-135HA08-HP374 | 30404015 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD221-0480-2-3-135HA08-HP374 | 30404019 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD221-0500-2-3-135HA08-HP374 | 30404021 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD221-0510-2-3-135HA08-HP374 | 30404022 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD221-0520-2-3-135HA08-HP374 | 30404023 |
| 5,40 | 6 | 95 | 57 | 48 | 36 | SCD221-0540-2-3-135HA08-HP374 | 30404025 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD221-0550-2-3-135HA08-HP374 | 30404026 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD221-0580-2-3-135HA08-HP374 | 30404030 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD221-0600-2-3-135HA08-HP374 | 30404032 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD221-0610-2-3-135HA08-HP374 | 30404033 |
| 6,40 | 8 | 114 | 76 | 64 | 36 | SCD221-0640-2-3-135HA08-HP374 | 30404036 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD221-0650-2-3-135HA08-HP374 | 30404037 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD221-0680-2-3-135HA08-HP374 | 30404040 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD221-0700-2-3-135HA08-HP374 | 30404043 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD221-0750-2-3-135HA08-HP374 | 30404048 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD221-0780-2-3-135HA08-HP374 | 30404051 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD221-0800-2-3-135HA08-HP374 | 30404053 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD221-0850-2-3-135HA08-HP374 | 30404058 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD221-0900-2-3-135HA08-HP374 | 30404063 |
| 9,30 | 10 | 142 | 95 | 80 | 40 | SCD221-0930-2-3-135HA08-HP374 | 30404066 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD221-0950-2-3-135HA08-HP374 | 30404068 |
| 9,60 | 10 | 142 | 95 | 80 | 40 | SCD221-0960-2-3-135HA08-HP374 | 30404069 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD221-0980-2-3-135HA08-HP374 | 30404071 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD221-1000-2-3-135HA08-HP374 | 30404073 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD221-1020-2-3-135HA08-HP374 | 30404075 |

MEGA-Speed-Drill-Uni | Solid carbide twist drill SCD221 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD221-1050-2-3-135HA08-HP374 | 30404078 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD221-1100-2-3-135HA08-HP374 | 30404083 |
| 11,40 | 12 | 162 | 114 | 96 | 45 | SCD221-1140-2-3-135HA08-HP374 | 30404088 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD221-1180-2-3-135HA08-HP374 | 30404092 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD221-1200-2-3-135HA08-HP374 | 30404094 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD221-1250-2-3-135HA08-HP374 | 30404095 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD221-1300-2-3-135HA08-HP374 | 30404097 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD221-1350-2-3-135HA08-HP374 | 30404098 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD221-1400-2-3-135HA08-HP374 | 30404100 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD221-1500-2-3-135HA08-HP374 | 30404103 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD221-1600-2-3-135HA08-HP374 | 30404106 |
| 17,50 | 18 | 222 | 171 | 144 | 48 | SCD221-1750-2-3-135HA08-HP374 | 30404110 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

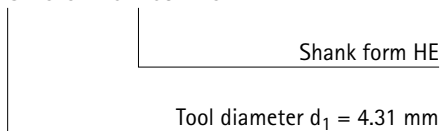
SCD221-[diameter]-3-3-140[shank form]08-HP374

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 72 | 34 | 29 | 36 |
| 3,71 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,80 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Example:

SCD221-0431-3-3-140HE08-HP374



Dimensions in mm.

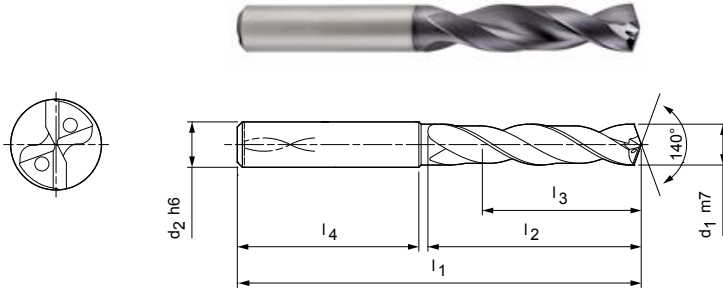
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

ECU Drill Uni

Solid carbide twist drill
SCD351 (4xD), internal coolant supply

Design:
 Drill diameter: 3.00 - 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP765
 Number of cutting edges: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 22 | 16 | 36 | SCD351-0300-2-2-140HA04-HP765 | 30421828 |
| 3,10 | 6 | 62 | 22 | 16 | 36 | SCD351-0310-2-2-140HA04-HP765 | 30421829 |
| 3,20 | 6 | 62 | 22 | 16 | 36 | SCD351-0320-2-2-140HA04-HP765 | 30421830 |
| 3,30 | 6 | 62 | 22 | 16 | 36 | SCD351-0330-2-2-140HA04-HP765 | 30421831 |
| 3,40 | 6 | 62 | 22 | 16 | 36 | SCD351-0340-2-2-140HA04-HP765 | 30421832 |
| 3,50 | 6 | 62 | 22 | 16 | 36 | SCD351-0350-2-2-140HA04-HP765 | 30421833 |
| 3,60 | 6 | 62 | 22 | 16 | 36 | SCD351-0360-2-2-140HA04-HP765 | 30421834 |
| 3,70* | 6 | 62 | 22 | 16 | 36 | SCD351-0370-2-2-140HA04-HP765 | 30421835 |
| 3,80 | 6 | 66 | 26 | 22 | 36 | SCD351-0380-2-2-140HA04-HP765 | 30421836 |
| 3,90 | 6 | 66 | 26 | 22 | 36 | SCD351-0390-2-2-140HA04-HP765 | 30421837 |
| 4,00 | 6 | 66 | 26 | 22 | 36 | SCD351-0400-2-2-140HA04-HP765 | 30421838 |
| 4,10 | 6 | 66 | 26 | 22 | 36 | SCD351-0410-2-2-140HA04-HP765 | 30421839 |
| 4,20 | 6 | 66 | 26 | 22 | 36 | SCD351-0420-2-2-140HA04-HP765 | 30421840 |
| 4,30 | 6 | 66 | 26 | 22 | 36 | SCD351-0430-2-2-140HA04-HP765 | 30421842 |
| 4,40 | 6 | 66 | 26 | 22 | 36 | SCD351-0440-2-2-140HA04-HP765 | 30421843 |
| 4,50 | 6 | 66 | 26 | 22 | 36 | SCD351-0450-2-2-140HA04-HP765 | 30421844 |
| 4,60 | 6 | 66 | 26 | 22 | 36 | SCD351-0460-2-2-140HA04-HP765 | 30421845 |
| 4,65* | 6 | 66 | 26 | 22 | 36 | SCD351-0465-2-2-140HA04-HP765 | 30421846 |
| 4,70 | 6 | 66 | 26 | 22 | 36 | SCD351-0470-2-2-140HA04-HP765 | 30421847 |
| 4,80 | 6 | 66 | 30 | 24 | 36 | SCD351-0480-2-2-140HA04-HP765 | 30421848 |
| 4,90 | 6 | 66 | 30 | 24 | 36 | SCD351-0490-2-2-140HA04-HP765 | 30421849 |
| 5,00 | 6 | 66 | 30 | 24 | 36 | SCD351-0500-2-2-140HA04-HP765 | 30421850 |
| 5,10 | 6 | 66 | 30 | 24 | 36 | SCD351-0510-2-2-140HA04-HP765 | 30421851 |
| 5,20 | 6 | 66 | 30 | 24 | 36 | SCD351-0520-2-2-140HA04-HP765 | 30421852 |
| 5,30 | 6 | 66 | 30 | 24 | 36 | SCD351-0530-2-2-140HA04-HP765 | 30421853 |
| 5,40 | 6 | 66 | 30 | 24 | 36 | SCD351-0540-2-2-140HA04-HP765 | 30421854 |
| 5,50 | 6 | 66 | 30 | 24 | 36 | SCD351-0550-2-2-140HA04-HP765 | 30421855 |
| 5,55* | 6 | 66 | 30 | 24 | 36 | SCD351-0555-2-2-140HA04-HP765 | 30421856 |
| 5,60 | 6 | 66 | 30 | 24 | 36 | SCD351-0560-2-2-140HA04-HP765 | 30421857 |
| 5,70 | 6 | 66 | 30 | 24 | 36 | SCD351-0570-2-2-140HA04-HP765 | 30421858 |
| 5,80 | 6 | 66 | 30 | 24 | 36 | SCD351-0580-2-2-140HA04-HP765 | 30421859 |
| 5,90 | 6 | 66 | 30 | 24 | 36 | SCD351-0590-2-2-140HA04-HP765 | 30421860 |
| 6,00 | 6 | 66 | 30 | 24 | 36 | SCD351-0600-2-2-140HA04-HP765 | 30421861 |
| 6,10 | 8 | 79 | 38 | 30 | 36 | SCD351-0610-2-2-140HA04-HP765 | 30421862 |

ECU-Drill-Uni | Solid carbide twist drill SCD351 (4xD), internal coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,20 | 8 | 79 | 38 | 30 | 36 | SCD351-0620-2-2-140HA04-HP765 | 30421863 |
| 6,30 | 8 | 79 | 38 | 30 | 36 | SCD351-0630-2-2-140HA04-HP765 | 30421864 |
| 6,40 | 8 | 79 | 38 | 30 | 36 | SCD351-0640-2-2-140HA04-HP765 | 30421865 |
| 6,50 | 8 | 79 | 38 | 30 | 36 | SCD351-0650-2-2-140HA04-HP765 | 30421866 |
| 6,60 | 8 | 79 | 38 | 30 | 36 | SCD351-0660-2-2-140HA04-HP765 | 30421867 |
| 6,70 | 8 | 79 | 38 | 30 | 36 | SCD351-0670-2-2-140HA04-HP765 | 30421868 |
| 6,80 | 8 | 79 | 38 | 30 | 36 | SCD351-0680-2-2-140HA04-HP765 | 30421869 |
| 6,90 | 8 | 79 | 38 | 30 | 36 | SCD351-0690-2-2-140HA04-HP765 | 30421870 |
| 7,00 | 8 | 79 | 38 | 30 | 36 | SCD351-0700-2-2-140HA04-HP765 | 30421871 |
| 7,10 | 8 | 79 | 42 | 34 | 36 | SCD351-0710-2-2-140HA04-HP765 | 30421872 |
| 7,20 | 8 | 79 | 42 | 34 | 36 | SCD351-0720-2-2-140HA04-HP765 | 30421873 |
| 7,30 | 8 | 79 | 42 | 34 | 36 | SCD351-0730-2-2-140HA04-HP765 | 30421874 |
| 7,40 | 8 | 79 | 42 | 34 | 36 | SCD351-0740-2-2-140HA04-HP765 | 30421875 |
| 7,45* | 8 | 79 | 42 | 34 | 36 | SCD351-0745-2-2-140HA04-HP765 | 30569196 |
| 7,50 | 8 | 79 | 42 | 34 | 36 | SCD351-0750-2-2-140HA04-HP765 | 30421876 |
| 7,60 | 8 | 79 | 42 | 34 | 36 | SCD351-0760-2-2-140HA04-HP765 | 30421878 |
| 7,70 | 8 | 79 | 42 | 34 | 36 | SCD351-0770-2-2-140HA04-HP765 | 30421879 |
| 7,80 | 8 | 79 | 42 | 34 | 36 | SCD351-0780-2-2-140HA04-HP765 | 30421880 |
| 7,90 | 8 | 79 | 42 | 34 | 36 | SCD351-0790-2-2-140HA04-HP765 | 30421881 |
| 8,00 | 8 | 79 | 42 | 34 | 36 | SCD351-0800-2-2-140HA04-HP765 | 30421882 |
| 8,10 | 10 | 89 | 49 | 38 | 40 | SCD351-0810-2-2-140HA04-HP765 | 30421883 |
| 8,20 | 10 | 89 | 49 | 38 | 40 | SCD351-0820-2-2-140HA04-HP765 | 30421884 |
| 8,30 | 10 | 89 | 49 | 38 | 40 | SCD351-0830-2-2-140HA04-HP765 | 30421885 |
| 8,40 | 10 | 89 | 49 | 38 | 40 | SCD351-0840-2-2-140HA04-HP765 | 30421886 |
| 8,50 | 10 | 89 | 49 | 38 | 40 | SCD351-0850-2-2-140HA04-HP765 | 30421887 |
| 8,60 | 10 | 89 | 49 | 38 | 40 | SCD351-0860-2-2-140HA04-HP765 | 30421888 |
| 8,70 | 10 | 89 | 49 | 38 | 40 | SCD351-0870-2-2-140HA04-HP765 | 30421889 |
| 8,80 | 10 | 89 | 49 | 38 | 40 | SCD351-0880-2-2-140HA04-HP765 | 30421890 |
| 8,90 | 10 | 89 | 49 | 38 | 40 | SCD351-0890-2-2-140HA04-HP765 | 30421891 |
| 9,00 | 10 | 89 | 49 | 38 | 40 | SCD351-0900-2-2-140HA04-HP765 | 30421892 |
| 9,10 | 10 | 89 | 49 | 38 | 40 | SCD351-0910-2-2-140HA04-HP765 | 30421893 |
| 9,20 | 10 | 89 | 49 | 38 | 40 | SCD351-0920-2-2-140HA04-HP765 | 30421894 |
| 9,30* | 10 | 89 | 49 | 40 | 40 | SCD351-0930-2-2-140HA04-HP765 | 30421896 |
| 9,40 | 10 | 89 | 49 | 40 | 40 | SCD351-0940-2-2-140HA04-HP765 | 30421897 |
| 9,50 | 10 | 89 | 49 | 40 | 40 | SCD351-0950-2-2-140HA04-HP765 | 30421898 |
| 9,60 | 10 | 89 | 49 | 40 | 40 | SCD351-0960-2-2-140HA04-HP765 | 30421899 |
| 9,70 | 10 | 89 | 49 | 40 | 40 | SCD351-0970-2-2-140HA04-HP765 | 30421900 |
| 9,80 | 10 | 89 | 49 | 40 | 40 | SCD351-0980-2-2-140HA04-HP765 | 30421901 |
| 9,90 | 10 | 89 | 49 | 40 | 40 | SCD351-0990-2-2-140HA04-HP765 | 30421902 |
| 10,00 | 10 | 89 | 49 | 40 | 40 | SCD351-1000-2-2-140HA04-HP765 | 30421903 |
| 10,10 | 12 | 102 | 56 | 45 | 45 | SCD351-1010-2-2-140HA04-HP765 | 30421904 |
| 10,20 | 12 | 102 | 56 | 45 | 45 | SCD351-1020-2-2-140HA04-HP765 | 30421905 |
| 10,30 | 12 | 102 | 56 | 45 | 45 | SCD351-1030-2-2-140HA04-HP765 | 30421906 |
| 10,40 | 12 | 102 | 56 | 45 | 45 | SCD351-1040-2-2-140HA04-HP765 | 30421907 |
| 10,50 | 12 | 102 | 56 | 45 | 45 | SCD351-1050-2-2-140HA04-HP765 | 30421908 |
| 10,60 | 12 | 102 | 56 | 45 | 45 | SCD351-1060-2-2-140HA04-HP765 | 30421909 |
| 10,70 | 12 | 102 | 56 | 45 | 45 | SCD351-1070-2-2-140HA04-HP765 | 30421910 |
| 10,80 | 12 | 102 | 56 | 45 | 45 | SCD351-1080-2-2-140HA04-HP765 | 30421911 |
| 10,90 | 12 | 102 | 56 | 45 | 45 | SCD351-1090-2-2-140HA04-HP765 | 30421912 |
| 11,00 | 12 | 102 | 56 | 45 | 45 | SCD351-1100-2-2-140HA04-HP765 | 30421913 |
| 11,10 | 12 | 102 | 56 | 45 | 45 | SCD351-1110-2-2-140HA04-HP765 | 30421914 |
| 11,20* | 12 | 102 | 56 | 45 | 45 | SCD351-1120-2-2-140HA04-HP765 | 30421915 |
| 11,50 | 12 | 102 | 56 | 45 | 45 | SCD351-1150-2-2-140HA04-HP765 | 30421918 |
| 11,70 | 12 | 102 | 56 | 45 | 45 | SCD351-1170-2-2-140HA04-HP765 | 30421920 |
| 11,80 | 12 | 102 | 56 | 45 | 45 | SCD351-1180-2-2-140HA04-HP765 | 30421921 |

Continued on next page.


ECU-Drill-Uni | Solid carbide twist drill SCD351 (4xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,90 | 12 | 102 | 56 | 45 | 45 | SCD351-1190-2-2-140HA04-HP765 | 30421922 |
| 12,00 | 12 | 102 | 56 | 45 | 45 | SCD351-1200-2-2-140HA04-HP765 | 30421923 |
| 12,20 | 14 | 107 | 61 | 50 | 45 | SCD351-1220-2-2-140HA04-HP765 | 30421924 |
| 12,50 | 14 | 107 | 61 | 50 | 45 | SCD351-1250-2-2-140HA04-HP765 | 30421925 |
| 12,70 | 14 | 107 | 61 | 50 | 45 | SCD351-1270-2-2-140HA04-HP765 | 30421926 |
| 12,80 | 14 | 107 | 61 | 50 | 45 | SCD351-1280-2-2-140HA04-HP765 | 30421927 |
| 13,00 | 14 | 107 | 61 | 50 | 45 | SCD351-1300-2-2-140HA04-HP765 | 30421928 |
| 13,50 | 14 | 107 | 61 | 50 | 45 | SCD351-1350-2-2-140HA04-HP765 | 30421929 |
| 13,80 | 14 | 107 | 61 | 50 | 45 | SCD351-1380-2-2-140HA04-HP765 | 30421931 |
| 14,00 | 14 | 107 | 61 | 50 | 45 | SCD351-1400-2-2-140HA04-HP765 | 30421932 |
| 14,20 | 16 | 115 | 65 | 51 | 48 | SCD351-1420-2-2-140HA04-HP765 | 30421934 |
| 14,50 | 16 | 115 | 65 | 51 | 48 | SCD351-1450-2-2-140HA04-HP765 | 30421935 |
| 14,80 | 16 | 115 | 65 | 51 | 48 | SCD351-1480-2-2-140HA04-HP765 | 30421936 |
| 15,00 | 16 | 115 | 65 | 51 | 48 | SCD351-1500-2-2-140HA04-HP765 | 30421937 |
| 15,10 | 16 | 115 | 65 | 51 | 48 | SCD351-1510-2-2-140HA04-HP765 | 30421938 |
| 15,20 | 16 | 115 | 65 | 51 | 48 | SCD351-1520-2-2-140HA04-HP765 | 30421939 |
| 15,50 | 16 | 115 | 65 | 51 | 48 | SCD351-1550-2-2-140HA04-HP765 | 30421941 |
| 15,70 | 16 | 115 | 65 | 51 | 48 | SCD351-1570-2-2-140HA04-HP765 | 30421942 |
| 15,80 | 16 | 115 | 65 | 51 | 48 | SCD351-1580-2-2-140HA04-HP765 | 30421943 |
| 16,00 | 16 | 115 | 65 | 51 | 48 | SCD351-1600-2-2-140HA04-HP765 | 30421944 |
| 16,50 | 18 | 123 | 73 | 53 | 48 | SCD351-1650-2-2-140HA04-HP765 | 30421946 |
| 16,80 | 18 | 123 | 73 | 53 | 48 | SCD351-1680-2-2-140HA04-HP765 | 30569199 |
| 17,00 | 18 | 123 | 73 | 53 | 48 | SCD351-1700-2-2-140HA04-HP765 | 30421947 |
| 17,30 | 18 | 123 | 73 | 53 | 48 | SCD351-1730-2-2-140HA04-HP765 | 30421949 |
| 17,50 | 18 | 123 | 73 | 53 | 48 | SCD351-1750-2-2-140HA04-HP765 | 30421950 |
| 17,70 | 18 | 123 | 73 | 53 | 48 | SCD351-1770-2-2-140HA04-HP765 | 30421951 |
| 18,00 | 18 | 123 | 73 | 53 | 48 | SCD351-1800-2-2-140HA04-HP765 | 30421952 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD351-1850-2-2-140HA04-HP765 | 30421953 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD351-1900-2-2-140HA04-HP765 | 30421954 |
| 19,50 | 20 | 131 | 79 | 55 | 50 | SCD351-1950-2-2-140HA04-HP765 | 30421956 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD351-2000-2-2-140HA04-HP765 | 30421957 |

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD351-0430-3-3-140[shank form]04-HP765

Example:
SCD351-0430-3-3-140HE04-HP765

Shank form HE

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

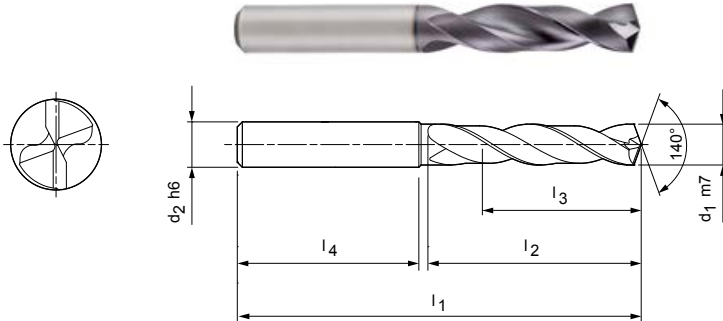
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

ECU-Drill-Uni

Solid carbide twist drill
SCD350 (4xD), external coolant supply

Design:
 Drill diameter: 3.00 - 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP765
 Number of cutting edges: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 22 | 16 | 36 | SCD350-0300-2-2-140HA04-HP765 | 30421694 |
| 3,10 | 6 | 62 | 22 | 16 | 36 | SCD350-0310-2-2-140HA04-HP765 | 30421696 |
| 3,20 | 6 | 62 | 22 | 16 | 36 | SCD350-0320-2-2-140HA04-HP765 | 30421697 |
| 3,30 | 6 | 62 | 22 | 16 | 36 | SCD350-0330-2-2-140HA04-HP765 | 30421698 |
| 3,40 | 6 | 62 | 22 | 16 | 36 | SCD350-0340-2-2-140HA04-HP765 | 30421699 |
| 3,50 | 6 | 62 | 22 | 16 | 36 | SCD350-0350-2-2-140HA04-HP765 | 30421700 |
| 3,60 | 6 | 62 | 22 | 16 | 36 | SCD350-0360-2-2-140HA04-HP765 | 30421701 |
| 3,70* | 6 | 62 | 22 | 16 | 36 | SCD350-0370-2-2-140HA04-HP765 | 30421703 |
| 3,80 | 6 | 66 | 26 | 22 | 36 | SCD350-0380-2-2-140HA04-HP765 | 30421704 |
| 3,90 | 6 | 66 | 26 | 22 | 36 | SCD350-0390-2-2-140HA04-HP765 | 30421705 |
| 4,00 | 6 | 66 | 26 | 22 | 36 | SCD350-0400-2-2-140HA04-HP765 | 30421706 |
| 4,10 | 6 | 66 | 26 | 22 | 36 | SCD350-0410-2-2-140HA04-HP765 | 30421707 |
| 4,20 | 6 | 66 | 26 | 22 | 36 | SCD350-0420-2-2-140HA04-HP765 | 30421708 |
| 4,30 | 6 | 66 | 26 | 22 | 36 | SCD350-0430-2-2-140HA04-HP765 | 30421709 |
| 4,40 | 6 | 66 | 26 | 22 | 36 | SCD350-0440-2-2-140HA04-HP765 | 30421710 |
| 4,50 | 6 | 66 | 26 | 22 | 36 | SCD350-0450-2-2-140HA04-HP765 | 30421711 |
| 4,60 | 6 | 66 | 26 | 22 | 36 | SCD350-0460-2-2-140HA04-HP765 | 30421712 |
| 4,65* | 6 | 66 | 26 | 22 | 36 | SCD350-0465-2-2-140HA04-HP765 | 30421713 |
| 4,70 | 6 | 66 | 26 | 22 | 36 | SCD350-0470-2-2-140HA04-HP765 | 30421714 |
| 4,80 | 6 | 66 | 30 | 24 | 36 | SCD350-0480-2-2-140HA04-HP765 | 30421715 |
| 4,90 | 6 | 66 | 30 | 24 | 36 | SCD350-0490-2-2-140HA04-HP765 | 30421716 |
| 5,00 | 6 | 66 | 30 | 24 | 36 | SCD350-0500-2-2-140HA04-HP765 | 30421717 |
| 5,10 | 6 | 66 | 30 | 24 | 36 | SCD350-0510-2-2-140HA04-HP765 | 30421718 |
| 5,20 | 6 | 66 | 30 | 24 | 36 | SCD350-0520-2-2-140HA04-HP765 | 30421719 |
| 5,30 | 6 | 66 | 30 | 24 | 36 | SCD350-0530-2-2-140HA04-HP765 | 30421720 |
| 5,40 | 6 | 66 | 30 | 24 | 36 | SCD350-0540-2-2-140HA04-HP765 | 30421721 |
| 5,50 | 6 | 66 | 30 | 24 | 36 | SCD350-0550-2-2-140HA04-HP765 | 30421722 |
| 5,55* | 6 | 66 | 30 | 24 | 36 | SCD350-0555-2-2-140HA04-HP765 | 30421723 |
| 5,60 | 6 | 66 | 30 | 24 | 36 | SCD350-0560-2-2-140HA04-HP765 | 30421725 |
| 5,70 | 6 | 66 | 30 | 24 | 36 | SCD350-0570-2-2-140HA04-HP765 | 30421726 |
| 5,80 | 6 | 66 | 30 | 24 | 36 | SCD350-0580-2-2-140HA04-HP765 | 30421727 |
| 5,90 | 6 | 66 | 30 | 24 | 36 | SCD350-0590-2-2-140HA04-HP765 | 30421728 |
| 6,00 | 6 | 66 | 30 | 24 | 36 | SCD350-0600-2-2-140HA04-HP765 | 30421731 |
| 6,10 | 8 | 79 | 38 | 30 | 36 | SCD350-0610-2-2-140HA04-HP765 | 30421732 |


ECU-Drill-Uni | Solid carbide twist drill SCD350 (4xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,20 | 8 | 79 | 38 | 30 | 36 | SCD350-0620-2-2-140HA04-HP765 | 30421733 |
| 6,30 | 8 | 79 | 38 | 30 | 36 | SCD350-0630-2-2-140HA04-HP765 | 30421734 |
| 6,40 | 8 | 79 | 38 | 30 | 36 | SCD350-0640-2-2-140HA04-HP765 | 30421735 |
| 6,50 | 8 | 79 | 38 | 30 | 36 | SCD350-0650-2-2-140HA04-HP765 | 30421736 |
| 6,60 | 8 | 79 | 38 | 30 | 36 | SCD350-0660-2-2-140HA04-HP765 | 30421737 |
| 6,70 | 8 | 79 | 38 | 30 | 36 | SCD350-0670-2-2-140HA04-HP765 | 30421738 |
| 6,80 | 8 | 79 | 38 | 30 | 36 | SCD350-0680-2-2-140HA04-HP765 | 30421739 |
| 6,90 | 8 | 79 | 38 | 30 | 36 | SCD350-0690-2-2-140HA04-HP765 | 30421740 |
| 7,00 | 8 | 79 | 38 | 30 | 36 | SCD350-0700-2-2-140HA04-HP765 | 30421741 |
| 7,10 | 8 | 79 | 42 | 34 | 36 | SCD350-0710-2-2-140HA04-HP765 | 30421742 |
| 7,20 | 8 | 79 | 42 | 34 | 36 | SCD350-0720-2-2-140HA04-HP765 | 30421743 |
| 7,30 | 8 | 79 | 42 | 34 | 36 | SCD350-0730-2-2-140HA04-HP765 | 30421744 |
| 7,40 | 8 | 79 | 42 | 34 | 36 | SCD350-0740-2-2-140HA04-HP765 | 30421745 |
| 7,50 | 8 | 79 | 42 | 34 | 36 | SCD350-0750-2-2-140HA04-HP765 | 30421746 |
| 7,60 | 8 | 79 | 42 | 34 | 36 | SCD350-0760-2-2-140HA04-HP765 | 30421748 |
| 7,70 | 8 | 79 | 42 | 34 | 36 | SCD350-0770-2-2-140HA04-HP765 | 30421749 |
| 7,80 | 8 | 79 | 42 | 34 | 36 | SCD350-0780-2-2-140HA04-HP765 | 30421750 |
| 7,90 | 8 | 79 | 42 | 34 | 36 | SCD350-0790-2-2-140HA04-HP765 | 30421751 |
| 8,00 | 8 | 79 | 42 | 34 | 36 | SCD350-0800-2-2-140HA04-HP765 | 30421752 |
| 8,10 | 10 | 89 | 49 | 38 | 40 | SCD350-0810-2-2-140HA04-HP765 | 30421753 |
| 8,20 | 10 | 89 | 49 | 38 | 40 | SCD350-0820-2-2-140HA04-HP765 | 30421754 |
| 8,30 | 10 | 89 | 49 | 38 | 40 | SCD350-0830-2-2-140HA04-HP765 | 30421755 |
| 8,40 | 10 | 89 | 49 | 38 | 40 | SCD350-0840-2-2-140HA04-HP765 | 30421756 |
| 8,50 | 10 | 89 | 49 | 38 | 40 | SCD350-0850-2-2-140HA04-HP765 | 30421757 |
| 8,60 | 10 | 89 | 49 | 38 | 40 | SCD350-0860-2-2-140HA04-HP765 | 30421758 |
| 8,70 | 10 | 89 | 49 | 38 | 40 | SCD350-0870-2-2-140HA04-HP765 | 30421759 |
| 8,80 | 10 | 89 | 49 | 38 | 40 | SCD350-0880-2-2-140HA04-HP765 | 30421760 |
| 8,90 | 10 | 89 | 49 | 38 | 40 | SCD350-0890-2-2-140HA04-HP765 | 30421761 |
| 9,00 | 10 | 89 | 49 | 38 | 40 | SCD350-0900-2-2-140HA04-HP765 | 30421762 |
| 9,10 | 10 | 89 | 49 | 38 | 40 | SCD350-0910-2-2-140HA04-HP765 | 30421763 |
| 9,20 | 10 | 89 | 49 | 38 | 40 | SCD350-0920-2-2-140HA04-HP765 | 30421764 |
| 9,30* | 10 | 89 | 49 | 40 | 40 | SCD350-0930-2-2-140HA04-HP765 | 30421766 |
| 9,40 | 10 | 89 | 49 | 40 | 40 | SCD350-0940-2-2-140HA04-HP765 | 30421767 |
| 9,50 | 10 | 89 | 49 | 40 | 40 | SCD350-0950-2-2-140HA04-HP765 | 30421768 |
| 9,60 | 10 | 89 | 49 | 40 | 40 | SCD350-0960-2-2-140HA04-HP765 | 30421769 |
| 9,70 | 10 | 89 | 49 | 40 | 40 | SCD350-0970-2-2-140HA04-HP765 | 30421770 |
| 9,80 | 10 | 89 | 49 | 40 | 40 | SCD350-0980-2-2-140HA04-HP765 | 30421771 |
| 9,90 | 10 | 89 | 49 | 40 | 40 | SCD350-0990-2-2-140HA04-HP765 | 30421772 |
| 10,00 | 10 | 89 | 49 | 40 | 40 | SCD350-1000-2-2-140HA04-HP765 | 30421773 |
| 10,10 | 12 | 102 | 56 | 45 | 45 | SCD350-1010-2-2-140HA04-HP765 | 30421774 |
| 10,20 | 12 | 102 | 56 | 45 | 45 | SCD350-1020-2-2-140HA04-HP765 | 30421775 |
| 10,30 | 12 | 102 | 56 | 45 | 45 | SCD350-1030-2-2-140HA04-HP765 | 30421776 |
| 10,40 | 12 | 102 | 56 | 45 | 45 | SCD350-1040-2-2-140HA04-HP765 | 30421777 |
| 10,50 | 12 | 102 | 56 | 45 | 45 | SCD350-1050-2-2-140HA04-HP765 | 30421778 |
| 10,60 | 12 | 102 | 56 | 45 | 45 | SCD350-1060-2-2-140HA04-HP765 | 30421779 |
| 10,80 | 12 | 102 | 56 | 45 | 45 | SCD350-1080-2-2-140HA04-HP765 | 30421781 |
| 10,90 | 12 | 102 | 56 | 45 | 45 | SCD350-1090-2-2-140HA04-HP765 | 30421782 |
| 11,00 | 12 | 102 | 56 | 45 | 45 | SCD350-1100-2-2-140HA04-HP765 | 30421783 |
| 11,10 | 12 | 102 | 56 | 45 | 45 | SCD350-1110-2-2-140HA04-HP765 | 30421784 |
| 11,20* | 12 | 102 | 56 | 45 | 45 | SCD350-1120-2-2-140HA04-HP765 | 30421785 |
| 11,30 | 12 | 102 | 56 | 45 | 45 | SCD350-1130-2-2-140HA04-HP765 | 30421786 |
| 11,40 | 12 | 102 | 56 | 45 | 45 | SCD350-1140-2-2-140HA04-HP765 | 30421787 |
| 11,50 | 12 | 102 | 56 | 45 | 45 | SCD350-1150-2-2-140HA04-HP765 | 30421788 |
| 11,60 | 12 | 102 | 56 | 45 | 45 | SCD350-1160-2-2-140HA04-HP765 | 30421789 |
| 11,70 | 12 | 102 | 56 | 45 | 45 | SCD350-1170-2-2-140HA04-HP765 | 30421790 |


ECU-Drill-Uni | Solid carbide twist drill SCD350 (4xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,80 | 12 | 102 | 56 | 45 | 45 | SCD350-1180-2-2-140HA04-HP765 | 30421791 |
| 12,00 | 12 | 102 | 56 | 45 | 45 | SCD350-1200-2-2-140HA04-HP765 | 30421793 |
| 12,20 | 14 | 107 | 61 | 50 | 45 | SCD350-1220-2-2-140HA04-HP765 | 30421794 |
| 12,50 | 14 | 107 | 61 | 50 | 45 | SCD350-1250-2-2-140HA04-HP765 | 30421795 |
| 12,80 | 14 | 107 | 61 | 50 | 45 | SCD350-1280-2-2-140HA04-HP765 | 30421798 |
| 13,00 | 14 | 107 | 61 | 50 | 45 | SCD350-1300-2-2-140HA04-HP765 | 30421799 |
| 13,50 | 14 | 107 | 61 | 50 | 45 | SCD350-1350-2-2-140HA04-HP765 | 30421800 |
| 13,80 | 14 | 107 | 61 | 50 | 45 | SCD350-1380-2-2-140HA04-HP765 | 30421802 |
| 14,00 | 14 | 107 | 61 | 50 | 45 | SCD350-1400-2-2-140HA04-HP765 | 30421803 |
| 14,20 | 16 | 115 | 65 | 51 | 48 | SCD350-1420-2-2-140HA04-HP765 | 30421804 |
| 14,50 | 16 | 115 | 65 | 51 | 48 | SCD350-1450-2-2-140HA04-HP765 | 30421805 |
| 14,80 | 16 | 115 | 65 | 51 | 48 | SCD350-1480-2-2-140HA04-HP765 | 30421807 |
| 15,00 | 16 | 115 | 65 | 51 | 48 | SCD350-1500-2-2-140HA04-HP765 | 30421808 |
| 15,10 | 16 | 115 | 65 | 51 | 48 | SCD350-1510-2-2-140HA04-HP765 | 30421809 |
| 15,20 | 16 | 115 | 65 | 51 | 48 | SCD350-1520-2-2-140HA04-HP765 | 30421810 |
| 15,50 | 16 | 115 | 65 | 51 | 48 | SCD350-1550-2-2-140HA04-HP765 | 30421811 |
| 15,70 | 16 | 115 | 65 | 51 | 48 | SCD350-1570-2-2-140HA04-HP765 | 30421813 |
| 15,80 | 16 | 115 | 65 | 51 | 48 | SCD350-1580-2-2-140HA04-HP765 | 30421814 |
| 16,00 | 16 | 115 | 65 | 51 | 48 | SCD350-1600-2-2-140HA04-HP765 | 30421815 |
| 16,50 | 18 | 123 | 73 | 53 | 48 | SCD350-1650-2-2-140HA04-HP765 | 30421817 |
| 17,00 | 18 | 123 | 73 | 53 | 48 | SCD350-1700-2-2-140HA04-HP765 | 30421818 |
| 17,50 | 18 | 123 | 73 | 53 | 48 | SCD350-1750-2-2-140HA04-HP765 | 30421820 |
| 17,70 | 18 | 123 | 73 | 53 | 48 | SCD350-1770-2-2-140HA04-HP765 | 30421821 |
| 18,00 | 18 | 123 | 73 | 53 | 48 | SCD350-1800-2-2-140HA04-HP765 | 30421822 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD350-1850-2-2-140HA04-HP765 | 30421823 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD350-1900-2-2-140HA04-HP765 | 30421824 |
| 19,50 | 20 | 131 | 79 | 55 | 50 | SCD350-1950-2-2-140HA04-HP765 | 30421826 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD350-2000-2-2-140HA04-HP765 | 30421827 |

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD350-0430-3-3-140[shank form]04-HP765

Example:

SCD350-0430-3-3-140HE04-HP765

Shank form HE

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

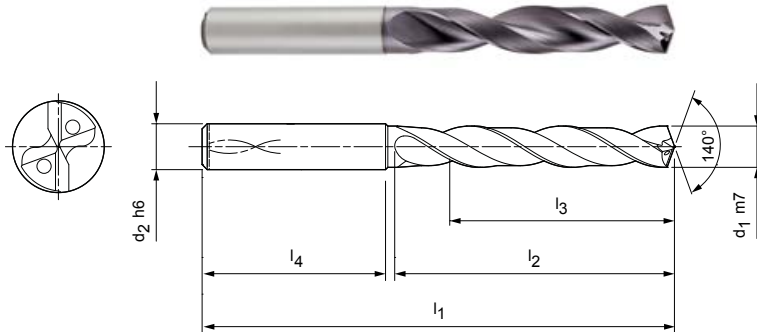
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

ECU-Drill-Uni

Solid carbide twist drill
SCD351 (6xD), internal coolant supply

Design:
 Drill diameter: 3.00 - 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP765
 Number of cutting edges: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD351-0300-2-2-140HA06-HP765 | 30421958 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD351-0310-2-2-140HA06-HP765 | 30421959 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD351-0320-2-2-140HA06-HP765 | 30421960 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD351-0330-2-2-140HA06-HP765 | 30421961 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD351-0340-2-2-140HA06-HP765 | 30421962 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD351-0350-2-2-140HA06-HP765 | 30421963 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD351-0360-2-2-140HA06-HP765 | 30421964 |
| 3,70* | 6 | 66 | 28 | 23 | 36 | SCD351-0370-2-2-140HA06-HP765 | 30421965 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD351-0380-2-2-140HA06-HP765 | 30421966 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD351-0390-2-2-140HA06-HP765 | 30421967 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD351-0400-2-2-140HA06-HP765 | 30421968 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD351-0410-2-2-140HA06-HP765 | 30421969 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD351-0420-2-2-140HA06-HP765 | 30421970 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD351-0430-2-2-140HA06-HP765 | 30421971 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD351-0440-2-2-140HA06-HP765 | 30421972 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD351-0450-2-2-140HA06-HP765 | 30421973 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD351-0460-2-2-140HA06-HP765 | 30421974 |
| 4,65* | 6 | 74 | 36 | 29 | 36 | SCD351-0465-2-2-140HA06-HP765 | 30421975 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD351-0470-2-2-140HA06-HP765 | 30421976 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD351-0480-2-2-140HA06-HP765 | 30421977 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD351-0490-2-2-140HA06-HP765 | 30421978 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD351-0500-2-2-140HA06-HP765 | 30421979 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD351-0510-2-2-140HA06-HP765 | 30421980 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD351-0520-2-2-140HA06-HP765 | 30421981 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD351-0530-2-2-140HA06-HP765 | 30421982 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD351-0540-2-2-140HA06-HP765 | 30421983 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD351-0550-2-2-140HA06-HP765 | 30421984 |
| 5,55* | 6 | 82 | 44 | 35 | 36 | SCD351-0555-2-2-140HA06-HP765 | 30421985 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD351-0560-2-2-140HA06-HP765 | 30421987 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD351-0570-2-2-140HA06-HP765 | 30421988 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD351-0580-2-2-140HA06-HP765 | 30421989 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD351-0590-2-2-140HA06-HP765 | 30421990 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD351-0600-2-2-140HA06-HP765 | 30421991 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD351-0610-2-2-140HA06-HP765 | 30421992 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD351-0620-2-2-140HA06-HP765 | 30421993 |

ECU-Drill-Uni | Solid carbide twist drill SCD351 (6xD), internal coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD351-0630-2-2-140HA06-HP765 | 30421994 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD351-0640-2-2-140HA06-HP765 | 30421995 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD351-0650-2-2-140HA06-HP765 | 30421996 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD351-0660-2-2-140HA06-HP765 | 30421997 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD351-0670-2-2-140HA06-HP765 | 30421998 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD351-0680-2-2-140HA06-HP765 | 30421999 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD351-0690-2-2-140HA06-HP765 | 30422000 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD351-0700-2-2-140HA06-HP765 | 30422001 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD351-0710-2-2-140HA06-HP765 | 30422002 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD351-0720-2-2-140HA06-HP765 | 30422003 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD351-0730-2-2-140HA06-HP765 | 30422004 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD351-0740-2-2-140HA06-HP765 | 30422005 |
| 7,45* | 8 | 91 | 53 | 43 | 36 | SCD351-0745-2-2-140HA06-HP765 | 30569230 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD351-0750-2-2-140HA06-HP765 | 30422006 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD351-0760-2-2-140HA06-HP765 | 30422008 |
| 7,70 | 8 | 91 | 53 | 43 | 36 | SCD351-0770-2-2-140HA06-HP765 | 30422009 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD351-0780-2-2-140HA06-HP765 | 30422010 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD351-0790-2-2-140HA06-HP765 | 30422011 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD351-0800-2-2-140HA06-HP765 | 30422012 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD351-0810-2-2-140HA06-HP765 | 30422013 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD351-0820-2-2-140HA06-HP765 | 30422014 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD351-0830-2-2-140HA06-HP765 | 30422015 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD351-0840-2-2-140HA06-HP765 | 30422016 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD351-0850-2-2-140HA06-HP765 | 30422017 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD351-0860-2-2-140HA06-HP765 | 30422018 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD351-0870-2-2-140HA06-HP765 | 30422019 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD351-0880-2-2-140HA06-HP765 | 30422020 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD351-0890-2-2-140HA06-HP765 | 30422021 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD351-0900-2-2-140HA06-HP765 | 30422022 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD351-0910-2-2-140HA06-HP765 | 30422023 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD351-0920-2-2-140HA06-HP765 | 30422024 |
| 9,30* | 10 | 103 | 61 | 49 | 40 | SCD351-0930-2-2-140HA06-HP765 | 30422026 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD351-0940-2-2-140HA06-HP765 | 30422027 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD351-0950-2-2-140HA06-HP765 | 30422028 |
| 9,60 | 10 | 103 | 61 | 49 | 40 | SCD351-0960-2-2-140HA06-HP765 | 30422029 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD351-0970-2-2-140HA06-HP765 | 30422030 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD351-0980-2-2-140HA06-HP765 | 30422031 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD351-0990-2-2-140HA06-HP765 | 30422032 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD351-1000-2-2-140HA06-HP765 | 30422033 |
| 10,10 | 12 | 118 | 71 | 56 | 45 | SCD351-1010-2-2-140HA06-HP765 | 30422034 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD351-1020-2-2-140HA06-HP765 | 30422035 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD351-1030-2-2-140HA06-HP765 | 30422036 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD351-1040-2-2-140HA06-HP765 | 30422037 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD351-1050-2-2-140HA06-HP765 | 30422038 |
| 10,60 | 12 | 118 | 71 | 56 | 45 | SCD351-1060-2-2-140HA06-HP765 | 30422039 |
| 10,70 | 12 | 118 | 71 | 56 | 45 | SCD351-1070-2-2-140HA06-HP765 | 30422040 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD351-1080-2-2-140HA06-HP765 | 30422041 |
| 10,90 | 12 | 118 | 71 | 56 | 45 | SCD351-1090-2-2-140HA06-HP765 | 30422042 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD351-1100-2-2-140HA06-HP765 | 30422043 |
| 11,10 | 12 | 118 | 71 | 56 | 45 | SCD351-1110-2-2-140HA06-HP765 | 30422044 |
| 11,20* | 12 | 118 | 71 | 56 | 45 | SCD351-1120-2-2-140HA06-HP765 | 30422045 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD351-1130-2-2-140HA06-HP765 | 30422046 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD351-1150-2-2-140HA06-HP765 | 30422048 |
| 11,60 | 12 | 118 | 71 | 56 | 45 | SCD351-1160-2-2-140HA06-HP765 | 30422049 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD351-1180-2-2-140HA06-HP765 | 30422051 |
| 11,90 | 12 | 118 | 71 | 56 | 45 | SCD351-1190-2-2-140HA06-HP765 | 30422052 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD351-1200-2-2-140HA06-HP765 | 30422053 |

Continued on next page.


ECU-Drill-Uni | Solid carbide twist drill SCD351 (6xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,20 | 14 | 124 | 77 | 60 | 45 | SCD351-1220-2-2-140HA06-HP765 | 30422054 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD351-1250-2-2-140HA06-HP765 | 30422055 |
| 12,70 | 14 | 124 | 77 | 60 | 45 | SCD351-1270-2-2-140HA06-HP765 | 30422056 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD351-1280-2-2-140HA06-HP765 | 30422057 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD351-1300-2-2-140HA06-HP765 | 30422058 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD351-1350-2-2-140HA06-HP765 | 30422059 |
| 13,70 | 14 | 124 | 77 | 60 | 45 | SCD351-1370-2-2-140HA06-HP765 | 30422060 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD351-1380-2-2-140HA06-HP765 | 30422061 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD351-1400-2-2-140HA06-HP765 | 30422062 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD351-1420-2-2-140HA06-HP765 | 30422063 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD351-1450-2-2-140HA06-HP765 | 30422064 |
| 14,80 | 16 | 133 | 83 | 63 | 48 | SCD351-1480-2-2-140HA06-HP765 | 30422066 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD351-1500-2-2-140HA06-HP765 | 30422067 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD351-1550-2-2-140HA06-HP765 | 30422069 |
| 15,70 | 16 | 133 | 83 | 63 | 48 | SCD351-1570-2-2-140HA06-HP765 | 30422070 |
| 15,80 | 16 | 133 | 83 | 63 | 48 | SCD351-1580-2-2-140HA06-HP765 | 30422071 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD351-1600-2-2-140HA06-HP765 | 30422072 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD351-1650-2-2-140HA06-HP765 | 30422073 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD351-1700-2-2-140HA06-HP765 | 30422074 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD351-1750-2-2-140HA06-HP765 | 30422075 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD351-1800-2-2-140HA06-HP765 | 30422076 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD351-1850-2-2-140HA06-HP765 | 30422077 |
| 19,00 | 20 | 153 | 101 | 77 | 50 | SCD351-1900-2-2-140HA06-HP765 | 30422078 |
| 19,50 | 20 | 153 | 101 | 77 | 50 | SCD351-1950-2-2-140HA06-HP765 | 30422079 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD351-2000-2-2-140HA06-HP765 | 30422080 |

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD351-0430-3-3-140[shank form]06-HP765

Example:
SCD351-0430-3-3-140HE06-HP765

Shank form HE

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

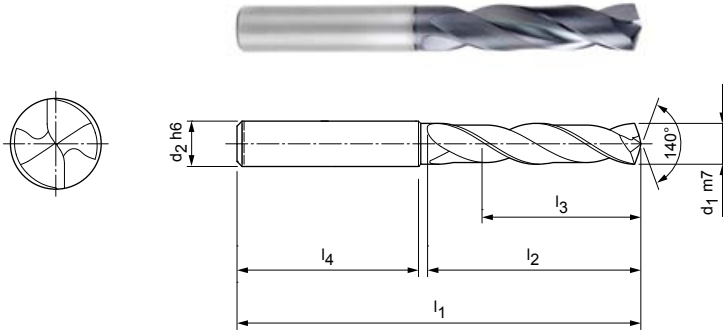
MEGA-Drill-Steel-Plus

Solid carbide twist drill

SCD600 (3xD), external coolant supply, follow-up product to the MEGA-Drill-Steel (SCD10)

Design:

Drill diameter: 3.00 – 25.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD600-0300-2-2-140HA03-HP358 | 30801131 |
| 3,10 | 6 | 62 | 20 | 14 | 36 | SCD600-0310-2-2-140HA03-HP358 | 30801132 |
| 3,15 | 6 | 62 | 20 | 14 | 36 | SCD600-0315-2-2-140HA03-HP358 | 30801133 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD600-0320-2-2-140HA03-HP358 | 30801134 |
| 3,25 | 6 | 62 | 20 | 14 | 36 | SCD600-0325-2-2-140HA03-HP358 | 30801136 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD600-0330-2-2-140HA03-HP358 | 30801137 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD600-0340-2-2-140HA03-HP358 | 30801138 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD600-0350-2-2-140HA03-HP358 | 30801139 |
| 3,60 | 6 | 62 | 20 | 14 | 36 | SCD600-0360-2-2-140HA03-HP358 | 30801140 |
| 3,70* | 6 | 62 | 20 | 14 | 36 | SCD600-0370-2-2-140HA03-HP358 | 30801141 |
| 3,80 | 6 | 66 | 24 | 17 | 36 | SCD600-0380-2-2-140HA03-HP358 | 30801142 |
| 3,85 | 6 | 66 | 24 | 17 | 36 | SCD600-0385-2-2-140HA03-HP358 | 30801143 |
| 3,90 | 6 | 66 | 24 | 17 | 36 | SCD600-0390-2-2-140HA03-HP358 | 30801144 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD600-0400-2-2-140HA03-HP358 | 30801145 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD600-0410-2-2-140HA03-HP358 | 30801146 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD600-0420-2-2-140HA03-HP358 | 30801147 |
| 4,25 | 6 | 66 | 24 | 17 | 36 | SCD600-0425-2-2-140HA03-HP358 | 30801148 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD600-0430-2-2-140HA03-HP358 | 30801149 |
| 4,35 | 6 | 66 | 24 | 17 | 36 | SCD600-0435-2-2-140HA03-HP358 | 30801150 |
| 4,40 | 6 | 66 | 24 | 17 | 36 | SCD600-0440-2-2-140HA03-HP358 | 30801151 |
| 4,45 | 6 | 66 | 24 | 17 | 36 | SCD600-0445-2-2-140HA03-HP358 | 30801152 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD600-0450-2-2-140HA03-HP358 | 30801153 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD600-0460-2-2-140HA03-HP358 | 30801154 |
| 4,65* | 6 | 66 | 24 | 17 | 36 | SCD600-0465-2-2-140HA03-HP358 | 30801155 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD600-0470-2-2-140HA03-HP358 | 30801156 |
| 4,80 | 6 | 66 | 28 | 20 | 36 | SCD600-0480-2-2-140HA03-HP358 | 30801157 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD600-0490-2-2-140HA03-HP358 | 30801158 |
| 4,95 | 6 | 66 | 28 | 20 | 36 | SCD600-0495-2-2-140HA03-HP358 | 30801159 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD600-0500-2-2-140HA03-HP358 | 30801160 |
| 5,05 | 6 | 66 | 28 | 20 | 36 | SCD600-0505-2-2-140HA03-HP358 | 30801161 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD600-0510-2-2-140HA03-HP358 | 30801162 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD600-0520-2-2-140HA03-HP358 | 30801163 |
| 5,30 | 6 | 66 | 28 | 20 | 36 | SCD600-0530-2-2-140HA03-HP358 | 30801164 |
| 5,40 | 6 | 66 | 28 | 20 | 36 | SCD600-0540-2-2-140HA03-HP358 | 30801165 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD600-0550-2-2-140HA03-HP358 | 30801166 |

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD600 (3xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,55* | 6 | 66 | 28 | 20 | 36 | SCD600-0555-2-2-140HA03-HP358 | 30801167 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD600-0560-2-2-140HA03-HP358 | 30801168 |
| 5,70 | 6 | 66 | 28 | 20 | 36 | SCD600-0570-2-2-140HA03-HP358 | 30801169 |
| 5,75 | 6 | 66 | 28 | 20 | 36 | SCD600-0575-2-2-140HA03-HP358 | 30801170 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD600-0580-2-2-140HA03-HP358 | 30801171 |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD600-0590-2-2-140HA03-HP358 | 30801172 |
| 5,95 | 6 | 66 | 28 | 20 | 36 | SCD600-0595-2-2-140HA03-HP358 | 30801173 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD600-0600-2-2-140HA03-HP358 | 30801174 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD600-0610-2-2-140HA03-HP358 | 30801175 |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD600-0620-2-2-140HA03-HP358 | 30801176 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD600-0630-2-2-140HA03-HP358 | 30801177 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD600-0640-2-2-140HA03-HP358 | 30801178 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD600-0650-2-2-140HA03-HP358 | 30801179 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD600-0660-2-2-140HA03-HP358 | 30801180 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD600-0670-2-2-140HA03-HP358 | 30801181 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD600-0680-2-2-140HA03-HP358 | 30801182 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD600-0690-2-2-140HA03-HP358 | 30801183 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD600-0700-2-2-140HA03-HP358 | 30801184 |
| 7,10 | 8 | 79 | 41 | 29 | 36 | SCD600-0710-2-2-140HA03-HP358 | 30801185 |
| 7,20 | 8 | 79 | 41 | 29 | 36 | SCD600-0720-2-2-140HA03-HP358 | 30801186 |
| 7,30 | 8 | 79 | 41 | 29 | 36 | SCD600-0730-2-2-140HA03-HP358 | 30801187 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD600-0740-2-2-140HA03-HP358 | 30801188 |
| 7,45* | 8 | 79 | 41 | 29 | 36 | SCD600-0745-2-2-140HA03-HP358 | 30801189 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD600-0750-2-2-140HA03-HP358 | 30801190 |
| 7,60 | 8 | 79 | 41 | 29 | 36 | SCD600-0760-2-2-140HA03-HP358 | 30801191 |
| 7,70 | 8 | 79 | 41 | 29 | 36 | SCD600-0770-2-2-140HA03-HP358 | 30801192 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD600-0780-2-2-140HA03-HP358 | 30801193 |
| 7,90 | 8 | 79 | 41 | 29 | 36 | SCD600-0790-2-2-140HA03-HP358 | 30801194 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD600-0800-2-2-140HA03-HP358 | 30801195 |
| 8,10 | 10 | 89 | 47 | 35 | 40 | SCD600-0810-2-2-140HA03-HP358 | 30801196 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD600-0820-2-2-140HA03-HP358 | 30801197 |
| 9,10 | 10 | 89 | 47 | 35 | 40 | SCD600-0910-2-2-140HA03-HP358 | 30801206 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD600-0920-2-2-140HA03-HP358 | 30801207 |
| 9,30* | 10 | 89 | 47 | 35 | 40 | SCD600-0930-2-2-140HA03-HP358 | 30801208 |
| 9,35 | 10 | 89 | 47 | 35 | 40 | SCD600-0935-2-2-140HA03-HP358 | 30801209 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD600-0950-2-2-140HA03-HP358 | 30801212 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD600-0960-2-2-140HA03-HP358 | 30801213 |
| 9,70 | 10 | 89 | 47 | 35 | 40 | SCD600-0970-2-2-140HA03-HP358 | 30801214 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD600-0980-2-2-140HA03-HP358 | 30801215 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD600-0990-2-2-140HA03-HP358 | 30801216 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD600-1000-2-2-140HA03-HP358 | 30801217 |
| 10,10 | 12 | 102 | 55 | 40 | 45 | SCD600-1010-2-2-140HA03-HP358 | 30801218 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD600-1020-2-2-140HA03-HP358 | 30801219 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD600-1030-2-2-140HA03-HP358 | 30801220 |
| 10,40 | 12 | 102 | 55 | 40 | 45 | SCD600-1040-2-2-140HA03-HP358 | 30801221 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD600-1050-2-2-140HA03-HP358 | 30801222 |
| 10,55 | 12 | 102 | 55 | 40 | 45 | SCD600-1055-2-2-140HA03-HP358 | 30801223 |
| 10,60 | 12 | 102 | 55 | 40 | 45 | SCD600-1060-2-2-140HA03-HP358 | 30801224 |
| 10,70 | 12 | 102 | 55 | 40 | 45 | SCD600-1070-2-2-140HA03-HP358 | 30801225 |
| 10,80 | 12 | 102 | 55 | 40 | 45 | SCD600-1080-2-2-140HA03-HP358 | 30801227 |
| 10,90 | 12 | 102 | 55 | 40 | 45 | SCD600-1090-2-2-140HA03-HP358 | 30801228 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD600-1100-2-2-140HA03-HP358 | 30801229 |
| 11,10 | 12 | 102 | 55 | 40 | 45 | SCD600-1110-2-2-140HA03-HP358 | 30801230 |
| 11,20* | 12 | 102 | 55 | 40 | 45 | SCD600-1120-2-2-140HA03-HP358 | 30801231 |
| 11,25 | 12 | 102 | 55 | 40 | 45 | SCD600-1125-2-2-140HA03-HP358 | 30801232 |
| 11,30 | 12 | 102 | 55 | 40 | 45 | SCD600-1130-2-2-140HA03-HP358 | 30801233 |
| 11,35 | 12 | 102 | 55 | 40 | 45 | SCD600-1135-2-2-140HA03-HP358 | 30801234 |


MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD600 (3xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,40 | 12 | 102 | 55 | 40 | 45 | SCD600-1140-2-2-140HA03-HP358 | 30801235 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD600-1150-2-2-140HA03-HP358 | 30801237 |
| 11,60 | 12 | 102 | 55 | 40 | 45 | SCD600-1160-2-2-140HA03-HP358 | 30801238 |
| 11,70 | 12 | 102 | 55 | 40 | 45 | SCD600-1170-2-2-140HA03-HP358 | 30801239 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD600-1180-2-2-140HA03-HP358 | 30801240 |
| 11,90 | 12 | 102 | 55 | 40 | 45 | SCD600-1190-2-2-140HA03-HP358 | 30801241 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD600-1200-2-2-140HA03-HP358 | 30801242 |
| 12,15 | 14 | 107 | 60 | 43 | 45 | SCD600-1215-2-2-140HA03-HP358 | 30801243 |
| 12,25 | 14 | 107 | 60 | 43 | 45 | SCD600-1225-2-2-140HA03-HP358 | 30801244 |
| 12,50 | 14 | 107 | 60 | 43 | 45 | SCD600-1250-2-2-140HA03-HP358 | 30801245 |
| 12,55 | 14 | 107 | 60 | 43 | 45 | SCD600-1255-2-2-140HA03-HP358 | 30801246 |
| 12,70 | 14 | 107 | 60 | 43 | 45 | SCD600-1270-2-2-140HA03-HP358 | 30801247 |
| 12,80 | 14 | 107 | 60 | 43 | 45 | SCD600-1280-2-2-140HA03-HP358 | 30801248 |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD600-1300-2-2-140HA03-HP358 | 30801250 |
| 13,10 | 14 | 107 | 60 | 43 | 45 | SCD600-1310-2-2-140HA03-HP358 | 30801251 |
| 13,30 | 14 | 107 | 60 | 43 | 45 | SCD600-1330-2-2-140HA03-HP358 | 30801252 |
| 13,35 | 14 | 107 | 60 | 43 | 45 | SCD600-1335-2-2-140HA03-HP358 | 30801253 |
| 13,50 | 14 | 107 | 60 | 43 | 45 | SCD600-1350-2-2-140HA03-HP358 | 30801254 |
| 13,70 | 14 | 107 | 60 | 43 | 45 | SCD600-1370-2-2-140HA03-HP358 | 30801255 |
| 13,80 | 14 | 107 | 60 | 43 | 45 | SCD600-1380-2-2-140HA03-HP358 | 30801256 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD600-1400-2-2-140HA03-HP358 | 30801257 |
| 14,20 | 16 | 115 | 65 | 45 | 48 | SCD600-1420-2-2-140HA03-HP358 | 30801258 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD600-1450-2-2-140HA03-HP358 | 30801259 |
| 14,80 | 16 | 115 | 65 | 45 | 48 | SCD600-1480-2-2-140HA03-HP358 | 30801260 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD600-1500-2-2-140HA03-HP358 | 30801261 |
| 15,10 | 16 | 115 | 65 | 45 | 48 | SCD600-1510-2-2-140HA03-HP358 | 30801262 |
| 15,25 | 16 | 115 | 65 | 45 | 48 | SCD600-1525-2-2-140HA03-HP358 | 30801263 |
| 15,30 | 16 | 115 | 65 | 45 | 48 | SCD600-1530-2-2-140HA03-HP358 | 30801264 |
| 15,35 | 16 | 115 | 65 | 45 | 48 | SCD600-1535-2-2-140HA03-HP358 | 30801265 |
| 15,50 | 16 | 115 | 65 | 45 | 48 | SCD600-1550-2-2-140HA03-HP358 | 30801266 |
| 15,60 | 16 | 115 | 65 | 45 | 48 | SCD600-1560-2-2-140HA03-HP358 | 30801267 |
| 15,80 | 16 | 115 | 65 | 45 | 48 | SCD600-1580-2-2-140HA03-HP358 | 30801268 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD600-1600-2-2-140HA03-HP358 | 30801269 |
| 16,05 | 18 | 123 | 73 | 51 | 48 | SCD600-1605-2-2-140HA03-HP358 | 30801270 |
| 16,50 | 18 | 123 | 73 | 51 | 48 | SCD600-1650-2-2-140HA03-HP358 | 30801271 |
| 16,80 | 18 | 123 | 73 | 51 | 48 | SCD600-1680-2-2-140HA03-HP358 | 30801272 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD600-1700-2-2-140HA03-HP358 | 30801274 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD600-1750-2-2-140HA03-HP358 | 30801275 |
| 17,80 | 18 | 123 | 73 | 51 | 48 | SCD600-1780-2-2-140HA03-HP358 | 30801277 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD600-1800-2-2-140HA03-HP358 | 30801278 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD600-1850-2-2-140HA03-HP358 | 30801279 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD600-1900-2-2-140HA03-HP358 | 30801282 |
| 19,35 | 20 | 131 | 79 | 55 | 50 | SCD600-1935-2-2-140HA03-HP358 | 30801283 |
| 19,60 | 20 | 131 | 79 | 55 | 50 | SCD600-1960-2-2-140HA03-HP358 | 30801285 |
| 19,80 | 20 | 131 | 79 | 55 | 50 | SCD600-1980-2-2-140HA03-HP358 | 30801286 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD600-2000-2-2-140HA03-HP358 | 30801287 |


Continued on next page.


MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD600 (3xD), external coolant supply

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

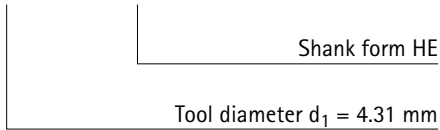




Shank form:
Shank form: HB | HE

Specification:
SCD600-[diameter]-3-3-140[shank form]03-HP358

Example:
SCD600-0431-3-3-140HE03-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 62 | 20 | 14 | 36 |
| 3,71 | 4,70 | 6 | 66 | 24 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 7,00 | 8 | 79 | 34 | 24 | 36 |
| 7,01 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 55 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 60 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |
| 20,01 | 22,00 | 25 | 151 | 93 | 66 | 56 |
| 22,01 | 25,00 | 25 | 153 | 96 | 72 | 56 |

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

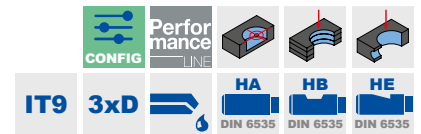
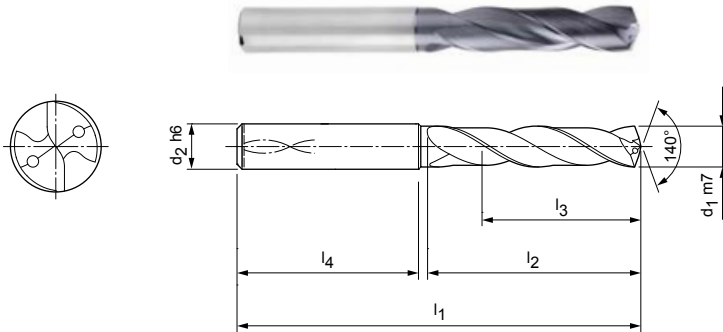
MEGA-Drill-Steel-Plus

Solid carbide twist drill

SCD601 (3xD), internal coolant supply, follow-up product to the MEGA-Drill-Steel (SCD10)

Design:

- Drill diameter: 3.00 – 25.00 mm
- Bore tolerance: \geq IT 9
- Cutting material: HP358
- Number of cutting edges: 2
- Number of guiding chamfers: 2
- Tip angle: 140°
- Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD601-0300-2-2-140HA03-HP358 | 30802107 |
| 3,10 | 6 | 62 | 20 | 14 | 36 | SCD601-0310-2-2-140HA03-HP358 | 30802108 |
| 3,15 | 6 | 62 | 20 | 14 | 36 | SCD601-0315-2-2-140HA03-HP358 | 30802109 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD601-0320-2-2-140HA03-HP358 | 30802110 |
| 3,22 | 6 | 62 | 20 | 14 | 36 | SCD601-0322-2-2-140HA03-HP358 | 30802111 |
| 3,25 | 6 | 62 | 20 | 14 | 36 | SCD601-0325-2-2-140HA03-HP358 | 30802112 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD601-0330-2-2-140HA03-HP358 | 30802113 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD601-0340-2-2-140HA03-HP358 | 30802115 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD601-0350-2-2-140HA03-HP358 | 30802116 |
| 3,60 | 6 | 62 | 20 | 14 | 36 | SCD601-0360-2-2-140HA03-HP358 | 30802117 |
| 3,70* | 6 | 62 | 20 | 14 | 36 | SCD601-0370-2-2-140HA03-HP358 | 30802118 |
| 3,80 | 6 | 66 | 24 | 17 | 36 | SCD601-0380-2-2-140HA03-HP358 | 30802119 |
| 3,85 | 6 | 66 | 24 | 17 | 36 | SCD601-0385-2-2-140HA03-HP358 | 30802120 |
| 3,90 | 6 | 66 | 24 | 17 | 36 | SCD601-0390-2-2-140HA03-HP358 | 30802121 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD601-0400-2-2-140HA03-HP358 | 30802122 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD601-0410-2-2-140HA03-HP358 | 30802123 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD601-0420-2-2-140HA03-HP358 | 30802124 |
| 4,25 | 6 | 66 | 24 | 17 | 36 | SCD601-0425-2-2-140HA03-HP358 | 30802125 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD601-0430-2-2-140HA03-HP358 | 30802126 |
| 4,40 | 6 | 66 | 24 | 17 | 36 | SCD601-0440-2-2-140HA03-HP358 | 30802129 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD601-0450-2-2-140HA03-HP358 | 30802131 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD601-0460-2-2-140HA03-HP358 | 30802132 |
| 4,65* | 6 | 66 | 24 | 17 | 36 | SCD601-0465-2-2-140HA03-HP358 | 30802133 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD601-0470-2-2-140HA03-HP358 | 30802134 |
| 4,80 | 6 | 66 | 28 | 20 | 36 | SCD601-0480-2-2-140HA03-HP358 | 30802135 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD601-0490-2-2-140HA03-HP358 | 30802136 |
| 4,95 | 6 | 66 | 28 | 20 | 36 | SCD601-0495-2-2-140HA03-HP358 | 30802137 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD601-0500-2-2-140HA03-HP358 | 30802138 |
| 5,05 | 6 | 66 | 28 | 20 | 36 | SCD601-0505-2-2-140HA03-HP358 | 30802139 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD601-0510-2-2-140HA03-HP358 | 30802140 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD601-0520-2-2-140HA03-HP358 | 30802141 |
| 5,30 | 6 | 66 | 28 | 20 | 36 | SCD601-0530-2-2-140HA03-HP358 | 30802142 |
| 5,40 | 6 | 66 | 28 | 20 | 36 | SCD601-0540-2-2-140HA03-HP358 | 30802143 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD601-0550-2-2-140HA03-HP358 | 30802144 |
| 5,55* | 6 | 66 | 28 | 20 | 36 | SCD601-0555-2-2-140HA03-HP358 | 30802145 |

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD601-0560-2-2-140HA03-HP358 | 30802146 |
| 5,70 | 6 | 66 | 28 | 20 | 36 | SCD601-0570-2-2-140HA03-HP358 | 30802147 |
| 5,75 | 6 | 66 | 28 | 20 | 36 | SCD601-0575-2-2-140HA03-HP358 | 30802148 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD601-0580-2-2-140HA03-HP358 | 30802149 |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD601-0590-2-2-140HA03-HP358 | 30802150 |
| 5,95 | 6 | 66 | 28 | 20 | 36 | SCD601-0595-2-2-140HA03-HP358 | 30802151 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD601-0600-2-2-140HA03-HP358 | 30802152 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD601-0610-2-2-140HA03-HP358 | 30802153 |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD601-0620-2-2-140HA03-HP358 | 30802154 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD601-0630-2-2-140HA03-HP358 | 30802155 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD601-0640-2-2-140HA03-HP358 | 30802156 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD601-0650-2-2-140HA03-HP358 | 30802157 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD601-0660-2-2-140HA03-HP358 | 30802158 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD601-0670-2-2-140HA03-HP358 | 30802159 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD601-0680-2-2-140HA03-HP358 | 30802160 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD601-0690-2-2-140HA03-HP358 | 30802161 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD601-0700-2-2-140HA03-HP358 | 30802162 |
| 7,10 | 8 | 79 | 41 | 29 | 36 | SCD601-0710-2-2-140HA03-HP358 | 30802163 |
| 7,20 | 8 | 79 | 41 | 29 | 36 | SCD601-0720-2-2-140HA03-HP358 | 30802164 |
| 7,30 | 8 | 79 | 41 | 29 | 36 | SCD601-0730-2-2-140HA03-HP358 | 30802165 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD601-0740-2-2-140HA03-HP358 | 30802166 |
| 7,45* | 8 | 79 | 41 | 29 | 36 | SCD601-0745-2-2-140HA03-HP358 | 30802167 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD601-0750-2-2-140HA03-HP358 | 30802168 |
| 7,60 | 8 | 79 | 41 | 29 | 36 | SCD601-0760-2-2-140HA03-HP358 | 30802169 |
| 7,70 | 8 | 79 | 41 | 29 | 36 | SCD601-0770-2-2-140HA03-HP358 | 30802170 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD601-0780-2-2-140HA03-HP358 | 30802171 |
| 7,90 | 8 | 79 | 41 | 29 | 36 | SCD601-0790-2-2-140HA03-HP358 | 30802172 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD601-0800-2-2-140HA03-HP358 | 30802173 |
| 8,10 | 10 | 89 | 47 | 35 | 40 | SCD601-0810-2-2-140HA03-HP358 | 30802174 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD601-0820-2-2-140HA03-HP358 | 30802175 |
| 8,30 | 10 | 89 | 47 | 35 | 40 | SCD601-0830-2-2-140HA03-HP358 | 30802176 |
| 8,40 | 10 | 89 | 47 | 35 | 40 | SCD601-0840-2-2-140HA03-HP358 | 30802177 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD601-0850-2-2-140HA03-HP358 | 30802178 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD601-0860-2-2-140HA03-HP358 | 30802179 |
| 8,70 | 10 | 89 | 47 | 35 | 40 | SCD601-0870-2-2-140HA03-HP358 | 30802180 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD601-0880-2-2-140HA03-HP358 | 30802181 |
| 8,90 | 10 | 89 | 47 | 35 | 40 | SCD601-0890-2-2-140HA03-HP358 | 30802182 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD601-0900-2-2-140HA03-HP358 | 30802183 |
| 9,10 | 10 | 89 | 47 | 35 | 40 | SCD601-0910-2-2-140HA03-HP358 | 30802184 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD601-0920-2-2-140HA03-HP358 | 30802185 |
| 9,30* | 10 | 89 | 47 | 35 | 40 | SCD601-0930-2-2-140HA03-HP358 | 30802186 |
| 9,35 | 10 | 89 | 47 | 35 | 40 | SCD601-0935-2-2-140HA03-HP358 | 30802187 |
| 9,40 | 10 | 89 | 47 | 35 | 40 | SCD601-0940-2-2-140HA03-HP358 | 30802188 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD601-0950-2-2-140HA03-HP358 | 30802190 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD601-0960-2-2-140HA03-HP358 | 30802191 |
| 9,70 | 10 | 89 | 47 | 35 | 40 | SCD601-0970-2-2-140HA03-HP358 | 30802192 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD601-0980-2-2-140HA03-HP358 | 30802193 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD601-0990-2-2-140HA03-HP358 | 30802194 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD601-1000-2-2-140HA03-HP358 | 30802195 |
| 10,10 | 12 | 102 | 55 | 40 | 45 | SCD601-1010-2-2-140HA03-HP358 | 30802196 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD601-1020-2-2-140HA03-HP358 | 30802197 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD601-1030-2-2-140HA03-HP358 | 30802198 |
| 10,40 | 12 | 102 | 55 | 40 | 45 | SCD601-1040-2-2-140HA03-HP358 | 30802199 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD601-1050-2-2-140HA03-HP358 | 30802200 |
| 10,55 | 12 | 102 | 55 | 40 | 45 | SCD601-1055-2-2-140HA03-HP358 | 30802201 |
| 10,60 | 12 | 102 | 55 | 40 | 45 | SCD601-1060-2-2-140HA03-HP358 | 30802202 |
| 10,70 | 12 | 102 | 55 | 40 | 45 | SCD601-1070-2-2-140HA03-HP358 | 30802203 |

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,75 | 12 | 102 | 55 | 40 | 45 | SCD601-1075-2-2-140HA03-HP358 | 30802204 |
| 10,80 | 12 | 102 | 55 | 40 | 45 | SCD601-1080-2-2-140HA03-HP358 | 30802205 |
| 10,90 | 12 | 102 | 55 | 40 | 45 | SCD601-1090-2-2-140HA03-HP358 | 30802206 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD601-1100-2-2-140HA03-HP358 | 30802207 |
| 11,10 | 12 | 102 | 55 | 40 | 45 | SCD601-1110-2-2-140HA03-HP358 | 30802208 |
| 11,20* | 12 | 102 | 55 | 40 | 45 | SCD601-1120-2-2-140HA03-HP358 | 30802209 |
| 11,25 | 12 | 102 | 55 | 40 | 45 | SCD601-1125-2-2-140HA03-HP358 | 30802210 |
| 11,30 | 12 | 102 | 55 | 40 | 45 | SCD601-1130-2-2-140HA03-HP358 | 30802211 |
| 11,45 | 12 | 102 | 55 | 40 | 45 | SCD601-1145-2-2-140HA03-HP358 | 30802214 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD601-1150-2-2-140HA03-HP358 | 30802215 |
| 11,60 | 12 | 102 | 55 | 40 | 45 | SCD601-1160-2-2-140HA03-HP358 | 30802216 |
| 11,70 | 12 | 102 | 55 | 40 | 45 | SCD601-1170-2-2-140HA03-HP358 | 30802217 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD601-1180-2-2-140HA03-HP358 | 30802218 |
| 11,90 | 12 | 102 | 55 | 40 | 45 | SCD601-1190-2-2-140HA03-HP358 | 30802219 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD601-1200-2-2-140HA03-HP358 | 30802220 |
| 12,15 | 14 | 107 | 60 | 43 | 45 | SCD601-1215-2-2-140HA03-HP358 | 30802221 |
| 12,20 | 14 | 107 | 60 | 43 | 45 | SCD601-1220-2-2-140HA03-HP358 | 31307544 |
| 12,25 | 14 | 107 | 60 | 43 | 45 | SCD601-1225-2-2-140HA03-HP358 | 30802222 |
| 12,50 | 14 | 107 | 60 | 43 | 45 | SCD601-1250-2-2-140HA03-HP358 | 30802223 |
| 12,55 | 14 | 107 | 60 | 43 | 45 | SCD601-1255-2-2-140HA03-HP358 | 30802224 |
| 12,70 | 14 | 107 | 60 | 43 | 45 | SCD601-1270-2-2-140HA03-HP358 | 30802225 |
| 12,80 | 14 | 107 | 60 | 43 | 45 | SCD601-1280-2-2-140HA03-HP358 | 30802226 |
| 12,90 | 14 | 107 | 60 | 43 | 45 | SCD601-1290-2-2-140HA03-HP358 | 30802227 |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD601-1300-2-2-140HA03-HP358 | 30802228 |
| 13,10 | 14 | 107 | 60 | 43 | 45 | SCD601-1310-2-2-140HA03-HP358 | 30802229 |
| 13,30 | 14 | 107 | 60 | 43 | 45 | SCD601-1330-2-2-140HA03-HP358 | 30802230 |
| 13,35 | 14 | 107 | 60 | 43 | 45 | SCD601-1335-2-2-140HA03-HP358 | 30802231 |
| 13,50 | 14 | 107 | 60 | 43 | 45 | SCD601-1350-2-2-140HA03-HP358 | 30802232 |
| 13,70 | 14 | 107 | 60 | 43 | 45 | SCD601-1370-2-2-140HA03-HP358 | 30802233 |
| 13,80 | 14 | 107 | 60 | 43 | 45 | SCD601-1380-2-2-140HA03-HP358 | 30802234 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD601-1400-2-2-140HA03-HP358 | 30802235 |
| 14,20 | 16 | 115 | 65 | 45 | 48 | SCD601-1420-2-2-140HA03-HP358 | 30802236 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD601-1450-2-2-140HA03-HP358 | 30802237 |
| 14,80 | 16 | 115 | 65 | 45 | 48 | SCD601-1480-2-2-140HA03-HP358 | 30802238 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD601-1500-2-2-140HA03-HP358 | 30802239 |
| 15,10 | 16 | 115 | 65 | 45 | 48 | SCD601-1510-2-2-140HA03-HP358 | 30802240 |
| 15,25 | 16 | 115 | 65 | 45 | 48 | SCD601-1525-2-2-140HA03-HP358 | 30802241 |
| 15,30 | 16 | 115 | 65 | 45 | 48 | SCD601-1530-2-2-140HA03-HP358 | 30802242 |
| 15,35 | 16 | 115 | 65 | 45 | 48 | SCD601-1535-2-2-140HA03-HP358 | 30802243 |
| 15,50 | 16 | 115 | 65 | 45 | 48 | SCD601-1550-2-2-140HA03-HP358 | 30802244 |
| 15,60 | 16 | 115 | 65 | 45 | 48 | SCD601-1560-2-2-140HA03-HP358 | 30802245 |
| 15,80 | 16 | 115 | 65 | 45 | 48 | SCD601-1580-2-2-140HA03-HP358 | 30802246 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD601-1600-2-2-140HA03-HP358 | 30802247 |
| 16,05 | 18 | 123 | 73 | 51 | 48 | SCD601-1605-2-2-140HA03-HP358 | 30802248 |
| 16,50 | 18 | 123 | 73 | 51 | 48 | SCD601-1650-2-2-140HA03-HP358 | 30802249 |
| 16,60 | 18 | 123 | 73 | 51 | 48 | SCD601-1660-2-2-140HA03-HP358 | 31307545 |
| 16,90 | 18 | 123 | 73 | 51 | 48 | SCD601-1690-2-2-140HA03-HP358 | 30802251 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD601-1700-2-2-140HA03-HP358 | 30802252 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD601-1750-2-2-140HA03-HP358 | 30802253 |
| 17,60 | 18 | 123 | 73 | 51 | 48 | SCD601-1760-2-2-140HA03-HP358 | 30802254 |
| 17,80 | 18 | 123 | 73 | 51 | 48 | SCD601-1780-2-2-140HA03-HP358 | 30802255 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD601-1800-2-2-140HA03-HP358 | 30802256 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD601-1850-2-2-140HA03-HP358 | 30802257 |
| 18,90 | 20 | 131 | 79 | 55 | 50 | SCD601-1890-2-2-140HA03-HP358 | 30802259 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD601-1900-2-2-140HA03-HP358 | 30802260 |
| 19,35 | 20 | 131 | 79 | 55 | 50 | SCD601-1935-2-2-140HA03-HP358 | 30802261 |
| 19,50 | 20 | 131 | 79 | 55 | 50 | SCD601-1950-2-2-140HA03-HP358 | 30802262 |

Continued on next page.

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 19,80 | 20 | 131 | 79 | 55 | 50 | SCD601-1980-2-2-140HA03-HP358 | 30802264 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD601-2000-2-2-140HA03-HP358 | 30802265 |
| 21,00 | 25 | 151 | 93 | 66 | 56 | SCD601-2100-2-2-140HA03-HP358 | 30802267 |
| 21,50 | 25 | 151 | 93 | 66 | 56 | SCD601-2150-2-2-140HA03-HP358 | 30802268 |
| 22,00 | 25 | 151 | 93 | 66 | 56 | SCD601-2200-2-2-140HA03-HP358 | 30802269 |
| 23,50 | 25 | 151 | 93 | 66 | 56 | SCD601-2350-2-2-140HA03-HP358 | 30802272 |

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

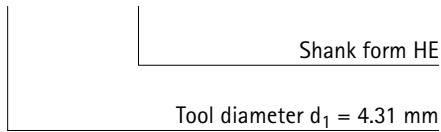
Shank form: HB | HE

Specification:

SCD601-[diameter]-3-3-140[shank form]03-HP358

Example:

SCD601-0431-3-3-140HE03-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 62 | 20 | 14 | 36 |
| 3,71 | 4,70 | 6 | 66 | 24 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 7,00 | 8 | 79 | 34 | 24 | 36 |
| 7,01 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 55 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 60 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |
| 20,01 | 25,00 | 25 | 151 | 93 | 66 | 56 |

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

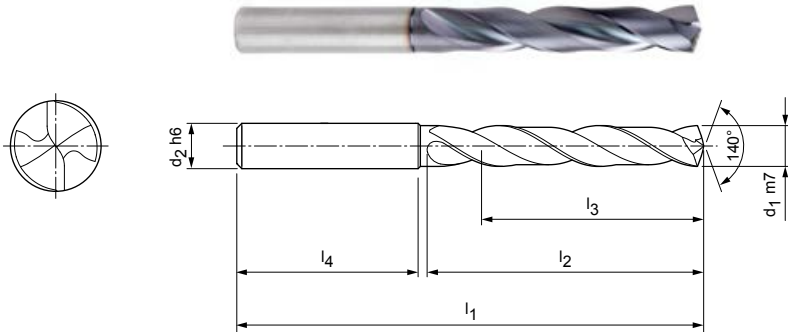
MEGA-Drill-Steel-Plus

Solid carbide twist drill

SCD600 (5xD), external coolant supply, follow-up product to the MEGA-Drill-Steel (SCD10)

Design:

Drill diameter: 3.00 – 25.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD600-0300-2-2-140HA05-HP358 | 30801634 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD600-0310-2-2-140HA05-HP358 | 30801635 |
| 3,15 | 6 | 66 | 28 | 23 | 36 | SCD600-0315-2-2-140HA05-HP358 | 30801636 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD600-0320-2-2-140HA05-HP358 | 30801637 |
| 3,25 | 6 | 66 | 28 | 23 | 36 | SCD600-0325-2-2-140HA05-HP358 | 30801639 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD600-0330-2-2-140HA05-HP358 | 30801640 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD600-0340-2-2-140HA05-HP358 | 30801641 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD600-0350-2-2-140HA05-HP358 | 30801642 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD600-0360-2-2-140HA05-HP358 | 30801643 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD600-0370-2-2-140HA05-HP358 | 30801644 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD600-0380-2-2-140HA05-HP358 | 30801645 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD600-0390-2-2-140HA05-HP358 | 30801647 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD600-0400-2-2-140HA05-HP358 | 30801648 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD600-0410-2-2-140HA05-HP358 | 30801649 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD600-0420-2-2-140HA05-HP358 | 30801650 |
| 4,25 | 6 | 74 | 36 | 29 | 36 | SCD600-0425-2-2-140HA05-HP358 | 30801651 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD600-0430-2-2-140HA05-HP358 | 30801652 |
| 4,35 | 6 | 74 | 36 | 29 | 36 | SCD600-0435-2-2-140HA05-HP358 | 30801653 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD600-0440-2-2-140HA05-HP358 | 30801654 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD600-0450-2-2-140HA05-HP358 | 30801656 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD600-0460-2-2-140HA05-HP358 | 30801657 |
| 4,65 | 6 | 74 | 36 | 29 | 36 | SCD600-0465-2-2-140HA05-HP358 | 30801658 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD600-0470-2-2-140HA05-HP358 | 30801659 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD600-0480-2-2-140HA05-HP358 | 30801660 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD600-0490-2-2-140HA05-HP358 | 30801662 |
| 4,95 | 6 | 82 | 44 | 35 | 36 | SCD600-0495-2-2-140HA05-HP358 | 30801663 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD600-0500-2-2-140HA05-HP358 | 30801664 |
| 5,05 | 6 | 82 | 44 | 35 | 36 | SCD600-0505-2-2-140HA05-HP358 | 30801665 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD600-0510-2-2-140HA05-HP358 | 30801666 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD600-0520-2-2-140HA05-HP358 | 30801667 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD600-0530-2-2-140HA05-HP358 | 30801668 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD600-0540-2-2-140HA05-HP358 | 30801669 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD600-0550-2-2-140HA05-HP358 | 30801670 |
| 5,55 | 6 | 82 | 44 | 35 | 36 | SCD600-0555-2-2-140HA05-HP358 | 30801671 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD600-0560-2-2-140HA05-HP358 | 30801672 |

Continued on next page.

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD600 (5xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD600-0570-2-2-140HA05-HP358 | 30801673 |
| 5,75 | 6 | 82 | 44 | 35 | 36 | SCD600-0575-2-2-140HA05-HP358 | 30801674 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD600-0580-2-2-140HA05-HP358 | 30801675 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD600-0590-2-2-140HA05-HP358 | 30801676 |
| 5,95 | 6 | 82 | 44 | 35 | 36 | SCD600-0595-2-2-140HA05-HP358 | 30801677 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD600-0600-2-2-140HA05-HP358 | 30801678 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD600-0610-2-2-140HA05-HP358 | 30801679 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD600-0620-2-2-140HA05-HP358 | 30801680 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD600-0630-2-2-140HA05-HP358 | 30801681 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD600-0640-2-2-140HA05-HP358 | 30801682 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD600-0650-2-2-140HA05-HP358 | 30801683 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD600-0660-2-2-140HA05-HP358 | 30801684 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD600-0670-2-2-140HA05-HP358 | 30801685 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD600-0680-2-2-140HA05-HP358 | 30801686 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD600-0690-2-2-140HA05-HP358 | 30801687 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD600-0700-2-2-140HA05-HP358 | 30801688 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD600-0710-2-2-140HA05-HP358 | 30801689 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD600-0720-2-2-140HA05-HP358 | 30801690 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD600-0730-2-2-140HA05-HP358 | 30801691 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD600-0740-2-2-140HA05-HP358 | 30801692 |
| 7,45 | 8 | 91 | 53 | 43 | 36 | SCD600-0745-2-2-140HA05-HP358 | 30801693 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD600-0750-2-2-140HA05-HP358 | 30801694 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD600-0760-2-2-140HA05-HP358 | 30801695 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD600-0780-2-2-140HA05-HP358 | 30801697 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD600-0790-2-2-140HA05-HP358 | 30801698 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD600-0800-2-2-140HA05-HP358 | 30801699 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD600-0810-2-2-140HA05-HP358 | 30801700 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD600-0820-2-2-140HA05-HP358 | 30801701 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD600-0830-2-2-140HA05-HP358 | 30801702 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD600-0840-2-2-140HA05-HP358 | 30801703 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD600-0850-2-2-140HA05-HP358 | 30801704 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD600-0860-2-2-140HA05-HP358 | 30801705 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD600-0870-2-2-140HA05-HP358 | 30801706 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD600-0880-2-2-140HA05-HP358 | 30801707 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD600-0890-2-2-140HA05-HP358 | 30801708 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD600-0900-2-2-140HA05-HP358 | 30801709 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD600-0910-2-2-140HA05-HP358 | 30801710 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD600-0920-2-2-140HA05-HP358 | 30801711 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD600-0930-2-2-140HA05-HP358 | 30801712 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD600-0950-2-2-140HA05-HP358 | 30801716 |
| 9,60 | 10 | 103 | 61 | 49 | 40 | SCD600-0960-2-2-140HA05-HP358 | 30801717 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD600-0970-2-2-140HA05-HP358 | 30801718 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD600-0980-2-2-140HA05-HP358 | 30801719 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD600-0990-2-2-140HA05-HP358 | 30801720 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD600-1000-2-2-140HA05-HP358 | 30801721 |
| 10,10 | 12 | 118 | 71 | 56 | 45 | SCD600-1010-2-2-140HA05-HP358 | 30801722 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD600-1020-2-2-140HA05-HP358 | 30801723 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD600-1030-2-2-140HA05-HP358 | 30801724 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD600-1040-2-2-140HA05-HP358 | 30801725 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD600-1050-2-2-140HA05-HP358 | 30801726 |
| 10,70 | 12 | 118 | 71 | 56 | 45 | SCD600-1070-2-2-140HA05-HP358 | 30801729 |
| 10,75 | 12 | 118 | 71 | 56 | 45 | SCD600-1075-2-2-140HA05-HP358 | 30801731 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD600-1080-2-2-140HA05-HP358 | 30801732 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD600-1100-2-2-140HA05-HP358 | 30801734 |
| 11,20 | 12 | 118 | 71 | 56 | 45 | SCD600-1120-2-2-140HA05-HP358 | 30801736 |
| 11,25 | 12 | 118 | 71 | 56 | 45 | SCD600-1125-2-2-140HA05-HP358 | 30801737 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD600-1130-2-2-140HA05-HP358 | 30801738 |


MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD600 (5xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,35 | 12 | 118 | 71 | 56 | 45 | SCD600-1135-2-2-140HA05-HP358 | 30801739 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD600-1150-2-2-140HA05-HP358 | 30801742 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD600-1180-2-2-140HA05-HP358 | 30801745 |
| 11,90 | 12 | 118 | 71 | 56 | 45 | SCD600-1190-2-2-140HA05-HP358 | 30801746 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD600-1200-2-2-140HA05-HP358 | 30801747 |
| 12,15 | 14 | 124 | 77 | 60 | 45 | SCD600-1215-2-2-140HA05-HP358 | 30801748 |
| 12,25 | 14 | 124 | 77 | 60 | 45 | SCD600-1225-2-2-140HA05-HP358 | 30801749 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD600-1250-2-2-140HA05-HP358 | 30801750 |
| 12,70 | 14 | 124 | 77 | 60 | 45 | SCD600-1270-2-2-140HA05-HP358 | 30801752 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD600-1280-2-2-140HA05-HP358 | 30801753 |
| 12,90 | 14 | 124 | 77 | 60 | 45 | SCD600-1290-2-2-140HA05-HP358 | 30801754 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD600-1300-2-2-140HA05-HP358 | 30801755 |
| 13,10 | 14 | 124 | 77 | 60 | 45 | SCD600-1310-2-2-140HA05-HP358 | 30801756 |
| 13,30 | 14 | 124 | 77 | 60 | 45 | SCD600-1330-2-2-140HA05-HP358 | 30801757 |
| 13,35 | 14 | 124 | 77 | 60 | 45 | SCD600-1335-2-2-140HA05-HP358 | 30801758 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD600-1350-2-2-140HA05-HP358 | 30801759 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD600-1380-2-2-140HA05-HP358 | 30801761 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD600-1400-2-2-140HA05-HP358 | 30801762 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD600-1420-2-2-140HA05-HP358 | 30801763 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD600-1450-2-2-140HA05-HP358 | 30801764 |
| 14,80 | 16 | 133 | 83 | 63 | 48 | SCD600-1480-2-2-140HA05-HP358 | 30801765 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD600-1500-2-2-140HA05-HP358 | 30801766 |
| 15,10 | 16 | 133 | 83 | 63 | 48 | SCD600-1510-2-2-140HA05-HP358 | 30801767 |
| 15,25 | 16 | 133 | 83 | 63 | 48 | SCD600-1525-2-2-140HA05-HP358 | 30801768 |
| 15,30 | 16 | 133 | 83 | 63 | 48 | SCD600-1530-2-2-140HA05-HP358 | 30801769 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD600-1550-2-2-140HA05-HP358 | 30801771 |
| 15,80 | 16 | 133 | 83 | 63 | 48 | SCD600-1580-2-2-140HA05-HP358 | 30801773 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD600-1600-2-2-140HA05-HP358 | 30801774 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD600-1650-2-2-140HA05-HP358 | 30801776 |
| 16,80 | 18 | 143 | 93 | 71 | 48 | SCD600-1680-2-2-140HA05-HP358 | 30801777 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD600-1700-2-2-140HA05-HP358 | 30801779 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD600-1750-2-2-140HA05-HP358 | 30801780 |
| 17,60 | 18 | 143 | 93 | 71 | 48 | SCD600-1760-2-2-140HA05-HP358 | 30801781 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD600-1800-2-2-140HA05-HP358 | 30801783 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD600-1850-2-2-140HA05-HP358 | 30801784 |
| 18,80 | 20 | 153 | 101 | 77 | 50 | SCD600-1880-2-2-140HA05-HP358 | 30801785 |
| 18,90 | 20 | 153 | 101 | 77 | 50 | SCD600-1890-2-2-140HA05-HP358 | 30801786 |
| 19,00 | 20 | 153 | 101 | 77 | 50 | SCD600-1900-2-2-140HA05-HP358 | 30801787 |
| 19,50 | 20 | 153 | 101 | 77 | 50 | SCD600-1950-2-2-140HA05-HP358 | 30801789 |
| 19,80 | 20 | 153 | 101 | 77 | 50 | SCD600-1980-2-2-140HA05-HP358 | 30801791 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD600-2000-2-2-140HA05-HP358 | 30801792 |


Continued on next page.


MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD600 (5xD), external coolant supply

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

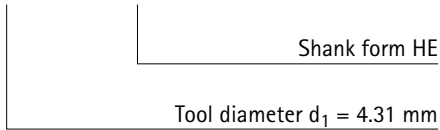




Shank form:
Shank form: HB | HE

Specification:
SCD600-[diameter]-3-3-140[shank form]05-HP358

Example:
SCD600-0431-3-3-140HE05-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |
| 20,01 | 25,00 | 25 | 151 | 93 | 66 | 56 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

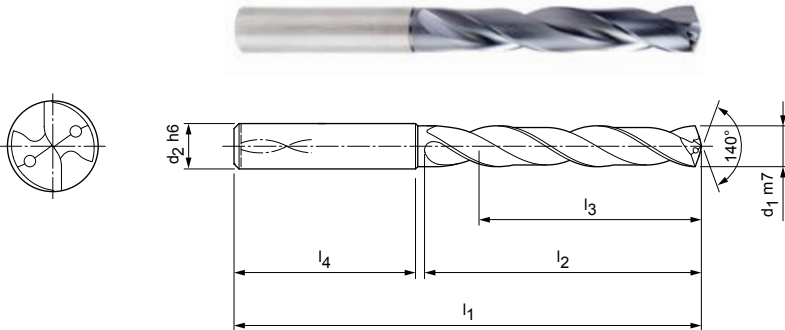
MEGA-Drill-Steel-Plus

Solid carbide twist drill

SCD601 (5xD), internal coolant supply, follow-up product to the MEGA-Drill-Steel (SCD10)

Design:

- Drill diameter: 3.00 – 25.00 mm
- Bore tolerance: \geq IT 9
- Cutting material: HP358
- Number of cutting edges: 2
- Number of guiding chamfers: 2
- Tip angle: 140°
- Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|--------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD601-0300-2-2-140HA05-HP358 | 30802611 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD601-0310-2-2-140HA05-HP358 | 30802612 |
| 3,15 | 6 | 66 | 28 | 23 | 36 | SCD601-0315-2-2-140HA05-HP358 | 30802613 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD601-0320-2-2-140HA05-HP358 | 30802614 |
| 3,25 | 6 | 66 | 28 | 23 | 36 | SCD601-0325-2-2-140HA05-HP358 | 30802616 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD601-0330-2-2-140HA05-HP358 | 30802617 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD601-0340-2-2-140HA05-HP358 | 30802618 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD601-0350-2-2-140HA05-HP358 | 30802619 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD601-0360-2-2-140HA05-HP358 | 30802620 |
| 3,65 | 6 | 66 | 28 | 23 | 36 | SCD601-0365-2-2-140HA05-HP358 | 31307546 |
| 3,70* | 6 | 66 | 28 | 23 | 36 | SCD601-0370-2-2-140HA05-HP358 | 30802621 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD601-0380-2-2-140HA05-HP358 | 30802622 |
| 3,85 | 6 | 74 | 36 | 29 | 36 | SCD601-0385-2-2-140HA05-HP358 | 30802623 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD601-0390-2-2-140HA05-HP358 | 30802624 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD601-0400-2-2-140HA05-HP358 | 30802625 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD601-0410-2-2-140HA05-HP358 | 30802626 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD601-0420-2-2-140HA05-HP3583 | 30802627 |
| 4,25 | 6 | 74 | 36 | 29 | 36 | SCD601-0425-2-2-140HA05-HP358 | 30802628 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD601-0430-2-2-140HA05-HP358 | 30802629 |
| 4,35 | 6 | 74 | 36 | 29 | 36 | SCD601-0435-2-2-140HA05-HP358 | 30802630 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD601-0440-2-2-140HA05-HP358 | 30802631 |
| 4,45 | 6 | 74 | 36 | 29 | 36 | SCD601-0445-2-2-140HA05-HP358 | 30802632 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD601-0450-2-2-140HA05-HP358 | 30802633 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD601-0460-2-2-140HA05-HP358 | 30802634 |
| 4,65* | 6 | 74 | 36 | 29 | 36 | SCD601-0465-2-2-140HA05-HP358 | 30802635 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD601-0470-2-2-140HA05-HP358 | 30802636 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD601-0480-2-2-140HA05-HP358 | 30802637 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD601-0490-2-2-140HA05-HP358 | 30802638 |
| 4,95 | 6 | 82 | 44 | 35 | 36 | SCD601-0495-2-2-140HA05-HP358 | 30802639 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD601-0500-2-2-140HA05-HP358 | 30802640 |
| 5,05 | 6 | 82 | 44 | 35 | 36 | SCD601-0505-2-2-140HA05-HP358 | 30802641 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD601-0510-2-2-140HA05-HP358 | 30802642 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD601-0520-2-2-140HA05-HP358 | 30802643 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD601-0530-2-2-140HA05-HP358 | 30802644 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD601-0540-2-2-140HA05-HP358 | 30802645 |

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD601-0550-2-2-140HA05-HP358 | 30802646 |
| 5,55* | 6 | 82 | 44 | 35 | 36 | SCD601-0555-2-2-140HA05-HP358 | 30802647 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD601-0560-2-2-140HA05-HP358 | 30802648 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD601-0570-2-2-140HA05-HP358 | 30802649 |
| 5,75 | 6 | 82 | 44 | 35 | 36 | SCD601-0575-2-2-140HA05-HP358 | 30802650 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD601-0580-2-2-140HA05-HP358 | 30802651 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD601-0590-2-2-140HA05-HP358 | 30802652 |
| 5,95 | 6 | 82 | 44 | 35 | 36 | SCD601-0595-2-2-140HA05-HP358 | 30802653 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD601-0600-2-2-140HA05-HP358 | 30802654 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD601-0610-2-2-140HA05-HP358 | 30802655 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD601-0620-2-2-140HA05-HP358 | 30802656 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD601-0630-2-2-140HA05-HP358 | 30802657 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD601-0640-2-2-140HA05-HP358 | 30802658 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD601-0650-2-2-140HA05-HP358 | 30802659 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD601-0660-2-2-140HA05-HP358 | 30802660 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD601-0670-2-2-140HA05-HP358 | 30802661 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD601-0680-2-2-140HA05-HP358 | 30802662 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD601-0690-2-2-140HA05-HP358 | 30802663 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD601-0700-2-2-140HA05-HP358 | 30802664 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD601-0710-2-2-140HA05-HP358 | 30802665 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD601-0720-2-2-140HA05-HP358 | 30802666 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD601-0730-2-2-140HA05-HP358 | 30802667 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD601-0740-2-2-140HA05-HP358 | 30802668 |
| 7,45* | 8 | 91 | 53 | 43 | 36 | SCD601-0745-2-2-140HA05-HP358 | 30802669 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD601-0750-2-2-140HA05-HP358 | 30802670 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD601-0760-2-2-140HA05-HP358 | 30802671 |
| 7,70 | 8 | 91 | 53 | 43 | 36 | SCD601-0770-2-2-140HA05-HP358 | 30802672 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD601-0780-2-2-140HA05-HP358 | 30802673 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD601-0790-2-2-140HA05-HP358 | 30802674 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD601-0800-2-2-140HA05-HP358 | 30802675 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD601-0810-2-2-140HA05-HP358 | 30802676 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD601-0820-2-2-140HA05-HP358 | 30802677 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD601-0830-2-2-140HA05-HP358 | 30802678 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD601-0840-2-2-140HA05-HP358 | 30802679 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD601-0850-2-2-140HA05-HP358 | 30802680 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD601-0860-2-2-140HA05-HP358 | 30802681 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD601-0870-2-2-140HA05-HP358 | 30802682 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD601-0880-2-2-140HA05-HP358 | 30802683 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD601-0890-2-2-140HA05-HP358 | 30802684 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD601-0900-2-2-140HA05-HP358 | 30802685 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD601-0910-2-2-140HA05-HP358 | 30802686 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD601-0920-2-2-140HA05-HP358 | 30802687 |
| 9,30* | 10 | 103 | 61 | 49 | 40 | SCD601-0930-2-2-140HA05-HP358 | 30802688 |
| 9,35 | 10 | 103 | 61 | 49 | 40 | SCD601-0935-2-2-140HA05-HP358 | 30802689 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD601-0940-2-2-140HA05-HP358 | 30802690 |
| 9,45 | 10 | 103 | 61 | 49 | 40 | SCD601-0945-2-2-140HA05-HP358 | 30802691 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD601-0950-2-2-140HA05-HP358 | 30802692 |
| 9,60 | 10 | 103 | 61 | 49 | 40 | SCD601-0960-2-2-140HA05-HP358 | 30802693 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD601-0970-2-2-140HA05-HP358 | 30802694 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD601-0980-2-2-140HA05-HP358 | 30802695 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD601-0990-2-2-140HA05-HP358 | 30802696 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD601-1000-2-2-140HA05-HP358 | 30802697 |
| 10,10 | 12 | 118 | 71 | 56 | 45 | SCD601-1010-2-2-140HA05-HP358 | 30802698 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD601-1020-2-2-140HA05-HP358 | 30802699 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD601-1030-2-2-140HA05-HP358 | 30802700 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD601-1040-2-2-140HA05-HP358 | 30802701 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD601-1050-2-2-140HA05-HP358 | 30802702 |

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,55 | 12 | 118 | 71 | 56 | 45 | SCD601-1055-2-2-140HA05-HP358 | 30802703 |
| 10,60 | 12 | 118 | 71 | 56 | 45 | SCD601-1060-2-2-140HA05-HP358 | 30802704 |
| 10,70 | 12 | 118 | 71 | 56 | 45 | SCD601-1070-2-2-140HA05-HP358 | 30802705 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD601-1080-2-2-140HA05-HP358 | 30802707 |
| 10,90 | 12 | 118 | 71 | 56 | 45 | SCD601-1090-2-2-140HA05-HP358 | 30802708 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD601-1100-2-2-140HA05-HP358 | 30802709 |
| 11,10 | 12 | 118 | 71 | 56 | 45 | SCD601-1110-2-2-140HA05-HP358 | 30802710 |
| 11,20* | 12 | 118 | 71 | 56 | 45 | SCD601-1120-2-2-140HA05-HP358 | 30802711 |
| 11,25 | 12 | 118 | 71 | 56 | 45 | SCD601-1125-2-2-140HA05-HP358 | 30802712 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD601-1130-2-2-140HA05-HP358 | 30802713 |
| 11,40 | 12 | 118 | 71 | 56 | 45 | SCD601-1140-2-2-140HA05-HP358 | 30802715 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD601-1150-2-2-140HA05-HP358 | 30802717 |
| 11,60 | 12 | 118 | 71 | 56 | 45 | SCD601-1160-2-2-140HA05-HP358 | 30802718 |
| 11,70 | 12 | 118 | 71 | 56 | 45 | SCD601-1170-2-2-140HA05-HP358 | 30802719 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD601-1180-2-2-140HA05-HP358 | 30802720 |
| 11,90 | 12 | 118 | 71 | 56 | 45 | SCD601-1190-2-2-140HA05-HP358 | 30802721 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD601-1200-2-2-140HA05-HP358 | 30802722 |
| 12,15 | 14 | 124 | 77 | 60 | 45 | SCD601-1215-2-2-140HA05-HP358 | 30802723 |
| 12,25 | 14 | 124 | 77 | 60 | 45 | SCD601-1225-2-2-140HA05-HP358 | 30802724 |
| 12,30 | 14 | 124 | 77 | 60 | 45 | SCD601-1230-2-2-140HA05-HP358 | 31201193 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD601-1250-2-2-140HA05-HP358 | 30802725 |
| 12,55 | 14 | 124 | 77 | 60 | 45 | SCD601-1255-2-2-140HA05-HP358 | 30802726 |
| 12,70 | 14 | 124 | 77 | 60 | 45 | SCD601-1270-2-2-140HA05-HP358 | 30802727 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD601-1280-2-2-140HA05-HP358 | 30802728 |
| 12,90 | 14 | 124 | 77 | 60 | 45 | SCD601-1290-2-2-140HA05-HP358 | 30802729 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD601-1300-2-2-140HA05-HP358 | 30802730 |
| 13,10 | 14 | 124 | 77 | 60 | 45 | SCD601-1310-2-2-140HA05-HP358 | 30802731 |
| 13,30 | 14 | 124 | 77 | 60 | 45 | SCD601-1330-2-2-140HA05-HP358 | 30802732 |
| 13,35 | 14 | 124 | 77 | 60 | 45 | SCD601-1335-2-2-140HA05-HP358 | 30802733 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD601-1350-2-2-140HA05-HP358 | 30802734 |
| 13,70 | 14 | 124 | 77 | 60 | 45 | SCD601-1370-2-2-140HA05-HP358 | 30802735 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD601-1380-2-2-140HA05-HP358 | 30802736 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD601-1400-2-2-140HA05-HP358 | 30802737 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD601-1420-2-2-140HA05-HP358 | 30802738 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD601-1450-2-2-140HA05-HP358 | 30802739 |
| 14,80 | 16 | 133 | 83 | 63 | 48 | SCD601-1480-2-2-140HA05-HP358 | 30802740 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD601-1500-2-2-140HA05-HP358 | 30802741 |
| 15,10 | 16 | 133 | 83 | 63 | 48 | SCD601-1510-2-2-140HA05-HP358 | 30802742 |
| 15,25 | 16 | 133 | 83 | 63 | 48 | SCD601-1525-2-2-140HA05-HP358 | 30802743 |
| 15,30 | 16 | 133 | 83 | 63 | 48 | SCD601-1530-2-2-140HA05-HP358 | 30802744 |
| 15,35 | 16 | 133 | 83 | 63 | 48 | SCD601-1535-2-2-140HA05-HP358 | 30802745 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD601-1550-2-2-140HA05-HP358 | 30802746 |
| 15,60 | 16 | 133 | 83 | 63 | 48 | SCD601-1560-2-2-140HA05-HP358 | 30802747 |
| 15,80 | 16 | 133 | 83 | 63 | 48 | SCD601-1580-2-2-140HA05-HP358 | 30802748 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD601-1600-2-2-140HA05-HP358 | 30802749 |
| 16,05 | 18 | 143 | 93 | 71 | 48 | SCD601-1605-2-2-140HA05-HP358 | 30802750 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD601-1650-2-2-140HA05-HP358 | 30802751 |
| 16,80 | 18 | 143 | 93 | 71 | 48 | SCD601-1680-2-2-140HA05-HP358 | 30802752 |
| 16,90 | 18 | 143 | 93 | 71 | 48 | SCD601-1690-2-2-140HA05-HP358 | 30802753 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD601-1700-2-2-140HA05-HP358 | 30802754 |

Continued on next page.

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (5xD), internal coolant supply

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

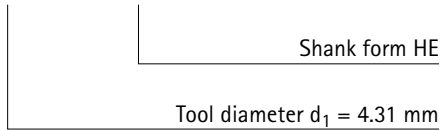
Shank form: HB | HE

Specification:

SCD601-[diameter]-3-3-140[shank form]05-HP358

Example:

SCD601-0431-3-3-140HE05-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |
| 20,01 | 22,00 | 25 | 200 | 135 | 110 | 56 |
| 22,01 | 25,00 | 25 | 200 | 140 | 120 | 56 |

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

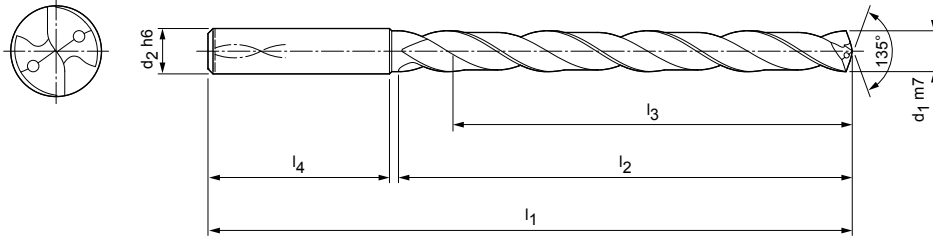
MEGA-Drill-Steel-Plus

Solid carbide twist drill

SCD601 (8xD), internal coolant supply, follow-up product to the MEGA-Drill-Steel (SCD10)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 135°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD601-0300-2-2-140HA08-HP358 | 30803112 |
| 3,10 | 6 | 72 | 34 | 29 | 36 | SCD601-0310-2-2-140HA08-HP358 | 30803113 |
| 3,20 | 6 | 72 | 34 | 29 | 36 | SCD601-0320-2-2-140HA08-HP358 | 30803114 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD601-0330-2-2-140HA08-HP358 | 30803115 |
| 3,40 | 6 | 72 | 34 | 29 | 36 | SCD601-0340-2-2-140HA08-HP358 | 30803116 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD601-0350-2-2-140HA08-HP358 | 30803117 |
| 3,60 | 6 | 72 | 34 | 29 | 36 | SCD601-0360-2-2-140HA08-HP358 | 30803118 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD601-0370-2-2-140HA08-HP358 | 30803119 |
| 3,80 | 6 | 81 | 43 | 36 | 36 | SCD601-0380-2-2-140HA08-HP358 | 30803120 |
| 3,90 | 6 | 81 | 43 | 36 | 36 | SCD601-0390-2-2-140HA08-HP358 | 30803121 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD601-0400-2-2-140HA08-HP358 | 30803122 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD601-0410-2-2-140HA08-HP358 | 30803123 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD601-0420-2-2-140HA08-HP358 | 30803124 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD601-0430-2-2-140HA08-HP358 | 30803125 |
| 4,40 | 6 | 81 | 43 | 36 | 36 | SCD601-0440-2-2-140HA08-HP358 | 30803126 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD601-0450-2-2-140HA08-HP358 | 30803127 |
| 4,60 | 6 | 81 | 43 | 36 | 36 | SCD601-0460-2-2-140HA08-HP358 | 30803128 |
| 4,70 | 6 | 81 | 43 | 36 | 36 | SCD601-0470-2-2-140HA08-HP358 | 30803129 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD601-0480-2-2-140HA08-HP358 | 30803130 |
| 4,90 | 6 | 95 | 57 | 48 | 36 | SCD601-0490-2-2-140HA08-HP358 | 30803131 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD601-0500-2-2-140HA08-HP358 | 30803132 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD601-0510-2-2-140HA08-HP358 | 30803133 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD601-0520-2-2-140HA08-HP358 | 30803134 |
| 5,30 | 6 | 95 | 57 | 48 | 36 | SCD601-0530-2-2-140HA08-HP358 | 30803135 |
| 5,40 | 6 | 95 | 57 | 48 | 36 | SCD601-0540-2-2-140HA08-HP358 | 30803136 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD601-0550-2-2-140HA08-HP358 | 30803137 |
| 5,60 | 6 | 95 | 57 | 48 | 36 | SCD601-0560-2-2-140HA08-HP358 | 30803138 |
| 5,70 | 6 | 95 | 57 | 48 | 36 | SCD601-0570-2-2-140HA08-HP358 | 30803139 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD601-0580-2-2-140HA08-HP358 | 30803140 |
| 5,90 | 6 | 95 | 57 | 48 | 36 | SCD601-0590-2-2-140HA08-HP358 | 30803141 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD601-0600-2-2-140HA08-HP358 | 30803142 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD601-0610-2-2-140HA08-HP358 | 30803143 |
| 6,20 | 8 | 114 | 76 | 64 | 36 | SCD601-0620-2-2-140HA08-HP358 | 30803144 |
| 6,30 | 8 | 114 | 76 | 64 | 36 | SCD601-0630-2-2-140HA08-HP358 | 30803145 |
| 6,40 | 8 | 114 | 76 | 64 | 36 | SCD601-0640-2-2-140HA08-HP358 | 30803146 |

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD601-0650-2-2-140HA08-HP358 | 30803147 |
| 6,60 | 8 | 114 | 76 | 64 | 36 | SCD601-0660-2-2-140HA08-HP358 | 30803148 |
| 6,70 | 8 | 114 | 76 | 64 | 36 | SCD601-0670-2-2-140HA08-HP358 | 30803149 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD601-0680-2-2-140HA08-HP358 | 30803150 |
| 6,90 | 8 | 114 | 76 | 64 | 36 | SCD601-0690-2-2-140HA08-HP358 | 30803151 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD601-0700-2-2-140HA08-HP358 | 30803152 |
| 7,10 | 8 | 114 | 76 | 64 | 36 | SCD601-0710-2-2-140HA08-HP358 | 30803153 |
| 7,20 | 8 | 114 | 76 | 64 | 36 | SCD601-0720-2-2-140HA08-HP358 | 30803154 |
| 7,30 | 8 | 114 | 76 | 64 | 36 | SCD601-0730-2-2-140HA08-HP358 | 30803155 |
| 7,40 | 8 | 114 | 76 | 64 | 36 | SCD601-0740-2-2-140HA08-HP358 | 30803156 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD601-0750-2-2-140HA08-HP358 | 30803157 |
| 7,60 | 8 | 114 | 76 | 64 | 36 | SCD601-0760-2-2-140HA08-HP358 | 30803158 |
| 7,70 | 8 | 114 | 76 | 64 | 36 | SCD601-0770-2-2-140HA08-HP358 | 30803159 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD601-0780-2-2-140HA08-HP358 | 30803160 |
| 7,90 | 8 | 114 | 76 | 64 | 36 | SCD601-0790-2-2-140HA08-HP358 | 30803161 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD601-0800-2-2-140HA08-HP358 | 30803162 |
| 8,10 | 10 | 142 | 95 | 80 | 40 | SCD601-0810-2-2-140HA08-HP358 | 30803163 |
| 8,20 | 10 | 142 | 95 | 80 | 40 | SCD601-0820-2-2-140HA08-HP358 | 30803164 |
| 8,40 | 10 | 142 | 95 | 80 | 40 | SCD601-0840-2-2-140HA08-HP358 | 30803166 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD601-0850-2-2-140HA08-HP358 | 30803167 |
| 8,60 | 10 | 142 | 95 | 80 | 40 | SCD601-0860-2-2-140HA08-HP358 | 30803168 |
| 8,70 | 10 | 142 | 95 | 80 | 40 | SCD601-0870-2-2-140HA08-HP358 | 30803169 |
| 8,80 | 10 | 142 | 95 | 80 | 40 | SCD601-0880-2-2-140HA08-HP358 | 30803170 |
| 8,90 | 10 | 142 | 95 | 80 | 40 | SCD601-0890-2-2-140HA08-HP358 | 30803171 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD601-0900-2-2-140HA08-HP358 | 30803172 |
| 9,10 | 10 | 142 | 95 | 80 | 40 | SCD601-0910-2-2-140HA08-HP358 | 30803173 |
| 9,20 | 10 | 142 | 95 | 80 | 40 | SCD601-0920-2-2-140HA08-HP358 | 30803174 |
| 9,30 | 10 | 142 | 95 | 80 | 40 | SCD601-0930-2-2-140HA08-HP358 | 30803175 |
| 9,40 | 10 | 142 | 95 | 80 | 40 | SCD601-0940-2-2-140HA08-HP358 | 30803176 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD601-0950-2-2-140HA08-HP358 | 30803177 |
| 9,60 | 10 | 142 | 95 | 80 | 40 | SCD601-0960-2-2-140HA08-HP358 | 30803178 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD601-0980-2-2-140HA08-HP358 | 30803180 |
| 9,90 | 10 | 142 | 95 | 80 | 40 | SCD601-0990-2-2-140HA08-HP358 | 30803181 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD601-1000-2-2-140HA08-HP358 | 30803182 |
| 10,10 | 12 | 162 | 114 | 96 | 45 | SCD601-1010-2-2-140HA08-HP358 | 30803183 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD601-1020-2-2-140HA08-HP358 | 30803184 |
| 10,30 | 12 | 162 | 114 | 95 | 45 | SCD601-1030-2-2-140HA08-HP358 | 30803185 |
| 10,40 | 12 | 162 | 114 | 96 | 45 | SCD601-1040-2-2-140HA08-HP358 | 30803186 |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD601-1050-2-2-140HA08-HP358 | 30803187 |
| 10,70 | 12 | 162 | 114 | 96 | 45 | SCD601-1070-2-2-140HA08-HP358 | 30803189 |
| 10,80 | 12 | 162 | 114 | 96 | 45 | SCD601-1080-2-2-140HA08-HP358 | 30803190 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD601-1100-2-2-140HA08-HP358 | 30803192 |
| 11,10 | 12 | 162 | 114 | 96 | 45 | SCD601-1110-2-2-140HA08-HP358 | 30803193 |
| 11,20 | 12 | 162 | 114 | 96 | 45 | SCD601-1120-2-2-140HA08-HP358 | 30803194 |
| 11,30 | 12 | 162 | 114 | 96 | 45 | SCD601-1130-2-2-140HA08-HP358 | 30803195 |
| 11,40 | 12 | 162 | 114 | 96 | 45 | SCD601-1140-2-2-140HA08-HP358 | 30803196 |
| 11,50 | 12 | 162 | 114 | 96 | 45 | SCD601-1150-2-2-140HA08-HP358 | 30803197 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD601-1180-2-2-140HA08-HP358 | 30803200 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD601-1200-2-2-140HA08-HP358 | 30803202 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD601-1250-2-2-140HA08-HP358 | 30803203 |
| 12,80 | 14 | 178 | 133 | 112 | 45 | SCD601-1280-2-2-140HA08-HP358 | 30803204 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD601-1300-2-2-140HA08-HP358 | 30803205 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD601-1350-2-2-140HA08-HP358 | 30803206 |
| 13,80 | 14 | 178 | 133 | 112 | 45 | SCD601-1380-2-2-140HA08-HP358 | 30803207 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD601-1400-2-2-140HA08-HP358 | 30803208 |
| 14,50 | 16 | 203 | 152 | 128 | 48 | SCD601-1450-2-2-140HA08-HP358 | 30803209 |
| 14,80 | 16 | 203 | 152 | 128 | 48 | SCD601-1480-2-2-140HA08-HP358 | 30803210 |

MEGA-Drill-Steel-Plus | Solid carbide twist drill SCD601 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD601-1500-2-2-140HA08-HP358 | 30803211 |
| 15,50 | 16 | 203 | 152 | 128 | 48 | SCD601-1550-2-2-140HA08-HP358 | 30803212 |
| 15,80 | 16 | 203 | 152 | 128 | 48 | SCD601-1580-2-2-140HA08-HP358 | 30803213 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD601-1600-2-2-140HA08-HP358 | 30803214 |
| 17,00 | 18 | 222 | 171 | 144 | 48 | SCD601-1700-2-2-140HA08-HP358 | 30803217 |
| 17,50 | 18 | 222 | 171 | 144 | 48 | SCD601-1750-2-2-140HA08-HP358 | 30803218 |
| 17,80 | 18 | 222 | 171 | 144 | 48 | SCD601-1780-2-2-140HA08-HP358 | 30803219 |
| 18,00 | 18 | 222 | 171 | 144 | 48 | SCD601-1800-2-2-140HA08-HP358 | 30803220 |
| 18,50 | 20 | 243 | 190 | 160 | 50 | SCD601-1850-2-2-140HA08-HP358 | 30803221 |
| 18,80 | 20 | 243 | 190 | 160 | 50 | SCD601-1880-2-2-140HA08-HP358 | 30803222 |
| 19,50 | 20 | 243 | 190 | 160 | 50 | SCD601-1950-2-2-140HA08-HP358 | 30803224 |
| 19,80 | 20 | 243 | 190 | 160 | 50 | SCD601-1980-2-2-140HA08-HP358 | 30803225 |
| 20,00 | 20 | 243 | 190 | 160 | 50 | SCD601-2000-2-2-140HA08-HP358 | 30803226 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

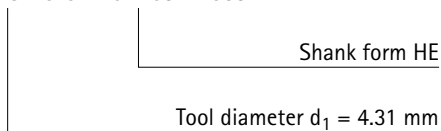
SCD601-[diameter]-3-3-140[shank form]08-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 72 | 34 | 29 | 36 |
| 3,71 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Example:

SCD601-0431-3-3-140HE08-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

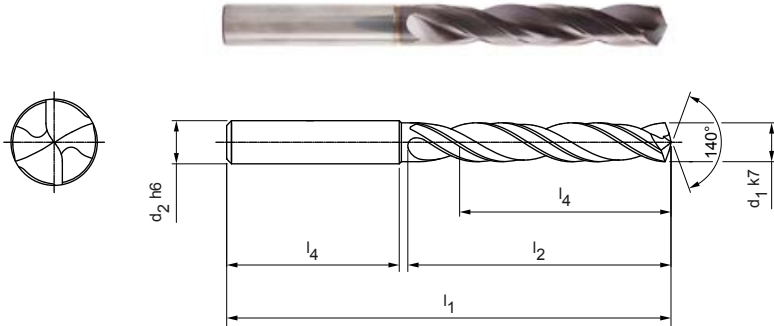
MEGA-Quadro-Drill-Plus

Solid carbide twist drill

SCD610 (5xD), external coolant supply, follow-up product to the MEGA Quadro Drill (SCD16)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: \geq IT 8
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD610-0300-2-4-140HA05-HP358 | 31052631 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD610-0310-2-4-140HA05-HP358 | 31052632 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD610-0320-2-4-140HA05-HP358 | 31052633 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD610-0330-2-4-140HA05-HP358 | 31052634 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD610-0340-2-4-140HA05-HP358 | 31052635 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD610-0350-2-4-140HA05-HP358 | 31052636 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD610-0370-2-4-140HA05-HP358 | 31052638 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD610-0400-2-4-140HA05-HP358 | 31052641 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD610-0420-2-4-140HA05-HP358 | 31052643 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD610-0430-2-4-140HA05-HP358 | 31052644 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD610-0450-2-4-140HA05-HP358 | 31052646 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD610-0480-2-4-140HA05-HP358 | 31052649 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD610-0500-2-4-140HA05-HP358 | 31052651 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD610-0510-2-4-140HA05-HP358 | 31052652 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD610-0520-2-4-140HA05-HP358 | 31052653 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD610-0550-2-4-140HA05-HP358 | 31052656 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD610-0560-2-4-140HA05-HP358 | 31052657 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD610-0580-2-4-140HA05-HP358 | 31052659 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD610-0600-2-4-140HA05-HP358 | 31052661 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD610-0640-2-4-140HA05-HP358 | 31052665 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD610-0650-2-4-140HA05-HP358 | 31052666 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD610-0680-2-4-140HA05-HP358 | 31052669 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD610-0690-2-4-140HA05-HP358 | 31052670 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD610-0700-2-4-140HA05-HP358 | 31052671 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD610-0740-2-4-140HA05-HP358 | 31052675 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD610-0750-2-4-140HA05-HP358 | 31052676 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD610-0780-2-4-140HA05-HP358 | 31052679 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD610-0800-2-4-140HA05-HP358 | 31052681 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD610-0850-2-4-140HA05-HP358 | 31052686 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD610-0860-2-4-140HA05-HP358 | 31052687 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD610-0880-2-4-140HA05-HP358 | 31052689 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD610-0900-2-4-140HA05-HP358 | 31052691 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD610-0950-2-4-140HA05-HP358 | 31052696 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD610-0980-2-4-140HA05-HP358 | 31052699 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD610-1000-2-4-140HA05-HP358 | 31052701 |

MEGA-Quadro-Drill-Plus | Solid carbide twist drills SCD610 (5xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD610-1020-2-4-140HA05-HP358 | 31052703 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD610-1030-2-4-140HA05-HP358 | 31052704 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD610-1050-2-4-140HA05-HP358 | 31052706 |
| 10,90 | 12 | 118 | 71 | 56 | 45 | SCD610-1090-2-4-140HA05-HP358 | 31052710 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD610-1100-2-4-140HA05-HP358 | 31052711 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD610-1150-2-4-140HA05-HP358 | 31052716 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD610-1180-2-4-140HA05-HP358 | 31052719 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD610-1200-2-4-140HA05-HP358 | 31052721 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD610-1250-2-4-140HA05-HP358 | 31052722 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD610-1300-2-4-140HA05-HP358 | 31052724 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD610-1350-2-4-140HA05-HP358 | 31052725 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD610-1400-2-4-140HA05-HP358 | 31052727 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD610-1450-2-4-140HA05-HP358 | 31052728 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD610-1500-2-4-140HA05-HP358 | 31052730 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD610-1600-2-4-140HA05-HP358 | 31052733 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD610-1700-2-4-140HA05-HP358 | 31052736 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD610-1750-2-4-140HA05-HP358 | 31052737 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD610-1800-2-4-140HA05-HP358 | 31052739 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD610-1850-2-4-140HA05-HP358 | 31052740 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD610-2000-2-4-140HA05-HP358 | 31052745 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

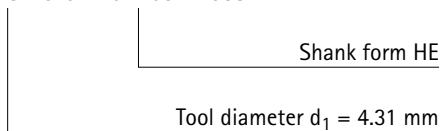
SCD610-[diameter]-3-3-140[shank form]05-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:

SCD610-0431-3-3-140HE05-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

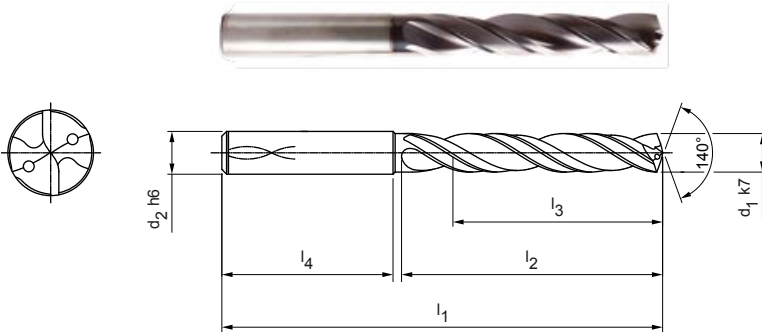
MEGA-Quadro-Drill-Plus

Solid carbide twist drill

SCD611 (5xD), internal coolant supply, follow-up product to the MEGA Quadro Drill (SCD16)

Design:

| | |
|-----------------------------|-----------------|
| Drill diameter: | 3.00 – 20.00 mm |
| Bore tolerance: | ≥ IT 8 |
| Cutting material: | HP358 |
| Number of cutting edges: | 2 |
| Number of guiding chamfers: | 4 |
| Tip angle: | 140° |
| Helix angle: | 30° |



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD611-0300-2-4-140HA05-HP358 | 31052795 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD611-0310-2-4-140HA05-HP358 | 31052796 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD611-0320-2-4-140HA05-HP358 | 31052797 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD611-0330-2-4-140HA05-HP358 | 31052798 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD611-0340-2-4-140HA05-HP358 | 31052799 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD611-0350-2-4-140HA05-HP358 | 31052800 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD611-0370-2-4-140HA05-HP358 | 31052802 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD611-0380-2-4-140HA05-HP358 | 31052803 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD611-0390-2-4-140HA05-HP358 | 31052804 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD611-0400-2-4-140HA05-HP358 | 31052805 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD611-0420-2-4-140HA05-HP358 | 31052807 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD611-0430-2-4-140HA05-HP358 | 31052808 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD611-0450-2-4-140HA05-HP358 | 31052810 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD611-0480-2-4-140HA05-HP358 | 31052813 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD611-0500-2-4-140HA05-HP358 | 31052815 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD611-0510-2-4-140HA05-HP358 | 31052816 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD611-0520-2-4-140HA05-HP358 | 31052817 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD611-0530-2-4-140HA05-HP358 | 31052818 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD611-0550-2-4-140HA05-HP358 | 31052820 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD611-0560-2-4-140HA05-HP358 | 31052821 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD611-0580-2-4-140HA05-HP358 | 31052823 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD611-0590-2-4-140HA05-HP358 | 31052824 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD611-0600-2-4-140HA05-HP358 | 31052825 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD611-0640-2-4-140HA05-HP358 | 31052829 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD611-0650-2-4-140HA05-HP358 | 31052830 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD611-0660-2-4-140HA05-HP358 | 31052831 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD611-0670-2-4-140HA05-HP358 | 31052832 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD611-0680-2-4-140HA05-HP358 | 31052833 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD611-0690-2-4-140HA05-HP358 | 31052834 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD611-0700-2-4-140HA05-HP358 | 31052835 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD611-0720-2-4-140HA05-HP358 | 31052837 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD611-0740-2-4-140HA05-HP358 | 31052839 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD611-0750-2-4-140HA05-HP358 | 31052840 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD611-0780-2-4-140HA05-HP358 | 31052843 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD611-0790-2-4-140HA05-HP358 | 31052844 |

MEGA-Quadro-Drill-Plus | Solid carbide twist drill SCD611 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD611-0800-2-4-140HA05-HP358 | 31052845 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD611-0810-2-4-140HA05-HP358 | 31052846 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD611-0830-2-4-140HA05-HP358 | 31052848 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD611-0840-2-4-140HA05-HP358 | 31052849 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD611-0850-2-4-140HA05-HP358 | 31052850 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD611-0860-2-4-140HA05-HP358 | 31052851 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD611-0880-2-4-140HA05-HP358 | 31052853 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD611-0900-2-4-140HA05-HP358 | 31052855 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD611-0920-2-4-140HA05-HP358 | 31052857 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD611-0930-2-4-140HA05-HP358 | 31052858 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD611-0950-2-4-140HA05-HP358 | 31052860 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD611-0980-2-4-140HA05-HP358 | 31052863 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD611-0990-2-4-140HA05-HP358 | 31052864 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD611-1000-2-4-140HA05-HP358 | 31052865 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD611-1020-2-4-140HA05-HP358 | 31052867 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD611-1030-2-4-140HA05-HP358 | 31052868 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD611-1040-2-4-140HA05-HP358 | 31052869 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD611-1050-2-4-140HA05-HP358 | 31052870 |
| 10,90 | 12 | 118 | 71 | 56 | 45 | SCD611-1090-2-4-140HA05-HP358 | 31052874 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD611-1100-2-4-140HA05-HP358 | 31052875 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD611-1150-2-4-140HA05-HP358 | 31052880 |
| 11,70 | 12 | 118 | 71 | 56 | 45 | SCD611-1170-2-4-140HA05-HP358 | 31052882 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD611-1180-2-4-140HA05-HP358 | 31052883 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

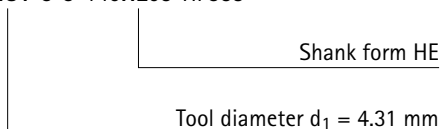
SCD611-[diameter]-3-3-140[shank form]05-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:

SCD611-0431-3-3-140HE05-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

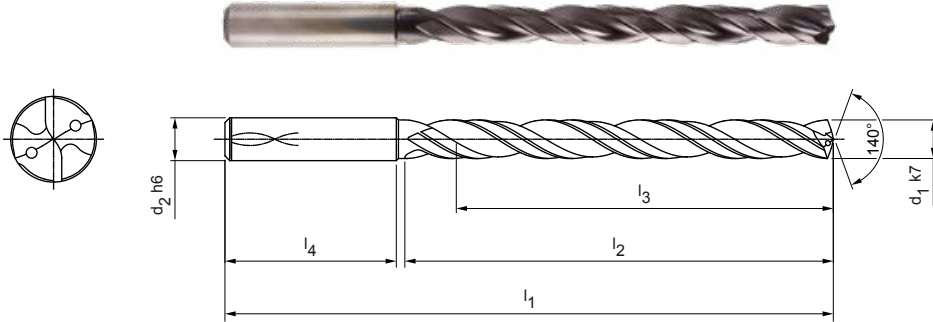
MEGA-Quadro-Drill-Plus

Solid carbide twist drill

SCD611 (8xD), internal coolant supply, follow-up product to the MEGA Quadro Drill (SCD16)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: \geq IT 8
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD611-0300-2-4-140HA08-HP358 | 31052910 |
| 3,10 | 6 | 72 | 34 | 29 | 36 | SCD611-0310-2-4-140HA08-HP358 | 31052911 |
| 3,20 | 6 | 72 | 34 | 29 | 36 | SCD611-0320-2-4-140HA08-HP358 | 31052912 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD611-0330-2-4-140HA08-HP358 | 31052913 |
| 3,40 | 6 | 72 | 34 | 29 | 36 | SCD611-0340-2-4-140HA08-HP358 | 31052914 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD611-0350-2-4-140HA08-HP358 | 31052915 |
| 3,60 | 6 | 72 | 34 | 29 | 36 | SCD611-0360-2-4-140HA08-HP358 | 31052916 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD611-0370-2-4-140HA08-HP358 | 31052917 |
| 3,80 | 6 | 81 | 43 | 36 | 36 | SCD611-0380-2-4-140HA08-HP358 | 31052918 |
| 3,90 | 6 | 81 | 43 | 36 | 36 | SCD611-0390-2-4-140HA08-HP358 | 31052919 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD611-0400-2-4-140HA08-HP358 | 31052920 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD611-0410-2-4-140HA08-HP358 | 31052921 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD611-0420-2-4-140HA08-HP358 | 31052922 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD611-0430-2-4-140HA08-HP358 | 31052923 |
| 4,40 | 6 | 81 | 43 | 36 | 36 | SCD611-0440-2-4-140HA08-HP358 | 31052924 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD611-0450-2-4-140HA08-HP358 | 31052925 |
| 4,60 | 6 | 81 | 43 | 36 | 36 | SCD611-0460-2-4-140HA08-HP358 | 31052926 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD611-0480-2-4-140HA08-HP358 | 31052928 |
| 4,90 | 6 | 95 | 57 | 48 | 36 | SCD611-0490-2-4-140HA08-HP358 | 31052929 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD611-0500-2-4-140HA08-HP358 | 31052930 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD611-0510-2-4-140HA08-HP358 | 31052931 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD611-0520-2-4-140HA08-HP358 | 31052932 |
| 5,40 | 6 | 95 | 57 | 48 | 36 | SCD611-0540-2-4-140HA08-HP358 | 31052934 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD611-0550-2-4-140HA08-HP358 | 31052935 |
| 5,60 | 6 | 95 | 57 | 48 | 36 | SCD611-0560-2-4-140HA08-HP358 | 31052936 |
| 5,70 | 6 | 95 | 57 | 48 | 36 | SCD611-0570-2-4-140HA08-HP358 | 31052937 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD611-0580-2-4-140HA08-HP358 | 31052938 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD611-0600-2-4-140HA08-HP358 | 31052940 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD611-0610-2-4-140HA08-HP358 | 31052941 |
| 6,20 | 8 | 114 | 76 | 64 | 36 | SCD611-0620-2-4-140HA08-HP358 | 31052942 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD611-0650-2-4-140HA08-HP358 | 31052945 |
| 6,60 | 8 | 114 | 76 | 64 | 36 | SCD611-0660-2-4-140HA08-HP358 | 31052946 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD611-0680-2-4-140HA08-HP358 | 31052948 |
| 6,90 | 8 | 114 | 76 | 64 | 36 | SCD611-0690-2-4-140HA08-HP358 | 31052949 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD611-0700-2-4-140HA08-HP358 | 31052950 |

MEGA-Quadro-Drill-Plus | Solid carbide twist drill SCD611 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 7,20 | 8 | 114 | 76 | 64 | 36 | SCD611-0720-2-4-140HA08-HP358 | 31052952 |
| 7,40 | 8 | 114 | 76 | 64 | 36 | SCD611-0740-2-4-140HA08-HP358 | 31052954 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD611-0750-2-4-140HA08-HP358 | 31052955 |
| 7,60 | 8 | 114 | 76 | 64 | 36 | SCD611-0760-2-4-140HA08-HP358 | 31052956 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD611-0780-2-4-140HA08-HP358 | 31052958 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD611-0800-2-4-140HA08-HP358 | 31052960 |
| 8,20 | 10 | 142 | 95 | 80 | 40 | SCD611-0820-2-4-140HA08-HP358 | 31052962 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD611-0850-2-4-140HA08-HP358 | 31052965 |
| 8,60 | 10 | 142 | 95 | 80 | 40 | SCD611-0860-2-4-140HA08-HP358 | 31052966 |
| 8,70 | 10 | 142 | 95 | 80 | 40 | SCD611-0870-2-4-140HA08-HP358 | 31052967 |
| 8,90 | 10 | 142 | 95 | 80 | 40 | SCD611-0890-2-4-140HA08-HP358 | 31052969 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD611-0900-2-4-140HA08-HP358 | 31052970 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD611-0950-2-4-140HA08-HP358 | 31052975 |
| 9,60 | 10 | 142 | 95 | 80 | 40 | SCD611-0960-2-4-140HA08-HP358 | 31052976 |
| 9,70 | 10 | 142 | 95 | 80 | 40 | SCD611-0970-2-4-140HA08-HP358 | 31052977 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD611-0980-2-4-140HA08-HP358 | 31052978 |
| 9,90 | 10 | 142 | 95 | 80 | 40 | SCD611-0990-2-4-140HA08-HP358 | 31052979 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD611-1000-2-4-140HA08-HP358 | 31052980 |
| 10,10 | 12 | 162 | 114 | 96 | 45 | SCD611-1010-2-4-140HA08-HP358 | 31052981 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD611-1020-2-4-140HA08-HP358 | 31052982 |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD611-1050-2-4-140HA08-HP358 | 31052985 |
| 10,60 | 12 | 162 | 114 | 96 | 45 | SCD611-1060-2-4-140HA08-HP358 | 31052986 |
| 10,70 | 12 | 162 | 114 | 96 | 45 | SCD611-1070-2-4-140HA08-HP358 | 31052987 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD611-1100-2-4-140HA08-HP358 | 31052990 |
| 11,30 | 12 | 162 | 114 | 96 | 45 | SCD611-1130-2-4-140HA08-HP358 | 31052993 |
| 11,70 | 12 | 162 | 114 | 96 | 45 | SCD611-1170-2-4-140HA08-HP358 | 31052997 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD611-1180-2-4-140HA08-HP358 | 31052998 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD611-1200-2-4-140HA08-HP358 | 31053000 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD611-1250-2-4-140HA08-HP358 | 31053001 |
| 12,80 | 14 | 178 | 133 | 112 | 45 | SCD611-1280-2-4-140HA08-HP358 | 31053002 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD611-1300-2-4-140HA08-HP358 | 31053003 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD611-1350-2-4-140HA08-HP358 | 31053004 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD611-1400-2-4-140HA08-HP358 | 31053006 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD611-1500-2-4-140HA08-HP358 | 31053009 |
| 15,80 | 16 | 203 | 152 | 128 | 48 | SCD611-1580-2-4-140HA08-HP358 | 31053011 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD611-1600-2-4-140HA08-HP358 | 31053012 |
| 16,50 | 18 | 222 | 171 | 144 | 48 | SCD611-1650-2-4-140HA08-HP358 | 31053013 |
| 20,00 | 20 | 243 | 190 | 160 | 50 | SCD611-2000-2-4-140HA08-HP358 | 31053024 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

SCD611-[diameter]-3-3-140[shank form]08-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 72 | 34 | 29 | 36 |
| 3,71 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Example:

SCD611-0431-2-4-140HE08-HP358

Shank form HE

Tool diameter d₁ = 4.31 mm

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

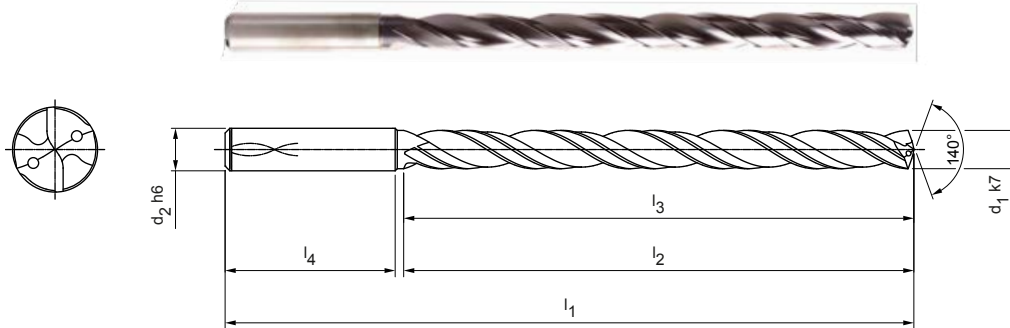
MEGA-Quadro-Drill-Plus

Solid carbide twist drill

SCD611 (12xD), internal coolant supply, follow-up product to the MEGA Quadro Drill (SCD16)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: \geq IT 8
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 92 | 54 | 48 | 36 | SCD611-0300-2-4-140HA12-HP358 | 31053025 |
| 3,10 | 6 | 92 | 54 | 48 | 36 | SCD611-0310-2-4-140HA12-HP358 | 31053026 |
| 3,20 | 6 | 92 | 54 | 48 | 36 | SCD611-0320-2-4-140HA12-HP358 | 31053027 |
| 3,30 | 6 | 92 | 54 | 48 | 36 | SCD611-0330-2-4-140HA12-HP358 | 31053028 |
| 3,40 | 6 | 92 | 54 | 48 | 36 | SCD611-0340-2-4-140HA12-HP358 | 31053029 |
| 3,50 | 6 | 92 | 54 | 48 | 36 | SCD611-0350-2-4-140HA12-HP358 | 31053030 |
| 3,60 | 6 | 92 | 54 | 48 | 36 | SCD611-0360-2-4-140HA12-HP358 | 31053031 |
| 3,70 | 6 | 92 | 54 | 48 | 36 | SCD611-0370-2-4-140HA12-HP358 | 31053032 |
| 3,80 | 6 | 102 | 64 | 58 | 36 | SCD611-0380-2-4-140HA12-HP358 | 31053033 |
| 3,90 | 6 | 102 | 64 | 58 | 36 | SCD611-0390-2-4-140HA12-HP358 | 31053034 |
| 4,00 | 6 | 102 | 64 | 58 | 36 | SCD611-0400-2-4-140HA12-HP358 | 31053035 |
| 4,05 | 6 | 102 | 64 | 58 | 36 | SCD611-0405-2-4-140HA12-HP358 | 31300718 |
| 4,10 | 6 | 102 | 64 | 58 | 36 | SCD611-0410-2-4-140HA12-HP358 | 31053036 |
| 4,20 | 6 | 102 | 64 | 58 | 36 | SCD611-0420-2-4-140HA12-HP358 | 31053037 |
| 4,30 | 6 | 102 | 64 | 58 | 36 | SCD611-0430-2-4-140HA12-HP358 | 31053038 |
| 4,40 | 6 | 102 | 64 | 58 | 36 | SCD611-0440-2-4-140HA12-HP358 | 31053039 |
| 4,50 | 6 | 102 | 64 | 58 | 36 | SCD611-0450-2-4-140HA12-HP358 | 31053040 |
| 4,60 | 6 | 102 | 64 | 58 | 36 | SCD611-0460-2-4-140HA12-HP358 | 31053041 |
| 4,65 | 6 | 116 | 78 | 58 | 36 | SCD611-0465-2-4-140HA12-HP358 | 31179333 |
| 4,70 | 6 | 102 | 64 | 58 | 36 | SCD611-0470-2-4-140HA12-HP358 | 31053042 |
| 4,80 | 6 | 116 | 78 | 70 | 36 | SCD611-0480-2-4-140HA12-HP358 | 31053043 |
| 5,00 | 6 | 116 | 78 | 70 | 36 | SCD611-0500-2-4-140HA12-HP358 | 31053045 |
| 5,05 | 6 | 116 | 78 | 70 | 36 | SCD611-0505-2-4-140HA12-HP358 | 31245107 |
| 5,10 | 6 | 116 | 78 | 70 | 36 | SCD611-0510-2-4-140HA12-HP358 | 31053046 |
| 5,20 | 6 | 116 | 78 | 70 | 36 | SCD611-0520-2-4-140HA12-HP358 | 31053047 |
| 5,40 | 6 | 116 | 78 | 70 | 36 | SCD611-0540-2-4-140HA12-HP358 | 31053049 |
| 5,50 | 6 | 116 | 78 | 70 | 36 | SCD611-0550-2-4-140HA12-HP358 | 31053050 |
| 5,60 | 6 | 116 | 78 | 70 | 36 | SCD611-0560-2-4-140HA12-HP358 | 31053051 |
| 5,70 | 6 | 116 | 78 | 70 | 36 | SCD611-0570-2-4-140HA12-HP358 | 31053052 |
| 5,80 | 6 | 116 | 78 | 70 | 36 | SCD611-0580-2-4-140HA12-HP358 | 31053053 |
| 6,00 | 6 | 116 | 78 | 70 | 36 | SCD611-0600-2-4-140HA12-HP358 | 31053055 |
| 6,10 | 8 | 146 | 108 | 94 | 36 | SCD611-0610-2-4-140HA12-HP358 | 31053056 |
| 6,40 | 8 | 146 | 108 | 94 | 36 | SCD611-0640-2-4-140HA12-HP358 | 31053059 |
| 6,50 | 8 | 146 | 108 | 94 | 36 | SCD611-0650-2-4-140HA12-HP358 | 31053060 |
| 6,80 | 8 | 146 | 108 | 94 | 36 | SCD611-0680-2-4-140HA12-HP358 | 31053063 |

MEGA-Quadro-Drill-Plus | Solid carbide twist drill SCD611 (12xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,90 | 8 | 146 | 108 | 94 | 36 | SCD611-0690-2-4-140HA12-HP358 | 31053064 |
| 7,00 | 8 | 146 | 108 | 94 | 36 | SCD611-0700-2-4-140HA12-HP358 | 31053065 |
| 7,10 | 8 | 146 | 108 | 94 | 36 | SCD611-0710-2-4-140HA12-HP358 | 31053066 |
| 7,50 | 8 | 146 | 108 | 94 | 36 | SCD611-0750-2-4-140HA12-HP358 | 31053070 |
| 7,60 | 8 | 146 | 108 | 94 | 36 | SCD611-0760-2-4-140HA12-HP358 | 31053071 |
| 7,70 | 8 | 146 | 108 | 94 | 36 | SCD611-0770-2-4-140HA12-HP358 | 31053072 |
| 7,80 | 8 | 146 | 108 | 94 | 36 | SCD611-0780-2-4-140HA12-HP358 | 31053073 |
| 7,90 | 8 | 146 | 108 | 94 | 36 | SCD611-0790-2-4-140HA12-HP358 | 31053074 |
| 8,00 | 8 | 146 | 108 | 94 | 36 | SCD611-0800-2-4-140HA12-HP358 | 31053075 |
| 8,20 | 10 | 162 | 120 | 110 | 40 | SCD611-0820-2-4-140HA12-HP358 | 31053077 |
| 8,30 | 10 | 162 | 120 | 110 | 40 | SCD611-0830-2-4-140HA12-HP358 | 31053078 |
| 8,40 | 10 | 162 | 120 | 110 | 40 | SCD611-0840-2-4-140HA12-HP358 | 31053079 |
| 8,50 | 10 | 162 | 120 | 110 | 40 | SCD611-0850-2-4-140HA12-HP358 | 31053080 |
| 8,60 | 10 | 162 | 120 | 110 | 40 | SCD611-0860-2-4-140HA12-HP358 | 31053081 |
| 8,70 | 10 | 162 | 120 | 110 | 40 | SCD611-0870-2-4-140HA12-HP358 | 31053082 |
| 9,00 | 10 | 162 | 120 | 110 | 40 | SCD611-0900-2-4-140HA12-HP358 | 31053085 |
| 9,50 | 10 | 162 | 120 | 110 | 40 | SCD611-0950-2-4-140HA12-HP358 | 31053090 |
| 9,60 | 10 | 162 | 120 | 110 | 40 | SCD611-0960-2-4-140HA12-HP358 | 31053091 |
| 9,80 | 10 | 162 | 120 | 110 | 40 | SCD611-0980-2-4-140HA12-HP358 | 31053093 |
| 9,90 | 10 | 162 | 120 | 110 | 40 | SCD611-0990-2-4-140HA12-HP358 | 31053094 |
| 10,00 | 10 | 162 | 120 | 110 | 40 | SCD611-1000-2-4-140HA12-HP358 | 31053095 |
| 10,20 | 12 | 204 | 156 | 142 | 45 | SCD611-1020-2-4-140HA12-HP358 | 31053097 |
| 10,50 | 12 | 204 | 156 | 142 | 45 | SCD611-1050-2-4-140HA12-HP358 | 31053100 |
| 10,60 | 12 | 204 | 156 | 142 | 45 | SCD611-1060-2-4-140HA12-HP358 | 31053101 |
| 11,00 | 12 | 204 | 156 | 142 | 45 | SCD611-1100-2-4-140HA12-HP358 | 31053105 |
| 11,20 | 12 | 204 | 156 | 142 | 45 | SCD611-1120-2-4-140HA12-HP358 | 31053107 |
| 11,70 | 12 | 204 | 156 | 142 | 45 | SCD611-1170-2-4-140HA12-HP358 | 31053112 |
| 11,80 | 12 | 204 | 156 | 142 | 45 | SCD611-1180-2-4-140HA12-HP358 | 31053113 |
| 12,00 | 12 | 204 | 156 | 142 | 45 | SCD611-1200-2-4-140HA12-HP358 | 31053115 |
| 12,50 | 14 | 230 | 182 | 166 | 45 | SCD611-1250-2-4-140HA12-HP358 | 31053116 |
| 13,00 | 14 | 230 | 182 | 166 | 45 | SCD611-1300-2-4-140HA12-HP358 | 31053118 |
| 13,50 | 14 | 230 | 182 | 166 | 45 | SCD611-1350-2-4-140HA12-HP358 | 31053119 |
| 14,00 | 14 | 230 | 182 | 166 | 45 | SCD611-1400-2-4-140HA12-HP358 | 31053121 |
| 14,50 | 16 | 260 | 208 | 192 | 48 | SCD611-1450-2-4-140HA12-HP358 | 31053122 |
| 15,00 | 16 | 260 | 208 | 192 | 48 | SCD611-1500-2-4-140HA12-HP358 | 31053124 |
| 16,00 | 16 | 260 | 208 | 192 | 48 | SCD611-1600-2-4-140HA12-HP358 | 31053127 |
| 16,50 | 18 | 285 | 234 | 216 | 48 | SCD611-1650-2-4-140HA12-HP358 | 31053128 |
| 17,50 | 18 | 285 | 234 | 216 | 48 | SCD611-1750-2-4-140HA12-HP358 | 31053131 |
| 19,50 | 20 | 310 | 258 | 240 | 50 | SCD611-1950-2-4-140HA12-HP358 | 31053137 |

Continued on next page.

MEGA-Quadro-Drill-Plus | Solid carbide twist drill SCD611 (12xD), internal coolant supply

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

Shank form: HB | HE

Specification:

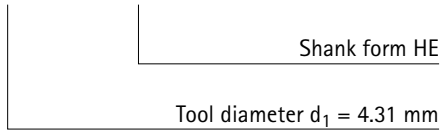
SCD611-[diameter]-2-4-140[shank form]12-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 92 | 54 | 48 | 36 |
| 3,71 | 4,70 | 6 | 102 | 64 | 58 | 36 |
| 4,71 | 6,00 | 6 | 116 | 78 | 70 | 36 |
| 6,01 | 8,00 | 8 | 146 | 108 | 94 | 36 |
| 8,01 | 10,00 | 10 | 162 | 120 | 110 | 40 |
| 10,01 | 12,00 | 12 | 204 | 156 | 142 | 45 |
| 12,01 | 14,00 | 14 | 230 | 182 | 166 | 45 |
| 14,01 | 16,00 | 16 | 260 | 208 | 192 | 48 |
| 16,01 | 18,00 | 18 | 285 | 234 | 216 | 48 |
| 18,01 | 20,00 | 20 | 310 | 258 | 240 | 50 |

Example:

SCD611-0431-2-4-140HE12-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

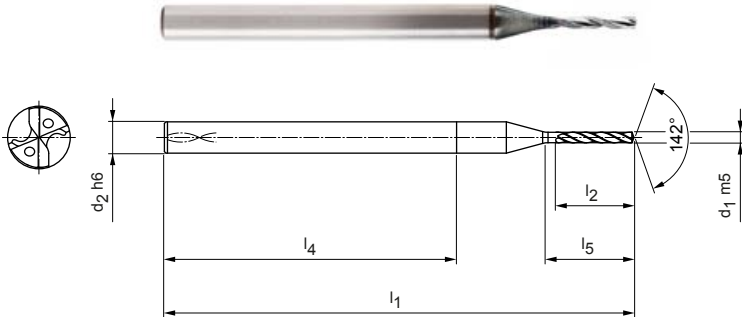
Special designs and other coatings available upon request.

MICRO-Drill-Steel

Solid carbide twist drill
SCD371 (5xD), internal coolant supply

Design:
 Drill diameter: 0.80 – 2.99 mm
 Bore tolerance: IT9 (available)
 Cutting material: HP246
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 142°
 Helix angle: 30°


Application:
 Pilot drill specifically designed for the MEGA-Deep-Drill.
 Maximum use up to < diameter 3.00 mm.



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m5 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 0,80 | 3 | 45 | 6 | 4 | 28 | SCD371-0080-2-4-142HA05-HP246 | 31238823 |
| 1,00 | 3 | 45 | 7,5 | 5 | 28 | SCD371-0100-2-4-142HA05-HP246 | 31238825 |
| 1,20 | 3 | 45 | 9 | 6 | 28 | SCD371-0120-2-4-142HA05-HP246 | 31238827 |
| 1,50 | 3 | 45 | 11,3 | 7,5 | 28 | SCD371-0150-2-4-142HA05-HP246 | 31238890 |
| 1,60 | 3 | 50 | 12 | 8 | 28 | SCD371-0160-2-4-142HA05-HP246 | 31238891 |
| 2,00 | 3 | 50 | 15 | 10 | 28 | SCD371-0200-2-4-142HA05-HP246 | 31238895 |
| 2,40 | 3 | 52 | 18 | 12 | 28 | SCD371-0240-2-4-142HA05-HP246 | 31238899 |
| 2,50 | 3 | 52 | 18,8 | 12,5 | 28 | SCD371-0250-2-4-142HA05-HP246 | 31238900 |
| 2,60 | 3 | 55 | 19,5 | 13 | 28 | SCD371-0260-2-4-142HA05-HP246 | 31238901 |
| 2,80 | 3 | 55 | 21 | 14 | 28 | SCD371-0280-2-4-142HA05-HP246 | 31238903 |

Configurable features



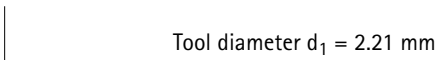
Diameter:
Diameter in increments of 0.01 mm freely selectable

Specification:
SCD371-[diameter]-2-4-142HA05-HP246

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 0,80 | 0,99 | 3 | 45 | 6,0 | 4,0 | 28 |
| 1,00 | 1,29 | 3 | 45 | 7,5 | 5,0 | 28 |
| 1,30 | 1,59 | 3 | 45 | 9,8 | 6,5 | 28 |
| 1,60 | 1,89 | 3 | 50 | 12,0 | 8,0 | 28 |
| 1,90 | 2,19 | 3 | 50 | 14,3 | 9,5 | 28 |
| 2,20 | 2,59 | 3 | 52 | 16,5 | 11,0 | 28 |
| 2,60 | 2,99 | 3 | 55 | 19,5 | 13,0 | 28 |

Example:
SCD371-0221-2-4-142HA05-HP246

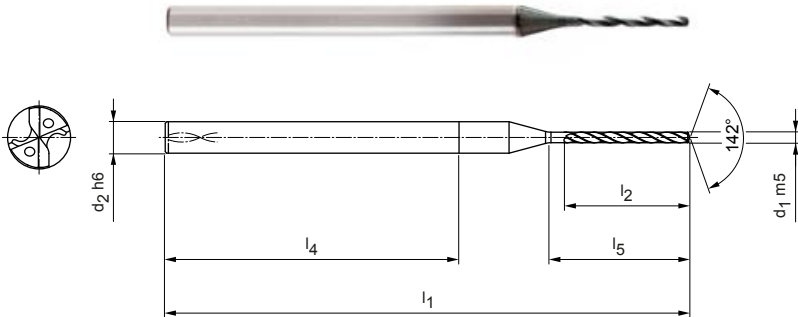


Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

MICRO-Drill-Steel

Solid carbide twist drill
SCD371 (8xD), internal coolant supply


Design:
 Drill diameter: 1.00 – 2.99 mm
 Bore tolerance: IT9 (available)
 Cutting material: HP246
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 142°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m5 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 1,00 | 3 | 50 | 12 | 8 | 28 | SCD371-0100-2-4-142HA08-HP246 | 31238905 |
| 1,20 | 3 | 50 | 14,4 | 9,6 | 28 | SCD371-0120-2-4-142HA08-HP246 | 31238907 |
| 1,50 | 3 | 52 | 18 | 12 | 28 | SCD371-0150-2-4-142HA08-HP246 | 31238910 |
| 1,60 | 3 | 55 | 19,2 | 12,8 | 28 | SCD371-0160-2-4-142HA08-HP246 | 31238911 |
| 2,00 | 3 | 60 | 24 | 16 | 28 | SCD371-0200-2-4-142HA08-HP246 | 31238915 |
| 2,50 | 3 | 62 | 30 | 20 | 28 | SCD371-0250-2-4-142HA08-HP246 | 31238920 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

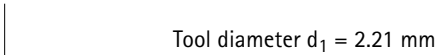
Specification:
SCD371-[diameter]-2-4-142HA08-HP246

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 1,00 | 1,29 | 3 | 50 | 12,0 | 8,0 | 28 |
| 1,30 | 1,59 | 3 | 52 | 15,6 | 10,4 | 28 |
| 1,60 | 1,89 | 3 | 55 | 19,2 | 12,8 | 28 |
| 1,90 | 2,19 | 3 | 60 | 22,8 | 15,2 | 28 |
| 2,20 | 2,59 | 3 | 62 | 26,4 | 17,6 | 28 |
| 2,60 | 2,99 | 3 | 66 | 31,2 | 20,8 | 28 |

Example:

SCD371-0221-2-4-142HA08-HP246



Dimensions in mm.

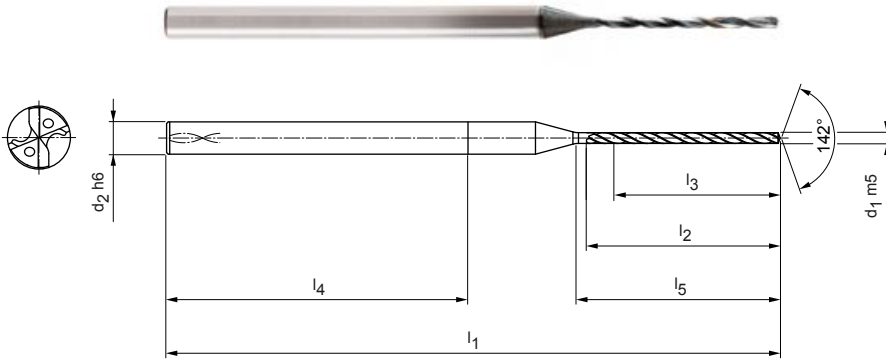
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MICRO-Drill-Steel

Solid carbide twist drill
SCD371 (12xD), internal coolant supply


Design:
 Drill diameter: 1.00 – 2.99 mm
 Bore tolerance: IT9 (available)
 Cutting material: HP246
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 142°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m5 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 1,00 | 3 | 57 | 18 | 12 | 28 | SCD371-0100-2-4-142HA12-HP246 | 31238925 |
| 1,20 | 3 | 57 | 21,6 | 14,4 | 28 | SCD371-0120-2-4-142HA12-HP246 | 31238927 |
| 1,30 | 3 | 62 | 23,4 | 15,6 | 28 | SCD371-0130-2-4-142HA12-HP246 | 31238928 |
| 1,50 | 3 | 62 | 27 | 18 | 28 | SCD371-0150-2-4-142HA12-HP246 | 31238930 |
| 2,00 | 3 | 72 | 36 | 24 | 28 | SCD371-0200-2-4-142HA12-HP246 | 31238935 |
| 2,50 | 3 | 79 | 45 | 30 | 28 | SCD371-0250-2-4-142HA12-HP246 | 31238940 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

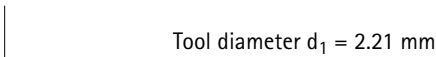
Specification:
SCD371-[diameter]-2-4-142HA12-HP246

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 1,00 | 1,29 | 3 | 57 | 18,0 | 12,0 | 28 |
| 1,30 | 1,59 | 3 | 62 | 23,4 | 15,6 | 28 |
| 1,60 | 1,89 | 3 | 66 | 28,8 | 19,2 | 28 |
| 1,90 | 2,19 | 3 | 72 | 34,2 | 22,8 | 28 |
| 2,20 | 2,59 | 3 | 79 | 39,6 | 26,4 | 28 |
| 2,60 | 2,99 | 3 | 85 | 46,8 | 31,2 | 28 |

Example:

SCD371-0221-2-4-142HA12-HP246



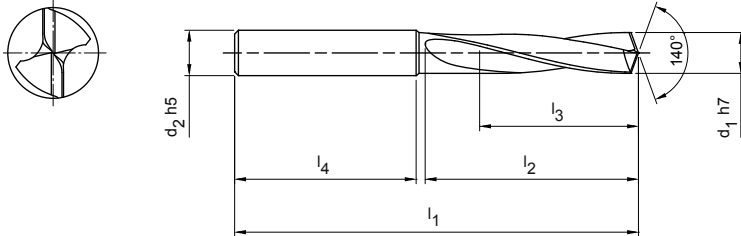
Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

MEGA-Drill-Hardened

Solid carbide twist drill
SCD140 (3xD)

Design:

Drill diameter: 2.55 – 20.00 mm
Bore tolerance: IT 9 (achievable)
Cutting material: HP809
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 140°
Helix angle: 15°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h5 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 2,55 | 6 | 62 | 20 | 14 | 36 | SCD140-0255-2-2-140HA03-HP809 | 31198190 |
| 2,60 | 6 | 62 | 20 | 14 | 36 | SCD140-0260-2-2-140HA03-HP809 | 31198191 |
| 2,70 | 6 | 62 | 20 | 14 | 36 | SCD140-0270-2-2-140HA03-HP809 | 31198192 |
| 2,80 | 6 | 62 | 20 | 14 | 36 | SCD140-0280-2-2-140HA03-HP809 | 31198194 |
| 2,90 | 6 | 62 | 20 | 14 | 36 | SCD140-0290-2-2-140HA03-HP809 | 31198196 |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD140-0300-2-2-140HA03-HP809 | 31151191 |
| 3,10 | 6 | 62 | 20 | 14 | 36 | SCD140-0310-2-2-140HA03-HP809 | 31151192 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD140-0320-2-2-140HA03-HP809 | 31151193 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD140-0330-2-2-140HA03-HP809 | 31151194 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD140-0340-2-2-140HA03-HP809 | 31151195 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD140-0350-2-2-140HA03-HP809 | 31151196 |
| 3,60 | 6 | 62 | 20 | 14 | 36 | SCD140-0360-2-2-140HA03-HP809 | 31151197 |
| 3,70 | 6 | 62 | 20 | 14 | 36 | SCD140-0370-2-2-140HA03-HP809 | 31151198 |
| 3,80 | 6 | 66 | 24 | 17 | 36 | SCD140-0380-2-2-140HA03-HP809 | 31151199 |
| 3,90 | 6 | 66 | 24 | 17 | 36 | SCD140-0390-2-2-140HA03-HP809 | 31151330 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD140-0400-2-2-140HA03-HP809 | 31151331 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD140-0410-2-2-140HA03-HP809 | 31151332 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD140-0420-2-2-140HA03-HP809 | 31151333 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD140-0430-2-2-140HA03-HP809 | 31151334 |
| 4,40 | 6 | 66 | 24 | 17 | 36 | SCD140-0440-2-2-140HA03-HP809 | 31151335 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD140-0450-2-2-140HA03-HP809 | 31151336 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD140-0460-2-2-140HA03-HP809 | 31151337 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD140-0470-2-2-140HA03-HP809 | 31151339 |
| 4,80 | 6 | 66 | 28 | 20 | 36 | SCD140-0480-2-2-140HA03-HP809 | 31151340 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD140-0490-2-2-140HA03-HP809 | 31151341 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD140-0500-2-2-140HA03-HP809 | 31151342 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD140-0510-2-2-140HA03-HP809 | 31151343 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD140-0520-2-2-140HA03-HP809 | 31151344 |
| 5,30 | 6 | 66 | 28 | 20 | 36 | SCD140-0530-2-2-140HA03-HP809 | 31151345 |
| 5,40 | 6 | 66 | 28 | 20 | 36 | SCD140-0540-2-2-140HA03-HP809 | 31151346 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD140-0550-2-2-140HA03-HP809 | 31151347 |
| 5,55 | 6 | 66 | 28 | 20 | 36 | SCD140-0555-2-2-140HA03-HP809 | 31151348 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD140-0560-2-2-140HA03-HP809 | 31151349 |
| 5,70 | 6 | 66 | 28 | 20 | 36 | SCD140-0570-2-2-140HA03-HP809 | 31151350 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD140-0580-2-2-140HA03-HP809 | 31151351 |


MEGA-Drill-Hardened | Solid carbide twist drill SCD140 (3xD)

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD140-0590-2-2-140HA03-HP809 | 31151352 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD140-0600-2-2-140HA03-HP809 | 31151353 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD140-0610-2-2-140HA03-HP809 | 31151354 |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD140-0620-2-2-140HA03-HP809 | 31151355 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD140-0630-2-2-140HA03-HP809 | 31151356 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD140-0640-2-2-140HA03-HP809 | 31151357 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD140-0650-2-2-140HA03-HP809 | 31151358 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD140-0660-2-2-140HA03-HP809 | 31151359 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD140-0670-2-2-140HA03-HP809 | 31151360 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD140-0680-2-2-140HA03-HP809 | 31151361 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD140-0690-2-2-140HA03-HP809 | 31151362 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD140-0700-2-2-140HA03-HP809 | 31151363 |
| 7,10 | 8 | 79 | 41 | 29 | 36 | SCD140-0710-2-2-140HA03-HP809 | 31151364 |
| 7,30 | 8 | 79 | 41 | 29 | 36 | SCD140-0730-2-2-140HA03-HP809 | 31151366 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD140-0740-2-2-140HA03-HP809 | 31151367 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD140-0750-2-2-140HA03-HP809 | 31151368 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD140-0780-2-2-140HA03-HP809 | 31151371 |
| 7,90 | 8 | 79 | 41 | 29 | 36 | SCD140-0790-2-2-140HA03-HP809 | 31151372 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD140-0800-2-2-140HA03-HP809 | 31151373 |
| 8,10 | 10 | 89 | 47 | 35 | 40 | SCD140-0810-2-2-140HA03-HP809 | 31151374 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD140-0820-2-2-140HA03-HP809 | 31151375 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD140-0850-2-2-140HA03-HP809 | 31151378 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD140-0860-2-2-140HA03-HP809 | 31151379 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD140-0880-2-2-140HA03-HP809 | 31151381 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD140-0900-2-2-140HA03-HP809 | 31151383 |
| 9,30 | 10 | 89 | 47 | 35 | 40 | SCD140-0930-2-2-140HA03-HP809 | 31151386 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD140-0950-2-2-140HA03-HP809 | 31151388 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD140-0960-2-2-140HA03-HP809 | 31151389 |
| 9,70 | 10 | 89 | 47 | 35 | 40 | SCD140-0970-2-2-140HA03-HP809 | 31151390 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD140-0980-2-2-140HA03-HP809 | 31151391 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD140-1000-2-2-140HA03-HP809 | 31151393 |
| 10,10 | 12 | 102 | 55 | 40 | 45 | SCD140-1010-2-2-140HA03-HP809 | 31151394 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD140-1020-2-2-140HA03-HP809 | 31151395 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD140-1030-2-2-140HA03-HP809 | 31151396 |
| 10,40 | 12 | 102 | 55 | 40 | 45 | SCD140-1040-2-2-140HA03-HP809 | 31151397 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD140-1050-2-2-140HA03-HP809 | 31151398 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD140-1100-2-2-140HA03-HP809 | 31151403 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD140-1150-2-2-140HA03-HP809 | 31151408 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD140-1180-2-2-140HA03-HP809 | 31151411 |
| 11,90 | 12 | 102 | 55 | 40 | 45 | SCD140-1190-2-2-140HA03-HP809 | 31151412 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD140-1200-2-2-140HA03-HP809 | 31151413 |
| 12,50 | 14 | 107 | 60 | 43 | 45 | SCD140-1250-2-2-140HA03-HP809 | 31151415 |
| 12,80 | 14 | 107 | 60 | 43 | 45 | SCD140-1280-2-2-140HA03-HP809 | 31151416 |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD140-1300-2-2-140HA03-HP809 | 31151417 |
| 13,50 | 14 | 107 | 60 | 43 | 45 | SCD140-1350-2-2-140HA03-HP809 | 31151418 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD140-1400-2-2-140HA03-HP809 | 31151420 |
| 14,20 | 16 | 115 | 65 | 45 | 48 | SCD140-1420-2-2-140HA03-HP809 | 31151421 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD140-1450-2-2-140HA03-HP809 | 31151422 |
| 14,80 | 16 | 115 | 65 | 45 | 48 | SCD140-1480-2-2-140HA03-HP809 | 31151423 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD140-1500-2-2-140HA03-HP809 | 31151424 |
| 15,50 | 16 | 115 | 65 | 45 | 48 | SCD140-1550-2-2-140HA03-HP809 | 31151426 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD140-1600-2-2-140HA03-HP809 | 31151428 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD140-1750-2-2-140HA03-HP809 | 31151432 |


Continued on next page.


MEGA-Drill-Hardened | Solid carbide twist drill SCD140 (3xD)

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable





Shank form:
Shank form: HB | HE

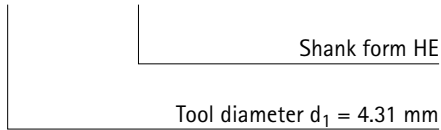
Specification:
SCD140-[diameter]-2-2-140[shank form]03-HP809

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 2,55 | 3,79 | 6 | 62 | 20 | 14 | 36 |
| 3,80 | 4,79 | 6 | 66 | 24 | 17 | 36 |
| 4,80 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 7,00 | 8 | 79 | 34 | 24 | 36 |
| 7,01 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 55 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 60 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Example:

SCD140-0431-2-2-140HE03-HP809



Dimensions in mm.

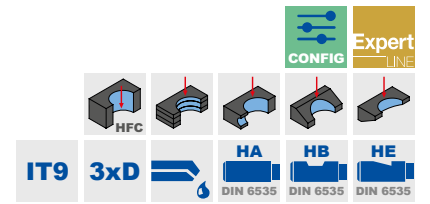
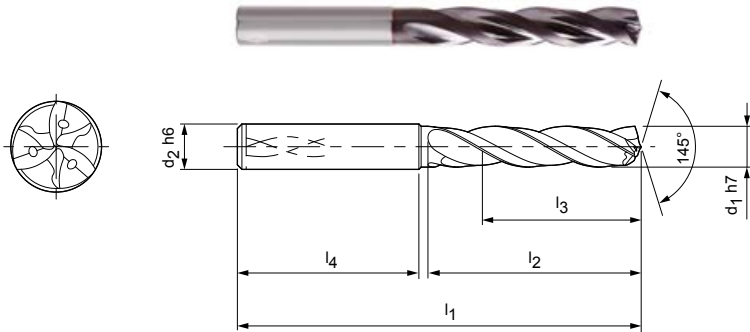
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Tritan-Drill-Steel

Solid carbide twist drill
SCD661 (3xD), internal coolant supply

Design:
 Drill diameter: 4.00 – 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 145°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD661-0400-3-3-145HA03-HP358 | 30902036 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD661-0410-3-3-145HA03-HP358 | 30902037 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD661-0420-3-3-145HA03-HP358 | 30902038 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD661-0430-3-3-145HA03-HP358 | 30902039 |
| 4,40 | 6 | 66 | 24 | 17 | 36 | SCD661-0440-3-3-145HA03-HP358 | 30902040 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD661-0450-3-3-145HA03-HP358 | 30902041 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD661-0460-3-3-145HA03-HP358 | 30902042 |
| 4,65 | 6 | 66 | 24 | 17 | 36 | SCD661-0465-3-3-145HA03-HP358 | 30902043 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD661-0470-3-3-145HA03-HP358 | 30902044 |
| 4,80 | 6 | 66 | 28 | 20 | 36 | SCD661-0480-3-3-145HA03-HP358 | 30902045 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD661-0490-3-3-145HA03-HP358 | 30902046 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD661-0500-3-3-145HA03-HP358 | 30902047 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD661-0510-3-3-145HA03-HP358 | 30902048 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD661-0520-3-3-145HA03-HP358 | 30902049 |
| 5,30 | 6 | 66 | 28 | 20 | 36 | SCD661-0530-3-3-145HA03-HP358 | 30902050 |
| 5,40 | 6 | 66 | 28 | 20 | 36 | SCD661-0540-3-3-145HA03-HP358 | 30902051 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD661-0550-3-3-145HA03-HP358 | 30902052 |
| 5,55 | 6 | 66 | 28 | 20 | 36 | SCD661-0555-3-3-145HA03-HP358 | 30902053 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD661-0560-3-3-145HA03-HP358 | 30902054 |
| 5,70 | 6 | 66 | 28 | 20 | 36 | SCD661-0570-3-3-145HA03-HP358 | 30902055 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD661-0580-3-3-145HA03-HP358 | 30902056 |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD661-0590-3-3-145HA03-HP358 | 30902057 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD661-0600-3-3-145HA03-HP358 | 30902058 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD661-0610-3-3-145HA03-HP358 | 30902059 |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD661-0620-3-3-145HA03-HP358 | 30902060 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD661-0630-3-3-145HA03-HP358 | 30902061 |
| 6,35 | 8 | 79 | 34 | 24 | 36 | SCD661-0635-3-3-145HA03-HP358 | 31307522 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD661-0640-3-3-145HA03-HP358 | 30902062 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD661-0650-3-3-145HA03-HP358 | 30902063 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD661-0660-3-3-145HA03-HP358 | 30902064 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD661-0670-3-3-145HA03-HP358 | 30902065 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD661-0680-3-3-145HA03-HP358 | 30902066 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD661-0690-3-3-145HA03-HP358 | 30902067 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD661-0700-3-3-145HA03-HP358 | 30902068 |
| 7,10 | 8 | 79 | 41 | 29 | 36 | SCD661-0710-3-3-145HA03-HP358 | 30902069 |

Tritan-Drill-Steel | Solid carbide twist drill SCD661 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 7,20 | 8 | 79 | 41 | 29 | 36 | SCD661-0720-3-3-145HA03-HP358 | 30902070 |
| 7,30 | 8 | 79 | 41 | 29 | 36 | SCD661-0730-3-3-145HA03-HP358 | 30902071 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD661-0740-3-3-145HA03-HP358 | 30902072 |
| 7,45 | 8 | 79 | 41 | 29 | 36 | SCD661-0745-3-3-145HA03-HP358 | 30902073 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD661-0750-3-3-145HA03-HP358 | 30902074 |
| 7,60 | 8 | 79 | 41 | 29 | 36 | SCD661-0760-3-3-145HA03-HP358 | 30902075 |
| 7,70 | 8 | 79 | 41 | 29 | 36 | SCD661-0770-3-3-145HA03-HP358 | 30902076 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD661-0780-3-3-145HA03-HP358 | 30902077 |
| 7,90 | 8 | 79 | 41 | 29 | 36 | SCD661-0790-3-3-145HA03-HP358 | 30902078 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD661-0800-3-3-145HA03-HP358 | 30902079 |
| 8,10 | 10 | 89 | 47 | 35 | 40 | SCD661-0810-3-3-145HA03-HP358 | 30902080 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD661-0820-3-3-145HA03-HP358 | 30902081 |
| 8,30 | 10 | 89 | 47 | 35 | 40 | SCD661-0830-3-3-145HA03-HP358 | 30902082 |
| 8,40 | 10 | 89 | 47 | 35 | 40 | SCD661-0840-3-3-145HA03-HP358 | 30902083 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD661-0850-3-3-145HA03-HP358 | 30902084 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD661-0860-3-3-145HA03-HP358 | 30902085 |
| 8,70 | 10 | 89 | 47 | 35 | 40 | SCD661-0870-3-3-145HA03-HP358 | 30902086 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD661-0880-3-3-145HA03-HP358 | 30902087 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD661-0900-3-3-145HA03-HP358 | 30902089 |
| 9,10 | 10 | 89 | 47 | 35 | 40 | SCD661-0910-3-3-145HA03-HP358 | 30902090 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD661-0920-3-3-145HA03-HP358 | 30902091 |
| 9,30 | 10 | 89 | 47 | 35 | 40 | SCD661-0930-3-3-145HA03-HP358 | 30902092 |
| 9,35 | 10 | 89 | 47 | 35 | 40 | SCD661-0935-3-3-145HA03-HP358 | 31307523 |
| 9,40 | 10 | 89 | 47 | 35 | 40 | SCD661-0940-3-3-145HA03-HP358 | 30902093 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD661-0950-3-3-145HA03-HP358 | 30902094 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD661-0960-3-3-145HA03-HP358 | 30902095 |
| 9,70 | 10 | 89 | 47 | 35 | 40 | SCD661-0970-3-3-145HA03-HP358 | 30902096 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD661-0980-3-3-145HA03-HP358 | 30902097 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD661-0990-3-3-145HA03-HP358 | 30902098 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD661-1000-3-3-145HA03-HP358 | 30902099 |
| 10,10 | 12 | 102 | 55 | 40 | 45 | SCD661-1010-3-3-145HA03-HP358 | 30902100 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD661-1020-3-3-145HA03-HP358 | 30902101 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD661-1030-3-3-145HA03-HP358 | 30902102 |
| 10,40 | 12 | 102 | 55 | 40 | 45 | SCD661-1040-3-3-145HA03-HP358 | 30902103 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD661-1050-3-3-145HA03-HP358 | 30902104 |
| 10,80 | 12 | 102 | 55 | 40 | 45 | SCD661-1080-3-3-145HA03-HP358 | 30902107 |
| 10,90 | 12 | 102 | 55 | 40 | 45 | SCD661-1090-3-3-145HA03-HP358 | 30902108 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD661-1100-3-3-145HA03-HP358 | 30902109 |
| 11,10 | 12 | 102 | 55 | 40 | 45 | SCD661-1110-3-3-145HA03-HP358 | 30902110 |
| 11,20 | 12 | 102 | 55 | 40 | 45 | SCD661-1120-3-3-145HA03-HP358 | 30902111 |
| 11,30 | 12 | 102 | 55 | 40 | 45 | SCD661-1130-3-3-145HA03-HP358 | 30902112 |
| 11,40 | 12 | 102 | 55 | 40 | 45 | SCD661-1140-3-3-145HA03-HP358 | 30902113 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD661-1150-3-3-145HA03-HP358 | 30902114 |
| 11,60 | 12 | 102 | 55 | 40 | 45 | SCD661-1160-3-3-145HA03-HP358 | 30902115 |
| 11,70 | 12 | 102 | 55 | 40 | 45 | SCD661-1170-3-3-145HA03-HP358 | 30902116 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD661-1180-3-3-145HA03-HP358 | 30902117 |
| 11,90 | 12 | 102 | 55 | 40 | 45 | SCD661-1190-3-3-145HA03-HP358 | 30902118 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD661-1200-3-3-145HA03-HP358 | 30902119 |
| 12,20 | 14 | 107 | 60 | 43 | 45 | SCD661-1220-3-3-145HA03-HP358 | 30902120 |
| 12,23 | 14 | 107 | 60 | 43 | 45 | SCD661-1223-3-3-145HA03-HP358 | 31271441 |
| 12,50 | 14 | 107 | 60 | 43 | 45 | SCD661-1250-3-3-145HA03-HP358 | 30902121 |
| 12,70 | 14 | 107 | 60 | 43 | 45 | SCD661-1270-3-3-145HA03-HP358 | 31307524 |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD661-1300-3-3-145HA03-HP358 | 30902123 |
| 13,50 | 14 | 107 | 60 | 43 | 45 | SCD661-1350-3-3-145HA03-HP358 | 30902125 |
| 13,80 | 14 | 107 | 60 | 43 | 45 | SCD661-1380-3-3-145HA03-HP358 | 30902126 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD661-1400-3-3-145HA03-HP358 | 30902127 |
| 14,20 | 16 | 115 | 65 | 45 | 48 | SCD661-1420-3-3-145HA03-HP358 | 30902128 |

Tritan-Drill-Steel | Solid carbide twist drill SCD661 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD661-1450-3-3-145HA03-HP358 | 30902129 |
| 14,80 | 16 | 115 | 65 | 45 | 48 | SCD661-1480-3-3-145HA03-HP358 | 30902130 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD661-1500-3-3-145HA03-HP358 | 30902131 |
| 15,20 | 16 | 115 | 65 | 45 | 48 | SCD661-1520-3-3-145HA03-HP358 | 30902132 |
| 15,50 | 16 | 115 | 65 | 45 | 48 | SCD661-1550-3-3-145HA03-HP358 | 30902133 |
| 15,80 | 16 | 115 | 65 | 45 | 48 | SCD661-1580-3-3-145HA03-HP358 | 30902134 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD661-1600-3-3-145HA03-HP358 | 30902135 |
| 16,20 | 18 | 123 | 73 | 51 | 48 | SCD661-1620-3-3-145HA03-HP358 | 30902136 |
| 16,50 | 18 | 123 | 73 | 51 | 48 | SCD661-1650-3-3-145HA03-HP358 | 30902137 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD661-1700-3-3-145HA03-HP358 | 30902139 |
| 17,35 | 18 | 123 | 73 | 51 | 48 | SCD661-1735-3-3-145HA03-HP358 | 31307525 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD661-1750-3-3-145HA03-HP358 | 30902141 |
| 17,80 | 18 | 123 | 73 | 51 | 48 | SCD661-1780-3-3-145HA03-HP358 | 30902142 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD661-1800-3-3-145HA03-HP358 | 30902143 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD661-1850-3-3-145HA03-HP358 | 30902145 |
| 18,80 | 20 | 131 | 79 | 55 | 50 | SCD661-1880-3-3-145HA03-HP358 | 30902146 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD661-1900-3-3-145HA03-HP358 | 30902147 |
| 19,50 | 20 | 131 | 79 | 55 | 50 | SCD661-1950-3-3-145HA03-HP358 | 30902149 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD661-2000-3-3-145HA03-HP358 | 30902151 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

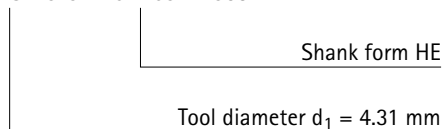
SCD661-[diameter]-3-3-140[shank form]03-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 4,00 | 4,70 | 6 | 66 | 24 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 7,00 | 8 | 79 | 34 | 24 | 36 |
| 7,01 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 55 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 60 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Example:

SCD661-0431-3-3-140HE03-HP358



Dimensions in mm.

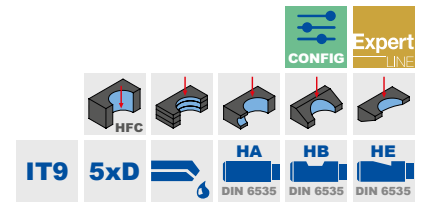
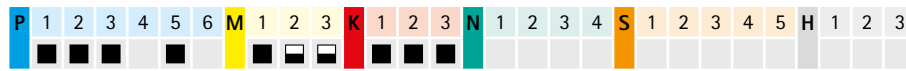
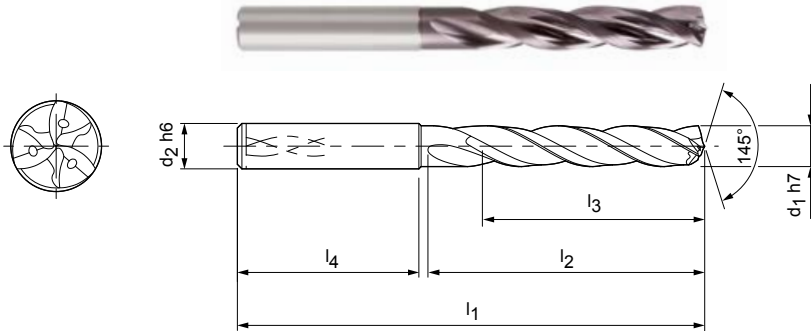
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Tritan-Drill-Steel

Solid carbide twist drill
SCD661 (5xD), internal coolant supply

Design:
 Drill diameter: 4.00 – 20.00 mm
 Bore tolerance: $\geq IT 9$
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 145°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD661-0400-3-3-145HA05-HP358 | 30902152 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD661-0410-3-3-145HA05-HP358 | 30902153 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD661-0420-3-3-145HA05-HP358 | 30902154 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD661-0430-3-3-145HA05-HP358 | 30902155 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD661-0440-3-3-145HA05-HP358 | 30902156 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD661-0450-3-3-145HA05-HP358 | 30902157 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD661-0460-3-3-145HA05-HP358 | 30902158 |
| 4,65 | 6 | 74 | 36 | 29 | 36 | SCD661-0465-3-3-145HA05-HP358 | 30902159 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD661-0470-3-3-145HA05-HP358 | 30902160 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD661-0480-3-3-145HA05-HP358 | 30902161 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD661-0490-3-3-145HA05-HP358 | 30902162 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD661-0500-3-3-145HA05-HP358 | 30902163 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD661-0510-3-3-145HA05-HP358 | 30902164 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD661-0520-3-3-145HA05-HP358 | 30902165 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD661-0530-3-3-145HA05-HP358 | 30902166 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD661-0540-3-3-145HA05-HP358 | 30902167 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD661-0550-3-3-145HA05-HP358 | 30902168 |
| 5,55 | 6 | 82 | 44 | 35 | 36 | SCD661-0555-3-3-145HA05-HP358 | 30902169 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD661-0560-3-3-145HA05-HP358 | 30902170 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD661-0570-3-3-145HA05-HP358 | 30902171 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD661-0580-3-3-145HA05-HP358 | 30902172 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD661-0590-3-3-145HA05-HP358 | 30902173 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD661-0600-3-3-145HA05-HP358 | 30902174 |
| 6,05 | 8 | 91 | 53 | 43 | 36 | SCD661-0605-3-3-145HA05-HP358 | 31307526 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD661-0610-3-3-145HA05-HP358 | 30902175 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD661-0620-3-3-145HA05-HP358 | 30902176 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD661-0630-3-3-145HA05-HP358 | 30902177 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD661-0640-3-3-145HA05-HP358 | 30902178 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD661-0650-3-3-145HA05-HP358 | 30902179 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD661-0660-3-3-145HA05-HP358 | 30902180 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD661-0680-3-3-145HA05-HP358 | 30902182 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD661-0690-3-3-145HA05-HP358 | 30902183 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD661-0700-3-3-145HA05-HP358 | 30902184 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD661-0710-3-3-145HA05-HP358 | 30902185 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD661-0720-3-3-145HA05-HP358 | 30902186 |

Tritan-Drill-Steel | Solid carbide twist drill SCD661 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD661-0730-3-3-145HA05-HP358 | 30902187 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD661-0740-3-3-145HA05-HP358 | 30902188 |
| 7,45 | 8 | 91 | 53 | 43 | 36 | SCD661-0745-3-3-145HA05-HP358 | 30902189 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD661-0750-3-3-145HA05-HP358 | 30902190 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD661-0760-3-3-145HA05-HP358 | 30902191 |
| 7,70 | 8 | 91 | 53 | 43 | 36 | SCD661-0770-3-3-145HA05-HP358 | 30902192 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD661-0780-3-3-145HA05-HP358 | 30902193 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD661-0790-3-3-145HA05-HP358 | 30902194 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD661-0800-3-3-145HA05-HP358 | 30902195 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD661-0810-3-3-145HA05-HP358 | 30902196 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD661-0820-3-3-145HA05-HP358 | 30902197 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD661-0830-3-3-145HA05-HP358 | 30902198 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD661-0840-3-3-145HA05-HP358 | 30902199 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD661-0850-3-3-145HA05-HP358 | 30902200 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD661-0860-3-3-145HA05-HP358 | 30902201 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD661-0870-3-3-145HA05-HP358 | 30902202 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD661-0880-3-3-145HA05-HP358 | 30902203 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD661-0890-3-3-145HA05-HP358 | 30902204 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD661-0900-3-3-145HA05-HP358 | 30902205 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD661-0910-3-3-145HA05-HP358 | 30902206 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD661-0920-3-3-145HA05-HP358 | 30902207 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD661-0930-3-3-145HA05-HP358 | 30902208 |
| 9,35 | 10 | 103 | 61 | 49 | 40 | SCD661-0935-3-3-145HA05-HP358 | 30902209 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD661-0940-3-3-145HA05-HP358 | 30902210 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD661-0950-3-3-145HA05-HP358 | 30902211 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD661-0970-3-3-145HA05-HP358 | 30902214 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD661-0980-3-3-145HA05-HP358 | 30902215 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD661-0990-3-3-145HA05-HP358 | 30902216 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD661-1000-3-3-145HA05-HP358 | 30902217 |
| 10,10 | 12 | 118 | 71 | 56 | 45 | SCD661-1010-3-3-145HA05-HP358 | 30902218 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD661-1020-3-3-145HA05-HP358 | 30902219 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD661-1030-3-3-145HA05-HP358 | 30902220 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD661-1040-3-3-145HA05-HP358 | 30902221 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD661-1050-3-3-145HA05-HP358 | 30902222 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD661-1080-3-3-145HA05-HP358 | 30902225 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD661-1100-3-3-145HA05-HP358 | 30902227 |
| 11,10 | 12 | 118 | 71 | 56 | 45 | SCD661-1110-3-3-145HA05-HP358 | 30902228 |
| 11,20 | 12 | 118 | 71 | 56 | 45 | SCD661-1120-3-3-145HA05-HP358 | 30902229 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD661-1130-3-3-145HA05-HP358 | 30902230 |
| 11,40 | 12 | 118 | 71 | 56 | 45 | SCD661-1140-3-3-145HA05-HP358 | 30902231 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD661-1150-3-3-145HA05-HP358 | 30902232 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD661-1180-3-3-145HA05-HP358 | 30902235 |
| 11,90 | 12 | 118 | 71 | 56 | 45 | SCD661-1190-3-3-145HA05-HP358 | 30902236 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD661-1200-3-3-145HA05-HP358 | 30902237 |
| 12,20 | 14 | 124 | 77 | 60 | 45 | SCD661-1220-3-3-145HA05-HP358 | 30902238 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD661-1250-3-3-145HA05-HP358 | 30902239 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD661-1280-3-3-145HA05-HP358 | 30902240 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD661-1300-3-3-145HA05-HP358 | 30902241 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD661-1350-3-3-145HA05-HP358 | 30902243 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD661-1380-3-3-145HA05-HP358 | 30902244 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD661-1400-3-3-145HA05-HP358 | 30902245 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD661-1420-3-3-145HA05-HP358 | 30902246 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD661-1450-3-3-145HA05-HP358 | 30902247 |
| 14,80 | 16 | 133 | 83 | 63 | 48 | SCD661-1480-3-3-145HA05-HP358 | 30902248 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD661-1500-3-3-145HA05-HP358 | 30902249 |
| 15,10 | 16 | 133 | 83 | 63 | 48 | SCD661-1510-3-3-145HA05-HP358 | 30902250 |
| 15,20 | 16 | 133 | 83 | 63 | 48 | SCD661-1520-3-3-145HA05-HP358 | 30902251 |

Continued on next page.

Tritan-Drill-Steel | Solid carbide twist drill SCD661 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 15,25 | 16 | 133 | 83 | 63 | 48 | SCD661-1525-3-3-145HA05-HP358 | 30902252 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD661-1550-3-3-145HA05-HP358 | 30902253 |
| 15,80 | 16 | 133 | 83 | 63 | 48 | SCD661-1580-3-3-145HA05-HP358 | 30902254 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD661-1600-3-3-145HA05-HP358 | 30902255 |
| 16,20 | 18 | 143 | 93 | 71 | 48 | SCD661-1620-3-3-145HA05-HP358 | 30902256 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD661-1650-3-3-145HA05-HP358 | 30902257 |
| 16,80 | 18 | 143 | 93 | 71 | 48 | SCD661-1680-3-3-145HA05-HP358 | 30902258 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD661-1700-3-3-145HA05-HP358 | 30902259 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD661-1750-3-3-145HA05-HP358 | 30902261 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD661-1800-3-3-145HA05-HP358 | 30902263 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD661-1850-3-3-145HA05-HP358 | 30902265 |
| 18,80 | 20 | 153 | 101 | 77 | 50 | SCD661-1880-3-3-145HA05-HP358 | 30902266 |
| 19,00 | 20 | 153 | 101 | 77 | 50 | SCD661-1900-3-3-145HA05-HP358 | 30902267 |
| 19,50 | 20 | 153 | 101 | 77 | 50 | SCD661-1950-3-3-145HA05-HP358 | 30902269 |
| 19,80 | 20 | 153 | 101 | 77 | 50 | SCD661-1980-3-3-145HA05-HP358 | 30902270 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD661-2000-3-3-145HA05-HP358 | 30902271 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

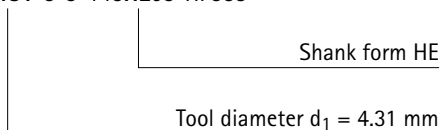
SCD661-[diameter]-3-3-145[shank form]05-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 4,00 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:

SCD661-0431-3-3-145HE05-HP358



Dimensions in mm.

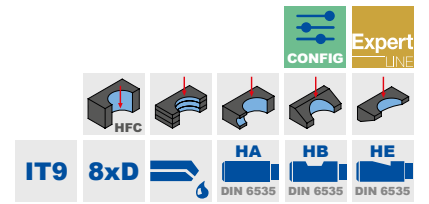
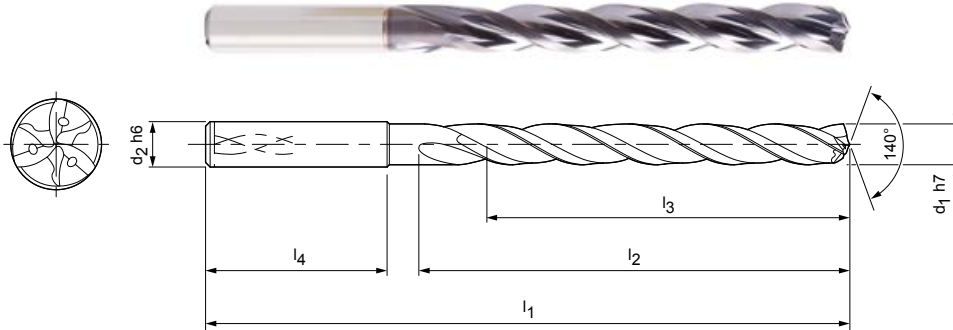
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Tritan-Drill-Steel

Solid carbide twist drill
SCD661 (8xD), internal coolant supply

Design:
 Drill diameter: 4.00 – 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|------------|----------|-------|-------|-------|-------|-------------------------------|-----------|
| d_1 h7 | d_2 h6 | l_1 | l_2 | l_3 | l_4 | Specification | Order no. |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD661-0400-3-3-140HA08-HP358 | 30902272 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD661-0410-3-3-140HA08-HP358 | 30902273 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD661-0420-3-3-140HA08-HP358 | 30902274 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD661-0430-3-3-140HA08-HP358 | 30902275 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD661-0450-3-3-140HA08-HP358 | 30902277 |
| 4,60 | 6 | 81 | 43 | 36 | 36 | SCD661-0460-3-3-140HA08-HP358 | 30902278 |
| 4,70 | 6 | 81 | 43 | 36 | 36 | SCD661-0470-3-3-140HA08-HP358 | 30902279 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD661-0480-3-3-140HA08-HP358 | 30902280 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD661-0500-3-3-140HA08-HP358 | 30902282 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD661-0510-3-3-140HA08-HP358 | 30902283 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD661-0520-3-3-140HA08-HP358 | 30902284 |
| 5,40 | 6 | 95 | 57 | 48 | 36 | SCD661-0540-3-3-140HA08-HP358 | 30902286 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD661-0550-3-3-140HA08-HP358 | 30902287 |
| 5,60 | 6 | 95 | 57 | 48 | 36 | SCD661-0560-3-3-140HA08-HP358 | 30902288 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD661-0580-3-3-140HA08-HP358 | 30902290 |
| 5,90 | 6 | 95 | 57 | 48 | 36 | SCD661-0590-3-3-140HA08-HP358 | 30902291 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD661-0600-3-3-140HA08-HP358 | 30902292 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD661-0610-3-3-140HA08-HP358 | 30902293 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD661-0650-3-3-140HA08-HP358 | 30902297 |
| 6,60 | 8 | 114 | 76 | 64 | 36 | SCD661-0660-3-3-140HA08-HP358 | 30902298 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD661-0680-3-3-140HA08-HP358 | 30902300 |
| 6,90 | 8 | 114 | 76 | 64 | 36 | SCD661-0690-3-3-140HA08-HP358 | 30902301 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD661-0700-3-3-140HA08-HP358 | 30902302 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD661-0750-3-3-140HA08-HP358 | 30902307 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD661-0780-3-3-140HA08-HP358 | 30902310 |
| 7,90 | 8 | 114 | 76 | 64 | 36 | SCD661-0790-3-3-140HA08-HP358 | 30902311 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD661-0800-3-3-140HA08-HP358 | 30902312 |
| 8,10 | 10 | 142 | 95 | 80 | 40 | SCD661-0810-3-3-140HA08-HP358 | 30902313 |
| 8,20 | 10 | 142 | 95 | 80 | 40 | SCD661-0820-3-3-140HA08-HP358 | 30902314 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD661-0850-3-3-140HA08-HP358 | 30902317 |
| 8,60 | 10 | 142 | 95 | 80 | 40 | SCD661-0860-3-3-140HA08-HP358 | 30902318 |
| 8,80 | 10 | 142 | 95 | 80 | 40 | SCD661-0880-3-3-140HA08-HP358 | 30902320 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD661-0900-3-3-140HA08-HP358 | 30902322 |
| 9,10 | 10 | 142 | 95 | 80 | 40 | SCD661-0910-3-3-140HA08-HP358 | 30902323 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD661-0950-3-3-140HA08-HP358 | 30902327 |

Tritan-Drill-Steel | Solid carbide twist drill SCD661 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD661-0980-3-3-140HA08-HP358 | 30902330 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD661-1000-3-3-140HA08-HP358 | 30902332 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD661-1020-3-3-140HA08-HP358 | 30902334 |
| 10,30 | 12 | 162 | 114 | 96 | 45 | SCD661-1030-3-3-140HA08-HP358 | 30902335 |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD661-1050-3-3-140HA08-HP358 | 30902337 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD661-1100-3-3-140HA08-HP358 | 30902342 |
| 11,50 | 12 | 162 | 114 | 96 | 45 | SCD661-1150-3-3-140HA08-HP358 | 30902347 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD661-1180-3-3-140HA08-HP358 | 30902350 |
| 11,90 | 12 | 162 | 114 | 96 | 45 | SCD661-1190-3-3-140HA08-HP358 | 30902351 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD661-1200-3-3-140HA08-HP358 | 30902352 |
| 12,20 | 14 | 178 | 133 | 112 | 45 | SCD661-1220-3-3-140HA08-HP358 | 30902353 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD661-1250-3-3-140HA08-HP358 | 30902354 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD661-1300-3-3-140HA08-HP358 | 30902356 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD661-1350-3-3-140HA08-HP358 | 30902358 |
| 13,80 | 14 | 178 | 133 | 112 | 45 | SCD661-1380-3-3-140HA08-HP358 | 30902359 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD661-1400-3-3-140HA08-HP358 | 30902360 |
| 14,20 | 16 | 203 | 152 | 128 | 48 | SCD661-1420-3-3-140HA08-HP358 | 30902361 |
| 14,50 | 16 | 203 | 152 | 128 | 48 | SCD661-1450-3-3-140HA08-HP358 | 30902362 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD661-1500-3-3-140HA08-HP358 | 30902364 |
| 15,50 | 16 | 203 | 152 | 128 | 48 | SCD661-1550-3-3-140HA08-HP358 | 30902366 |
| 15,80 | 16 | 203 | 152 | 128 | 48 | SCD661-1580-3-3-140HA08-HP358 | 30902367 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD661-1600-3-3-140HA08-HP358 | 30902368 |
| 17,00 | 18 | 222 | 171 | 144 | 48 | SCD661-1700-3-3-140HA08-HP358 | 30902372 |
| 17,50 | 18 | 222 | 171 | 144 | 48 | SCD661-1750-3-3-140HA08-HP358 | 30902374 |
| 18,00 | 18 | 222 | 171 | 144 | 48 | SCD661-1800-3-3-140HA08-HP358 | 30902376 |
| 18,50 | 20 | 243 | 190 | 160 | 50 | SCD661-1850-3-3-140HA08-HP358 | 30902378 |
| 19,00 | 20 | 243 | 190 | 160 | 50 | SCD661-1900-3-3-140HA08-HP358 | 30902380 |
| 19,20 | 20 | 243 | 190 | 160 | 50 | SCD661-1920-3-3-140HA08-HP358 | 30902381 |
| 19,50 | 20 | 243 | 190 | 160 | 50 | SCD661-1950-3-3-140HA08-HP358 | 30902382 |
| 20,00 | 20 | 243 | 190 | 160 | 50 | SCD661-2000-3-3-140HA08-HP358 | 30902384 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

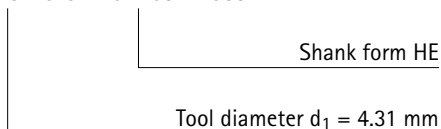
SCD661-[diameter]-3-3-140[shank form]08-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 4,00 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Example:

SCD661-0431-3-3-140HE08-HP358



Dimensions in mm.

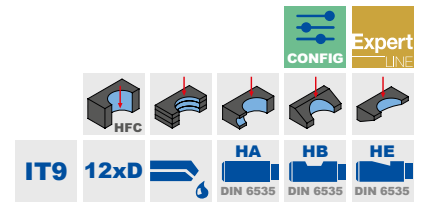
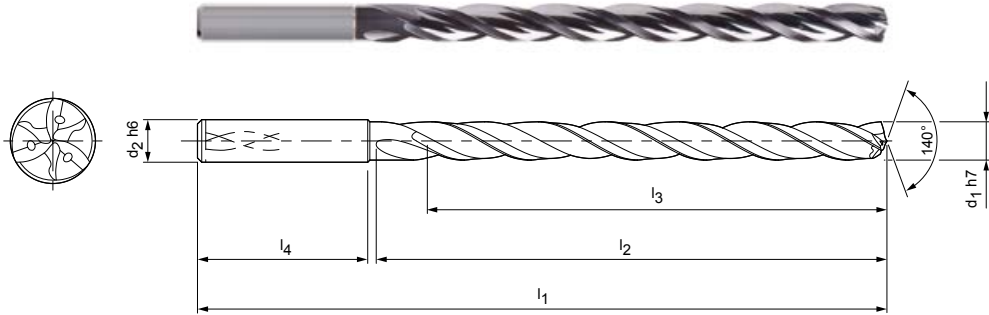
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Tritan-Drill-Steel

Solid carbide twist drill
SCD661 (12xD), internal coolant supply

Design:
 Drill diameter: 4.00 – 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 102 | 64 | 58 | 36 | SCD661-0400-3-3-140HA12-HP358 | 30902385 |
| 4,10 | 6 | 102 | 64 | 58 | 36 | SCD661-0410-3-3-140HA12-HP358 | 30902386 |
| 4,20 | 6 | 102 | 64 | 58 | 36 | SCD661-0420-3-3-140HA12-HP358 | 30902387 |
| 4,30 | 6 | 102 | 64 | 58 | 36 | SCD661-0430-3-3-140HA12-HP358 | 30902388 |
| 4,50 | 6 | 102 | 64 | 58 | 36 | SCD661-0450-3-3-140HA12-HP358 | 30902390 |
| 4,60 | 6 | 102 | 64 | 58 | 36 | SCD661-0460-3-3-140HA12-HP358 | 30902391 |
| 4,80 | 6 | 116 | 78 | 70 | 36 | SCD661-0480-3-3-140HA12-HP358 | 30902393 |
| 5,00 | 6 | 116 | 78 | 70 | 36 | SCD661-0500-3-3-140HA12-HP358 | 30902395 |
| 5,10 | 6 | 116 | 78 | 70 | 36 | SCD661-0510-3-3-140HA12-HP358 | 30902396 |
| 5,20 | 6 | 116 | 78 | 70 | 36 | SCD661-0520-3-3-140HA12-HP358 | 30902397 |
| 5,40 | 6 | 116 | 78 | 70 | 36 | SCD661-0540-3-3-140HA12-HP358 | 30902399 |
| 5,50 | 6 | 116 | 78 | 70 | 36 | SCD661-0550-3-3-140HA12-HP358 | 30902400 |
| 5,80 | 6 | 116 | 78 | 70 | 36 | SCD661-0580-3-3-140HA12-HP358 | 30902403 |
| 5,90 | 6 | 116 | 78 | 70 | 36 | SCD661-0590-3-3-140HA12-HP358 | 30902404 |
| 6,00 | 6 | 116 | 78 | 70 | 36 | SCD661-0600-3-3-140HA12-HP358 | 30902405 |
| 6,10 | 8 | 146 | 108 | 94 | 36 | SCD661-0610-3-3-140HA12-HP358 | 30902406 |
| 6,50 | 8 | 146 | 108 | 94 | 36 | SCD661-0650-3-3-140HA12-HP358 | 30902410 |
| 6,80 | 8 | 146 | 108 | 94 | 36 | SCD661-0680-3-3-140HA12-HP358 | 30902413 |
| 7,00 | 8 | 146 | 108 | 94 | 36 | SCD661-0700-3-3-140HA12-HP358 | 30902415 |
| 7,50 | 8 | 146 | 108 | 94 | 36 | SCD661-0750-3-3-140HA12-HP358 | 30902420 |
| 7,80 | 8 | 146 | 108 | 94 | 36 | SCD661-0780-3-3-140HA12-HP358 | 30902423 |
| 7,90 | 8 | 146 | 108 | 94 | 36 | SCD661-0790-3-3-140HA12-HP358 | 30902424 |
| 8,00 | 8 | 146 | 108 | 94 | 36 | SCD661-0800-3-3-140HA12-HP358 | 30902425 |
| 8,20 | 10 | 162 | 120 | 110 | 40 | SCD661-0820-3-3-140HA12-HP358 | 30902427 |
| 8,40 | 10 | 162 | 120 | 110 | 40 | SCD661-0840-3-3-140HA12-HP358 | 30902429 |
| 8,50 | 10 | 162 | 120 | 110 | 40 | SCD661-0850-3-3-140HA12-HP358 | 30902430 |
| 8,80 | 10 | 162 | 120 | 110 | 40 | SCD661-0880-3-3-140HA12-HP358 | 30902433 |
| 9,00 | 10 | 162 | 120 | 110 | 40 | SCD661-0900-3-3-140HA12-HP358 | 30902435 |
| 9,50 | 10 | 162 | 120 | 110 | 40 | SCD661-0950-3-3-140HA12-HP358 | 30902440 |
| 9,60 | 10 | 162 | 120 | 110 | 40 | SCD661-0960-3-3-140HA12-HP358 | 30902441 |
| 9,80 | 10 | 162 | 120 | 110 | 40 | SCD661-0980-3-3-140HA12-HP358 | 30902443 |
| 10,00 | 10 | 162 | 120 | 110 | 40 | SCD661-1000-3-3-140HA12-HP358 | 30902445 |
| 10,20 | 12 | 204 | 156 | 142 | 45 | SCD661-1020-3-3-140HA12-HP358 | 30902447 |
| 10,30 | 12 | 204 | 156 | 142 | 45 | SCD661-1030-3-3-140HA12-HP358 | 30902448 |
| 10,50 | 12 | 204 | 156 | 142 | 45 | SCD661-1050-3-3-140HA12-HP358 | 30902450 |

Tritan-Drill-Steel | Solid carbide twist drill SCD661 (12xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,00 | 12 | 204 | 156 | 142 | 45 | SCD661-1100-3-3-140HA12-HP358 | 30902455 |
| 11,50 | 12 | 204 | 156 | 142 | 45 | SCD661-1150-3-3-140HA12-HP358 | 30902460 |
| 11,80 | 12 | 204 | 156 | 142 | 45 | SCD661-1180-3-3-140HA12-HP358 | 30902463 |
| 12,00 | 12 | 204 | 156 | 142 | 45 | SCD661-1200-3-3-140HA12-HP358 | 30902465 |
| 12,50 | 14 | 230 | 182 | 166 | 45 | SCD661-1250-3-3-140HA12-HP358 | 30902467 |
| 13,00 | 14 | 230 | 182 | 166 | 45 | SCD661-1300-3-3-140HA12-HP358 | 30902469 |
| 13,50 | 14 | 230 | 182 | 166 | 45 | SCD661-1350-3-3-140HA12-HP358 | 30902471 |
| 14,00 | 14 | 230 | 182 | 166 | 45 | SCD661-1400-3-3-140HA12-HP358 | 30902473 |
| 14,50 | 16 | 260 | 208 | 192 | 48 | SCD661-1450-3-3-140HA12-HP358 | 30902475 |
| 15,00 | 16 | 260 | 208 | 192 | 48 | SCD661-1500-3-3-140HA12-HP358 | 30902477 |
| 15,50 | 16 | 260 | 208 | 192 | 48 | SCD661-1550-3-3-140HA12-HP358 | 30902479 |
| 16,00 | 16 | 260 | 208 | 192 | 48 | SCD661-1600-3-3-140HA12-HP358 | 30902481 |
| 16,50 | 18 | 285 | 234 | 216 | 48 | SCD661-1650-3-3-140HA12-HP358 | 30902483 |
| 17,00 | 18 | 285 | 234 | 216 | 48 | SCD661-1700-3-3-140HA12-HP358 | 30902485 |
| 17,50 | 18 | 285 | 234 | 216 | 48 | SCD661-1750-3-3-140HA12-HP358 | 30902487 |
| 18,00 | 18 | 285 | 234 | 216 | 48 | SCD661-1800-3-3-140HA12-HP358 | 30902489 |
| 18,50 | 20 | 310 | 258 | 240 | 50 | SCD661-1850-3-3-140HA12-HP358 | 30902491 |
| 19,00 | 20 | 310 | 258 | 240 | 50 | SCD661-1900-3-3-140HA12-HP358 | 30902493 |
| 19,50 | 20 | 310 | 258 | 240 | 50 | SCD661-1950-3-3-140HA12-HP358 | 30902495 |
| 20,00 | 20 | 310 | 258 | 240 | 50 | SCD661-2000-3-3-140HA12-HP358 | 30902497 |

Configurable features

Diameter:
Diameter in increments of 0.01 mm freely selectable

Shank form:
Shank form: HB | HE

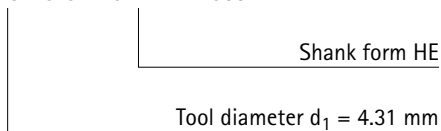
Specification:
SCD661-[diameter]-3-3-140[shank form]12-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 4,00 | 4,70 | 6 | 102 | 64 | 58 | 36 |
| 4,71 | 6,00 | 6 | 116 | 78 | 70 | 36 |
| 6,01 | 8,00 | 8 | 146 | 108 | 94 | 36 |
| 8,01 | 10,00 | 10 | 162 | 120 | 110 | 40 |
| 10,01 | 12,00 | 12 | 204 | 156 | 142 | 45 |
| 12,01 | 14,00 | 14 | 230 | 182 | 166 | 45 |
| 14,01 | 16,00 | 16 | 260 | 208 | 192 | 48 |
| 16,01 | 18,00 | 18 | 285 | 234 | 216 | 48 |
| 18,01 | 20,00 | 20 | 310 | 258 | 240 | 50 |

Example:

SCD661-0431-3-3-140HE12-HP358



Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

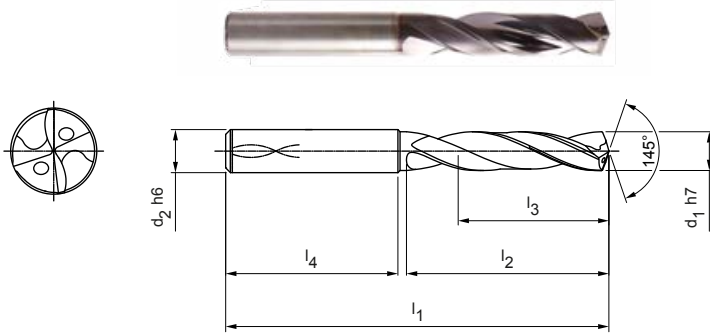
MEGA-Speed-Drill-Steel

Solid carbide twist drill

SCD621 (3xD), internal coolant supply, follow-up product to the MEGA-Speed-Drill-Steel (SCD22)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: IT 9 (achievable)
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 145°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD621-0300-2-3-145HA03-HP358 | 31036265 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD621-0320-2-3-145HA03-HP358 | 31036267 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD621-0330-2-3-145HA03-HP358 | 31036268 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD621-0340-2-3-145HA03-HP358 | 31036269 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD621-0350-2-3-145HA03-HP358 | 31036270 |
| 3,70 | 6 | 62 | 20 | 14 | 36 | SCD621-0370-2-3-145HA03-HP358 | 31036272 |
| 3,80 | 6 | 66 | 24 | 17 | 36 | SCD621-0380-2-3-145HA03-HP358 | 31036273 |
| 3,90 | 6 | 66 | 24 | 17 | 36 | SCD621-0390-2-3-145HA03-HP358 | 31036274 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD621-0400-2-3-145HA03-HP358 | 31036275 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD621-0410-2-3-145HA03-HP358 | 31036276 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD621-0420-2-3-145HA03-HP358 | 31036277 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD621-0430-2-3-145HA03-HP358 | 31036278 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD621-0450-2-3-145HA03-HP358 | 31036280 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD621-0460-2-3-145HA03-HP358 | 31036281 |
| 4,65 | 6 | 66 | 24 | 17 | 36 | SCD621-0465-2-3-145HA03-HP358 | 31307528 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD621-0470-2-3-145HA03-HP358 | 31036282 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD621-0490-2-3-145HA03-HP358 | 31036284 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD621-0500-2-3-145HA03-HP358 | 31036285 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD621-0510-2-3-145HA03-HP358 | 31036286 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD621-0520-2-3-145HA03-HP358 | 31036287 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD621-0550-2-3-145HA03-HP358 | 31036290 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD621-0560-2-3-145HA03-HP358 | 31036291 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD621-0580-2-3-145HA03-HP358 | 31036293 |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD621-0590-2-3-145HA03-HP358 | 31036294 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD621-0600-2-3-145HA03-HP358 | 31036295 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD621-0610-2-3-145HA03-HP358 | 31036296 |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD621-0620-2-3-145HA03-HP358 | 31036297 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD621-0630-2-3-145HA03-HP358 | 31036298 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD621-0640-2-3-145HA03-HP358 | 31036299 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD621-0650-2-3-145HA03-HP358 | 31036300 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD621-0660-2-3-145HA03-HP358 | 31036301 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD621-0680-2-3-145HA03-HP358 | 31036303 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD621-0690-2-3-145HA03-HP358 | 31036304 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD621-0700-2-3-145HA03-HP358 | 31036305 |
| 7,15 | 8 | 79 | 41 | 29 | 36 | SCD621-0715-2-3-145HA03-HP358 | 31307529 |

MEGA-Speed-Drill-Steel | Solid carbide twist drill SCD621 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 7,30 | 8 | 79 | 41 | 29 | 36 | SCD621-0730-2-3-145HA03-HP358 | 31036308 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD621-0740-2-3-145HA03-HP358 | 31036309 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD621-0750-2-3-145HA03-HP358 | 31036310 |
| 7,60 | 8 | 79 | 41 | 29 | 36 | SCD621-0760-2-3-145HA03-HP358 | 31036311 |
| 7,70 | 8 | 79 | 41 | 29 | 36 | SCD621-0770-2-3-145HA03-HP358 | 31036312 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD621-0780-2-3-145HA03-HP358 | 31036313 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD621-0800-2-3-145HA03-HP358 | 31036315 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD621-0820-2-3-145HA03-HP358 | 31036317 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD621-0850-2-3-145HA03-HP358 | 31036320 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD621-0860-2-3-145HA03-HP358 | 31036321 |
| 8,70 | 10 | 89 | 47 | 35 | 40 | SCD621-0870-2-3-145HA03-HP358 | 31036322 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD621-0880-2-3-145HA03-HP358 | 31036323 |
| 8,90 | 10 | 89 | 47 | 35 | 40 | SCD621-0890-2-3-145HA03-HP358 | 31036324 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD621-0900-2-3-145HA03-HP358 | 31036325 |
| 9,10 | 10 | 89 | 47 | 35 | 40 | SCD621-0910-2-3-145HA03-HP358 | 31036326 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD621-0920-2-3-145HA03-HP358 | 31036327 |
| 9,30 | 10 | 89 | 47 | 35 | 40 | SCD621-0930-2-3-145HA03-HP358 | 31036328 |
| 9,40 | 10 | 89 | 47 | 35 | 40 | SCD621-0940-2-3-145HA03-HP358 | 31036329 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD621-0950-2-3-145HA03-HP358 | 31036330 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD621-0960-2-3-145HA03-HP358 | 31036331 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD621-0980-2-3-145HA03-HP358 | 31036333 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD621-0990-2-3-145HA03-HP358 | 31036334 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD621-1000-2-3-145HA03-HP358 | 31036335 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD621-1020-2-3-145HA03-HP358 | 31036337 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD621-1030-2-3-145HA03-HP358 | 31036338 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD621-1050-2-3-145HA03-HP358 | 31036340 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD621-1100-2-3-145HA03-HP358 | 31036345 |
| 11,20 | 12 | 102 | 55 | 40 | 45 | SCD621-1120-2-3-145HA03-HP358 | 31036347 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD621-1150-2-3-145HA03-HP358 | 31036350 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD621-1180-2-3-145HA03-HP358 | 31036353 |
| 11,90 | 12 | 102 | 55 | 40 | 45 | SCD621-1190-2-3-145HA03-HP358 | 31036354 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD621-1200-2-3-145HA03-HP358 | 31036355 |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD621-1300-2-3-145HA03-HP358 | 31036359 |
| 13,80 | 14 | 107 | 60 | 43 | 45 | SCD621-1380-2-3-145HA03-HP358 | 31036361 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD621-1400-2-3-145HA03-HP358 | 31036362 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD621-1450-2-3-145HA03-HP358 | 31036364 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD621-1500-2-3-145HA03-HP358 | 31036366 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD621-1600-2-3-145HA03-HP358 | 31036370 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD621-1700-2-3-145HA03-HP358 | 31036373 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD621-1750-2-3-145HA03-HP358 | 31036374 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD621-1800-2-3-145HA03-HP358 | 31036376 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD621-1850-2-3-145HA03-HP358 | 31036377 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD621-2000-2-3-145HA03-HP358 | 31036392 |

MEGA-Speed-Drill-Steel | Solid carbide twist drill SCD621 (3xD), internal coolant supply

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

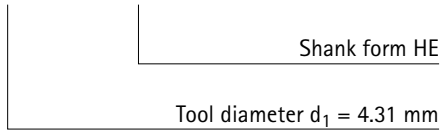
Shank form HB | HE

Specification:

SCD621-[diameter]-3-3-140[shank form]03-HP358

Example:

SCD621-0431-2-3-140HE03-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 62 | 20 | 14 | 36 |
| 3,71 | 4,70 | 6 | 66 | 24 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 6,80 | 8 | 79 | 34 | 24 | 36 |
| 6,81 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 55 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 60 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

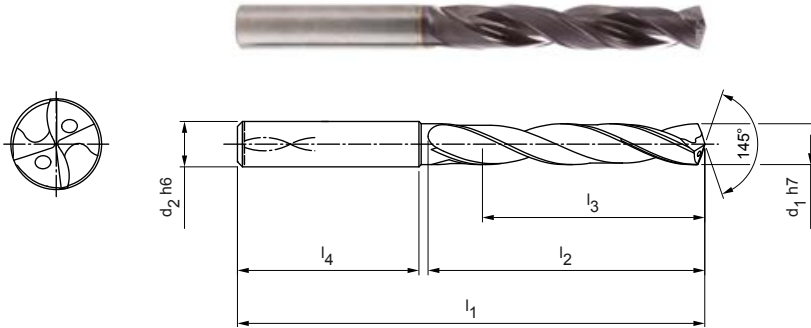
MEGA-Speed-Drill-Steel

Solid carbide twist drill

SCD621 (5xD), internal coolant supply, follow-up product to the MEGA-Speed-Drill-Steel (SCD22)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: $\geq IT 9$
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 145°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD621-0300-2-3-145HA05-HP358 | 30966287 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD621-0310-2-3-145HA05-HP358 | 30966288 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD621-0320-2-3-145HA05-HP358 | 30966289 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD621-0330-2-3-145HA05-HP358 | 30966310 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD621-0340-2-3-145HA05-HP358 | 30966311 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD621-0350-2-3-145HA05-HP358 | 30959126 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD621-0370-2-3-145HA05-HP358 | 30966313 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD621-0380-2-3-145HA05-HP358 | 30966314 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD621-0400-2-3-145HA05-HP358 | 30966316 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD621-0420-2-3-145HA05-HP358 | 30966318 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD621-0430-2-3-145HA05-HP358 | 30966319 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD621-0450-2-3-145HA05-HP358 | 30966321 |
| 4,65 | 6 | 74 | 36 | 29 | 36 | SCD621-0465-2-3-145HA05-HP358 | 31307540 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD621-0470-2-3-145HA05-HP358 | 30966323 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD621-0480-2-3-145HA05-HP358 | 30966324 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD621-0490-2-3-145HA05-HP358 | 30966326 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD621-0500-2-3-145HA05-HP358 | 30966327 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD621-0510-2-3-145HA05-HP358 | 30966328 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD621-0520-2-3-145HA05-HP358 | 30966329 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD621-0530-2-3-145HA05-HP358 | 30966330 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD621-0540-2-3-145HA05-HP358 | 30966331 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD621-0550-2-3-145HA05-HP358 | 30966332 |
| 5,55 | 6 | 82 | 44 | 35 | 36 | SCD621-0555-2-3-145HA05-HP358 | 31307541 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD621-0560-2-3-145HA05-HP358 | 30966333 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD621-0570-2-3-145HA05-HP358 | 30966334 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD621-0580-2-3-145HA05-HP358 | 30966335 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD621-0590-2-3-145HA05-HP358 | 30966336 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD621-0600-2-3-145HA05-HP358 | 30966337 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD621-0610-2-3-145HA05-HP358 | 30966338 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD621-0620-2-3-145HA05-HP358 | 30966339 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD621-0630-2-3-145HA05-HP358 | 30966340 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD621-0650-2-3-145HA05-HP358 | 30966342 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD621-0670-2-3-145HA05-HP358 | 30966344 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD621-0680-2-3-145HA05-HP358 | 30966345 |

MEGA-Speed-Drill-Steel | Solid carbide twist drill SCD621 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD621-0690-2-3-145HA05-HP358 | 30966346 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD621-0700-2-3-145HA05-HP358 | 30966347 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD621-0710-2-3-145HA05-HP358 | 30966348 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD621-0720-2-3-145HA05-HP358 | 30966349 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD621-0730-2-3-145HA05-HP358 | 30966350 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD621-0740-2-3-145HA05-HP358 | 30966351 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD621-0750-2-3-145HA05-HP358 | 30966352 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD621-0760-2-3-145HA05-HP358 | 30966353 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD621-0780-2-3-145HA05-HP358 | 30966355 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD621-0800-2-3-145HA05-HP358 | 30948674 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD621-0810-2-3-145HA05-HP358 | 30966357 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD621-0820-2-3-145HA05-HP358 | 30966358 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD621-0830-2-3-145HA05-HP358 | 30966359 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD621-0840-2-3-145HA05-HP358 | 30966360 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD621-0850-2-3-145HA05-HP358 | 30959302 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD621-0860-2-3-145HA05-HP358 | 30966361 |
| 8,70 | 10 | 89 | 47 | 35 | 40 | SCD621-0870-2-3-145HA05-HP358 | 30812607 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD621-0880-2-3-145HA05-HP358 | 30966362 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD621-0900-2-3-145HA05-HP358 | 30966364 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD621-0910-2-3-145HA05-HP358 | 30966365 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD621-0930-2-3-145HA05-HP358 | 30966367 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD621-0940-2-3-145HA05-HP358 | 30966368 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD621-0950-2-3-145HA05-HP358 | 30966369 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD621-0970-2-3-145HA05-HP358 | 30958145 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD621-0980-2-3-145HA05-HP358 | 30959402 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD621-0990-2-3-145HA05-HP358 | 30966371 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD621-1000-2-3-145HA05-HP358 | 30948675 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD621-1020-2-3-145HA05-HP358 | 30966373 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD621-1030-2-3-145HA05-HP358 | 30966374 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD621-1050-2-3-145HA05-HP358 | 30966376 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD621-1100-2-3-145HA05-HP358 | 30966381 |
| 11,10 | 12 | 118 | 71 | 56 | 45 | SCD621-1110-2-3-145HA05-HP358 | 30966382 |
| 11,20 | 12 | 118 | 71 | 56 | 45 | SCD621-1120-2-3-145HA05-HP358 | 30966383 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD621-1130-2-3-145HA05-HP358 | 30966384 |
| 11,40 | 12 | 118 | 71 | 56 | 45 | SCD621-1140-2-3-145HA05-HP358 | 30966385 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD621-1150-2-3-145HA05-HP358 | 30966386 |
| 11,60 | 12 | 118 | 71 | 56 | 45 | SCD621-1160-2-3-145HA05-HP358 | 30966387 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD621-1180-2-3-145HA05-HP358 | 30966389 |
| 11,90 | 12 | 118 | 71 | 56 | 45 | SCD621-1190-2-3-145HA05-HP358 | 30966390 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD621-1200-2-3-145HA05-HP358 | 30948676 |
| 12,20 | 14 | 124 | 77 | 60 | 45 | SCD621-1220-2-3-145HA05-HP358 | 30966391 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD621-1250-2-3-145HA05-HP358 | 30966392 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD621-1280-2-3-145HA05-HP358 | 30980599 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD621-1300-2-3-145HA05-HP358 | 30966393 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD621-1350-2-3-145HA05-HP358 | 30966394 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD621-1380-2-3-145HA05-HP358 | 30966395 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD621-1400-2-3-145HA05-HP358 | 30966396 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD621-1420-2-3-145HA05-HP358 | 30966397 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD621-1450-2-3-145HA05-HP358 | 30966398 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD621-1500-2-3-145HA05-HP358 | 30966400 |
| 15,20 | 16 | 133 | 83 | 63 | 48 | SCD621-1520-2-3-145HA05-HP358 | 30966401 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD621-1550-2-3-145HA05-HP358 | 30966402 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD621-1600-2-3-145HA05-HP358 | 30966404 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD621-1650-2-3-145HA05-HP358 | 30966405 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD621-1700-2-3-145HA05-HP358 | 30966407 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD621-1750-2-3-145HA05-HP358 | 30966408 |

Continued on next page.

MEGA-Speed-Drill-Steel | Solid carbide twist drill SCD621 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD621-1800-2-3-145HA05-HP358 | 30966410 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD621-1850-2-3-145HA05-HP358 | 30966411 |
| 19,80 | 20 | 153 | 101 | 77 | 50 | SCD621-1980-2-3-145HA05-HP358 | 30966415 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD621-2000-2-3-145HA05-HP358 | 30966416 |

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

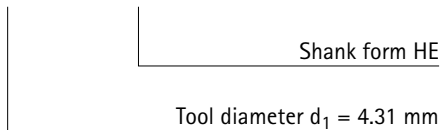
Shank form: HB | HE

Specification:

SCD621-[diameter]-3-3-140[shank form]05-HP358

Example:

SCD621-0431-2-3-140HE05-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 6,80 | 8 | 91 | 53 | 43 | 36 |
| 6,81 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 9,00 | 10 | 103 | 61 | 49 | 40 |
| 9,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 11,00 | 12 | 118 | 71 | 56 | 45 |
| 11,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

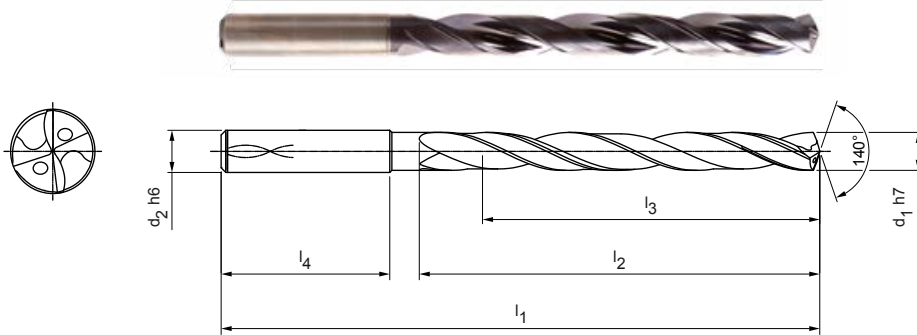
MEGA-Speed-Drill-Steel

Solid carbide twist drill

SCD621 (8xD), internal coolant supply, follow-up product to the MEGA-Speed-Drill-Steel (SCD22)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: IT 9 (achievable)
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD621-0300-2-3-140HA08-HP358 | 31036147 |
| 3,10 | 6 | 72 | 34 | 29 | 36 | SCD621-0310-2-3-140HA08-HP358 | 31036148 |
| 3,20 | 6 | 72 | 34 | 29 | 36 | SCD621-0320-2-3-140HA08-HP358 | 31036149 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD621-0330-2-3-140HA08-HP358 | 31036150 |
| 3,40 | 6 | 72 | 34 | 29 | 36 | SCD621-0340-2-3-140HA08-HP358 | 31036151 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD621-0350-2-3-140HA08-HP358 | 31036152 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD621-0370-2-3-140HA08-HP358 | 31036154 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD621-0400-2-3-140HA08-HP358 | 31036157 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD621-0410-2-3-140HA08-HP358 | 31036158 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD621-0420-2-3-140HA08-HP358 | 31036159 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD621-0430-2-3-140HA08-HP358 | 31036160 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD621-0450-2-3-140HA08-HP358 | 31036162 |
| 4,65 | 6 | 81 | 43 | 36 | 36 | SCD621-0465-2-3-145HA08-HP358 | 31307542 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD621-0480-2-3-140HA08-HP358 | 31036165 |
| 4,90 | 6 | 95 | 57 | 48 | 36 | SCD621-0490-2-3-140HA08-HP358 | 31036166 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD621-0500-2-3-140HA08-HP358 | 31036167 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD621-0510-2-3-140HA08-HP358 | 31036168 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD621-0520-2-3-140HA08-HP358 | 31036169 |
| 5,40 | 6 | 95 | 57 | 48 | 36 | SCD621-0540-2-3-140HA08-HP358 | 31036171 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD621-0550-2-3-140HA08-HP358 | 31036172 |
| 5,55 | 6 | 95 | 57 | 48 | 36 | SCD621-0555-2-3-145HA08-HP358 | 31307543 |
| 5,60 | 6 | 95 | 57 | 48 | 36 | SCD621-0560-2-3-140HA08-HP358 | 31036173 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD621-0580-2-3-140HA08-HP358 | 31036175 |
| 5,90 | 6 | 95 | 57 | 48 | 36 | SCD621-0590-2-3-140HA08-HP358 | 31036176 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD621-0600-2-3-140HA08-HP358 | 31036177 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD621-0610-2-3-140HA08-HP358 | 31036178 |
| 6,20 | 8 | 114 | 76 | 64 | 36 | SCD621-0620-2-3-140HA08-HP358 | 31036179 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD621-0650-2-3-140HA08-HP358 | 31036182 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD621-0680-2-3-140HA08-HP358 | 31036185 |
| 6,90 | 8 | 114 | 76 | 64 | 36 | SCD621-0690-2-3-140HA08-HP358 | 31036186 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD621-0700-2-3-140HA08-HP358 | 31036187 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD621-0750-2-3-140HA08-HP358 | 31036192 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD621-0780-2-3-140HA08-HP358 | 31036195 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD621-0800-2-3-140HA08-HP358 | 31036197 |
| 8,10 | 10 | 142 | 95 | 80 | 40 | SCD621-0810-2-3-140HA08-HP358 | 31036198 |

MEGA-Speed-Drill-Steel | Solid carbide twist drill SCD621 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD621-0850-2-3-140HA08-HP358 | 31036202 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD621-0900-2-3-140HA08-HP358 | 31036207 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD621-0950-2-3-140HA08-HP358 | 31036212 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD621-0980-2-3-140HA08-HP358 | 31036215 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD621-1000-2-3-140HA08-HP358 | 31036217 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD621-1020-2-3-140HA08-HP358 | 31036219 |
| 10,30 | 12 | 162 | 114 | 96 | 45 | SCD621-1030-2-3-140HA08-HP358 | 31036220 |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD621-1050-2-3-140HA08-HP358 | 31036222 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD621-1100-2-3-140HA08-HP358 | 31036227 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD621-1180-2-3-140HA08-HP358 | 31036235 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD621-1200-2-3-140HA08-HP358 | 31036237 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD621-1250-2-3-140HA08-HP358 | 31036239 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD621-1300-2-3-140HA08-HP358 | 31036241 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD621-1350-2-3-140HA08-HP358 | 31036242 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD621-1400-2-3-140HA08-HP358 | 31036244 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD621-1500-2-3-140HA08-HP358 | 31036248 |
| 15,80 | 16 | 203 | 152 | 128 | 48 | SCD621-1580-2-3-140HA08-HP358 | 31036251 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD621-1600-2-3-140HA08-HP358 | 31036252 |
| 19,00 | 20 | 243 | 190 | 160 | 50 | SCD621-1900-2-3-140HA08-HP358 | 31036261 |
| 19,80 | 20 | 243 | 190 | 160 | 50 | SCD621-1980-2-3-140HA08-HP358 | 31036263 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



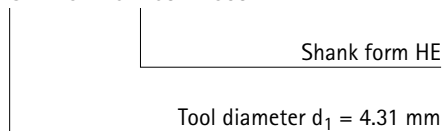
Shank form:
Shank form: HB | HE

Specification:

SCD621-[diameter]-3-3-140[shank form]08-HP358

Example:

SCD621-0431-2-3-140HE08-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 72 | 34 | 29 | 36 |
| 3,71 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 6,80 | 8 | 114 | 76 | 64 | 36 |
| 6,81 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 9,00 | 10 | 142 | 95 | 80 | 40 |
| 9,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 11,00 | 12 | 162 | 114 | 96 | 45 |
| 11,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

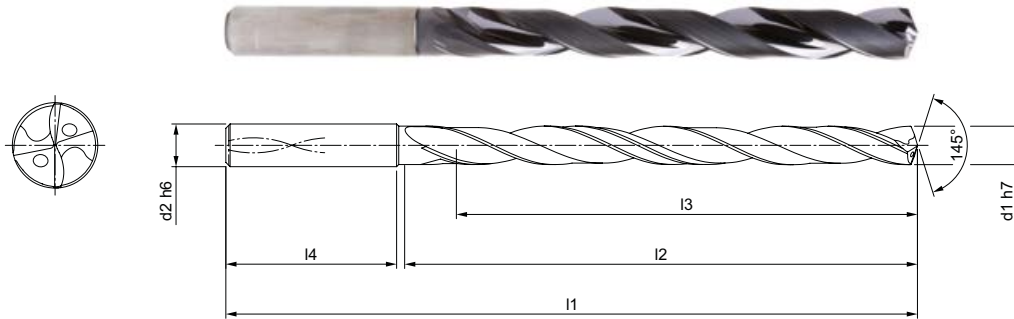
MEGA-Speed-Drill-Steel

Solid carbide twist drill

SCD621 (12xD), internal coolant supply, follow-up product to the MEGA-Speed-Drill-Steel (SCD22)

Design:

Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 145°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 92 | 54 | 48 | 36 | SCD621-0300-2-3-145HA12-HP358 | 31239148 |
| 3,20 | 6 | 92 | 54 | 48 | 36 | SCD621-0320-2-3-145HA12-HP358 | 31239150 |
| 3,30 | 6 | 92 | 54 | 48 | 36 | SCD621-0330-2-3-145HA12-HP358 | 31239151 |
| 3,40 | 6 | 92 | 54 | 48 | 36 | SCD621-0340-2-3-145HA12-HP358 | 31239152 |
| 3,50 | 6 | 92 | 54 | 48 | 36 | SCD621-0350-2-3-145HA12-HP358 | 31239153 |
| 3,70 | 6 | 92 | 54 | 48 | 36 | SCD621-0370-2-3-145HA12-HP358 | 31239155 |
| 4,00 | 6 | 102 | 64 | 58 | 36 | SCD621-0400-2-3-145HA12-HP358 | 31239158 |
| 4,10 | 6 | 102 | 64 | 58 | 36 | SCD621-0410-2-3-145HA12-HP358 | 31239159 |
| 4,20 | 6 | 102 | 64 | 58 | 36 | SCD621-0420-2-3-145HA12-HP358 | 31239160 |
| 4,30 | 6 | 102 | 64 | 58 | 36 | SCD621-0430-2-3-145HA12-HP358 | 31239161 |
| 4,50 | 6 | 102 | 64 | 58 | 36 | SCD621-0450-2-3-145HA12-HP358 | 31239163 |
| 4,80 | 6 | 116 | 78 | 70 | 36 | SCD621-0480-2-3-145HA12-HP358 | 31239166 |
| 5,00 | 6 | 116 | 78 | 70 | 36 | SCD621-0500-2-3-145HA12-HP358 | 31239168 |
| 5,10 | 6 | 116 | 78 | 70 | 36 | SCD621-0510-2-3-145HA12-HP358 | 31239169 |
| 5,20 | 6 | 116 | 78 | 70 | 36 | SCD621-0520-2-3-145HA12-HP358 | 31239170 |
| 5,40 | 6 | 116 | 78 | 70 | 36 | SCD621-0540-2-3-145HA12-HP358 | 31239172 |
| 5,50 | 6 | 116 | 78 | 70 | 36 | SCD621-0550-2-3-145HA12-HP358 | 31239173 |
| 5,80 | 6 | 116 | 78 | 70 | 36 | SCD621-0580-2-3-145HA12-HP358 | 31239176 |
| 6,00 | 6 | 116 | 78 | 70 | 36 | SCD621-0600-2-3-145HA12-HP358 | 31239178 |
| 6,10 | 8 | 146 | 108 | 94 | 36 | SCD621-0610-2-3-145HA12-HP358 | 31239179 |
| 6,50 | 8 | 146 | 108 | 94 | 36 | SCD621-0650-2-3-145HA12-HP358 | 31239183 |
| 6,80 | 8 | 146 | 108 | 94 | 36 | SCD621-0680-2-3-145HA12-HP358 | 31239186 |
| 7,00 | 8 | 146 | 108 | 94 | 36 | SCD621-0700-2-3-145HA12-HP358 | 31239188 |
| 7,50 | 8 | 146 | 108 | 94 | 36 | SCD621-0750-2-3-145HA12-HP358 | 31239193 |
| 7,80 | 8 | 146 | 108 | 94 | 36 | SCD621-0780-2-3-145HA12-HP358 | 31239196 |
| 8,00 | 8 | 146 | 108 | 94 | 36 | SCD621-0800-2-3-145HA12-HP358 | 31239198 |
| 8,50 | 10 | 162 | 120 | 110 | 40 | SCD621-0850-2-3-145HA12-HP358 | 31239203 |
| 9,00 | 10 | 162 | 120 | 110 | 40 | SCD621-0900-2-3-145HA12-HP358 | 31239208 |
| 9,50 | 10 | 162 | 120 | 110 | 40 | SCD621-0950-2-3-145HA12-HP358 | 31239213 |
| 9,80 | 10 | 162 | 120 | 110 | 40 | SCD621-0980-2-3-145HA12-HP358 | 31239216 |
| 10,00 | 10 | 162 | 120 | 110 | 40 | SCD621-1000-2-3-145HA12-HP358 | 31239218 |
| 10,20 | 12 | 204 | 156 | 142 | 45 | SCD621-1020-2-3-145HA12-HP358 | 31239220 |
| 10,50 | 12 | 204 | 156 | 142 | 45 | SCD621-1050-2-3-145HA12-HP358 | 31239223 |
| 11,00 | 12 | 204 | 156 | 142 | 45 | SCD621-1100-2-3-145HA12-HP358 | 31239228 |
| 11,80 | 12 | 204 | 156 | 142 | 45 | SCD621-1180-2-3-145HA12-HP358 | 31239236 |

MEGA-Speed-Drill-Steel | Solid carbide twist drill SCD621 (12xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00 | 12 | 204 | 156 | 142 | 45 | SCD621-1200-2-3-145HA12-HP358 | 31239238 |
| 12,50 | 14 | 230 | 182 | 166 | 45 | SCD621-1250-2-3-145HA12-HP358 | 31239240 |
| 13,00 | 14 | 230 | 182 | 166 | 45 | SCD621-1300-2-3-145HA12-HP358 | 31239242 |
| 13,50 | 14 | 230 | 182 | 166 | 45 | SCD621-1350-2-3-145HA12-HP358 | 31239243 |
| 14,00 | 14 | 230 | 182 | 166 | 45 | SCD621-1400-2-3-145HA12-HP358 | 31239245 |
| 15,00 | 16 | 260 | 208 | 192 | 48 | SCD621-1500-2-3-145HA12-HP358 | 31239248 |
| 16,00 | 16 | 260 | 208 | 192 | 48 | SCD621-1600-2-3-145HA12-HP358 | 31239253 |

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

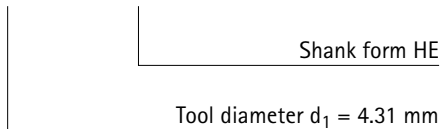
Shank form: HB | HE

Specification:

SCD621-[diameter]-3-3-140[shank form]12-HP358

Example:

SCD621-0431-2-3-140HE12-HP358



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 92 | 54 | 48 | 36 |
| 3,71 | 4,70 | 6 | 102 | 64 | 58 | 36 |
| 4,71 | 6,00 | 6 | 116 | 78 | 70 | 36 |
| 6,01 | 6,80 | 8 | 146 | 108 | 94 | 36 |
| 6,81 | 8,00 | 8 | 146 | 108 | 94 | 36 |
| 8,01 | 9,00 | 10 | 162 | 120 | 110 | 40 |
| 9,01 | 10,00 | 10 | 162 | 120 | 110 | 40 |
| 10,01 | 11,00 | 12 | 204 | 156 | 142 | 45 |
| 11,01 | 12,00 | 12 | 204 | 156 | 142 | 45 |
| 12,01 | 14,00 | 14 | 230 | 182 | 166 | 45 |
| 14,01 | 16,00 | 16 | 260 | 208 | 192 | 48 |
| 16,01 | 18,00 | 18 | 285 | 234 | 216 | 48 |
| 18,01 | 20,00 | 20 | 310 | 258 | 240 | 50 |

Dimensions in mm.

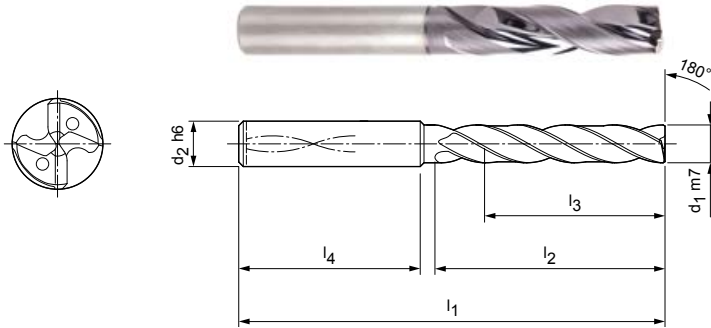
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA 180° Drill

Solid carbide twist drill
SCD231 (3xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP230
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 180°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD231-0300-2-4-180HA03-HP230 | 30382647 |
| 3,10 | 6 | 62 | 20 | 14 | 36 | SCD231-0310-2-4-180HA03-HP230 | 30382648 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD231-0320-2-4-180HA03-HP230 | 30382649 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD231-0330-2-4-180HA03-HP230 | 30382650 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD231-0340-2-4-180HA03-HP230 | 30382651 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD231-0350-2-4-180HA03-HP230 | 30382652 |
| 3,60 | 6 | 62 | 20 | 14 | 36 | SCD231-0360-2-4-180HA03-HP230 | 30382653 |
| 3,70 | 6 | 62 | 20 | 14 | 36 | SCD231-0370-2-4-180HA03-HP230 | 30382654 |
| 3,80 | 6 | 66 | 24 | 17 | 36 | SCD231-0380-2-4-180HA03-HP230 | 30382655 |
| 3,90 | 6 | 66 | 24 | 17 | 36 | SCD231-0390-2-4-180HA03-HP230 | 30382656 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD231-0400-2-4-180HA03-HP230 | 30382657 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD231-0410-2-4-180HA03-HP230 | 30382658 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD231-0420-2-4-180HA03-HP230 | 30382659 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD231-0430-2-4-180HA03-HP230 | 30382660 |
| 4,40 | 6 | 66 | 24 | 17 | 36 | SCD231-0440-2-4-180HA03-HP230 | 30382661 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD231-0450-2-4-180HA03-HP230 | 30382662 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD231-0460-2-4-180HA03-HP230 | 30382663 |
| 4,65 | 6 | 66 | 24 | 17 | 36 | SCD231-0465-2-4-180HA03-HP230 | 30382664 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD231-0470-2-4-180HA03-HP230 | 30382665 |
| 4,80 | 6 | 66 | 28 | 20 | 36 | SCD231-0480-2-4-180HA03-HP230 | 30382666 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD231-0490-2-4-180HA03-HP230 | 30382667 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD231-0500-2-4-180HA03-HP230 | 30382668 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD231-0510-2-4-180HA03-HP230 | 30382669 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD231-0520-2-4-180HA03-HP230 | 30382670 |
| 5,30 | 6 | 66 | 28 | 20 | 36 | SCD231-0530-2-4-180HA03-HP230 | 30382671 |
| 5,40 | 6 | 66 | 28 | 20 | 36 | SCD231-0540-2-4-180HA03-HP230 | 30382672 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD231-0550-2-4-180HA03-HP230 | 30382673 |
| 5,55 | 6 | 66 | 28 | 20 | 36 | SCD231-0555-2-4-180HA03-HP230 | 30382674 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD231-0560-2-4-180HA03-HP230 | 30382675 |
| 5,70 | 6 | 66 | 28 | 20 | 36 | SCD231-0570-2-4-180HA03-HP230 | 30382676 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD231-0580-2-4-180HA03-HP230 | 30382677 |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD231-0590-2-4-180HA03-HP230 | 30382678 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD231-0600-2-4-180HA03-HP230 | 30382679 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD231-0610-2-4-180HA03-HP230 | 30382680 |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD231-0620-2-4-180HA03-HP230 | 30382681 |


MEGA-180°-Drill | Solid carbide twist drill SCD231 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD231-0630-2-4-180HA03-HP230 | 30382682 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD231-0640-2-4-180HA03-HP230 | 30382683 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD231-0650-2-4-180HA03-HP230 | 30382684 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD231-0660-2-4-180HA03-HP230 | 30382685 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD231-0670-2-4-180HA03-HP230 | 30382686 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD231-0680-2-4-180HA03-HP230 | 30382687 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD231-0690-2-4-180HA03-HP230 | 30382688 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD231-0700-2-4-180HA03-HP230 | 30382689 |
| 7,10 | 8 | 79 | 41 | 29 | 36 | SCD231-0710-2-4-180HA03-HP230 | 30382690 |
| 7,20 | 8 | 79 | 41 | 29 | 36 | SCD231-0720-2-4-180HA03-HP230 | 30382691 |
| 7,30 | 8 | 79 | 41 | 29 | 36 | SCD231-0730-2-4-180HA03-HP230 | 30382692 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD231-0740-2-4-180HA03-HP230 | 30382693 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD231-0750-2-4-180HA03-HP230 | 30382694 |
| 7,60 | 8 | 79 | 41 | 29 | 36 | SCD231-0760-2-4-180HA03-HP230 | 30382695 |
| 7,70 | 8 | 79 | 41 | 29 | 36 | SCD231-0770-2-4-180HA03-HP230 | 30382696 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD231-0780-2-4-180HA03-HP230 | 30382697 |
| 7,90 | 8 | 79 | 41 | 29 | 36 | SCD231-0790-2-4-180HA03-HP230 | 30382698 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD231-0800-2-4-180HA03-HP230 | 30382699 |
| 8,10 | 10 | 89 | 47 | 35 | 40 | SCD231-0810-2-4-180HA03-HP230 | 30382700 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD231-0820-2-4-180HA03-HP230 | 30382701 |
| 8,30 | 10 | 89 | 47 | 35 | 40 | SCD231-0830-2-4-180HA03-HP230 | 30382702 |
| 8,40 | 10 | 89 | 47 | 35 | 40 | SCD231-0840-2-4-180HA03-HP230 | 30382703 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD231-0850-2-4-180HA03-HP230 | 30382704 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD231-0860-2-4-180HA03-HP230 | 30382705 |
| 8,70 | 10 | 89 | 47 | 35 | 40 | SCD231-0870-2-4-180HA03-HP230 | 30382706 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD231-0880-2-4-180HA03-HP230 | 30382707 |
| 8,90 | 10 | 89 | 47 | 35 | 40 | SCD231-0890-2-4-180HA03-HP230 | 30382708 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD231-0900-2-4-180HA03-HP230 | 30382709 |
| 9,10 | 10 | 89 | 47 | 35 | 40 | SCD231-0910-2-4-180HA03-HP230 | 30382710 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD231-0920-2-4-180HA03-HP230 | 30382711 |
| 9,30 | 10 | 89 | 47 | 35 | 40 | SCD231-0930-2-4-180HA03-HP230 | 30382712 |
| 9,40 | 10 | 89 | 47 | 35 | 40 | SCD231-0940-2-4-180HA03-HP230 | 30382713 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD231-0950-2-4-180HA03-HP230 | 30382714 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD231-0960-2-4-180HA03-HP230 | 30382715 |
| 9,70 | 10 | 89 | 47 | 35 | 40 | SCD231-0970-2-4-180HA03-HP230 | 30382716 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD231-0980-2-4-180HA03-HP230 | 30382717 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD231-0990-2-4-180HA03-HP230 | 30382718 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD231-1000-2-4-180HA03-HP230 | 30382719 |
| 10,10 | 12 | 100 | 53 | 38 | 45 | SCD231-1010-2-4-180HA03-HP230 | 30382720 |
| 10,20 | 12 | 100 | 53 | 38 | 45 | SCD231-1020-2-4-180HA03-HP230 | 30382721 |
| 10,30 | 12 | 100 | 53 | 38 | 45 | SCD231-1030-2-4-180HA03-HP230 | 30382722 |
| 10,40 | 12 | 100 | 53 | 38 | 45 | SCD231-1040-2-4-180HA03-HP230 | 30382723 |
| 10,50 | 12 | 100 | 53 | 38 | 45 | SCD231-1050-2-4-180HA03-HP230 | 30382724 |
| 10,60 | 12 | 100 | 53 | 38 | 45 | SCD231-1060-2-4-180HA03-HP230 | 30382725 |
| 10,70 | 12 | 100 | 53 | 38 | 45 | SCD231-1070-2-4-180HA03-HP230 | 30382726 |
| 10,80 | 12 | 100 | 53 | 38 | 45 | SCD231-1080-2-4-180HA03-HP230 | 30382727 |
| 11,00 | 12 | 100 | 53 | 38 | 45 | SCD231-1100-2-4-180HA03-HP230 | 30382729 |
| 11,10 | 12 | 100 | 53 | 38 | 45 | SCD231-1110-2-4-180HA03-HP230 | 30382730 |
| 11,20 | 12 | 100 | 53 | 38 | 45 | SCD231-1120-2-4-180HA03-HP230 | 30382731 |
| 11,30 | 12 | 100 | 53 | 38 | 45 | SCD231-1130-2-4-180HA03-HP230 | 30382732 |
| 11,40 | 12 | 100 | 53 | 38 | 45 | SCD231-1140-2-4-180HA03-HP230 | 30382733 |
| 11,50 | 12 | 100 | 53 | 38 | 45 | SCD231-1150-2-4-180HA03-HP230 | 30382734 |
| 11,60 | 12 | 100 | 53 | 38 | 45 | SCD231-1160-2-4-180HA03-HP230 | 30382735 |
| 11,70 | 12 | 100 | 53 | 38 | 45 | SCD231-1170-2-4-180HA03-HP230 | 30382736 |
| 11,80 | 12 | 100 | 53 | 38 | 45 | SCD231-1180-2-4-180HA03-HP230 | 30382737 |
| 11,90 | 12 | 100 | 53 | 38 | 45 | SCD231-1190-2-4-180HA03-HP230 | 30382738 |
| 12,00 | 12 | 100 | 53 | 38 | 45 | SCD231-1200-2-4-180HA03-HP230 | 30382739 |


MEGA-180°-Drill | Solid carbide twist drill SCD231 (3xD), internal coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,50 | 14 | 105 | 58 | 41 | 45 | SCD231-1250-2-4-180HA03-HP230 | 30382740 |
| 12,70 | 14 | 105 | 58 | 41 | 45 | SCD231-1270-2-4-180HA03-HP230 | 30852019 |
| 12,80 | 14 | 105 | 58 | 41 | 45 | SCD231-1280-2-4-180HA03-HP230 | 30382741 |
| 13,00 | 14 | 105 | 58 | 41 | 45 | SCD231-1300-2-4-180HA03-HP230 | 30382742 |
| 13,50 | 14 | 105 | 58 | 41 | 45 | SCD231-1350-2-4-180HA03-HP230 | 30382743 |
| 13,80 | 14 | 105 | 58 | 41 | 45 | SCD231-1380-2-4-180HA03-HP230 | 30382744 |
| 14,00 | 14 | 105 | 58 | 41 | 45 | SCD231-1400-2-4-180HA03-HP230 | 30382745 |
| 14,50 | 16 | 113 | 63 | 43 | 48 | SCD231-1450-2-4-180HA03-HP230 | 30382746 |
| 14,80 | 16 | 113 | 63 | 43 | 48 | SCD231-1480-2-4-180HA03-HP230 | 30382747 |
| 15,00 | 16 | 113 | 63 | 43 | 48 | SCD231-1500-2-4-180HA03-HP230 | 30382748 |
| 15,50 | 16 | 113 | 63 | 43 | 48 | SCD231-1550-2-4-180HA03-HP230 | 30382749 |
| 15,80 | 16 | 113 | 63 | 43 | 48 | SCD231-1580-2-4-180HA03-HP230 | 30382750 |
| 16,00 | 16 | 113 | 63 | 43 | 48 | SCD231-1600-2-4-180HA03-HP230 | 30382751 |
| 16,50 | 18 | 121 | 71 | 49 | 48 | SCD231-1650-2-4-180HA03-HP230 | 30382752 |
| 16,80 | 18 | 121 | 71 | 49 | 48 | SCD231-1680-2-4-180HA03-HP230 | 30382753 |
| 17,00 | 18 | 121 | 71 | 49 | 48 | SCD231-1700-2-4-180HA03-HP230 | 30382754 |
| 17,50 | 18 | 121 | 71 | 49 | 48 | SCD231-1750-2-4-180HA03-HP230 | 30382755 |
| 18,00 | 18 | 121 | 71 | 49 | 48 | SCD231-1800-2-4-180HA03-HP230 | 30382757 |
| 18,50 | 20 | 129 | 77 | 53 | 50 | SCD231-1850-2-4-180HA03-HP230 | 30382758 |
| 18,80 | 20 | 129 | 77 | 53 | 50 | SCD231-1880-2-4-180HA03-HP230 | 30382759 |
| 19,00 | 20 | 129 | 77 | 53 | 50 | SCD231-1900-2-4-180HA03-HP230 | 30382760 |
| 19,50 | 20 | 129 | 77 | 53 | 50 | SCD231-1950-2-4-180HA03-HP230 | 30382761 |
| 20,00 | 20 | 129 | 77 | 53 | 50 | SCD231-2000-2-4-180HA03-HP230 | 30382763 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



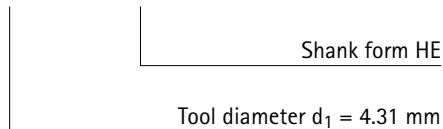


Shank form:
Shank form: HB | HE

Specification:
SCD231-[diameter]-3-4-180[shank form]03-HP230

Example:

SCD231-0431-2-3-140HE03-HP230



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 62 | 20 | 14 | 36 |
| 3,71 | 4,70 | 6 | 66 | 24 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 6,80 | 8 | 79 | 34 | 24 | 36 |
| 6,81 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 100 | 53 | 38 | 45 |
| 12,01 | 14,00 | 14 | 105 | 58 | 41 | 45 |
| 14,01 | 16,00 | 16 | 113 | 63 | 43 | 48 |
| 16,01 | 18,00 | 18 | 121 | 71 | 49 | 48 |
| 18,01 | 20,00 | 20 | 129 | 77 | 53 | 50 |
| 16,01 | 18,00 | 18 | 285 | 234 | 216 | 48 |
| 18,01 | 20,00 | 20 | 310 | 258 | 240 | 50 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

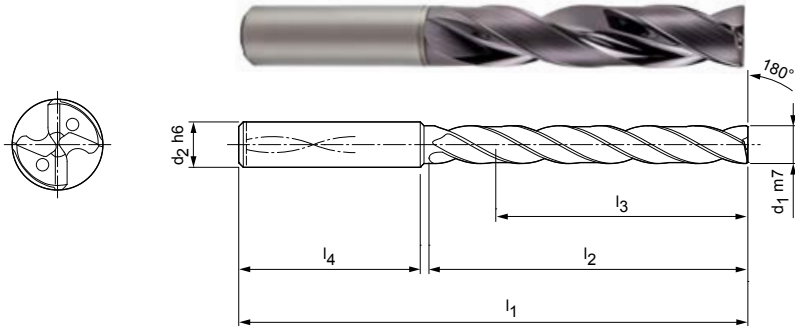
Special designs and other coatings available upon request.

MEGA 180° Drill

Solid carbide twist drill
SCD231 (5xD), internal coolant supply

Design:

Drill diameter: 3.00 – 20.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP230
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 180°
Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|------------|----------|-------|-------|-------|-------|-------------------------------|-----------|
| d_1 m7 | d_2 h6 | l_1 | l_2 | l_3 | l_4 | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD231-0300-2-4-180HA05-HP230 | 30382764 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD231-0310-2-4-180HA05-HP230 | 30382765 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD231-0320-2-4-180HA05-HP230 | 30382766 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD231-0330-2-4-180HA05-HP230 | 30382767 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD231-0340-2-4-180HA05-HP230 | 30382768 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD231-0350-2-4-180HA05-HP230 | 30382769 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD231-0360-2-4-180HA05-HP230 | 30382770 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD231-0370-2-4-180HA05-HP230 | 30382771 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD231-0380-2-4-180HA05-HP230 | 30382772 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD231-0390-2-4-180HA05-HP230 | 30382773 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD231-0400-2-4-180HA05-HP230 | 30382774 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD231-0410-2-4-180HA05-HP230 | 30382775 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD231-0420-2-4-180HA05-HP230 | 30382776 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD231-0430-2-4-180HA05-HP230 | 30382777 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD231-0440-2-4-180HA05-HP230 | 30382778 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD231-0450-2-4-180HA05-HP230 | 30382779 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD231-0460-2-4-180HA05-HP230 | 30382780 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD231-0480-2-4-180HA05-HP230 | 30382783 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD231-0490-2-4-180HA05-HP230 | 30382784 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD231-0500-2-4-180HA05-HP230 | 30382785 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD231-0510-2-4-180HA05-HP230 | 30382786 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD231-0520-2-4-180HA05-HP230 | 30382787 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD231-0530-2-4-180HA05-HP230 | 30382788 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD231-0540-2-4-180HA05-HP230 | 30382789 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD231-0550-2-4-180HA05-HP230 | 30382790 |
| 5,55 | 6 | 82 | 44 | 35 | 36 | SCD231-0555-2-4-180HA05-HP230 | 30382791 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD231-0560-2-4-180HA05-HP230 | 30382792 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD231-0570-2-4-180HA05-HP230 | 30382793 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD231-0580-2-4-180HA05-HP230 | 30382794 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD231-0590-2-4-180HA05-HP230 | 30382795 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD231-0600-2-4-180HA05-HP230 | 30382796 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD231-0610-2-4-180HA05-HP230 | 30382797 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD231-0620-2-4-180HA05-HP230 | 30382798 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD231-0630-2-4-180HA05-HP230 | 30382799 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD231-0640-2-4-180HA05-HP230 | 30382800 |

MEGA-180°-Drill | Solid carbide twist drill SCD231 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD231-0650-2-4-180HA05-HP230 | 30382801 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD231-0660-2-4-180HA05-HP230 | 30382802 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD231-0670-2-4-180HA05-HP230 | 30382803 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD231-0680-2-4-180HA05-HP230 | 30382804 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD231-0690-2-4-180HA05-HP230 | 30382805 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD231-0700-2-4-180HA05-HP230 | 30382806 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD231-0710-2-4-180HA05-HP230 | 30382807 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD231-0720-2-4-180HA05-HP230 | 30382808 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD231-0730-2-4-180HA05-HP230 | 30382809 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD231-0740-2-4-180HA05-HP230 | 30382810 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD231-0750-2-4-180HA05-HP230 | 30382811 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD231-0760-2-4-180HA05-HP230 | 30382812 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD231-0780-2-4-180HA05-HP230 | 30382814 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD231-0790-2-4-180HA05-HP230 | 30382815 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD231-0800-2-4-180HA05-HP230 | 30382816 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD231-0810-2-4-180HA05-HP230 | 30382817 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD231-0820-2-4-180HA05-HP230 | 30382818 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD231-0830-2-4-180HA05-HP230 | 30382819 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD231-0840-2-4-180HA05-HP230 | 30382820 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD231-0850-2-4-180HA05-HP230 | 30382821 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD231-0860-2-4-180HA05-HP230 | 30382822 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD231-0870-2-4-180HA05-HP230 | 30382823 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD231-0880-2-4-180HA05-HP230 | 30382824 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD231-0890-2-4-180HA05-HP230 | 30382825 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD231-0900-2-4-180HA05-HP230 | 30382826 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD231-0910-2-4-180HA05-HP230 | 30382827 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD231-0920-2-4-180HA05-HP230 | 30382828 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD231-0930-2-4-180HA05-HP230 | 30382829 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD231-0940-2-4-180HA05-HP230 | 30382830 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD231-0950-2-4-180HA05-HP230 | 30382831 |
| 9,60 | 10 | 103 | 61 | 49 | 40 | SCD231-0960-2-4-180HA05-HP230 | 30382832 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD231-0970-2-4-180HA05-HP230 | 30382833 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD231-0980-2-4-180HA05-HP230 | 30382834 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD231-0990-2-4-180HA05-HP230 | 30382835 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD231-1000-2-4-180HA05-HP230 | 30382836 |
| 10,10 | 12 | 116 | 69 | 54 | 45 | SCD231-1010-2-4-180HA05-HP230 | 30382838 |
| 10,20 | 12 | 116 | 69 | 54 | 45 | SCD231-1020-2-4-180HA05-HP230 | 30382840 |
| 10,30 | 12 | 116 | 69 | 54 | 45 | SCD231-1030-2-4-180HA05-HP230 | 30382841 |
| 10,40 | 12 | 116 | 69 | 54 | 45 | SCD231-1040-2-4-180HA05-HP230 | 30382842 |
| 10,50 | 12 | 116 | 69 | 54 | 45 | SCD231-1050-2-4-180HA05-HP230 | 30382843 |
| 10,60 | 12 | 116 | 69 | 54 | 45 | SCD231-1060-2-4-180HA05-HP230 | 30382844 |
| 10,65 | 12 | 116 | 69 | 54 | 45 | SCD231-1065-2-4-180HA05-HP230 | 31198519 |
| 10,80 | 12 | 116 | 69 | 54 | 45 | SCD231-1080-2-4-180HA05-HP230 | 30382846 |
| 11,00 | 12 | 116 | 69 | 54 | 45 | SCD231-1100-2-4-180HA05-HP230 | 30382848 |
| 11,20 | 12 | 116 | 69 | 54 | 45 | SCD231-1120-2-4-180HA05-HP230 | 30382850 |
| 11,50 | 12 | 116 | 69 | 54 | 45 | SCD231-1150-2-4-180HA05-HP230 | 30382853 |
| 11,60 | 12 | 116 | 69 | 54 | 45 | SCD231-1160-2-4-180HA05-HP230 | 30382854 |
| 11,70 | 12 | 116 | 69 | 54 | 45 | SCD231-1170-2-4-180HA05-HP230 | 30382855 |
| 11,80 | 12 | 116 | 69 | 54 | 45 | SCD231-1180-2-4-180HA05-HP230 | 30382856 |
| 12,00 | 12 | 116 | 69 | 54 | 45 | SCD231-1200-2-4-180HA05-HP230 | 30382858 |
| 12,50 | 14 | 122 | 75 | 58 | 45 | SCD231-1250-2-4-180HA05-HP230 | 30382859 |
| 12,80 | 14 | 122 | 75 | 58 | 45 | SCD231-1280-2-4-180HA05-HP230 | 30382860 |
| 13,00 | 14 | 122 | 75 | 58 | 45 | SCD231-1300-2-4-180HA05-HP230 | 30382861 |
| 13,50 | 14 | 122 | 75 | 58 | 45 | SCD231-1350-2-4-180HA05-HP230 | 30382862 |
| 13,80 | 14 | 122 | 75 | 58 | 45 | SCD231-1380-2-4-180HA05-HP230 | 30382863 |
| 14,00 | 14 | 122 | 75 | 58 | 45 | SCD231-1400-2-4-180HA05-HP230 | 30382864 |
| 14,50 | 16 | 131 | 81 | 61 | 48 | SCD231-1450-2-4-180HA05-HP230 | 30382865 |

Continued on next page.

MEGA-180°-Drill | Solid carbide twist drill SCD231 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 14,80 | 16 | 131 | 81 | 61 | 48 | SCD231-1480-2-4-180HA05-HP230 | 30382866 |
| 15,00 | 16 | 131 | 81 | 61 | 48 | SCD231-1500-2-4-180HA05-HP230 | 30382867 |
| 15,50 | 16 | 131 | 81 | 61 | 48 | SCD231-1550-2-4-180HA05-HP230 | 30382868 |
| 15,80 | 16 | 131 | 81 | 61 | 48 | SCD231-1580-2-4-180HA05-HP230 | 30382869 |
| 16,00 | 16 | 131 | 81 | 61 | 48 | SCD231-1600-2-4-180HA05-HP230 | 30382870 |
| 16,50 | 18 | 141 | 91 | 69 | 48 | SCD231-1650-2-4-180HA05-HP230 | 30382871 |
| 17,00 | 18 | 141 | 91 | 69 | 48 | SCD231-1700-2-4-180HA05-HP230 | 30382873 |
| 17,50 | 18 | 141 | 91 | 69 | 48 | SCD231-1750-2-4-180HA05-HP230 | 30382874 |
| 17,80 | 18 | 141 | 91 | 69 | 48 | SCD231-1780-2-4-180HA05-HP230 | 30382875 |
| 18,00 | 18 | 141 | 91 | 69 | 48 | SCD231-1800-2-4-180HA05-HP230 | 30382876 |
| 18,50 | 20 | 151 | 99 | 75 | 50 | SCD231-1850-2-4-180HA05-HP230 | 30382877 |
| 19,00 | 20 | 151 | 99 | 75 | 50 | SCD231-1900-2-4-180HA05-HP230 | 30382879 |
| 19,80 | 20 | 151 | 99 | 75 | 50 | SCD231-1980-2-4-180HA05-HP230 | 30382881 |
| 20,00 | 20 | 151 | 99 | 75 | 50 | SCD231-2000-2-4-180HA05-HP230 | 30382882 |

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

Shank form: HB | HE

Specification:

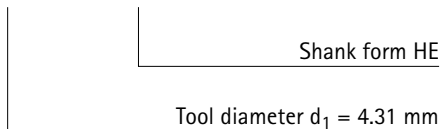
SCD231-[diameter]-2-4-180[shank form]05-HP230

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 116 | 69 | 54 | 45 |
| 12,01 | 14,00 | 14 | 122 | 75 | 58 | 45 |
| 14,01 | 16,00 | 16 | 131 | 81 | 61 | 48 |
| 16,01 | 18,00 | 18 | 141 | 91 | 69 | 48 |
| 18,01 | 20,00 | 20 | 151 | 99 | 75 | 50 |

Example:

SCD231-0431-2-4-180HE05-HP230



Dimensions in mm.

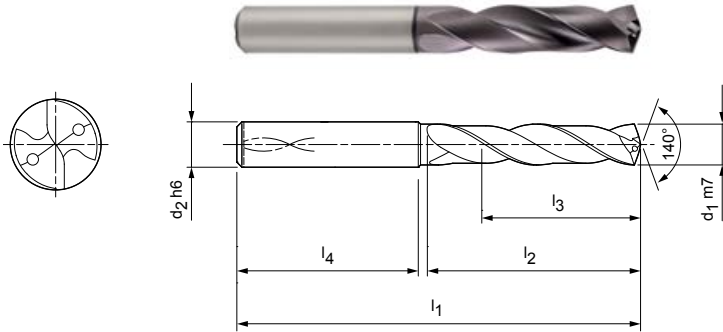
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

ECU-Drill-Steel

Solid carbide twist drill
SCD361 (3xD), internal coolant supply

Design:
 Drill diameter: 3.00 - 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP132
 Number of cutting edges: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD361-0300-2-2-140HA03-HP132 | 30421364 |
| 3,10 | 6 | 62 | 20 | 14 | 36 | SCD361-0310-2-2-140HA03-HP132 | 30421365 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD361-0320-2-2-140HA03-HP132 | 30421366 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD361-0330-2-2-140HA03-HP132 | 30421368 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD361-0340-2-2-140HA03-HP132 | 30421369 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD361-0350-2-2-140HA03-HP132 | 30421370 |
| 3,70* | 6 | 62 | 20 | 14 | 36 | SCD361-0370-2-2-140HA03-HP132 | 30421372 |
| 3,80 | 6 | 66 | 24 | 17 | 36 | SCD361-0380-2-2-140HA03-HP132 | 30421373 |
| 3,90 | 6 | 66 | 24 | 17 | 36 | SCD361-0390-2-2-140HA03-HP132 | 30421374 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD361-0400-2-2-140HA03-HP132 | 30421375 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD361-0410-2-2-140HA03-HP132 | 30421376 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD361-0420-2-2-140HA03-HP132 | 30421377 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD361-0430-2-2-140HA03-HP132 | 30421379 |
| 4,40 | 6 | 66 | 24 | 17 | 36 | SCD361-0440-2-2-140HA03-HP132 | 30421380 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD361-0450-2-2-140HA03-HP132 | 30421381 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD361-0460-2-2-140HA03-HP132 | 30421382 |
| 4,65* | 6 | 66 | 24 | 17 | 36 | SCD361-0465-2-2-140HA03-HP132 | 30421383 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD361-0470-2-2-140HA03-HP132 | 30421384 |
| 4,80 | 6 | 66 | 28 | 20 | 36 | SCD361-0480-2-2-140HA03-HP132 | 30421385 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD361-0490-2-2-140HA03-HP132 | 30421386 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD361-0500-2-2-140HA03-HP132 | 30421388 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD361-0510-2-2-140HA03-HP132 | 30421390 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD361-0520-2-2-140HA03-HP132 | 30421391 |
| 5,30 | 6 | 66 | 28 | 20 | 36 | SCD361-0530-2-2-140HA03-HP132 | 30421392 |
| 5,40 | 6 | 66 | 28 | 20 | 36 | SCD361-0540-2-2-140HA03-HP132 | 30421393 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD361-0550-2-2-140HA03-HP132 | 30421394 |
| 5,55* | 6 | 66 | 28 | 20 | 36 | SCD361-0555-2-2-140HA03-HP132 | 30421395 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD361-0560-2-2-140HA03-HP132 | 30421396 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD361-0580-2-2-140HA03-HP132 | 30421399 |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD361-0590-2-2-140HA03-HP132 | 30421400 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD361-0600-2-2-140HA03-HP132 | 30421401 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD361-0610-2-2-140HA03-HP132 | 30421402 |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD361-0620-2-2-140HA03-HP132 | 30421403 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD361-0630-2-2-140HA03-HP132 | 30421404 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD361-0640-2-2-140HA03-HP132 | 30421405 |


ECU-Drill-Steel | Solid carbide twist drill SCD361 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD361-0650-2-2-140HA03-HP132 | 30421406 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD361-0660-2-2-140HA03-HP132 | 30421407 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD361-0670-2-2-140HA03-HP132 | 30421408 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD361-0680-2-2-140HA03-HP132 | 30421409 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD361-0690-2-2-140HA03-HP132 | 30421410 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD361-0700-2-2-140HA03-HP132 | 30421411 |
| 7,10 | 8 | 79 | 41 | 29 | 36 | SCD361-0710-2-2-140HA03-HP132 | 30421412 |
| 7,20 | 8 | 79 | 41 | 29 | 36 | SCD361-0720-2-2-140HA03-HP132 | 30421413 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD361-0740-2-2-140HA03-HP132 | 30421415 |
| 7,45* | 8 | 79 | 41 | 29 | 36 | SCD361-0745-2-2-140HA03-HP132 | 30421416 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD361-0750-2-2-140HA03-HP132 | 30421417 |
| 7,70 | 8 | 79 | 41 | 29 | 36 | SCD361-0770-2-2-140HA03-HP132 | 30421420 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD361-0780-2-2-140HA03-HP132 | 30421421 |
| 7,90 | 8 | 79 | 41 | 29 | 36 | SCD361-0790-2-2-140HA03-HP132 | 30421422 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD361-0800-2-2-140HA03-HP132 | 30421423 |
| 8,10 | 10 | 89 | 47 | 35 | 40 | SCD361-0810-2-2-140HA03-HP132 | 30421424 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD361-0820-2-2-140HA03-HP132 | 30421425 |
| 8,30 | 10 | 89 | 47 | 35 | 40 | SCD361-0830-2-2-140HA03-HP132 | 30421426 |
| 8,40 | 10 | 89 | 47 | 35 | 40 | SCD361-0840-2-2-140HA03-HP132 | 30421427 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD361-0850-2-2-140HA03-HP132 | 30421428 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD361-0860-2-2-140HA03-HP132 | 30421429 |
| 8,70 | 10 | 89 | 47 | 35 | 40 | SCD361-0870-2-2-140HA03-HP132 | 30421430 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD361-0880-2-2-140HA03-HP132 | 30421431 |
| 8,90 | 10 | 89 | 47 | 35 | 40 | SCD361-0890-2-2-140HA03-HP132 | 30421432 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD361-0900-2-2-140HA03-HP132 | 30421433 |
| 9,10 | 10 | 89 | 47 | 35 | 40 | SCD361-0910-2-2-140HA03-HP132 | 30421434 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD361-0920-2-2-140HA03-HP132 | 30421435 |
| 9,30* | 10 | 89 | 47 | 35 | 40 | SCD361-0930-2-2-140HA03-HP132 | 30421437 |
| 9,35 | 10 | 89 | 47 | 35 | 40 | SCD361-0935-2-2-140HA03-HP132 | 30421438 |
| 9,40 | 10 | 89 | 47 | 35 | 40 | SCD361-0940-2-2-140HA03-HP132 | 30421439 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD361-0950-2-2-140HA03-HP132 | 30421440 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD361-0960-2-2-140HA03-HP132 | 30421441 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD361-0980-2-2-140HA03-HP132 | 30421443 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD361-0990-2-2-140HA03-HP132 | 30421445 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD361-1000-2-2-140HA03-HP132 | 30421446 |
| 10,10 | 12 | 102 | 55 | 40 | 45 | SCD361-1010-2-2-140HA03-HP132 | 30421447 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD361-1020-2-2-140HA03-HP132 | 30421448 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD361-1030-2-2-140HA03-HP132 | 30421449 |
| 10,40 | 12 | 102 | 55 | 40 | 45 | SCD361-1040-2-2-140HA03-HP132 | 30421450 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD361-1050-2-2-140HA03-HP132 | 30421451 |
| 10,60 | 12 | 102 | 55 | 40 | 45 | SCD361-1060-2-2-140HA03-HP132 | 30421453 |
| 10,70 | 12 | 102 | 55 | 40 | 45 | SCD361-1070-2-2-140HA03-HP132 | 30421454 |
| 10,80 | 12 | 102 | 55 | 40 | 45 | SCD361-1080-2-2-140HA03-HP132 | 30421456 |
| 10,90 | 12 | 102 | 55 | 40 | 45 | SCD361-1090-2-2-140HA03-HP132 | 30421457 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD361-1100-2-2-140HA03-HP132 | 30421458 |
| 11,10 | 12 | 102 | 55 | 40 | 45 | SCD361-1110-2-2-140HA03-HP132 | 30421459 |
| 11,20* | 12 | 102 | 55 | 40 | 45 | SCD361-1120-2-2-140HA03-HP132 | 30421460 |
| 11,40 | 12 | 102 | 55 | 40 | 45 | SCD361-1140-2-2-140HA03-HP132 | 30421463 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD361-1150-2-2-140HA03-HP132 | 30421464 |
| 11,70 | 12 | 102 | 55 | 40 | 45 | SCD361-1170-2-2-140HA03-HP132 | 30421466 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD361-1180-2-2-140HA03-HP132 | 30421467 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD361-1200-2-2-140HA03-HP132 | 30421469 |
| 12,25 | 14 | 107 | 60 | 43 | 45 | SCD361-1225-2-2-140HA03-HP132 | 30421470 |
| 12,50 | 14 | 107 | 60 | 43 | 45 | SCD361-1250-2-2-140HA03-HP132 | 30421471 |
| 12,70 | 14 | 107 | 60 | 43 | 45 | SCD361-1270-2-2-140HA03-HP132 | 30421472 |
| 12,80 | 14 | 107 | 60 | 43 | 45 | SCD361-1280-2-2-140HA03-HP132 | 30421473 |
| 12,90 | 14 | 107 | 60 | 43 | 45 | SCD361-1290-2-2-140HA03-HP132 | 30421474 |


ECU-Drill-Steel | Solid carbide twist drill SCD361 (3xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD361-1300-2-2-140HA03-HP132 | 30421475 |
| 13,10 | 14 | 107 | 60 | 43 | 45 | SCD361-1310-2-2-140HA03-HP132 | 30421476 |
| 13,20 | 14 | 107 | 60 | 43 | 45 | SCD361-1320-2-2-140HA03-HP132 | 30421477 |
| 13,50 | 14 | 107 | 60 | 43 | 45 | SCD361-1350-2-2-140HA03-HP132 | 30421479 |
| 13,80 | 14 | 107 | 60 | 43 | 45 | SCD361-1380-2-2-140HA03-HP132 | 30421481 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD361-1400-2-2-140HA03-HP132 | 30421482 |
| 14,20 | 16 | 115 | 65 | 45 | 48 | SCD361-1420-2-2-140HA03-HP132 | 30421483 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD361-1450-2-2-140HA03-HP132 | 30421484 |
| 14,80 | 16 | 115 | 65 | 45 | 48 | SCD361-1480-2-2-140HA03-HP132 | 30421487 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD361-1500-2-2-140HA03-HP132 | 30421488 |
| 15,10 | 16 | 115 | 65 | 45 | 48 | SCD361-1510-2-2-140HA03-HP132 | 30421489 |
| 15,25 | 16 | 115 | 65 | 45 | 48 | SCD361-1525-2-2-140HA03-HP132 | 30421490 |
| 15,30 | 16 | 115 | 65 | 45 | 48 | SCD361-1530-2-2-140HA03-HP132 | 30421491 |
| 15,50 | 16 | 115 | 65 | 45 | 48 | SCD361-1550-2-2-140HA03-HP132 | 30421493 |
| 15,80 | 16 | 115 | 65 | 45 | 48 | SCD361-1580-2-2-140HA03-HP132 | 30421496 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD361-1600-2-2-140HA03-HP132 | 30421497 |
| 16,50 | 18 | 123 | 73 | 51 | 48 | SCD361-1650-2-2-140HA03-HP132 | 30421498 |
| 16,80 | 18 | 123 | 73 | 51 | 48 | SCD361-1680-2-2-140HA03-HP132 | 30421499 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD361-1700-2-2-140HA03-HP132 | 30421501 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD361-1750-2-2-140HA03-HP132 | 30421502 |
| 17,80 | 18 | 123 | 73 | 51 | 48 | SCD361-1780-2-2-140HA03-HP132 | 30421504 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD361-1800-2-2-140HA03-HP132 | 30421505 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD361-1850-2-2-140HA03-HP132 | 30421506 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD361-1900-2-2-140HA03-HP132 | 30421509 |
| 19,80 | 20 | 131 | 79 | 55 | 50 | SCD361-1980-2-2-140HA03-HP132 | 30421512 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD361-2000-2-2-140HA03-HP132 | 30421513 |

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD361-0430-2-2-140[shank form]03-HP132

Example:
SCD361-0430-2-2-140HE03-HP132

Shank form HE

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

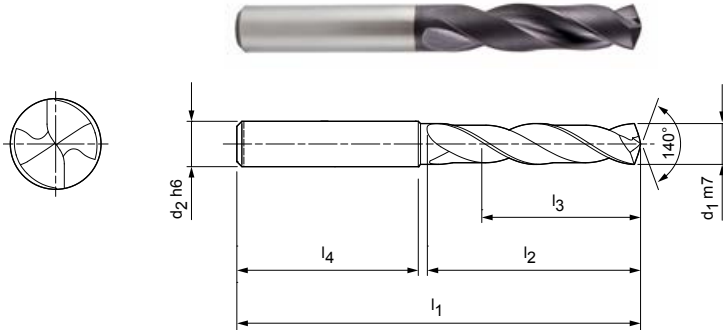
Special designs and other coatings available upon request.

ECU-Drill-Steel

Solid carbide twist drill
SCD360 (3xD), external coolant supply

Design:

Drill diameter: 3.00 - 20.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP132
Number of cutting edges: 2
Tip angle: 140°
Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD360-0300-2-2-140HA03-HP132 | 30421215 |
| 3,10 | 6 | 62 | 20 | 14 | 36 | SCD360-0310-2-2-140HA03-HP132 | 30421216 |
| 3,20 | 6 | 62 | 20 | 14 | 36 | SCD360-0320-2-2-140HA03-HP132 | 30421217 |
| 3,30 | 6 | 62 | 20 | 14 | 36 | SCD360-0330-2-2-140HA03-HP132 | 30421218 |
| 3,40 | 6 | 62 | 20 | 14 | 36 | SCD360-0340-2-2-140HA03-HP132 | 30421219 |
| 3,50 | 6 | 62 | 20 | 14 | 36 | SCD360-0350-2-2-140HA03-HP132 | 30421220 |
| 3,60 | 6 | 62 | 20 | 14 | 36 | SCD360-0360-2-2-140HA03-HP132 | 30421221 |
| 3,70* | 6 | 62 | 20 | 14 | 36 | SCD360-0370-2-2-140HA03-HP132 | 30421222 |
| 3,80 | 6 | 66 | 24 | 17 | 36 | SCD360-0380-2-2-140HA03-HP132 | 30421223 |
| 3,90 | 6 | 66 | 24 | 17 | 36 | SCD360-0390-2-2-140HA03-HP132 | 30421224 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD360-0400-2-2-140HA03-HP132 | 30421225 |
| 4,02 | 6 | 66 | 24 | 17 | 36 | SCD360-0402-2-2-140HA03-HP132 | 30421226 |
| 4,10 | 6 | 66 | 24 | 17 | 36 | SCD360-0410-2-2-140HA03-HP132 | 30421227 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD360-0420-2-2-140HA03-HP132 | 30421228 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD360-0430-2-2-140HA03-HP132 | 30421229 |
| 4,40 | 6 | 66 | 24 | 17 | 36 | SCD360-0440-2-2-140HA03-HP132 | 30421230 |
| 4,50 | 6 | 66 | 24 | 17 | 36 | SCD360-0450-2-2-140HA03-HP132 | 30421231 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD360-0460-2-2-140HA03-HP132 | 30421232 |
| 4,65* | 6 | 66 | 24 | 17 | 36 | SCD360-0465-2-2-140HA03-HP132 | 30421233 |
| 4,70 | 6 | 66 | 24 | 17 | 36 | SCD360-0470-2-2-140HA03-HP132 | 30421234 |
| 4,80 | 6 | 66 | 28 | 20 | 36 | SCD360-0480-2-2-140HA03-HP132 | 30421235 |
| 4,90 | 6 | 66 | 28 | 20 | 36 | SCD360-0490-2-2-140HA03-HP132 | 30421236 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD360-0500-2-2-140HA03-HP132 | 30421237 |
| 5,10 | 6 | 66 | 28 | 20 | 36 | SCD360-0510-2-2-140HA03-HP132 | 30421238 |
| 5,20 | 6 | 66 | 28 | 20 | 36 | SCD360-0520-2-2-140HA03-HP132 | 30421240 |
| 5,30 | 6 | 66 | 28 | 20 | 36 | SCD360-0530-2-2-140HA03-HP132 | 30421241 |
| 5,40 | 6 | 66 | 28 | 20 | 36 | SCD360-0540-2-2-140HA03-HP132 | 30421242 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD360-0550-2-2-140HA03-HP132 | 30421243 |
| 5,55* | 6 | 66 | 28 | 20 | 36 | SCD360-0555-2-2-140HA03-HP132 | 30421244 |
| 5,60 | 6 | 66 | 28 | 20 | 36 | SCD360-0560-2-2-140HA03-HP132 | 30421245 |
| 5,70 | 6 | 66 | 28 | 20 | 36 | SCD360-0570-2-2-140HA03-HP132 | 30421246 |
| 5,80 | 6 | 66 | 28 | 20 | 36 | SCD360-0580-2-2-140HA03-HP132 | 30421247 |
| 5,90 | 6 | 66 | 28 | 20 | 36 | SCD360-0590-2-2-140HA03-HP132 | 30421248 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD360-0600-2-2-140HA03-HP132 | 30421249 |
| 6,10 | 8 | 79 | 34 | 24 | 36 | SCD360-0610-2-2-140HA03-HP132 | 30421250 |

ECU-Drill-Steel | Solid carbide twist drill SCD360 (3xD), external coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,20 | 8 | 79 | 34 | 24 | 36 | SCD360-0620-2-2-140HA03-HP132 | 30421251 |
| 6,30 | 8 | 79 | 34 | 24 | 36 | SCD360-0630-2-2-140HA03-HP132 | 30421252 |
| 6,40 | 8 | 79 | 34 | 24 | 36 | SCD360-0640-2-2-140HA03-HP132 | 30421253 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD360-0650-2-2-140HA03-HP132 | 30421254 |
| 6,60 | 8 | 79 | 34 | 24 | 36 | SCD360-0660-2-2-140HA03-HP132 | 30421255 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD360-0670-2-2-140HA03-HP132 | 30421256 |
| 6,80 | 8 | 79 | 34 | 24 | 36 | SCD360-0680-2-2-140HA03-HP132 | 30421257 |
| 6,90 | 8 | 79 | 34 | 24 | 36 | SCD360-0690-2-2-140HA03-HP132 | 30421258 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD360-0700-2-2-140HA03-HP132 | 30421259 |
| 7,10 | 8 | 79 | 41 | 29 | 36 | SCD360-0710-2-2-140HA03-HP132 | 30421260 |
| 7,20 | 8 | 79 | 41 | 29 | 36 | SCD360-0720-2-2-140HA03-HP132 | 30421261 |
| 7,30 | 8 | 79 | 41 | 29 | 36 | SCD360-0730-2-2-140HA03-HP132 | 30421262 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD360-0740-2-2-140HA03-HP132 | 30421263 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD360-0750-2-2-140HA03-HP132 | 30421264 |
| 7,60 | 8 | 79 | 41 | 29 | 36 | SCD360-0760-2-2-140HA03-HP132 | 30421266 |
| 7,70 | 8 | 79 | 41 | 29 | 36 | SCD360-0770-2-2-140HA03-HP132 | 30421267 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD360-0780-2-2-140HA03-HP132 | 30421268 |
| 7,90 | 8 | 79 | 41 | 29 | 36 | SCD360-0790-2-2-140HA03-HP132 | 30421269 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD360-0800-2-2-140HA03-HP132 | 30421270 |
| 8,10 | 10 | 89 | 47 | 35 | 40 | SCD360-0810-2-2-140HA03-HP132 | 30421271 |
| 8,20 | 10 | 89 | 47 | 35 | 40 | SCD360-0820-2-2-140HA03-HP132 | 30421272 |
| 8,30 | 10 | 89 | 47 | 35 | 40 | SCD360-0830-2-2-140HA03-HP132 | 30421273 |
| 8,40 | 10 | 89 | 47 | 35 | 40 | SCD360-0840-2-2-140HA03-HP132 | 30421274 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD360-0850-2-2-140HA03-HP132 | 30421275 |
| 8,60 | 10 | 89 | 47 | 35 | 40 | SCD360-0860-2-2-140HA03-HP132 | 30421276 |
| 8,70 | 10 | 89 | 47 | 35 | 40 | SCD360-0870-2-2-140HA03-HP132 | 30421277 |
| 8,80 | 10 | 89 | 47 | 35 | 40 | SCD360-0880-2-2-140HA03-HP132 | 30421278 |
| 8,90 | 10 | 89 | 47 | 35 | 40 | SCD360-0890-2-2-140HA03-HP132 | 30421279 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD360-0900-2-2-140HA03-HP132 | 30421280 |
| 9,10 | 10 | 89 | 47 | 35 | 40 | SCD360-0910-2-2-140HA03-HP132 | 30421281 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD360-0920-2-2-140HA03-HP132 | 30421282 |
| 9,30* | 10 | 89 | 47 | 35 | 40 | SCD360-0930-2-2-140HA03-HP132 | 30421284 |
| 9,40 | 10 | 89 | 47 | 35 | 40 | SCD360-0940-2-2-140HA03-HP132 | 30421285 |
| 9,50 | 10 | 89 | 47 | 35 | 40 | SCD360-0950-2-2-140HA03-HP132 | 30421286 |
| 9,60 | 10 | 89 | 47 | 35 | 40 | SCD360-0960-2-2-140HA03-HP132 | 30421287 |
| 9,70 | 10 | 89 | 47 | 35 | 40 | SCD360-0970-2-2-140HA03-HP132 | 30421288 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD360-0980-2-2-140HA03-HP132 | 30421289 |
| 9,90 | 10 | 89 | 47 | 35 | 40 | SCD360-0990-2-2-140HA03-HP132 | 30421290 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD360-1000-2-2-140HA03-HP132 | 30421291 |
| 10,10 | 12 | 102 | 55 | 40 | 45 | SCD360-1010-2-2-140HA03-HP132 | 30421292 |
| 10,20 | 12 | 102 | 55 | 40 | 45 | SCD360-1020-2-2-140HA03-HP132 | 30421293 |
| 10,30 | 12 | 102 | 55 | 40 | 45 | SCD360-1030-2-2-140HA03-HP132 | 30421294 |
| 10,40 | 12 | 102 | 55 | 40 | 45 | SCD360-1040-2-2-140HA03-HP132 | 30421295 |
| 10,50 | 12 | 102 | 55 | 40 | 45 | SCD360-1050-2-2-140HA03-HP132 | 30421296 |
| 10,60 | 12 | 102 | 55 | 40 | 45 | SCD360-1060-2-2-140HA03-HP132 | 30421297 |
| 10,70 | 12 | 102 | 55 | 40 | 45 | SCD360-1070-2-2-140HA03-HP132 | 30421298 |
| 10,80 | 12 | 102 | 55 | 40 | 45 | SCD360-1080-2-2-140HA03-HP132 | 30421300 |
| 10,90 | 12 | 102 | 55 | 40 | 45 | SCD360-1090-2-2-140HA03-HP132 | 30421301 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD360-1100-2-2-140HA03-HP132 | 30421302 |
| 11,10 | 12 | 102 | 55 | 40 | 45 | SCD360-1110-2-2-140HA03-HP132 | 30421303 |
| 11,20* | 12 | 102 | 55 | 40 | 45 | SCD360-1120-2-2-140HA03-HP132 | 30421304 |
| 11,30 | 12 | 102 | 55 | 40 | 45 | SCD360-1130-2-2-140HA03-HP132 | 30421305 |
| 11,40 | 12 | 102 | 55 | 40 | 45 | SCD360-1140-2-2-140HA03-HP132 | 30421306 |
| 11,50 | 12 | 102 | 55 | 40 | 45 | SCD360-1150-2-2-140HA03-HP132 | 30421307 |
| 11,60 | 12 | 102 | 55 | 40 | 45 | SCD360-1160-2-2-140HA03-HP132 | 30421308 |
| 11,70 | 12 | 102 | 55 | 40 | 45 | SCD360-1170-2-2-140HA03-HP132 | 30421309 |
| 11,80 | 12 | 102 | 55 | 40 | 45 | SCD360-1180-2-2-140HA03-HP132 | 30421310 |

Continued on next page.


ECU-Drill-Steel | Solid carbide twist drill SCD360 (3xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,90 | 12 | 102 | 55 | 40 | 45 | SCD360-1190-2-2-140HA03-HP132 | 30421312 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD360-1200-2-2-140HA03-HP132 | 30421313 |
| 12,20 | 14 | 107 | 60 | 43 | 45 | SCD360-1220-2-2-140HA03-HP132 | 30569112 |
| 12,25 | 14 | 107 | 60 | 43 | 45 | SCD360-1225-2-2-140HA03-HP132 | 30421314 |
| 12,50 | 14 | 107 | 60 | 43 | 45 | SCD360-1250-2-2-140HA03-HP132 | 30421316 |
| 12,70 | 14 | 107 | 60 | 43 | 45 | SCD360-1270-2-2-140HA03-HP132 | 30421317 |
| 12,80 | 14 | 107 | 60 | 43 | 45 | SCD360-1280-2-2-140HA03-HP132 | 30421318 |
| 13,00 | 14 | 107 | 60 | 43 | 45 | SCD360-1300-2-2-140HA03-HP132 | 30421320 |
| 13,30 | 14 | 107 | 60 | 43 | 45 | SCD360-1330-2-2-140HA03-HP132 | 30421323 |
| 13,50 | 14 | 107 | 60 | 43 | 45 | SCD360-1350-2-2-140HA03-HP132 | 30421324 |
| 13,70 | 14 | 107 | 60 | 43 | 45 | SCD360-1370-2-2-140HA03-HP132 | 30421325 |
| 13,80 | 14 | 107 | 60 | 43 | 45 | SCD360-1380-2-2-140HA03-HP132 | 30421326 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SCD360-1400-2-2-140HA03-HP132 | 30421327 |
| 14,20 | 16 | 115 | 65 | 45 | 48 | SCD360-1420-2-2-140HA03-HP132 | 30421328 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD360-1450-2-2-140HA03-HP132 | 30421330 |
| 14,70 | 16 | 115 | 65 | 45 | 48 | SCD360-1470-2-2-140HA03-HP132 | 30421331 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD360-1500-2-2-140HA03-HP132 | 30421333 |
| 15,25 | 16 | 115 | 65 | 45 | 48 | SCD360-1525-2-2-140HA03-HP132 | 30421335 |
| 15,30 | 16 | 115 | 65 | 45 | 48 | SCD360-1530-2-2-140HA03-HP132 | 30421336 |
| 15,50 | 16 | 115 | 65 | 45 | 48 | SCD360-1550-2-2-140HA03-HP132 | 30421337 |
| 15,80 | 16 | 115 | 65 | 45 | 48 | SCD360-1580-2-2-140HA03-HP132 | 30421339 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD360-1600-2-2-140HA03-HP132 | 30421340 |
| 16,50 | 18 | 123 | 73 | 51 | 48 | SCD360-1650-2-2-140HA03-HP132 | 30421341 |
| 16,80 | 18 | 123 | 73 | 51 | 48 | SCD360-1680-2-2-140HA03-HP132 | 30421342 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD360-1700-2-2-140HA03-HP132 | 30421343 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD360-1750-2-2-140HA03-HP132 | 30421344 |
| 17,80 | 18 | 123 | 73 | 51 | 48 | SCD360-1780-2-2-140HA03-HP132 | 30421345 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD360-1800-2-2-140HA03-HP132 | 30421346 |
| 18,50 | 20 | 131 | 79 | 55 | 50 | SCD360-1850-2-2-140HA03-HP132 | 30421347 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD360-1900-2-2-140HA03-HP132 | 30421349 |
| 19,50 | 20 | 131 | 79 | 55 | 50 | SCD360-1950-2-2-140HA03-HP132 | 30421350 |
| 19,80 | 20 | 131 | 79 | 55 | 50 | SCD360-1980-2-2-140HA03-HP132 | 30421351 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD360-2000-2-2-140HA03-HP132 | 30421352 |

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD360-0430-2-2-140[shank form]05-HP132

Example:

SCD360-0430-2-2-140HE05-HP132

Shank form HE

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

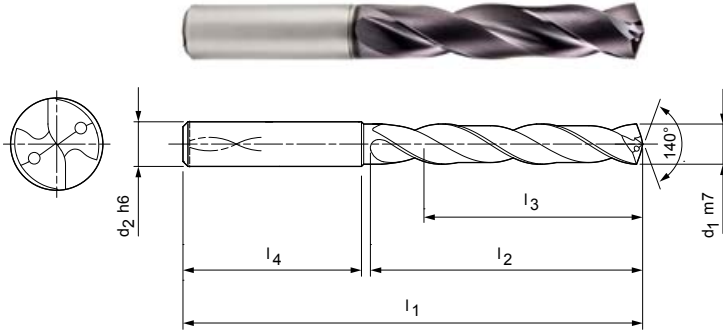
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

ECU-Drill-Steel

Solid carbide twist drill
SCD361 (5xD), internal coolant supply

Design:
 Drill diameter: 3.00 - 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP132
 Number of cutting edges: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD361-0300-2-2-140HA05-HP132 | 30421524 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD361-0310-2-2-140HA05-HP132 | 30421525 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD361-0320-2-2-140HA05-HP132 | 30421526 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD361-0330-2-2-140HA05-HP132 | 30421528 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD361-0340-2-2-140HA05-HP132 | 30421529 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD361-0350-2-2-140HA05-HP132 | 30421530 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD361-0360-2-2-140HA05-HP132 | 30421531 |
| 3,70* | 6 | 66 | 28 | 23 | 36 | SCD361-0370-2-2-140HA05-HP132 | 30421532 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD361-0380-2-2-140HA05-HP132 | 30421533 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD361-0390-2-2-140HA05-HP132 | 30421534 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD361-0400-2-2-140HA05-HP132 | 30421535 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD361-0410-2-2-140HA05-HP132 | 30421536 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD361-0420-2-2-140HA05-HP132 | 30421537 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD361-0430-2-2-140HA05-HP132 | 30421539 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD361-0440-2-2-140HA05-HP132 | 30421540 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD361-0450-2-2-140HA05-HP132 | 30421541 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD361-0460-2-2-140HA05-HP132 | 30421542 |
| 4,65* | 6 | 74 | 36 | 29 | 36 | SCD361-0465-2-2-140HA05-HP132 | 30421543 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD361-0470-2-2-140HA05-HP132 | 30421544 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD361-0480-2-2-140HA05-HP132 | 30421545 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD361-0490-2-2-140HA05-HP132 | 30421546 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD361-0500-2-2-140HA05-HP132 | 30421548 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD361-0510-2-2-140HA05-HP132 | 30421550 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD361-0520-2-2-140HA05-HP132 | 30421551 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD361-0530-2-2-140HA05-HP132 | 30421552 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD361-0540-2-2-140HA05-HP132 | 30421553 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD361-0550-2-2-140HA05-HP132 | 30421554 |
| 5,55* | 6 | 82 | 44 | 35 | 36 | SCD361-0555-2-2-140HA05-HP132 | 30421555 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD361-0560-2-2-140HA05-HP132 | 30421556 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD361-0570-2-2-140HA05-HP132 | 30421557 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD361-0580-2-2-140HA05-HP132 | 30421559 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD361-0590-2-2-140HA05-HP132 | 30421560 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD361-0600-2-2-140HA05-HP132 | 30421561 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD361-0610-2-2-140HA05-HP132 | 30421562 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD361-0620-2-2-140HA05-HP132 | 30421563 |

ECU-Drill-Steel | Solid carbide twist drill SCD361 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD361-0630-2-2-140HA05-HP132 | 30421564 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD361-0640-2-2-140HA05-HP132 | 30421565 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD361-0650-2-2-140HA05-HP132 | 30421566 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD361-0660-2-2-140HA05-HP132 | 30421567 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD361-0670-2-2-140HA05-HP132 | 30421568 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD361-0680-2-2-140HA05-HP132 | 30421569 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD361-0690-2-2-140HA05-HP132 | 30421570 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD361-0700-2-2-140HA05-HP132 | 30421571 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD361-0710-2-2-140HA05-HP132 | 30421572 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD361-0720-2-2-140HA05-HP132 | 30421573 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD361-0730-2-2-140HA05-HP132 | 30421574 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD361-0740-2-2-140HA05-HP132 | 30421575 |
| 7,45* | 8 | 91 | 53 | 43 | 36 | SCD361-0745-2-2-140HA05-HP132 | 30421576 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD361-0750-2-2-140HA05-HP132 | 30421577 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD361-0760-2-2-140HA05-HP132 | 30421579 |
| 7,70 | 8 | 91 | 53 | 43 | 36 | SCD361-0770-2-2-140HA05-HP132 | 30421580 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD361-0780-2-2-140HA05-HP132 | 30421581 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD361-0790-2-2-140HA05-HP132 | 30421582 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD361-0800-2-2-140HA05-HP132 | 30421583 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD361-0810-2-2-140HA05-HP132 | 30421584 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD361-0820-2-2-140HA05-HP132 | 30421585 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD361-0830-2-2-140HA05-HP132 | 30421586 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD361-0840-2-2-140HA05-HP132 | 30421587 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD361-0850-2-2-140HA05-HP132 | 30421588 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD361-0860-2-2-140HA05-HP132 | 30421589 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD361-0870-2-2-140HA05-HP132 | 30421590 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD361-0880-2-2-140HA05-HP132 | 30421591 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD361-0890-2-2-140HA05-HP132 | 30421592 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD361-0900-2-2-140HA05-HP132 | 30421593 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD361-0910-2-2-140HA05-HP132 | 30421594 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD361-0920-2-2-140HA05-HP132 | 30421595 |
| 9,30* | 10 | 103 | 61 | 49 | 40 | SCD361-0930-2-2-140HA05-HP132 | 30421597 |
| 9,35 | 10 | 103 | 61 | 49 | 40 | SCD361-0935-2-2-140HA05-HP132 | 30421598 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD361-0940-2-2-140HA05-HP132 | 30421599 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD361-0950-2-2-140HA05-HP132 | 30421600 |
| 9,60 | 10 | 103 | 61 | 49 | 40 | SCD361-0960-2-2-140HA05-HP132 | 30421601 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD361-0970-2-2-140HA05-HP132 | 30421602 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD361-0980-2-2-140HA05-HP132 | 30421603 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD361-0990-2-2-140HA05-HP132 | 30421604 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD361-1000-2-2-140HA05-HP132 | 30421605 |
| 10,10 | 12 | 118 | 71 | 56 | 45 | SCD361-1010-2-2-140HA05-HP132 | 30421606 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD361-1020-2-2-140HA05-HP132 | 30421607 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD361-1030-2-2-140HA05-HP132 | 30421608 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD361-1040-2-2-140HA05-HP132 | 30421609 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD361-1050-2-2-140HA05-HP132 | 30421610 |
| 10,60 | 12 | 118 | 71 | 56 | 45 | SCD361-1060-2-2-140HA05-HP132 | 30421612 |
| 10,70 | 12 | 118 | 71 | 56 | 45 | SCD361-1070-2-2-140HA05-HP132 | 30421613 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD361-1080-2-2-140HA05-HP132 | 30421615 |
| 10,90 | 12 | 118 | 71 | 56 | 45 | SCD361-1090-2-2-140HA05-HP132 | 30421616 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD361-1100-2-2-140HA05-HP132 | 30421617 |
| 11,10 | 12 | 118 | 71 | 56 | 45 | SCD361-1110-2-2-140HA05-HP132 | 30421618 |
| 11,20* | 12 | 118 | 71 | 56 | 45 | SCD361-1120-2-2-140HA05-HP132 | 30421619 |
| 11,25 | 12 | 118 | 71 | 56 | 45 | SCD361-1125-2-2-140HA05-HP132 | 30421620 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD361-1130-2-2-140HA05-HP132 | 30421621 |
| 11,40 | 12 | 118 | 71 | 56 | 45 | SCD361-1140-2-2-140HA05-HP132 | 30421622 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD361-1150-2-2-140HA05-HP132 | 30421623 |
| 11,60 | 12 | 118 | 71 | 56 | 45 | SCD361-1160-2-2-140HA05-HP132 | 30421624 |


ECU-Drill-Steel | Solid carbide twist drill SCD361 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,70 | 12 | 118 | 71 | 56 | 45 | SCD361-1170-2-2-140HA05-HP132 | 30421625 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD361-1180-2-2-140HA05-HP132 | 30421626 |
| 11,90 | 12 | 118 | 71 | 56 | 45 | SCD361-1190-2-2-140HA05-HP132 | 30421628 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD361-1200-2-2-140HA05-HP132 | 30421629 |
| 12,20 | 14 | 124 | 77 | 60 | 45 | SCD361-1220-2-2-140HA05-HP132 | 30569175 |
| 12,25 | 14 | 124 | 77 | 60 | 45 | SCD361-1225-2-2-140HA05-HP132 | 30421630 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD361-1250-2-2-140HA05-HP132 | 30421632 |
| 12,70 | 14 | 124 | 77 | 60 | 45 | SCD361-1270-2-2-140HA05-HP132 | 30421633 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD361-1280-2-2-140HA05-HP132 | 30421634 |
| 12,90 | 14 | 124 | 77 | 60 | 45 | SCD361-1290-2-2-140HA05-HP132 | 30421635 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD361-1300-2-2-140HA05-HP132 | 30421636 |
| 13,10 | 14 | 124 | 77 | 60 | 45 | SCD361-1310-2-2-140HA05-HP132 | 30421637 |
| 13,20 | 14 | 124 | 77 | 60 | 45 | SCD361-1320-2-2-140HA05-HP132 | 30421638 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD361-1350-2-2-140HA05-HP132 | 30421640 |
| 13,70 | 14 | 124 | 77 | 60 | 45 | SCD361-1370-2-2-140HA05-HP132 | 30421641 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD361-1380-2-2-140HA05-HP132 | 30421642 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD361-1400-2-2-140HA05-HP132 | 30421643 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD361-1420-2-2-140HA05-HP132 | 30421644 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD361-1450-2-2-140HA05-HP132 | 30421645 |
| 14,70 | 16 | 133 | 83 | 63 | 48 | SCD361-1470-2-2-140HA05-HP132 | 30421646 |
| 14,80 | 16 | 133 | 83 | 63 | 48 | SCD361-1480-2-2-140HA05-HP132 | 30421647 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD361-1500-2-2-140HA05-HP132 | 30421648 |
| 15,10 | 16 | 133 | 83 | 63 | 48 | SCD361-1510-2-2-140HA05-HP132 | 30421649 |
| 15,25 | 16 | 133 | 83 | 63 | 48 | SCD361-1525-2-2-140HA05-HP132 | 30421650 |
| 15,30 | 16 | 133 | 83 | 63 | 48 | SCD361-1530-2-2-140HA05-HP132 | 30421651 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD361-1550-2-2-140HA05-HP132 | 30421652 |
| 15,70 | 16 | 133 | 83 | 63 | 48 | SCD361-1570-2-2-140HA05-HP132 | 30421654 |
| 15,80 | 16 | 133 | 83 | 63 | 48 | SCD361-1580-2-2-140HA05-HP132 | 30421655 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD361-1600-2-2-140HA05-HP132 | 30421656 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD361-1650-2-2-140HA05-HP132 | 30421657 |
| 16,80 | 18 | 143 | 93 | 71 | 48 | SCD361-1680-2-2-140HA05-HP132 | 30421658 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD361-1700-2-2-140HA05-HP132 | 30421660 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD361-1750-2-2-140HA05-HP132 | 30421661 |
| 17,80 | 18 | 143 | 93 | 71 | 48 | SCD361-1780-2-2-140HA05-HP132 | 30421663 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD361-1800-2-2-140HA05-HP132 | 30421664 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD361-1850-2-2-140HA05-HP132 | 30421665 |
| 18,80 | 20 | 153 | 101 | 77 | 50 | SCD361-1880-2-2-140HA05-HP132 | 30421666 |
| 19,00 | 20 | 153 | 101 | 77 | 50 | SCD361-1900-2-2-140HA05-HP132 | 30421668 |
| 19,50 | 20 | 153 | 101 | 77 | 50 | SCD361-1950-2-2-140HA05-HP132 | 30421669 |
| 19,80 | 20 | 153 | 101 | 77 | 50 | SCD361-1980-2-2-140HA05-HP132 | 30421671 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD361-2000-2-2-140HA05-HP132 | 30421672 |

Continued on next page.

ECU-Drill-Steel | Solid carbide twist drill SCD361 (5xD), internal coolant supply

Configurable features

 **Shank form:**
Shank form: HB | HE

Specification:
SCD361-0430-2-2-140[shank form]05-HP132

Example:

SCD361-0430-2-2-140**HE**05-HP132

Shank form HE

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

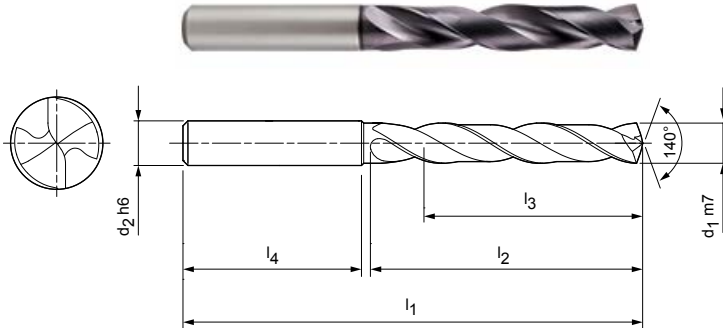
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

ECU-Drill-Steel

Solid carbide twist drill
SCD360 (5xD), external coolant supply

Design:
 Drill diameter: 3.00 - 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP132
 Number of cutting edges: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD360-0300-2-2-140HA05-HP132 | 30568692 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD360-0310-2-2-140HA05-HP132 | 30568693 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD360-0320-2-2-140HA05-HP132 | 30568694 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD360-0330-2-2-140HA05-HP132 | 30568695 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD360-0340-2-2-140HA05-HP132 | 30568696 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD360-0350-2-2-140HA05-HP132 | 30568697 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD360-0360-2-2-140HA05-HP132 | 30568698 |
| 3,70* | 6 | 66 | 28 | 23 | 36 | SCD360-0370-2-2-140HA05-HP132 | 30568699 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD360-0380-2-2-140HA05-HP132 | 30568700 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD360-0390-2-2-140HA05-HP132 | 30568701 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD360-0400-2-2-140HA05-HP132 | 30568702 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD360-0410-2-2-140HA05-HP132 | 30568703 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD360-0420-2-2-140HA05-HP132 | 30568704 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD360-0430-2-2-140HA05-HP132 | 30568705 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD360-0440-2-2-140HA05-HP132 | 30568706 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD360-0450-2-2-140HA05-HP132 | 30568707 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD360-0460-2-2-140HA05-HP132 | 30568708 |
| 4,65* | 6 | 74 | 36 | 29 | 36 | SCD360-0465-2-2-140HA05-HP132 | 30568709 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD360-0470-2-2-140HA05-HP132 | 30568710 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD360-0480-2-2-140HA05-HP132 | 30568711 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD360-0490-2-2-140HA05-HP132 | 30568712 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD360-0500-2-2-140HA05-HP132 | 30568713 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD360-0510-2-2-140HA05-HP132 | 30568714 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD360-0520-2-2-140HA05-HP132 | 30568715 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD360-0530-2-2-140HA05-HP132 | 30568716 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD360-0540-2-2-140HA05-HP132 | 30568717 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD360-0550-2-2-140HA05-HP132 | 30568718 |
| 5,55* | 6 | 82 | 44 | 35 | 36 | SCD360-0555-2-2-140HA05-HP132 | 30568719 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD360-0560-2-2-140HA05-HP132 | 30568720 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD360-0570-2-2-140HA05-HP132 | 30568721 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD360-0580-2-2-140HA05-HP132 | 30568722 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD360-0590-2-2-140HA05-HP132 | 30568723 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD360-0600-2-2-140HA05-HP132 | 30568724 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD360-0610-2-2-140HA05-HP132 | 30568725 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD360-0620-2-2-140HA05-HP132 | 30568726 |

ECU-Drill-Steel | Solid carbide twist drill SCD360 (5xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD360-0630-2-2-140HA05-HP132 | 30568727 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD360-0640-2-2-140HA05-HP132 | 30568728 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD360-0650-2-2-140HA05-HP132 | 30568729 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD360-0660-2-2-140HA05-HP132 | 30568730 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD360-0670-2-2-140HA05-HP132 | 30568731 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD360-0680-2-2-140HA05-HP132 | 30568732 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD360-0690-2-2-140HA05-HP132 | 30568733 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD360-0700-2-2-140HA05-HP132 | 30568734 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD360-0710-2-2-140HA05-HP132 | 30568735 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD360-0720-2-2-140HA05-HP132 | 30568736 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD360-0730-2-2-140HA05-HP132 | 30568737 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD360-0740-2-2-140HA05-HP132 | 30568738 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD360-0750-2-2-140HA05-HP132 | 30568740 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD360-0760-2-2-140HA05-HP132 | 30568741 |
| 7,70 | 8 | 91 | 53 | 43 | 36 | SCD360-0770-2-2-140HA05-HP132 | 30568742 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD360-0780-2-2-140HA05-HP132 | 30568743 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD360-0790-2-2-140HA05-HP132 | 30568744 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD360-0800-2-2-140HA05-HP132 | 30568745 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD360-0810-2-2-140HA05-HP132 | 30568746 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD360-0820-2-2-140HA05-HP132 | 30568747 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD360-0830-2-2-140HA05-HP132 | 30568748 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD360-0840-2-2-140HA05-HP132 | 30568749 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD360-0850-2-2-140HA05-HP132 | 30568750 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD360-0860-2-2-140HA05-HP132 | 30568751 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD360-0870-2-2-140HA05-HP132 | 30568752 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD360-0880-2-2-140HA05-HP132 | 30568753 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD360-0890-2-2-140HA05-HP132 | 30568754 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD360-0900-2-2-140HA05-HP132 | 30568755 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD360-0910-2-2-140HA05-HP132 | 30568756 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD360-0920-2-2-140HA05-HP132 | 30568757 |
| 9,30* | 10 | 103 | 61 | 49 | 40 | SCD360-0930-2-2-140HA05-HP132 | 30568758 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD360-0940-2-2-140HA05-HP132 | 30568759 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD360-0950-2-2-140HA05-HP132 | 30568760 |
| 9,60 | 10 | 103 | 61 | 49 | 40 | SCD360-0960-2-2-140HA05-HP132 | 30568761 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD360-0970-2-2-140HA05-HP132 | 30568762 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD360-0980-2-2-140HA05-HP132 | 30568763 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD360-0990-2-2-140HA05-HP132 | 30568764 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD360-1000-2-2-140HA05-HP132 | 30568765 |
| 10,10 | 12 | 118 | 71 | 56 | 45 | SCD360-1010-2-2-140HA05-HP132 | 30568766 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD360-1020-2-2-140HA05-HP132 | 30568767 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD360-1030-2-2-140HA05-HP132 | 30568768 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD360-1040-2-2-140HA05-HP132 | 30568769 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD360-1050-2-2-140HA05-HP132 | 30568770 |
| 10,60 | 12 | 118 | 71 | 56 | 45 | SCD360-1060-2-2-140HA05-HP132 | 30568771 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD360-1080-2-2-140HA05-HP132 | 30568773 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD360-1100-2-2-140HA05-HP132 | 30568775 |
| 11,10 | 12 | 118 | 71 | 56 | 45 | SCD360-1110-2-2-140HA05-HP132 | 30568776 |
| 11,20* | 12 | 118 | 71 | 56 | 45 | SCD360-1120-2-2-140HA05-HP132 | 30568777 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD360-1130-2-2-140HA05-HP132 | 30568778 |
| 11,40 | 12 | 118 | 71 | 56 | 45 | SCD360-1140-2-2-140HA05-HP132 | 30568779 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD360-1150-2-2-140HA05-HP132 | 30568780 |
| 11,60 | 12 | 118 | 71 | 56 | 45 | SCD360-1160-2-2-140HA05-HP132 | 30568781 |
| 11,70 | 12 | 118 | 71 | 56 | 45 | SCD360-1170-2-2-140HA05-HP132 | 30568782 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD360-1180-2-2-140HA05-HP132 | 30568783 |
| 11,90 | 12 | 118 | 71 | 56 | 45 | SCD360-1190-2-2-140HA05-HP132 | 30568784 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD360-1200-2-2-140HA05-HP132 | 30568785 |
| 12,20 | 14 | 124 | 77 | 60 | 45 | SCD360-1220-2-2-140HA05-HP132 | 30568786 |

ECU-Drill-Steel | Solid carbide twist drill SCD360 (5xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD360-1250-2-2-140HA05-HP132 | 30568787 |
| 12,70 | 14 | 124 | 77 | 60 | 45 | SCD360-1270-2-2-140HA05-HP132 | 30568788 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD360-1280-2-2-140HA05-HP132 | 30568789 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD360-1300-2-2-140HA05-HP132 | 30568790 |
| 13,10 | 14 | 124 | 77 | 60 | 45 | SCD360-1310-2-2-140HA05-HP132 | 30569190 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD360-1350-2-2-140HA05-HP132 | 30568792 |
| 13,70 | 14 | 124 | 77 | 60 | 45 | SCD360-1370-2-2-140HA05-HP132 | 30568793 |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD360-1380-2-2-140HA05-HP132 | 30568794 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD360-1400-2-2-140HA05-HP132 | 30568795 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD360-1420-2-2-140HA05-HP132 | 30568796 |
| 14,50 | 16 | 133 | 83 | 63 | 48 | SCD360-1450-2-2-140HA05-HP132 | 30568797 |
| 14,70 | 16 | 133 | 83 | 63 | 48 | SCD360-1470-2-2-140HA05-HP132 | 30568798 |
| 14,80 | 16 | 133 | 83 | 63 | 48 | SCD360-1480-2-2-140HA05-HP132 | 30568799 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD360-1500-2-2-140HA05-HP132 | 30568800 |
| 15,50 | 16 | 133 | 83 | 63 | 48 | SCD360-1550-2-2-140HA05-HP132 | 30568801 |
| 15,70 | 16 | 133 | 83 | 63 | 48 | SCD360-1570-2-2-140HA05-HP132 | 30568802 |
| 15,80 | 16 | 133 | 83 | 63 | 48 | SCD360-1580-2-2-140HA05-HP132 | 30568803 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD360-1600-2-2-140HA05-HP132 | 30568804 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD360-1650-2-2-140HA05-HP132 | 30568805 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD360-1700-2-2-140HA05-HP132 | 30568807 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD360-1750-2-2-140HA05-HP132 | 30568808 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD360-1800-2-2-140HA05-HP132 | 30568810 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD360-1850-2-2-140HA05-HP132 | 30568811 |
| 18,80 | 20 | 153 | 101 | 77 | 50 | SCD360-1880-2-2-140HA05-HP132 | 30568812 |
| 19,00 | 20 | 153 | 101 | 77 | 50 | SCD360-1900-2-2-140HA05-HP132 | 30568813 |
| 19,80 | 20 | 153 | 101 | 77 | 50 | SCD360-1980-2-2-140HA05-HP132 | 30568815 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD360-2000-2-2-140HA05-HP132 | 30568816 |

Configurable features



Shank form:
Shank form: HB | HE

Specification:

SCD360-0430-2-2-140[shank form]05-HP132

Example:

SCD360-0430-2-2-140HE05-HP132

Shank form HE

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

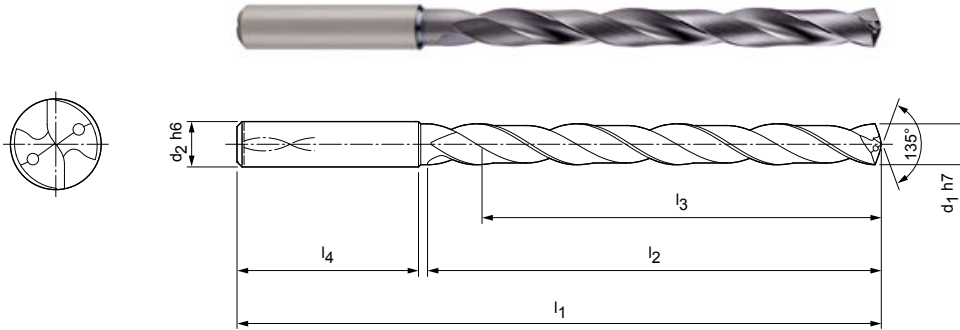
Special designs and other coatings available upon request.

ECU-Drill-Steel

Solid carbide twist drill
SCD361 (8xD), internal coolant supply

Design:

Drill diameter: 3.00 - 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP132
 Number of cutting edges: 2
 Tip angle: 135°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD361-0300-2-2-135HA08-HP132 | 30677713 |
| 3,10 | 6 | 72 | 34 | 29 | 36 | SCD361-0310-2-2-135HA08-HP132 | 30677714 |
| 3,20 | 6 | 72 | 34 | 29 | 36 | SCD361-0320-2-2-135HA08-HP132 | 30677715 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD361-0330-2-2-135HA08-HP132 | 30677716 |
| 3,40 | 6 | 72 | 34 | 29 | 36 | SCD361-0340-2-2-135HA08-HP132 | 30677717 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD361-0350-2-2-135HA08-HP132 | 30677718 |
| 3,60 | 6 | 72 | 34 | 29 | 36 | SCD361-0360-2-2-135HA08-HP132 | 30677719 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD361-0370-2-2-135HA08-HP132 | 30677720 |
| 3,80 | 6 | 81 | 43 | 36 | 36 | SCD361-0380-2-2-135HA08-HP132 | 30677721 |
| 3,90 | 6 | 81 | 43 | 36 | 36 | SCD361-0390-2-2-135HA08-HP132 | 30677722 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD361-0400-2-2-135HA08-HP132 | 30677723 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD361-0410-2-2-135HA08-HP132 | 30677724 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD361-0420-2-2-135HA08-HP132 | 30677725 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD361-0430-2-2-135HA08-HP132 | 30677726 |
| 4,40 | 6 | 81 | 43 | 36 | 36 | SCD361-0440-2-2-135HA08-HP132 | 30677727 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD361-0450-2-2-135HA08-HP132 | 30677728 |
| 4,60 | 6 | 81 | 43 | 36 | 36 | SCD361-0460-2-2-135HA08-HP132 | 30677729 |
| 4,70 | 6 | 81 | 43 | 36 | 36 | SCD361-0470-2-2-135HA08-HP132 | 30677730 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD361-0480-2-2-135HA08-HP132 | 30677731 |
| 4,90 | 6 | 95 | 57 | 48 | 36 | SCD361-0490-2-2-135HA08-HP132 | 30677732 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD361-0500-2-2-135HA08-HP132 | 30677733 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD361-0510-2-2-135HA08-HP132 | 30677734 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD361-0520-2-2-135HA08-HP132 | 30677735 |
| 5,30 | 6 | 95 | 57 | 48 | 36 | SCD361-0530-2-2-135HA08-HP132 | 30677736 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD361-0550-2-2-135HA08-HP132 | 30677738 |
| 5,70 | 6 | 95 | 57 | 48 | 36 | SCD361-0570-2-2-135HA08-HP132 | 30677740 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD361-0580-2-2-135HA08-HP132 | 30677741 |
| 5,90 | 6 | 95 | 57 | 48 | 36 | SCD361-0590-2-2-135HA08-HP132 | 30677742 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD361-0600-2-2-135HA08-HP132 | 30677743 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD361-0610-2-2-135HA08-HP132 | 30677744 |
| 6,20 | 8 | 114 | 76 | 64 | 36 | SCD361-0620-2-2-135HA08-HP132 | 30677745 |
| 6,30 | 8 | 114 | 76 | 64 | 36 | SCD361-0630-2-2-135HA08-HP132 | 30677746 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD361-0650-2-2-135HA08-HP132 | 30677748 |
| 6,60 | 8 | 114 | 76 | 64 | 36 | SCD361-0660-2-2-135HA08-HP132 | 30677749 |
| 6,70 | 8 | 114 | 76 | 64 | 36 | SCD361-0670-2-2-135HA08-HP132 | 30677751 |


ECU-Drill-Steel | Solid carbide twist drill SCD361 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD361-0680-2-2-135HA08-HP132 | 30677752 |
| 6,90 | 8 | 114 | 76 | 64 | 36 | SCD361-0690-2-2-135HA08-HP132 | 30677753 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD361-0700-2-2-135HA08-HP132 | 30677754 |
| 7,10 | 8 | 114 | 76 | 64 | 36 | SCD361-0710-2-2-135HA08-HP132 | 30677755 |
| 7,40 | 8 | 114 | 76 | 64 | 36 | SCD361-0740-2-2-135HA08-HP132 | 30677758 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD361-0750-2-2-135HA08-HP132 | 30677759 |
| 7,70 | 8 | 114 | 76 | 64 | 36 | SCD361-0770-2-2-135HA08-HP132 | 30677761 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD361-0780-2-2-135HA08-HP132 | 30677762 |
| 7,90 | 8 | 114 | 76 | 64 | 36 | SCD361-0790-2-2-135HA08-HP132 | 30677763 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD361-0800-2-2-135HA08-HP132 | 30677764 |
| 8,10 | 10 | 142 | 95 | 80 | 40 | SCD361-0810-2-2-135HA08-HP132 | 30677765 |
| 8,20 | 10 | 142 | 95 | 80 | 40 | SCD361-0820-2-2-135HA08-HP132 | 30677766 |
| 8,30 | 10 | 142 | 95 | 80 | 40 | SCD361-0830-2-2-135HA08-HP132 | 30677767 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD361-0850-2-2-135HA08-HP132 | 30677769 |
| 8,60 | 10 | 142 | 95 | 80 | 40 | SCD361-0860-2-2-135HA08-HP132 | 30677770 |
| 8,70 | 10 | 142 | 95 | 80 | 40 | SCD361-0870-2-2-135HA08-HP132 | 30677750 |
| 8,80 | 10 | 142 | 95 | 80 | 40 | SCD361-0880-2-2-135HA08-HP132 | 30677773 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD361-0900-2-2-135HA08-HP132 | 30677775 |
| 9,10 | 10 | 142 | 95 | 80 | 40 | SCD361-0910-2-2-135HA08-HP132 | 30677776 |
| 9,20 | 10 | 142 | 95 | 80 | 40 | SCD361-0920-2-2-135HA08-HP132 | 30677777 |
| 9,30 | 10 | 142 | 95 | 80 | 40 | SCD361-0930-2-2-135HA08-HP132 | 30677778 |
| 9,40 | 10 | 142 | 95 | 80 | 40 | SCD431-0940-2-2-135HA08-HP765 | 30550363 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD361-0950-2-2-135HA08-HP132 | 30677780 |
| 9,70 | 10 | 142 | 95 | 80 | 40 | SCD361-0970-2-2-135HA08-HP132 | 30677782 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD361-0980-2-2-135HA08-HP132 | 30677783 |
| 9,90 | 10 | 142 | 95 | 80 | 40 | SCD361-0990-2-2-135HA08-HP132 | 30677784 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD361-1000-2-2-135HA08-HP132 | 30677785 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD361-1020-2-2-135HA08-HP132 | 30677787 |
| 10,30 | 12 | 162 | 114 | 96 | 45 | SCD361-1030-2-2-135HA08-HP132 | 30677788 |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD361-1050-2-2-135HA08-HP132 | 30677790 |
| 10,80 | 12 | 162 | 114 | 96 | 45 | SCD361-1080-2-2-135HA08-HP132 | 30677793 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD361-1100-2-2-135HA08-HP132 | 30677795 |
| 11,20 | 12 | 162 | 114 | 96 | 45 | SCD361-1120-2-2-135HA08-HP132 | 30677797 |
| 11,50 | 12 | 162 | 114 | 96 | 45 | SCD361-1150-2-2-135HA08-HP132 | 30677800 |
| 11,70 | 12 | 162 | 114 | 96 | 45 | SCD361-1170-2-2-135HA08-HP132 | 30677802 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD361-1180-2-2-135HA08-HP132 | 30677803 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD361-1200-2-2-135HA08-HP132 | 30677805 |
| 12,20 | 14 | 178 | 133 | 112 | 45 | SCD361-1220-2-2-135HA08-HP132 | 30677806 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD361-1250-2-2-135HA08-HP132 | 30677807 |
| 12,80 | 14 | 178 | 133 | 112 | 45 | SCD361-1280-2-2-135HA08-HP132 | 30677808 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD361-1300-2-2-135HA08-HP132 | 30677809 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD361-1350-2-2-135HA08-HP132 | 30677811 |
| 13,80 | 14 | 178 | 133 | 112 | 45 | SCD361-1380-2-2-135HA08-HP132 | 30677812 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD361-1400-2-2-135HA08-HP132 | 30677813 |
| 14,50 | 16 | 203 | 152 | 128 | 48 | SCD361-1450-2-2-135HA08-HP132 | 30677815 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD361-1500-2-2-135HA08-HP132 | 30677817 |
| 15,50 | 16 | 203 | 152 | 128 | 48 | SCD361-1550-2-2-135HA08-HP132 | 30677818 |
| 15,80 | 16 | 203 | 152 | 128 | 48 | SCD361-1580-2-2-135HA08-HP132 | 30677819 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD361-1600-2-2-135HA08-HP132 | 30677820 |
| 16,50 | 18 | 222 | 171 | 144 | 48 | SCD361-1650-2-2-135HA08-HP132 | 30677821 |
| 17,00 | 18 | 222 | 171 | 144 | 48 | SCD361-1700-2-2-135HA08-HP132 | 30677822 |
| 17,50 | 18 | 222 | 171 | 144 | 48 | SCD361-1750-2-2-135HA08-HP132 | 30677823 |
| 18,00 | 18 | 222 | 171 | 144 | 48 | SCD361-1800-2-2-135HA08-HP132 | 30677824 |
| 18,50 | 20 | 243 | 190 | 160 | 50 | SCD361-1850-2-2-135HA08-HP132 | 30677825 |
| 19,00 | 20 | 243 | 190 | 160 | 50 | SCD361-1900-2-2-135HA08-HP132 | 30677826 |
| 20,00 | 20 | 243 | 190 | 160 | 50 | SCD361-2000-2-2-135HA08-HP132 | 30677828 |

Continued on next page.

ECU-Drill-Steel | Solid carbide twist drill SCD361 (8xD), internal coolant supply

Configurable features

 **Shank form:**
Shank form: HB | HE

Specification:
SCD361-0430-2-2-140[shank form]08-HP132

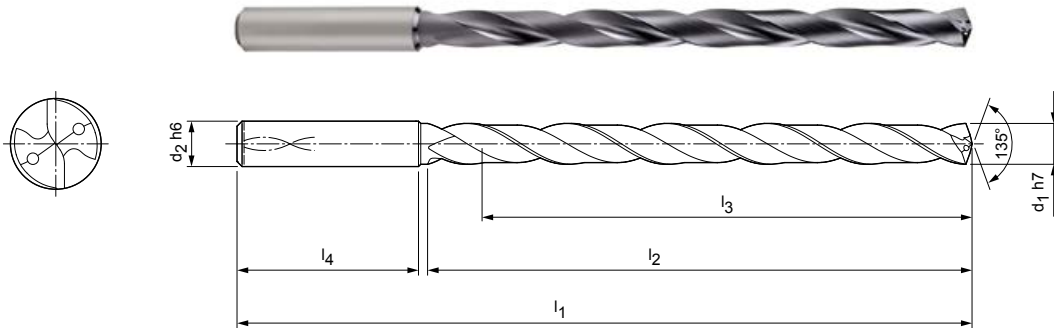
Example:
SCD361-0430-2-2-140HE08-HP132

Shank form HE

ECU-Drill-Steel

Solid carbide twist drill
SCD361 (12xD), internal coolant supply

Design:
 Drill diameter: 3.00 - 18.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP132
 Number of cutting edges: 2
 Tip angle: 135°
 Helix angle: 30°




Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 92 | 54 | 48 | 36 | SCD361-0300-2-2-135HA12-HP132 | 30677829 |
| 3,10 | 6 | 92 | 54 | 48 | 36 | SCD361-0310-2-2-135HA12-HP132 | 30677830 |
| 3,20 | 6 | 92 | 54 | 48 | 36 | SCD361-0320-2-2-135HA12-HP132 | 30677831 |
| 3,30 | 6 | 92 | 54 | 48 | 36 | SCD361-0330-2-2-135HA12-HP132 | 30677832 |
| 3,40 | 6 | 92 | 54 | 48 | 36 | SCD361-0340-2-2-135HA12-HP132 | 30677833 |
| 3,50 | 6 | 92 | 54 | 48 | 36 | SCD361-0350-2-2-135HA12-HP132 | 30677834 |
| 3,60 | 6 | 92 | 54 | 48 | 36 | SCD361-0360-2-2-135HA12-HP132 | 30677835 |
| 3,70 | 6 | 92 | 54 | 48 | 36 | SCD361-0370-2-2-135HA12-HP132 | 30677836 |
| 3,80 | 6 | 102 | 64 | 58 | 36 | SCD361-0380-2-2-135HA12-HP132 | 30677837 |
| 3,90 | 6 | 102 | 64 | 58 | 36 | SCD361-0390-2-2-135HA12-HP132 | 30677838 |
| 4,00 | 6 | 102 | 64 | 58 | 36 | SCD361-0400-2-2-135HA12-HP132 | 30677839 |
| 4,10 | 6 | 102 | 64 | 58 | 36 | SCD361-0410-2-2-135HA12-HP132 | 30677840 |
| 4,20 | 6 | 102 | 64 | 58 | 36 | SCD361-0420-2-2-135HA12-HP132 | 30677841 |
| 4,30 | 6 | 102 | 64 | 58 | 36 | SCD361-0430-2-2-135HA12-HP132 | 30677842 |
| 4,40 | 6 | 102 | 64 | 58 | 36 | SCD361-0440-2-2-135HA12-HP132 | 30677843 |
| 4,50 | 6 | 102 | 64 | 58 | 36 | SCD361-0450-2-2-135HA12-HP132 | 30677844 |
| 4,60 | 6 | 102 | 64 | 58 | 36 | SCD361-0460-2-2-135HA12-HP132 | 30677845 |
| 4,70 | 6 | 102 | 64 | 58 | 36 | SCD361-0470-2-2-135HA12-HP132 | 30677846 |
| 4,80 | 6 | 116 | 78 | 70 | 36 | SCD361-0480-2-2-135HA12-HP132 | 30677847 |
| 4,90 | 6 | 116 | 78 | 70 | 36 | SCD361-0490-2-2-135HA12-HP132 | 30677848 |
| 5,00 | 6 | 116 | 78 | 70 | 36 | SCD361-0500-2-2-135HA12-HP132 | 30677849 |
| 5,10 | 6 | 116 | 78 | 70 | 36 | SCD361-0510-2-2-135HA12-HP132 | 30677850 |
| 5,20 | 6 | 116 | 78 | 70 | 36 | SCD361-0520-2-2-135HA12-HP132 | 30677851 |
| 5,50 | 6 | 116 | 78 | 70 | 36 | SCD361-0550-2-2-135HA12-HP132 | 30677853 |
| 5,80 | 6 | 116 | 78 | 70 | 36 | SCD361-0580-2-2-135HA12-HP132 | 30677854 |
| 6,00 | 6 | 116 | 78 | 70 | 36 | SCD361-0600-2-2-135HA12-HP132 | 30677856 |
| 6,30 | 8 | 146 | 108 | 94 | 36 | SCD361-0630-2-2-135HA12-HP132 | 30677859 |
| 6,50 | 8 | 146 | 108 | 94 | 36 | SCD361-0650-2-2-135HA12-HP132 | 30677860 |
| 6,60 | 8 | 146 | 108 | 94 | 36 | SCD361-0660-2-2-135HA12-HP132 | 30677861 |
| 6,80 | 8 | 146 | 108 | 94 | 36 | SCD361-0680-2-2-135HA12-HP132 | 30677862 |
| 7,00 | 8 | 146 | 108 | 94 | 36 | SCD361-0700-2-2-135HA12-HP132 | 30677863 |
| 7,40 | 8 | 146 | 108 | 94 | 36 | SCD361-0740-2-2-135HA12-HP132 | 30677864 |
| 7,50 | 8 | 146 | 108 | 94 | 36 | SCD361-0750-2-2-135HA12-HP132 | 30677865 |
| 7,80 | 8 | 146 | 108 | 94 | 36 | SCD361-0780-2-2-135HA12-HP132 | 30677867 |
| 8,00 | 8 | 146 | 108 | 94 | 36 | SCD361-0800-2-2-135HA12-HP132 | 30677869 |


ECU-Drill-Steel | Solid carbide twist drill SCD361 (12xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 8,10 | 10 | 162 | 120 | 110 | 40 | SCD361-0810-2-2-135HA12-HP132 | 30677870 |
| 8,20 | 10 | 162 | 120 | 110 | 40 | SCD361-0820-2-2-135HA12-HP132 | 30677871 |
| 8,50 | 10 | 162 | 120 | 110 | 40 | SCD361-0850-2-2-135HA12-HP132 | 30677874 |
| 9,00 | 10 | 162 | 120 | 110 | 40 | SCD361-0900-2-2-135HA12-HP132 | 30677878 |
| 9,30 | 10 | 162 | 120 | 110 | 40 | SCD361-0930-2-2-135HA12-HP132 | 30677881 |
| 9,50 | 10 | 162 | 120 | 110 | 40 | SCD361-0950-2-2-135HA12-HP132 | 30677883 |
| 9,80 | 10 | 162 | 120 | 110 | 40 | SCD361-0980-2-2-135HA12-HP132 | 30677885 |
| 10,00 | 10 | 162 | 120 | 110 | 40 | SCD361-1000-2-2-135HA12-HP132 | 30677887 |
| 10,20 | 12 | 204 | 156 | 142 | 45 | SCD361-1020-2-2-135HA12-HP132 | 30677888 |
| 10,50 | 12 | 204 | 156 | 142 | 45 | SCD361-1050-2-2-135HA12-HP132 | 30677889 |
| 11,00 | 12 | 204 | 156 | 142 | 45 | SCD361-1100-2-2-135HA12-HP132 | 30677891 |
| 11,50 | 12 | 204 | 156 | 142 | 45 | SCD361-1150-2-2-135HA12-HP132 | 30677893 |
| 11,80 | 12 | 204 | 156 | 142 | 45 | SCD361-1180-2-2-135HA12-HP132 | 30677894 |
| 12,00 | 12 | 204 | 156 | 142 | 45 | SCD361-1200-2-2-135HA12-HP132 | 30677895 |
| 12,50 | 14 | 230 | 182 | 166 | 45 | SCD361-1250-2-2-135HA12-HP132 | 30677896 |
| 13,00 | 14 | 230 | 182 | 166 | 45 | SCD361-1300-2-2-135HA12-HP132 | 30677897 |
| 13,50 | 14 | 230 | 182 | 166 | 45 | SCD361-1350-2-2-135HA12-HP132 | 30677899 |
| 14,00 | 14 | 230 | 182 | 166 | 45 | SCD361-1400-2-2-135HA12-HP132 | 30677900 |
| 15,00 | 16 | 260 | 208 | 192 | 48 | SCD361-1500-2-2-135HA12-HP132 | 30677903 |
| 16,00 | 16 | 260 | 208 | 192 | 48 | SCD361-1600-2-2-135HA12-HP132 | 30677906 |
| 17,00 | 18 | 285 | 234 | 216 | 48 | SCD361-1700-2-2-135HA12-HP132 | 30677908 |
| 17,50 | 18 | 285 | 234 | 216 | 48 | SCD361-1750-2-2-135HA12-HP132 | 30677909 |
| 18,00 | 18 | 285 | 234 | 216 | 48 | SCD361-1800-2-2-135HA12-HP132 | 30677910 |

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD361-0430-2-2-140[shank form]12-HP132

Example:
SCD361-0430-2-2-140HE12-HP132

Shank form HE

Dimensions in mm.

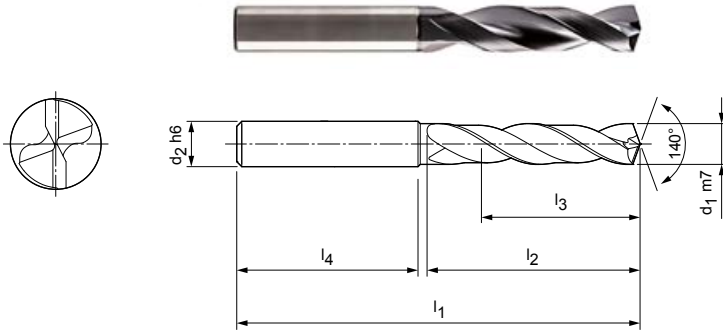
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Drill-Inox

Solid carbide twist drill
SCD120 (3xD), external coolant supply

Design:
 Drill diameter: 2.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP835
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 2,00 | 6 | 58 | 16 | 11 | 36 | SCD120-0200-2-2-140HA03-HP835 | 30444703 |
| 2,10 | 6 | 58 | 16 | 11 | 36 | SCD120-0210-2-2-140HA03-HP835 | 30453589 |
| 2,20 | 6 | 58 | 16 | 11 | 36 | SCD120-0220-2-2-140HA03-HP835 | 30453826 |
| 2,30 | 6 | 58 | 16 | 11 | 36 | SCD120-0230-2-2-140HA03-HP835 | 30453515 |
| 2,33 | 6 | 58 | 16 | 11 | 36 | SCD120-0233-2-2-140HA03-HP835 | 30453605 |
| 2,40 | 6 | 58 | 16 | 11 | 36 | SCD120-0240-2-2-140HA03-HP835 | 30444776 |
| 2,43 | 6 | 58 | 16 | 11 | 36 | SCD120-0243-2-2-140HA03-HP835 | 30453606 |
| 2,50 | 6 | 58 | 16 | 11 | 36 | SCD120-0250-2-2-140HA03-HP835 | 30451313 |
| 2,55 | 6 | 62 | 22 | 14 | 36 | SCD120-0255-2-2-140HA03-HP835 | 30453607 |
| 2,60 | 6 | 58 | 16 | 11 | 36 | SCD120-0260-2-2-140HA03-HP835 | 30453541 |
| 2,62 | 6 | 58 | 16 | 11 | 36 | SCD120-0262-2-2-140HA03-HP835 | 30453608 |
| 2,70 | 6 | 58 | 16 | 11 | 36 | SCD120-0270-2-2-140HA03-HP835 | 30453525 |
| 2,80 | 6 | 58 | 16 | 11 | 36 | SCD120-0280-2-2-140HA03-HP835 | 30453502 |
| 2,90 | 6 | 58 | 16 | 11 | 36 | SCD120-0290-2-2-140HA03-HP835 | 30453546 |
| 3,00 | 6 | 62 | 22 | 14 | 36 | SCD120-0300-2-2-140HA03-HP835 | 30390310 |
| 3,10 | 6 | 62 | 22 | 14 | 36 | SCD120-0310-2-2-140HA03-HP835 | 30390311 |
| 3,15 | 6 | 62 | 22 | 14 | 36 | SCD120-0315-2-2-140HA03-HP835 | 30453609 |
| 3,20 | 6 | 62 | 22 | 14 | 36 | SCD120-0320-2-2-140HA03-HP835 | 30390312 |
| 3,22 | 6 | 62 | 22 | 14 | 36 | SCD120-0322-2-2-140HA03-HP835 | 30453610 |
| 3,25 | 6 | 62 | 22 | 14 | 36 | SCD120-0325-2-2-140HA03-HP835 | 30453611 |
| 3,30 | 6 | 62 | 22 | 14 | 36 | SCD120-0330-2-2-140HA03-HP835 | 30390313 |
| 3,40 | 6 | 62 | 22 | 14 | 36 | SCD120-0340-2-2-140HA03-HP835 | 30390314 |
| 3,50 | 6 | 62 | 22 | 14 | 36 | SCD120-0350-2-2-140HA03-HP835 | 30390315 |
| 3,60 | 6 | 62 | 22 | 14 | 36 | SCD120-0360-2-2-140HA03-HP835 | 30390316 |
| 3,70 | 6 | 62 | 22 | 14 | 36 | SCD120-0370-2-2-140HA03-HP835 | 30390317 |
| 3,80 | 6 | 66 | 26 | 17 | 36 | SCD120-0380-2-2-140HA03-HP835 | 30390318 |
| 3,90 | 6 | 66 | 26 | 17 | 36 | SCD120-0390-2-2-140HA03-HP835 | 30390319 |
| 4,00 | 6 | 66 | 26 | 17 | 36 | SCD120-0400-2-2-140HA03-HP835 | 30390320 |
| 4,05 | 6 | 66 | 26 | 17 | 36 | SCD120-0405-2-2-140HA03-HP835 | 30445425 |
| 4,10 | 6 | 66 | 26 | 17 | 36 | SCD120-0410-2-2-140HA03-HP835 | 30390321 |
| 4,20 | 6 | 66 | 26 | 17 | 36 | SCD120-0420-2-2-140HA03-HP835 | 30390322 |
| 4,30 | 6 | 66 | 26 | 17 | 36 | SCD120-0430-2-2-140HA03-HP835 | 30390323 |
| 4,35 | 6 | 66 | 26 | 17 | 36 | SCD120-0435-2-2-140HA03-HP835 | 30453613 |
| 4,40 | 6 | 66 | 26 | 17 | 36 | SCD120-0440-2-2-140HA03-HP835 | 30390324 |
| 4,50 | 6 | 66 | 26 | 17 | 36 | SCD120-0450-2-2-140HA03-HP835 | 30390325 |

MEGA-Drill-Inox | Solid carbide twist drill SCD120 (3xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,60 | 6 | 66 | 26 | 17 | 36 | SCD120-0460-2-2-140HA03-HP835 | 30390326 |
| 4,65 | 6 | 66 | 26 | 17 | 36 | SCD120-0465-2-2-140HA03-HP835 | 30452080 |
| 4,70 | 6 | 66 | 26 | 17 | 36 | SCD120-0470-2-2-140HA03-HP835 | 30390327 |
| 4,80 | 6 | 66 | 30 | 20 | 36 | SCD120-0480-2-2-140HA03-HP835 | 30390328 |
| 4,90 | 6 | 66 | 30 | 20 | 36 | SCD120-0490-2-2-140HA03-HP835 | 30390329 |
| 5,00 | 6 | 66 | 30 | 20 | 36 | SCD120-0500-2-2-140HA03-HP835 | 30390330 |
| 5,03 | 6 | 66 | 30 | 20 | 36 | SCD120-0503-2-2-140HA03-HP835 | 30453912 |
| 5,10 | 6 | 66 | 30 | 20 | 36 | SCD120-0510-2-2-140HA03-HP835 | 30390331 |
| 5,20 | 6 | 66 | 30 | 20 | 36 | SCD120-0520-2-2-140HA03-HP835 | 30390332 |
| 5,30 | 6 | 66 | 30 | 20 | 36 | SCD120-0530-2-2-140HA03-HP835 | 30390333 |
| 5,40 | 6 | 66 | 30 | 20 | 36 | SCD120-0540-2-2-140HA03-HP835 | 30390334 |
| 5,50 | 6 | 66 | 30 | 20 | 36 | SCD120-0550-2-2-140HA03-HP835 | 30390335 |
| 5,55 | 6 | 66 | 30 | 20 | 36 | SCD120-0555-2-2-140HA03-HP835 | 30452081 |
| 5,60 | 6 | 66 | 30 | 20 | 36 | SCD120-0560-2-2-140HA03-HP835 | 30390336 |
| 5,70 | 6 | 66 | 30 | 20 | 36 | SCD120-0570-2-2-140HA03-HP835 | 30390337 |
| 5,80 | 6 | 66 | 30 | 20 | 36 | SCD120-0580-2-2-140HA03-HP835 | 30390338 |
| 5,90 | 6 | 66 | 30 | 20 | 36 | SCD120-0590-2-2-140HA03-HP835 | 30390339 |
| 6,00 | 6 | 66 | 30 | 20 | 36 | SCD120-0600-2-2-140HA03-HP835 | 30390340 |
| 6,10 | 8 | 79 | 38 | 24 | 36 | SCD120-0610-2-2-140HA03-HP835 | 30390341 |
| 6,20 | 8 | 79 | 38 | 24 | 36 | SCD120-0620-2-2-140HA03-HP835 | 30390342 |
| 6,30 | 8 | 79 | 38 | 24 | 36 | SCD120-0630-2-2-140HA03-HP835 | 30390343 |
| 6,40 | 8 | 79 | 38 | 24 | 36 | SCD120-0640-2-2-140HA03-HP835 | 30390344 |
| 6,50 | 8 | 79 | 38 | 24 | 36 | SCD120-0650-2-2-140HA03-HP835 | 30390345 |
| 6,60 | 8 | 79 | 38 | 24 | 36 | SCD120-0660-2-2-140HA03-HP835 | 30390346 |
| 6,70 | 8 | 79 | 38 | 24 | 36 | SCD120-0670-2-2-140HA03-HP835 | 30390347 |
| 6,80 | 8 | 79 | 38 | 24 | 36 | SCD120-0680-2-2-140HA03-HP835 | 30390348 |
| 6,90 | 8 | 79 | 38 | 24 | 36 | SCD120-0690-2-2-140HA03-HP835 | 30390349 |
| 7,00 | 8 | 79 | 38 | 24 | 36 | SCD120-0700-2-2-140HA03-HP835 | 30390350 |
| 7,20 | 8 | 79 | 42 | 29 | 36 | SCD120-0720-2-2-140HA03-HP835 | 30390352 |
| 7,40 | 8 | 79 | 42 | 29 | 36 | SCD120-0740-2-2-140HA03-HP835 | 30390354 |
| 7,45 | 8 | 79 | 42 | 29 | 36 | SCD120-0745-2-2-140HA03-HP835 | 30453616 |
| 7,50 | 8 | 79 | 42 | 29 | 36 | SCD120-0750-2-2-140HA03-HP835 | 30390355 |
| 7,70 | 8 | 79 | 42 | 29 | 36 | SCD120-0770-2-2-140HA03-HP835 | 30390357 |
| 7,80 | 8 | 79 | 42 | 29 | 36 | SCD120-0780-2-2-140HA03-HP835 | 30390358 |
| 7,90 | 8 | 79 | 42 | 29 | 36 | SCD120-0790-2-2-140HA03-HP835 | 30390359 |
| 8,00 | 8 | 79 | 42 | 29 | 36 | SCD120-0800-2-2-140HA03-HP835 | 30390360 |
| 8,10 | 10 | 89 | 49 | 35 | 40 | SCD120-0810-2-2-140HA03-HP835 | 30390361 |
| 8,20 | 10 | 89 | 49 | 35 | 40 | SCD120-0820-2-2-140HA03-HP835 | 30390362 |
| 8,30 | 10 | 89 | 49 | 35 | 40 | SCD120-0830-2-2-140HA03-HP835 | 30390363 |
| 8,40 | 10 | 89 | 49 | 35 | 40 | SCD120-0840-2-2-140HA03-HP835 | 30390364 |
| 8,50 | 10 | 89 | 49 | 35 | 40 | SCD120-0850-2-2-140HA03-HP835 | 30390365 |
| 8,60 | 10 | 89 | 49 | 35 | 40 | SCD120-0860-2-2-140HA03-HP835 | 30390366 |
| 8,70 | 10 | 89 | 49 | 35 | 40 | SCD120-0870-2-2-140HA03-HP835 | 30390367 |
| 8,80 | 10 | 89 | 49 | 35 | 40 | SCD120-0880-2-2-140HA03-HP835 | 30390368 |
| 8,90 | 10 | 89 | 49 | 35 | 40 | SCD120-0890-2-2-140HA03-HP835 | 30390369 |
| 9,00 | 10 | 89 | 49 | 35 | 40 | SCD120-0900-2-2-140HA03-HP835 | 30390370 |
| 9,10 | 10 | 89 | 49 | 35 | 40 | SCD120-0910-2-2-140HA03-HP835 | 30390371 |
| 9,50 | 10 | 89 | 49 | 35 | 40 | SCD120-0950-2-2-140HA03-HP835 | 30390375 |
| 9,80 | 10 | 89 | 49 | 35 | 40 | SCD120-0980-2-2-140HA03-HP835 | 30390378 |
| 9,90 | 10 | 89 | 49 | 35 | 40 | SCD120-0990-2-2-140HA03-HP835 | 30390379 |
| 10,00 | 10 | 89 | 49 | 35 | 40 | SCD120-1000-2-2-140HA03-HP835 | 30390380 |
| 10,10 | 12 | 102 | 56 | 40 | 45 | SCD120-1010-2-2-140HA03-HP835 | 30390381 |
| 10,20 | 12 | 102 | 56 | 40 | 45 | SCD120-1020-2-2-140HA03-HP835 | 30390382 |
| 10,30 | 12 | 102 | 56 | 40 | 45 | SCD120-1030-2-2-140HA03-HP835 | 30390383 |
| 10,50 | 12 | 102 | 56 | 40 | 45 | SCD120-1050-2-2-140HA03-HP835 | 30390385 |
| 11,00 | 12 | 102 | 56 | 40 | 45 | SCD120-1100-2-2-140HA03-HP835 | 30390390 |
| 11,50 | 12 | 102 | 56 | 40 | 45 | SCD120-1150-2-2-140HA03-HP835 | 30390395 |

MEGA-Drill-Inox | Solid carbide twist drill SCD120 (3xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 11,80 | 12 | 102 | 56 | 40 | 45 | SCD120-1180-2-2-140HA03-HP835 | 30390398 |
| 12,00 | 12 | 102 | 56 | 40 | 45 | SCD120-1200-2-2-140HA03-HP835 | 30390400 |
| 12,15 | 14 | 107 | 61 | 43 | 45 | SCD120-1215-2-2-140HA03-HP835 | 30453623 |
| 12,50 | 14 | 107 | 61 | 43 | 45 | SCD120-1250-2-2-140HA03-HP835 | 30390401 |
| 12,80 | 14 | 107 | 61 | 43 | 45 | SCD120-1280-2-2-140HA03-HP835 | 30445978 |
| 13,00 | 14 | 107 | 61 | 43 | 45 | SCD120-1300-2-2-140HA03-HP835 | 30390402 |
| 13,80 | 14 | 107 | 61 | 43 | 45 | SCD120-1380-2-2-140HA03-HP835 | 30445979 |
| 14,00 | 14 | 107 | 61 | 43 | 45 | SCD120-1400-2-2-140HA03-HP835 | 30390404 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD120-1500-2-2-140HA03-HP835 | 30390406 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD120-1600-2-2-140HA03-HP835 | 30390408 |
| 17,00 | 18 | 123 | 73 | 51 | 48 | SCD120-1700-2-2-140HA03-HP835 | 30390410 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD120-1800-2-2-140HA03-HP835 | 30390412 |
| 19,00 | 20 | 131 | 79 | 55 | 50 | SCD120-1900-2-2-140HA03-HP835 | 30390414 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



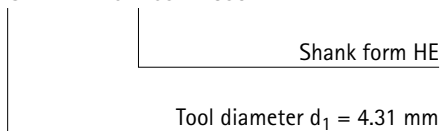
Shank form:
Shank form: HB | HE

Specification:

SCD120-[diameter]-2-2-140[shank form]03-HP835

Example:

SCD120-0431-2-2-140HE03-HP835



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 62 | 22 | 14 | 36 |
| 3,71 | 4,70 | 6 | 66 | 26 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 30 | 20 | 36 |
| 6,01 | 7,00 | 8 | 79 | 38 | 24 | 36 |
| 7,01 | 8,00 | 8 | 79 | 42 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 49 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 56 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 61 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

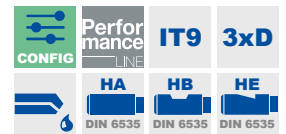
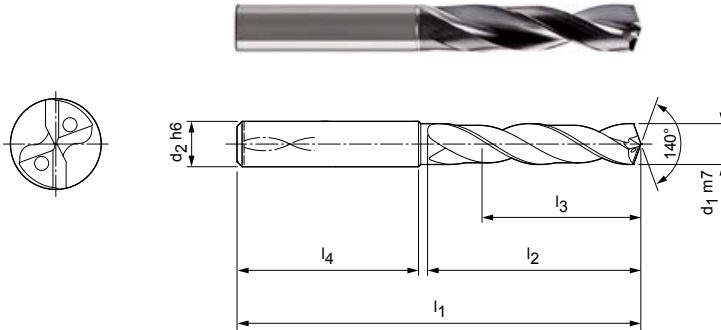
Special designs and other coatings available upon request.

MEGA-Drill-Inox

Solid carbide twist drill
SCD121 (3xD), internal coolant supply

Design:

Drill diameter: 3.00 – 20.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP835
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 140°
Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|------------|----------|-------|-------|-------|-------|-------------------------------|-----------|
| d_1 m7 | d_2 h6 | l_1 | l_2 | l_3 | l_4 | Specification | Order no. |
| 3,00 | 6 | 62 | 22 | 14 | 36 | SCD121-0300-2-2-140HA03-HP835 | 30390523 |
| 3,05 | 6 | 62 | 22 | 14 | 36 | SCD121-0305-2-2-140HA03-HP835 | 30445910 |
| 3,15 | 6 | 62 | 22 | 14 | 36 | SCD121-0315-2-2-140HA03-HP835 | 30453629 |
| 3,20 | 6 | 62 | 22 | 14 | 36 | SCD121-0320-2-2-140HA03-HP835 | 30390525 |
| 3,25 | 6 | 62 | 22 | 14 | 36 | SCD121-0325-2-2-140HA03-HP835 | 30453631 |
| 3,30 | 6 | 62 | 22 | 14 | 36 | SCD121-0330-2-2-140HA03-HP835 | 30390526 |
| 3,40 | 6 | 62 | 22 | 14 | 36 | SCD121-0340-2-2-140HA03-HP835 | 30390527 |
| 3,50 | 6 | 62 | 22 | 14 | 36 | SCD121-0350-2-2-140HA03-HP835 | 30390528 |
| 3,60 | 6 | 62 | 22 | 14 | 36 | SCD121-0360-2-2-140HA03-HP835 | 30390529 |
| 3,70 | 6 | 62 | 22 | 14 | 36 | SCD121-0370-2-2-140HA03-HP835 | 30390530 |
| 3,80 | 6 | 66 | 26 | 17 | 36 | SCD121-0380-2-2-140HA03-HP835 | 30390531 |
| 3,90 | 6 | 66 | 26 | 17 | 36 | SCD121-0390-2-2-140HA03-HP835 | 30390532 |
| 4,00 | 6 | 66 | 26 | 17 | 36 | SCD121-0400-2-2-140HA03-HP835 | 30390533 |
| 4,10 | 6 | 66 | 26 | 17 | 36 | SCD121-0410-2-2-140HA03-HP835 | 30390534 |
| 4,20 | 6 | 66 | 26 | 17 | 36 | SCD121-0420-2-2-140HA03-HP835 | 30390535 |
| 4,30 | 6 | 66 | 26 | 17 | 36 | SCD121-0430-2-2-140HA03-HP835 | 30390536 |
| 4,35 | 6 | 66 | 26 | 17 | 36 | SCD121-0435-2-2-140HA03-HP835 | 30453633 |
| 4,40 | 6 | 66 | 26 | 17 | 36 | SCD121-0440-2-2-140HA03-HP835 | 30390537 |
| 4,50 | 6 | 66 | 26 | 17 | 36 | SCD121-0450-2-2-140HA03-HP835 | 30390538 |
| 4,65 | 6 | 66 | 26 | 17 | 36 | SCD121-0465-2-2-140HA03-HP835 | 30438861 |
| 4,70 | 6 | 66 | 26 | 17 | 36 | SCD121-0470-2-2-140HA03-HP835 | 30390540 |
| 4,80 | 6 | 66 | 30 | 20 | 36 | SCD121-0480-2-2-140HA03-HP835 | 30390541 |
| 5,00 | 6 | 66 | 30 | 20 | 36 | SCD121-0500-2-2-140HA03-HP835 | 30390543 |
| 5,10 | 6 | 66 | 30 | 20 | 36 | SCD121-0510-2-2-140HA03-HP835 | 30390544 |
| 5,20 | 6 | 66 | 30 | 20 | 36 | SCD121-0520-2-2-140HA03-HP835 | 30390545 |
| 5,30 | 6 | 66 | 30 | 20 | 36 | SCD121-0530-2-2-140HA03-HP835 | 30390546 |
| 5,40 | 6 | 66 | 30 | 20 | 36 | SCD121-0540-2-2-140HA03-HP835 | 30390547 |
| 5,50 | 6 | 66 | 30 | 20 | 36 | SCD121-0550-2-2-140HA03-HP835 | 30390548 |
| 5,55 | 6 | 66 | 30 | 20 | 36 | SCD121-0555-2-2-140HA03-HP835 | 30439052 |
| 5,60 | 6 | 66 | 30 | 20 | 36 | SCD121-0560-2-2-140HA03-HP835 | 30390549 |
| 5,70 | 6 | 66 | 30 | 20 | 36 | SCD121-0570-2-2-140HA03-HP835 | 30390550 |
| 5,80 | 6 | 66 | 30 | 20 | 36 | SCD121-0580-2-2-140HA03-HP835 | 30390551 |
| 5,90 | 6 | 66 | 30 | 20 | 36 | SCD121-0590-2-2-140HA03-HP835 | 30390552 |
| 5,95 | 6 | 66 | 30 | 20 | 36 | SCD121-0595-2-2-140HA03-HP835 | 30453636 |
| 6,00 | 6 | 66 | 30 | 20 | 36 | SCD121-0600-2-2-140HA03-HP835 | 30390553 |

MEGA-Drill-Inox | Solid carbide twist drill SCD121 (3xD), internal coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,10 | 8 | 79 | 38 | 24 | 36 | SCD121-0610-2-2-140HA03-HP835 | 30390554 |
| 6,20 | 8 | 79 | 38 | 24 | 36 | SCD121-0620-2-2-140HA03-HP835 | 30390555 |
| 6,30 | 8 | 79 | 38 | 24 | 36 | SCD121-0630-2-2-140HA03-HP835 | 30390556 |
| 6,40 | 8 | 79 | 38 | 24 | 36 | SCD121-0640-2-2-140HA03-HP835 | 30390557 |
| 6,50 | 8 | 79 | 38 | 24 | 36 | SCD121-0650-2-2-140HA03-HP835 | 30390558 |
| 6,60 | 8 | 79 | 38 | 24 | 36 | SCD121-0660-2-2-140HA03-HP835 | 30390559 |
| 6,70 | 8 | 79 | 38 | 24 | 36 | SCD121-0670-2-2-140HA03-HP835 | 30390560 |
| 6,80 | 8 | 79 | 38 | 24 | 36 | SCD121-0680-2-2-140HA03-HP835 | 30390561 |
| 6,90 | 8 | 79 | 38 | 24 | 36 | SCD121-0690-2-2-140HA03-HP835 | 30390562 |
| 7,00 | 8 | 79 | 38 | 24 | 36 | SCD121-0700-2-2-140HA03-HP835 | 30390563 |
| 7,10 | 8 | 79 | 42 | 29 | 36 | SCD121-0710-2-2-140HA03-HP835 | 30390564 |
| 7,20 | 8 | 79 | 42 | 29 | 36 | SCD121-0720-2-2-140HA03-HP835 | 30390565 |
| 7,30 | 8 | 79 | 42 | 29 | 36 | SCD121-0730-2-2-140HA03-HP835 | 30390566 |
| 7,40 | 8 | 79 | 42 | 29 | 36 | SCD121-0740-2-2-140HA03-HP835 | 30390567 |
| 7,45 | 8 | 79 | 42 | 29 | 36 | SCD121-0745-2-2-140HA03-HP835 | 30453637 |
| 7,50 | 8 | 79 | 42 | 29 | 36 | SCD121-0750-2-2-140HA03-HP835 | 30390568 |
| 7,70 | 8 | 79 | 42 | 29 | 36 | SCD121-0770-2-2-140HA03-HP835 | 30390570 |
| 7,80 | 8 | 79 | 42 | 29 | 36 | SCD121-0780-2-2-140HA03-HP835 | 30390571 |
| 7,90 | 8 | 79 | 42 | 29 | 36 | SCD121-0790-2-2-140HA03-HP835 | 30390572 |
| 8,00 | 8 | 79 | 42 | 29 | 36 | SCD121-0800-2-2-140HA03-HP835 | 30390573 |
| 8,10 | 10 | 89 | 49 | 35 | 40 | SCD121-0810-2-2-140HA03-HP835 | 30390574 |
| 8,20 | 10 | 89 | 49 | 35 | 40 | SCD121-0820-2-2-140HA03-HP835 | 30390575 |
| 8,30 | 10 | 89 | 49 | 35 | 40 | SCD121-0830-2-2-140HA03-HP835 | 30390576 |
| 8,40 | 10 | 89 | 49 | 35 | 40 | SCD121-0840-2-2-140HA03-HP835 | 30390577 |
| 8,50 | 10 | 89 | 49 | 35 | 40 | SCD121-0850-2-2-140HA03-HP835 | 30390578 |
| 8,60 | 10 | 89 | 49 | 35 | 40 | SCD121-0860-2-2-140HA03-HP835 | 30390579 |
| 8,70 | 10 | 89 | 49 | 35 | 40 | SCD121-0870-2-2-140HA03-HP835 | 30390580 |
| 8,80 | 10 | 89 | 49 | 35 | 40 | SCD121-0880-2-2-140HA03-HP835 | 30390581 |
| 9,00 | 10 | 89 | 49 | 35 | 40 | SCD121-0900-2-2-140HA03-HP835 | 30390583 |
| 9,10 | 10 | 89 | 49 | 35 | 40 | SCD121-0910-2-2-140HA03-HP835 | 30390584 |
| 9,20 | 10 | 89 | 49 | 35 | 40 | SCD121-0920-2-2-140HA03-HP835 | 30390585 |
| 9,30 | 10 | 89 | 49 | 35 | 40 | SCD121-0930-2-2-140HA03-HP835 | 30390586 |
| 9,35 | 10 | 89 | 49 | 35 | 40 | SCD121-0935-2-2-140HA03-HP835 | 30450663 |
| 9,40 | 10 | 89 | 49 | 35 | 40 | SCD121-0940-2-2-140HA03-HP835 | 30390587 |
| 9,50 | 10 | 89 | 49 | 35 | 40 | SCD121-0950-2-2-140HA03-HP835 | 30390588 |
| 9,70 | 10 | 89 | 49 | 35 | 40 | SCD121-0970-2-2-140HA03-HP835 | 30390590 |
| 9,80 | 10 | 89 | 49 | 35 | 40 | SCD121-0980-2-2-140HA03-HP835 | 30390591 |
| 9,90 | 10 | 89 | 49 | 35 | 40 | SCD121-0990-2-2-140HA03-HP835 | 30390592 |
| 10,00 | 10 | 89 | 49 | 35 | 40 | SCD121-1000-2-2-140HA03-HP835 | 30390593 |
| 10,20 | 12 | 102 | 56 | 40 | 45 | SCD121-1020-2-2-140HA03-HP835 | 30390595 |
| 10,30 | 12 | 102 | 56 | 40 | 45 | SCD121-1030-2-2-140HA03-HP835 | 30390596 |
| 10,40 | 12 | 102 | 56 | 40 | 45 | SCD121-1040-2-2-140HA03-HP835 | 30390597 |
| 10,50 | 12 | 102 | 56 | 40 | 45 | SCD121-1050-2-2-140HA03-HP835 | 30390598 |
| 10,70 | 12 | 102 | 56 | 40 | 45 | SCD121-1070-2-2-140HA03-HP835 | 30390600 |
| 10,80 | 12 | 102 | 56 | 40 | 45 | SCD121-1080-2-2-140HA03-HP835 | 30390601 |
| 11,00 | 12 | 102 | 56 | 40 | 45 | SCD121-1100-2-2-140HA03-HP835 | 30390603 |
| 11,10 | 12 | 102 | 56 | 40 | 45 | SCD121-1110-2-2-140HA03-HP835 | 30390604 |
| 11,30 | 12 | 102 | 56 | 40 | 45 | SCD121-1130-2-2-140HA03-HP835 | 30390606 |
| 11,50 | 12 | 102 | 56 | 40 | 45 | SCD121-1150-2-2-140HA03-HP835 | 30390608 |
| 11,70 | 12 | 102 | 56 | 40 | 45 | SCD121-1170-2-2-140HA03-HP835 | 30390610 |
| 11,80 | 12 | 102 | 56 | 40 | 45 | SCD121-1180-2-2-140HA03-HP835 | 30390611 |
| 12,00 | 12 | 102 | 56 | 40 | 45 | SCD121-1200-2-2-140HA03-HP835 | 30390613 |
| 12,15 | 14 | 107 | 61 | 43 | 45 | SCD121-1215-2-2-140HA03-HP835 | 30453644 |
| 12,50 | 14 | 107 | 61 | 43 | 45 | SCD121-1250-2-2-140HA03-HP835 | 30443976 |
| 12,80 | 14 | 107 | 61 | 43 | 45 | SCD121-1280-2-2-140HA03-HP835 | 30445992 |
| 13,00 | 14 | 107 | 61 | 43 | 45 | SCD121-1300-2-2-140HA03-HP835 | 30444778 |
| 13,50 | 14 | 107 | 61 | 43 | 45 | SCD121-1350-2-2-140HA03-HP835 | 30390614 |

Continued on next page.


MEGA-Drill-Inox | Solid carbide twist drill SCD121 (3xD), internal coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 13,80 | 14 | 107 | 61 | 43 | 45 | SCD121-1380-2-2-140HA03-HP835 | 30445993 |
| 14,00 | 14 | 107 | 61 | 43 | 45 | SCD121-1400-2-2-140HA03-HP835 | 30445050 |
| 14,50 | 16 | 115 | 65 | 45 | 48 | SCD121-1450-2-2-140HA03-HP835 | 30390615 |
| 15,00 | 16 | 115 | 65 | 45 | 48 | SCD121-1500-2-2-140HA03-HP835 | 30390616 |
| 15,50 | 16 | 115 | 65 | 45 | 48 | SCD121-1550-2-2-140HA03-HP835 | 30442531 |
| 15,80 | 16 | 115 | 65 | 45 | 48 | SCD121-1580-2-2-140HA03-HP835 | 30445995 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD121-1600-2-2-140HA03-HP835 | 30390617 |
| 17,50 | 18 | 123 | 73 | 51 | 48 | SCD121-1750-2-2-140HA03-HP835 | 30390620 |
| 18,00 | 18 | 123 | 73 | 51 | 48 | SCD121-1800-2-2-140HA03-HP835 | 30390621 |
| 20,00 | 20 | 131 | 79 | 55 | 50 | SCD121-2000-2-2-140HA03-HP835 | 30390625 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable





Shank form:
Shank form: HB | HE

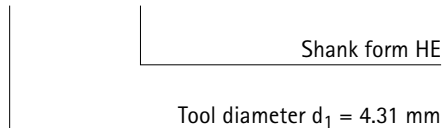
Specification:
SCD121-[diameter]-2-2-140[shank form]03-HP835

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,71 | 4,70 | 6 | 66 | 26 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 30 | 20 | 36 |
| 6,01 | 7,00 | 8 | 79 | 38 | 24 | 36 |
| 7,01 | 8,00 | 8 | 79 | 42 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 49 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 56 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 61 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Example:

SCD121-0431-2-2-140HE03-HP835



Dimensions in mm.

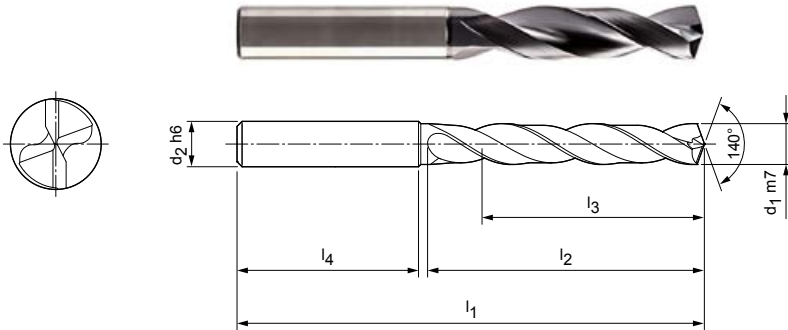
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Drill-Inox

Solid carbide twist drill
SCD120 (5xD), external coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP835
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD120-0300-2-2-140HA05-HP835 | 30390730 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD120-0310-2-2-140HA05-HP835 | 30390731 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD120-0320-2-2-140HA05-HP835 | 30390732 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD120-0330-2-2-140HA05-HP835 | 30390733 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD120-0340-2-2-140HA05-HP835 | 30390734 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD120-0350-2-2-140HA05-HP835 | 30390735 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD120-0360-2-2-140HA05-HP835 | 30390736 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD120-0370-2-2-140HA05-HP835 | 30390737 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD120-0380-2-2-140HA05-HP835 | 30390738 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD120-0390-2-2-140HA05-HP835 | 30390739 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD120-0400-2-2-140HA05-HP835 | 30390740 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD120-0410-2-2-140HA05-HP835 | 30390741 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD120-0420-2-2-140HA05-HP835 | 30390742 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD120-0430-2-2-140HA05-HP835 | 30390743 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD120-0440-2-2-140HA05-HP835 | 30390744 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD120-0450-2-2-140HA05-HP835 | 30390745 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD120-0460-2-2-140HA05-HP835 | 30390746 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD120-0470-2-2-140HA05-HP835 | 30390747 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD120-0480-2-2-140HA05-HP835 | 30390748 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD120-0490-2-2-140HA05-HP835 | 30390749 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD120-0500-2-2-140HA05-HP835 | 30390750 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD120-0510-2-2-140HA05-HP835 | 30390751 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD120-0520-2-2-140HA05-HP835 | 30390752 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD120-0530-2-2-140HA05-HP835 | 30390753 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD120-0540-2-2-140HA05-HP835 | 30390754 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD120-0550-2-2-140HA05-HP835 | 30390755 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD120-0560-2-2-140HA05-HP835 | 30390756 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD120-0580-2-2-140HA05-HP835 | 30390758 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD120-0600-2-2-140HA05-HP835 | 30390760 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD120-0610-2-2-140HA05-HP835 | 30390761 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD120-0620-2-2-140HA05-HP835 | 30390762 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD120-0630-2-2-140HA05-HP835 | 30390763 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD120-0640-2-2-140HA05-HP835 | 30390764 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD120-0650-2-2-140HA05-HP835 | 30390765 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD120-0660-2-2-140HA05-HP835 | 30390766 |

MEGA-Drill-Inox | Solid carbide twist drill SCD120 (5xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD120-0670-2-2-140HA05-HP835 | 30390767 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD120-0680-2-2-140HA05-HP835 | 30390768 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD120-0690-2-2-140HA05-HP835 | 30390769 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD120-0700-2-2-140HA05-HP835 | 30390770 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD120-0710-2-2-140HA05-HP835 | 30390771 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD120-0740-2-2-140HA05-HP835 | 30390774 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD120-0750-2-2-140HA05-HP835 | 30390775 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD120-0760-2-2-140HA05-HP835 | 30390776 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD120-0780-2-2-140HA05-HP835 | 30390778 |
| 7,90 | 8 | 91 | 53 | 43 | 36 | SCD120-0790-2-2-140HA05-HP835 | 30390779 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD120-0800-2-2-140HA05-HP835 | 30390780 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD120-0810-2-2-140HA05-HP835 | 30390781 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD120-0820-2-2-140HA05-HP835 | 30390782 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD120-0850-2-2-140HA05-HP835 | 30390785 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD120-0860-2-2-140HA05-HP835 | 30390786 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD120-0870-2-2-140HA05-HP835 | 30390787 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD120-0880-2-2-140HA05-HP835 | 30390788 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD120-0900-2-2-140HA05-HP835 | 30390790 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD120-0920-2-2-140HA05-HP835 | 30390792 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD120-0930-2-2-140HA05-HP835 | 30390793 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD120-0940-2-2-140HA05-HP835 | 30390794 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD120-0950-2-2-140HA05-HP835 | 30390795 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD120-1000-2-2-140HA05-HP835 | 30390800 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD120-1020-2-2-140HA05-HP835 | 30390802 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD120-1030-2-2-140HA05-HP835 | 30390803 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD120-1050-2-2-140HA05-HP835 | 30390805 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD120-1080-2-2-140HA05-HP835 | 30390808 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD120-1100-2-2-140HA05-HP835 | 30390810 |
| 11,70 | 12 | 118 | 71 | 56 | 45 | SCD120-1170-2-2-140HA05-HP835 | 30390817 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD120-1180-2-2-140HA05-HP835 | 30390818 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD120-1200-2-2-140HA05-HP835 | 30390820 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD120-1250-2-2-140HA05-HP835 | 30390821 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD120-1300-2-2-140HA05-HP835 | 30390822 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD120-1600-2-2-140HA05-HP835 | 30390828 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD120-1650-2-2-140HA05-HP835 | 30445987 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

SCD120-[diameter]-2-2-140[shank form]05-HP835

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 66 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 74 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Example:

SCD120-0431-2-2-140HE05-HP835

Shank form HE

Tool diameter d₁ = 4.31 mm

Dimensions in mm.

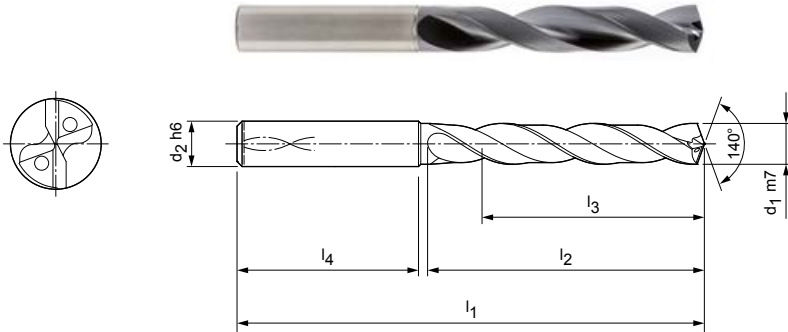
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Drill-Inox

Solid carbide twist drill
SCD121 (5xD), internal coolant supply

Design:
 Drill diameter: 2.80 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP835
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 2,80 | 6 | 66 | 28 | 23 | 36 | SCD121-0280-2-2-140HA05-HP835 | 30453905 |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD121-0300-2-2-140HA05-HP835 | 30390951 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD121-0310-2-2-140HA05-HP835 | 30390952 |
| 3,15 | 6 | 66 | 28 | 23 | 36 | SCD121-0315-2-2-140HA05-HP835 | 30430429 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD121-0320-2-2-140HA05-HP835 | 30390953 |
| 3,22 | 6 | 66 | 28 | 23 | 36 | SCD121-0322-2-2-140HA05-HP835 | 30453650 |
| 3,25 | 6 | 66 | 28 | 23 | 36 | SCD121-0325-2-2-140HA05-HP835 | 30453651 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD121-0330-2-2-140HA05-HP835 | 30390954 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD121-0340-2-2-140HA05-HP835 | 30390955 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD121-0350-2-2-140HA05-HP835 | 30390956 |
| 3,60 | 6 | 66 | 28 | 23 | 36 | SCD121-0360-2-2-140HA05-HP835 | 30390957 |
| 3,70* | 6 | 66 | 28 | 23 | 36 | SCD121-0370-2-2-140HA05-HP835 | 30390958 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD121-0380-2-2-140HA05-HP835 | 30390959 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD121-0390-2-2-140HA05-HP835 | 30390960 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD121-0400-2-2-140HA05-HP835 | 30390961 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD121-0410-2-2-140HA05-HP835 | 30390962 |
| 4,15 | 6 | 74 | 36 | 29 | 36 | SCD121-0415-2-2-140HA05-HP835 | 30454007 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD121-0420-2-2-140HA05-HP835 | 30390963 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD121-0430-2-2-140HA05-HP835 | 30390964 |
| 4,40 | 6 | 74 | 36 | 29 | 36 | SCD121-0440-2-2-140HA05-HP835 | 30390965 |
| 4,45 | 6 | 74 | 36 | 29 | 36 | SCD121-0445-2-2-140HA05-HP835 | 30453654 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD121-0450-2-2-140HA05-HP835 | 30390966 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD121-0460-2-2-140HA05-HP835 | 30390967 |
| 4,65* | 6 | 74 | 36 | 29 | 36 | SCD121-0465-2-2-140HA05-HP835 | 30453655 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD121-0470-2-2-140HA05-HP835 | 30390968 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD121-0480-2-2-140HA05-HP835 | 30390969 |
| 4,90 | 6 | 82 | 44 | 35 | 36 | SCD121-0490-2-2-140HA05-HP835 | 30390970 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD121-0500-2-2-140HA05-HP835 | 30390971 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD121-0510-2-2-140HA05-HP835 | 30390972 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD121-0520-2-2-140HA05-HP835 | 30390973 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD121-0530-2-2-140HA05-HP835 | 30390974 |
| 5,40 | 6 | 82 | 44 | 35 | 36 | SCD121-0540-2-2-140HA05-HP835 | 30390975 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD121-0550-2-2-140HA05-HP835 | 30390976 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD121-0560-2-2-140HA05-HP835 | 30390977 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD121-0570-2-2-140HA05-HP835 | 30390978 |

MEGA-Drill-Inox | Solid carbide twist drill SCD121 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD121-0580-2-2-140HA05-HP835 | 30390979 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD121-0590-2-2-140HA05-HP835 | 30390980 |
| 5,95 | 6 | 82 | 44 | 35 | 36 | SCD121-0595-2-2-140HA05-HP835 | 30453657 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD121-0600-2-2-140HA05-HP835 | 30390981 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD121-0610-2-2-140HA05-HP835 | 30390982 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD121-0620-2-2-140HA05-HP835 | 30390983 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD121-0630-2-2-140HA05-HP835 | 30390984 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD121-0640-2-2-140HA05-HP835 | 30390985 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD121-0650-2-2-140HA05-HP835 | 30390986 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD121-0660-2-2-140HA05-HP835 | 30390987 |
| 6,70 | 8 | 91 | 53 | 43 | 36 | SCD121-0670-2-2-140HA05-HP835 | 30390988 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD121-0680-2-2-140HA05-HP835 | 30390989 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD121-0690-2-2-140HA05-HP835 | 30390990 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD121-0700-2-2-140HA05-HP835 | 30390991 |
| 7,10 | 8 | 91 | 53 | 43 | 36 | SCD121-0710-2-2-140HA05-HP835 | 30390992 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD121-0720-2-2-140HA05-HP835 | 30390993 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD121-0730-2-2-140HA05-HP835 | 30390994 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD121-0740-2-2-140HA05-HP835 | 30390995 |
| 7,45* | 8 | 91 | 53 | 43 | 36 | SCD121-0745-2-2-140HA05-HP835 | 30453658 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD121-0750-2-2-140HA05-HP835 | 30390996 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD121-0760-2-2-140HA05-HP835 | 30390997 |
| 7,70 | 8 | 91 | 53 | 43 | 36 | SCD121-0770-2-2-140HA05-HP835 | 30390998 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD121-0780-2-2-140HA05-HP835 | 30390999 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD121-0800-2-2-140HA05-HP835 | 30391001 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD121-0810-2-2-140HA05-HP835 | 30391002 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD121-0820-2-2-140HA05-HP835 | 30391003 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD121-0830-2-2-140HA05-HP835 | 30391004 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD121-0850-2-2-140HA05-HP835 | 30391006 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD121-0860-2-2-140HA05-HP835 | 30391007 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD121-0870-2-2-140HA05-HP835 | 30391008 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD121-0880-2-2-140HA05-HP835 | 30391009 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD121-0890-2-2-140HA05-HP835 | 30391010 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD121-0900-2-2-140HA05-HP835 | 30391011 |
| 9,10 | 10 | 103 | 61 | 49 | 40 | SCD121-0910-2-2-140HA05-HP835 | 30391012 |
| 9,35 | 10 | 103 | 61 | 49 | 40 | SCD121-0935-2-2-140HA05-HP835 | 30450706 |
| 9,40 | 10 | 103 | 61 | 49 | 40 | SCD121-0940-2-2-140HA05-HP835 | 30391015 |
| 9,45 | 10 | 103 | 61 | 49 | 40 | SCD121-0945-2-2-140HA05-HP835 | 30453660 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD121-0950-2-2-140HA05-HP835 | 30391016 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD121-0980-2-2-140HA05-HP835 | 30391019 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD121-0990-2-2-140HA05-HP835 | 30391020 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD121-1000-2-2-140HA05-HP835 | 30391021 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD121-1020-2-2-140HA05-HP835 | 30391023 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD121-1030-2-2-140HA05-HP835 | 30391024 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD121-1050-2-2-140HA05-HP835 | 30391026 |
| 10,55 | 12 | 118 | 71 | 56 | 45 | SCD121-1055-2-2-140HA05-HP835 | 30453661 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD121-1080-2-2-140HA05-HP835 | 30391029 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD121-1100-2-2-140HA05-HP835 | 30391031 |
| 11,20* | 12 | 118 | 71 | 56 | 45 | SCD121-1120-2-2-140HA05-HP835 | 30391033 |
| 11,25 | 12 | 118 | 71 | 56 | 45 | SCD121-1125-2-2-140HA05-HP835 | 30453662 |
| 11,30 | 12 | 118 | 71 | 56 | 45 | SCD121-1130-2-2-140HA05-HP835 | 30391034 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD121-1150-2-2-140HA05-HP835 | 30391036 |
| 11,70 | 12 | 118 | 71 | 56 | 45 | SCD121-1170-2-2-140HA05-HP835 | 30391038 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD121-1180-2-2-140HA05-HP835 | 30391039 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD121-1200-2-2-140HA05-HP835 | 30391041 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD121-1250-2-2-140HA05-HP835 | 30391042 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD121-1300-2-2-140HA05-HP835 | 30391044 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD121-1350-2-2-140HA05-HP835 | 30391045 |

MEGA-Drill-Inox | Solid carbide twist drill SCD121 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 13,80 | 14 | 124 | 77 | 60 | 45 | SCD121-1380-2-2-140HA05-HP835 | 30391046 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD121-1400-2-2-140HA05-HP835 | 30391047 |
| 15,00 | 16 | 133 | 83 | 63 | 48 | SCD121-1500-2-2-140HA05-HP835 | 30391050 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD121-1600-2-2-140HA05-HP835 | 30391053 |
| 16,50 | 18 | 143 | 93 | 71 | 48 | SCD121-1650-2-2-140HA05-HP835 | 30391054 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD121-1700-2-2-140HA05-HP835 | 30391056 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD121-1800-2-2-140HA05-HP835 | 30391059 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD121-2000-2-2-140HA05-HP835 | 30391065 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

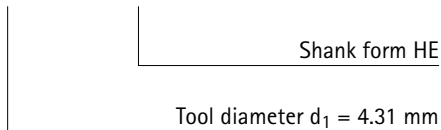
SCD121-[diameter]-2-2-140[shank form]05-HP835

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 45 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:

SCD121-0431-2-2-140HE05-HP835



Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

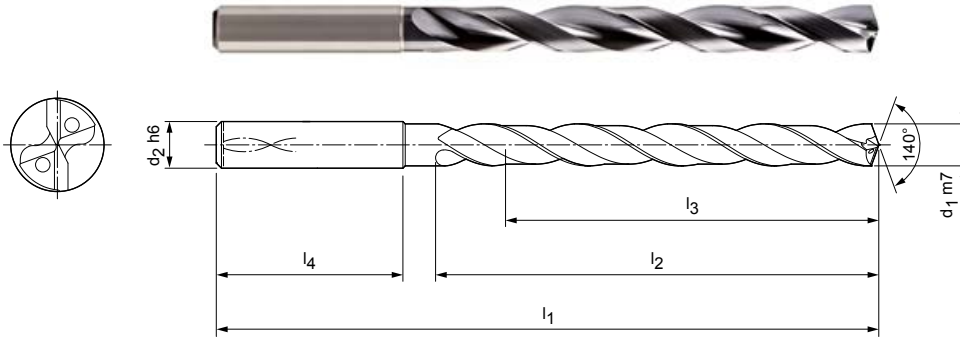
Special designs and other coatings available upon request.

MEGA-Drill-Inox

Solid carbide twist drill
SCD121 (8xD), internal coolant supply

Design:

Drill diameter: 3.00 – 20.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP835
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 140°
Helix angle: 30°




Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD121-0300-2-2-140HA08-HP835 | 30391171 |
| 3,20 | 6 | 72 | 34 | 29 | 36 | SCD121-0320-2-2-140HA08-HP835 | 30391173 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD121-0330-2-2-140HA08-HP835 | 30391174 |
| 3,40 | 6 | 72 | 34 | 29 | 36 | SCD121-0340-2-2-140HA08-HP835 | 30391175 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD121-0350-2-2-140HA08-HP835 | 30391176 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD121-0370-2-2-140HA08-HP835 | 30391178 |
| 3,80 | 6 | 81 | 43 | 36 | 36 | SCD121-0380-2-2-140HA08-HP835 | 30391179 |
| 3,90 | 6 | 81 | 43 | 36 | 36 | SCD121-0390-2-2-140HA08-HP835 | 30391180 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD121-0400-2-2-140HA08-HP835 | 30391181 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD121-0420-2-2-140HA08-HP835 | 30391183 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD121-0430-2-2-140HA08-HP835 | 30391184 |
| 4,40 | 6 | 81 | 43 | 36 | 36 | SCD121-0440-2-2-140HA08-HP835 | 30391185 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD121-0450-2-2-140HA08-HP835 | 30391186 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD121-0480-2-2-140HA08-HP835 | 30391189 |
| 4,90 | 6 | 95 | 57 | 48 | 36 | SCD121-0490-2-2-140HA08-HP835 | 30391190 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD121-0500-2-2-140HA08-HP835 | 30391191 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD121-0510-2-2-140HA08-HP835 | 30391192 |
| 5,30 | 6 | 95 | 57 | 48 | 36 | SCD121-0530-2-2-140HA08-HP835 | 30391194 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD121-0550-2-2-140HA08-HP835 | 30391196 |
| 5,60 | 6 | 95 | 57 | 48 | 36 | SCD121-0560-2-2-140HA08-HP835 | 30391197 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD121-0580-2-2-140HA08-HP835 | 30391199 |
| 5,90 | 6 | 95 | 57 | 48 | 36 | SCD121-0590-2-2-140HA08-HP835 | 30391200 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD121-0600-2-2-140HA08-HP835 | 30391201 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD121-0610-2-2-140HA08-HP835 | 30391202 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD121-0650-2-2-140HA08-HP835 | 30391206 |
| 6,60 | 8 | 114 | 76 | 64 | 36 | SCD121-0660-2-2-140HA08-HP835 | 30391207 |
| 6,70 | 8 | 114 | 76 | 64 | 36 | SCD121-0670-2-2-140HA08-HP835 | 30391208 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD121-0680-2-2-140HA08-HP835 | 30391209 |
| 6,90 | 8 | 114 | 76 | 64 | 36 | SCD121-0690-2-2-140HA08-HP835 | 30391210 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD121-0700-2-2-140HA08-HP835 | 30391212 |
| 7,20 | 8 | 114 | 76 | 64 | 36 | SCD121-0720-2-2-140HA08-HP835 | 30391214 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD121-0750-2-2-140HA08-HP835 | 30391217 |
| 7,60 | 8 | 114 | 76 | 64 | 36 | SCD121-0760-2-2-140HA08-HP835 | 30391218 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD121-0780-2-2-140HA08-HP835 | 30391220 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD121-0800-2-2-140HA08-HP835 | 30391222 |


MEGA-Drill-Inox | Solid carbide twist drill SCD121 (8xD), internal coolant supply


| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD121-0850-2-2-140HA08-HP835 | 30391227 |
| 8,90 | 10 | 142 | 95 | 80 | 40 | SCD121-0890-2-2-140HA08-HP835 | 30391231 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD121-0900-2-2-140HA08-HP835 | 30391232 |
| 9,10 | 10 | 142 | 95 | 80 | 40 | SCD121-0910-2-2-140HA08-HP835 | 30391233 |
| 9,30 | 10 | 142 | 95 | 80 | 40 | SCD121-0930-2-2-140HA08-HP835 | 30391235 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD121-0950-2-2-140HA08-HP835 | 30391237 |
| 9,60 | 10 | 142 | 95 | 80 | 40 | SCD121-0960-2-2-140HA08-HP835 | 30391238 |
| 9,70 | 10 | 142 | 95 | 80 | 40 | SCD121-0970-2-2-140HA08-HP835 | 30391239 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD121-0980-2-2-140HA08-HP835 | 30391240 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD121-1000-2-2-140HA08-HP835 | 30391242 |
| 10,10 | 12 | 162 | 114 | 96 | 45 | SCD121-1010-2-2-140HA08-HP835 | 30391243 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD121-1020-2-2-140HA08-HP835 | 30391244 |
| 10,80 | 12 | 162 | 114 | 96 | 45 | SCD121-1080-2-2-140HA08-HP835 | 30391250 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD121-1100-2-2-140HA08-HP835 | 30391252 |
| 11,50 | 12 | 162 | 114 | 96 | 45 | SCD121-1150-2-2-140HA08-HP835 | 30391257 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD121-1180-2-2-140HA08-HP835 | 30391260 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD121-1200-2-2-140HA08-HP835 | 30391262 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD121-1300-2-2-140HA08-HP835 | 30391265 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD121-1350-2-2-140HA08-HP835 | 30391266 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD121-1400-2-2-140HA08-HP835 | 30391268 |
| 14,50 | 16 | 203 | 152 | 128 | 48 | SCD121-1450-2-2-140HA08-HP835 | 30391269 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD121-1500-2-2-140HA08-HP835 | 30391271 |
| 18,00 | 18 | 222 | 171 | 144 | 48 | SCD121-1800-2-2-140HA08-HP835 | 30391280 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



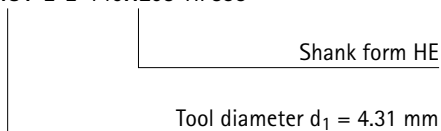


Shank form:
Shank form: HB | HE

Specification:
SCD121-[diameter]-2-2-140[shank form]08-HP835

Example:

SCD121-0431-2-2-140HE08-HP835



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,71 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

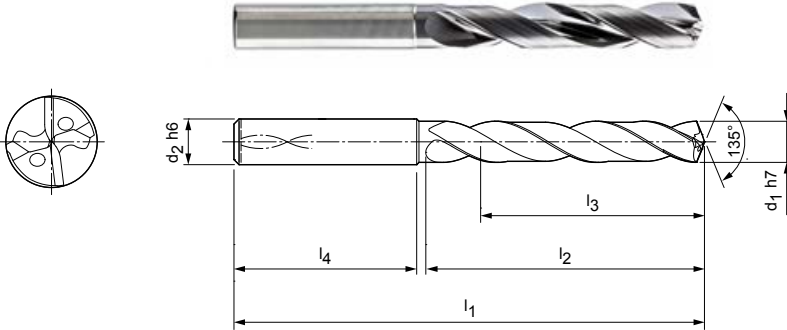
Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Speed-Drill-Inox

Solid carbide twist drill
SCD411 (5xD), internal coolant supply



Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP374
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°

Application:
 For high-speed machining.



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD411-0300-2-3-135HA05-HP374 | 30488182 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD411-0310-2-3-135HA05-HP374 | 30488183 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD411-0320-2-3-135HA05-HP374 | 30488184 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD411-0330-2-3-135HA05-HP374 | 30488185 |
| 3,40 | 6 | 66 | 28 | 23 | 36 | SCD411-0340-2-3-135HA05-HP374 | 30488186 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD411-0350-2-3-135HA05-HP374 | 30488187 |
| 3,70 | 6 | 66 | 28 | 23 | 36 | SCD411-0370-2-3-135HA05-HP374 | 30488189 |
| 3,80 | 6 | 74 | 36 | 29 | 36 | SCD411-0380-2-3-135HA05-HP374 | 30488190 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD411-0400-2-3-135HA05-HP374 | 30488192 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD411-0410-2-3-135HA05-HP374 | 30488193 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD411-0420-2-3-135HA05-HP374 | 30488194 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD411-0430-2-3-135HA05-HP374 | 30488195 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD411-0450-2-3-135HA05-HP374 | 30488197 |
| 4,65 | 6 | 74 | 36 | 29 | 36 | SCD411-0465-2-3-135HA05-HP374 | 30488199 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD411-0470-2-3-135HA05-HP374 | 30488200 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD411-0480-2-3-135HA05-HP374 | 30488201 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD411-0500-2-3-135HA05-HP374 | 30488203 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD411-0510-2-3-135HA05-HP374 | 30488204 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD411-0520-2-3-135HA05-HP374 | 30488205 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD411-0530-2-3-135HA05-HP374 | 30488206 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD411-0550-2-3-135HA05-HP374 | 30488208 |
| 5,55 | 6 | 82 | 44 | 35 | 36 | SCD411-0555-2-3-135HA05-HP374 | 30488209 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD411-0560-2-3-135HA05-HP374 | 30488210 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD411-0580-2-3-135HA05-HP374 | 30488212 |
| 5,90 | 6 | 82 | 44 | 35 | 36 | SCD411-0590-2-3-135HA05-HP374 | 30488213 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD411-0600-2-3-135HA05-HP374 | 30488214 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD411-0610-2-3-135HA05-HP374 | 30488215 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD411-0630-2-3-135HA05-HP374 | 30488217 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD411-0650-2-3-135HA05-HP374 | 30488219 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD411-0660-2-3-135HA05-HP374 | 30488220 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD411-0680-2-3-135HA05-HP374 | 30488222 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD411-0690-2-3-135HA05-HP374 | 30488223 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD411-0700-2-3-135HA05-HP374 | 30488224 |
| 7,30 | 8 | 91 | 53 | 43 | 36 | SCD411-0730-2-3-135HA05-HP374 | 30488227 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD411-0740-2-3-135HA05-HP374 | 30488228 |

MEGA-Speed-Drill-Inox | Solid carbide twist drill SCD411 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD411-0750-2-3-135HA05-HP374 | 30488229 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD411-0760-2-3-135HA05-HP374 | 30488230 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD411-0780-2-3-135HA05-HP374 | 30488232 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD411-0800-2-3-135HA05-HP374 | 30488234 |
| 8,30 | 10 | 103 | 61 | 49 | 40 | SCD411-0830-2-3-135HA05-HP374 | 30488237 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD411-0850-2-3-135HA05-HP374 | 30488239 |
| 8,60 | 10 | 103 | 61 | 49 | 40 | SCD411-0860-2-3-135HA05-HP374 | 30488240 |
| 8,70 | 10 | 103 | 61 | 49 | 40 | SCD411-0870-2-3-135HA05-HP374 | 30488241 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD411-0880-2-3-135HA05-HP374 | 30488242 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD411-0890-2-3-135HA05-HP374 | 30488243 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD411-0900-2-3-135HA05-HP374 | 30488244 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD411-0920-2-3-135HA05-HP374 | 30488246 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD411-0950-2-3-135HA05-HP374 | 30488249 |
| 9,70 | 10 | 103 | 61 | 49 | 40 | SCD411-0970-2-3-135HA05-HP374 | 30488251 |
| 9,80 | 10 | 103 | 61 | 49 | 40 | SCD411-0980-2-3-135HA05-HP374 | 30488252 |
| 9,90 | 10 | 103 | 61 | 49 | 40 | SCD411-0990-2-3-135HA05-HP374 | 30488253 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD411-1000-2-3-135HA05-HP374 | 30488254 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD411-1020-2-3-135HA05-HP374 | 30488256 |
| 10,30 | 12 | 118 | 71 | 56 | 45 | SCD411-1030-2-3-135HA05-HP374 | 30488257 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD411-1050-2-3-135HA05-HP374 | 30488259 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD411-1080-2-3-135HA05-HP374 | 30488262 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD411-1100-2-3-135HA05-HP374 | 30488264 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD411-1150-2-3-135HA05-HP374 | 30488269 |
| 11,80 | 12 | 118 | 71 | 56 | 45 | SCD411-1180-2-3-135HA05-HP374 | 30488272 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD411-1200-2-3-135HA05-HP374 | 30488274 |
| 12,20 | 14 | 124 | 77 | 60 | 45 | SCD411-1220-2-3-135HA05-HP374 | 31307527 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD411-1250-2-3-135HA05-HP374 | 30488275 |
| 12,80 | 14 | 124 | 77 | 60 | 45 | SCD411-1280-2-3-135HA05-HP374 | 30488276 |
| 13,00 | 14 | 124 | 77 | 60 | 45 | SCD411-1300-2-3-135HA05-HP374 | 30488277 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD411-1350-2-3-135HA05-HP374 | 30488278 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD411-1400-2-3-135HA05-HP374 | 30488280 |
| 14,20 | 16 | 133 | 83 | 63 | 48 | SCD411-1420-2-3-135HA05-HP374 | 30661538 |
| 14,50 | 16 | 133 | 83 | 71 | 48 | SCD411-1450-2-3-135HA05-HP374 | 30488281 |
| 15,00 | 16 | 133 | 83 | 71 | 48 | SCD411-1500-2-3-135HA05-HP374 | 30488283 |
| 16,00 | 16 | 133 | 83 | 71 | 48 | SCD411-1600-2-3-135HA05-HP374 | 30488286 |
| 17,00 | 18 | 143 | 93 | 71 | 48 | SCD411-1700-2-3-135HA05-HP374 | 30488289 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD411-1750-2-3-135HA05-HP374 | 30488290 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SCD411-1800-2-3-135HA05-HP374 | 30488292 |
| 18,50 | 20 | 153 | 101 | 77 | 50 | SCD411-1850-2-3-135HA05-HP374 | 30488293 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD411-2000-2-3-135HA05-HP374 | 30488298 |

Continued on next page.

MEGA-Speed-Drill-Inox | Solid carbide twist drill SCD411 (5xD), internal coolant supply

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

Shank form: HB | HE

Specification:

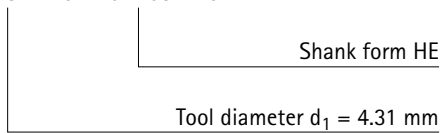
SCD411-[diameter]-2-3-135[shank form]05-HP374

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:

SCD411-0431-2-3-140HE05-HP374



Dimensions in mm.

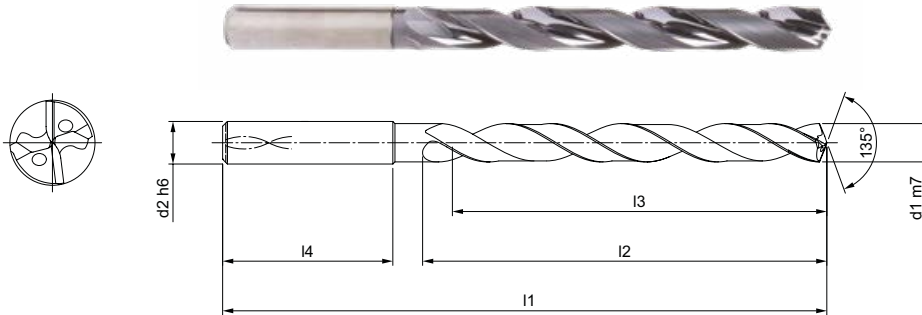
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Speed-Drill-Inox

Solid carbide twist drill
SCD411 (8xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP374
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD411-0300-2-3-135HA08-HP374 | 31159372 |
| 3,20 | 6 | 72 | 34 | 29 | 36 | SCD411-0320-2-3-135HA08-HP374 | 31159374 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD411-0330-2-3-135HA08-HP374 | 31159375 |
| 3,40 | 6 | 72 | 34 | 29 | 36 | SCD411-0340-2-3-135HA08-HP374 | 31159376 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD411-0350-2-3-135HA08-HP374 | 31159377 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD411-0370-2-3-135HA08-HP374 | 31159379 |
| 3,90 | 6 | 81 | 43 | 36 | 36 | SCD411-0390-2-3-135HA08-HP374 | 31159391 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD411-0400-2-3-135HA08-HP374 | 31159392 |
| 4,10 | 6 | 81 | 43 | 36 | 36 | SCD411-0410-2-3-135HA08-HP374 | 31159393 |
| 4,20 | 6 | 81 | 43 | 36 | 36 | SCD411-0420-2-3-135HA08-HP374 | 31159394 |
| 4,30 | 6 | 81 | 43 | 36 | 36 | SCD411-0430-2-3-135HA08-HP374 | 31159395 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD411-0450-2-3-135HA08-HP374 | 31159397 |
| 4,60 | 6 | 81 | 43 | 36 | 36 | SCD411-0460-2-3-135HA08-HP374 | 31159398 |
| 4,80 | 6 | 95 | 57 | 48 | 36 | SCD411-0480-2-3-135HA08-HP374 | 31159401 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD411-0500-2-3-135HA08-HP374 | 31159403 |
| 5,10 | 6 | 95 | 57 | 48 | 36 | SCD411-0510-2-3-135HA08-HP374 | 31159404 |
| 5,20 | 6 | 95 | 57 | 48 | 36 | SCD411-0520-2-3-135HA08-HP374 | 31159405 |
| 5,40 | 6 | 95 | 57 | 48 | 36 | SCD411-0540-2-3-135HA08-HP374 | 31159407 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD411-0550-2-3-135HA08-HP374 | 31159408 |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD411-0580-2-3-135HA08-HP374 | 31159412 |
| 6,00 | 6 | 95 | 57 | 48 | 36 | SCD411-0600-2-3-135HA08-HP374 | 31159414 |
| 6,10 | 8 | 114 | 76 | 64 | 36 | SCD411-0610-2-3-135HA08-HP374 | 31159415 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD411-0650-2-3-135HA08-HP374 | 31159419 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD411-0680-2-3-135HA08-HP374 | 31159422 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD411-0700-2-3-135HA08-HP374 | 31159424 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD411-0750-2-3-135HA08-HP374 | 31159429 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD411-0780-2-3-135HA08-HP374 | 31159432 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD411-0800-2-3-135HA08-HP374 | 31159434 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD411-0850-2-3-135HA08-HP374 | 31159439 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD411-0900-2-3-135HA08-HP374 | 31159444 |
| 9,30 | 10 | 142 | 95 | 80 | 40 | SCD411-0930-2-3-135HA08-HP374 | 31159447 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD411-0950-2-3-135HA08-HP374 | 31159449 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD411-0980-2-3-135HA08-HP374 | 31159452 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD411-1000-2-3-135HA08-HP374 | 31159454 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD411-1020-2-3-135HA08-HP374 | 31159456 |

MEGA-Speed-Drill-Inox | Solid carbide twist drill SCD411 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD411-1050-2-3-135HA08-HP374 | 31159459 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD411-1100-2-3-135HA08-HP374 | 31159464 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD411-1180-2-3-135HA08-HP374 | 31159472 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD411-1200-2-3-135HA08-HP374 | 31159474 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD411-1250-2-3-135HA08-HP374 | 31159476 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD411-1300-2-3-135HA08-HP374 | 31159478 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD411-1350-2-3-135HA08-HP374 | 31159479 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD411-1400-2-3-135HA08-HP374 | 31159481 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD411-1500-2-3-135HA08-HP374 | 31159485 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD411-1600-2-3-135HA08-HP374 | 31159489 |
| 7,30 | 8 | 114 | 76 | 64 | 36 | SCD411-0730-2-3-135HA08-HP374 | 31159427 |
| 7,40 | 8 | 114 | 76 | 64 | 36 | SCD411-0740-2-3-135HA08-HP374 | 31159428 |
| 7,50 | 8 | 114 | 76 | 64 | 36 | SCD411-0750-2-3-135HA08-HP374 | 31159429 |
| 7,60 | 8 | 114 | 76 | 64 | 36 | SCD411-0760-2-3-135HA08-HP374 | 31159430 |
| 7,70 | 8 | 114 | 76 | 64 | 36 | SCD411-0770-2-3-135HA08-HP374 | 31159431 |
| 7,80 | 8 | 114 | 76 | 64 | 36 | SCD411-0780-2-3-135HA08-HP374 | 31159432 |
| 7,90 | 8 | 114 | 76 | 64 | 36 | SCD411-0790-2-3-135HA08-HP374 | 31159433 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD411-0800-2-3-135HA08-HP374 | 31159434 |
| 8,10 | 10 | 142 | 95 | 80 | 40 | SCD411-0810-2-3-135HA08-HP374 | 31159435 |
| 8,20 | 10 | 142 | 95 | 80 | 40 | SCD411-0820-2-3-135HA08-HP374 | 31159436 |
| 8,30 | 10 | 142 | 95 | 80 | 40 | SCD411-0830-2-3-135HA08-HP374 | 31159437 |
| 8,40 | 10 | 142 | 95 | 80 | 40 | SCD411-0840-2-3-135HA08-HP374 | 31159438 |
| 8,50 | 10 | 142 | 95 | 80 | 40 | SCD411-0850-2-3-135HA08-HP374 | 31159439 |
| 8,60 | 10 | 142 | 95 | 80 | 40 | SCD411-0860-2-3-135HA08-HP374 | 31159440 |
| 8,70 | 10 | 142 | 95 | 80 | 40 | SCD411-0870-2-3-135HA08-HP374 | 31159441 |
| 8,80 | 10 | 142 | 95 | 80 | 40 | SCD411-0880-2-3-135HA08-HP374 | 31159442 |
| 8,90 | 10 | 142 | 95 | 80 | 40 | SCD411-0890-2-3-135HA08-HP374 | 31159443 |
| 9,00 | 10 | 142 | 95 | 80 | 40 | SCD411-0900-2-3-135HA08-HP374 | 31159444 |
| 9,10 | 10 | 142 | 95 | 80 | 40 | SCD411-0910-2-3-135HA08-HP374 | 31159445 |
| 9,20 | 10 | 142 | 95 | 80 | 40 | SCD411-0920-2-3-135HA08-HP374 | 31159446 |
| 9,30 | 10 | 142 | 95 | 80 | 40 | SCD411-0930-2-3-135HA08-HP374 | 31159447 |
| 9,40 | 10 | 142 | 95 | 80 | 40 | SCD411-0940-2-3-135HA08-HP374 | 31159448 |
| 9,50 | 10 | 142 | 95 | 80 | 40 | SCD411-0950-2-3-135HA08-HP374 | 31159449 |
| 9,60 | 10 | 142 | 95 | 80 | 40 | SCD411-0960-2-3-135HA08-HP374 | 31159450 |
| 9,70 | 10 | 142 | 95 | 80 | 40 | SCD411-0970-2-3-135HA08-HP374 | 31159451 |
| 9,80 | 10 | 142 | 95 | 80 | 40 | SCD411-0980-2-3-135HA08-HP374 | 31159452 |
| 9,90 | 10 | 142 | 95 | 80 | 40 | SCD411-0990-2-3-135HA08-HP374 | 31159453 |
| 10,00 | 10 | 142 | 95 | 80 | 40 | SCD411-1000-2-3-135HA08-HP374 | 31159454 |
| 10,10 | 12 | 162 | 114 | 96 | 45 | SCD411-1010-2-3-135HA08-HP374 | 31159455 |
| 10,20 | 12 | 162 | 114 | 96 | 45 | SCD411-1020-2-3-135HA08-HP374 | 31159456 |
| 10,30 | 12 | 162 | 114 | 96 | 45 | SCD411-1030-2-3-135HA08-HP374 | 31159457 |
| 10,40 | 12 | 162 | 114 | 96 | 45 | SCD411-1040-2-3-135HA08-HP374 | 31159458 |
| 10,50 | 12 | 162 | 114 | 96 | 45 | SCD411-1050-2-3-135HA08-HP374 | 31159459 |
| 10,60 | 12 | 162 | 114 | 96 | 45 | SCD411-1060-2-3-135HA08-HP374 | 31159460 |
| 10,70 | 12 | 162 | 114 | 96 | 45 | SCD411-1070-2-3-135HA08-HP374 | 31159461 |
| 10,80 | 12 | 162 | 114 | 96 | 45 | SCD411-1080-2-3-135HA08-HP374 | 31159462 |
| 10,90 | 12 | 162 | 114 | 96 | 45 | SCD411-1090-2-3-135HA08-HP374 | 31159463 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD411-1100-2-3-135HA08-HP374 | 31159464 |
| 11,10 | 12 | 162 | 114 | 96 | 45 | SCD411-1110-2-3-135HA08-HP374 | 31159465 |
| 11,20 | 12 | 162 | 114 | 96 | 45 | SCD411-1120-2-3-135HA08-HP374 | 31159466 |
| 11,30 | 12 | 162 | 114 | 96 | 45 | SCD411-1130-2-3-135HA08-HP374 | 31159467 |
| 11,40 | 12 | 162 | 114 | 96 | 45 | SCD411-1140-2-3-135HA08-HP374 | 31159468 |
| 11,50 | 12 | 162 | 114 | 96 | 45 | SCD411-1150-2-3-135HA08-HP374 | 31159469 |
| 11,60 | 12 | 162 | 114 | 96 | 45 | SCD411-1160-2-3-135HA08-HP374 | 31159470 |
| 11,70 | 12 | 162 | 114 | 96 | 45 | SCD411-1170-2-3-135HA08-HP374 | 31159471 |
| 11,80 | 12 | 162 | 114 | 96 | 45 | SCD411-1180-2-3-135HA08-HP374 | 31159472 |
| 11,90 | 12 | 162 | 114 | 96 | 45 | SCD411-1190-2-3-135HA08-HP374 | 31159473 |

MEGA-Speed-Drill-Inox | Solid carbide twist drill SCD411 (8xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD411-1200-2-3-135HA08-HP374 | 31159474 |
| 12,20 | 14 | 178 | 133 | 112 | 45 | SCD411-1220-2-3-135HA08-HP374 | 31159475 |
| 12,50 | 14 | 178 | 133 | 112 | 45 | SCD411-1250-2-3-135HA08-HP374 | 31159476 |
| 12,80 | 14 | 178 | 133 | 112 | 45 | SCD411-1280-2-3-135HA08-HP374 | 31159477 |
| 13,00 | 14 | 178 | 133 | 112 | 45 | SCD411-1300-2-3-135HA08-HP374 | 31159478 |
| 13,50 | 14 | 178 | 133 | 112 | 45 | SCD411-1350-2-3-135HA08-HP374 | 31159479 |
| 13,80 | 14 | 178 | 133 | 112 | 45 | SCD411-1380-2-3-135HA08-HP374 | 31159480 |
| 14,00 | 14 | 178 | 133 | 112 | 45 | SCD411-1400-2-3-135HA08-HP374 | 31159481 |
| 14,20 | 16 | 203 | 152 | 128 | 48 | SCD411-1420-2-3-135HA08-HP374 | 31159482 |
| 14,50 | 16 | 203 | 152 | 128 | 48 | SCD411-1450-2-3-135HA08-HP374 | 31159483 |
| 14,80 | 16 | 203 | 152 | 128 | 48 | SCD411-1480-2-3-135HA08-HP374 | 31159484 |
| 15,00 | 16 | 203 | 152 | 128 | 48 | SCD411-1500-2-3-135HA08-HP374 | 31159485 |
| 15,20 | 16 | 203 | 152 | 128 | 48 | SCD411-1520-2-3-135HA08-HP374 | 31159486 |
| 15,50 | 16 | 203 | 152 | 128 | 48 | SCD411-1550-2-3-135HA08-HP374 | 31159487 |
| 15,80 | 16 | 203 | 152 | 128 | 48 | SCD411-1580-2-3-135HA08-HP374 | 31159488 |
| 16,00 | 16 | 203 | 152 | 128 | 48 | SCD411-1600-2-3-135HA08-HP374 | 31159489 |
| 16,50 | 18 | 222 | 171 | 144 | 48 | SCD411-1650-2-3-135HA08-HP374 | 31159490 |
| 16,80 | 18 | 222 | 171 | 144 | 48 | SCD411-1680-2-3-135HA08-HP374 | 31159491 |
| 17,00 | 18 | 222 | 171 | 144 | 48 | SCD411-1700-2-3-135HA08-HP374 | 31159492 |
| 17,50 | 18 | 222 | 171 | 144 | 48 | SCD411-1750-2-3-135HA08-HP374 | 31159493 |
| 17,80 | 18 | 222 | 171 | 144 | 48 | SCD411-1780-2-3-135HA08-HP374 | 31159494 |
| 18,00 | 18 | 222 | 171 | 144 | 48 | SCD411-1800-2-3-135HA08-HP374 | 31159495 |
| 18,50 | 20 | 243 | 190 | 160 | 50 | SCD411-1850-2-3-135HA08-HP374 | 31159496 |
| 18,80 | 20 | 243 | 190 | 160 | 50 | SCD411-1880-2-3-135HA08-HP374 | 31159497 |
| 19,00 | 20 | 243 | 190 | 160 | 50 | SCD411-1900-2-3-135HA08-HP374 | 31159498 |
| 19,50 | 20 | 243 | 190 | 160 | 50 | SCD411-1950-2-3-135HA08-HP374 | 31159499 |
| 19,80 | 20 | 243 | 190 | 160 | 50 | SCD411-1980-2-3-135HA08-HP374 | 31159500 |
| 20,00 | 20 | 243 | 190 | 160 | 50 | SCD411-2000-2-3-135HA08-HP374 | 31159501 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

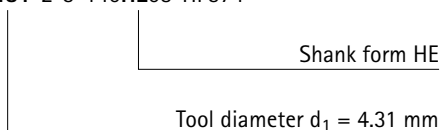
SCD411-[diameter]-2-3-135[shank form]08-HP374

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 72 | 34 | 29 | 36 |
| 3,71 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Example:

SCD411-0431-2-3-140HE08-HP374



Dimensions in mm.

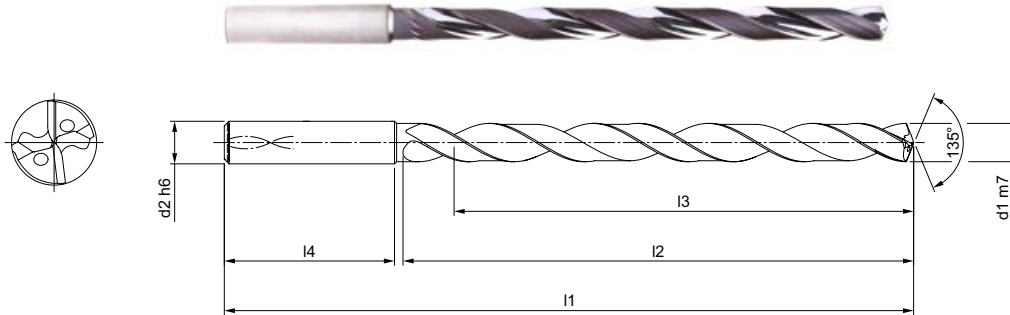
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Speed-Drill-Inox

Solid carbide twist drill
SCD411 (12xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP374
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 135°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 92 | 54 | 48 | 36 | SCD411-0300-2-3-135HA12-HP374 | 31132678 |
| 3,10 | 6 | 92 | 54 | 48 | 36 | SCD411-0310-2-3-135HA12-HP374 | 31132679 |
| 3,20 | 6 | 92 | 54 | 48 | 36 | SCD411-0320-2-3-135HA12-HP374 | 31132690 |
| 3,30 | 6 | 92 | 54 | 48 | 36 | SCD411-0330-2-3-135HA12-HP374 | 31132691 |
| 3,40 | 6 | 92 | 54 | 48 | 36 | SCD411-0340-2-3-135HA12-HP374 | 31132692 |
| 3,50 | 6 | 92 | 54 | 48 | 36 | SCD411-0350-2-3-135HA12-HP374 | 31132693 |
| 3,70 | 6 | 92 | 54 | 48 | 36 | SCD411-0370-2-3-135HA12-HP374 | 31132695 |
| 4,00 | 6 | 102 | 64 | 58 | 36 | SCD411-0400-2-3-135HA12-HP374 | 31132698 |
| 4,10 | 6 | 102 | 64 | 58 | 36 | SCD411-0410-2-3-135HA12-HP374 | 31132699 |
| 4,20 | 6 | 102 | 64 | 58 | 36 | SCD411-0420-2-3-135HA12-HP374 | 31132700 |
| 4,30 | 6 | 102 | 64 | 58 | 36 | SCD411-0430-2-3-135HA12-HP374 | 31132701 |
| 4,50 | 6 | 102 | 64 | 58 | 36 | SCD411-0450-2-3-135HA12-HP374 | 31132703 |
| 4,80 | 6 | 116 | 78 | 70 | 36 | SCD411-0480-2-3-135HA12-HP374 | 31132706 |
| 5,00 | 6 | 116 | 78 | 70 | 36 | SCD411-0500-2-3-135HA12-HP374 | 31132708 |
| 5,10 | 6 | 116 | 78 | 70 | 36 | SCD411-0510-2-3-135HA12-HP374 | 31132709 |
| 5,20 | 6 | 116 | 78 | 70 | 36 | SCD411-0520-2-3-135HA12-HP374 | 31132710 |
| 5,40 | 6 | 116 | 78 | 70 | 36 | SCD411-0540-2-3-135HA12-HP374 | 31132712 |
| 5,50 | 6 | 116 | 78 | 70 | 36 | SCD411-0550-2-3-135HA12-HP374 | 31132713 |
| 5,80 | 6 | 116 | 78 | 70 | 36 | SCD411-0580-2-3-135HA12-HP374 | 31132716 |
| 6,00 | 6 | 116 | 78 | 70 | 36 | SCD411-0600-2-3-135HA12-HP374 | 31132718 |
| 6,10 | 8 | 146 | 108 | 94 | 36 | SCD411-0610-2-3-135HA12-HP374 | 31132719 |
| 6,20 | 8 | 146 | 108 | 94 | 36 | SCD411-0620-2-3-135HA12-HP374 | 31132720 |
| 6,50 | 8 | 146 | 108 | 94 | 36 | SCD411-0650-2-3-135HA12-HP374 | 31132723 |
| 6,80 | 8 | 146 | 108 | 94 | 36 | SCD411-0680-2-3-135HA12-HP374 | 31132726 |
| 7,00 | 8 | 146 | 108 | 94 | 36 | SCD411-0700-2-3-135HA12-HP374 | 31132728 |
| 7,50 | 8 | 146 | 108 | 94 | 36 | SCD411-0750-2-3-135HA12-HP374 | 31132733 |
| 7,80 | 8 | 146 | 108 | 94 | 36 | SCD411-0780-2-3-135HA12-HP374 | 31132736 |
| 8,00 | 8 | 146 | 108 | 94 | 36 | SCD411-0800-2-3-135HA12-HP374 | 31132738 |
| 8,50 | 10 | 162 | 120 | 110 | 40 | SCD411-0850-2-3-135HA12-HP374 | 31132743 |
| 9,00 | 10 | 162 | 120 | 110 | 40 | SCD411-0900-2-3-135HA12-HP374 | 31132748 |
| 9,10 | 10 | 162 | 120 | 110 | 40 | SCD411-0910-2-3-135HA12-HP374 | 31132749 |
| 9,50 | 10 | 162 | 120 | 110 | 40 | SCD411-0950-2-3-135HA12-HP374 | 31132753 |
| 9,70 | 10 | 162 | 120 | 110 | 40 | SCD411-0970-2-3-135HA12-HP374 | 31132755 |
| 9,80 | 10 | 162 | 120 | 110 | 40 | SCD411-0980-2-3-135HA12-HP374 | 31132756 |
| 10,00 | 10 | 162 | 120 | 110 | 40 | SCD411-1000-2-3-135HA12-HP374 | 31132758 |

MEGA-Speed-Drill-Inox | Solid carbide twist drill SCD411 (12xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,10 | 12 | 204 | 156 | 142 | 45 | SCD411-1010-2-3-135HA12-HP374 | 31132759 |
| 10,20 | 12 | 204 | 156 | 142 | 45 | SCD411-1020-2-3-135HA12-HP374 | 31132760 |
| 10,50 | 12 | 204 | 156 | 142 | 45 | SCD411-1050-2-3-135HA12-HP374 | 31132763 |
| 11,00 | 12 | 204 | 156 | 142 | 45 | SCD411-1100-2-3-135HA12-HP374 | 31132768 |
| 11,80 | 12 | 204 | 156 | 142 | 45 | SCD411-1180-2-3-135HA12-HP374 | 31132776 |
| 12,00 | 12 | 204 | 156 | 142 | 45 | SCD411-1200-2-3-135HA12-HP374 | 31132778 |
| 12,50 | 14 | 230 | 182 | 166 | 45 | SCD411-1250-2-3-135HA12-HP374 | 31132780 |
| 12,80 | 14 | 230 | 182 | 166 | 45 | SCD411-1280-2-3-135HA12-HP374 | 31132781 |
| 13,00 | 14 | 230 | 182 | 166 | 45 | SCD411-1300-2-3-135HA12-HP374 | 31132782 |
| 13,50 | 14 | 230 | 182 | 166 | 45 | SCD411-1350-2-3-135HA12-HP374 | 31132783 |
| 14,00 | 14 | 230 | 182 | 166 | 45 | SCD411-1400-2-3-135HA12-HP374 | 31132785 |
| 15,00 | 16 | 260 | 208 | 192 | 48 | SCD411-1500-2-3-135HA12-HP374 | 31132788 |
| 16,00 | 16 | 260 | 208 | 192 | 48 | SCD411-1600-2-3-135HA12-HP374 | 31132793 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



Shank form:
Shank form: HB | HE

Specification:

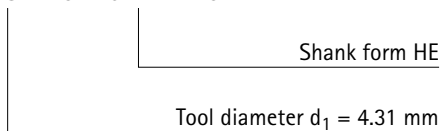
SCD411-[diameter]-2-3-135[shank form]12-HP374

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 92 | 54 | 48 | 36 |
| 3,71 | 4,70 | 6 | 102 | 64 | 58 | 36 |
| 4,71 | 6,00 | 6 | 116 | 78 | 70 | 36 |
| 6,01 | 8,00 | 8, | 146 | 108 | 94 | 36 |
| 8,01 | 10,00 | 10 | 162 | 120 | 110 | 40 |
| 10,01 | 12,00 | 12 | 204 | 156 | 142 | 45 |
| 12,01 | 14,00 | 14 | 230 | 182 | 166 | 45 |
| 14,01 | 16,00 | 16 | 260 | 208 | 192 | 48 |
| 16,01 | 18,00 | 18 | 285 | 234 | 216 | 48 |
| 18,01 | 20,00 | 20 | 310 | 258 | 240 | 50 |

Example:

SCD411-0431-2-3-140HE12-HP374



Dimensions in mm.

For cutting data recommendations, see end of chapter.

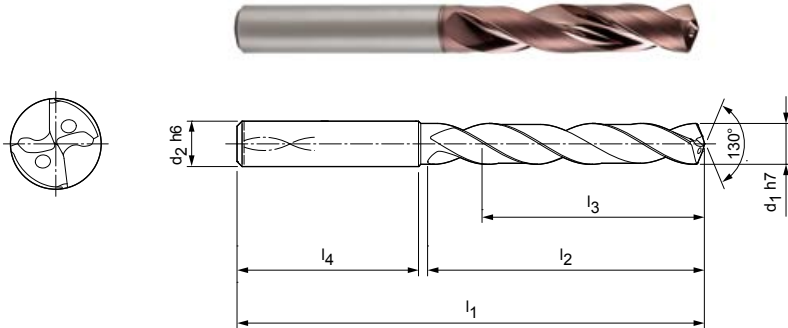
Special designs and other coatings available upon request.

MEGA-Speed-Drill-Iron

Solid carbide twist drill
SCD421 (5xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP238
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 130°
 Helix angle: 30°

Application:
 For high-speed machining.



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD421-0500-2-3-130HA05-HP238 | 30488320 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD421-0510-2-3-130HA05-HP238 | 30488321 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD421-0600-2-3-130HA05-HP238 | 30488331 |
| 6,90 | 8 | 91 | 53 | 43 | 36 | SCD421-0690-2-3-130HA05-HP238 | 30488340 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD421-0700-2-3-130HA05-HP238 | 30488341 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD421-0720-2-3-130HA05-HP238 | 30488343 |
| 8,10 | 10 | 103 | 61 | 49 | 40 | SCD421-0810-2-3-130HA05-HP238 | 30488352 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD421-0850-2-3-130HA05-HP238 | 30488356 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD421-0900-2-3-130HA05-HP238 | 30488361 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD421-1400-2-3-130HA05-HP238 | 30488397 |
| 17,50 | 18 | 143 | 93 | 71 | 48 | SCD421-1750-2-3-130HA05-HP238 | 30488407 |

Configurable features

Diameter:
Diameter in increments of 0.01 mm freely selectable

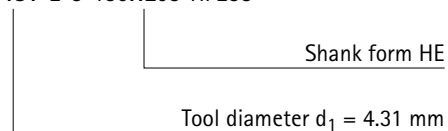
Shank form:
Shank form: HB | HE

Specification:
SCD421-[diameter]-2-3-130[shank form]05-HP238

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,79 | 6 | 74 | 36 | 29 | 36 |
| 4,80 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |

Example:
SCD421-0431-2-3-130HE05-HP238



Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

MEGA-Drill-Alu

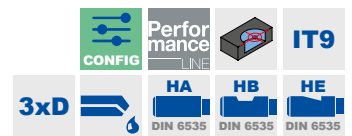
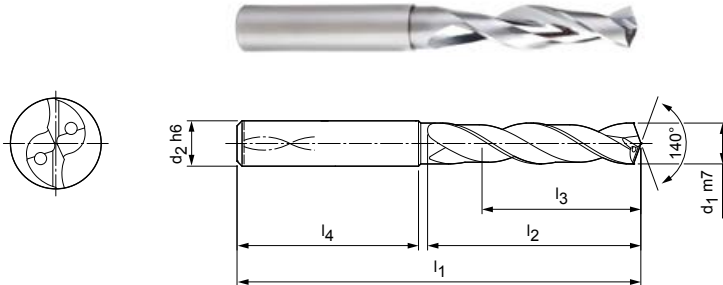
Solid carbide twist drill
SCD131 (3xD), internal coolant supply

Design:

Drill diameter: 3.00 – 20.00 mm
Bore tolerance: ≥ IT 9
Cutting material: HU630
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 140°
Helix angle: 30°

Application:

Suitable for use as pilot drill for MEGA-Deep-Drill-Alu.



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD131-0650-2-2-140HA03-HU630 | 30394280 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD131-0670-2-2-140HA03-HU630 | 30446643 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD131-0700-2-2-140HA03-HU630 | 30391294 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD131-1000-2-2-140HA03-HU630 | 30391297 |
| 11,00 | 12 | 102 | 55 | 40 | 45 | SCD131-1100-2-2-140HA03-HU630 | 30391298 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SCD131-1200-2-2-140HA03-HU630 | 30391299 |
| 13,20 | 14 | 107 | 60 | 43 | 45 | SCD131-1320-2-2-140HA03-HU630 | 30694326 |
| 13,70 | 14 | 107 | 60 | 43 | 45 | SCD131-1370-2-2-140HA03-HU630 | 30694329 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SCD131-1600-2-2-140HA03-HU630 | 30391303 |

Configurable features

Diameter:
Diameter in increments of 0.01 mm freely selectable

Shank form:
Shank form: HB | HE

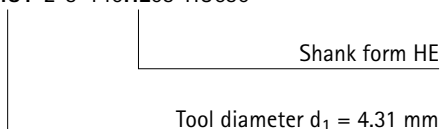
Specification:
SCD131-[diameter]-2-2-140[shank form]03-HU630

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,50 | 6 | 62 | 20 | 14 | 36 |
| 3,51 | 4,50 | 6 | 66 | 24 | 17 | 36 |
| 4,51 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 7,97 | 8 | 79 | 34 | 24 | 36 |
| 7,98 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 102 | 55 | 40 | 45 |
| 12,01 | 14,00 | 14 | 107 | 60 | 43 | 45 |
| 14,01 | 16,00 | 16 | 115 | 65 | 45 | 48 |
| 16,01 | 18,00 | 18 | 123 | 73 | 51 | 48 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Example:

SCD131-0431-2-3-140HE03-HU630



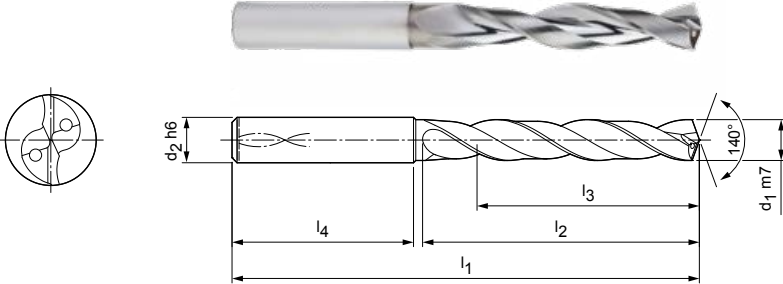
Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Drill-Alu

Solid carbide twist drill
SCD131 (5xD), internal coolant supply



Design:

- Drill diameter: 2.80 – 20.00 mm
- Bore tolerance: ≥ IT 9
- Cutting material: HU630
- Number of cutting edges: 2
- Number of guiding chamfers: 2
- Tip angle: 140°
- Helix angle: 30°

Application:

Suitable for use as pilot drill for MEGA-Deep-Drill-Alu.

P
1
2
3
4
5
6
M
1
2
3
K
1
2
3
N
1
2
3
4
S
1
2
3
4
5
H
1
2
3

5xD

HA
DIN 6535

HB
DIN 6535

HE
DIN 6535

CONFIG

Performance
LINE

IT9

Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD131-0300-2-2-140HA05-HU630 | 30391326 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD131-0320-2-2-140HA05-HU630 | 30391328 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD131-0330-2-2-140HA05-HU630 | 30391329 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD131-0350-2-2-140HA05-HU630 | 30391331 |
| 3,70* | 6 | 66 | 28 | 23 | 36 | SCD131-0370-2-2-140HA05-HU630 | 30391333 |
| 3,90 | 6 | 74 | 36 | 29 | 36 | SCD131-0390-2-2-140HA05-HU630 | 30391335 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD131-0400-2-2-140HA05-HU630 | 30391336 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD131-0410-2-2-140HA05-HU630 | 30391337 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD131-0420-2-2-140HA05-HU630 | 30391338 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD131-0430-2-2-140HA05-HU630 | 30391339 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD131-0450-2-2-140HA05-HU630 | 30391341 |
| 4,60 | 6 | 74 | 36 | 29 | 36 | SCD131-0460-2-2-140HA05-HU630 | 30391342 |
| 4,70 | 6 | 74 | 36 | 29 | 36 | SCD131-0470-2-2-140HA05-HU630 | 30391343 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD131-0500-2-2-140HA05-HU630 | 30391346 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD131-0510-2-2-140HA05-HU630 | 30391347 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD131-0520-2-2-140HA05-HU630 | 30391348 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD131-0550-2-2-140HA05-HU630 | 30391351 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD131-0560-2-2-140HA05-HU630 | 30391352 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD131-0600-2-2-140HA05-HU630 | 30391356 |
| 6,10 | 8 | 91 | 53 | 43 | 36 | SCD131-0610-2-2-140HA05-HU630 | 30391357 |
| 6,20 | 8 | 91 | 53 | 43 | 36 | SCD131-0620-2-2-140HA05-HU630 | 30391358 |
| 6,30 | 8 | 91 | 53 | 43 | 36 | SCD131-0630-2-2-140HA05-HU630 | 30391359 |
| 6,40 | 8 | 91 | 53 | 43 | 36 | SCD131-0640-2-2-140HA05-HU630 | 30391360 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD131-0650-2-2-140HA05-HU630 | 30391361 |
| 6,60 | 8 | 91 | 53 | 43 | 36 | SCD131-0660-2-2-140HA05-HU630 | 30391362 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD131-0680-2-2-140HA05-HU630 | 30391364 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD131-0700-2-2-140HA05-HU630 | 30391366 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD131-0740-2-2-140HA05-HU630 | 30391370 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD131-0750-2-2-140HA05-HU630 | 30391371 |
| 7,60 | 8 | 91 | 53 | 43 | 36 | SCD131-0760-2-2-140HA05-HU630 | 30391372 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD131-0800-2-2-140HA05-HU630 | 30391376 |
| 8,40 | 10 | 103 | 61 | 49 | 40 | SCD131-0840-2-2-140HA05-HU630 | 30391380 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD131-0850-2-2-140HA05-HU630 | 30391381 |
| 8,73 | 10 | 103 | 61 | 49 | 40 | SCD131-0873-2-2-140HA05-HU630 | 30451167 |
| 8,90 | 10 | 103 | 61 | 49 | 40 | SCD131-0890-2-2-140HA05-HU630 | 30391385 |

MEGA-Drill-Alu | Solid carbide twist drill SCD131 (5xD), internal coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD131-0900-2-2-140HA05-HU630 | 30391386 |
| 9,20 | 10 | 103 | 61 | 49 | 40 | SCD131-0920-2-2-140HA05-HU630 | 30391388 |
| 9,30* | 10 | 103 | 61 | 49 | 40 | SCD131-0930-2-2-140HA05-HU630 | 30391389 |
| 9,50 | 10 | 103 | 61 | 49 | 40 | SCD131-0950-2-2-140HA05-HU630 | 30391391 |
| 9,60 | 10 | 103 | 61 | 49 | 40 | SCD131-0960-2-2-140HA05-HU630 | 30391392 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD131-1000-2-2-140HA05-HU630 | 30391396 |
| 10,20 | 12 | 118 | 71 | 56 | 45 | SCD131-1020-2-2-140HA05-HU630 | 30391398 |
| 10,50 | 12 | 118 | 71 | 56 | 45 | SCD131-1050-2-2-140HA05-HU630 | 30391401 |
| 10,80 | 12 | 118 | 71 | 56 | 45 | SCD131-1080-2-2-140HA05-HU630 | 30391404 |
| 11,00 | 12 | 118 | 71 | 56 | 45 | SCD131-1100-2-2-140HA05-HU630 | 30391406 |
| 11,50 | 12 | 118 | 71 | 56 | 45 | SCD131-1150-2-2-140HA05-HU630 | 30391407 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD131-1200-2-2-140HA05-HU630 | 30391408 |
| 12,50 | 14 | 124 | 77 | 60 | 45 | SCD131-1250-2-2-140HA05-HU630 | 30391409 |
| 13,50 | 14 | 124 | 77 | 60 | 45 | SCD131-1350-2-2-140HA05-HU630 | 30391411 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SCD131-1400-2-2-140HA05-HU630 | 30391412 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SCD131-1600-2-2-140HA05-HU630 | 30391418 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SCD131-2000-2-2-140HA05-HU630 | 30446886 |

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable



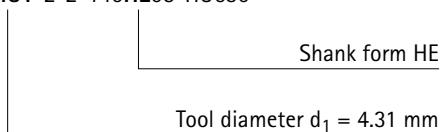
Shank form:
Shank form: HB | HE

Specification:

SCD131-[diameter]-2-2-140[shank form]05-HU630

Example:

SCD131-0431-2-2-140HE05-HU630



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 2,80 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |
| 12,01 | 14,00 | 14 | 124 | 77 | 60 | 45 |
| 14,01 | 16,00 | 16 | 133 | 83 | 63 | 48 |
| 16,01 | 18,00 | 18 | 143 | 93 | 71 | 48 |
| 18,01 | 20,00 | 20 | 153 | 101 | 77 | 50 |
| 18,01 | 20,00 | 20 | 131 | 79 | 55 | 50 |

Dimensions in mm.

* Particularly suitable for the premanufacturing of core bores for thread formers.

For cutting data recommendations, see end of chapter.

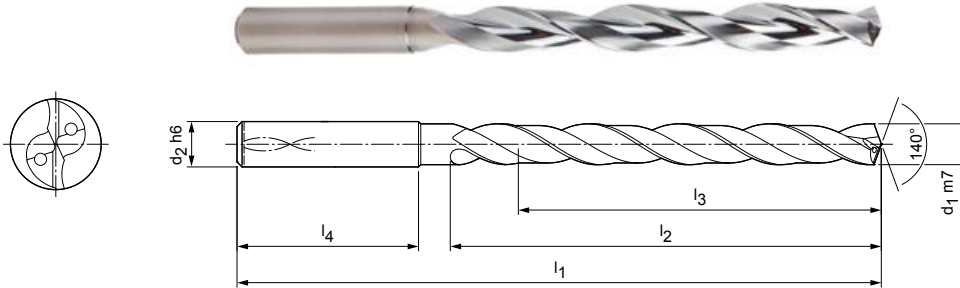
Special designs and other coatings available upon request.

MEGA-Drill-Alu

Solid carbide twist drill
SCD131 (8xD), internal coolant supply

Design:

Drill diameter: 3.00 – 20.00 mm
Bore tolerance: ≥ IT 9
Cutting material: HU630
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 140°
Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 72 | 34 | 29 | 36 | SCD131-0300-2-2-140HA08-HU630 | 30391421 |
| 3,30 | 6 | 72 | 34 | 29 | 36 | SCD131-0330-2-2-140HA08-HU630 | 30391424 |
| 3,50 | 6 | 72 | 34 | 29 | 36 | SCD131-0350-2-2-140HA08-HU630 | 30391426 |
| 3,70 | 6 | 72 | 34 | 29 | 36 | SCD131-0370-2-2-140HA08-HU630 | 30391428 |
| 4,00 | 6 | 81 | 43 | 36 | 36 | SCD131-0400-2-2-140HA08-HU630 | 30391431 |
| 4,50 | 6 | 81 | 43 | 36 | 36 | SCD131-0450-2-2-140HA08-HU630 | 30391436 |
| 5,00 | 6 | 95 | 57 | 48 | 36 | SCD131-0500-2-2-140HA08-HU630 | 30391441 |
| 5,50 | 6 | 95 | 57 | 48 | 36 | SCD131-0550-2-2-140HA08-HU630 | 30391446 |
| 6,50 | 8 | 114 | 76 | 64 | 36 | SCD131-0650-2-2-140HA08-HU630 | 30391457 |
| 6,80 | 8 | 114 | 76 | 64 | 36 | SCD131-0680-2-2-140HA08-HU630 | 30391460 |
| 7,00 | 8 | 114 | 76 | 64 | 36 | SCD131-0700-2-2-140HA08-HU630 | 30391462 |
| 8,00 | 8 | 114 | 76 | 64 | 36 | SCD131-0800-2-2-140HA08-HU630 | 30391472 |
| 9,30 | 10 | 142 | 95 | 80 | 40 | SCD131-0930-2-2-140HA08-HU630 | 30391484 |
| 11,00 | 12 | 162 | 114 | 96 | 45 | SCD131-1100-2-2-140HA08-HU630 | 30391500 |
| 12,00 | 12 | 162 | 114 | 96 | 45 | SCD131-1200-2-2-140HA08-HU630 | 30391510 |

Configurable features

Diameter:
Diameter in increments of 0.01 mm freely selectable

Shank form:
Shank form: HB | HE

Specification:
SCD131-[diameter]-2-2-140[shank form]08-HU630

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 72 | 34 | 29 | 36 |
| 3,71 | 4,70 | 6 | 81 | 43 | 36 | 36 |
| 4,71 | 6,00 | 6 | 95 | 57 | 48 | 36 |
| 6,01 | 8,00 | 8 | 114 | 76 | 64 | 36 |
| 8,01 | 10,00 | 10 | 142 | 95 | 80 | 40 |
| 10,01 | 12,00 | 12 | 162 | 114 | 96 | 45 |
| 12,01 | 14,00 | 14 | 178 | 133 | 112 | 45 |
| 14,01 | 16,00 | 16 | 203 | 152 | 128 | 48 |
| 16,01 | 18,00 | 18 | 222 | 171 | 144 | 48 |
| 18,01 | 20,00 | 20 | 243 | 190 | 160 | 50 |

Example:

SCD131-0431-2-2-140HE08-HU630

Dimensions in mm.
For cutting data recommendations, see end of chapter.
Special designs and other coatings available upon request.

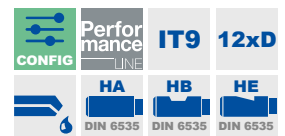
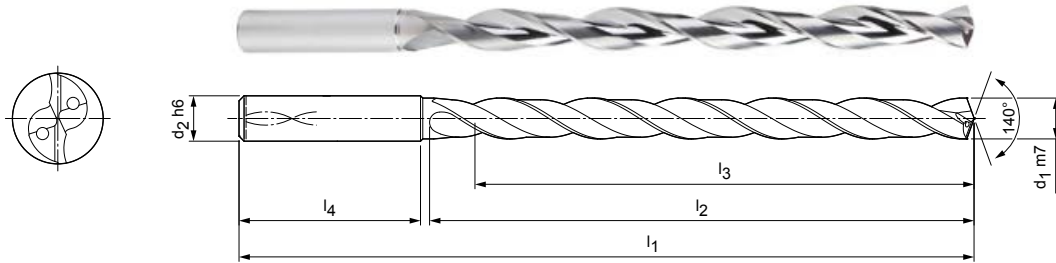
Shank form HE

Tool diameter d₁ = 4.31 mm

MEGA-Drill-Alu

Solid carbide twist drill
SCD131 (12xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HU630
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 140°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 92 | 54 | 48 | 36 | SCD131-0300-2-2-140HA12-HU630 | 30391519 |
| 3,50 | 6 | 92 | 54 | 48 | 36 | SCD131-0350-2-2-140HA12-HU630 | 30391524 |
| 4,00 | 6 | 102 | 64 | 58 | 36 | SCD131-0400-2-2-140HA12-HU630 | 30391529 |
| 4,70 | 6 | 102 | 64 | 58 | 36 | SCD131-0470-2-2-140HA12-HU630 | 30391536 |
| 5,00 | 6 | 116 | 78 | 70 | 36 | SCD131-0500-2-2-140HA12-HU630 | 30391539 |
| 5,40 | 6 | 116 | 78 | 70 | 36 | SCD131-0540-2-2-140HA12-HU630 | 30391543 |
| 5,50 | 6 | 116 | 78 | 70 | 36 | SCD131-0550-2-2-140HA12-HU630 | 30391544 |
| 5,60 | 6 | 116 | 78 | 70 | 36 | SCD131-0560-2-2-140HA12-HU630 | 30391545 |
| 6,00 | 6 | 116 | 78 | 70 | 36 | SCD131-0600-2-2-140HA12-HU630 | 30391549 |
| 6,50 | 8 | 146 | 108 | 94 | 36 | SCD131-0650-2-2-140HA12-HU630 | 30391554 |
| 6,60 | 8 | 146 | 108 | 94 | 36 | SCD131-0660-2-2-140HA12-HU630 | 30391555 |
| 7,00 | 8 | 146 | 108 | 94 | 36 | SCD131-0700-2-2-140HA12-HU630 | 30391558 |
| 8,00 | 8 | 146 | 108 | 94 | 36 | SCD131-0800-2-2-140HA12-HU630 | 30391568 |
| 9,00 | 10 | 162 | 120 | 110 | 40 | SCD131-0900-2-2-140HA12-HU630 | 30391577 |

Configurable features

Diameter:
 Diameter in increments of 0.01 mm freely selectable

Shank form:
 Shank form: HB | HE

Specification:
 SCD131-[diameter]-2-2-140[shank form]12-HU630

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 92 | 54 | 48 | 36 |
| 3,71 | 4,70 | 6 | 102 | 64 | 58 | 36 |
| 4,71 | 6,00 | 6 | 116 | 78 | 70 | 36 |
| 6,01 | 8,00 | 8 | 146 | 108 | 94 | 36 |
| 8,01 | 10,00 | 10 | 162 | 120 | 110 | 40 |
| 10,01 | 12,00 | 12 | 204 | 156 | 142 | 45 |
| 12,01 | 14,00 | 14 | 230 | 182 | 166 | 45 |
| 14,01 | 16,00 | 16 | 260 | 208 | 192 | 48 |
| 16,01 | 18,00 | 18 | 285 | 234 | 216 | 48 |
| 18,01 | 20,00 | 20 | 310 | 258 | 240 | 50 |

Example:
 SCD131-0431-2-2-140HE12-HU630

Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

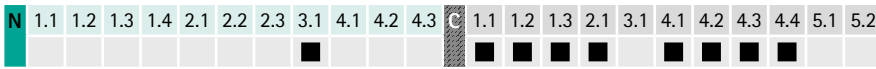
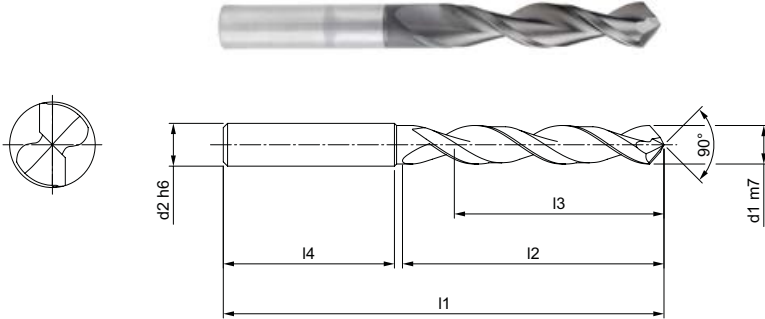


MEGA-Drill-Composite-MD

Solid carbide twist drill
SCD250 (5xD), external coolant supply

Design:
 Drill diameter: 0.50 – 12.00 mm
 Cutting material: HC611/619/620
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 90°
 Helix angle: 35°

Application:
 CFRP with multidirectional fibres.



| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 0,50 | 3 | 55 | 4,5 | 3 | 46 | SCD250-0050-2-2-140HA05-HC620 | 30504673 |
| 2,00 | 3 | 68 | 14 | 11 | 51 | SCD250-0200-2-2-140HA05-HC620 | 30504688 |
| 2,50 | 3 | 74 | 18 | 14 | 54 | SCD250-0250-2-2-140HA05-HC620 | 30504693 |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD250-0300-2-2-090HA05-HC619 | 30401902 |
| 3,10 | 6 | 66 | 28 | 23 | 36 | SCD250-0310-2-2-090HA05-HC619 | 30401903 |
| 3,20 | 6 | 66 | 28 | 23 | 36 | SCD250-0320-2-2-090HA05-HC619 | 30401905 |
| 3,30 | 6 | 66 | 28 | 23 | 36 | SCD250-0330-2-2-090HA05-HC619 | 30401906 |
| 3,80 | 6 | 66 | 28 | 23 | 36 | SCD250-0380-2-2-090HA05-HC619 | 30401911 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD250-0400-2-2-090HA05-HC619 | 30401913 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD250-0410-2-2-090HA05-HC619 | 30401914 |
| 4,20 | 6 | 74 | 36 | 29 | 36 | SCD250-0420-2-2-090HA05-HC619 | 30401915 |
| 4,30 | 6 | 74 | 36 | 29 | 36 | SCD250-0430-2-2-090HA05-HC619 | 30401916 |
| 4,50 | 6 | 74 | 36 | 29 | 36 | SCD250-0450-2-2-090HA05-HC619 | 30401918 |
| 4,80 | 6 | 74 | 36 | 29 | 36 | SCD250-0480-2-2-090HA05-HC619 | 30401922 |
| 4,86 | 6 | 74 | 36 | 0 | 36 | SCD250-0486-2-2-090HA05-HC619 | 30681789 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD250-0500-2-2-090HA05-HC619 | 30401924 |
| 5,10 | 6 | 82 | 44 | 35 | 36 | SCD250-0510-2-2-090HA05-HC619 | 30401925 |
| 5,20 | 6 | 82 | 44 | 35 | 36 | SCD250-0520-2-2-090HA05-HC619 | 30401926 |
| 5,30 | 6 | 82 | 44 | 35 | 36 | SCD250-0530-2-2-090HA05-HC619 | 30401927 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD250-0550-2-2-090HA05-HC619 | 30401929 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD250-0560-2-2-090HA05-HC619 | 30401930 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD250-0580-2-2-090HA05-HC619 | 30401932 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD250-0600-2-2-090HA05-HC619 | 30401934 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD250-0650-2-2-090HA05-HC619 | 30401940 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD250-0680-2-2-090HA05-HC619 | 30401943 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD250-0700-2-2-090HA05-HC619 | 30401945 |
| 7,20 | 8 | 91 | 53 | 43 | 36 | SCD250-0720-2-2-090HA05-HC619 | 30401947 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD250-0750-2-2-090HA05-HC619 | 30401950 |
| 7,80 | 8 | 91 | 53 | 43 | 36 | SCD250-0780-2-2-090HA05-HC619 | 30401953 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD250-0800-2-2-090HA05-HC619 | 30401956 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD250-0850-2-2-090HA05-HC611 | 30401961 |
| 8,80 | 10 | 103 | 61 | 49 | 40 | SCD250-0880-2-2-090HA05-HC611 | 30401964 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD250-1000-2-2-090HA05-HC611 | 30401977 |

MEGA-Drill-Composite-MD | Solid carbide twist drill SCD250 (5xD), external coolant supply

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 10,10 | 12 | 118 | 71 | 56 | 45 | SCD250-1010-2-2-090HA05-HC611 | 30401978 |
| 10,40 | 12 | 118 | 71 | 56 | 45 | SCD250-1040-2-2-090HA05-HC611 | 30401981 |
| 10,70 | 12 | 118 | 71 | 56 | 45 | SCD250-1070-2-2-090HA05-HC611 | 30401984 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SCD250-1200-2-2-090HA05-HC611 | 30401998 |

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

Shank form: HB | HE

Specification:

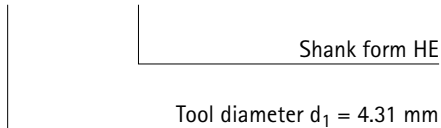
SCD250-[diameter]-2-2-090[shank form]05-HC611

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,99 | 6 | 66 | 28 | 23 | 36 |
| 4,00 | 4,99 | 6 | 74 | 36 | 29 | 36 |
| 5,00 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 118 | 71 | 56 | 45 |

Example:

SCD250-0431-2-2-090HE05-HC611



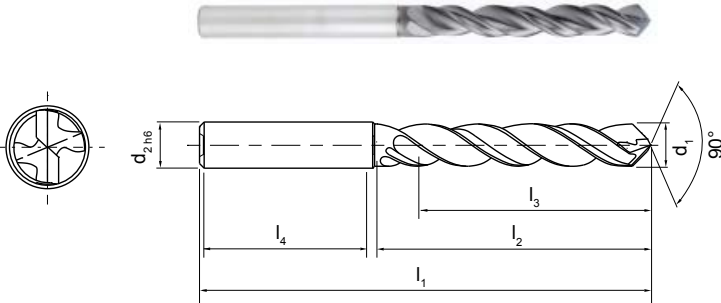
Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Drill-Composite-UDX

Solid carbide twist drill
SCD270 (5xD), external coolant supply

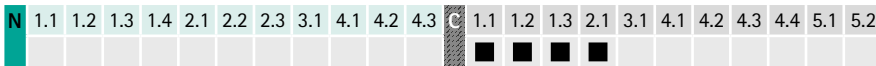


Design:

- Drill diameter: 3.00 – 12.00 mm
- Bore tolerance: ≥ IT 8
- Cutting material: HC619
- Number of cutting edges: 2
- Number of guiding chamfers: 4
- Tip angle: 90°
- Helix angle: 35°

Application:

For all CFRP workpiece materials / problem solver in unstable clamping situations or for thin-walled parts.



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|--------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,30 | 6 | 66 | 26 | 20 | 36 | SCD270-0330-2-2-090HA05-HC619 | 30402105 |
| 4,00 | 6 | 74 | 35 | 27 | 36 | SCD270-0400-2-2-090HA05-HC619 | 30402112 |
| 4,394 | 6 | 74 | 35 | 27 | 36 | SCD270-04394-2-2-090HA05-HC619 | 30634827 |
| 4,50 | 6 | 74 | 35 | 27 | 36 | SCD270-0450-2-2-090HA05-HC619 | 30402117 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD270-0500-2-2-090HA05-HC619 | 30402123 |

Configurable features

Diameter:
Diameter in increments of 0.01 mm freely selectable

Shank form:
Shank form: HB | HE

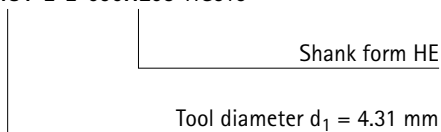
Specification:
SCD270-[diameter]-2-2-090[shank form]05-HC619

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,99 | 6 | 66 | 26 | 20 | 36 |
| 4,00 | 4,99 | 6 | 74 | 35 | 27 | 36 |
| 5,00 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 52 | 40 | 36 |
| 8,01 | 10,00 | 10 | 103 | 60 | 45 | 40 |
| 10,01 | 12,00 | 12 | 118 | 70 | 52 | 45 |

Example:

SCD270-0431-2-2-090HE05-HC619



Dimensions in mm.

For cutting data recommendations, see end of chapter.

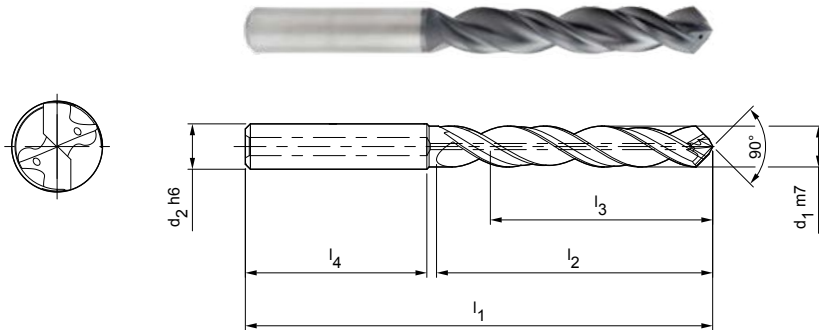
Special designs and other coatings available upon request.

MEGA-Drill-Composite-UDX

Solid carbide twist drill
SCD271 (5xD), internal coolant supply

Design:
 Drill diameter: 6.00 - 12.00
 Cutting material: HC619
 Number of cutting edges: 2
 Number of guiding chamfers: 3
 Tip angle: 90°
 Helix angle: 35°

Application:
 For all CFRP workpiece materials / problem solver
 in unstable clamping situations or for thin-walled parts.



| | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| N | 1.1 | 1.2 | 1.3 | 1.4 | 2.1 | 2.2 | 2.3 | 3.1 | 4.1 | 4.2 | 4.3 | C | 1.1 | 1.2 | 1.3 | 2.1 | 3.1 | 4.1 | 4.2 | 5.1 | 5.2 | 5.3 | |
| | | | | | | | | ■ | | | | ■ | | ■ | ■ | ■ | | | | | | | |



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|------------|-------|-----|----|----|----|-------------------------------|-----------|
| d1 m7 | d2 h6 | l1 | l2 | l3 | l4 | Specification | Order no. |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD271-0600-2-2-090HA05-HC619 | 30402197 |
| 8,00 | 8 | 91 | 52 | 40 | 36 | SCD271-0800-2-2-090HA05-HC619 | 30402219 |
| 10,00 | 10 | 103 | 60 | 45 | 40 | SCD271-1000-2-2-090HA05-HC611 | 30402240 |

Configurable features



Diameter:
 Diameter in increments of 0.01 mm freely selectable



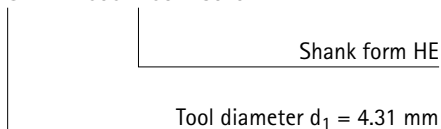
Shank form:
 Shank form: HB | HE

Specification:
 SCD271-[diameter]-2-2-090[shank form]05-HC619

Dimensions of configurable series

| d1 min. | d1 max. | d2 h6 | l1 | l2 | l3 | l4 |
|---------|---------|-------|-----|----|----|----|
| 6,00 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 52 | 40 | 36 |
| 8,01 | 10,00 | 10 | 103 | 60 | 45 | 40 |
| 10,01 | 12,00 | 12 | 118 | 70 | 52 | 45 |

Example:
 SCD271-0431-2-2-090HE05-HC619

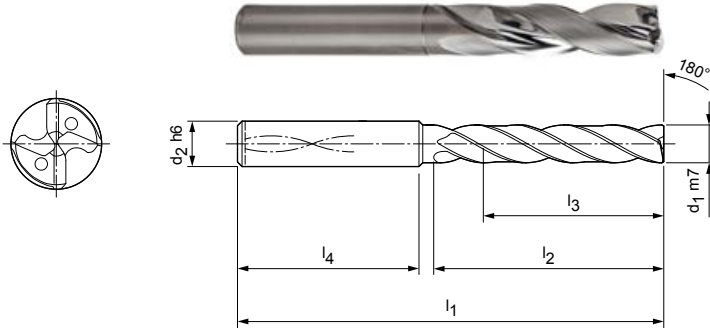


Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

MEGA-180°-Drill-Alu

Solid carbide twist drill
SCD241 (3xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HU630
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 180°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 62 | 20 | 14 | 36 | SCD241-0300-2-4-180HA03-HU630 | 30382883 |
| 3,70 | 6 | 62 | 20 | 14 | 36 | SCD241-0370-2-4-180HA03-HU630 | 30382890 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SCD241-0400-2-4-180HA03-HU630 | 30382893 |
| 4,20 | 6 | 66 | 24 | 17 | 36 | SCD241-0420-2-4-180HA03-HU630 | 30382895 |
| 4,30 | 6 | 66 | 24 | 17 | 36 | SCD241-0430-2-4-180HA03-HU630 | 30382896 |
| 4,60 | 6 | 66 | 24 | 17 | 36 | SCD241-0460-2-4-180HA03-HU630 | 30382899 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SCD241-0500-2-4-180HA03-HU630 | 30382904 |
| 5,50 | 6 | 66 | 28 | 20 | 36 | SCD241-0550-2-4-180HA03-HU630 | 30382909 |
| 5,56 | 6 | 66 | 28 | 20 | 36 | SCD241-0556-2-4-180HA03-HU630 | 30463897 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SCD241-0600-2-4-180HA03-HU630 | 30382915 |
| 6,50 | 8 | 79 | 34 | 24 | 36 | SCD241-0650-2-4-180HA03-HU630 | 30382920 |
| 6,70 | 8 | 79 | 34 | 24 | 36 | SCD241-0670-2-4-180HA03-HU630 | 30382922 |
| 7,00 | 8 | 79 | 34 | 24 | 36 | SCD241-0700-2-4-180HA03-HU630 | 30382925 |
| 7,20 | 8 | 79 | 41 | 29 | 36 | SCD241-0720-2-4-180HA03-HU630 | 30382927 |
| 7,40 | 8 | 79 | 41 | 29 | 36 | SCD241-0740-2-4-180HA03-HU630 | 30382929 |
| 7,50 | 8 | 79 | 41 | 29 | 36 | SCD241-0750-2-4-180HA03-HU630 | 30382930 |
| 7,80 | 8 | 79 | 41 | 29 | 36 | SCD241-0780-2-4-180HA03-HU630 | 30382933 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SCD241-0800-2-4-180HA03-HU630 | 30382935 |
| 8,50 | 10 | 89 | 47 | 35 | 40 | SCD241-0850-2-4-180HA03-HU630 | 30382940 |
| 8,90 | 10 | 89 | 47 | 35 | 40 | SCD241-0890-2-4-180HA03-HU630 | 30382944 |
| 9,00 | 10 | 89 | 47 | 35 | 40 | SCD241-0900-2-4-180HA03-HU630 | 30382945 |
| 9,20 | 10 | 89 | 47 | 35 | 40 | SCD241-0920-2-4-180HA03-HU630 | 30382947 |
| 9,80 | 10 | 89 | 47 | 35 | 40 | SCD241-0980-2-4-180HA03-HU630 | 30382953 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SCD241-1000-2-4-180HA03-HU630 | 30382955 |
| 11,00 | 12 | 100 | 53 | 38 | 45 | SCD241-1100-2-4-180HA03-HU630 | 30382965 |
| 12,00 | 12 | 100 | 53 | 38 | 45 | SCD241-1200-2-4-180HA03-HU630 | 30382975 |
| 13,00 | 14 | 105 | 58 | 41 | 45 | SCD241-1300-2-4-180HA03-HU630 | 30382978 |
| 14,50 | 16 | 113 | 63 | 43 | 48 | SCD241-1450-2-4-180HA03-HU630 | 30382982 |
| 17,00 | 18 | 121 | 71 | 49 | 48 | SCD241-1700-2-4-180HA03-HU630 | 30382990 |
| 18,50 | 20 | 129 | 77 | 53 | 50 | SCD241-1850-2-4-180HA03-HU630 | 30382994 |

MEGA-180°-Drill-Alu | Solid carbide twist drill SCD241 (3xD), internal coolant supply

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

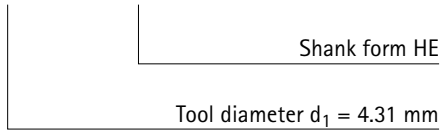
Shank form: HB | HE

Specification:

SCD241-[diameter]-2-4-180[shank form]03-HU630

Example:

SCD241-0431-2-4-180HE03-HU630



Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 62 | 20 | 14 | 36 |
| 3,71 | 4,70 | 6 | 66 | 24 | 17 | 36 |
| 4,71 | 6,00 | 6 | 66 | 28 | 20 | 36 |
| 6,01 | 6,80 | 8 | 79 | 34 | 24 | 36 |
| 6,81 | 8,00 | 8 | 79 | 41 | 29 | 36 |
| 8,01 | 10,00 | 10 | 89 | 47 | 35 | 40 |
| 10,01 | 12,00 | 12 | 100 | 53 | 38 | 45 |
| 12,0 | 14,00 | 14 | 105 | 58 | 41 | 45 |
| 14,01 | 16,00 | 16 | 113 | 63 | 43 | 48 |
| 16,01 | 18,00 | 18 | 121 | 71 | 49 | 48 |
| 18,01 | 20,00 | 20 | 129 | 77 | 53 | 50 |

Dimensions in mm.

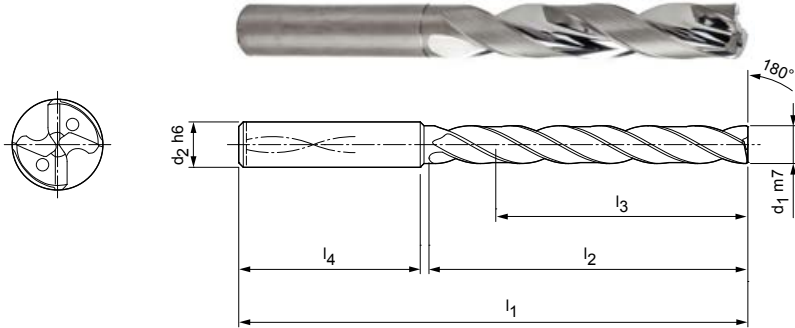
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-180°-Drill-Alu

Solid carbide twist drill
SCD241 (5xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 20.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HU630
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 180°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 3,00 | 6 | 66 | 28 | 23 | 36 | SCD241-0300-2-4-180HA05-HU630 | 30383000 |
| 3,50 | 6 | 66 | 28 | 23 | 36 | SCD241-0350-2-4-180HA05-HU630 | 30383005 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SCD241-0400-2-4-180HA05-HU630 | 30383010 |
| 4,10 | 6 | 74 | 36 | 29 | 36 | SCD241-0410-2-4-180HA05-HU630 | 30383011 |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD241-0480-2-4-180HA05-HU630 | 30383019 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SCD241-0500-2-4-180HA05-HU630 | 30383021 |
| 5,60 | 6 | 82 | 44 | 35 | 36 | SCD241-0560-2-4-180HA05-HU630 | 30383028 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SCD241-0600-2-4-180HA05-HU630 | 30383032 |
| 6,50 | 8 | 91 | 53 | 43 | 36 | SCD241-0650-2-4-180HA05-HU630 | 30383037 |
| 7,00 | 8 | 91 | 53 | 43 | 36 | SCD241-0700-2-4-180HA05-HU630 | 30383042 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD241-0750-2-4-180HA05-HU630 | 30383047 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SCD241-0800-2-4-180HA05-HU630 | 30383052 |
| 8,20 | 10 | 103 | 61 | 49 | 40 | SCD241-0820-2-4-180HA05-HU630 | 30383054 |
| 8,50 | 10 | 103 | 61 | 49 | 40 | SCD241-0850-2-4-180HA05-HU630 | 30383057 |
| 9,00 | 10 | 103 | 61 | 49 | 40 | SCD241-0900-2-4-180HA05-HU630 | 30383062 |
| 9,30 | 10 | 103 | 61 | 49 | 40 | SCD241-0930-2-4-180HA05-HU630 | 30383066 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SCD241-1000-2-4-180HA05-HU630 | 30383073 |
| 12,00 | 12 | 116 | 69 | 54 | 45 | SCD241-1200-2-4-180HA05-HU630 | 30383093 |
| 13,00 | 14 | 122 | 75 | 58 | 45 | SCD241-1300-2-4-180HA05-HU630 | 30383096 |
| 14,00 | 14 | 122 | 75 | 58 | 45 | SCD241-1400-2-4-180HA05-HU630 | 30383099 |
| 15,00 | 16 | 131 | 81 | 61 | 48 | SCD241-1500-2-4-180HA05-HU630 | 30383102 |
| 15,70 | 16 | 131 | 81 | 61 | 48 | SCD241-1570-2-4-180HA05-HU630 | 31237410 |
| 20,00 | 20 | 151 | 99 | 75 | 50 | SCD241-2000-2-4-180HA05-HU630 | 30383117 |

MEGA-180°-Drill-Alu | Solid carbide twist drill SCD241 (5xD), internal coolant supply

Configurable features

**Diameter:**

Diameter in increments of 0.01 mm freely selectable

**Shank form:**

Shank form: HB | HE

Specification:

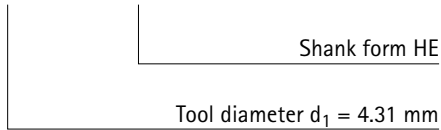
SCD241-[diameter]-2-4-180[shank form]05-HU630

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,00 | 3,70 | 6 | 66 | 28 | 23 | 36 |
| 3,71 | 4,70 | 6 | 74 | 36 | 29 | 36 |
| 4,71 | 6,00 | 6 | 82 | 44 | 35 | 36 |
| 6,01 | 8,00 | 8 | 91 | 53 | 43 | 36 |
| 8,01 | 10,00 | 10 | 103 | 61 | 49 | 40 |
| 10,01 | 12,00 | 12 | 116 | 69 | 54 | 45 |
| 12,01 | 14,00 | 14 | 122 | 75 | 58 | 45 |
| 14,01 | 16,00 | 16 | 131 | 81 | 61 | 48 |
| 16,01 | 18,00 | 18 | 141 | 91 | 69 | 48 |
| 18,01 | 20,00 | 20 | 151 | 99 | 75 | 50 |

Example:

SCD241-0431-2-4-180HE05-HU630



Dimensions in mm.

For cutting data recommendations, see end of chapter.

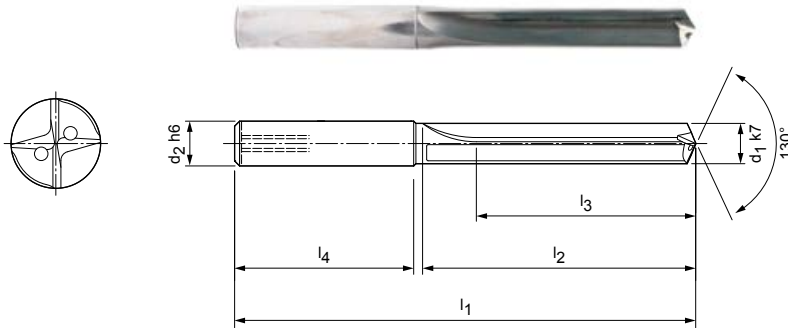
Special designs and other coatings available upon request.

ECU G Drill

Solid carbide drill, straight fluted
SCD211 (5xD), internal coolant supply

Design:

Drill diameter: 4.80 – 7.50 mm
Bore diameter: ≥ IT 9
Cutting material: HU610
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 130°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,80 | 6 | 82 | 44 | 35 | 36 | SCD211-0480-2-4-130HA05-HU610 | 30392622 |
| 5,50 | 6 | 82 | 44 | 35 | 36 | SCD211-0550-2-4-130HA05-HU610 | 30392630 |
| 5,70 | 6 | 82 | 44 | 35 | 36 | SCD211-0570-2-4-130HA05-HU610 | 30392632 |
| 5,80 | 6 | 82 | 44 | 35 | 36 | SCD211-0580-2-4-130HA05-HU610 | 30392633 |
| 6,80 | 8 | 91 | 53 | 43 | 36 | SCD211-0680-2-4-130HA05-HU610 | 30392643 |
| 7,40 | 8 | 91 | 53 | 43 | 36 | SCD211-0740-2-4-130HA05-HU610 | 30392649 |
| 7,50 | 8 | 91 | 53 | 43 | 36 | SCD211-0750-2-4-130HA05-HU610 | 30392650 |

Configurable features

Shank form:
Shank form: HB | HE

Specification:
SCD211-0430-2-4-130[shank form]05-HU610

Example:

SCD211-0430-3-3-140HE05-HU610

Shank form HE

Dimensions in mm.

For cutting data recommendations, see end of chapter.

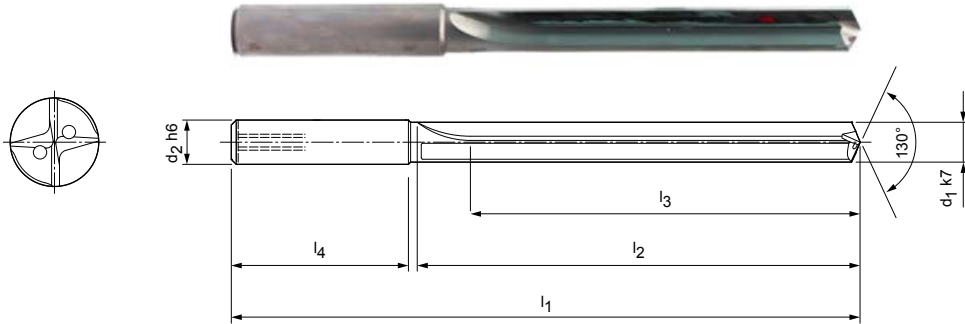
Special designs and other coatings available upon request.

ECU G Drill

Solid carbide drill, straight fluted
SCD211 (8xD), internal coolant supply

Design:


Drill diameter: 5.80 – 11.60 mm
Bore tolerance: ≥ IT 9
Cutting material: HU610
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 130°




Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-------------------------------|-----------|
| d ₁ k7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 5,80 | 6 | 95 | 57 | 48 | 36 | SCD211-0580-2-4-130HA08-HU610 | 30392739 |
| 11,60 | 12 | 162 | 114 | 96 | 45 | SCD211-1160-2-4-130HA08-HU610 | 30392797 |

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD211-0430-2-4-130[shank form]08-HU610

Example:

SCD211-0430-3-3-140HE08-HU610

Shank form HE

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

Tritan-Drill-Uni-Plus | SCD631

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P5.1 Cast steel | |
| M | M1.1 Stainless steels, austenitic | < 700 |
| | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |
| N | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | N1.3 Aluminium, alloy > 7-12 % Si | |
| | N1.4 Aluminium, alloy > 12 % Si | |
| | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | N2.2 Copper, alloy | > 300 |
| | N2.3 Brass, bronze, gunmetal | < 1,200 |

MEGA-Speed-Drill-Uni | SCD221

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4.1 Stainless steels, ferritic and martensitic | |
| | P5.1 Cast steel | |
| | P6.1 Stainless cast steel, ferritic and martensitic | |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|------|------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 4.00 | 5.50 | 7.50 | 10.50 | 14.50 | 20.00 |
| | 115 | 105 | 105 | | 0.22 | 0.27 | 0.34 | 0.42 | 0.51 | 0.59 |
| | 105 | 85 | 85 | | 0.27 | 0.34 | 0.42 | 0.53 | 0.64 | 0.74 |
| | 115 | 100 | 100 | | 0.25 | 0.32 | 0.40 | 0.50 | 0.60 | 0.70 |
| | 80 | 70 | 70 | | 0.21 | 0.26 | 0.32 | 0.40 | 0.48 | 0.55 |
| | 85 | 75 | 75 | | 0.23 | 0.29 | 0.36 | 0.45 | 0.54 | 0.63 |
| | 70 | 65 | 65 | | 0.19 | 0.24 | 0.30 | 0.37 | 0.44 | 0.51 |
| | 70 | 50 | 60 | | 0.16 | 0.19 | 0.24 | 0.29 | 0.34 | 0.40 |
| | 115 | 100 | 100 | | 0.25 | 0.32 | 0.40 | 0.50 | 0.60 | 0.70 |
| | 55 | 35 | 35 | | 0.11 | 0.14 | 0.18 | 0.22 | 0.27 | 0.31 |
| | 140 | 100 | 100 | 100 | 0.31 | 0.41 | 0.53 | 0.68 | 0.84 | 0.98 |
| | 185 | 115 | 140 | 140 | 0.30 | 0.39 | 0.50 | 0.64 | 0.78 | 0.91 |
| | 115 | 85 | 85 | | 0.27 | 0.35 | 0.44 | 0.55 | 0.67 | 0.78 |
| | 70 | 45 | 60 | | 0.14 | 0.18 | 0.22 | 0.28 | 0.33 | 0.38 |
| | 105 | 90 | 90 | | 0.29 | 0.37 | 0.47 | 0.59 | 0.72 | 0.84 |
| | 90 | 80 | 80 | | 0.25 | 0.31 | 0.38 | 0.48 | 0.57 | 0.66 |
| | 345 | 230 | 290 | | 0.22 | 0.27 | 0.34 | 0.42 | 0.51 | 0.59 |
| | 290 | 205 | 230 | | 0.27 | 0.35 | 0.44 | 0.55 | 0.67 | 0.78 |
| | 255 | 175 | 205 | | 0.27 | 0.35 | 0.44 | 0.55 | 0.67 | 0.78 |
| | 205 | 140 | 175 | | 0.27 | 0.35 | 0.44 | 0.55 | 0.67 | 0.78 |
| | 140 | 105 | | | 0.20 | 0.26 | 0.33 | 0.41 | 0.50 | 0.58 |
| | 230 | 185 | 185 | 140 | 0.31 | 0.41 | 0.53 | 0.68 | 0.84 | 0.98 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 170 | 155 | 155 | | 0.11 | 0.14 | 0.18 | 0.23 | 0.30 | 0.36 |
| | 155 | 130 | 130 | | 0.14 | 0.18 | 0.22 | 0.29 | 0.37 | 0.45 |
| | 170 | 145 | 145 | | 0.13 | 0.17 | 0.21 | 0.27 | 0.35 | 0.43 |
| | 120 | 100 | 100 | | 0.11 | 0.14 | 0.17 | 0.22 | 0.28 | 0.34 |
| | 130 | 110 | 110 | | 0.11 | 0.15 | 0.19 | 0.25 | 0.32 | 0.38 |
| | 115 | 100 | 95 | | 0.10 | 0.14 | 0.17 | 0.22 | 0.28 | 0.35 |
| | 100 | 75 | 85 | | 0.10 | 0.13 | 0.16 | 0.20 | 0.26 | 0.31 |
| | 100 | 75 | 85 | | 0.08 | 0.10 | 0.13 | 0.16 | 0.21 | 0.25 |
| | 170 | 145 | 145 | | 0.13 | 0.17 | 0.21 | 0.27 | 0.35 | 0.43 |
| | 100 | 75 | 85 | | 0.08 | 0.10 | 0.13 | 0.16 | 0.21 | 0.25 |
| | 150 | 105 | 105 | 105 | 0.13 | 0.19 | 0.26 | 0.35 | 0.45 | 0.54 |
| | 200 | 125 | 150 | 150 | 0.13 | 0.18 | 0.25 | 0.33 | 0.42 | 0.50 |
| | 125 | 95 | 95 | | 0.12 | 0.16 | 0.22 | 0.28 | 0.36 | 0.43 |
| | 75 | 50 | 65 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 115 | 100 | 100 | | 0.13 | 0.18 | 0.23 | 0.31 | 0.39 | 0.46 |
| | 100 | 90 | 90 | | 0.11 | 0.15 | 0.19 | 0.25 | 0.31 | 0.36 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

ECU-Drill-Uni | SCD350, 351

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|-----------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| P5 | P5.1 Cast steel | | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2 | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | M3 | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| K | K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |

MEGA-Drill-Steel-Plus | SCD600, 601

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|----|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4 | P4.1 Stainless steels, ferritic and martensitic | |
| | P5 | P5.1 Cast steel | |
| | P6 | P6.1 Stainless cast steel, ferritic and martensitic | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |
| H | H1 | H1.1 Hardened steel/cast steel | < 44 |
| | | H1.2 Hardened steel/cast steel | < 55 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----------|-----------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 1.00 | 1.82 | 3.31 | 6.03 | 10.99 | 20.00 |
| | 75 | 70 | 70 | | 0.03 | 0.05 | 0.07 | 0.10 | 0.16 | 0.21 |
| | 70 | 55 | 55 | | 0.04 | 0.06 | 0.08 | 0.13 | 0.20 | 0.27 |
| | 75 | 65 | 65 | | 0.04 | 0.05 | 0.08 | 0.12 | 0.18 | 0.25 |
| | 55 | 45 | 45 | | 0.04 | 0.05 | 0.07 | 0.10 | 0.15 | 0.20 |
| | 55 | 50 | 50 | | 0.03 | 0.05 | 0.07 | 0.11 | 0.17 | 0.23 |
| | 45 | 40 | 40 | | 0.03 | 0.04 | 0.06 | 0.09 | 0.14 | 0.18 |
| | 45 | 35 | 40 | | 0.03 | 0.04 | 0.05 | 0.07 | 0.11 | 0.14 |
| | 75 | 65 | 65 | | 0.04 | 0.05 | 0.08 | 0.12 | 0.18 | 0.25 |
| | 45 | 30 | 30 | | 0.03 | 0.04 | 0.06 | 0.09 | 0.14 | 0.19 |
| | 45 | 25 | 25 | | 0.02 | 0.03 | 0.05 | 0.08 | 0.12 | 0.16 |
| | 45 | 30 | 30 | | 0.03 | 0.04 | 0.06 | 0.09 | 0.14 | 0.19 |
| | 45 | 25 | 25 | | 0.02 | 0.03 | 0.05 | 0.08 | 0.12 | 0.16 |
| | 120 | 75 | 90 | 90 | 0.05 | 0.07 | 0.12 | 0.19 | 0.30 | 0.41 |
| | 75 | 55 | 55 | | 0.04 | 0.07 | 0.11 | 0.17 | 0.26 | 0.35 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 110 | 100 | 100 | | 0.10 | 0.13 | 0.17 | 0.22 | 0.28 | 0.33 |
| | 100 | 85 | 85 | | 0.12 | 0.16 | 0.21 | 0.27 | 0.34 | 0.41 |
| | 110 | 95 | 95 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.38 |
| | 75 | 65 | 65 | | 0.10 | 0.13 | 0.16 | 0.21 | 0.26 | 0.30 |
| | 85 | 70 | 70 | | 0.10 | 0.14 | 0.18 | 0.23 | 0.29 | 0.35 |
| | 65 | 60 | 60 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 65 | 50 | 55 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.22 |
| | 65 | 50 | 55 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.23 |
| | 110 | 95 | 95 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.38 |
| | 65 | 50 | 55 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.23 |
| | 120 | 85 | 85 | 85 | 0.13 | 0.19 | 0.26 | 0.35 | 0.45 | 0.54 |
| | 160 | 100 | 120 | 120 | 0.13 | 0.18 | 0.25 | 0.33 | 0.42 | 0.50 |
| | 100 | 75 | 75 | | 0.12 | 0.16 | 0.22 | 0.28 | 0.36 | 0.43 |
| | 60 | 40 | 50 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 90 | 80 | 80 | | 0.13 | 0.18 | 0.23 | 0.31 | 0.39 | 0.46 |
| | 80 | 70 | 70 | | 0.11 | 0.15 | 0.19 | 0.25 | 0.31 | 0.36 |
| | 90 | 90 | 90 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 25 | 25 | 25 | | 0.05 | 0.06 | 0.08 | 0.11 | 0.14 | 0.16 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

MEGA-Quadro-Drill-Plus | SCD610, 611

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1500 |
| P5 | P5.1 Cast steel | | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

MICRO-Drill-Steel | SCD371

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1500 |
| P5 | P5.1 Cast steel | | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1000 |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

MEGA-Drill-Hardened | SCD141

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|--------------------------------|---|
| H | H1 | H1.1 Hardened steel/cast steel | < 44 |
| | | H1.2 Hardened steel/cast steel | < 55 |
| | H2 | H2.1 Hardened steel/cast steel | < 60 |
| | | H2.2 Hardened steel/cast steel | < 65 |
| | | H2.3 Hardened steel/cast steel | < 68 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 4.00 | 5.50 | 7.50 | 10.50 | 14.50 | 20.00 |
| | 110 | 100 | 100 | | 0.10 | 0.13 | 0.17 | 0.22 | 0.28 | 0.33 |
| | 100 | 85 | 85 | | 0.12 | 0.16 | 0.21 | 0.27 | 0.34 | 0.41 |
| | 110 | 95 | 95 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.38 |
| | 75 | 65 | 65 | | 0.10 | 0.13 | 0.16 | 0.21 | 0.26 | 0.30 |
| | 85 | 70 | 70 | | 0.10 | 0.14 | 0.18 | 0.23 | 0.29 | 0.35 |
| | 65 | 60 | 60 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 65 | 50 | 55 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.22 |
| | 110 | 95 | 95 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.38 |
| | 130 | 95 | 95 | 95 | 0.13 | 0.19 | 0.26 | 0.35 | 0.45 | 0.54 |
| | 175 | 110 | 130 | 130 | 0.13 | 0.18 | 0.25 | 0.33 | 0.42 | 0.50 |
| | 110 | 85 | 85 | | 0.12 | 0.16 | 0.22 | 0.28 | 0.36 | 0.43 |
| | 65 | 45 | 55 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 100 | 90 | 90 | | 0.13 | 0.18 | 0.23 | 0.31 | 0.39 | 0.46 |
| | 90 | 75 | 75 | | 0.11 | 0.15 | 0.19 | 0.25 | 0.31 | 0.36 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----------|-----------|----------------------------------|------|------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 4.00 | 5.50 | 7.50 | 10.50 | 14.50 | 20.00 |
| | 80 | 70 | 70 | | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | 70 | 60 | 60 | | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.10 |
| | 80 | 70 | 70 | | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 |
| | 55 | 50 | 50 | | 0.04 | 0.05 | 0.05 | 0.06 | 0.07 | 0.08 |
| | 60 | 50 | 50 | | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | 50 | 45 | 45 | | 0.04 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 |
| | 50 | 35 | 40 | | 0.03 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 |
| | 80 | 70 | 70 | | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 |
| | 40 | 25 | 25 | | 0.03 | 0.03 | 0.03 | 0.04 | 0.05 | 0.06 |
| | | | | | | | | | | |
| | 95 | 70 | 70 | 70 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.11 |
| | 130 | 80 | 95 | 95 | 0.04 | 0.05 | 0.06 | 0.07 | 0.09 | 0.11 |
| | 80 | 60 | 60 | | 0.04 | 0.05 | 0.05 | 0.07 | 0.08 | 0.10 |
| | | | | | | | | | | |
| | 70 | 65 | 65 | | 0.04 | 0.05 | 0.06 | 0.07 | 0.09 | 0.11 |
| | 65 | 55 | | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 | |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----------|-----|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 2.50 | 3.62 | 5.25 | 7.61 | 11.04 | 16.00 |
| | 80 | 80 | 80 | | 0.07 | 0.09 | 0.11 | 0.02 | 0.19 | 0.20 |
| | 30 | 30 | 30 | | 0.05 | 0.06 | 0.08 | 0.10 | 0.13 | 0.16 |
| | | 30 | 30 | | 0.04 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 |
| | | 20 | 20 | | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 |
| | | 15 | 15 | | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 |
| | | | | | | | | | | |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

Tritan-Drill-Steel | SCD661

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P5.1 Cast steel | |
| M | M1.1 Stainless steels, austenitic | < 700 |
| | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

MEGA-Speed-Drill-Steel | SCD621

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4.1 Stainless steels, ferritic and martensitic | |
| | P5.1 Cast steel | |
| | P6.1 Stainless cast steel, ferritic and martensitic | |
| M | M1.1 Stainless steels, austenitic | < 700 |
| | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|------|------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 4.00 | 5.50 | 7.50 | 10.50 | 14.50 | 20.00 |
| | 115 | 105 | 105 | | 0.24 | 0.30 | 0.37 | 0.46 | 0.56 | 0.65 |
| | 105 | 85 | 85 | | 0.30 | 0.37 | 0.46 | 0.58 | 0.70 | 0.81 |
| | 115 | 100 | 100 | | 0.28 | 0.35 | 0.44 | 0.55 | 0.66 | 0.77 |
| | 80 | 70 | 70 | | 0.24 | 0.29 | 0.36 | 0.44 | 0.53 | 0.61 |
| | 85 | 75 | 75 | | 0.25 | 0.31 | 0.39 | 0.49 | 0.60 | 0.69 |
| | 70 | 65 | 65 | | 0.21 | 0.26 | 0.33 | 0.41 | 0.49 | 0.56 |
| | 70 | 50 | 60 | | 0.18 | 0.21 | 0.26 | 0.32 | 0.38 | 0.43 |
| | 115 | 100 | 100 | | 0.28 | 0.35 | 0.44 | 0.55 | 0.66 | 0.77 |
| | 55 | 35 | 35 | | 0.11 | 0.14 | 0.18 | 0.22 | 0.27 | 0.31 |
| | | | | | | | | | | |
| | 140 | 100 | 100 | 100 | 0.34 | 0.45 | 0.58 | 0.75 | 0.92 | 1.08 |
| | 185 | 115 | 140 | 140 | 0.34 | 0.43 | 0.55 | 0.70 | 0.85 | 1.00 |
| | 115 | 85 | 85 | | 0.30 | 0.38 | 0.48 | 0.61 | 0.74 | 0.86 |
| | 70 | 45 | 60 | | 0.16 | 0.20 | 0.25 | 0.31 | 0.38 | 0.44 |
| | 105 | 90 | 90 | | 0.32 | 0.41 | 0.52 | 0.65 | 0.79 | 0.92 |
| | 90 | 80 | 80 | | 0.27 | 0.34 | 0.42 | 0.52 | 0.63 | 0.73 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 170 | 155 | 155 | | 0.13 | 0.17 | 0.22 | 0.29 | 0.36 | 0.43 |
| | 155 | 130 | 130 | | 0.16 | 0.21 | 0.28 | 0.36 | 0.45 | 0.54 |
| | 170 | 145 | 145 | | 0.15 | 0.20 | 0.26 | 0.34 | 0.43 | 0.51 |
| | 120 | 100 | 100 | | 0.13 | 0.17 | 0.21 | 0.27 | 0.34 | 0.40 |
| | 130 | 110 | 110 | | 0.13 | 0.18 | 0.23 | 0.30 | 0.39 | 0.46 |
| | 100 | 95 | 95 | | 0.12 | 0.15 | 0.20 | 0.25 | 0.32 | 0.37 |
| | 100 | 75 | 85 | | 0.10 | 0.12 | 0.16 | 0.20 | 0.25 | 0.29 |
| | 100 | 75 | 85 | | 0.09 | 0.12 | 0.16 | 0.20 | 0.25 | 0.30 |
| | 170 | 145 | 145 | | 0.15 | 0.20 | 0.26 | 0.34 | 0.43 | 0.51 |
| | 100 | 75 | 85 | | 0.09 | 0.12 | 0.16 | 0.20 | 0.25 | 0.30 |
| | 65 | 40 | 40 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.23 |
| | 60 | 35 | 35 | | 0.06 | 0.08 | 0.10 | 0.13 | 0.17 | 0.20 |
| | 65 | 40 | 40 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.23 |
| | 60 | 35 | 35 | | 0.06 | 0.08 | 0.10 | 0.13 | 0.17 | 0.20 |
| | 150 | 105 | 105 | 105 | 0.14 | 0.21 | 0.28 | 0.38 | 0.49 | 0.59 |
| | 200 | 125 | 150 | 150 | 0.14 | 0.20 | 0.27 | 0.36 | 0.46 | 0.54 |
| | 125 | 95 | 95 | | 0.13 | 0.18 | 0.24 | 0.31 | 0.39 | 0.47 |
| | 75 | 50 | 65 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 115 | 100 | 100 | | 0.14 | 0.19 | 0.25 | 0.33 | 0.42 | 0.50 |
| | 100 | 90 | 90 | | 0.12 | 0.16 | 0.21 | 0.27 | 0.34 | 0.40 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

MEGA 180° Drill | SCD231

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P5 | P5.1 Cast steel | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

ECU-Drill-Steel | SCD360, 361

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4 | P4.1 Stainless steels, ferritic and martensitic | |
| | P5 | P5.1 Cast steel | |
| | P6 | P6.1 Stainless cast steel, ferritic and martensitic | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----------|-----------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 80 | 70 | 70 | | 0.07 | 0.09 | 0.12 | 0.16 | 0.20 | 0.24 |
| | 70 | 60 | 60 | | 0.09 | 0.12 | 0.15 | 0.20 | 0.25 | 0.30 |
| | 80 | 70 | 70 | | 0.08 | 0.11 | 0.14 | 0.19 | 0.24 | 0.28 |
| | 55 | 50 | 50 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.22 |
| | 60 | 50 | 50 | | 0.07 | 0.10 | 0.13 | 0.17 | 0.21 | 0.25 |
| | 50 | 45 | 45 | | 0.06 | 0.08 | 0.11 | 0.14 | 0.17 | 0.21 |
| | 50 | 35 | 40 | | 0.05 | 0.07 | 0.09 | 0.11 | 0.14 | 0.16 |
| | 80 | 70 | 70 | | 0.08 | 0.11 | 0.14 | 0.19 | 0.24 | 0.28 |
| | 95 | 70 | 70 | 70 | 0.09 | 0.14 | 0.19 | 0.25 | 0.33 | 0.39 |
| | 130 | 80 | 95 | 95 | 0.10 | 0.13 | 0.18 | 0.24 | 0.30 | 0.36 |
| | 80 | 60 | 60 | | 0.09 | 0.12 | 0.16 | 0.21 | 0.26 | 0.31 |
| | 50 | 30 | 40 | | 0.06 | 0.08 | 0.11 | 0.14 | 0.17 | 0.21 |
| | 70 | 65 | 65 | | 0.09 | 0.13 | 0.17 | 0.22 | 0.28 | 0.33 |
| | 65 | 55 | 55 | | 0.08 | 0.11 | 0.14 | 0.18 | 0.22 | 0.26 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----------|-----------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 1.00 | 1.82 | 3.31 | 6.03 | 10.99 | 20.00 |
| | 75 | 70 | 70 | | 0.04 | 0.06 | 0.08 | 0.13 | 0.20 | 0.27 |
| | 70 | 55 | 55 | | 0.05 | 0.07 | 0.11 | 0.16 | 0.24 | 0.33 |
| | 75 | 65 | 65 | | 0.05 | 0.07 | 0.10 | 0.15 | 0.23 | 0.31 |
| | 55 | 45 | 45 | | 0.05 | 0.06 | 0.09 | 0.13 | 0.18 | 0.25 |
| | 55 | 50 | 50 | | 0.04 | 0.06 | 0.09 | 0.14 | 0.21 | 0.28 |
| | 45 | 40 | 40 | | 0.04 | 0.05 | 0.08 | 0.12 | 0.17 | 0.23 |
| | 45 | 35 | 40 | | 0.04 | 0.05 | 0.06 | 0.09 | 0.13 | 0.18 |
| | 45 | 35 | 40 | | 0.03 | 0.04 | 0.06 | 0.09 | 0.14 | 0.19 |
| | 75 | 65 | 65 | | 0.05 | 0.07 | 0.10 | 0.15 | 0.23 | 0.31 |
| | 45 | 35 | 40 | | 0.03 | 0.04 | 0.06 | 0.09 | 0.14 | 0.19 |
| | 80 | 60 | 60 | 60 | 0.04 | 0.07 | 0.12 | 0.20 | 0.32 | 0.44 |
| | 110 | 70 | 80 | 80 | 0.05 | 0.07 | 0.12 | 0.19 | 0.30 | 0.41 |
| | 70 | 50 | 50 | | 0.04 | 0.07 | 0.11 | 0.17 | 0.26 | 0.35 |
| | 40 | 25 | 35 | | 0.04 | 0.05 | 0.08 | 0.12 | 0.17 | 0.23 |
| | 60 | 55 | 55 | | 0.05 | 0.07 | 0.11 | 0.18 | 0.27 | 0.38 |
| | 55 | 50 | 50 | | 0.05 | 0.07 | 0.10 | 0.15 | 0.22 | 0.30 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

MEGA-Drill-Inox | SCD120, 121

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4.1 Stainless steels, ferritic and martensitic | |
| | P5.1 Cast steel | |
| | P6.1 Stainless cast steel, ferritic and martensitic | |
| M | M1.1 Stainless steels, austenitic | < 700 |
| | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |
| N | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | N2.2 Copper, alloy | > 300 |
| | N2.3 Brass, bronze, gunmetal | < 1,200 |

MEGA-Speed-Drill-Inox | SCD411

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4.1 Stainless steels, ferritic and martensitic | |
| | P5.1 Cast steel | |
| | P6.1 Stainless cast steel, ferritic and martensitic | |
| M | M1.1 Stainless steels, austenitic | < 700 |
| | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| S | S1.1 Titanium, titanium alloys | < 400 |
| | S2.1 Titanium, titanium alloys | < 1,200 |
| | S2.2 Titanium, titanium alloys | > 1,200 |
| | S3.1 Nickel, unalloyed and alloyed | < 900 |
| | S3.2 Nickel, unalloyed and alloyed | > 900 |
| | S4.1 High-temperature super alloy Ni, Co and Fe-based | |
| | S5.1 Tungsten and molybdenum alloys | |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 100 | 90 | 90 | | 0.07 | 0.09 | 0.12 | 0.16 | 0.20 | 0.24 |
| | 90 | 75 | 75 | | 0.09 | 0.12 | 0.15 | 0.20 | 0.25 | 0.30 |
| | 100 | 85 | 85 | | 0.08 | 0.11 | 0.14 | 0.19 | 0.24 | 0.28 |
| | 70 | 60 | 60 | | 0.07 | 0.09 | 0.12 | 0.15 | 0.19 | 0.22 |
| | 75 | 65 | 65 | | 0.07 | 0.10 | 0.13 | 0.17 | 0.21 | 0.25 |
| | 60 | 55 | 55 | | 0.06 | 0.08 | 0.11 | 0.14 | 0.17 | 0.21 |
| | 60 | 45 | 50 | | 0.05 | 0.07 | 0.09 | 0.11 | 0.14 | 0.16 |
| | 60 | 45 | 50 | | 0.05 | 0.07 | 0.09 | 0.11 | 0.14 | 0.17 |
| | 100 | 85 | 85 | | 0.08 | 0.11 | 0.14 | 0.19 | 0.24 | 0.28 |
| | 60 | 45 | 50 | | 0.05 | 0.07 | 0.09 | 0.11 | 0.14 | 0.17 |
| | 55 | 35 | 35 | | 0.06 | 0.08 | 0.11 | 0.14 | 0.18 | 0.21 |
| | 50 | 30 | 30 | | 0.05 | 0.07 | 0.09 | 0.12 | 0.15 | 0.18 |
| | 55 | 35 | 35 | | 0.06 | 0.08 | 0.11 | 0.14 | 0.18 | 0.21 |
| | 50 | 30 | 30 | | 0.05 | 0.07 | 0.09 | 0.12 | 0.15 | 0.18 |
| | 120 | 85 | 85 | 85 | 0.12 | 0.17 | 0.24 | 0.32 | 0.41 | 0.49 |
| | 160 | 100 | 120 | 120 | 0.12 | 0.17 | 0.22 | 0.30 | 0.38 | 0.45 |
| | 100 | 75 | 75 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.39 |
| | 60 | 40 | 50 | | 0.08 | 0.10 | 0.13 | 0.17 | 0.22 | 0.26 |
| | 90 | 80 | 80 | | 0.12 | 0.16 | 0.21 | 0.28 | 0.35 | 0.42 |
| | 80 | 70 | 70 | | 0.10 | 0.13 | 0.17 | 0.22 | 0.28 | 0.33 |
| | 140 | 100 | | | 0.09 | 0.12 | 0.15 | 0.20 | 0.25 | 0.30 |
| | 120 | 90 | | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.39 |
| | 200 | 160 | 160 | 120 | 0.12 | 0.17 | 0.24 | 0.32 | 0.41 | 0.49 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 150 | 135 | 135 | | 0.09 | 0.12 | 0.15 | 0.20 | 0.25 | 0.30 |
| | 135 | 115 | 115 | | 0.11 | 0.15 | 0.19 | 0.25 | 0.31 | 0.37 |
| | 150 | 130 | 130 | | 0.10 | 0.14 | 0.18 | 0.23 | 0.30 | 0.35 |
| | 105 | 90 | 90 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 115 | 100 | 100 | | 0.09 | 0.12 | 0.16 | 0.21 | 0.27 | 0.32 |
| | 90 | 85 | 85 | | 0.08 | 0.10 | 0.13 | 0.17 | 0.22 | 0.26 |
| | 90 | 70 | 75 | | 0.07 | 0.09 | 0.11 | 0.14 | 0.17 | 0.20 |
| | 70 | 55 | 60 | | 0.06 | 0.08 | 0.11 | 0.14 | 0.18 | 0.21 |
| | 150 | 130 | 130 | | 0.10 | 0.14 | 0.18 | 0.23 | 0.30 | 0.35 |
| | 70 | 55 | 60 | | 0.06 | 0.08 | 0.11 | 0.14 | 0.18 | 0.21 |
| | 80 | 50 | 50 | | 0.08 | 0.10 | 0.13 | 0.17 | 0.22 | 0.26 |
| | 75 | 45 | 45 | | 0.07 | 0.09 | 0.11 | 0.15 | 0.19 | 0.22 |
| | 80 | 50 | 50 | | 0.08 | 0.10 | 0.13 | 0.17 | 0.22 | 0.26 |
| | 75 | 45 | 45 | | 0.07 | 0.09 | 0.11 | 0.15 | 0.19 | 0.22 |
| | | | | | 0.07 | 0.10 | 0.13 | 0.17 | 0.21 | 0.25 |
| | 35 | 25 | | | 0.06 | 0.08 | 0.11 | 0.14 | 0.18 | 0.21 |
| | 30 | 20 | | | 0.05 | 0.07 | 0.09 | 0.12 | 0.15 | 0.18 |
| | 25 | 20 | | | 0.04 | 0.06 | 0.07 | 0.10 | 0.12 | 0.14 |
| | 20 | 10 | | | 0.05 | 0.07 | 0.09 | 0.12 | 0.15 | 0.18 |
| | 20 | 10 | | | 0.04 | 0.06 | 0.07 | 0.10 | 0.12 | 0.14 |
| | 20 | 10 | | | 0.04 | 0.06 | 0.07 | 0.10 | 0.12 | 0.14 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

MEGA-Speed-Drill-Iron | SCD421

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|--|---|
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

MEGA-Drill-Alu | SCD131

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------------------------------|--------------------|--|---|
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | |
| | | N1.4 Aluminium, alloy > 12 % Si | |
| | N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | | N2.2 Copper, alloy | > 300 |
| N2.3 Brass, bronze, gunmetal | | < 1,200 | |

MEGA-Drill-Composite-MD | SCD250

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|--|---|
| N | N3 | N3.1 Graphite, > 8 μm | |
| | | N3.2 Graphite, ≤ 8 μm | |
| C | C1 | C1.1 Plastic matrix, aramide fibre-reinforced (AFRP) | |
| | | C1.2 Plastic matrix (thermosetting), CFRP/GFRP | |
| | | C1.3 Plastic matrix (thermoplastic), CFRP/GFRP | |
| | C2 | C2.1 Carbon matrix, carbon fibre-reinforced (CFC) | |
| | | C3.1 Metal matrix (MMC) | |
| | C4 | C4.1 Sandwich construction, honeycomb core (Honeycomb) | |
| | | C4.2 Sandwich construction, foam core | |

MEGA-Drill-Composite-UDX | SCD270, 271

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|--|---|
| C | C1 | C1.1 Plastic matrix, aramide fibre-reinforced (AFRP) | |
| | | C1.2 Plastic matrix (thermosetting), CFRP/GFRP | |
| | | C1.3 Plastic matrix (thermoplastic), CFRP/GFRP | |
| | C2 | C2.1 Carbon matrix, carbon fibre-reinforced (CFC) | |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 170 | 120 | 120 | 120 | 0.15 | 0.21 | 0.29 | 0.40 | 0.51 | 0.61 |
| | 225 | 140 | 170 | 170 | 0.15 | 0.21 | 0.28 | 0.37 | 0.48 | 0.57 |
| | 140 | 105 | 105 | | 0.14 | 0.19 | 0.25 | 0.32 | 0.41 | 0.49 |
| | 85 | 55 | 70 | | 0.10 | 0.13 | 0.17 | 0.22 | 0.27 | 0.32 |
| | 125 | 110 | 110 | | 0.15 | 0.20 | 0.26 | 0.35 | 0.44 | 0.52 |
| | 110 | 100 | 100 | | 0.13 | 0.17 | 0.22 | 0.28 | 0.35 | 0.41 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 300 | 200 | 250 | | 0.09 | 0.12 | 0.15 | 0.20 | 0.25 | 0.30 |
| | 250 | 180 | 200 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.39 |
| | 220 | 150 | 180 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.39 |
| | 180 | 120 | 150 | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.39 |
| | 140 | 100 | | | 0.09 | 0.12 | 0.15 | 0.20 | 0.25 | 0.30 |
| | 120 | 90 | | | 0.11 | 0.15 | 0.20 | 0.26 | 0.33 | 0.39 |
| | 200 | 160 | 160 | 120 | 0.09 | 0.14 | 0.19 | 0.25 | 0.33 | 0.39 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|------------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.00 | 5.50 | 7.50 | 10.00 | 12.00 |
| | | | | 200 | 0.07 | 0.09 | 0.11 | 0.14 | 0.16 | 0.18 |
| | | | | 200 | 0.07 | 0.09 | 0.11 | 0.14 | 0.16 | 0.18 |
| | | | | 90 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | | | | 75 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | | | | 75 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | | | | 400 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | | | | 400 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.00 | 5.50 | 7.50 | 10.00 | 12.00 |
| | | | | 90 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | | | | 75 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |
| | | | | 75 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

Cutting data recommendations for solid carbide drills

Feed and cutting speed

MEGA-180°-Drill-Alu | SCD241

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|--|---|
| N | N1.1 Aluminium, unalloyed and alloyed < 3 % Si | |
| | N1.2 Aluminium, alloyed ≤ 7 % Si | |
| | N1.3 Aluminium, alloyed > 7 - 12 % Si | |
| | N1.4 Aluminium, alloyed > 12 % Si | |
| N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | N2.2 Copper, alloy | > 300 |
| | N2.3 Brass, bronze, gunmetal | < 1,200 |

Ecu-G-Drill | SCD211

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| N | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | N1.3 Aluminium, alloy > 7-12 % Si | |
| | N1.4 Aluminium, alloy > 12 % Si | |
| N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | N2.2 Copper, alloy | > 300 |
| | N2.3 Brass, bronze, gunmetal | < 1,200 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|-----------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 240 | 160 | 200 | | 0.07 | 0.09 | 0.12 | 0.16 | 0.20 | 0.24 |
| | 200 | 145 | 160 | | 0.09 | 0.12 | 0.16 | 0.21 | 0.26 | 0.31 |
| | 175 | 120 | 145 | | 0.09 | 0.12 | 0.16 | 0.21 | 0.26 | 0.31 |
| | 145 | 95 | 120 | | 0.09 | 0.12 | 0.16 | 0.21 | 0.26 | 0.31 |
| | 110 | 80 | | | 0.07 | 0.09 | 0.12 | 0.16 | 0.20 | 0.24 |
| | 95 | 70 | | | 0.09 | 0.12 | 0.16 | 0.21 | 0.26 | 0.31 |
| | 160 | 130 | 130 | 95 | 0.09 | 0.14 | 0.19 | 0.25 | 0.33 | 0.39 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|-----------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.50 | 6.50 | 9.50 | 14.00 | 20.00 |
| | 90 | 65 | 65 | 65 | 0.08 | 0.12 | 0.16 | 0.22 | 0.29 | 0.34 |
| | 120 | 75 | 90 | 90 | 0.08 | 0.12 | 0.16 | 0.21 | 0.27 | 0.32 |
| | 75 | 55 | 55 | | 0.08 | 0.10 | 0.14 | 0.18 | 0.23 | 0.27 |
| | | | | | | | | | | |
| | 215 | 155 | 170 | | 0.08 | 0.10 | 0.14 | 0.18 | 0.23 | 0.27 |
| | 185 | 130 | 155 | | 0.08 | 0.10 | 0.14 | 0.18 | 0.23 | 0.27 |
| | 155 | 100 | 130 | | 0.08 | 0.10 | 0.14 | 0.18 | 0.23 | 0.27 |
| | | | | | | | | | | |
| | 160 | 130 | 130 | 95 | 0.08 | 0.12 | 0.16 | 0.22 | 0.29 | 0.34 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.



DRILLING FROM SOLID WITH A REPLACEABLE HEAD SYSTEM

QTD indexable insert drill

| | |
|------------------------------------|-----|
| Technology | 184 |
| Type 01 - Steel | 186 |
| Type 05 - Steel-Pyramid | 188 |
| Type 10 - Uni, EK-Shaped | 190 |
| Type 02 - Inox | 191 |
| Type 04 - Iron | 193 |
| Type 03 - Alu | 194 |
| QTS indexable insert holder | 195 |
| Accessories and spare parts | 198 |
| Cutting data recommendations | 200 |

TTD replaceable head drill

| | |
|------------------------------------|-----|
| Technology | 204 |
| Type 01 - Uni-Plus | 206 |
| Type 04 - Steel | 207 |
| Type 02 - Inox | 209 |
| Type 05 - Iron | 211 |
| Type 03 - Alu | 212 |
| TTS replaceable head holders | 213 |
| Accessories and spare parts | 222 |
| Cutting data recommendations | 224 |

TTD-Tritan replaceable head drill

| | |
|--|-----|
| Technology | 228 |
| Type 01 - Uni | 230 |
| TTS 300 replaceable head holders | 231 |
| Accessories and spare parts | 234 |
| Cutting data recommendations | 236 |





QTD INDEXABLE INSERT DRILL

Stable insert mounting, simple clamping system

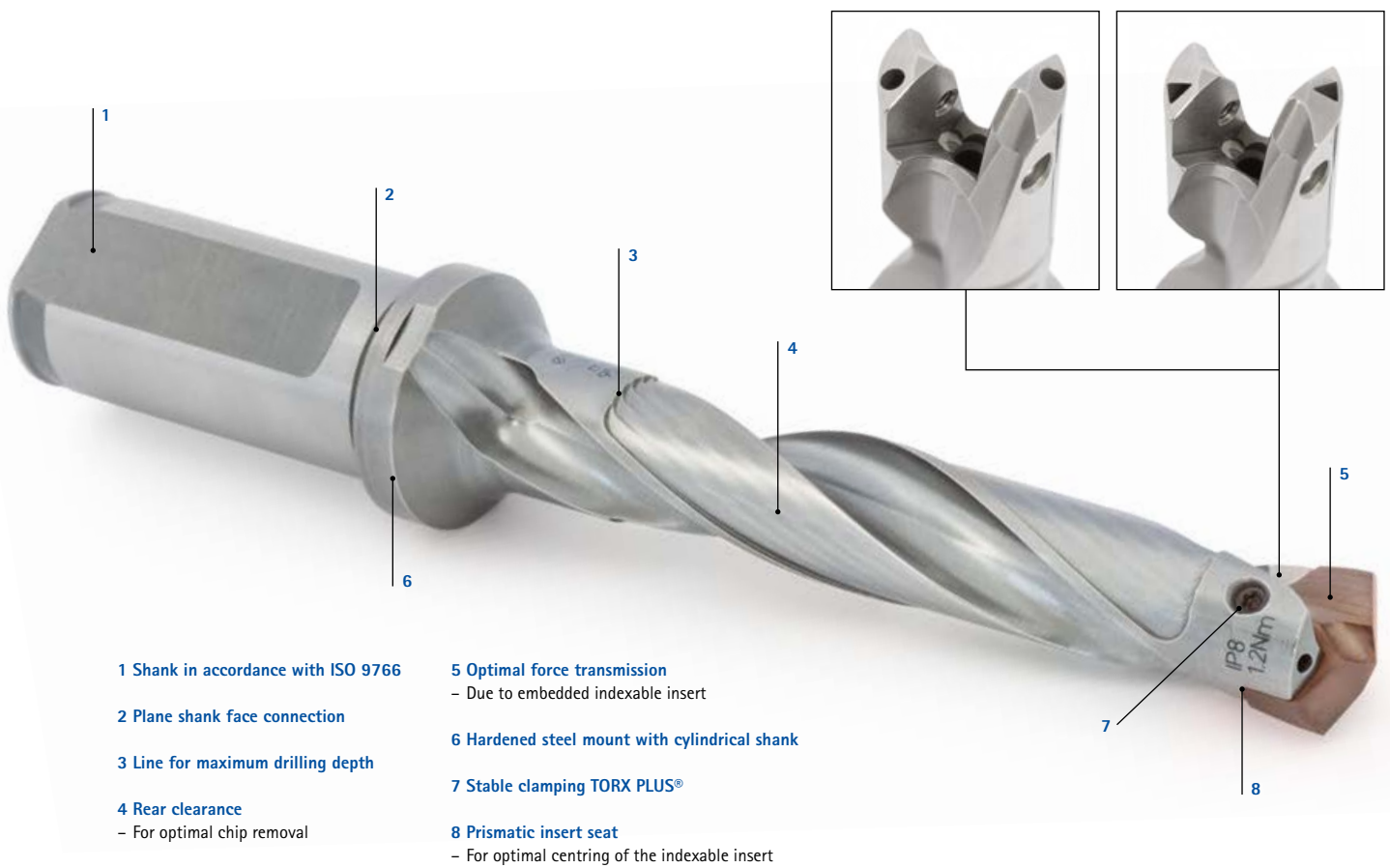
With the latest manufacturing technology with a diameter range from 8 to 50 mm

The QTD indexable insert drill for the medium to upper diameter range impresses with very good chip formation and reliable chip removal. Numerous indexable insert changes are possible per holder, as the basic holder is not eroded. The clamping system for the indexable insert is both particularly simple and extremely effective. It consists of a screw that is inserted transversely through the indexable insert, clamping the indexable insert stably in the prism mounting. The indexable insert is held particularly stable in the prism mounting such that high cutting data and bore qualities are possible.

Additive manufacturing enables optimum coolant outlet design and diameters from 9 mm

Additive manufacturing is used to produce diameters smaller than 13 mm. This method makes it possible to manufacture tool bodies in the diameter range 8 to 13 mm with spiral cooling channels. Compared to central coolant supply with diversions, the QTD with coiled channels achieves a 100% increase in the coolant flow rate, particularly due to the deviation from the circular cooling channel profile.

Tool features in detail



AT A GLANCE

- High availability of stock
- Diameter range from 9 to 50 mm
- Holder range 1.5 | 3 | 5 | 8 and 12xD
- Indexable inserts for steel, stainless steel, aluminium and cast iron
- With internal cooling
- Special surface treatment
- Easy to handle, indexable insert change in the machine

PERFORMANCE FEATURES

- Same performance as a solid carbide drill
- High degree of radial run-out accuracy
- Stable collar to absorb high axial forces
- Secure clamping of the indexable insert with TORX PLUS® screw
- Robust system

ADVANTAGES

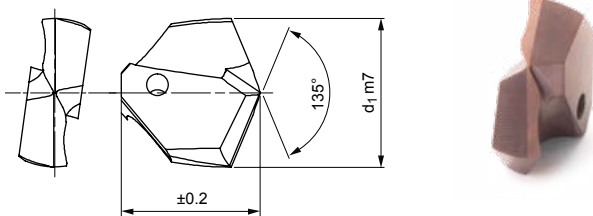
- Optimised costs
- Highest performance
- Non-confusable indexable insert installation
- Optimum chip formation in the indexable insert and chip removal
- One tool holder for all drill geometries
- Large number of indexable insert changes per tool holder possible, as there is no wash-out of the basic holder

QTD indexable inserts

Produced from solid carbide, internal coolant supply
Type 01 - Steel

Design:

Drill diameter: 9.00 - 50.00 mm
Bore tolerance: \geq IT 10
Cutting material: HP240
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 135°



Stocked preferred series

| d ₁ from 9.00 to 15.50 | | | |
|-----------------------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | Specification | Order no. |
| 9,00 | 9 | QTD-2F01-0900-HP240 | 30615635 |
| 9,50 | 9,5 | QTD-2F01-0950-HP240 | 30615636 |
| 10,00 | 10 | QTD-2F01-1000-HP240 | 30615638 |
| 10,20 | 10 | QTD-2F01-1020-HP240 | 30646024 |
| 10,50 | 10,5 | QTD-2F01-1050-HP240 | 30615639 |
| 10,70 | 10,5 | QTD-2F01-1070-HP240 | 30615640 |
| 11,00 | 11 | QTD-2F01-1100-HP240 | 30615641 |
| 11,50 | 11,5 | QTD-2F01-1150-HP240 | 30615642 |
| 12,00 | 12 | QTD-2F01-1200-HP240 | 30615644 |
| 12,50 | 12,5 | QTD-2F01-1250-HP240 | 30615645 |
| 12,70 | 12,5 | QTD-2F01-1270-HP240 | 30615646 |
| 12,80 | 12,5 | QTD-2F01-1280-HP240 | 30646043 |
| 13,00 | 13 | QTD-2F01-1300-HP240 | 30572990 |
| 13,10 | 13 | QTD-2F01-1310-HP240 | 30646045 |
| 13,30 | 13 | QTD-2F01-1330-HP240 | 30646047 |
| 13,40 | 13 | QTD-2F01-1340-HP240 | 30646048 |
| 13,50 | 13,5 | QTD-2F01-1350-HP240 | 30572991 |
| 13,80 | 13,5 | QTD-2F01-1380-HP240 | 30646050 |
| 13,90 | 13,5 | QTD-2F01-1390-HP240 | 30646051 |
| 14,00 | 14 | QTD-2F01-1400-HP240 | 30572993 |
| 14,10 | 14 | QTD-2F01-1410-HP240 | 30646052 |
| 14,20 | 14 | QTD-2F01-1420-HP240 | 30646053 |
| 14,30 | 14 | QTD-2F01-1430-HP240 | 30646055 |
| 14,50 | 14,5 | QTD-2F01-1450-HP240 | 30572994 |
| 14,60 | 14,5 | QTD-2F01-1460-HP240 | 30646057 |
| 14,70 | 14,5 | QTD-2F01-1470-HP240 | 30572995 |
| 14,80 | 14,5 | QTD-2F01-1480-HP240 | 30646058 |
| 14,90 | 14,5 | QTD-2F01-1490-HP240 | 30646059 |
| 15,00 | 15 | QTD-2F01-1500-HP240 | 30572997 |
| 15,10 | 15 | QTD-2F01-1510-HP240 | 30646060 |
| 15,20 | 15 | QTD-2F01-1520-HP240 | 30646061 |
| 15,25 | 15 | QTD-2F01-1525-HP240 | 30572998 |
| 15,50 | 15 | QTD-2F01-1550-HP240 | 30572999 |

| d ₁ from 15.70 to 19.50 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | Specification | Order no. |
| 15,70 | 15 | QTD-2F01-1570-HP240 | 30573000 |
| 15,80 | 15 | QTD-2F01-1580-HP240 | 30646066 |
| 15,90 | 15 | QTD-2F01-1590-HP240 | 30646068 |
| 16,00 | 16 | QTD-2F01-1600-HP240 | 30573001 |
| 16,10 | 16 | QTD-2F01-1610-HP240 | 30573003 |
| 16,20 | 16 | QTD-2F01-1620-HP240 | 30646069 |
| 16,25 | 16 | QTD-2F01-1625-HP240 | 30573004 |
| 16,30 | 16 | QTD-2F01-1630-HP240 | 30610882 |
| 16,40 | 16 | QTD-2F01-1640-HP240 | 30646071 |
| 16,50 | 16 | QTD-2F01-1650-HP240 | 30573005 |
| 16,60 | 16 | QTD-2F01-1660-HP240 | 30646072 |
| 16,70 | 16 | QTD-2F01-1670-HP240 | 30573006 |
| 16,80 | 16 | QTD-2F01-1680-HP240 | 30646074 |
| 16,90 | 16 | QTD-2F01-1690-HP240 | 30646075 |
| 17,00 | 17 | QTD-2F01-1700-HP240 | 30573009 |
| 17,10 | 17 | QTD-2F01-1710-HP240 | 30646076 |
| 17,20 | 17 | QTD-2F01-1720-HP240 | 30646077 |
| 17,30 | 17 | QTD-2F01-1730-HP240 | 30646078 |
| 17,40 | 17 | QTD-2F01-1740-HP240 | 30646079 |
| 17,50 | 17 | QTD-2F01-1750-HP240 | 30573010 |
| 17,60 | 17 | QTD-2F01-1760-HP240 | 30646081 |
| 17,70 | 17 | QTD-2F01-1770-HP240 | 30573011 |
| 17,80 | 17 | QTD-2F01-1780-HP240 | 30646082 |
| 17,90 | 17 | QTD-2F01-1790-HP240 | 30646083 |
| 18,00 | 18 | QTD-2F01-1800-HP240 | 30573012 |
| 18,10 | 18 | QTD-2F01-1810-HP240 | 30646084 |
| 18,50 | 18 | QTD-2F01-1850-HP240 | 30573014 |
| 18,60 | 18 | QTD-2F01-1860-HP240 | 30646088 |
| 18,70 | 18 | QTD-2F01-1870-HP240 | 30573015 |
| 18,80 | 18 | QTD-2F01-1880-HP240 | 30646089 |
| 18,90 | 18 | QTD-2F01-1890-HP240 | 30646090 |
| 19,00 | 19 | QTD-2F01-1900-HP240 | 30573016 |
| 19,50 | 19 | QTD-2F01-1905-HP240 | 30646091 |

Indexable inserts QTD produced from solid carbide, internal coolant supply – Type O1

| d ₁ from 19.10 to 24.70 | | | | d ₁ from 24.75 to 42.60 | | | |
|------------------------------------|--------------------|---------------------|-----------|------------------------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | Specification | Order no. | d ₁ m7 | Tool holder size D | Specification | Order no. |
| 19,10 | 19 | QTD-2F01-1910-HP240 | 30646092 | 24,75 | 24 | QTD-2F01-2475-HP240 | 30573046 |
| 19,20 | 19 | QTD-2F01-1920-HP240 | 30573017 | 24,80 | 24 | QTD-2F01-2480-HP240 | 30660662 |
| 19,25 | 19 | QTD-2F01-1925-HP240 | 30573018 | 25,00 | 25 | QTD-2F01-2500-HP240 | 30573047 |
| 19,30 | 19 | QTD-2F01-1930-HP240 | 30646094 | 25,40 | 25 | QTD-2F01-2540-HP240 | 30573048 |
| 19,50 | 19 | QTD-2F01-1950-HP240 | 30573020 | 25,50 | 25 | QTD-2F01-2550-HP240 | 30573049 |
| 19,60 | 19 | QTD-2F01-1960-HP240 | 30646095 | 25,70 | 25 | QTD-2F01-2570-HP240 | 30573050 |
| 19,70 | 19 | QTD-2F01-1970-HP240 | 30573021 | 25,80 | 25 | QTD-2F01-2580-HP240 | 30584730 |
| 19,75 | 19 | QTD-2F01-1975-HP240 | 30573022 | 26,00 | 26 | QTD-2F01-2600-HP240 | 30573051 |
| 19,80 | 19 | QTD-2F01-1980-HP240 | 30646096 | 26,50 | 26 | QTD-2F01-2650-HP240 | 30573052 |
| 19,90 | 19 | QTD-2F01-1990-HP240 | 30646097 | 27,00 | 27 | QTD-2F01-2700-HP240 | 30573053 |
| 20,00 | 20 | QTD-2F01-2000-HP240 | 30573023 | 27,50 | 27 | QTD-2F01-2750-HP240 | 30573054 |
| 20,40 | 20 | QTD-2F01-2040-HP240 | 30573024 | 27,75 | 27 | QTD-2F01-2775-HP240 | 30573055 |
| 20,50 | 20 | QTD-2F01-2050-HP240 | 30573025 | 28,00 | 28 | QTD-2F01-2800-HP240 | 30573056 |
| 20,70 | 20 | QTD-2F01-2070-HP240 | 30573026 | 28,50 | 28 | QTD-2F01-2850-HP240 | 30573058 |
| 20,75 | 20 | QTD-2F01-2075-HP240 | 30573027 | 29,00 | 29 | QTD-2F01-2900-HP240 | 30573059 |
| 21,00 | 21 | QTD-2F01-2100-HP240 | 30573028 | 29,50 | 29 | QTD-2F01-2950-HP240 | 30573060 |
| 21,50 | 21 | QTD-2F01-2150-HP240 | 30573029 | 29,80 | 29 | QTD-2F01-2980-HP240 | 30728319 |
| 21,70 | 21 | QTD-2F01-2170-HP240 | 30573030 | 30,00 | 30 | QTD-2F01-3000-HP240 | 30573062 |
| 22,00 | 22 | QTD-2F01-2200-HP240 | 30573031 | 30,25 | 30 | QTD-2F01-3025-HP240 | 30573063 |
| 22,25 | 22 | QTD-2F01-2225-HP240 | 30573032 | 30,50 | 30 | QTD-2F01-3050-HP240 | 30573064 |
| 22,50 | 22 | QTD-2F01-2250-HP240 | 30573034 | 31,00 | 31 | QTD-2F01-3100-HP240 | 30573066 |
| 22,70 | 22 | QTD-2F01-2270-HP240 | 30573035 | 31,50 | 31 | QTD-2F01-3150-HP240 | 30573067 |
| 22,75 | 22 | QTD-2F01-2275-HP240 | 30573036 | 32,00 | 32 | QTD-2F01-3200-HP240 | 30573068 |
| 23,00 | 23 | QTD-2F01-2300-HP240 | 30573037 | 33,00 | 33 | QTD-2F01-3300-HP240 | 30649656 |
| 23,25 | 23 | QTD-2F01-2325-HP240 | 30573038 | 34,00 | 34 | QTD-2F01-3400-HP240 | 30649657 |
| 23,50 | 23 | QTD-2F01-2350-HP240 | 30573039 | 35,00 | 35 | QTD-2F01-3500-HP240 | 30649658 |
| 23,75 | 23 | QTD-2F01-2375-HP240 | 30573042 | 36,00 | 36 | QTD-2F01-3600-HP240 | 30649659 |
| 24,00 | 24 | QTD-2F01-2400-HP240 | 30573043 | 37,00 | 37 | QTD-2F01-3700-HP240 | 30649660 |
| 24,30 | 24 | QTD-2F01-2430-HP240 | 30646105 | 38,00 | 37 | QTD-2F01-3800-HP240 | 30649661 |
| 24,50 | 24 | QTD-2F01-2450-HP240 | 30573044 | 40,00 | 39 | QTD-2F01-4000-HP240 | 30657233 |
| 24,70 | 24 | QTD-2F01-2470-HP240 | 30573045 | 42,00 | 41 | QTD-2F01-4200-HP240 | 30657235 |

Configurable features



Diameter:
Diameter in increments
of 0.01 mm freely selectable



Specification:

QTD-2F01-[diameter]-HP240

Example:

QTD-2F01-0901-HP240

Tool diameter d₁ = 9.01 mm

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 9,00 | 50,00 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

QTD indexable inserts

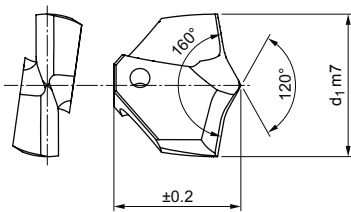
Produced from solid carbide, internal coolant supply
Type 05 - Steel-Pyramid

Design:

Drill diameter: 14.00 - 32.00 mm
Bore tolerance: \geq IT 10
Cutting material: HP605
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 165°

Application:

For machining operations with special demands on tool centring (e.g. thin-walled parts, unstable machining conditions).



Stocked preferred series

| Dimensions | | Specification | Order no. |
|-------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | | |
| 14,00 | 14 | QTD-2F05-1400-HP605 | 31126352 |
| 15,00 | 15 | QTD-2F05-1500-HP605 | 31126356 |
| 16,00 | 16 | QTD-2F05-1600-HP605 | 31126361 |
| 16,50 | 16 | QTD-2F05-1650-HP605 | 31126364 |
| 17,50 | 17 | QTD-2F05-1750-HP605 | 31126366 |
| 18,00 | 18 | QTD-2F05-1800-HP605 | 31126368 |
| 18,50 | 18 | QTD-2F05-1850-HP605 | 31126369 |
| 19,27 | 19 | QTD-2F05-1927-HP605 | 31208007 |
| 19,80 | 19 | QTD-2F05-1980-HP605 | 31126372 |
| 20,00 | 20 | QTD-2F05-2000-HP605 | 31126373 |
| 20,50 | 20 | QTD-2F05-2050-HP605 | 31126374 |
| 21,00 | 21 | QTD-2F05-2100-HP605 | 31126375 |
| 21,50 | 21 | QTD-2F05-2150-HP605 | 31126376 |
| 22,00 | 22 | QTD-2F05-2200-HP605 | 31126377 |
| 23,00 | 23 | QTD-2F05-2300-HP605 | 31126379 |
| 24,00 | 24 | QTD-2F05-2400-HP605 | 31126380 |
| 25,00 | 25 | QTD-2F05-2500-HP605 | 31126382 |
| 26,00 | 26 | QTD-2F05-2600-HP605 | 31126384 |
| 26,50 | 26 | QTD-2F05-2650-HP605 | 31126385 |
| 27,00 | 27 | QTD-2F05-2700-HP605 | 31126386 |
| 28,00 | 28 | QTD-2F05-2800-HP605 | 31126387 |
| 29,00 | 29 | QTD-2F05-2900-HP605 | 31126388 |
| 30,00 | 30 | QTD-2F05-3000-HP605 | 31126389 |
| 32,00 | 32 | QTD-2F05-3200-HP605 | 31126391 |

Configurable features



Diameter:
Diameter in increments
of 0.01 mm freely selectable



Specification:

QTD-2F01-[diameter]-HP240

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 14,00 | 32,00 |

Example:

QTD-2F01-1401-HP240

Tool diameter d₁ = 14.01 mm

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Practical test

Machining von sheets, heat exchangers / boiler plates, steel beams (T, U, ...).

Especially for machining with special demands on tool centring as well as for thin-walled parts and unstable machining conditions.

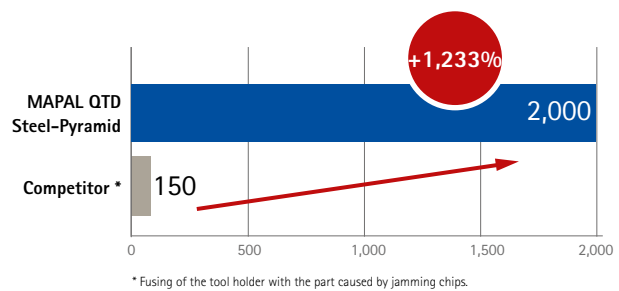


Machining data

Tool: \varnothing 18 mm | 5xD
 Chuck: Mill chucks
 Cooling: MQL-internal cooling

IB [mm]: 90
 vc [m/min]: 63
 n [min^{-1}]: 1,115
 f [mm]: 0.3
 vf [mm/min]: 334

Number of bores



QTD indexable inserts

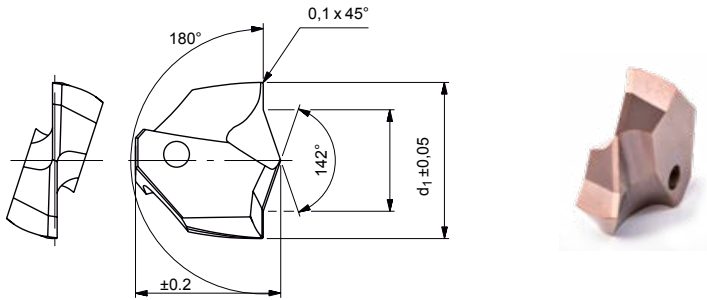
Produced of solid carbide,
Type 10 - Uni, EK-Shaped

Design:

- Drill diameter: 10.00 - 33.00 mm
- Bore tolerance: $\geq IT 10$
- Cutting material: HP240
- Number of cutting edges: 2
- Number of guiding chamfers: 2
- Tip angle: 142°
- Special features: EK-shaped
180° cutting edge,
protective chamfer
0.5 mm

Application:

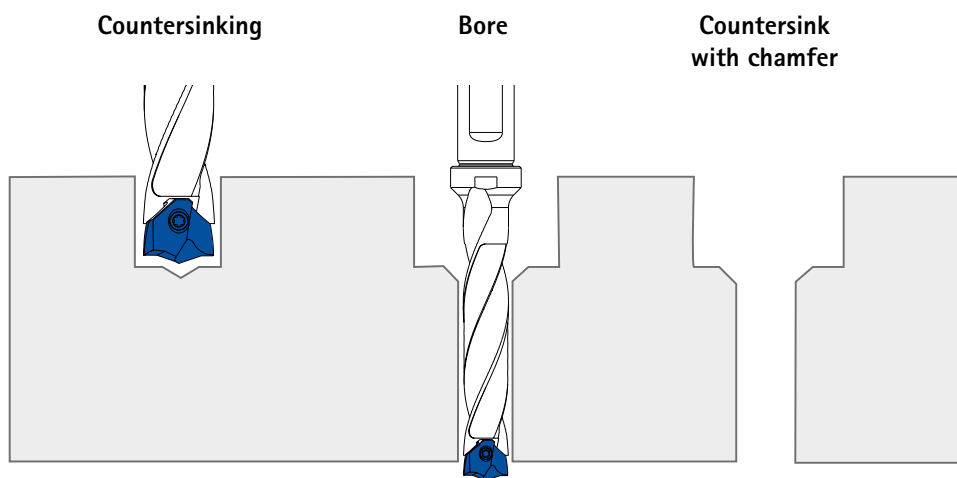
For screw through bores according to DIN-ISO 273 and countersinks according to DIN 74, sheet 2 form H, J and K, medium design. For screws in accordance with DIN 912, 6912 and 7984, ISO 1207 (DIN 84).



Stocked preferred series

| Dimensions | | For cylinder head DIN screws | Suitable for through bores in Ø | Specification | Order no. |
|----------------|--------------------|---------------------------------|------------------------------------|---------------------|-----------|
| $d_2 \pm 0,05$ | Tool holder size D | | | | |
| 10,00 | 10 | M5 | 5,5 | QTD-2F10-1000-HP240 | 30868435 |
| 11,00 | 11 | M6 | 6,6 | QTD-2F10-1100-HP240 | 30868436 |
| 15,00 | 15 | M8 | 9 | QTD-2F10-1500-HP240 | 30868437 |
| 18,00 | 18 | M10 | 11 | QTD-2F10-1800-HP240 | 30868438 |
| 20,00 | 20 | M12 | 13,5 | QTD-2F10-2000-HP240 | 30868439 |
| 24,00 | 24 | M14 | 15 | QTD-2F10-2400-HP240 | 30868440 |
| 26,00 | 26 | M16 | 17 | QTD-2F10-2600-HP240 | 30868441 |
| 30,00 | 30 | M18 | 19 | QTD-2F10-3000-HP240 | 30868442 |
| 33,00 | 33 | M20 | 21 | QTD-2F10-3300-HP240 | 30868443 |

Application note:

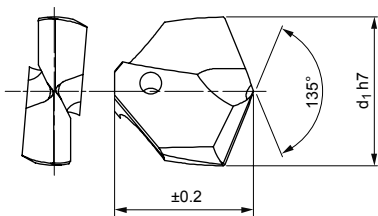


Dimensions in mm.
For cutting data recommendations, see end of chapter.
Special designs and other coatings available upon request.

QTD indexable inserts

Produced from solid carbide, internal coolant supply
Type 02 - Inox

Design:
 Drill diameter: 9.00 - 50.00 mm
 Bore tolerance: $\geq IT 10$
 Cutting material: HP600
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 135°



Stocked preferred series

| d ₁ from 10.00 to 16.70 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ h7 | Tool holder size D | Specification | Order no. |
| 10,00 | 10 | QTD-2F02-1000-HP600 | 30615624 |
| 10,50 | 10,5 | QTD-2F02-1050-HP600 | 30615625 |
| 11,00 | 11 | QTD-2F02-1100-HP600 | 30615627 |
| 12,00 | 12 | QTD-2F02-1200-HP600 | 30615630 |
| 12,50 | 12,5 | QTD-2F02-1250-HP600 | 30615631 |
| 13,00 | 13 | QTD-2F02-1300-HP600 | 30573070 |
| 13,50 | 13,5 | QTD-2F02-1350-HP600 | 30573072 |
| 14,00 | 14 | QTD-2F02-1400-HP600 | 30573074 |
| 14,10 | 14 | QTD-2F02-1410-HP600 | 30646120 |
| 14,20 | 14 | QTD-2F02-1420-HP600 | 30630410 |
| 14,30 | 14 | QTD-2F02-1430-HP600 | 30646122 |
| 14,40 | 14 | QTD-2F02-1440-HP600 | 30646123 |
| 14,50 | 14,5 | QTD-2F02-1450-HP600 | 30573075 |
| 14,60 | 14,5 | QTD-2F02-1460-HP600 | 30646124 |
| 14,70 | 14,5 | QTD-2F02-1470-HP600 | 30573076 |
| 14,75 | 14,5 | QTD-2F02-1475-HP600 | 30573077 |
| 14,80 | 14,5 | QTD-2F02-1480-HP600 | 30646125 |
| 15,00 | 15 | QTD-2F02-1500-HP600 | 30573078 |
| 15,20 | 15 | QTD-2F02-1520-HP600 | 30646128 |
| 15,25 | 15 | QTD-2F02-1525-HP600 | 30573079 |
| 15,40 | 15 | QTD-2F02-1540-HP600 | 30646130 |
| 15,50 | 15 | QTD-2F02-1550-HP600 | 30573080 |
| 15,60 | 15 | QTD-2F02-1560-HP600 | 30646131 |
| 15,70 | 15 | QTD-2F02-1570-HP600 | 30573081 |
| 15,80 | 15 | QTD-2F02-1580-HP600 | 30646132 |
| 16,00 | 16 | QTD-2F02-1600-HP600 | 30573083 |
| 16,10 | 16 | QTD-2F02-1610-HP600 | 30573086 |
| 16,20 | 16 | QTD-2F02-1620-HP600 | 30646134 |
| 16,30 | 16 | QTD-2F02-1630-HP600 | 30646135 |
| 16,40 | 16 | QTD-2F02-1640-HP600 | 30646136 |
| 16,50 | 16 | QTD-2F02-1650-HP600 | 30573088 |
| 16,60 | 16 | QTD-2F02-1660-HP600 | 30646137 |
| 16,70 | 16 | QTD-2F02-1670-HP600 | 30573089 |

| d ₁ from 16.75 to 23.75 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ h7 | Tool holder size D | Specification | Order no. |
| 16,75 | 16 | QTD-2F02-1675-HP600 | 30573090 |
| 16,80 | 16 | QTD-2F02-1680-HP600 | 30646138 |
| 16,90 | 16 | QTD-2F02-1690-HP600 | 30646139 |
| 17,00 | 17 | QTD-2F02-1700-HP600 | 30573091 |
| 17,30 | 17 | QTD-2F02-1730-HP600 | 30646142 |
| 17,40 | 17 | QTD-2F02-1740-HP600 | 30646143 |
| 17,50 | 17 | QTD-2F02-1750-HP600 | 30573092 |
| 17,70 | 17 | QTD-2F02-1770-HP600 | 30573093 |
| 17,90 | 17 | QTD-2F02-1790-HP600 | 30646146 |
| 18,00 | 18 | QTD-2F02-1800-HP600 | 30573094 |
| 18,50 | 18 | QTD-2F02-1850-HP600 | 30573096 |
| 18,60 | 18 | QTD-2F02-1860-HP600 | 30646151 |
| 18,70 | 18 | QTD-2F02-1870-HP600 | 30573097 |
| 19,00 | 19 | QTD-2F02-1900-HP600 | 30573098 |
| 19,40 | 19 | QTD-2F02-1940-HP600 | 30573101 |
| 19,50 | 19 | QTD-2F02-1950-HP600 | 30573102 |
| 19,60 | 19 | QTD-2F02-1960-HP600 | 30646157 |
| 19,70 | 19 | QTD-2F02-1970-HP600 | 30573103 |
| 19,75 | 19 | QTD-2F02-1975-HP600 | 30573104 |
| 19,80 | 19 | QTD-2F02-1980-HP600 | 30646158 |
| 19,90 | 19 | QTD-2F02-1990-HP600 | 30646159 |
| 20,00 | 20 | QTD-2F02-2000-HP600 | 30573105 |
| 20,40 | 20 | QTD-2F02-2040-HP600 | 30573106 |
| 20,50 | 20 | QTD-2F02-2050-HP600 | 30573107 |
| 21,00 | 21 | QTD-2F02-2100-HP600 | 30573110 |
| 21,50 | 21 | QTD-2F02-2150-HP600 | 30573111 |
| 21,70 | 21 | QTD-2F02-2170-HP600 | 30573112 |
| 22,00 | 22 | QTD-2F02-2200-HP600 | 30573113 |
| 22,25 | 22 | QTD-2F02-2225-HP600 | 30573114 |
| 22,70 | 22 | QTD-2F02-2270-HP600 | 30573117 |
| 23,00 | 23 | QTD-2F02-2300-HP600 | 30573119 |
| 23,50 | 23 | QTD-2F02-2350-HP600 | 30573121 |
| 23,75 | 23 | QTD-2F02-2375-HP600 | 30573124 |


Continued on next page.

Indexable inserts QTD produced from solid carbide, internal coolant supply – Type O2

| d ₁ from 24.00 to 27.00 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ h7 | Tool holder size D | Specification | Order no. |
| 24,00 | 24 | QTD-2F02-2400-HP600 | 30573125 |
| 24,40 | 24 | QTD-2F02-2440-HP600 | 30665151 |
| 24,50 | 24 | QTD-2F02-2450-HP600 | 30573126 |
| 24,70 | 24 | QTD-2F02-2470-HP600 | 30573127 |
| 24,75 | 24 | QTD-2F02-2475-HP600 | 30573128 |
| 25,00 | 25 | QTD-2F02-2500-HP600 | 30573129 |
| 25,50 | 25 | QTD-2F02-2550-HP600 | 30573131 |
| 25,70 | 25 | QTD-2F02-2570-HP600 | 30573132 |
| 26,00 | 26 | QTD-2F02-2600-HP600 | 30573133 |
| 26,50 | 26 | QTD-2F02-2650-HP600 | 30573134 |
| 27,00 | 27 | QTD-2F02-2700-HP600 | 30573135 |

| d ₁ from 27.50 to 40.00 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ h7 | Tool holder size D | Specification | Order no. |
| 27,50 | 27 | QTD-2F02-2750-HP600 | 30573136 |
| 28,00 | 28 | QTD-2F02-2800-HP600 | 30573138 |
| 29,00 | 29 | QTD-2F02-2900-HP600 | 30573141 |
| 29,50 | 29 | QTD-2F02-2950-HP600 | 30573142 |
| 30,00 | 30 | QTD-2F02-3000-HP600 | 30573143 |
| 30,75 | 30 | QTD-2F02-3075-HP600 | 30573146 |
| 33,00 | 33 | QTD-2F02-3300-HP600 | 30649662 |
| 36,00 | 36 | QTD-2F02-3600-HP600 | 30649665 |
| 37,00 | 37 | QTD-2F02-3700-HP600 | 30649666 |
| 40,00 | 39 | QTD-2F02-4000-HP600 | 30657246 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

Specification:
QTD-2F02-[diameter]-HP600

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 9,00 | 50,00 |

Example:

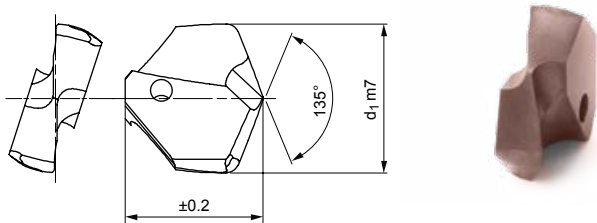
QTD-2F02-1401-HP600

Tool diameter d₁ = 14.01 mm

QTD indexable inserts

Produced from solid carbide, internal coolant supply
Type 04 - Iron

Design:
 Drill diameter: 9.00 - 50.00 mm
 Bore tolerance: \geq IT 10
 Cutting material: HP240
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 135°




Stocked preferred series


| d ₁ from 12.00 to 23.00 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | Specification | Order no. |
| 12,00 | 12 | QTD-2F04-1200-HP240 | 30615805 |
| 14,00 | 14 | QTD-2F04-1400-HP240 | 30612900 |
| 14,50 | 14,5 | QTD-2F04-1450-HP240 | 30612901 |
| 17,00 | 17 | QTD-2F04-1700-HP240 | 30612915 |
| 17,50 | 17 | QTD-2F04-1750-HP240 | 30612916 |
| 18,00 | 18 | QTD-2F04-1800-HP240 | 30612918 |
| 19,00 | 19 | QTD-2F04-1900-HP240 | 30612922 |
| 19,10 | 19 | QTD-2F04-1910-HP240 | 30646366 |
| 19,50 | 19 | QTD-2F04-1950-HP240 | 30612926 |
| 20,50 | 20 | QTD-2F04-2050-HP240 | 30612931 |
| 21,00 | 21 | QTD-2F04-2100-HP240 | 30612934 |
| 21,50 | 21 | QTD-2F04-2150-HP240 | 30612935 |
| 22,00 | 22 | QTD-2F04-2200-HP240 | 30612937 |
| 23,00 | 23 | QTD-2F04-2300-HP240 | 30612943 |

| d ₁ from 23.50 to 33.00 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | Specification | Order no. |
| 23,50 | 23 | QTD-2F04-2350-HP240 | 30612945 |
| 24,00 | 24 | QTD-2F04-2400-HP240 | 30612949 |
| 24,50 | 24 | QTD-2F04-2450-HP240 | 30612950 |
| 25,00 | 25 | QTD-2F04-2500-HP240 | 30612953 |
| 25,70 | 25 | QTD-2F04-2570-HP240 | 30612956 |
| 26,00 | 26 | QTD-2F04-2600-HP240 | 30612957 |
| 26,50 | 26 | QTD-2F04-2650-HP240 | 30612958 |
| 28,00 | 28 | QTD-2F04-2800-HP240 | 30612962 |
| 28,50 | 28 | QTD-2F04-2850-HP240 | 30612964 |
| 29,00 | 29 | QTD-2F04-2900-HP240 | 30612965 |
| 29,50 | 29 | QTD-2F04-2950-HP240 | 30612966 |
| 30,00 | 30 | QTD-2F04-3000-HP240 | 30612967 |
| 31,00 | 31 | QTD-2F04-3100-HP240 | 30612971 |
| 33,00 | 33 | QTD-2F04-3300-HP240 | 30649674 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable



Specification:
QTD-2F02-[diameter]-HP600

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 9,00 | 50,00 |

Example:
QTD-2F02-1401-HP600

Tool diameter d₁ = 14.01 mm

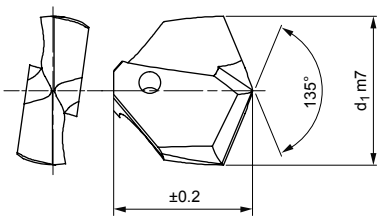
Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

QTD indexable inserts

Produced from solid carbide, internal coolant supply
Type 03 - Alu

Design:

Drill diameter: 9.00 - 50.00 mm
Bore tolerance: \geq IT 10
Cutting material: HU310
Number of cutting edges: 2
Number of guiding chamfers: 2
Tip angle: 135°




Stocked preferred series


| d ₁ from 13.00 to 20.50 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | Specification | Order no. |
| 13,00 | 13 | QTD-2F03-1300-HU310 | 30612819 |
| 13,50 | 13,5 | QTD-2F03-1350-HU310 | 30612820 |
| 14,00 | 14 | QTD-2F03-1400-HU310 | 30612822 |
| 14,50 | 14,5 | QTD-2F03-1450-HU310 | 30612823 |
| 15,00 | 15 | QTD-2F03-1500-HU310 | 30612826 |
| 15,50 | 15 | QTD-2F03-1550-HU310 | 30612828 |
| 16,00 | 16 | QTD-2F03-1600-HU310 | 30612830 |
| 17,00 | 17 | QTD-2F03-1700-HU310 | 30612837 |
| 17,50 | 17 | QTD-2F03-1750-HU310 | 30612838 |
| 18,25 | 18 | QTD-2F03-1825-HU310 | 30612841 |
| 18,50 | 18 | QTD-2F03-1850-HU310 | 30612842 |
| 19,00 | 19 | QTD-2F03-1900-HU310 | 30612844 |
| 20,00 | 20 | QTD-2F03-2000-HU310 | 30612851 |
| 20,50 | 20 | QTD-2F03-2050-HU310 | 30612853 |

| d ₁ from 21.00 to 36.00 | | | |
|------------------------------------|--------------------|---------------------|-----------|
| d ₁ m7 | Tool holder size D | Specification | Order no. |
| 21,00 | 21 | QTD-2F03-2100-HU310 | 30612856 |
| 22,00 | 22 | QTD-2F03-2200-HU310 | 30612859 |
| 22,50 | 22 | QTD-2F03-2250-HU310 | 30612862 |
| 23,00 | 23 | QTD-2F03-2300-HU310 | 30612865 |
| 23,50 | 23 | QTD-2F03-2350-HU310 | 30612867 |
| 24,00 | 24 | QTD-2F03-2400-HU310 | 30612871 |
| 24,50 | 24 | QTD-2F03-2450-HU310 | 30612872 |
| 25,00 | 25 | QTD-2F03-2500-HU310 | 30612875 |
| 26,00 | 26 | QTD-2F03-2600-HU310 | 30612879 |
| 27,00 | 27 | QTD-2F03-2700-HU310 | 30612881 |
| 29,50 | 29 | QTD-2F03-2950-HU310 | 30612888 |
| 30,00 | 30 | QTD-2F03-3000-HU310 | 30612889 |
| 34,00 | 34 | QTD-2F03-3400-HU310 | 30649669 |
| 36,00 | 36 | QTD-2F03-3600-HU310 | 30649671 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable



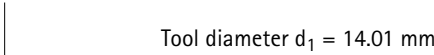
Specification:
QTD-2F03-[diameter]-HU310

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 9,00 | 50,00 |

Example:

QTD-2F02-1401-HU310



Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

QTS indexable insert holder

With prism mounting for QTD indexable inserts
QTS100S, internal coolant supply

Design:

For diameter:

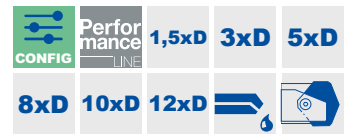
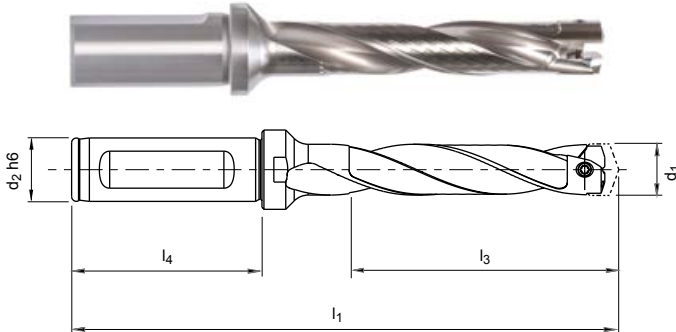
9.00 - 42.99 mm

Shank form:

According to ISO
9766

Changing system:

Prism mounting,
possible to replace
cutting edges on the
machine



Stocked preferred series

| Dimensions | | | | | | | | |
|--------------------|---|-------------------|----------------|----------------|----------------|----------------------------|-----------|--|
| Tool holder size D | Diameter range Indexable insert d ₁ | d ₂ h6 | l ₁ | l ₃ | l ₄ | Specification | Order no. | |
| 9,00 | 9,00 - 9,49 | 12 | 110 | 48 | 45 | QTS100S-0900-DR05-ZYL12-MN | 30605484 | |
| 9,50 | 9,50 - 9,99 | 12 | 113 | 50 | 45 | QTS100S-0950-DR05-ZYL12-MN | 30605485 | |
| 10,00 | 10,00 - 10,49 | 16 | 99 | 32 | 48 | QTS100S-1000-DR03-ZYL16-MN | 30605476 | |
| 10,00 | 10,00 - 10,49 | 16 | 120 | 53 | 48 | QTS100S-1000-DR05-ZYL16-MN | 30605486 | |
| 10,50 | 10,50 - 10,99 | 16 | 122 | 55 | 48 | QTS100S-1050-DR05-ZYL16-MN | 30605487 | |
| 11,50 | 11,00 - 11,49 | 16 | 126 | 58 | 48 | QTS100S-1100-DR05-ZYL16-MN | 30605488 | |
| 11,50 | 11,00 - 11,49 | 16 | 160 | 92 | 48 | QTS100S-1100-DR08-ZYL16-MN | 30605498 | |
| 11,30 | 11,50 - 11,99 | 16 | 105 | 36 | 48 | QTS100S-1150-DR03-ZYL16-MN | 30605479 | |
| 12,00 | 12,00 - 12,49 | 16 | 107 | 38 | 48 | QTS100S-1200-DR03-ZYL16-MN | 30605480 | |
| 12,00 | 12,00 - 12,49 | 16 | 132 | 63 | 48 | QTS100S-1200-DR05-ZYL16-MN | 30605490 | |
| 12,00 | 12,00 - 12,49 | 16 | 169 | 100 | 48 | QTS100S-1200-DR08-ZYL16-MN | 30605500 | |
| 12,50 | 12,50 - 12,99 | 16 | 109 | 39 | 48 | QTS100S-1250-DR03-ZYL16-MN | 30605481 | |
| 12,50 | 12,50 - 12,99 | 16 | 135 | 65 | 48 | QTS100S-1250-DR05-ZYL16-MN | 30605491 | |
| 12,50 | 12,50 - 12,99 | 16 | 174 | 104 | 48 | QTS100S-1250-DR08-ZYL16-MN | 30605501 | |
| 13,00 | 13,00 - 13,49 | 16 | 112 | 41 | 48 | QTS100S-1300-DR03-ZYL16-MN | 30572922 | |
| 13,00 | 13,00 - 13,49 | 16 | 138 | 68 | 48 | QTS100S-1300-DR05-ZYL16-MN | 30572945 | |
| 13,00 | 13,00 - 13,49 | 16 | 178 | 108 | 48 | QTS100S-1300-DR08-ZYL16-MN | 30572967 | |
| 13,00 | 13,00 - 13,49 | 16 | 232 | 162 | 48 | QTS100S-1300-DR12-ZYL16-MN | 30598728 | |
| 13,50 | 13,50 - 13,99 | 16 | 211 | 140 | 48 | QTS100S-1350-DR10-ZYL16-MN | 30826051 | |
| 13,50 | 13,50 - 13,99 | 16 | 239 | 168 | 48 | QTS100S-1350-DR12-ZYL16-MN | 30598729 | |
| 14,00 | 14,00 - 14,49 | 16 | 116 | 44 | 48 | QTS100S-1400-DR03-ZYL16-MN | 30572924 | |
| 14,00 | 14,00 - 14,49 | 16 | 144 | 73 | 48 | QTS100S-1400-DR05-ZYL16-MN | 30572947 | |
| 14,00 | 14,00 - 14,49 | 16 | 187 | 116 | 48 | QTS100S-1400-DR08-ZYL16-MN | 30572970 | |
| 14,00 | 14,00 - 14,49 | 16 | 245 | 174 | 48 | QTS100S-1400-DR12-ZYL16-MN | 30598730 | |
| 14,50 | 14,50 - 14,99 | 16 | 95 | 23 | 48 | QTS100S-1450-DR01-ZYL16-MN | 30572903 | |
| 14,50 | 14,50 - 14,99 | 16 | 147 | 75 | 48 | QTS100S-1450-DR05-ZYL16-MN | 30572948 | |
| 15,00 | 15,00 - 15,99 | 20 | 124 | 48 | 50 | QTS100S-1500-DR03-ZYL20-MN | 30572926 | |
| 15,00 | 15,00 - 15,99 | 20 | 155 | 80 | 50 | QTS100S-1500-DR05-ZYL20-MN | 30572949 | |
| 15,00 | 15,00 - 15,99 | 20 | 203 | 128 | 50 | QTS100S-1500-DR08-ZYL20-MN | 30572972 | |
| 15,00 | 15,00 - 15,99 | 20 | 237 | 162 | 50 | QTS100S-1500-DR10-ZYL20-MN | 30826054 | |
| 15,00 | 15,00 - 15,99 | 20 | 267 | 192 | 50 | QTS100S-1500-DR12-ZYL20-MN | 30598732 | |
| 16,00 | 16,00 - 16,99 | 20 | 102 | 26 | 50 | QTS100S-1600-DR01-ZYL20-MN | 30572905 | |
| 16,00 | 16,00 - 16,99 | 20 | 128 | 51 | 50 | QTS100S-1600-DR03-ZYL20-MN | 30572927 | |
| 16,00 | 16,00 - 16,99 | 20 | 161 | 85 | 50 | QTS100S-1600-DR05-ZYL20-MN | 30572950 | |

Continued on next page.


QTS indexable insert holder | QTS100, internal coolant supply

| Dimensions | | | | | | Specification | Order no. |
|--------------------|---|-------------------|----------------|----------------|----------------|----------------------------|-----------|
| Tool holder size D | Diameter range Indexable insert d ₁ | d ₂ h6 | l ₁ | l ₃ | l ₄ | | |
| 16,00 | 16,00 - 16,99 | 20 | 212 | 136 | 50 | QTS100S-1600-DR08-ZYL20-MN | 30572973 |
| 16,00 | 16,00 - 16,99 | 20 | 246 | 170 | 50 | QTS100S-1600-DR10-ZYL20-MN | 30826055 |
| 17,00 | 17,00 - 17,99 | 20 | 105 | 27 | 50 | QTS100S-1700-DR01-ZYL20-MN | 30572906 |
| 17,00 | 17,00 - 17,99 | 20 | 132 | 54 | 50 | QTS100S-1700-DR03-ZYL20-MN | 30572928 |
| 17,00 | 17,00 - 17,99 | 20 | 168 | 90 | 50 | QTS100S-1700-DR05-ZYL20-MN | 30572951 |
| 17,00 | 17,00 - 17,99 | 20 | 222 | 144 | 50 | QTS100S-1700-DR08-ZYL20-MN | 30572974 |
| 17,00 | 17,00 - 17,99 | 20 | 258 | 180 | 50 | QTS100S-1700-DR10-ZYL20-MN | 30826056 |
| 17,00 | 17,00 - 17,99 | 20 | 294 | 216 | 50 | QTS100S-1700-DR12-ZYL20-MN | 30598734 |
| 18,00 | 18,00 - 18,99 | 25 | 142 | 57 | 56 | QTS100S-1800-DR03-ZYL25-MN | 30572929 |
| 18,00 | 18,00 - 18,99 | 25 | 180 | 95 | 56 | QTS100S-1800-DR05-ZYL25-MN | 30572952 |
| 18,00 | 18,00 - 18,99 | 25 | 237 | 152 | 56 | QTS100S-1800-DR08-ZYL25-MN | 30572975 |
| 18,00 | 18,00 - 18,99 | 25 | 313 | 228 | 56 | QTS100S-1800-DR12-ZYL25-MN | 30598735 |
| 19,00 | 19,00 - 19,99 | 25 | 116 | 30 | 56 | QTS100S-1900-DR01-ZYL25-MN | 30572908 |
| 19,00 | 19,00 - 19,99 | 25 | 146 | 60 | 56 | QTS100S-1900-DR03-ZYL25-MN | 30572930 |
| 19,00 | 19,00 - 19,99 | 25 | 186 | 100 | 56 | QTS100S-1900-DR05-ZYL25-MN | 30572953 |
| 19,00 | 19,00 - 19,99 | 25 | 246 | 160 | 56 | QTS100S-1900-DR08-ZYL25-MN | 30572976 |
| 20,00 | 20,00 - 20,99 | 25 | 151 | 63 | 56 | QTS100S-2000-DR03-ZYL25-MN | 30572931 |
| 20,00 | 20,00 - 20,99 | 25 | 192 | 105 | 56 | QTS100S-2000-DR05-ZYL25-MN | 30572954 |
| 20,00 | 20,00 - 20,99 | 25 | 255 | 168 | 56 | QTS100S-2000-DR08-ZYL25-MN | 30572977 |
| 20,00 | 20,00 - 20,99 | 25 | 297 | 210 | 56 | QTS100S-2000-DR10-ZYL25-MN | 30826059 |
| 20,00 | 20,00 - 20,99 | 25 | 339 | 252 | 56 | QTS100S-2000-DR12-ZYL25-MN | 30598737 |
| 21,00 | 21,00 - 21,99 | 25 | 121 | 33 | 56 | QTS100S-2100-DR01-ZYL25-MN | 30572910 |
| 21,00 | 21,00 - 21,99 | 25 | 155 | 66 | 56 | QTS100S-2100-DR03-ZYL25-MN | 30572932 |
| 21,00 | 21,00 - 21,99 | 25 | 198 | 110 | 56 | QTS100S-2100-DR05-ZYL25-MN | 30572955 |
| 21,00 | 21,00 - 21,99 | 25 | 264 | 176 | 56 | QTS100S-2100-DR08-ZYL25-MN | 30572978 |
| 21,00 | 21,00 - 21,99 | 25 | 308 | 220 | 56 | QTS100S-2100-DR10-ZYL25-MN | 30826060 |
| 22,00 | 22,00 - 22,99 | 25 | 125 | 35 | 56 | QTS100S-2200-DR01-ZYL25-MN | 30572911 |
| 22,00 | 22,00 - 22,99 | 25 | 159 | 69 | 56 | QTS100S-2200-DR03-ZYL25-MN | 30572933 |
| 22,00 | 22,00 - 22,99 | 25 | 205 | 115 | 56 | QTS100S-2200-DR05-ZYL25-MN | 30572956 |
| 22,00 | 22,00 - 22,99 | 25 | 274 | 184 | 56 | QTS100S-2200-DR08-ZYL25-MN | 30572979 |
| 23,00 | 23,00 - 23,99 | 25 | 127 | 36 | 56 | QTS100S-2300-DR01-ZYL25-MN | 30572912 |
| 23,00 | 23,00 - 23,99 | 25 | 211 | 120 | 56 | QTS100S-2300-DR05-ZYL25-MN | 30572957 |
| 23,00 | 23,00 - 23,99 | 25 | 379 | 288 | 56 | QTS100S-2300-DR12-ZYL25-MN | 30598740 |
| 24,00 | 24,00 - 24,99 | 32 | 171 | 75 | 60 | QTS100S-2400-DR03-ZYL32-MN | 30572935 |
| 24,00 | 24,00 - 24,99 | 32 | 221 | 125 | 60 | QTS100S-2400-DR05-ZYL32-MN | 30572958 |
| 24,00 | 24,00 - 24,99 | 32 | 296 | 200 | 60 | QTS100S-2400-DR08-ZYL32-MN | 30572981 |
| 24,00 | 24,00 - 24,99 | 32 | 396 | 300 | 60 | QTS100S-2400-DR12-ZYL32-MN | 30598741 |
| 25,00 | 25,00 - 25,99 | 32 | 136 | 39 | 60 | QTS100S-2500-DR01-ZYL32-MN | 30572914 |
| 25,00 | 25,00 - 25,99 | 32 | 176 | 78 | 60 | QTS100S-2500-DR03-ZYL32-MN | 30572937 |
| 25,00 | 25,00 - 25,99 | 32 | 227 | 130 | 60 | QTS100S-2500-DR05-ZYL32-MN | 30572959 |
| 25,00 | 25,00 - 25,99 | 32 | 305 | 208 | 60 | QTS100S-2500-DR08-ZYL32-MN | 30572982 |
| 25,00 | 25,00 - 25,99 | 32 | 409 | 312 | 60 | QTS100S-2500-DR12-ZYL32-MN | 30598742 |
| 26,00 | 26,00 - 26,99 | 32 | 139 | 41 | 60 | QTS100S-2600-DR01-ZYL32-MN | 30572915 |
| 26,00 | 26,00 - 26,99 | 32 | 180 | 41 | 60 | QTS100S-2600-DR03-ZYL32-MN | 30572938 |
| 26,00 | 26,00 - 26,99 | 32 | 233 | 81 | 60 | QTS100S-2600-DR05-ZYL32-MN | 30572960 |
| 26,00 | 26,00 - 26,99 | 32 | 314 | 216 | 60 | QTS100S-2600-DR08-ZYL32-MN | 30572983 |
| 26,00 | 26,00 - 26,99 | 32 | 368 | 270 | 60 | QTS100S-2600-DR10-ZYL32-MN | 30826065 |
| 27,00 | 27,00 - 27,99 | 32 | 184 | 84 | 60 | QTS100S-2700-DR03-ZYL32-MN | 30572939 |
| 27,00 | 27,00 - 27,99 | 32 | 324 | 224 | 60 | QTS100S-2700-DR08-ZYL32-MN | 30572984 |
| 28,00 | 28,00 - 28,99 | 32 | 188 | 87 | 60 | QTS100S-2800-DR03-ZYL32-MN | 30572940 |
| 28,00 | 28,00 - 28,99 | 32 | 246 | 145 | 60 | QTS100S-2800-DR05-ZYL32-MN | 30572962 |
| 28,00 | 28,00 - 28,99 | 32 | 449 | 348 | 60 | QTS100S-2800-DR12-ZYL32-MN | 30598745 |
| 29,00 | 29,00 - 29,99 | 32 | 402 | 300 | 60 | QTS100S-2900-DR10-ZYL32-MN | 30826068 |
| 30,00 | 30,00 - 30,99 | 32 | 197 | 93 | 60 | QTS100S-3000-DR03-ZYL32-MN | 30572942 |
| 30,00 | 30,00 - 30,99 | 32 | 351 | 248 | 60 | QTS100S-3000-DR08-ZYL32-MN | 30572987 |
| 30,00 | 30,00 - 30,99 | 32 | 413 | 310 | 60 | QTS100S-3000-DR10-ZYL32-MN | 30826069 |


QTS indexable insert holder | QTS100, internal coolant supply

| Dimensions | | | | | | | Specification | Order no. |
|--------------------|---|-------------------|----------------|----------------|----------------|--|----------------------------|-----------|
| Tool holder size D | Diameter range Indexable insert d ₁ | d ₂ h6 | l ₁ | l ₃ | l ₄ | | | |
| 30,00 | 30,00 - 30,99 | 32 | 475 | 372 | 60 | | QTS100S-3000-DR12-ZYL32-MN | 30598747 |
| 31,00 | 31,00 - 31,99 | 32 | 264 | 160 | 60 | | QTS100S-3100-DR05-ZYL32-MN | 30572965 |
| 32,00 | 32,00 - 32,99 | 32 | 271 | 165 | 60 | | QTS100S-3200-DR05-ZYL32-MN | 30572966 |
| 32,00 | 32,00 - 32,99 | 32 | 436 | 330 | 60 | | QTS100S-3200-DR10-ZYL32-MN | 30826071 |
| 32,00 | 32,00 - 32,99 | 32 | 502 | 396 | 60 | | QTS100S-3200-DR12-ZYL32-MN | 30598749 |
| 33,00 | 33,00 - 33,99 | 32 | 209 | 102 | 60 | | QTS100S-3300-DR03-ZYL32-MN | 30639167 |
| 34,00 | 34,00 - 34,99 | 32 | 283 | 175 | 60 | | QTS100S-3400-DR05-ZYL32-MN | 30639172 |
| 35,00 | 35,00 - 35,99 | 32 | 218 | 108 | 60 | | QTS100S-3500-DR03-ZYL32-MN | 30639169 |
| 36,00 | 36,00 - 36,99 | 32 | 222 | 111 | 60 | | QTS100S-3600-DR03-ZYL32-MN | 30639170 |
| 37,00 | 37,00 - 38,99 | 40 | 318 | 195 | 70 | | QTS100S-3700-DR05-ZYL40-MN | 30650288 |
| 39,00 | 39,00 - 40,99 | 40 | 249 | 123 | 70 | | QTS100S-3900-DR03-ZYL40-MN | 30650284 |
| 41,00 | 41,00 - 42,99 | 40 | 257 | 129 | 70 | | QTS100S-4100-DR03-ZYL40-MN | 30650285 |

Configurable features



Length version:
DR01 | DR03 | DR05 | DR08 |
DR10 | DR12



Specification:
QTS100S-3500-[Length version]-ZYL32-MN

Example:
QTS100S-3500-DR10-ZYL32-MN

Length version 10xD

Dimensions of configurable series

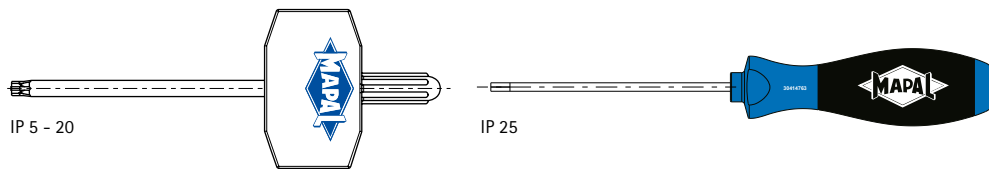
| Tool holder size D | Diameter range Indexable insert d ₁ | d ₂ h6 | l ₄ | DR01 | | DR03 | | DR05 | | DR08 | | DR10 | | DR12 | | Specification |
|--------------------|--|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--|
| | | | | l ₁ | l ₃ | l ₁ | l ₃ | l ₁ | l ₃ | l ₁ | l ₃ | l ₁ | l ₃ | l ₁ | l ₃ | |
| 9 | 9,00 - 9,49 | 12 | 45 | 77 | 15 | 92 | 29 | 110 | 48 | 138 | 76 | - | - | - | - | QTS100S-0900-[Length version]-ZYL12-MN |
| 9,5 | 9,50 - 9,99 | 12 | 45 | 78 | 15 | 93 | 30 | 113 | 50 | 143 | 80 | - | - | - | - | QTS100S-0950-[Length version]-ZYL12-MN |
| 10 | 10,00 - 10,49 | 16 | 48 | 83 | 16 | 99 | 32 | 120 | 53 | 151 | 84 | - | - | - | - | QTS100S-1000-[Length version]-ZYL16-MN |
| 10,5 | 10,50 - 10,99 | 16 | 48 | 84 | 17 | 101 | 33 | 122 | 55 | 155 | 88 | - | - | - | - | QTS100S-1050-[Length version]-ZYL16-MN |
| 11 | 11,00 - 11,49 | 16 | 48 | 86 | 18 | 103 | 35 | 126 | 58 | 160 | 92 | - | - | - | - | QTS100S-1100-[Length version]-ZYL16-MN |
| 11,5 | 11,50 - 11,99 | 16 | 48 | 86 | 18 | 105 | 36 | 128 | 60 | 164 | 96 | - | - | - | - | QTS100S-1150-[Length version]-ZYL16-MN |
| 12 | 12,00 - 12,49 | 16 | 48 | 88 | 19 | 107 | 38 | 132 | 63 | 169 | 100 | - | - | - | - | QTS100S-1200-[Length version]-ZYL16-MN |
| 12,5 | 12,50 - 12,99 | 16 | 48 | 90 | 20 | 109 | 39 | 135 | 65 | 174 | 104 | - | - | - | - | QTS100S-1250-[Length version]-ZYL16-MN |
| 13 | 13,00 - 13,49 | 16 | 48 | 91 | 21 | 112 | 41 | 138 | 68 | 178 | 108 | 135 | 205 | 232 | 162 | QTS100S-1300-[Length version]-ZYL16-MN |
| 13,5 | 13,50 - 13,99 | 16 | 48 | 92 | 21 | 113 | 42 | 141 | 70 | 183 | 112 | 140 | 211 | 239 | 168 | QTS100S-1350-[Length version]-ZYL16-MN |
| 14 | 14,00 - 14,49 | 16 | 48 | 93 | 22 | 116 | 44 | 144 | 73 | 187 | 116 | 145 | 216 | 245 | 174 | QTS100S-1400-[Length version]-ZYL16-MN |
| 14,5 | 14,50 - 14,99 | 16 | 48 | 95 | 23 | 117 | 45 | 147 | 75 | 192 | 120 | 150 | 222 | 252 | 180 | QTS100S-1450-[Length version]-ZYL16-MN |
| 15 | 15,00 - 15,99 | 20 | 50 | 99 | 24 | 124 | 48 | 155 | 80 | 203 | 128 | 162 | 237 | 267 | 192 | QTS100S-1500-[Length version]-ZYL20-MN |
| 16 | 16,00 - 16,99 | 20 | 50 | 102 | 26 | 128 | 51 | 161 | 85 | 212 | 136 | 170 | 246 | 280 | 204 | QTS100S-1600-[Length version]-ZYL20-MN |
| 17 | 17,00 - 17,99 | 20 | 50 | 105 | 27 | 132 | 54 | 168 | 90 | 222 | 144 | 180 | 258 | 294 | 216 | QTS100S-1700-[Length version]-ZYL20-MN |
| 18 | 18,00 - 18,99 | 25 | 56 | 114 | 29 | 142 | 57 | 180 | 95 | 237 | 152 | 190 | 275 | 313 | 228 | QTS100S-1800-[Length version]-ZYL25-MN |
| 19 | 19,00 - 19,99 | 25 | 56 | 116 | 30 | 146 | 60 | 186 | 100 | 246 | 160 | 200 | 286 | 326 | 240 | QTS100S-1900-[Length version]-ZYL25-MN |
| 20 | 20,00 - 20,99 | 25 | 56 | 119 | 32 | 151 | 63 | 192 | 105 | 255 | 168 | 210 | 297 | 339 | 252 | QTS100S-2000-[Length version]-ZYL25-MN |
| 21 | 21,00 - 21,99 | 25 | 56 | 121 | 33 | 155 | 66 | 198 | 110 | 264 | 176 | 220 | 308 | 352 | 264 | QTS100S-2100-[Length version]-ZYL25-MN |
| 22 | 22,00 - 22,99 | 25 | 56 | 125 | 35 | 159 | 69 | 205 | 115 | 274 | 184 | 230 | 320 | 366 | 276 | QTS100S-2200-[Length version]-ZYL25-MN |
| 23 | 23,00 - 23,99 | 25 | 56 | 127 | 36 | 163 | 72 | 211 | 120 | 283 | 192 | 240 | 331 | 379 | 288 | QTS100S-2300-[Length version]-ZYL25-MN |
| 24 | 24,00 - 24,99 | 32 | 60 | 134 | 38 | 171 | 75 | 221 | 125 | 296 | 200 | 250 | 346 | 396 | 300 | QTS100S-2400-[Length version]-ZYL32-MN |
| 25 | 25,00 - 25,99 | 32 | 60 | 136 | 39 | 176 | 78 | 227 | 130 | 305 | 208 | 260 | 357 | 409 | 312 | QTS100S-2500-[Length version]-ZYL32-MN |
| 26 | 26,00 - 26,99 | 32 | 60 | 139 | 41 | 180 | 81 | 233 | 135 | 314 | 216 | 270 | 368 | 422 | 324 | QTS100S-2600-[Length version]-ZYL32-MN |
| 27 | 27,00 - 27,99 | 32 | 60 | 142 | 42 | 184 | 84 | 240 | 140 | 324 | 224 | 280 | 380 | 436 | 336 | QTS100S-2700-[Length version]-ZYL32-MN |

Continued on next page.

Dimensions of configurable series

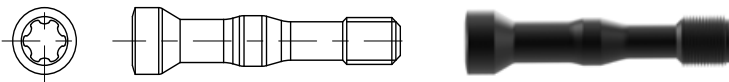
| Tool holder size D | Diameter range Indexable insert d_1 | d_2 h6 | l_4 | DR01 | | DR03 | | DR05 | | DR08 | | DR10 | | DR12 | | Specification |
|--------------------|---------------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | | | | l_1 | l_3 | l_1 | l_3 | l_1 | l_3 | l_1 | l_3 | l_1 | l_3 | l_1 | l_3 | |
| 28 | 28,00 - 28,99 | 32 | 60 | 145 | 44 | 188 | 87 | 246 | 145 | 333 | 232 | 290 | 391 | 449 | 348 | QTS100S-2800-[Length version]-ZYL32-MN |
| 29 | 29,00 - 29,99 | 32 | 60 | 147 | 45 | 192 | 90 | 252 | 150 | 342 | 240 | 300 | 402 | 462 | 360 | QTS100S-2900-[Length version]-ZYL32-MN |
| 30 | 30,00 - 30,99 | 32 | 60 | 150 | 47 | 197 | 93 | 258 | 155 | 351 | 248 | 310 | 413 | 475 | 372 | QTS100S-3000-[Length version]-ZYL32-MN |
| 31 | 31,00 - 31,99 | 32 | 60 | 152 | 48 | 201 | 96 | 264 | 160 | 360 | 256 | 320 | 424 | 488 | 384 | QTS100S-3100-[Length version]-ZYL32-MN |
| 32 | 32,00 - 32,99 | 32 | 60 | 156 | 50 | 205 | 99 | 271 | 165 | 370 | 264 | 330 | 436 | 502 | 396 | QTS100S-3200-[Length version]-ZYL32-MN |
| 33 | 33,00 - 33,99 | 32 | 60 | 158 | 51 | 209 | 102 | 277 | 170 | 379 | 272 | 340 | 447 | 515 | 408 | QTS100S-3300-[Length version]-ZYL32-MN |
| 34 | 34,00 - 34,99 | 32 | 60 | 161 | 53 | 213 | 105 | 283 | 175 | 388 | 280 | 350 | 458 | 528 | 420 | QTS100S-3400-[Length version]-ZYL32-MN |
| 35 | 35,00 - 35,99 | 32 | 60 | 163 | 54 | 218 | 108 | 289 | 180 | 397 | 288 | 360 | 469 | 541 | 432 | QTS100S-3500-[Length version]-ZYL32-MN |
| 36 | 36,00 - 36,99 | 32 | 60 | 166 | 56 | 222 | 111 | 295 | 185 | 406 | 296 | 370 | 480 | 554 | 444 | QTS100S-3600-[Length version]-ZYL32-MN |
| 37 | 37,00 - 38,99 | 40 | 70 | 182 | 59 | 240 | 117 | 318 | 195 | 435 | 312 | 390 | 515 | 591 | 468 | QTS100S-3700-[Length version]-ZYL40-MN |
| 39 | 39,00 - 40,99 | 40 | 70 | 187 | 62 | 249 | 123 | 330 | 205 | 453 | 328 | 410 | 537 | 617 | 492 | QTS100S-3900-[Length version]-ZYL40-MN |
| 41 | 41,00 - 42,99 | 40 | 70 | 193 | 65 | 257 | 129 | 343 | 215 | 472 | 344 | 430 | 560 | 644 | 516 | QTS100S-4100-[Length version]-ZYL40-MN |
| 43 | 43,00 - 44,99 | 40 | 70 | 198 | 68 | 265 | 135 | 355 | 225 | 490 | 360 | 440 | 582 | 670 | 540 | QTS100S-4300-[Length version]-ZYL40-MN |
| 45 | 45,00 - 46,99 | 40 | 70 | 203 | 71 | 274 | 141 | 367 | 235 | 508 | 376 | 470 | 604 | 696 | 564 | QTS100S-4500-[Length version]-ZYL40-MN |
| 47 | 47,00 - 48,99 | 40 | 70 | 211 | 74 | 284 | 147 | 382 | 245 | 529 | 392 | 490 | 627 | 725 | 588 | QTS100S-4700-[Length version]-ZYL40-MN |
| 49 | 49,00 - 50,99 | 40 | 70 | 216 | 77 | 293 | 153 | 394 | 255 | 547 | 408 | 510 | 649 | 751 | 612 | QTS100S-4900-[Length version]-ZYL40-MN |

Spare parts



Screwdriver

| Torx size TORX PLUS® | Order no. |
|-------------------------|-----------|
| 5 IP | 30584281 |
| 6 IP | 30584282 |
| 7 IP | 30584283 |
| 8 IP | 30584284 |
| 9 IP | 30584285 |
| 10 IP | 30584286 |
| 15 IP | 30584287 |
| 20 IP | 30584288 |
| 25 IP | 30414767 |



Clamping screw

| Ø range | TORX PLUS® size | Order no. | Specification | Tightening torque [Nm] |
|---------------|-----------------|-----------|------------------|------------------------|
| 8,00 - 8,99 | 5 IP | 30604440 | M1.2X7.5-TX5-IP | 0,2 |
| 9,00 - 10,99 | 5 IP | 30546309 | M1.2X8.5-TX5-IP | 0,2 |
| 11,00 - 12,99 | 6 IP | 30604180 | M1.6X10.5-TX6-IP | 0,4 |
| 13,00 - 13,99 | 7 IP | 30510826 | M2x12-TX7-IP | 0,6 |
| 14,00 - 15,99 | 8 IP | 30510827 | M2.2x13-TX8-IP | 0,9 |
| 16,00 - 18,99 | 8 IP | 30495432 | M2.5x15-TX8-IP | 1,2 |
| 19,00 - 21,99 | 9 IP | 30510829 | M3x18-TX9-IP | 2,2 |
| 22,00 - 24,99 | 10 IP | 30510830 | M3.5x21-TX10-IP | 3,3 |
| 25,00 - 27,99 | 15 IP | 30510831 | M4x24-TX15-IP | 5,0 |
| 28,00 - 30,99 | 15 IP | 30510832 | M4.5x27-TX15-IP | 5,7 |
| 31,00 - 32,99 | 20 IP | 30510833 | M5x30-TX20-IP | 7,5 |
| 33,00 - 36,99 | 20 IP | 30651830 | M5X32-TX20-IP | 7,5 |
| 37,00 - 44,99 | 25 IP | 30651399 | M6X35-TX25-IP | 15,0 |
| 45,00 - 50,99 | 25 IP | 30651510 | M6X43-TX25-IP | 15,0 |

Cutting data recommendations for QTD indexable inserts

Feed and cutting speed

Type 01 – Steel

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|-----------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| P5 | P5.1 Cast steel | | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

Type 05 – Steel-Pyramid

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|----|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |

Type 10 – Uni, EK-shaped

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|----|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----------|-----------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 8.00 | 11.50 | 16.50 | 24.00 | 34.50 | 50.00 |
| | 100 | 90 | 90 | | 0.20 | 0.26 | 0.31 | 0.36 | 0.38 | 0.39 |
| | 90 | 75 | 75 | | 0.25 | 0.32 | 0.39 | 0.45 | 0.47 | 0.49 |
| | 100 | 85 | 85 | | 0.24 | 0.30 | 0.37 | 0.43 | 0.45 | 0.46 |
| | 70 | 60 | 60 | | 0.19 | 0.24 | 0.29 | 0.34 | 0.35 | 0.36 |
| | 75 | 65 | 65 | | 0.22 | 0.27 | 0.33 | 0.38 | 0.40 | 0.42 |
| | 60 | 55 | 55 | | 0.18 | 0.22 | 0.27 | 0.31 | 0.33 | 0.34 |
| | 60 | 45 | 50 | | 0.14 | 0.18 | 0.21 | 0.24 | 0.25 | 0.26 |
| | 100 | 85 | 85 | | 0.24 | 0.30 | 0.37 | 0.43 | 0.45 | 0.46 |
| | 95 | 70 | 70 | 70 | 0.25 | 0.33 | 0.41 | 0.47 | 0.49 | 0.51 |
| | 130 | 80 | 95 | 95 | 0.24 | 0.30 | 0.37 | 0.43 | 0.46 | 0.47 |
| | 80 | 60 | 60 | | 0.21 | 0.26 | 0.32 | 0.37 | 0.39 | 0.40 |
| | 50 | 30 | 40 | | 0.14 | 0.18 | 0.21 | 0.24 | 0.26 | 0.26 |
| | 70 | 65 | 65 | | 0.22 | 0.28 | 0.35 | 0.40 | 0.42 | 0.43 |
| | 65 | 55 | 55 | | 0.18 | 0.23 | 0.27 | 0.32 | 0.33 | 0.34 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|-----------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 14.00 | 16.50 | 19.50 | 23.00 | 27.00 | 32.00 |
| | 120 | 110 | 110 | | 0.26 | 0.29 | 0.31 | 0.33 | 0.34 | 0.34 |
| | 110 | 90 | 90 | | 0.33 | 0.36 | 0.38 | 0.41 | 0.42 | 0.43 |
| | 120 | 100 | 100 | | 0.31 | 0.34 | 0.36 | 0.38 | 0.40 | 0.41 |
| | 90 | 80 | 80 | | 0.28 | 0.30 | 0.33 | 0.35 | 0.36 | 0.37 |
| | | | | | | | | | | |
| | 95 | 70 | 70 | 70 | 0.39 | 0.43 | 0.46 | 0.49 | 0.51 | 0.52 |
| | 110 | 70 | 85 | 85 | 0.36 | 0.40 | 0.43 | 0.45 | 0.47 | 0.48 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|-----------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 10.00 | 13.00 | 17.00 | 23.00 | 30.00 | 40.00 |
| | 120 | 110 | 110 | | 0.22 | 0.25 | 0.29 | 0.32 | 0.34 | 0.35 |
| | 110 | 90 | 90 | | 0.27 | 0.32 | 0.36 | 0.40 | 0.43 | 0.43 |
| | 120 | 100 | 100 | | 0.25 | 0.30 | 0.34 | 0.38 | 0.41 | 0.41 |
| | 90 | 80 | 80 | | 0.23 | 0.27 | 0.31 | 0.34 | 0.37 | 0.37 |
| | | | | | | | | | | |
| | 95 | 70 | 70 | 70 | 0.31 | 0.37 | 0.43 | 0.49 | 0.52 | 0.52 |
| | 110 | 70 | 85 | 85 | 0.29 | 0.35 | 0.40 | 0.45 | 0.48 | 0.48 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for QTD indexable inserts

Feed and cutting speed

Type 02 – Inox

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | |
|------|---|---|--|-------|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 | |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 | |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 | |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 | |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 | |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 | |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 | |
| | P4 | P4.1 Stainless steels, ferritic and martensitic | | |
| | P5 | P5.1 Cast steel | | |
| P6 | P6.1 Stainless cast steel, ferritic and martensitic | | | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 | |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 | |
| | M2 | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 | |
| | M3 | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 | |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 | |
| | | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 | |
| | K2 | K2.3 Cast iron with spheroidal graphite, GJS | > 800 | |
| | | K3.1 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

Type 03 – Alu

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|----|--|--|
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | |
| | | N1.4 Aluminium, alloy > 12 % Si | |
| | N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | | N2.2 Copper, alloy | > 300 |
| | | N2.3 Brass, bronze, gunmetal | < 1,200 |

Type 04 – Iron

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | |
|------|----|---|--|-------|
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 | |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 | |
| | | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 | |
| | K2 | K2.3 Cast iron with spheroidal graphite, GJS | > 800 | |
| | | K3.1 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

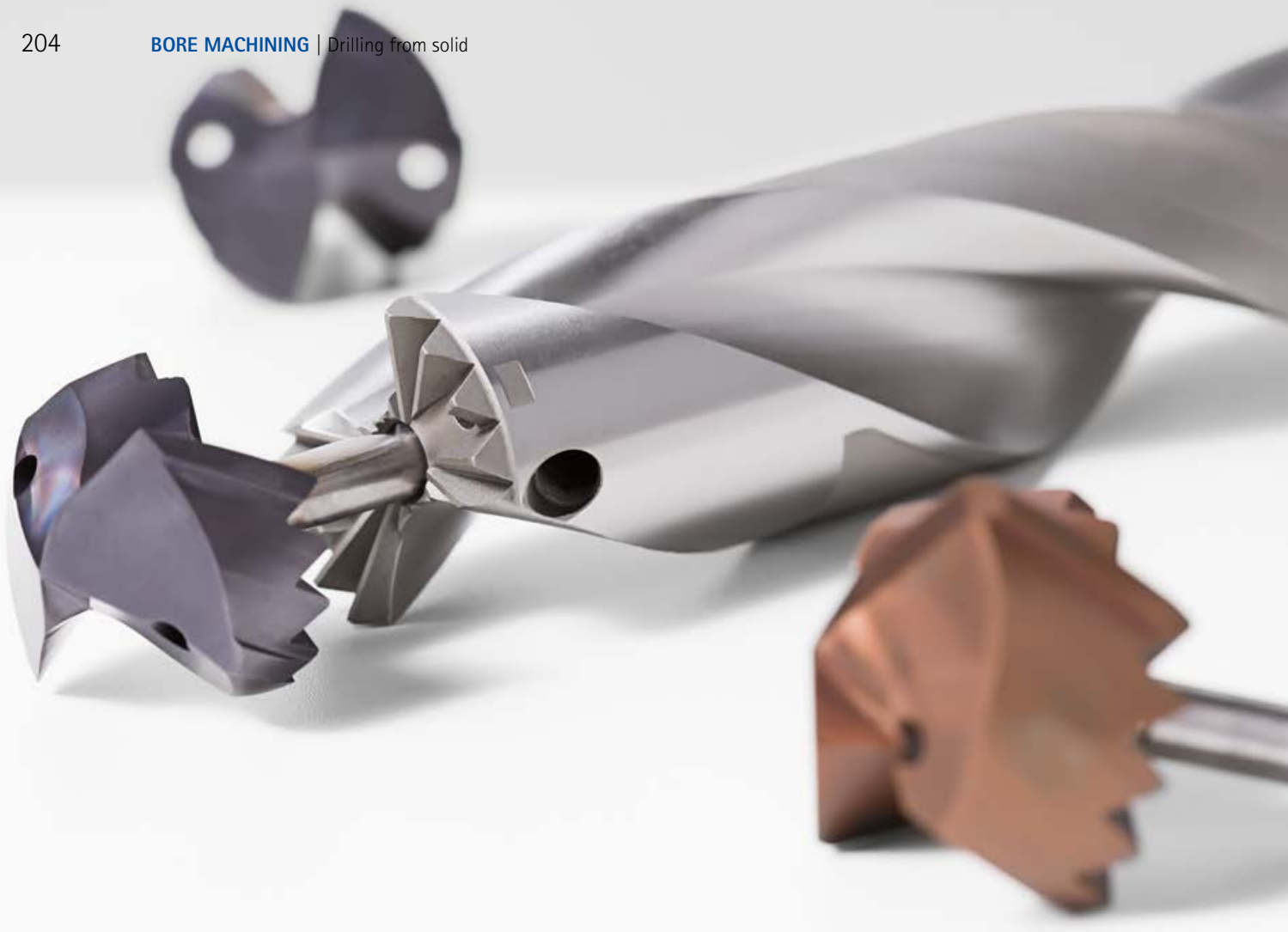
| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MLQ | Air | 9.00 | 12.00 | 16.00 | 21.00 | 27.50 | 36.00 |
| | 100 | 90 | 90 | | 0.19 | 0.23 | 0.27 | 0.30 | 0.32 | 0.33 |
| | 90 | 75 | 75 | | 0.24 | 0.29 | 0.34 | 0.38 | 0.40 | 0.41 |
| | 100 | 85 | 85 | | 0.23 | 0.27 | 0.32 | 0.36 | 0.38 | 0.39 |
| | 70 | 60 | 60 | | 0.18 | 0.22 | 0.25 | 0.28 | 0.30 | 0.31 |
| | 75 | 65 | 65 | | 0.20 | 0.24 | 0.29 | 0.32 | 0.34 | 0.35 |
| | 60 | 55 | 55 | | 0.17 | 0.20 | 0.23 | 0.26 | 0.28 | 0.29 |
| | 60 | 45 | 50 | | 0.13 | 0.16 | 0.18 | 0.20 | 0.21 | 0.22 |
| | 60 | 45 | 50 | | 0.13 | 0.16 | 0.19 | 0.21 | 0.23 | 0.23 |
| | 100 | 85 | 85 | | 0.23 | 0.27 | 0.32 | 0.36 | 0.38 | 0.39 |
| | 60 | 45 | 50 | | 0.13 | 0.16 | 0.19 | 0.21 | 0.23 | 0.23 |
| | 55 | 35 | 35 | | 0.15 | 0.18 | 0.22 | 0.24 | 0.26 | 0.27 |
| | 50 | 30 | 30 | | 0.13 | 0.16 | 0.19 | 0.21 | 0.22 | 0.23 |
| | 55 | 35 | 35 | | 0.15 | 0.18 | 0.22 | 0.24 | 0.26 | 0.27 |
| | 50 | 30 | 30 | | 0.13 | 0.16 | 0.19 | 0.21 | 0.22 | 0.23 |
| | 110 | 75 | 75 | 75 | 0.27 | 0.34 | 0.40 | 0.45 | 0.49 | 0.50 |
| | 145 | 90 | 110 | 110 | 0.26 | 0.31 | 0.37 | 0.42 | 0.45 | 0.46 |
| | 90 | 70 | 70 | | 0.22 | 0.27 | 0.32 | 0.36 | 0.38 | 0.39 |
| | 55 | 35 | 45 | | 0.15 | 0.18 | 0.21 | 0.23 | 0.25 | 0.26 |
| | 80 | 70 | 70 | | 0.24 | 0.29 | 0.34 | 0.38 | 0.41 | 0.42 |
| | 70 | 65 | 65 | | 0.19 | 0.23 | 0.27 | 0.30 | 0.33 | 0.33 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MLQ | Air | 9.00 | 12.00 | 16.00 | 21.00 | 27.50 | 36.00 |
| | 300 | 200 | 250 | | 0.19 | 0.23 | 0.27 | 0.30 | 0.32 | 0.33 |
| | 250 | 180 | 200 | | 0.25 | 0.30 | 0.35 | 0.40 | 0.43 | 0.43 |
| | 220 | 150 | 180 | | 0.25 | 0.30 | 0.35 | 0.40 | 0.43 | 0.43 |
| | 180 | 120 | 150 | | 0.25 | 0.30 | 0.35 | 0.40 | 0.43 | 0.43 |
| | 140 | 100 | | | 0.19 | 0.23 | 0.27 | 0.30 | 0.32 | 0.33 |
| | 120 | 90 | | | 0.25 | 0.30 | 0.35 | 0.40 | 0.43 | 0.43 |
| | 200 | 160 | 160 | 120 | 0.30 | 0.37 | 0.44 | 0.50 | 0.54 | 0.55 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----|-----|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MLQ | Air | 9.00 | 12.00 | 16.00 | 21.00 | 27.50 | 36.00 |
| | 120 | 85 | 85 | 85 | 0.37 | 0.45 | 0.53 | 0.60 | 0.65 | 0.66 |
| | 160 | 100 | 120 | 120 | 0.34 | 0.42 | 0.49 | 0.55 | 0.59 | 0.61 |
| | 100 | 75 | 75 | | 0.30 | 0.36 | 0.42 | 0.48 | 0.51 | 0.52 |
| | 60 | 40 | 50 | | 0.20 | 0.24 | 0.28 | 0.31 | 0.34 | 0.34 |
| | 90 | 80 | 80 | | 0.32 | 0.39 | 0.46 | 0.51 | 0.55 | 0.56 |
| | 80 | 70 | 70 | | 0.26 | 0.31 | 0.36 | 0.40 | 0.43 | 0.44 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



TTD REPLACEABLE HEAD DRILL

Minimised usage of carbide with highest stability and precision

The TTD replaceable head drill achieves the performance and quality level of solid carbide drills. At the same time, the reduction in the use of carbide metal for the replaceable drill heads means reduced tool costs.

The heart of the TTD replaceable head drill is the connection TTS (Torque Transfer System) that guarantees an extremely stable connection. It features optimal torque transmission and high changing and radial run-out accuracies.

The standard ranges of the TTD replaceable head drills cover the drilling depths 1xD, 3xD, 5xD, 8xD and 12xD. With five different types of replaceable drill head, even problematic machining tasks can be carried out in practically all workpiece materials in the diameter range from 12 mm to 45 mm.

The drill heads exhibit optimal centring properties. The chips are reliably discharged via the chip flutes of the TTS tool holder thanks to

the special facet geometry. In addition, very smooth running in the bore is enhanced by the special three- or four-chamfer geometry. The combination of these properties enables long tool lives and drilling results to be achieved at the highest level.

Tool features in detail



1 Three or four guiding chamfers

- Optimal guiding properties

2 TTS tool holder

- Universal carrier for all drill geometries

3 TTS connection

- Non-confusable Hirth serration



AT A GLANCE

- Available ex-stock
- \varnothing range 12.00 to 45.00 mm
- Drilling depths 1 | 3 | 5 | 8 and 12xD
- With internal cooling
- Easy handling
- Head replacement on the machine possible

PERFORMANCE FEATURES

- Identical performance as solid carbide drill
- High degree of radial run-out accuracy
- Good positioning accuracy
- High level of torque transmission

ADVANTAGES

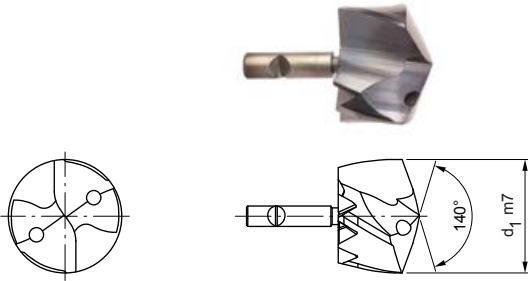
- Can be reground if necessary
- Error-free head replacement
- One replaceable head holder for different drill heads
- Almost all bore geometries can be achieved

TTD replaceable drill head

Produced from solid carbide, internal coolant supply
Type 01P - Uni-Plus

Design:

Drill diameter: 12.00 – 45.00 mm
Bore tolerance: ≥ IT 9
Cutting material: HP358
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 140°




Stocked preferred series

| d ₁ from 12.00 to 21.00 | | |
|------------------------------------|----------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 12,00 | TTD-4F01P-1200-HP358 | 31164086 |
| 13,50 | TTD-4F01P-1350-HP358 | 31164141 |
| 14,00 | TTD-4F01P-1400-HP358 | 31164146 |
| 14,50 | TTD-4F01P-1450-HP358 | 31164151 |
| 15,00 | TTD-4F01P-1500-HP358 | 31164156 |
| 15,50 | TTD-4F01P-1550-HP358 | 31164161 |
| 15,60 | TTD-4F01P-1560-HP358 | 31164162 |
| 15,80 | TTD-4F01P-1580-HP358 | 31164164 |
| 16,00 | TTD-4F01P-1600-HP358 | 31164166 |
| 16,50 | TTD-4F01P-1650-HP358 | 31164171 |
| 17,00 | TTD-4F01P-1700-HP358 | 31164176 |
| 17,50 | TTD-4F01P-1750-HP358 | 31164181 |
| 17,70 | TTD-4F01P-1770-HP358 | 31164183 |
| 17,80 | TTD-4F01P-1780-HP358 | 31164184 |
| 18,00 | TTD-4F01P-1800-HP358 | 31164186 |
| 18,50 | TTD-4F01P-1850-HP358 | 31164191 |
| 18,80 | TTD-4F01P-1880-HP358 | 31164194 |
| 19,00 | TTD-4F01P-1900-HP358 | 31164196 |
| 19,50 | TTD-4F01P-1950-HP358 | 31164201 |
| 19,70 | TTD-4F01P-1970-HP358 | 31164203 |
| 20,00 | TTD-4F01P-2000-HP358 | 31164206 |
| 20,50 | TTD-4F01P-2050-HP358 | 31164211 |
| 21,00 | TTD-4F01P-2100-HP358 | 31164216 |

| d ₁ from 21.50 to 40.00 | | |
|------------------------------------|----------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 21,50 | TTD-4F01P-2150-HP358 | 31164221 |
| 22,00 | TTD-4F01P-2200-HP358 | 31164226 |
| 22,50 | TTD-4F01P-2250-HP358 | 31164231 |
| 23,00 | TTD-4F01P-2300-HP358 | 31164236 |
| 24,00 | TTD-4F01P-2400-HP358 | 31164246 |
| 24,50 | TTD-4F01P-2450-HP358 | 31164251 |
| 25,00 | TTD-4F01P-2500-HP358 | 31164256 |
| 25,40 | TTD-4F01P-2540-HP358 | 31164260 |
| 25,50 | TTD-4F01P-2550-HP358 | 31164261 |
| 26,00 | TTD-4F01P-2600-HP358 | 31164266 |
| 26,50 | TTD-4F01P-2650-HP358 | 31164271 |
| 27,00 | TTD-4F01P-2700-HP358 | 31164276 |
| 28,00 | TTD-4F01P-2800-HP358 | 31164286 |
| 28,50 | TTD-4F01P-2850-HP358 | 31164291 |
| 30,00 | TTD-4F01P-3000-HP358 | 31164306 |
| 30,70 | TTD-4F01P-3070-HP358 | 31164313 |
| 31,00 | TTD-4F01P-3100-HP358 | 31164316 |
| 32,00 | TTD-4F01P-3200-HP358 | 31164326 |
| 33,00 | TTD-4F01P-3300-HP358 | 31164328 |
| 37,00 | TTD-4F01P-3700-HP358 | 31164336 |
| 38,50 | TTD-4F01P-3850-HP358 | 31164339 |
| 39,00 | TTD-4F01P-3900-HP358 | 31164340 |
| 40,00 | TTD-4F01P-4000-HP358 | 31164342 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

Specification:
TTD-4F01P-[diameter]-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 12,00 | 45,00 |

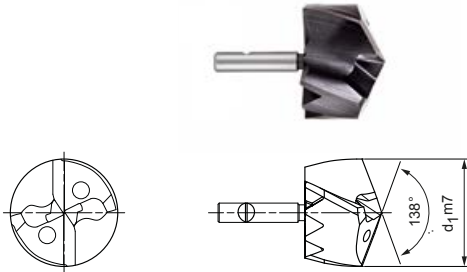
Example:
TTD-4F01P-1401-HP358

Tool diameter d₁ = 14.01 mm

Dimensions in mm.
Special designs available upon request.

TTD replaceable drill head

Produced from solid carbide, internal coolant supply
Type 04 - Steel



Design:

Drill diameter: 12.00 – 45.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP358
Number of cutting edges: 2
Number of guiding chamfers: 3
Tip angle: 138°



Stocked preferred series

| d ₁ from 12.00 to 17.00 | | |
|------------------------------------|---------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 12,00 | TTD-3F04-1200-HP358 | 30530406 |
| 12,10 | TTD-3F04-1210-HP358 | 30596953 |
| 12,20 | TTD-3F04-1220-HP358 | 30596954 |
| 12,50 | TTD-3F04-1250-HP358 | 30530407 |
| 12,80 | TTD-3F04-1280-HP358 | 30596958 |
| 13,00 | TTD-3F04-1300-HP358 | 30530409 |
| 13,10 | TTD-3F04-1310-HP358 | 30596960 |
| 13,20 | TTD-3F04-1320-HP358 | 30596961 |
| 13,50 | TTD-3F04-1350-HP358 | 30530410 |
| 14,00 | TTD-3F04-1400-HP358 | 30530412 |
| 14,10 | TTD-3F04-1410-HP358 | 30596967 |
| 14,20 | TTD-3F04-1420-HP358 | 30596968 |
| 14,30 | TTD-3F04-1430-HP358 | 30596969 |
| 14,40 | TTD-3F04-1440-HP358 | 30596970 |
| 14,50 | TTD-3F04-1450-HP358 | 30530413 |
| 14,70 | TTD-3F04-1470-HP358 | 30530414 |
| 14,80 | TTD-3F04-1480-HP358 | 30596972 |
| 15,00 | TTD-3F04-1500-HP358 | 30530415 |
| 15,10 | TTD-3F04-1510-HP358 | 30596974 |
| 15,20 | TTD-3F04-1520-HP358 | 30596975 |
| 15,50 | TTD-3F04-1550-HP358 | 30530416 |
| 15,70 | TTD-3F04-1570-HP358 | 30530417 |
| 15,80 | TTD-3F04-1580-HP358 | 30596979 |
| 16,00 | TTD-3F04-1600-HP358 | 30530418 |
| 16,10 | TTD-3F04-1610-HP358 | 30596981 |
| 16,20 | TTD-3F04-1620-HP358 | 30596982 |
| 16,30 | TTD-3F04-1630-HP358 | 30596983 |
| 16,40 | TTD-3F04-1640-HP358 | 30596984 |
| 16,50 | TTD-3F04-1650-HP358 | 30530419 |
| 16,60 | TTD-3F04-1660-HP358 | 30596985 |
| 16,70 | TTD-3F04-1670-HP358 | 30530420 |
| 16,80 | TTD-3F04-1680-HP358 | 30596986 |
| 17,00 | TTD-3F04-1700-HP358 | 30530421 |


| d ₁ from 17.10 to 21.40 | | |
|------------------------------------|---------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 17,10 | TTD-3F04-1710-HP358 | 30596988 |
| 17,30 | TTD-3F04-1730-HP358 | 30596990 |
| 17,50 | TTD-3F04-1750-HP358 | 30530422 |
| 17,60 | TTD-3F04-1760-HP358 | 30596992 |
| 17,70 | TTD-3F04-1770-HP358 | 30530423 |
| 17,80 | TTD-3F04-1780-HP358 | 30596993 |
| 18,00 | TTD-3F04-1800-HP358 | 30530424 |
| 18,10 | TTD-3F04-1810-HP358 | 30596995 |
| 18,20 | TTD-3F04-1820-HP358 | 30596996 |
| 18,30 | TTD-3F04-1830-HP358 | 30596997 |
| 18,40 | TTD-3F04-1840-HP358 | 30596998 |
| 18,50 | TTD-3F04-1850-HP358 | 30530425 |
| 18,80 | TTD-3F04-1880-HP358 | 30597000 |
| 18,90 | TTD-3F04-1890-HP358 | 30597001 |
| 19,00 | TTD-3F04-1900-HP358 | 30530427 |
| 19,20 | TTD-3F04-1920-HP358 | 30597003 |
| 19,30 | TTD-3F04-1930-HP358 | 30597004 |
| 19,50 | TTD-3F04-1950-HP358 | 30530428 |
| 19,70 | TTD-3F04-1970-HP358 | 30530429 |
| 19,80 | TTD-3F04-1980-HP358 | 30597007 |
| 19,90 | TTD-3F04-1990-HP358 | 30597008 |
| 20,00 | TTD-3F04-2000-HP358 | 30530431 |
| 20,10 | TTD-3F04-2010-HP358 | 30597009 |
| 20,20 | TTD-3F04-2020-HP358 | 30597010 |
| 20,30 | TTD-3F04-2030-HP358 | 30597011 |
| 20,40 | TTD-3F04-2040-HP358 | 30597012 |
| 20,50 | TTD-3F04-2050-HP358 | 30530432 |
| 20,60 | TTD-3F04-2060-HP358 | 30597013 |
| 20,70 | TTD-3F04-2070-HP358 | 30530433 |
| 21,00 | TTD-3F04-2100-HP358 | 30530434 |
| 21,10 | TTD-3F04-2110-HP358 | 30597016 |
| 21,20 | TTD-3F04-2120-HP358 | 30597017 |
| 21,40 | TTD-3F04-2140-HP358 | 30597019 |

Continued on next page.

Replaceable drill head TTD produced of solid carbide, internal coolant supply – type O4

| d ₁ from 21.50 to 26.10 | | | d ₁ from 26.20 to 41.00 | | |
|------------------------------------|---------------------|-----------|------------------------------------|---------------------|-----------|
| d ₁ m7 | Specification | Order no. | d ₁ m7 | Specification | Order no. |
| 21,50 | TTD-3F04-2150-HP358 | 30530435 | 26,20 | TTD-3F04-2620-HP358 | 30597052 |
| 21,70 | TTD-3F04-2170-HP358 | 30530436 | 26,50 | TTD-3F04-2650-HP358 | 30530450 |
| 21,80 | TTD-3F04-2180-HP358 | 30597021 | 26,70 | TTD-3F04-2670-HP358 | 30530451 |
| 22,00 | TTD-3F04-2200-HP358 | 30530437 | 27,00 | TTD-3F04-2700-HP358 | 30530452 |
| 22,10 | TTD-3F04-2210-HP358 | 30597023 | 27,50 | TTD-3F04-2750-HP358 | 30530453 |
| 22,20 | TTD-3F04-2220-HP358 | 30597024 | 27,70 | TTD-3F04-2770-HP358 | 30530454 |
| 22,30 | TTD-3F04-2230-HP358 | 30597025 | 27,80 | TTD-3F04-2780-HP358 | 30597063 |
| 22,40 | TTD-3F04-2240-HP358 | 30597026 | 28,00 | TTD-3F04-2800-HP358 | 30530455 |
| 22,50 | TTD-3F04-2250-HP358 | 30530438 | 28,20 | TTD-3F04-2820-HP358 | 30597066 |
| 22,60 | TTD-3F04-2260-HP358 | 30597027 | 28,30 | TTD-3F04-2830-HP358 | 30597067 |
| 22,70 | TTD-3F04-2270-HP358 | 30530439 | 28,50 | TTD-3F04-2850-HP358 | 30530456 |
| 23,00 | TTD-3F04-2300-HP358 | 30530440 | 29,00 | TTD-3F04-2900-HP358 | 30530458 |
| 23,10 | TTD-3F04-2310-HP358 | 30597030 | 30,00 | TTD-3F04-3000-HP358 | 30530461 |
| 23,30 | TTD-3F04-2330-HP358 | 30597032 | 30,30 | TTD-3F04-3030-HP358 | 30597082 |
| 23,50 | TTD-3F04-2350-HP358 | 30530441 | 30,50 | TTD-3F04-3050-HP358 | 30530462 |
| 23,70 | TTD-3F04-2370-HP358 | 30530442 | 31,00 | TTD-3F04-3100-HP358 | 30530464 |
| 24,00 | TTD-3F04-2400-HP358 | 30530443 | 31,50 | TTD-3F04-3150-HP358 | 30530465 |
| 24,40 | TTD-3F04-2440-HP358 | 30597040 | 31,70 | TTD-3F04-3170-HP358 | 30530466 |
| 24,50 | TTD-3F04-2450-HP358 | 30530444 | 32,00 | TTD-3F04-3200-HP358 | 30530467 |
| 24,70 | TTD-3F04-2470-HP358 | 30530445 | 33,00 | TTD-3F04-3300-HP358 | 30530469 |
| 24,80 | TTD-3F04-2480-HP358 | 30597042 | 34,00 | TTD-3F04-3400-HP358 | 30530471 |
| 25,00 | TTD-3F04-2500-HP358 | 30530446 | 34,50 | TTD-3F04-3450-HP358 | 30530472 |
| 25,20 | TTD-3F04-2520-HP358 | 30597045 | 35,00 | TTD-3F04-3500-HP358 | 30530473 |
| 25,30 | TTD-3F04-2530-HP358 | 30597046 | 36,00 | TTD-3F04-3600-HP358 | 30530475 |
| 25,40 | TTD-3F04-2540-HP358 | 30597047 | 37,00 | TTD-3F04-3700-HP358 | 30530477 |
| 25,50 | TTD-3F04-2550-HP358 | 30530447 | 38,00 | TTD-3F04-3800-HP358 | 30530479 |
| 25,90 | TTD-3F04-2590-HP358 | 30597050 | 39,00 | TTD-3F04-3900-HP358 | 30530481 |
| 26,00 | TTD-3F04-2600-HP358 | 30530449 | 40,00 | TTD-3F04-4000-HP358 | 30530483 |
| 26,10 | TTD-3F04-2610-HP358 | 30597051 | 41,00 | TTD-3F04-4100-HP358 | 30530485 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

Specification:
TTD-3F04-[diameter]-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 12,00 | 45,00 |

Example:
TTD-3F04-1401-HP358

Tool diameter d₁ = 14.01 mm

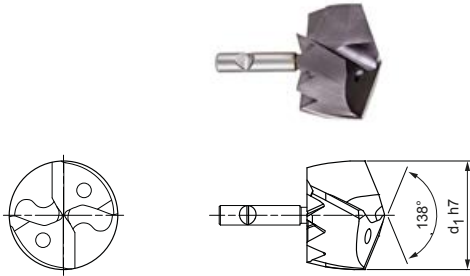
Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

TTD replaceable drill head

Produced from solid carbide, internal coolant supply
Type 02 - Inox



Design:

Drill diameter: 12.00 – 45.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP385
Number of cutting edges: 2
Number of guiding chamfers: 3
Tip angle: 138°



Stocked preferred series

| d ₁ from 12.00 to 16.40 | | |
|------------------------------------|---------------------|-----------|
| d ₁ h7 | Specification | Order no. |
| 12,00 | TTD-3F02-1200-HP385 | 30231780 |
| 12,10 | TTD-3F02-1210-HP385 | 30248920 |
| 12,20 | TTD-3F02-1220-HP385 | 30248921 |
| 12,40 | TTD-3F02-1240-HP385 | 30248923 |
| 12,50 | TTD-3F02-1250-HP385 | 30231784 |
| 12,60 | TTD-3F02-1260-HP385 | 30248924 |
| 12,70 | TTD-3F02-1270-HP385 | 30231787 |
| 13,00 | TTD-3F02-1300-HP385 | 30231791 |
| 13,10 | TTD-3F02-1310-HP385 | 30248927 |
| 13,50 | TTD-3F02-1350-HP385 | 30231792 |
| 13,80 | TTD-3F02-1380-HP385 | 30248932 |
| 14,00 | TTD-3F02-1400-HP385 | 30231795 |
| 14,10 | TTD-3F02-1410-HP385 | 30239446 |
| 14,20 | TTD-3F02-1420-HP385 | 30248934 |
| 14,30 | TTD-3F02-1430-HP385 | 30248935 |
| 14,40 | TTD-3F02-1440-HP385 | 30248936 |
| 14,50 | TTD-3F02-1450-HP385 | 30231802 |
| 14,60 | TTD-3F02-1460-HP385 | 30248937 |
| 14,70 | TTD-3F02-1470-HP385 | 30231804 |
| 14,80 | TTD-3F02-1480-HP385 | 30248938 |
| 15,00 | TTD-3F02-1500-HP385 | 30231805 |
| 15,10 | TTD-3F02-1510-HP385 | 30248940 |
| 15,30 | TTD-3F02-1530-HP385 | 30248942 |
| 15,50 | TTD-3F02-1550-HP385 | 30231806 |
| 15,60 | TTD-3F02-1560-HP385 | 30248944 |
| 15,70 | TTD-3F02-1570-HP385 | 30219115 |
| 15,80 | TTD-3F02-1580-HP385 | 30248945 |
| 15,90 | TTD-3F02-1590-HP385 | 30248946 |
| 16,00 | TTD-3F02-1600-HP385 | 30191427 |
| 16,10 | TTD-3F02-1610-HP385 | 30248947 |
| 16,20 | TTD-3F02-1620-HP385 | 30248948 |
| 16,30 | TTD-3F02-1630-HP385 | 30248949 |
| 16,40 | TTD-3F02-1640-HP385 | 30248950 |

| d ₁ from 16.50 to 21.00 | | |
|------------------------------------|---------------------|-----------|
| d ₁ h7 | Specification | Order no. |
| 16,50 | TTD-3F02-1650-HP385 | 30191428 |
| 16,60 | TTD-3F02-1660-HP385 | 30248951 |
| 16,70 | TTD-3F02-1670-HP385 | 30219122 |
| 16,80 | TTD-3F02-1680-HP385 | 30248952 |
| 17,00 | TTD-3F02-1700-HP385 | 30191429 |
| 17,50 | TTD-3F02-1750-HP385 | 30191430 |
| 17,60 | TTD-3F02-1760-HP385 | 30248958 |
| 17,70 | TTD-3F02-1770-HP385 | 30219123 |
| 17,80 | TTD-3F02-1780-HP385 | 30248959 |
| 18,00 | TTD-3F02-1800-HP385 | 30191431 |
| 18,20 | TTD-3F02-1820-HP385 | 30248962 |
| 18,30 | TTD-3F02-1830-HP385 | 30248963 |
| 18,50 | TTD-3F02-1850-HP385 | 30191432 |
| 18,60 | TTD-3F02-1860-HP385 | 30248965 |
| 18,80 | TTD-3F02-1880-HP385 | 30248966 |
| 18,90 | TTD-3F02-1890-HP385 | 30248967 |
| 19,00 | TTD-3F02-1900-HP385 | 30191433 |
| 19,10 | TTD-3F02-1910-HP385 | 30248968 |
| 19,20 | TTD-3F02-1920-HP385 | 30248969 |
| 19,30 | TTD-3F02-1930-HP385 | 30248970 |
| 19,40 | TTD-3F02-1940-HP385 | 30248971 |
| 19,50 | TTD-3F02-1950-HP385 | 30191434 |
| 19,70 | TTD-3F02-1970-HP385 | 30219125 |
| 19,80 | TTD-3F02-1980-HP385 | 30248973 |
| 19,90 | TTD-3F02-1990-HP385 | 30248974 |
| 20,00 | TTD-3F02-2000-HP385 | 30191435 |
| 20,10 | TTD-3F02-2010-HP385 | 30248975 |
| 20,20 | TTD-3F02-2020-HP385 | 30248976 |
| 20,30 | TTD-3F02-2030-HP385 | 30248977 |
| 20,40 | TTD-3F02-2040-HP385 | 30248978 |
| 20,50 | TTD-3F02-2050-HP385 | 30191436 |
| 20,70 | TTD-3F02-2070-HP385 | 30219126 |
| 21,00 | TTD-3F02-2100-HP385 | 30191437 |


Continued on next page.

Replaceable drill head TTD produced of solid carbide, internal coolant supply – type O2

| d ₁ from 21.20 to 25.80 | | |
|------------------------------------|---------------------|-----------|
| d ₁ h7 | Specification | Order no. |
| 21,20 | TTD-3F02-2120-HP385 | 30248982 |
| 21,50 | TTD-3F02-2150-HP385 | 30191438 |
| 21,70 | TTD-3F02-2170-HP385 | 30219127 |
| 21,80 | TTD-3F02-2180-HP385 | 30248986 |
| 22,00 | TTD-3F02-2200-HP385 | 30191439 |
| 22,10 | TTD-3F02-2210-HP385 | 30248988 |
| 22,40 | TTD-3F02-2240-HP385 | 30248990 |
| 22,50 | TTD-3F02-2250-HP385 | 30191440 |
| 22,60 | TTD-3F02-2260-HP385 | 30248991 |
| 22,70 | TTD-3F02-2270-HP385 | 30219128 |
| 22,80 | TTD-3F02-2280-HP385 | 30248992 |
| 22,90 | TTD-3F02-2290-HP385 | 30248993 |
| 23,00 | TTD-3F02-2300-HP385 | 30191441 |
| 23,50 | TTD-3F02-2350-HP385 | 30191442 |
| 23,70 | TTD-3F02-2370-HP385 | 30219129 |
| 24,00 | TTD-3F02-2400-HP385 | 30191443 |
| 24,20 | TTD-3F02-2420-HP385 | 30249002 |
| 24,40 | TTD-3F02-2440-HP385 | 30249004 |
| 24,50 | TTD-3F02-2450-HP385 | 30191444 |
| 24,70 | TTD-3F02-2470-HP385 | 30219130 |
| 24,80 | TTD-3F02-2480-HP385 | 30249006 |
| 25,00 | TTD-3F02-2500-HP385 | 30191445 |
| 25,20 | TTD-3F02-2520-HP385 | 30249009 |
| 25,30 | TTD-3F02-2530-HP385 | 30249010 |
| 25,40 | TTD-3F02-2540-HP385 | 30249011 |
| 25,50 | TTD-3F02-2550-HP385 | 30191446 |
| 25,70 | TTD-3F02-2570-HP385 | 30219131 |
| 25,80 | TTD-3F02-2580-HP385 | 30249013 |

| d ₁ from 26.00 to 38.50 | | |
|------------------------------------|---------------------|-----------|
| d ₁ h7 | Specification | Order no. |
| 26,00 | TTD-3F02-2600-HP385 | 30191447 |
| 26,50 | TTD-3F02-2650-HP385 | 30191448 |
| 26,80 | TTD-3F02-2680-HP385 | 30249020 |
| 27,00 | TTD-3F02-2700-HP385 | 30191449 |
| 27,10 | TTD-3F02-2710-HP385 | 30249022 |
| 27,40 | TTD-3F02-2740-HP385 | 30249025 |
| 27,50 | TTD-3F02-2750-HP385 | 30191450 |
| 28,00 | TTD-3F02-2800-HP385 | 30191451 |
| 28,10 | TTD-3F02-2810-HP385 | 30249029 |
| 28,20 | TTD-3F02-2820-HP385 | 30249030 |
| 28,50 | TTD-3F02-2850-HP385 | 30191452 |
| 28,60 | TTD-3F02-2860-HP385 | 30249033 |
| 28,70 | TTD-3F02-2870-HP385 | 30219134 |
| 29,00 | TTD-3F02-2900-HP385 | 30191453 |
| 29,50 | TTD-3F02-2950-HP385 | 30191454 |
| 29,70 | TTD-3F02-2970-HP385 | 30219135 |
| 29,80 | TTD-3F02-2980-HP385 | 30249041 |
| 29,90 | TTD-3F02-2990-HP385 | 30249042 |
| 30,00 | TTD-3F02-3000-HP385 | 30191455 |
| 30,10 | TTD-3F02-3010-HP385 | 30249043 |
| 30,30 | TTD-3F02-3030-HP385 | 30249045 |
| 31,00 | TTD-3F02-3100-HP385 | 30191457 |
| 31,30 | TTD-3F02-3130-HP385 | 30249052 |
| 31,50 | TTD-3F02-3150-HP385 | 30191458 |
| 31,80 | TTD-3F02-3180-HP385 | 30249055 |
| 32,00 | TTD-3F02-3200-HP385 | 30191459 |
| 38,50 | TTD-3F02-3850-HP385 | 30322384 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

Specification:
TTD-3F02-[diameter]-HP358

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 12,00 | 45,00 |

Example:
TTD-3F02-1401-HP358

Tool diameter d₁ = 14.01 mm

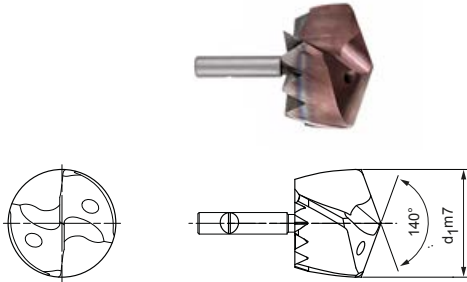
Dimensions in mm.
For cutting data recommendations, see end of chapter.
Special designs and other coatings available upon request.

TTD replaceable drill head

Produced from solid carbide, internal coolant supply
Type 05 - Iron

Design:

Drill diameter: 12.00 – 45.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP240
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 140°




Stocked preferred series


| d ₁ from 12.50 to 20.80 | | |
|------------------------------------|---------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 12,50 | TTD-4F05-1250-HP240 | 30597144 |
| 12,70 | TTD-4F05-1270-HP240 | 30597146 |
| 14,00 | TTD-4F05-1400-HP240 | 30597159 |
| 14,50 | TTD-4F05-1450-HP240 | 30597164 |
| 15,30 | TTD-4F05-1530-HP240 | 30597173 |
| 15,70 | TTD-4F05-1570-HP240 | 30597177 |
| 16,30 | TTD-4F05-1630-HP240 | 30597183 |
| 16,50 | TTD-4F05-1650-HP240 | 30597185 |
| 16,70 | TTD-4F05-1670-HP240 | 30597187 |
| 16,80 | TTD-4F05-1680-HP240 | 30597188 |
| 17,00 | TTD-4F05-1700-HP240 | 30597190 |
| 17,10 | TTD-4F05-1710-HP240 | 30597191 |
| 17,50 | TTD-4F05-1750-HP240 | 30597195 |
| 18,00 | TTD-4F05-1800-HP240 | 30597200 |
| 18,20 | TTD-4F05-1820-HP240 | 30597202 |
| 18,50 | TTD-4F05-1850-HP240 | 30597205 |
| 18,60 | TTD-4F05-1860-HP240 | 30597206 |
| 18,80 | TTD-4F05-1880-HP240 | 30597208 |
| 19,00 | TTD-4F05-1900-HP240 | 30597210 |
| 19,70 | TTD-4F05-1970-HP240 | 30597217 |
| 20,50 | TTD-4F05-2050-HP240 | 30597225 |
| 20,70 | TTD-4F05-2070-HP240 | 30597227 |
| 20,80 | TTD-4F05-2080-HP240 | 30597228 |

| d ₁ from 21.00 to 37.00 | | |
|------------------------------------|---------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 21,00 | TTD-4F05-2100-HP240 | 30597230 |
| 21,10 | TTD-4F05-2110-HP240 | 30597231 |
| 21,50 | TTD-4F05-2150-HP240 | 30597235 |
| 21,70 | TTD-4F05-2170-HP240 | 30597237 |
| 22,00 | TTD-4F05-2200-HP240 | 30597240 |
| 22,10 | TTD-4F05-2210-HP240 | 30597241 |
| 22,30 | TTD-4F05-2230-HP240 | 30597243 |
| 22,70 | TTD-4F05-2270-HP240 | 30597247 |
| 23,00 | TTD-4F05-2300-HP240 | 30597250 |
| 23,50 | TTD-4F05-2350-HP240 | 30597255 |
| 24,00 | TTD-4F05-2400-HP240 | 30597260 |
| 24,40 | TTD-4F05-2440-HP240 | 30597264 |
| 24,80 | TTD-4F05-2480-HP240 | 30597268 |
| 25,00 | TTD-4F05-2500-HP240 | 30597270 |
| 25,80 | TTD-4F05-2580-HP240 | 30597278 |
| 26,00 | TTD-4F05-2600-HP240 | 30597280 |
| 27,00 | TTD-4F05-2700-HP240 | 30597290 |
| 27,10 | TTD-4F05-2710-HP240 | 30597291 |
| 28,00 | TTD-4F05-2800-HP240 | 30597300 |
| 28,50 | TTD-4F05-2850-HP240 | 30597305 |
| 30,00 | TTD-4F05-3000-HP240 | 30597320 |
| 32,00 | TTD-4F05-3200-HP240 | 30597341 |
| 37,00 | TTD-4F05-3700-HP240 | 30597351 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable



Specification:
TTD-4F05-[diameter]-HP240

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 12,00 | 45,00 |

Example:

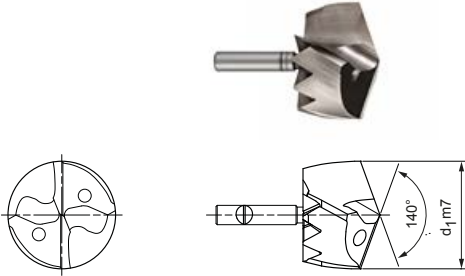
TTD-4F05-1401-HP619

Tool diameter d₁ = 14.01 mm

TTD replaceable drill head

Produced from solid carbide, internal coolant supply
Type 03 - Alu

Design:
 Drill diameter: 12.00 – 45.00 mm
 Bore tolerance: ≥ IT 9
 Cutting material: HP685
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 140°




Stocked preferred series

| d ₁ from 12.10 to 21.00 | | |
|------------------------------------|---------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 12,10 | TTD-4F03-1210-HP685 | 30249057 |
| 12,50 | TTD-4F03-1250-HP685 | 30231808 |
| 12,80 | TTD-4F03-1280-HP685 | 30249062 |
| 13,00 | TTD-4F03-1300-HP685 | 30231812 |
| 13,50 | TTD-4F03-1350-HP685 | 30231815 |
| 14,00 | TTD-4F03-1400-HP685 | 30231817 |
| 14,50 | TTD-4F03-1450-HP685 | 30231818 |
| 14,70 | TTD-4F03-1470-HP685 | 30231819 |
| 14,90 | TTD-4F03-1490-HP685 | 30249077 |
| 15,00 | TTD-4F03-1500-HP685 | 30231820 |
| 16,00 | TTD-4F03-1600-HP685 | 30191460 |
| 16,10 | TTD-4F03-1610-HP685 | 30249085 |
| 16,50 | TTD-4F03-1650-HP685 | 30191461 |
| 17,00 | TTD-4F03-1700-HP685 | 30191462 |
| 17,50 | TTD-4F03-1750-HP685 | 30191463 |
| 18,00 | TTD-4F03-1800-HP685 | 30191464 |
| 18,10 | TTD-4F03-1810-HP685 | 30234210 |
| 18,20 | TTD-4F03-1820-HP685 | 30249099 |
| 18,30 | TTD-4F03-1830-HP685 | 30249100 |
| 18,50 | TTD-4F03-1850-HP685 | 30191465 |
| 18,60 | TTD-4F03-1860-HP685 | 30249102 |
| 18,70 | TTD-4F03-1870-HP685 | 30219141 |
| 19,00 | TTD-4F03-1900-HP685 | 30191466 |
| 19,50 | TTD-4F03-1950-HP685 | 30191467 |
| 19,60 | TTD-4F03-1960-HP685 | 30249109 |
| 20,00 | TTD-4F03-2000-HP685 | 30191468 |
| 20,30 | TTD-4F03-2030-HP685 | 30216431 |
| 20,50 | TTD-4F03-2050-HP685 | 30191469 |
| 21,00 | TTD-4F03-2100-HP685 | 30191470 |

| d ₁ from 21.50 to 43.00 | | |
|------------------------------------|---------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 21,50 | TTD-4F03-2150-HP685 | 30191471 |
| 22,00 | TTD-4F03-2200-HP685 | 30191472 |
| 22,50 | TTD-4F03-2250-HP685 | 30191473 |
| 22,60 | TTD-4F03-2260-HP685 | 30249129 |
| 23,00 | TTD-4F03-2300-HP685 | 30191474 |
| 23,50 | TTD-4F03-2350-HP685 | 30191475 |
| 23,90 | TTD-4F03-2390-HP685 | 30249138 |
| 24,00 | TTD-4F03-2400-HP685 | 30191476 |
| 24,10 | TTD-4F03-2410-HP685 | 30249139 |
| 24,40 | TTD-4F03-2440-HP685 | 30249142 |
| 24,50 | TTD-4F03-2450-HP685 | 30191477 |
| 25,00 | TTD-4F03-2500-HP685 | 30191478 |
| 25,10 | TTD-4F03-2510-HP685 | 30249146 |
| 25,20 | TTD-4F03-2520-HP685 | 30249147 |
| 25,50 | TTD-4F03-2550-HP685 | 30191479 |
| 26,00 | TTD-4F03-2600-HP685 | 30191480 |
| 26,40 | TTD-4F03-2640-HP685 | 30249156 |
| 27,00 | TTD-4F03-2700-HP685 | 30191482 |
| 27,50 | TTD-4F03-2750-HP685 | 30191483 |
| 28,00 | TTD-4F03-2800-HP685 | 30191484 |
| 28,30 | TTD-4F03-2830-HP685 | 30249169 |
| 28,40 | TTD-4F03-2840-HP685 | 30249170 |
| 29,50 | TTD-4F03-2950-HP685 | 30191487 |
| 31,00 | TTD-4F03-3100-HP685 | 30191490 |
| 31,20 | TTD-4F03-3120-HP685 | 30249189 |
| 32,00 | TTD-4F03-3200-HP685 | 30191492 |
| 35,00 | TTD-4F03-3500-HP685 | 30322405 |
| 43,00 | TTD-4F03-4300-HP685 | 30322423 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

Specification:
TTD-4F03-[diameter]-HP685

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 12.00 | 45.00 |

Example:
TTD-4F03-1401-HP685

Tool diameter d₁ = 14.01 mm

Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

TTS replaceable head holder

With front clamping system for TTD replaceable head drill
TTS100, internal coolant supply

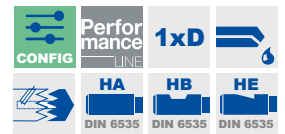
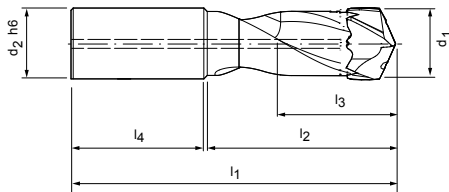
Design:

For drill diameter:

12.00 - 45.49 mm

Changing system:

Front clamping system
Head replacement on
the machine possible



Stocked preferred series


| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00-12,49 | TTS12-S | 14 | 81 | 29 | 13 | 45 | TTS100-12-DR1-1200-14-HB | 30324304 |
| 12,50-12,99 | TTS12-S | 14 | 81 | 29 | 13 | 45 | TTS100-12-DR1-1250-14-HB | 30324305 |
| 13,00-13,49 | TTS12-S | 14 | 81 | 31 | 14 | 45 | TTS100-12-DR1-1300-14-HB | 30324306 |
| 13,50-13,99 | TTS12-S | 16 | 86 | 32 | 14 | 48 | TTS100-12-DR1-1350-16-HB | 30324307 |
| 14,00-14,49 | TTS12-S | 16 | 86 | 33 | 15 | 48 | TTS100-12-DR1-1400-16-HB | 30324308 |
| 14,50-14,99 | TTS12-S | 16 | 91 | 34 | 15 | 48 | TTS100-12-DR1-1450-16-HB | 30324309 |
| 15,00-15,49 | TTS12-S | 16 | 91 | 36 | 16 | 48 | TTS100-12-DR1-1500-16-HB | 30324310 |
| 15,50-16,49 | TTS12-S | 18 | 92 | 38 | 17 | 48 | TTS100-12-DR1-1550-18-HB | 30324311 |
| 16,50-17,49 | TTS12-S | 18 | 94 | 40 | 18 | 48 | TTS100-12-DR1-1650-18-HB | 30324312 |
| 17,50-18,49 | TTS12-S | 18 | 99 | 43 | 19 | 48 | TTS100-12-DR1-1750-18-HB | 30324313 |
| 18,50-19,49 | TTS12-S | 20 | 99 | 45 | 20 | 50 | TTS100-12-DR1-1850-20-HB | 30324314 |
| 19,50-20,49 | TTS12-S | 20 | 104 | 47 | 21 | 50 | TTS100-12-DR1-1950-20-HB | 30324316 |
| 20,50-21,49 | TTS12-S | 25 | 111 | 49 | 22 | 56 | TTS100-12-DR1-2050-25-HB | 30324317 |
| 21,50-22,49 | TTS12-S | 25 | 116 | 52 | 23 | 56 | TTS100-12-DR1-2150-25-HB | 30324318 |
| 22,50-23,49 | TTS12-S | 25 | 116 | 54 | 24 | 56 | TTS100-12-DR1-2250-25-HB | 30324319 |
| 23,50-24,49 | TTS12-S | 25 | 121 | 56 | 25 | 56 | TTS100-12-DR1-2350-25-HB | 30324320 |
| 24,50-25,49 | TTS18-S | 25 | 123 | 59 | 26 | 56 | TTS100-18-DR1-2450-25-HB | 30324321 |
| 25,50-26,49 | TTS18-S | 25 | 123 | 61 | 27 | 56 | TTS100-18-DR1-2550-25-HB | 30324322 |
| 26,50-27,49 | TTS18-S | 25 | 128 | 63 | 28 | 56 | TTS100-18-DR1-2650-25-HB | 30324323 |
| 27,50-28,49 | TTS18-S | 25 | 128 | 66 | 29 | 56 | TTS100-18-DR1-2750-25-HB | 30324325 |
| 28,50-29,49 | TTS18-S | 32 | 134 | 68 | 30 | 60 | TTS100-18-DR1-2850-32-HB | 30324327 |
| 29,50-30,49 | TTS18-S | 32 | 139 | 70 | 31 | 60 | TTS100-18-DR1-2950-32-HB | 30324328 |
| 30,50-31,49 | TTS18-S | 32 | 139 | 75 | 32 | 60 | TTS100-18-DR1-3050-32-HB | 30324329 |
| 31,50-32,49 | TTS18-S | 32 | 139 | 75 | 33 | 60 | TTS100-18-DR1-3150-32-HB | 30324330 |
| 32,50-33,49 | TTS18-S | 32 | 150 | 78 | 34 | 60 | TTS100-18-DR1-3250-32-HB | 30374587 |
| 33,50-34,49 | TTS18-S | 32 | 150 | 79 | 35 | 60 | TTS100-18-DR1-3350-32-HB | 30374590 |
| 34,50-35,49 | TTS12-S | 32 | 152 | 86 | 36 | 60 | TTS100-18-DR1-3550-32-HB | 30496703 |
| 34,50-35,49 | TTS18-S | 32 | 150 | 82 | 36 | 60 | TTS100-18-DR1-3450-32-HB | 30374593 |
| 35,50-37,49 | TTS18-S | 40 | 162 | 86 | 38 | 70 | TTS100-18-DR1-3550-40-HB | 30535302 |
| 37,50-39,49 | TTS18-S | 32 | 157 | 91 | 40 | 60 | TTS100-18-DR1-3750-32-HB | 30496704 |
| 37,50-39,49 | TTS18-S | 40 | 167 | 71 | 40 | 70 | TTS100-18-DR1-3750-40-HB | 30535303 |

Continued on next page.


TTS 100 replaceable head holder, internal coolant supply

| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 39,50-41,49 | TTS18-S | 32 | 167 | 95 | 42 | 60 | TTS100-18-DR1-3950-32-HB | 30496705 |
| 39,50-41,49 | TTS18-S | 40 | 177 | 95 | 42 | 70 | TTS100-18-DR1-3950-40-HB | 30535305 |
| 41,50-43,49 | TTS18-S | 40 | 180 | 100 | 44 | 70 | TTS100-18-DR1-4150-40-HB | 30535307 |
| 43,50-45,49 | TTS18-S | 40 | 185 | 105 | 46 | 70 | TTS100-18-DR1-4350-40-HB | 30535312 |

Configurable features



Shank form:
Shank form: HA | HE



Specification:
TTS100-18-DR1-4150-40-[shank form]

Example:

TTS100-18-DR1-4150-40-HE

Shank form HE

TTS replaceable head holder

With front clamping system for TTD replaceable head drill
TTS100 (3xD), internal coolant supply

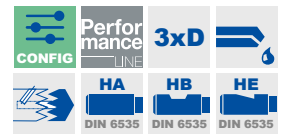
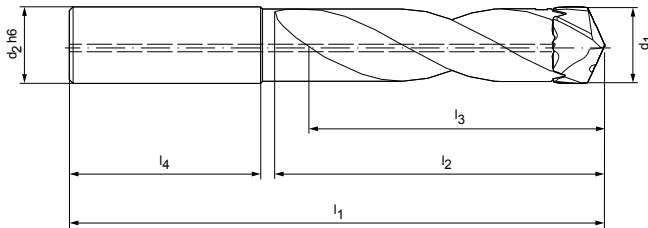
Design:

For drill diameter:

12.00 - 45.49 mm

Changing system:

Front clamping system
Head replacement on
the machine possible



Stocked preferred series


| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00-12,49 | TTS12-S | 14 | 100 | 53 | 38 | 45 | TTS100-12-DR3-1200-14-HB | 30232785 |
| 12,50-12,99 | TTS12-S | 14 | 105 | 55 | 39 | 45 | TTS100-12-DR3-1250-14-HB | 30232787 |
| 13,00-13,49 | TTS12-S | 14 | 105 | 57 | 41 | 45 | TTS100-12-DR3-1300-14-HB | 30232789 |
| 13,50-13,99 | TTS12-S | 16 | 110 | 59 | 42 | 48 | TTS100-12-DR3-1350-16-HB | 30232790 |
| 14,00-14,49 | TTS12-S | 16 | 115 | 61 | 44 | 48 | TTS100-12-DR3-1400-16-HB | 30232792 |
| 14,50-14,99 | TTS12-S | 16 | 115 | 63 | 45 | 48 | TTS100-12-DR3-1450-16-HB | 30232793 |
| 15,00-15,49 | TTS12-S | 16 | 115 | 65 | 47 | 48 | TTS100-12-DR3-1500-16-HB | 30232794 |
| 15,50-16,49 | TTS12-S | 18 | 120 | 70 | 50 | 48 | TTS100-12-DR3-1550-18-HB | 30191496 |
| 16,50-17,49 | TTS12-S | 18 | 125 | 74 | 53 | 48 | TTS100-12-DR3-1650-18-HB | 30191497 |
| 17,50-18,49 | TTS12-S | 18 | 130 | 78 | 56 | 48 | TTS100-12-DR3-1750-18-HB | 30191498 |
| 18,50-19,49 | TTS12-S | 16 | 135 | 82 | 59 | 49 | TTS100-12-DR3-1850-16-HB | 30772931 |
| 18,50-19,49 | TTS12-S | 20 | 135 | 82 | 59 | 50 | TTS100-12-DR3-1850-20-HB | 30191499 |
| 19,50-20,49 | TTS12-S | 20 | 140 | 87 | 62 | 50 | TTS100-12-DR3-1950-20-HB | 30191500 |
| 20,50-21,49 | TTS12-S | 25 | 150 | 91 | 65 | 56 | TTS100-12-DR3-2050-25-HB | 30191501 |
| 21,50-22,49 | TTS12-S | 25 | 155 | 95 | 68 | 56 | TTS100-12-DR3-2150-25-HB | 30191502 |
| 22,50-23,49 | TTS12-S | 25 | 160 | 99 | 71 | 56 | TTS100-12-DR3-2250-25-HB | 30191503 |
| 23,50-24,49 | TTS12-S | 25 | 165 | 103 | 74 | 56 | TTS100-12-DR3-2350-25-HB | 30191504 |
| 24,50-25,49 | TTS18-S | 25 | 165 | 108 | 77 | 56 | TTS100-18-DR3-2450-25-HB | 30191505 |
| 25,50-26,49 | TTS18-S | 25 | 175 | 112 | 80 | 56 | TTS100-18-DR3-2550-25-HB | 30191507 |
| 26,50-27,49 | TTS18-S | 25 | 175 | 116 | 83 | 56 | TTS100-18-DR3-2650-25-HB | 30191508 |
| 27,50-28,49 | TTS18-S | 25 | 180 | 120 | 86 | 56 | TTS100-18-DR3-2750-25-HB | 30191509 |
| 28,50-29,49 | TTS18-S | 32 | 190 | 124 | 89 | 60 | TTS100-18-DR3-2850-32-HB | 30191510 |
| 29,50-30,49 | TTS18-S | 32 | 195 | 129 | 92 | 60 | TTS100-18-DR3-2950-32-HB | 30191511 |
| 30,50-31,49 | TTS18-S | 32 | 195 | 133 | 95 | 60 | TTS100-18-DR3-3050-32-HB | 30191512 |
| 31,50-32,49 | TTS18-S | 32 | 200 | 137 | 98 | 60 | TTS100-18-DR3-3150-32-HB | 30191513 |
| 32,50-33,49 | TTS18-S | 32 | 210 | 144 | 101 | 60 | TTS100-18-DR3-3250-32-HB | 30322289 |
| 33,50-34,49 | TTS18-S | 32 | 215 | 148 | 104 | 60 | TTS100-18-DR3-3350-32-HB | 30322290 |
| 34,50-35,49 | TTS18-S | 32 | 227 | 161 | 107 | 60 | TTS100-18-DR3-3550-32-HB | 30496706 |
| 34,50-35,49 | TTS18-S | 32 | 220 | 153 | 107 | 60 | TTS100-18-DR3-3450-32-HB | 30322291 |
| 35,50-37,49 | TTS18-S | 40 | 237 | 161 | 113 | 70 | TTS100-18-DR3-3550-40-HB | 30535313 |
| 37,50-39,49 | TTS18-S | 32 | 237 | 170 | 119 | 60 | TTS100-18-DR3-3750-32-HB | 30496707 |
| 37,50-39,49 | TTS18-S | 40 | 247 | 170 | 119 | 70 | TTS100-18-DR3-3750-40-HB | 30535316 |

Continued on next page.


TTS 100 (3xD) replaceable head holder, internal coolant supply

| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 39,50-41,49 | TTS18-S | 32 | 247 | 178 | 125 | 60 | TTS100-18-DR3-3950-32-HB | 30496708 |
| 39,50-41,49 | TTS18-S | 40 | 257 | 178 | 125 | 70 | TTS100-18-DR3-3950-40-HB | 30535318 |
| 41,50-43,49 | TTS18-S | 40 | 265 | 187 | 131 | 70 | TTS100-18-DR3-4150-40-HB | 30535320 |
| 43,50-45,49 | TTS18-S | 40 | 275 | 196 | 137 | 70 | TTS100-18-DR3-4350-40-HB | 30535321 |

Configurable features



Shank form:
Shank form: HA | HE



Specification:
TTS100-18-DR5-4150-40-[shank form]

Example:

TTS100-18-DR5-4150-40-HE

Shank form HE

TTS replaceable head holder

With front clamping system for TTD replaceable head drill
TTS100 (5xD), internal coolant supply

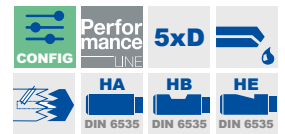
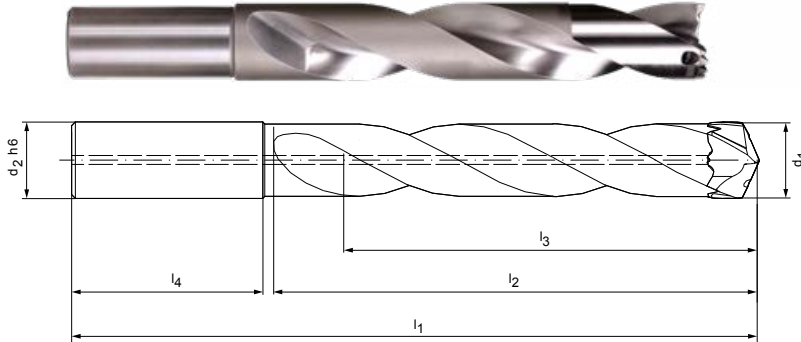
Design:

For drill diameter:

12.00 - 45.49 mm

Changing system:

Front clamping system
Head replacement on
the machine possible



Stocked preferred series


| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00-12,49 | TTS12-S | 14 | 125 | 78 | 63 | 45 | TTS100-12-DR5-1200-14-HB | 30232796 |
| 12,50-12,99 | TTS12-S | 14 | 130 | 81 | 65 | 45 | TTS100-12-DR5-1250-14-HB | 30232798 |
| 13,00-13,49 | TTS12-S | 14 | 130 | 84 | 68 | 45 | TTS100-12-DR5-1300-14-HB | 30232799 |
| 13,50-13,99 | TTS12-S | 16 | 140 | 88 | 70 | 48 | TTS100-12-DR5-1350-16-HB | 30232800 |
| 14,00-14,49 | TTS12-S | 16 | 140 | 90 | 73 | 48 | TTS100-12-DR5-1400-16-HB | 30232801 |
| 14,50-14,99 | TTS12-S | 16 | 145 | 94 | 75 | 48 | TTS100-12-DR5-1450-16-HB | 30232802 |
| 15,00-15,49 | TTS12-S | 16 | 145 | 96 | 78 | 48 | TTS100-12-DR5-1500-16-HB | 30232803 |
| 15,50-16,49 | TTS12-S | 18 | 155 | 103 | 83 | 48 | TTS100-12-DR5-1550-18-HB | 30191514 |
| 16,50-17,49 | TTS12-S | 18 | 160 | 109 | 88 | 48 | TTS100-12-DR5-1650-18-HB | 30191515 |
| 17,50-18,49 | TTS12-S | 18 | 165 | 115 | 93 | 48 | TTS100-12-DR5-1750-18-HB | 30191516 |
| 18,50-19,49 | TTS12-S | 20 | 175 | 121 | 98 | 50 | TTS100-12-DR5-1850-20-HB | 30191517 |
| 19,50-20,49 | TTS12-S | 20 | 180 | 128 | 103 | 50 | TTS100-12-DR5-1950-20-HB | 30191518 |
| 20,50-21,49 | TTS12-S | 25 | 195 | 134 | 108 | 56 | TTS100-12-DR5-2050-25-HB | 30191519 |
| 21,50-22,49 | TTS12-S | 25 | 200 | 140 | 113 | 56 | TTS100-12-DR5-2150-25-HB | 30191520 |
| 22,50-23,49 | TTS12-S | 25 | 205 | 146 | 118 | 56 | TTS100-12-DR5-2250-25-HB | 30191521 |
| 23,50-24,49 | TTS12-S | 25 | 210 | 152 | 123 | 56 | TTS100-12-DR5-2350-25-HB | 30191522 |
| 24,50-25,49 | TTS18-S | 25 | 220 | 159 | 128 | 56 | TTS100-18-DR5-2450-25-HB | 30191523 |
| 25,50-26,49 | TTS18-S | 25 | 225 | 165 | 133 | 56 | TTS100-18-DR5-2550-25-HB | 30191525 |
| 26,50-27,49 | TTS18-S | 25 | 230 | 171 | 138 | 56 | TTS100-18-DR5-2650-25-HB | 30191526 |
| 27,50-28,49 | TTS18-S | 25 | 240 | 177 | 143 | 56 | TTS100-18-DR5-2750-25-HB | 30191527 |
| 28,50-29,49 | TTS18-S | 32 | 250 | 183 | 148 | 60 | TTS100-18-DR5-2850-32-HB | 30191528 |
| 29,50-30,49 | TTS18-S | 32 | 255 | 190 | 153 | 60 | TTS100-18-DR5-2950-32-HB | 30191529 |
| 30,50-31,49 | TTS18-S | 32 | 260 | 196 | 158 | 60 | TTS100-18-DR5-3050-32-HB | 30191530 |
| 31,50-32,49 | TTS18-S | 32 | 265 | 202 | 163 | 60 | TTS100-18-DR5-3150-32-HB | 30191531 |
| 32,50-33,49 | TTS18-S | 32 | 275 | 210 | 168 | 60 | TTS100-18-DR5-3250-32-HB | 30322313 |
| 33,50-34,49 | TTS18-S | 32 | 285 | 217 | 173 | 60 | TTS100-18-DR5-3350-32-HB | 30322314 |
| 34,50-35,49 | TTS18-S | 32 | 290 | 224 | 178 | 60 | TTS100-18-DR5-3450-32-HB | 30322315 |
| 35,50-37,49 | TTS18-S | 32 | 302 | 236 | 188 | 60 | TTS100-18-DR5-3550-32-HB | 30496709 |
| *35,50-37,49 | TTS18-S | 40 | 312 | 236 | 188 | 70 | TTS100-18-DR5-3550-40-HB | 30535324 |
| 37,50-39,49 | TTS18-S | 32 | 317 | 249 | 198 | 60 | TTS100-18-DR5-3750-32-HB | 30496710 |
| *37,50-39,49 | TTS18-S | 40 | 327 | 249 | 198 | 70 | TTS100-18-DR5-3750-40-HB | 30534860 |

Continued on next page.


TTS 100 (5xD) replaceable head holder, internal coolant supply

| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 39,50-41,49 | TTS18-S | 32 | 327 | 261 | 208 | 60 | TTS100-18-DR5-3950-32-HB | 30496711 |
| *39,50-41,49 | TTS18-S | 40 | 337 | 261 | 208 | 70 | TTS100-18-DR5-3950-40-HB | 30535326 |
| *41,50-43,49 | TTS18-S | 40 | 350 | 274 | 218 | 70 | TTS100-18-DR5-4150-40-HB | 30535327 |
| *43,50-45,49 | TTS18-S | 40 | 365 | 287 | 228 | 70 | TTS100-18-DR5-4350-40-HB | 30535328 |

Configurable features



Shank form:
Shank form: HA | HE



Specification:
TTS100-18-DR5-4150-40-[shank form]

Example:

TTS100-18-DR5-4150-40-HE

Shank form HE

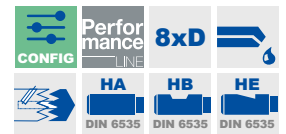
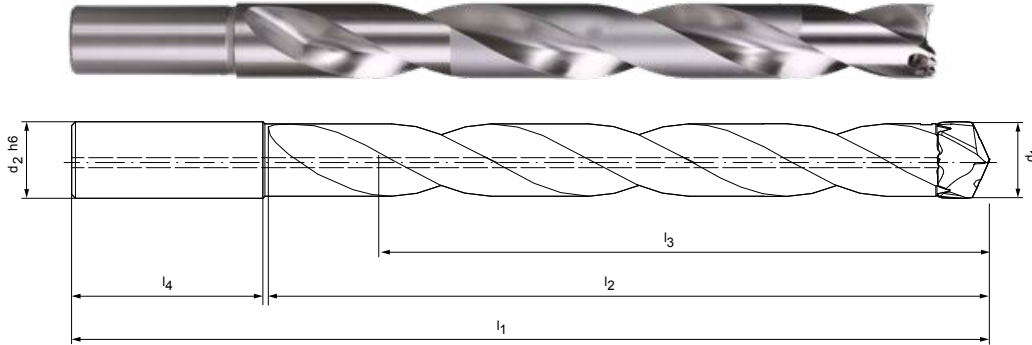
TTS replaceable head holder

With front clamping system for TTD replaceable head drill
TTS100 (8xD), internal coolant supply

Design:

For drill diameter:
Changing system:

12.00 - 45.49 mm
Front clamping system
Head replacement on
the machine possible



Stocked preferred series


| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00-12,49 | TTS12-S | 14 | 165 | 116 | 100 | 45 | TTS100-12-DR8-1200-14-HB | 30232805 |
| 12,50-12,99 | TTS12-S | 14 | 170 | 121 | 104 | 45 | TTS100-12-DR8-1250-14-HB | 30232806 |
| 13,00-13,49 | TTS12-S | 14 | 175 | 126 | 108 | 45 | TTS100-12-DR8-1300-14-HB | 30232807 |
| 13,50-13,99 | TTS12-S | 16 | 180 | 129 | 112 | 48 | TTS100-12-DR8-1350-16-HB | 30232808 |
| 14,00-14,49 | TTS12-S | 16 | 185 | 134 | 116 | 48 | TTS100-12-DR8-1400-16-HB | 30232809 |
| 14,50-14,99 | TTS12-S | 16 | 190 | 139 | 120 | 48 | TTS100-12-DR8-1450-16-HB | 30232810 |
| 15,00-15,49 | TTS12-S | 16 | 195 | 144 | 124 | 48 | TTS100-12-DR8-1500-16-HB | 30232811 |
| 15,50-16,49 | TTS12-S | 18 | 205 | 152 | 132 | 48 | TTS100-12-DR8-1550-18-HB | 30191532 |
| 16,50-17,49 | TTS12-S | 18 | 215 | 161 | 140 | 48 | TTS100-12-DR8-1650-18-HB | 30191533 |
| 17,50-18,49 | TTS12-S | 18 | 220 | 171 | 148 | 48 | TTS100-12-DR8-1750-18-HB | 30191534 |
| 18,50-19,49 | TTS12-S | 20 | 235 | 180 | 156 | 50 | TTS100-12-DR8-1850-20-HB | 30191535 |
| 19,50-20,49 | TTS12-S | 20 | 240 | 189 | 164 | 50 | TTS100-12-DR8-1950-20-HB | 30191536 |
| 20,50-21,49 | TTS12-S | 25 | 260 | 198 | 172 | 56 | TTS100-12-DR8-2050-25-HB | 30191537 |
| 21,50-22,49 | TTS12-S | 25 | 270 | 207 | 180 | 56 | TTS100-12-DR8-2150-25-HB | 30191538 |
| 22,50-23,49 | TTS12-S | 25 | 275 | 217 | 188 | 56 | TTS100-12-DR8-2250-25-HB | 30191539 |
| 23,50-24,49 | TTS12-S | 25 | 285 | 226 | 196 | 56 | TTS100-12-DR8-2350-25-HB | 30191540 |
| 24,50-25,49 | TTS18-S | 25 | 295 | 235 | 204 | 56 | TTS100-18-DR8-2450-25-HB | 30191541 |
| 25,50-26,49 | TTS18-S | 25 | 305 | 244 | 212 | 56 | TTS100-18-DR8-2550-25-HB | 30191543 |
| 26,50-27,49 | TTS18-S | 25 | 315 | 253 | 220 | 56 | TTS100-18-DR8-2650-25-HB | 30191544 |
| 27,50-28,49 | TTS18-S | 25 | 325 | 263 | 228 | 56 | TTS100-18-DR8-2750-25-HB | 30191545 |
| 28,50-29,49 | TTS18-S | 32 | 340 | 272 | 236 | 60 | TTS100-18-DR8-2850-32-HB | 30191546 |
| 29,50-30,49 | TTS18-S | 32 | 345 | 281 | 244 | 60 | TTS100-18-DR8-2950-32-HB | 30191547 |
| 30,50-31,49 | TTS18-S | 32 | 355 | 290 | 252 | 60 | TTS100-18-DR8-3050-32-HB | 30191548 |
| 31,50-32,49 | TTS18-S | 32 | 360 | 299 | 260 | 60 | TTS100-18-DR8-3150-32-HB | 30191549 |
| 32,50 - 33,49 | TTS18-S | 32 | 375 | 275 | 268 | 60 | TTS100-18-DR8-3250-32-HB | 30809129 |
| 33,50 - 34,49 | TTS18-S | 32 | 385 | 317 | 276 | 60 | TTS100-18-DR8-3350-32-HB | 30809654 |
| 34,50 - 35,49 | TTS18-S | 32 | 395 | 329 | 284 | 60 | TTS100-18-DR8-3450-32-HB | 30809664 |
| 35,50 - 37,49 | TTS18-S | 32 | 402 | 336 | 300 | 60 | TTS100-18-DR8-3550-32-HB | 30812380 |
| 35,50 - 37,49 | TTS18-S | 40 | 412 | 336 | 300 | 70 | TTS100-18-DR8-3550-40-HB | 30809673 |

Continued on next page.


TTS 100 (8xD) replaceable head holder, internal coolant supply

| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 37,50 - 39,49 | TTS18-S | 32 | 421 | 353 | 316 | 60 | TTS100-18-DR8-3750-32-HB | 30812379 |
| 37,50 - 39,49 | TTS18-S | 40 | 431 | 353 | 316 | 70 | TTS100-18-DR8-3750-40-HB | 30809961 |
| 39,50 - 41,49 | TTS18-S | 32 | 440 | 374 | 332 | 70 | TTS100-18-DR8-3950-32-HB | 30812376 |
| 39,50 - 41,49 | TTS18-S | 40 | 450 | 374 | 332 | 70 | TTS100-18-DR8-3950-40-HB | 30809964 |
| 41,50 - 43,49 | TTS18-S | 40 | 470 | 394 | 348 | 70 | TTS100-18-DR8-4150-40-HB | 30809976 |
| 43,50 - 45,49 | TTS18-S | 40 | 500 | 422 | 364 | 70 | TTS100-18-DR8-4350-40-HB | 30809158 |

Configurable features



Shank form:
Shank form: HA | HE



Specification:
TTS100-18-DR8-4150-40-[shank form]

Example:

TTS100-18-DR8-4150-40-HE

Shank form HE

TTS replaceable head holder

With front clamping system for TTD replaceable head drill
TTS100 (12xD), internal coolant supply

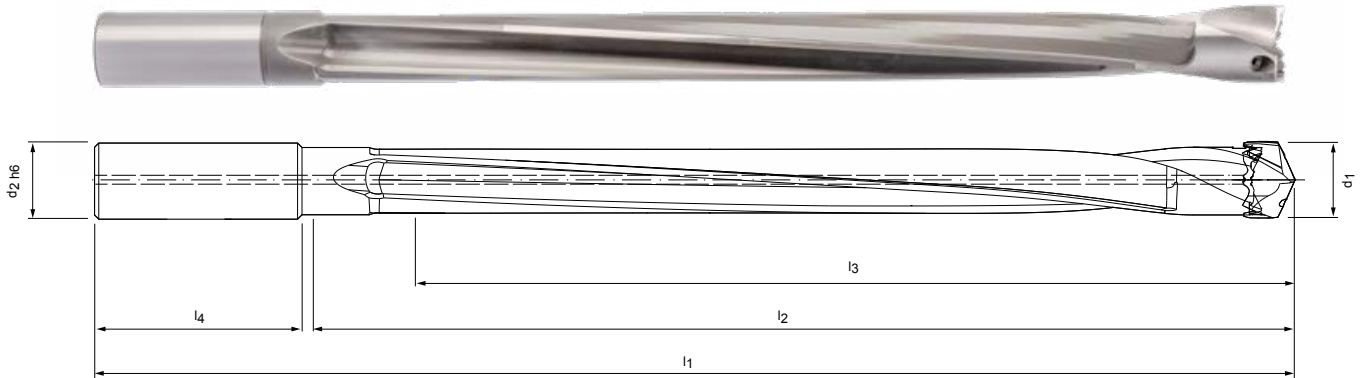
Design:

For drill diameter:

12.00 - 32.49 mm

Changing system:

Front clamping system
Head replacement on
the machine possible



Stocked preferred series

| Dimensions | | | | | | | Shank form HB | |
|----------------|------------|-------------------|----------------|----------------|----------------|----------------|---------------------------|-----------|
| d ₁ | Connection | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00-12,49 | TTS12-S | 14 | 210 | 162 | 150 | 45 | TTS100-12-DR12-1200-14-HB | 30327798 |
| 12,50-12,99 | TTS12-S | 14 | 216 | 168 | 156 | 45 | TTS100-12-DR12-1250-14-HB | 30327802 |
| 13,00-13,49 | TTS12-S | 14 | 223 | 175 | 162 | 45 | TTS100-12-DR12-1300-14-HB | 30327805 |
| 13,50-13,99 | TTS12-S | 16 | 235 | 182 | 168 | 48 | TTS100-12-DR12-1350-16-HB | 30327808 |
| 14,00-14,49 | TTS12-S | 16 | 242 | 189 | 174 | 48 | TTS100-12-DR12-1400-16-HB | 30327811 |
| 14,50-14,99 | TTS12-S | 16 | 248 | 195 | 180 | 48 | TTS100-12-DR12-1450-16-HB | 30327814 |
| 15,00-15,49 | TTS12-S | 16 | 255 | 202 | 186 | 48 | TTS100-12-DR12-1500-16-HB | 30327817 |
| 15,50-16,49 | TTS12-S | 18 | 262 | 209 | 198 | 48 | TTS100-12-DR12-1550-18-HB | 30327820 |
| 16,50-17,49 | TTS12-S | 18 | 275 | 222 | 210 | 48 | TTS100-12-DR12-1650-18-HB | 30327824 |
| 17,50-18,49 | TTS12-S | 18 | 289 | 236 | 222 | 48 | TTS100-12-DR12-1750-18-HB | 30327828 |
| 18,50-19,49 | TTS12-S | 20 | 304 | 249 | 234 | 50 | TTS100-12-DR12-1850-20-HB | 30327833 |
| 19,50-20,49 | TTS12-S | 20 | 318 | 263 | 246 | 50 | TTS100-12-DR12-1950-20-HB | 30255588 |
| 20,50-21,49 | TTS12-S | 25 | 337 | 276 | 258 | 56 | TTS100-12-DR12-2050-25-HB | 30327844 |
| 21,50-22,49 | TTS12-S | 25 | 351 | 290 | 270 | 56 | TTS100-12-DR12-2150-25-HB | 30327847 |
| 22,50-23,49 | TTS12-S | 25 | 364 | 303 | 282 | 56 | TTS100-12-DR12-2250-25-HB | 30327851 |
| 23,50-24,49 | TTS12-S | 25 | 378 | 317 | 294 | 56 | TTS100-12-DR12-2350-25-HB | 30327854 |
| 24,50-25,49 | TTS18-S | 25 | 391 | 330 | 306 | 56 | TTS100-18-DR12-2450-25-HB | 30327859 |
| 25,50-26,49 | TTS18-S | 25 | 405 | 344 | 318 | 56 | TTS100-18-DR12-2550-25-HB | 30327863 |
| 26,50-27,49 | TTS18-S | 25 | 418 | 357 | 330 | 56 | TTS100-18-DR12-2650-25-HB | 30327866 |
| 27,50-28,49 | TTS18-S | 25 | 432 | 371 | 342 | 56 | TTS100-18-DR12-2750-25-HB | 30327870 |
| 28,50-29,49 | TTS18-S | 32 | 449 | 384 | 354 | 60 | TTS100-18-DR12-2850-32-HB | 30327873 |
| 29,50-30,49 | TTS18-S | 32 | 463 | 398 | 366 | 60 | TTS100-18-DR12-2950-32-HB | 30327876 |
| 30,50-31,49 | TTS18-S | 32 | 476 | 411 | 378 | 60 | TTS100-18-DR12-3050-32-HB | 30327879 |
| 31,50-32,49 | TTS18-S | 32 | 490 | 425 | 390 | 60 | TTS100-18-DR12-3150-32-HB | 30327883 |

Configurable features



Shank form:
Shank form: HA | HE



Specification:

TTS100-18-DR12-4150-40-[shank form]

Example:

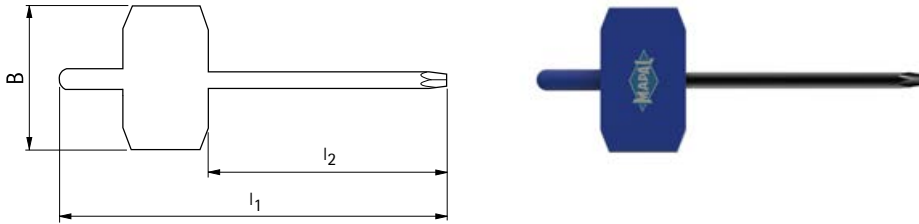
TTS100-18-DR12-4150-40-HE

Shank form HE

Dimensions in mm.

Pay attention to the handling notes for the TTD (12xD) replaceable head drill on page 748. Special designs available upon request.

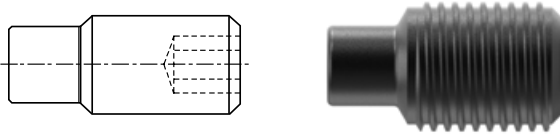
Spare parts



Hexagonal wrench

| Tool holder type | sw | l_1 | l_2 | B | Order no. |
|-------------------------|-----|-------|-------|----|-----------|
| TS100-12-DRx-1200-14-HB | 1,3 | 95 | 60 | 38 | 10004355 |
| TS100-12-DRx-1250-14-HB | 1,3 | 95 | 60 | 38 | 10004355 |
| TS100-12-DRx-1300-14-HB | 1,3 | 95 | 60 | 38 | 10004355 |
| TS100-12-DRx-1350-16-HB | 1,5 | 95 | 60 | 38 | 10098108 |
| TS100-12-DRx-1400-16-HB | 1,5 | 95 | 60 | 38 | 10098108 |
| TS100-12-DRx-1450-16-HB | 1,5 | 95 | 60 | 38 | 10098108 |
| TS100-12-DRx-1500-16-HB | 1,5 | 95 | 60 | 38 | 10098108 |
| TS100-12-DRx-1550-18-HB | 1,5 | 95 | 60 | 38 | 10098108 |
| TS100-12-DRx-1650-18-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-12-DRx-1750-18-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-12-DRx-1850-20-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-12-DRx-1950-20-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-12-DRx-2050-25-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-12-DRx-2150-25-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-12-DRx-2250-25-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-12-DRx-2350-25-HB | 2 | 95 | 60 | 38 | 10098109 |
| TS100-18-DRx-2450-25-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-2550-25-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-2650-25-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-2750-25-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-2850-32-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-2950-32-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-3050-32-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-3150-32-HB | 2,5 | 95 | 60 | 38 | 10098110 |
| TS100-18-DRx-3250-32-HB | 3 | 100 | 60 | 38 | 10006234 |
| TS100-18-DRx-3350-32-HB | 3 | 100 | 60 | 38 | 10006234 |
| TS100-18-DRx-3450-32-HB | 3 | 100 | 60 | 38 | 10006234 |
| TS100-18-DRx-3550-40-HB | 3 | 100 | 60 | 38 | 10006234 |
| TS100-18-DRx-3750-40-HB | 3 | 100 | 60 | 38 | 10006234 |
| TS100-18-DRx-3950-40-HB | 3 | 100 | 60 | 38 | 10006234 |
| TS100-18-DRx-4150-40-HB | 4 | 100 | 60 | 38 | 10006235 |
| TS100-18-DRx-4350-40-HB | 4 | 100 | 60 | 38 | 10006235 |

Threaded pin



| Tool holder type | Threaded pin | Order no. |
|-------------------------|--------------|-----------|
| TS100-12-DRx-1200-14-HB | M2,5x5 | 30259117 |
| TS100-12-DRx-1250-14-HB | M2,5x6 | 30259118 |
| TS100-12-DRx-1300-14-HB | M2,5x6 | 30259118 |
| TS100-12-DRx-1350-16-HB | M3x6 | 30259119 |
| TS100-12-DRx-1400-16-HB | M3x6 | 30259119 |
| TS100-12-DRx-1450-16-HB | M3x7 | 30193231 |
| TS100-12-DRx-1500-16-HB | M3x7 | 30193231 |
| TS100-12-DRx-1550-18-HB | M3x0,5x7 | 30193231 |
| TS100-12-DRx-1650-18-HB | M4x0,5x7,5 | 30193232 |
| TS100-12-DRx-1750-18-HB | M4x0,5x7,5 | 30193232 |
| TS100-12-DRx-1850-20-HB | M4x0,5x7,5 | 30193232 |
| TS100-12-DRx-1950-20-HB | M4x0,5x7,5 | 30193232 |
| TS100-12-DRx-2050-25-HB | M4x0,5x10 | 30193233 |
| TS100-12-DRx-2150-25-HB | M4x0,5x10 | 30193233 |
| TS100-12-DRx-2250-25-HB | M4x0,5x10 | 30193233 |
| TS100-12-DRx-2350-25-HB | M4x0,5x10 | 30193233 |
| TS100-18-DRx-2450-25-HB | M5x0,5x11 | 30193234 |
| TS100-18-DRx-2550-25-HB | M5x0,5x11 | 30193234 |
| TS100-18-DRx-2650-25-HB | M5x0,5x11 | 30193234 |
| TS100-18-DRx-2750-25-HB | M5x0,5x11 | 30193234 |
| TS100-18-DRx-2850-32-HB | M5x0,5x14 | 30193235 |
| TS100-18-DRx-2950-32-HB | M5x0,5x14 | 30193235 |
| TS100-18-DRx-3050-32-HB | M5x0,5x14 | 30193235 |
| TS100-18-DRx-3150-32-HB | M5x0,5x14 | 30193235 |
| TS100-18-DRx-3250-32-HB | M6x0,5x16 | 30320812 |
| TS100-18-DRx-3350-32-HB | M6x0,5x16 | 30320812 |
| TS100-18-DRx-3450-32-HB | M6x0,5x16 | 30320812 |
| TS100-18-DRx-3550-40-HB | M6x0,5x18 | 30320811 |
| TS100-18-DRx-3750-40-HB | M6x0,5x18 | 30320811 |
| TS100-18-DRx-3950-40-HB | M6x0,5x20 | 30320810 |
| TS100-18-DRx-4150-40-HB | M8x1x20 | 30320806 |
| TS100-18-DRx-4350-40-HB | M8x1x20 | 30320806 |

Cutting data recommendation for TTD replaceable head drills

Feed and cutting speed

Type 01 – Uni-Plus

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|-----------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| P5 | P5.1 Cast steel | | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

Type 04 – Steel

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| P4 | P4.1 Stainless steels, ferritic and martensitic | | |
| P5 | P5.1 Cast steel | | |
| P6 | P6.1 Stainless cast steel, ferritic and martensitic | | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

Type 03 – Alu

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|----|--|---|
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | |
| | | N1.4 Aluminium, alloy > 12 % Si | |
| | N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | | N2.2 Copper, alloy | > 300 |
| | | N2.3 Brass, bronze, gunmetal | < 1,200 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 12.00 | 15.50 | 19.50 | 25.00 | 32.00 | 40.00 |
| | 110 | 100 | 100 | | 0.23 | 0.26 | 0.29 | 0.32 | 0.33 | 0.33 |
| | 100 | 85 | 85 | | 0.29 | 0.33 | 0.37 | 0.40 | 0.41 | 0.41 |
| | 110 | 95 | 95 | | 0.27 | 0.31 | 0.35 | 0.37 | 0.39 | 0.39 |
| | 75 | 65 | 65 | | 0.22 | 0.25 | 0.27 | 0.30 | 0.31 | 0.31 |
| | 85 | 70 | 70 | | 0.24 | 0.28 | 0.31 | 0.34 | 0.35 | 0.35 |
| | 65 | 60 | 60 | | 0.20 | 0.23 | 0.25 | 0.27 | 0.28 | 0.29 |
| | 65 | 50 | 55 | | 0.16 | 0.18 | 0.20 | 0.21 | 0.22 | 0.22 |
| | 110 | 95 | 95 | | 0.27 | 0.31 | 0.35 | 0.37 | 0.39 | 0.39 |
| | 110 | 75 | 75 | 75 | 0.34 | 0.39 | 0.44 | 0.48 | 0.49 | 0.49 |
| | 145 | 90 | 110 | 110 | 0.31 | 0.36 | 0.40 | 0.44 | 0.45 | 0.46 |
| | 90 | 70 | 70 | | 0.27 | 0.31 | 0.35 | 0.38 | 0.39 | 0.39 |
| | 55 | 35 | 45 | | 0.18 | 0.21 | 0.23 | 0.25 | 0.26 | 0.26 |
| | 80 | 70 | 70 | | 0.29 | 0.34 | 0.37 | 0.40 | 0.42 | 0.42 |
| | 70 | 65 | 65 | | 0.23 | 0.27 | 0.30 | 0.32 | 0.33 | 0.33 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 12.00 | 15.50 | 19.50 | 25.00 | 32.00 | 40.00 |
| | 110 | 100 | 100 | | 0.26 | 0.30 | 0.34 | 0.36 | 0.38 | 0.38 |
| | 100 | 85 | 85 | | 0.33 | 0.38 | 0.42 | 0.46 | 0.47 | 0.47 |
| | 110 | 95 | 95 | | 0.31 | 0.36 | 0.40 | 0.43 | 0.45 | 0.45 |
| | 75 | 65 | 65 | | 0.25 | 0.28 | 0.31 | 0.34 | 0.35 | 0.35 |
| | 85 | 70 | 70 | | 0.28 | 0.32 | 0.36 | 0.39 | 0.40 | 0.41 |
| | 65 | 60 | 60 | | 0.23 | 0.26 | 0.29 | 0.32 | 0.33 | 0.33 |
| | 65 | 50 | 55 | | 0.18 | 0.20 | 0.23 | 0.24 | 0.25 | 0.25 |
| | 65 | 50 | 55 | | 0.18 | 0.21 | 0.24 | 0.25 | 0.26 | 0.27 |
| | 110 | 95 | 95 | | 0.31 | 0.36 | 0.40 | 0.43 | 0.45 | 0.45 |
| | 110 | 75 | 75 | 75 | 0.37 | 0.44 | 0.49 | 0.53 | 0.55 | 0.55 |
| | 145 | 90 | 110 | 110 | 0.35 | 0.40 | 0.45 | 0.49 | 0.50 | 0.51 |
| | 90 | 70 | 70 | | 0.30 | 0.35 | 0.39 | 0.42 | 0.43 | 0.43 |
| | 55 | 35 | 45 | | 0.20 | 0.23 | 0.25 | 0.27 | 0.28 | 0.29 |
| | 80 | 70 | 70 | | 0.32 | 0.37 | 0.41 | 0.45 | 0.47 | 0.47 |
| | 70 | 65 | 65 | | 0.26 | 0.30 | 0.33 | 0.35 | 0.37 | 0.37 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 12.00 | 15.50 | 19.50 | 25.00 | 32.00 | 40.00 |
| | 300 | 200 | 250 | | 0.23 | 0.26 | 0.29 | 0.32 | 0.33 | 0.33 |
| | 250 | 180 | 200 | | 0.30 | 0.35 | 0.39 | 0.42 | 0.43 | 0.43 |
| | 220 | 150 | 180 | | 0.30 | 0.35 | 0.39 | 0.42 | 0.43 | 0.43 |
| | 180 | 120 | 150 | | 0.30 | 0.35 | 0.39 | 0.42 | 0.43 | 0.43 |
| | 140 | 100 | | | 0.23 | 0.26 | 0.29 | 0.32 | 0.33 | 0.33 |
| | 120 | 90 | | | 0.30 | 0.35 | 0.39 | 0.42 | 0.43 | 0.43 |
| | 200 | 160 | 160 | 120 | 0.37 | 0.44 | 0.49 | 0.53 | 0.55 | 0.55 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for TTD replaceable head drills

Feed and cutting speed

Type 02 – Inox

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|---|---|--|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4.1 Stainless steels, ferritic and martensitic | |
| | P5.1 Cast steel | |
| P6.1 Stainless cast steel, ferritic and martensitic | | |
| M | M1.1 Stainless steels, austenitic | < 700 |
| | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |
| N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | N2.2 Copper, alloy | > 300 |
| | N2.3 Brass, bronze, gunmetal | < 1,200 |
| S | S1.1 Titanium, titanium alloys | < 400 |
| | S2.1 Titanium, titanium alloys | < 1,200 |
| | S2.2 Titanium, titanium alloys | > 1,200 |
| | S3.1 Nickel, unalloyed and alloyed | < 900 |
| | S3.2 Nickel, unalloyed and alloyed | > 900 |
| | S4.1 High-temperature super alloy Ni, Co and Fe-based | |
| | S5.1 Tungsten and molybdenum alloys | |

Type 05 – Iron

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|--|--|
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

* MAPAL machining groups

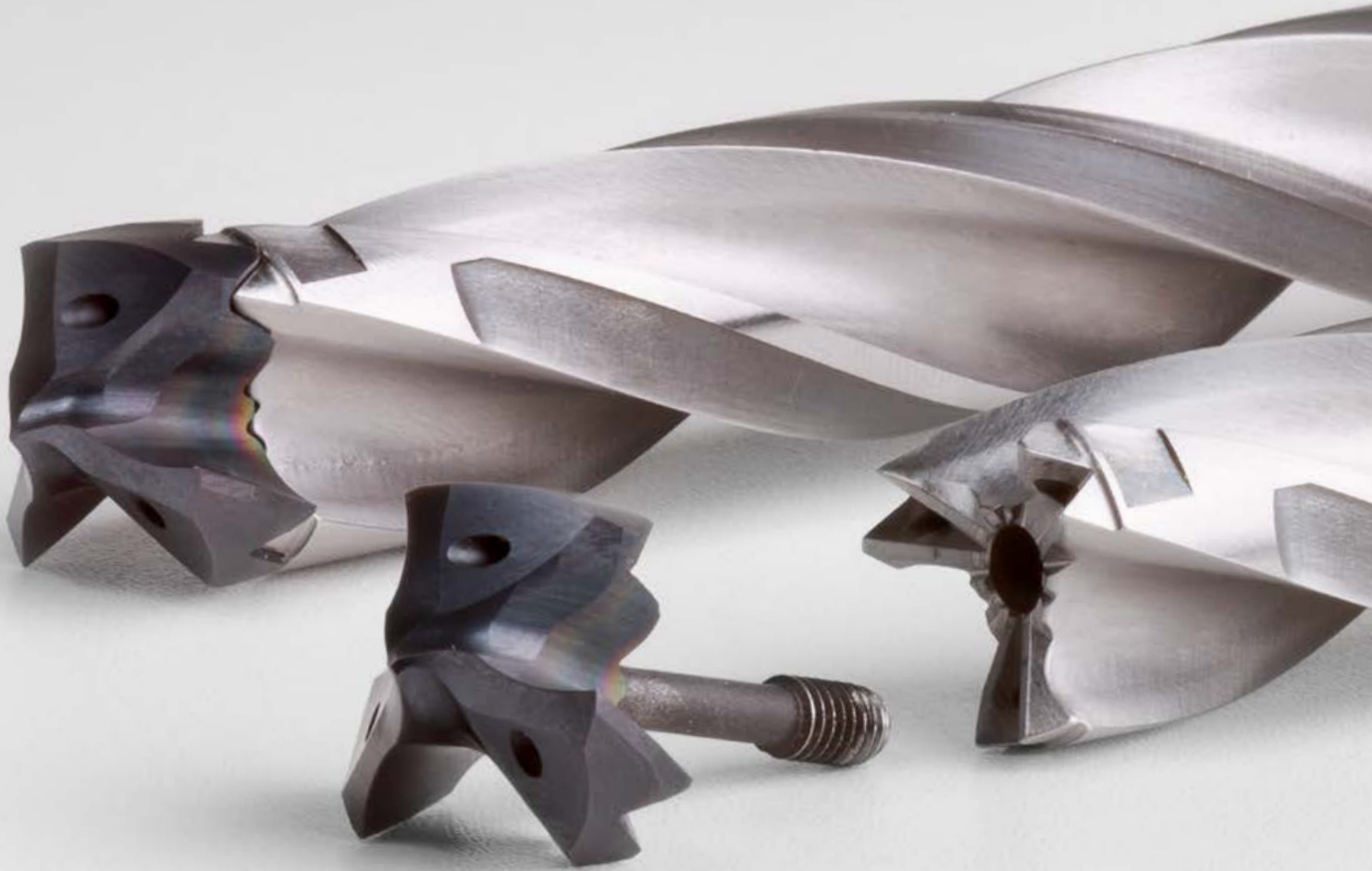
** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 12.00 | 15.50 | 19.50 | 25.00 | 32.00 | 40.00 |
| | 100 | 90 | 90 | | 0.21 | 0.24 | 0.26 | 0.28 | 0.30 | 0.30 |
| | 90 | 75 | 75 | | 0.26 | 0.30 | 0.33 | 0.36 | 0.37 | 0.37 |
| | 100 | 85 | 85 | | 0.24 | 0.28 | 0.31 | 0.34 | 0.35 | 0.35 |
| | 70 | 60 | 60 | | 0.19 | 0.22 | 0.25 | 0.27 | 0.28 | 0.28 |
| | 75 | 65 | 65 | | 0.22 | 0.25 | 0.28 | 0.30 | 0.32 | 0.32 |
| | 60 | 55 | 55 | | 0.18 | 0.21 | 0.23 | 0.25 | 0.26 | 0.26 |
| | 60 | 45 | 50 | | 0.14 | 0.16 | 0.18 | 0.19 | 0.20 | 0.20 |
| | 60 | 45 | 50 | | 0.14 | 0.17 | 0.18 | 0.20 | 0.21 | 0.21 |
| | 100 | 85 | 85 | | 0.24 | 0.28 | 0.31 | 0.34 | 0.35 | 0.35 |
| | 60 | 45 | 50 | | 0.14 | 0.17 | 0.18 | 0.20 | 0.21 | 0.21 |
| | 55 | 35 | 35 | | 0.18 | 0.21 | 0.24 | 0.25 | 0.26 | 0.27 |
| | 50 | 30 | 30 | | 0.16 | 0.18 | 0.20 | 0.22 | 0.23 | 0.23 |
| | 55 | 35 | 35 | | 0.18 | 0.21 | 0.24 | 0.25 | 0.26 | 0.27 |
| | 50 | 30 | 30 | | 0.16 | 0.18 | 0.20 | 0.22 | 0.23 | 0.23 |
| | 95 | 70 | 70 | 70 | 0.34 | 0.39 | 0.44 | 0.48 | 0.49 | 0.49 |
| | 130 | 80 | 95 | 95 | 0.31 | 0.36 | 0.40 | 0.44 | 0.45 | 0.46 |
| | 80 | 60 | 60 | | 0.27 | 0.31 | 0.35 | 0.38 | 0.39 | 0.39 |
| | 50 | 30 | 40 | | 0.18 | 0.21 | 0.23 | 0.25 | 0.26 | 0.26 |
| | 70 | 65 | 65 | | 0.29 | 0.34 | 0.37 | 0.40 | 0.42 | 0.42 |
| | 65 | 55 | 55 | | 0.23 | 0.27 | 0.30 | 0.32 | 0.33 | 0.33 |
| | 140 | 100 | | | 0.23 | 0.26 | 0.29 | 0.32 | 0.33 | 0.33 |
| | 120 | 90 | | | 0.30 | 0.35 | 0.39 | 0.42 | 0.43 | 0.43 |
| | 200 | 160 | 160 | 120 | 0.37 | 0.44 | 0.49 | 0.53 | 0.55 | 0.55 |
| | 40 | 25 | | | 0.16 | 0.18 | 0.21 | 0.22 | 0.23 | 0.23 |
| | 30 | 20 | | | 0.14 | 0.16 | 0.18 | 0.19 | 0.20 | 0.20 |
| | 25 | 15 | | | 0.11 | 0.13 | 0.15 | 0.16 | 0.16 | 0.17 |
| | 20 | 15 | | | 0.09 | 0.11 | 0.12 | 0.13 | 0.13 | 0.13 |
| | 15 | 10 | | | 0.11 | 0.13 | 0.15 | 0.16 | 0.16 | 0.17 |
| | 15 | 10 | | | 0.09 | 0.11 | 0.12 | 0.13 | 0.13 | 0.13 |
| | 15 | 10 | | | 0.09 | 0.11 | 0.12 | 0.13 | 0.13 | 0.13 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 12.00 | 15.50 | 19.50 | 25.00 | 32.00 | 40.00 |
| | 120 | 85 | 85 | 85 | 0.45 | 0.52 | 0.58 | 0.63 | 0.66 | 0.66 |
| | 160 | 100 | 120 | 120 | 0.42 | 0.48 | 0.54 | 0.58 | 0.60 | 0.61 |
| | 100 | 75 | 75 | | 0.36 | 0.42 | 0.46 | 0.50 | 0.52 | 0.52 |
| | 60 | 40 | 50 | | 0.24 | 0.28 | 0.30 | 0.33 | 0.34 | 0.34 |
| | 90 | 80 | 80 | | 0.39 | 0.45 | 0.50 | 0.54 | 0.56 | 0.56 |
| | 80 | 70 | 70 | | 0.31 | 0.36 | 0.39 | 0.43 | 0.44 | 0.44 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



TTD-TRITAN REPLACEABLE HEAD DRILL

Minimised usage of carbide with highest stability and precision

The triple-edge Tritan-Drill is also available as a replaceable head variant.

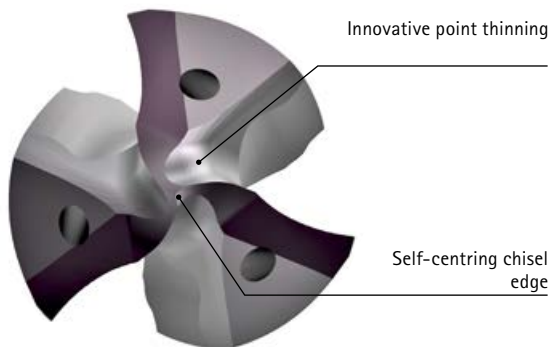
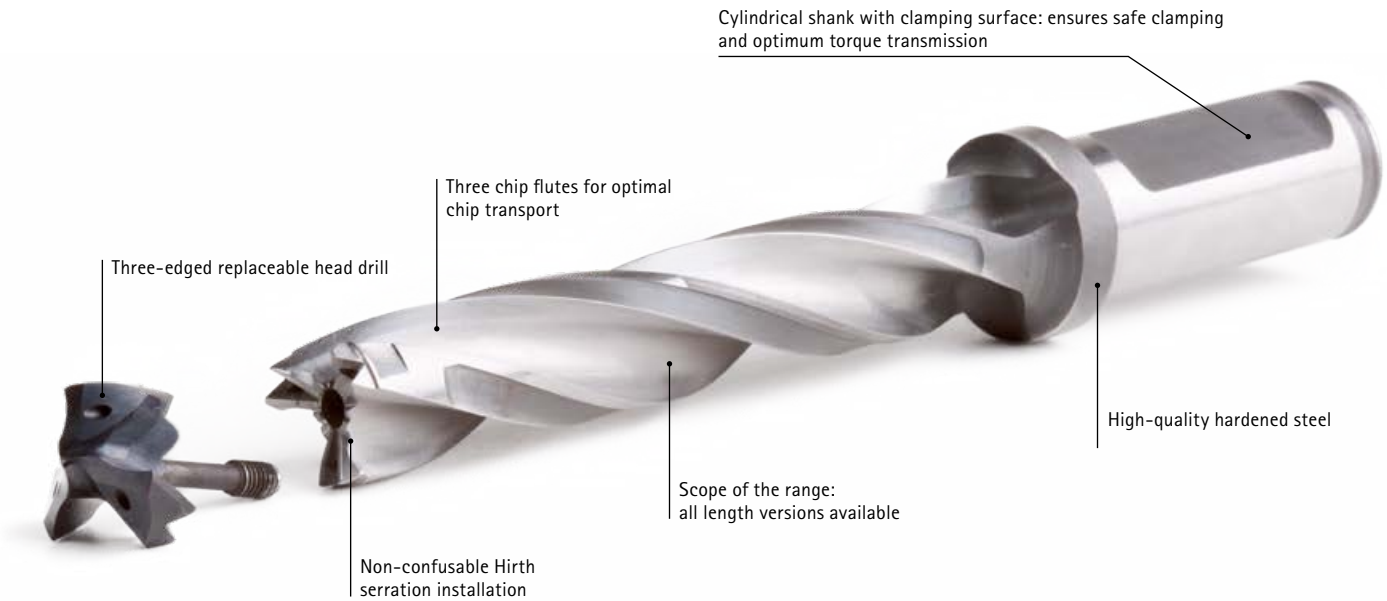
The tool head and tool holder are joined by Hirth serrations. This connection is particularly stable so that all the benefits and the performance level of the solid carbide equivalent are fully retained with the replaceable head variant. The stability of the connection derives among other things from the triple edge that is predestined for a replaceable head system.

The three cutting edges ensure a homogeneous load on the connection so that the forces occurring during machining are transmitted uniformly to the steel tool holder. In addition, the cut guarantees optimal torque transmission while simultaneously achieving high changeover and radial run-out accuracy.

Compared to double edged replaceable head drills produced of solid carbide, feed rates up to twice as high can be realised using the TTD-Tritan.

As a result, it can be used reliably and stably even in difficult drilling situations, such as with inclined bore entrance or in cross bores. The tool can be perfectly centred via its pronounced drill tip and ensures very good roundness – at lower costs than with solid carbide drills too, because with the new replaceable head system, expensive carbide is only needed at the head. Lower costs are thus guaranteed even with large diameters.

Tool features in detail



AT A GLANCE

- Three-edged replaceable head drill
- \varnothing range 12.00 to 32.49 mm
- Drilling depths 3 | 5 and 8xD
- With internal cooling
- Easy handling
- Head replacement on the machine possible

PERFORMANCE FEATURES

- Up to twice the feed compared to double edged replaceable head drills
- High exchange accuracy and radial run-out accuracy
- Ideal for inclined bore entrances
- Tool centres optimally due to its pronounced drill tip
- High level of torque transmission

ADVANTAGES

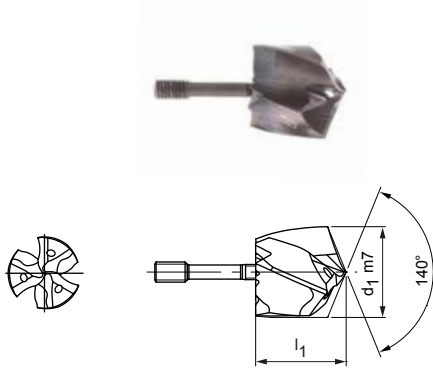
- Significant increase in feed rate and tool life
- Tritan geometry for good bore results
- High process reliability and stability even in difficult drilling situations
- Homogeneous load on the connection due to the three cutting edges

TTD-Tritan replaceable drill head

Produced from solid carbide, internal coolant supply
Type 01 - Uni

Design:

Drill diameter: 12.00 – 32.49 mm
Bore tolerance: IT 9 (achievable)
Cutting material: HP926
Number of cutting edges: 3
Number of guiding chamfers: 3
Tip angle: 140°




Stocked preferred series

| d ₁ from 13.50 to 20.00 | | |
|------------------------------------|------------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 13,50 | TTD300-3F01-1350-HP926 | 30871173 |
| 14,00 | TTD300-3F01-1400-HP926 | 30871178 |
| 14,40 | TTD300-3F01-1440-HP926 | 30871182 |
| 14,60 | TTD300-3F01-1460-HP926 | 30871184 |
| 15,00 | TTD300-3F01-1500-HP926 | 30871188 |
| 15,10 | TTD300-3F01-1510-HP926 | 30871189 |
| 15,20 | TTD300-3F01-1520-HP926 | 30871190 |
| 15,38 | TTD300-3F01-1538-HP926 | 31290822 |
| 15,40 | TTD300-3F01-1540-HP926 | 30871192 |
| 16,00 | TTD300-3F01-1600-HP926 | 30871198 |
| 16,50 | TTD300-3F01-1650-HP926 | 30871203 |
| 17,00 | TTD300-3F01-1700-HP926 | 30871209 |
| 17,50 | TTD300-3F01-1750-HP926 | 30871214 |
| 18,00 | TTD300-3F01-1800-HP926 | 30871219 |
| 18,50 | TTD300-3F01-1850-HP926 | 30871224 |
| 19,00 | TTD300-3F01-1900-HP926 | 30871229 |
| 19,80 | TTD300-3F01-1980-HP926 | 30871237 |
| 20,00 | TTD300-3F01-2000-HP926 | 30871239 |

| d ₁ from 20.50 to 32.00 | | |
|------------------------------------|------------------------|-----------|
| d ₁ m7 | Specification | Order no. |
| 20,50 | TTD300-3F01-2050-HP926 | 30871244 |
| 21,00 | TTD300-3F01-2100-HP926 | 30871249 |
| 22,00 | TTD300-3F01-2200-HP926 | 30871259 |
| 24,00 | TTD300-3F01-2400-HP926 | 30871279 |
| 24,70 | TTD300-3F01-2470-HP926 | 30871287 |
| 25,00 | TTD300-3F01-2500-HP926 | 30871290 |
| 25,10 | TTD300-3F01-2510-HP926 | 30871291 |
| 25,20 | TTD300-3F01-2520-HP926 | 30871292 |
| 26,00 | TTD300-3F01-2600-HP926 | 30871300 |
| 26,10 | TTD300-3F01-2610-HP926 | 30871301 |
| 26,50 | TTD300-3F01-2650-HP926 | 30871305 |
| 27,00 | TTD300-3F01-2700-HP926 | 30871310 |
| 27,10 | TTD300-3F01-2710-HP926 | 30871311 |
| 28,00 | TTD300-3F01-2800-HP926 | 30871320 |
| 28,50 | TTD300-3F01-2850-HP926 | 30871325 |
| 31,00 | TTD300-3F01-3100-HP926 | 30871350 |
| 32,00 | TTD300-3F01-3200-HP926 | 30871360 |

Configurable features



Diameter:
Diameter in increments of 0.01 mm freely selectable

Specification:
TTD300-3F01-[diameter]-HP929

Dimensions of configurable series

| d ₁ min. | d ₁ max. |
|---------------------|---------------------|
| 12,00 | 32,49 |

Example:
TTD300-4F03-1401-HP619

Tool diameter d₁ = 14.01 mm

Dimensions in mm.
For cutting data recommendations, see end of chapter.
Special designs and other coatings available upon request.

TTS replaceable head holder

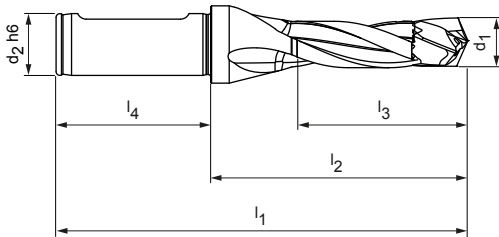
TTS300 with axial clamping system for TTD-Tritan (3xD) replaceable head drill, internal coolant supply

Design:

Drill diameter: 12.00 – 32.49 mm
Changing system: Central clamping over coolant bore

Comment:

Assembly tool included in scope of delivery.


Stocked preferred series

| Dimensions | | | | | | Shank form HB | |
|----------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 14,00 - 14,49 | 16 | 120 | 72 | 48 | 48 | TTS300B-1400-DR3-ZYL-16-MN | 30839684 |
| 14,50 - 14,99 | 16 | 122 | 74 | 49 | 48 | TTS300B-1450-DR3-ZYL-16-MN | 30839685 |
| 15,00 - 15,49 | 16 | 124 | 76 | 51 | 48 | TTS300B-1500-DR3-ZYL-16-MN | 30839686 |
| 17,50 - 18,49 | 20 | 140 | 90 | 61 | 50 | TTS300B-1750-DR3-ZYL-20-MN | 30839689 |
| 18,50 - 19,49 | 25 | 150 | 94 | 64 | 56 | TTS300B-1850-DR3-ZYL-25-MN | 30839690 |
| 20,50 - 21,49 | 25 | 159 | 103 | 71 | 56 | TTS300B-2050-DR3-ZYL-25-MN | 30839692 |
| 21,50 - 22,49 | 25 | 164 | 108 | 74 | 56 | TTS300B-2150-DR3-ZYL-25-MN | 30839693 |
| 24,50 - 25,49 | 32 | 182 | 122 | 84 | 60 | TTS300B-2450-DR3-ZYL-32-MN | 30839696 |
| 26,50 - 27,49 | 32 | 191 | 131 | 91 | 60 | TTS300B-2650-DR3-ZYL-32-MN | 30839698 |

Available on request

| Dimensions | | | | | | Shank form HB | |
|----------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00 - 12,49 | 16 | 111 | 63 | 39 | 48 | TTS300B-1200-DR3-ZYL-16-MN | 30839680 |
| 12,50 - 12,99 | 16 | 113 | 65 | 43 | 48 | TTS300B-1250-DR3-ZYL-16-MN | 30839681 |
| 13,00 - 13,49 | 16 | 115 | 67 | 45 | 48 | TTS300B-1300-DR3-ZYL-16-MN | 30839682 |
| 13,50 - 13,99 | 16 | 117 | 69 | 46 | 48 | TTS300B-1350-DR3-ZYL-16-MN | 30839683 |
| 15,50 - 16,49 | 20 | 131 | 81 | 54 | 50 | TTS300B-1550-DR3-ZYL-20-MN | 30839687 |
| 16,50 - 17,49 | 20 | 135 | 85 | 58 | 50 | TTS300B-1650-DR3-ZYL-20-MN | 30839688 |
| 19,50 - 20,49 | 25 | 155 | 99 | 68 | 56 | TTS300B-1950-DR3-ZYL-25-MN | 30839691 |
| 22,50 - 23,49 | 25 | 168 | 112 | 78 | 56 | TTS300B-2250-DR3-ZYL-25-MN | 30839694 |
| 23,50 - 24,49 | 25 | 173 | 117 | 81 | 56 | TTS300B-2350-DR3-ZYL-25-MN | 30839695 |
| 25,50 - 26,49 | 32 | 186 | 126 | 87 | 60 | TTS300B-2550-DR3-ZYL-32-MN | 30839697 |
| 27,50 - 28,49 | 32 | 195 | 135 | 94 | 60 | TTS300B-2750-DR3-ZYL-32-MN | 30839699 |
| 28,50 - 29,49 | 32 | 200 | 140 | 97 | 60 | TTS300B-2850-DR3-ZYL-32-MN | 30839700 |
| 29,50 - 30,49 | 32 | 204 | 144 | 101 | 60 | TTS300B-2950-DR3-ZYL-32-MN | 30839701 |
| 30,50 - 31,49 | 32 | 209 | 149 | 104 | 60 | TTS300B-3050-DR3-ZYL-32-MN | 30839702 |
| 31,50 - 32,49 | 32 | 213 | 153 | 107 | 60 | TTS300B-3150-DR3-ZYL-32-MN | 30839703 |

Dimensions in mm.

Special designs available upon request.

TTS replaceable head holder

TTS300 with axial clamping system for TTD-Tritan (5xD) replaceable head drill, internal coolant supply

Design:

Drill diameter:

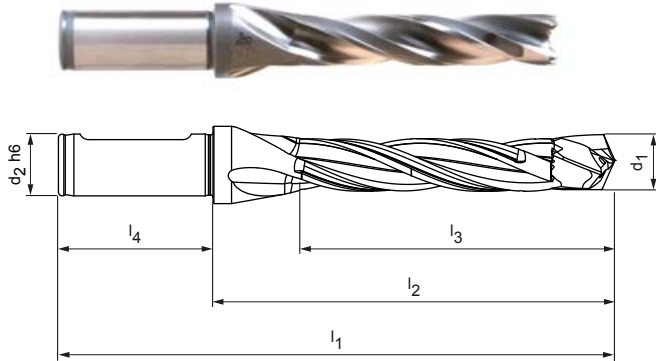
12.00 – 32.49 mm

Changing system:

Central clamping over coolant bore

Comment:

Assembly tool included in scope of delivery.


Stocked preferred series

| Dimensions | | | | | | Shank form HB | |
|----------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 14,00 - 14,49 | 16 | 149 | 101 | 77 | 48 | TTS300B-1400-DR5-ZYL-16-MN | 30839708 |
| 15,00 - 15,49 | 16 | 155 | 107 | 82 | 48 | TTS300B-1500-DR5-ZYL-16-MN | 30839710 |
| 16,50 - 17,49 | 20 | 170 | 120 | 93 | 50 | TTS300B-1650-DR5-ZYL-20-MN | 30839712 |
| 17,50 - 18,49 | 20 | 177 | 127 | 98 | 50 | TTS300B-1750-DR5-ZYL-20-MN | 30839713 |
| 23,50 - 24,49 | 25 | 222 | 166 | 130 | 56 | TTS300B-2350-DR5-ZYL-25-MN | 30839719 |
| 24,50 - 25,49 | 32 | 233 | 173 | 135 | 60 | TTS300B-2450-DR5-ZYL-32-MN | 30839720 |
| 26,50 - 27,49 | 32 | 246 | 186 | 146 | 60 | TTS300B-2650-DR5-ZYL-32-MN | 30839722 |

Available on request

| Dimensions | | | | | | Shank form HB | |
|----------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00 - 12,49 | 16 | 136 | 88 | 66 | 48 | TTS300B-1200-DR5-ZYL-16-MN | 30839704 |
| 12,50 - 12,99 | 16 | 139 | 91 | 69 | 48 | TTS300B-1250-DR5-ZYL-16-MN | 30839705 |
| 13,00 - 13,49 | 16 | 142 | 94 | 71 | 48 | TTS300B-1300-DR5-ZYL-16-MN | 30839706 |
| 13,50 - 13,99 | 16 | 145 | 97 | 74 | 48 | TTS300B-1350-DR5-ZYL-16-MN | 30839707 |
| 14,50 - 14,99 | 16 | 152 | 104 | 79 | 48 | TTS300B-1450-DR5-ZYL-16-MN | 30839709 |
| 15,50 - 16,49 | 20 | 164 | 114 | 87 | 50 | TTS300B-1550-DR5-ZYL-20-MN | 30839711 |
| 18,50 - 19,49 | 25 | 189 | 133 | 103 | 56 | TTS300B-1850-DR5-ZYL-25-MN | 30839714 |
| 19,50 - 20,49 | 25 | 196 | 140 | 109 | 56 | TTS300B-1950-DR5-ZYL-25-MN | 30839715 |
| 20,50 - 21,49 | 25 | 202 | 146 | 114 | 56 | TTS300B-2050-DR5-ZYL-25-MN | 30839716 |
| 21,50 - 22,49 | 25 | 209 | 153 | 119 | 56 | TTS300B-2150-DR5-ZYL-25-MN | 30839717 |
| 22,50 - 23,49 | 25 | 215 | 159 | 124 | 56 | TTS300B-2250-DR5-ZYL-25-MN | 30839718 |
| 25,50 - 26,49 | 32 | 239 | 179 | 140 | 60 | TTS300B-2550-DR5-ZYL-32-MN | 30839721 |
| 27,50 - 28,49 | 32 | 252 | 192 | 151 | 60 | TTS300B-2750-DR5-ZYL-32-MN | 30839723 |
| 28,50 - 29,49 | 32 | 259 | 199 | 156 | 60 | TTS300B-2850-DR5-ZYL-32-MN | 30839724 |
| 29,50 - 30,49 | 32 | 265 | 205 | 162 | 60 | TTS300B-2950-DR5-ZYL-32-MN | 30839725 |
| 30,50 - 31,49 | 32 | 272 | 212 | 167 | 60 | TTS300B-3050-DR5-ZYL-32-MN | 30839726 |
| 31,50 - 32,49 | 32 | 278 | 218 | 172 | 60 | TTS300B-3150-DR5-ZYL-32-MN | 30839727 |

Dimensions in mm.

Special designs available upon request.

TTS replaceable head holder

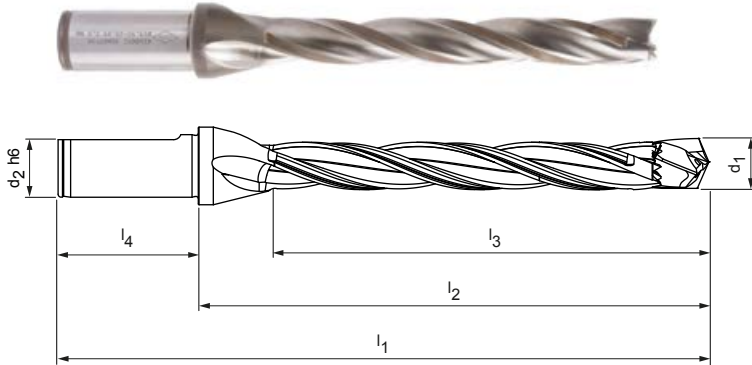
TTS300 with axial clamping system for TTD-Tritan (8xD) replaceable head drill, internal coolant supply

Design:

Drill diameter: 12.00 – 32.49 mm
Changing system: Central clamping over coolant bore

Comment:

Assembly tool included in scope of delivery.


Stocked preferred series

| Dimensions | | | | | | Shank form HB | |
|----------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 15,50 - 16,49 | 20 | 213 | 163 | 137 | 50 | TTS300B-1550-DR8-ZYL-20-MN | 30867702 |
| 20,50 - 21,49 | 25 | 267 | 211 | 178 | 56 | TTS300B-2050-DR8-ZYL-25-MN | 30867707 |

Available on request

| Dimensions | | | | | | Shank form HB | |
|----------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 12,00 - 12,49 | 16 | 173 | 125 | 104 | 48 | TTS300B-1200-DR8-ZYL-16-MN | 30867695 |
| 12,50 - 12,99 | 16 | 178 | 130 | 108 | 48 | TTS300B-1250-DR8-ZYL-16-MN | 30867696 |
| 13,00 - 13,49 | 16 | 183 | 135 | 112 | 48 | TTS300B-1300-DR8-ZYL-16-MN | 30867697 |
| 13,50 - 13,99 | 16 | 187 | 139 | 116 | 48 | TTS300B-1350-DR8-ZYL-16-MN | 30867698 |
| 14,00 - 14,49 | 16 | 192 | 144 | 120 | 48 | TTS300B-1400-DR8-ZYL-16-MN | 30867699 |
| 14,50 - 14,99 | 16 | 197 | 149 | 124 | 48 | TTS300B-1450-DR8-ZYL-16-MN | 30867700 |
| 15,00 - 15,49 | 16 | 202 | 154 | 129 | 48 | TTS300B-1500-DR8-ZYL-16-MN | 30867701 |
| 16,50 - 17,49 | 20 | 223 | 173 | 145 | 50 | TTS300B-1650-DR8-ZYL-20-MN | 30867703 |
| 17,50 - 18,49 | 20 | 232 | 182 | 153 | 50 | TTS300B-1750-DR8-ZYL-20-MN | 30867704 |
| 18,50 - 19,49 | 25 | 248 | 192 | 162 | 56 | TTS300B-1850-DR8-ZYL-25-MN | 30867705 |
| 19,50 - 20,49 | 25 | 257 | 201 | 170 | 56 | TTS300B-1950-DR8-ZYL-25-MN | 30867706 |
| 21,50 - 22,49 | 25 | 276 | 220 | 187 | 56 | TTS300B-2150-DR8-ZYL-25-MN | 30867708 |
| 22,50 - 23,49 | 25 | 286 | 230 | 195 | 56 | TTS300B-2250-DR8-ZYL-25-MN | 30867709 |
| 23,50 - 24,49 | 25 | 295 | 239 | 203 | 56 | TTS300B-2350-DR8-ZYL-25-MN | 30867710 |
| 24,50 - 25,49 | 32 | 309 | 249 | 212 | 60 | TTS300B-2450-DR8-ZYL-32-MN | 30867711 |
| 25,50 - 26,49 | 32 | 319 | 259 | 220 | 60 | TTS300B-2550-DR8-ZYL-32-MN | 30885879 |
| 26,50 - 27,49 | 32 | 328 | 268 | 228 | 60 | TTS300B-2650-DR8-ZYL-32-MN | 30867713 |
| 27,50 - 28,49 | 32 | 338 | 278 | 236 | 60 | TTS300B-2750-DR8-ZYL-32-MN | 30867714 |
| 28,50 - 29,49 | 32 | 342 | 282 | 245 | 60 | TTS300B-2850-DR8-ZYL-32-MN | 30867715 |
| 29,50 - 30,49 | 32 | 352 | 292 | 253 | 60 | TTS300B-2950-DR8-ZYL-32-MN | 30867716 |
| 30,50 - 31,49 | 32 | 361 | 301 | 261 | 60 | TTS300B-3050-DR8-ZYL-32-MN | 30867717 |
| 31,50 - 32,49 | 32 | 371 | 311 | 270 | 60 | TTS300B-3150-DR8-ZYL-32-MN | 30867718 |

Dimensions in mm.

Special designs available upon request.



Accessories and spare parts for TTD-Tritan




TORX® wrench

| Diameter range TTD-Tritan replaceable drill head | Torx | Order no. |
|---|------|--|
| | | For tool holder lengths 3xD, 5xD and 8xD |
| 12,00 - 12,49 | 6 | 30890316 |
| 12,50 - 12,99 | | |
| 13,00 - 13,49 | | |
| 13,50 - 13,99 | | |
| 14,00 - 14,49 | | |
| 14,50 - 14,99 | 7 | 30890318 |
| 15,00 - 15,49 | | |
| 15,50 - 16,49 | | |
| 16,50 - 17,49 | | |
| 17,50 - 18,49 | | |
| 18,50 - 19,49 | 8 | 30890321 |
| 19,50 - 20,49 | | |
| 20,50 - 21,49 | | |
| 21,50 - 22,49 | | |
| 22,50 - 23,49 | | |
| 23,50 - 24,49 | 10 | 30890323 |
| 24,50 - 25,49 | | |
| 25,50 - 26,49 | | |
| 26,50 - 27,49 | | |
| 27,50 - 28,49 | | |
| 28,50 - 29,49 | | |
| 29,50 - 30,49 | | |
| 30,50 - 31,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |
| 31,50 - 32,49 | | |

Torque wrench

| Accessories | Tightening torque range [Nm] | Order no. |
|--|------------------------------|-----------|
| Torque wrench  | 0,2 – 1,2 | 30911425 |
| Torque wrench  | 1,0 – 6,0 | 30911426 |

Handle for TORX® wrench

| Spare part | Attachment shank | Order no. |
|--|-----------------------|-----------|
| Multi-grip  | Internal hexagon 1/4" | 30918896 |

Cutting data recommendation for TTD-Tritan replaceable head drills

Feed and cutting speed

Type 01 – Uni

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P5.1 Cast steel | |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

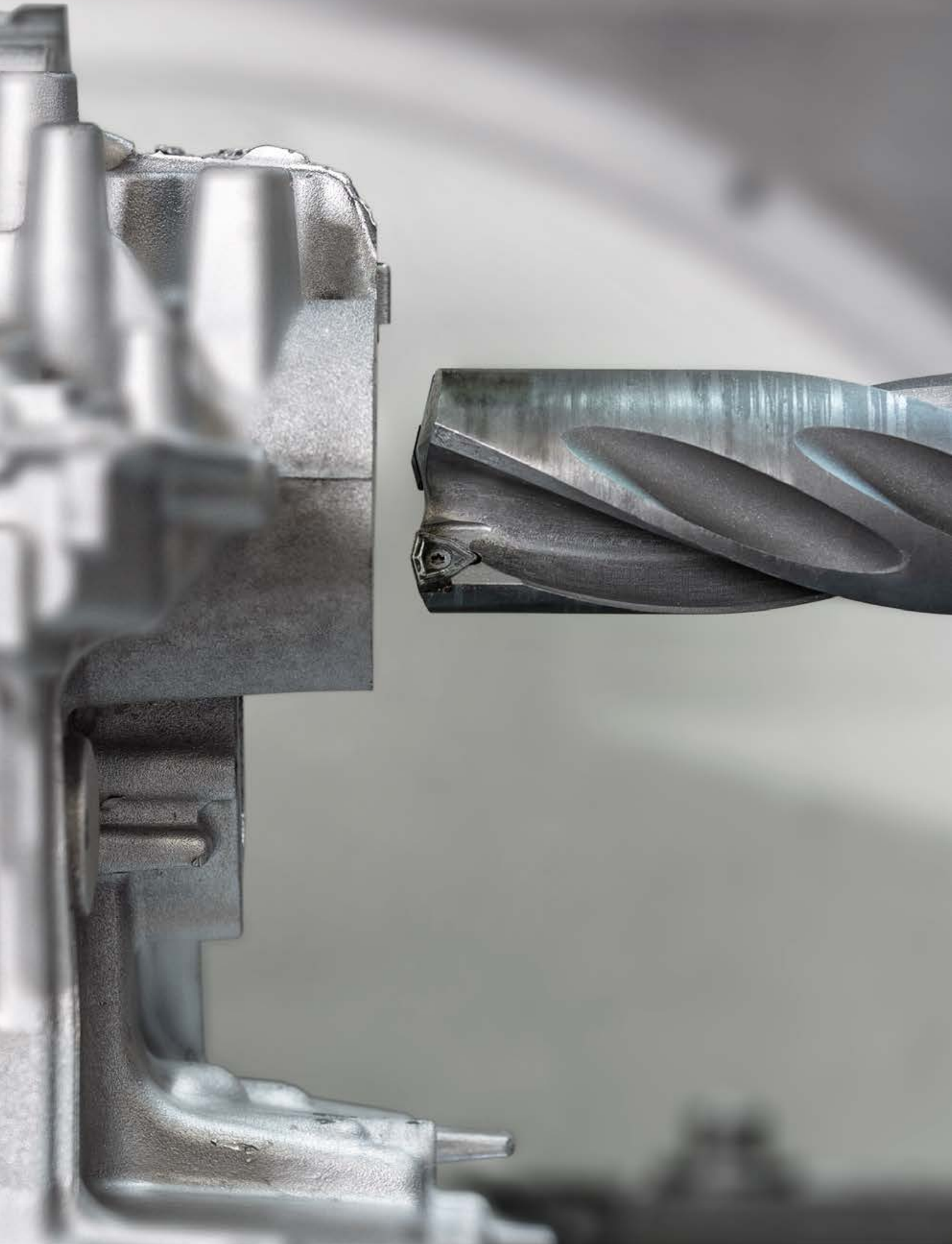
* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 12.00 | 14.50 | 17.50 | 21.50 | 26.00 | 32.00 |
| | 90 | 80 | 80 | | 0.38 | 0.42 | 0.46 | 0.50 | 0.53 | 0.54 |
| | 80 | 70 | 70 | | 0.47 | 0.53 | 0.58 | 0.63 | 0.66 | 0.68 |
| | 90 | 75 | 75 | | 0.45 | 0.50 | 0.55 | 0.59 | 0.62 | 0.64 |
| | 65 | 55 | 55 | | 0.36 | 0.40 | 0.43 | 0.47 | 0.49 | 0.51 |
| | 70 | 60 | 60 | | 0.40 | 0.45 | 0.49 | 0.53 | 0.56 | 0.58 |
| | 55 | 50 | 50 | | 0.33 | 0.37 | 0.40 | 0.43 | 0.46 | 0.47 |
| | 55 | 40 | 45 | | 0.26 | 0.28 | 0.31 | 0.33 | 0.35 | 0.36 |
| | 90 | 75 | 75 | | 0.45 | 0.50 | 0.55 | 0.59 | 0.62 | 0.64 |
| | 110 | 75 | 75 | 75 | 0.62 | 0.69 | 0.77 | 0.83 | 0.88 | 0.90 |
| | 145 | 90 | 110 | 110 | 0.57 | 0.64 | 0.71 | 0.77 | 0.81 | 0.83 |
| | 90 | 70 | 70 | | 0.49 | 0.55 | 0.61 | 0.66 | 0.69 | 0.71 |
| | 55 | 35 | 45 | | 0.33 | 0.37 | 0.40 | 0.43 | 0.46 | 0.47 |
| | 80 | 70 | 70 | | 0.53 | 0.59 | 0.65 | 0.71 | 0.75 | 0.77 |
| | 70 | 65 | 65 | | 0.43 | 0.47 | 0.52 | 0.56 | 0.59 | 0.61 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.





DRILLING FROM SOLID USING INDEXABLE INSERTS

Drilling from solid using indexable inserts

| | |
|---|-----|
| Indexable insert drill _____ | 240 |
| WOGT radial indexable insert, three cutting edges _____ | 241 |

Technical appendix

| | |
|---|-----|
| Cutting data recommendation for indexable insert drills _____ | 242 |
| Instructions for use _____ | 744 |

DRILLING FROM SOLID USING INDEXABLE INSERTS

The indexable inserts for drilling aluminium from solid impress with three usable cutting edges and a high-performance CVD diamond coating. The cutting edges are available in five sizes. This allows their use in a very wide range of applications.

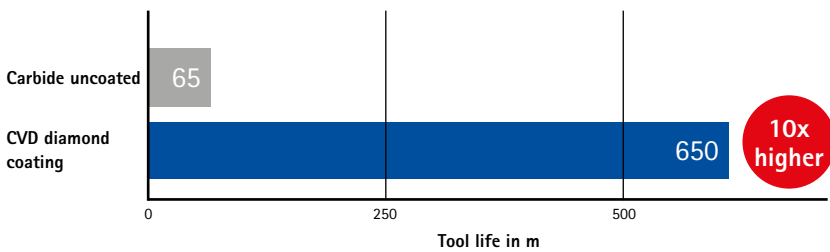
The single- or multi-stage custom tools are characterised by extremely high economic efficiency and simple handling.



From practice

Material: AISi1 v_c : 800 - 1000 m/min
 Diameter: 39.0 mm f : 0.30 - 0.45 mm
 Drilling depth: 65 mm

Tool life per cutting edge

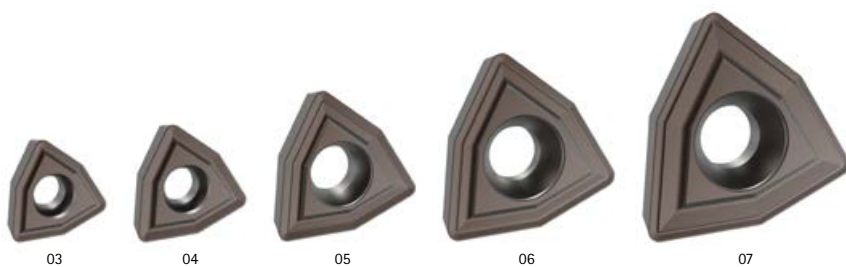


AT A GLANCE

- Customer-specific solutions for: \varnothing 16 - 54.9 mm
- Drilling AISi1 to AISi12 from solid
- With internal cooling, MQL also possible
- Single- or multi-stage with indexable insert or PCD boring stage

ADVANTAGES

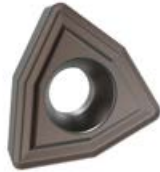
- Extremely economical with highest productivity
- Wide range of applications
- Easy handling



Five indexable insert sizes for the diameter range 16 to 54.9 mm.

WOGT

Radial indexable insert, three cutting edges



| | | |
|-----------------------|------------------|-----------------|
| | Carbide | |
| Workpiece material | N | |
| | ← Wear-resistant | Tough/Ductile → |
| Cutting material type | HC698 | |
| Cutting edge design | X40 | |

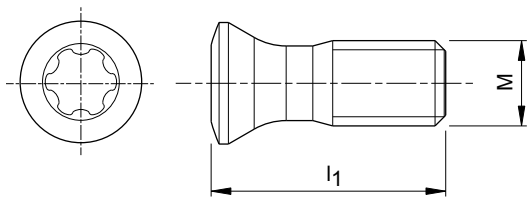
ø range [mm]


| | | |
|---------------------|-------------|----------|
| WOGT030206N-...-... | 16.0 - 20.9 | 31033174 |
| WOGT040206N-...-... | 21.0 - 25.9 | 31033175 |
| WOGT053006N-...-... | 26.0 - 30.9 | 31033177 |
| WOGT063008N-...-... | 31.0 - 44.9 | 30787196 |
| WOGT073808N-...-... | 45.0 - 54.9 | 31033178 |

For product ID code see page 676.

For cutting material overview see page 672.

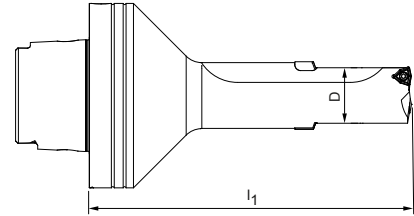
Accessories for radial indexable inserts



| Indexable insert | Size of indexable insert | Clamping screw | | | | | Screwdriver |
|---|--------------------------|-----------------|----------------------|------------------------|-----------|-----------|-------------|
| | | Dimension [MxI] | Description | Tightening torque [Nm] | Torx size | Order no. | Order no. |
| WOGT...  | 0302 | M2x4.95 | MN659 M2x4.95-TX6-IP | 0,4 | TX6-IP | 10002712 | 30414758 |
| | 0402 | M2.2x6 | MN659 M2.2x6-TX7-IP | 0,9 | TX7-IP | 31074485 | 30414759 |
| | 0530 | M3x8.5 | MN659 M3x8.5-TX8-IP | 1,5 | TX8-IP | 31074486 | 30414760 |
| | 0630 | M3.5x9 | MN659 M3.5x9-TX15-IP | 2,8 | TX15-IP | 10105078 | 30414764 |
| | 0738 | M4x9.4 | MN659 M4x9.4-TX15-IP | 3,5 | TX15-IP | 30480629 | 30414764 |

Cutting data recommendation for indexable insert drills

Feed and cutting speed



Indexable insert drills

Starting values for cutting speed and feed with WOGT...-X40-HC698

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|--|---|
| N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | N1.3 Aluminium, alloy > 7-12 % Si | |
| | N1.4 Aluminium, alloy > 12 % Si | |
| N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | N2.2 Copper, alloy | > 300 |
| | N2.3 Brass, bronze, gunmetal | < 1,200 |
| N3 | N3.1 Graphite | |
| N4 | N4.1 Plastic, thermoplastics | |
| | N4.2 Plastic, thermosets | |
| | N4.3 Plastic, foams | |

Correction factor: Tapping / drill exit

| l_1 | v_c | f_z |
|-------|-------|-------|
| 3xD | 0.8 | 0.7 |
| 4xD | 0.7 | 0.6 |
| 5xD | 0.6 | 0.5 |

| | Cutting speed v_c [m/min] | Feed f [mm] for drill diameter range [mm] | | | | |
|--|-----------------------------|---|---------------|---------------|---------------|---------------|
| | | 16.00 - 20.90 | 21.00 - 25.90 | 26.00 - 30.90 | 31.00 - 44.90 | 45.00 - 54.90 |
| | 300 - 1,000 | 0.08 - 0.20 | 0.12 - 0.22 | 0.14 - 0.30 | 0.16 - 0.40 | 0.20 - 0.45 |
| | 230 - 900 | 0.06 - 0.18 | 0.10 - 0.20 | 0.12 - 0.25 | 0.14 - 0.30 | 0.18 - 0.35 |
| | 220 - 800 | 0.05 - 0.15 | 0.08 - 0.18 | 0.10 - 0.20 | 0.12 - 0.25 | 0.15 - 0.30 |
| | 200 - 700 | 0.05 - 0.15 | 0.08 - 0.18 | 0.10 - 0.20 | 0.12 - 0.25 | 0.15 - 0.30 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



TAPPING

Pilot drills

| | |
|------------------------------------|-----|
| Tritan-Spot-Drill-Steel | 246 |
| ECU-Centre-Drill | 248 |
| CPD-Spot-Drill | 249 |
| Cutting data recommendations | 250 |

Technical appendix

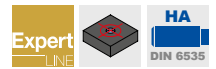
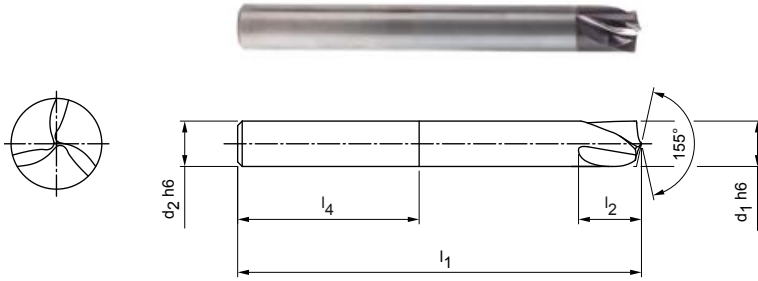
| | |
|------------------------------------|-----|
| Cutting data recommendations | 251 |
|------------------------------------|-----|

Tritan-Spot-Drill-Steel

Solid carbide NC-pilot drill
SCD670, external coolant supply

Design:
 Drill diameter: 4.00 – 20.00 mm
 Shank form: HA (DIN 6535)
 Cutting material: HP358
 Number of cutting edges: 3
 Tip angle: 155°

Application:
 Special NC pilot drill for the Tritan-Drill-Steel.



Stocked preferred series

| Dimensions | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|-----------------------------|-----------|
| d ₁ h6 | d ₂ h6 | l ₁ | l ₂ | l ₄ | Specification | Order no. |
| 4,00 | 4 | 55 | 6 | 28 | SCD670-0400-3-0-155HA-HP358 | 30980587 |
| 5,00 | 6 | 62 | 7 | 36 | SCD670-0500-3-0-155HA-HP358 | 30980588 |
| 6,00 | 6 | 66 | 9 | 36 | SCD670-0600-3-0-155HA-HP358 | 30980589 |
| 8,00 | 8 | 79 | 11 | 36 | SCD670-0800-3-0-155HA-HP358 | 30980590 |
| 10,00 | 10 | 89 | 14 | 40 | SCD670-1000-3-0-155HA-HP358 | 30980592 |
| 12,00 | 12 | 102 | 17 | 45 | SCD670-1200-3-0-155HA-HP358 | 30980594 |
| 16,00 | 16 | 115 | 23 | 48 | SCD670-1600-3-0-155HA-HP358 | 30980595 |
| 20,00 | 20 | 131 | 28 | 50 | SCD670-2000-3-0-155HA-HP358 | 30980596 |

Drilling depths

| d ₁ h6 | d ₂ h6 | l ₁ | l ₂ | l ₄ | Maximum drilling depth * | Minimum drilling depth ** |
|-------------------|-------------------|----------------|----------------|----------------|--------------------------|---------------------------|
| 4,00 | 4 | 55 | 6 | 28 | 0,40 | 0,24 |
| 5,00 | 6 | 62 | 7 | 36 | 0,50 | 0,30 |
| 6,00 | 6 | 66 | 9 | 36 | 0,60 | 0,36 |
| 8,00 | 8 | 79 | 11 | 36 | 0,80 | 0,48 |
| 10,00 | 10 | 89 | 14 | 40 | 1,00 | 0,60 |
| 12,00 | 12 | 102 | 17 | 45 | 1,20 | 0,72 |
| 16,00 | 16 | 115 | 23 | 48 | 1,60 | 0,96 |
| 20,00 | 20 | 131 | 28 | 50 | 2,00 | 1,20 |

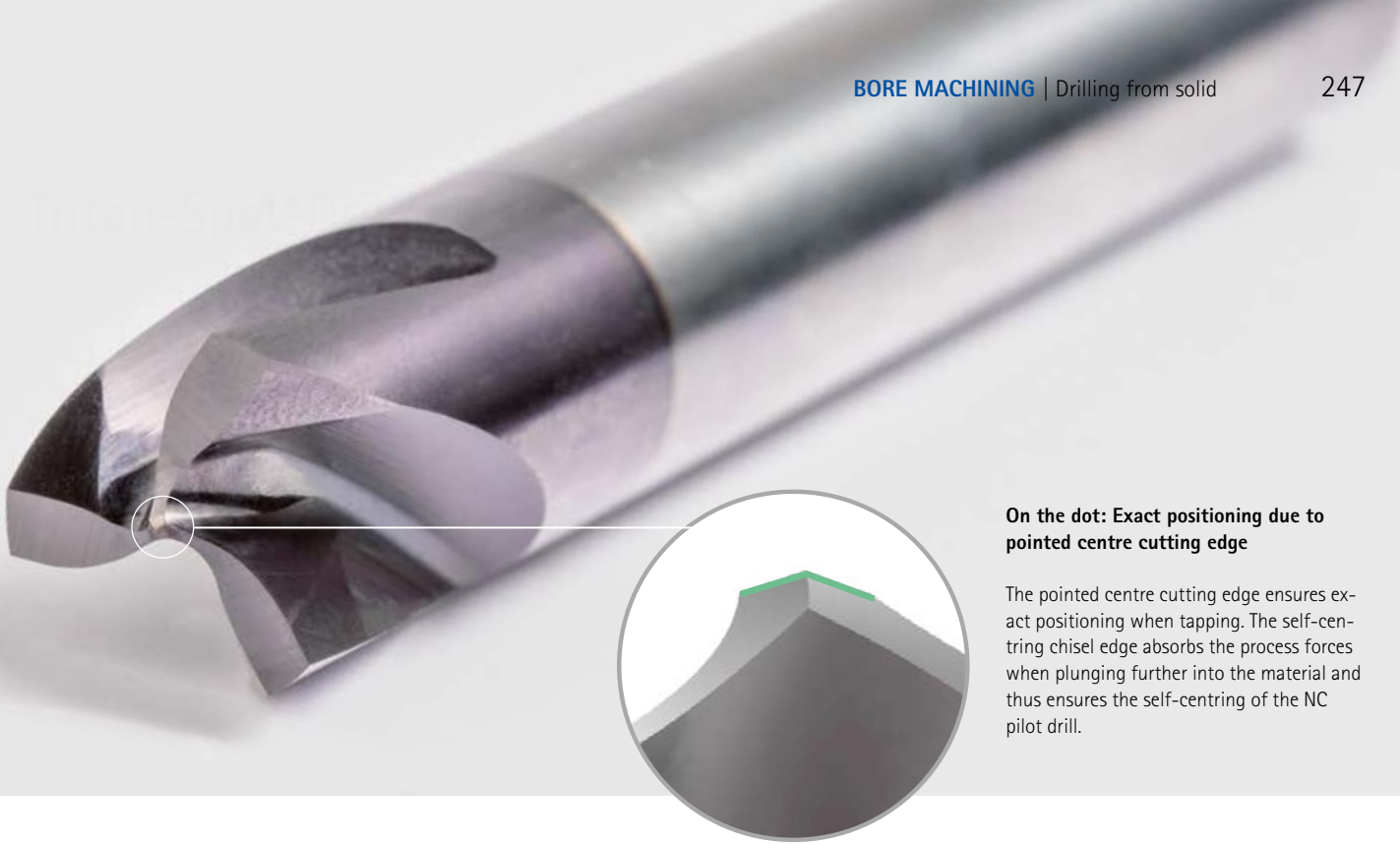
* 10% from nominal Ø

** 6% from nominal Ø

Dimensions in mm.

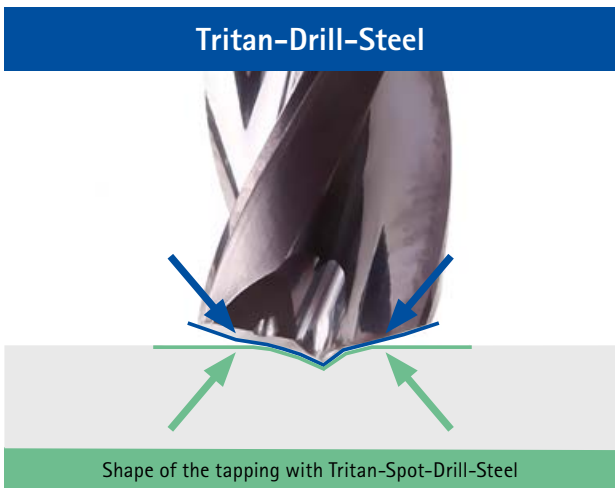
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.



On the dot: Exact positioning due to pointed centre cutting edge

The pointed centre cutting edge ensures exact positioning when tapping. The self-centring chisel edge absorbs the process forces when plunging further into the material and thus ensures the self-centring of the NC pilot drill.



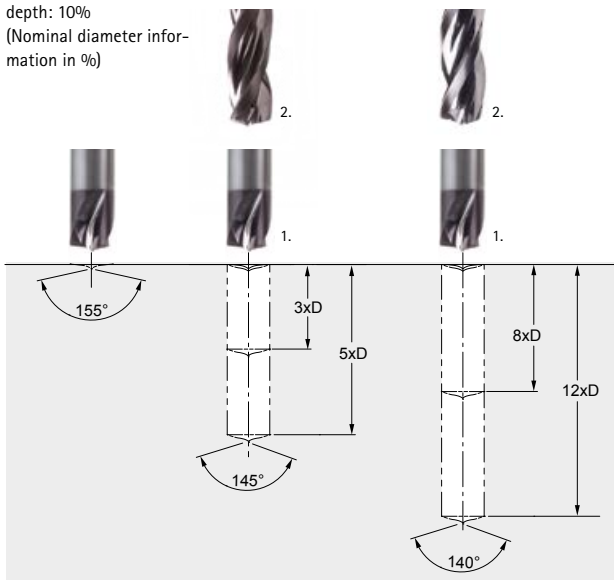
The tip angle of the Tritan-Spot-Drill-Steel (155°) and the Tritan-Drill-Steel (140°/145°) are perfectly harmonised.

The Tritan-Drill-Steel is available in:



Drilling strategy 3xD to 12xD:

Maximum pilot drilling depth: 10%
(Nominal diameter information in %)



AT A GLANCE

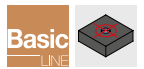
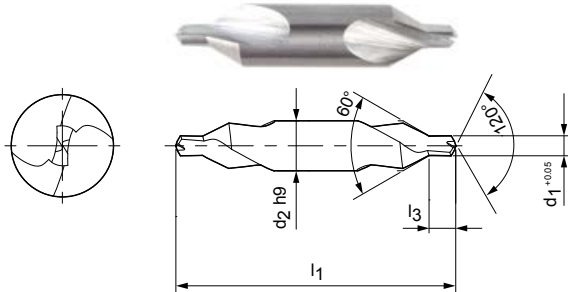
- Three-edge NC pilot drill with 155° tip angle
- Perfectly matched to the Tritan-Drill-Steel
- High degree of positional accuracy
- Self-centring chisel edge
- Also suitable for challenging drilling situations

ECU-Centre-Drill

Solid carbide centre drill
SCD450

Design:

Drill diameter: 0.50 – 2.50 mm
 Cutting material: HU318
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 120°/60°
 Side rake angle: 5°



Stocked preferred series

| Dimensions | | | | Specification | Order no. |
|----------------------------|-------------------|----------------|----------------|-----------------------------|-----------|
| d ₁ (0 +0.05) | d ₂ h9 | l ₁ | l ₃ | | |
| 0,50* | 3,15 | 20 | 0,8 | SCD450-0050-2-2-120HA-HU318 | 30561506 |
| 0,80* | 3,15 | 20 | 1,1 | SCD450-0080-2-2-120HA-HU318 | 30561507 |
| 1,00 | 3,15 | 31,5 | 1,3 | SCD450-0100-2-2-120HA-HU318 | 30561508 |
| 1,25 | 3,15 | 31,5 | 1,6 | SCD450-0125-2-2-120HA-HU318 | 30561509 |
| 1,60 | 4 | 35,5 | 2 | SCD450-0160-2-2-120HA-HU318 | 30561510 |
| 2,00 | 5 | 40 | 2,5 | SCD450-0200-2-2-120HA-HU318 | 30561511 |
| 2,50 | 6,3 | 45 | 3,1 | SCD450-0250-2-2-120HA-HU318 | 30561512 |

Dimensions in mm.

* Single-side cutting.

For cutting data recommendations, see end of chapter.

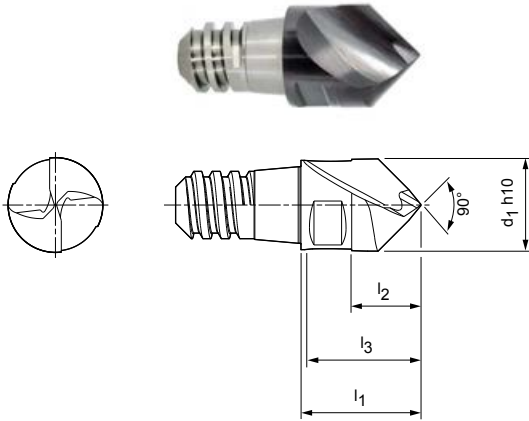
Special designs and other coatings available upon request.

CPD-Spot-Drill

Design with CFS connection
CPD100

Design:
 Drill diameter: 8.00 – 20.00 mm
 Cutting material: HP338
 Number of cutting edges: 2
 Helix angle: 15°
 Tip angle: 90°


Application:
 Centre drilling.



Stocked preferred series

| Dimensions | | | | | z | a _p max. | SW | Specification | Order no. |
|--------------------|----------|----------------|----------------|----------------|---|---------------------|-------|------------------------------|-----------|
| d ₁ h10 | CFS size | l ₁ | l ₂ | l ₃ | | | | | |
| 8,00 | 6 | 11 | 6 | 10 | 2 | 4 | SW 6 | CPD100-0800Z02-W090-06-HP338 | 30371388 |
| 10,00 | 8 | 13 | 7,5 | 12 | 2 | 5 | SW 8 | CPD100-1000Z02-W090-08-HP338 | 30371389 |
| 12,00 | 10 | 16 | 9 | 15 | 2 | 6 | SW 10 | CPD100-1200Z02-W090-10-HP338 | 30371390 |
| 16,00 | 12 | 20 | 12 | 18 | 2 | 8 | SW 13 | CPD100-1600Z02-W090-12-HP338 | 30371391 |
| 20,00 | 16 | 25 | 15 | 23 | 2 | 10 | SW 16 | CPD100-2000Z02-W090-16-HP338 | 30371393 |

Accessories

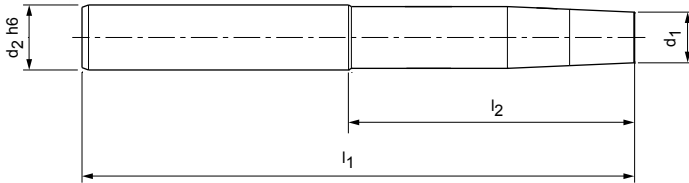
| | | |
|---|--|----------|
|  | CFS replaceable head holders CFS201 | Page 250 |
|---|--|----------|

Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

CFS replaceable head holders

Conical design, with internal cooling

CFS201



Design produced of steel

| CFS size | Dimensions | | | | Specification | Order no. |
|----------|------------|----------|-------|-------|---------------------------|-----------|
| | d_1 | d_2 h6 | l_1 | l_2 | | |
| 6 | 7,8 | 10 | 60 | 20 | CFS201N-06-020-ZYL-HA10-S | 30393776 |
| 8 | 9,8 | 16 | 70 | 30 | CFS201N-08-030-ZYL-HA16-S | 30393787 |
| 8 | 9,8 | 16 | 90 | 40 | CFS201N-08-040-ZYL-HA16-S | 30393788 |
| 10 | 11,8 | 16 | 70 | 30 | CFS201N-10-030-ZYL-HA16-S | 30393798 |
| 10 | 11,8 | 16 | 90 | 42 | CFS201N-10-042-ZYL-HA16-S | 30393799 |
| 12 | 15,8 | 20 | 80 | 30 | CFS201N-12-030-ZYL-HA20-S | 30393963 |
| 12 | 15,8 | 20 | 105 | 55 | CFS201N-12-055-ZYL-HA20-S | 30393964 |
| 16 | 19,8 | 25 | 90 | 40 | CFS201N-16-040-ZYL-HA25-S | 30393976 |

Design produced of carbide

| | | | | | | |
|----|------|----|-----|-----|---------------------------|----------|
| 6 | 7,8 | 10 | 110 | 70 | CFS201N-06-070-ZYL-HA10-H | 30393779 |
| 8 | 9,8 | 16 | 110 | 60 | CFS201N-08-060-ZYL-HA16-H | 30393790 |
| 10 | 11,8 | 20 | 110 | 60 | CFS201N-10-060-ZYL-HA20-H | 30393801 |
| 10 | 11,8 | 20 | 150 | 100 | CFS201N-10-100-ZYL-HA20-H | 30393802 |
| 12 | 15,8 | 20 | 130 | 80 | CFS201N-12-080-ZYL-HA20-H | 30393966 |
| 12 | 15,8 | 20 | 150 | 100 | CFS201N-12-100-ZYL-HA20-H | 30393967 |
| 16 | 19,8 | 25 | 150 | 94 | CFS201N-16-094-ZYL-HA25-H | 30393979 |

Cutting data recommendations for pilot drills

Feed and cutting speed

CPD-Spot-Drill | CPD100

| MMG* | Workpiece material | Strength/ hardness [N/mm ²] [HRC] | Cooling | | | v _c [m/min] | f _z [mm] | | | | | | |
|------|--------------------|--|---|---------|-----|---------------------------|---------------------|-------|-------|-------|-------|-------|-------|
| | | | MQL/Air | Dry | KSS | | Drill diameter [mm] | | | | | | |
| | | | | | | | 8.00 | 10.00 | 12.00 | 16.00 | 20.00 | | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, | < 700 | ✓ | ✓ | ✓ | 160 | 0.084 | 0.100 | 0.115 | 0.141 | 0.161 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, | < 1,200 | ✓ | ✓ | ✓ | 130 | 0.078 | 0.094 | 0.108 | 0.131 | 0.150 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 | ✓ | ✓ | ✓ | 145 | 0.084 | 0.100 | 0.115 | 0.141 | 0.161 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1,400 | ✓ | | ✓ | 100 | 0.070 | 0.084 | 0.096 | 0.117 | 0.134 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 | ✓ | ✓ | ✓ | 95 | 0.081 | 0.097 | 0.111 | 0.136 | 0.156 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1,000 | ✓ | | ✓ | 85 | 0.077 | 0.092 | 0.106 | 0.129 | 0.148 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1,500 | ✓ | | ✓ | 80 | 0.073 | 0.087 | 0.100 | 0.122 | 0.140 |
| | P4 | P4.1 | Stainless steels, ferritic and martensitic | | ✓ | | ✓ | 65 | 0.056 | 0.067 | 0.077 | 0.094 | 0.107 |
| | P5 | P5.1 | Cast steel | | | | ✓ | 95 | 0.081 | 0.097 | 0.111 | 0.136 | 0.156 |
| | P6 | P6.1 | Stainless cast steel, ferritic and martensitic | | | | ✓ | 65 | 0.039 | 0.047 | 0.054 | 0.066 | 0.075 |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 | ✓ | | ✓ | 45 | 0.049 | 0.059 | 0.067 | 0.082 | 0.094 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1,000 | | | ✓ | 40 | 0.040 | 0.048 | 0.056 | 0.068 | 0.078 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 | ✓ | | ✓ | 50 | 0.053 | 0.064 | 0.073 | 0.089 | 0.102 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 | | | ✓ | 45 | 0.042 | 0.050 | 0.058 | 0.070 | 0.081 |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 | ✓ | ✓ | ✓ | 175 | 0.140 | 0.167 | 0.192 | 0.235 | 0.268 |
| | | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 | ✓ | ✓ | ✓ | 160 | 0.119 | 0.142 | 0.163 | 0.199 | 0.228 |
| | K2 | K2.2 | Cast iron with spheroidal graphite, GJS | 500-800 | ✓ | ✓ | ✓ | 130 | 0.098 | 0.117 | 0.134 | 0.164 | 0.188 |
| | | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 | ✓ | ✓ | ✓ | 70 | 0.056 | 0.067 | 0.077 | 0.094 | 0.107 |
| | K3 | K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 | ✓ | ✓ | ✓ | 115 | 0.098 | 0.117 | 0.134 | 0.164 | 0.188 |
| | | K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 | ✓ | ✓ | ✓ | 110 | 0.084 | 0.100 | 0.115 | 0.141 | 0.161 |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | ✓ | ✓ | ✓ | 610 | 0.142 | 0.170 | 0.196 | 0.239 | 0.273 |
| | | N1.2 | Aluminium, alloyed < 7% Si | | ✓ | ✓ | ✓ | 405 | 0.149 | 0.179 | 0.206 | 0.251 | 0.287 |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | | ✓ | ✓ | ✓ | 325 | 0.156 | 0.187 | 0.215 | 0.263 | 0.301 |
| | | N1.4 | Aluminium, alloy > 12 % Si | | ✓ | ✓ | ✓ | 235 | 0.171 | 0.204 | 0.235 | 0.287 | 0.328 |
| | N2 | N2.1 | Copper, non-alloy and low-alloy | < 300 | ✓ | ✓ | ✓ | 235 | 0.114 | 0.136 | 0.157 | 0.191 | 0.219 |
| | | N2.2 | Copper, alloy | > 300 | ✓ | ✓ | ✓ | 175 | 0.114 | 0.136 | 0.157 | 0.191 | 0.219 |
| | | N2.3 | Brass, bronze, gunmetal | < 1,200 | ✓ | ✓ | ✓ | 295 | 0.071 | 0.085 | 0.098 | 0.120 | 0.137 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

The specified machining values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for pilot drills

Feed and cutting speed

Tritan-Spot-Drill-Steel | SCD670

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|-----------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| P5 | P5.1 Cast steel | | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2 | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | M3 | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | |
| | | N1.4 Aluminium, alloy > 12 % Si | |
| | N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | | N2.2 Copper, alloy | > 300 |
| | | N2.3 Brass, bronze, gunmetal | < 1,200 |
| | N4 | N4.1 Plastic, thermoplastics | |
| | | N4.2 Plastic, thermosets | |
| | | N4.3 Plastic, foams | |
| S | S1 | S1.1 Titanium, titanium alloys | < 400 |
| | | S2.1 Titanium, titanium alloys | < 1,200 |
| | S2 | S2.2 Titanium, titanium alloys | > 1,200 |
| | | S3.1 Nickel, unalloyed and alloyed | < 900 |
| | S3 | S3.2 Nickel, unalloyed and alloyed | > 900 |
| | | S4.1 High-temperature super alloy Ni, Co and Fe-based | |
| | S5 | S5.1 Tungsten and molybdenum alloys | |
| H | H1 | H1.1 Hardened steel/cast steel | < 44 |
| | | H1.2 Hardened steel/cast steel | < 55 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 4.00 | 5.50 | 7.50 | 10.50 | 14.50 | 20.00 |
| | 175 | 160 | 160 | | 0.09 | 0.10 | 0.11 | 0.13 | 0.14 | 0.15 |
| | 160 | 130 | 130 | | 0.11 | 0.12 | 0.14 | 0.16 | 0.17 | 0.18 |
| | 170 | 145 | 145 | | 0.10 | 0.12 | 0.13 | 0.15 | 0.16 | 0.17 |
| | 120 | 100 | 100 | | 0.08 | 0.09 | 0.11 | 0.12 | 0.13 | 0.14 |
| | 110 | 95 | 95 | | 0.09 | 0.11 | 0.12 | 0.13 | 0.15 | 0.16 |
| | 90 | 85 | 85 | | 0.08 | 0.09 | 0.10 | 0.11 | 0.12 | 0.13 |
| | 90 | 70 | 75 | | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 |
| | 110 | 95 | 95 | | 0.10 | 0.12 | 0.13 | 0.15 | 0.16 | 0.17 |
| | 70 | 45 | 45 | | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | 0.10 |
| | 75 | 50 | 50 | | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | 0.10 |
| | 245 | 175 | 175 | 175 | 0.17 | 0.19 | 0.22 | 0.25 | 0.27 | 0.30 |
| | 225 | 140 | 170 | 170 | 0.16 | 0.18 | 0.20 | 0.23 | 0.25 | 0.27 |
| | 170 | 130 | 130 | | 0.14 | 0.15 | 0.18 | 0.20 | 0.22 | 0.23 |
| | 100 | 70 | 85 | | 0.09 | 0.10 | 0.12 | 0.13 | 0.14 | 0.15 |
| | 155 | 135 | 135 | | 0.15 | 0.17 | 0.19 | 0.21 | 0.23 | 0.25 |
| | 135 | 120 | 120 | | 0.12 | 0.13 | 0.15 | 0.17 | 0.19 | 0.20 |
| | 300 | 200 | 250 | | 0.11 | 0.12 | 0.13 | 0.15 | 0.17 | 0.18 |
| | 250 | 180 | 200 | | 0.14 | 0.15 | 0.18 | 0.20 | 0.22 | 0.23 |
| | 220 | 150 | 180 | | 0.14 | 0.15 | 0.18 | 0.20 | 0.22 | 0.23 |
| | 180 | 120 | 150 | | 0.14 | 0.15 | 0.18 | 0.20 | 0.22 | 0.23 |
| | 140 | 100 | | | 0.11 | 0.12 | 0.13 | 0.15 | 0.17 | 0.18 |
| | 120 | 90 | | | 0.14 | 0.15 | 0.18 | 0.20 | 0.22 | 0.23 |
| | 200 | 160 | 160 | 120 | 0.17 | 0.19 | 0.22 | 0.25 | 0.27 | 0.30 |
| | | 60 | | 50 | 0.09 | 0.10 | 0.12 | 0.13 | 0.14 | 0.15 |
| | | 65 | | 40 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.12 |
| | | | 400 | 0.07 | 0.08 | 0.09 | 0.11 | 0.12 | 0.12 | |
| | 40 | 25 | | | 0.062 | 0.069 | 0.078 | 0.088 | 0.097 | 0.104 |
| | 30 | 20 | | | 0.053 | 0.059 | 0.067 | 0.075 | 0.083 | 0.089 |
| | 25 | 15 | | | 0.044 | 0.050 | 0.056 | 0.063 | 0.069 | 0.074 |
| | 20 | 15 | | | 0.035 | 0.040 | 0.045 | 0.050 | 0.055 | 0.059 |
| | 15 | 10 | | | 0.044 | 0.050 | 0.056 | 0.063 | 0.069 | 0.074 |
| | 15 | 10 | | | 0.035 | 0.040 | 0.045 | 0.050 | 0.055 | 0.059 |
| | 15 | 10 | | | 0.035 | 0.040 | 0.045 | 0.050 | 0.055 | 0.059 |
| | 80 | 80 | 80 | | 0.078 | 0.087 | 0.098 | 0.109 | 0.120 | 0.128 |
| | 30 | 30 | 30 | | 0.053 | 0.059 | 0.067 | 0.075 | 0.083 | 0.089 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for pilot drills

Feed and cutting speed

ECU-Centre-Drill | SCD450

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|-------------------------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4 | P4.1 Stainless steels, ferritic and martensitic | |
| | P5 | P5.1 Cast steel | |
| | P6 | P6.1 Stainless cast steel, ferritic and martensitic | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2 | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | M3 | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| N | N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | | N2.2 Copper, alloy | > 300 |
| | | N2.3 Brass, bronze, gunmetal | < 1,200 |
| S | S1 | S1.1 Titanium, titanium alloys | < 400 |
| | | S2.1 Titanium, titanium alloys | < 1,200 |
| | S2 | S2.2 Titanium, titanium alloys | > 1,200 |
| | | S3.1 Nickel, unalloyed and alloyed | < 900 |
| | S3 | S3.2 Nickel, unalloyed and alloyed | > 900 |
| | | S4 | S4.1 High-temperature super alloy Ni, Co and Fe-based |
| S5 | S5.1 Tungsten and molybdenum alloys | | |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|-----|----------------------------------|------|------|------|------|------|
| | Internal cooling | External cooling | MQL | Air | 0.50 | 0.83 | 1.38 | 2.29 | 3.80 | 6.30 |
| | | 70 | 70 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 55 | 55 | | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 | 0.06 |
| | | 65 | 65 | | 0.01 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 |
| | | 45 | 45 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 50 | 50 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.05 |
| | | 40 | 40 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 35 | 40 | | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 |
| | | 35 | 40 | | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 |
| | | 65 | 65 | | 0.01 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 |
| | | 35 | 40 | | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 |
| | | 30 | 30 | | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 |
| | | 25 | 25 | | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.03 |
| | | 30 | 30 | | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 |
| | | 25 | 25 | | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.03 |
| | | 85 | | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 75 | | | 0.01 | 0.01 | 0.02 | 0.03 | 0.04 | 0.06 |
| | | 135 | 135 | | 0.01 | 0.01 | 0.02 | 0.03 | 0.04 | 0.07 |
| | | 40 | 40 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 35 | 35 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 30 | 30 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 25 | 25 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 20 | 20 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 20 | 20 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| | | 20 | 20 | | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



STEPPED DRILLING

Step drill

Tritan-Step-Drill-Steel 258

MEGA-Step-Drill-Steel-Plus 259

Technical appendix

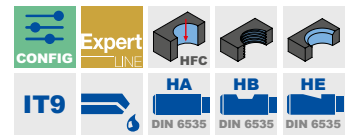
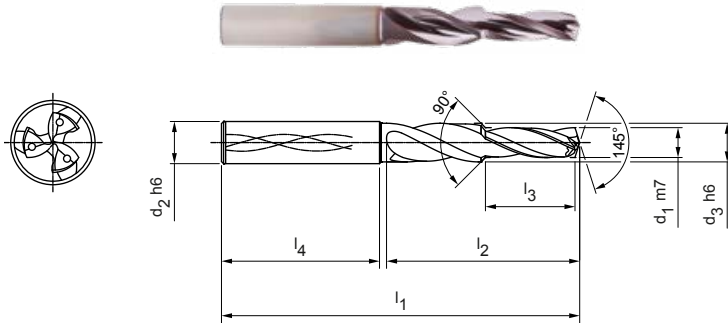
Cutting data recommendations 262

Tritan-Step-Drill-Steel

Solid carbide step drill
SCD561, internal coolant supply

Design:
 Drill diameter: 3.98 – 17.50 mm
 Bore tolerance: IT 9 (achievable)
 Cutting material: HP835
 Number of cutting edges: 3
 Number of guiding chamfers: 3
 Tip angle: 145°
 Helix angle: 30°

Application:
 For threaded core-bore drilling with 90° countersink.



Stocked preferred series in shank form HA

| Dimensions | | | | | | | | Shank form HA | |
|------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------------|-----------|
| For thread | d ₁ m7 | d ₂ h6 | d ₃ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| M5 | 4,25 | 6 | 5,5 | 66 | 28 | 13,6 | 36 | SCD561-0425-3-3-145HA-HP835 | 31053657 |
| M6 | 5,10 | 8 | 6,6 | 79 | 41 | 16,5 | 36 | SCD561-0510-3-3-145HA-HP835 | 31053658 |
| M8 | 6,85 | 10 | 8,8 | 89 | 47 | 21 | 40 | SCD561-0685-3-3-145HA-HP835 | 31053659 |
| M8x1 | 7,10 | 10 | 8,8 | 89 | 47 | 21 | 40 | SCD561-0710-3-3-145HA-HP835 | 31073436 |
| M10 | 8,60 | 12 | 11 | 102 | 55 | 25,5 | 45 | SCD561-0860-3-3-145HA-HP835 | 31053670 |
| M10x1 | 9,10 | 12 | 11 | 102 | 55 | 25,5 | 45 | SCD561-0910-3-3-145HA-HP835 | 31073438 |
| M12 | 10,35 | 14 | 13,2 | 107 | 60 | 30 | 45 | SCD561-1035-3-3-145HA-HP835 | 31053671 |
| M16 | 14,15 | 18 | 17,6 | 123 | 73 | 38,5 | 48 | SCD561-1415-3-3-145HA-HP835 | 31053672 |

Configurable features

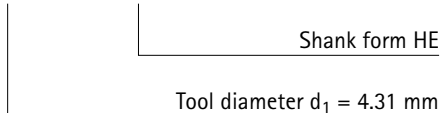
Diameter:
Diameter in increments of 0.01 mm freely selectable

Step length
Step lengths in increments of 0,01mm available

Shank form:
Shank form: HB | HE

Specification:
SCD561-[diameter]-3-3-145[shank form]-HP835

Example:
SCD561-0431-3-3-145HE-HP835



Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | d ₃ h6 | l ₁ | l ₂ | l ₃ min. | l ₃ max. |
|---------------------|---------------------|-------------------|-------------------|----------------|----------------|---------------------|---------------------|
| 3,98 | 4,50 | 6 | 5 | 66 | 28 | 4,00 | 15,4 |
| 4,51 | 5,50 | 6 | 6 | 66 | 28 | 4,50 | 15,4 |
| 5,51 | 6,50 | 8 | 7 | 79 | 41 | 5,50 | 22,55 |
| 6,51 | 7,50 | 8 | 8 | 79 | 41 | 6,50 | 22,55 |
| 7,51 | 8,50 | 10 | 9 | 89 | 47 | 7,50 | 25,85 |
| 8,51 | 9,50 | 10 | 10 | 89 | 47 | 8,50 | 25,85 |
| 9,51 | 11,50 | 12 | 12 | 102 | 55 | 9,50 | 30,25 |
| 11,51 | 13,50 | 14 | 14 | 107 | 60 | 11,50 | 33 |
| 13,51 | 15,50 | 16 | 16 | 115 | 65 | 13,50 | 35,75 |
| 15,51 | 17,50 | 18 | 18 | 123 | 73 | 15,50 | 40,15 |

Core bore drilling with 90° chamfer

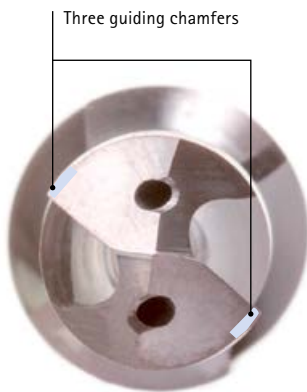
In accordance to DIN 8378 with the Tritan-Step-Drill-Steel



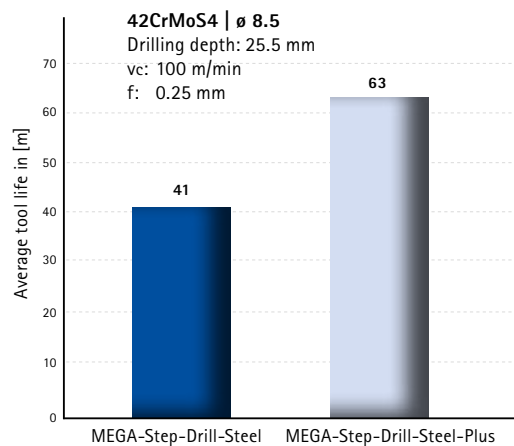
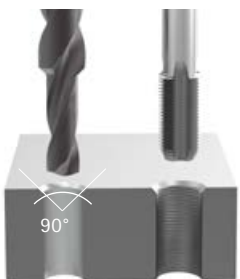


MEGA STEP DRILL STEEL PLUS

Cost-effective machining of tapping bores (in accordance with DIN 8378)



Core hole bore M10



AT A GLANCE

- Upgrade of the MEGA-Step-Drill-Steel with and without IC
- Innovative coating
- Optimised micro and macro geometry
- Diameter range from 2.50 to 15.00 mm

ADVANTAGES

- 15 per cent higher cutting speeds*
- 15 per cent higher feed*
- 50 per cent longer tool life*

* Compared to the predecessor model

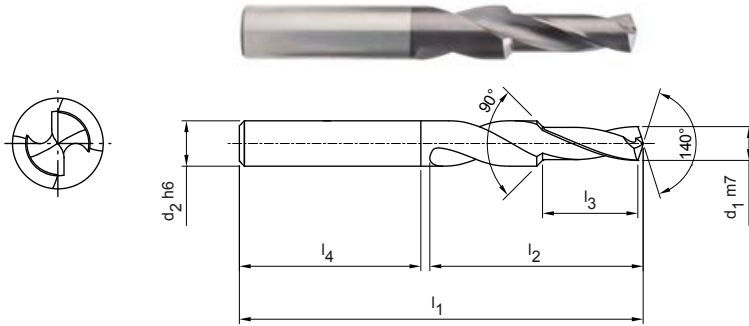
MEGA-Step-Drill-Steel-Plus

Solid carbide step drill

SCD590, external coolant supply, follow-up product to the MEGA-Step-Drill-Steel

Design:

- Drill diameter: 2.50 – 15.00 mm
- Cutting material: HP358
- Number of cutting edges: 2
- Number of guiding chamfers: 2
- Tip angle: 140°
- Side rake angle: 30°



Stocked preferred series in shank form HA

| | | Dimensions | | | | | | Shank form HA | |
|------------|------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------------|-----------|
| For thread | Type | d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| M3 | GB | 2,50 | 6 | 62 | 20 | 8,8 | 36 | SCD590-0250-2-2-140HA-HP358 | 31228957 |
| M3 | FO | 2,80 | 6 | 62 | 20 | 8,8 | 36 | SCD590-0280-2-2-140HA-HP358 | 31228958 |
| M4 | GB | 3,30 | 6 | 62 | 24 | 11,4 | 36 | SCD590-0330-2-2-140HA-HP358 | 31228959 |
| M4 | FO | 3,70 | 6 | 62 | 24 | 11,4 | 36 | SCD590-0370-2-2-140HA-HP358 | 31228960 |
| M5 | GB | 4,20 | 6 | 66 | 28 | 13,6 | 36 | SCD590-0420-2-2-140HA-HP358 | 31228961 |
| M5 | FO | 4,65 | 6 | 66 | 28 | 13,6 | 36 | SCD590-0465-2-2-140HA-HP358 | 31228962 |
| M6 | GB | 5,00 | 8 | 79 | 34 | 16,5 | 36 | SCD590-0500-2-2-140HA-HP358 | 31149619 |
| M6 | FO | 5,55 | 8 | 79 | 34 | 16,5 | 36 | SCD590-0555-2-2-140HA-HP358 | 31228963 |
| M8 | GB | 6,80 | 10 | 89 | 47 | 21 | 40 | SCD590-0680-2-2-140HA-HP358 | 31141315 |
| M8 | FO | 7,45 | 10 | 89 | 47 | 21 | 40 | SCD590-0745-2-2-140HA-HP358 | 31228964 |
| M10 | GB | 8,50 | 12 | 102 | 55 | 25,5 | 45 | SCD590-0850-2-2-140HA-HP358 | 31228965 |
| M10 | FO | 9,30 | 12 | 102 | 55 | 25,5 | 45 | SCD590-0930-2-2-140HA-HP358 | 31228966 |
| M12 | GB | 10,20 | 14 | 107 | 60 | 30 | 45 | SCD590-1020-2-2-140HA-HP358 | 31228967 |
| M12 | FO | 11,20 | 14 | 107 | 60 | 30 | 45 | SCD590-1120-2-2-140HA-HP358 | 31228968 |
| M14 | GB | 12,00 | 16 | 115 | 65 | 34,5 | 48 | SCD590-1200-2-2-140HA-HP358 | 31149650 |
| M16 | GB | 14,00 | 18 | 123 | 73 | 38,5 | 48 | SCD590-1400-2-2-140HA-HP358 | 31228970 |

GB: Core bore thread boring
FO: Core bore thread forming / thread grooving

Configurable features

Shank form:
Shank form: HB | HE

Specification:
SCD590-0420-2-2-140[shank form]-HP358

Example:

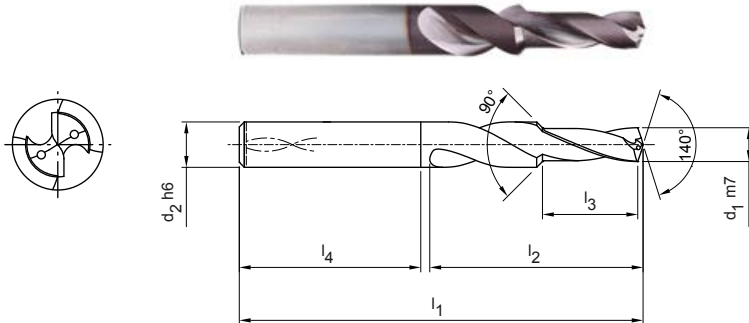
SCD590-0420-2-2-140HE05-HP358

Shank form HE

MEGA-Step-Drill-Steel-Plus

Solid carbide step drill
SCD591, internal coolant supply, follow-up product to the MEGA-Step-Drill-Steel

Design:
 Drill diameter: 3,30 - 14,00 mm
 Cutting material: HP358
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 140°
 Side rake angle: 30°




Stocked preferred series in shank form HA


| | | Dimensions | | | | | | Shank form HA | |
|------------|------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------------|-----------|
| For thread | Type | d ₁ m7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| M4 | GB | 3,30 | 6 | 62 | 24 | 11,4 | 36 | SCD591-0330-2-2-140HA-HP358 | 31140987 |
| M4 | FO | 3,70 | 6 | 62 | 24 | 11,4 | 36 | SCD591-0370-2-2-140HA-HP358 | 31140988 |
| M5 | GB | 4,20 | 6 | 66 | 28 | 13,6 | 36 | SCD591-0420-2-2-140HA-HP358 | 31140989 |
| M6 | GB | 5,00 | 8 | 79 | 34 | 16,5 | 36 | SCD591-0500-2-2-140HA-HP358 | 31140991 |
| M6 | FO | 5,55 | 8 | 79 | 34 | 16,5 | 36 | SCD591-0555-2-2-140HA-HP358 | 31140992 |
| M8 | GB | 6,80 | 10 | 89 | 47 | 21 | 40 | SCD591-0680-2-2-140HA-HP358 | 31140993 |
| M8 | FO | 7,45 | 10 | 89 | 47 | 21 | 40 | SCD591-0745-2-2-140HA-HP358 | 31140994 |
| M10 | GB | 8,50 | 12 | 102 | 55 | 25,5 | 45 | SCD591-0850-2-2-140HA-HP358 | 31140995 |
| M10 | FO | 9,30 | 12 | 102 | 55 | 25,5 | 45 | SCD591-0930-2-2-140HA-HP358 | 31140996 |
| M12 | GB | 10,20 | 14 | 107 | 60 | 30 | 45 | SCD591-1020-2-2-140HA-HP358 | 31140997 |
| M12 | GB | 10,20 | 14 | 107 | 60 | 30 | 45 | SCD591-1020-2-2-140HA-HP358 | 31140997 |
| M12 | FO | 11,20 | 14 | 107 | 60 | 30 | 45 | SCD591-1120-2-2-140HA-HP358 | 31140998 |
| M16 | GB | 14,00 | 18 | 123 | 73 | 38,5 | 48 | SCD591-1400-2-2-140HA-HP358 | 31140999 |

GB: Core bore thread boring
FO: Core bore thread forming / thread grooving

Configurable features



Shank form:
Shank form: HB | HE



Specification:
SCD591-0420-2-2-140[shank form]-HP358

Example:
SCD591-0420-2-2-140HE05-HP358

Shank form HE

Dimensions in mm.
For cutting data recommendations, see end of chapter.
Special designs and other coatings available upon request.

Cutting data recommendations for step drills

Feed and cutting speed

Tritan-Step-Drill-Steel | SCD561

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|----|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P5 | P5.1 Cast steel | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 4.00 | 5.50 | 7.50 | 10.50 | 14.50 | 20.00 |
| | 115 | 105 | 105 | | 0.24 | 0.30 | 0.37 | 0.46 | 0.56 | 0.65 |
| | 105 | 85 | 85 | | 0.30 | 0.37 | 0.46 | 0.58 | 0.70 | 0.81 |
| | 115 | 100 | 100 | | 0.28 | 0.35 | 0.44 | 0.55 | 0.66 | 0.77 |
| | 80 | 70 | 70 | | 0.24 | 0.29 | 0.36 | 0.44 | 0.53 | 0.61 |
| | 85 | 75 | 75 | | 0.25 | 0.31 | 0.39 | 0.49 | 0.60 | 0.69 |
| | 70 | 65 | 65 | | 0.21 | 0.26 | 0.33 | 0.41 | 0.49 | 0.56 |
| | 70 | 50 | 60 | | 0.18 | 0.21 | 0.26 | 0.32 | 0.38 | 0.43 |
| | 115 | 100 | 100 | | 0.28 | 0.35 | 0.44 | 0.55 | 0.66 | 0.77 |
| | 55 | 35 | 35 | | 0.11 | 0.14 | 0.18 | 0.22 | 0.27 | 0.31 |
| | | | | | | | | | | |
| | 140 | 100 | 100 | 100 | 0.36 | 0.45 | 0.55 | 0.67 | 0.80 | 0.91 |
| | 185 | 115 | 140 | 140 | 0.35 | 0.43 | 0.52 | 0.63 | 0.74 | 0.84 |
| | 115 | 85 | 85 | | 0.31 | 0.38 | 0.46 | 0.55 | 0.64 | 0.73 |
| | 70 | 45 | 60 | | 0.17 | 0.20 | 0.24 | 0.28 | 0.33 | 0.37 |
| | 105 | 90 | 90 | | 0.34 | 0.41 | 0.49 | 0.59 | 0.69 | 0.78 |
| | 90 | 80 | 80 | | 0.28 | 0.34 | 0.40 | 0.47 | 0.55 | 0.62 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for step drills

Feed and cutting speed

MEGA-Step-Drill-Steel-Plus | SCD590, 591

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | |
|------|----|---|---|-------|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 | |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 | |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 | |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 | |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 | |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 | |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 | |
| | P4 | P4.1 Stainless steels, ferritic and martensitic | | |
| | P5 | P5.1 Cast steel | | |
| | P6 | P6.1 Stainless cast steel, ferritic and martensitic | | |
| | K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| K2 | | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 | |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 | |
| K3 | | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 | |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 | |
| H | H1 | H1.1 Hardened steel/cast steel | < 44 | |
| | | H1.2 Hardened steel/cast steel | < 55 | |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 2.50 | 3.70 | 5.00 | 7.45 | 10.20 | 15.00 |
| | 110 | 100 | 100 | | 0.09 | 0.11 | 0.14 | 0.18 | 0.23 | 0.29 |
| | 100 | 85 | 85 | | 0.11 | 0.14 | 0.18 | 0.23 | 0.29 | 0.36 |
| | 110 | 95 | 95 | | 0.10 | 0.13 | 0.17 | 0.22 | 0.27 | 0.34 |
| | 75 | 65 | 65 | | 0.09 | 0.11 | 0.14 | 0.18 | 0.22 | 0.27 |
| | 85 | 70 | 70 | | 0.09 | 0.11 | 0.15 | 0.19 | 0.25 | 0.30 |
| | 65 | 60 | 60 | | 0.08 | 0.10 | 0.13 | 0.16 | 0.20 | 0.25 |
| | 65 | 50 | 55 | | 0.07 | 0.08 | 0.10 | 0.13 | 0.16 | 0.19 |
| | 65 | 50 | 55 | | 0.06 | 0.08 | 0.10 | 0.13 | 0.16 | 0.20 |
| | 110 | 95 | 95 | | 0.10 | 0.13 | 0.17 | 0.22 | 0.27 | 0.34 |
| | 65 | 50 | 55 | | 0.06 | 0.08 | 0.10 | 0.13 | 0.16 | 0.20 |
| | 120 | 85 | 85 | 85 | 0.13 | 0.19 | 0.26 | 0.35 | 0.45 | 0.54 |
| | 160 | 100 | 120 | 120 | 0.13 | 0.18 | 0.25 | 0.33 | 0.42 | 0.50 |
| | 100 | 75 | 75 | | 0.12 | 0.16 | 0.22 | 0.28 | 0.36 | 0.43 |
| | 60 | 40 | 50 | | 0.09 | 0.12 | 0.15 | 0.19 | 0.24 | 0.28 |
| | 90 | 80 | 80 | | 0.13 | 0.18 | 0.23 | 0.31 | 0.39 | 0.46 |
| | 80 | 70 | 70 | | 0.11 | 0.15 | 0.19 | 0.25 | 0.31 | 0.36 |
| | 90 | 90 | 90 | | 0.08 | 0.10 | 0.13 | 0.16 | 0.20 | 0.25 |
| | 25 | 25 | 25 | | 0.04 | 0.05 | 0.07 | 0.09 | 0.11 | 0.14 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.





DEEP DRILLING

Deep drill

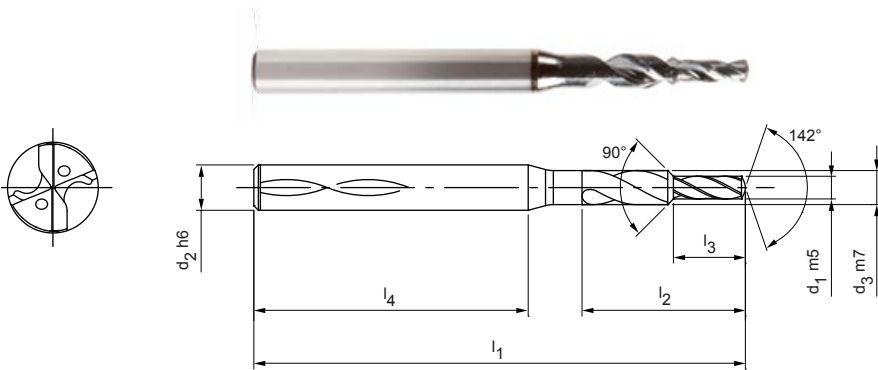
| | |
|---------------------------|-----|
| MEGA-Pilot-Drill | 268 |
| MEGA-Deep-Drill | 269 |
| MEGA-Deep-Drill-Alu | 278 |

Technical appendix

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|---|-----|
| Cutting data recommendations | 284 |
| Application notes for deep drilling | 742 |

MEGA-Pilot-Drill

Solid carbide step drill
SCD581, internal coolant supply



Design:
 Drill diameter: 1.00 – 3.00 mm
 Bore tolerance: IT 9 (achievable)
 Cutting material: HP246
 Number of cutting edges: 2
 Number of guiding chamfers: 2
 Tip angle: 142°

Application:
 Pilot drill specifically designed for the MEGA-Deep-Drill.
 Maximum use up to diameter of 3.00 mm.



Stocked preferred series in shank form HA

| Dimensions | | | | | | | Shank form HA | |
|-------------------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------------|-----------|
| d ₁ m5 | d ₂ h6 | d ₃ m7 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 1,00 | 3 | 1,5 | 50 | 7,2 | 3 | 38 | SCD581-0100-2-2-142HA-HP246 | 31080870 |
| 1,10 | 3 | 1,65 | 50 | 7,9 | 3,3 | 37,5 | SCD581-0110-2-2-142HA-HP246 | 31080871 |
| 1,20 | 3 | 1,8 | 50 | 8,6 | 3,6 | 36,9 | SCD581-0120-2-2-142HA-HP246 | 31080872 |
| 1,30 | 3 | 1,95 | 50 | 9,4 | 3,9 | 36,3 | SCD581-0130-2-2-142HA-HP246 | 31080873 |
| 1,40 | 3 | 2,1 | 50 | 10,1 | 4,2 | 35,7 | SCD581-0140-2-2-142HA-HP246 | 31080874 |
| 1,50 | 3 | 2,25 | 50 | 10,8 | 4,5 | 35,1 | SCD581-0150-2-2-142HA-HP246 | 31080875 |
| 1,60 | 3 | 2,4 | 50 | 11,5 | 4,8 | 34,6 | SCD581-0160-2-2-142HA-HP246 | 31080876 |
| 1,70 | 3 | 2,55 | 50 | 12,2 | 5,1 | 34 | SCD581-0170-2-2-142HA-HP246 | 31080877 |
| 1,80 | 3 | 2,7 | 50 | 13 | 5,4 | 33,4 | SCD581-0180-2-2-142HA-HP246 | 31080878 |
| 1,90 | 4 | 2,85 | 55 | 13,7 | 5,7 | 35,9 | SCD581-0190-2-2-142HA-HP246 | 31080879 |
| 2,00 | 4 | 3 | 55 | 14,4 | 6 | 35,3 | SCD581-0200-2-2-142HA-HP246 | 31080880 |
| 2,10 | 4 | 3,15 | 55 | 15,1 | 6,3 | 34,8 | SCD581-0210-2-2-142HA-HP246 | 31080881 |
| 2,20 | 4 | 3,3 | 55 | 15,8 | 6,6 | 34,2 | SCD581-0220-2-2-142HA-HP246 | 31080882 |
| 2,30 | 4 | 3,45 | 55 | 16,6 | 6,9 | 33,6 | SCD581-0230-2-2-142HA-HP246 | 31080883 |
| 2,40 | 4 | 3,6 | 55 | 17,3 | 7,2 | 33 | SCD581-0240-2-2-142HA-HP246 | 31080884 |
| 2,50 | 4 | 3,75 | 55 | 18 | 7,5 | 32,4 | SCD581-0250-2-2-142HA-HP246 | 31080885 |
| 2,60 | 6 | 3,9 | 66 | 18,7 | 7,8 | 39,1 | SCD581-0260-2-2-142HA-HP246 | 31080886 |
| 2,70 | 6 | 4,05 | 66 | 19,4 | 8,1 | 38,5 | SCD581-0270-2-2-142HA-HP246 | 31080887 |
| 2,80 | 6 | 4,2 | 66 | 20,2 | 8,4 | 37,9 | SCD581-0280-2-2-142HA-HP246 | 31080888 |
| 2,90 | 6 | 4,35 | 66 | 20,9 | 8,7 | 37,4 | SCD581-0290-2-2-142HA-HP246 | 31080889 |
| 3,00 | 6 | 4,5 | 66 | 21,6 | 9 | 36,8 | SCD581-0300-2-2-142HA-HP246 | 31080890 |

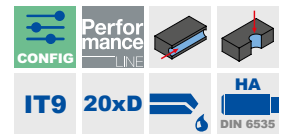
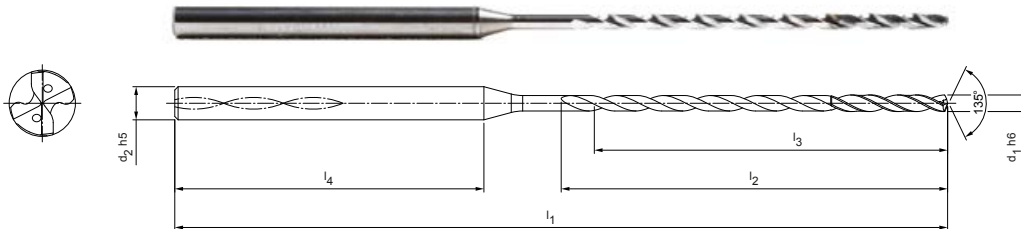
Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

MEGA-Deep-Drill

Solid carbide twist drill
SCD171 (20xD), internal coolant supply

Design:

Drill diameter: 1.00 – 2.99 mm
Bore tolerance: \geq IT 9
Cutting material: HP246
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 135°
Helix angle: 30°
Special features: Head coating



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 1,00 | 3 | 62 | 27 | 25 | 28 | 28 | SCD171-0100-2-4-135HA20-HP246 | 30998795 |
| 1,10 | 3 | 62 | 27 | 25 | 28 | 28 | SCD171-0110-2-4-135HA20-HP246 | 30998796 |
| 1,20 | 3 | 62 | 27 | 25 | 28 | 28 | SCD171-0120-2-4-135HA20-HP246 | 30998798 |
| 1,30 | 3 | 70 | 35 | 33 | 28 | 28 | SCD171-0130-2-4-135HA20-HP246 | 30998799 |
| 1,40 | 3 | 70 | 35 | 32 | 28 | 28 | SCD171-0140-2-4-135HA20-HP246 | 30998800 |
| 1,50 | 3 | 70 | 35 | 32 | 28 | 28 | SCD171-0150-2-4-135HA20-HP246 | 30998801 |
| 1,60 | 3 | 75 | 41 | 38 | 28 | 28 | SCD171-0160-2-4-135HA20-HP246 | 30998802 |
| 1,70 | 3 | 75 | 41 | 38 | 28 | 28 | SCD171-0170-2-4-135HA20-HP246 | 30998803 |
| 1,80 | 3 | 75 | 41 | 38 | 28 | 28 | SCD171-0180-2-4-135HA20-HP246 | 30998804 |
| 1,90 | 3 | 80 | 46 | 43 | 28 | 28 | SCD171-0190-2-4-135HA20-HP246 | 30998805 |
| 2,00 | 3 | 80 | 46 | 43 | 28 | 28 | SCD171-0200-2-4-135HA20-HP246 | 30998806 |
| 2,10 | 3 | 80 | 46 | 42 | 28 | 28 | SCD171-0210-2-4-135HA20-HP246 | 30998807 |
| 2,20 | 3 | 90 | 55 | 51 | 28 | 28 | SCD171-0220-2-4-135HA20-HP246 | 30998808 |
| 2,30 | 3 | 90 | 55 | 51 | 28 | 28 | SCD171-0230-2-4-135HA20-HP246 | 30998809 |
| 2,40 | 3 | 90 | 55 | 51 | 28 | 28 | SCD171-0240-2-4-135HA20-HP246 | 30998810 |
| 2,50 | 3 | 90 | 55 | 51 | 28 | 28 | SCD171-0250-2-4-135HA20-HP246 | 30998811 |
| 2,60 | 3 | 100 | 66 | 62 | 28 | 28 | SCD171-0260-2-4-135HA20-HP246 | 30998812 |
| 2,70 | 3 | 100 | 66 | 61 | 28 | 28 | SCD171-0270-2-4-135HA20-HP246 | 30998813 |
| 2,80 | 3 | 100 | 66 | 61 | 28 | 28 | SCD171-0280-2-4-135HA20-HP246 | 30998814 |
| 2,90 | 3 | 100 | 66 | 61 | 28 | 28 | SCD171-0290-2-4-135HA20-HP246 | 30998815 |

Recommendation for pilot drill:

Please use the MEGA-Pilot-Drill (SCD581) or the MICRO-Drill-Steel (SCD371 - 5xD) with the same nominal diameter for the pilot drill.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Deep-Drill | Solid carbide twist drill SCD171 (20xD), internal coolant supply

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable

**Specification:**

SCD171-[diameter]-2-4-135HA20-HP246

Example:

SCD171-0221-2-4-135HA20-HP246

Tool diameter $d_1 = 2.21$ mm

Dimensions of configurable series

| d_1 min. | d_1 max. | d_2 h6 | l_1 | l_2 | l_3 max. | l_4 |
|------------|------------|----------|-------|-------|------------|-------|
| 1,00 | 1,29 | 3 | 62 | 27 | 25 | 28 |
| 1,30 | 1,39 | 3 | 70 | 35 | 33 | 28 |
| 1,40 | 1,59 | 3 | 70 | 35 | 32 | 28 |
| 1,60 | 1,89 | 3 | 75 | 41 | 38 | 28 |
| 1,90 | 2,09 | 3 | 80 | 46 | 43 | 28 |
| 2,10 | 2,19 | 3 | 80 | 46 | 42 | 28 |
| 2,20 | 2,59 | 3 | 90 | 55 | 51 | 28 |
| 2,60 | 2,69 | 3 | 100 | 66 | 62 | 28 |
| 2,70 | 2,99 | 3 | 100 | 66 | 61 | 28 |

Application notes for deep drilling can be found in the
Technical Appendix chapter.

Dimensions in mm.

For cutting data recommendations, see end of chapter.

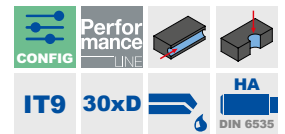
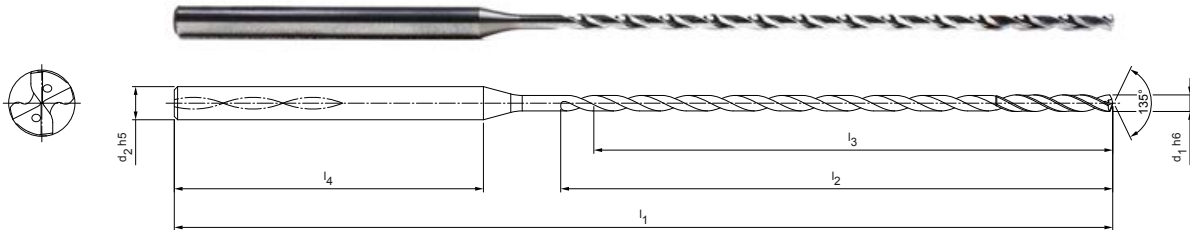
Special designs and other coatings available upon request.

MEGA-Deep-Drill

Solid carbide twist drill
SCD171 (30xD), internal coolant supply

Design:

Drill diameter: 1.00 – 2.99 mm
Bore tolerance: \geq IT 9
Cutting material: HP246
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 135°
Helix angle: 30°
Special features: Head coating



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h6 | d ₂ h5 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 1,00 | 3 | 75 | 38 | 36 | 28 | 36 | SCD171-0100-2-4-135HA30-HP246 | 30998816 |
| 1,10 | 3 | 75 | 38 | 36 | 28 | 33 | SCD171-0110-2-4-135HA30-HP246 | 30998817 |
| 1,20 | 3 | 75 | 38 | 36 | 28 | 30 | SCD171-0120-2-4-135HA30-HP246 | 30998818 |
| 1,30 | 3 | 85 | 50 | 48 | 28 | 37 | SCD171-0130-2-4-135HA30-HP246 | 30998819 |
| 1,40 | 3 | 85 | 50 | 47 | 28 | 34 | SCD171-0140-2-4-135HA30-HP246 | 30998820 |
| 1,50 | 3 | 85 | 50 | 47 | 28 | 31 | SCD171-0150-2-4-135HA30-HP246 | 30998821 |
| 1,60 | 3 | 95 | 59 | 56 | 28 | 35 | SCD171-0160-2-4-135HA30-HP246 | 30998822 |
| 1,70 | 3 | 95 | 59 | 56 | 28 | 33 | SCD171-0170-2-4-135HA30-HP246 | 30998823 |
| 1,80 | 3 | 95 | 59 | 56 | 28 | 31 | SCD171-0180-2-4-135HA30-HP246 | 30998824 |
| 1,90 | 3 | 100 | 66 | 63 | 28 | 33 | SCD171-0190-2-4-135HA30-HP246 | 30998825 |
| 2,00 | 3 | 100 | 66 | 63 | 28 | 32 | SCD171-0200-2-4-135HA30-HP246 | 30998826 |
| 2,10 | 3 | 100 | 66 | 62 | 28 | 30 | SCD171-0210-2-4-135HA30-HP246 | 30998827 |
| 2,20 | 3 | 115 | 80 | 76 | 28 | 35 | SCD171-0220-2-4-135HA30-HP246 | 30998828 |
| 2,30 | 3 | 115 | 80 | 76 | 28 | 33 | SCD171-0230-2-4-135HA30-HP246 | 30998829 |
| 2,40 | 3 | 115 | 80 | 76 | 28 | 32 | SCD171-0240-2-4-135HA30-HP246 | 30998830 |
| 2,50 | 3 | 115 | 80 | 76 | 28 | 30 | SCD171-0250-2-4-135HA30-HP245 | 30451572 |
| 2,60 | 3 | 130 | 96 | 92 | 28 | 35 | SCD171-0260-2-4-135HA30-HP246 | 30998832 |
| 2,70 | 3 | 130 | 96 | 91 | 28 | 34 | SCD171-0270-2-4-135HA30-HP246 | 30998833 |
| 2,80 | 3 | 130 | 96 | 91 | 28 | 33 | SCD171-0280-2-4-135HA30-HP246 | 30998834 |
| 2,90 | 3 | 130 | 96 | 91 | 28 | 31 | SCD171-0290-2-4-135HA30-HP246 | 30998835 |

Recommendation for pilot drill:

Please use the MEGA-Pilot-Drill (SCD581) or the MICRO-Drill-Steel (SCD371 - 5xD) with the same nominal diameter for the pilot drill.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Deep-Drill | Solid carbide twist drill SCD171 (20xD), internal coolant supply

Configurable features



Diameter:
Diameter in increments of
0.01 mm freely selectable

**Specification:**

SCD171-[diameter]-2-4-135HA30-HP246

Example:

SCD171-0221-2-4-135HA30-HP246

Tool diameter $d_1 = 2.21$ mm

Dimensions of configurable series

| d_1 min. | d_1 max. | d_2 h6 | l_1 | l_2 | l_3 max. | l_4 |
|------------|------------|----------|-------|-------|------------|-------|
| 1,00 | 1,29 | 3 | 75 | 38 | 36 | 28 |
| 1,30 | 1,39 | 3 | 85 | 50 | 48 | 28 |
| 1,40 | 1,59 | 3 | 85 | 50 | 47 | 28 |
| 1,60 | 1,89 | 3 | 95 | 59 | 56 | 28 |
| 1,90 | 2,09 | 3 | 100 | 66 | 63 | 28 |
| 2,10 | 2,19 | 3 | 100 | 66 | 62 | 28 |
| 2,20 | 2,59 | 3 | 115 | 80 | 76 | 28 |
| 2,60 | 2,69 | 3 | 130 | 96 | 92 | 28 |
| 2,70 | 2,99 | 3 | 130 | 96 | 91 | 28 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

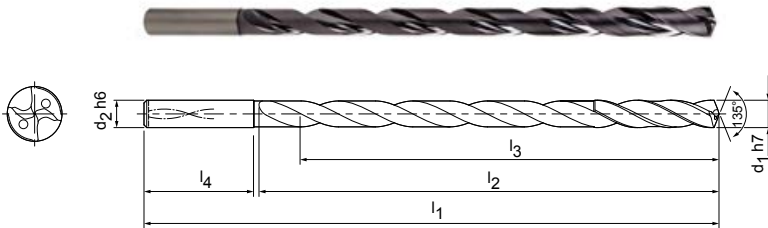
Special designs and other coatings available upon request.

MEGA-Deep-Drill

Solid carbide twist drill
SCD171 (15xD), internal coolant supply

Design:

Drill diameter: 3.00 – 16.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP285 / HP245
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 135°
Helix angle: 30°
Special features: Head coating



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 3,00 | 4 | 90 | 56 | 52 | 32 | 17 | SCD171-0300-2-4-135HA15-HP285 | 30392214 |
| 3,50 | 4 | 100 | 66 | 61 | 32 | 17 | SCD171-0350-2-4-135HA15-HP285 | 30392215 |
| 4,00 | 4 | 100 | 66 | 60 | 32 | 15 | SCD171-0400-2-4-135HA15-HP285 | 30392216 |
| 4,50 | 5 | 110 | 74 | 67 | 34 | 15 | SCD171-0450-2-4-135HA15-HP285 | 30392217 |
| 5,00 | 5 | 120 | 84 | 77 | 34 | 15 | SCD171-0500-2-4-135HA15-HP285 | 30392218 |
| 5,50 | 6 | 130 | 92 | 84 | 36 | 15 | SCD171-0550-2-4-135HA15-HP285 | 30392219 |
| 6,00 | 6 | 140 | 102 | 93 | 36 | 16 | SCD171-0600-2-4-135HA15-HP285 | 30392220 |
| 7,00 | 7 | 155 | 115 | 105 | 38 | 15 | SCD171-0700-2-4-135HA15-HP285 | 30392221 |
| 8,00 | 8 | 175 | 133 | 121 | 40 | 15 | SCD171-0800-2-4-135HA15-HP285 | 30392222 |
| 9,00 | 9 | 190 | 148 | 135 | 40 | 15 | SCD171-0900-2-4-135HA15-HP285 | 30392223 |
| 9,50 | 10 | 210 | 168 | 153 | 40 | 15 | SCD171-0950-2-4-135HA15-HP245 | 30453021 |
| 10,00 | 10 | 210 | 168 | 153 | 40 | 15 | SCD171-1000-2-4-135HA15-HP285 | 30392224 |
| 11,00 | 11 | 230 | 183 | 167 | 45 | 15 | SCD171-1100-2-4-135HA15-HP245 | 30392225 |
| 12,00 | 12 | 250 | 203 | 185 | 45 | 15 | SCD171-1200-2-4-135HA15-HP245 | 30392226 |
| 13,00 | 13 | 265 | 218 | 199 | 45 | 15 | SCD171-1300-2-4-135HA15-HP245 | 30392227 |
| 14,00 | 14 | 285 | 233 | 212 | 50 | 15 | SCD171-1400-2-4-135HA15-HP245 | 30392228 |
| 15,00 | 15 | 305 | 253 | 231 | 50 | 15 | SCD171-1500-2-4-135HA15-HP245 | 30392229 |

Recommendation for pilot drill:

Please use the MEGA-Drill-Steel-Plus (SCD601 - 3xD) and the same nominal diameter for the pilot drill.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

Dimensions in mm.

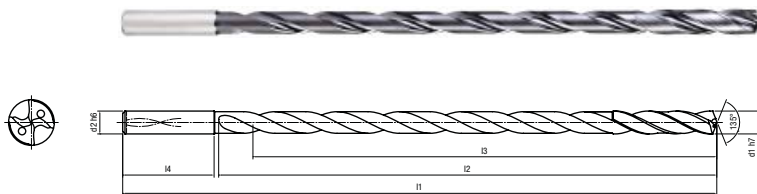
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Deep-Drill

Solid carbide twist drill
SCD171 (20xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 16.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HP245 / HP285
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 135°
 Helix angle: 30°
 Special features: Head coating



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 3,00 | 4 | 110 | 74 | 70 | 32 | 23 | SCD171-0300-2-4-135HA20-HP285 | 30392231 |
| 3,50 | 4 | 120 | 86 | 81 | 32 | 23 | SCD171-0350-2-4-135HA20-HP285 | 30392232 |
| 4,00 | 4 | 120 | 86 | 80 | 32 | 20 | SCD171-0400-2-4-135HA20-HP285 | 30392233 |
| 5,00 | 5 | 145 | 109 | 102 | 34 | 20 | SCD171-0500-2-4-135HA20-HP285 | 30392235 |
| 5,50 | 6 | 160 | 120 | 112 | 36 | 20 | SCD171-0550-2-4-135HA20-HP285 | 30392236 |
| 6,00 | 6 | 170 | 130 | 121 | 36 | 20 | SCD171-0600-2-4-135HA20-HP285 | 30392237 |
| 6,50 | 7 | 190 | 150 | 140 | 36 | 20 | SCD171-0650-2-4-135HA20-HP245 | 30451508 |
| 7,00 | 7 | 190 | 150 | 140 | 38 | 20 | SCD171-0700-2-4-135HA20-HP285 | 30392238 |
| 8,00 | 8 | 215 | 173 | 161 | 40 | 20 | SCD171-0800-2-4-135HA20-HP285 | 30392239 |
| 9,00 | 9 | 240 | 196 | 183 | 40 | 20 | SCD171-0900-2-4-135HA20-HP285 | 30392240 |
| 10,00 | 10 | 260 | 218 | 203 | 40 | 20 | SCD171-1000-2-4-135HA20-HP285 | 30392241 |
| 11,00 | 11 | 285 | 238 | 222 | 45 | 20 | SCD171-1100-2-4-135HA20-HP245 | 30392242 |
| 12,00 | 12 | 305 | 258 | 240 | 45 | 20 | SCD171-1200-2-4-135HA20-HP245 | 30392243 |
| 14,00 | 14 | 355 | 303 | 282 | 50 | 20 | SCD171-1400-2-4-135HA20-HP245 | 30392245 |
| 15,00 | 15 | 375 | 323 | 301 | 50 | 20 | SCD171-1500-2-4-135HA20-HP245 | 30392246 |
| 16,00 | 16 | 400 | 348 | 324 | 50 | 20 | SCD171-1600-2-4-135HA20-HP245 | 30392247 |

Recommendation for pilot drill:

Please use the MEGA-Drill-Steel-Plus (SCD601 - 3xD) and the same nominal diameter for the pilot drill.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

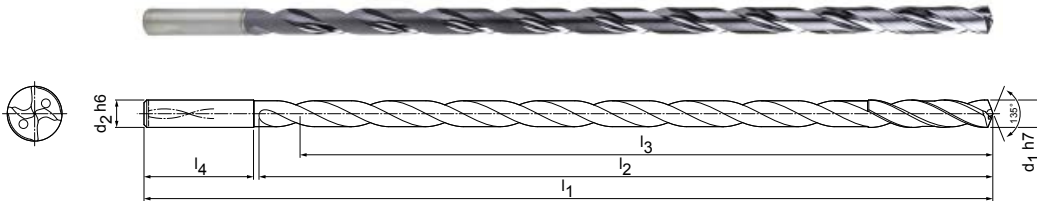
Application notes for deep drilling can be found in the Technical Appendix chapter.

MEGA-Deep-Drill

Solid carbide twist drill
SCD171 (25xD), internal coolant supply

Design:

Drill diameter: 3.00 – 14.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP285 / HP245
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 135°
Helix angle: 30°
Special features: Head coating



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 3,00 | 4 | 125 | 91 | 87 | 32 | 29 | SCD171-0300-2-4-135HA25-HP285 | 30392248 |
| 3,50 | 4 | 140 | 106 | 101 | 32 | 29 | SCD171-0350-2-4-135HA25-HP285 | 30392249 |
| 4,00 | 4 | 140 | 106 | 100 | 32 | 25 | SCD171-0400-2-4-135HA25-HP285 | 30392250 |
| 5,00 | 5 | 170 | 134 | 127 | 34 | 25 | SCD171-0500-2-4-135HA25-HP285 | 30392252 |
| 5,50 | 6 | 185 | 147 | 139 | 36 | 25 | SCD171-0550-2-4-135HA25-HP285 | 30392253 |
| 6,00 | 6 | 200 | 160 | 151 | 36 | 25 | SCD171-0600-2-4-135HA25-HP285 | 30392254 |
| 7,00 | 7 | 225 | 185 | 175 | 38 | 25 | SCD171-0700-2-4-135HA25-HP285 | 30392255 |
| 8,00 | 8 | 255 | 213 | 201 | 40 | 25 | SCD171-0800-2-4-135HA25-HP285 | 30392256 |
| 9,00 | 9 | 280 | 238 | 225 | 40 | 25 | SCD171-0900-2-4-135HA25-HP285 | 30392257 |
| 10,00 | 10 | 310 | 268 | 253 | 40 | 25 | SCD171-1000-2-4-135HA25-HP285 | 30392258 |
| 11,00 | 11 | 340 | 293 | 277 | 45 | 25 | SCD171-1100-2-4-135HA25-HP245 | 30392259 |
| 12,00 | 12 | 365 | 318 | 300 | 45 | 25 | SCD171-1200-2-4-135HA25-HP245 | 30392260 |
| 14,00 | 14 | 425 | 373 | 352 | 50 | 25 | SCD171-1400-2-4-135HA25-HP245 | 30392262 |

Recommendation for pilot drill:

Please use the MEGA-Drill-Steel-Plus (SCD601 - 3xD) and the same nominal diameter for the pilot drill.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

Dimensions in mm.

For cutting data recommendations, see end of chapter.

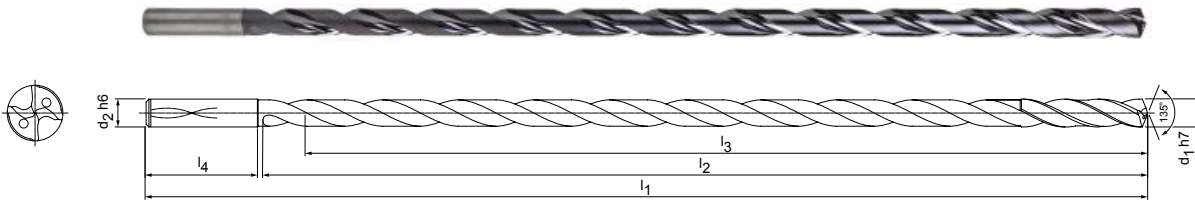
Special designs and other coatings available upon request.

MEGA-Deep-Drill

Solid carbide twist drill
SCD171 (30xD), internal coolant supply

Design:

Drill diameter: 3.00 – 12.00 mm
 Bore tolerance: $\geq IT 9$
 Cutting material: HP245 / HP285
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 135°
 Helix angle: 30°
 Special features: Head coating



Performance LINE IT9 30xD HA DIN 6535

P 1 2 3 4 5 6 M 1 2 3 K 1 2 3 N 1 2 3 4 S 1 2 3 4 5 H 1 2 3

Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 3,00 | 4 | 145 | 110 | 106 | 32 | 35 | SCD171-0300-2-4-135HA30-HP285 | 30392264 |
| 4,00 | 4 | 160 | 126 | 120 | 32 | 30 | SCD171-0400-2-4-135HA30-HP285 | 30392266 |
| 4,50 | 5 | 180 | 144 | 137 | 34 | 31 | SCD171-0450-2-4-135HA30-HP285 | 30392267 |
| 5,00 | 5 | 195 | 159 | 152 | 34 | 30 | SCD171-0500-2-4-135HA30-HP285 | 30392268 |
| 5,50 | 6 | 210 | 172 | 164 | 36 | 30 | SCD171-0550-2-4-135HA30-HP285 | 30392269 |
| 6,00 | 6 | 230 | 192 | 183 | 36 | 31 | SCD171-0600-2-4-135HA30-HP285 | 30392270 |
| 7,00 | 7 | 260 | 220 | 210 | 38 | 30 | SCD171-0700-2-4-135HA30-HP285 | 30392271 |
| 8,00 | 8 | 295 | 253 | 241 | 40 | 30 | SCD171-0800-2-4-135HA30-HP285 | 30392272 |
| 9,00 | 9 | 325 | 283 | 270 | 40 | 30 | SCD171-0900-2-4-135HA30-HP285 | 30392273 |
| 10,00 | 10 | 360 | 318 | 303 | 40 | 30 | SCD171-1000-2-4-135HA30-HP285 | 30392274 |
| 11,00 | 11 | 400 | 353 | 337 | 45 | 31 | SCD171-1100-2-4-135HA30-HP245 | 30392275 |
| 12,00 | 12 | 430 | 383 | 365 | 45 | 30 | SCD171-1200-2-4-135HA30-HP245 | 30392276 |

Recommendation for pilot drill:

Please use the MEGA-Drill-Steel-Plus (SCD601 - 3xD) and the same nominal diameter for the pilot drill.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

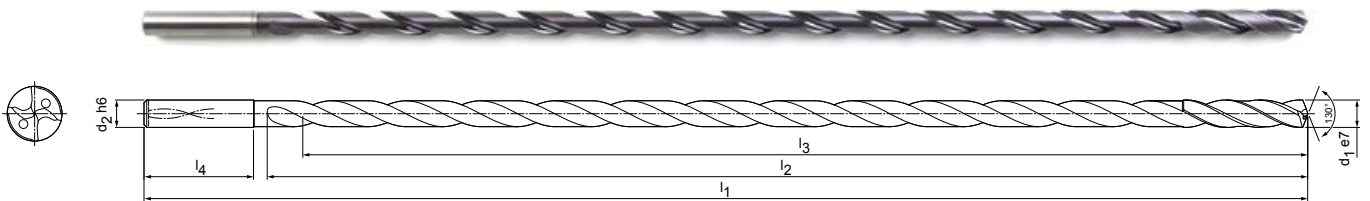
Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

MEGA-Deep-Drill

Solid carbide twist drill
SCD171 (40xD), internal coolant supply

Design:

Drill diameter: 4.00 – 6.00 mm
Bore tolerance: \geq IT 9
Cutting material: HP285
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 130°
Helix angle: 30°
Special features: Head coating



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|------------|----------|-------|-------|-------|-------|-----------|-------------------------------|-----------|
| d_1 h7 | d_2 h6 | l_1 | l_2 | l_3 | l_4 | | Specification | Order no. |
| 4,00 | 4 | 205 | 170 | 164 | 32 | 43 | SCD171-0400-2-4-130HA40-HP285 | 30549867 |
| 5,00 | 5 | 245 | 208 | 201 | 34 | 42 | SCD171-0500-2-4-130HA40-HP285 | 30549869 |
| 6,00 | 6 | 290 | 250 | 241 | 36 | 42 | SCD171-0600-2-4-130HA40-HP285 | 30549871 |

Recommendation for pilot drills or pre-drills:

Please use the MEGA-Drill-Steel-Plus (SCD601 - 3xD) and the same nominal diameter for the pilot drill. Then start pre-drilling using the MEGA-Deep-Drill SCD171 / 20xD and also using the same nominal diameter. The tip angle and diameter tolerance are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

Dimensions in mm.

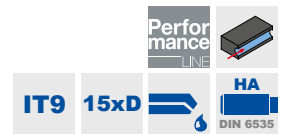
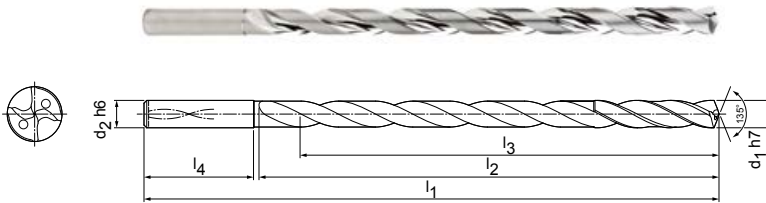
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Deep-Drill-Alu

Solid carbide twist drill
SCD181 (15xD), internal coolant supply

Design:
 Drill diameter: 3.00 – 12.00 mm
 Bore tolerance: \geq IT 9
 Cutting material: HU680 / HU644
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 135°
 Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 3,00 | 4 | 90 | 56 | 52 | 32 | 17 | SCD181-0300-2-4-135HA15-HU680 | 30392277 |
| 3,50 | 4 | 100 | 66 | 61 | 32 | 17 | SCD181-0350-2-4-135HA15-HU680 | 30392278 |
| 4,00 | 4 | 100 | 66 | 60 | 32 | 15 | SCD181-0400-2-4-135HA15-HU680 | 30392279 |
| 5,00 | 5 | 120 | 84 | 77 | 34 | 15 | SCD181-0500-2-4-135HA15-HU680 | 30392281 |
| 6,00 | 6 | 140 | 102 | 93 | 36 | 16 | SCD181-0600-2-4-135HA15-HU680 | 30392283 |
| 7,00 | 7 | 155 | 115 | 105 | 38 | 15 | SCD181-0700-2-4-135HA15-HU680 | 30392284 |
| 8,00 | 8 | 175 | 133 | 121 | 40 | 15 | SCD181-0800-2-4-135HA15-HU680 | 30392285 |
| 10,00 | 10 | 210 | 168 | 153 | 40 | 15 | SCD181-1000-2-4-135HA15-HU680 | 30392287 |
| 12,00 | 12 | 250 | 203 | 185 | 45 | 15 | SCD181-1200-2-4-135HA15-HU644 | 30392289 |

Recommendation for pilot drill:

For the pilot drill please use the MEGA-Drill-Alu (SCD131 - 3xD/5xD) with the same nominal diameter.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

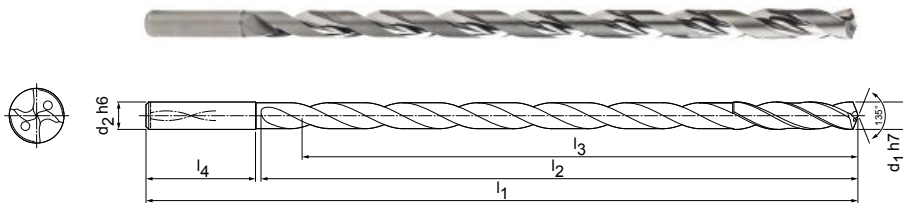
Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

MEGA-Deep-Drill-Alu

Solid carbide twist drill
SCD181 (20xD), internal coolant supply

Design:

Drill diameter: 3.00 – 12.00 mm
Bore tolerance: \geq IT 9
Cutting material: HU680 / HU644
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 135°
Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 3,00 | 4 | 110 | 74 | 70 | 32 | 23 | SCD181-0300-2-4-135HA20-HU680 | 30392294 |
| 4,00 | 4 | 120 | 86 | 80 | 32 | 20 | SCD181-0400-2-4-135HA20-HU680 | 30392296 |
| 5,00 | 5 | 145 | 109 | 102 | 34 | 20 | SCD181-0500-2-4-135HA20-HU680 | 30392298 |
| 5,50 | 6 | 160 | 120 | 112 | 36 | 20 | SCD181-0550-2-4-135HA20-HU680 | 30392299 |
| 6,00 | 6 | 170 | 130 | 121 | 36 | 20 | SCD181-0600-2-4-135HA20-HU680 | 30392300 |
| 7,00 | 7 | 190 | 150 | 140 | 38 | 20 | SCD181-0700-2-4-135HA20-HU680 | 30392301 |
| 8,00 | 8 | 215 | 173 | 161 | 40 | 20 | SCD181-0800-2-4-135HA20-HU680 | 30392302 |
| 10,00 | 10 | 260 | 218 | 203 | 40 | 20 | SCD181-1000-2-4-135HA20-HU680 | 30392304 |
| 12,00 | 12 | 305 | 258 | 240 | 45 | 20 | SCD181-1200-2-4-135HA20-HU644 | 30392306 |

Recommendation for pilot drill:

For the pilot drill please use the MEGA-Drill-Alu (SCD131 - 3xD/5xD) with the same nominal diameter.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

Dimensions in mm.

For cutting data recommendations, see end of chapter.

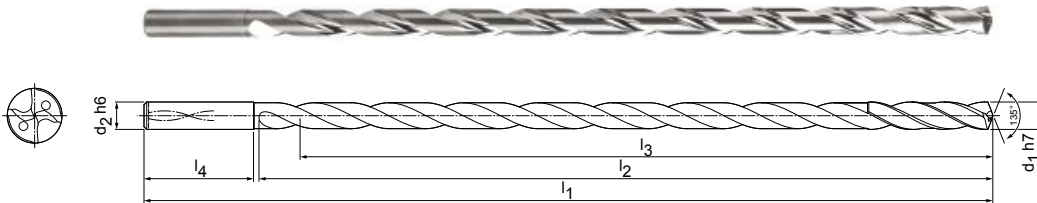
Special designs and other coatings available upon request.

MEGA-Deep-Drill-Alu

Solid carbide twist drill
SCD181 (25xD), internal coolant supply

Design:

Drill diameter: 3.00 – 10.00 mm
Bore tolerance: $\geq IT 9$
Cutting material: HU680
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 135°
Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 3,00 | 4 | 125 | 91 | 87 | 32 | 29 | SCD181-0300-2-4-135HA25-HU680 | 30392311 |
| 4,00 | 4 | 140 | 106 | 100 | 32 | 25 | SCD181-0400-2-4-135HA25-HU680 | 30392313 |
| 5,00 | 5 | 170 | 134 | 127 | 34 | 25 | SCD181-0500-2-4-135HA25-HU680 | 30392315 |
| 6,00 | 6 | 200 | 160 | 151 | 36 | 25 | SCD181-0600-2-4-135HA25-HU680 | 30392317 |
| 7,00 | 7 | 225 | 185 | 175 | 38 | 25 | SCD181-0700-2-4-135HA25-HU680 | 30392318 |
| 8,00 | 8 | 255 | 213 | 201 | 40 | 25 | SCD181-0800-2-4-135HA25-HU680 | 30392319 |
| 10,00 | 10 | 310 | 268 | 253 | 40 | 25 | SCD181-1000-2-4-135HA25-HU680 | 30392321 |

Recommendation for pilot drill:

For the pilot drill please use the MEGA-Drill-Alu (SCD131 - 3xD/5xD) with the same nominal diameter.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

Dimensions in mm.

For cutting data recommendations, see end of chapter.

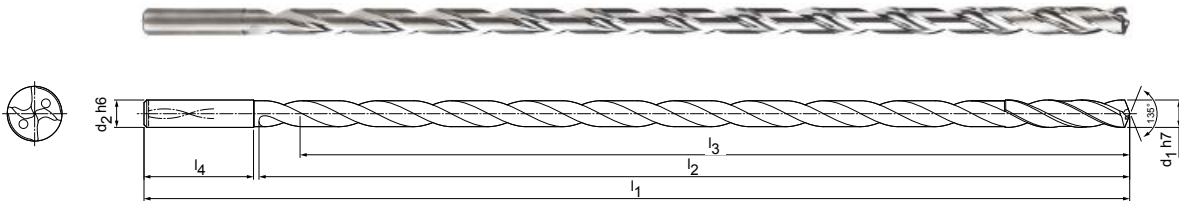
Special designs and other coatings available upon request.

MEGA-Deep-Drill-Alu

Solid carbide twist drill
SCD181 (30xD), internal coolant supply

Design:

Drill diameter: 4.00 - 6.00 mm
Bore tolerance: \geq IT 9
Cutting material: HU680
Number of cutting edges: 2
Number of guiding chamfers: 4
Tip angle: 135°
Helix angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 4,00 | 4 | 160 | 126 | 120 | 32 | 30 | SCD181-0400-2-4-135HA30-HU680 | 30392328 |
| 4,50 | 5 | 180 | 144 | 137 | 34 | 31 | SCD181-0450-2-4-135HA30-HU680 | 30392329 |
| 5,00 | 5 | 195 | 159 | 152 | 34 | 30 | SCD181-0500-2-4-135HA30-HU680 | 30392330 |
| 6,00 | 6 | 230 | 192 | 183 | 36 | 31 | SCD181-0600-2-4-135HA30-HU680 | 30392332 |

Recommendation for pilot drill:

For the pilot drill please use the MEGA-Drill-Alu (SCD131 - 3xD/5xD) with the same nominal diameter.

The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

Dimensions in mm.

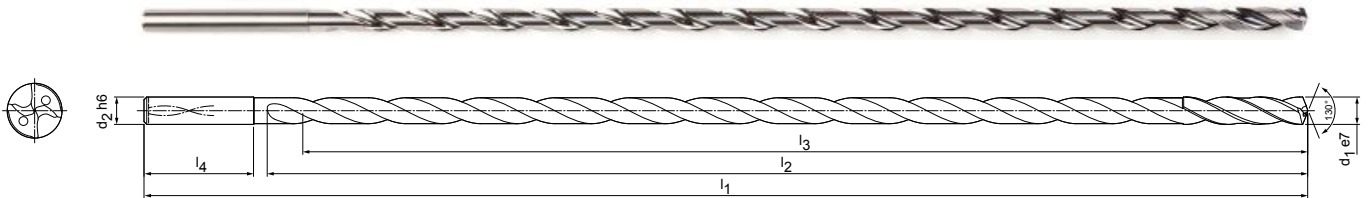
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

MEGA-Deep-Drill-Alu

Solid carbide twist drill
SCD181 (40xD), internal coolant supply

Design:
 Drill diameter: 6.00 - 7.00 mm
 Bore tolerance: $\geq IT 9$
 Cutting material: HU680
 Number of cutting edges: 2
 Number of guiding chamfers: 4
 Tip angle: 130°
 Helix angle: 30°



Performance LINE

IT9 40xD HA DIN 6535

P 1 2 3 4 5 6 M 1 2 3 K 1 2 3 N 1 2 3 4 S 1 2 3 4 5 H 1 2 3

Stocked preferred series in shank form HA

| Dimensions | | | | | | L/d ratio | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------|-------------------------------|-----------|
| d ₁ h7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | | Specification | Order no. |
| 6,00 | 6 | 290 | 250 | 241 | 36 | 42 | SCD181-0600-2-4-130HA40-HU680 | 30549881 |
| 7,00 | 7 | 330 | 290 | 280 | 38 | 41 | SCD181-0700-2-4-130HA40-HU680 | 30549882 |

Recommendation for pilot drill:

For the pilot drill please use the MEGA-Drill-Alu (SCD131 - 3xD/5xD) with the same nominal diameter.
 The tip angle and diameter tolerances are matched for optimal functionality as well as for the interaction of pilot drill and deep drill.

Application notes for deep drilling can be found in the Technical Appendix chapter.

Dimensions in mm.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.



Cutting data recommendations for deep drills

Feed and cutting speed

MEGA-Pilot-Drill | SCD581

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|-----------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| P5 | P5.1 Cast steel | | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|-----------|-----------|----------------------------------|------|------|------|------|------|
| | Internal cooling | External cooling | MQL | Air | 1.00 | 1.20 | 1.60 | 1.90 | 2.40 | 3.00 |
| | 80 | 70 | 70 | | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.09 |
| | 70 | 60 | 60 | | 0.07 | 0.07 | 0.08 | 0.09 | 0.10 | 0.11 |
| | 80 | 70 | 70 | | 0.06 | 0.07 | 0.08 | 0.08 | 0.10 | 0.11 |
| | 55 | 50 | 50 | | 0.06 | 0.06 | 0.07 | 0.07 | 0.08 | 0.09 |
| | 60 | 50 | 50 | | 0.06 | 0.06 | 0.07 | 0.07 | 0.08 | 0.10 |
| | 50 | 45 | 45 | | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.08 |
| | 50 | 35 | 40 | | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.07 |
| | 80 | 70 | 70 | | 0.06 | 0.07 | 0.08 | 0.08 | 0.10 | 0.11 |
| | 45 | 30 | 30 | | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.06 |
| | 95 | 70 | 70 | 70 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | 0.12 |
| | 130 | 80 | 95 | 95 | 0.07 | 0.07 | 0.08 | 0.09 | 0.11 | 0.13 |
| | 80 | 60 | 60 | | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | 0.11 |
| | 70 | 65 | 65 | | 0.07 | 0.08 | 0.08 | 0.09 | 0.11 | 0.12 |
| | 65 | 55 | 55 | | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 | 0.11 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for deep drills

Feed and cutting speed

MEGA-Deep-Drill | SCD171

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P5 | P5.1 Cast steel | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

MEGA-Deep-Drill-Alu | SCD181

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|--|---|
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | |
| | | N1.4 Aluminium, alloy > 12 % Si | |
| | N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | | N2.2 Copper, alloy | > 300 |
| | | N2.3 Brass, bronze, gunmetal | < 1,200 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|------|------|-------|
| | Internal cooling | External cooling | MQL | Air | 1.00 | 2.00 | 4.00 | 6.00 | 9.00 | 16.00 |
| | 90 | 80 | 80 | | 0.04 | 0.06 | 0.09 | 0.13 | 0.19 | 0.27 |
| | 80 | 70 | 70 | | 0.06 | 0.08 | 0.11 | 0.16 | 0.24 | 0.34 |
| | 90 | 75 | 75 | | 0.05 | 0.07 | 0.10 | 0.16 | 0.23 | 0.32 |
| | 65 | 55 | 55 | | 0.05 | 0.07 | 0.09 | 0.13 | 0.18 | 0.25 |
| | 70 | 60 | 60 | | 0.05 | 0.06 | 0.09 | 0.14 | 0.21 | 0.29 |
| | 55 | 50 | 50 | | 0.04 | 0.06 | 0.08 | 0.12 | 0.17 | 0.23 |
| | 55 | 40 | 45 | | 0.04 | 0.05 | 0.07 | 0.09 | 0.13 | 0.18 |
| | 90 | 75 | 75 | | 0.05 | 0.07 | 0.10 | 0.16 | 0.23 | 0.32 |
| | 110 | 75 | 75 | 75 | 0.14 | 0.18 | 0.25 | 0.32 | 0.41 | 0.53 |
| | 145 | 90 | 110 | 110 | 0.14 | 0.18 | 0.24 | 0.30 | 0.38 | 0.49 |
| | 90 | 70 | 70 | | 0.13 | 0.16 | 0.21 | 0.26 | 0.33 | 0.42 |
| | 55 | 35 | 45 | | 0.10 | 0.12 | 0.14 | 0.18 | 0.22 | 0.28 |
| | 80 | 70 | 70 | | 0.14 | 0.18 | 0.22 | 0.28 | 0.36 | 0.46 |
| | 70 | 65 | 65 | | 0.12 | 0.15 | 0.18 | 0.23 | 0.29 | 0.36 |

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 3.00 | 4.00 | 5.50 | 7.50 | 10.50 | 16.00 |
| | 300 | 200 | 250 | | 0.11 | 0.13 | 0.16 | 0.20 | 0.25 | 0.32 |
| | 250 | 180 | 200 | | 0.13 | 0.16 | 0.21 | 0.26 | 0.33 | 0.42 |
| | 220 | 150 | 180 | | 0.13 | 0.16 | 0.21 | 0.26 | 0.33 | 0.42 |
| | 180 | 120 | 150 | | 0.13 | 0.16 | 0.21 | 0.26 | 0.33 | 0.42 |
| | 140 | 100 | | | 0.09 | 0.11 | 0.14 | 0.17 | 0.21 | 0.27 |
| | 120 | 90 | | | 0.11 | 0.14 | 0.17 | 0.22 | 0.28 | 0.35 |
| | 200 | 160 | 160 | 120 | 0.14 | 0.18 | 0.25 | 0.32 | 0.41 | 0.53 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



DRILLING REAMING

Drill reamers

Technology 290

Tritan-Drill-Reamer 292

Technical appendix

Cutting data recommendations 298

TRITAN DRILL REAMER

The most precise solution for drilling and reaming in one machining step

A proven way to manufacture as economical-ly as possible is combining several machining steps in one tool. For example, bores can be drilled and reamed simultaneously with the Tritan-Drill-Reamer from MAPAL.

MAPAL has developed the Tritan-Drill-Reamer in order to produce fitting bores even more accurately using just one tool.

With six guiding chamfers for excellent guiding properties, precision-ground chip flutes with matching groove shape for good chip removal and a self-centring chisel edge, the new Tritan-Drill-Reamer is impressive all around.

The self-centring chisel edge ensures good positioning accuracy and improved tapping behaviour. Three cutting edges guarantee optimal roundness of the fit bore and highest performance. The guiding chamfers produce best-quality surfaces.

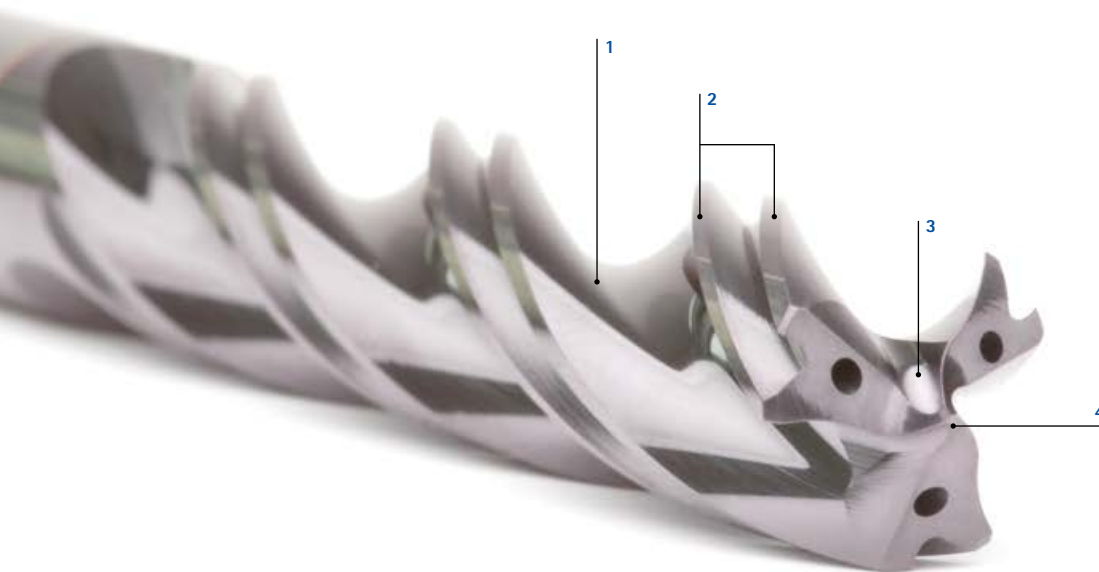
FEATURES

- Combination of drilling and reaming
- Length versions 3xD and 5xD
- Three cutting edges and six guiding chamfers
- With internal cooling
- Tolerance versions ± 0.003 mm and H7

ADVANTAGES

- Reduced productive and non-productive times
- Best performance and highest levels of accuracy
- High degree of positional accuracy
- Optimal roundness

Tool features in detail



- 1 Finely ground groove profile
- 2 Six guiding chamfers
- 3 Innovative point thinning
- 4 Self-centring chisel edge



Six guiding chamfers

- For excellent guiding properties
- For the production of fitting bores with maximum economic efficiency and accuracy with only one tool



Innovative centre point

- Self-centring chisel edges for very good positional accuracy and improved tapping



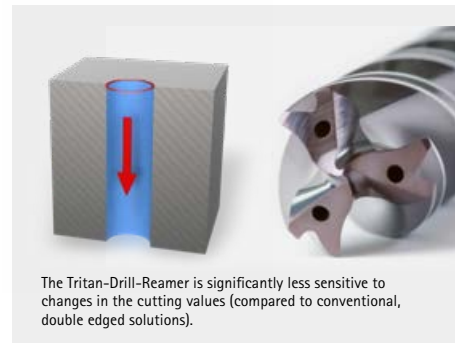
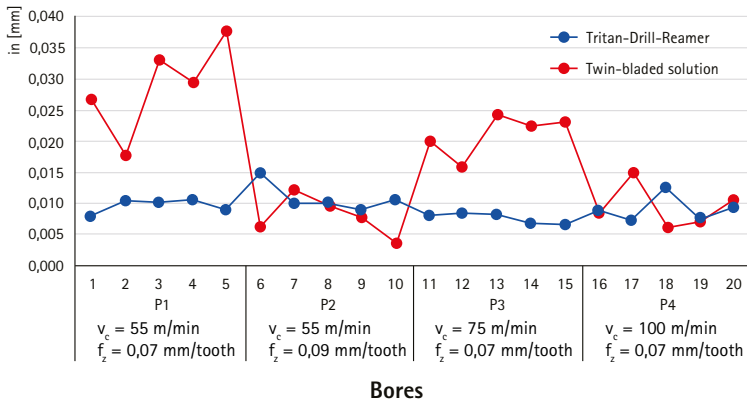
Finely ground groove profile

- Finely ground chip flutes with adapted groove shape for very good chip removal

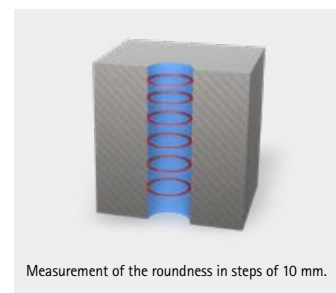
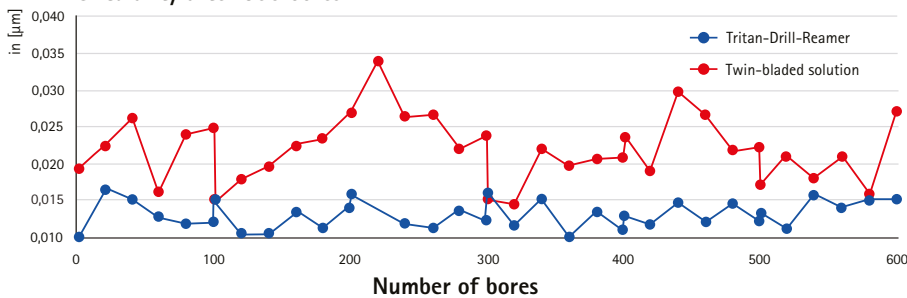


Comparison Tritan-Drill-Reamer and double edged solution

Diameter deviation over the tools entire diameter (42CrMoS4)



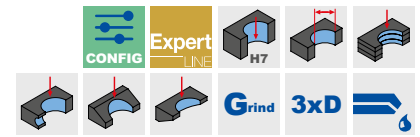
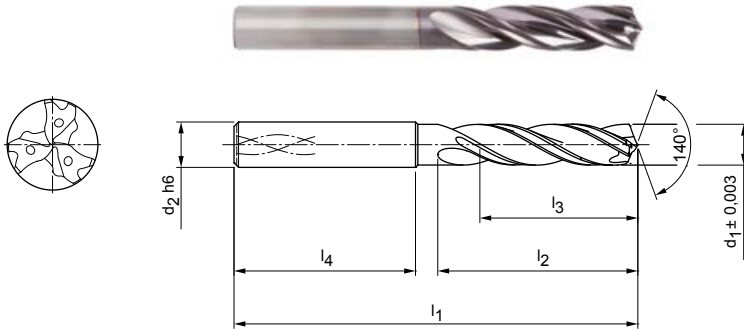
Circularity after 600 bores



Tritan-Drill-Reamer

Drill reamer
SDR301G (3xD), internal coolant supply

Design:
 Drill diameter: 3.80 – 20.05 mm
 Bore tolerance: \geq IT 7
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 6
 Tip angle: 140°
 Side rake angle: 30°



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-----------------|----------|-------|-------|-------|-------|-------------------------------|-----------|
| $d_1 \pm 0.003$ | d_2 h6 | l_1 | l_2 | l_3 | l_4 | Specification | Order no. |
| 3,99 | 6 | 66 | 24 | 17 | 36 | SDR301G-3.990+3-3-HA03-HP358 | 31196569 |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SDR301G-4.000+3-3-HA03-HP358 | 31196570 |
| 4,01 | 6 | 66 | 24 | 17 | 36 | SDR301G-4.010+3-3-HA03-HP358 | 31196571 |
| 4,99 | 6 | 66 | 28 | 20 | 36 | SDR301G-4.990+3-3-HA03-HP358 | 31196575 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SDR301G-5.000+3-3-HA03-HP358 | 31196576 |
| 5,01 | 6 | 66 | 28 | 20 | 36 | SDR301G-5.010+3-3-HA03-HP358 | 31196577 |
| 5,02 | 6 | 66 | 28 | 20 | 36 | SDR301G-5.020+3-3-HA03-HP358 | 31196578 |
| 5,99 | 6 | 66 | 28 | 20 | 36 | SDR301G-5.990+3-3-HA03-HP358 | 31196581 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SDR301G-6.000+3-3-HA03-HP358 | 31196582 |
| 6,01 | 6 | 66 | 28 | 20 | 36 | SDR301G-6.010+3-3-HA03-HP358 | 31196583 |
| 7,99 | 8 | 79 | 41 | 29 | 36 | SDR301G-7.990+3-3-HA03-HP358 | 31196587 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SDR301G-8.000+3-3-HA03-HP358 | 31196588 |
| 8,01 | 8 | 79 | 41 | 29 | 36 | SDR301G-8.010+3-3-HA03-HP358 | 31196589 |
| 9,99 | 10 | 89 | 47 | 35 | 40 | SDR301G-9.990+3-3-HA03-HP358 | 31196593 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SDR301G-10.000+3-3-HA03-HP358 | 31196594 |
| 10,01 | 10 | 89 | 47 | 35 | 40 | SDR301G-10.010+3-3-HA03-HP358 | 31196595 |
| 10,02 | 10 | 89 | 47 | 35 | 40 | SDR301G-10.020+3-3-HA03-HP358 | 31196596 |
| 11,99 | 12 | 102 | 55 | 40 | 45 | SDR301G-11.990+3-3-HA03-HP358 | 31196599 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SDR301G-12.000+3-3-HA03-HP358 | 31196600 |
| 12,01 | 12 | 102 | 55 | 40 | 45 | SDR301G-12.010+3-3-HA03-HP358 | 31196601 |
| 13,99 | 14 | 107 | 60 | 43 | 45 | SDR301G-13.990+3-3-HA03-HP358 | 31196605 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SDR301G-14.000+3-3-HA03-HP358 | 31196606 |
| 14,01 | 14 | 107 | 60 | 43 | 45 | SDR301G-14.010+3-3-HA03-HP358 | 31196607 |
| 15,99 | 16 | 115 | 65 | 45 | 48 | SDR301G-15.990+3-3-HA03-HP358 | 31196611 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SDR301G-16.000+3-3-HA03-HP358 | 31196612 |
| 16,01 | 16 | 115 | 65 | 45 | 48 | SDR301G-16.010+3-3-HA03-HP358 | 31196613 |

Tritan-Drill-Reamer | Drill reamer SDR301G (3xD), internal coolant supply

Configurable features



Diameter:
Diameter in increments of
0.001 mm freely selectable

**Specification:**

SDR301G-[diameter]+3-3-HA03-HP358

Example:

SDR301G-4.001+3-3-HA03-HP358

Tool diameter $d_1 = 4.001$ mm

Dimensions of configurable series

| d_1 min. | d_1 max. | d_2 h6 | l_1 | l_2 | l_3 | l_4 |
|------------|------------|----------|-------|-------|-------|-------|
| 3,800 | 4,700 | 6 | 66 | 24 | 17 | 36 |
| 4,701 | 6,050 | 6 | 66 | 28 | 20 | 36 |
| 6,051 | 8,050 | 8 | 79 | 41 | 29 | 36 |
| 8,051 | 10,050 | 10 | 89 | 47 | 35 | 40 |
| 10,051 | 12,050 | 12 | 102 | 55 | 40 | 45 |
| 12,970 | 14,050 | 14 | 107 | 60 | 43 | 45 |
| 14,970 | 16,050 | 16 | 115 | 65 | 45 | 48 |
| 16,800 | 18,050 | 18 | 123 | 73 | 51 | 48 |
| 18,700 | 20,050 | 20 | 131 | 79 | 55 | 50 |

Dimensions in mm.

For tolerance class fit bores up to max. IT7, with sufficient machine stability and cooling.

For help in calculating the optimum nominal diameter for different fitting bores, please refer to the information field at the end of the chapter.

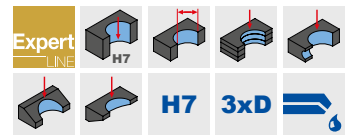
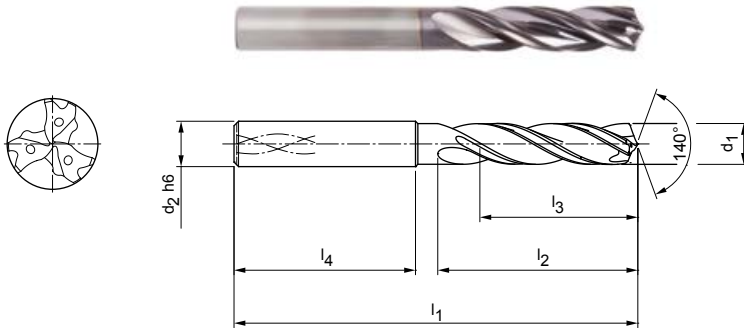
For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Tritan-Drill-Reamer

Drill reamer
SDR301 (3xD), internal coolant supply

Design:
 Drill diameter: 4.00 – 16.00 mm
 Bore tolerance: \geq IT 7
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 6
 Tip angle: 140°
 Side rake angle: 30°



Stocked preferred series in shank form HA

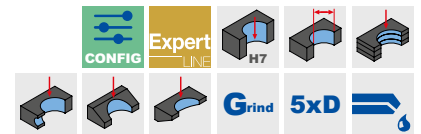
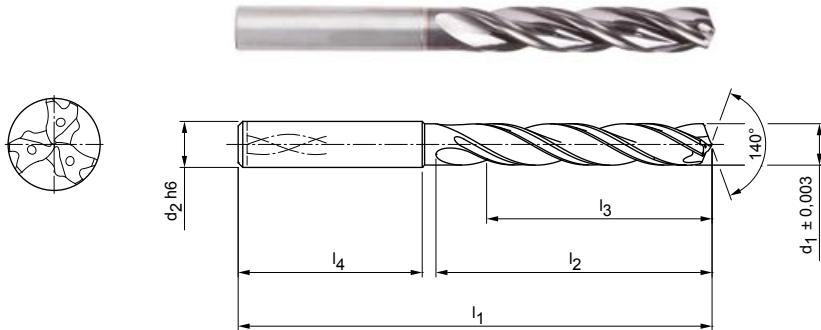
| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ H7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 66 | 24 | 17 | 36 | SDR301-4.000H7-HA03-HP358 | 31196337 |
| 5,00 | 6 | 66 | 28 | 20 | 36 | SDR301-5.000H7-HA03-HP358 | 31196338 |
| 6,00 | 6 | 66 | 28 | 20 | 36 | SDR301-6.000H7-HA03-HP358 | 31196339 |
| 8,00 | 8 | 79 | 41 | 29 | 36 | SDR301-8.000H7-HA03-HP358 | 31196560 |
| 10,00 | 10 | 89 | 47 | 35 | 40 | SDR301-10.000H7-HA03-HP358 | 31196561 |
| 12,00 | 12 | 102 | 55 | 40 | 45 | SDR301-12.000H7-HA03-HP358 | 31196562 |
| 14,00 | 14 | 107 | 60 | 43 | 45 | SDR301-14.000H7-HA03-HP358 | 31196563 |
| 16,00 | 16 | 115 | 65 | 45 | 48 | SDR301-16.000H7-HA03-HP358 | 31196564 |

Dimensions in mm.
 For tolerance class fit bores of H7, with sufficient machine stability and cooling.
 For cutting data recommendations, see end of chapter.
 Special designs and other coatings available upon request.

Tritan-Drill-Reamer

Drill reamer
SDR301G (5xD), internal coolant supply

Design:
 Drill diameter: 3.80 – 20.05 mm
 Bore tolerance: \geq IT 7
 Cutting material: HP358
 Number of cutting edges: 3
 Number of guiding chamfers: 6
 Tip angle: 140°
 Side rake angle: 30°




Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------|-------|-----|----|----|----|-------------------------------|-----------|
| d1 +/-0.003 | d2 h6 | l1 | l2 | l3 | l4 | Specification | Order no. |
| 3,99 | 6 | 74 | 36 | 29 | 36 | SDR301G-3.990+3-3-HA05-HP358 | 31196639 |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SDR301G-4.000+3-3-HA05-HP358 | 31196640 |
| 4,01 | 6 | 74 | 36 | 29 | 36 | SDR301G-4.010+3-3-HA05-HP358 | 31196641 |
| 4,02 | 6 | 74 | 36 | 29 | 36 | SDR301G-4.020+3-3-HA05-HP358 | 31196642 |
| 4,99 | 6 | 82 | 44 | 35 | 36 | SDR301G-4.990+3-3-HA05-HP358 | 31196645 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SDR301G-5.000+3-3-HA05-HP358 | 31196646 |
| 5,01 | 6 | 82 | 44 | 35 | 36 | SDR301G-5.010+3-3-HA05-HP358 | 31196647 |
| 5,99 | 6 | 82 | 44 | 35 | 36 | SDR301G-5.990+3-3-HA05-HP358 | 31196651 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SDR301G-6.000+3-3-HA05-HP358 | 31196652 |
| 6,01 | 6 | 82 | 44 | 35 | 36 | SDR301G-6.010+3-3-HA05-HP358 | 31196653 |
| 7,99 | 8 | 91 | 53 | 43 | 36 | SDR301G-7.990+3-3-HA05-HP358 | 31196658 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SDR301G-8.000+3-3-HA05-HP358 | 31196659 |
| 8,01 | 8 | 91 | 53 | 43 | 36 | SDR301G-8.010+3-3-HA05-HP358 | 31196660 |
| 8,02 | 8 | 91 | 53 | 43 | 36 | SDR301G-8.020+3-3-HA05-HP358 | 31196661 |
| 9,99 | 10 | 103 | 61 | 49 | 40 | SDR301G-9.990+3-3-HA05-HP358 | 31196664 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SDR301G-10.000+3-3-HA05-HP358 | 31196665 |
| 10,01 | 10 | 103 | 61 | 49 | 40 | SDR301G-10.010+3-3-HA05-HP358 | 31196666 |
| 11,99 | 12 | 118 | 71 | 59 | 45 | SDR301G-11.990+3-3-HA05-HP358 | 31196670 |
| 12,00 | 12 | 118 | 71 | 59 | 45 | SDR301G-12.000+3-3-HA05-HP358 | 31196671 |
| 12,01 | 12 | 118 | 71 | 59 | 45 | SDR301G-12.010+3-3-HA05-HP358 | 31196672 |
| 13,99 | 14 | 124 | 77 | 60 | 45 | SDR301G-13.990+3-3-HA05-HP358 | 31196676 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SDR301G-14.000+3-3-HA05-HP358 | 31196677 |
| 14,01 | 14 | 124 | 77 | 60 | 45 | SDR301G-14.010+3-3-HA05-HP358 | 31196678 |
| 15,99 | 16 | 133 | 83 | 63 | 48 | SDR301G-15.990+3-3-HA05-HP358 | 31196682 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SDR301G-16.000+3-3-HA05-HP358 | 31196683 |
| 16,01 | 16 | 133 | 83 | 63 | 48 | SDR301G-16.010+3-3-HA05-HP358 | 31196684 |


Continued on next page.

Tritan-Drill-Reamer | Drill reamer SDR301G (5xD), internal coolant supply

Configurable features



Diameter:
Diameter in increments of 0.001 mm freely selectable



Specification:
SDR301G-[diameter]+3-3-HA05-HP358

Example:

SDR301G-04001+3-3-HA05-HP358

Tool diameter $d_1 = 4.001$ mm

Dimensions of configurable series

| d ₁ min. | d ₁ max. | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ |
|---------------------|---------------------|-------------------|----------------|----------------|----------------|----------------|
| 3,800 | 4,700 | 6 | 74 | 36 | 29 | 36 |
| 4,701 | 6,050 | 6 | 82 | 44 | 35 | 36 |
| 6,051 | 8,050 | 8 | 91 | 53 | 43 | 36 |
| 8,051 | 10,050 | 10 | 103 | 61 | 49 | 40 |
| 10,051 | 12,050 | 12 | 118 | 71 | 56 | 45 |
| 12,970 | 14,050 | 14 | 124 | 77 | 60 | 45 |
| 14,970 | 16,050 | 16 | 133 | 83 | 63 | 48 |
| 16,800 | 18,050 | 18 | 143 | 93 | 71 | 48 |
| 18,700 | 20,050 | 20 | 153 | 101 | 77 | 50 |

Dimensions in mm.

For tolerance class fit bores up to max. IT7, with sufficient machine stability and cooling.

For help in calculating the optimum nominal diameter for different fitting bores, please refer to the information field at the end of the chapter.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

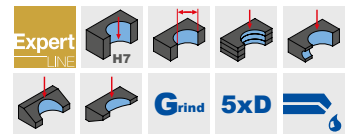
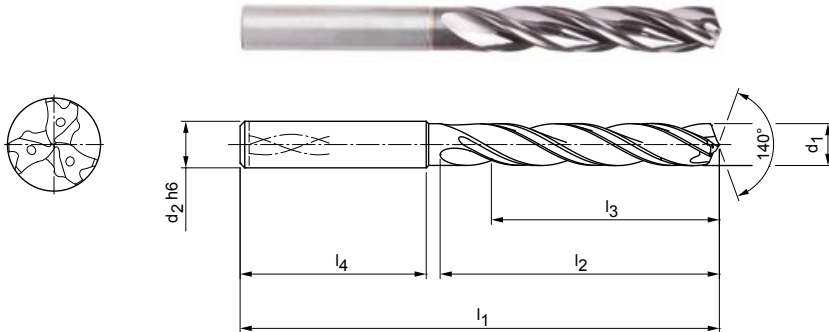
Tritan-Drill-Reamer

Drill reamer

SDR301 (5xD), internal coolant supply

Design:

| | |
|-----------------------------|-----------------|
| Drill diameter: | 4.00 – 20.00 mm |
| Bore tolerance: | ≥ IT 7 |
| Cutting material: | HP358 |
| Number of cutting edges: | 3 |
| Number of guiding chamfers: | 6 |
| Tip angle: | 140° |
| Side rake angle: | 30° |



Stocked preferred series in shank form HA

| Dimensions | | | | | | Shank form HA | |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ H7 | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Specification | Order no. |
| 4,00 | 6 | 74 | 36 | 29 | 36 | SDR301-4.000H7-HA05-HP358 | 31196627 |
| 5,00 | 6 | 82 | 44 | 35 | 36 | SDR301-5.000H7-HA05-HP358 | 31196628 |
| 6,00 | 6 | 82 | 44 | 35 | 36 | SDR301-6.000H7-HA05-HP358 | 31196629 |
| 8,00 | 8 | 91 | 53 | 43 | 36 | SDR301-8.000H7-HA05-HP358 | 31196630 |
| 10,00 | 10 | 103 | 61 | 49 | 40 | SDR301-10.000H7-HA05-HP358 | 31196631 |
| 12,00 | 12 | 118 | 71 | 56 | 45 | SDR301-12.000H7-HA05-HP358 | 31196632 |
| 14,00 | 14 | 124 | 77 | 60 | 45 | SDR301-14.000H7-HA05-HP358 | 31196633 |
| 16,00 | 16 | 133 | 83 | 63 | 48 | SDR301-16.000H7-HA05-HP358 | 31196634 |
| 18,00 | 18 | 143 | 93 | 71 | 48 | SDR301-18.000H7-HA05-HP358 | 31196635 |
| 20,00 | 20 | 153 | 101 | 77 | 50 | SDR301-20.000H7-HA05-HP358 | 31196636 |

Dimensions in mm.

For tolerance class fit bores of H7, with sufficient machine stability and cooling.

For cutting data recommendations, see end of chapter.

Special designs and other coatings available upon request.

Cutting data recommendations for drill reamer

Feed and cutting speed

Tritan-Drill-Reamer | SCD641

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] |
|------|--------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P5 | P5.1 Cast steel | |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |

EXAMPLE CALCULATION

Please note that the result may be influenced by additional parameters such as the machine tool or tool clamping.

Formula for calculating the optimum nominal tool diameter:

$$(G_{OB} + G_{UB}) / 2$$

Example:

- Fitting bore: \varnothing 10 F7
- Maximum bore dimension G_{OB} : 10.028 mm
- Minimum bore dimension G_{UB} : 10.013 mm

$$\rightarrow (10.028 \text{ mm} + 10.013 \text{ mm}) / 2 = 10.021 \text{ mm} = \text{selection of tool nominal diameter } 10.021 \text{ mm}$$

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

| | Cutting speed v_c [m/min] | | | | Feed f [mm] for drill diameter | | | | | |
|--|-----------------------------|------------------|------------|------------|----------------------------------|------|------|-------|-------|-------|
| | Internal cooling | External cooling | MQL | Air | 4.00 | 5.50 | 7.50 | 10.50 | 14.50 | 20.00 |
| | 70 | 65 | 65 | | 0.17 | 0.22 | 0.27 | 0.34 | 0.41 | 0.47 |
| | 65 | 55 | 55 | | 0.22 | 0.27 | 0.34 | 0.42 | 0.51 | 0.59 |
| | 70 | 60 | 60 | | 0.20 | 0.26 | 0.32 | 0.40 | 0.48 | 0.56 |
| | 50 | 40 | 40 | | 0.17 | 0.21 | 0.26 | 0.32 | 0.38 | 0.44 |
| | 55 | 45 | 45 | | 0.18 | 0.23 | 0.29 | 0.36 | 0.43 | 0.50 |
| | 40 | 40 | 40 | | 0.15 | 0.19 | 0.24 | 0.30 | 0.36 | 0.41 |
| | 40 | 30 | 35 | | 0.13 | 0.16 | 0.19 | 0.23 | 0.28 | 0.32 |
| | 70 | 60 | 60 | | 0.20 | 0.26 | 0.32 | 0.40 | 0.48 | 0.56 |
| | 100 | 70 | 70 | 70 | 0.25 | 0.33 | 0.42 | 0.55 | 0.67 | 0.79 |
| | 135 | 85 | 100 | 100 | 0.24 | 0.32 | 0.40 | 0.51 | 0.62 | 0.72 |
| | 85 | 65 | 65 | | 0.22 | 0.28 | 0.35 | 0.44 | 0.54 | 0.62 |
| | 50 | 35 | 45 | | 0.11 | 0.13 | 0.16 | 0.20 | 0.24 | 0.28 |
| | 75 | 70 | 70 | | 0.23 | 0.30 | 0.38 | 0.47 | 0.58 | 0.67 |
| | 70 | 60 | 60 | | 0.20 | 0.25 | 0.31 | 0.38 | 0.46 | 0.53 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

SPECIAL SOLUTIONS

Drilling from solid with solid carbide

Along with a comprehensive standard range of drilling tools, MAPAL also offers custom tools.

Individual customer requirements demand bespoke solutions that are specifically tailored to the machining tasks. With its vast know-how in machining metal and many years of experience, MAPAL is your competent partner worldwide when it comes to the design and manufacturing of custom tools, as well as the design of complete machining processes for drilling. The range includes twisted and straight-fluted drills as well as step drills produced of solid carbide and PCD-tipped drills.

MAPAL – your partner for application-specific custom solutions.





Custom tools for drilling from MAPAL

- 1 Custom solid carbide step drill with three cutting edges, self-centring chisel edge, for connecting rod machining in one shot
- 2 Solid carbide step drill with three guiding chamfers and special coating for high-speed machining
- 3 Solid carbide core-bore drill for connecting rod machining in a two-shot process
- 4 Solid carbide step drill with three guiding chamfers and special coating for the high-speed machining of automotive constant-velocity joints produced of ADI 900
- 5 Custom solid carbide drill with Tritan-Drill geometry and special coating for turbocharger machining
- 6 Drill reamer with three cutting edges and additional reaming cutting edge on the periphery with special coating for machining axles produced of GJS
- 7 Solid carbide pilot drill for connecting rod machining in a two-step process
- 8 Solid carbide deep drill with custom coating for machining cylinder blocks produced of GJV
- 9 Solid carbide aluminium drill with three cutting edges, self-centring chisel edge and highly polished chip flutes for machining AISi1
- 10 Solid carbide step drill with 180° face geometry for valve machining



SPECIAL SOLUTIONS

Drilling from solid with PCD

During the machining of parts produced of aluminium and other non-ferrous metals, straight-fluted PCD drilling tools are used for drilling for the most part. The tool features are optimally matched for the high performance of the PCD drills. The chip flutes are polished along the entire length of the drill to keep the chip friction as low as possible. The optimally embedded PCD cutting edges result in good soft cutting behaviour of the drill. In this way, less heat is introduced into the part.

For processes with minimum quantity lubrication (MQL), MAPAL has positioned the coolant

outlets on the tools so that the aerosol arrives exactly where it is required for lubrication, reducing the risk of built-up edges and increasing the tool life of the drill.

However, modern machining processes increasingly require PCD-tipped drilling tools with a large helix angle.

The twisted PCD tools make reliable, productive bore machining possible. Chip congestion or tool fracture is prevented by "mechanically assisted" removal of the chips. Highly positive rake angles reduce the cutting forces required. Several machining steps such as drilling from solid or boring processes can be undertaken in one machining step. The reduction of the machining time increases productivity, with high process reliability and bore quality.

Tool features in detail



1 PCD cutting edges

2 Twisted and highly polished chip flute

3 Optimised coolant outlets for MQL process

Optimally embedded PCD cutting edges



The embedding of PCD segments in a twisted slot rounded on all sides places high demands on the production technology. The latest production equipment ensures that twisted PCD drilling tools can be designed and manufactured reliably and reproducibly. To keep improving the tools, comprehensive application details flow via the technical consultants and production specialists at MAPAL into the design and the construction.

Highly polished chip flutes



The chip flutes are highly polished, such that the friction produced by the chips is reduced and as a consequence the heat introduced to the part is also reduced. The twisted design of the chip flutes makes the "mechanically assisted" removal of the chips possible. Highly positive rake angles reduce the cutting forces required.

Ideal for MQL processes



The correct positioning of the coolant outlets is crucial for the performance of the drill during MQL machining. The aerosol must arrive exactly where it is required for lubrication. This reduces the risk, for example, of built-up edges and of course also helps to increase the tool life of the drill.



REAMING AND FINE BORING

Highest levels of accuracy guaranteed with the MAPAL principle



PRODUCT OVERVIEW

Reaming and fine boring

Tools for the fine machining of bores represent the core competence of MAPAL. The "original reamer" produced in 1954 marked the beginning of the success story that MAPAL continues to write today in this area. Decades of experience and continuous further development and optimisation of the tool solutions ensure that MAPAL offers the right solution according to the complexity of the machining and the precision requirements. In addition to customised special solutions, a diverse standard range of tools for reaming and fine boring is available.

Reaming and fine boring are the most common methods for the fine machining of bores, yielding impressive, precise results. This is be

cause MAPAL tools are produced with the same high levels of precision that they deliver in practice. Whatever the complexity of the machining and the requirements placed on precision and surface finish, MAPAL has the appropriate solution:

Single-bladed reamers, fine boring tools with guide pads and WP cutting edges all deliver the highest levels of precision. On top of that, the range also includes fixed multi-bladed reamers: HPR replaceable head reamers with high-precision clamping system, high-performance reamers produced of carbide or cermet as well as systems for machining large diameters.



Basic
LINE





Basic Line:
Universal tools, broad field of application, low procurement costs

Performance
LINE

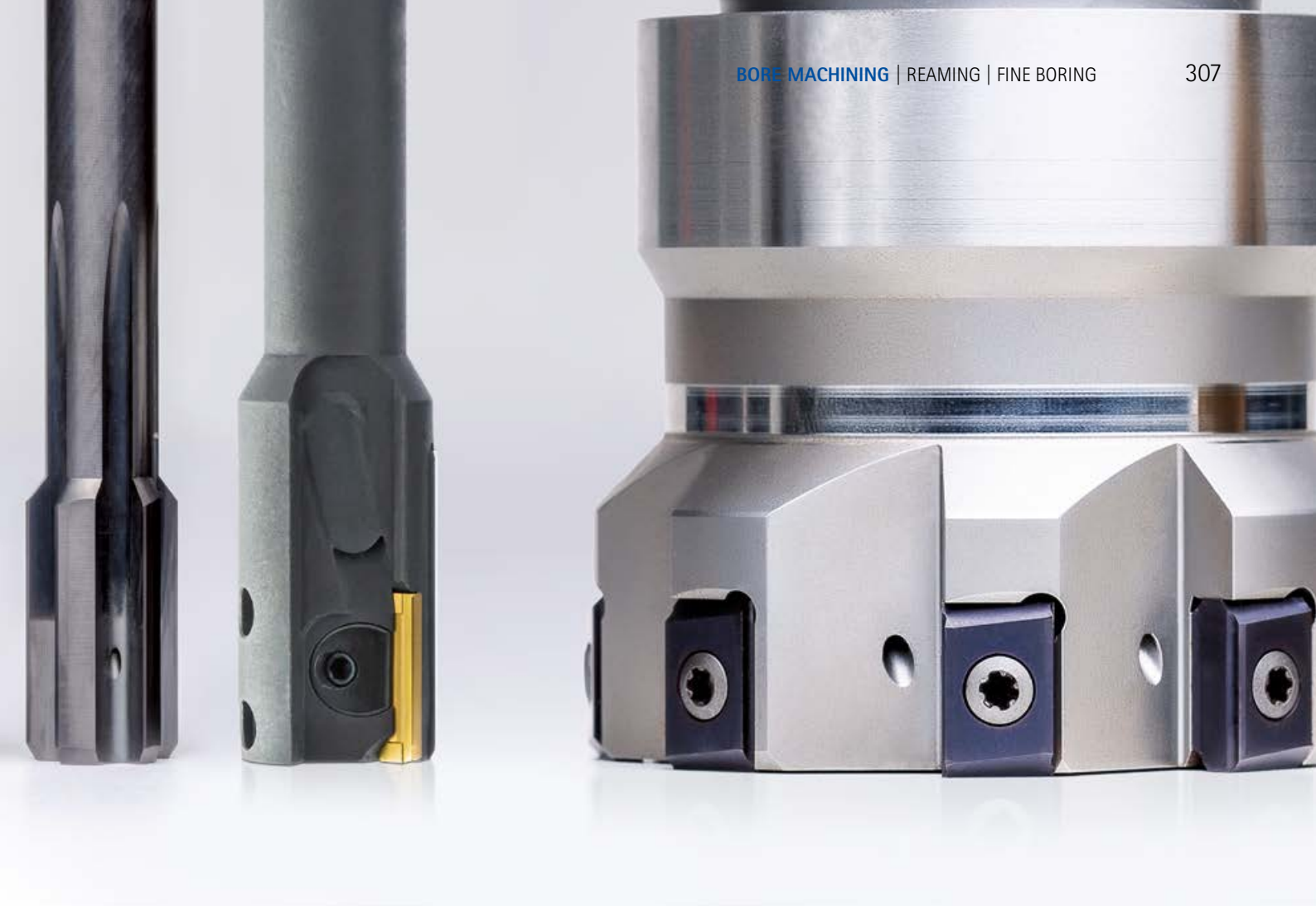
Performance Line:
High-performance tools, broad field of application, high productivity in series production manufacturing

Expert
LINE

Expert Line:
Specialist tools for selected applications, maximum precision and productivity

| Fixed multi-bladed reamers | | Tools with guide pads | |
|--|---|--|---|
|  <p>High-performance reamer FXR</p> <p>The high-performance reamers of the FXR series (the tools of choice when short cycle times are required) are available with different cutting materials and coatings. This means that almost all workpiece materials can be machined economically and reliably with them. Without any setting effort, the tools, which are available in the diameter range 2.800 to 20.200 mm, achieve IT7 tolerances.</p> <p>∅ range: 2.800-20.200 mm*</p> <p>P M K N C S</p> |  <p>Tipped high-performance reamers MOR</p> <p>Simple, efficient and standardised – this is how the reaming system of the Mono-Ream series can be summarised. The cutting edges of the high-performance reamers of the FXR series are brazed onto the tool body. The MOR reamers (in contrast to the FXR reamers) can be reprocessed. For this purpose, they are equipped with an expansion screw that expands the diameter of the reamer and thus enables regrinding.</p> <p>∅ range: 3.850-40.200 mm*</p> <p>P K N</p> |  <p>HPR replaceable head reamers with HFS connection</p> <p>If maximum economic efficiency is required, the use of HPR replaceable head reamers is recommended in the small diameter range. The high-precision connection HFS guarantees (despite the replaceable head system) an exact radial run-out as well as a high changeover accuracy. Handling is very simple. The HPR reamers are available with fixed brazed cutting edges as well as with adjustable cutting edges.</p> <p>∅ range: 7.000-65.000 mm*</p> <p>P M K S</p> |  <p>Single bladed reamer</p> <p>When it comes to achieving the greatest possible precision, single bladed reamers with guide pads based on the MAPAL principle are virtually unrivalled. Their cutting inserts are available with two cutting edges and special leads.</p> <p>∅ range: 5.000-30.290 mm*</p> <p>P M K N S H</p> |
| Page 316 | Page 350 | Page 368 | Page 478 |

* The diameter range can vary, depending on the series.



Solutions for large diameters

Special solutions



EasyAdjust system

When developing the EasyAdjust system, the goal was to drastically reduce the setting effort for tools with guide pad technology. The heart of the system is an innovative cassette that holds the six- or four-edge indexable inserts securely without any play. The back taper of the minor cutting edge is already integrated into this cassette, thus eliminating the need for this adjustment. Due to the exact guidance of the cassette on a precision guide pin, the back taper remains unchanged even during diameter settings.

P M K N S H

Solutions for large diameters

Multi-bladed high-performance reamers for large diameter ranges. HPR400: Quick change of cutting edges on site without long reconditioning. HPR400 plus: Four instead of the previous single cutting edge. Indexable blades easily rotated and changed.

Ø range: 63.000-319.999 mm*

P M K N H

Tailor made special tools

Special machining tasks require special tools. This is why MAPAL offers reaming tools in special designs that are individually tailored to the customer's requirements. With special lead geometries and coatings as well as multi-stage tools, the respective tasks are optimally fulfilled. Combination solutions with other tool technologies from MAPAL can also increase productivity and reduce non-productive times.

SELECTION SYSTEM

Fixed multi-bladed reamers | Tools with guide pads



Fixed multi-bladed reamers

First choice for the following applications:

- Machining with high feed rates
- Highest output in series production
- Abrasive and hard workpiece materials
- Multi-spindle machining
- Machining in diameter < 5 mm

Tools with guide pads

First choice for the following applications:

- Unstable machining conditions
 - Optimal with floating holder on the lathe
 - Bar machining and thin-walled parts
 - Unfavourable length and diameter ratios
 - Extremely high shape and position tolerances
- 
- 



Drastically reduced machining times are possible using fixed multi-bladed reamers. The multiple blades permit a higher feed rate, which ultimately reduces machining times. Thanks to specifically developed systems and

the latest manufacturing technology, MAPAL also offers these tools with the highest accuracies.

► [more from page 311](#)

TOOL PROPERTIES

- Fixed design without any setting effort
- Finely adjustable version optimised for regrinding
- Highly exact replaceable head system for simple handling
- Various performance classes in the standard programme
- Reconditioning for higher cost-effectiveness
- Preferred series available from stock, intermediate sizes quickly available



The MAPAL guide pad technology is unrivalled when it comes to the fine machining of bores in any material. The precision of the bore diameter, roundness and cylindrical form as well as the surface finish cannot be produced by

other production means, or at least cannot be achieved cost-effectively.

► [more from page 477](#)

TOOL PROPERTIES

- Maximum accuracy thanks to exact and μ -precise settings
- Insert technology for maximum flexibility in the choice of cutting material
- Intermediate sizes and all tolerances available at short notice



FIXED MULTI-BLADED REAMERS

Fixed multi-bladed reamers

| | |
|------------------------|-----|
| Selection system | 312 |
|------------------------|-----|

FixReam FXR

| | |
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MonoReam MOR

| | |
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HPR replaceable head reamers












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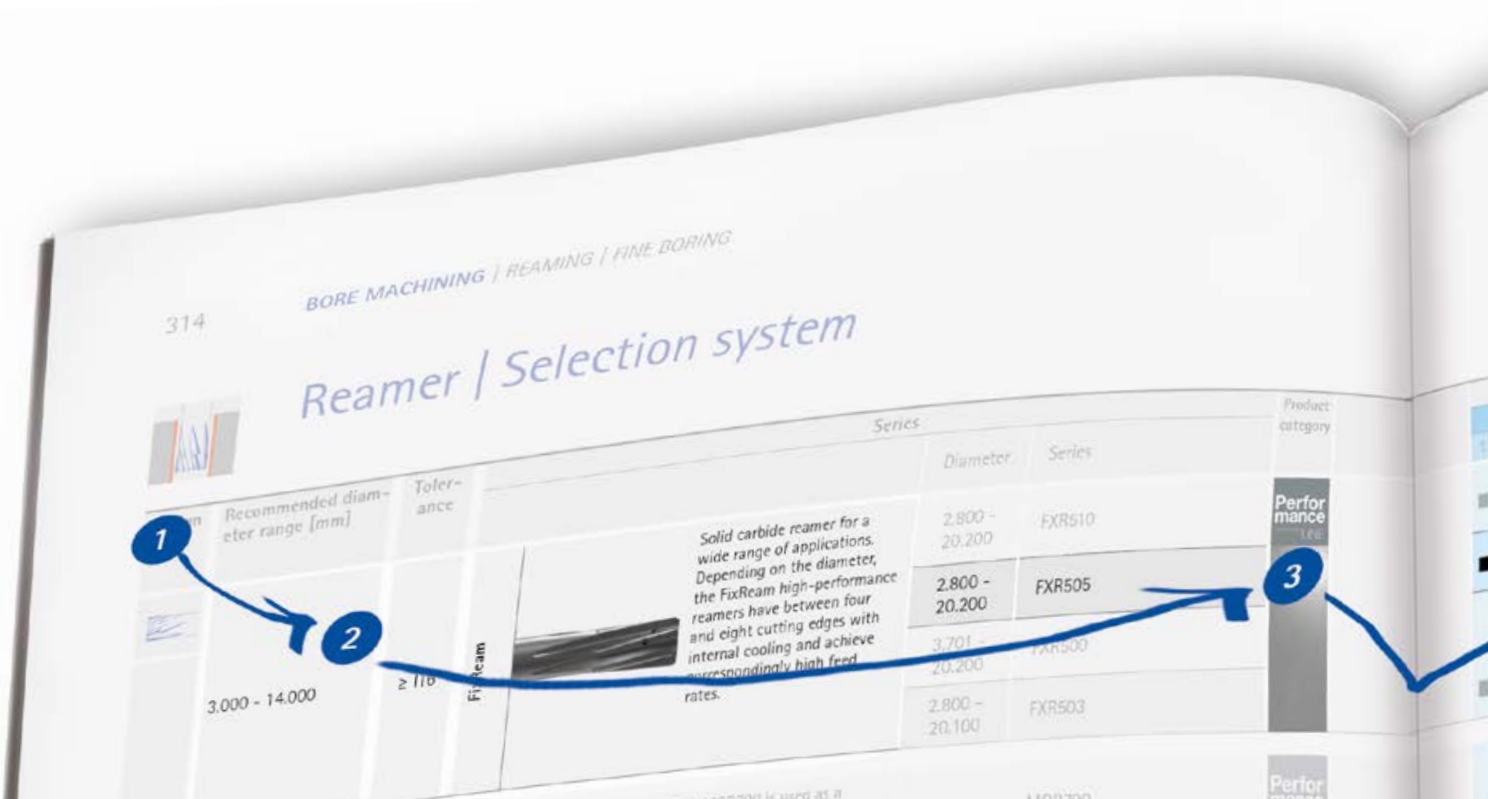


SELECTION OF MULTI-BLADED REAMERS

Step by step to the right reamer

Are you looking for a solid carbide multi-bladed reamer in diameter 10.000 H7 for blind bore machining in steel, for example? This selection aid guides you step by step to the right reamer.

| | | | | |
|---|-----------------------------|--|--|--|
| 1 | Design | Select your preferred design (monolithic or modular). |  Monolithic |  HFS modular connection |
| 2 | Bore features | Check that the geometric features meet your requirements. Select the diameter range and the required tolerance. |  Diameter range |  Achievable bore tolerance \geq IT7 |
| 3 | Product category | Choose a product category. |  Basic Line: Universal tools, wide range of applications, low acquisition costs | |
| 4 | Material suitability | Identify your workpiece material as per the MMG (MAPAL machining group). |  Steel |  Stainless steel |
| 5 | Type of bore | Check the requirements that are placed on your tool by the type of bore. |  Through bore |  Blind bore |
| 6 | Product | Select your reamer. Products from the stocked preferred series are available at short notice, while products with configurable features can be freely configured within predefined limits. |  Stocked preferred series |  Free configuration |





Performance Line:
High-performance tools, broad field of application, high productivity in series production manufacturing



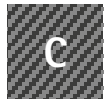
Expert Line:
Specialist tools for selected applications, maximum precision and productivity



Cast iron



Non-ferrous metals and plastics



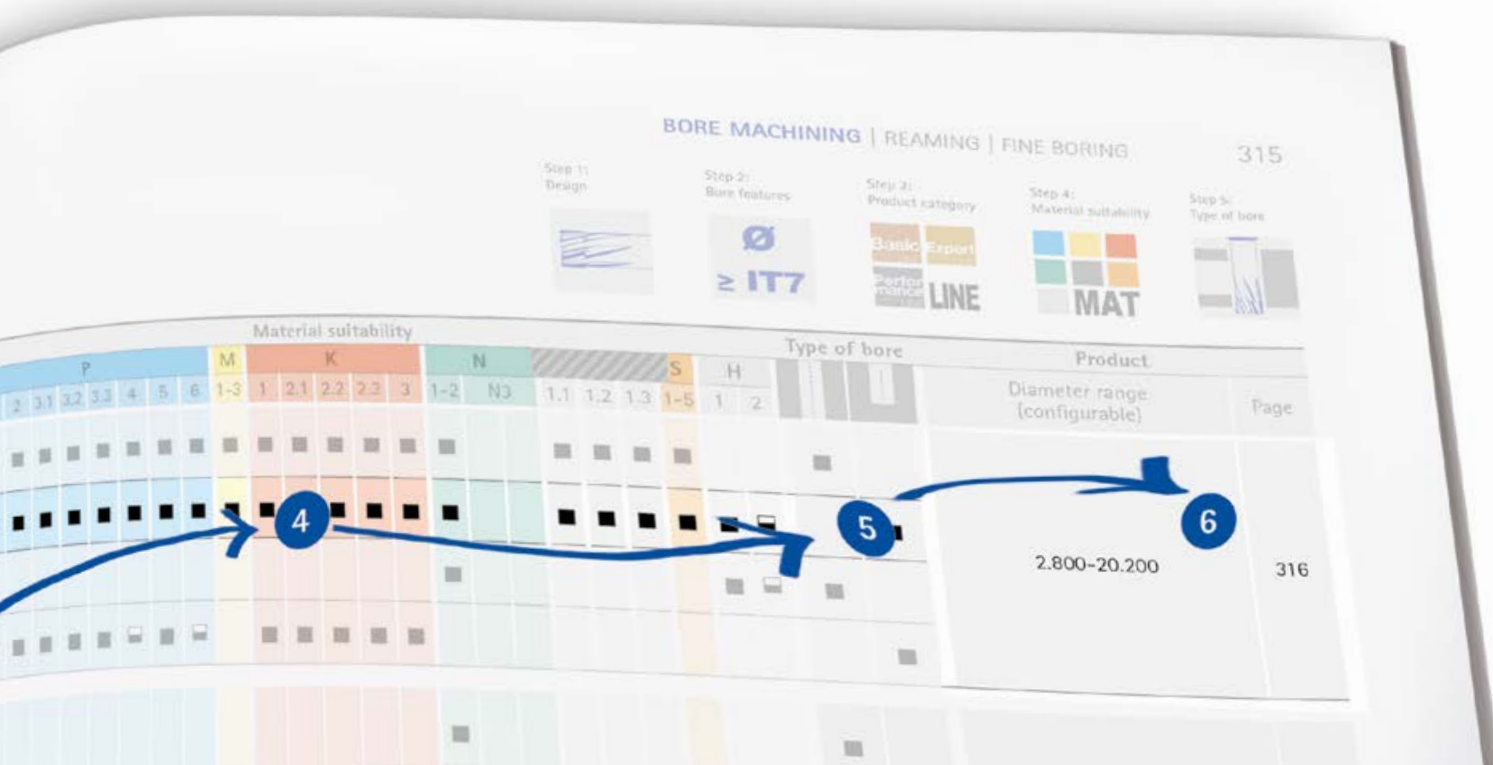
Composite materials



Super alloy and titanium



Hardened steel and cast steel





Reamer | Selection system

| Design | Recommended diameter range [mm] | Tolerance | Series | | Product category | | |
|--------|---------------------------------|-----------|--------------------|--|------------------|----------------------------|---|
| | | | Diameter | Series | | | |
| | 3.000 - 14.000 | ≥ IT6 | FixReam | <p>Solid carbide reamer for a wide range of applications. Depending on the diameter, the FixReam high-performance reamers have between four and eight cutting edges with internal cooling and achieve correspondingly high feed rates.</p> | 2.800 - 20.200 | FXR510 | Performance LINE |
| | | | | | 2.800 - 20.200 | FXR505 | |
| | | | | | 3.701 - 20.200 | FXR500 | |
| | | | | | 2.800 - 20.100 | FXR503 | |
| | 14.000 - 40.000 | ≥ IT6 | MonoReam | <p>The MOR700 is used as a fixed tool, but this series is optimised for regrinding. The reamer is expanded in diameter using a one-piece expansion screw.</p> | 7.700 - 40.200 | MOR700 | Performance LINE |
| | | | | | | MOR705 | |
| | | | | | | MOR710 | |
| | 4.000 - 8.000 | ≥ IT6 | MonoReam Plus | <p>Especially for machining cast iron and steel. A sleeve ensures the optimal supply of coolant to the HPC blades.</p> | 3.850 - 8.200 | MRP505 | Performance LINE |
| | | | | | | MRP510 | |
| | 7.000 - 65.000 | ≥ IT5 | HPR | <p>High-precision replaceable head system in fixed and fine-adjustable design.</p> | 7.000 - 65.000 | HPR1XX fixed | Performance LINE Expert LINE |
| | | | | | 7.000 - 65.000 | HPR2XX finely adjustable | |
| | 63.000 - 319.999 | ≥ IT7 | HPR 400 400 plus | <p>Exchangeable cutting edges make it easy to replace the cutting edge on site. This results in very short set-up times.</p> | 63.000 - 319.999 | HPR400 400 plus | Expert LINE |

Step 1:
Design



Step 2:
Bore features



Step 3:
Product category



Step 4:
Material suitability



Step 5:
Type of bore



| | Material suitability | | | | | | | | | | | | | | Type of bore | | | | Product | | | | | | | | | | |
|--|----------------------|---|-----|-----|-----|---|---|---|-----|---|-----|-----|-----|---|--------------|----|-----|-----|---------|-------------------------------|------|-----|---|---|---|----------------|-----|--|--|
| | P | | | | | | M | K | | | | | N | | S | | | H | | Diameter range (configurable) | Page | | | | | | | | |
| | 1 | 2 | 3.1 | 3.2 | 3.3 | 4 | 5 | 6 | 1-3 | 1 | 2.1 | 2.2 | 2.3 | 3 | 1-2 | N3 | 1.1 | 1.2 | 1.3 | | | 1-5 | 1 | 2 | | | | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | | | ■ | ■ | | | 2.800-20.200 | 316 | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | | | | | |
| | | | | | | | | | | | | | | ■ | | | | | | ■ | ■ | ■ | | | | | | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | ■ | | | | | |
| | | | | | | | | | | | | | | ■ | ■ | | | | | | | | | ■ | | 7.700-40.200 | 350 | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | ■ | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | ■ | | | | | |
| | ■ | ■ | ■ | ■ | | | | | ■ | ■ | | | | | | | | | | | | | | ■ | | 3.850-8.200 | 350 | | |
| | ■ | ■ | ■ | ■ | | | | | ■ | ■ | | | | | | | | | | | | | | ■ | | | | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | ■ | | | | | ■ | ■ | 7.000-65.000 | 368 | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | ■ | | | | | ■ | ■ | | | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | ■ | ■ | 63.000-319.999 | 562 | | |

PRODUCT OVERVIEW

FixReam: FXR500 | FXR510 | FXR505 | FXR503

The FXR series of high-performance reamers produced of solid carbide cover a wide range of applications. Depending on the diameter, the FixReam high-performance reamers have between four to eight cutting edges with internal cooling and achieve correspondingly high feed rates. Thanks to different cutting materials and coatings, numerous workpiece materials can be machined economically and reliably in the diameter range from 2.850 to 20.200 mm* without an adjustment process in the IT7 tolerance range.

For use where space is limited, for example on automated lathes, "short" versions are available.



FixReam



FixReam | FXR500 solid carbide

Straight fluted high-performance reamer with internal cooling produced of solid carbide. As a preferred series in H7.

Preferred series \varnothing range: 3.701 – 20.200 mm*



FixReam | FXR510 solid carbide

Left-hand fluted high-performance reamer with internal cooling produced of solid carbide. As a preferred series in H7.

Preferred series \varnothing range: 2.800 – 20.200 mm*





FixReam | FXR505 solid carbide

Straight fluted high-performance reamer with internal cooling produced of solid carbide. As a preferred series in H7.

Preferred series \varnothing range: 2.800-20.200 mm*



FixReam | FXR503 short, solid carbide

Extra-short FixReam reamer produced of solid carbide, specially designed for use on automated lathes. As a preferred series in H7.

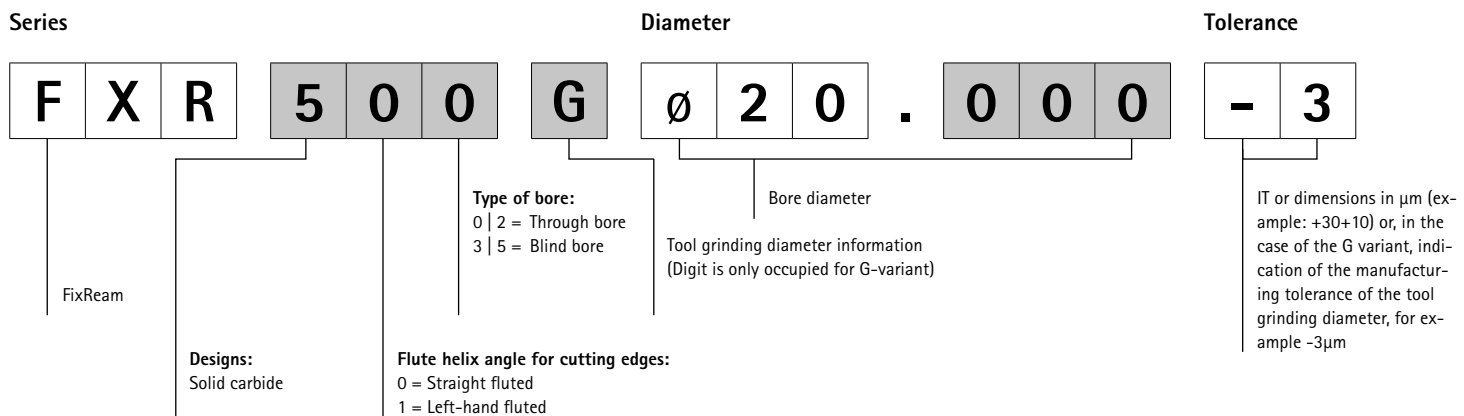
Preferred series \varnothing range: 2.800-20.100 mm*

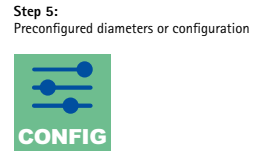
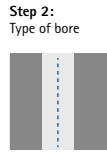


Article overview FixReam (1/2)

| Product category | Type of bore | Material suitability | | | | | | | | | | | | | |
|---------------------|--------------|----------------------|---|---|---|-----|-----|---|---|---|---|-----|---|---|--|
| | | P | | | | M | K | N | | | | S | H | | |
| | | 1-3 | 4 | 5 | 6 | 1-3 | 1-3 | 1 | 2 | 4 | 1 | 1-5 | 1 | 2 | |
| Performance LINE | | ■ | ■ | ■ | ■ | | ■ | | | | | | | | |
| | | | ■ | | ■ | ■ | | | | | | | | | |
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Ordering example:





| d1 | Design | | | | Preconfigured diameters | | Configuration |
|--------------|------------------|------|--|--|-------------------------|------|--|
| | Cutting material | Lead | | | Series | Page | |
| 2.800-20.200 | HP145 | MG1M | | | FXR510 | 322 | FXR510 Fixed design, left-hand fluted, for through bores |
| 2.800-20.200 | HP145 | MF1M | | | FXR510 | 326 | |
| 3.701-20.200 | HP622 | MG0A | | | FXR500 | 330 | |
| 2.800-20.200 | HU612 | MG1M | | | FXR510 | 324 | FXR500 Fixed design, straight fluted, for through bores |
| 2.800-20.200 | HC614 | MF1M | | | FXR510 | 329 | |
| 2.800-20.200 | HP613 | MF1M | | | FXR510 | 328 | |
| 3.701-20.200 | HP141 | MFOA | | | FXR500 | 331 | |
| 2.800-20.200 | HP145 | MV0A | | | FXR505 | 332 | |
| 2.800-20.100 | HP145 | MC1F | | | FXR503 | 342 | FXR505 Fixed design, straight fluted, for blind bores |
| 2.800-20.200 | HP145 | MT0A | | | FXR505 | 334 | |
| 2.800-20.200 | HP622 | MV0A | | | FXR505 | 335 | |
| 2.800-20.200 | HU612 | MV0A | | | FXR505 | 336 | |
| 2.800-20.200 | HC614 | MV0A | | | FXR505 | 339 | |
| 2.800-20.200 | HP613 | MT0A | | | FXR505 | 338 | |
| 2.800-20.200 | HP141 | MT0A | | | FXR505 | 340 | |
| | | | | | | | |

Series configuration on next page.

Lead

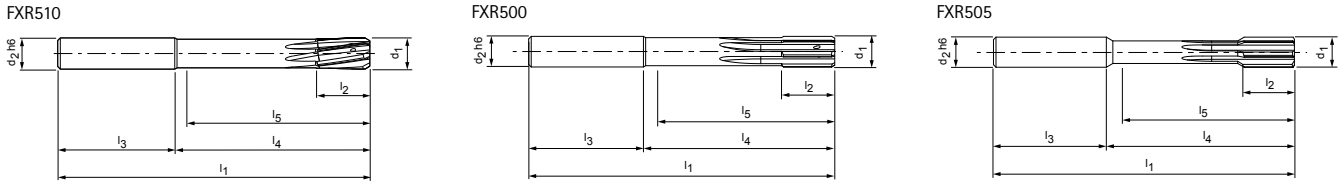
Cutting material



Lead geometry and rake angle:
 MGOA MT0A For explanation of
 MG1M MFOA the lead geometries,
 MF1M MC1F see pages 752
 MV0A

Cutting material:
 HP145 HP141
 HU612 HP613
 HP622
 HC614

Article overview FixReam | Configuration (2/2)



Tool dimensions

FXR510

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,700 | 4 | 65 | 12 | 28 | 37 | 34 | 4 |
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

FXR505

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

Tolerances for the G variant/fixed variant FXR5XX:

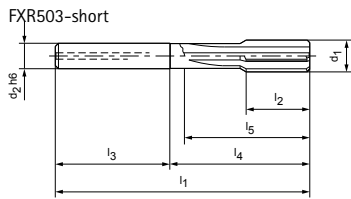
| Cutting material | Diameter range |
|--|----------------|
| | Ø2.800-20.200 |
| Uncoated | -0.003 |
| HU612 | |
| Coated (layer thickness 0.8-2 µm) | -0.004 |
| HP145 | |
| HP613 | |
| HP622 | |
| HC614 | |
| Coated (layer thickness 2-4 µm) | -0.005 |
| HP141 | |

Explanation of the G variant FXR

Permissible workpiece tolerances for selecting the tool diameter

G variant design:

The G variant indicates the tool diameter of the reamer with our manufacturing tolerances. The manufacturing tolerances depend on the cutting material; see permissible smallest tolerances for the G variant.



FXR500

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

FXR503-short

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 2,800 - 4,050 | 4 | 56 | 12 | 28 | 28 | 24 | 4 |
| 4,051 - 5,100 | 6 | 64 | 12 | 36 | 28 | 23 | 4 |
| 5,101 - 5,600 | 6 | 64 | 12 | 36 | 28 | 24 | 4 |
| 6,101 - 6,600 | 8 | 75 | 16 | 36 | 39 | 32 | 6 |
| 6,601 - 7,100 | 8 | 75 | 16 | 36 | 39 | 34 | 6 |
| 7,101 - 8,100 | 8 | 75 | 16 | 36 | 39 | 35 | 6 |
| 8,101 - 10,100 | 8 | 75 | 20 | 36 | 39 | 35 | 6 |
| 10,101 - 11,600 | 10 | 80 | 20 | 40 | 40 | 35 | 6 |
| 11,601 - 13,100 | 12 | 90 | 22 | 45 | 45 | 40 | 6 |
| 13,101 - 15,100 | 14 | 90 | 22 | 45 | 45 | 40 | 6 |
| 15,101 - 18,100 | 16 | 100 | 25 | 48 | 52 | 47 | 8 |
| 18,101 - 20,100 | 18 | 100 | 25 | 48 | 52 | 47 | 8 |



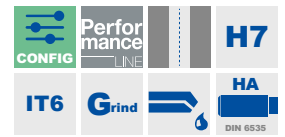
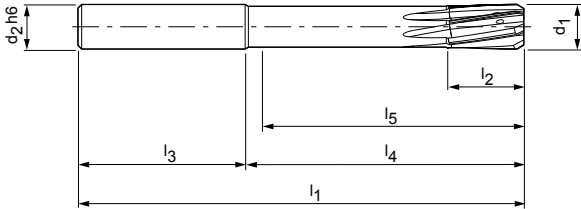
Customised special solutions for multi-stage machining and order-specific fitting with guide pads possible.

FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MG1M
HP145
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 4,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR510Ø4.000H7MG1M-HP145 | 30570722 |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR510Ø5.000H7MG1M-HP145 | 30570724 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR510Ø6.000H7MG1M-HP145 | 30570726 |
| 7,000 | 8 | 100 | 16 | 36 | 64 | 59 | 6 | FXR510Ø7.000H7MG1M-HP145 | 30570728 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 60 | 6 | FXR510Ø8.000H7MG1M-HP145 | 30570730 |
| 9,000 | 10 | 100 | 20 | 40 | 60 | 55 | 6 | FXR510Ø9.000H7MG1M-HP145 | 30570732 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 76 | 6 | FXR510Ø10.000H7MG1M-HP145 | 30570734 |
| 11,000 | 12 | 120 | 20 | 45 | 75 | 70 | 6 | FXR510Ø11.000H7MG1M-HP145 | 30570736 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 71 | 6 | FXR510Ø12.000H7MG1M-HP145 | 30570738 |
| 13,000 | 14 | 130 | 22 | 45 | 85 | 80 | 6 | FXR510Ø13.000H7MG1M-HP145 | 30570739 |
| 14,000 | 14 | 130 | 22 | 45 | 85 | 80 | 6 | FXR510Ø14.000H7MG1M-HP145 | 30570740 |
| 15,000 | 16 | 130 | 22 | 48 | 82 | 77 | 6 | FXR510Ø15.000H7MG1M-HP145 | 30570741 |
| 16,000 | 16 | 150 | 25 | 48 | 102 | 97 | 6 | FXR510Ø16.000H7MG1M-HP145 | 30570742 |
| 17,000 | 18 | 150 | 25 | 48 | 102 | 97 | 8 | FXR510Ø17.000H7MG1M-HP145 | 30570743 |
| 18,000 | 18 | 150 | 25 | 48 | 102 | 97 | 8 | FXR510Ø18.000H7MG1M-HP145 | 30570744 |
| 19,000 | 20 | 150 | 25 | 50 | 100 | 95 | 8 | FXR510Ø19.000H7MG1M-HP145 | 30570745 |

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FXR510 | Fixed design, left-hand fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR510Ø[diameter][tolerance]MG1M-HP145

G variants:

- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR510GØ[diameter][tolerance]MG1M-HP145

Dimensions of configurable series IT6

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 2,800 - 3,700 | 4 | 65 | 12 | 28 | 37 | 34 | 4 |
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

IT6 tolerance example:

FXR510Ø16.350H6MG1M-HP145

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR510GØ16.350-4MG1M-HP145

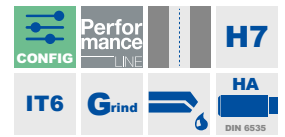
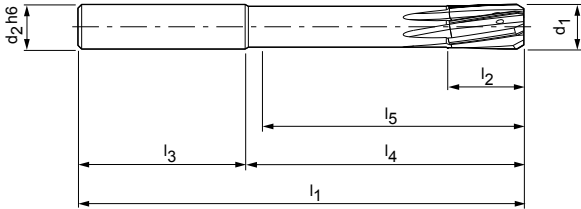
Special tool diameter $d_1 = 16.350 -4 \mu$ m

FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MG1M
HU612
Carbide
uncoated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 4,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR510Ø4.000H7MG1M-HU612 | 30570665 |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR510Ø5.000H7MG1M-HU612 | 30570667 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR510Ø6.000H7MG1M-HU612 | 30570669 |
| 7,000 | 8 | 100 | 16 | 36 | 64 | 59 | 6 | FXR510Ø7.000H7MG1M-HU612 | 30570671 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 60 | 6 | FXR510Ø8.000H7MG1M-HU612 | 30570673 |
| 9,000 | 10 | 100 | 20 | 40 | 60 | 55 | 6 | FXR510Ø9.000H7MG1M-HU612 | 30570675 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 76 | 6 | FXR510Ø10.000H7MG1M-HU612 | 30570677 |
| 11,000 | 12 | 120 | 20 | 45 | 75 | 70 | 6 | FXR510Ø11.000H7MG1M-HU612 | 30570679 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 71 | 6 | FXR510Ø12.000H7MG1M-HU612 | 30570682 |
| 13,000 | 14 | 130 | 22 | 45 | 85 | 80 | 6 | FXR510Ø13.000H7MG1M-HU612 | 30570683 |
| 14,000 | 14 | 130 | 22 | 45 | 85 | 80 | 6 | FXR510Ø14.000H7MG1M-HU612 | 30570684 |
| 15,000 | 16 | 130 | 22 | 48 | 82 | 77 | 6 | FXR510Ø15.000H7MG1M-HU612 | 30570685 |
| 16,000 | 16 | 150 | 25 | 48 | 102 | 97 | 6 | FXR510Ø16.000H7MG1M-HU612 | 30570686 |
| 17,000 | 18 | 150 | 25 | 48 | 102 | 97 | 8 | FXR510Ø17.000H7MG1M-HU612 | 30570687 |
| 18,000 | 18 | 150 | 25 | 48 | 102 | 97 | 8 | FXR510Ø18.000H7MG1M-HU612 | 30570688 |

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FXR510 | Fixed design, left-hand fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR510Ø[diameter][tolerance]MG1M-HU612

G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 320)

G variant specification:

FXR510GØ[diameter][tolerance]MG1M-HU612

Dimensions of configurable series IT6

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 2,800 - 3,700 | 4 | 65 | 12 | 28 | 37 | 34 | 4 |
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

IT6 tolerance example:

FXR510Ø16.350H6MG1M-HU612

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR510GØ16.350-3MG1M-HU612

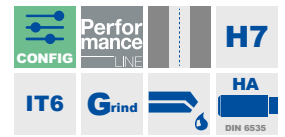
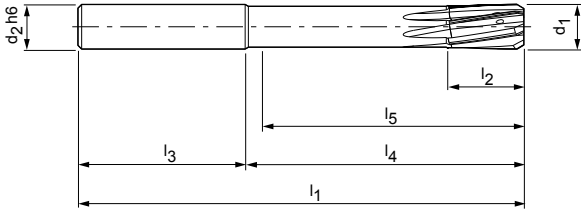
Special tool diameter $d_1 = 16.350 - 3 \mu\text{m}$

FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MF1M
HP145
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 4,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR510Ø4.000H7MF1M-HP145 | 30570772 |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR510Ø5.000H7MF1M-HP145 | 30570774 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR510Ø6.000H7MF1M-HP145 | 30570776 |
| 7,000 | 8 | 100 | 16 | 36 | 64 | 59 | 6 | FXR510Ø7.000H7MF1M-HP145 | 30570778 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 60 | 6 | FXR510Ø8.000H7MF1M-HP145 | 30570780 |
| 9,000 | 10 | 100 | 20 | 40 | 60 | 55 | 6 | FXR510Ø9.000H7MF1M-HP145 | 30570782 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 76 | 6 | FXR510Ø10.000H7MF1M-HP145 | 30570784 |
| 11,000 | 12 | 120 | 20 | 45 | 75 | 70 | 6 | FXR510Ø11.000H7MF1M-HP145 | 30570786 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 71 | 6 | FXR510Ø12.000H7MF1M-HP145 | 30570788 |
| 14,000 | 14 | 130 | 22 | 45 | 85 | 80 | 6 | FXR510Ø14.000H7MF1M-HP145 | 30570790 |
| 16,000 | 16 | 150 | 25 | 48 | 102 | 97 | 6 | FXR510Ø16.000H7MF1M-HP145 | 30570792 |

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FXR510 | Fixed design, left-hand fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR510Ø[diameter][tolerance]MF1M-HP145

G variants:

- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

Dimensions of configurable series IT6

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 2,800 - 3,700 | 4 | 65 | 12 | 28 | 37 | 34 | 4 |
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

IT6 tolerance example:

FXR510Ø16.350H6MF1M-HP145

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR510GØ16.350-4MF1M-HP145

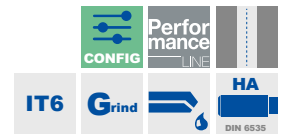
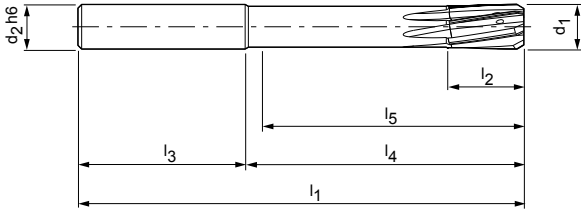
Special tool diameter $d_1 = 16.350 -4 \mu$ m

FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MF1M
HP613
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR510Ø[diameter][tolerance]MF1M-HP613

G variants:
- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR510GØ[diameter][tolerance]MF1M-HP613

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,700 | 4 | 65 | 12 | 28 | 37 | 34 | 4 |
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

IT6 tolerance example:
FXR510Ø16.350H6MF1M-HP613

Bore diameter d₁ = 16.350 H6

G variant example:
FXR510GØ16.350-4MF1M-HP613

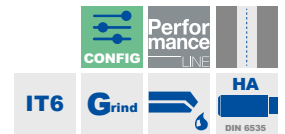
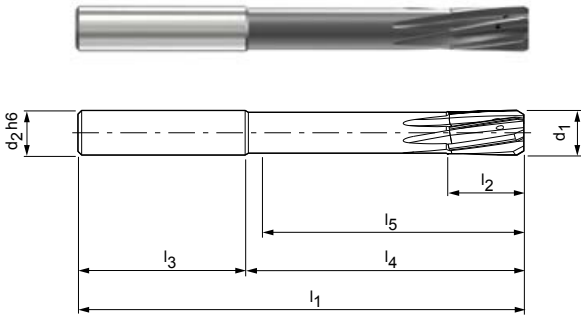
Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MF1M
HC614
Carbide
CVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR510Ø[diameter][tolerance]MF1M-HC614

G variants:
- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR510GØ[diameter][tolerance]MF1M-HC614

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,700 | 4 | 65 | 12 | 28 | 37 | 34 | 4 |
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

IT6 tolerance example:
FXR510Ø16.350H6MF1M-HC614

Bore diameter d₁ = 16.350 H6

G variant example:
FXR510GØ16.350-4MF1M-HC614

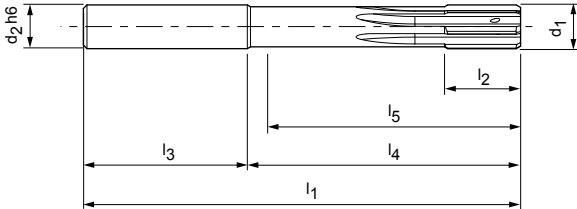
Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, straight fluted, for through bores
FXR500

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
3.701-20.200 mm
MG0A
HP622
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR500Ø[diameter][tolerance]MG0A-HP622

G variants:
- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR500GØ[diameter][tolerance]MG0A-HP622

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

IT6 tolerance example:
FXR500Ø16.350H6MG0A-HP622

Bore diameter d₁ = 16.350 H6

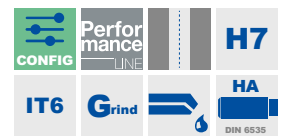
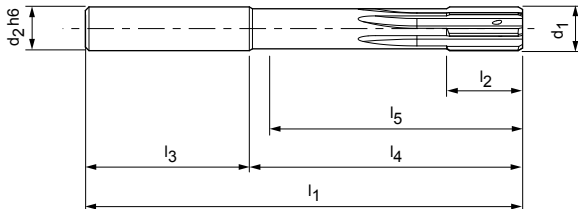
G variant example:
FXR500GØ16.350-4MG0A-HP622

Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, straight fluted, for through bores
FXR500

Design:
Reamer diameter: 3.701–20.200 mm
Lead: MF0A
Cutting material: HP141 Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR500Ø5.000H7MF0A-HP141 | 30570824 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 35 | 4 | FXR500Ø6.000H7MF0A-HP141 | 30570826 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 60 | 6 | FXR500Ø8.000H7MF0A-HP141 | 30570830 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 76 | 6 | FXR500Ø10.000H7MF0A-HP141 | 30570834 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 71 | 6 | FXR500Ø12.000H7MF0A-HP141 | 30570838 |

Configurable features



Bore diameter tolerance ≥ IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

Specification:
FXR500Ø[diameter][tolerance]MF0A-HP141

G variants:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance ≥ 5 μm (G variant, see page 320)

G variant specification:
FXR500GØ[diameter][tolerance]MF0A-HP141

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 3,701 - 4,700 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 4,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 35 | 4 |
| 6,201 - 7,200 | 8 | 100 | 16 | 36 | 64 | 59 | 6 |
| 7,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 60 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 55 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 76 | 6 |
| 10,201 - 11,200 | 12 | 120 | 20 | 45 | 75 | 70 | 6 |
| 11,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 71 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 80 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 77 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 97 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 97 | 8 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 95 | 8 |

IT6 tolerance example:
FXR500Ø16.350H6MF0A-HP141

Bore diameter d₁ = 16.350 H6

G variant example:
FXR500GØ16.350-5MF0A-HP141

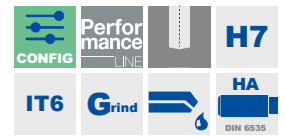
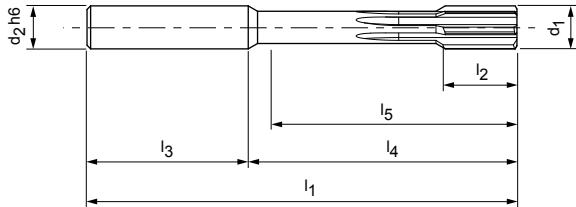
Special tool diameter d₁ = 16.350 -5 μm

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MV0A
HP145
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 4,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø4.000H7MV0A-HP145 | 30570747 |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø5.000H7MV0A-HP145 | 30570749 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø6.000H7MV0A-HP145 | 30570751 |
| 7,000 | 8 | 100 | 16 | 36 | 64 | 58 | 6 | FXR505Ø7.000H7MV0A-HP145 | 30570753 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 58 | 6 | FXR505Ø8.000H7MV0A-HP145 | 30570755 |
| 9,000 | 10 | 100 | 20 | 40 | 60 | 54 | 6 | FXR505Ø9.000H7MV0A-HP145 | 30570757 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 74 | 6 | FXR505Ø10.000H7MV0A-HP145 | 30570759 |
| 11,000 | 12 | 120 | 20 | 45 | 75 | 68 | 6 | FXR505Ø11.000H7MV0A-HP145 | 30570761 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 68 | 6 | FXR505Ø12.000H7MV0A-HP145 | 30570763 |
| 13,000 | 14 | 130 | 22 | 45 | 85 | 78 | 6 | FXR505Ø13.000H7MV0A-HP145 | 30570764 |
| 14,000 | 14 | 130 | 22 | 45 | 85 | 78 | 6 | FXR505Ø14.000H7MV0A-HP145 | 30570765 |
| 15,000 | 16 | 130 | 22 | 48 | 82 | 75 | 6 | FXR505Ø15.000H7MV0A-HP145 | 30570766 |
| 16,000 | 16 | 150 | 25 | 48 | 102 | 95 | 6 | FXR505Ø16.000H7MV0A-HP145 | 30570767 |
| 17,000 | 18 | 150 | 25 | 48 | 102 | 95 | 6 | FXR505Ø17.000H7MV0A-HP145 | 30570768 |
| 18,000 | 18 | 150 | 25 | 48 | 102 | 95 | 6 | FXR505Ø18.000H7MV0A-HP145 | 30570769 |
| 19,000 | 20 | 150 | 25 | 50 | 100 | 92 | 6 | FXR505Ø19.000H7MV0A-HP145 | 30570770 |

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FXR505 | Fixed design, straight fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR505Ø[diameter][tolerance]MV0A-HP145

G variants:

- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MV0A-HP145

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

IT6 tolerance example:

FXR505Ø16.350H6MV0A-HP145

Bore diameter d₁ = 16.350 H6**G variant example:**

FXR505GØ16.350-4MV0A-HP145

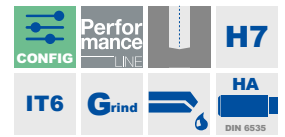
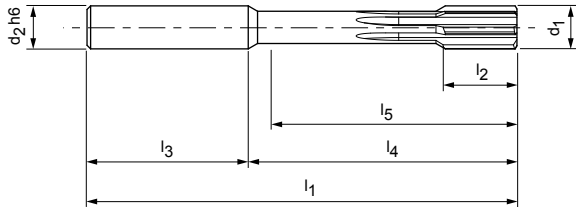
Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MT0A
HP145
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 4,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø4.000H7MT0A-HP145 | 30570797 |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø5.000H7MT0A-HP145 | 30570799 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø6.000H7MT0A-HP145 | 30570801 |
| 7,000 | 8 | 100 | 16 | 36 | 64 | 58 | 6 | FXR505Ø7.000H7MT0A-HP145 | 30570803 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 58 | 6 | FXR505Ø8.000H7MT0A-HP145 | 30570805 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 74 | 6 | FXR505Ø10.000H7MT0A-HP145 | 30570809 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 68 | 6 | FXR505Ø12.000H7MT0A-HP145 | 30570813 |

Configurable features

Bore diameter tolerance ≥ IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

Specification:
FXR505Ø[diameter][tolerance]MT0A-HP145

G variants:

- Diameter freely selectable in increments of 0.001 mm
- From tolerance ≥ 4 µm orderable (G variant, see page 320)

G variant specification:
FXR505GØ[diameter][tolerance]MT0A-HP145

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

IT6 tolerance example:
FXR505Ø16.350H6MT0A-HP145

Bore diameter d₁ = 16.350 H6

G variant example:
FXR505GØ16.350-4MT0A-HP145

Special tool diameter d₁ = 16.350 -4 µm

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter:

Lead:

Cutting material:

Solid carbide

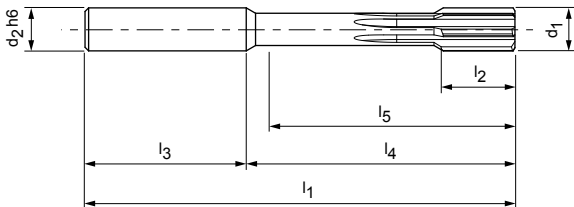
2.800–20.200 mm

MVOA

HP622

Carbide

PVD-coated



Configurable features


Bore diameter tolerance \geq IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:

FXR505Ø[diameter][tolerance]MVOA-HP622

G variants:

- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MVOA-HP622

Dimensions of configurable series IT6

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|---|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

IT6 tolerance example:

FXR505Ø16.350H6MVOA-HP622

 Bore diameter $d_1 = 16.350$ H6

G variant example:

FXR505GØ16.350-4MVOA-HP622

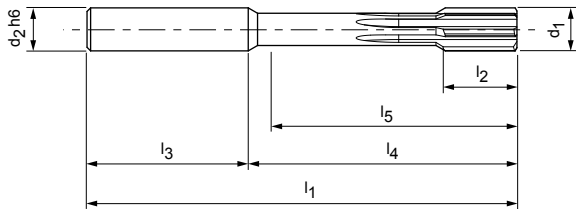
 Special tool diameter $d_1 = 16.350$ -4 μ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MV0A
HU612
Carbide
uncoated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 4,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø4.000H7MV0A-HU612 | 30570694 |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø5.000H7MV0A-HU612 | 30570696 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø6.000H7MV0A-HU612 | 30570698 |
| 7,000 | 8 | 100 | 16 | 36 | 64 | 58 | 6 | FXR505Ø7.000H7MV0A-HU612 | 30570700 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 58 | 6 | FXR505Ø8.000H7MV0A-HU612 | 30570702 |
| 9,000 | 10 | 100 | 20 | 40 | 60 | 54 | 6 | FXR505Ø9.000H7MV0A-HU612 | 30570704 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 74 | 6 | FXR505Ø10.000H7MV0A-HU612 | 30570706 |
| 11,000 | 12 | 120 | 20 | 45 | 75 | 68 | 6 | FXR505Ø11.000H7MV0A-HU612 | 30570708 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 68 | 6 | FXR505Ø12.000H7MV0A-HU612 | 30570710 |
| 13,000 | 14 | 130 | 22 | 45 | 85 | 78 | 6 | FXR505Ø13.000H7MV0A-HU612 | 30570711 |
| 14,000 | 14 | 130 | 22 | 45 | 85 | 78 | 6 | FXR505Ø14.000H7MV0A-HU612 | 30570712 |
| 15,000 | 16 | 130 | 22 | 48 | 82 | 75 | 6 | FXR505Ø15.000H7MV0A-HU612 | 30570713 |
| 16,000 | 16 | 150 | 25 | 48 | 102 | 95 | 6 | FXR505Ø16.000H7MV0A-HU612 | 30570714 |
| 17,000 | 18 | 150 | 25 | 48 | 102 | 95 | 6 | FXR505Ø17.000H7MV0A-HU612 | 30570715 |
| 18,000 | 18 | 150 | 25 | 48 | 102 | 95 | 6 | FXR505Ø18.000H7MV0A-HU612 | 30570716 |
| 19,000 | 20 | 150 | 25 | 50 | 100 | 92 | 6 | FXR505Ø19.000H7MV0A-HU612 | 30570717 |

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FXR505 | Fixed design, straight fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR505Ø[diameter][tolerance]MV0A-HU612

G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MV0A-HU612

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

IT6 tolerance example:

FXR505Ø16.350H6MV0A-HU612

Bore diameter d₁ = 16.350 H6**G variant example:**

FXR505GØ16.350-3MV0A-HU612

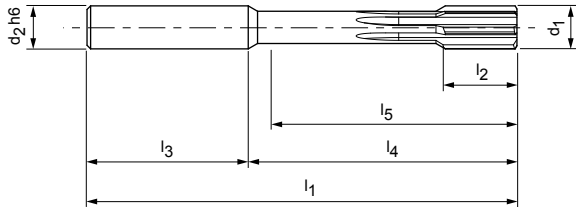
Special tool diameter d₁ = 16.350 -3 μ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MT0A
HP613
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR505Ø[diameter][tolerance]MT0A-HP613

G variants:
- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR505GØ[diameter][tolerance]MT0A-HP613

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

IT6 tolerance example:
FXR505Ø16.350H6MT0A-HP613

Bore diameter d₁ = 16.350 H6

G variant example:
FXR505GØ16.350-4MT0A-HP613

Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter:

Lead:

Cutting material:

Solid carbide

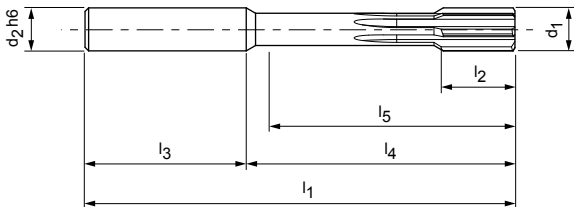
2.800-20.200 mm

MVOA

HC614

Carbide

CVD-coated



Configurable features


Bore diameter tolerance \geq IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:

FXR505Ø[diameter][tolerance]MVOA-HC614

G variants:

- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MVOA-HC614

Dimensions of configurable series IT6

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|---|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

IT6 tolerance example:

FXR505Ø16.350H6MVOA-HC614

 Bore diameter $d_1 = 16.350$ H6

G variant example:

FXR505GØ16.350-4MVOA-HC614

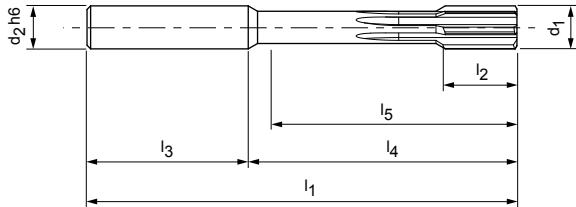
 Special tool diameter $d_1 = 16.350 -4 \mu$ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.200 mm
MT0A
HP141
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | Dimensions | | | | | | z | Specification | Order no. |
|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---|---------------------------|-----------|
| | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | |
| 4,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø4.000H7MT0A-HP141 | 30570847 |
| 5,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø5.000H7MT0A-HP141 | 30570849 |
| 6,000 | 6 | 75 | 12 | 36 | 39 | 34 | 4 | FXR505Ø6.000H7MT0A-HP141 | 30570851 |
| 8,000 | 8 | 100 | 16 | 36 | 64 | 58 | 6 | FXR505Ø8.000H7MT0A-HP141 | 30570855 |
| 10,000 | 10 | 120 | 20 | 40 | 80 | 74 | 6 | FXR505Ø10.000H7MT0A-HP141 | 30570859 |
| 12,000 | 12 | 120 | 20 | 45 | 75 | 68 | 6 | FXR505Ø12.000H7MT0A-HP141 | 30570863 |

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FXR505 | Fixed design, straight fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR505Ø[diameter][tolerance]MT0A-HP141

G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 5 μ m (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MT0A-HP141

Dimensions of configurable series IT6

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 2,800 - 3,350 | 4 | 65 | 12 | 37 | 28 | 33 | 4 |
| 3,351 - 3,700 | 4 | 65 | 12 | 28 | 37 | 33 | 4 |
| 3,701 - 6,200 | 6 | 75 | 12 | 36 | 39 | 34 | 4 |
| 6,201 - 8,200 | 8 | 100 | 16 | 36 | 64 | 58 | 6 |
| 8,201 - 9,200 | 10 | 100 | 20 | 40 | 60 | 54 | 6 |
| 9,201 - 10,200 | 10 | 120 | 20 | 40 | 80 | 74 | 6 |
| 10,201 - 12,200 | 12 | 120 | 20 | 45 | 75 | 68 | 6 |
| 12,201 - 14,200 | 14 | 130 | 22 | 45 | 85 | 78 | 6 |
| 14,201 - 15,200 | 16 | 130 | 22 | 48 | 82 | 75 | 6 |
| 15,201 - 16,200 | 16 | 150 | 25 | 48 | 102 | 95 | 6 |
| 16,201 - 18,200 | 18 | 150 | 25 | 48 | 102 | 95 | 6 |
| 18,201 - 20,200 | 20 | 150 | 25 | 50 | 100 | 92 | 6 |

IT6 tolerance example:

FXR505Ø16.350H6MT0A-HP141

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR505GØ16.350-5MT0A-HP141

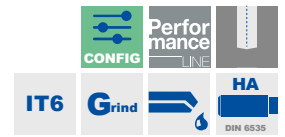
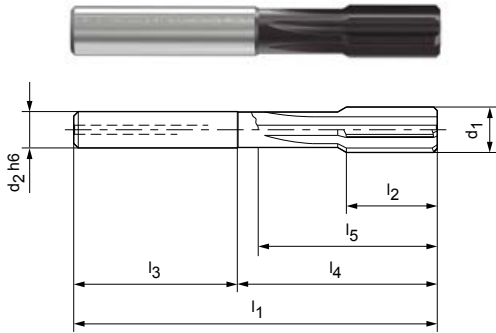
Special tool diameter $d_1 = 16.350 -5 \mu$ m

FixReam

Fixed design, straight fluted, for blind bores
FXR503-short

Design:
Reamer diameter:
Lead:
Cutting material:

Solid carbide
2.800-20.100 mm
MC1F
HP145
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR503Ø[diameter][tolerance]MC1F-HP145

G variants:
- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR503GØ[diameter][tolerance]MC1F-HP145

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 2,800 - 4,050 | 4 | 56 | 12 | 28 | 28 | 24 | 4 |
| 4,051 - 5,100 | 6 | 64 | 12 | 36 | 28 | 23 | 4 |
| 5,101 - 5,600 | 6 | 64 | 12 | 36 | 28 | 24 | 4 |
| 6,101 - 6,600 | 8 | 75 | 16 | 36 | 39 | 32 | 6 |
| 6,601 - 7,100 | 8 | 75 | 16 | 36 | 39 | 34 | 6 |
| 7,101 - 8,100 | 8 | 75 | 16 | 36 | 39 | 35 | 6 |
| 8,101 - 10,100 | 8 | 75 | 20 | 36 | 39 | 35 | 6 |
| 10,101 - 11,600 | 10 | 80 | 20 | 40 | 40 | 35 | 6 |
| 11,601 - 13,100 | 12 | 90 | 22 | 45 | 45 | 40 | 6 |
| 13,101 - 15,100 | 14 | 90 | 22 | 45 | 45 | 40 | 6 |
| 15,101 - 18,100 | 16 | 100 | 25 | 48 | 52 | 47 | 8 |
| 18,101 - 20,100 | 18 | 100 | 25 | 48 | 52 | 47 | 8 |

IT6 tolerance example:
FXR503Ø16.350H6MC1F-HP145

Bore diameter d₁ = 16.350 H6

G variant example:
FXR503GØ16.350-4MC1F-HP145

Special tool diameter d₁ = 16.350 -4 μ m



Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR510 | FXR505

Cutting material: HP145 | Lead: MF1M | MTOA

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|--|--------------------------|------------------|-----|----|
| | | | Internal cooling | External cooling | MQL | |
| P | P4 P4.1 | Stainless steels, ferritic and martensitic | 40 | 20 | 30 | |
| | P6 P6.1 | Stainless cast steel, ferritic and martensitic | 40 | 20 | 30 | |
| M | M1 M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 40 | 20 | 30 |
| | M1 M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 20 |
| | M2 M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 40 | 20 | 30 |
| | M3 M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 20 |

FXR510 | FXR505

Cutting material: HP145 | Lead: MG1M | MVOA

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|---------|--------------------|--|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| P | P1 P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 150 |
| | P1 P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 140 | 70 | 115 |
| | P2 P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 180 | 90 | 150 |
| | P2 P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 115 |
| | P3 P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 180 | 90 | 150 |
| | P3 P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 140 | 70 | 110 |
| | P3 P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 120 | 60 | 90 |
| P6 P5.1 | Cast steel | | 140 | 75 | 100 | |
| K | K1 K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 120 | 100 | 100 |
| | K2 K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 150 | 105 | 130 |
| | K2 K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 120 | 85 | 98 |
| | K2 K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 90 | 55 | 70 |
| | K3 K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 90 | 55 | 70 |
| | K3 K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 90 | 55 | 70 |

* MAPAL machining groups

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 6 | z 8 |
| | < 5.000 | > 5.000 - 6.200 | > 6.200 - 8.000 | > 8.000 - 12.000 | > 12.000 - 16.000 | > 16.000 - 16.200 | > 16.200 - 20.200 |
| | 0.020 | 0.040 | 0.060 | 0.080 | 0.100 | 0.120 | 0.120 |
| | 0.020 | 0.040 | 0.060 | 0.080 | 0.100 | 0.120 | 0.120 |
| | 0.020 | 0.040 | 0.060 | 0.080 | 0.100 | 0.120 | 0.120 |
| | 0.020 | 0.040 | 0.060 | 0.080 | 0.100 | 0.120 | 0.120 |
| | 0.020 | 0.040 | 0.060 | 0.080 | 0.100 | 0.120 | 0.120 |
| | 0.020 | 0.040 | 0.060 | 0.080 | 0.100 | 0.120 | 0.120 |

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 6 | z 8 |
| | < 5.000 | > 5.000 - 6.200 | > 6.200 - 8.000 | > 8.000 - 12.000 | > 12.000 - 16.000 | > 16.000 - 16.200 | > 16.200 - 20.200 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.080 | 0.100 | 0.100 | 0.170 | 0.220 | 0.220 | 0.230 |
| | 0.080 | 0.100 | 0.100 | 0.170 | 0.220 | 0.220 | 0.230 |
| | 0.080 | 0.100 | 0.100 | 0.170 | 0.220 | 0.220 | 0.230 |
| | 0.080 | 0.100 | 0.100 | 0.170 | 0.220 | 0.220 | 0.230 |
| | 0.080 | 0.100 | 0.100 | 0.170 | 0.220 | 0.220 | 0.230 |
| | 0.080 | 0.100 | 0.100 | 0.170 | 0.220 | 0.220 | 0.230 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR503–short

Cutting material: HP145 | Lead: MC1F

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|--|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| P | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 140 | 70 | 115 |
| | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 180 | 90 | 150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 115 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 180 | 90 | 150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 140 | 70 | 110 |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 120 | 60 | 90 |
| | P5.1 | Cast steel | | 140 | 75 | 100 |
| K | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 120 | 100 | 100 |
| | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 150 | 105 | 130 |
| | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 120 | 85 | 98 |
| | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 90 | 55 | 70 |
| | K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 90 | 55 | 70 |
| | K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 90 | 55 | 70 |

FXR505 | FXR500

Cutting material: HP622 | Lead: MVOA | MGOA

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|---|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| N | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 250 | 125 | 190 |
| | N1.2 | Aluminium, alloy ≤ 7 % Si | | 250 | 125 | 190 |
| | N1.3 | Aluminium, alloy > 7-12 % Si | | 250 | 125 | 190 |
| | N1.4 | Aluminium, alloy > 12 % Si | | 250 | 125 | 190 |

FXR505 | FXR510

Cutting material: HU612 | Lead: MVOA | MG1M

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|---|--------------------------|------------------|-----|----|
| | | | Internal cooling | External cooling | MQL | |
| N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 50 | 25 | |
| | N2.2 | Copper, alloy | > 300 N/mm ² | 50 | 25 | |
| | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 50 | 25 | 40 |

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 8 | z 8 |
| | < 5.000 | > 5.000 - 6.100 | > 6.100 - 8.000 | > 8.000 - 12.000 | > 12.000 - 15.100 | > 15.100 - 16.000 | > 16.000 - 20.100 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.050 | 0.080 | 0.080 | 0.140 | 0.180 | 0.180 | 0.190 |
| | 0.08 | 0.10 | 0.10 | 0.17 | 0.22 | 0.22 | 0.23 |
| | 0.08 | 0.10 | 0.10 | 0.17 | 0.22 | 0.22 | 0.23 |
| | 0.08 | 0.10 | 0.10 | 0.17 | 0.22 | 0.22 | 0.23 |
| | 0.08 | 0.10 | 0.10 | 0.17 | 0.22 | 0.22 | 0.23 |
| | 0.08 | 0.10 | 0.10 | 0.17 | 0.22 | 0.22 | 0.23 |
| | 0.08 | 0.10 | 0.10 | 0.17 | 0.22 | 0.22 | 0.23 |

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 6 | z 6 |
| | < 5.000 | > 5.000 - 6.200 | > 6.200 - 8.000 | > 8.000 - 12.000 | > 12.000 - 16.000 | > 16.000 - 16.200 | > 16.200 - 20.200 |
| | 0.120 | 0.150 | 0.150 | 0.210 | 0.250 | 0.250 | 0.300 |
| | 0.120 | 0.150 | 0.150 | 0.210 | 0.250 | 0.250 | 0.300 |
| | 0.120 | 0.150 | 0.150 | 0.210 | 0.250 | 0.250 | 0.300 |
| | 0.120 | 0.150 | 0.150 | 0.210 | 0.250 | 0.250 | 0.300 |

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 6 | z 8 |
| | < 5.000 | > 5.000 - 6.200 | > 6.200 - 8.000 | > 8.000 - 12.000 | > 12.000 - 16.000 | > 16.000 - 16.200 | > 16.200 - 20.200 |
| | 0.040 | 0.050 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 |
| | 0.040 | 0.050 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 |
| | 0.040 | 0.050 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR510 | FXR505

Cutting material: HP613 | Lead: MF1M | MTOA

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--------------------|---|--------------------------|------------------|-------|
| | | | Internal cooling | External cooling | MQL |
| S | S1 S1.1 | < 400 N/mm ² | 15 | 0.080 | 0.050 |
| | S2 S2.1 | < 1200 N/mm ² | 15 | 0.080 | 0.050 |
| | S2 S2.2 | > 1200 N/mm ² | 15 | 0.080 | 0.050 |
| | S3 S3.1 | < 900 N/mm ² | 15 | 0.080 | 0.050 |
| | S3 S3.2 | > 900 N/mm ² | 15 | 0.080 | 0.050 |
| | S4 S4.1 | | 15 | 0.080 | 0.050 |
| | S5 S5.1 | | 15 | 0.080 | 0.050 |

FXR510 | FXR505

Cutting material: HC614 | Lead: MF1M | MVOA

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--|---|--------------------------|------------------|-----|
| | | | Internal cooling | External cooling | MQL |
| C | C1.1 Plastic matrix, aramide fibre-reinforced (AFRP) | | 50 | 25 | 30 |
| | C1.2 Plastic matrix (thermosetting), CFRP/GFRP | | 50 | 25 | 30 |
| | C1.3 Plastic matrix (thermoplastic), CFRP/GFRP | | 50 | 25 | 30 |

FXR500 | FXR505

Cutting material: HP141 | Lead: MFOA | MTOA

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|-------------------------------------|---|--------------------------|------------------|-----|
| | | | Internal cooling | External cooling | MQL |
| H | H1 H1.1 Hardened steel / cast steel | < 44 HRC | 50 | 20 | 30 |
| | H1 H1.2 Hardened steel / cast steel | < 55 HRC | 10 | 5 | 5 |

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 6 | z 8 |
| | < 5.000 | > 5.000 - 6.200 | > 6.200 - 8.000 | > 8.000 - 12.000 | > 12.000 - 16.000 | > 16.000 - 16.200 | > 16.200 - 20.200 |
| | 15 | 0.150 | 0.050 | 15 | 0.100 | 0.050 | 0.100 |
| | 15 | 0.160 | 0.050 | 15 | 0.100 | 0.050 | 0.100 |
| | 15 | 0.170 | 0.050 | 15 | 0.100 | 0.050 | 0.100 |
| | 15 | 0.180 | 0.050 | 15 | 0.100 | 0.050 | 0.100 |
| | 15 | 0.190 | 0.050 | 15 | 0.100 | 0.050 | 0.100 |
| | 15 | 0.200 | 0.050 | 15 | 0.100 | 0.050 | 0.100 |
| | 15 | 0.210 | 0.050 | 15 | 0.100 | 0.050 | 0.100 |

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 6 | z 8 |
| | < 5.000 | > 5.000 - 6.200 | > 6.200 - 8.000 | > 8.000 - 12.000 | > 12.000 - 16.000 | > 16.000 - 16.200 | > 16.200 - 20.200 |
| | 50 | 0.400 | 0.100 | 50 | 0.400 | 0.100 | 0.100 |
| | 50 | 0.400 | 0.100 | 50 | 0.400 | 0.100 | 0.100 |
| | 50 | 0.400 | 0.100 | 50 | 0.400 | 0.100 | 0.100 |

| | Feed fz (mm/z) with drill diameter | | | | | | |
|--|------------------------------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|
| | z 4 | z 4 | z 6 | z 6 | z 6 | z 6 | z 6 |
| | < 5.000 | > 5.000 - 6.200 | > 6.200 - 8.000 | > 8.000 - 12.000 | > 12.000 - 16.000 | > 16.000 - 16.200 | > 16.200 - 20.200 |
| | 0.015 | 0.025 | 0.020 | 0.040 | 0.050 | 0.050 | 0.050 |
| | 0.015 | 0.025 | 0.020 | 0.040 | 0.050 | 0.050 | 0.050 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

PRODUCT OVERVIEW






















MonoReam 700 series

The multi-bladed reamers in the MonoReam 700 series offer a new, simple, high-performance, standardised reaming system. The reamers of the MonoReam series are available as expandable versions. Depending on the area of application and workpiece material, they are available as left-angled or straight fluted versions for through and blind bores as well as with different leads and cutting materials.

MonoReam Plus

The MonoReam Plus series is specially designed for machining cast iron and steel. The reamers of this series are equipped with an innovative and patented coolant supply. A sleeve ensures optimal coolant supply to the HPC cutting edges.

The range for through and blind bores is ideally suited to machining in the diameter range from 3.850 to 8.200 mm.

| MonoReam | | | |
|--|---|--|--|
|  |  |  | |
| <p>MonoReam 700 Straight fluted design for machining through bores produced of non-ferrous metals with uncoated carbide cutting edges (PCD cutting edges on request).</p> <p>Ø range: 7.700-40.200 mm*</p> <p>    </p> | <p>MonoReam 710 Left-hand fluted design for machining through bores using uncoated or coated carbide blades.</p> <p>Ø range: 7.700-40.200 mm*</p> <p>     </p> | <p>MonoReam 705 Straight fluted design for machining blind bores using uncoated or coated carbide blades.</p> <p>Ø range: 7.700-40.200 mm*</p> <p>      </p> | |
| Page 358 | Page 356 | Page 359 | |

* The diameter range can vary, depending on the series.



Series 700 system explanation

The MonoReam reamers in the 700 series are used as fixed tools, however this series is optimised for re-grinding. The reamer is expanded in diameter using a one-piece expansion screw. The expansion system is therefore only suitable for compensation prior to re-grinding and not for setting or re-adjusting the diameter. Due to the expansion of the diameter, it is possible to re-grind all functional surfaces, both on the lead, and also on the tool diameter.

MonoReam Plus



MonoReam Plus | MRP510
Solid cermet head

High-performance reamer with solid cermet head, left-hand fluted

Ø range: 3.850 - 8.200 mm







MonoReam Plus | MRP505
Solid cermet head

High-performance reamer with solid cermet head, straight fluted

Ø range: 3.850 - 8.200 mm

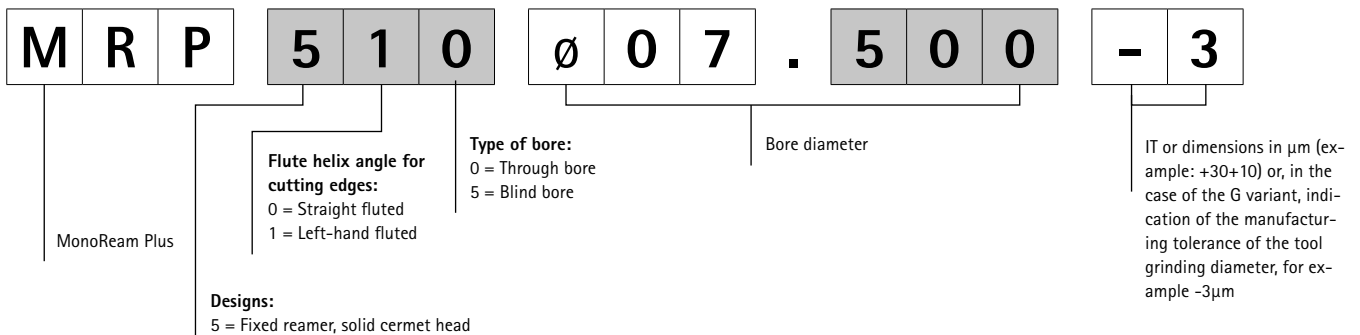


Article overview MonoReam | MonoReam Plus (1/2)

| Product category | Type of bore | Material suitability | | | | | | | | | | | |
|------------------|---|----------------------|-----|-----|-----|-----|---|-----|-----|-----|----|-----|---|
| | | P | | | | | K | | | | | N | |
| | | 1-2 | 3.1 | 3.2 | 3.3 | 4-6 | 1 | 2.1 | 2.2 | 2.3 | K3 | 1-2 | 4 |
| Performance |  | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | | | | | | | | | | | ■ | ■ |
| |  | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | | | |
| | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | | | | | | | | | | | ■ | ■ |
| |  | ■ | ■ | ■ | | | ■ | ■ | | | | | |
| | | ■ | ■ | ■ | | | ■ | ■ | | | | | |
| |  | ■ | ■ | ■ | | | ■ | ■ | | | | | |
| | | ■ | ■ | ■ | | | ■ | ■ | | | | | |

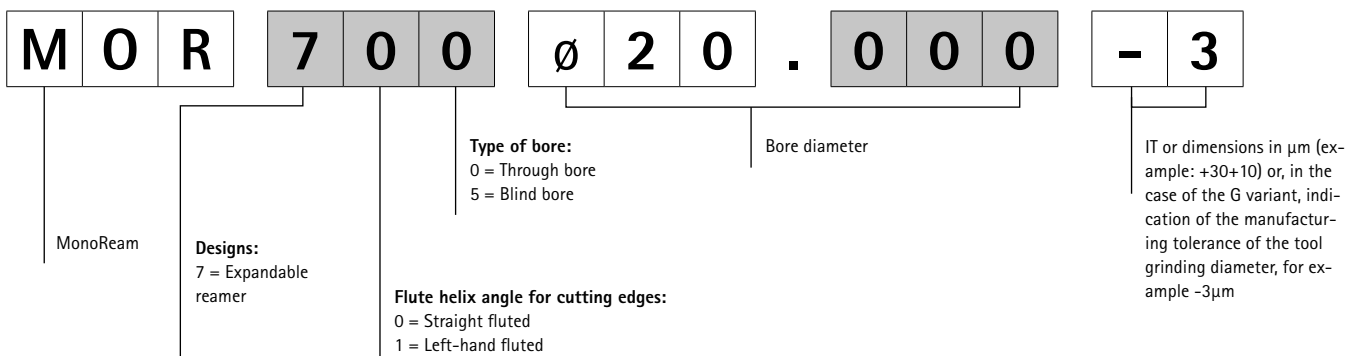
Ordering example:

MonoReam Plus series



Ordering example:

MonoReam series



Step 1:
Product category



Step 2:
Type of bore



Step 3:
Material suitability





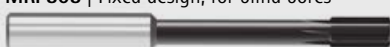


Step 4:
Design



Step 5:
Preconfigured diameters or configuration



| d ₁ | Design | | | | | Preconfigured diameters | | Configuration |
|----------------|------------------|------|-------|------------|--------|-------------------------|--|---------------|
| | Cutting material | Lead | fixed | expandable | Series | Page | | |
| 7.700 - 40.200 | CU130 | MY1G | | ■ | MOR710 | 356 | MOR710 Expanding version, for through bores  | |
| 7.700 - 40.200 | HP421 | MY1G | | ■ | MOR710 | 357 | | |
| 7.700 - 40.200 | HU612 | MY1G | | ■ | MOR700 | 358 | MOR700  | |
| 7.700 - 40.200 | CU130 | MU2A | | ■ | MOR705 | 359 | MOR705 Expanding version, for blind bores  | |
| 7.700 - 40.200 | HP421 | MU2A | | ■ | MOR705 | 360 | | |
| 7.700 - 40.200 | HU612 | MU2A | | ■ | MOR705 | 361 | | |
| 3.850 - 8.200 | CU178 | MG1M | ■ | | MRP510 | 362 | MRP510 Fixed design, for through bores  | |
| 3.850 - 8.200 | CU178 | MV3C | ■ | | MRP505 | 363 | MRP505 Fixed design, for blind bores  | |

Lead

Cutting material

M G 1 M - **C U 1 7 8**

Lead geometry and rake angle:
MG1M
MV3C

Cutting material:
CU178

For explanation of the lead geometries, see pages 752.

Lead

Cutting material

M Y 1 G - **C P 1 3 6**

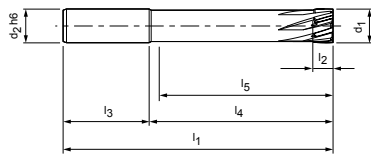
Lead geometry and rake angle:
MY1G
MU2A

Cutting material:
HP421
HU612
CU130
PCD and PcBN on request

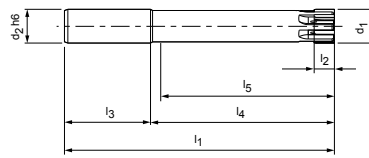
For explanation of the lead geometries, see pages 752.

Article overview MonoReam | MonoReam Plus Configuration (2/2)

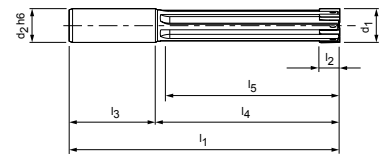
MOR710



MOR700



MOR705



Tool dimensions

MOR710 | MOR700

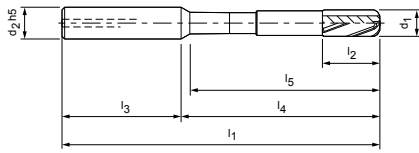
| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 70 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 70 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 87 | 6 |
| 17,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 105 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 125 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 139 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 139 | 8 |

MOR705

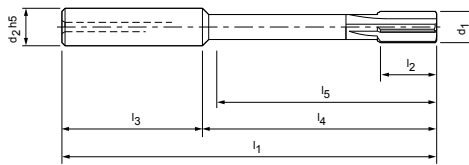
| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|-----|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 64 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 65 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 80 | 6 |
| 17,201 - 18,200 | 20 | 160 | 12 | 50 | 110 | 98 | 6 |
| 18,201 - 19,200 | 20 | 160 | 12 | 50 | 110 | 99 | 6 |
| 19,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 100 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 120 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 130 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 130 | 8 |



MRP510



MRP505

**Tool dimensions**

MRP510

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 3,850 - 4,900 | 10 | 80 | 14 | 40 | 40 | 33 | 4 |
| 4,901 - 6,200 | 12 | 85 | 14 | 45 | 40 | 33 | 4 |
| 6,201 - 6,700 | 12 | 105 | 14 | 45 | 60 | 52 | 6 |
| 6,701 - 8,200 | 12 | 110 | 18 | 45 | 65 | 57 | 6 |

MRP505

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 3,850 - 4,900 | 10 | 80 | 12 | 40 | 40 | 33 | 4 |
| 4,901 - 6,200 | 12 | 85 | 45 | 40 | 12 | 33 | 4 |
| 6,201 - 6,700 | 12 | 105 | 45 | 60 | 12 | 53 | 6 |
| 6,701 - 8,200 | 12 | 110 | 45 | 65 | 16 | 58 | 6 |

Tolerances for the G variant/fixed variant MOR7XX | MRP5XX:

| Cutting material | Diameter range |
|--|----------------|
| | Ø 7.700-40.200 |
| Uncoated | -0,003 |
| CU130 | |
| HU612 | |
| CU178 | |
| Coated (coating thickness 1 - 2 µm) | -0,004 |
| HP421 | |
| CP136 | |

Explanation of the G-variant MOR | MRP

Permissible workpiece tolerances for selecting the tool diameter

G variant design:

The G variant indicates the tool diameter of the reamer with our manufacturing tolerances. The manufacturing tolerances depend on the cutting material. See permissible smallest tolerances for the G-variant.

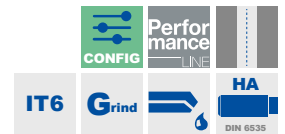
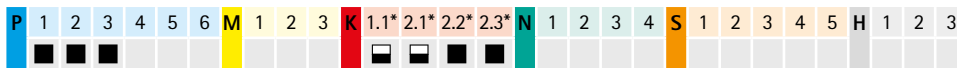
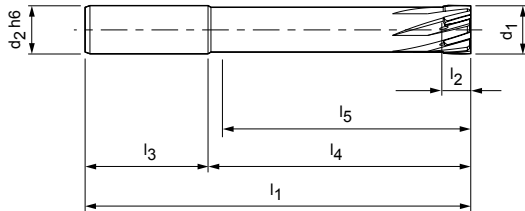
MonoReam

Expanding design, for through bores
MOR710

Design:

Reamer diameter:
Lead:
Cutting material:

7.700–40.200 mm
MY1G
CU130
Uncoated cermet



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
MOR710Ø[diameter][tolerance]MY1G-CU130

G variants:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 355)

G variant specification:
MOR710GØ[diameter][tolerance]MY1G-CU130

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 70 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 70 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 87 | 6 |
| 17,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 105 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 125 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 139 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 139 | 8 |

IT6 tolerance example:
MOR710Ø16.350H6MY1G-CU130

Bore diameter d₁ = 16.350 H6

G variant example:
MOR710GØ16.350-3MY1G-CU130

Special tool diameter d₁ = 16.350 -3 μ m

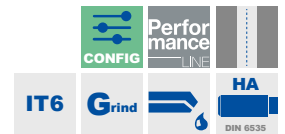
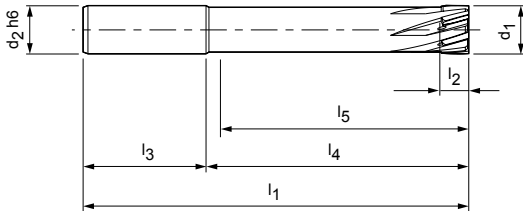
Dimensions in mm.
* for surfaces R_a < 2 μ m
For cutting data recommendations, see end of chapter.

MonoReam

Expanding design, for through bores
MOR710

Design:

Reamer diameter: 7.700–40.200 mm
Lead: MY1G
Cutting material: HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance ≥ IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

Specification:
MOR710Ø[diameter][tolerance]MY1G-HP421

G variants:
- Diameter freely selectable in increments of 0.001 mm
- From tolerance ≥ 4 µm orderable (G variant, see page 355)

G variant specification:
MOR710GØ[diameter][tolerance]MY1G-HP421

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 70 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 70 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 87 | 6 |
| 17,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 105 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 125 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 139 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 139 | 8 |

IT6 tolerance example:
MOR710Ø16.350H6MY1G-HP421

Bore diameter d₁ = 16.350 H6

G variant example:
MOR710GØ16.350-4MY1G-HP421

Special tool diameter d₁ = 16.350 -4 µm

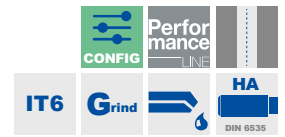
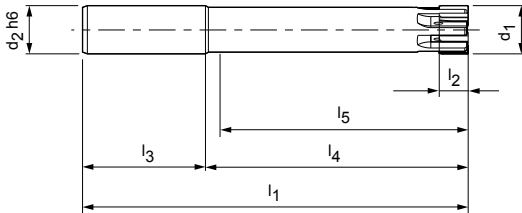
MonoReam

Expanding design, for through bores
MOR700

Design:

Reamer diameter:
Lead:
Cutting material:

7.700–40.200 mm
MY1G
HU612
Carbide
uncoated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
MOR700Ø[diameter][tolerance]MY1G-HU612

G variants:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 355)

G variant specification:
MOR700GØ16.350-3MY1G-HU612

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 70 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 70 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 87 | 6 |
| 17,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 105 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 125 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 139 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 139 | 8 |

IT6 tolerance example:
MOR700Ø16.350H6MY1G-HU612

Bore diameter d₁ = 16.350 H6

G variant example:
MOR700GØ16.350-3MY1G-HU612

Special tool diameter d₁ = 16.350 -3 μ m

MonoReam

Expanding design, straight fluted, for blind bores
MOR705

Design:

Reamer diameter:

7.700–40.200 mm

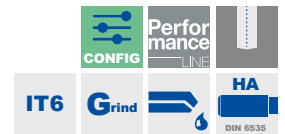
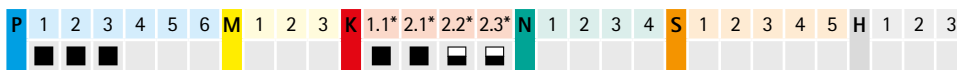
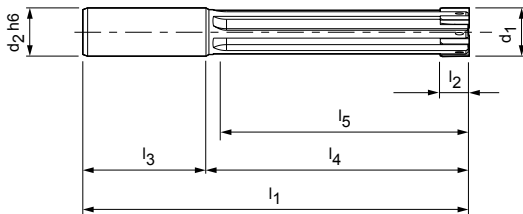
Lead:

MU2A

Cutting material:

CU130

Uncoated cermet



Configurable features


Bore diameter tolerance \geq IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:

MOR705Ø[diameter][tolerance]MU2A-CU130

G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 355)

G variant specification:

MOR705GØ[diameter][tolerance]MU2A-CU130

Dimensions of configurable series IT6

| d_1 | d_2 | l_1 | l_2 | l_3 | l_4 | l_5 | z |
|-----------------|-------|-------|-------|-------|-------|-------|---|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 64 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 65 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 80 | 6 |
| 17,201 - 18,200 | 20 | 160 | 12 | 50 | 110 | 98 | 6 |
| 18,201 - 19,200 | 20 | 160 | 12 | 50 | 110 | 99 | 6 |
| 19,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 100 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 120 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 130 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 130 | 8 |

IT6 tolerance example:

MOR705Ø16.350H6MU2A-CU130

Bore diameter $d_1 = 16.350$ H6

G variant example:

MOR705GØ16.350-3MU2A-CU130

Special tool diameter $d_1 = 16.350 - 3 \mu$ m

Dimensions in mm.

* for surfaces $R_a < 2 \mu$ m

For cutting data recommendations, see end of chapter.

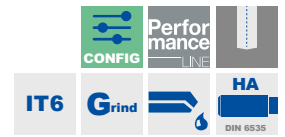
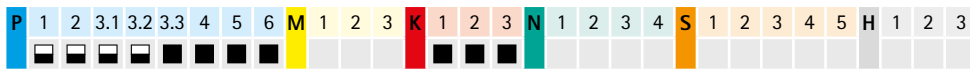
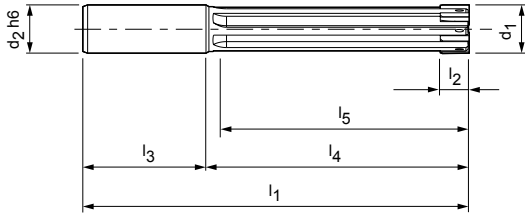
MonoReam

Expanding design, straight fluted, for blind bores
MOR705

Design:

Reamer diameter:
Lead:
Cutting material:

7.700–40.200 mm
MU2A
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
MOR705Ø[diameter][tolerance]MU2A-HP421

G variants:
- Diameter freely selectable in increments of 0.001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 355)

G variant specification:
MOR705GØ[diameter][tolerance]MU2A-HP421

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 64 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 65 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 80 | 6 |
| 17,201 - 18,200 | 20 | 160 | 12 | 50 | 110 | 98 | 6 |
| 18,201 - 19,200 | 20 | 160 | 12 | 50 | 110 | 99 | 6 |
| 19,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 100 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 120 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 130 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 130 | 8 |

IT6 tolerance example:
MOR705Ø16.350H6MU2A-HP421

Bore diameter d₁ = 16.350 H6

G variant example:
MOR705GØ16.350-4MU2A-HP421

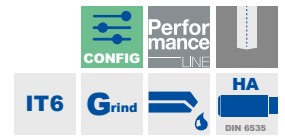
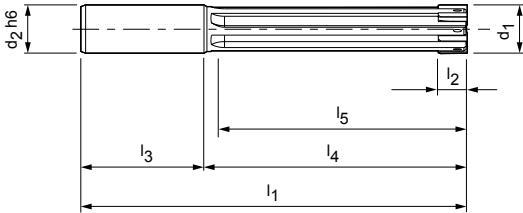
Special tool diameter d₁ = 16.350 -4 μ m

MonoReam

Expanding design, straight fluted, for blind bores
MOR705

Design:

Reamer diameter: 7.700–40.200 mm
Lead: MU2A
Cutting material: HU612
Carbide uncoated



Configurable features



Bore diameter tolerance ≥ IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

Specification:
MOR705Ø[diameter][tolerance]MU2A-HU612

G variants:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance ≥ 3 µm (G variant, see page 355)

G variant specification:
MOR705GØ[diameter][tolerance]MU2A-HU612

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 7,700 - 9,700 | 12 | 120 | 8 | 45 | 75 | 64 | 4 |
| 9,701 - 11,700 | 12 | 120 | 8 | 45 | 75 | 65 | 6 |
| 11,701 - 17,200 | 16 | 140 | 8 | 48 | 92 | 80 | 6 |
| 17,201 - 18,200 | 20 | 160 | 12 | 50 | 110 | 98 | 6 |
| 18,201 - 19,200 | 20 | 160 | 12 | 50 | 110 | 99 | 6 |
| 19,201 - 22,200 | 20 | 160 | 12 | 50 | 110 | 100 | 6 |
| 22,201 - 27,200 | 20 | 180 | 12 | 50 | 130 | 120 | 6 |
| 27,201 - 29,200 | 25 | 200 | 12 | 56 | 144 | 130 | 6 |
| 29,201 - 40,200 | 25 | 200 | 12 | 56 | 144 | 130 | 8 |

IT6 tolerance example:
MOR705Ø16.350H6MU2A-HU612

Bore diameter d₁ = 16.350 H6

G variant example:
MOR705GØ16.350-3MU2A-HU612

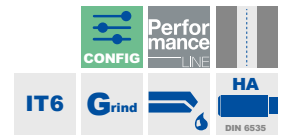
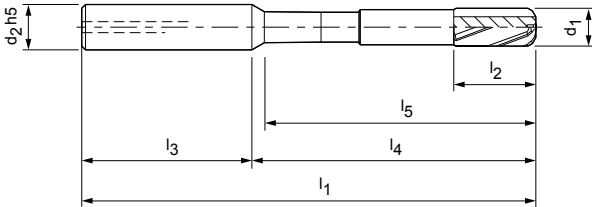
Special tool diameter d₁ = 16.350 -3 µm

Dimensions in mm.
For cutting data recommendations, see end of chapter.

MonoReam Plus

Fixed design, for through bores
MRP510

Design:
Reamer diameter: 3.850-8.200 mm
Lead: MG1M
Cutting material: CU178
Uncoated cermet



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:
MRP510Ø[diameter][tolerance]MG1M-CU178

G variants:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 355)

G variant specification:
MRP510GØ[diameter][tolerance]MG1M-CU178

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 3,850 - 4,900 | 10 | 80 | 14 | 40 | 40 | 33 | 4 |
| 4,901 - 6,200 | 12 | 85 | 14 | 45 | 40 | 33 | 4 |
| 6,201 - 6,700 | 12 | 105 | 14 | 45 | 60 | 52 | 6 |
| 6,701 - 8,200 | 12 | 110 | 18 | 45 | 65 | 57 | 6 |

IT6 tolerance example:
MRP510Ø5.350H6MG1M-CU178

Bore diameter d₁ = 5.350 mm H6

G variant example:
MRP510GØ5.350-3MG1M-CU178

Special tool diameter d₁ = 5.350 -3 μ m

Dimensions in mm.
* for surfaces R_a < 2 μ m
For cutting data recommendations, see end of chapter.

MonoReam Plus

Fixed design, for through bores
MRP505

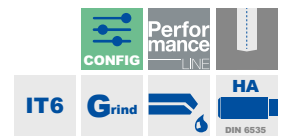
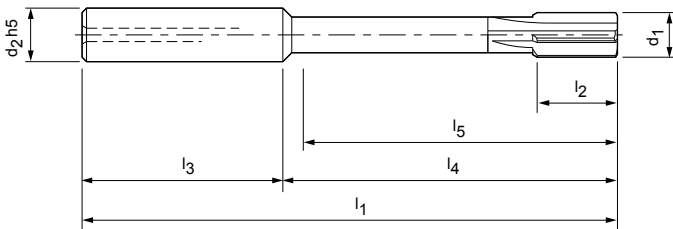
Design:

Reamer diameter: 3.850–8.200 mm

Lead: MV3C

Cutting material: CU178

Uncoated cermet



Configurable features


Bore diameter tolerance \geq IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance \geq IT6

Specification:

MRP505Ø[diameter][tolerance]MV3C-CU178

G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 355)

G variant specification:

MRP505GØ[diameter][tolerance]MV3C-CU178

Dimensions of configurable series IT6

| d ₁ | d ₂ | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | z |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 3,850 - 4,900 | 10 | 80 | 12 | 40 | 40 | 33 | 4 |
| 4,901 - 6,200 | 12 | 85 | 45 | 40 | 12 | 33 | 4 |
| 6,201 - 6,700 | 12 | 105 | 45 | 60 | 12 | 53 | 6 |
| 6,701 - 8,200 | 12 | 110 | 45 | 65 | 16 | 58 | 6 |

IT6 tolerance example:

MRP505Ø5.350H6MV3C-CU178

 Bore diameter d₁ = 5.350 mm H6

G variant example:

MRP505Ø5.350-3MV3C-CU178

 Special tool diameter d₁ = 5.350 -3 μ m

Dimensions in mm.

 * for surfaces R_a < 2 μ m

For cutting data recommendations, see end of chapter.

Cutting data recommendations for MonoReam MOR | MonoReam Plus MRP

Feed and cutting speed

MRP505 | MRP510

Cutting material: CU178 | Lead: MV3C | MG1M

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|--|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| P | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 150 | 75 | 125 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 150 | 75 | 125 |
| | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 130 | 65 | 110 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 130 | 65 | 110 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 130 | 65 | 110 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 120 | 60 | 100 |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | | | |

MOR705 | MOR710

Cutting material: CU130 | Lead: MU2A | MY1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|--|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| P | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 150 | 75 | 125 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 150 | 75 | 125 |
| | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 130 | 65 | 110 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 130 | 65 | 110 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 130 | 65 | 110 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 120 | 60 | 100 |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | | | |
| K | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 120 | 100 | 100 |
| | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 120 | 85 | 105 |
| | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | | | |
| | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | | | |

MOR705 | MOR710

Cutting material: HP421 | Lead: MU2A | MY1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|---|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| P | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | | | |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | | | |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 100 | 50 | 75 |
| | P4.1 | Stainless steels, ferritic and martensitic | | 40 | 20 | 30 |
| | P5.1 | Cast steel | | 110 | 60 | 80 |
| | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 30 |
| K | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 120 | 100 | 100 |
| | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 110 | 80 | 95 |
| | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 65 | 75 |
| | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 90 | 55 | 70 |
| | K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 90 | 55 | 70 |
| | K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 90 | 55 | 70 |

* MAPAL machining groups

| | Feed fz (mm/z) with drill diameter | | |
|--|------------------------------------|---------------|-----------------|
| | z 4 | z 4 | z 6 |
| | < 5.000 | 5.000 - 6.200 | > 6.200 - 8.200 |
| | 0.025 | 0.040 | 0.060 |
| | 0.025 | 0.040 | 0.060 |
| | 0.025 | 0.040 | 0.060 |
| | 0.025 | 0.040 | 0.060 |
| | 0.025 | 0.040 | 0.060 |
| | 0.025 | 0.040 | 0.060 |

| | Feed fz (mm/z) with drill diameter | | | |
|--|------------------------------------|------------------|-------------------|-------------------|
| | z 4 | z 6 | z 6 | z 8 |
| | 8.000 - 9.700 | > 9.700 - 16.000 | > 16.000 - 29.200 | > 29.200 - 40.200 |
| | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.080 | 0.120 | 0.120 | 0.120 |
| | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.200 | 0.200 | 0.250 |
| | 0.150 | 0.180 | 0.180 | 0.180 |
| | | | | |
| | | | | |

| | Feed fz (mm/z) with drill diameter | | | |
|--|------------------------------------|------------------|-------------------|-------------------|
| | z 4 | z 6 | z 6 | z 8 |
| | 8.000 - 9.700 | > 9.700 - 16.000 | > 16.000 - 29.200 | > 29.200 - 40.200 |
| | | | | |
| | | | | |
| | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.080 | 0.100 | 0.120 | 0.120 |
| | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.080 | 0.100 | 0.120 | 0.120 |
| | 0.150 | 0.200 | 0.200 | 0.250 |
| | 0.150 | 0.180 | 0.180 | 0.180 |
| | 0.150 | 0.180 | 0.180 | 0.180 |
| | 0.120 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.180 | 0.180 | 0.180 |
| | 0.150 | 0.150 | 0.150 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for MonoReam MOR

Feed and cutting speed

MOR700

Cutting material: HU612 | Lead: MY1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--|---|--------------------------|------------------|-----|
| | | | Internal cooling | External cooling | MQL |
| N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 50 | 25 | 40 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 50 | 25 | 40 |
| | N1.3 Aluminium, alloy > 7-12 % Si | | 30 | 15 | 25 |
| | N1.4 Aluminium, alloy > 12 % Si | | 30 | 15 | 25 |
| N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 50 | 25 | |
| | N2.2 Copper, alloy | > 300 N/mm ² | 50 | 25 | |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 50 | 25 | 40 |
| N4 | N4.1 Plastic, thermoplastics | | 40 | 20 | |
| | N4.2 Plastic, thermosets | | 40 | 20 | |
| | N4.3 Plastic, foams | | 40 | 20 | |

MOR705

Cutting material: HU612 | Lead: MU2A

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--|---|--------------------------|------------------|-----|
| | | | Internal cooling | External cooling | MQL |
| N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 50 | 25 | 40 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 50 | 25 | 40 |
| | N1.3 Aluminium, alloy > 7-12 % Si | | 30 | 15 | 25 |
| | N1.4 Aluminium, alloy > 12 % Si | | 30 | 15 | 25 |
| N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 50 | 25 | |
| | N2.2 Copper, alloy | > 300 N/mm ² | 50 | 25 | |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 50 | 25 | 40 |

| | Feed fz (mm/z) with drill diameter | | | |
|--|------------------------------------|------------------|-------------------|-------------------|
| | z 4 | z 6 | z 6 | z 8 |
| | 8.000 - 9.700 | > 9.700 - 16.000 | > 16.000 - 29.200 | > 29.200 - 40.200 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.080 | 0.080 |
| | 0.050 | 0.080 | 0.080 | 0.080 |
| | 0.050 | 0.080 | 0.080 | 0.080 |

| | Feed fz (mm/z) with drill diameter | | | |
|--|------------------------------------|------------------|-------------------|-------------------|
| | z 4 | z 6 | z 6 | z 8 |
| | 8.000 - 9.700 | > 9.700 - 16.000 | > 16.000 - 29.200 | > 29.200 - 40.200 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |
| | 0.050 | 0.080 | 0.100 | 0.120 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

PRODUCT OVERVIEW

HPR replaceable head reamer

The HPR range of replaceable head reamers includes series for through and blind bores from a diameter of 8.00 mm. The replaceable head reamers are available either as a fixed design (100 series) or as a finely adjustable design (200 series) and can be fitted with various cutting materials such as carbide or cermet. The reamers can be configured in the diameter range from 8.00 to 65.00 mm in increments of a tenths of a millimetre and in the tolerance range. A wide range of H7 dimensions is available as a preferred series.

With the Head Fitting System (HFS), the associated tool holders are characterised by exact radial run-out and changeover accuracy of less than 3 µm and safe, simple handling, especially when mounting and dismounting the tool head. HFS guarantees high precision and power transmission. The simple design with direct coolant supply to the cutting edge makes the system suitable for minimum quantity lubrication (MQL).

HPR fixed design



HPR series 100 | 130 | 131 | 110 | 150 | 180

Fixed design with brazed cutting edges.

Ø range: 7.000-65.000 mm*





HPR finely adjustable design



HPR series 200 | 230 | 231 | 210 | 250 | 280

Adjustable to the μm by means of an adjustment system.

\varnothing range: 7.000-65.000 mm*

Expert
LINE



P M K N S

Step 1:
Type of bore



Step 2:
Material suitability



Step 3:
Design



Step 4:
Product category



Step 5:
Preconfigured diameters or configuration

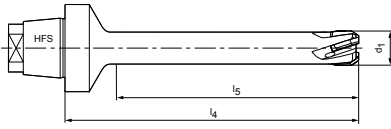


| | Design | | | Preconfigured diameters | | | | Configuration |
|--|-----------------|------------------|------|--------------------------|-----------------|----------------|------------------------------|-----------------|
| | d1 | Cutting material | Lead | Perfor- mance LINE | fixed series | Expert LINE | Fine adjustable series | |
| | | | | Series | Page | Series | Page | |
| | 7.000 - 18.590 | CU134 | ME1G | HPR131 | 379 | HPR231 | 418 | HPR131 HPR231 |
| | 15.600 - 65.000 | CU134 | ME1G | HPR110 | 390 | HPR210 | 426 | |
| | 7.000 - 18.590 | HP421 | ME1G | HPR131 | 380 | HPR231 | 419 | |
| | 15.600 - 65.000 | HP421 | ME1G | HPR110 | 392 | HPR210 | 427 | HPR130 HPR230 |
| | 7.000 - 18.590 | HP421 | MF1G | HPR131 | 381 | HPR231 | 420 | |
| | 15.600 - 65.000 | HP421 | MF1G | HPR110 | 394 | HPR210 | 428 | |
| | 7.000 - 18.590 | CP134 | MC1G | HPR130 | 374 | HPR230 | 414 | |
| | 15.600 - 65.000 | CP134 | MC1G | HPR100 | 383 | HPR200 | 422 | HPR100 HPR200 |
| | 7.000 - 18.590 | HC419 | MC1G | HPR130 | 375 | | | |
| | 15.600 - 65.000 | HC419 | MC1G | HPR100 | 384 | | | |
| | 7.000 - 18.590 | HP422 | MC1G | HPR130 | 376 | HPR230 | 415 | |
| | 15.600 - 65.000 | HP422 | MC1G | HPR100 | 386 | HPR200 | 423 | |
| | 7.000 - 18.590 | HP423 | MC1G | HPR130 | 377 | HPR230 | 416 | |
| | 15.600 - 65.000 | HP423 | MC1G | HPR100 | 388 | HPR200 | 424 | HPR110 HPR210 |
| | 7.000 - 18.590 | PU620 | MA0A | HPR130 | 378 | HPR230 | 417 | |
| | 15.600 - 65.000 | PU620 | MA0A | HPR100 | 389 | HPR200 | 425 | |
| | 7.000 - 18.590 | HP612 | MF1G | HPR131 | 382 | HPR231 | 421 | |
| | 15.600 - 65.000 | HP612 | MF1G | HPR110 | 393 | HPR210 | 431 | |
| | 7.000 - 21.290 | CU134 | ML2G | HPR180 | 396 | HPR280 | 430 | HPR180 HPR280 |
| | 16.600 - 65.000 | CU134 | ML2G | HPR150 | 405 | HPR250 | 438 | |
| | 7.000 - 21.290 | HP421 | ML2G | HPR180 | 397 | HPR280 | 431 | |
| | 16.600 - 65.000 | HP421 | ML2G | HPR150 | 406 | HPR250 | 439 | HPR150 HPR250 |
| | 7.000 - 21.290 | HP421 | MO2G | HPR180 | 398 | HPR280 | 432 | |
| | 16.600 - 65.000 | HP421 | MO2G | HPR150 | 407 | HPR250 | 440 | |
| | 7.000 - 21.290 | CP134 | MC1G | HPR180 | 399 | HPR280 | 433 | |
| | 16.600 - 65.000 | CP134 | MC1G | HPR150 | 408 | HPR250 | 441 | |
| | 7.000 - 21.290 | HC419 | MC1G | HPR180 | 400 | | | |
| | 16.600 - 65.000 | HC419 | MC1G | HPR150 | 403 | | | |
| | 7.000 - 21.290 | HP421 | MC1G | HPR180 | 401 | HPR280 | 434 | |
| | 16.600 - 65.000 | HP421 | MC1G | HPR150 | 410 | HPR250 | 442 | |
| | 7.000 - 21.290 | HP423 | MC1G | HPR180 | 402 | HPR280 | 435 | |
| | 16.600 - 65.000 | HP423 | MC1G | HPR150 | 411 | HPR250 | 443 | |
| | 7.000 - 21.290 | PU620 | MA0A | HPR180 | 403 | HPR280 | 436 | |
| | 16.600 - 65.000 | PU620 | MA0A | HPR150 | 412 | HPR250 | 444 | |
| | 7.000 - 21.290 | HP612 | MO2G | HPR180 | 404 | HPR280 | 437 | |
| | 16.600 - 65.000 | HP612 | MO2G | HPR150 | 413 | HPR250 | 445 | |

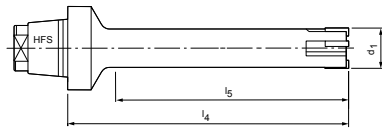
Series configuration on next page.

Article overview HPR | Configuration (2/2)

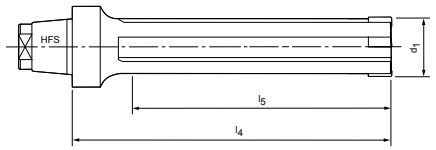
HPR131 | HPR231



HPR130 | HPR230



HPR180 | HPR280



Tool dimensions

| | ød ₁ | l ₄ | l ₅ | HFS size | z |
|--------------------------|-----------------|----------------|----------------|----------|---|
| HPR130 131 HPR230 231 | 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| | 9,600 - 18,590 | 60 | 45 | 12 | 6 |
| HPR180 HPR280 | 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| | 14,600 - 21,290 | 60 | 40 | 12 | 6 |
| HPR100 HPR110 | 15,600 - 18,590 | 14 | - | 10 | 6 |
| | 18,600 - 21,290 | 14,5 | - | 12 | 6 |
| | 21,300 - 23,990 | 15,5 | - | 14 | 6 |
| | 24,000 - 29,990 | 16 | - | 16 | 6 |
| | 30,000 - 39,990 | 17 | - | 20 | 8 |
| | 40,000 - 50,700 | 19 | - | 24 | 8 |
| HPR150 | 50,710 - 65,000 | 25 | - | 24 | 8 |
| | 16,600 - 21,290 | 14 | - | 10 | 6 |
| | 21,300 - 24,990 | 15,5 | - | 12 | 6 |
| | 25,000 - 28,990 | 15,5 | - | 14 | 6 |
| | 29,000 - 36,990 | 17 | - | 16 | 6 |
| | 37,000 - 44,990 | 17 | - | 20 | 8 |
| | 45,000 - 50,700 | 19 | - | 24 | 8 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | |

| | ød ₁ | l ₄ | l ₅ | HFS size | z |
|------------------|-----------------|----------------|----------------|----------|---|
| HPR200 HPR210 | 18,600 - 20,390 | 25 | - | 12 | 6 |
| | 20,400 - 21,290 | 27 | - | 12 | 6 |
| | 21,300 - 23,990 | 27 | - | 14 | 6 |
| | 24,000 - 29,990 | 35 | - | 16 | 6 |
| | 30,000 - 39,990 | 41 | - | 20 | 8 |
| HPR250 | 40,000 - 65,000 | 47 | - | 24 | 8 |
| | 16,600 - 21,290 | 25 | - | 10 | 6 |
| | 21,300 - 24,990 | 27 | - | 12 | 6 |
| | 25,000 - 28,590 | 35 | - | 14 | 6 |
| | 29,000 - 32,290 | 35 | - | 16 | 6 |
| | 32,300 - 36,990 | 41 | - | 16 | 6 |
| | 37,000 - 41,190 | 41 | - | 20 | 8 |
| | 41,200 - 44,900 | 47 | - | 20 | 8 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | |

Ordering example:

Series

H P R

HPR replaceable head reamer

1 0 0

Designs:
1 = Fixed reamer
2 = Finely adjustable reamer

Diameter

G **ø 2 0 . 0 0 0**

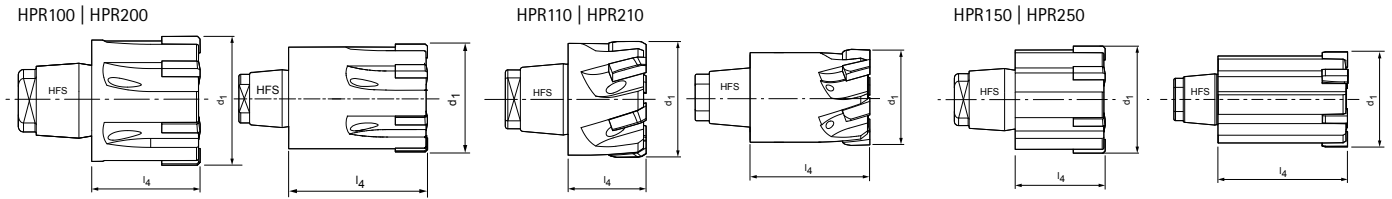
Flute helix angle for cutting edges:
0 = Straight fluted up to ø 65.000 mm
1 = Left-hand fluted up to ø 65.000 mm
3 = Left-hand up to ø 18.590 mm
5 = Blind bore up to ø 65.000 mm
8 = Blind bore up to ø 21.290 mm

G = Tool diameter information
Digit is only used for C and G variants

Tolerance

- 3

IT or dimensions in µm (example: +30+10) or, in the case of the G variant, indication of the manufacturing tolerance of the tool grinding diameter, for example -3µm



Permissible workpiece tolerances for selecting the tool diameter:

Fixed design:

IT6 (16 µm) over ≥ Ø30.000 HPR

If the tolerance of the workpiece diameter to be machined is smaller than the tolerance class mentioned above, a finely adjustable design or a fixed design as a G variant (special tool diameter) can be selected.

Finely adjustable design:

IT5 (11 µm) over ≥ Ø30.000 HPR

If the tolerance of the workpiece diameter to be machined is smaller than the tolerance class mentioned above, a finely adjustable design as a G variant (special tool diameter) can be selected.

G variant

The G variant then indicates the tool diameter of the reamer with our manufacturing tolerances.

Tolerances for the G variant/fixed variant HPR1XX:

| Cutting material | Diameter range | |
|--|----------------|---------------|
| | Ø 7 - < Ø 60 | ≥ Ø 60 - Ø 65 |
| Uncoated | | |
| HU612 | | |
| CU134 | -0.003 | -0.006 |
| CU130 | | |
| PU620 | | |
| Coated (layer thickness 1-2 µm) | | |
| HP421 | -0.005 | -0.008 |
| CP134 | | |
| Coated (layer thickness 2-4 µm) | | |
| HP423 | | |
| HP463 | -0.008 | -0.010 |
| CP132 | | |
| CP233 | | |
| Coated (layer thickness 3-5 µm) | | |
| HC412 | | |
| HC413 | -0.007 | -0.010 |
| HC419 | | |
| HP612 | | |

Tolerances for the G variant/finely adjustable design HPR2XX:
General setting dimension +/-0.001

Lead

Cutting material

| | | | | | | | | | |
|---|----------|----------|----------|---|---|----------|----------|----------|----------|
| M | C | 1 | G | - | H | P | 4 | 2 | 1 |
| <p>Lead geometry and rake angle: MC1G ME1G For explanation of MA0A ML2G the lead geometries, MO2G MF1G see pages 752.</p> | | | | | <p>Cutting material: HP421 CU134 HP422 HP612 HP423 HC419 CP134 PU620</p> | | | | |

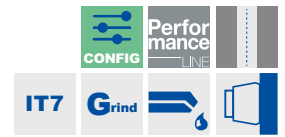
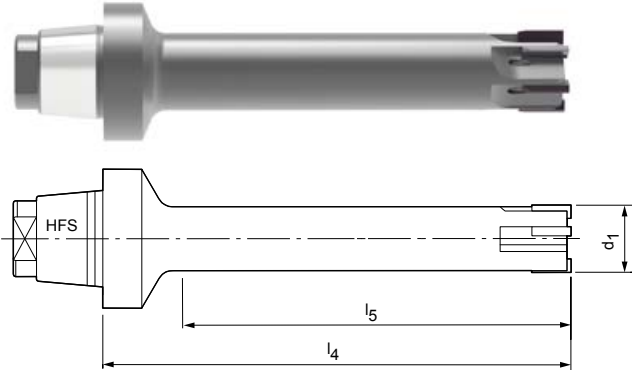
HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR130

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
MC1G
CP134
Cermet
PVD-coated



Configurable features

Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:
HPR130Ø[diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR130GØ[diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT7

| d_1 | l_4 | l_5 | HFS size | z |
|----------------|-------|-------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:
HPR130Ø16.350H7MC1G-CP134

Bore diameter $d_1 = 16.350 H7$

G variant example:
HPR130GØ16.350-5MC1G-CP134

Special tool diameter $d_1 = 16.350 -5 \mu m$

Dimensions in mm.

* for surfaces $R_a < 2 \mu m$

For associated HFS replaceable head holders, see page 460.

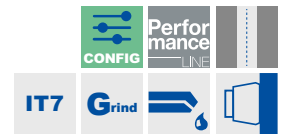
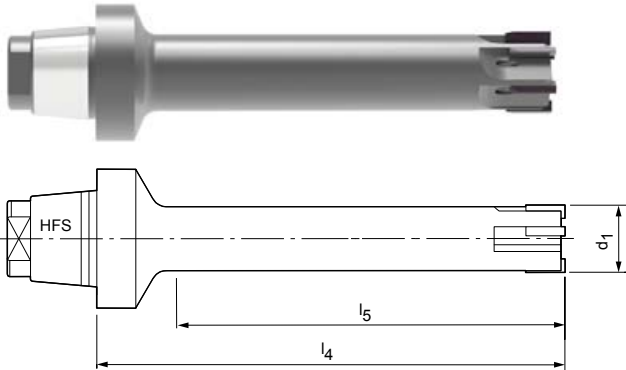
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR130

Design:

Reamer diameter: 7.000–18.590 mm
Lead: MC1G
Cutting material: HC419
Carbide
CVD-coated



Configurable features



Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:

HPR130Ø[diameter][tolerance]MC1G-HC419

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR130GØ[diameter][tolerance]MC1G-HC419

Dimensions of configurable series IT7

| d_1 | l_4 | l_5 | HFS size | z |
|----------------|-------|-------|----------|-----|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:

HPR130Ø16.350H7MC1G-HC419

Bore diameter $d_1 = 16.350 \text{ H7}$

G variant example:

HPR130GØ16.350-7MC1G-HC419

Special tool diameter $d_1 = 16.350 -7 \mu\text{m}$

Dimensions in mm.

* for surfaces $R_a < 2 \mu\text{m}$

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

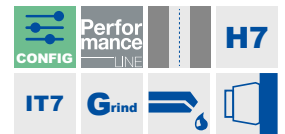
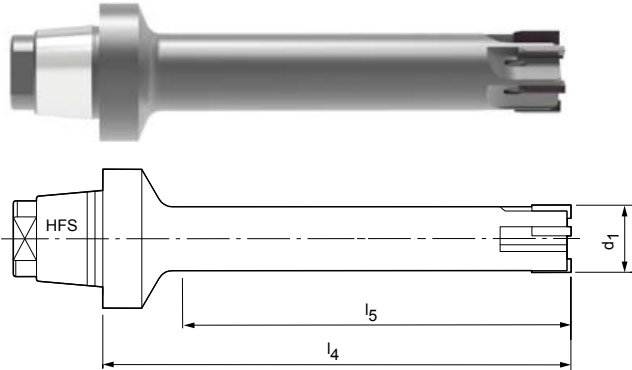
HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR130

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
MC1G
HP421
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | | Specification | Order no. |
|-------------------|----------|----------------|----------------|---|-----------------------|-----------|
| | | l ₄ | l ₅ | z | | |
| 10,000 | 12 | 60 | 45 | 6 | HPR130Ø10H7MC1G-HP421 | 30058428 |
| 12,000 | 12 | 60 | 45 | 6 | HPR130Ø12H7MC1G-HP421 | 30201261 |
| 14,000 | 12 | 60 | 45 | 6 | HPR130Ø14H7MC1G-HP421 | 30710146 |
| 16,000 | 12 | 60 | 45 | 6 | HPR130Ø16H7MC1G-HP421 | 30710148 |
| 18,000 | 12 | 60 | 45 | 6 | HPR130Ø18H7MC1G-HP421 | 30156684 |

Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:
HPR130Ø[diameter][tolerance]MC1G-HP421

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR130GØ[diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT7

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:
HPR130Ø16.350H7MC1G-HP421

Bore diameter d₁ = 16.350 H7

G variant example:
HPR130GØ16.350-5MC1G-HP421

Special tool diameter d₁ = 16.350 -5 µm

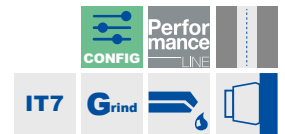
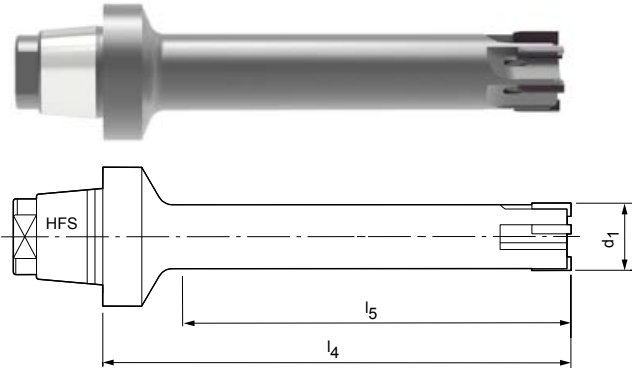
Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR130

Design:

Reamer diameter: 7.000–18.590 mm
Lead: MC1G
Cutting material: HP423
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:

HPR130Ø[diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR130GØ[diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT7

| d_1 | l_4 | l_5 | HFS size | z |
|----------------|-------|-------|----------|-----|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:

HPR130Ø16.350H7MC1G-HP423

Bore diameter $d_1 = 16.350 \text{ H7}$

G variant example:

HPR130GØ16.350-8MC1G-HP423

Special tool diameter $d_1 = 16.350 -8 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

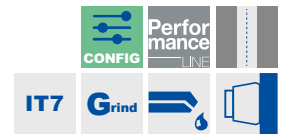
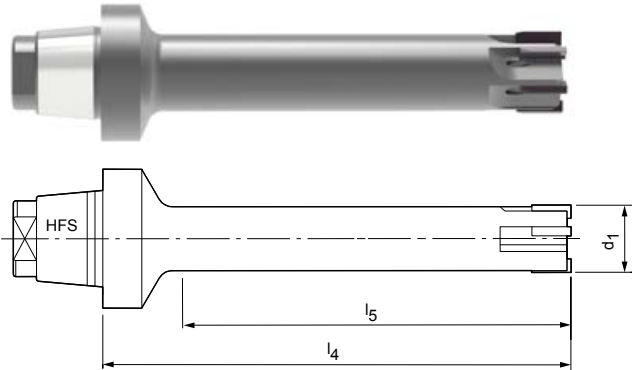
HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR130

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
MA0A
PU620
PCD-tipped



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:
HPR130Ø[diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR130GØ[diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT7

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:
HPR130Ø16.350H7MA0A-PU620

Bore diameter d₁ = 16.350 H7

G variant example:
HPR130GØ16.350-3MA0A-PU620

Special tool diameter d₁ = 16.350 -3 µm

Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, left-hand grooved, for through bores
HPR131

Design:

Reamer diameter:

7.000–18.590 mm

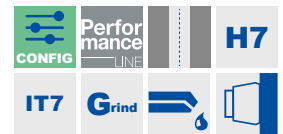
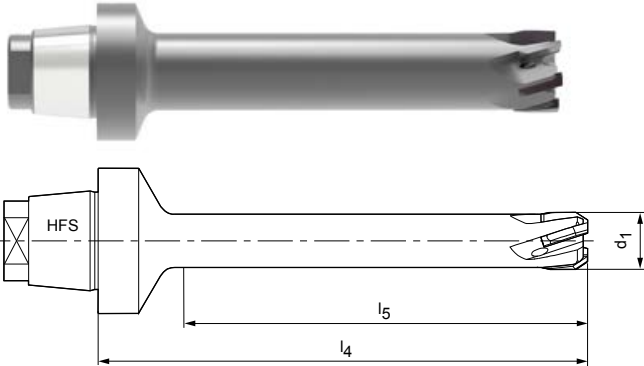
Lead:

ME1G

Cutting material:

CU134

Uncoated cermet


Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | | Specification | Order no. |
|-------------------|----------|----------------|----------------|---|-----------------------|-----------|
| | | l ₄ | l ₅ | z | | |
| 10,000 | 12 | 60 | 45 | 6 | HPR131Ø10H7ME1G-CU134 | 30043741 |
| 11,000 | 12 | 60 | 45 | 6 | HPR131Ø11H7ME1G-CU134 | 30087260 |
| 12,000 | 12 | 60 | 45 | 6 | HPR131Ø12H7ME1G-CU134 | 30041656 |
| 13,000 | 12 | 60 | 45 | 6 | HPR131Ø13H7ME1G-CU134 | 30057835 |
| 14,000 | 12 | 60 | 45 | 6 | HPR131Ø14H7ME1G-CU134 | 30082580 |
| 16,000 | 12 | 60 | 45 | 6 | HPR131Ø16H7ME1G-CU134 | 30047996 |
| 18,000 | 12 | 60 | 45 | 6 | HPR131Ø18H7ME1G-CU134 | 30048997 |

Configurable features

Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:

HPR131Ø[diameter][tolerance]ME1G-CU134

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR131GØ[diameter][tolerance]ME1G-CU134

Dimensions of configurable series IT7

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:

HPR131Ø16.350H7ME1G-CU134

Bore diameter d₁ = 16.350 H7

G variant example:

HPR131GØ16.350-3ME1G-CU134

Special tool diameter d₁ = 16.350 -3 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

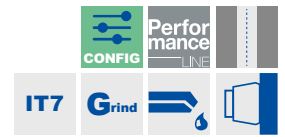
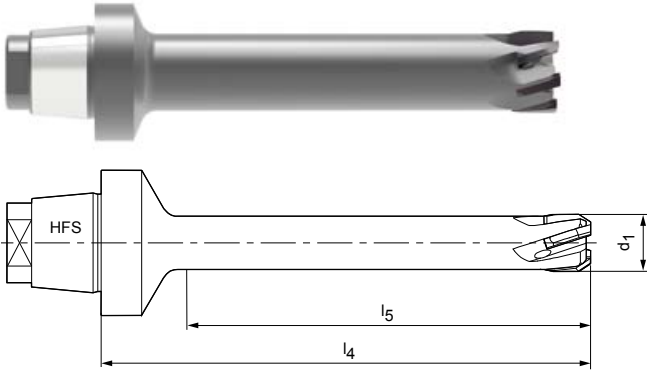
HPR replaceable head reamer

Fixed design, left-hand grooved, for through bores
HPR131

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
ME1G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:
HPR131Ø[diameter][tolerance]ME1G-HP421

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR131GØ[diameter][tolerance]ME1G-HP421

Dimensions of configurable series IT7

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:
HPR131Ø16.350H7ME1G-HP421

Bore diameter d₁ = 16.350 H7

G variant example:
HPR131GØ16.350-5ME1G-HP421

Special tool diameter d₁ = 16.350 -5 µm

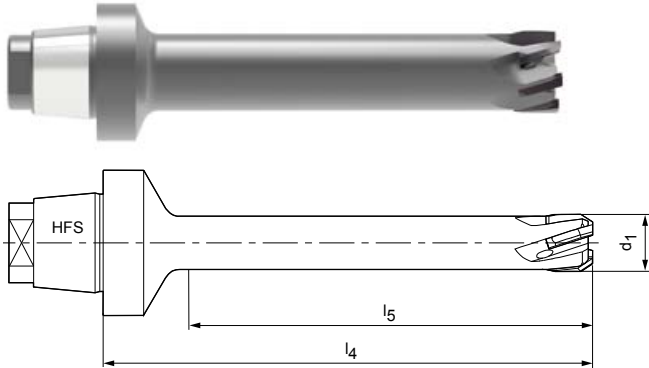
Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, left-hand grooved, for through bores
HPR131

Design:

Reamer diameter: 7.000–18.590 mm
Lead: MF1G
Cutting material: HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:

HPR131Ø[diameter][tolerance]MF1G-HP421

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR131GØ[diameter][tolerance]MF1G-HP421

Dimensions of configurable series IT7

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:

HPR131Ø16.350H7MF1G-HP421

Bore diameter d₁ = 16.350 H7

G variant example:

HPR131GØ16.350-5MF1G-HP421

Special tool diameter d₁ = 16.350 -5 μm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

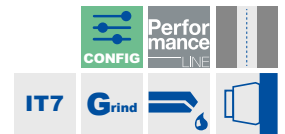
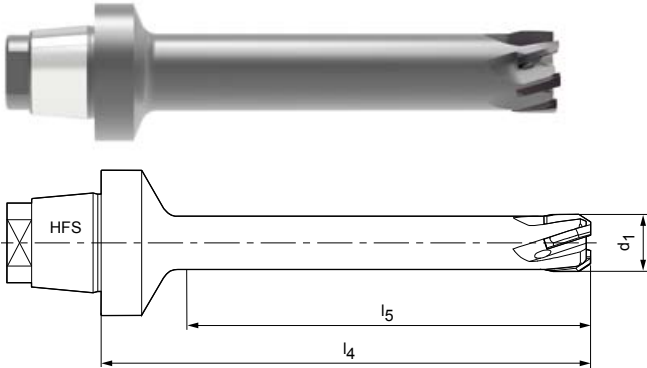
HPR replaceable head reamer

Fixed design, left-hand grooved, for through bores
HPR131

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
MF1G
HP612
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT7

Specification:
HPR131Ø[diameter][tolerance]MF1G-HP612

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR131GØ[diameter][tolerance]MF1G-HP612

Dimensions of configurable series IT7

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT7 tolerance example:
HPR131Ø16.350H7MF1G-HP612

Bore diameter d₁ = 16.350 H7

G variant example:
HPR131GØ16.350-7MF1G-HP612

Special tool diameter d₁ = 16.350 -7 µm

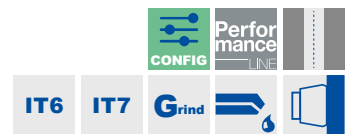
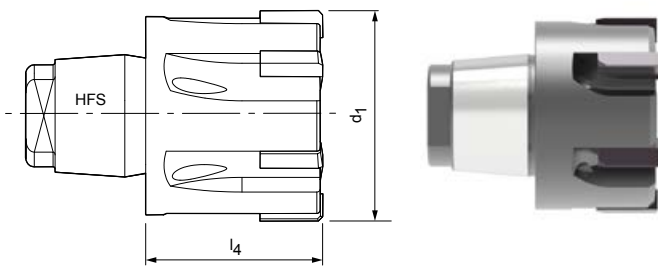
Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR100

Design:

Reamer diameter: 15.600-65.000 mm
Lead: MC1G
Cutting material: CP134
Cermet
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\varnothing 30.000$ IT6 | $\leq \varnothing 30.000$ IT7

Specification:

HPR100 \varnothing [diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR100G \varnothing [diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:

HPR100 \varnothing 16.350H7MC1G-CP134

Bore diameter d₁ = 16.350 H7

G variant example:

HPR100G \varnothing 16.350-5MC1G-CP134

Special tool diameter d₁ = 16.350 -5 μ m

Dimensions in mm.

* for surfaces R_a < 2 μ m

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

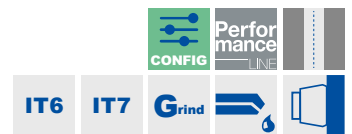
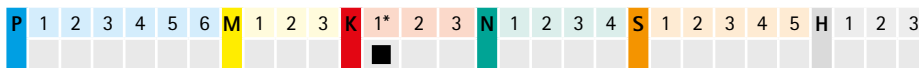
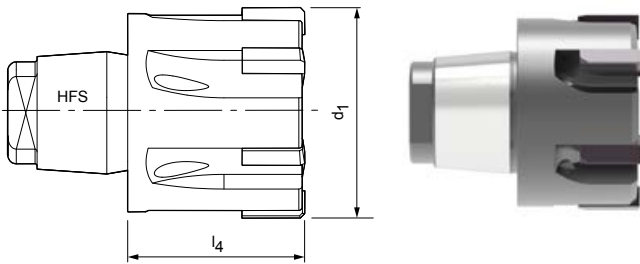
HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR100

Design:

Reamer diameter:
Lead:
Cutting material:

15.600-65.000 mm
MC1G
HC419
Carbide
CVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR100Ø[diameter][tolerance]MC1G-HC419

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR100GØ[diameter][tolerance]MC1G-HC419

Dimensions of configurable series IT6/IT7

| d1 | l4 | l5 | HFS size | z | Tolerance |
|-----------------|------|----|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:

HPR100Ø16.350H7MC1G-HC419

Bore diameter d₁ = 16.350 H7

G variant example:

HPR100GØ16.350-7MC1G-HC419

Special tool diameter d₁ = 16.350 -7 µm

Dimensions in mm.

* for surfaces Ra > 2 µm

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.



HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR100

Design:

Reamer diameter:

15.600-65.000 mm

Lead:

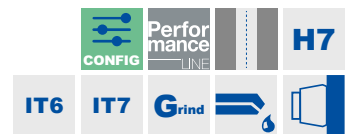
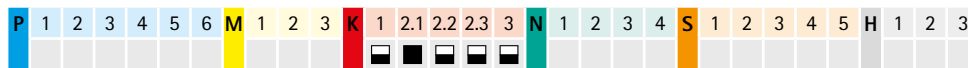
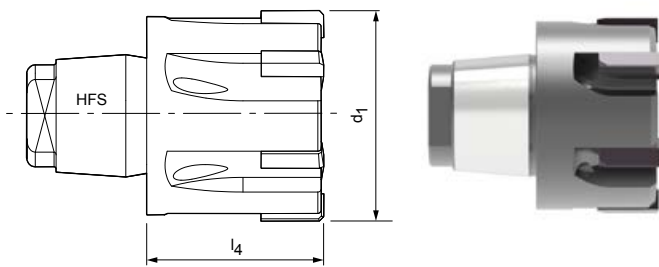
MC1G

Cutting material:

HP421

Carbide

PVD-coated


Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | Specification | Order no. |
|-------------------|----------|----------------|---|-----------------------|-----------|
| | | l ₄ | z | | |
| 19,000 | 12 | 14,5 | 6 | HPR100Ø19H7MC1G-HP421 | 30037777 |
| 20,000 | 12 | 14,5 | 6 | HPR100Ø20H7MC1G-HP421 | 30191340 |
| 22,000 | 14 | 15,5 | 6 | HPR100Ø22H7MC1G-HP421 | 30368857 |
| 24,000 | 16 | 16 | 6 | HPR100Ø24H7MC1G-HP421 | 30181729 |
| 25,000 | 16 | 16 | 6 | HPR100Ø25H7MC1G-HP421 | 30537929 |
| 26,000 | 16 | 16 | 6 | HPR100Ø26H7MC1G-HP421 | 30076945 |
| 28,000 | 16 | 16 | 6 | HPR100Ø28H7MC1G-HP421 | 30025212 |
| 30,000 | 20 | 17 | 8 | HPR100Ø30H7MC1G-HP421 | 30031345 |
| 32,000 | 20 | 17 | 8 | HPR100Ø32H7MC1G-HP421 | 30438453 |
| 35,000 | 20 | 17 | 8 | HPR100Ø35H7MC1G-HP421 | 30537930 |
| 40,000 | 24 | 19 | 8 | HPR100Ø40H7MC1G-HP421 | 30083953 |
| 45,000 | 24 | 19 | 8 | HPR100Ø45H7MC1G-HP421 | 30537931 |
| 50,000 | 24 | 19 | 8 | HPR100Ø50H7MC1G-HP421 | 30710245 |
| 55,000 | 24 | 25 | 8 | HPR100Ø55H7MC1G-HP421 | 30419154 |
| 60,000 | 24 | 25 | 8 | HPR100Ø60H7MC1G-HP421 | 30350208 |
| 65,000 | 24 | 25 | 8 | HPR100Ø65H7MC1G-HP421 | 30272888 |

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR100 | Fixed design, straight fluted

Configurable features

**Bore diameter tolerance IT6/IT7:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\emptyset 30.000$ IT6 | $\leq \emptyset 30.000$ IT7

**Specification:**HPR100 \emptyset [diameter][tolerance]MC1G-HP421**Bore diameter tolerance < IT6/IT7:**

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:HPR100G \emptyset [diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT6/IT7

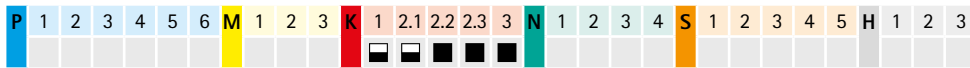
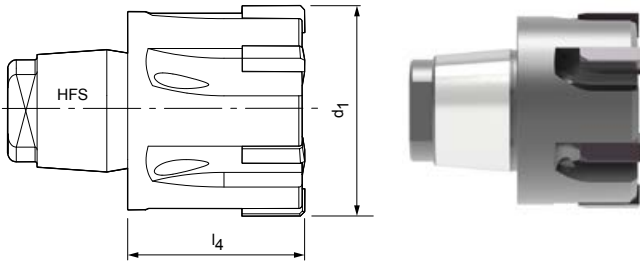
| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:HPR100 \emptyset 16.350H7MC1G-HP421Bore diameter d₁ = 16.350 H7**G variant example:**HPR100G \emptyset 16.350-5MC1G-HP421Special tool diameter d₁ = 16.350 -5 μ m

HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR100

Design:
Reamer diameter: 15.600-65.000 mm
Lead: MC1G
Cutting material: HP423
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\varnothing 30.000$ IT6 | $\leq \varnothing 30.000$ IT7

Specification:

HPR100 \varnothing [diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR100G \varnothing [diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:

HPR100 \varnothing 16.350H7MC1G-HP423

Bore diameter d₁ = 16.350 H7

G variant example:

HPR100G \varnothing 16.350-8MC1G-HP423

Special tool diameter d₁ = 16.350 -8 μ m

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for through bores
HPR100

Design:

Reamer diameter:

15.600-65.000 mm

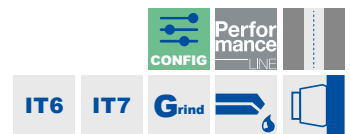
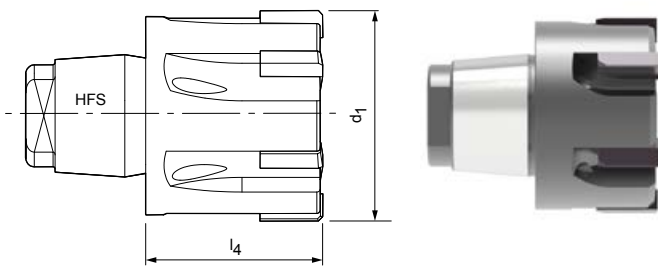
Lead:

MA0A

Cutting material:

PU620

PCD-tipped



Configurable features


Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\varnothing 30.000$ IT6 | $\leq \varnothing 30.000$ IT7

Specification:

HPR100 \varnothing [diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR100G \varnothing [diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:

HPR100 \varnothing 16.350H7MA0A-PU620

Bore diameter $d_1 = 16.350$ H7

G variant example:

HPR100G \varnothing 16.350-3MA0A-PU620

Special tool diameter $d_1 = 16.350 -3 \mu\text{m}$

Dimensions in mm.

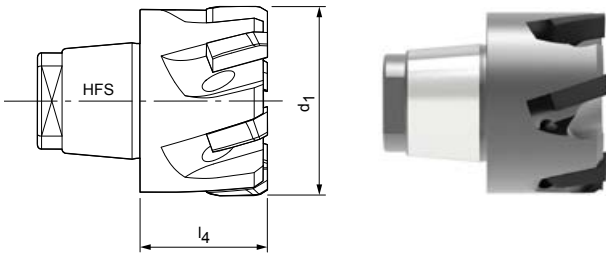
For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, left-hand fluted, for through bores
HPR110

Design:
Reamer diameter: 15.600-65.000 mm
Lead: ME1G
Cutting material: CU134
Uncoated cermet



Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | Specification | Order no. |
|-------------------|----------|----------------|---|-----------------------|-----------|
| | | l ₄ | z | | |
| 19,000 | 12 | 14,5 | 6 | HPR110019H7ME1G-CU134 | 30077358 |
| 20,000 | 12 | 14,5 | 6 | HPR110020H7ME1G-CU134 | 30040404 |
| 21,000 | 12 | 14,5 | 6 | HPR110021H7ME1G-CU134 | 30039919 |
| 22,000 | 14 | 15,5 | 6 | HPR110022H7ME1G-CU134 | 30081546 |
| 23,000 | 14 | 15,5 | 6 | HPR110023H7ME1G-CU134 | 30085368 |
| 24,000 | 16 | 16 | 6 | HPR110024H7ME1G-CU134 | 30080958 |
| 25,000 | 16 | 16 | 6 | HPR110025H7ME1G-CU134 | 30076110 |
| 26,000 | 16 | 16 | 6 | HPR110026H7ME1G-CU134 | 30045730 |
| 27,000 | 16 | 16 | 6 | HPR110027H7ME1G-CU134 | 30087257 |
| 28,000 | 16 | 16 | 6 | HPR110028H7ME1G-CU134 | 30046121 |
| 29,000 | 16 | 16 | 6 | HPR110029H7ME1G-CU134 | 30087258 |
| 30,000 | 20 | 17 | 8 | HPR110030H7ME1G-CU134 | 30045095 |
| 31,000 | 20 | 17 | 8 | HPR110031H7ME1G-CU134 | 30192960 |
| 32,000 | 20 | 17 | 8 | HPR110032H7ME1G-CU134 | 30084530 |
| 33,000 | 20 | 17 | 8 | HPR110033H7ME1G-CU134 | 30162282 |
| 34,000 | 20 | 17 | 8 | HPR110034H7ME1G-CU134 | 30043743 |
| 35,000 | 20 | 17 | 8 | HPR110035H7ME1G-CU134 | 30084885 |
| 39,000 | 20 | 17 | 8 | HPR110039H7ME1G-CU134 | 30088042 |
| 40,000 | 24 | 19 | 8 | HPR110040H7ME1G-CU134 | 30045097 |
| 42,000 | 24 | 19 | 8 | HPR110042H7ME1G-CU134 | 30080437 |
| 44,000 | 24 | 19 | 8 | HPR110044H7ME1G-CU134 | 30097178 |
| 45,000 | 24 | 19 | 8 | HPR110045H7ME1G-CU134 | 30049313 |
| 50,000 | 24 | 19 | 8 | HPR110050H7ME1G-CU134 | 30219386 |
| 55,000 | 24 | 25 | 8 | HPR110055H7ME1G-CU134 | 30196567 |
| 60,000 | 24 | 25 | 8 | HPR110060H7ME1G-CU134 | 30242416 |
| 65,000 | 24 | 25 | 8 | HPR110065H7ME1G-CU134 | 30236537 |

Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR110 | Fixed design, left-hand fluted

Configurable features

**Bore diameter tolerance IT6/IT7:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\varnothing 30.000$ IT6 | $\leq \varnothing 30.000$ IT7

**Specification:**HPR110 \varnothing [diameter][tolerance]ME1G-CU134**Bore diameter tolerance < IT6/IT7:**

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:HPR110G \varnothing [diameter][tolerance]ME1G-CU134

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:HPR110 \varnothing 16.350H7ME1G-CU134Bore diameter $d_1 = 16.350$ H7**G variant example:**HPR110G \varnothing 16.350-3ME1G-CU134Special tool diameter $d_1 = 16.350 -3 \mu\text{m}$

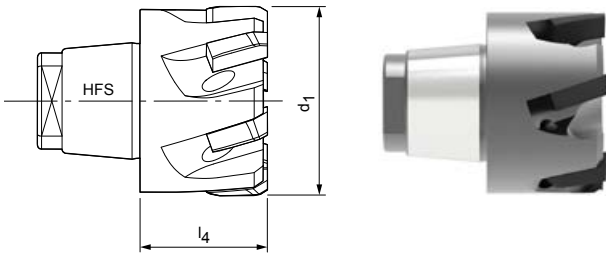
HPR replaceable head reamer

Fixed design, left-hand fluted, for through bores
HPR110

Design:

Reamer diameter:
Lead:
Cutting material:

15.600-65.000 mm
ME1G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR110Ø[diameter][tolerance]ME1G-HP421

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR110GØ[diameter][tolerance]ME1G-HP421

Dimensions of configurable series IT6/IT7

| d1 | l4 | l5 | HFS size | z | Tolerance |
|-----------------|------|----|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:

HPR110Ø16.350H7ME1G-HP421

Bore diameter d₁ = 16.350 H7

G variant example:

HPR110GØ16.350-5ME1G-HP421

Special tool diameter d₁ = 16.350 -5 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

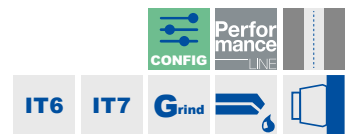
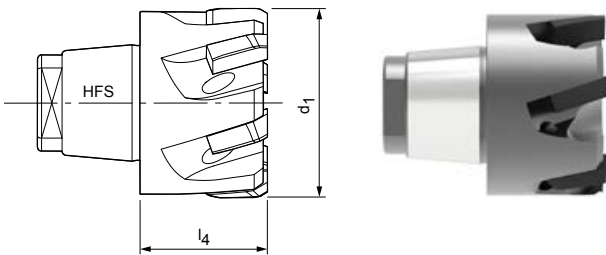
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, left-hand fluted, for through bores
HPR110

Design:

Reamer diameter: 15.600-65.000 mm
Lead: MF1G
Cutting material: HP612
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\varnothing 30.000$ IT6 | $\leq \varnothing 30.000$ IT7

Specification:

HPR110 \varnothing [diameter][tolerance]MF1G-HP612

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR110G \varnothing [diameter][tolerance]MF1G-HP612

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:

HPR110 \varnothing 16.350H7MF1G-HP612

Bore diameter d₁ = 16.350 H7

G variant example:

HPR110G \varnothing 16.350-7MF1G-HP612

Special tool diameter d₁ = 16.350 -7 μ m

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

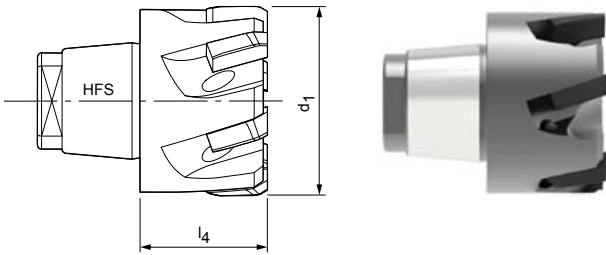
HPR replaceable head reamer

Fixed design, left-hand fluted, for through bores
HPR110

Design:

Reamer diameter:
Lead:
Cutting material:

15.600-65.000 mm
MF1G
HP421
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | Specification | Order no. |
|-------------------|----------|----------------|---|-----------------------|-----------|
| | | l ₄ | z | | |
| 19,000 | 12 | 14,5 | 6 | HPR110Ø19H7MF1G-HP421 | 30710291 |
| 20,000 | 12 | 14,5 | 6 | HPR110Ø20H7MF1G-HP421 | 30401369 |
| 22,000 | 14 | 15,5 | 6 | HPR110Ø22H7MF1G-HP421 | 30710293 |
| 23,000 | 14 | 15,5 | 6 | HPR110Ø23H7MF1G-HP421 | 30710294 |
| 24,000 | 16 | 16 | 6 | HPR110Ø24H7MF1G-HP421 | 30710295 |
| 25,000 | 16 | 16 | 6 | HPR110Ø25H7MF1G-HP421 | 30318503 |
| 26,000 | 16 | 16 | 6 | HPR110Ø26H7MF1G-HP421 | 30710296 |
| 27,000 | 16 | 16 | 6 | HPR110Ø27H7MF1G-HP421 | 30710297 |
| 28,000 | 16 | 16 | 6 | HPR110Ø28H7MF1G-HP421 | 30710298 |
| 30,000 | 20 | 17 | 8 | HPR110Ø30H7MF1G-HP421 | 30576508 |
| 31,000 | 20 | 17 | 8 | HPR110Ø31H7MF1G-HP421 | 30710300 |
| 32,000 | 20 | 17 | 8 | HPR110Ø32H7MF1G-HP421 | 30671985 |
| 33,000 | 20 | 17 | 8 | HPR110Ø33H7MF1G-HP421 | 30710301 |
| 34,000 | 20 | 17 | 8 | HPR110Ø34H7MF1G-HP421 | 30710302 |
| 35,000 | 20 | 17 | 8 | HPR110Ø35H7MF1G-HP421 | 30710303 |
| 39,000 | 20 | 17 | 8 | HPR110Ø39H7MF1G-HP421 | 30710307 |
| 40,000 | 24 | 19 | 8 | HPR110Ø40H7MF1G-HP421 | 30498368 |

Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

Configurable features

**Bore diameter tolerance IT6/IT7:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\varnothing 30.000$ IT6 | $\leq \varnothing 30.000$ IT7

**Specification:**HPR110 \varnothing [diameter][tolerance]MF1G-HP421**Bore diameter tolerance < IT6/IT7:**

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:HPR110G \varnothing [diameter][tolerance]MF1G-HP421

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 15,600 - 18,590 | 14 | - | 10 | 6 | IT7 |
| 18,600 - 21,290 | 14,5 | - | 12 | 6 | IT7 |
| 21,300 - 23,990 | 15,5 | - | 14 | 6 | IT7 |
| 24,000 - 29,990 | 16 | - | 16 | 6 | IT7 |
| 30,000 - 39,990 | 17 | - | 20 | 8 | IT6 |
| 40,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT7 tolerance example:HPR110 \varnothing 16.350H7MF1G-HP421Bore diameter d₁ = 16.350 H7**G variant example:**HPR110G \varnothing 16.350-5MF1G-HP421Special tool diameter d₁ = 16.350 -5 μ m

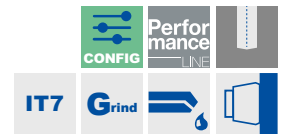
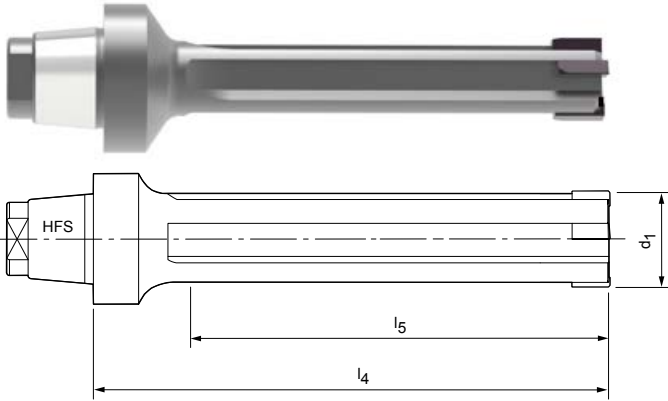
HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-21.290 mm
ML2G
CU134
Uncoated cermet



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:
HPR180Ø[diameter][tolerance]ML2G-CU134

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR180GØ[diameter][tolerance]ML2G-CU134

Dimensions of configurable series IT7

| d1 | l4 | l5 | HFS size | z |
|-----------------|----|----|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:
HPR180Ø16.350H7ML2G-CU134

Bore diameter d₁ = 16.350 H7

G variant example:
HPR180GØ16.350-3ML2G-CU134

Special tool diameter d₁ = 16.350 -3 µm

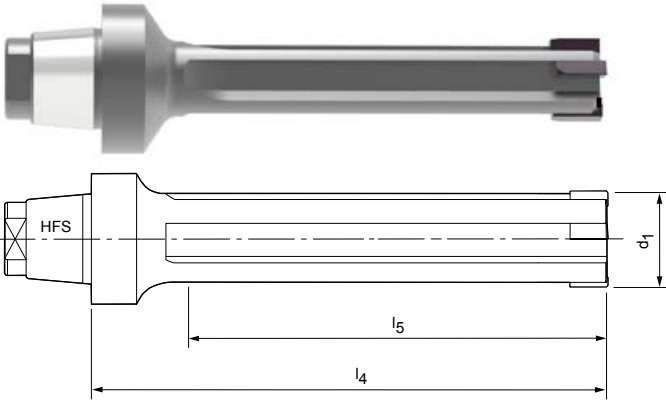
Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter: 7.000–21.290 mm
Lead: ML2G
Cutting material: HP421
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | | Specification | Order no. |
|-------------------|----------|----------------|----------------|---|-----------------------|-----------|
| | | l ₄ | l ₅ | z | | |
| 10,000 | 12 | 60 | 40 | 4 | HPR180010H7ML2G-HP421 | 30710208 |
| 12,000 | 12 | 60 | 40 | 4 | HPR180012H7ML2G-HP421 | 30710210 |
| 14,000 | 12 | 60 | 40 | 4 | HPR180014H7ML2G-HP421 | 30710212 |
| 16,000 | 12 | 60 | 40 | 6 | HPR180016H7ML2G-HP421 | 30710214 |
| 18,000 | 12 | 60 | 40 | 6 | HPR180018H7ML2G-HP421 | 30710216 |
| 19,000 | 12 | 60 | 40 | 6 | HPR180019H7ML2G-HP421 | 30710217 |
| 20,000 | 12 | 60 | 40 | 6 | HPR180020H7ML2G-HP421 | 30710218 |

Configurable features



Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:

HPR1800[diameter][tolerance]ML2G-HP421

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR180G0[diameter][tolerance]ML2G-HP421

Dimensions of configurable series IT7

| d ₁ | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:

HPR180016.350H7ML2G-HP421

Bore diameter d₁ = 16.350 H7

G variant example:

HPR180G016.350-5ML2G-HP421

Special tool diameter d₁ = 16.350 -5 μm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

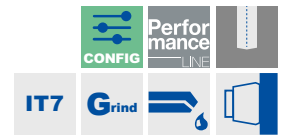
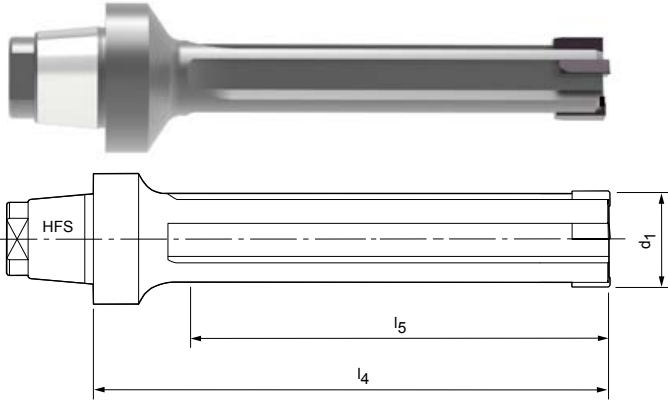
HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
M02G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:
HPR180Ø[diameter][tolerance]M02G-HP421

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR180GØ[diameter][tolerance]M02G-HP421

Dimensions of configurable series IT7

| d1 | l4 | l5 | HFS size | z |
|-----------------|----|----|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:
HPR180Ø16.350H7M02G-HP421

Bore diameter d₁ = 16.350 H7

G variant example:
HPR180GØ16.350-5M02G-HP421

Special tool diameter d₁ = 16.350 -5 µm

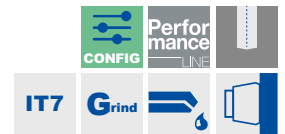
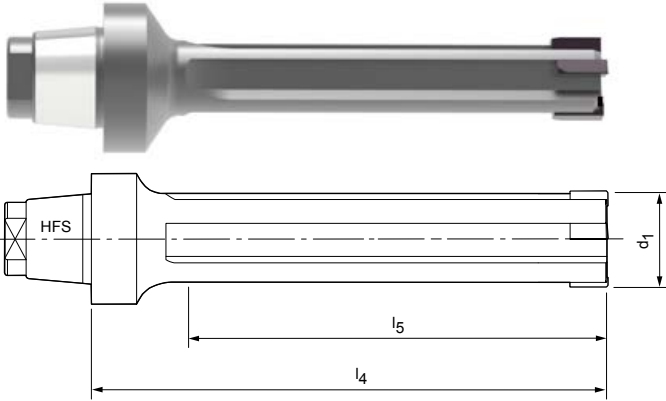
Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter: 7.000–21.290 mm
Lead: MC1G
Cutting material: CP134
Cermet
PVD-coated



Configurable features



Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:

HPR180Ø[diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR180GØ[diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT7

| d1 | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:

HPR180Ø16.350H7MC1G-CP134

Bore diameter $d_1 = 16.350 \text{ H7}$

G variant example:

HPR180GØ16.350-5MC1G-CP134

Special tool diameter $d_1 = 16.350 -5 \mu\text{m}$

Dimensions in mm.

* for surfaces $R_a > 2 \mu\text{m}$

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

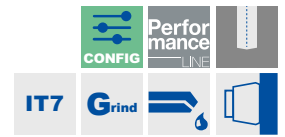
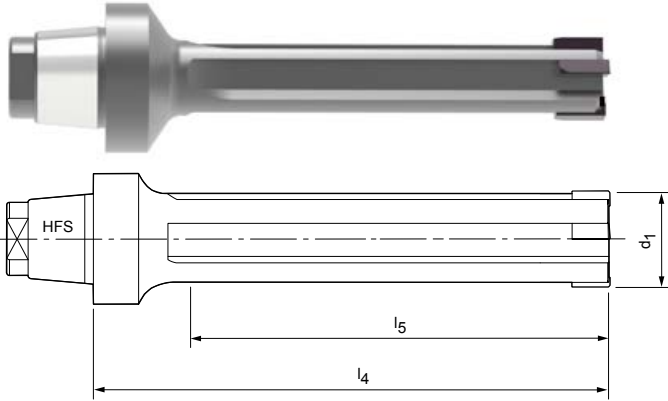
HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
MC1G
HC419
Carbide
CVD-coated



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:
HPR180Ø[diameter][tolerance]MC1G-HC419

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR180GØ[diameter][tolerance]MC1G-HC419

Dimensions of configurable series IT7

| d1 | l4 | l5 | HFS size | z |
|-----------------|----|----|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:
HPR180Ø16.350H7MC1G-HC419

Bore diameter $d_1 = 16.350 H7$

G variant example:
HPR180GØ16.350-7MC1G-HC419

Special tool diameter $d_1 = 16.350 -7 \mu m$

Dimensions in mm.
* for surfaces $R_a < 2 \mu m$
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter:

7.000–21.290 mm

Lead:

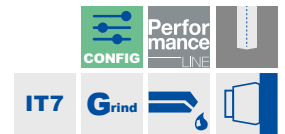
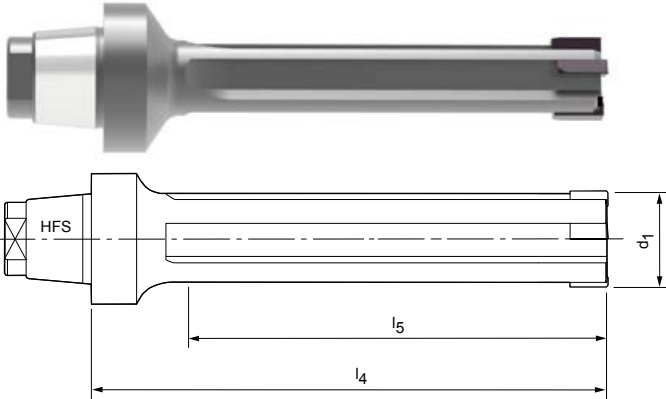
MC1G

Cutting material:

HP421

Carbide

PVD-coated



Configurable features


Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:

HPR180Ø[diameter][tolerance]MC1G-HP421

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR180GØ[diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT7

| d1 | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:

HPR180Ø16.350H7MC1G-HP421

Bore diameter d₁ = 16.350 H7

G variant example:

HPR180GØ16.350-5MC1G-HP421

Special tool diameter d₁ = 16.350 -5 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

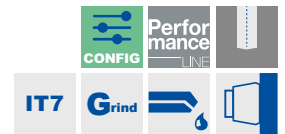
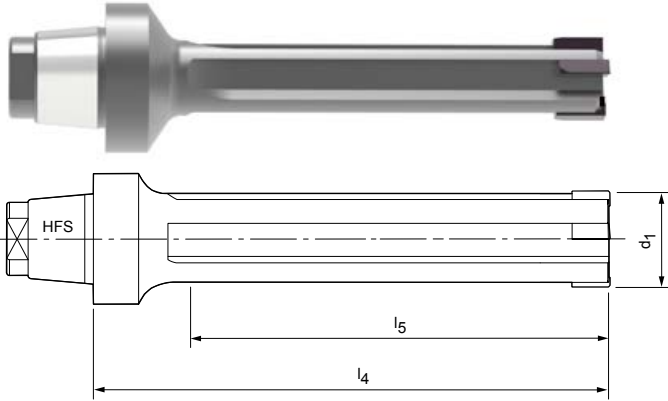
HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
MC1G
HP423
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:
HPR180Ø[diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR180GØ[diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT7

| d1 | l4 | l5 | HFS size | z |
|-----------------|----|----|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:
HPR180Ø16.350H7MC1G-HP423

Bore diameter d₁ = 16.350 H7

G variant example:
HPR180GØ16.350-8MC1G-HP423

Special tool diameter d₁ = 16.350 -8 µm

Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter:

7.000–21.290 mm

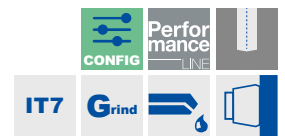
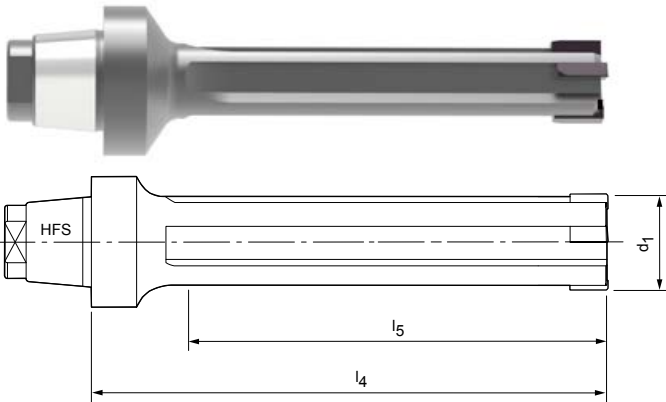
Lead:

MA0A

Cutting material:

PU620

PCD-tipped



Configurable features


Bore diameter tolerance IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:

HPR180Ø[diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT7:

- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR180GØ[diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT7

| d1 | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:

HPR180Ø16.350H7MA0A-PU620

Bore diameter $d_1 = 16.350 \text{ H7}$

G variant example:

HPR180GØ16.350-3MA0A-PU620

Special tool diameter $d_1 = 16.350 -3 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

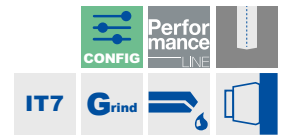
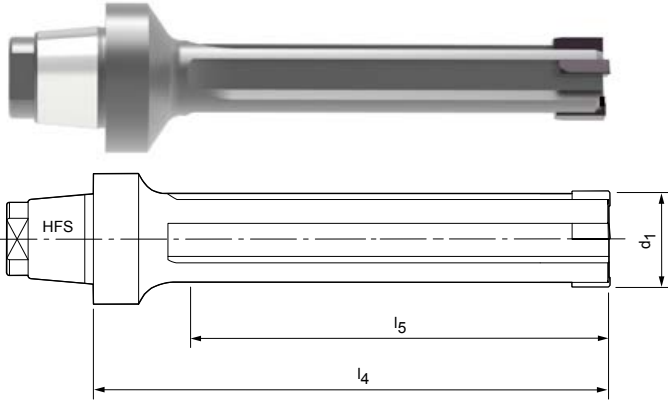
HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR180

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
M02G
HP612
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT7:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7

Specification:
HPR180Ø[diameter][tolerance]M02G-HP612

Bore diameter tolerance < IT7:
- Tolerances smaller than IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR180GØ[diameter][tolerance]M02G-HP612

Dimensions of configurable series IT7

| d1 | l4 | l5 | HFS size | z |
|-----------------|----|----|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT7 tolerance example:
HPR180Ø16.350H7M02G-HP612

Bore diameter d₁ = 16.350 H7

G variant example:
HPR180GØ16.350-7M02G-HP612

Special tool diameter d₁ = 16.350 -7 µm

Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter:

16.600-65.000 mm

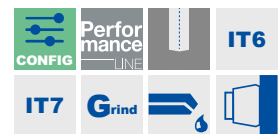
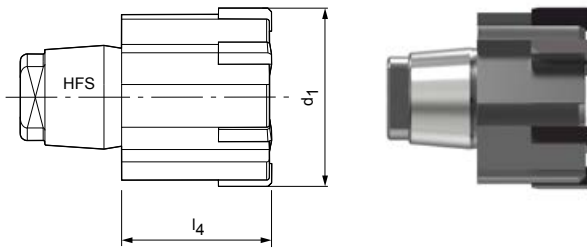
Lead:

ML2G

Cutting material:

CU134

Uncoated cermet



Configurable features


Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR150Ø[diameter][tolerance]ML2G-CU134

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150GØ[diameter][tolerance]ML2G-CU134

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150Ø37.350H6ML2G-CU134

Bore diameter d₁ = 37.350 H6

G variant example:

HPR150GØ37.350-3ML2G-CU134

Special tool diameter d₁ = 37.350 -3 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

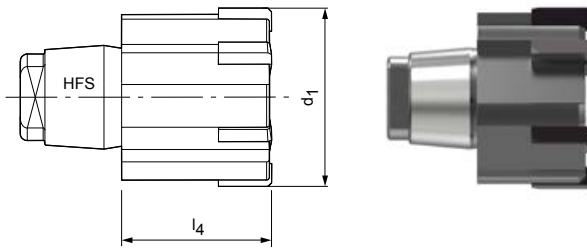
HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter:
Lead:
Cutting material:

16.600-65.000 mm
ML2G
HP421
Carbide
PVD-coated


Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | Specification | Order no. |
|-------------------|----------|----------------|---|-----------------------|-----------|
| | | l ₄ | z | | |
| 22,000 | 12 | 15,5 | 6 | HPR150Ø22H7ML2G-HP421 | 30098915 |
| 24,000 | 12 | 15,5 | 6 | HPR150Ø24H7ML2G-HP421 | 30329443 |
| 26,000 | 12 | 15,5 | 6 | HPR150Ø26H7ML2G-HP421 | 30044823 |
| 28,000 | 12 | 15,5 | 6 | HPR150Ø28H7ML2G-HP421 | 30710391 |
| 30,000 | 16 | 17 | 6 | HPR150Ø30H7ML2G-HP421 | 30710393 |
| 32,000 | 16 | 17 | 6 | HPR150Ø32H7ML2G-HP421 | 30462441 |
| 40,000 | 16 | 17 | 8 | HPR150Ø40H7ML2G-HP421 | 30586834 |

Configurable features

Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR150Ø[diameter][tolerance]ML2G-HP421

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150GØ[diameter][tolerance]ML2G-HP421

Dimensions of configurable series IT6/IT7

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150Ø37.350H6ML2G-HP421

Bore diameter d₁ = 37.350 H6

G variant example:

HPR150GØ37.350-5ML2G-HP421

Special tool diameter d₁ = 37.350 -5 μm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

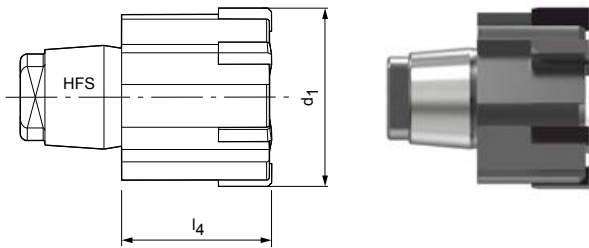
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter: 16.600-65.000 mm
Lead: M02G
Cutting material: HP421
Carbide
PVD-coated



Preferred series in H7

| d ₁ H7 | HFS size | Dimensions | | Specification | Order no. |
|-------------------|----------|----------------|---|-----------------------|-----------|
| | | l ₄ | z | | |
| 20,000 | 10 | 14 | 6 | HPR150Ø20H7M02G-HP421 | 30975790 |
| 26,000 | 14 | 15,5 | 6 | HPR150Ø26H7M02G-HP421 | 30975773 |
| 28,000 | 14 | 15,5 | 6 | HPR150Ø28H7M02G-HP421 | 30843363 |
| 30,000 | 16 | 17 | 6 | HPR150Ø30H7M02G-HP421 | 30975775 |
| 32,000 | 16 | 17 | 6 | HPR150Ø32H7M02G-HP421 | 30975776 |
| 35,000 | 16 | 17 | 6 | HPR150Ø35H7M02G-HP421 | 30976284 |
| 40,000 | 20 | 17 | 8 | HPR150Ø40H7M02G-HP421 | 30898813 |

Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR150Ø[diameter][tolerance]M02G-HP421

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150GØ[diameter][tolerance]M02G-HP421

Dimensions of configurable series IT6/IT7

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150Ø37.350H6M02G-HP421

Bore diameter d₁ = 37.350 H6

G variant example:

HPR150GØ37.350-5M02G-HP421

Special tool diameter d₁ = 37.350 -5 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

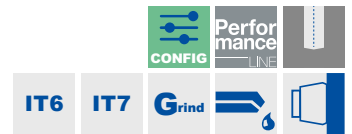
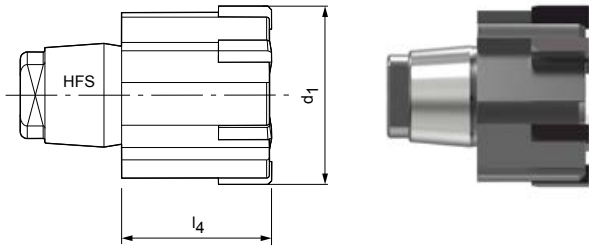
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter: 16.600-65.000 mm
Lead: MC1G
Cutting material: CP134
Cermet
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR150Ø[diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150GØ[diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT6/IT7

| d1 | l4 | l5 | HFS size | z | Tolerance |
|-----------------|------|----|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150Ø37.350H6MC1G-CP134

Bore diameter d₁ = 37.350 H6

G variant example:

HPR150GØ37.350-5MC1G-CP134

Special tool diameter d₁ = 37.350 -5 µm

Dimensions in mm.

* for surfaces R_a < 2 µm

For associated HFS replaceable head holders, see page 460.

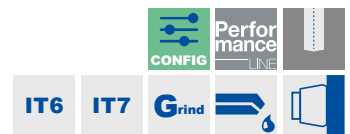
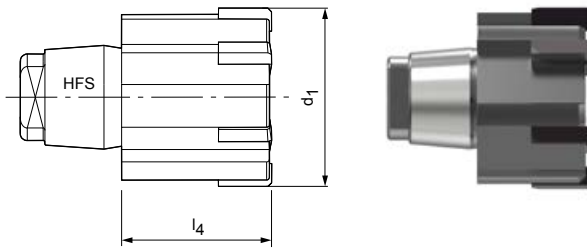
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter: 16.600-65.000 mm
Lead: MC1G
Cutting material: HC419
Carbide
CVD-coated



Configurable features


Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\emptyset 30.000$ IT6 | $\leq \emptyset 30.000$ IT7

Specification:

HPR150 \emptyset [diameter][tolerance]MC1G-HC419

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150G \emptyset [diameter][tolerance]MC1G-HC419

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150 \emptyset 37.350H6MC1G-HC419

Bore diameter $d_1 = 37.350$ H6

G variant example:

HPR150G \emptyset 37.350-7MC1G-HC419

Special tool diameter $d_1 = 37.350 -7 \mu\text{m}$

Dimensions in mm.

* for surfaces $R_a > 2 \mu\text{m}$

For associated HFS replaceable head holders, see page 460.

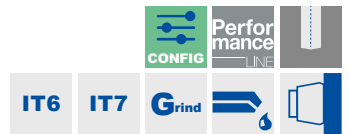
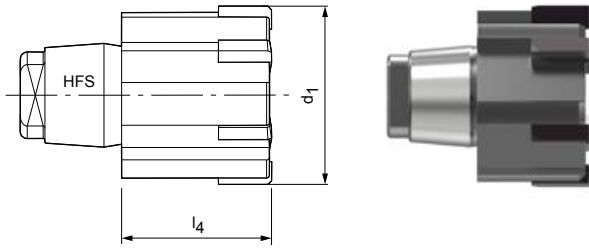
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter: 16.600-65.000 mm
Lead: MC1G
Cutting material: HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR150Ø[diameter][tolerance]MC1G-HP421

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150GØ[diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT6/IT7

| d1 | l4 | l5 | HFS size | z | Tolerance |
|-----------------|------|----|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150Ø37.350H6MC1G-HP421

Bore diameter d₁ = 37.350 H6

G variant example:

HPR150GØ37.350-5MC1G-HP421

Special tool diameter d₁ = 37.350 -5 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

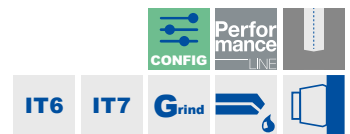
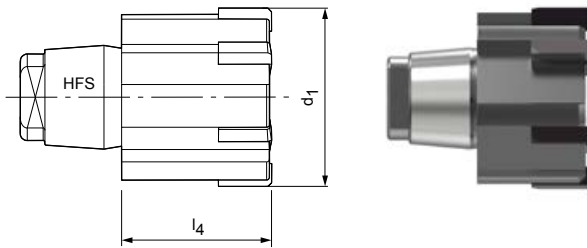
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter: 16.600-65.000 mm
Lead: MC1G
Cutting material: HP423
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\varnothing 30.000$ IT6 | $\leq \varnothing 30.000$ IT7

Specification:

HPR150 \varnothing [diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150G \varnothing [diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150 \varnothing 37.350H6MC1G-HP423

Bore diameter $d_1 = 37.350$ H6

G variant example:

HPR150G \varnothing 37.350-8MC1G-HP423

Special tool diameter $d_1 = 37.350 -8 \mu\text{m}$

Dimensions in mm.

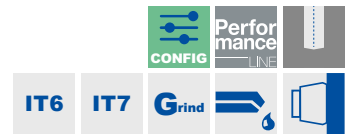
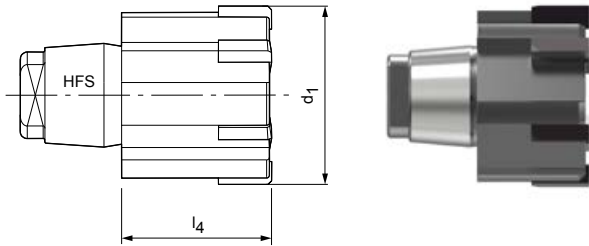
For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:
Reamer diameter: 16.600-65.000 mm
Lead: MA0A
Cutting material: PU620
PCD-tipped



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > Ø30.000 IT6 | ≤ Ø30.000 IT7

Specification:

HPR150Ø[diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150GØ[diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT6/IT7

| d1 | l4 | l5 | HFS size | z | Tolerance |
|-----------------|------|----|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150Ø37.350H6MA0A-PU620

Bore diameter d₁ = 37.350 H6

G variant example:

HPR150GØ37.350-3MA0A-PU620

Special tool diameter d₁ = 37.350 -3 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

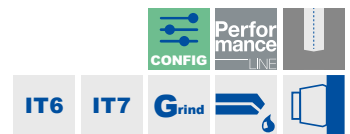
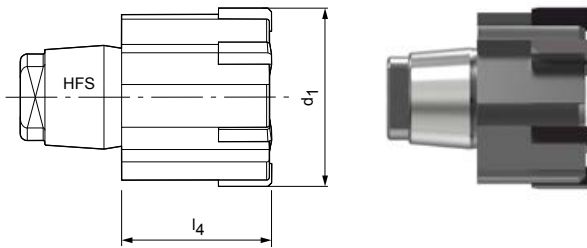
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Fixed design, straight fluted, for blind bores
HPR150

Design:

Reamer diameter: 16.600-65.000 mm
Lead: M02G
Cutting material: HP612
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6/IT7:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT6/IT7 depending on the diameter range
- > $\emptyset 30.000$ IT6 | $\leq \emptyset 30.000$ IT7

Specification:

HPR150 \emptyset [diameter][tolerance]M02G-HP612

Bore diameter tolerance < IT6/IT7:

- Tolerances smaller than IT6/IT7 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR150G \emptyset [diameter][tolerance]M02G-HP612

Dimensions of configurable series IT6/IT7

| d1 | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 14 | - | 10 | 6 | IT7 |
| 21,300 - 24,990 | 15,5 | - | 12 | 6 | IT7 |
| 25,000 - 28,990 | 15,5 | - | 14 | 6 | IT7 |
| 29,000 - 29,990 | 17 | - | 16 | 6 | IT7 |
| 30,000 - 36,990 | 17 | - | 16 | 6 | IT6 |
| 37,000 - 44,990 | 17 | - | 20 | 8 | IT6 |
| 45,000 - 50,700 | 19 | - | 24 | 8 | IT6 |
| 50,710 - 65,000 | 25 | - | 24 | 8 | IT6 |

IT6 tolerance example:

HPR150 \emptyset 37.350H6M02G-HP612

Bore diameter $d_1 = 37.350$ H6

G variant example:

HPR150G \emptyset 37.350-7M02G-HP612

Special tool diameter $d_1 = 37.350 -7 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

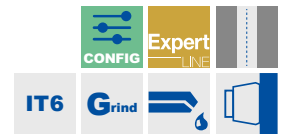
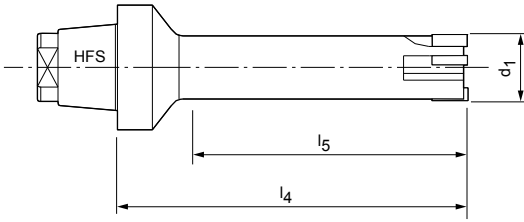
HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR230

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
MC1G
CP134
Cermet
PVD-coated



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR230Ø[diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR230GØ[diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR230Ø10.350H6MC1G-CP134

Bore diameter d₁ = 10.350 H6

G variant example:

HPR230GØ10.350+1-1MC1G-CP134

Special tool diameter d₁ = 10.350 +1 µm -1 µm

Dimensions in mm.

* for surfaces R_a < 2 µm

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR230

Design:

Reamer diameter:

7.000–18.590 mm

Lead:

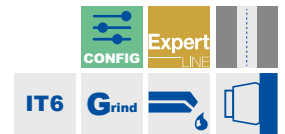
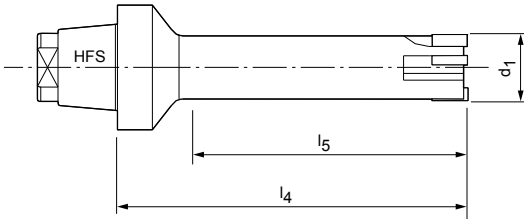
MC1G

Cutting material:

HP421

Carbide

PVD-coated



Configurable features


Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR230Ø[diameter][tolerance]MC1G-HP421

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR230GØ[diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT6

| d_1 | l_4 | l_5 | HFS size | z |
|----------------|-------|-------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR230Ø10.350H6MC1G-HP421

Bore diameter $d_1 = 10.350 \text{ H6}$

G variant example:

HPR230GØ10.350+1-1MC1G-HP421

Special tool diameter $d_1 = 10.350 +1 \mu\text{m} -1 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

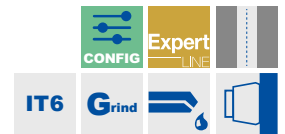
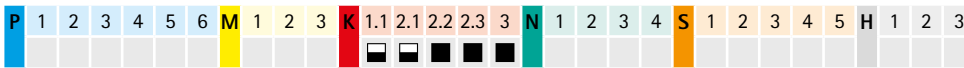
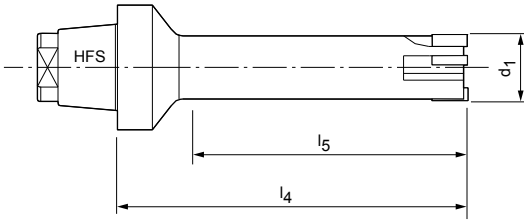
HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR230

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
MC1G
HP423
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR230Ø[diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR230GØ[diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR230Ø10.350H6MC1G-HP423

Bore diameter d₁ = 10.350 H6

G variant example:

HPR230GØ10.350+1-1MC1G-HP423

Special tool diameter d₁ = 10.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR230

Design:

Reamer diameter:

7.000–18.590 mm

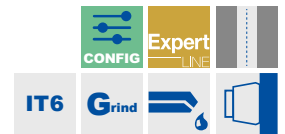
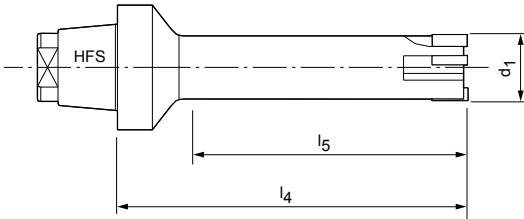
Lead:

MA0A

Cutting material:

PU620

PCD-tipped



Configurable features


Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR230Ø[diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR230GØ[diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT6

| d_1 | l_4 | l_5 | HFS size | z |
|----------------|-------|-------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR230Ø10.350H6MA0A-PU620

Bore diameter $d_1 = 10.350 \text{ H6}$

G variant example:

HPR230GØ10.350+1-1MA0A-PU620

Special tool diameter $d_1 = 10.350 +1 \mu\text{m} -1 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

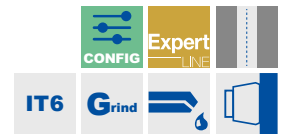
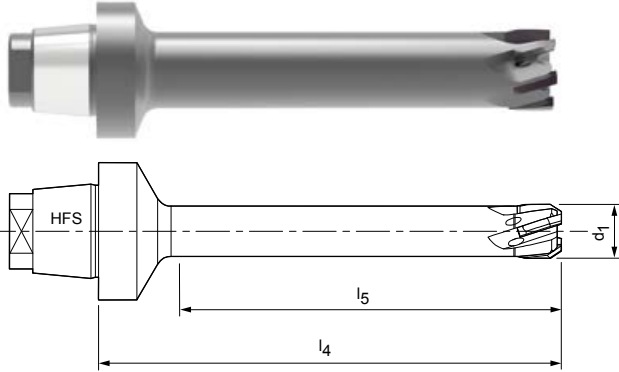
HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR231

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
ME1G
CU134
Uncoated cermet



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR231Ø[diameter][tolerance]ME1G-CU134

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR231GØ[diameter][tolerance]ME1G-CU134

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR231Ø10.350H6ME1G-CU134

Bore diameter d₁ = 10.350 H6

G variant example:

HPR231GØ10.350+1-1ME1G-CU134

Special tool diameter d₁ = 10.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR231

Design:

Reamer diameter:

7.000-18.590 mm

Lead:

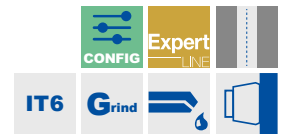
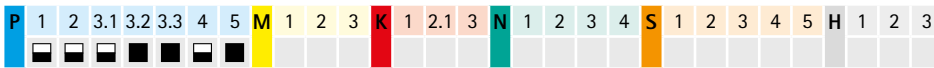
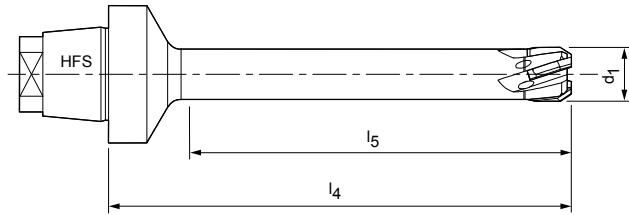
ME1G

Cutting material:

HP421

Carbide

PVD-coated



Configurable features


Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR231Ø[diameter][tolerance]ME1G-HP421

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR231GØ[diameter][tolerance]ME1G-HP421

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR231Ø10.350H6ME1G-HP421

Bore diameter d₁ = 10.350 H6

G variant example:

HPR231GØ10.350+1-1ME1G-HP421

Special tool diameter d₁ = 10.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

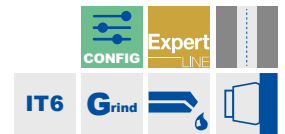
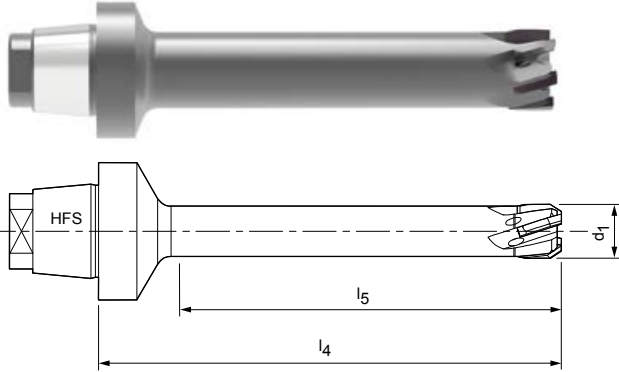
HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR231

Design:

Reamer diameter:
Lead:
Cutting material:

7.000-18.590 mm
MF1G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR231Ø[diameter][tolerance]MF1G-HP421

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR231GØ[diameter][tolerance]MF1G-HP421

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|----------------|----------------|----------------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR231Ø10.350H6MF1G-HP421

Bore diameter d₁ = 10.350 H6

G variant example:

HPR231GØ10.350+1-1MF1G-HP421

Special tool diameter d₁ = 10.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR231

Design:

Reamer diameter:

7.000–18.590 mm

Lead:

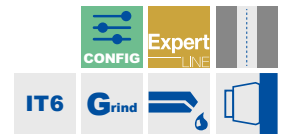
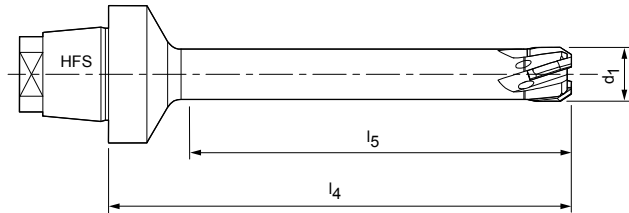
MF1G

Cutting material:

HP612

Carbide

PVD-coated



Configurable features


Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR231Ø[diameter][tolerance]MF1G-HP612

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR231GØ[diameter][tolerance]MF1G-HP612

Dimensions of configurable series IT6

| d_1 | l_4 | l_5 | HFS size | z |
|----------------|-------|-------|----------|---|
| 7,000 - 9,590 | 60 | 45 | 12 | 4 |
| 9,600 - 18,590 | 60 | 45 | 12 | 6 |

IT6 tolerance example:

HPR231Ø10.350H6MF1G-HP612

Bore diameter $d_1 = 10.350 \text{ H6}$

G variant example:

HPR231GØ10.350+1-1MF1G-HP612

Special tool diameter $d_1 = 10.350 +1 \mu\text{m} -1 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR200

Design:

Reamer diameter:

18.600-65.000 mm

Lead:

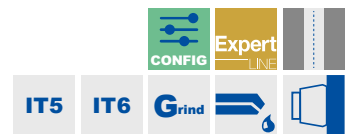
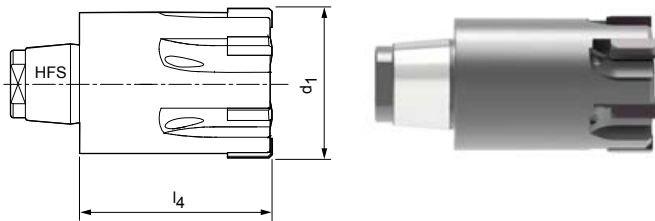
MC1G

Cutting material:

CP134

Cermet

PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Depending on the diameter range can be ordered from tolerance IT5/IT6
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR200Ø[diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR200GØ[diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT5/IT6

| d_1 | l_4 | l_5 | HFS size | z | Tolerance |
|-----------------|-------|-------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR200Ø35.350H5MC1G-CP134

Bore diameter $d_1 = 35.350 \text{ H5}$

G variant example:

HPR200GØ35.350+1-1MC1G-CP134

Special tool diameter $d_1 = 35.350 +1 \mu\text{m} -1 \mu\text{m}$

Dimensions in mm.

* for surfaces $R_a < 2 \mu\text{m}$

For associated HFS replaceable head holders, see page 460.

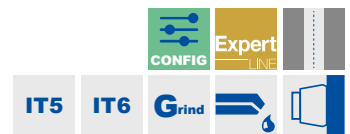
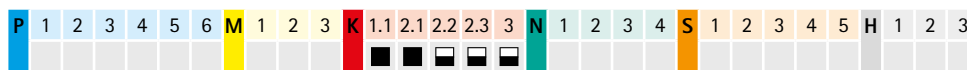
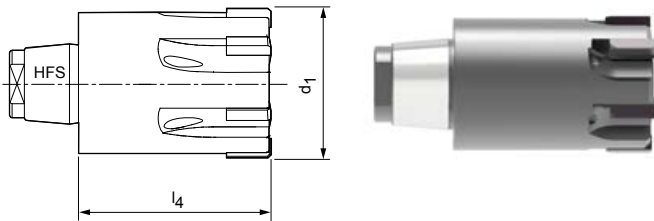
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR200

Design:

Reamer diameter: 18.600-65.000 mm
Lead: MC1G
Cutting material: HP421
Carbide
PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Depending on the diameter range can be ordered from tolerance IT5/IT6
- > Ø30.000 IT5 | ≤ Ø30.000 IT6

Specification:

HPR200Ø[diameter][tolerance]MC1G-HP421

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR200GØ[diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR200Ø35.350H5MC1G-HP421

Bore diameter d₁ = 35.350 H5

G variant example:

HPR200GØ35.350+1-1MC1G-HP421

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

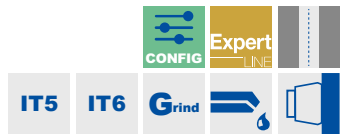
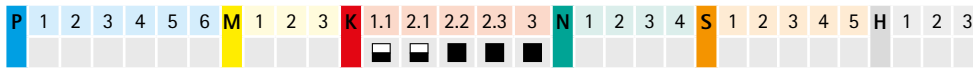
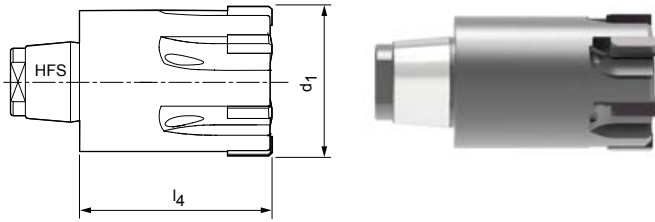
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR200

Design:

Reamer diameter: 18.600-65.000 mm
Lead: MC1G
Cutting material: HP423
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT5/IT6:
- Diameter freely selectable in increments of 0.001 mm
- Depending on the diameter range can be ordered from tolerance IT5/IT6
- > Ø30.000 IT5 | ≤ Ø30.000 IT6

Specification:
HPR200Ø[diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT5/IT6:
- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter
(G variant, see page 373)

G variant specification:
HPR200GØ[diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:
HPR200Ø35.350H5MC1G-HP423

Bore diameter d₁ = 35.350 H5

G variant example:
HPR200GØ35.350+1-1MC1G-HP423

Special tool diameter d₁ = 35.350 +1 µm -1 µm

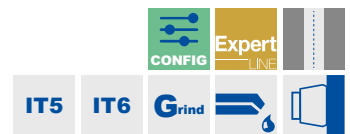
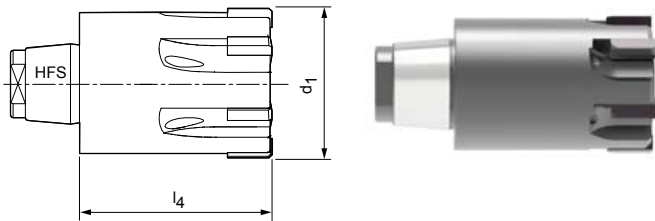
Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for through bores
HPR200

Design:

Reamer diameter: 18.600-65.000 mm
Lead: MA0A
Cutting material: PU620
PCD-tipped



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR200Ø[diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR200GØ[diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR200Ø35.350H5MA0A-PU620

Bore diameter d₁ = 35.350 H5

G variant example:

HPR200GØ35.350+1-1MA0A-PU620

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR210

Design:

Reamer diameter:

18.600-65.000 mm

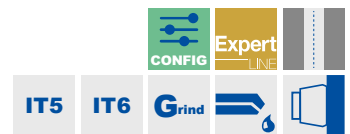
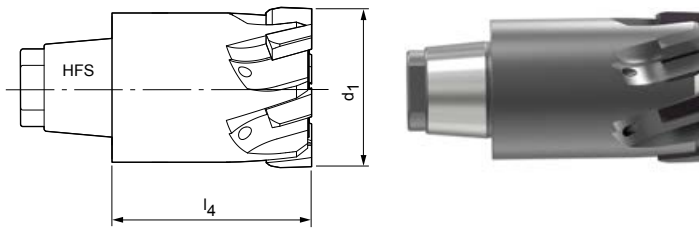
Lead:

ME1G

Cutting material:

CU134

Uncoated cermet



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > Ø30.000 IT5 | ≤ Ø30.000 IT6

Specification:

HPR210Ø[diameter][tolerance]ME1G-CU134

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR210GØ[diameter][tolerance]ME1G-CU134

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR210Ø35.350H5ME1G-CU134

Bore diameter d₁ = 35.350 H5

G variant example:

HPR210GØ35.350+1-1ME1G-CU134

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

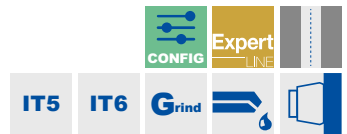
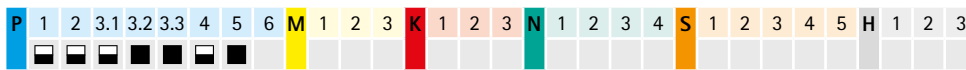
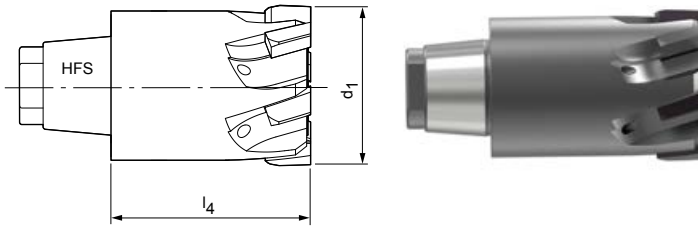
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR210

Design:

Reamer diameter: 18.600-65.000 mm
Lead: ME1G
Cutting material: HP421
Carbide
PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > Ø30.000 IT5 | ≤ Ø30.000 IT6

Specification:

HPR210Ø[diameter][tolerance]ME1G-HP421

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR210GØ[diameter][tolerance]ME1G-HP421

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR210Ø35.350H5ME1G-HP421

Bore diameter d₁ = 35.350 H5

G variant example:

HPR210GØ35.350+1-1ME1G-HP421

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

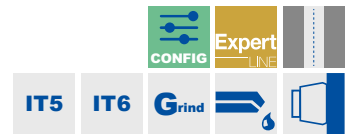
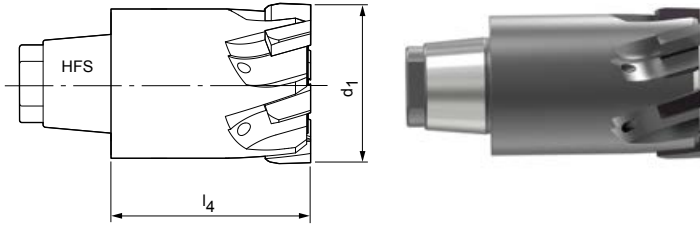
HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR210

Design:

Reamer diameter:
Lead:
Cutting material:

18.600-65.000 mm
MF1G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > Ø30.000 IT5 | ≤ Ø30.000 IT6

Specification:

HPR210Ø[diameter][tolerance]MF1G-HP421

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR210GØ[diameter][tolerance]MF1G-HP421

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR210Ø35.350H5MF1G-HP421

Bore diameter d₁ = 35.350 H5

G variant example:

HPR210GØ35.350+1-1MF1G-HP421

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

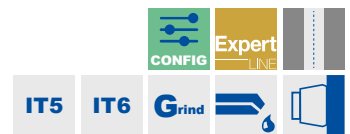
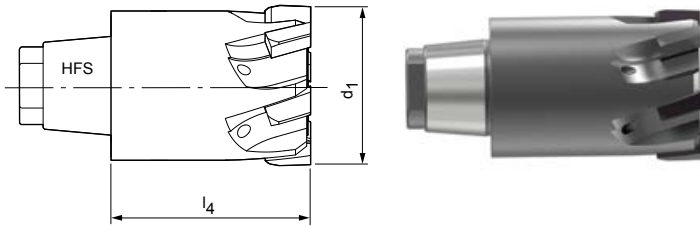
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, left-hand fluted, for through bores
HPR210

Design:

Reamer diameter: 18.600-65.000 mm
Lead: MF1G
Cutting material: HP612
Carbide
PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > Ø30.000 IT5 | ≤ Ø30.000 IT6

Specification:

HPR210Ø[diameter][tolerance]MF1G-HP612

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR210GØ[diameter][tolerance]MF1G-HP612

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 18,600 - 20,390 | 25 | - | 12 | 6 | IT6 |
| 20,400 - 21,290 | 27 | - | 12 | 6 | IT6 |
| 21,300 - 23,990 | 27 | - | 14 | 6 | IT6 |
| 24,000 - 29,990 | 35 | - | 16 | 6 | IT6 |
| 30,000 - 39,990 | 41 | - | 20 | 8 | IT5 |
| 40,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR210Ø35.350H5MF1G-HP612

Bore diameter d₁ = 35.350 H5

G variant example:

HPR210GØ35.350+1-1MF1G-HP612

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

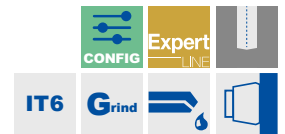
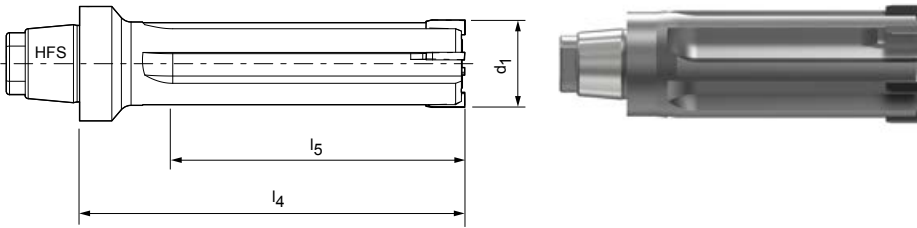
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
ML2G
CU134
Uncoated cermet



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR280Ø[diameter][tolerance]ML2G-CU134

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR280GØ[diameter][tolerance]ML2G-CU134

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:

HPR280Ø16.350H6ML2G-CU134

Bore diameter d₁ = 16.350 H6

G variant example:

HPR280GØ16.350+1-1ML2G-CU134

Special tool diameter d₁ = 16.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter:

7.000–21.290 mm

Lead:

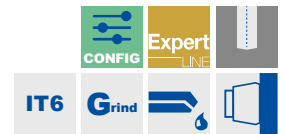
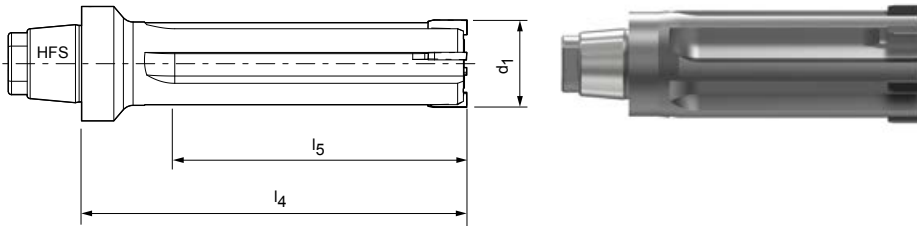
ML2G

Cutting material:

HP421

Carbide

PVD-coated



Configurable features


Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR280Ø[diameter][tolerance]ML2G-HP421

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR280GØ[diameter][tolerance]ML2G-HP421

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:

HPR280Ø16.350H6ML2G-HP421

Bore diameter d₁ = 16.350 H6

G variant example:

HPR280GØ16.350+1-1ML2G-HP421

Special tool diameter d₁ = 16.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

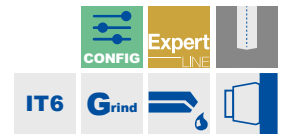
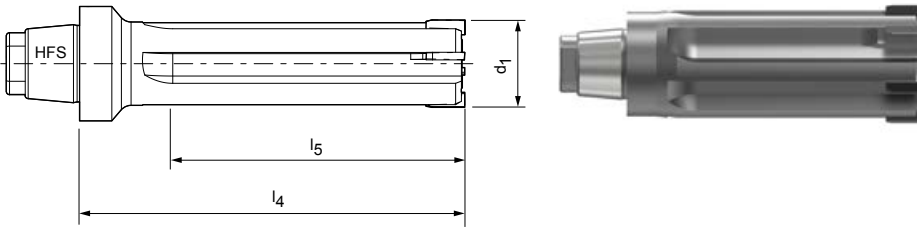
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
M02G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6:
- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:
HPR280Ø[diameter][tolerance]M02G-HP421

Bore diameter tolerance < IT6:
- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:
HPR280GØ[diameter][tolerance]M02G-HP421

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:
HPR280Ø16.350H6M02G-HP421

Bore diameter d₁ = 16.350 H6

G variant example:
HPR280GØ16.350+1-1M02G-HP421

Special tool diameter d₁ = 16.350 +1 µm -1 µm

Dimensions in mm.
For associated HFS replaceable head holders, see page 460.
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter:

7.000–21.290 mm

Lead:

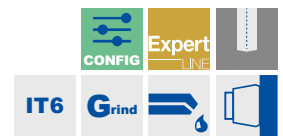
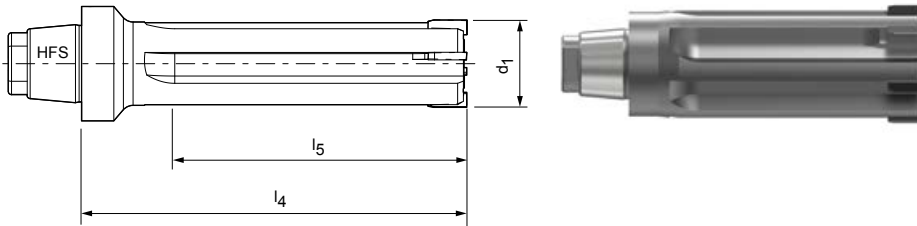
MC1G

Cutting material:

CP134

Cermet

PVD-coated



Configurable features


Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR280Ø[diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR280GØ[diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT6

| d_1 | l_4 | l_5 | HFS size | z |
|-----------------|-------|-------|----------|-----|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:

HPR280Ø16.350H6MC1G-CP134

Bore diameter $d_1 = 16.350 \text{ H6}$

G variant example:

HPR280GØ16.350+1-1MC1G-CP134

Special tool diameter $d_1 = 16.350 + 1 \mu\text{m} - 1 \mu\text{m}$

Dimensions in mm.

* for surfaces $R_a < 2 \mu\text{m}$

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

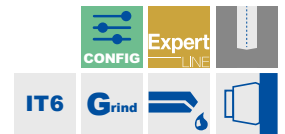
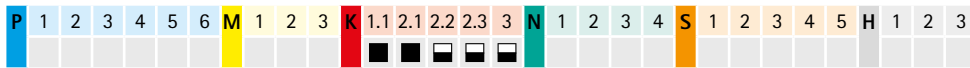
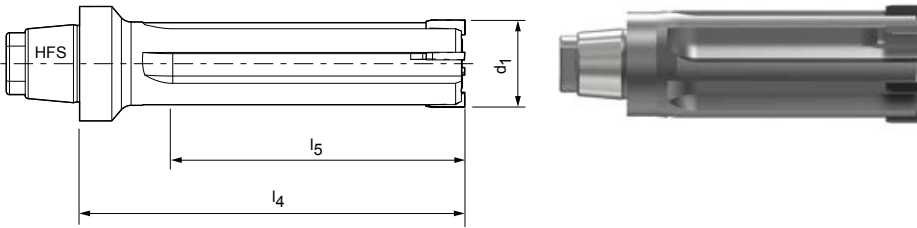
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
MC1G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR280Ø[diameter][tolerance]MC1G-HP421

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR280GØ[diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:

HPR280Ø16.350H6MC1G-HP421

Bore diameter d₁ = 16.350 H6

G variant example:

HPR280GØ16.350+1-1MC1G-HP421

Special tool diameter d₁ = 16.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

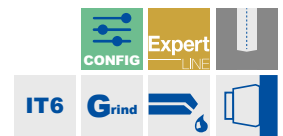
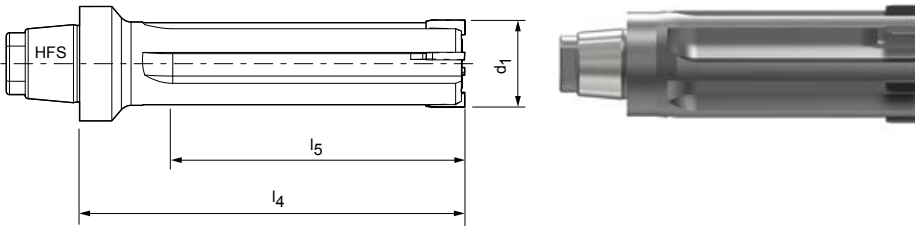
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter: 7.000–21.290 mm
Lead: MC1G
Cutting material: HP423
Carbide
PVD-coated



Configurable features


Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR280Ø[diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR280GØ[diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT6

| d_1 | l_4 | l_5 | HFS size | z |
|-----------------|-------|-------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:

HPR280Ø16.350H6MC1G-HP423

Bore diameter $d_1 = 16.350 \text{ H6}$

G variant example:

HPR280GØ16.350+1-1MC1G-HP423

Special tool diameter $d_1 = 16.350 +1 \mu\text{m} -1 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

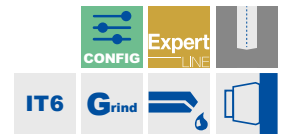
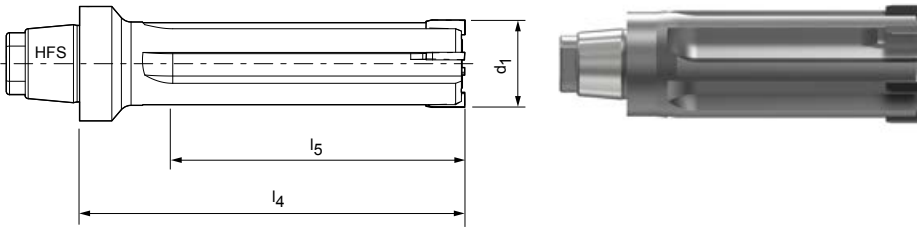
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter:
Lead:
Cutting material:

7.000–21.290 mm
MA0A
PU620
PCD-tipped



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR280Ø[diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR280GØ[diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:

HPR280Ø16.350H6MA0A-PU620

Bore diameter d₁ = 16.350 H6

G variant example:

HPR280GØ16.350+1-1MA0A-PU620

Special tool diameter d₁ = 16.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

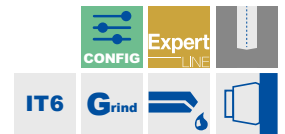
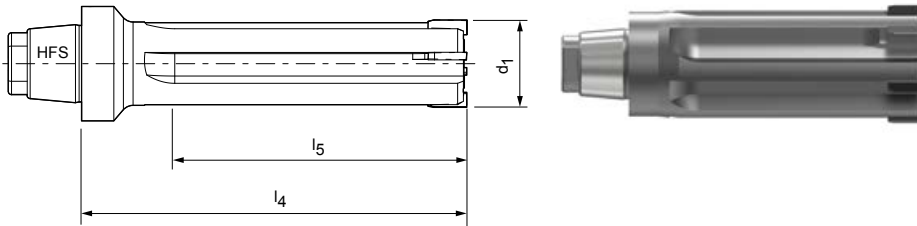
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR280

Design:

Reamer diameter: 7.000–21.290 mm
Lead: M02G
Cutting material: HP612
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance IT6

Specification:

HPR280Ø[diameter][tolerance]M02G-HP612

Bore diameter tolerance < IT6:

- Tolerances smaller than IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR280GØ[diameter][tolerance]M02G-HP612

Dimensions of configurable series IT6

| d ₁ | l ₄ | l ₅ | HFS size | z |
|-----------------|----------------|----------------|----------|---|
| 7,000 - 14,590 | 60 | 40 | 12 | 4 |
| 14,600 - 21,290 | 60 | 40 | 12 | 6 |

IT6 tolerance example:

HPR280Ø16.350H6M02G-HP612

Bore diameter d₁ = 16.350 H6

G variant example:

HPR280GØ16.350+1-1M02G-HP612

Special tool diameter d₁ = 16.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

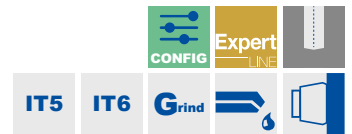
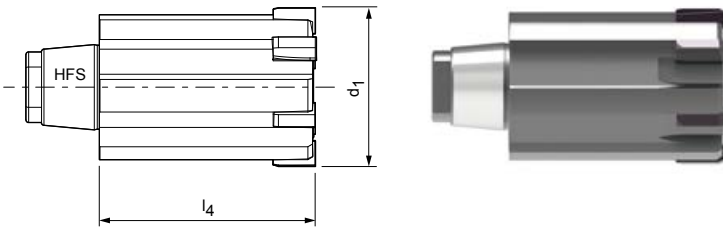
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter:
Lead:
Cutting material:

16.600-65.000 mm
ML2G
CU134
Uncoated cermet



Configurable features



Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > Ø30.000 IT5 | ≤ Ø30.000 IT6

Specification:

HPR250Ø[diameter][tolerance]ML2G-CU134

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]ML2G-CU134

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5ML2G-CU134

Bore diameter d₁ = 35.350 H5

G variant example:

HPR250GØ35.350+1-1ML2G-CU134

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

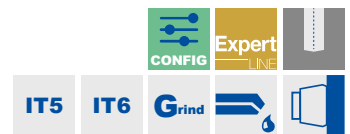
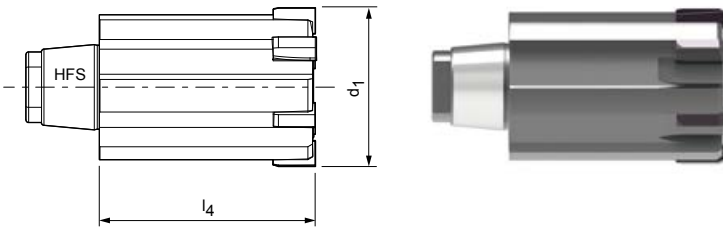
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter: 16.600-65.000 mm
Lead: ML2G
Cutting material: HP421
Carbide
PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR250Ø[diameter][tolerance]ML2G-HP421

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]ML2G-HP421

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5ML2G-HP421

Bore diameter d₁ = 35.350 H5

G variant example:

HPR250GØ35.350+1-1ML2G-HP421

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

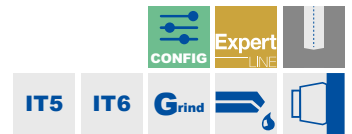
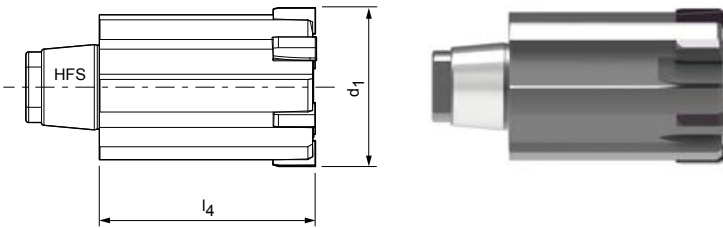
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter:
Lead:
Cutting material:

16.600-65.000 mm
M02G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR250Ø[diameter][tolerance]M02G-HP421

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]M02G-HP421

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5M02G-HP421

Bore diameter d₁ = 35.350 H5

G variant example:

HPR250GØ35.350+1-1M02G-HP421

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

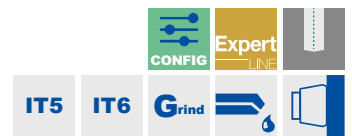
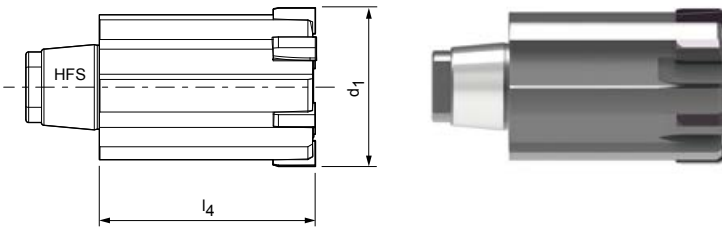
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter: 16.600-65.000 mm
Lead: MC1G
Cutting material: CP134
Cermet
PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR250Ø[diameter][tolerance]MC1G-CP134

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]MC1G-CP134

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5MC1G-CP134

Bore diameter d₁ = 35.350 H5

G variant example:

HPR250GØ35.350+1-1MC1G-CP134

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

* for surfaces R_a < 2 µm

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

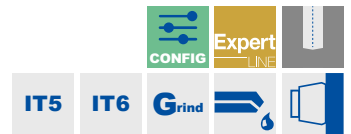
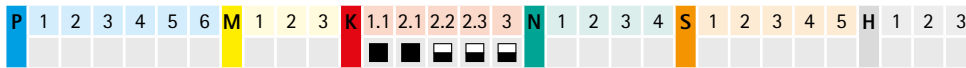
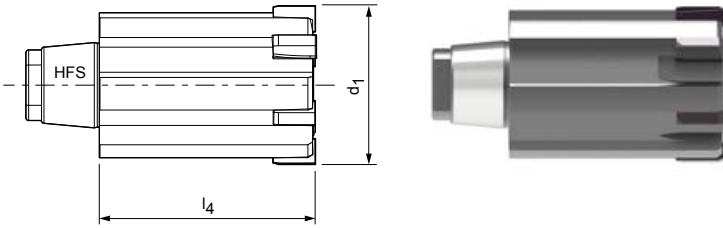
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter:
Lead:
Cutting material:

16.600-65.000 mm
MC1G
HP421
Carbide
PVD-coated



Configurable features



Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR250Ø[diameter][tolerance]MC1G-HP421

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]MC1G-HP421

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5MC1G-HP421

Bore diameter d₁ = 35.350 H5

G variant example:

HPR250GØ35.350+1-1MC1G-HP421

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

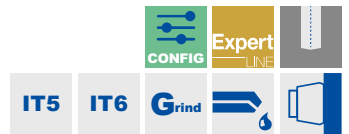
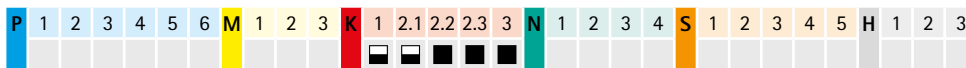
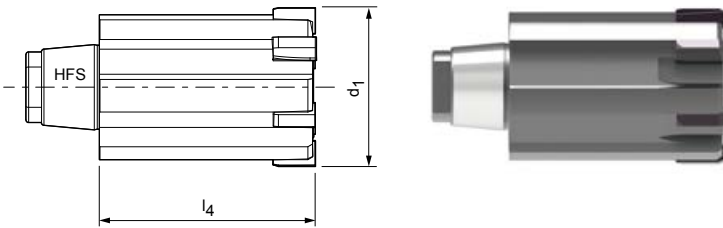
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter: 16.600-65.000 mm
Lead: MC1G
Cutting material: HP423
Carbide
PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR250Ø[diameter][tolerance]MC1G-HP423

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]MC1G-HP423

Dimensions of configurable series IT5/IT6

| d_1 | l_4 | l_5 | HFS size | z | Tolerance |
|-----------------|-------|-------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5MC1G-HP423

Bore diameter $d_1 = 35.350 \text{ H5}$

G variant example:

HPR250GØ35.350+1-1MC1G-HP423

Special tool diameter $d_1 = 35.350 +1 \mu\text{m} -1 \mu\text{m}$

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

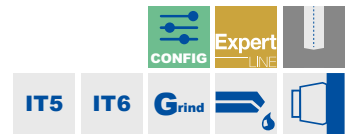
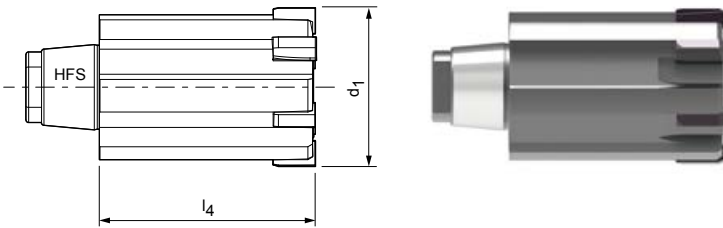
HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter:
Lead:
Cutting material:

16.600-65.000 mm
MA0A
PU620
PCD-tipped



Configurable features



Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR250Ø[diameter][tolerance]MA0A-PU620

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]MA0A-PU620

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5MA0A-PU620

Bore diameter d₁ = 35.350 H5

G variant example:

HPR250GØ35.350+1-1MA0A-PU620

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

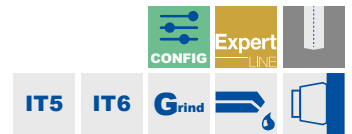
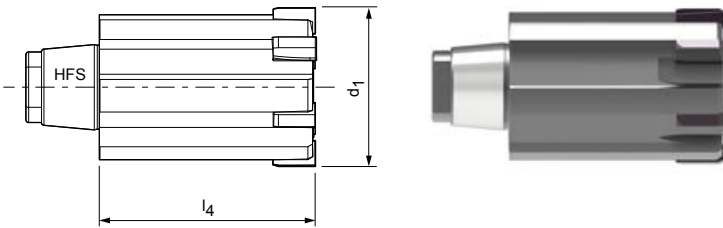
For cutting data recommendations, see end of chapter.

HPR replaceable head reamer

Finely adjustable design, straight fluted, for blind bores
HPR250

Design:

Reamer diameter: 16.600-65.000 mm
Lead: M02G
Cutting material: HP612
Carbide
PVD-coated



Configurable features


Bore diameter tolerance IT5/IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT5/IT6 depending on the diameter range
- > 030.000 IT5 | ≤ 030.000 IT6

Specification:

HPR250Ø[diameter][tolerance]M02G-HP612

Bore diameter tolerance < IT5/IT6:

- Tolerances smaller than IT5/IT6 can be ordered as a special tool diameter (G variant, see page 373)

G variant specification:

HPR250GØ[diameter][tolerance]M02G-HP612

Dimensions of configurable series IT5/IT6

| d ₁ | l ₄ | l ₅ | HFS size | z | Tolerance |
|-----------------|----------------|----------------|----------|---|-----------|
| 16,600 - 21,290 | 25 | - | 10 | 6 | IT6 |
| 21,300 - 24,990 | 27 | - | 12 | 6 | IT6 |
| 25,000 - 28,590 | 35 | - | 14 | 6 | IT6 |
| 29,000 - 32,290 | 35 | - | 16 | 6 | IT5 |
| 32,300 - 36,990 | 41 | - | 16 | 6 | IT5 |
| 37,000 - 41,190 | 41 | - | 20 | 8 | IT5 |
| 41,200 - 44,900 | 47 | - | 20 | 8 | IT5 |
| 45,000 - 65,000 | 47 | - | 24 | 8 | IT5 |

IT5 tolerance example:

HPR250Ø35.350H5M02G-HP612

Bore diameter d₁ = 35.350 H5

G variant example:

HPR250GØ35.350+1-1M02G-HP612

Special tool diameter d₁ = 35.350 +1 µm -1 µm

Dimensions in mm.

For associated HFS replaceable head holders, see page 460.

For cutting data recommendations, see end of chapter.

Cutting data recommendations for HPR replaceable head reamers

Feed and cutting speed

HPR131 | HPR231 | HPR180 | HPR280

Cutting material: HP421 | Lead: ME1G | ML2G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | |
|------|------|---|---|--------------------------|------------------|-----|-----------------------------------|----------------|
| | | | | Internal cooling | External cooling | MQL | z 4 | z 6 |
| | | | | | | | 7.000 - 9.590 | 9.600 - 21.290 |
| P | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | | | | | |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 100 | 100 | 120 | 0.100 | 0.200 |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 100 | 100 | 120 | 0.100 | 0.200 |
| | P5 | P5.1 | Cast steel | | 35 | 35 | 35 | 0.070 |

HPR150 | HPR250

Cutting material: CU134 | Lead: ML2G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | |
|------|------|--|---|--------------------------|------------------|-----|-----------------------------------|-----------------|
| | | | | Internal cooling | External cooling | MQL | z 6 | z 8 |
| | | | | | | | 16.600 - 36.990 | 37.000 - 65.000 |
| P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | | | | | |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | | | | | |

HPR180 | HPR280

Cutting material: CU134 | Lead: ML2G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | |
|------|------|--|---|--------------------------|------------------|-----|-----------------------------------|-----------------|
| | | | | Internal cooling | External cooling | MQL | z 4 | z 6 |
| | | | | | | | 7.000 - 14.590 | 14.600 - 21.290 |
| P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | | | | | |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | | | | | |

HPR110 | HPR210 | HPR150 | HPR250

Cutting material: HP421 | Lead: ME1G | ML2G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | |
|------|------|---|---|--------------------------|------------------|-----|-----------------------------------|---------------|
| | | | | Internal cooling | External cooling | MQL | z 6 | z 8 |
| | | | | | | | 15.600 - 29.990 | 30.00 - 65.00 |
| P | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 120 | 100 | 120 | 0.200 | 0.200 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 100 | 100 | 120 | 0.200 | 0.200 |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 100 | 100 | 120 | 0.200 | 0.200 |
| | P5.1 | Cast steel | | 35 | 35 | 35 | 0.070 | 0.070 |

HPR110 | HPR210

Cutting material: CU134 | Lead: ME1G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | |
|------|------|--|---|--------------------------|------------------|-----|-----------------------------------|-----------------|
| | | | | Internal cooling | External cooling | MQL | z 6 | z 8 |
| | | | | | | | 15.600 - 29.990 | 30.000 - 65.000 |
| P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 140 | 100 | 120 | 0.200 | 0.250 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | | | | | |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | | | | | |

HPR131 | HPR231

Cutting material: CU134 | Lead: ME1G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | |
|------|------|--|---|--------------------------|------------------|-----|-----------------------------------|----------------|
| | | | | Internal cooling | External cooling | MQL | z 4 | z 6 |
| | | | | | | | 7.000 - 9.590 | 9.600 - 18.590 |
| P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 140 | 100 | 120 | 0.150 | 0.200 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | | | | | |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | | | | | |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for HPR replaceable head reamers

Feed and cutting speed

HPR131 | HPR231 | HPR180 | HPR280

Cutting material: HP421 | Lead: MF1G | MO2G

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--------------------|------|--|--------------------------|------------------|-----|
| | | | | Internal cooling | External cooling | MQL |
| P | P4 | P4.1 | Stainless steels, ferritic and martensitic | 35 | 35 | 35 |
| | P6 | P6.1 | Stainless cast steel, ferritic and martensitic | 35 | 35 | 35 |
| M | M1 | M1.1 | Stainless steels, austenitic < 700 N/mm ² | 35 | 35 | 35 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) < 1000 N/mm ² | 35 | 35 | 35 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic < 700 N/mm ² | 35 | 35 | 35 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) < 1000 N/mm ² | 35 | 35 | 35 |

HPR110 | HPR210 | HPR150 | HPR250

Cutting material: HP421 | Lead: MF1G | MO2G

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--------------------|------|--|--------------------------|------------------|-----|
| | | | | Internal cooling | External cooling | MQL |
| P | P4 | P4.1 | Stainless steels, ferritic and martensitic | 35 | 35 | 35 |
| | P6 | P6.1 | Stainless cast steel, ferritic and martensitic | 35 | 35 | 35 |
| M | M1 | M1.1 | Stainless steels, austenitic < 700 N/mm ² | 35 | 35 | 35 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) < 1000 N/mm ² | 35 | 35 | 35 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic < 700 N/mm ² | 35 | 35 | 35 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) < 1000 N/mm ² | 35 | 35 | 35 |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|--------------|-----------------|---------------|
| HPR131 HPR231 | | HPR180 HPR280 | |
| z4 | z6 | z4 | z6 |
| 7.000-9.590 | 9.600-18.590 | 7.000-14.590 | 14.600-21.290 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|---------------|-----------------|---------------|
| HPR110 HPR210 | | HPR150 HPR250 | |
| z6 | z8 | z6 | z8 |
| 15.600-29.990 | 30.000-65.000 | 16.600-36.990 | 37.000-65.000 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |
| 0.070 | 0.070 | 0.070 | 0.070 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for HPR replaceable head reamers

Feed and cutting speed

HPR130 | HPR230 | HPR180 | HPR280

Cutting material: HP423 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | | |
|----------|--------------------|---|--|-------------------------|-----|-----|-----|
| | | | Internal cooling | External cooling | MQL | | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 140 | 100 | 120 |
| | | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 140 | 100 | 120 |
| | K2 | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | | | |
| | | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | | | |

HPR100 | HPR200 | HPR150 | HPR250

Cutting material: CP134 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | | |
|----------|--------------------|---|--|-------------------------|-----|-----|-----|
| | | | Internal cooling | External cooling | MQL | | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 140 | 100 | 120 |
| | | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 140 | 100 | 120 |
| | K2 | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | | | |
| | | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | | | |

HPR130 | HPR180

Cutting material: HC419 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | | |
|----------|--------------------|---|--|-------------------------|-----|-----|-----|
| | | | Internal cooling | External cooling | MQL | | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 120 | 100 | 120 |

HPR100 | HPR150

Cutting material: HC419 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | | |
|----------|--------------------|---|--|-------------------------|-----|-----|-----|
| | | | Internal cooling | External cooling | MQL | | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 120 | 100 | 120 |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|--------------|-----------------|---------------|
| HPR130 HPR230 | | HPR180 HPR280 | |
| z4 | z6 | z4 | z6 |
| 7.000-9.590 | 9.600-18.590 | 7.000-14.590 | 14.600-21.290 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| | | | |
| | | | |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|---------------|-----------------|---------------|
| HPR100 HPR200 | | HPR150 HPR250 | |
| z6 | z8 | z6 | z8 |
| 15.600-29.990 | 30.000-65.000 | 16.600-36.990 | 37.000-65.000 |
| 0.200 | 0.300 | 0.200 | 0.300 |
| 0.200 | 0.300 | 0.200 | 0.300 |
| | | | |
| | | | |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|--------------|--------------|---------------|
| HPR130 | | HPR180 | |
| z 4 | z 6 | z 4 | z 6 |
| 7.000-9.590 | 9.600-18.590 | 7.000-14.590 | 14.600-21.290 |
| 0.150 | 0.200 | 0.150 | 0.200 |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|---------------|---------------|---------------|
| HPR100 | | HPR150 | |
| z6 | z8 | z6 | z8 |
| 15.600-29.990 | 30.000-65.000 | 16.600-36.990 | 37.000-65.000 |
| 0.150 | 0.200 | 0.150 | 0.200 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for HPR replaceable head reamers

Feed and cutting speed

HPR130 | HPR230 | HPR180 | HPR280

Cutting material: HP422 | HP421 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--|--|--------------------------|------------------|-----|
| | | | Internal cooling | External cooling | MQL |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 120 | 100 | 120 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | | | |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | | | |

HPR100 | HPR200 | HPR150 | HPR250

Cutting material: HP422 | HP421 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | |
|------|--|--|--------------------------|------------------|-----|
| | | | Internal cooling | External cooling | MQL |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 120 | 100 | 120 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | | | |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | | | |

HPR130 | HPR230 | HPR180 | HPR280

Cutting material: HP423 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|--|--------------------------|------------------|-----|----|
| | | | Internal cooling | External cooling | MQL | |
| K | K2 | K2.1 Cast iron with spheroidal graphite, GJS | | | | |
| | | K2.2 Cast iron with spheroidal graphite, GJS | 120 | 100 | 120 | |
| | | K2.3 Cast iron with spheroidal graphite, GJS | 120 | 100 | 120 | |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 90 | 70 | 90 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 90 | 70 | 90 |

HPR100 | HPR200 | HPR150 | HPR250

Cutting material: HP423 | Lead: MC1G

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|--|--------------------------|------------------|-----|----|
| | | | Internal cooling | External cooling | MQL | |
| K | K2 | K2.1 Cast iron with spheroidal graphite, GJS | | | | |
| | | K2.2 Cast iron with spheroidal graphite, GJS | 120 | 100 | 120 | |
| | | K2.3 Cast iron with spheroidal graphite, GJS | 120 | 100 | 120 | |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 90 | 70 | 90 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 90 | 70 | 90 |

* MAPAL machining groups

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|--------------|-----------------|---------------|
| HPR130 HPR230 | | HPR180 HPR280 | |
| z4 | z6 | z4 | z6 |
| 7.000-9.590 | 9.600-18.590 | 7.000-14.590 | 14.600-21.290 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| | | | |
| | | | |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|---------------|-----------------|---------------|
| HPR100 HPR200 | | HPR150 HPR250 | |
| z6 | z8 | z6 | z8 |
| 15.600-29.990 | 30.000-65.000 | 16.600-36.990 | 37.000-65.000 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| | | | |
| | | | |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|--------------|-----------------|---------------|
| HPR130 HPR230 | | HPR180 HPR280 | |
| z4 | z6 | z4 | z6 |
| 7.000-9.590 | 9.600-18.590 | 7.000-14.590 | 14.600-21.290 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| 0.150 | 0.200 | 0.150 | 0.200 |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|---------------|-----------------|---------------|
| HPR100 HPR200 | | HPR150 HPR250 | |
| z6 | z8 | z6 | z8 |
| 15.600-29.990 | 30.000-65.000 | 16.600-36.990 | 37.000-65.000 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| 0.150 | 0.200 | 0.150 | 0.200 |
| 0.150 | 0.200 | 0.150 | 0.200 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for HPR replaceable head reamers

Feed and cutting speed

HPR130 | HPR230 | HPR180 | HPR280

Cutting material: PU620 | Lead: MA0A

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|---|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 130 | 100 | 120 | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 130 | 100 | 120 | |
| | | N1.3 Aluminium, alloy > 7 - 12 % Si | 130 | 100 | 120 | |
| | | N1.4 Aluminium, alloy > 12 % Si | 130 | 100 | 120 | |
| | N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 130 | 100 | 120 |
| | | N2.2 Copper, alloy | > 300 N/mm ² | 130 | 100 | 120 |
| | | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 130 | 100 | 120 |

HPR100 | HPR200 | HPR150 | HPR250

Cutting material: PU620 | Lead: MA0A

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | |
|------|--------------------|---|--------------------------|------------------|-----|-----|
| | | | Internal cooling | External cooling | MQL | |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 130 | 100 | 120 | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 130 | 100 | 120 | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 130 | 100 | 120 | |
| | | N1.4 Aluminium, alloy > 12 % Si | 130 | 100 | 120 | |
| | N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 130 | 100 | 120 |
| | | N2.2 Copper, alloy | > 300 N/mm ² | 130 | 100 | 120 |
| | | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 130 | 100 | 120 |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|--------------|-----------------|---------------|
| HPR130 HPR230 | | HPR180 HPR280 | |
| z4 | z6 | z4 | z6 |
| 7.000-9.590 | 9.600-18.590 | 7.000-14.590 | 14.600-21.290 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |

| Feed fz (mm/z) with tool diameter | | | |
|-----------------------------------|---------------|-----------------|---------------|
| HPR100 HPR200 | | HPR150 HPR250 | |
| z6 | z8 | z6 | z8 |
| 15.600-29.990 | 30.000-65.000 | 16.600-36.990 | 37.000-65.000 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |
| 0.150 | 0.250 | 0.150 | 0.250 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for HPR replaceable head reamers

Feed and cutting speed

HPR180 | HPR280

Cutting material: HP612 | Lead: MO2G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | | |
|------|----|--------------------|--|--------------------------|------------------|-----|-----------------------------------|---------------|-------|
| | | | | Internal cooling | External cooling | MQL | z 4 | z 6 | |
| | | | | | | | 7.000-14.590 | 14.600-21.290 | |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 35 | 20 | 25 | 0.060 | 0.080 |
| | S2 | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 35 | 20 | 25 | 0.060 | 0.080 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 35 | 20 | 25 | 0.060 | 0.080 |
| | S3 | S3.1 | Nickel, unalloyed and alloyed | < 900 N/mm ² | 30 | 15 | 25 | 0.060 | 0.080 |
| | | S3.2 | Nickel, unalloyed and alloyed | > 900 N/mm ² | 30 | 15 | 25 | 0.060 | 0.080 |
| | S4 | S4.1 | High-temperature super alloy Ni, Co and Fe-based | | 25 | 15 | 20 | 0.060 | 0.080 |
| | S5 | S5.1 | Tungsten and molybdenum alloys | | 25 | 15 | 20 | 0.060 | 0.080 |

HPR131 | HPR231

Cutting material: HP612 | Lead: MF1G

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | | |
|------|----|--------------------|--|--------------------------|------------------|-----|-----------------------------------|--------------|-------|
| | | | | Internal cooling | External cooling | MQL | z 4 | z 6 | |
| | | | | | | | 7.000-9.590 | 9.600-18.590 | |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 35 | 20 | 25 | 0.060 | 0.100 |
| | S2 | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 35 | 20 | 25 | 0.060 | 0.100 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 35 | 20 | 25 | 0.060 | 0.100 |
| | S3 | S3.1 | Nickel, unalloyed and alloyed | < 900 N/mm ² | 30 | 15 | 25 | 0.060 | 0.100 |
| | | S3.2 | Nickel, unalloyed and alloyed | > 900 N/mm ² | 30 | 15 | 25 | 0.060 | 0.100 |
| | S4 | S4.1 | High-temperature super alloy Ni, Co and Fe-based | | 25 | 15 | 20 | 0.060 | 0.100 |
| | S5 | S5.1 | Tungsten and molybdenum alloys | | 25 | 15 | 20 | 0.060 | 0.100 |

HPR110 | HPR210

Cutting material: HP612 | Lead: MF1G

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | | |
|------|--------------------|------|--|--------------------------|---------------------|-----|-----------------------------------|---------------|-------|
| | | | | Internal cooling | External cooling | MQL | z 6 | z 8 | |
| | | | | | | | 15.600-29.990 | 30.000-65.000 | |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 35 | 20 | 25 | 0.100 | 0.100 |
| | S2 | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 35 | 20 | 25 | 0.100 | 0.100 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 35 | 20 | 25 | 0.100 | 0.100 |
| | S3 | S3.1 | Nickel, unalloyed and alloyed | < 900 N/mm ² | 30 | 15 | 25 | 0.100 | 0.100 |
| | | S3.2 | Nickel, unalloyed and alloyed | > 900 N/mm ² | 30 | 15 | 25 | 0.100 | 0.100 |
| | S4 | S4.1 | High-temperature super alloy Ni, Co and Fe-based | | 25 | 15 | 20 | 0.100 | 0.100 |
| | S5 | S5.1 | Tungsten and molybdenum alloys | | 25 | 15 | 20 | 0.100 | 0.100 |

HPR150 | HPR250

Cutting material: HP612 | Lead: MO2G

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | | Feed fz (mm/z) with tool diameter | | |
|------|--------------------|------|--|--------------------------|---------------------|-----|-----------------------------------|---------------|-------|
| | | | | Internal cooling | External cooling | MQL | z 6 | z 8 | |
| | | | | | | | 16.600-36.990 | 37.000-65.000 | |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 35 | 20 | 25 | 0.080 | 0.080 |
| | S2 | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 35 | 20 | 25 | 0.080 | 0.080 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 35 | 20 | 25 | 0.080 | 0.080 |
| | S3 | S3.1 | Nickel, unalloyed and alloyed | < 900 N/mm ² | 30 | 15 | 25 | 0.080 | 0.080 |
| | | S3.2 | Nickel, unalloyed and alloyed | > 900 N/mm ² | 30 | 15 | 25 | 0.080 | 0.080 |
| | S4 | S4.1 | High-temperature super alloy Ni, Co and Fe-based | | 25 | 15 | 20 | 0.080 | 0.080 |
| | S5 | S5.1 | Tungsten and molybdenum alloys | | 25 | 15 | 20 | 0.080 | 0.080 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Stock removals during reaming

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|---|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 N/mm ² |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² |
| | P4 | P4.1 Stainless steels, ferritic and martensitic | |
| | P5 | P5.1 Cast steel | |
| P6 | P6.1 Stainless cast steel, ferritic and martensitic | | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 N/mm ² |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² |
| | M2 | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² |
| | M3 | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | |
| | | N1.4 Aluminium, alloy > 12 % Si | |
| | N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² |
| | | N2.2 Copper, alloy | > 300 N/mm ² |
| | | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² |
| N4 | N4.1 Plastic, thermoplastics | | |
| | N4.2 Plastic, thermosets | | |
| | N4.3 Plastic, foams | | |
| C | C1 | C1.1 Plastic matrix, aramide fibre-reinforced (AFRP) | |
| | | C1.2 Plastic matrix (thermosetting), CFRP/GFRP | |
| | | C1.3 Plastic matrix (thermoplastic), CFRP/GFRP | |
| | C2 | C2.1 Carbon matrix, carbon fibre-reinforced (CFC) | |
| S | S1 | S1.1 Titanium, titanium alloys | < 400 N/mm ² |
| | | S2.1 Titanium, titanium alloys | < 1200 N/mm ² |
| | S2 | S2.2 Titanium, titanium alloys | > 1200 N/mm ² |
| | | S3.1 Nickel, unalloyed and alloyed | < 900 N/mm ² |
| | S3 | S3.2 Nickel, unalloyed and alloyed | > 900 N/mm ² |
| | | S4 | S4.1 High-temperature super alloy Ni, Co and Fe-based |
| S5 | S5.1 Tungsten and molybdenum alloys | | |
| H | H1 | H1.1 Hardened steel / cast steel | < 44 HRC |
| | | H1.2 Hardened steel / cast steel | < 55 HRC |
| | H2 | H2.1 Hardened steel / cast steel | < 60 HRC |
| | | H2.2 Hardened steel / cast steel | < 65 HRC |
| | | H2.3 Hardened steel / cast steel | < 68 HRC |
| | H3 | H3.1 Wear-resistant cast/chill casting, GJN | |

* MAPAL machining groups

| | Stock removal ap (mm) during reaming | | | | |
|--|--------------------------------------|--------|---------|----------|---------|
| | < Ø5mm | Ø5-8mm | Ø8-12mm | Ø12-18mm | > Ø18mm |
| | 0.100 | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.100 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.100 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.100 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.150 | 0.150 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.100 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| | 0.050 | 0.050 | 0.075 | 0.075 | 0.075 |
| | 0.050 | 0.050 | 0.075 | 0.075 | 0.075 |
| | 0.050 | 0.050 | 0.075 | 0.075 | 0.075 |
| | 0.050 | 0.050 | 0.075 | 0.075 | 0.075 |
| | 0.100 | 0.050 | 0.075 | 0.075 | 0.075 |

The specified cutting values are guide values.
 The optimum data for the respective machining task should be determined during the test or machining.

Tool features of HFS systems in detail



HFS axial clamping system

Also available for module and hollow shank taper connections



- 1 Different holder variants
e.g. cylindrical shank, HSK-A
- 2 Taper for easy, highly accurate centring
- 3 Face connection for rigidity and stability
- 4 Internal coolant supply
Exit directly at the cutting edge
- 5 Sturdy, precision clamping screw with differential thread



HFS radial clamping system

Head change is quick, easy and always in the machine

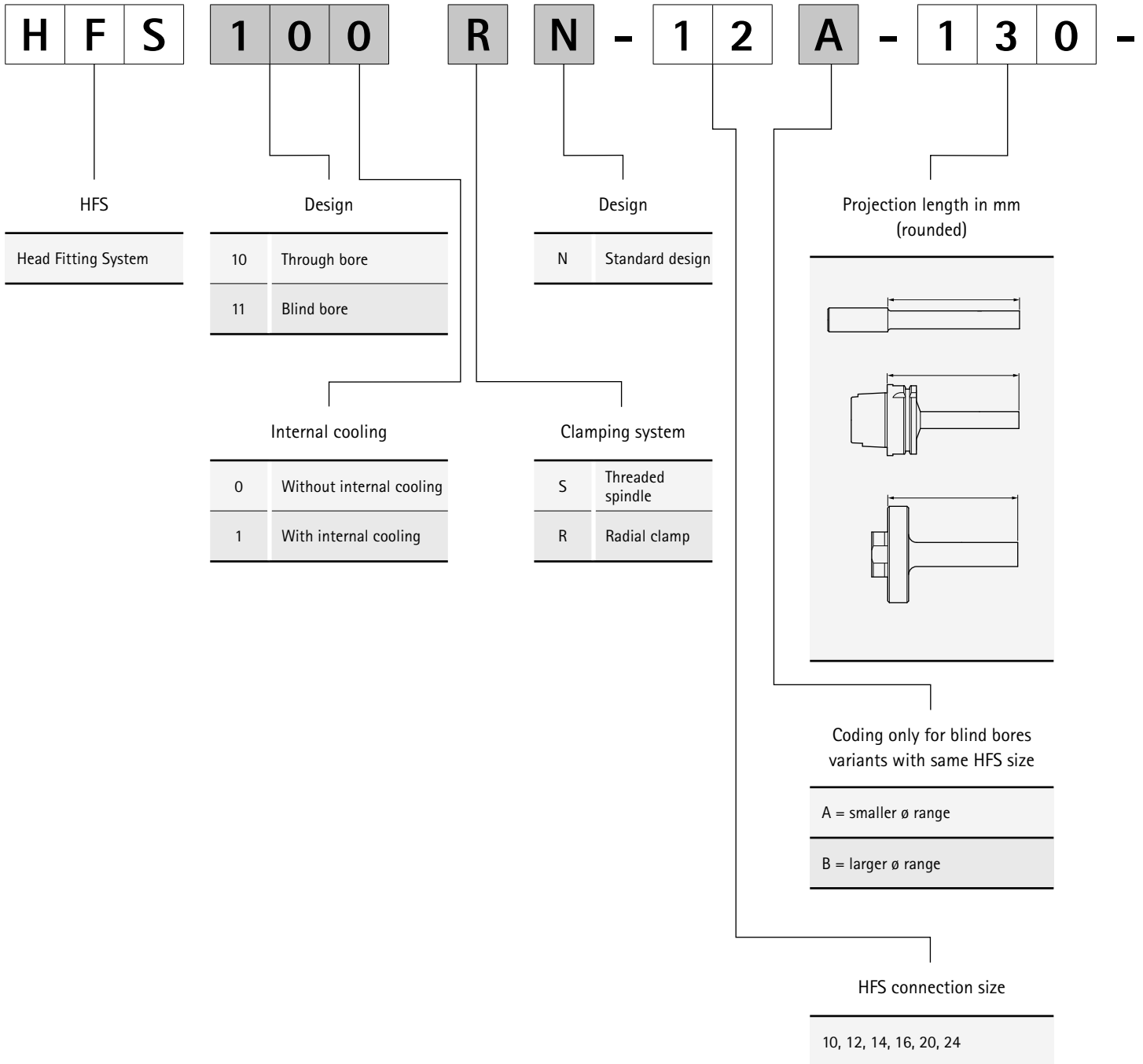


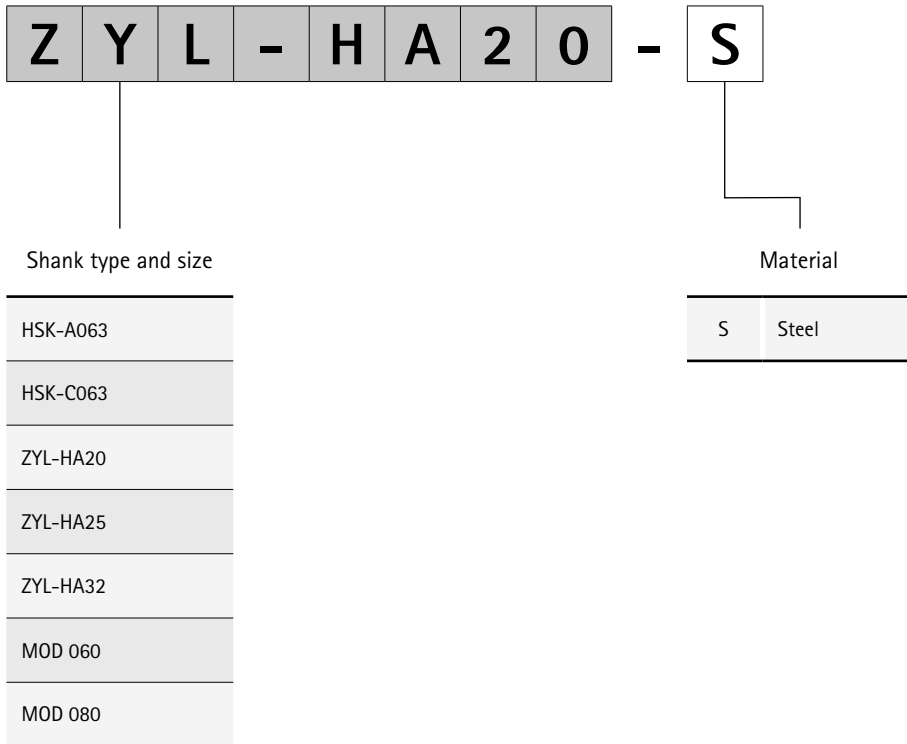
- 6 Eccentric pin
for rapid clamping and release with high clamping force
- 7 Taper for easy, highly accurate centring
- 8 Face connection for rigidity and stability
- 9 Internal coolant supply
Exit directly at the cutting edge
- 10 Precision pull stud
- 11 Different holder variants
e.g. cylindrical shank, HSK-A



Product ID codes

HFS replaceable head holders

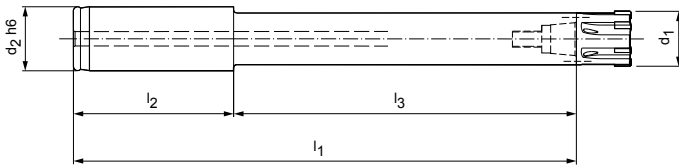




HFS replaceable head holders

With axial clamping system

Shank to MN 623, similar to DIN 1835-A



Long design with cylindrical shank

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | l_1 | l_2 | l_3 | | |
| 15,60 - 18,59 | 10 | 20 | 160 | 50 | 110 | HFS101SN-10-110-ZYL-HA20-S | 30010248 |
| 18,60 - 21,29 | 12 | 20 | 179,5 | 50 | 129,5 | HFS101SN-12-130-ZYL-HA20-S | 30010249 |
| 21,30 - 23,99 | 14 | 20 | 180,5 | 50 | 130,5 | HFS101SN-14-131-ZYL-HA20-S | 30010250 |
| 24,00 - 29,99 | 16 | 25 | 211 | 60 | 151 | HFS101SN-16-151-ZYL-HA25-S | 30010251 |
| 30,00 - 39,99 | 20 | 25 | 210 | 60 | 150 | HFS101SN-20-150-ZYL-HA25-S | 30010252 |
| 40,00 - 50,70 | 24 | 32 | 266 | 60 | 206 | HFS101SN-24-206-ZYL-HA32-S | 30010253 |
| 50,71 - 65,00 | | | | | | | |

Short design with cylindrical shank

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | l_1 | l_2 | l_3 | | |
| 15,60 - 18,59 | 10 | 20 | 99 | 50 | 49 | HFS101SN-10-049-ZYL-HA20-S | 30010256 |
| 18,60 - 21,29 | 12 | 20 | 118,5 | 50 | 68,5 | HFS101SN-12-069-ZYL-HA20-S | 30010257 |
| 21,30 - 23,99 | 14 | 20 | 119,5 | 50 | 69,5 | HFS101SN-14-070-ZYL-HA20-S | 30010258 |
| 24,00 - 29,99 | 16 | 25 | 150 | 60 | 90 | HFS101SN-16-090-ZYL-HA25-S | 30010259 |
| 30,00 - 39,99 | 20 | 25 | 149 | 60 | 89 | HFS101SN-20-089-ZYL-HA25-S | 30010260 |
| 40,00 - 50,70 | 24 | 32 | 167 | 60 | 107 | HFS101SN-24-107-ZYL-HA32-S | 30010261 |
| 50,71 - 65,00 | | | | | | | |

Ultra-short design with cylindrical shank

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | l_1 | l_2 | l_3 | | |
| 18,60 - 21,29 | 12 | 20 | 82 | 50 | 32 | HFS101SN-12-032-ZYL-HA20-S | 30078683 |

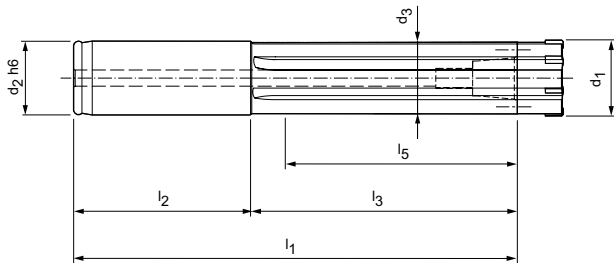
Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle and hexagonal T-handle.

HFS replaceable head holders

With axial clamping system

Shank to MN 623, similar to DIN 1835-A



Long design with cylindrical shank

| Dimensions | | | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|-------|-------|-----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | d_3 | l_1 | l_2 | l_3 | l_5 | | |
| 16,60 - 19,39 | 10 | 20 | 16 | 160 | 50 | 110 | 94 | HFS111SN-10A-110-ZYL-HA20-S | 30026380 |
| 19,40 - 21,29 | 10 | 20 | 18,6 | 160 | 50 | 110 | 94 | HFS111SN-10B-110-ZYL-HA20-S | 30026488 |
| 21,30 - 24,99 | 12 | 20 | 20,5 | 180,5 | 50 | 130,5 | 114,5 | HFS111SN-12-131-ZYL-HA20-S | 30026489 |
| 25,00 - 28,99 | 14 | 25 | 24,2 | 211,5 | 60 | 151,5 | 132,5 | HFS111SN-14-152-ZYL-HA25-S | 30026510 |
| 29,00 - 32,29 | 16 | 25 | 28,2 | 210 | 60 | 150 | 131 | HFS111SN-16A-150-ZYL-HA25-S | 30026511 |
| 32,30 - 36,99 | 16 | 25 | 31,5 | 210 | 60 | 150 | 140 | HFS111SN-16B-150-ZYL-HA25-S | 30026512 |
| 37,00 - 41,19 | 20 | 25 | 36,2 | 210 | 60 | 150 | 140 | HFS111SN-20A-150-ZYL-HA25-S | 30026513 |
| 41,20 - 44,99 | 20 | 25 | 40,2 | 210 | 60 | 150 | 140 | HFS111SN-20B-150-ZYL-HA25-S | 30026514 |
| 45,00 - 50,70 | 24 | 32 | 44 | 266 | 60 | 206 | 195 | HFS111SN-24-206-ZYL-HA32-S | 30026515 |
| 50,71 - 65,00 | | | | | | | | | |

Short design with cylindrical shank

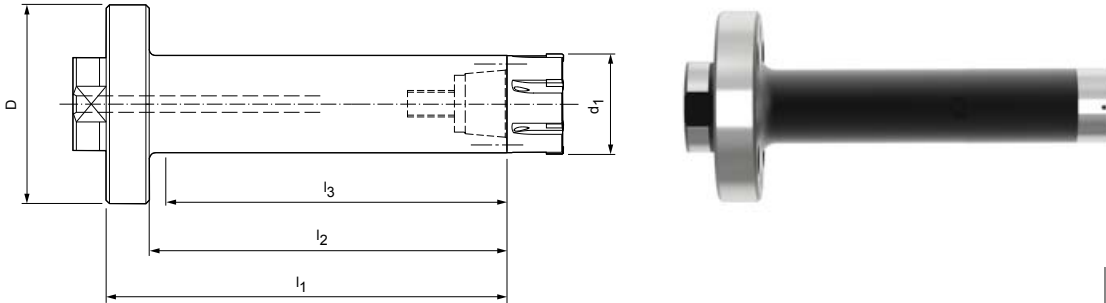
| Dimensions | | | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|-------|-------|-----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | d_3 | l_1 | l_2 | l_3 | l_5 | | |
| 16,60 - 19,39 | 10 | 20 | 16 | 99 | 50 | 49 | 33 | HFS111SN-10A-049-ZYL-HA20-S | 30026516 |
| 19,40 - 21,29 | 10 | 20 | 18,6 | 99 | 50 | 49 | 33 | HFS111SN-10B-049-ZYL-HA20-S | 30026521 |
| 21,30 - 24,99 | 12 | 20 | 20,5 | 117,5 | 50 | 67,5 | 51,5 | HFS111SN-12-068-ZYL-HA20-S | 30026522 |
| 25,00 - 28,99 | 14 | 25 | 24,2 | 150,5 | 60 | 90,5 | 71,5 | HFS111SN-14-091-ZYL-HA25-S | 30026523 |
| 29,00 - 32,29 | 16 | 25 | 28,2 | 149 | 60 | 89 | 70 | HFS111SN-16A-089-ZYL-HA25-S | 30026525 |
| 32,30 - 36,99 | 16 | 25 | 31,5 | 149 | 60 | 89 | 79 | HFS111SN-16B-089-ZYL-HA25-S | 30026526 |
| 37,00 - 41,19 | 20 | 25 | 36,2 | 149 | 60 | 89 | 79 | HFS111SN-20A-089-ZYL-HA25-S | 30026527 |
| 41,20 - 44,99 | 20 | 25 | 40,2 | 149 | 60 | 89 | 79 | HFS111SN-20B-089-ZYL-HA25-S | 30026528 |
| 45,00 - 50,70 | 24 | 32 | 44 | 167 | 60 | 107 | 96 | HFS111SN-24-107-ZYL-HA32-S | 30026529 |
| 50,71 - 65,00 | | | | | | | | | |

Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle and hexagonal T-handle.

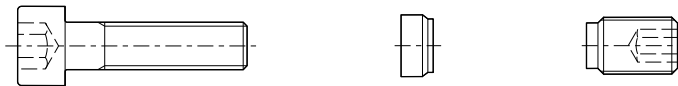
HFS replaceable head holders

With axial clamping system with radial and angular alignment
Module connection sizes to MN 5000-14



Long design with module adaptor (radial and angular alignment)

| Dimensions | | | | | | Specification | Order no. |
|----------------|----------|----|----------------|----------------|----------------|---------------------------|-----------|
| d ₁ | HFS size | D | l ₁ | l ₂ | l ₃ | | |
| 15,60 - 18,59 | 10 | 60 | 81 | 68 | 61 | HFS101SN-10-081-MOD-060-S | 30010264 |
| 18,60 - 21,29 | 12 | 60 | 100,5 | 87,5 | 80,5 | HFS101SN-12-101-MOD-060-S | 30010265 |
| 21,30 - 23,99 | 14 | 60 | 101,5 | 88,5 | 79,5 | HFS101SN-14-102-MOD-060-S | 30010266 |
| 24,00 - 29,99 | 16 | 60 | 122 | 109 | 104 | HFS101SN-16-122-MOD-060-S | 30010267 |
| 30,00 - 39,99 | 20 | 60 | 121 | 108 | 103 | HFS101SN-20-121-MOD-060-S | 30010268 |
| 40,00 - 50,70 | 24 | 60 | 133 | 120 | 116 | HFS101SN-24-133-MOD-060-S | 30010269 |
| 50,71 - 65,00 | 24 | 80 | 133 | 116 | 112 | HFS101SN-24-133-MOD-080-S | 30190195 |



List of spare parts for module adaptors

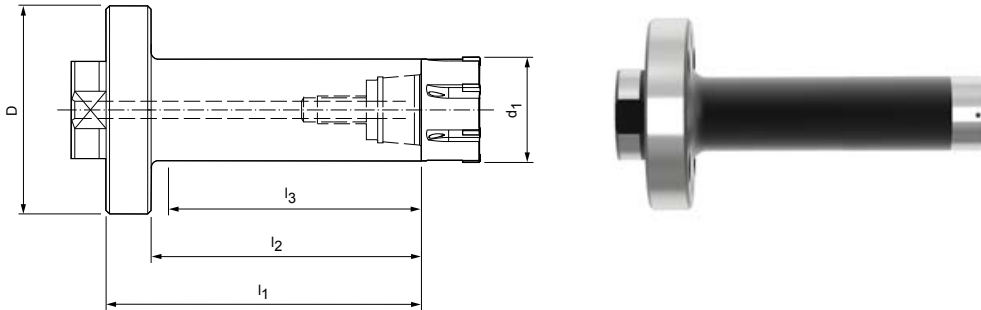
| Module size D | Cylinder screw ISO 4762 (DIN 912) | | | Thrust pad | | Threaded pin | |
|------------------|-----------------------------------|------------|-----------|------------|-----------|--------------|-----------|
| | Quantity required | Size | Order no. | Size | Order no. | Size | Order no. |
| 60 | 4 | M5x16-12,9 | 10003601 | 10,6x5 | 10040108 | M8x1x8 | 10040109 |
| 80 | 4 | M6x20-12,9 | 10003619 | 10,6x5 | 10040108 | M8x1x11,5 | 10075074 |

Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle, screwdriver with T-handle, fastening screws for the module adaptor, and parts for the angular alignment of the module adaptor.

HFS replaceable head holders

With axial clamping system with radial and angular alignment
Module connection sizes to MN 5000-14



Short design with module adaptor (radial and angular alignment)

| Dimensions | | | | | | Specification | Order no. |
|----------------|----------|----|----------------|----------------|----------------|---------------------------|-----------|
| d ₁ | HFS size | D | l ₁ | l ₂ | l ₃ | | |
| 15,60 - 18,59 | 10 | 60 | 49 | 36 | 31 | HFS101SN-10-049-MOD-060-S | 30027896 |
| 18,60 - 21,29 | 12 | 60 | 58,5 | 45,5 | 40,5 | HFS101SN-12-059-MOD-060-S | 30027897 |
| 21,30 - 23,99 | 14 | 60 | 62,5 | 49,5 | 44,5 | HFS101SN-14-063-MOD-060-S | 30027898 |
| 24,00 - 29,99 | 16 | 60 | 72 | 59 | 54 | HFS101SN-16-072-MOD-060-S | 30027899 |
| 30,00 - 39,99 | 20 | 60 | 71 | 58 | 53 | HFS101SN-20-071-MOD-060-S | 30027900 |
| 40,00 - 50,70 | 24 | 60 | 84 | 71 | 66 | HFS101SN-24-084-MOD-060-S | 30027901 |
| 50,71 - 65,00 | 24 | 80 | 84 | 67 | 62 | HFS101SN-24-084-MOD-080-S | 30152510 |



List of spare parts for module adaptors

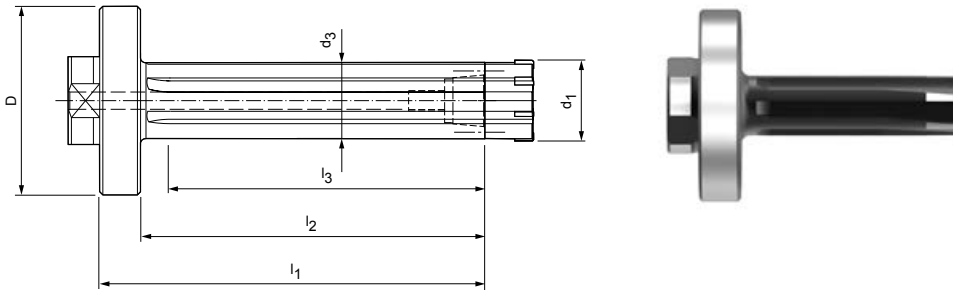
| Module size D | Cylinder screw ISO 4762 (DIN 912) | | | Thrust pad | | Threaded pin | |
|------------------|-----------------------------------|------------|-----------|------------|-----------|--------------|-----------|
| | Quantity required | Size | Order no. | Size | Order no. | Size | Order no. |
| 60 | 4 | M5x16-12,9 | 10003601 | 10,6x5 | 10040108 | M8x1x8 | 10040109 |
| 80 | 4 | M6x20-12,9 | 10003619 | 10,6x5 | 10040108 | M8x1x11,5 | 10075074 |

Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle, screwdriver with T-handle, fastening screws for the module adaptor, and parts for the angular alignment of the module adaptor.

HFS replaceable head holders

With axial clamping system with radial and angular alignment
Module connection sizes to MN 5000-14



Long design with module adaptor (radial and angular alignment)

| Dimensions | | | | | | | Specification | Order no. |
|----------------|----------|----|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | HFS size | D | d ₃ | l ₁ | l ₂ | l ₃ | | |
| 16,60 - 19,39 | 10 | 60 | 16 | 81 | 68 | 48 | HFS111SN-10A-081-MOD-060-S | 30026562 |
| 19,40 - 21,29 | 10 | 60 | 18,6 | 81 | 68 | 48 | HFS111SN-10B-081-MOD-060-S | 30026563 |
| 21,30 - 24,99 | 12 | 60 | 20,5 | 101,5 | 88,5 | 69,5 | HFS111SN-12-102-MOD-060-S | 30026564 |
| 25,00 - 28,99 | 14 | 60 | 24,2 | 122,5 | 109,5 | 90,5 | HFS111SN-14-123-MOD-060-S | 30026565 |
| 29,00 - 32,29 | 16 | 60 | 28,2 | 121 | 108 | 89 | HFS111SN-16A-121-MOD-060-S | 30026566 |
| 32,30 - 36,99 | 16 | 60 | 31,5 | 121 | 108 | 89 | HFS111SN-16B-121-MOD-060-S | 30026567 |
| 37,00 - 41,19 | 20 | 60 | 36,2 | 121 | 108 | 89 | HFS111SN-20A-121-MOD-060-S | 30026568 |
| 41,20 - 44,99 | 20 | 60 | 40,2 | 121 | 108 | 89 | HFS111SN-20B-121-MOD-060-S | 30026569 |
| 45,00 - 50,70 | 24 | 60 | 44 | 123 | 110 | 95 | HFS111SN-24-123-MOD-060-S | 30026570 |
| 50,71 - 65,00 | 24 | 80 | 44 | 133 | 116 | 110 | HFS111SN-24-133-MOD-080-S | 30193167 |



List of spare parts for module adaptors

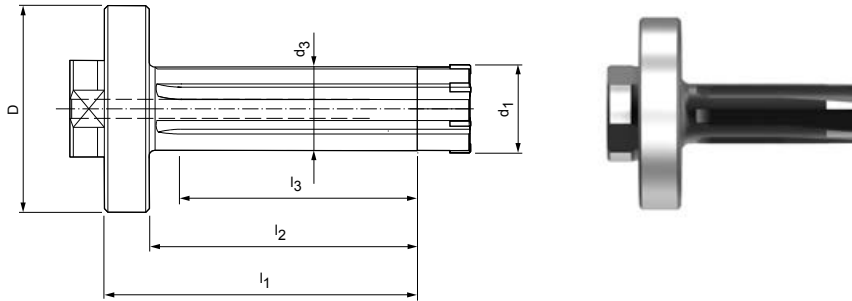
| Module size D | Cylinder screw ISO 4762 (DIN 912) | | | Thrust pad | | Threaded pin | |
|------------------|-----------------------------------|------------|-----------|------------|-----------|--------------|-----------|
| | Quantity required | Size | Order no. | Size | Order no. | Size | Order no. |
| 60 | 4 | M5x16-12,9 | 10003601 | 10,6x5 | 10040108 | M8x1x8 | 10040109 |
| 80 | 4 | M6x20-12,9 | 10003619 | 10,6x5 | 10040108 | M8x1x11,5 | 10075074 |

Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle, screwdriver with T-handle, fastening screws for the module adaptor, and parts for the angular alignment of the module adaptor.

HFS replaceable head holders

With axial clamping system with radial and angular alignment
Module connection sizes to MN 5000-14



Short design with module adaptor (radial and angular alignment)

| Dimensions | | | | | | | Specification | Order no. |
|----------------|----------|----|----------------|----------------|----------------|----------------|----------------------------|-----------|
| d ₁ | HFS size | D | d ₃ | l ₁ | l ₂ | l ₃ | | |
| 16,60 - 19,39 | 10 | 60 | 16 | 49 | 36 | 31 | HFS111SN-10A-049-MOD-060-S | 30027885 |
| 19,40 - 21,29 | 10 | 60 | 18,6 | 59 | 46 | 41 | HFS111SN-10B-059-MOD-060-S | 30027886 |
| 21,30 - 24,99 | 12 | 60 | 20,5 | 62,5 | 49,5 | 44,5 | HFS111SN-12-063-MOD-060-S | 30027887 |
| 25,00 - 28,99 | 14 | 60 | 24,2 | 72,5 | 59,5 | 54,5 | HFS111SN-14-073-MOD-060-S | 30027888 |
| 29,00 - 32,29 | 16 | 60 | 28,2 | 71 | 58 | 53 | HFS111SN-16A-071-MOD-060-S | 30027889 |
| 32,30 - 36,99 | 16 | 60 | 31,5 | 71 | 58 | 53 | HFS111SN-16B-071-MOD-060-S | 30027890 |
| 37,00 - 41,19 | 20 | 60 | 36,2 | 71 | 58 | 53 | HFS111SN-20A-071-MOD-060-S | 30027891 |
| 41,20 - 44,99 | 20 | 60 | 40,2 | 81 | 68 | 63 | HFS111SN-20B-081-MOD-060-S | 30027892 |
| 45,00 - 50,70 | 24 | 60 | 44 | 84 | 71 | 66 | HFS111SN-24-084-MOD-060-S | 30027893 |
| 50,71 - 65,00 | 24 | 80 | 44 | 84 | 67 | 64 | HFS111SN-24-084-MOD-080-S | 30193168 |



List of spare parts for module adaptors

| Module size D | Cylinder screw ISO 4762 (DIN 912) | | | Thrust pad | | Threaded pin | |
|------------------|-----------------------------------|------------|-----------|------------|-----------|--------------|-----------|
| | Quantity required | Size | Order no. | Size | Order no. | Size | Order no. |
| 60 | 4 | M5x16-12,9 | 10003601 | 10,6x5 | 10040108 | M8x1x8 | 10040109 |
| 80 | 4 | M6x20-12,9 | 10003619 | 10,6x5 | 10040108 | M8x1x11,5 | 10075074 |

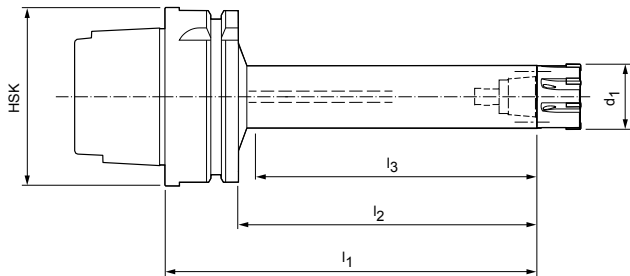
Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle, screwdriver with T-handle, fastening screws for the module adaptor, and parts for the angular alignment of the module adaptor.

HFS replaceable head holders

With axial clamping system

Shank hollow shank taper-A according to DIN 69893-1



Long design with HSK-A 63

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|-------|-------|-------|------------|----------------------------|-----------|
| d_1 | HFS size | l_1 | l_2 | l_3 | HSK-A size | | |
| 15,60 - 18,59 | 10 | 117 | 91 | 86 | 63 | HFS101SN-10-117-HSK-A063-S | 30010272 |
| 18,60 - 21,29 | 12 | 132,5 | 106,5 | 100,5 | 63 | HFS101SN-12-133-HSK-A063-S | 30010273 |
| 21,30 - 23,99 | 14 | 131,5 | 105,5 | 99,5 | 63 | HFS101SN-14-132-HSK-A063-S | 30010275 |
| 24,00 - 29,99 | 16 | 163 | 137 | 129 | 63 | HFS101SN-16-163-HSK-A063-S | 30010276 |
| 30,00 - 39,99 | 20 | 188 | 162 | 158 | 63 | HFS101SN-20-188-HSK-A063-S | 30010280 |
| 40,00 - 50,70 | 24 | 207 | 181 | 176 | 63 | HFS101SN-24-207-HSK-A063-S | 30010286 |
| 50,71 - 65,00 | | | | | | | |

Short design with HSK-A 63

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|-------|-------|-------|------------|----------------------------|-----------|
| d_1 | HFS size | l_1 | l_2 | l_3 | HSK-A size | | |
| 15,60 - 18,59 | 10 | 77 | 51 | 46 | 63 | HFS101SN-10-077-HSK-A063-S | 30010283 |
| 18,60 - 21,29 | 12 | 92,5 | 66,5 | 60,5 | 63 | HFS101SN-12-093-HSK-A063-S | 30010285 |
| 21,30 - 23,99 | 14 | 91,5 | 65,5 | 59,5 | 63 | HFS101SN-14-092-HSK-A063-S | 30010287 |
| 24,00 - 29,99 | 16 | 112 | 86 | 79 | 63 | HFS101SN-16-112-HSK-A063-S | 30010288 |
| 30,00 - 39,99 | 20 | 111 | 85 | 78 | 63 | HFS101SN-20-111-HSK-A063-S | 30010289 |
| 40,00 - 50,70 | 24 | 109 | 83 | 76 | 63 | HFS101SN-24-109-HSK-A063-S | 30010291 |
| 50,71 - 65,00 | | | | | | | |

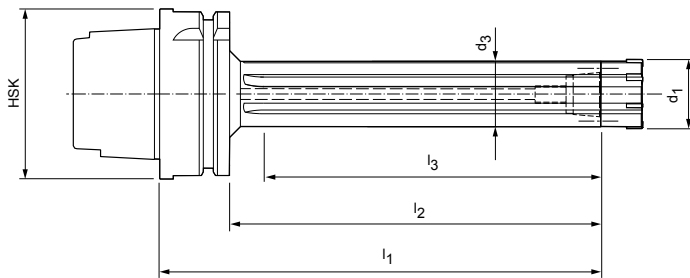
Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle and hexagonal T-handle.

HFS replaceable head holders

With axial clamping system

Shank hollow shank taper-A according to DIN 69893-1



Long design with HSK-A 63

| Dimensions | | | | | | | Specification | Order no. |
|----------------|----------|----------------|----------------|----------------|----------------|------------|-----------------------------|-----------|
| d ₁ | HFS size | d ₃ | l ₁ | l ₂ | l ₃ | HSK-A size | | |
| 16,60 - 19,39 | 10 | 16,0 | 117 | 91 | 71 | 63 | HFS111SN-10A-117-HSK-A063-S | 30026586 |
| 19,40 - 21,29 | 10 | 18,6 | 117 | 91 | 71 | 63 | HFS111SN-10B-117-HSK-A063-S | 30026587 |
| 21,30 - 24,99 | 12 | 20,5 | 131,5 | 105,5 | 86,5 | 63 | HFS111SN-12-132-HSK-A063-S | 30026588 |
| 25,00 - 28,99 | 14 | 24,2 | 163,5 | 137,5 | 118,5 | 63 | HFS111SN-14-164-HSK-A063-S | 30026589 |
| 29,00 - 32,29 | 16 | 28,2 | 188 | 162 | 143 | 63 | HFS111SN-16A-188-HSK-A063-S | 30026590 |
| 32,30 - 36,99 | 16 | 31,5 | 188 | 162 | 143 | 63 | HFS111SN-16B-188-HSK-A063-S | 30026591 |
| 37,00 - 41,19 | 20 | 36,2 | 188 | 162 | 152 | 63 | HFS111SN-20A-188-HSK-A063-S | 30026592 |
| 41,20 - 44,99 | 20 | 40,2 | 188 | 162 | 152 | 63 | HFS111SN-20B-188-HSK-A063-S | 30026593 |
| 45,00 - 50,70 | 24 | 44,0 | 233 | 207 | 197 | 63 | HFS111SN-24-233-HSK-A063-S | 30026594 |
| 50,71 - 65,00 | | | | | | | | |

Short design with HSK-A 63

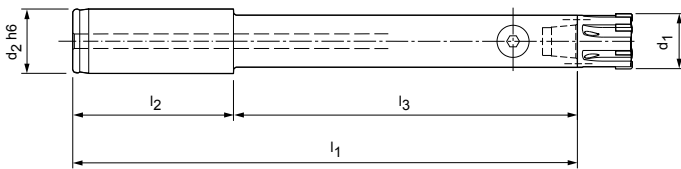
| Dimensions | | | | | | | Specification | Order no. |
|----------------|----------|----------------|----------------|----------------|----------------|------------|-----------------------------|-----------|
| d ₁ | HFS size | d ₃ | l ₁ | l ₂ | l ₃ | HSK-A size | | |
| 16,60 - 19,39 | 10 | 16,0 | 77 | 51 | 31 | 63 | HFS111SN-10A-077-HSK-A063-S | 30026574 |
| 19,40 - 21,29 | 10 | 18,6 | 77 | 51 | 31 | 63 | HFS111SN-10B-077-HSK-A063-S | 30026575 |
| 21,30 - 24,99 | 12 | 20,5 | 91,5 | 65,5 | 46,5 | 63 | HFS111SN-12-092-HSK-A063-S | 30026576 |
| 25,00 - 28,99 | 14 | 24,2 | 112,5 | 86,5 | 67,5 | 63 | HFS111SN-14-113-HSK-A063-S | 30026577 |
| 29,00 - 32,29 | 16 | 28,2 | 111 | 85 | 66 | 63 | HFS111SN-16A-111-HSK-A063-S | 30026578 |
| 32,30 - 36,99 | 16 | 31,5 | 111 | 85 | 66 | 63 | HFS111SN-16B-111-HSK-A063-S | 30026579 |
| 37,00 - 41,19 | 20 | 36,2 | 111 | 85 | 75 | 63 | HFS111SN-20A-111-HSK-A063-S | 30026580 |
| 41,20 - 44,99 | 20 | 40,2 | 111 | 85 | 75 | 63 | HFS111SN-20B-111-HSK-A063-S | 30026581 |
| 45,00 - 50,70 | 24 | 44,0 | 109 | 83 | 73 | 63 | HFS111SN-24-109-HSK-A063-S | 30026582 |
| 50,71 - 65,00 | | | | | | | | |

Dimensions in mm.

Scope of delivery: Tool holder with threaded spindle and hexagonal T-handle.

HFS replaceable head holders

With radial clamping system, shank to MN 623, similar to DIN 1835-A
For HPR replaceable head reamer HPR100, HPR110, HPR200, HPR210



Long design with cylindrical shank

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | l_1 | l_2 | l_3 | | |
| 18,60 - 21,29 | 12 | 20 | 179,5 | 50 | 129,5 | HFS101RN-12-130-ZYL-HA20-S | 30078110 |
| 21,30 - 23,99 | 14 | 20 | 180,5 | 50 | 130,5 | HFS101RN-14-131-ZYL-HA20-S | 30078115 |
| 24,00 - 29,99 | 16 | 25 | 211 | 60 | 151 | HFS101RN-16-151-ZYL-HA25-S | 30078116 |
| 30,00 - 39,99 | 20 | 25 | 210 | 60 | 150 | HFS101RN-20-150-ZYL-HA25-S | 30080112 |

Short design with cylindrical shank

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | l_1 | l_2 | l_3 | | |
| 18,60 - 21,29 | 12 | 20 | 118,5 | 50 | 68,5 | HFS101RN-12-069-ZYL-HA20-S | 30078117 |
| 21,30 - 23,99 | 14 | 20 | 119,5 | 50 | 69,5 | HFS101RN-14-070-ZYL-HA20-S | 30078118 |
| 24,00 - 29,99 | 16 | 25 | 150 | 60 | 90 | HFS101RN-16-090-ZYL-HA25-S | 30078119 |
| 30,00 - 39,99 | 20 | 25 | 149 | 60 | 89 | HFS101RN-20-089-ZYL-HA25-S | 30080151 |

Ultra-short design with cylindrical shank

| Dimensions | | | | | | Specification | Order no. |
|---------------|----------|----------|-------|-------|-------|----------------------------|-----------|
| d_1 | HFS size | d_2 h6 | l_1 | l_2 | l_3 | | |
| 18,60 - 21,29 | 12 | 20 | 85 | 50 | 35 | HFS101RN-12-035-ZYL-HA20-S | 30115560 |

Dimensions in mm.

Recommendation: To make it possible to change reamers quickly using the radial clamping system, at least 1 additional pull stud should be ordered.

Scope of delivery: Tool holder with pull stud, hexagonal T-handle and open-ended wrench for pull stud.

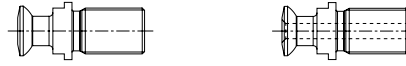


Accessories and spare parts for HFS



Threaded spindle for axial clamping system

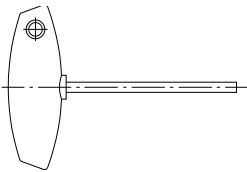
| HFS size | without coolant through-bore Threaded spindle MN 618 Order no. | with coolant through-bore Threaded spindle MN 618 Order no. |
|----------|--|---|
| 10 | 10024720 | 10025194 |
| 12 | 10024721 | 10025195 |
| 14 | 10024721 | 10025195 |
| 16 | 10024722 | 10025196 |
| 20 | 10024722 | 10025196 |
| 24 | 10024723 | 10025198 |



Pull studs for radial clamping system

| HFS size | without coolant bore Order no. | with coolant bore Order no. |
|----------|-----------------------------------|--------------------------------|
| 12 | 10059113 | 10059273 |
| 14 | 10059113 | 10059273 |
| 16 | 10059117 | 10059279 |
| 20 | 10059117 | 10059279 |

Recommendation: To make it possible to change reamers quickly using the radial clamping system, at least 1 additional pull stud should be ordered.



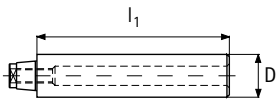
Hexagonal wrench with T-handle

| HFS size | Short design | | Long design | |
|----------|--------------|-----------|-------------|-----------|
| | Size | Order no. | Size | Order no. |
| 10 | sw2,5 x 100 | 10006233 | sw2,5 x 200 | 10032722 |
| 12 | sw3 x 100 | 10006234 | sw3 x 200 | 10025313 |
| 14 | sw3 x 100 | 10006234 | sw3 x 200 | 10025313 |
| 16 | sw4 x 100 | 10006235 | sw4 x 200 | 10018010 |
| 20 | sw4 x 100 | 10006235 | sw4 x 200 | 10018010 |
| 24 | sw5 x 100 | 10006236 | sw5 x 200 | 10013349 |



Taper wipers for HFS internal tapers

| HFS size | Order no. |
|----------|-----------|
| 10 | 10029989 |
| 12 | 10029990 |
| 14 | 10030002 |
| 16 | 10030003 |
| 20 | 10030004 |
| 24 | 10030005 |



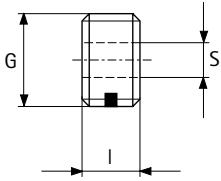
Test arbor (alignment aid)

| HFS size | l_1 | D | Order no. |
|----------|-------|------|-----------|
| 10 | 70 | 15 | 30036468 |
| 12 | 80 | 20 | 30036469 |
| 14 | 80 | 20,5 | 30036470 |
| 16 | 80 | 23,2 | 30036471 |
| 20 | 80 | 29,3 | 30036472 |
| 24 | 80 | 39 | 30036473 |

Dimensions in mm.

Design: Permissible run-out variation of the cylindrical part in relation to the HFS connection of max. 0.002 mm.

Accessories and spare parts for HSK-A 63

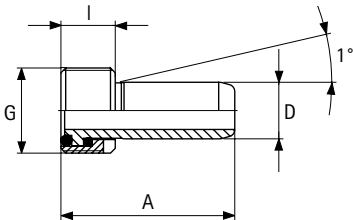


Blind screw

| HSK-A size | I | S | G | Order no. |
|------------|------|---|-------|-----------|
| 63 | 11,5 | 8 | M18x1 | 30326078 |

| HFS size | sw | Torque wrench | | | | Blades and hexagonal inserts for torque wrenches | | | |
|----------|-----|---------------|------------------------------|-------|-----------|--|---------------------|--------------|-----------|
| | | Torque | Design | Input | Order no. | l [mm] | l ₁ [mm] | Input | Order no. |
| 10 | 2.5 | 4 Nm | fixed – with blade | – | 10044842 | 175 | 70 | Blade | 10044839 |
| 12 | 3 | 6 Nm | adjustable – without element | 1/4" | 10040125 | 55 | 30 | 1/4" element | 10040122 |
| 14 | 3 | 6 Nm | adjustable – without element | 1/4" | 10040125 | 55 | 30 | 1/4" element | 10040122 |
| 16 | 4 | 15 Nm | adjustable – without element | 3/8" | 10040126 | 60 | 35 | 3/8" element | 10040123 |
| 20 | 4 | 15 Nm | adjustable – without element | 3/8" | 10040126 | 60 | 35 | 3/8" element | 10040123 |
| 24 | 5 | 20 Nm | adjustable – without element | 3/8" | 10040126 | 70 | 45 | 3/8" element | 10040124 |

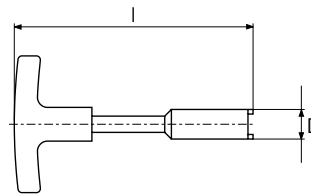
Torque wrench and hexagon inserts only from HFS size 12 or sw 3.



Coolant tube

| HSK-A size | A | I | G | D | Order no. |
|------------|------|------|-------|----|-----------|
| 63 | 36.6 | 11,5 | M18x1 | 12 | 30326006 |

Scope of delivery: Coolant tube with two O-rings and clamping nut.
 Design: Smooth angular movement 1° self-centering, axially sealed.
 Note: Designed according to DIN 69893.



Assembly tool

| HSK-A size | I | D | Order no. |
|------------|-----|----|-----------|
| 63 | 182 | 17 | 10040110 |

Use: For installation and removal of coolant tubes.

Dimensions in mm.

Use: For closing the thread bore in hollow shank taper tool shanks if no coolant tube is used.

Design: With Nylok insert for screw retention.

Workpiece material: Corrosion-resistant steel.



TOOLS WITH GUIDE PADS

Tools with guide pads

| | |
|--|-----|
| Article overview – single bladed reamers | 478 |
| Product ID codes | 480 |

WP single-bladed reamers

| | |
|---|-----|
| MN2000 | 484 |
| MN2003 | 486 |
| MN2004 | 488 |
| MN2034 | 489 |
| MN2023 | 490 |
| MN2024 | 491 |
| MN2043 | 492 |
| MN2044 | 493 |
| Indexable insert leads AS AZ DZ EK SZ | 494 |
| Cutting data | 504 |

EasyAdjust system

| | |
|--|-----|
| Product overview, handling and system overview | 514 |
| Back taper | 516 |
| Article overview | 517 |
| HX blades for EA system | 518 |
| TEC indexable inserts for EA system | 520 |
| Accessories | 522 |
| Cutting data | 524 |

External machining tools

| | |
|--|-----|
| Product overview, handling and system overview | 538 |
| TEC indexable inserts | 540 |
| Indexable inserts | 542 |
| Accessories | 544 |
| Cutting data | 546 |

Technical appendix


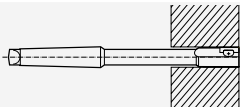


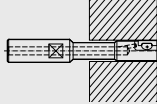

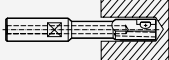

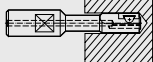


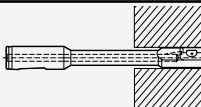



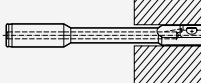



| | |
|----------------------------|-----|
| Instructions for use | 737 |
|----------------------------|-----|

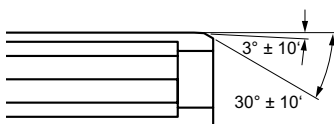
Article overview – single bladed reamers

| Machine concept | | Type of coolant supply | | Type of bore | | Number of cutting edges | Shank form |
|-----------------------|---|------------------------|---|--------------|---|-------------------------|--|
| | | | | | | | |
| Single bladed reamers | Boring machines | | ✓ | ✓ | | 1 | Morse taper shank |
| | Automated lathes (with floating holder) | ✓ | | ✓ | | 1 | Cylindrical shank with clamping surface |
| | | ✓ | | | ✓ | 1 | |
| ✓ | | | ✓ | 1 | | | |
| Single bladed reamers | Machining centres | ✓ | | ✓ | | 1 | Cylindrical shank with NC clamping surface |
| | | ✓ | | | ✓ | 1 | |
| | | ✓ | | ✓ | | 1 | Cylindrical shank smooth |
| | | ✓ | | | ✓ | 1 | |

Leads for MAPAL indexable inserts

| | | |
|--|--|---|
| | <p>AS lead Lead suitable for all materials, high surface quality even at high cutting speeds. Lead length 1.3 mm.</p> | <p>Max. cutting depth: 0.15 mm Rake angle: 0 °, 6 °, 12 °</p> |
| | <p>AZ lead For high cutting speeds; especially suitable for aluminium machining.</p> | <p>Max. cutting depth: 0.25 mm Rake angle: 0 °, 6 °, 12 °</p> |
| | <p>DZ lead Especially for short chipping materials (grey cast iron) and large cutting depths. The 15° lead angle of the finishing edge slightly increases the radial forces, making it suitable for thin-walled workpieces as well.</p> | <p>Max. cutting depth: 0.15 mm Rake angle: 0 °, 6 °, 12 °</p> |

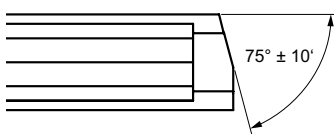
| Tool | Cutting edge | | Page | Series |
|-----------------------|---|---|------|---|
| Series | Description | | | |
| MN2000 | WP reamer  |  | 484 | MN2000 Design with MK shank  |
| MN2003 | WP reamer  |  | 486 | MN2003 Short design with internal coolant supply  |
| MN2004 | |  | 488 | MN2004 Short design  |
| MN2034 (short design) | |  | 489 | MN2034 Extra short design  |
| MN2023 | WP NC reamer  |  | 490 | MN2023 NC-form  |
| MN2024 | |  | 491 | MN2024 NC-form  |
| MN2043 | |  | 492 | MN2043 NC-form  |
| MN2044 | |  | 493 | MN2044 NC-form  |



EK lead

Only use if a small lead length of 0.6 mm is required, for all work-piece material, do not exceed max. feed rate of 0.2 mm/rev.

Max. cutting depth: 0.5 mm
Rake angle: 0 °, 6 °, 12 °



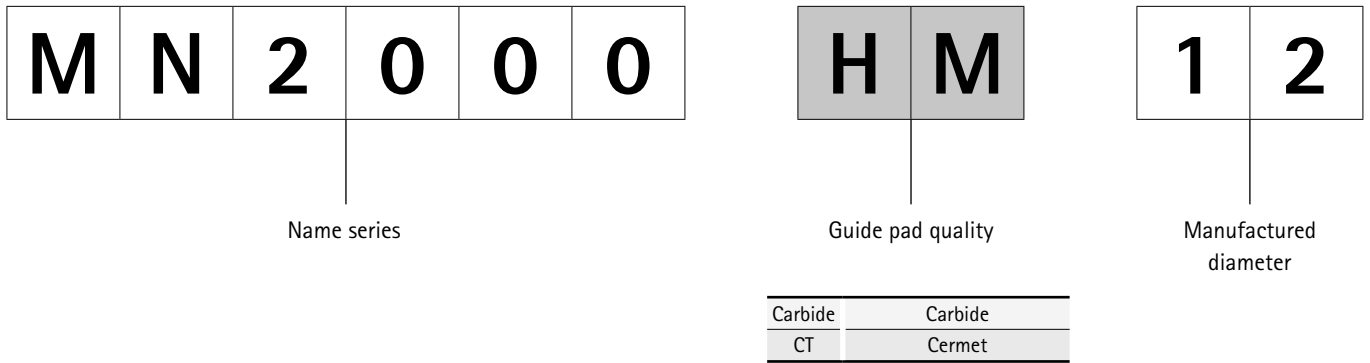
SZ lead

Especially for aluminium cast alloys, good surface at small feed rates. Gauges are met exactly. The lead angle of the main cutter of 75° reduces the radial forces, making it particularly suitable for thin-walled workpieces.

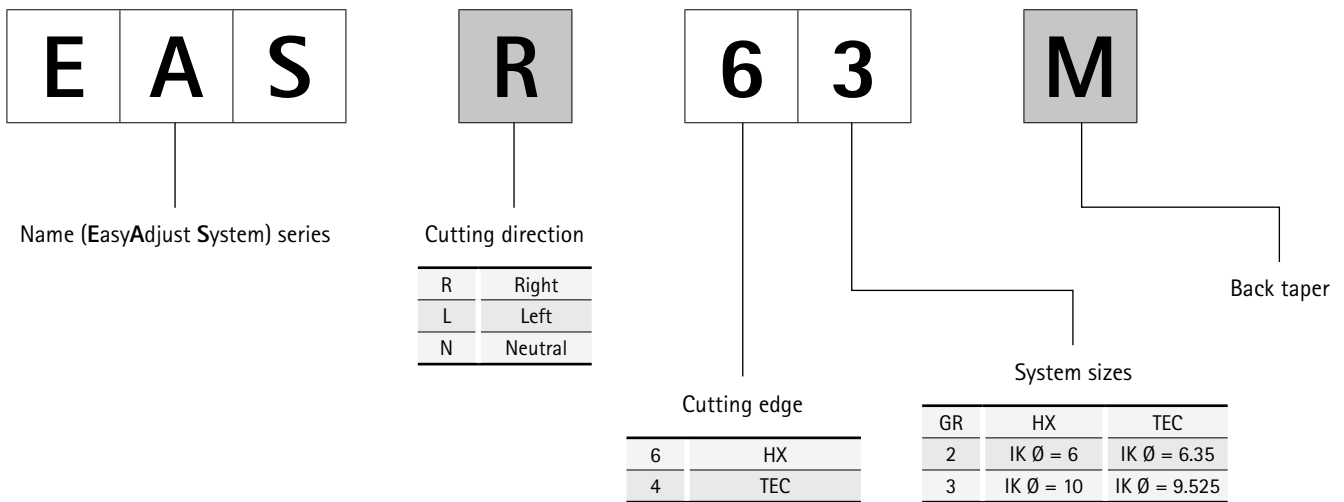
Max. cutting depth: 1.0 mm
Rake angle: 6 °, 12 °

Product ID codes

WP reamer



EasyAdjust system



| | |
|---|---|
| H | 7 |
|---|---|

IT tolerance or
dimensions

| | |
|---|---|
| A | S |
|---|---|

Lead designa-
tion

| | |
|----|---|
| AS | Application infor- mation on page 478/479 |
| AZ | |
| DZ | |
| EK | |
| SZ | |

Product ID codes

Indexable inserts



Size
81 | 90 | 91 | 92 | 93
Select the size to suit the design of the reamer. For assignment, see product tables.

Only state for designs with guiding chamfer.

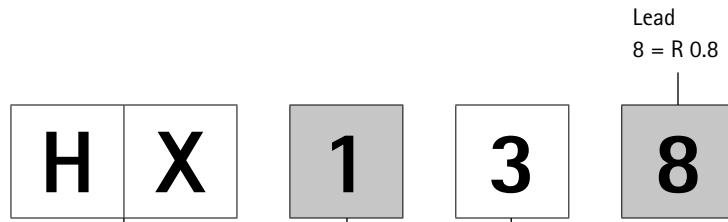


Lead form
AS = 3°/30° length 1.3 mm
AZ = 3°/75° length 1.3 mm
DZ = 15°/75° length 0.55 mm
EK = 3°/30° length 0.6 mm
SZ = 0°/75° length 0.55 mm

Cutting direction
R = right-hand cutting
L = left-hand cutting

Size of the rake angle
0 = 0°
6 = 6°
2 = 12°

HX indexable inserts



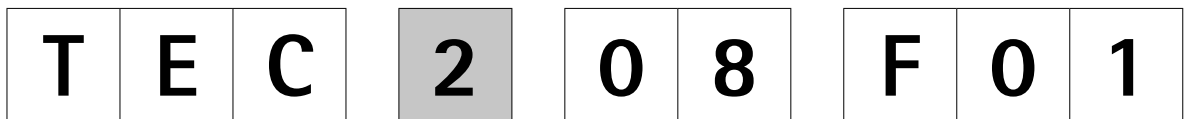
Hexagonal geometry
Hexagonal

Chip form geometry (rake angle)
1 = Hochpositiv
2 = Positiv materials

Indexable insert size
2 = incircle Ø 6 mm
3 = incircle Ø 10 mm

Lead
8 = R 0.8

TEC indexable inserts

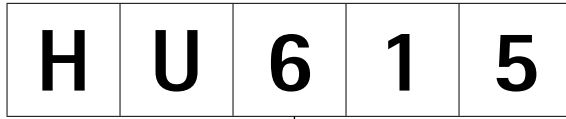


Blade form (Tetragonal)

Indexable insert size
2 = incircle Ø: 6.35
3 = incircle Ø: 9.525

Lead form
04 = R = 0.4
08 = R = 0.8
AS = 3°/30° length 1.3
EK = 3°/30° length 0.6
DZ = 15°/75° length 0.55

Cutting edge design
F01 = sharp-edged
02 = rounded
S35 = Negative chamfer and rounded



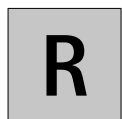
Cutting material quality
e.g.: HU = carbide, uncoated



Cutting direction
RL = right and left-hand cutting

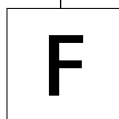


Cutting material quality
e.g.: HU = carbide, uncoated

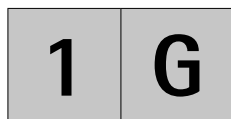


Cutting direction
R = right-hand cutting
L = left-hand cutting
N = Right-/left-hand cutting (neutral)

Optional:
Guiding chamfer



Chip groove – 1st element (position)
0 = without characteristic
1 = parallel positive



Chip groove – 2nd element (rake angle)
A = 0° N = 12°
G = 6° U = 18°
J = 8°



Only with cutting edge tipping
F = Entire rake face on one side (full chamfer)

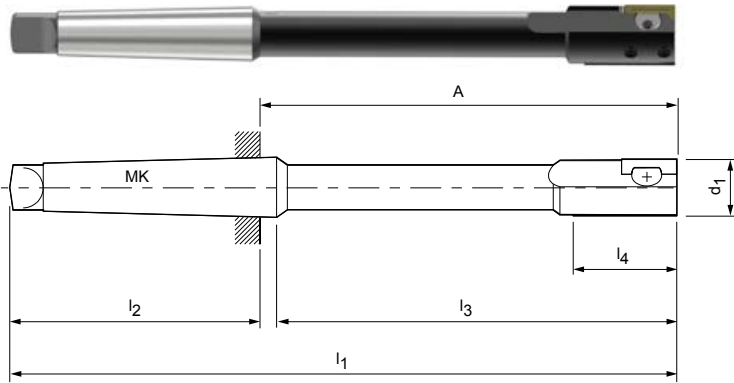


Cutting material quality (example)



WP single bladed reamer MN2000

Design with MK shank



| Dimensions | | | | | | | Indexable insert size | Accessories | | | | |
|------------------|----------------|----------------|----------------|----------------|----|-----|-----------------------|-----------------------------|----------------------|---------------------|---------------------|------------------------|
| d ₁ * | l ₁ | l ₂ | l ₃ | l ₄ | MK | A | | Clamping | | Adjusting | | |
| | | | | | | | | Torx screw/threaded spindle | | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 |
| | | | | | | | | Order no. (size) | | | | |
| 5,00 - 5,29 | 126** | 62 | 60,5 | 15 | 1 | 64 | (SP) 81 | Torx screw | 10036776 (M1,6x3,9) | 30026285 (GR - 1YN) | 10036736 (M2x1,8) | 30026239 (GR - 06) |
| 5,30 - 5,49 | 126** | 62 | 60,5 | 15 | 1 | 64 | (SP) 81 | | 10036778 (M1,6x4,4) | 30026285 (GR - 1YN) | 10036737 (M2x2) | 30026239 (GR - 06) |
| 5,50 - 6,19 | 126** | 62 | 60,5 | 15 | 1 | 64 | (SP) 81 | | 10036780 (M2x4) | 30026286 (GR - 1X) | 10036737 (M2x2) | 30026260 (GR - 07) |
| 6,20 - 6,90 | 126** | 62 | 60,5 | 15 | 1 | 64 | (SP) 81 | | 10036781 (M2x5) | 30026286 (GR - 1X) | 10036738 (M2x2,5) | 30026260 (GR - 07) |
| 6,91 - 7,49 | 136** | 62 | 70,5 | 15 | 1 | 74 | 90 | | 10036783 (M2,5x4,8) | 30026287 (GR - 1W) | 10036730 (M2,5x2,2) | 30026261 (GR - 08) |
| 7,50 - 7,79 | 136** | 62 | 70,5 | 15 | 1 | 74 | 90 | | 10036784 (M2,5x5,2) | 30026287 (GR - 1W) | 10036731 (M2,5x2,5) | 30026262 (GR - 09) |
| 7,80 - 7,99 | 155 | 62 | 89,5 | 30 | 1 | 93 | 90 | | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036743 (M3x2,5) | 30026238 (GR - 0) |
| 8,00 - 8,79 | 155 | 62 | 89,5 | 30 | 1 | 93 | 90 | | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036743 (M3x2,5) | 30026238 (GR - 0) |
| 8,80 - 9,29 | 160 | 62 | 94,5 | 30 | 1 | 98 | 90 | | 10036722 (M3LH/RHx6) | 30026289 (GR - 0N) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 9,30 - 9,79 | 170 | 62 | 104,5 | 30 | 1 | 108 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036744 (M3x3) | 30026238 (GR - 0) | |
| 9,80 - 11,29 | 170 | 62 | 104,5 | 30 | 1 | 108 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036744 (M3x3) | 30026263 (GR - 1) | |
| 11,30 - 11,79 | 170 | 62 | 104,5 | 30 | 1 | 108 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) | |
| 11,80 - 12,29 | 170 | 62 | 104,5 | 30 | 1 | 108 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) | |
| 12,30 - 13,29 | 180 | 62 | 114,5 | 30 | 1 | 118 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036752 (M4x4) | 30026266 (GR - 2) | |
| 13,30 - 14,29 | 180 | 62 | 114,5 | 30 | 1 | 118 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) | |
| 14,30 - 15,29 | 180 | 62 | 114,5 | 30 | 1 | 118 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) | |
| 15,30 - 16,29 | 200 | 75 | 120 | 30 | 2 | 125 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) | |
| 16,30 - 18,29 | 210 | 75 | 130 | 30 | 2 | 135 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) | |
| 18,30 - 20,29 | 220 | 75 | 140 | 30 | 2 | 145 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) | |

Ordering example (see P. 480): MN2000 HM 11.8 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

SP = indexable blade, not reversible.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

** With 2.5 mm long centring pin for d₁ smaller than 7.8 mm.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

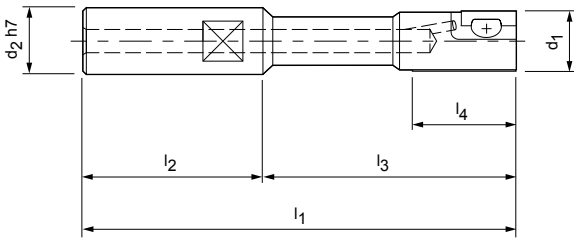
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

WP single bladed reamer MN2003

Short design with internal cooling



| Dimensions | | | | | | | Accessories | | | | |
|------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------|-----------------------------|----------------------|---------------------|------------------------|--------------------|
| d ₁ * | d ₂ H7 | l ₁ | l ₂ | l ₃ | l ₄ | Indexable insert size | Clamping | | Adjusting | | |
| | | | | | | | Torx screw/threaded spindle | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 | |
| | | | | | | | Order no. (size) | | | | |
| 5,00 - 5,29 | 10 | 90** | 30 | 60 | 15 | (SP) 81 | Torx screw | 10036776 (M1,6x3,9) | 30026285 (GR - 1YN) | 10036736 (M2x1,8) | 30026239 (GR - 06) |
| 5,30 - 5,49 | 10 | 90** | 30 | 60 | 15 | (SP) 81 | | 10036778 (M1,6x4,4) | 30026285 (GR - 1YN) | 10036737 (M2x2) | 30026239 (GR - 06) |
| 5,50 - 6,19 | 10 | 90** | 30 | 60 | 15 | (SP) 81 | | 10036780 (M2x4) | 30026286 (GR - 1X) | 10036737 (M2x2) | 30026260 (GR - 07) |
| 6,20 - 6,90 | 10 | 90** | 30 | 60 | 15 | (SP) 81 | | 10036781 (M2x5) | 30026286 (GR - 1X) | 10036738 (M2x2,5) | 30026260 (GR - 07) |
| 6,91 - 7,49 | 10 | 100** | 30 | 70 | 15 | 90 | | 10036783 (M2,5x4,8) | 30026287 (GR - 1W) | 10036730 (M2,5x2,2) | 30026261 (GR - 08) |
| 7,50 - 7,79 | 10 | 100** | 30 | 70 | 15 | 90 | | 10036784 (M2,5x5,2) | 30026287 (GR - 1W) | 10036731 (M2,5x2,5) | 30026262 (GR - 09) |
| 7,80 - 8,29 | 16 | 120 | 45 | 75 | 30 | 90 | | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036743 (M3x2,5) | 30026238 (GR - 0) |
| 8,30 - 8,79 | 16 | 120 | 45 | 75 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036744 (M3x3) | 30026238 (GR - 0) | |
| 8,80 - 9,29 | 16 | 120 | 45 | 75 | 30 | 90 | 10036722 (M3LH/RHx6) | 30026289 (GR - 0N) | 10036744 (M3x3) | 30026238 (GR - 0) | |
| 9,30 - 9,79 | 16 | 120 | 45 | 75 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036744 (M3x3) | 30026238 (GR - 0) | |
| 9,80 - 11,29 | 16 | 120 | 45 | 75 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036744 (M3x3) | 30026263 (GR - 1) | |
| 11,30 - 11,79 | 16 | 120 | 45 | 75 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) | |
| 11,80 - 12,29 | 16 | 120 | 45 | 75 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) | |
| 12,30 - 13,29 | 16 | 120 | 45 | 75 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036752 (M4x4) | 30026266 (GR - 2) | |
| 13,30 - 14,29 | 16 | 120 | 45 | 75 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) | |
| 14,30 - 18,29 | 20 | 130 | 55 | 75 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) | |
| 18,30 - 19,79 | 20 | 130 | 55 | 75 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036764 (M6x15) | 30026279 (GR - 4) | |
| 19,80 - 20,29 | 20 | 150 | 55 | 95 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036764 (M6x15) | 30026279 (GR - 4) | |

WP single bladed reamer MN 2003

| Dimensions | | | | | | Indexable insert size | Accessories | | | | |
|------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------------|-----------------------------|-----------------------------|------------------------|---------------------------|----------------------|
| d ₁ * | d ₂ H7 | l ₁ | l ₂ | l ₃ | l ₄ | | Clamping | | Adjusting | | |
| | | | | | | | Torx screw/threaded spindle | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 | |
| | | | | | | | Order no. (size) | | | | |
| 20,30 – 26,29 | 20 | 150 | 55 | 95 | 30 | 92 | MN 618 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR – 2N) | 10036755 (M4x8) | 30026266 (GR – 2) |
| 26,30 – 30,29 | 25 | 160 | 65 | 95 | 30 | 92 | MN 618 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR – 2N) | 10036755 (M4x8) | 30026266 (GR – 2) |

Ordering example (see P. 480):

MN2003 HM 20.99 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

SP = indexable blade, not reversible.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

** With 2.5 mm long centring pin for d₁ smaller than 7.8 mm.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

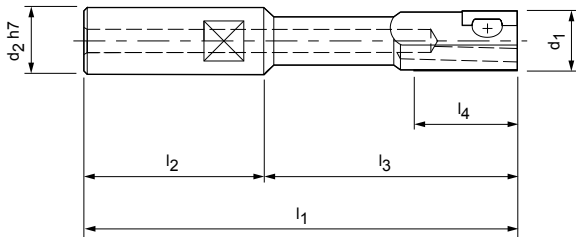
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

WP single bladed reamer MN2004

Short design



| Dimensions | | | | | | | Accessories | | | | |
|------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------|-----------------------------|--------------------------|---------------------|------------------------|--------------------|
| d ₁ * | d ₂ H7 | l ₁ | l ₂ | l ₃ | l ₄ | Indexable insert size | Clamping | | Adjusting | | |
| | | | | | | | Torx screw/threaded spindle | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 | |
| | | | | | | | Order no. (size) | | | | |
| 5,90 - 6,29 | 10 | 90** | 30 | 60 | 15 | (SP) 81 | Torx screw | 10036776 (M1,6x3,9) | 30026285 (GR - 1YN) | 10036737 (M2x2) | 30026239 (GR - 06) |
| 6,30 - 6,90 | 10 | 90** | 30 | 60 | 15 | (SP) 81 | | 10036778 (M1,6x4,4) | 30026285 (GR - 1YN) | 10036738 (M2x2,5) | 30026239 (GR - 06) |
| 6,91 - 7,29 | 10 | 100** | 30 | 70 | 15 | (SP) 81 | | 10036778 (M1,6x4,4) | 30026285 (GR - 1YN) | 10036738 (M2x2,5) | 30026239 (GR - 06) |
| 7,30 - 7,79 | 10 | 100** | 30 | 70 | 15 | (SP) 81 | | 10036781 (M2x5) | 30026286 (GR - 1X) | 10036739 (M2x3) | 30026260 (GR - 07) |
| 7,80 - 8,29 | 16 | 120** | 45 | 75 | 15 | (SP) 81 | | 10036781 (M2x5) | 30026286 (GR - 1X) | 10036739 (M2x3) | 30026260 (GR - 07) |
| 8,30 - 9,79 | 16 | 120 | 45 | 75 | 15 | 90 | | 10036784 (M2,5x5,2) | 30026287 (GR - 1W) | 10036732 (M2,5x3) | 30026262 (GR - 09) |
| 9,80 - 10,29 | 16 | 120 | 45 | 75 | 15 | 90 | | 10036784 (M2,5x5,2) | 30026287 (GR - 1W) | 10036733 (M2,5x4) | 30026262 (GR - 09) |
| 10,30 - 11,29 | 16 | 120 | 45 | 75 | 30 | 90 | Threaded spindle MN 618 | 10036722 (M3LH/RHx6) | 30026289 (GR - 0N) | 10036744 (M3x3) | 30026263 (GR - 1) |
| 11,30 - 12,29 | 16 | 120 | 45 | 75 | 30 | 90 | | 10036722 (M3LH/RHx6) | 30026289 (GR - 0N) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 12,30 - 14,29 | 16 | 120 | 45 | 75 | 30 | 91 | | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 14,30 - 16,29 | 20 | 130 | 55 | 75 | 30 | 91 | | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036747 (M3x6) | 30026263 (GR - 1) |
| 16,30 - 17,29 | 20 | 130 | 55 | 75 | 30 | 92 | | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 17,30 - 19,79 | 20 | 130 | 55 | 75 | 30 | 92 | | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036754 (M4x6) | 30026266 (GR - 2) |
| 19,80 - 26,29 | 20 | 150 | 55 | 95 | 30 | 92 | | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) |
| 26,30 - 30,29 | 25 | 160 | 65 | 95 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) | |

Ordering example (see P. 480):
MN2004 HM 20.99 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

** With 1 mm long centring pin for d₁ smaller than 8.3 mm.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

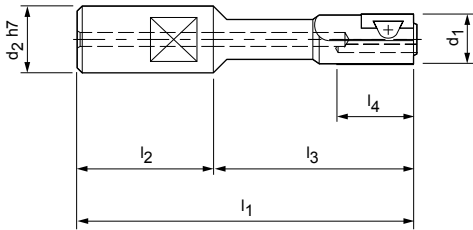
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

WP single bladed reamer MN2034

Ultra-short design



| Dimensions | | | | | | | Accessories | | | | |
|------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------|-----------------------------|--------------------------|---------------------|------------------------|--------------------|
| d ₁ * | d ₂ H7 | l ₁ | l ₂ | l ₃ | l ₄ | Indexable insert size | Clamping | | Adjusting | | |
| | | | | | | | Torx screw/threaded spindle | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 | |
| | | | | | | | Order no. (size) | | | | |
| 5,90 - 6,29 | 16 | 85** | 27 | 58 | 15 | (SP) 81 | Torx screw | 10036776 (M1,6x3,9) | 30026285 (GR - 1YN) | 10036737 (M2x2) | 30026239 (GR - 06) |
| 6,30 - 7,29 | 16 | 85** | 27 | 58 | 15 | (SP) 81 | | 10036778 (M1,6x4,4) | 30026285 (GR - 1YN) | 10036738 (M2x2,5) | 30026239 (GR - 06) |
| 7,30 - 8,29 | 16 | 85** | 27 | 58 | 15 | (SP) 81 | | 10036781 (M2x5) | 30026286 (GR - 1X) | 10036739 (M2x3) | 30026260 (GR - 07) |
| 8,30 - 9,79 | 16 | 85 | 27 | 58 | 15 | 90 | | 10036784 (M2,5x5,2) | 30026287 (GR - 1W) | 10036732 (M2,5x3) | 30026262 (GR - 09) |
| 9,80 - 10,29 | 16 | 85 | 27 | 58 | 15 | 90 | | 10036784 (M2,5x5,2) | 30026287 (GR - 1W) | 10036733 (M2,5x4) | 30026262 (GR - 09) |
| 10,30 - 11,29 | 16 | 85 | 27 | 58 | 30 | 90 | Threaded spindle MN 618 | 10036722 (M3LH/RHx6) | 30026289 (GR - 0N) | 10036744 (M3x3) | 30026263 (GR - 1) |
| 11,30 - 12,29 | 16 | 85 | 27 | 58 | 30 | 90 | | 10036722 (M3LH/RHx6) | 30026289 (GR - 0N) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 12,30 - 14,29 | 16 | 85 | 27 | 58 | 30 | 91 | | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 14,30 - 16,29 | 16 | 85 | 27 | 58 | 30 | 91 | | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036747 (M3x6) | 30026263 (GR - 1) |
| 16,30 - 17,29 | 16 | 85 | 27 | 58 | 30 | 92 | | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 17,30 - 19,79 | 16 | 85 | 27 | 58 | 30 | 92 | | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036754 (M4x6) | 30026266 (GR - 2) |
| 19,80 - 20,29 | 16 | 85 | 27 | 58 | 30 | 92 | | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) |
| 20,30 - 30,29 | 20 | 90 | 30 | 60 | 30 | 92 | | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) |

Ordering example (see P. 480):

MN2034 HM 20.99 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

SP = indexable blade, not reversible.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

** With 1 mm long centring pin for d₁ smaller than 8.3 mm.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

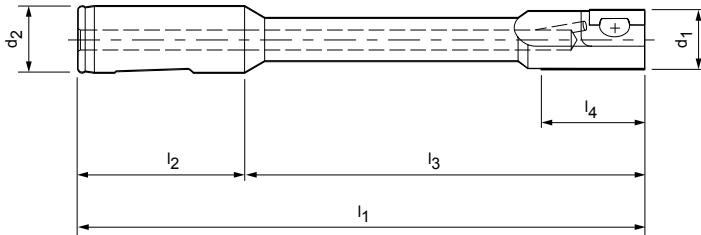
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

WP single bladed reamer MN2023

NC design



| Dimensions | | | | | | | Accessories | | | |
|------------------|-------------------------|----------------|----------------|----------------|----------------|-----------------------|----------------------------|--------------------|---------------------|------------------------|
| d ₁ * | d ₂ (-0.003) | l ₁ | l ₂ | l ₃ | l ₄ | Indexable insert size | Clamping | | Adjusting | |
| | | | | | | | Threaded spindle MN 618 | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 |
| Order no. (size) | | | | | | | | | | |
| 7,80 - 8,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036743 (M3x2,5) | 30026238 (GR - 0) |
| 8,30 - 8,79 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 8,80 - 9,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026289 (GR - 0N) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 9,30 - 11,29 | 16 | 133 | 48 | 85 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036744 (M3x3) | 30026263 (GR - 1) |
| 11,30 - 11,79 | 16 | 133 | 48 | 85 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) |
| 11,80 - 12,29 | 16 | 168 | 48 | 120 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) |
| 12,30 - 13,29 | 16 | 168 | 48 | 120 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036752 (M4x4) | 30026266 (GR - 2) |
| 13,30 - 14,29 | 16 | 168 | 48 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 14,30 - 15,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 15,80 - 17,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 17,80 - 18,29 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 18,30 - 19,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036754 (M4x6) | 30026266 (GR - 2) |
| 19,80 - 24,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) |
| 24,80 - 29,29 | 20 | 170 | 50 | 120 | 30 | 93 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036761 (M6x10) | 30026279 (GR - 4) |
| 28,80 - 30,79 | 20 | 170 | 50 | 120 | 30 | 93 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036762 (M6x12) | 30026279 (GR - 4) |

Ordering example (see P. 480):

MN2023 HM 20.99 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

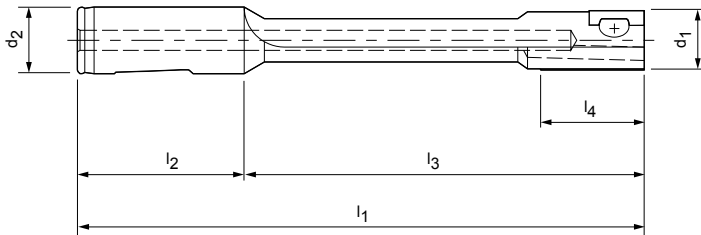
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

WP single bladed reamer MN2024

NC design



| Dimensions | | | | | | | Accessories | | | |
|------------------|-------------------------|----------------|----------------|----------------|----------------|-----------------------|--------------------------|--------------------|---------------------|------------------------|
| d ₁ * | d ₂ (-0.003) | l ₁ | l ₂ | l ₃ | l ₄ | Indexable insert size | Clamping | | Adjusting | |
| | | | | | | | Threaded spindle MN 618 | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 |
| Order no. (size) | | | | | | | | | | |
| 7,80 - 8,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026291 (GR - OZ) | 10036743 (M3x2,5) | 30026238 (GR - 0) |
| 8,30 - 8,79 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026291 (GR - OZ) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 8,80 - 9,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026291 (GR - OZ) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 9,30 - 11,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036722 (M3LH/RHx6) | 30026289 (GR - ON) | 10036744 (M3x3) | 30026263 (GR - 1) |
| 11,30 - 11,79 | 16 | 133 | 48 | 85 | 30 | 90 | 10036722 (M3LH/RHx6) | 30026289 (GR - ON) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 11,80 - 12,29 | 16 | 168 | 48 | 120 | 30 | 90 | 10036722 (M3LH/RHx6) | 30026289 (GR - ON) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 12,30 - 14,29 | 16 | 168 | 48 | 120 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 14,30 - 16,29 | 20 | 170 | 50 | 120 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036747 (M3x6) | 30026263 (GR - 1) |
| 16,30 - 17,29 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 17,30 - 19,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036754 (M4x6) | 30026266 (GR - 2) |
| 19,80 - 20,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) |

Ordering example (see P. 480):

MN2024 HM 11.99 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

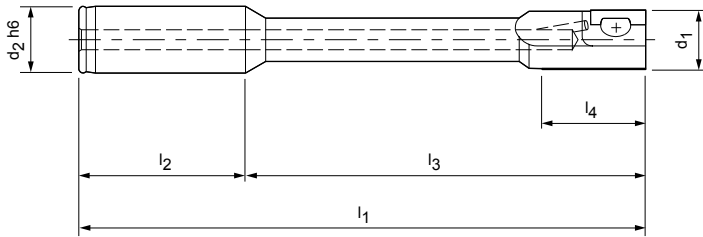
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

WP single bladed reamer MN2043

NC design



| Dimensions | | | | | | | Accessories | | | |
|------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------|----------------------------|--------------------|---------------------|------------------------|
| d ₁ * | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Indexable insert size | Clamping | | Adjusting | |
| | | | | | | | Threaded spindle MN 618 | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 |
| | | | | | | | Order no. (size) | | | |
| 7,80 - 8,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036743 (M3x2,5) | 30026238 (GR - 0) |
| 8,30 - 8,79 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026288 (GR - 0F) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 8,80 - 9,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026289 (GR - 0N) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 9,30 - 11,29 | 16 | 133 | 48 | 85 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036744 (M3x3) | 30026263 (GR - 1) |
| 11,30 - 11,79 | 16 | 133 | 48 | 85 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) |
| 11,80 - 12,29 | 16 | 168 | 48 | 120 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036751 (M4x3) | 30026266 (GR - 2) |
| 12,30 - 13,29 | 16 | 168 | 48 | 120 | 30 | 92 | 10036724 (M4x0,5LH/RHx6,5) | 30026294 (GR - 2F) | 10036752 (M4x4) | 30026266 (GR - 2) |
| 13,30 - 14,29 | 16 | 168 | 48 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 14,30 - 15,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 15,80 - 17,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 17,80 - 18,29 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 18,30 - 19,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036754 (M4x6) | 30026266 (GR - 2) |
| 19,80 - 24,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) |
| 24,80 - 28,79 | 20 | 170 | 50 | 120 | 30 | 93 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036761 (M6x10) | 30026279 (GR - 4) |
| 28,80 - 31,79 | 20 | 170 | 50 | 120 | 30 | 93 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036762 (M6x12) | 30026279 (GR - 4) |
| 31,80 - 37,79 | 20 | 170 | 50 | 120 | 30 | 93 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036764 (M6x15) | 30026279 (GR - 4) |
| 37,80 - 40,29 | 25 | 176 | 56 | 120 | 30 | 93 | 10036725 (M4x0,5LH/RHx9) | 30026298 (GR - 3N) | 10036764 (M6x15) | 30026279 (GR - 4) |

Ordering example (see P. 480):

MN2043 HM 20.99 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

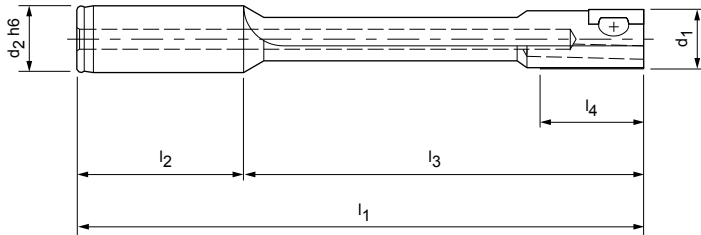
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

WP single bladed reamer MN2044

NC design



| Dimensions | | | | | | | Accessories | | | |
|------------------|-------------------|----------------|----------------|----------------|----------------|-----------------------|--------------------------|--------------------|---------------------|------------------------|
| d ₁ * | d ₂ h6 | l ₁ | l ₂ | l ₃ | l ₄ | Indexable insert size | Clamping | | Adjusting | |
| | | | | | | | Threaded spindle MN 618 | Clamping plate | Threaded pin MN 620 | Adjusting wedge MN 619 |
| Order no. (size) | | | | | | | | | | |
| 7,80 - 8,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026291 (GR - OZ) | 10036743 (M3x2,5) | 30026238 (GR - 0) |
| 8,30 - 8,79 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026291 (GR - OZ) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 8,80 - 9,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036711 (M3LH/RHx5) | 30026291 (GR - OZ) | 10036744 (M3x3) | 30026238 (GR - 0) |
| 9,30 - 11,29 | 16 | 133 | 48 | 85 | 30 | 90 | 10036722 (M3LH/RHx6) | 30026289 (GR - ON) | 10036744 (M3x3) | 30026263 (GR - 1) |
| 11,30 - 11,79 | 16 | 133 | 48 | 85 | 30 | 90 | 10036722 (M3LH/RHx6) | 30026289 (GR - ON) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 11,80 - 12,29 | 16 | 168 | 48 | 120 | 30 | 90 | 10036722 (M3LH/RHx6) | 30026289 (GR - ON) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 12,30 - 14,29 | 16 | 168 | 48 | 120 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036745 (M3x4) | 30026263 (GR - 1) |
| 14,30 - 16,29 | 20 | 170 | 50 | 120 | 30 | 91 | 10036722 (M3LH/RHx6) | 30026292 (GR - 1N) | 10036747 (M3x6) | 30026263 (GR - 1) |
| 16,30 - 17,29 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036753 (M4x5) | 30026266 (GR - 2) |
| 17,30 - 19,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036754 (M4x6) | 30026266 (GR - 2) |
| 19,80 - 20,79 | 20 | 170 | 50 | 120 | 30 | 92 | 10036725 (M4x0,5LH/RHx9) | 30026296 (GR - 2N) | 10036755 (M4x8) | 30026266 (GR - 2) |

Ordering example (see P. 480):

MN2044 HM 11.99 H7 AS

Dimensions in mm.

Additional dimensions available upon request.

Adjustment instructions and installation of the accessories, see technical appendix.

* Values indicate the sizes for different diameters (adjustable only within a tolerance field), not the adjustment range.

Please indicate the desired guide pad quality (HM, cermet) when ordering.

Unless otherwise indicated, the guide pads will be delivered in HM quality.

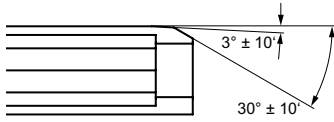
Tools with guide pads in PCD quality available from Ø 8 mm.

Price and delivery time for tools with guide pads in PCD quality on request.

For suitable indexable insert, see chapter indexable inserts from page 494.

Indexable inserts with AS lead

For tools with guide pads



AS lead

Lead suitable for all materials, high surface quality even at high cutting speeds. Lead length 1.3 mm.

Max. cutting depth: 0.25 mm

Rake angle: 0°, 6°, 12°

| Cutting material | Carbide | | | | | | | | |
|-----------------------|-----------|-----------|---------|-------|-------|-------|-----------|-------|-----------|
| | MMG* | P | | | | M | K | N | |
| Cutting material type | 1.1 - 1.2 | 2 - 3 5 | P4 P6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 |
| | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | |

| Rake angle | Size | Specification | Order no. | | | | | | | |
|------------|------|---------------|-----------|--|--|--|--|--|--|--|
| negative | 81 | SP-AS81R0-... | | | | | | | | |
| | 90 | SP-AS90R0-... | | | | | | | | |
| | 91 | SP-AS91R0-... | | | | | | | | |
| | 92 | SP-AS92R0-... | | | | | | | | |
| | 93 | SP-AS93R0-... | | | | | | | | |

| | | | | | | | | | | |
|---------|----|---------------|--|--|--|--|--|--|--|--|
| neutral | 81 | SP-AS81R0-... | | | | | | | | |
| | 90 | WP-AS90R0-... | | | | | | | | |
| | 91 | WP-AS91R0-... | | | | | | | | |
| | 92 | WP-AS92R0-... | | | | | | | | |
| | 93 | WP-AS93R0-... | | | | | | | | |

| | | | | | | | | | | |
|----------|----|---------------|----------|----------|----------|----------|--|--|--|----------|
| positive | 81 | SP-AS81R6-... | 30669442 | 30669444 | 31100866 | 31100866 | | | | 30669441 |
| | 90 | WP-AS90R6-... | 30668837 | 30668839 | 31100867 | 31100867 | | | | 30668836 |
| | 91 | WP-AS91R6-... | 30668848 | 30668850 | 31080268 | 31080268 | | | | 30668847 |
| | 92 | WP-AS92R6-... | 30668858 | 30668859 | 30912087 | 30912087 | | | | 30668857 |
| | 93 | WP-AS93R6-... | 30668869 | 30250310 | 30915826 | 30915826 | | | | 30668868 |

| | | | | | | | | | | |
|-----------------|----|---------------|--|--|--|--|--|--|----------|----------|
| highly positive | 81 | SP-AS81R2-... | | | | | | | 30685605 | 30669437 |
| | 90 | WP-AS90R2-... | | | | | | | 30685606 | 30668833 |
| | 91 | WP-AS91R2-... | | | | | | | 30685607 | 30668844 |
| | 92 | WP-AS92R2-... | | | | | | | 30685608 | 30668853 |
| | 93 | WP-AS93R2-... | | | | | | | 30685609 | 30668863 |

* MAPAL machining groups.



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|-----------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|----------|--|-----------|
| K | | H |
| 1.1 | | 1.1 - 1.2 |
| FU485 | | FU801 |

| Order no. | | |
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| | 30668853 | |
| | 30668863 | |

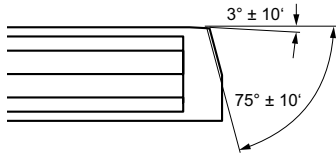
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Indexable inserts with AZ lead

For tools with guide pads



AZ lead

For high cutting speeds; especially suitable for aluminium machining.

Max. cutting depth: 0.5 mm
Rake angle: 0°, 6°, 12°

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| | MMG* | P | | | M | K | | N | | |
| Cutting material type | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | | |

| Rake angle | Size | Specification | Order no. | | | | | | | |
|------------|------|---------------|-----------|--|--|--|--|--|--|--|
| negative | 81 | SP-AZ81R0-... | | | | | | | | |
| | 90 | SP-AZ90R0-... | | | | | | | | |
| | 91 | SP-AZ91R0-... | | | | | | | | |
| | 92 | SP-AZ92R0-... | | | | | | | | |
| | 93 | SP-AZ93R0-... | | | | | | | | |

| | | | | | | | | | | |
|---------|----|---------------|--|--|--|--|--|----------|--|--|
| neutral | 81 | SP-AZ81R0-... | | | | | | 30685624 | | |
| | 90 | WP-AZ90R0-... | | | | | | 30670062 | | |
| | 91 | WP-AZ91R0-... | | | | | | 30685625 | | |
| | 92 | WP-AZ92R0-... | | | | | | 30664930 | | |
| | 93 | WP-AZ93R0-... | | | | | | 30664935 | | |

| | | | | | | | | | | |
|----------|----|---------------|--|--|--|--|--|----------|----------|--|
| positive | 81 | SP-AZ81R6-... | | | | | | 30914241 | 30668876 | |
| | 90 | WP-AZ90R6-... | | | | | | 30914251 | 30668884 | |
| | 91 | WP-AZ91R6-... | | | | | | 30914261 | 30668891 | |
| | 92 | WP-AZ92R6-... | | | | | | 30914275 | 30668903 | |
| | 93 | WP-AZ93R6-... | | | | | | 30914304 | 30668912 | |

| | | | | | | | | | | |
|-----------------|----|---------------|--|--|--|--|--|----------|----------|--|
| highly positive | 81 | SP-AZ81R2-... | | | | | | 30685639 | 30668875 | |
| | 90 | WP-AZ90R2-... | | | | | | 30685640 | 30668881 | |
| | 91 | WP-AZ91R2-... | | | | | | 30685641 | 30668889 | |
| | 92 | WP-AZ92R2-... | | | | | | 30685642 | 30668899 | |
| | 93 | WP-AZ93R2-... | | | | | | 30685643 | 30668908 | |

* MAPAL machining groups.



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|-----------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|----------|--|-----------|
| K | | H |
| 1.1 | | 1.1 - 1.2 |
| FU485 | | FU801 |

| Order no. | | |
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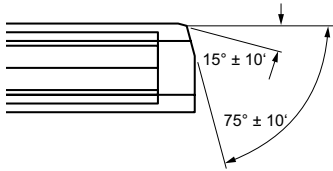
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Indexable inserts with DZ lead

For tools with guide pads

DZ lead



Especially for short chipping materials (grey cast iron) and large cutting depths. The 15° lead angle of the finishing edge slightly increases the radial forces, making it suitable for thin-walled workpieces as well

Max. cutting depth: 0.15 mm
Rake angle: 0° , 6° , 12°

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| MMG* | P | | | M | | K | | N | | |
| Cutting material type | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | | |

| Rake angle | Size | Specification | Order no. | | | | | | | |
|------------|------|---------------|-----------|--|--|--|--|--|--|--|
| negative | 81 | SP-DZ81R0-... | | | | | | | | |
| | 90 | SP-DZ90R0-... | | | | | | | | |
| | 91 | SP-DZ91R0-... | | | | | | | | |
| | 92 | SP-DZ92R0-... | | | | | | | | |
| | 93 | SP-DZ93R0-... | | | | | | | | |

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|---------|----|---------------|--|--|--|--|--|----------|--|--|--|
| neutral | 81 | SP-DZ81R0-... | | | | | | 30685653 | | | |
| | 90 | WP-DZ90R0-... | | | | | | 30685654 | | | |
| | 91 | WP-DZ91R0-... | | | | | | 30664932 | | | |
| | 92 | WP-DZ92R0-... | | | | | | 30685655 | | | |
| | 93 | WP-DZ93R0-... | | | | | | 30667699 | | | |

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|----------|----|---------------|----------|----------|----------|----------|--|----------|--|----------|
| positive | 81 | SP-DZ81R6-... | 30668927 | 30668928 | 31090592 | 31090592 | | 30914351 | | 30668926 |
| | 90 | WP-DZ90R6-... | 30668936 | 30668785 | 31034657 | 31034657 | | 30914370 | | 30668935 |
| | 91 | WP-DZ91R6-... | 30668949 | 30668950 | 31028496 | 31028496 | | 30914400 | | 30668947 |
| | 92 | WP-DZ92R6-... | 30668960 | 30668961 | 31100878 | 31100878 | | 30914435 | | 30668959 |
| | 93 | WP-DZ93R6-... | 30668969 | 30668970 | 31069730 | 31069730 | | 30914474 | | 30668968 |

| | | | | | | | | | | | |
|-----------------|----|---------------|--|--|--|--|--|--|----------|--|----------|
| highly positive | 81 | SP-DZ81R2-... | | | | | | | 30685663 | | 30668923 |
| | 90 | WP-DZ90R2-... | | | | | | | 30685664 | | 30668933 |
| | 91 | WP-DZ91R2-... | | | | | | | 30685665 | | 30668942 |
| | 92 | WP-DZ92R2-... | | | | | | | 30685666 | | 30668956 |
| | 93 | WP-DZ93R2-... | | | | | | | 30685667 | | 30668965 |

* MAPAL machining groups.



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|-----------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|----------|----------|-----------|
| K | H | |
| 1.1 | | 1.1 - 1.2 |
| FU485 | | FU801 |

| Order no. | | |
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| | 30314334 |
| | 30895254 |

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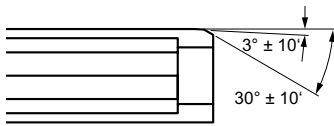
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For cutting data recommendations, see end of chapter.
Cutting edges with special lead available on request.

Indexable inserts with EK lead

For tools with guide pads



EK lead (face cutting design)

Only use if a small lead length of 0.6 mm is required, for all work-piece material, do not exceed max. feed rate of 0.2 mm/rev.

Max. cutting depth: 0.15 mm

Rake angle: 0°, 6°, 12°

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| MMG* | P | | | M | | K | | N | | |
| | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| Cutting material type | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | | |

| Rake angle | Size | Specification | Order no. | | | | | | | |
|------------|------|----------------|-----------|--|--|--|--|--|--|--|
| negative | 181 | SP-EK181R0-... | | | | | | | | |
| | 150 | SP-EK150R0-... | | | | | | | | |
| | 151 | SP-EK151R0-... | | | | | | | | |
| | 152 | SP-EK152R0-... | | | | | | | | |
| | 153 | SP-EK153R0-... | | | | | | | | |

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|---------|-----|----------------|--|--|--|--|--|--|--|--|
| neutral | 181 | SP-EK181R0-... | | | | | | | | |
| | 150 | WP-EK150R0-... | | | | | | | | |
| | 151 | WP-EK151R0-... | | | | | | | | |
| | 152 | WP-EK152R0-... | | | | | | | | |
| | 153 | WP-EK153R0-... | | | | | | | | |

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|----------|-----|----------------|----------|----------|----------|----------|--|--|--|----------|
| positive | 181 | SP-EK181R6-... | 30681706 | 30681707 | 31100872 | 31100872 | | | | 30681705 |
| | 150 | WP-EK150R6-... | 30668978 | 30668979 | 31100873 | 31100873 | | | | 30668977 |
| | 151 | WP-EK151R6-... | 30668987 | 30389077 | 31049120 | 31049120 | | | | 30668986 |
| | 152 | WP-EK152R6-... | 30668999 | 30669000 | 30990556 | 30990556 | | | | 30668998 |
| | 153 | WP-EK153R6-... | 30669009 | 30669010 | 31100874 | 31100874 | | | | 30669008 |

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|-----------------|-----|----------------|--|--|--|--|--|--|----------|----------|
| highly positive | 181 | SP-EK181R2-... | | | | | | | 30685689 | 30681702 |
| | 150 | WP-EK150R2-... | | | | | | | 30685690 | 30668974 |
| | 151 | WP-EK151R2-... | | | | | | | 30685691 | 30668983 |
| | 152 | WP-EK152R2-... | | | | | | | 30685692 | 30668993 |
| | 153 | WP-EK153R2-... | | | | | | | 30685693 | 30669006 |

* MAPAL machining groups.



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|------------------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |
| Preferred series | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|-----------|--|----------|
| K | | H |
| 1.1 - 1.2 | | |
| FU485 | | FU801 |

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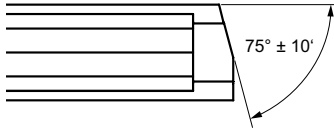
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For cutting data recommendations, see end of chapter.
Cutting edges with special lead available on request.

Indexable inserts with SZ lead

For tools with guide pads



SZ lead

Especially for aluminium cast alloys, very good surface at small feed rates. Gauges are met exactly. The lead angle of the main cutter of 75° reduces the radial forces, making it particularly suitable for thin-walled workpieces.

Max. cutting depth: 1.00 mm
 Rake angle: 6°, 12°

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| MMG* | P | | | M | | K | | N | | |
| Cutting material type | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | | |

| Rake angle | Size | Specification | Order no. | | | | | | | |
|------------|------|---------------|-----------|--|--|--|--|--|--|--|
| negative | 81 | SP-SZ81R0-... | | | | | | | | |
| | 90 | SP-SZ90R0-... | | | | | | | | |
| | 91 | SP-SZ91R0-... | | | | | | | | |
| | 92 | SP-SZ92R0-... | | | | | | | | |
| | 93 | SP-SZ93R0-... | | | | | | | | |

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|---------|----|---------------|--|--|--|--|--|--|--|--|
| neutral | 81 | SP-SZ81R0-... | | | | | | | | |
| | 90 | WP-SZ90R0-... | | | | | | | | |
| | 91 | WP-SZ91R0-... | | | | | | | | |
| | 92 | WP-SZ92R0-... | | | | | | | | |
| | 93 | WP-SZ93R0-... | | | | | | | | |

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|----------|----|---------------|--|--|--|--|--|--|----------|----------|
| positive | 81 | SP-SZ81R6-... | | | | | | | 31306727 | 30669514 |
| | 90 | WP-SZ90R6-... | | | | | | | 31306729 | 30669523 |
| | 91 | WP-SZ91R6-... | | | | | | | 31306730 | 30669534 |
| | 92 | WP-SZ92R6-... | | | | | | | 30690795 | 30669541 |
| | 93 | WP-SZ93R6-... | | | | | | | 31306732 | 30669549 |

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|-----------------|----|---------------|--|--|--|--|--|--|--|----------|
| highly positive | 81 | SP-SZ81R2-... | | | | | | | | 30669511 |
| | 90 | WP-SZ90R2-... | | | | | | | | 30669520 |
| | 91 | WP-SZ91R2-... | | | | | | | | 30669531 |
| | 92 | WP-SZ92R2-... | | | | | | | | 30669538 |
| | 93 | WP-SZ93R2-... | | | | | | | | 30669546 |

* MAPAL machining groups.



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|------------------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |
| Preferred series | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|-----------|--|----------|
| K | | H |
| 1.1 - 1.2 | | |
| FU485 | | FU801 |

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Cutting data recommendation for indexable inserts with AS lead

Feed and cutting speed

AS-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

AS-HP425

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------------------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P2 P3 P5 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5.1 | Cast steel | | 80 | 40 | 0.150 |

AS-HP016

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------------------|--|---|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P4 P6 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 |
| | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 0.120 |
| M M1 M2 M3 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 | |

AS-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 | Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

AS-HU615

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|------|-----------------------------------|---|--------------------------|------------------|---------------------------------------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

AS-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

AS-PU620

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | 230 | 115 | 0.150 | |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | 230 | 115 | 0.150 | |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | 230 | 115 | 0.150 | |
| | | N1.4 | Aluminium, alloy > 12 % Si | 230 | 115 | 0.150 | |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with AZ lead

Feed and cutting speed

AZ-HC418

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-----------------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K K1 K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 110 | 55 | 0.150 |

AZ-HP426

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|----------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 110 | 55 | 0.150 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 100 | 50 | 0.150 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 40 | 0.150 |
| K K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 80 | 40 | 0.150 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 80 | 40 | 0.150 |

AZ-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|----------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

AZ-HU615

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-----------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 110 | 55 | 0.150 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 110 | 55 | 0.150 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 110 | 55 | 0.150 |

AZ-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 115 | 0.150 | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 115 | 0.150 | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 115 | 0.150 | |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 115 | 0.150 | |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

AZ-FU485

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|---|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 160 | 80 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

DZ-HP425

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------------------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P2 P3 P5 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5.1 | Cast steel | | 80 | 40 | 0.150 |

DZ-HP016

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------------------|--|---|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P4 P6 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 |
| | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 0.120 |
| M M1 M2 M3 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 | |

DZ-HC418

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| K K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 100 | 50 | 0.150 |

DZ-HP426

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 100 | 50 | 0.150 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 45 | 0.150 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 40 | 0.150 |
| K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 70 | 35 | 0.150 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 70 | 35 | 0.150 |

DZ-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

DZ-HU615

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S S1 S2 | S1.1 Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | S2.1 Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | S2.2 Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

DZ-HP016

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-----------|-----------------------------|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| H H1 H1.1 | Hardened steel / cast steel | 45-55 HRC | 30 | 15 | 0.12 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with DZ lead

Feed and cutting speed

DZ-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 80 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

DZ-PU620

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 230 | 150 | 0.15 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | | 230 | 150 | 0.15 |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | | 230 | 150 | 0.15 |
| | | N1.4 | Aluminium, alloy > 12 % Si | | 230 | 150 | 0.15 |
| | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.15 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.15 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.15 |

DZ-FU485

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 150 | 75 | 0.150 |

DZ-FU801

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| H | H1 | H1.1 | Hardened steel / cast steel | 45-55 HRC | 60 | 30 | 0.100 |
| | | H1.2 | Hardened steel / cast steel | 55-64 HRC | 50 | 25 | 0.080 |

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

EK-HP425

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------------------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P2 P3 P5 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5.1 | Cast steel | | 80 | 40 | 0.150 |

EK-HP016

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------------------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P4 P6 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 |
| | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 0.120 |
| M M1 M2 M3 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |

EK-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|---|--------------------------|------------------|---------------------------------------|------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.15 |
| | N1.2 | Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.15 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for indexable inserts with EK lead

Feed and cutting speed

EK-HU615

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

EK-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

EK-PU620

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 230 | 115 | 0.150 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | | 230 | 115 | 0.150 |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | | 230 | 115 | 0.150 |
| | | N1.4 | Aluminium, alloy > 12 % Si | | 230 | 115 | 0.150 |
| | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

Cutting data recommendation for indexable inserts with SZ lead

Feed and cutting speed

SZ-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.120 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.120 |

SZ-HU615

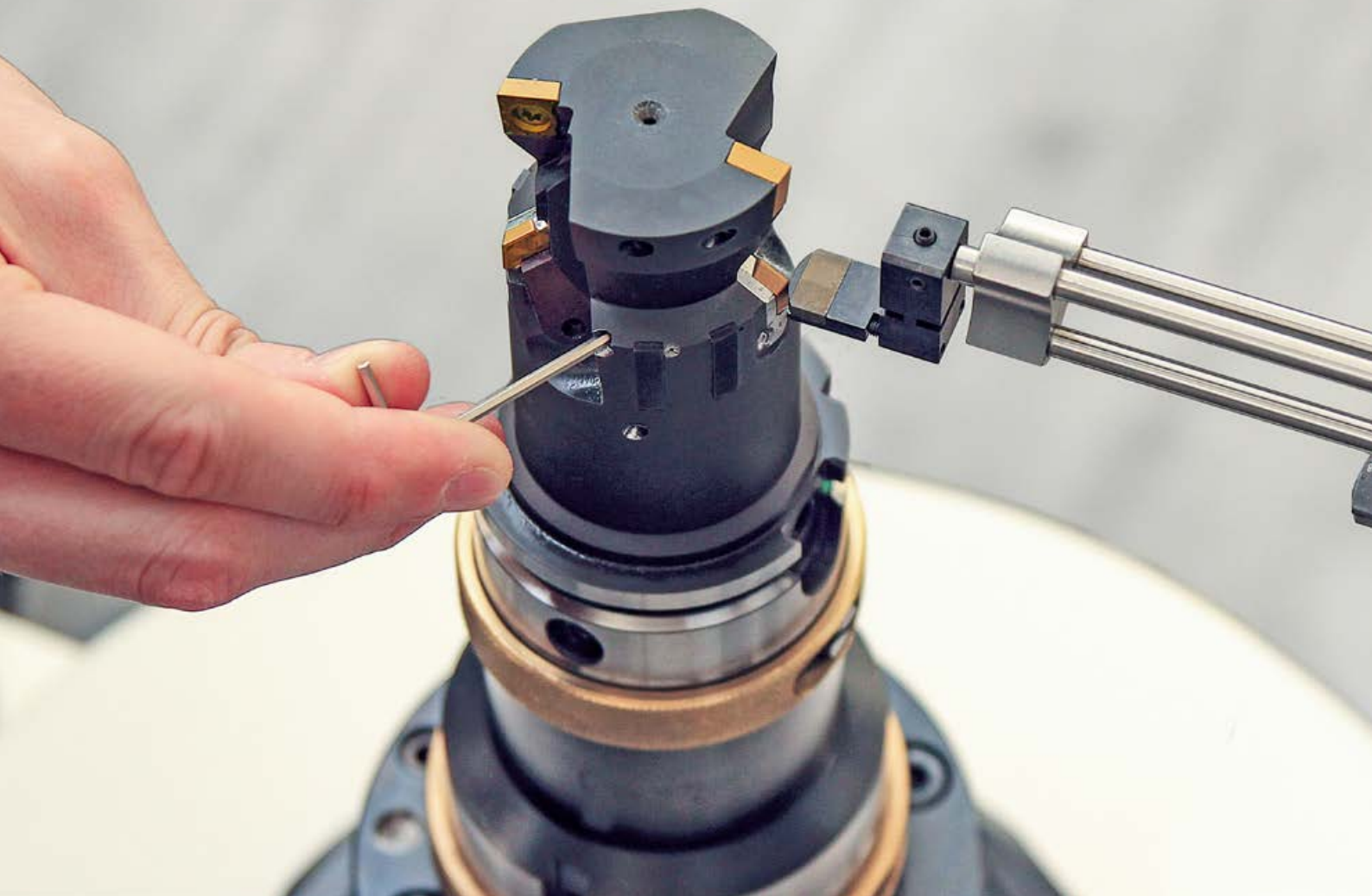
| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.120 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.120 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.120 |

SZ-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 230 | 115 | 0.120 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 230 | 115 | 0.120 |
| | N1.3 Aluminium, alloy > 7-12 % Si | | 230 | 115 | 0.120 |
| | N1.4 Aluminium, alloy > 12 % Si | | 230 | 115 | 0.120 |
| N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.120 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.120 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.120 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



EasyAdjust System

Quick and easy tool adjustment

When developing the EasyAdjust system, the goal was to drastically reduce the setting effort for tools with guide pad technology.

At the heart of the EasyAdjust system is an innovative cassette that holds the six- or four-edged inserts securely and free from unwanted movement. The back taper of the minor cutting edge is already integrated into this cassette, thus eliminated the need for this adjustment.

Due to the exact guidance of the cassette on a precision guide pin, the back taper remains unchanged even during diameter settings. The appropriate cassettes are available for different back tapers. They can be selected and used

depending on the application – independent of the indexable insert and tool.

Significant benefits for economic efficiency

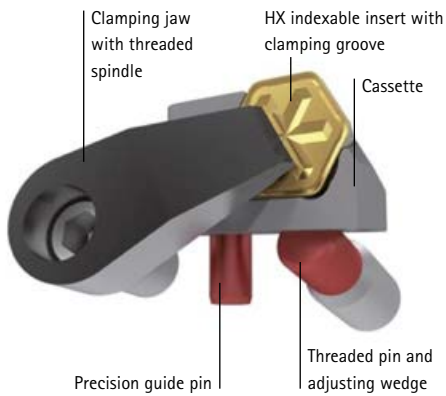
This system boosts economic efficiency while on the job: The HX indexable inserts with six useful cutting edges can be inserted quickly and precisely in cassettes with different back tapers. Tools with the EasyAdjust system only have to be adjusted in diameter. That increases process reliability while changing blades. An effect that becomes all the more significant, the more blades are installed in a tool. The setting effort per blade is reduced to a fraction by this new development.

ADVANTAGES

- Setting effort drastically reduced
- Tools only have to be adjusted in diameter
- Cost-effectiveness, handling and process reliability significantly increased compared to tools with guide pads without the EA system
- Precision remains high

System overview

The EasyAdjust system in detail

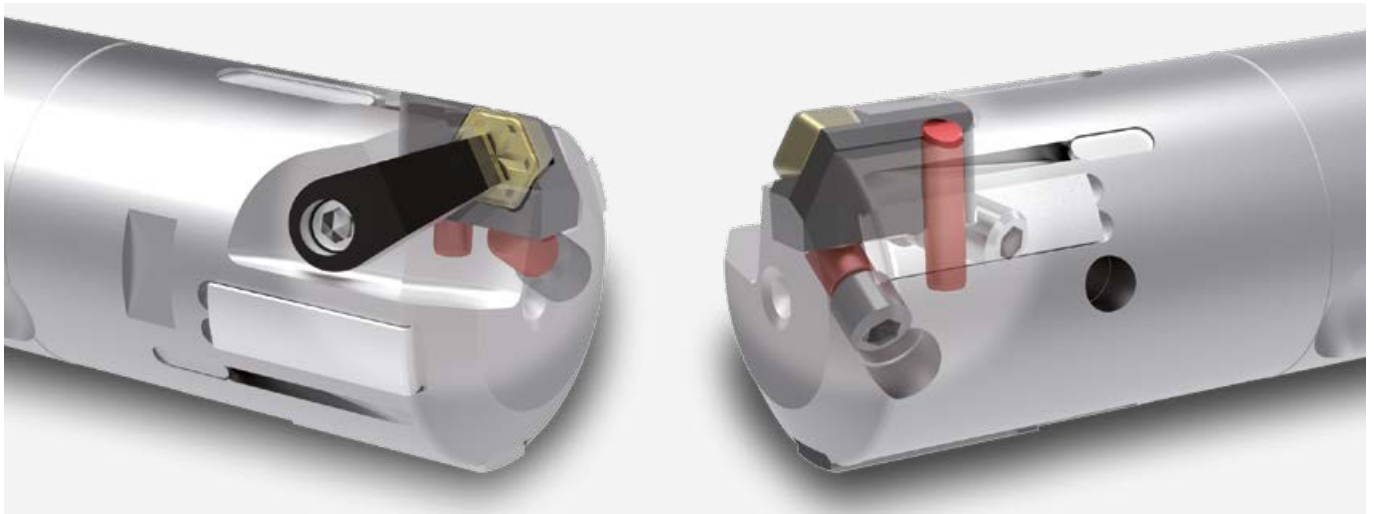


The EasyAdjust system consists of a precision cassette which holds the indexable insert. A precision guide pin guides the cassette during adjustment. A clamping groove together with the clamping jaw form a stable, force-closure system, which ensures that the indexable insert is securely retained.

Tools with the EasyAdjust system only have to be adjusted in diameter. The back taper is already integrated into the cassette and remains unchanged if the diameter is altered.

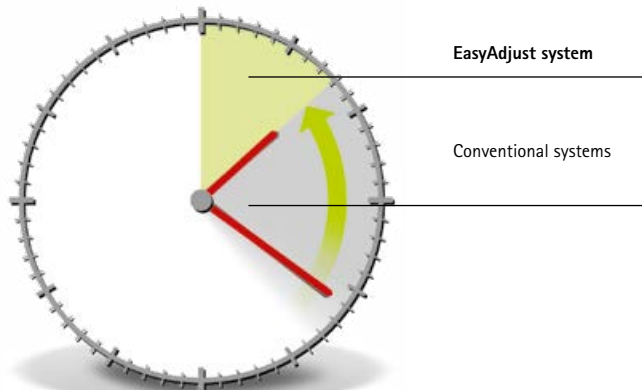
ADVANTAGES

- Setting time reduced by half
- Exact guidance of the system on precision guide pin
- Back taper already integrated into the cassette
- Optimum cutting material utilisation thanks to indexable insert with four and six cutting edges



Comparison of the setting times

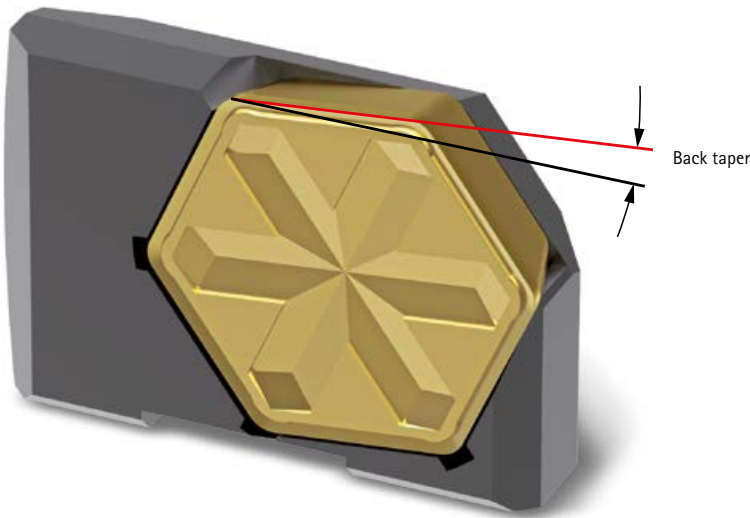
The setting effort per cutting edge is drastically reduced thanks to the EasyAdjust system.



Back taper

The back taper on the insert has a major influence on the bore quality. MAPAL selects the back taper of the cassette necessary for the machining task according to the demands of the material and the feed rate.

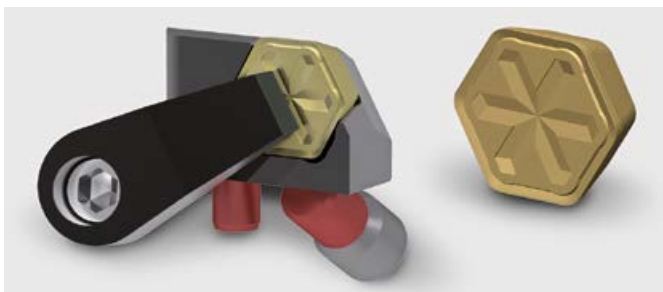
| ADVANTAGES |
|--|
| - Adaptation of the back taper, irrespective of indexable insert and tool body |
| - Production of defined roughness thanks to different back tapers |
| - Optimal surface finish for downstream processes (for example honing) |



Two variants of the indexable inserts

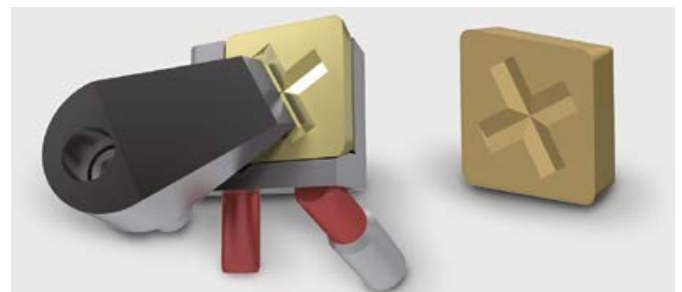
The EasyAdjust system is available with two different insert types for through bores and blind bores:

HX indexable inserts



HX indexable inserts with six cutting edges for through bores.

TEC indexable inserts



TEC indexable inserts with four cutting edges and different lead geometries for blind bores and face shoulder machining.



Through bore

Suitable for open bores. Not suitable for shoulder machining if 90° are required.






Blind bore and face shoulder bore

Suitable for closed bores and shoulder machining, taking the cutting edge length into account.

Article overview







EasyAdjust system with HX indexable inserts

| Selection criteria | | | | | Insert type |
|---|--------------|---|-------------------------------|------------------------------------|---|
| Type of bore | ∅ range tool |  | Graduation of the back taper* | | |
| Through bore  | from ∅ 20 | B | Particular demands | Back taper ↓ - + ↓ | HX  |
| | | D | Recommended standard | | |
| | | F | Particular demands | | |
| | | H | | | |
| | | K | | | |
| | | M | | | |
| | | P | | | |
| | | R | | | |
| | from ∅ 30 | B | Particular demands | Back taper ↓ - + ↓ | |
| | | D | Recommended standard | | |
| | | F | Particular demands | | |
| | | H | | | |
| | | K | | | |
| | | M | | | |
| P | | | | | |
| R | | | | | |



EasyAdjust system with TEC indexable inserts

| Selection criteria | | | | | Insert type |
|---|--------------|---|-------------------------------|------------------------------------|--|
| Type of bore | ∅ range tool |  | Graduation of the back taper* | | |
| Blind bore / face shoulder bore   | from ∅ 20 | B | Particular demands | Back taper ↓ - + ↓ | TEC  |
| | | D | Recommended standard | | |
| | | F | Particular demands | | |
| | | H | | | |
| | | K | | | |
| | | M | | | |
| | | P | | | |
| | | R | | | |
| | from ∅ 30 | B | Particular demands | Back taper ↓ - + ↓ | |
| | | D | Recommended standard | | |
| | | F | Particular demands | | |
| | | H | | | |
| | | K | | | |
| | | M | | | |
| P | | | | | |
| R | | | | | |

Dimensions in mm.

For suitable indexable insert, see page 518.

* Selection by agreement with MAPAL, depending on the demands of the part.

Note:

When changing the system, it is essential to note that the cassette and clamping plate must be adapted accordingly.

HX indexable inserts for bore machining

For tools with guide pads

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| MMG* | P | | | | M | K | N | | | |
| | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| Cutting material type | HP342 | HP122 | HP018 | HP018 | HC419 | HP122 | HP612 | HU612 | | |

| Chip form geometry. | Size | Lead | Specification | Order no. | | | | | | | | |
|---------------------|------|------|-------------------|-----------|--|--|--|--|--|--|--|--|
| negative | 2 | R0,8 | WP-K1288-2133-... | | | | | | | | | |
| | 3 | R0,8 | WP-K1288-2123-... | | | | | | | | | |

| | | | | | | | | | | | | |
|---------|---|------|------------------|--|--|--|--|-----------------|--|--|--|--|
| neutral | 2 | R0,8 | WP-606087689-... | | | | | 30688944 | | | | |
| | 3 | R0,8 | WP-606087714-... | | | | | 30688981 | | | | |

| | | | | | | | | | | | | |
|----------|---|------|----------------|-----------------|-----------------|-----------------|-----------------|--|-----------------|--|-----------------|--|
| positive | 2 | R0,8 | WP-HX228RL-... | 30685704 | 30197811 | 31100892 | 31100892 | | 30197811 | | 30320977 | |
| | 3 | R0,8 | WP-HX238RL-... | 30685705 | 30669024 | 31100893 | 31100893 | | 30669024 | | 30669021 | |

| | | | | | | | | | | | | |
|-----------------|---|------|----------------|--|--|--|--|--|--|-----------------|--|-----------------|
| highly positive | 2 | R0,8 | WP-HX128RL-... | | | | | | | 30685707 | | 30669011 |
| | 3 | R0,8 | WP-HX138RL-... | | | | | | | 30685708 | | 30669015 |



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU612 | | HP018 |

| Cermet | |
|-----------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|----------|----------|-----------|
| K | H | |
| 1.1 | | 1.1 - 1.2 |
| FU485 | | FU801 |

| Order no. | |
|-----------|--|
| | |

| Order no. |
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| Order no. |
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| Order no. | |
|-----------------|-----------------|
| 30009396 | 30033403 |
| 30008170 | 30097476 |

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| 30222667 |
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| 31290969 |
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| 30669011 | |
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TEC indexable inserts for bore machining

For tools with guide pads

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| MMG* | P | | | | M | K | N | | | |
| | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| Cutting material type | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | | |

| Chip form geometry. | Size | Lead | Specification | Order no. | | | | | | | | | | |
|---------------------|------|---------|----------------------|-----------|--|--|--|--|--|--|--|--|--|--|
| negative | 2 | AS | WP-TEC2-ASS35R0A-... | | | | | | | | | | | |
| | | ** EK | WP-TEC2-EKS35R0A-... | | | | | | | | | | | |
| | | DZ | WP-TEC2-DZS35R0A-... | | | | | | | | | | | |
| | | ** R0,4 | WP-TEC2-04S35R0A-... | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---------|---|---------|----------------------|--|--|--|--|--|-----------------|--|--|--|--|--|
| neutral | 2 | AS | WP-TEC2-ASE02R0A-... | | | | | | | | | | | |
| | | ** EK | WP-TEC2-EKE02R0A-... | | | | | | | | | | | |
| | | DZ | WP-TEC2-DZE02R0A-... | | | | | | 31306739 | | | | | |
| | | ** R0,4 | WP-TEC2-04E02R0A-... | | | | | | 31306750 | | | | | |

| | | | | | | | | | | | | | |
|----------|---|---------|----------------------|-----------------|-----------------|-----------------|-----------------|--|--|-----------------|--|-----------------|--|
| positive | 2 | AS | WP-TEC2-ASF01R1G-... | 31099198 | 30953115 | 31099199 | 31099199 | | | | | 31306751 | |
| | | ** EK | WP-TEC2-EKF01R1G-... | 31306755 | 31306756 | 31306758 | 31306758 | | | | | 31306761 | |
| | | DZ | WP-TEC2-DZF01R1G-... | 31306854 | 31100514 | 31100517 | 31100517 | | | 31306855 | | 31306857 | |
| | | ** R0,4 | WP-TEC2-04F01R1J-... | 31306873 | 31306875 | 31306876 | 31306876 | | | 31306878 | | 31306879 | |

| | | | | | | | | | | | | |
|-----------------|---|---------|----------------------|--|--|--|--|--|--|--|-----------------|-----------------|
| highly positive | 2 | AS | WP-TEC2-ASF01R1N-... | | | | | | | | 31306883 | 31306887 |
| | | ** EK | WP-TEC2-EKF01R1N-... | | | | | | | | 31306903 | 31306904 |
| | | DZ | WP-TEC2-DZF01R1N-... | | | | | | | | 31306907 | 31306920 |
| | | ** R0,4 | WP-TEC2-04F01R1U-... | | | | | | | | 30685231 | 31306921 |

** Note: Only use EK and R0.4 leads for blind bores machining and component-related face machining.



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|------------------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |
| Preferred series | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|----------|--|-----------|
| K | | H |
| 1.1 | | 1.1 - 1.2 |
| FU485 | | FU801 |

| Order no. | | |
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| Order no. | |
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| 30539027 | | 30688967 |

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| 31306880 | |

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| 31306754 | |
| 31306763 | |
| 31306871 | |
| 30823892 | |

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| | 31306887 | |
| | 31306904 | |
| | 31306920 | |
| | 31306921 | |

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Accessories for EasyAdjust system



| TEC cutting edge size | Blade cassettes for EasyAdjust system | | Clamping plates for EasyAdjust system | |
|-----------------------|---------------------------------------|-----------|---------------------------------------|-----------|
| | Specification | Order no. | Specification | Order no. |
| 2 | BC-EAS-R-42-B | 30546828 | CP-EAS-R-N2-B | 30508276 |
| 2 | BC-EAS-R-42-D | 30498068 | CP-EAS-R-N2-D | 30561484 |
| 2 | BC-EAS-R-42-F | 30503101 | CP-EAS-R-N2-F | 30561485 |
| 2 | BC-EAS-R-42-H | 30503104 | CP-EAS-R-N2-H | 30561487 |
| 2 | BC-EAS-R-42-K | 30546837 | CP-EAS-R-N2-K | 30561488 |
| 2 | BC-EAS-R-42-M | 30546839 | CP-EAS-R-N2-M | 30561489 |
| 2 | BC-EAS-R-42-P | 30546840 | CP-EAS-R-N2-P | 30561490 |
| 2 | BC-EAS-R-42-R | 30546841 | CP-EAS-R-N2-R | 30508277 |
| 3 | BC-EAS-R-43-B | 30546844 | CP-EAS-R-N3-B | 30561492 |
| 3 | BC-EAS-R-43-D | 30498067 | CP-EAS-R-N3-D | 30561493 |
| 3 | BC-EAS-R-43-F | 30503115 | CP-EAS-R-N3-F | 30561494 |
| 3 | BC-EAS-R-43-H | 30503116 | CP-EAS-R-N3-H | 30561495 |
| 3 | BC-EAS-R-43-K | 30546845 | CP-EAS-R-N3-K | 30561496 |
| 3 | BC-EAS-R-43-M | 30546846 | CP-EAS-R-N3-M | 30561497 |
| 3 | BC-EAS-R-43-P | 30546848 | CP-EAS-R-N3-P | 30561498 |
| 3 | BC-EAS-R-43-R | 30546849 | CP-EAS-R-N3-R | 30561499 |

Note:

When changing the system, it is essential to note that the cassette and clamping plate must be adapted accordingly.



| HX cutting edge size | Blade cassettes for EasyAdjust system | | Clamping plates for EasyAdjust system | |
|----------------------|---------------------------------------|-----------|---------------------------------------|-----------|
| | Specification | Order no. | Specification | Order no. |
| 2 | BC-EAS-R-62-B | 30275903 | CP-EAS-R-N2-B | 30508276 |
| 2 | BC-EAS-R-62-D | 30410077 | CP-EAS-R-N2-D | 30561484 |
| 2 | BC-EAS-R-62-F | 30503094 | CP-EAS-R-N2-F | 30561485 |
| 2 | BC-EAS-R-62-H | 30503096 | CP-EAS-R-N2-H | 30561487 |
| 2 | BC-EAS-R-62-K | 30496821 | CP-EAS-R-N2-K | 30561488 |
| 2 | BC-EAS-R-62-M | 30471831 | CP-EAS-R-N2-M | 30561489 |
| 2 | BC-EAS-R-62-P | 30471833 | CP-EAS-R-N2-P | 30561490 |
| 2 | BC-EAS-R-62-R | 30496828 | CP-EAS-R-N2-R | 30508277 |
| 3 | BC-EAS-R-63-B | 30495992 | CP-EAS-R-N3-B | 30561492 |
| 3 | BC-EAS-R-63-D | 30469856 | CP-EAS-R-N3-D | 30561493 |
| 3 | BC-EAS-R-63-F | 30503097 | CP-EAS-R-N3-F | 30561494 |
| 3 | BC-EAS-R-63-H | 30503098 | CP-EAS-R-N3-H | 30561495 |
| 3 | BC-EAS-R-63-K | 30496827 | CP-EAS-R-N3-K | 30561496 |
| 3 | BC-EAS-R-63-M | 30471832 | CP-EAS-R-N3-M | 30561497 |
| 3 | BC-EAS-R-63-P | 30471834 | CP-EAS-R-N3-P | 30561498 |
| 3 | BC-EAS-R-63-R | 30496829 | CP-EAS-R-N3-R | 30561499 |

Cutting data recommendation for HX indexable inserts

Feed and cutting speed

HX-HP342

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

HX-HP122

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | | |
|------|--------------------|--|---|--------------------------|---------------------------------------|-------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | | |
| P P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 | |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 | |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5 | P5.1 | Cast steel | | 80 | 40 | 0.150 |

HX-HP018

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | | |
|------|--------------------|---|---|--|---------------------------------------|-------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | | |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 | |
| | P6 | P6.1 | Stainless cast steel, ferritic and martensitic | 40 | 20 | 0.120 | |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 |

HX-HC419

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| K K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 110 | 55 | 0.150 |

HX-HP122

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 100 | 50 | 0.150 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 45 | 0.150 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 40 | 0.150 |
| K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 70 | 35 | 0.150 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 70 | 35 | 0.150 |

HX-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

HX-HU612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S S1 S2 | S1.1 Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | S2.1 Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | S2.2 Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

HX-HP018

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-----------|-----------------------------|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| H H1 H1.1 | Hardened steel / cast steel | 45-55 HRC | 30 | 15 | 0.120 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for HX indexable inserts

Feed and cutting speed

HX-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

HX-PU620

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 230 | 115 | 0.150 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | | 230 | 115 | 0.150 |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | | 230 | 115 | 0.150 |
| | | N1.4 | Aluminium, alloy > 12 % Si | | 230 | 115 | 0.150 |
| | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

HX-FU485

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 150 | 75 | 0.150 |

HX-FU801

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| H | H1 | H1.1 | Hardened steel / cast steel | 45-55 HRC | 60 | 30 | 0.100 |
| | | H1.2 | Hardened steel / cast steel | 55-64 HRC | 50 | 25 | 0.080 |

Cutting data recommendation for indexable TEC indexable inserts

Feed and cutting speed

TEC2-AS-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

TEC2-EK-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

TEC2-DZ-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

TEC2-04-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 40 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 35 | 0.150 |

TEC2-AS-HP425

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5.1 | Cast steel | | 80 | 40 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for TEC indexable inserts

Feed and cutting speed

TEC2-EK-HP425

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| P | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5.1 | Cast steel | | 80 | 40 | 0.150 |

TEC2-DZ-HP425

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| P | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5.1 | Cast steel | | 80 | 40 | 0.150 |

TEC2-04-HP425

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| P | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 40 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 50 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 40 | 0.150 |
| | P5.1 | Cast steel | | 80 | 40 | 0.150 |

TEC2-AS-HP016

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| P | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 |
| | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 0.120 |
| M | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |

TEC2-EK-HP016

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 | |
| | P6 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 0.120 | |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |

TEC2-DZ-HP016

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 | |
| | P6 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 0.120 | |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |

TEC2-04-HP016

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|--|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 25 | 0.120 | |
| | P6 | Stainless cast steel, ferritic and martensitic | | 40 | 20 | 0.120 | |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 25 | 0.120 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 15 | 0.120 |

TEC2-DZ-HC418

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 100 | 50 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for TEC indexable inserts

Feed and cutting speed

TEC2-04-HC418

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-------------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K K1 K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 100 | 50 | 0.150 |

TEC2-DZ-HP426

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-----------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 100 | 50 | 0.150 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 45 | 0.150 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 40 | 0.150 |
| K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 70 | 35 | 0.150 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 70 | 35 | 0.150 |

TEC2-04-HP426

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-----------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 100 | 50 | 0.150 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 45 | 0.150 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 40 | 0.150 |
| K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 70 | 35 | 0.150 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 70 | 35 | 0.150 |

TEC2-AS-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|--------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

TEC2-EK-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|--------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

TEC2-DZ-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

TEC2-04-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 80 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 80 | 0.150 |

TEC2-AS-HU615

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S S1 S2 | S1.1 Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | S2.1 Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | S2.2 Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

TEC2-EK-HU615

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S S1 S2 | S1.1 Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | S2.1 Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | S2.2 Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for TEC indexable inserts

Feed and cutting speed

TEC2-DZ-HU615

| MMG* | | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|----|------|-----------------------------------|---|--------------------------|------------------|---------------------------------------|
| | | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

TEC2-04-HU615

| MMG* | | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|----|------|-----------------------------------|---|--------------------------|------------------|---------------------------------------|
| | | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 50 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 50 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 50 | 0.150 |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 15 | 0.120 |
| | | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 10 | 0.120 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 10 | 0.100 |

TEC2-DZ-HP016

| MMG* | | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|----|------|-----------------------------|---|--------------------------|------------------|---------------------------------------|
| | | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| H | H1 | H1.1 | Hardened steel / cast steel | 45-55 HRC | 30 | 15 | 0.120 |

TEC2-04-HP016

| MMG* | | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|------|----|------|-----------------------------|---|--------------------------|------------------|---------------------------------------|
| | | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| H | H1 | H1.1 | Hardened steel / cast steel | 45-55 HRC | 30 | 15 | 0.120 |

TEC2-AS-CP122

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | | |
|------|--------------------|---|--|--------------------------|---------------------------------------|----|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

TEC2-EK-CP122

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | | |
|------|--------------------|---|--|--------------------------|---------------------------------------|----|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

TEC2-DZ-CP122

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | | |
|------|--------------------|---|--|--------------------------|---------------------------------------|----|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for TEC indexable inserts

Feed and cutting speed

TEC2-04-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 90 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 80 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 80 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 70 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 80 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 80 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 70 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 70 | 0.120 |

TEC2-AS-PU620

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 230 | 115 | 0.150 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | | 230 | 115 | 0.150 |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | | 230 | 115 | 0.150 |
| | | N1.4 | Aluminium, alloy > 12 % Si | | 230 | 115 | 0.150 |
| | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

TEC2-EK-PU620

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | 230 | 115 | 0.150 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | | 230 | 115 | 0.150 |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | | 230 | 115 | 0.150 |
| | | N1.4 | Aluminium, alloy > 12 % Si | | 230 | 115 | 0.150 |
| | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

TEC2-DZ-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 115 | 0.150 | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 115 | 0.150 | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 115 | 0.150 | |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 115 | 0.150 | |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

TEC2-04-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 115 | 0.150 | |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 115 | 0.150 | |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 115 | 0.150 | |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 115 | 0.150 | |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.2 Copper, alloy | > 300 N/mm ² | 180 | 90 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 180 | 90 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for TEC indexable inserts

Feed and cutting speed

TEC2-DZ-FU485

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-------------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K K1 K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 150 | 75 | 0.150 |

TEC2-04-FU485

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) |
|-------------------------|--|---|--------------------------|------------------|---------------------------------------|
| | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 |
| K K1 K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 150 | 75 | 0.150 |

TEC2-DZ-FU801

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| H | H1 | H1.1 | Hardened steel / cast steel | 45-55 HRC | 60 | 30 | 0.100 |
| | H1 | H1.2 | Hardened steel / cast steel | 55-64 HRC | 50 | 25 | 0.080 |

TEC2-04-FU801

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | | Feed fz (mm/z) | |
|------|----|--------------------|---|--------------------------|------------------|---------------------------------------|-------|
| | | | | Internal cooling | External cooling | with drill diameter 5.000 - 80.000 | |
| H | H1 | H1.1 | Hardened steel / cast steel | 45-55 HRC | 60 | 30 | 0.100 |
| | H1 | H1.2 | Hardened steel / cast steel | 55-64 HRC | 50 | 25 | 0.080 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.



Easy to handle during the external reaming of smaller diameters

MAPAL has developed a new system to make setting external reamers with small diameters as easy as possible. The EasyAdjust system is integrated into a cassette for this purpose. The cassette can be removed to set the insert quickly and easily using a micrometer or measuring plate.

In the EA system, the back taper for the insert is already integrated into the connection for the insert. This feature completely eliminates the need to set the back taper on the minor cutting edge. It is only necessary to set the insert radial distance in relation to the guide pads. Thanks to greater changeover accuracy as well as the fact that the inserts can be set very easily, reliable compliance with the required tolerances for highly accurate fits is significantly easier using the new system, even in the small diameter range.

AT A GLANCE

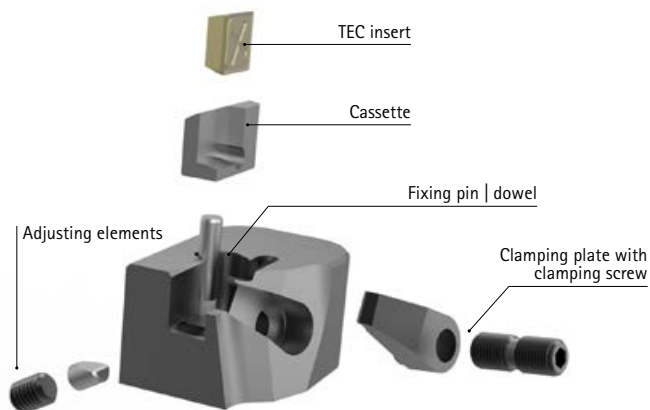
- New system for easy adjustment during the external reaming of smaller diameters
- Cassette for the EA system integrated into another removable cassette for this purpose
- High changeover accuracy (smaller than 2-3 μm)
- Insert can be adjusted quickly and easily
- Back taper on the insert is integrated into the cassette, which acts as the connection for the insert

ADVANTAGES

- High cost-effectiveness and process reliability
- Reduced setting effort thanks to innovative cassette in cassette
- Easy to handle
- You no longer need to set the back taper on the minor cutting edge
- Reliable compliance with close tolerances

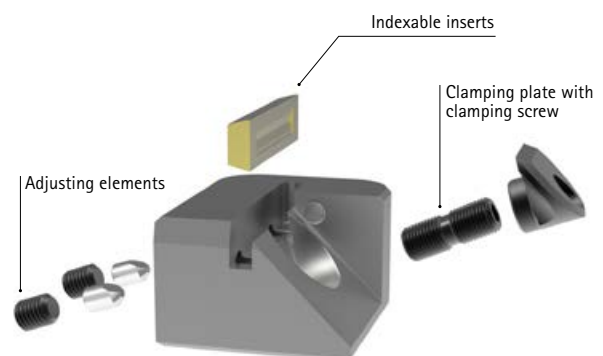


External reamer with EasyAdjust system | System differences



EasyAdjust system with TEC indexable inserts

- Multiple blades (number of cutting edges)
- Easy handling
- TEC2 and TEC3 cutting edge possible



Indexable inserts

- High surface requirements, e.g. $< R_z 6$
- Special contour (indexable inserts)
- Face machining
- Plan section with radius transition

Cutting data recommendation for external machining tools with TEC indexable inserts

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| MMG* | P | | | M | | K | | N | | |
| | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| Cutting material type | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | | |

| Chip form geometry. | Size | Lead | Specification | Order no. | | | | | | | | |
|---------------------|------|---------|----------------------|-----------|--|--|--|----------|--|--|--|--|
| neutral | 2 | AS | WP-TEC2-ASE02LOA-... | | | | | | | | | |
| | | EK ** | WP-TEC2-EKE02LOA-... | | | | | | | | | |
| | | DZ | WP-TEC2-DZE02LOA-... | | | | | 31306931 | | | | |
| | | R0,4 ** | WP-TEC2-04E02LOA-... | | | | | 31306932 | | | | |

| | | | | | | | | | | | | |
|----------|---|---------|----------------------|----------|----------|----------|----------|--|----------|--|----------|--|
| positive | 2 | AS | WP-TEC2-ASF01L1G-... | 31306933 | 30889440 | 31079651 | 31079651 | | | | 31140267 | |
| | | EK ** | WP-TEC2-EKF01L1G-... | 30653470 | 30829191 | 30971023 | 30971023 | | | | 30630537 | |
| | | DZ | WP-TEC2-DZF01L1G-... | 31306937 | 31306938 | 31306940 | 31306940 | | 31306941 | | 31181002 | |
| | | R0,4 ** | WP-TEC2-04F01L1J-... | 31306945 | 31306947 | 31306949 | 31306949 | | 31306950 | | 31306951 | |

| | | | | | | | | | | | | |
|-----------------|---|---------|----------------------|--|--|--|--|--|--|----------|--|----------|
| highly positive | 2 | AS | WP-TEC2-ASF01L1N-... | | | | | | | 31306973 | | 31306974 |
| | | EK ** | WP-TEC2-EKF01L1N-... | | | | | | | 31306977 | | 31306978 |
| | | DZ | WP-TEC2-DZF01L1N-... | | | | | | | 31306979 | | 31306980 |
| | | R0,4 ** | WP-TEC2-04F01L1U-... | | | | | | | 31306981 | | 31306982 |

** Note: Only use EK and R0.4 leads for blind bores machining and component-related face machining.

* MAPAL machining groups.



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|-----------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|----------|--|-----------|
| K | | H |
| 1.1 | | 1.1 - 1.2 |
| FU485 | | FU801 |

| Order no. | | |
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| Order no. | |
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| 31306942 | |
| 31307406 | |

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| 31306934 | |
| 30630446 | |
| 31306943 | |
| 31306953 | |

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| 31306974 | | |
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Cutting data recommendation for external machining tools with indexable inserts

| Cutting material | Carbide | | | | | | | | | |
|-----------------------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-----------|--|
| MMG* | P | | | M | | K | | N | | |
| | 1.1 - 1.2 | 2 - 3 5 | 4 6 | 1 - 3 | 1.1 | 2 - 3 | 1.1 - 1.2 | 2.3 | 2.1 - 2.2 | |
| Cutting material type | HP115 | HP425 | HP016 | HP016 | HC418 | HP426 | HP612 | HU615 | | |

| Chip form geometry. | Size | Lead | Specification | Order no. | | | | | | | |
|---------------------|------|------|----------------|-----------|--|--|--|-----------------|--|--|--|
| neutral | 92 | AS | WP-AS92L0-... | | | | | | | | |
| | | EK | WP-EK152L0-... | | | | | | | | |
| | | DZ | WP-DZ92L0-... | | | | | 31301508 | | | |

| | | | | | | | | | | | |
|----------|----|----|----------------|-----------------|-----------------|-----------------|-----------------|--|-----------------|--|----------|
| positive | 92 | AS | WP-AS92L6-... | 30914125 | 30914127 | 31056555 | 31056555 | | | | 30914124 |
| | | EK | WP-EK152L6-... | 30914554 | 31302302 | 31247603 | 31247603 | | | | 30914553 |
| | | DZ | WP-DZ92L6-... | 31306923 | 31306925 | 31306926 | 31306926 | | 31306927 | | 30914421 |

| | | | | | | | | | | | |
|-----------------|----|----|----------------|--|--|--|--|--|--|-----------------|-----------------|
| highly positive | 92 | AS | WP-AS92L2-... | | | | | | | 31175426 | 30914120 |
| | | EK | WP-EK152L2-... | | | | | | | 31301535 | 30914549 |
| | | DZ | WP-DZ92L2-... | | | | | | | | |

Cutting edge with AS lead



Cutting edge with EK lead



Cutting edge with DZ lead



| Carbide | | |
|----------|--|----------|
| S | | H |
| 1 - 2 | | 1.1 |
| HU615 | | HP016 |

| Cermet | |
|-----------|--|
| P | |
| 1 - 3 5 | |
| CP122 | |

| PCD | |
|----------|--|
| N | |
| 1 - 2 | |
| PU620 | |

| PcBN | | |
|----------|--|-----------|
| K | | H |
| 1.1 | | 1.1 - 1.2 |
| FU485 | | FU801 |

| Order no. | | |
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| Order no. | |
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Accessories for external machining tool



| TEC cutting edge size | Blade cassettes for external machining tool | | Clamping plates for external machining tool | |
|-----------------------|---|-----------|---|-----------|
| | Specification | Order no. | Specification | Order no. |
| 2 | BC-EAS-L-42-B | 30562954 | CP-EAS-L-N2-B | 30565468 |
| 2 | BC-EAS-L-42-D | 30558608 | CP-EAS-L-N2-D | 30560195 |
| 2 | BC-EAS-L-42-F | 30562956 | CP-EAS-L-N2-F | 30565469 |
| 2 | BC-EAS-L-42-H | 30562958 | CP-EAS-L-N2-H | 30565470 |
| 2 | BC-EAS-L-42-K | 30562959 | CP-EAS-L-N2-K | 30565472 |
| 2 | BC-EAS-L-42-M | 30562960 | CP-EAS-L-N2-M | 30565474 |
| 2 | BC-EAS-L-42-P | 30562963 | CP-EAS-L-N2-P | 30565475 |
| 2 | BC-EAS-L-42-R | 30562964 | CP-EAS-L-N2-R | 30565478 |
| 3 | BC-EAS-L-43-B | 30562965 | CP-EAS-L-N3-B | 30565479 |
| 3 | BC-EAS-L-43-D | 30562967 | CP-EAS-L-N3-D | 30565481 |
| 3 | BC-EAS-L-43-F | 30562968 | CP-EAS-L-N3-F | 30565483 |
| 3 | BC-EAS-L-43-H | 30562969 | CP-EAS-L-N3-H | 30565490 |
| 3 | BC-EAS-L-43-K | 30562970 | CP-EAS-L-N3-K | 30565491 |
| 3 | BC-EAS-L-43-M | 30562971 | CP-EAS-L-N3-M | 30565492 |
| 3 | BC-EAS-L-43-P | 30562972 | CP-EAS-L-N3-P | 30565494 |
| 3 | BC-EAS-L-43-R | 30562974 | CP-EAS-L-N3-R | 30565495 |

Note:

When changing the system, it is essential to note that the cassette and clamping plate must be adapted accordingly.



Cutting data recommendation for external machining tools with TEC indexable inserts

Feed and cutting speed

TEC2-AS-L-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 0.150 |

TEC2-EK-L-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 0.150 |

TEC2-DZ-L-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 0.150 |

TEC2-04-L-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 0.150 |

TEC2-AS-L-HP425

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 0.150 |
| | P5.1 | Cast steel | | 80 | 0.150 |

TEC2-EK-L-HP425

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 0.150 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 0.150 |
| | P5 | P5.1 | Cast steel | | 80 | 0.150 |

TEC2-DZ-L-HP425

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 0.150 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 0.150 |
| | P5 | P5.1 | Cast steel | | 80 | 0.150 |

TEC2-04-L-HP425

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 0.150 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 0.150 |
| | P5 | P5.1 | Cast steel | | 80 | 0.150 |

TEC2-AS-L-HP016

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|------|--|---|--------------------------|---------------------------------------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| P | P4 | P4.1 | Stainless steels, ferritic and martensitic | 50 | 0.120 |
| | P6 | P6.1 | Stainless cast steel, ferritic and martensitic | 40 | 0.120 |
| M | M1 | M1.1 | Stainless steels, austenitic | 50 | 0.120 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | 30 | 0.120 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | 50 | 0.120 |
| M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | 30 | 0.120 | |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for external machining tools with TEC indexable inserts

Feed and cutting speed

TEC2-EK-L-HP016

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|--|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | 50 | 0.120 |
| P6 | P6.1 | Stainless cast steel, ferritic and martensitic | 40 | 0.120 |
| M | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 |
| | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 |
| | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 |
| | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 |

TEC2-DZ-L-HP016

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|--|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | 50 | 0.120 |
| P6 | P6.1 | Stainless cast steel, ferritic and martensitic | 40 | 0.120 |
| M | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 |
| | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 |
| | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 |
| | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 |

TEC2-04-L-HP016

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|--|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | 50 | 0.120 |
| P6 | P6.1 | Stainless cast steel, ferritic and martensitic | 40 | 0.120 |
| M | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 |
| | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 |
| | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 |
| | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 |

TEC2-DZ-L-HC418

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | | |
|------|--------------------|---|--|---------------------------------------|-----|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 100 | 0.150 |

TEC2-04-L-HC418

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|-------------------------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| K K1 K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 100 | 0.150 |

TEC2-DZ-L-HP426

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|-----------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 100 | 0.150 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 0.150 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 0.150 |
| K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 70 | 0.150 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 70 | 0.150 |

TEC2-04-L-HP426

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|-----------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| K2 | K2.1 Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 100 | 0.150 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 0.150 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 0.150 |
| K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 70 | 0.150 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 70 | 0.150 |

TEC2-AS-L-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|--------------------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 0.150 |

TEC2-EK-L-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|--------------------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for external machining tools with TEC indexable inserts

Feed and cutting speed

TEC2-DZ-L-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 0.150 |

TEC2-04-L-HP612

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | | 160 | 0.150 |
| | N1.2 Aluminium, alloy ≤ 7 % Si | | 160 | 0.150 |

TEC2-AS-L-HU615

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 0.150 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 100 | 0.150 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 0.150 |
| S S1 S2 | S1.1 Titanium, titanium alloys | < 400 N/mm ² | 30 | 0.120 |
| | S2.1 Titanium, titanium alloys | < 1200 N/mm ² | 20 | 0.120 |
| | S2.2 Titanium, titanium alloys | > 1200 N/mm ² | 20 | 0.100 |

TEC2-EK-L-HU615

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------------|--|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N N2 | N2.1 Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 0.150 |
| | N2.2 Copper, alloy | > 300 N/mm ² | 100 | 0.150 |
| | N2.3 Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 0.150 |
| S S1 S2 | S1.1 Titanium, titanium alloys | < 400 N/mm ² | 30 | 0.120 |
| | S2.1 Titanium, titanium alloys | < 1200 N/mm ² | 20 | 0.120 |
| | S2.2 Titanium, titanium alloys | > 1200 N/mm ² | 20 | 0.100 |

TEC2-DZ-L-HU615

| MMG* | | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|----------|--------------------|-----------------------------------|---|--------------------------|---------------------------------------|
| | | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 0.150 |
| S | S1 S2 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 0.120 |
| | | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 0.120 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 0.100 |

TEC2-04-L-HU615

| MMG* | | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|----------|--------------------|-----------------------------------|---|--------------------------|---------------------------------------|
| | | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 0.150 |
| S | S1 S2 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 0.120 |
| | | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 0.120 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 0.100 |

TEC2-AS-L-CP122

| MMG* | | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|------|--------------------|--|---|--------------------------|---------------------------------------|
| | | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| P1 | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 0.120 |
| P2 | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 0.120 |
| P3 | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 0.120 |
| P5 | P5.1 | Cast steel | | 140 | 0.120 | |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for external machining tools with TEC indexable inserts

Feed and cutting speed

TEC2-EK-L-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 0.120 |

TEC2-DZ-L-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 0.120 |

TEC2-04-L-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 0.120 |

TEC2-AS-L-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 0.150 |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 0.150 |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 0.150 |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 0.150 |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | 180 | 0.150 |
| | | N2.2 Copper, alloy | 180 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | 180 | 0.150 |

TEC2-EK-L-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 0.150 |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 0.150 |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 0.150 |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 0.150 |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | 180 | 0.150 |
| | | N2.2 Copper, alloy | 180 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | 180 | 0.150 |

TEC2-DZ-L-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 0.150 |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 0.150 |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 0.150 |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 0.150 |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | 180 | 0.150 |
| | | N2.2 Copper, alloy | 180 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | 180 | 0.150 |

TEC2-04-L-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 0.150 |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 0.150 |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 0.150 |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 0.150 |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | 180 | 0.150 |
| | | N2.2 Copper, alloy | 180 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | 180 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for external machining tools with indexable inserts

Feed and cutting speed

AS-L-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 0.150 |

EK-L-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 0.150 |

DZ-L-HP115

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 80 | 0.150 |
| | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 70 | 0.150 |

AS-L-HP425

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------------|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P P2 P3 P5 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 0.150 |
| | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 0.150 |
| | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 0.150 |
| | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 0.150 |
| | P5.1 | Cast steel | | 80 | 0.150 |

EK-L-HP425

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 0.150 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 0.150 |
| | P5 | P5.1 | Cast steel | | 80 | 0.150 |

DZ-L-HP425

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 100 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 80 | 0.150 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 900 N/mm ² | 100 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 80 | 0.150 |
| | P5 | P5.1 | Cast steel | | 80 | 0.150 |

AS-L-HP016

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P4 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 0.120 |
| | P6 | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 0.120 |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 0.120 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 0.120 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 0.120 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 0.120 |

EK-L-HP016

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P4 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 0.120 |
| | P6 | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 0.120 |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 50 | 0.120 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 0.120 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | 50 | 0.120 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1000 N/mm ² | 30 | 0.120 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for external machining tools with indexable inserts

Feed and cutting speed

DZ-L-HP016

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|--|---|--------------------------|---------------------------------------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| P4 | P4.1 | Stainless steels, ferritic and martensitic | | 50 | 0.120 |
| | P6.1 | Stainless cast steel, ferritic and martensitic | | 40 | 0.120 |
| M | M1 | M1.1 | < 700 N/mm ² | 50 | 0.120 |
| | | M1.2 | < 1000 N/mm ² | 30 | 0.120 |
| | M2 | M2.1 | < 700 N/mm ² | 50 | 0.120 |
| | M3 | M3.1 | < 1000 N/mm ² | 30 | 0.120 |

DZ-L-HC418

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | 100 | 0.150 |

DZ-L-HP426

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|--------------------|------|---|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| K2 | K2 | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | 100 | 0.150 |
| | | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | 90 | 0.150 |
| | | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | 80 | 0.150 |
| K3 | K3 | K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | 70 | 0.150 |
| | | K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | 70 | 0.150 |

AS-L-HP612

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|------|---|--------------------------|---------------------------------------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | 160 | 0.150 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | 160 | 0.150 |

EK-L-HP612

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|------|---|--------------------------|---------------------------------------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | 160 | 0.150 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | 160 | 0.150 |

* MAPAL machining groups

AS-L-HU615

| MMG* | | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|----|--------------------|-----------------------------------|---|--------------------------|---------------------------------------|
| | | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 0.150 |
| S | S2 | S2.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 0.120 |
| | | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 0.120 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 0.100 |

EK-L-HU615

| MMG* | | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|----|--------------------|-----------------------------------|---|--------------------------|---------------------------------------|
| | | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 0.150 |
| S | S2 | S2.1 | Titanium, titanium alloys | < 400 N/mm ² | 30 | 0.120 |
| | | S2.1 | Titanium, titanium alloys | < 1200 N/mm ² | 20 | 0.120 |
| | | S2.2 | Titanium, titanium alloys | > 1200 N/mm ² | 20 | 0.100 |

DZ-L-HU615

| MMG* | | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|----|--------------------|-----------------------------------|---|--------------------------|---------------------------------------|
| | | | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N2 | N2.1 | Copper, unalloyed and low-alloyed | < 300 N/mm ² | 100 | 0.150 |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | 100 | 0.150 |
| | | N2.3 | Brass, bronze, gunmetal | < 1200 N/mm ² | 100 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for external machining tools with indexable inserts

Feed and cutting speed

AS-L-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 0.120 |

EK-L-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 0.120 |

DZ-L-CP122

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) | |
|------|----|--------------------|--|--------------------------|---------------------------------------|-------|
| | | | | Internal cooling | with drill diameter 5.000 - 80.000 | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 180 | 0.150 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1200 N/mm ² | 160 | 0.120 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 160 | 0.150 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1400 N/mm ² | 140 | 0.120 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 N/mm ² | 160 | 0.150 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1000 N/mm ² | 160 | 0.150 |
| | | P3.3 | Tool, bearing, spring and high-speed steels** | < 1500 N/mm ² | 140 | 0.120 |
| | P5 | P5.1 | Cast steel | | 140 | 0.120 |

AS-L-PU620

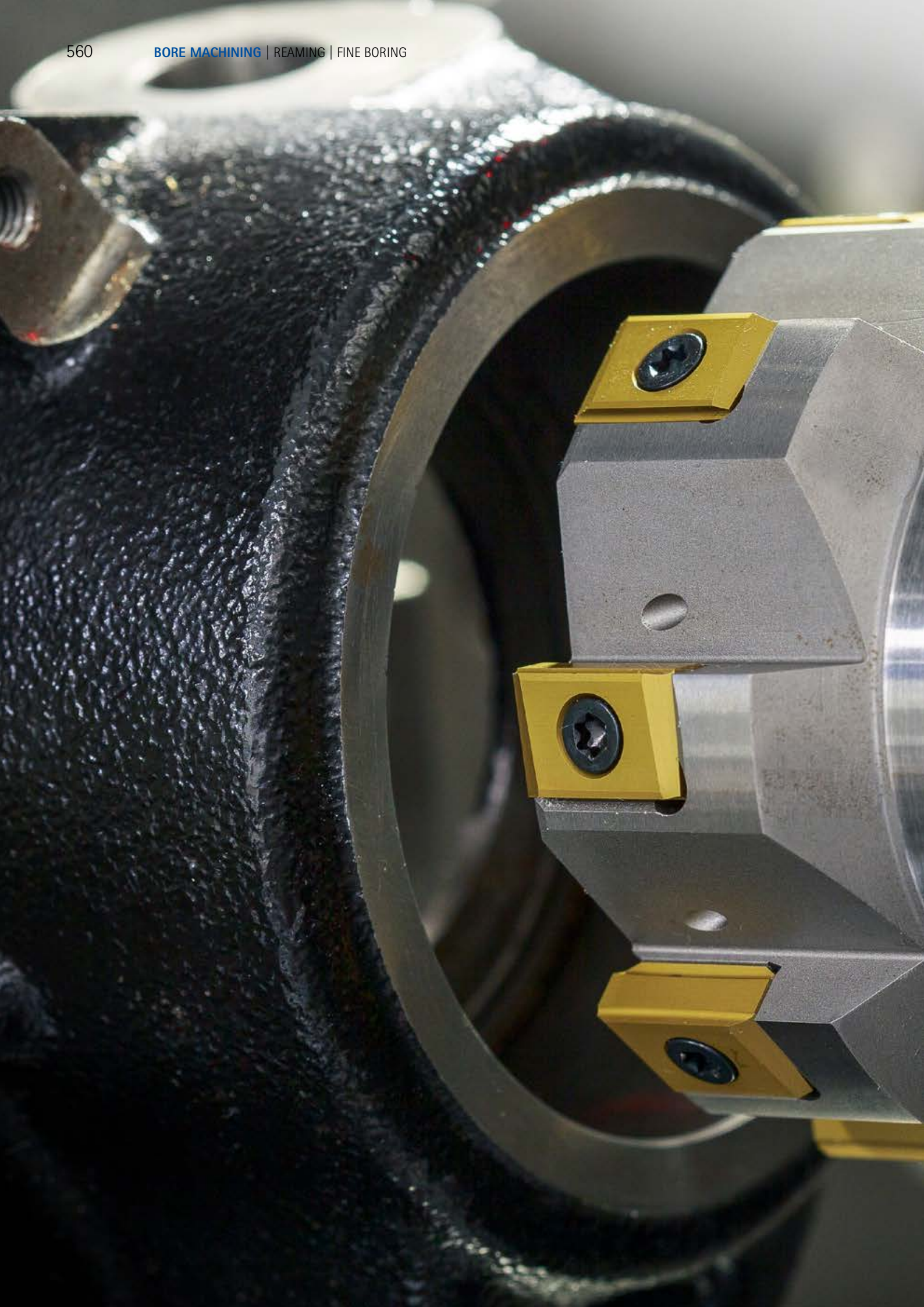
| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 0.150 |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 0.150 |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 0.150 |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 0.150 |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | 180 | 0.150 |
| | | N2.2 Copper, alloy | 180 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | 180 | 0.150 |

EK-L-PU620

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cutting speed vc (m/min) | Feed fz (mm/z) |
|------|--------------------|---|--------------------------|---------------------------------------|
| | | | Internal cooling | with drill diameter 5.000 - 80.000 |
| N | N1 | N1.1 Aluminium, non-alloy and alloy < 3 % Si | 230 | 0.150 |
| | | N1.2 Aluminium, alloy ≤ 7 % Si | 230 | 0.150 |
| | | N1.3 Aluminium, alloy > 7-12 % Si | 230 | 0.150 |
| | | N1.4 Aluminium, alloy > 12 % Si | 230 | 0.150 |
| N | N2 | N2.1 Copper, unalloyed and low-alloyed | 180 | 0.150 |
| | | N2.2 Copper, alloy | 180 | 0.150 |
| | | N2.3 Brass, bronze, gunmetal | 180 | 0.150 |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.





SOLUTIONS FOR LARGE DIAMETERS | SPECIAL SOLUTIONS

Solutions for large diameters

| | |
|--------------------------|-----|
| Programme overview | 562 |
| HPR400 plus | 564 |
| HPR400 | 568 |

Special solutions

| | |
|------------------------------------|-----|
| Tools with guide pads | 572 |
| Tools with EasyAdjust system | 574 |
| Multi-bladed reamers | 576 |



PROGRAMME OVERVIEW

Multi-bladed high-performance reamers for large diameter ranges

To finely machine bores with large diameters in a defined tolerance range, users are often faced with the question: reaming or finish-boring? On the one hand, it is possible to work significantly faster with multi-bladed reaming tools and they are less sensitive to an interrupted cut. On the other hand, the reconditioning of reamers with fixed inserts is a complex process.

MAPAL offers two HPR systems to optimise this reconditioning process:

HPR400 plus

The focus of the development of the HPR400 plus reamers was on increasing cost-effectiveness by means of efficient reconditioning. The multi-bladed tools impress due to high cost-effectiveness thanks to fast application

data and simple insert changing on site by the customer. This is possible due to the highly accurate insert seats. As such the logistics costs for transport to the manufacturer are completely eliminated. Tool stock and reconditioning costs remain low. Indexable inserts with four cutting edges guarantee optimal cutting material utilisation.

HPR400

Simple on-site insert changing

In order to reduce the number of tools in circulation and the stock, MAPAL offers the HPR400 system, in which the cutting edge can be changed on site by the customer. The tool bodies do not have to be reprocessed; only the storage costs for the required cutting edges are incurred.



HPR



HPR400 plus

- Four cutting edges for high cost-effectiveness.
- No logistics costs for transport to the manufacturer for reconditioning
 - IT7 tolerance achievable from diameter 65.000 mm

Ø range: 63.000 - 319.999 mm



HPR400

- Simple on-site insert changing.
- Incorrect installation of the cutting edge is ruled out; the cutting edges can be fitted in any position.

Ø range: 63.000 - 319.999 mm



HPR400 plus

No setting and four cutting edges significantly reduce cost per part

Increasing cost-effectiveness through efficient reconditioning was the focus of the development of the HPR400 reamers. The multi-bladed tools impress due to high cost-effectiveness thanks to fast application data and simple insert changing on site by the customer. This is possible due to the highly accurate insert seats. As such the logistics costs for transport to the manufacturer are completely eliminated. Tool stock and reconditioning costs remain low.

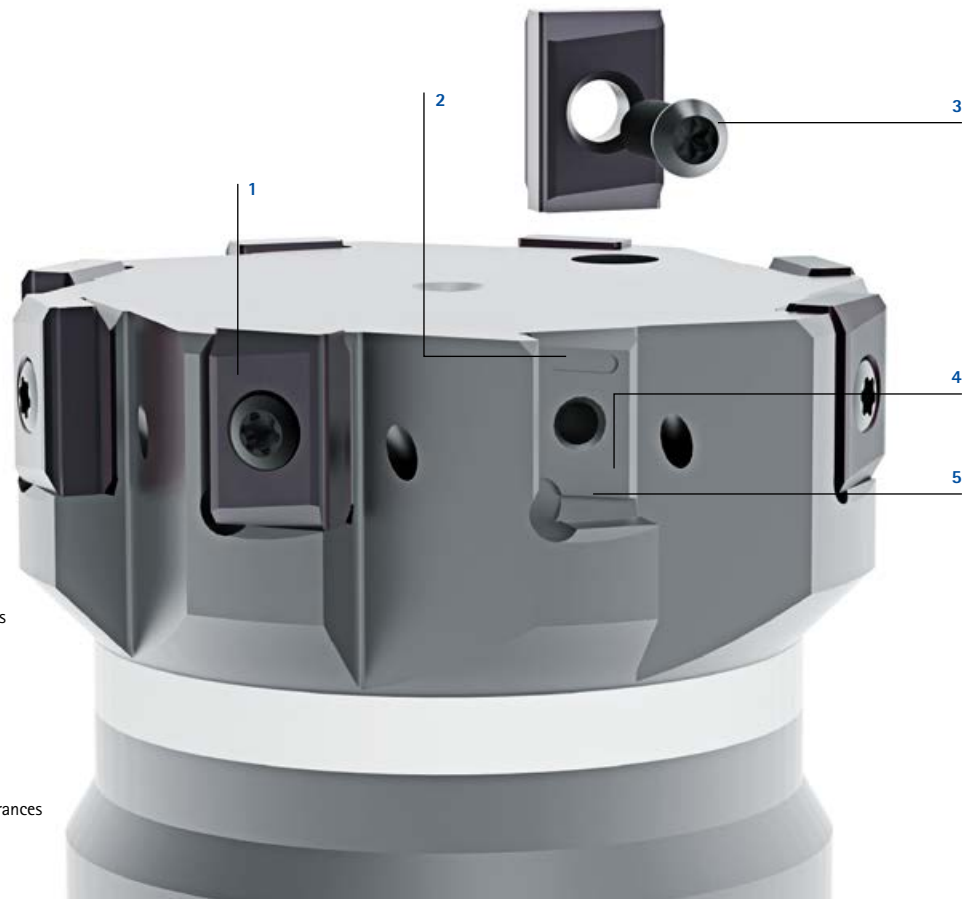
To further increase cost-effectiveness during the machining of large diameters, the indexable inserts on the newly developed HPR400 plus no longer have a single cutting – instead they have four cutting edges. The cutting material is therefore optimally utilised. The four-blade indexable inserts are manufactured so precisely that they can be turned or changed on site by the customer's employees without any problems.

The inventory of inserts can be further reduced; the reconditioning costs and therefore the cost per part drop.

AT A GLANCE

- Insert change on site by the customer
- Four instead of the previous single cutting edge
- Diameter range 63.000 to 319.999 mm
- Can be used universally with all materials
- Cutting material is optimally utilised
- No logistics costs for transport to the manufacturer for reconditioning
- Low tool stock and low reconditioning costs
- Indexable inserts simple to rotate and change

Tool features in detail



1 Indexable insert

Four cutting edges for high cost-effectiveness

2 Wiper pocket

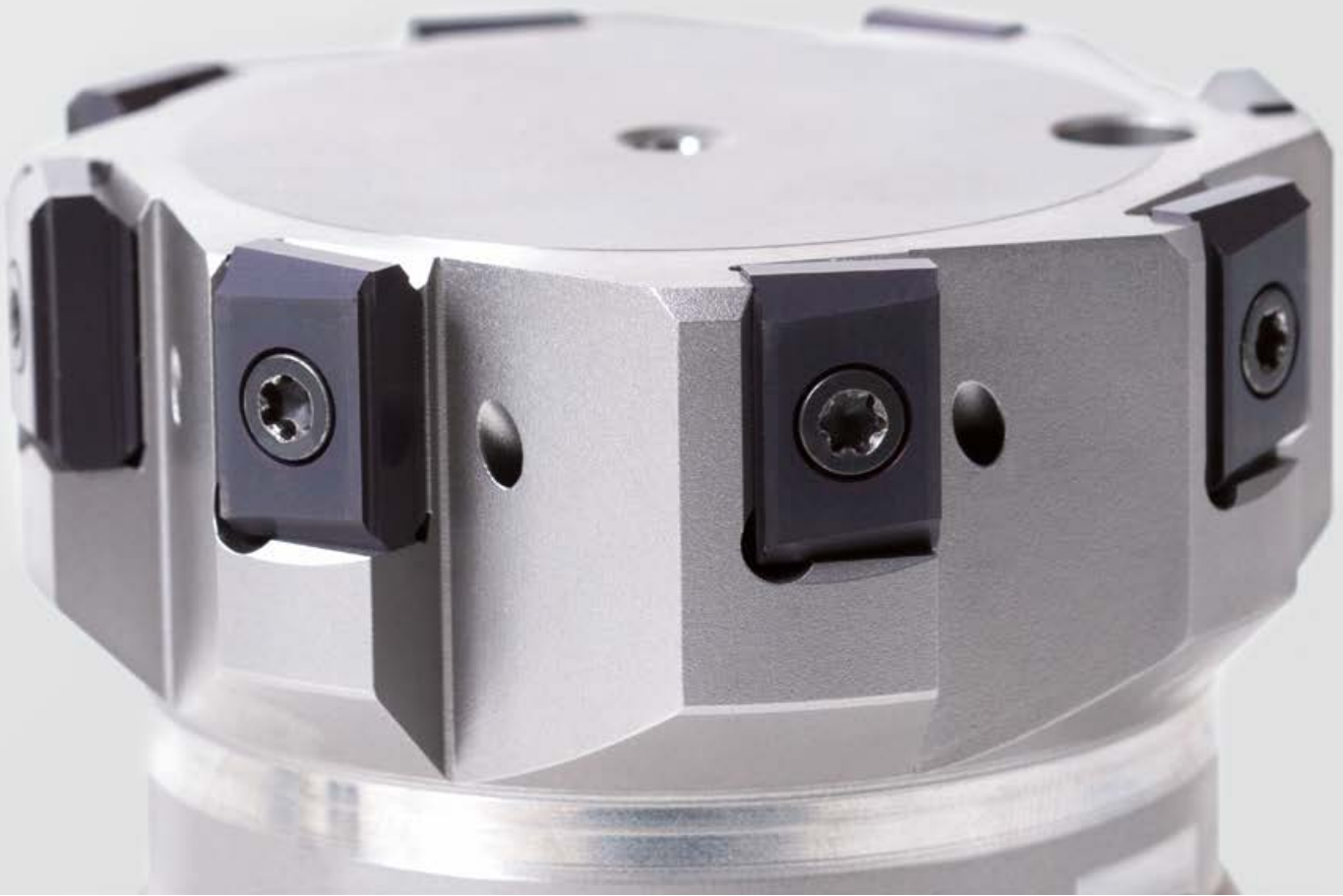
For removing microsoiling

3 TORX® PLUS screw

4 Insert seat

Highly accurate for optimal adherence to tolerances

5 Particle slot



HPR400 plus



Insert change on site by the customer

- Easy handling
- Accurate insert change thanks to highly accurate insert seat
- No setting necessary



Four cutting edges for high cost-effectiveness

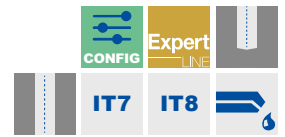
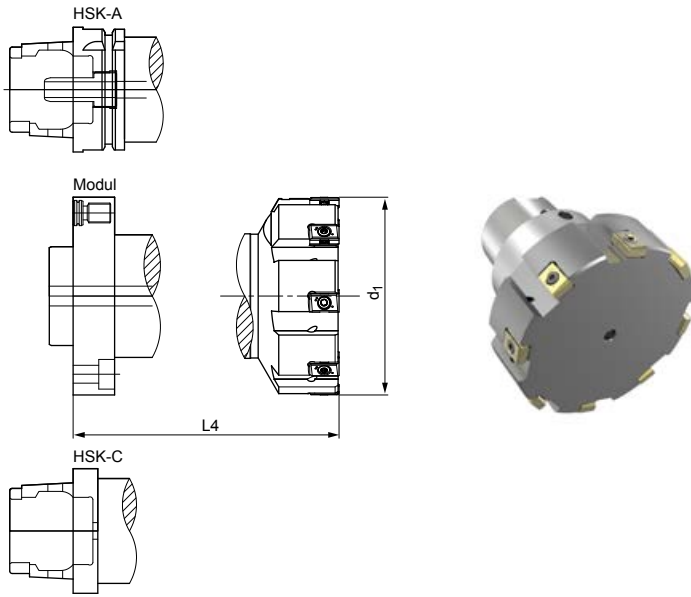
- Different cutting materials and leads available
- Special blades on request

| | | | | | |
|------|-----------------|------------------|-------------------|-------------------|-------------------|
| IT10 | | | | | |
| IT9 | | | | | |
| IT8 | | | | | |
| IT7 | | | | | |
| IT6 | | | | | |
| IT5 | | | | | |
| IT4 | | | | | |
| | 65,001 - 80,000 | 80,001 - 120,000 | 120,001 - 180,000 | 180,001 - 250,000 | 250,001 - 315,000 |

IT7 tolerance from diameter 65 mm

- Tolerance class IT7 can be easily realised on larger diameters, as well as smaller tolerances for larger diameters

High-performance reamer HPR400 plus



Dimensions of HPR400 plus tool body

| d ₁ | z | Connection size | | | | |
|-------------------|----|-----------------|----------|---|--------|---|
| | | HSK-C | HSK-A | Projection length L4 freely selectable | Module | Projection length L4 freely selectable |
| 63.000 - 79.999 | 8 | HSK-C063 | HSK-A063 | 65-290 | 60 | 65-320 |
| 80.000 - 99.999 | 8 | HSK-C063 | HSK-A063 | 65-290 | 80 | 65-320 |
| 100.000 - 124.999 | 8 | HSK-C080 | HSK-A080 | 75-330 | 100 | 75-320 |
| 125.000 - 159.999 | 8 | HSK-C080 | HSK-A080 | 75-330 | 100 | 75-320 |
| 160.000 - 199.999 | 8 | HSK-C080 | HSK-A080 | 75-330 | 140 | 90-320 |
| 200.000 - 249.999 | 10 | HSK-C100 | HSK-A100 | 90-300 | 140 | 90-320 |
| 250.000 - 319.999 | 12 | HSK-C100 | HSK-A100 | 90-300 | 140 | 90-320 |

Data are only guide values, deviations on request

Configurable features



- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7 – IT8 (min 40 µm)
- All common connections can be used
- Can be carried out as multi-stage tool
- Can be combined with MAPAL tool systems und MAPAL connection systems
- MQL-compatible



Specification:
Available upon request

| Accessories and spare parts | Material number |
|-----------------------------|-----------------|
| Torque wrench set 1-5 Nm | 30415174 |
| Spare screw M4x12 | 10018468 |

Indexable inserts for HPR400 plus



Cutting edges preferred series

| Diameter range | Material number |
|-------------------|-----------------|
| 63,000 - 79,999 | 30968871 |
| 80,000 - 99,999 | 30933385 |
| 100,000 - 124,999 | 30968884 |
| 125,000 - 159,999 | 30968891 |
| 160,000 - 199,999 | 30968898 |
| 200,000 - 249,999 | 30968905 |
| 250,000 - 319,999 | 30968912 |

Design:

Diameter range: 63.000 - 319.999
 Four cutting edges
 Lead: 45° x 0.55 mm
 Cutting material: HC419



Cutting edges preferred series

| Diameter range | Material number |
|-------------------|-----------------|
| 63,000 - 79,999 | 31315612 |
| 80,000 - 99,999 | 31315613 |
| 100,000 - 124,999 | 31149561 |
| 125,000 - 159,999 | 31315614 |
| 160,000 - 199,999 | 31315615 |
| 200,000 - 249,999 | 31315617 |
| 250,000 - 319,999 | 31315618 |

Design:

Diameter range: 63.000 - 319.999
 Four cutting edges
 Lead: 30° x 0.60 mm +
 peeling angle
 Cutting material: CP004
 Workpiece material group K
 Suitable for surface Ra < 2 µm

Dimensions in mm.

Additional leads and cutting materials available upon request

HPR400

Reaming in larger diameters with simple on-site insert changing

Due to the special, high-accuracy insert seats of the HPR400 series, users can replace the inserts on-site themselves using a torque wrench with this system. Incorrect installation is ruled out, as only one installation position is possible and the inserts can be fitted in any position. As a result, there is no setting effort, or the need to send tools for reconditioning. Users only need to have the inserts from MAPAL in stock. The quantity of tools required is low, as tool bodies do not need to be reconditioned. With minimal effort and a low number of tools in circulation, the user achieves high-accuracy bores with the HPR400.

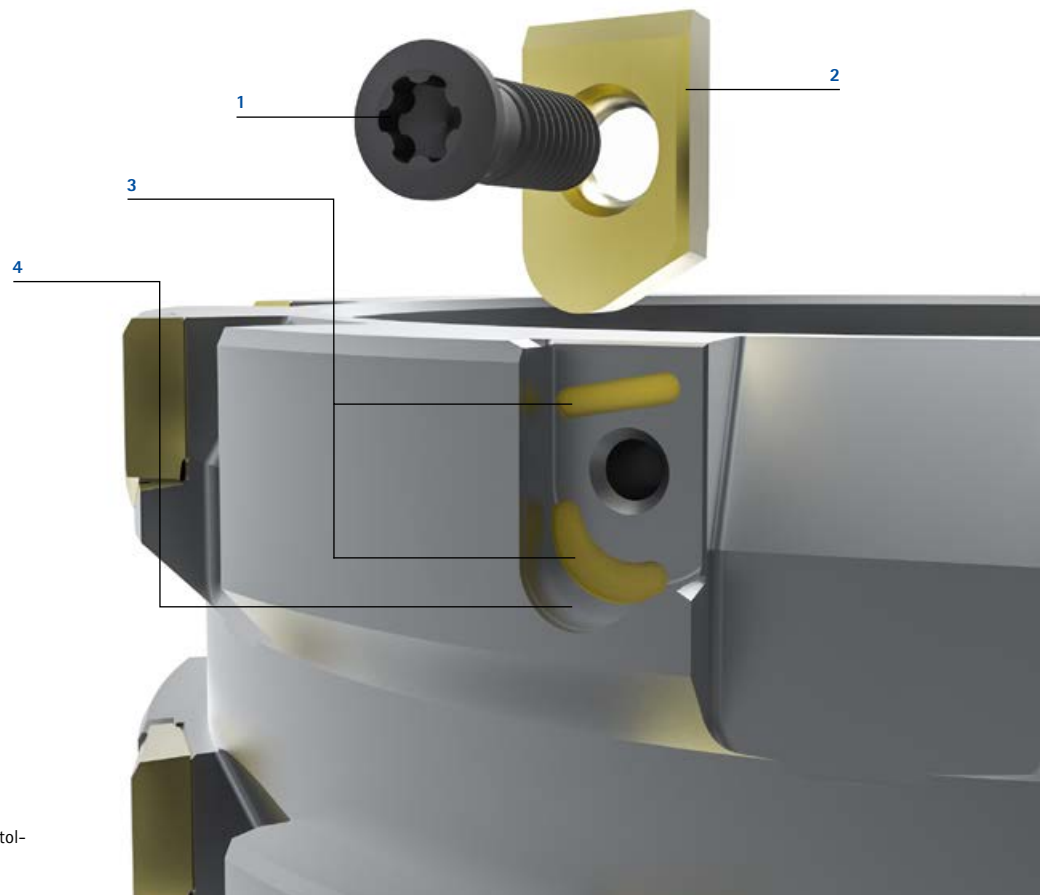
The cutting edges are optimally adapted to the material and the machining. The HPR400 is available in the diameter range from 63 to 319.999 mm with an hollow shank taper adaptor or MAPAL's own module adaptor. MAPAL offers various indexable inserts, produced of carbide with or without CVD coating, made of cermet, and tipped with PCD or PcBN.

AT A GLANCE

- Independent insert changing by the user on-site
- Insert installation independent of the seat position
- Reduction in the cost per part
- Reduced coating costs
- Reduction in the number of tools in circulation
- All cutting materials useable
- H7 tolerance
- \varnothing 63.000 / 319.999 mm



Tool features in detail



1 TORX® clamping screw

2 Insert

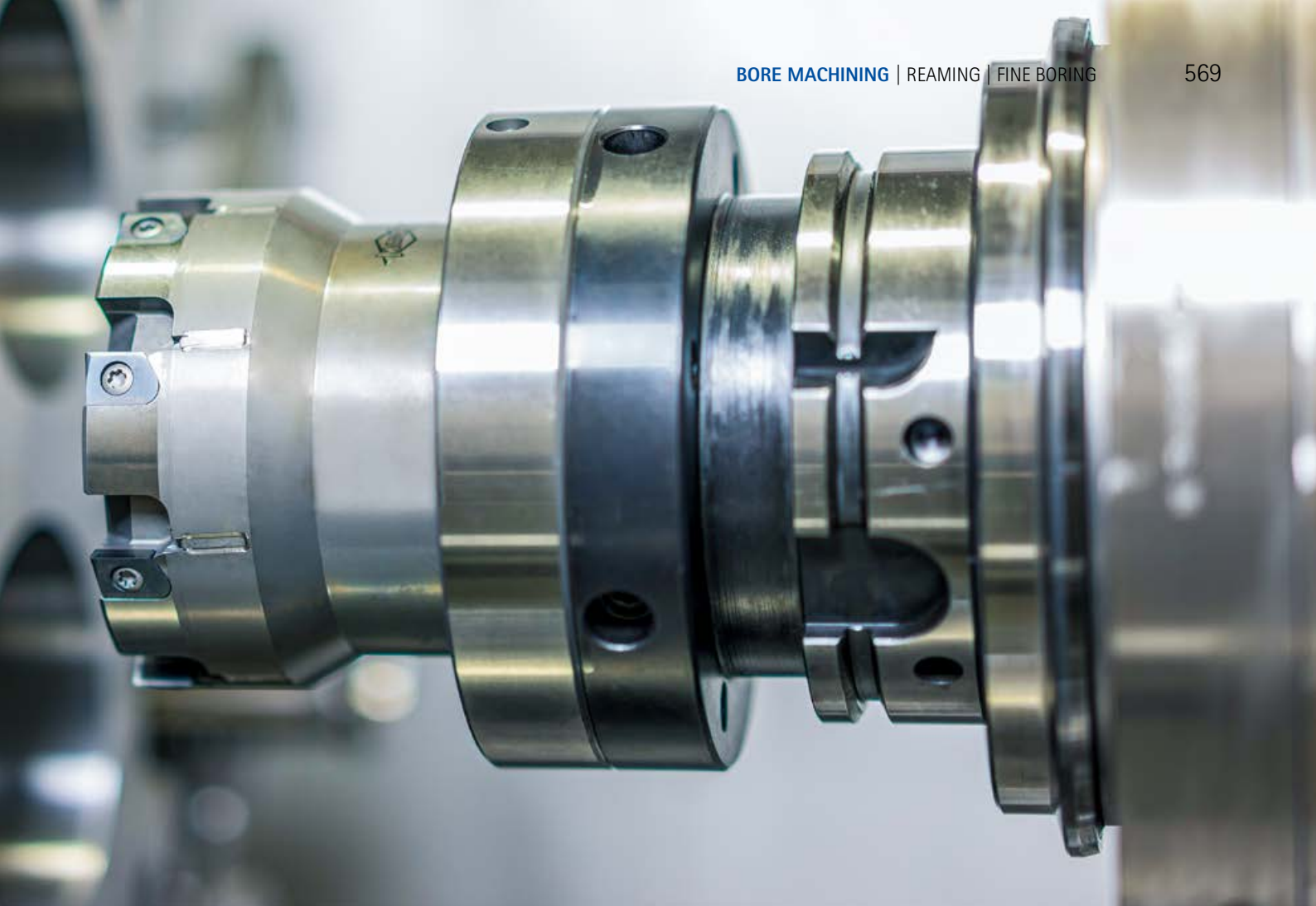
Prismatic shape for optimum investment

3 Wiper pocket

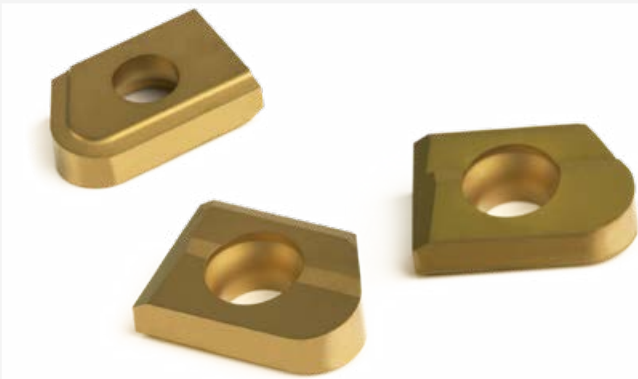
For removing microsoiling

4 Insert seat

Highly accurate for optimal adherence to tolerances



CVD-coated inserts



Optimally suited for reaming cast materials

The CVD-coated cutting materials available for the HPR400, recognisable by the cutting material abbreviation HC, have been specially developed for reaming the tough cast iron materials GJL, GJS and GJV in difficult machining conditions such as interrupted cutting. The CVD coating is characterised by a high level of ductility with good resistant to wear. Up to three times the tool life of existing PVD-coated cutting edges with high process reliability can be achieved with CVD-coated cutting edges. Thanks to the clamping system, almost all other cutting materials can be used in the HPR400 system.

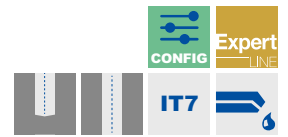
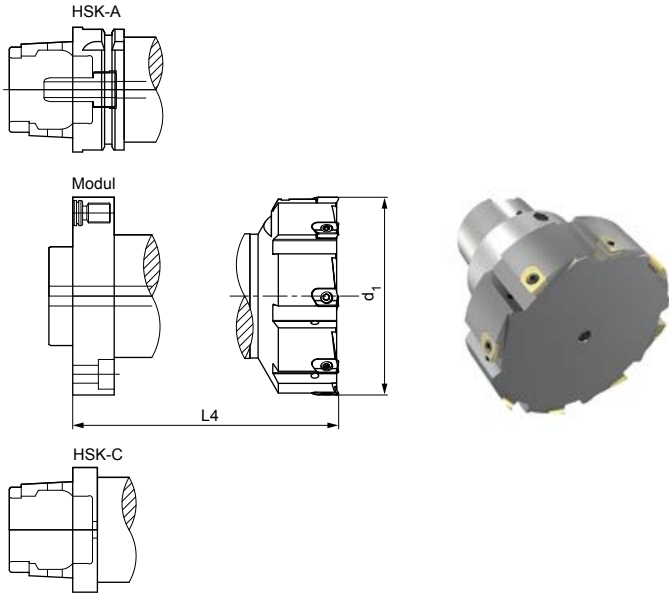
Cost-effective system



Simple on-site insert changing

With the HPR400, MAPAL offers a system where the cutting edge is changed on-site by the customer. The exchangeable cutting edges are pushed axially into the insert seat and fixed by a Torx screw in the high-precision insert seat with process reliability and high precision. The insert assignment is independent of the insert seat. Coating costs are reduced with a simultaneous reduction of the number of tools in circulation.

High-performance reamer HPR400



Dimensions for tool body HPR400

| d ₁ | z | Connection size | | | | |
|-------------------|----|-----------------|----------|---|--------|---|
| | | HSK-C | HSK-A | Projection length L4 freely selectable | Module | Projection length L4 freely selectable |
| 63.000 - 79.999 | 8 | HSK-C063 | HSK-A063 | 65-290 | 60 | 65-320 |
| 80.000 - 99.999 | 8 | HSK-C063 | HSK-A063 | 65-290 | 80 | 65-320 |
| 100.000 - 124.999 | 8 | HSK-C080 | HSK-A080 | 75-330 | 100 | 75-320 |
| 125.000 - 159.999 | 8 | HSK-C080 | HSK-A080 | 75-330 | 100 | 75-320 |
| 160.000 - 199.999 | 8 | HSK-C080 | HSK-A080 | 75-330 | 140 | 90-320 |
| 200.000 - 249.999 | 10 | HSK-C100 | HSK-A100 | 90-300 | 140 | 90-320 |
| 250.000 - 319.999 | 12 | HSK-C100 | HSK-A100 | 90-300 | 140 | 90-320 |

Data are only guide values, deviations on request

Configurable features



- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerance IT7
- Front cut possible
- All common connections can be used
- Can be carried out as multi-stage tool
- Can be combined with MAPAL tool systems und MAPAL connection systems
- MQL-compatible



Specification:
Available upon request

| Accessories and spare parts | Material number |
|-----------------------------|-----------------|
| Torque wrench set 1-5 Nm | 30415174 |
| Spare screw M3.5x9 | 10105078 |

Indexable insert for HPR400



Cutting edges preferred series

| Diameter range | Material number |
|-------------------|-----------------|
| 63,000 - 79,999 | 30916603 |
| 80,000 - 99,999 | 30794390 |
| 100,000 - 124,999 | 30809550 |
| 125,000 - 159,999 | 30788089 |
| 160,000 - 199,999 | 30809531 |
| 200,000 - 249,999 | 30938712 |
| 250,000 - 319,999 | 30931640 |

Design:

| | |
|-------------------|------------------|
| Diameter range: | 63.000 - 319.999 |
| A cutting edge | |
| Lead: | 45° x 0.55 mm |
| Cutting material: | HC419 |



Cutting edges preferred series

| Diameter range | Material number |
|-----------------|-----------------|
| 63,00 - 79,99 | 31026872 |
| 80,00 - 99,99 | 31129899 |
| 100,00 - 124,99 | 31049249 |
| 125,00 - 159,99 | 30690096 |
| 160,00 - 199,99 | 31149706 |
| 200,00 - 249,99 | 31149707 |
| 250,00 - 319,99 | 31129911 |

Design:

| | |
|--------------------------------|----------------------------------|
| Diameter range: | 63.000 - 319.999 |
| A cutting edge | |
| Lead: | 30° x 0.60 mm + peeling angle |
| Cutting material: | CP004 |
| Workpiece material group K | |
| Suitable for surface Ra < 2 μm | |

Dimensions in mm.

Additional leads and cutting materials available upon request

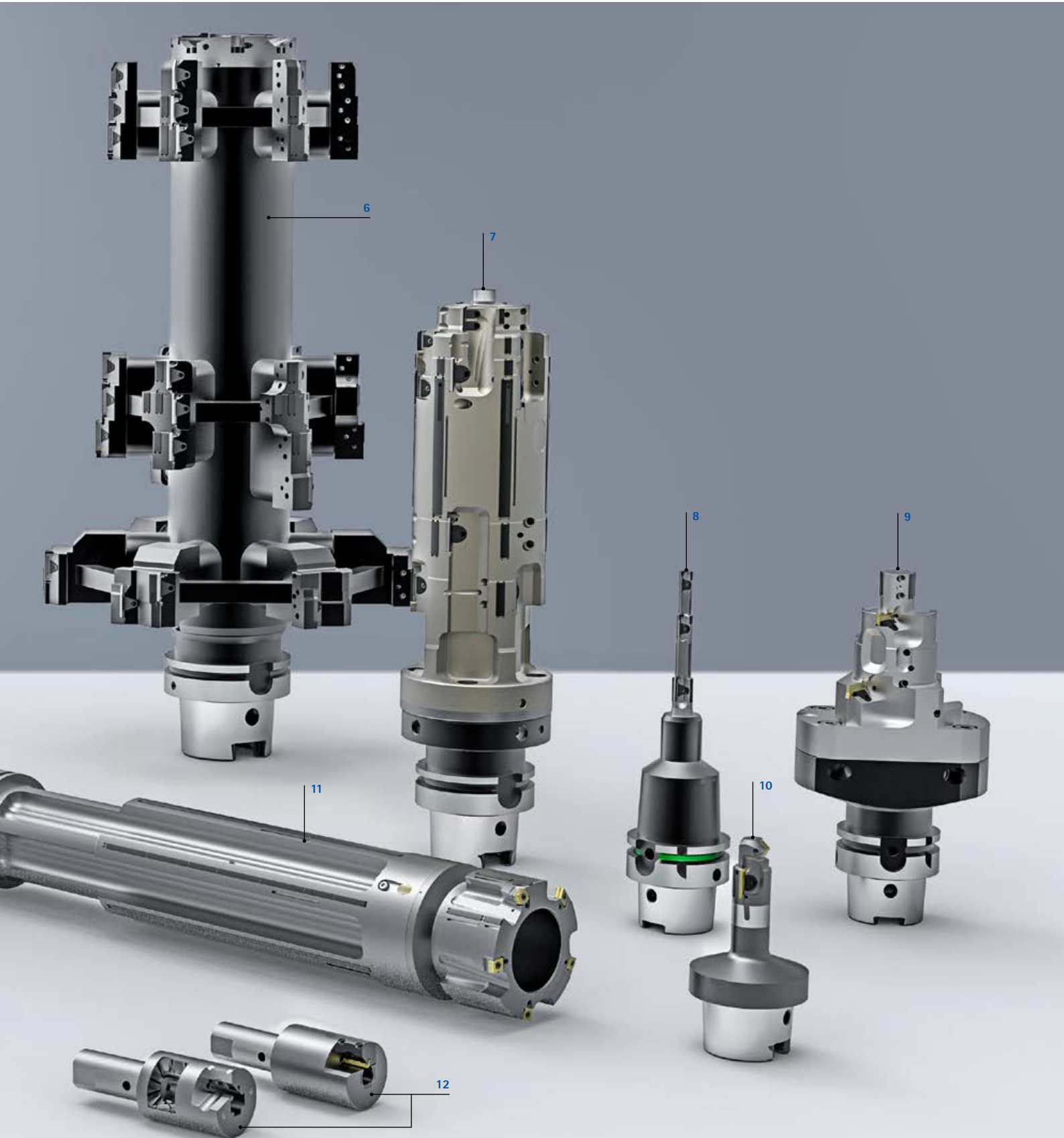
SPECIAL SOLUTIONS

Tools with guide pads

User-specific tool solutions

- 1 Boring tool with guide pads with ISO cartridges in lightweight construction produced of aluminium for machining a transmission housing
- 2 Fine boring tool with indexable insert system for combined internal and external machining of a planetary carrier
- 3 External reamer with EasyAdjust system and TEC inserts for machining an exhaust manifold with MAPAL floating holder
- 4 Fine boring tool with ISO leading stage and connection for HPR reaming head for machining a cylinder block
- 5 Fine boring tool with EasyAdjust system with HX cutting edges for machining a crankshaft bearing bore
- 6 Fine boring tool in lightweight construction as welded design for machining a transmission housing
- 7 Multi-stage and multi-bladed fine boring tool in lightweight construction produced of titanium for machining a steering housing
- 8 Fine boring tool designed for minimum quantity lubrication (MQL) with indexable insert system for machining valve housing
- 9 Multi-stepped fine boring tool with indexable insert system with contour cutting and facing of pump housing
- 10 Fine boring tool with indexable insert system for combined machining of a planetary carrier
- 11 Tangential fine boring tool for semi-finishing with modular cutting head for machining a crankshaft bearing bore
- 12 External reamer with indexable insert system additionally manufactured as a lightweight construction for machining a valve body pin





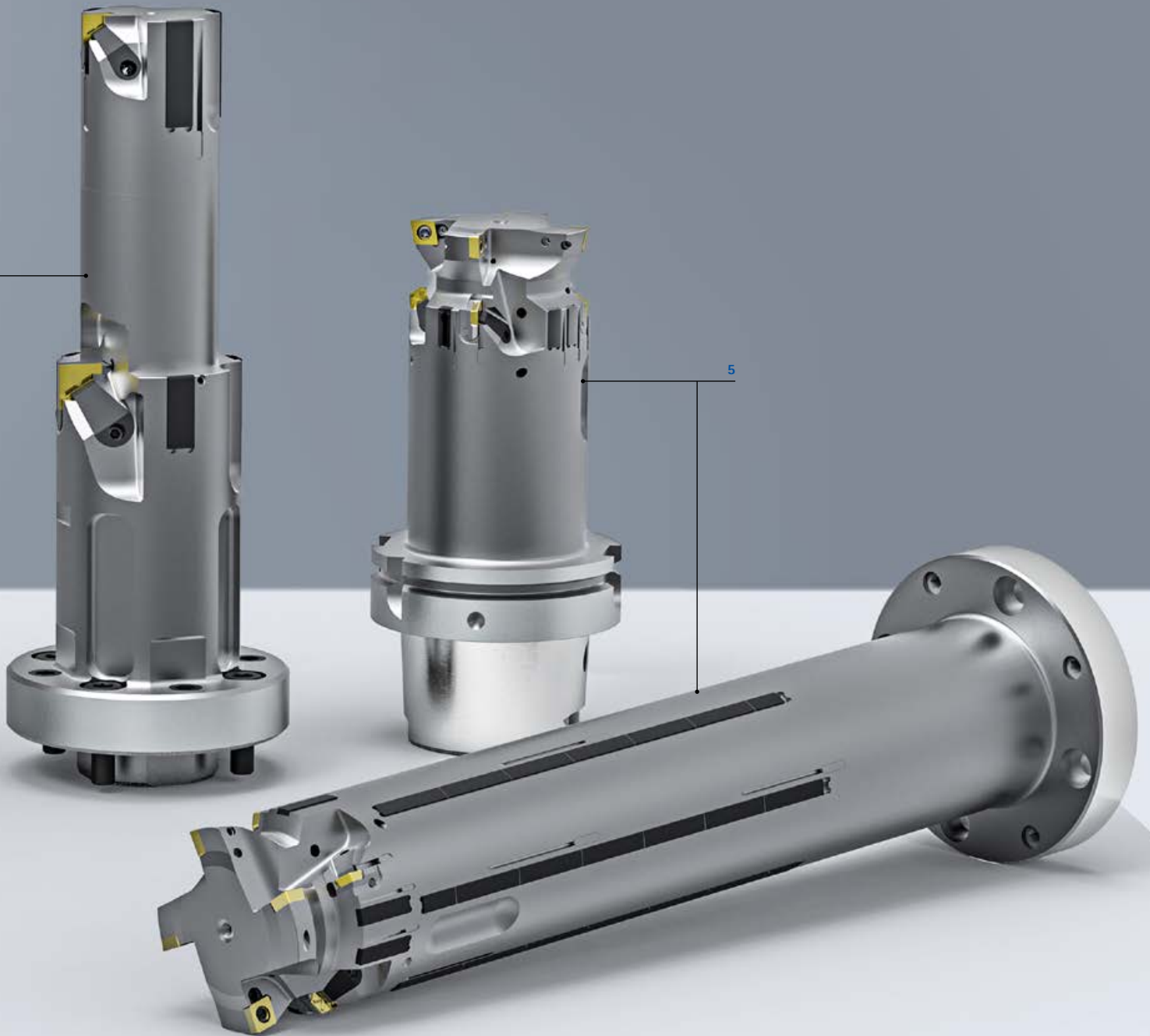
SPECIAL SOLUTIONS

Tools with EasyAdjust system

Special solutions with the EasyAdjust system

- 1 Combination tools for rough machining and fine machining of large and small pin bores. With ISO cutting edges for pre-machining and EasyAdjust system for fine machining
- 2 Custom tools with the EasyAdjust system with four TEC inserts ($z = 4$) and guide pads arranged on one side for machining a heavily interrupted cut in a pump housing produced of GJS-400
- 3 Six-blade tool with 4+2 distribution of cuts and EasyAdjust system with HX cutting edges for machining a cylinder bore
- 4 Multi-stage fine boring tools with the EasyAdjust system with TEC inserts for machining a blind bore in transmission and valve housings with IT5 and IT6 requirements for dimensional accuracy
- 5 Tools for semi-finishing and finishing a crankshaft bearing bore produced of the bi-metal combination aluminium-GJL
- 6 External reamer with the EasyAdjust system with TEC inserts, replaces conventional turning of a part produced of GJS with better dimensional accuracy

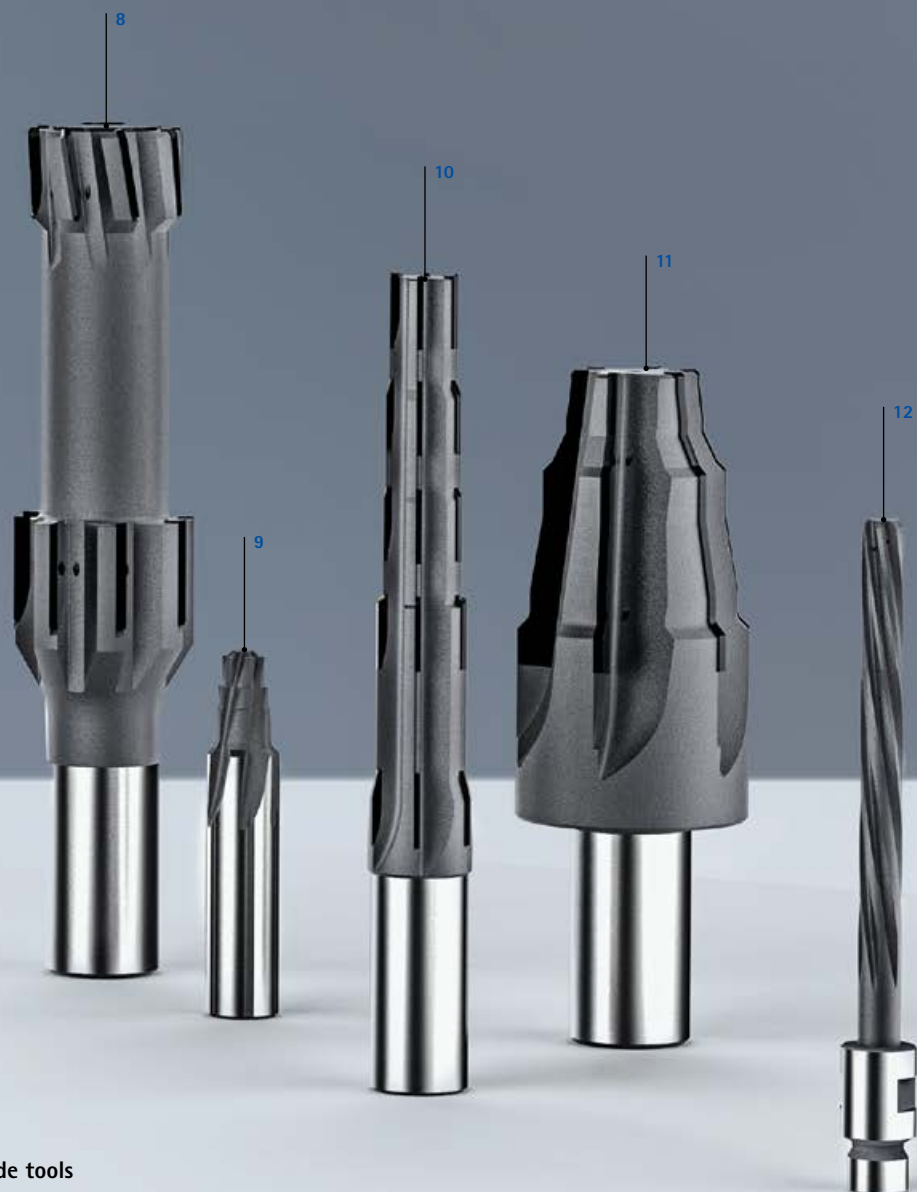




SPECIAL SOLUTIONS

Multi-bladed reamer





Custom solutions – solid carbide tools

- 1 Two-stage custom tool with brazed blades for machining a hydraulic housing produced of EN-GJS-500-7
- 2 Multi-stage coated solid carbide custom tool with chamfer and radius machining for machining on a steel cylinder holder
- 3 Coated solid carbide step reamer for machining the injector bore in a cylinder head
- 4 Coated solid carbide step reamer for fine machining a contour of the spark plug bore in EN-GJL-250
- 5 Two-stage solid carbide step reamer with additional chamfering for machining a high-pressure pump produced of stainless steel
- 6 HSS machine taper reamer with MK shank
- 7 Solid carbide step reamer with VA geometry for machining a stainless steel valve block
- 8 Two-stage custom reamer with brazed cermet blades with combined straight and left-hand fluted design
- 9 Coated multi-stage solid carbide reamer with internal cooling on the shank for machining a rail
- 10 Step reamer with brazed half-round embedded cermet blades for machining a steel nozzle holder
- 11 Coated carbide-tipped form reamer for machining special turned parts
- 12 High-performance reamer with blunt brazed solid carbide head with custom connection for aerospace for machining a titanium, aluminium and high-alloy steel rivet bore combination

SPECIAL SOLUTIONS

HPR – High-performance reamer





HPR custom solutions

- 1 Special solution with modular HPR multi-bladed ring and solid carbide step reamer with additively manufactured tool holder with hydraulic clamping technology for internal and external clamping for valve seat machining
- 2 Multi-stage, modular combination tool with integrated CFS connection for fixed brazed CPR tool with ISO tangential inserts for pre-machining and HPR300 system for fine machining a brake caliper
- 3 Multi-stage PCD-tipped custom tool with countersink step for machining a part in the aerospace industry
- 4 Multi-stage HPR custom tool with HFS connection for machining the bore and contour countersink of a turbocharger produced of GJL250
- 5 Multi-stepped custom tool for machining housings with tangentially arranged reaming cutting edge
- 6 Custom tool for machining a rivet bore in the aerospace industry
- 7 Right-hand cutting tool for blind bore machining
- 8 Multi-stepped custom tool with special blade geometries and HFS connection
- 9 Custom tool in fixed design with brazed cutting edges for step machining of face and chamfer transitions of the actuator bore in the brake caliper

SPECIAL SOLUTIONS

Multi-bladed reamer for large diameters





HPR300 and HPR400 custom solutions

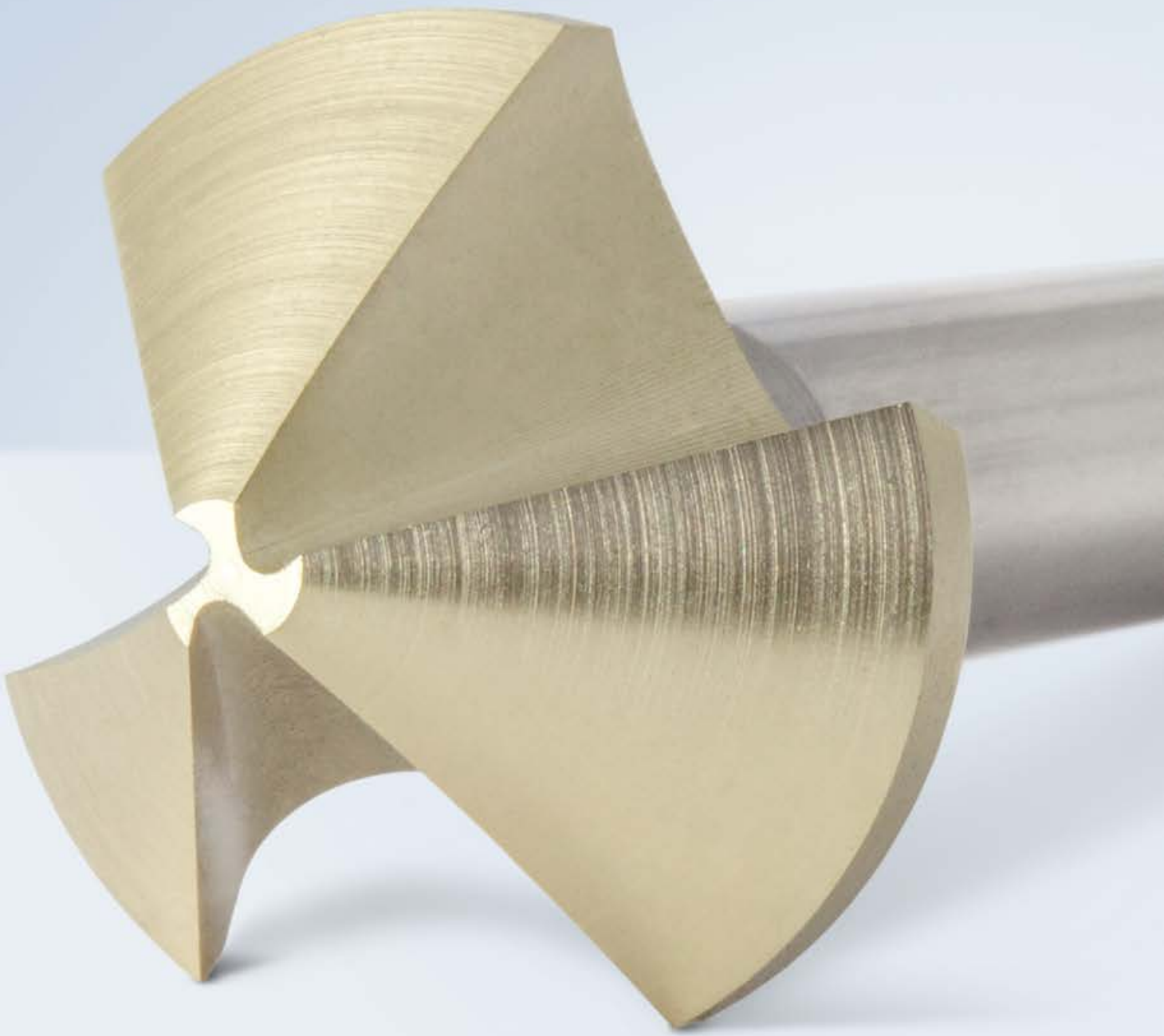
- 1 Two-stage HPR300 custom solution for machining the bearing bore of a transmission housing
- 2 HPR400 with CVD-coated cutting edges with a diameter of 160 mm for machining a differential housing with alignable module interface
- 3 Two-stage HPR400 tool with eight blades for the piston bore and four cutting edges for the control cut of a brake caliper
- 4 Combination tool with ISO tangential inserts for pre-machining and HPR300 with PCD-tipped cutting edges for fine machining a brass bush
- 5 HPR400 custom tool for axle bridge bore produced of GJS-400 with CVD special cutting edges for bearing seat machining and axial grooving
- 6 Combination tool in lightweight design with alignable module interface on hollow shank taper adapter (HSK-A) for machining a bevel gear housing. With ISO tangential inserts for pre-machining and HPR400 system for fine machining
- 7 HPR300 with chamfer machining
- 8 Combination tool with solid carbide drill as insert solution and HPR400 reaming stage for machining a swivel bearing
- 9 HPR400 multi-stage tool in lightweight design with alignable module interface for machining a bevel gear drive housing



COUNTERSINKING

Countersinking using extremely unequally spaced countersinks. Quiet, fast and precise for optimal countersinking.





COUNTERSINKS WITH EXTREMELY UNEQUAL SPACING

Introduction

Technology 586

Countersink

HSS variant, coated 588

Solid carbide variant, coated 589





COUNTERSINKS WITH EXTREMELY UNEQUAL SPACING

Finally, it can be quiet, fast and accurate

Every machining process has latent potential for boosting productivity. There is significant potential for improvement even in machining operations that seem secondary. This is proven by the countersinks from MAPAL.

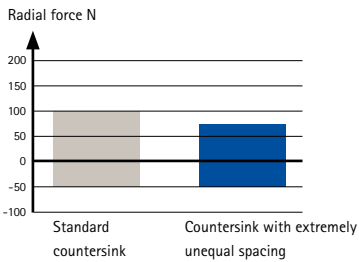
The countersinks operate with significantly reduced axial forces. Their cutting edges are unequally spaced. With the selected spacing, the axial force is reduced by more than 50 percent and the radial force by 25 percent, compared to conventional countersinks. The optimised operating conditions create significantly less

vibration in the tool, allowing more accuracy and better surface finishes. The level of precision now achieved by the countersinks directly improves the contact of the bolted and riveted joints, so the joints no longer settle under load after assembly. The reduced load on the machine also increases the tool life. As the tool runs smooth and stable, it can also be operated with higher cutting values. This results in significant time savings.

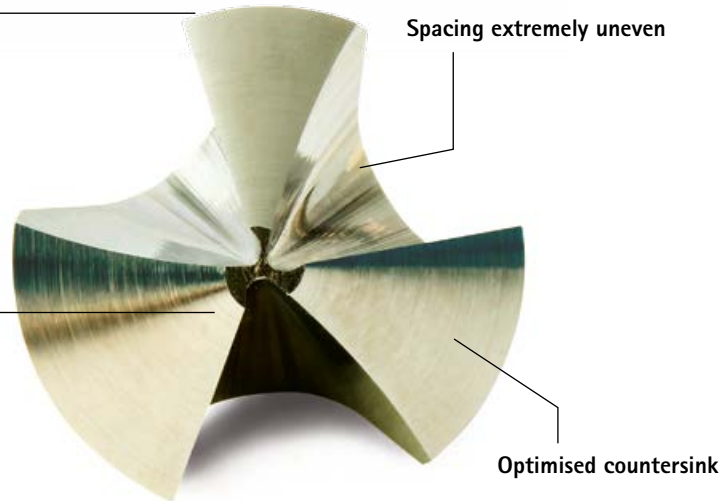
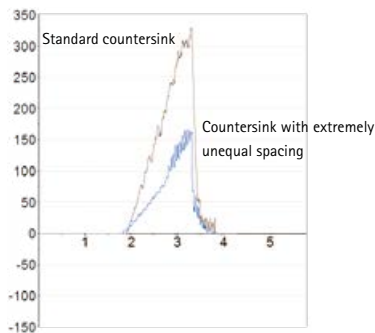


Tool features in detail

Radial force reduced by 25%



Axial force reduced by 50%



Countersink with extremely unequal spacing



Standard countersink

HSS design, coated



For all common workpiece materials (such as steel, stainless steel or aluminium), the countersinks in HSS design with high-performance coating are the tool of choice. The coating ensures a long tool life. The tools work safely and reliably, even at high cutting speeds. For more demanding workpiece materials, the solid carbide design is recommended.

Solid carbide design, coated



In addition to the high-performance coated HSS designs of countersinks, MAPAL also offers selected diameters in a coated solid carbide version. Along with the advantages of unequal spacing, the solid carbide design offers additional added value during the machining of demanding workpiece materials, such as titanium, high-alloy cast iron, Inconel or CFRP. Longer tool lives and higher cutting speeds are reliably achieved, compared with the coated HSS design.

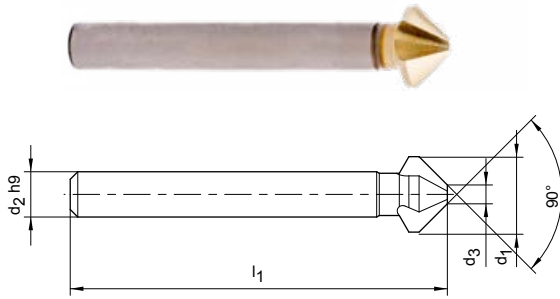
Special drill designs with countersink step



MAPAL offers the possibility of manufacturing a countersink step for almost all solid carbide drills as a special solution. In this way, both machining operations, drilling and countersinking, can be carried out using a single tool, which reduces downtimes. The most up-to-date manufacturing technologies as well as flexible manufacturing at MAPAL make short delivery times possible for custom solutions worldwide.

90° countersink

HSS design, coated, extremely unequal spacing
COS110



| Dimensions | | | | | Specification | Order no. |
|----------------|----------------|----------------|----------------|---|------------------------|-----------|
| d ₁ | d ₂ | d ₃ | l ₁ | z | | |
| 4.30 | 4 | 1.3 | 40 | 3 | COS110-0430-335C-SP345 | 30662991 |
| 6.00 | 5 | 1.5 | 45 | 3 | COS110-0600-335C-SP345 | 30662992 |
| 6.30 | 5 | 1.5 | 45 | 3 | COS110-0630-335C-SP345 | 30633783 |
| 8.00 | 6 | 2.0 | 50 | 3 | COS110-0800-335C-SP345 | 30662993 |
| 8.30 | 6 | 2.0 | 50 | 3 | COS110-0830-335C-SP345 | 30662994 |
| 10.00 | 6 | 2.5 | 50 | 3 | COS110-1000-335C-SP345 | 30662996 |
| 10.40 | 6 | 2.5 | 50 | 3 | COS110-1040-335C-SP345 | 30633784 |
| 11.50 | 8 | 2.8 | 56 | 3 | COS110-1150-335C-SP345 | 30662997 |
| 12.40 | 8 | 2.8 | 56 | 3 | COS110-1240-335C-SP345 | 30662998 |
| 15.00 | 10 | 3.2 | 60 | 3 | COS110-1500-335C-SP345 | 30662999 |
| 16.50 | 10 | 3.2 | 60 | 3 | COS110-1650-335C-SP345 | 30633786 |
| 19.00 | 10 | 3.5 | 63 | 3 | COS110-1900-335C-SP345 | 30663000 |
| 20.50 | 10 | 3.5 | 63 | 3 | COS110-2050-335C-SP345 | 30633787 |
| 23.00 | 10 | 3.8 | 67 | 3 | COS110-2300-335C-SP345 | 30663001 |
| 25.00 | 10 | 3.8 | 67 | 3 | COS110-2500-335C-SP345 | 30633788 |
| 31.00 | 12 | 4.2 | 71 | 3 | COS110-3100-335C-SP345 | 30663003 |



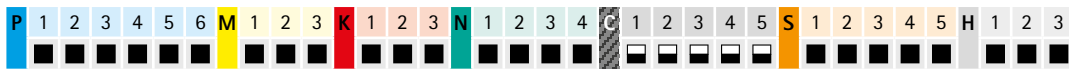
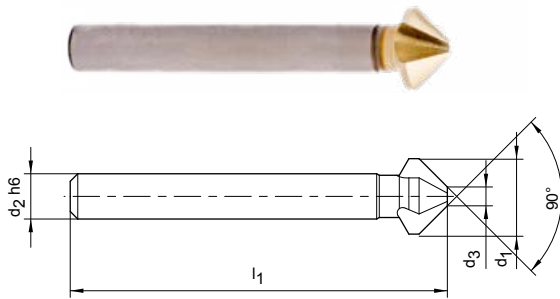
Countersink set

| d ₁ | Specification | Order no. |
|----------------|--|-----------|
| 6.30 - 25.00 | COS110-6.3-25-335C-SP345-SET Set consists of ∅ 6.30 mm ∅ 10.4 mm ∅ 16.5 mm ∅ 20.5 mm ∅ 25.0 mm | 30634356 |

Dimensions in mm.
For cutting data recommendations, see end of chapter.

90° countersink

Solid carbide design, coated, extremely unequal spacing
COS110



| Dimensions | | | | | Specification | Order no. |
|------------|-------|-------|-------|-----|------------------------|-----------|
| d_1 | d_2 | d_3 | l_1 | z | | |
| 6.30 | 5 | 1.5 | 45 | 3 | COS110-0630-335C-HP437 | 30799189 |
| 8.30 | 6 | 2.0 | 50 | 3 | COS110-0830-335C-HP437 | 30799191 |
| 10.40 | 6 | 2.5 | 50 | 3 | COS110-1040-335C-HP437 | 30799192 |
| 12.40 | 8 | 2.8 | 56 | 3 | COS110-1240-335C-HP437 | 30799195 |
| 16.50 | 10 | 3.2 | 60 | 3 | COS110-1650-335C-HP437 | 30799198 |
| 20.50 | 10 | 3.5 | 63 | 3 | COS110-2050-335C-HP437 | 30799199 |
| 25.00 | 10 | 3.8 | 67 | 3 | COS110-2500-335C-HP437 | 30799201 |
| 31.00 | 12 | 4.2 | 71 | 3 | COS110-3100-335C-HP437 | 30799203 |

Dimensions in mm.

For cutting data recommendations, see end of chapter.

Cutting data recommendations for countersinks

Countersink with extremely unequal spacing – HSS design, coated
Feed and cutting speed

| MMG* | | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|------|-------------------------------------|---|---|
| P | P1 | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2 | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3 | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| | | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4 | P4.1 Stainless steels, ferritic and martensitic | |
| | P5 | P5.1 Cast steel | |
| | P6 | P6.1 Stainless cast steel, ferritic and martensitic | |
| M | M1 | M1.1 Stainless steels, austenitic | < 700 |
| | | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1,000 |
| | M2 | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| | | M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 |
| K | K1 | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2 | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3 | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |
| N | N1 | N1.1 Aluminium, unalloyed and alloyed < 3 % Si | |
| | | N1.2 Aluminium, alloyed ≤ 7 % Si | |
| | | N1.3 Aluminium, alloyed > 7-12 % Si | |
| | | N1.4 Aluminium, alloyed > 12 % Si | |
| | N2 | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | | N2.2 Copper, alloy | > 300 |
| | | N2.3 Brass, bronze, gunmetal | < 1,200 |
| | N4 | N4.1 Plastic, thermoplastics | |
| | | N4.2 Plastic, thermosets | |
| | | N4.3 Plastic, foams | |
| S | S1 | S1.1 Titanium, titanium alloys | < 400 |
| | | S2.1 Titanium, titanium alloys | < 1,200 |
| | S2 | S2.2 Titanium, titanium alloys | > 1,200 |
| | | S3.1 Nickel, non-alloy and alloy | < 900 |
| | S3 | S3.2 Nickel, non-alloy and alloy | > 900 |
| | | S4.1 High-temperature super alloy Ni, Co and Fe-based | |
| S5 | S5.1 Tungsten and molybdenum alloys | | |
| H | H1 | H1.1 Hardened steel/cast steel | < 44 |
| | | H1.2 Hardened steel/cast steel | < 55 |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8 %, then select the next highest MAPAL machining group.

Next page:
Solid carbide design

| | $\varnothing < 5$ [mm] | | $\varnothing < 5-8$ [mm] | | $\varnothing < 8-12$ [mm] | | $\varnothing < 12-16$ [mm] | | $\varnothing < 16-20$ [mm] | | $\varnothing < 20-25$ [mm] | | $\varnothing < 25-31$ [mm] | |
|--|------------------------|-------------|--------------------------|-------------|---------------------------|-------------|----------------------------|-------------|----------------------------|-------------|----------------------------|-------------|----------------------------|-------------|
| | v_c [m/min] | f [mm] | v_c [m/min] | f [mm] | v_c [m/min] | f [mm] | v_c [m/min] | f [mm] | v_c [m/min] | f [mm] | v_c [m/min] | f [mm] | v_c [m/min] | f [mm] |
| | 40 | 0.06 | 40 | 0.08 | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.22 |
| | 30 | 0.04 | 30 | 0.06 | 30 | 0.08 | 30 | 0.10 | 30 | 0.12 | 30 | 0.14 | 30 | 0.18 |
| | 30 | 0.04 | 30 | 0.06 | 30 | 0.08 | 30 | 0.10 | 30 | 0.12 | 30 | 0.14 | 30 | 0.18 |
| | 12 | 0.03 | 12 | 0.04 | 12 | 0.05 | 12 | 0.06 | 12 | 0.08 | 12 | 0.10 | 12 | 0.12 |
| | 30 | 0.04 | 30 | 0.06 | 30 | 0.08 | 30 | 0.10 | 30 | 0.12 | 30 | 0.14 | 30 | 0.18 |
| | 12 | 0.03 | 12 | 0.04 | 12 | 0.05 | 12 | 0.06 | 12 | 0.08 | 12 | 0.10 | 12 | 0.12 |
| | | | | | | | | | | | | | | |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 30 | 0.04 | 30 | 0.06 | 30 | 0.08 | 30 | 0.10 | 30 | 0.12 | 30 | 0.14 | 30 | 0.18 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | | | | | | | | | | | | | | |
| | 20 | 0.06 | 20 | 0.10 | 20 | 0.12 | 20 | 0.14 | 20 | 0.18 | 20 | 0.20 | 20 | 0.25 |
| | 20 | 0.06 | 20 | 0.10 | 20 | 0.12 | 20 | 0.14 | 20 | 0.18 | 20 | 0.20 | 20 | 0.25 |
| | 20 | 0.06 | 20 | 0.10 | 20 | 0.12 | 20 | 0.14 | 20 | 0.18 | 20 | 0.20 | 20 | 0.25 |
| | 20 | 0.06 | 20 | 0.10 | 20 | 0.12 | 20 | 0.14 | 20 | 0.18 | 20 | 0.20 | 20 | 0.25 |
| | 20 | 0.06 | 20 | 0.10 | 20 | 0.12 | 20 | 0.14 | 20 | 0.18 | 20 | 0.20 | 20 | 0.25 |
| | 20 | 0.06 | 20 | 0.10 | 20 | 0.12 | 20 | 0.14 | 20 | 0.18 | 20 | 0.20 | 20 | 0.25 |
| | | | | | | | | | | | | | | |
| | 50 | 0.08 | 50 | 0.10 | 50 | 0.12 | 50 | 0.14 | 50 | 0.18 | 50 | 0.22 | 50 | 0.26 |
| | 50 | 0.08 | 50 | 0.10 | 50 | 0.12 | 50 | 0.14 | 50 | 0.18 | 50 | 0.22 | 50 | 0.26 |
| | 40 | 0.08 | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.22 | 40 | 0.26 |
| | 40 | 0.08 | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.22 | 40 | 0.26 |
| | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.20 | 40 | 0.24 | 40 | 0.30 |
| | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.20 | 40 | 0.24 | 40 | 0.30 |
| | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.20 | 40 | 0.24 | 40 | 0.30 |
| | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.20 | 40 | 0.24 | 40 | 0.30 |
| | 40 | 0.10 | 40 | 0.12 | 40 | 0.14 | 40 | 0.18 | 40 | 0.20 | 40 | 0.24 | 40 | 0.30 |
| | | | | | | | | | | | | | | |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | 10 | 0.04 | 10 | 0.05 | 10 | 0.06 | 10 | 0.07 | 10 | 0.08 | 10 | 0.09 | 10 | 0.12 |
| | | | | | | | | | | | | | | |
| | 6 | 0.04 | 6 | 0.05 | 6 | 0.06 | 6 | 0.08 | 6 | 0.08 | 6 | 0.10 | | |
| | 6 | 0.04 | 6 | 0.05 | 6 | 0.06 | 6 | 0.08 | 6 | 0.08 | 6 | 0.10 | | |

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for countersinks

Countersink with extremely unequal spacing – solid carbide design, coated
Feed and cutting speed

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] |
|---|---|--|
| P | P1.1 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 |
| | P1.2 Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 |
| | P2.1 Nitrided, case hardened and heat-treated steels, alloy | < 900 |
| | P2.2 Nitrided, case hardened and heat-treated steels, alloy | < 1,400 |
| | P3.1 Tool, bearing, spring and high-speed steels** | < 800 |
| | P3.2 Tool, bearing, spring and high-speed steels** | < 1,000 |
| P | P3.3 Tool, bearing, spring and high-speed steels** | < 1,500 |
| | P4.1 Stainless steels, ferritic and martensitic | |
| | P5.1 Cast steel | |
| P6.1 Stainless cast steel, ferritic and martensitic | | |
| M | M1.1 Stainless steels, austenitic | < 700 |
| | M1.2 Stainless steels, ferritic/austenitic (duplex) | < 1000 |
| | M2.1 Stainless/heat-resistant cast steel, austenitic | < 700 |
| M3.1 Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 | |
| K | K1.1 Cast iron with lamellar graphite (grey cast iron), GJL | < 300 |
| | K2.1 Cast iron with spheroidal graphite, GJS | < 500 |
| | K2.2 Cast iron with spheroidal graphite, GJS | ≤ 800 |
| | K2.3 Cast iron with spheroidal graphite, GJS | > 800 |
| | K3.1 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 |
| | K3.2 Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 |
| N | N1.1 Aluminium, unalloyed and alloyed < 3 % Si | |
| | N1.2 Aluminium, alloyed ≤ 7 % Si | |
| | N1.3 Aluminium, alloyed > 7-12 % Si | |
| | N1.4 Aluminium, alloyed > 12 % Si | |
| | N2.1 Copper, non-alloy and low-alloy | < 300 |
| | N2.2 Copper, alloy | > 300 |
| | N2.3 Brass, bronze, gunmetal | < 1,200 |
| | N3.1 Graphite > 8 µm | |
| | N3.2 Graphite < 8 µm | |
| | N4.1 Plastic, thermoplastics | |
| N | N4.2 Plastic, thermosets | |
| | N4.3 Plastic, foams | |
| | C | C1.1 Plastic matrix, aramide fibre-reinforced (AFRP) |
| C1.2 Plastic matrix (thermosetting), CFRP/GFRP | | |
| C1.3 Plastic matrix (thermoplastic), CFRP/GFRP | | |
| C2.1 Carbon matrix, carbon fibre-reinforced (CFC) | | |
| C3.1 Metal matrix (MMC) | | |
| C4.1 Sandwich construction, honeycomb core | | |
| C4.2 Sandwich construction, foam core | | |
| C5.1 Composite (stack), non-metal - non-ferrous metal composite | | |
| C5.2 Composite (stack), non-metal - metal composite | | |
| C5.3 Composite (stack), non-metal - non-metallic composite | | |
| C5.4 Composite (stack), non-ferrous metal - non-ferrous metal composite | | |
| C5.5 Composite (stack), non-ferrous metal - metal composite | | |
| C5.6 Composite (stack), metal - metal composite | | |
| S | S1.1 Titanium, titanium alloys | < 400 |
| | S2.1 Titanium, titanium alloys | < 1,200 |
| | S2.2 Titanium, titanium alloys | > 1,200 |
| | S3.1 Nickel, non-alloy and alloy | < 900 |
| | S3.2 Nickel, non-alloy and alloy | > 900 |
| | S4.1 High-temperature super alloy Ni, Co and Fe-based | |
| S5.1 Tungsten and molybdenum alloys | | |
| H | H1.1 Hardened steel/cast steel | < 44 |
| | H1.2 Hardened steel/cast steel | < 55 |
| | H2.1 Hardened steel/cast steel | < 60 |
| | H2.2 Hardened steel/cast steel | < 65 |
| H | H2.3 Hardened steel/cast steel | < 68 |
| | H3.1 Wear-resistant cast/chill casting, GJN | |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8 %, then select the next highest MAPAL machining group.

| | ø < 5 [mm] | | ø < 5-8 [mm] | | ø < 8-12 [mm] | | ø < 12-16 [mm] | | ø < 16-20 [mm] | | ø < 20-25 [mm] | | ø < 25-31 [mm] | |
|--|---------------------------|-----------|---------------------------|-----------|---------------------------|-----------|---------------------------|-----------|---------------------------|-----------|---------------------------|-----------|---------------------------|-----------|
| | v _c [m/min] | f [mm] | v _c [m/min] | f [mm] | v _c [m/min] | f [mm] | v _c [m/min] | f [mm] | v _c [m/min] | f [mm] | v _c [m/min] | f [mm] | v _c [m/min] | f [mm] |
| | 60 | 0.06 | 60 | 0.08 | 60 | 0.10 | 60 | 0.12 | 60 | 0.14 | 60 | 0.18 | 60 | 0.22 |
| | 50 | 0.04 | 50 | 0.06 | 50 | 0.08 | 50 | 0.10 | 50 | 0.12 | 50 | 0.14 | 50 | 0.18 |
| | 50 | 0.04 | 50 | 0.06 | 50 | 0.08 | 50 | 0.10 | 50 | 0.12 | 50 | 0.14 | 50 | 0.18 |
| | 40 | 0.03 | 40 | 0.04 | 40 | 0.05 | 40 | 0.06 | 40 | 0.08 | 40 | 0.10 | 40 | 0.12 |
| | 50 | 0.04 | 50 | 0.06 | 50 | 0.08 | 50 | 0.10 | 50 | 0.12 | 50 | 0.14 | 50 | 0.18 |
| | 40 | 0.03 | 40 | 0.04 | 40 | 0.05 | 40 | 0.06 | 40 | 0.08 | 40 | 0.10 | 40 | 0.12 |
| | | | | | | | | | | | | | | |
| | 30 | 0.04 | 30 | 0.05 | 30 | 0.06 | 30 | 0.07 | 30 | 0.08 | 30 | 0.09 | 30 | 0.12 |
| | 50 | 0.04 | 50 | 0.06 | 50 | 0.08 | 50 | 0.10 | 50 | 0.12 | 50 | 0.14 | 50 | 0.18 |
| | 30 | 0.04 | 30 | 0.05 | 30 | 0.06 | 30 | 0.07 | 30 | 0.08 | 30 | 0.09 | 30 | 0.12 |
| | 30 | 0.04 | 30 | 0.05 | 30 | 0.06 | 30 | 0.07 | 30 | 0.08 | 30 | 0.09 | 30 | 0.12 |
| | 25 | 0.04 | 25 | 0.05 | 25 | 0.06 | 25 | 0.07 | 25 | 0.08 | 25 | 0.09 | 25 | 0.12 |
| | 30 | 0.04 | 30 | 0.05 | 30 | 0.06 | 30 | 0.07 | 30 | 0.08 | 30 | 0.09 | 30 | 0.12 |
| | 25 | 0.04 | 25 | 0.05 | 25 | 0.06 | 25 | 0.07 | 25 | 0.08 | 25 | 0.09 | 25 | 0.12 |
| | 50 | 0.06 | 50 | 0.10 | 50 | 0.12 | 50 | 0.14 | 50 | 0.18 | 50 | 0.20 | 50 | 0.25 |
| | 45 | 0.06 | 45 | 0.10 | 45 | 0.12 | 45 | 0.14 | 45 | 0.18 | 45 | 0.20 | 45 | 0.25 |
| | 45 | 0.06 | 45 | 0.10 | 45 | 0.12 | 45 | 0.14 | 45 | 0.18 | 45 | 0.20 | 45 | 0.25 |
| | 45 | 0.06 | 45 | 0.10 | 45 | 0.12 | 45 | 0.14 | 45 | 0.18 | 45 | 0.20 | 45 | 0.25 |
| | 35 | 0.06 | 35 | 0.10 | 35 | 0.12 | 35 | 0.14 | 35 | 0.18 | 35 | 0.20 | 35 | 0.25 |
| | 35 | 0.06 | 35 | 0.10 | 35 | 0.12 | 35 | 0.14 | 35 | 0.18 | 35 | 0.20 | 35 | 0.25 |
| | 80 | 0.08 | 80 | 0.10 | 80 | 0.12 | 80 | 0.14 | 80 | 0.18 | 80 | 0.22 | 80 | 0.26 |
| | 80 | 0.08 | 80 | 0.10 | 80 | 0.12 | 80 | 0.14 | 80 | 0.18 | 80 | 0.22 | 80 | 0.26 |
| | 60 | 0.08 | 60 | 0.10 | 60 | 0.12 | 60 | 0.14 | 60 | 0.18 | 60 | 0.22 | 60 | 0.26 |
| | 60 | 0.08 | 60 | 0.10 | 60 | 0.12 | 60 | 0.14 | 60 | 0.18 | 60 | 0.22 | 60 | 0.26 |
| | 70 | 0.10 | 70 | 0.12 | 70 | 0.14 | 70 | 0.18 | 70 | 0.20 | 70 | 0.24 | 70 | 0.30 |
| | 70 | 0.10 | 70 | 0.12 | 70 | 0.14 | 70 | 0.18 | 70 | 0.20 | 70 | 0.24 | 70 | 0.30 |
| | 70 | 0.10 | 70 | 0.12 | 70 | 0.14 | 70 | 0.18 | 70 | 0.20 | 70 | 0.24 | 70 | 0.30 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 70 | 0.10 | 70 | 0.12 | 70 | 0.14 | 70 | 0.18 | 70 | 0.20 | 70 | 0.24 | 70 | 0.30 |
| | 70 | 0.10 | 70 | 0.12 | 70 | 0.14 | 70 | 0.18 | 70 | 0.20 | 70 | 0.24 | 70 | 0.30 |
| | 70 | 0.10 | 70 | 0.12 | 70 | 0.14 | 70 | 0.18 | 70 | 0.20 | 70 | 0.24 | 70 | 0.30 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 25 | 0.06 | 25 | 0.10 | 25 | 0.12 | 25 | 0.14 | 25 | 0.18 | 25 | 0.20 | 25 | 0.25 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 15 | 0.04 | 15 | 0.05 | 15 | 0.06 | 15 | 0.07 | 15 | 0.08 | 15 | 0.09 | 15 | 0.12 |
| | 12 | 0.04 | 12 | 0.05 | 12 | 0.06 | 12 | 0.08 | 12 | 0.08 | 12 | 0.10 | | |
| | 12 | 0.04 | 12 | 0.05 | 12 | 0.06 | 12 | 0.08 | 12 | 0.08 | 12 | 0.10 | | |
| | 8 | 0.04 | 8 | 0.05 | 8 | 0.06 | 8 | 0.08 | 8 | 0.08 | 8 | 0.10 | | |
| | 8 | 0.04 | 8 | 0.05 | 8 | 0.06 | 8 | 0.08 | 8 | 0.08 | 8 | 0.10 | | |
| | | | | | | | | | | | | | | |
| | 12 | 0.04 | 12 | 0.05 | 12 | 0.06 | 12 | 0.08 | 12 | 0.08 | 12 | 0.10 | | |

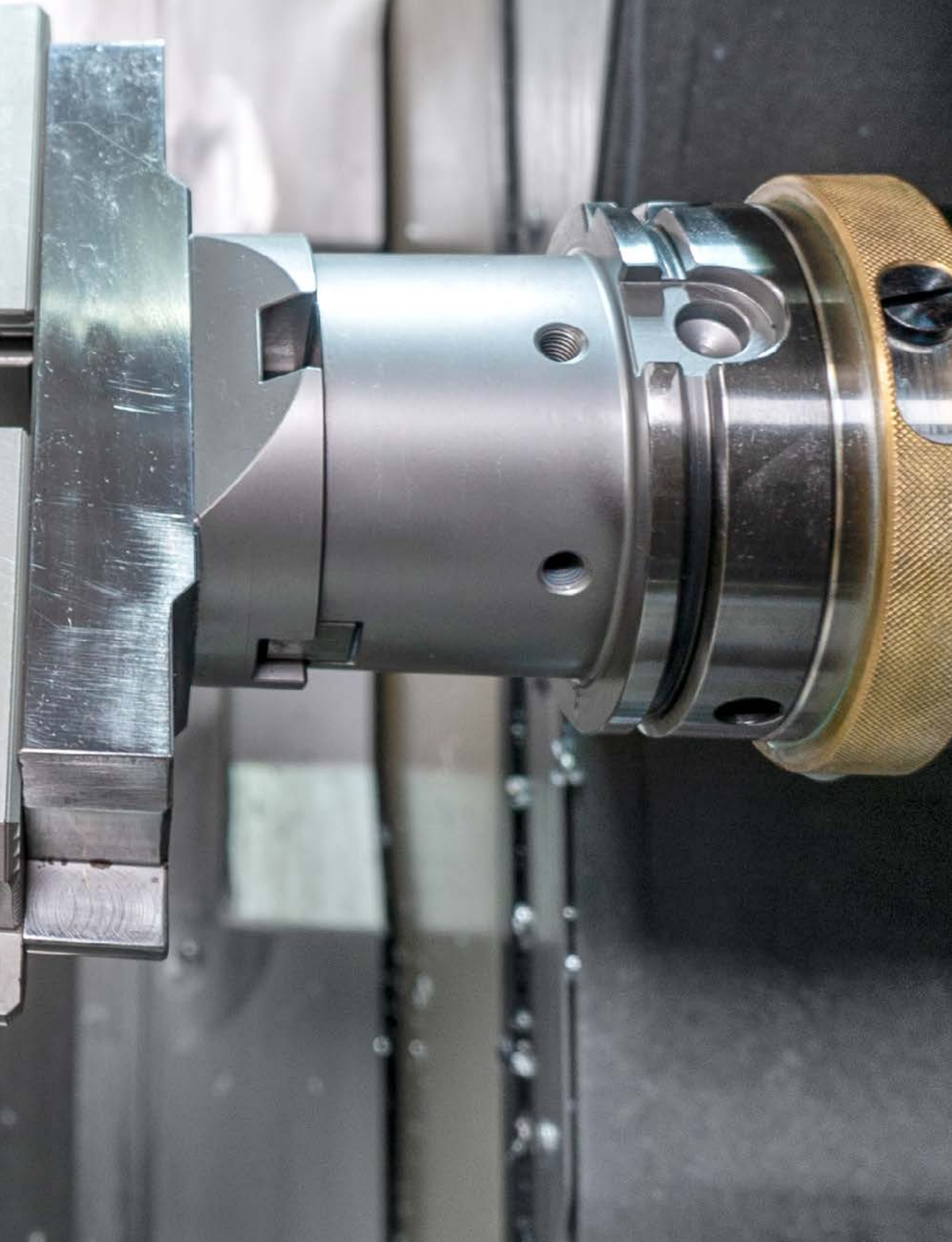
The specified cutting values are guide values.
The optimum data for the respective machining task should be determined during the test or machining.

BORING AND TURNING

Cartridges offer maximum flexibility for individual tool solutions. The ModulBore range is a modular solution for boring and fine boring.

Positive radial indexable inserts for boring and turning.
Tangential indexable inserts for the highest demands when boring.





PRODUCT OVERVIEW

Boring and turning

MAPAL boring tools for the machining step between drilling from solid and fine machining represent an optimal combination of cost-effectiveness and robustness tough enough for any machining forces that arise. Based on innovative technology and absolute precision, MAPAL offers a comprehensive range of custom tools with indexable inserts and fixed brazed PCD cutting edges. Mapal's understanding of the complete machining process and the production process as a whole makes real progress possible here.

With the standard range ModulBore, MAPAL offers a complete system for pre-machining and finishing bores in the diameter range from 6 to 1,000 mm. Easily adjustable cartridges offer numerous possibilities in various applica-

tions. The standard range is compatible with all common ISO indexable inserts and covers the bulk of installation variants in engineering.

The range of indexable inserts in special designs as well as radial and tangential indexable inserts covers all requirements for cutting materials and coatings as well as the corresponding blade geometries and accuracies. Select carbide and PCD-tipped indexable inserts are also available for turning applications.



Special solutions



Boring with PCD

- Individual tool solutions for demanding machining tasks
- Highest machining quality for dimensions, surface finish and shape
- Realisation of complex cutting geometries
- Twisted tools for machining delicate or unstable parts and clamping systems
- Manufacturing tolerances from $\leq 3 \mu\text{m}$ for tool diameter
- Multi-stage design guarantees coaxiality of stepped bores
- Boring tools as combination tool to reduce non-productive times
- Optimised for usage with minimum quantity lubrication (MQL)



Boring with indexable inserts

- Multi-stage design means less tools and machining time are needed
- Higher effectiveness due to the usage of tangential technology
- Guide pads ensure very high positioning accuracy
- Spring-loaded guide pads for reliable machining of large drilling depths
- Hybrid tools combine different tool systems
- In unstable machining situations or with large projection lengths, vibration dampers ensure higher machining quality and longer tool life



Indexable inserts in special design

- Realisation of complex geometries and contours for almost all applications
- Form cutting edges for machining complex contours with high shape accuracy
- Modern production facilities guarantee the highest precision and flexibility of special MAPAL inserts
- High-performance cutting materials for every work-piece material
- PCD- and PcBN-tipped indexable inserts are also available



Standard range



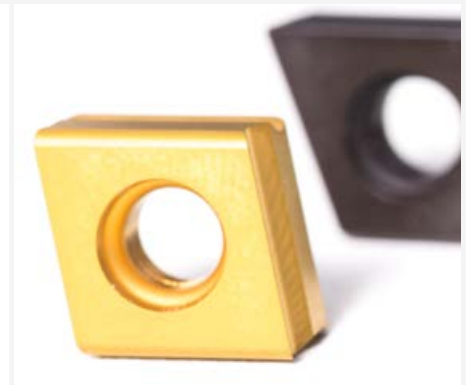
ModuBore

- Diameter range from 6 to 1,000 mm
- High flexibility due to modular construction
- Large diameter ranges can be machined using one tool
- Internal coolant supply for optimal chip removal
- Available with fine adjustment feature (ModuBore Plus)
- Face-side serration guarantees a stable, high-performance system
- Variant with ISO cartridges for machining larger diameter



Cartridges

- High flexibility due to quick, straightforward interchangeability
- Adjusting feature with long adjustment range
- Compatible with all common ISO indexable inserts
- Suitable for both external and internal machining operations
- Available in different installation variants
- Also available as compact cartridge with shorter length



Indexable inserts

- Positive radial inserts for boring and turning
- Tangential indexable inserts for the highest demands
- Ground and pressed cutting edges available
- PVD- and CVD-coated cutting materials cover a wide spectrum from wear resistance to ductility
- Tipped variants with PCD and PcBN for highly cost-effective machining of aluminium or cast iron

SPECIAL SOLUTIONS

Boring with PCD

Custom solutions with PCD cutting edges are the first choice if it is necessary to machine large quantities of aluminium and die cast aluminium parts reliably and cost-effectively. By using modern CNC controllers and laser technology, today it is possible to manufacture just about any cutting geometry reliably – and that with manufacturing tolerances from $\leq 3 \mu\text{m}$ on the tool diameter.

The combination of several machining operations in one tool is particularly worthwhile. The savings in tools and reduction of non-productive times increases the cost-effectiveness in production.

A stepped bore where all chamfers and radii are machined can be created using a PCD

boring tool with several steps. In this way the concentricity of the individual steps is guaranteed. The machining of axial recesses or spot facing of contact surfaces can also be solved cost-effectively using one drilling tool. Flatness requirements or angular accuracies can be achieved much more easily than with conventional turning or circular movements, as there are no radial forces acting on the workpiece.

MAPAL manufactures twisted PCD tools with decisive advantages compared to straight-fluted tools. The tools can be flexibly designed to the respective process, for example for minimum quantity lubrication. Hollow shank tape designs and modular systems that can be aligned ensure optimal results.



Special solutions



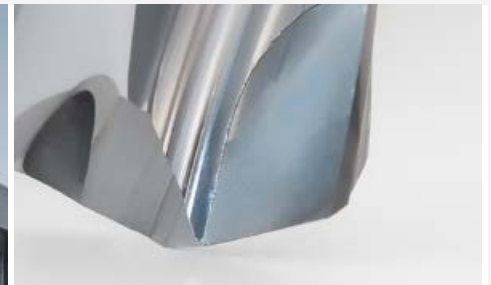
Polycrystalline diamond – PCD

- PCD is a cutting material for machining aluminium, non-ferrous metals, CFRP and other modern workpiece materials
- Synthetically produced from select diamond particles
- Sintered at approx. 1,500 °C and approx. 60 kbar pressure
- Extremely hard and wear-resistant structure
- Various basic substrates allow the selection of the right cutting material for the respective application



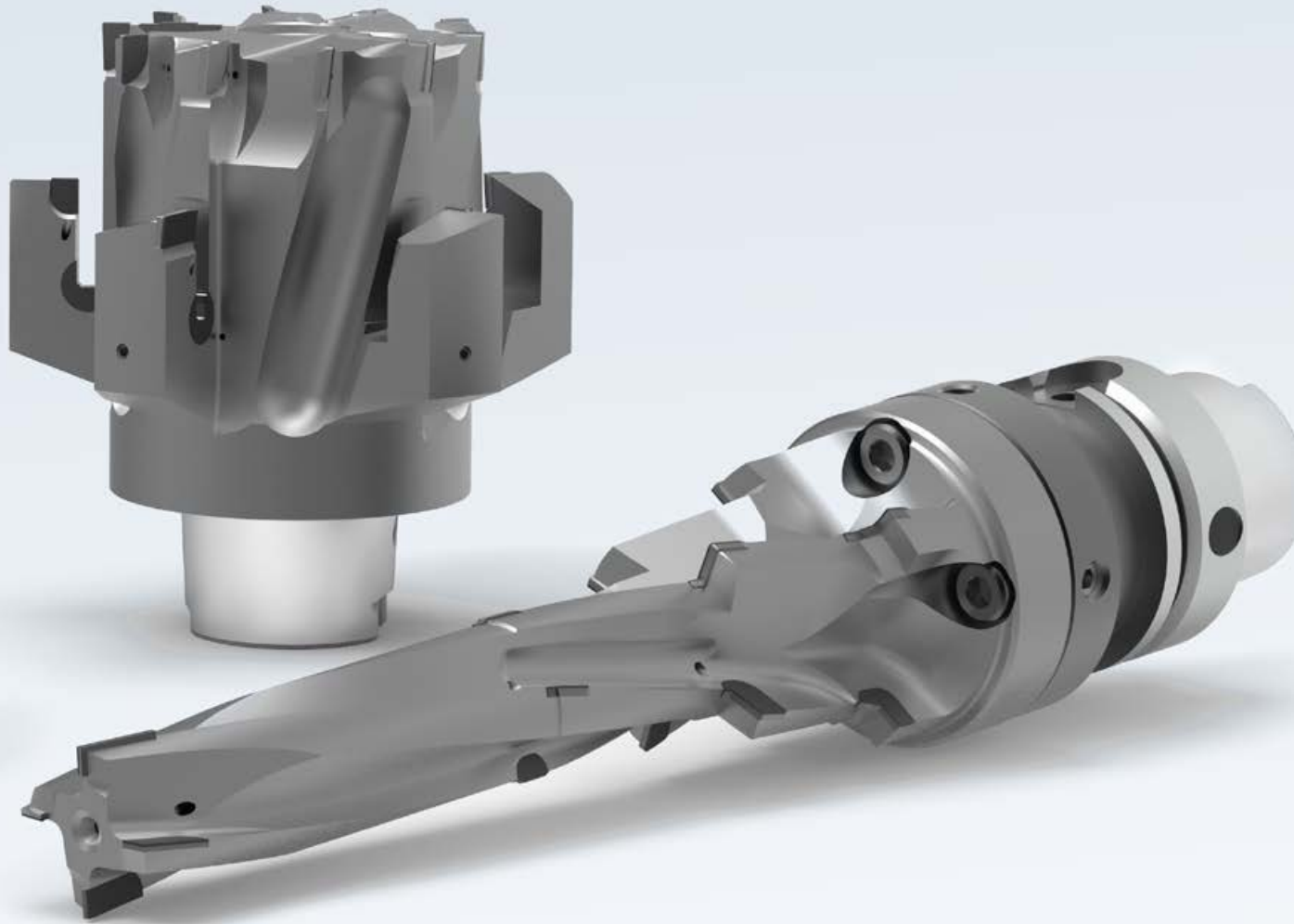
PCD Centre of Competence

- MAPAL Centre of Competence for PCD tools in Pforzheim
- World's largest development and production facility for PCD tools
- High quality standard in conjunction with highly qualified staff guarantee first-class production results
- Use of modern production technologies
- Use of laser technology



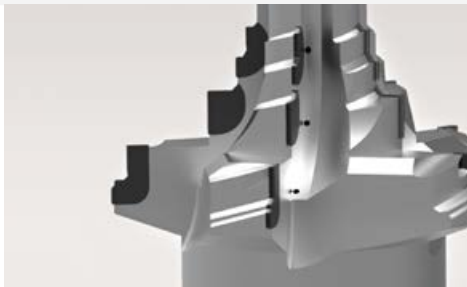
Maximum precision

- μm -precisely ground PCD cutting edges for highest precision
- Manufacturing tolerances from $\leq 3 \mu\text{m}$ for tool diameter
- Highest machining quality for dimensions, surface finish and shape
- Laser-machined chip guiding stages, chip breakers and chip formers make optimal chip removal possible and prevent chip congestion
- Modular design for highest radial run-out accuracy
- Precise and safe adjustment of radial run-out through axial and radial adjustment options



Innovative solutions

- Development of reliable solutions based on the most efficient machining strategies, such as minimum quantity lubrication (MQL)
- Combination tools reduce the number of process steps and shorten non-productive times
- PCD boring tools with several steps guarantee the concentricity of stepped bores
- Precisely embedded PCD segments
- Precisely matched to the respective step geometry



Innovative solutions

- Development of reliable solutions based on the most efficient machining strategies, such as minimum quantity lubrication (MQL)
- Combination tools reduce the number of process steps and shorten non-productive times
- PCD boring tools with several steps guarantee the concentricity of stepped bores
- Precisely embedded PCD segments
- Precisely matched to the respective step geometry



Reconditioning

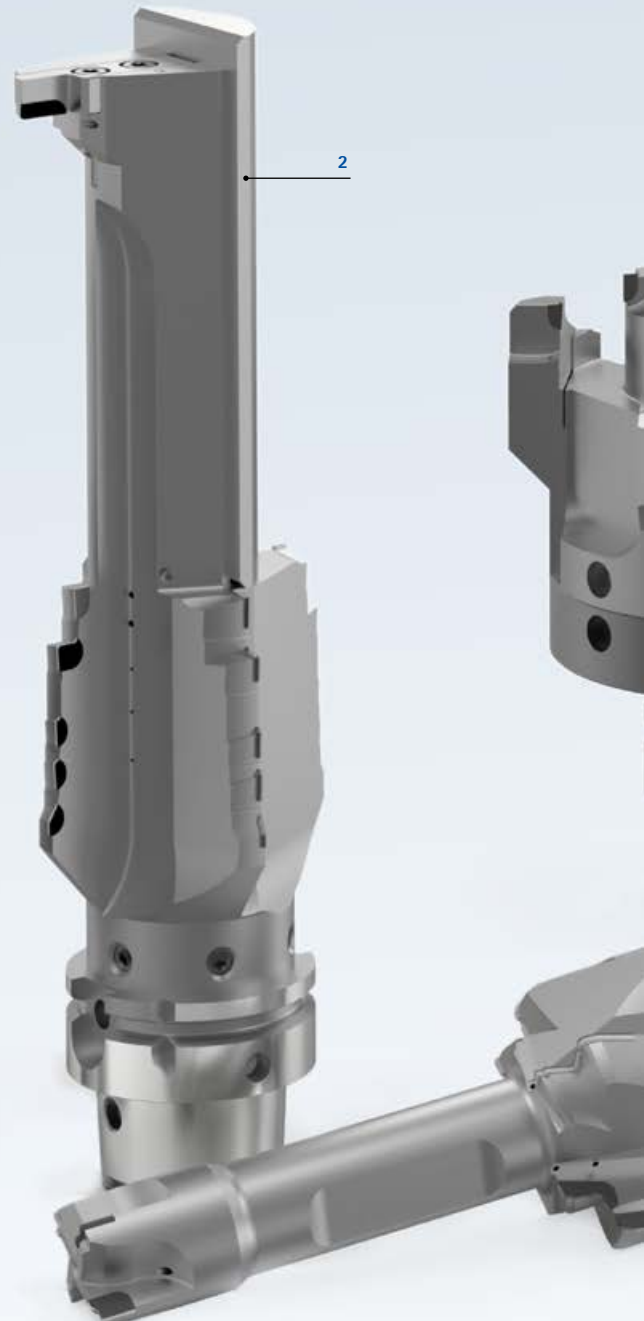
- Reconditioning significantly extends the service life of PCD boring tools
- This saves costs for new tools
- Tools ready for immediate use
- Customary tool lives are reached without any problems
- Picked up from and delivered to you directly by parcel service
- Standardised process for uncomplicated and fast processing within a few days

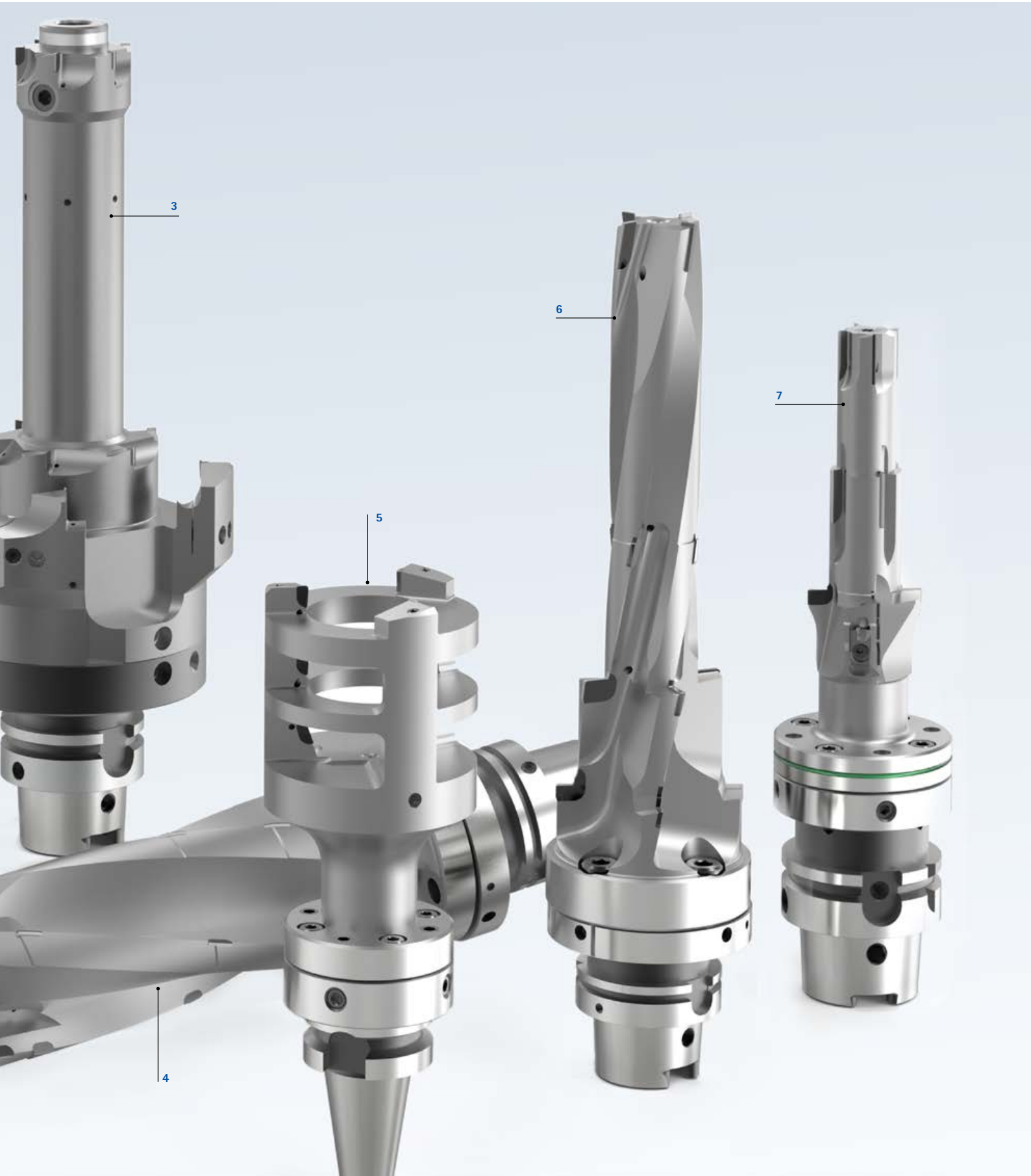
SPECIAL SOLUTIONS

Boring with PCD (1/2)

Application examples for special solutions with PCD

- 1 Boring tool with brazed PCD indexable inserts and exchangeable standard indexable inserts with adjustment option for the implementation of bores with IT6 and defined roughness
- 2 Step drilling tool with adjustable and interchangeable reverse machining for machining a differential housing produced of aluminium
- 3 Combination boring tool for machining an oil pump with an exchangeable solid carbide insertion tool
- 4 Multi-stage boring tool for machining a steering housing/steering rack tube produced of AISi9Cu3. Thanks to the titanium body, the tool weighs only 5.5 kg despite its extreme dimensions
- 5 Boring tool with a lightweight design for machining a compressor baseplate produced of AISi9Cu3. Due to the low tool weight, very high cutting data are possible and the load on the spindle is reduced
- 6 Twisted step boring tool for machining a steering housing produced of AISi9Cu3 with a module interface that can be aligned. Due to the twisted design, very soft cut and mechanical chip discharge
- 7 Step boring tool for machining a bearing bore with an integrated fine adjustment feature for the pilot on a camshaft bore in a cylinder head cover produced of AISi-9Cu3Fe for a process with minimum quantity lubrication



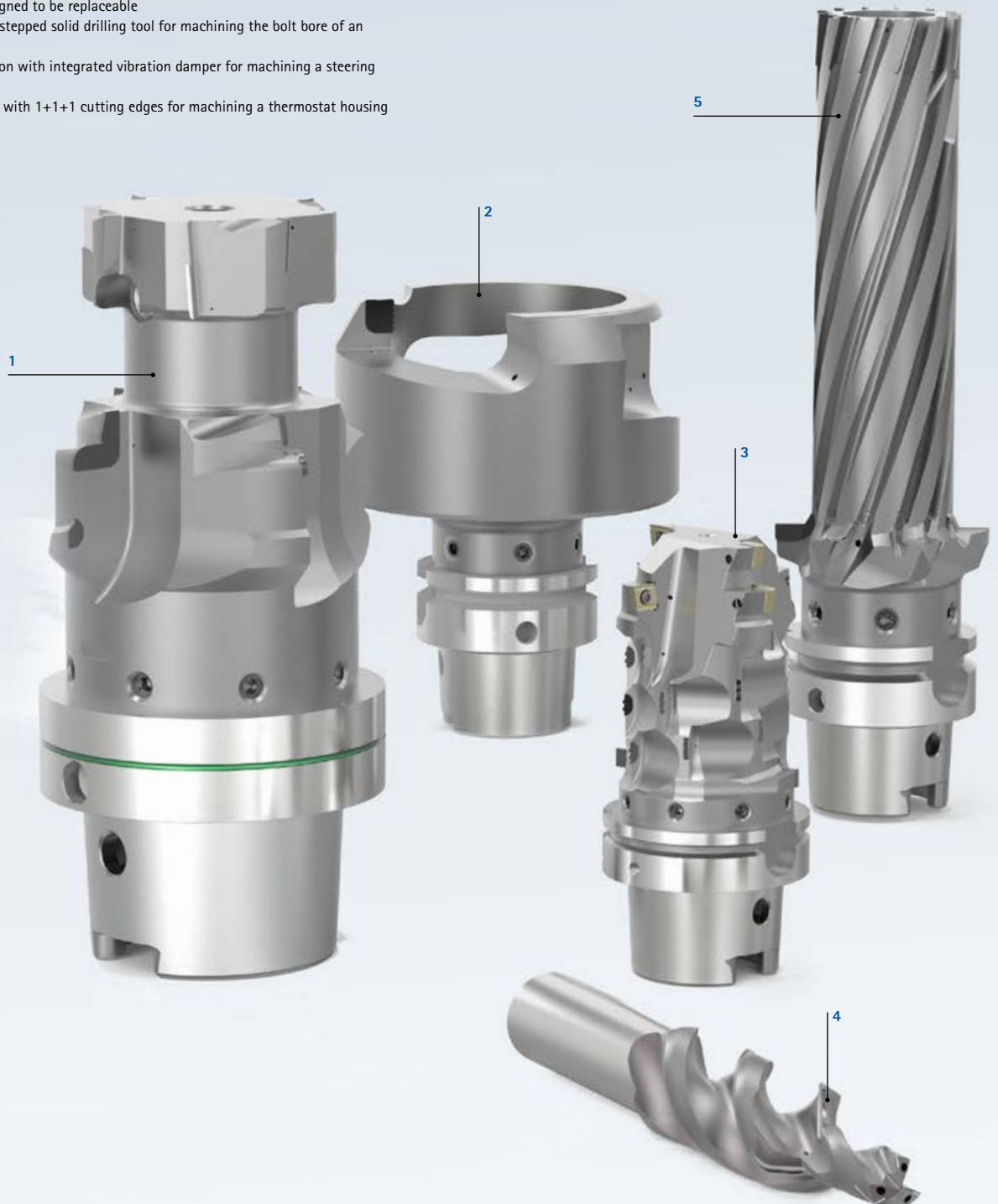


SPECIAL SOLUTIONS

Boring with PCD (2/2)

Application examples for special solutions with PCD

- 1 Bore milling tool for machining a steering knuckle produced of aluminium. Embedded cutting edges ensure chatter-free surfaces while maintaining all tolerances in both drilling and milling operations
- 2 Bell tool with brazed PCD cutting edges in a lightweight design for external machining of hose connections. The honeycomb structure inside the tool significantly reduces the weight, which makes higher cutting data possible. In addition, the honeycomb structure has a damping effect that has a positive impact on the tool life
- 3 Combination drilling-milling tool with PCD cutting edge and indexable inserts made of carbide for machining a rear frame produced of AISiMg0.3. The most heavily stressed cutting edges are designed to be replaceable
- 4 Twisted, triple-fluted, stepped solid drilling tool for machining the bolt bore of an aluminium rim
- 5 "One-shot" tool solution with integrated vibration damper for machining a steering feedback actuator
- 6 Circular milling cutter with 1+1+1 cutting edges for machining a thermostat housing produced of AL380
- 7 Multi-stage PCD boring tool for "one-shot machining" of an electric motor housing produced of AISi9Cu3Fe with a hollow design for use on very stable and powerful machine tools
- 8 Step boring tool for internal and external machining on a transmission housing made of AISi9Cu3Mg





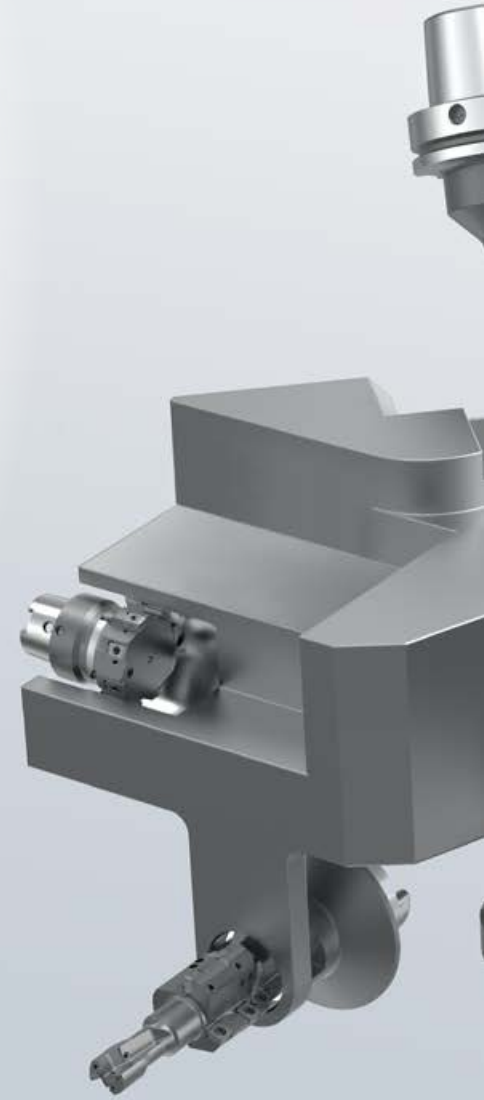
SPECIAL SOLUTIONS

Boring with indexable inserts

During the planning of new machining processes as well as the optimisation of existing processes, the focus is on the assessment of the machining time and the Cost Per Part (CPP). By means of intelligent, multi-stage, multi-cutting-edge combination tools or complete machining tools with indexable inserts, both the productive times and the non-productive times can be significantly reduced. To prepare a solution that is optimal for the customer, different machining systems are combined into so-called hybrid tools.

Tools with indexable inserts from MAPAL meet both the requirement for process reliability and straightforward handling – with intelligent and precise adapter solutions along with secure and quick indexable insert mounting.

The tools with indexable inserts function reliably thanks to the latest engineering methods that make it possible to assess collisions or to determine tool restrictions even during the planning phase. Production in the latest manufacturing facilities guarantees maximum tool precision.



Special solutions



Process solutions

- Effective complete machining tools simultaneously shorten productive and non-productive times
- Optimised processes reduce machining time by up to 60 per cent
- Reduced cycle times
- Less energy consumption
- More cost-effective



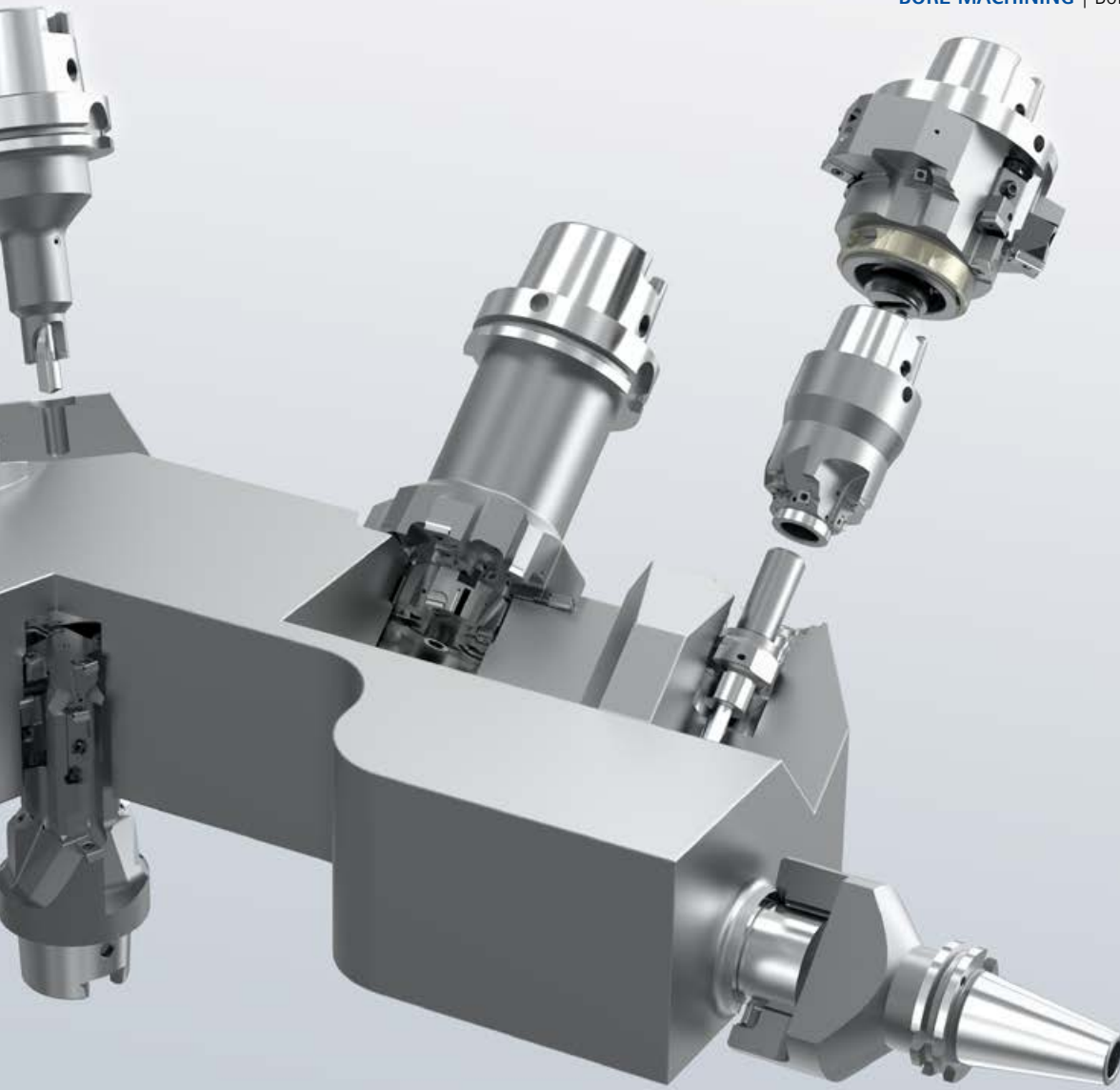
Design and production

- Development and design of complex tangential tools through state-of-the-art 3D design and computer-aided analysis
- Precisely defined insert seats and chip spaces
- Manufacturing with high-precision, high-performance 5-axis machining centres
- Monitoring and control by experienced staff
- Compliance with highly accurate manufacturing tolerances
- Real multi-cutting-edge capability and the high performance of the tools



Modular construction

- Modular design of combination tools with indexable inserts
- Machining of entire component families with just a few tools
- In case of wear and tear, only the part of the tool that is worn out needs to be replaced
- By using connections, for instance a highly accurate HSK-C (hollow shank taper) connection, particularly complex tools can be constructed
- Several machining steps combined into one tool
- Increase in productivity



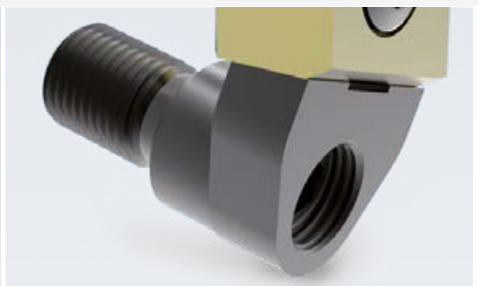
Tangential technology

- Tangential technology for high performance of boring tools with indexable inserts
- Compared to the use of radially mounted indexable inserts, more cutting edges can be used with the same power consumption
- Higher machining values and machining volume
- Very quiet running
- Excellent tool life and very good component qualities



Cutting edges

- Wide selection of geometries and cutting materials
- The right cutting edge for every application
- Different forms and sizes
- All cutting materials such as carbide, ceramic and indexable inserts with PCD or PcBN available
- High cost-effectiveness and resource reliability
- Optimal use of the cutting material due to up to eight cutting edges



Exact adjustment

- Specially developed adjustment system for highly precise adjustability of the cutting edges
- Stable support as the adjusting wedge is completely embedded in the tool body
- Cutting edge rests extensively on adjusting wedge
- The adjusting wedge has an angled surface and can be moved using a left-hand/right-hand setscrew
- Left-hand/right-hand setscrew provides indirect, very precise and easy-to-use adjustment

SPECIAL SOLUTIONS

Boring with indexable inserts (1/2)

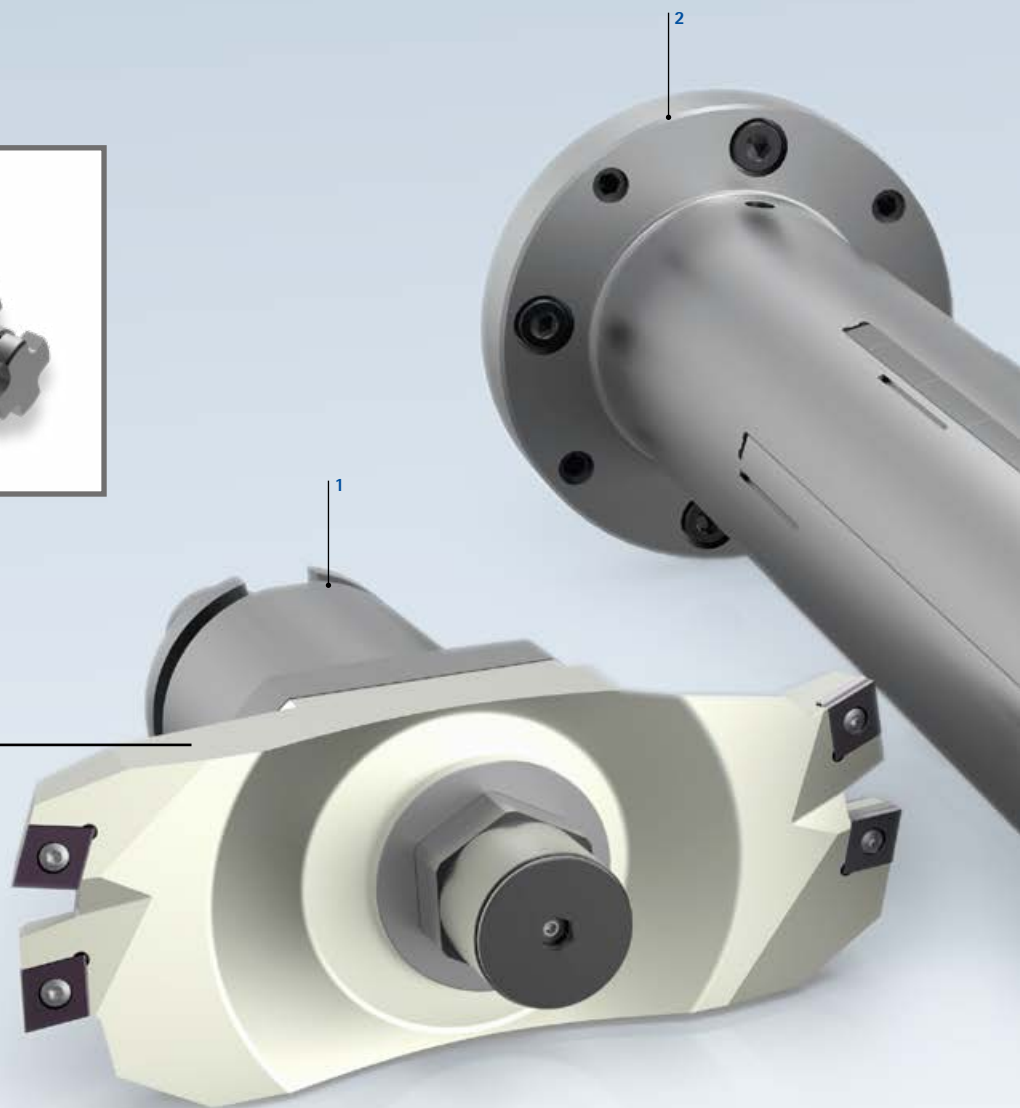
Text fehlt im englischen komplett

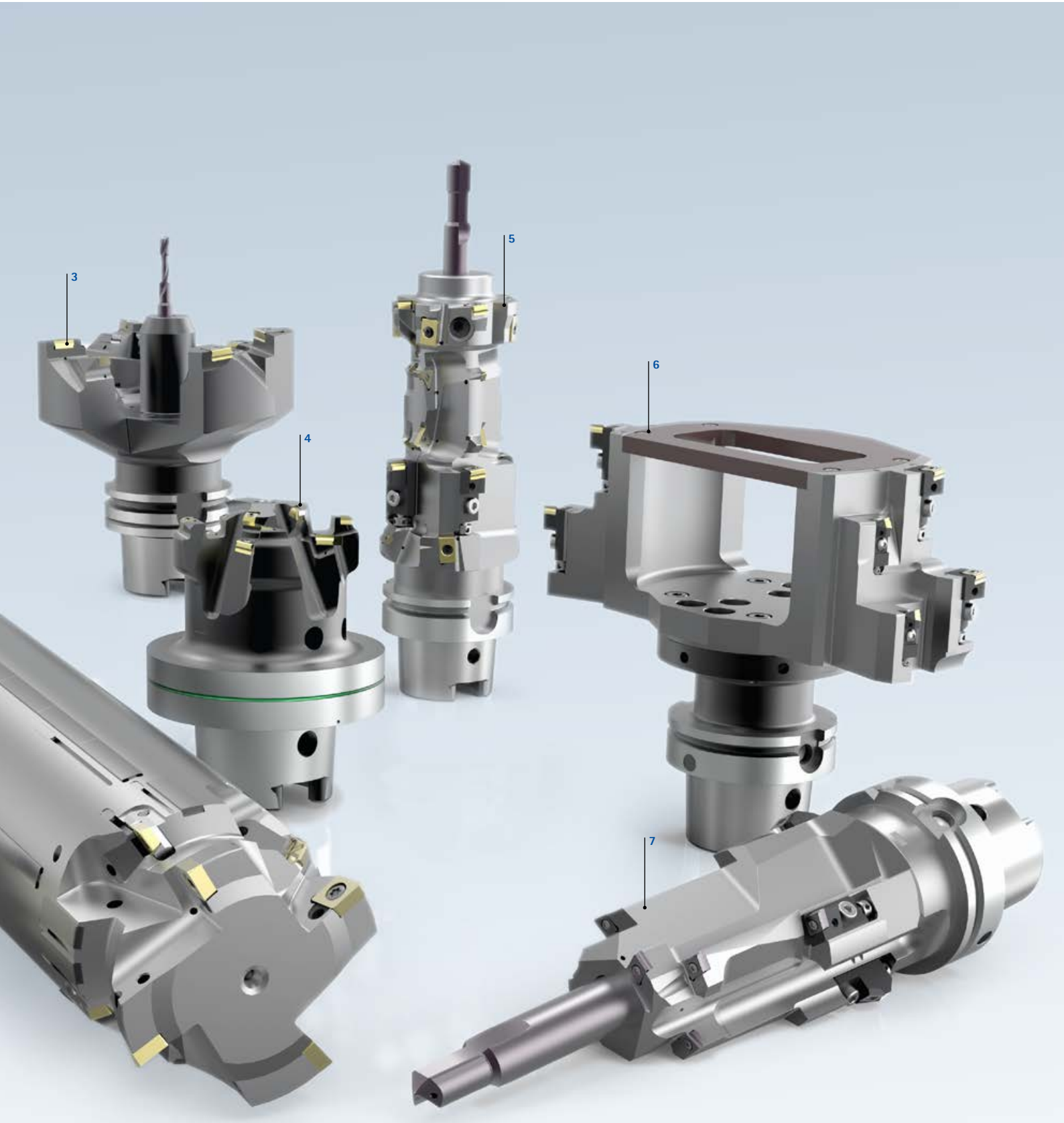
Anwendungsbeispiele für Sonderlösungen mit Wendeschneidplatten

- 1 Bearbeitung der Läuferbohrung im Kompressorgehäuse aus GJL mit stirnseitigem Schwingungsdämpfer
- 2 Werkzeug mit Führungsleistentechnologie zur optimalen Abstützung in der Bearbeitung einer Spindeldurchführung einer Rundtischmaschine mit einer Länge über 1.000 mm
- 3 Kombinationswerkzeug mit Wendeschneidplatten und Einsteck-Vollhartmetallbohrer für die Bremshalterbefestigung und zur mehrstufigen Bearbeitung eines Radträgers aus GJS
- 4 Tangentialbauweise ermöglicht die komplette Senkung der Formkontur bei der Turbinenläuferbohrung im Turbolader aus hochwarmfesten Werkstoffen mit Minimalmengenschmierung
- 5 Sonderwerkzeug für die Schwenklagerbearbeitung für Schrupp- und Semi-bearbeitung, inkl. Kantenbrüchen und Einstichfräsen und zusätzlichem Einsteckbohrer
- 6 Ultra-Leichtbau-Kombinationswerkzeug mit Grundkörperteilen aus CFK Radial- und Tangential-Wendeschneidplatten zur Bearbeitung des Hauptzuges im Getriebegehäuse aus Aluminium
- 7 Kombinationswerkzeug zur mehrstufigen Bearbeitung eines Schwerlastgetriebes aus GJL



Vibration dampers enable significantly better surface finishes during machining. The design is individually adapted to the respective machining tasks.





SPECIAL SOLUTIONS

Boring with indexable inserts (2/2)

Application examples for special solutions with indexable inserts

- 1 Interpolation turning tool with mould plates and a continuous cut path for machining the recess contour V-band connection of a turbine housing (turbocharger).
- 2 Pre-finishing and semi-finishing of the main bore of the turbine housing (turbocharger). Six machining features and a control cut are made using only one tool.
- 3 Combination tool with tangential indexable inserts and guide pads produced of cermet and PCD.
- 4 Fine machining of turbine and compressor housings with the TOOLTRONIC® mechatronic actuating tool.
- 5 Machining of the main bore with an ISO combination tool that combines the machining steps recessing, fine boring and countersinking.





SPECIAL SOLUTIONS

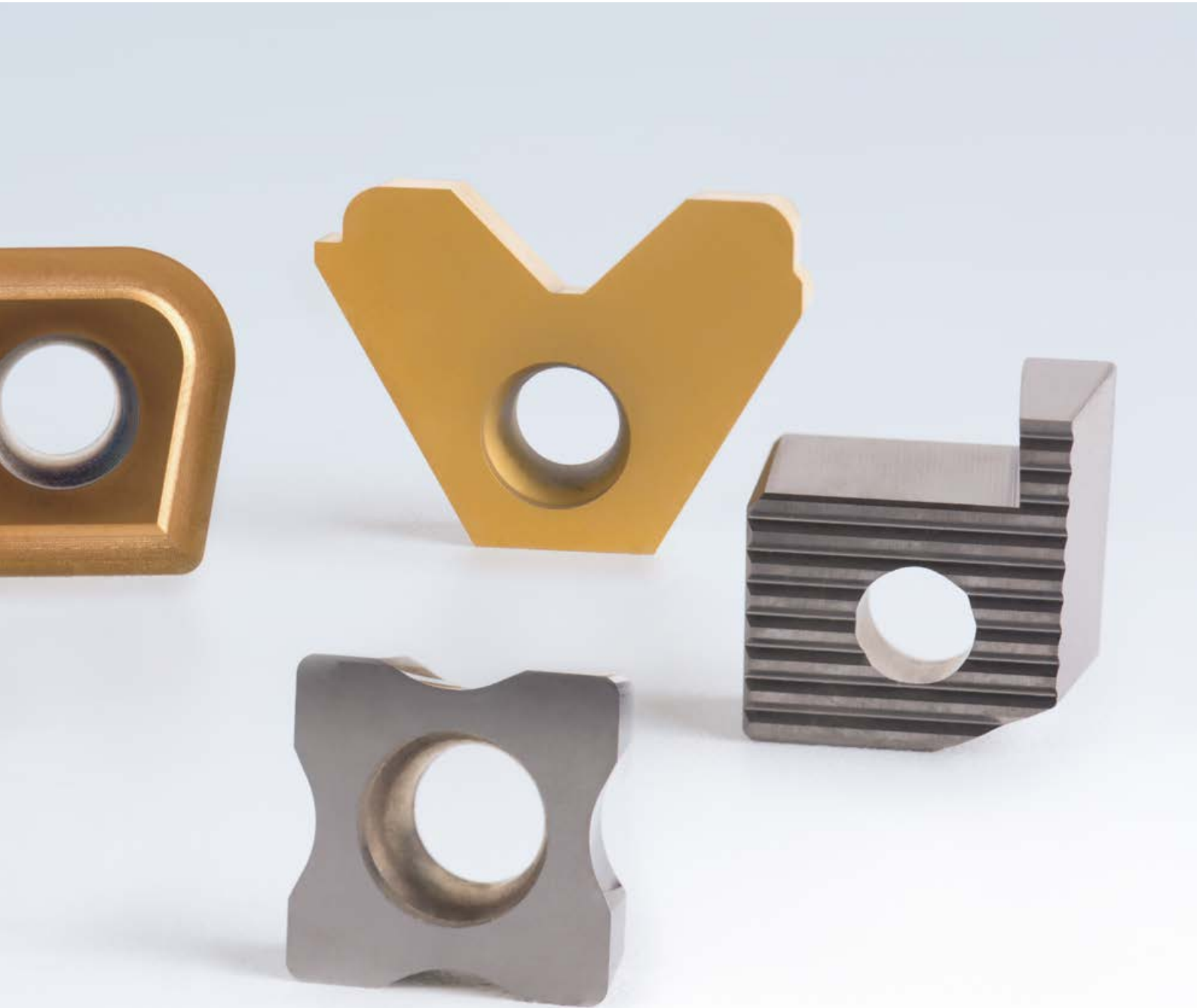
Indexable inserts in special design

Form cutting edges are often used to efficiently machine complex contours with high shape accuracy.

MAPAL provides numerous options in relation to form, cutting material and coating for these inserts. Modern production facilities guarantee the highest precision and flexibility of MAPAL indexable inserts in special design.

PCD- and PcBN-tipped indexable inserts are also available in this range. Fitted in the high-precision insert seats of MAPAL tools, they achieve the best results in terms of both economy and quality.





ADVANTAGES

- High process reliability in case of contour-dependent shapes and geometries
- Less complex machining sequences
- Multi-cutting-edge capability when creating complex contours





ModulBore

High flexibility during boring and fine boring

With the ModulBore boring range, MAPAL offers a complete system for pre-machining and finishing bores in the diameter range from 6 to 1,000 mm.

Thanks to its modular structure, the system is very flexible and can be configured for the specific machining task. Double edged boring tools are available for roughing. Thanks to a frontal serration on which the cutting edge holders are mounted, the tools are very stable and effective. The usage of indexable inserts with positive basic geometry, helical chip spaces and internal coolant supply ensures a broad range of applications, a high level of work safety and straightforward handling.

The ModulBore fine boring heads are available from a diameter of 6 mm. They are characterised by their high precision and robust construction, are very easy to handle and also have an internal coolant supply. The fine adjustment of the heads in either direction is very accurate and does not exhibit the "stick-slip effect".

The ModulBore range is individually adapted to customer-specific requirements and is therefore not available from stock.

ModulBore

| | |
|-------------------------|-----|
| Introduction | 614 |
| System overview | 618 |
| ModulBore – boring | 620 |
| ModulBore – fine boring | 627 |
| Adapters | 636 |

ModulBore – boring

ø 22 – 115 mm

Twin cutting edge tool with the ModulBore System (MBS) in seven dimensions for indexable insert holders (indexable insert cassettes).

ø 87 – 202 mm

Boring heads as bridge construction. Distributed over five bridges for indexable insert holders (indexable insert cassettes).

ø 200 – 520 mm

Boring heads as bridge construction. Distributed over four bridges for equipping with slides for commercially available ISO cartridges.

ø 358 – 1,000 mm

Boring heads as bridge construction (large boring range). Distributed over eight bridges for equipping with slides for commercially available ISO cartridges.



* Required order quantity: 2 pieces

Boring tools



Twin cutting edge tool with MBS

For roughing in the diameter range from 22 to 115 mm, double edged boring tools are available. Due to a serration on the face side on which the indexable insert holders are mounted, the system is very stable and effective. The usage of indexable inserts with positive basic geometry, helical chip spaces and internal coolant supply ensures a broad range of applications, a high level of work safety and straightforward handling.

The twin cutting edge tools are available both as a modular tool, and as monoblock tool with a hollow shank taper or steep taper connection.

* Required order quantity: 2 pieces



Boring heads with bridge module and ISO cartridges

Boring heads with a bridge module are available in the range from 87 to 1,000 mm. From a diameter of 200 mm, the bridge modules are equipped with ISO cartridges that are mounted on slides with serration on the face side on the bridges. For weight optimisation, the bridge modules are produced of aluminium in the diameter range from 358 to 1,000 mm.

ModulBore – fine boring

Ø 10 – 28 mm

Fine boring heads with boring bar

Ø 14 – 23 mm

Fine boring head

Ø 21 – 115 mm

Fine boring head with MBS

Ø 87 – 202 mm

Fine boring heads as bridge construction. Distributed over four bridges for equipping with slides for ModulBore fine boring cartridges.

Ø 200 – 520 mm

Fine boring heads as bridge construction. Distributed over four bridges for equipping with slides for ModulBore fine boring cartridges.

Ø 358 – 1,000 mm

Fine boring heads as bridge construction (large boring range). Distributed over eight bridges for equipping with slides for ModulBore fine boring cartridge.



Fine boring tools



Fine boring head with boring bar

The ModulBore fine boring heads are available from a diameter of 6 mm. They feature high precision and robust construction, are straightforward to handle, and also have an internal coolant supply. The fine adjustment of the heads in either direction is very accurate without "stick-slip effect".

The fine boring heads are available both as a modular tool, and as monoblock tool with a hollow shank taper or steep taper connection.



Fine boring heads with bridge module and fine boring cartridge

From a diameter of 87 mm the fine boring heads are designed with a bridge module. The bridge modules have slides that are fitted with adjustable fine boring cartridges. For larger diameters, the bridge tools are designed with one cutting edge. The opposite slide is used to compensate for the imbalance. For weight optimisation, the bridge modules are produced of aluminium in the diameter range from 358 to 1,000 mm.

ModulBore Plus – fine boring

The ModulBore Plus tools with fine adjustment feature a simple, precise adjusting mechanism. This enables defined, error-free feed directly on the machine using a standard Torx wrench. The high accuracy and simple handling reduce the non-productive time during fine boring while increasing quality and productivity.

MODULBORE PLUS

- **Fine adjustment feature:**
2 μm per graduation mark referring to the diameter
- **Reversing error:**
< 2 μm

ADVANTAGES

- Error-free reading (vernier not required)
- No "stick-slip effect"
- Low maintenance
- Easy to install
- Durable and robust: Three-year guarantee

Fine boring bar

The ModulBore Plus fine boring bar is suitable for usage in series and mass production and at the same time provides maximum tool lives.

Fine boring head

The reliable ModulBore Plus fine boring head is suitable for fine boring from prototype to mass production. The additional coarse adjusting unit gives the drill head a variable action radius of up to 9 mm. The complete range permits bore machining operations for diameters from 21 to 115 mm.

Fine boring cartridges

The ModulBore Plus fine boring cartridges are suitable for usage in single- or multiple-cutting-edge custom tools or in fine boring bridges for the large boring range. They do not require adjustment to the machine spindle.

ModulBore Plus tool systems

Fine boring bar \varnothing 14 to 23 mm



Fine boring head \varnothing 21 to 115 mm

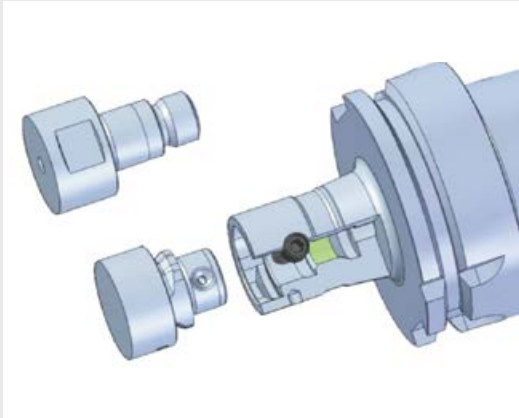


Fine boring cartridges



ModulBore – adapters

MBS connection



The MBS connection is the central feature of the ModulBore system. High torques are transmitted by the bayonet coupling, which forms a cylinder-face connection. Two radial clamping screws make it possible to preload the coupling and rotate the tool in both directions.

ADVANTAGES

- Simple handling, straightforward assembly and disassembly
- Highly precise bayonet coupling and cutting edge orientation
- High radial run-out accuracy due to face connection
- Internal coolant supply via the connection to the cutting edge
- Compatible with Starflex RFX

MBS adapter



The MBS adapters offer the possibility of adapting from the connection on the machine to the MBS connection. In this way, the comprehensive ModulBore range can be utilised without limitation. Common connections such as hollow shank taper (HSK) and various taper shanks (SK/BT) are included in the standard range in a wide range of nominal sizes and lengths. MBS extensions and reducers further increase the flexibility of the system. Other adapters can be manufactured as custom tools.

Milling arbors

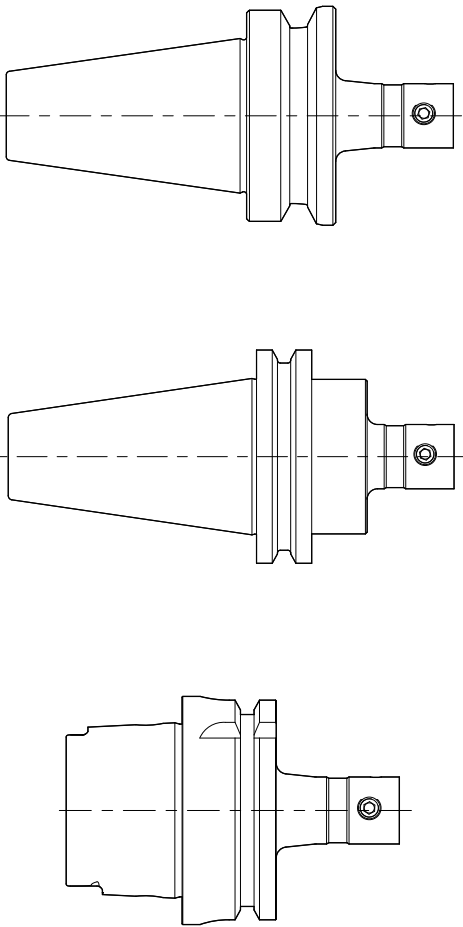


The combined arbor/cross slot arbors are the basis for a large number of variations of the ModulBore bridge tools. The standard range covers the common connections such as hollow shank taper (HSK), various taper shanks (SK/BT) and MBS in a wide range of nominal sizes and lengths. In addition, other machine connections such as KM in accordance with DIN ISO 26622 as a combined milling cutter arbor can be equipped with the bridge tools.

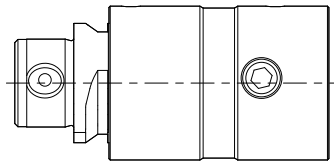
ModulBore – system overview

ModulBore | Adapters

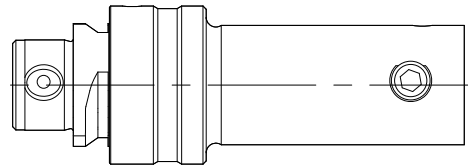
MBS adapter
Page 636 - 638



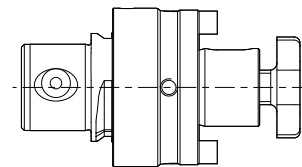
MBS extensions
Page 639



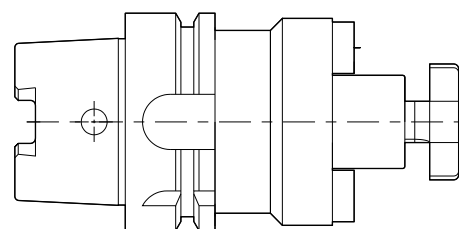
MBS reducers
Page 640



MBS cross slot arbors
Page 641



Milling arbors
see CLAMPING catalogue



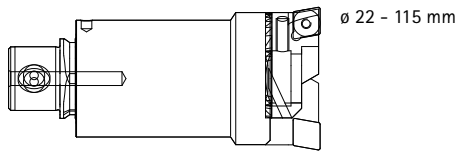
➤ MBS connection

➤ Arbor

ModulBore | Boring

Double cutter with MBS

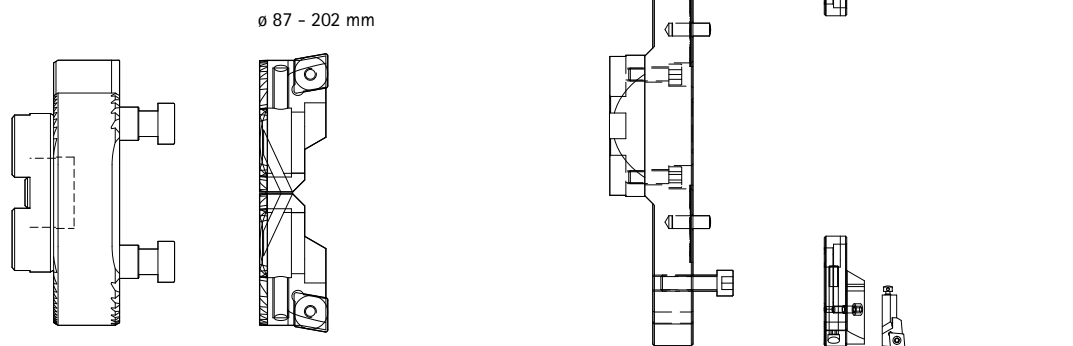
Page 620



Also available as a monoblock tool!

Drilling head with bridge module

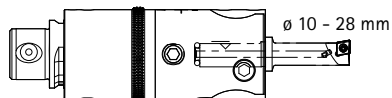
Page 622



ModulBore | Fine boring

ModulBore-Fine boring head with MBS

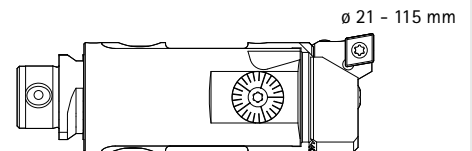
Page 627



Also available as monoblock tool with HSK/SK interface available!

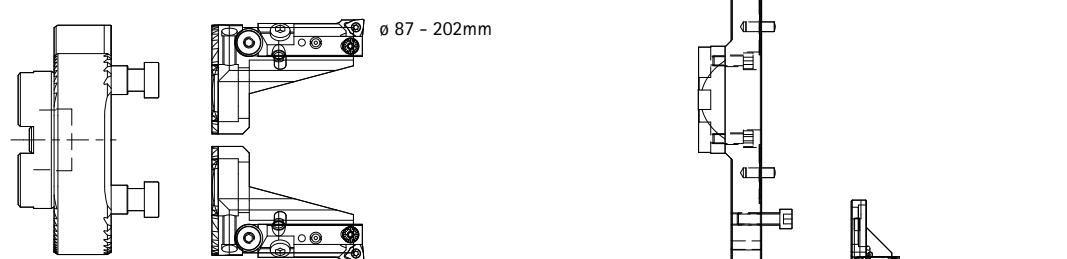
ModulBore-Plus Fine boring head with MBS

Page 630



ModulBore-Fine boring head with bridge module

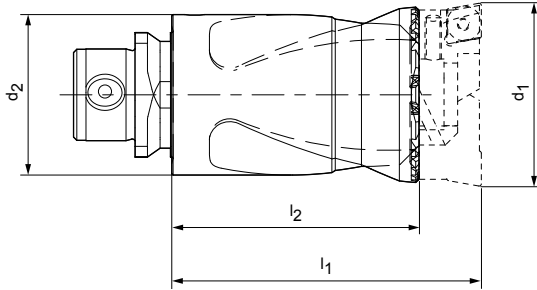
Page 631



ModulBore – twin cutting edge tools with MBS

Boring tool for roughing, tool body without indexable insert cassettes

Ø 22 – 115 mm



| d_1 min. - max. | d_2 MBS size | l_1 | l_2 | sw | Specification | Order no. |
|----------------------|-------------------|-------|-------|----|-------------------------|-----------|
| 22 - 30 | 18,5 | 40 | 27,7 | 17 | MBO100-022030-Z2-MBS185 | 30415217 |
| 30 - 39 | 24,5 | 50 | 37,7 | 22 | MBO100-030039-Z2-MBS254 | 30415218 |
| 39 - 50 | 32 | 65 | 48,7 | 27 | MBO100-039050-Z2-MBS320 | 30415219 |
| 50 - 67 | 42 | 90 | 68,2 | 36 | MBO100-050067-Z2-MBS420 | 30415220 |
| 67 - 88 | 55 | 115 | 90,7 | 46 | MBO100-067088-Z2-MBS550 | 30415221 |
| 88 - 115 | 72 | 150 | 113,7 | 60 | MBO100-088115-Z2-MBS720 | 30415222 |

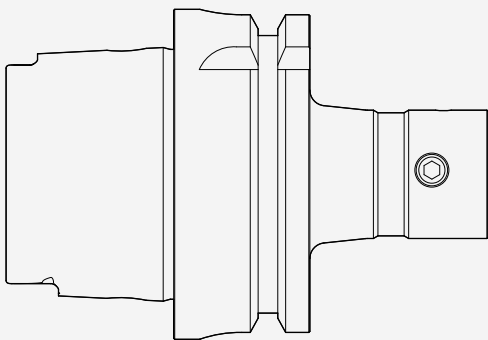
Delivery time available on request.

Example

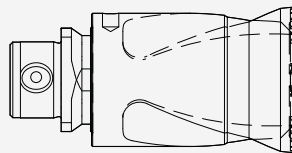
System overview – twin cutting edge tool with MBS

Ø 22 – 115 mm

MBS adapter



Twin cutting edge tool with MBS

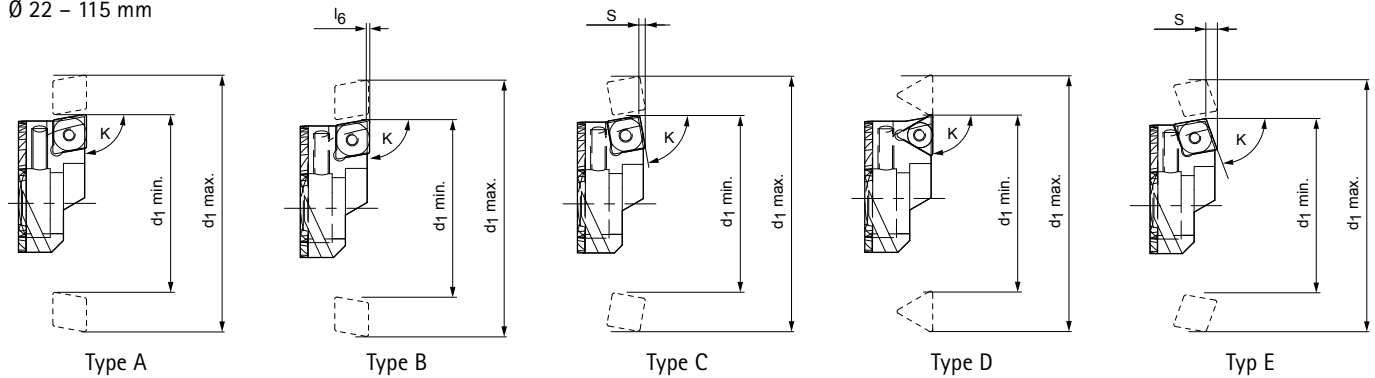


Indexable insert cas-
settes (insert holders)



ModulBore – indexable insert cassettes for twin cutting edge tools

Ø 22 – 115 mm



| d_1 min. - max. | Type | K | Height offset l_6 | S | Indexable insert | Specification | Bestell-Nr. |
|----------------------|------|-----|------------------------|-----|------------------|---------------------------|-------------|
| 22 - 30 | A | 90° | | | CC/CP.. 0602 | IC-MBO100-022030-A90-C_06 | 30415185 |
| | B | 90° | 0,3 | | CC/CP.. 0602 | IC-MBO100-022030-B90-C_06 | 30415186 |
| | E | 70° | | 2 | CC/CP.. 0602 | IC-MBO100-022030-E70-C_06 | 30415187 |
| 30 - 39 | A | 90° | | | CC/CP.. 0602 | IC-MBO100-030039-A90-C_06 | 30415188 |
| | B | 90° | 0,3 | | CC/CP.. 0602 | IC-MBO100-030039-B90-C_06 | 30415189 |
| | C | 80° | | 2 | SP.. 0703 | IC-MBO100-030039-C80-S_07 | 30415190 |
| | E | 70° | | 2 | CC/CP.. 0602 | IC-MBO100-030039-E70-C_06 | 30415191 |
| 39 - 50 | A | 90° | | | CC/CP.. 09T3 | IC-MBO100-039050-A90-C_09 | 30415192 |
| | B | 90° | 0,3 | | CC/CP.. 09T3 | IC-MBO100-039050-B90-C_09 | 30415193 |
| | C | 80° | | 1,5 | SC/SP.. 09T3 | IC-MBO100-039050-C80-S_09 | 30415194 |
| | D | 90° | | | TC/TP.. 09T3 | IC-MBO100-039050-D90-T_09 | 30415195 |
| | E | 70° | | 3,1 | CC/CP.. 09T3 | IC-MBO100-039050-E70-C_09 | 30415196 |
| 50 - 67 | A | 90° | | | CC/CP.. 1204 | IC-MBO100-050067-A90-C_12 | 30415197 |
| | B | 90° | 0,3 | | CC/CP.. 1204 | IC-MBO100-050067-B90-C_12 | 30415198 |
| | C | 80° | | 2,1 | SC/SP.. 09T3 | IC-MBO100-050067-C80-S_09 | 30415199 |
| | D | 90° | | | TC/TP.. 09T3 | IC-MBO100-050067-D90-T_09 | 30415200 |
| | E | 70° | | 4,1 | CC/CP.. 1204 | IC-MBO100-050067-E70-C_12 | 30415201 |
| 67 - 88 | A | 90° | | | CC/CP.. 1204 | IC-MBO100-067088-A90-C_12 | 30415202 |
| | B | 90° | 0,3 | | CC/CP.. 1204 | IC-MBO100-067088-B90-C_12 | 30415203 |
| | C | 80° | | 2,1 | SC/SP.. 1204 | IC-MBO100-067088-C80-S_12 | 30415204 |
| | D | 90° | | | TNM.. 16T3 | IC-MBO100-067088-D90-T_16 | 30415205 |
| | E | 70° | | 4,1 | CC/CP.. 1204 | IC-MBO100-067088-E70-C_12 | 30415206 |
| 88 - 115 | A | 90° | | | CC/CP.. 1204 | IC-MBO100-088115-A90-C_12 | 30415207 |
| | B | 90° | 0,3 | | CC/CP.. 1204 | IC-MBO100-088115-B90-C_12 | 30415208 |
| | C | 80° | | 2,5 | SC/SP.. 1204 | IC-MBO100-088115-C80-S_12 | 30415209 |
| | D | 90° | | | TNM.. 2204 | IC-MBO100-088115-D90-T_22 | 30415210 |
| | E | 70° | | 4,1 | CC/CP.. 1204 | IC-MBO100-088115-E70-C_12 | 30415211 |

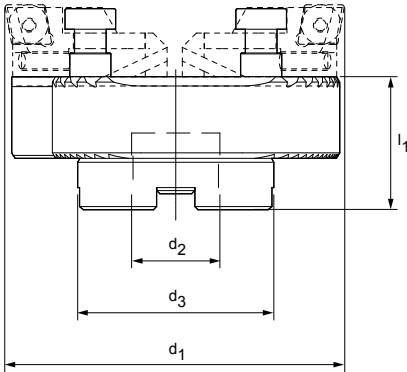
Required order quantity: 2 pieces

Delivery time available on request.

ModulBore – boring heads with bridge module

Boring tool for roughing, tool body without indexable insert cassettes

Ø 87 – 202 mm



| d_1 min. - max. | d_2 | d_3 | l_1 | Specification | Order no. |
|----------------------|-------|-------|-------|-----------------------|-----------|
| 87 - 110 | 27 | 61,5 | 42 | MB0110-087110-Z2-CA27 | 30415224 |
| 109 - 133 | 27 | 61,5 | 42 | MB0110-109133-Z2-CA27 | 30415225 |
| 132 - 156 | 27 | 62 | 42 | MB0110-132156-Z2-CA27 | 30415226 |
| 155 - 179 | 27 | 62 | 42 | MB0110-155179-Z2-CA27 | 30415227 |
| 178 - 202 | 27 | 62 | 42 | MB0110-178202-Z2-CA27 | 30415228 |

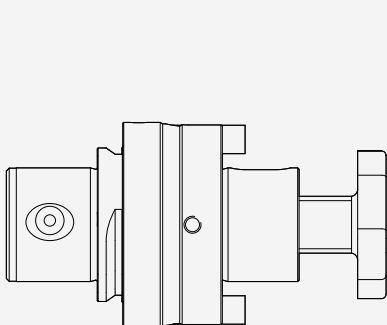
Delivery time available on request.

Example

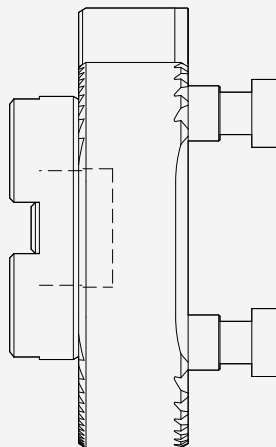
System overview – boring head with bridge module

Ø 87 – 202 mm

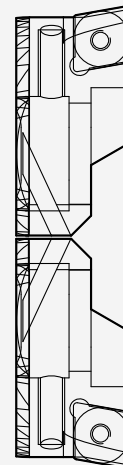
MBS adapter



Bridge module

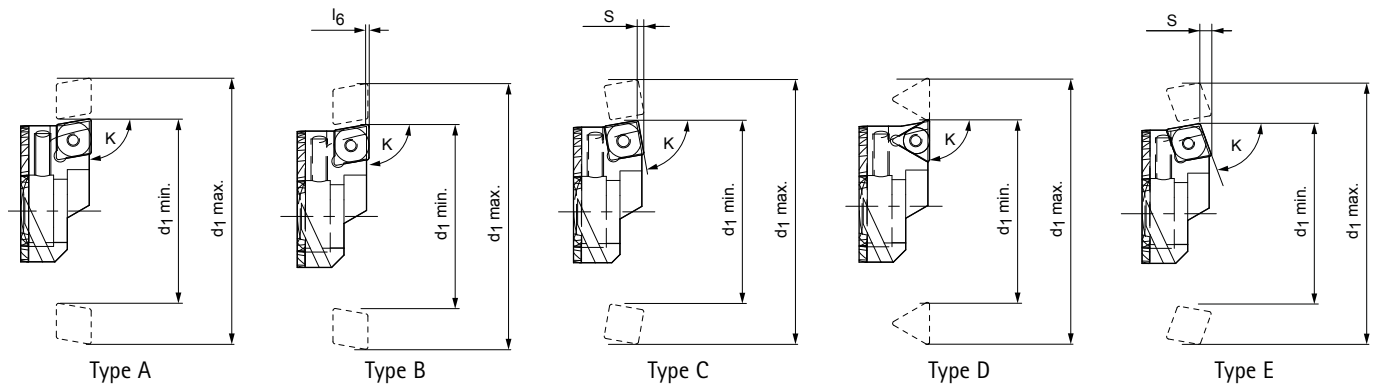


Indexable insert cassettes
(insert holders)



ModulBore – indexable insert cassettes for twin cutting edge tools

Ø 87 – 202 mm



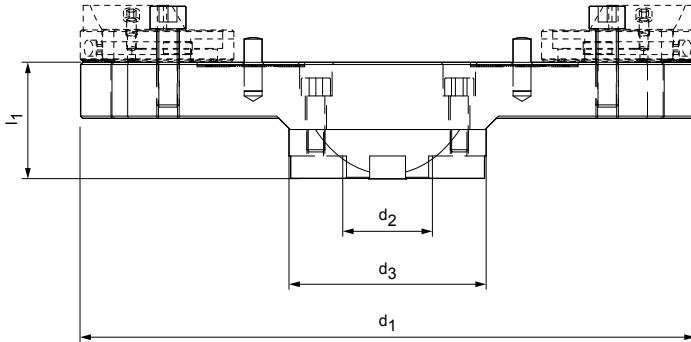
| d_1 min. - max. | Type | K | Height offset l_6 | S | Indexable insert | Specification | Order no. |
|----------------------|------|-----|------------------------|-----|------------------|---------------------------|---------------------------|
| 87 - 202 | A | 90° | | | CC/CP.. 1204 | IC-MBO100-067088-A90-C_12 | 30415202 |
| | B | 90° | 0,3 | | CC/CP.. 1204 | IC-MBO100-067088-B90-C_12 | 30415203 |
| | C | 80° | | 2,1 | SC/SP.. 1204 | IC-MBO100-067088-C80-S_12 | 30415204 |
| | D | 90° | | | TNM.. 16T3 | IC-MBO100-067088-D90-T_16 | 30415205 |
| | E | 70° | | | 4,1 | CC/CP.. 1204 | IC-MBO100-067088-E70-C_12 |

Required order quantity: 2 pieces

Delivery time available on request.

ModulBore – boring heads with bridge module

Boring tool for roughing, without slide and cartridge
 Ø 200 – 520 mm

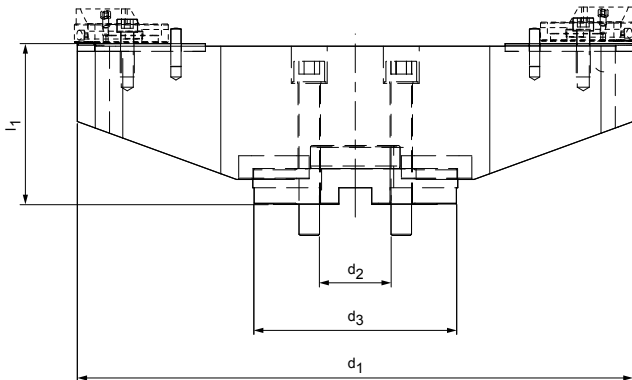


| d_1 min. - max. | d_2 | d_3 | l_1 | Specification | Order no. |
|----------------------|-------|-------|-------|-----------------------|-----------|
| 200 - 280 | 40 | 88 | 51 | MB0120-200280-Z2-CA40 | 30415229 |
| 280 - 360 | 40 | 88 | 51 | MB0120-280360-Z2-CA40 | 30415230 |
| 360 - 440 | 40 | 88 | 61 | MB0120-360440-Z2-CA40 | 30415231 |
| 440 - 520 | 40 | 88 | 61 | MB0120-440520-Z2-CA40 | 30415232 |

Delivery time available on request.

ModulBore – boring heads with bridge module

Boring tool for roughing, reinforced design produced of aluminium, without slide and cartridge
 Ø 358 – 1,000 mm



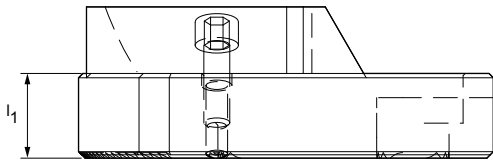
| d_1 min. - max. | d_2 | d_3 | l_1 | Specification | Order no. |
|----------------------|-------|-------|-------|-----------------------|-----------|
| 358 - 440 | 60 | 130 | 91 | MB0130-358440-Z2-CA60 | 30415233 |
| 438 - 520 | 60 | 130 | 126 | MB0130-438520-Z2-CA60 | 30415234 |
| 518 - 600 | 60 | 130 | 126 | MB0130-518600-Z2-CA60 | 30415235 |
| 598 - 680 | 60 | 130 | 126 | MB0130-598680-Z2-CA60 | 30415236 |
| 678 - 760 | 60 | 130 | 126 | MB0130-678760-Z2-CA60 | 30415237 |
| 758 - 840 | 60 | 130 | 126 | MB0130-758840-Z2-CA60 | 30415238 |
| 838 - 920 | 60 | 130 | 126 | MB0130-838920-Z2-CA60 | 30415239 |
| 918 - 1000 | 60 | 130 | 126 | MB0130-918000-Z2-CA60 | 30415240 |

Delivery time available on request.

Dimensions in mm.

ModulBore – slides for ISO cartridges

Ø 200 – 1,000 mm

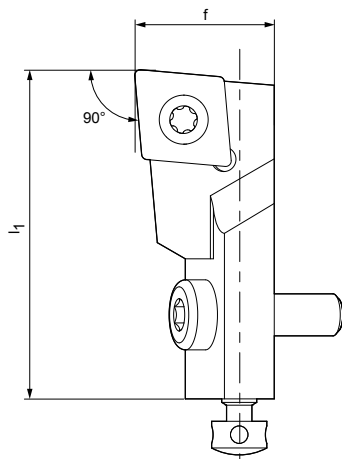


| For tool ø d ₁ | l ₁ | Specification | Order no. |
|------------------------------|----------------|-------------------|-----------|
| 200 – 1.000 | 19,4 | SL-MBO140-2001000 | 30415309 |

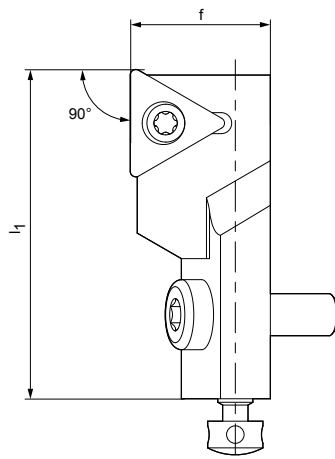
Delivery time available on request.

ModulBore – ISO cartridges

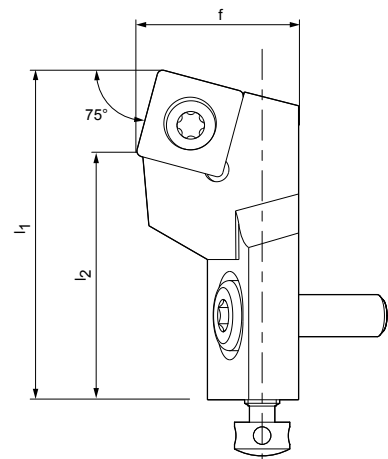
Ø 200 – 1,000 mm



Type A



Type B



Type C

| Type | f | l ₁ | l ₂ | Indexable inserts | Specification | Order no. |
|------|----|----------------|----------------|-------------------|---------------|-----------|
| A | 20 | 47 | - | CC...1204 | SCLCL12CA-12 | 30011071 |
| B | 20 | 47 | - | TC16T3 | STGCL12CA-16 | 30011077 |
| C | 20 | 47 | 35,409 | SC...1204 | SSRCL12CA-12 | 30011103 |

Delivery time available on request.

Zubehör siehe Seite 660.

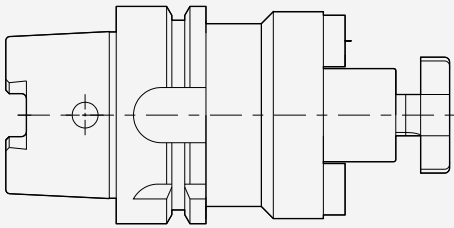
Dimensions in mm.

Example

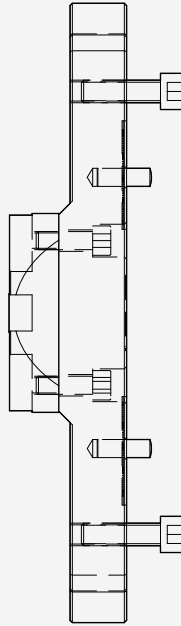
System overview – boring head with bridge module

Ø 200 – 1,000 mm

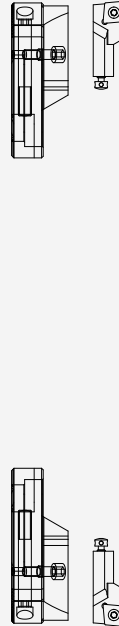
Adapter



Bridge module

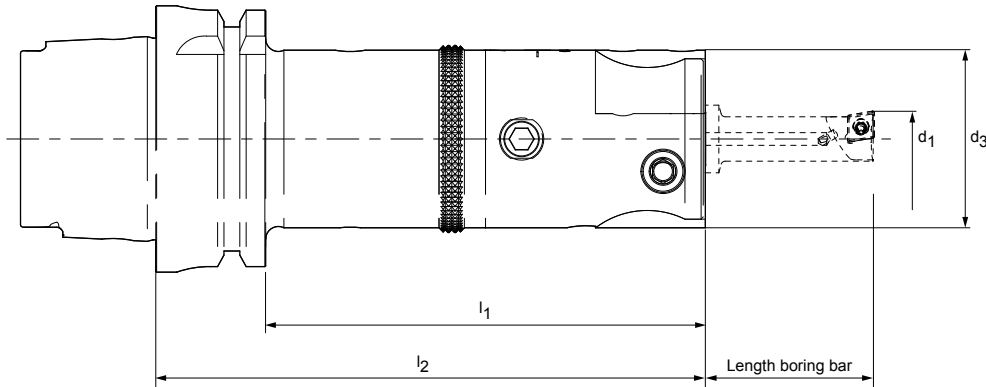


Slide + ISO cartridges



ModulBore – fine boring head

Turning tool for fine machining, tool body without boring bar
 Ø 10 – 28 mm



| d_1 min. - max. | Shank | d_3 | l_1 | l_2 | Specification | Order no. |
|----------------------|----------|-------|-------|-------|---------------------------|-----------|
| 10 - 28 | MBS | 42 | | 95 | MBO201-006028-Z1-MBS420 | 30415248 |
| | MAS BT40 | 42 | 76 | 103 | MBO201-006028-Z1-BT040 | 30415241 |
| | SK40 | 42 | 84 | 103 | MBO201-006028-Z1-SK040 | 30415249 |
| | HSK-A40 | 42 | 110 | 130 | MBO201-006028-Z1-HSK-A040 | 30415242 |
| | HSK-A50 | 42 | 104 | 130 | MBO201-006028-Z1-HSK-A050 | 30415243 |
| | HSK-A63 | 42 | 104 | 130 | MBO201-006028-Z1-HSK-A063 | 30415244 |
| | HSK-A80 | 42 | 104 | 130 | MBO201-006028-Z1-HSK-A080 | 30415245 |
| | HSK-A100 | 42 | 101 | 130 | MBO201-006028-Z1-HSK-A100 | 30415246 |
| | KM40 | 42 | | 100 | MBO201-006028-Z1-KM40 | 30415247 |

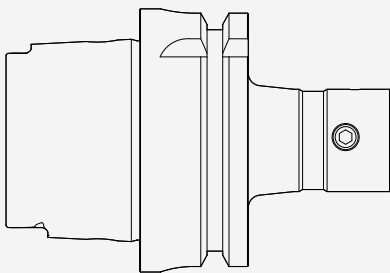
Coarse adjustment $d_1 = 3 \text{ mm}$ | Fine adjustment range $d_1 = 0.4 \text{ mm}$
 Delivery time available on request.

Example

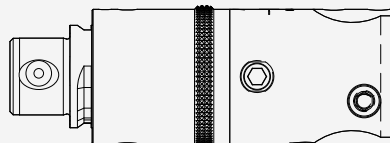
MBS system overview – fine boring heads

Ø 10 – 28 mm

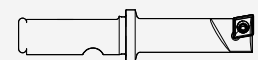
Adapter



Fine boring head with MBS



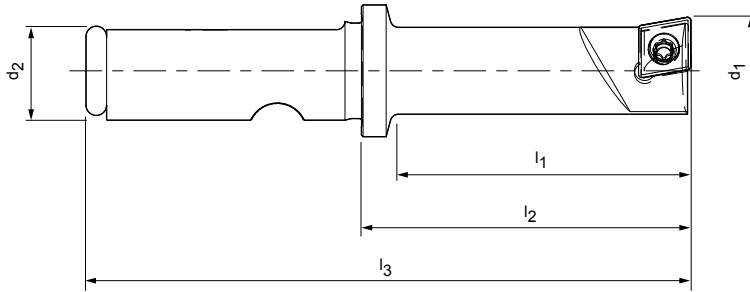
Boring bar



ModulBore – boring bars for fine boring head

Boring bar for fine boring head, with internal coolant supply

Ø 10 – 28 mm



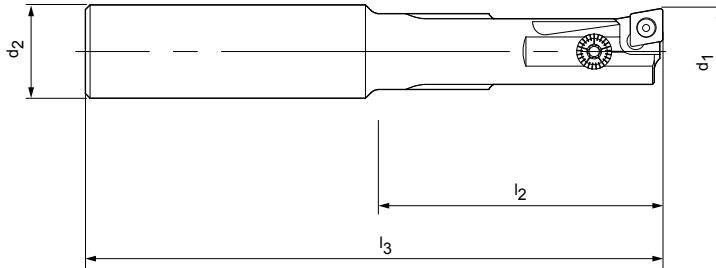
| d_1 min. - max. | d_2 | l_1 | l_2 | l_3 | Indexable insert | Specification | Order no. |
|----------------------|-------|-------|-------|-------|------------------|---------------------|-----------|
| 10 - 13 | 12 | 30 | 35 | 70 | CC.. 0602 | MB0211-010013-Z1-22 | 30415260 |
| 13 - 16 | 12 | 35 | 40 | 75 | CC.. 0602 | MB0211-013016-Z1-22 | 30415261 |
| 16 - 19 | 12 | 40 | 45 | 80 | CC.. 0602 | MB0211-016019-Z1-22 | 30415262 |
| 19 - 22 | 12 | 50 | 55 | 90 | CC.. 0602 | MB0211-019022-Z1-22 | 30415263 |
| 22 - 25 | 12 | 60 | 65 | 100 | CC.. 0602 | MB0211-022025-Z1-22 | 30415264 |
| 25 - 28 | 12 | 70 | 75 | 110 | CC.. 0602 | MB0211-025028-Z1-22 | 30415265 |

Delivery time available on request.

ModulBore Plus – fine boring bars

Boring tool for fine machining, with internal coolant supply

Ø 14 – 23 mm



| d ₁ | d ₂ | l ₂ | l ₃ | Indexable insert | Specification | Order no. |
|----------------|----------------|----------------|----------------|------------------|---------------------|-----------|
| 14,0 | 16 | 48 | 99 | CC.. 0602 | MB0311-0140-Z1-WC16 | 30415266 |
| 14,5 | 16 | 48 | 99 | CC.. 0602 | MB0311-0145-Z1-WC16 | 30415267 |
| 15,0 | 16 | 48 | 99 | CC.. 0602 | MB0311-0150-Z1-WC16 | 30415268 |
| 15,5 | 16 | 48 | 99 | CC.. 0602 | MB0311-0155-Z1-WC16 | 30415269 |
| 16,0 | 20 | 54 | 107 | CC.. 0602 | MB0311-0160-Z1-WC20 | 30415270 |
| 16,5 | 20 | 54 | 107 | CC.. 0602 | MB0311-0165-Z1-WC20 | 30415271 |
| 17,0 | 20 | 54 | 107 | CC.. 0602 | MB0311-0170-Z1-WC20 | 30415272 |
| 17,5 | 20 | 54 | 107 | CC.. 0602 | MB0311-0175-Z1-WC20 | 30415273 |
| 18,0 | 20 | 60 | 113 | CC.. 0602 | MB0311-0180-Z1-WC20 | 30415274 |
| 18,5 | 20 | 60 | 113 | CC.. 0602 | MB0311-0185-Z1-WC20 | 30415275 |
| 19,0 | 20 | 60 | 113 | CC.. 0602 | MB0311-0190-Z1-WC20 | 30415276 |
| 19,5 | 20 | 60 | 113 | CC.. 0602 | MB0311-0195-Z1-WC20 | 30415277 |
| 20,0 | 20 | 70 | 125 | CC.. 0602 | MB0311-0200-Z1-WC20 | 30415278 |
| 20,5 | 20 | 70 | 125 | CC.. 0602 | MB0311-0205-Z1-WC20 | 30415279 |
| 21,0 | 20 | 70 | 125 | CC.. 0602 | MB0311-0210-Z1-WC20 | 30415280 |
| 21,5 | 20 | 70 | 125 | CC.. 0602 | MB0311-0215-Z1-WC20 | 30415281 |
| 22,0 | 20 | 70 | 125 | CC.. 0602 | MB0311-0220-Z1-WC20 | 30415282 |
| 22,5 | 20 | 70 | 125 | CC.. 0602 | MB0311-0225-Z1-WC20 | 30415284 |
| 23,0 | 20 | 70 | 125 | CC.. 0602 | MB0311-0230-Z1-WC20 | 30415283 |

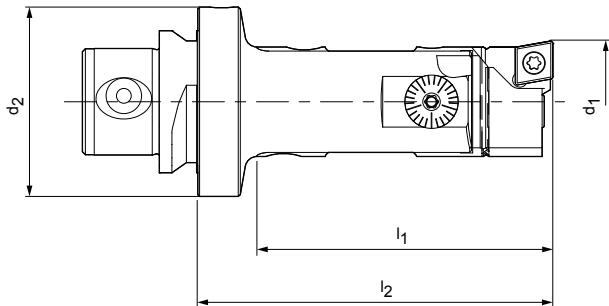
Adjustment range of nominal diameter d₁ $\begin{matrix} +0,3 \text{ mm} \\ -0,1 \text{ mm} \end{matrix}$

Delivery time available on request.

ModulBore Plus – fine boring head with MBS

Boring tool for fine machining, with internal coolant supply

Ø 21 – 115 mm



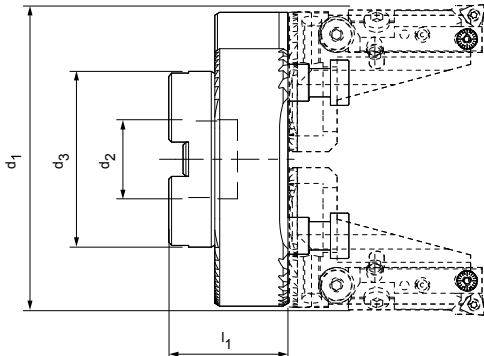
Available on request

| d_1 min. - max. | d_2 MBS size | l_1 | l_2 | Indexable insert | Specification | Order no. |
|----------------------|-------------------|-------|-------|------------------|-------------------------|-----------|
| 21 - 29 | 32 | 50 | 60 | CC.. 0602 | MBO401-021029-Z1-MBS320 | 30415285 |
| 29 - 39 | 24,5 | 65 | 65 | CC.. 0602 | MBO401-029039-Z1-MBS245 | 30415286 |
| 38 - 50 | 32 | 75 | 75 | CC.. 0602 | MBO401-038050-Z1-MBS320 | 30415287 |
| 50 - 65 | 42 | 95 | 95 | CC.. 0602 | MBO401-050065-Z1-MBS420 | 30415289 |
| 65 - 88 | 55 | 120 | 120 | CC.. 0602 | MBO401-065088-Z1-MBS550 | 30415291 |
| 88 - 115 | 72 | 150 | 150 | CC.. 0602 | MBO401-088115-Z1-MBS720 | 30415294 |

Coarse adjustment d_1 , see table | Fine adjustment range $d_1 = 0.4$ mm
 Delivery time available on request.

ModulBore – fine boring head with bridge module

Boring tool for fine machining, without slide and fine boring cartridge
 Ø 87 – 202 mm

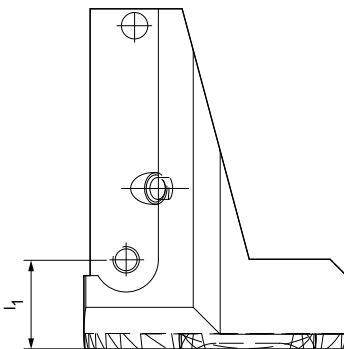


| d_1 min. - max. | d_2 | d_3 | l_1 | Specification | Order no. |
|----------------------|-------|-------|-------|-----------------------|-----------|
| 87 - 110 | 27 | 61,5 | 42 | MB0110-087110-Z2-CA27 | 30415224 |
| 109 - 133 | 27 | 61,5 | 42 | MB0110-109133-Z2-CA27 | 30415225 |
| 132 - 156 | 27 | 62 | 42 | MB0110-132156-Z2-CA27 | 30415226 |
| 155 - 179 | 27 | 62 | 42 | MB0110-155179-Z2-CA27 | 30415227 |
| 178 - 202 | 27 | 62 | 42 | MB0110-178202-Z2-CA27 | 30415228 |

Delivery time available on request.

ModulBore – slides for fine boring cartridge

Ø 87 – 202 mm



| For tool \varnothing d_1 | l_1 | Specification | Order no. |
|---------------------------------|-------|------------------|-----------|
| 87 - 202 | 16,9 | SL-MB0150-087202 | 30415310 |

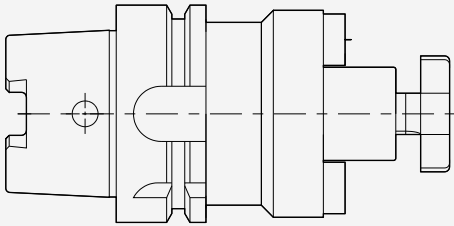
Delivery time available on request.

Example

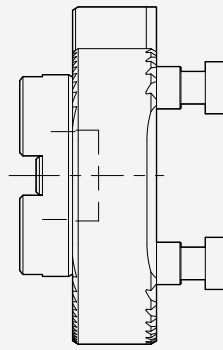
System overview – fine boring head with bridge module

Ø 87 – 202 mm

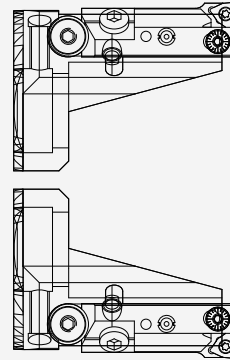
Adaptor



Bridge module

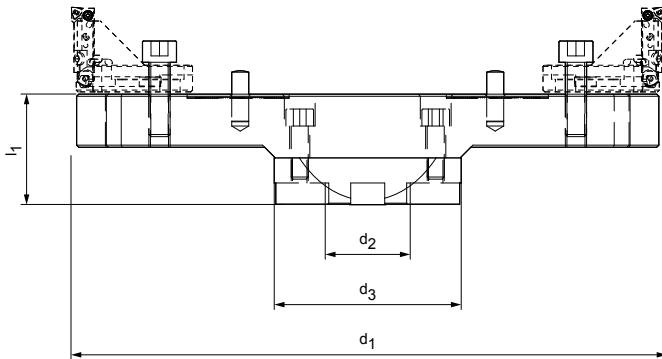


Slide + fine boring cartridge



ModulBore – fine boring head with bridge module

Boring tool for fine machining, without slide and fine boring cartridge
 \varnothing 200 – 520 mm



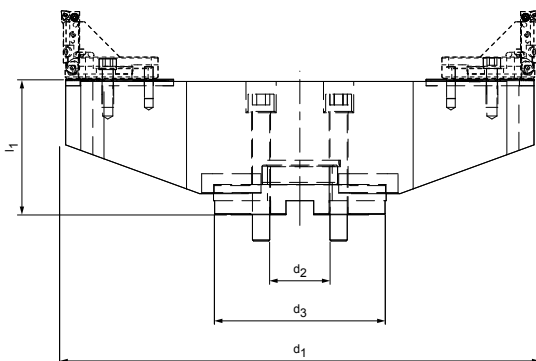
| d_1 min. - max. | d_2 | d_3 | l_1 | Specification | Order no. |
|----------------------|-------|-------|-------|-----------------------|-----------|
| 200 - 280 | 40 | 88 | 51 | MB0120-200280-Z2-CA40 | 30415229 |
| 280 - 360 | 40 | 88 | 51 | MB0120-280360-Z2-CA40 | 30415230 |
| 360 - 440 | 40 | 88 | 61 | MB0120-360440-Z2-CA40 | 30415231 |
| 440 - 520 | 40 | 88 | 61 | MB0120-440520-Z2-CA40 | 30415232 |

Delivery time available on request.

ModulBore – fine boring head with bridge module

Boring tool for fine machining, reinforced design produced of aluminium, without slide and fine boring cartridge

\varnothing 358 – 1,000 mm



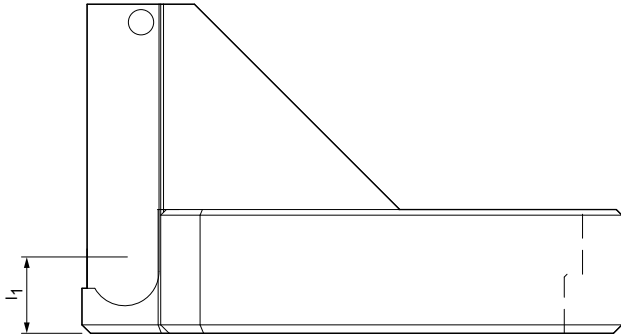
| d_1 min. - max. | d_2 | d_3 | l_1 | Specification | Order no. |
|----------------------|-------|-------|-------|-----------------------|-----------|
| 358 - 440 | 60 | 130 | 91 | MB0130-358440-Z2-CA60 | 30415233 |
| 438 - 520 | 60 | 130 | 126 | MB0130-438520-Z2-CA60 | 30415234 |
| 518 - 600 | 60 | 130 | 126 | MB0130-518600-Z2-CA60 | 30415235 |
| 598 - 680 | 60 | 130 | 126 | MB0130-598680-Z2-CA60 | 30415236 |
| 678 - 760 | 60 | 130 | 126 | MB0130-678760-Z2-CA60 | 30415237 |
| 758 - 840 | 60 | 130 | 126 | MB0130-758840-Z2-CA60 | 30415238 |
| 838 - 920 | 60 | 130 | 126 | MB0130-838920-Z2-CA60 | 30415239 |
| 918 - 1.000 | 60 | 130 | 126 | MB0130-918000-Z2-CA60 | 30415240 |

Delivery time available on request.

Dimensions in mm.

ModulBore – slides for fine boring cartridge

Ø 200 – 1,000 mm



| For tool ø d ₁ | l ₁ | Specification | Order no. |
|------------------------------|----------------|-------------------|-----------|
| 200 - 1.000 | 13,1 | SL-MBO150-2001000 | 30415311 |

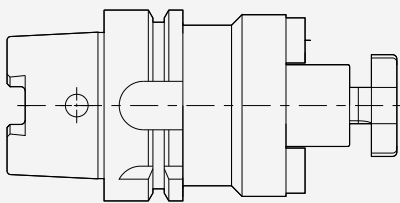
Matching counterweight for single-bladed spindle machining, order no. 30522418.
Delivery time available on request.

Example

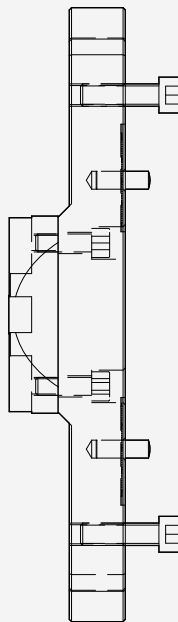
System overview – fine boring head with bridge module

Ø 200 – 1,000 mm

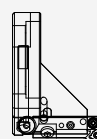
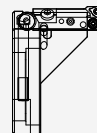
Adapter



Bridge module

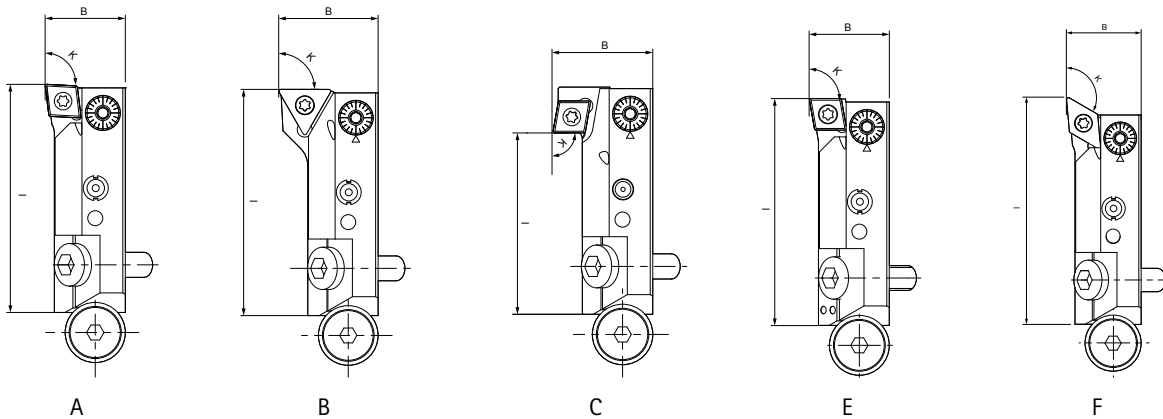


Slide + fine boring cartridge + imbalance compensation



ModulBore – fine boring head cartridges

Ø 87 – 1,000 mm



| Type | l | B | K | Design | Indexable insert | Specification | Order no. |
|------|------|----|-----|-----------|------------------|-------------------------|-----------|
| A | 45,5 | 16 | 93° | rechts | CC..0602 | MBO501-R-093-16-CC_0602 | 10030384 |
| A | 45,5 | 16 | 93° | links | CC..0602 | MBO501-L-093-16-CC_0602 | 30415298 |
| B | 45,5 | 20 | 90° | rechts | TC..1102 | MBO501-R-090-20-TC_1102 | 30355664 |
| B | 45,5 | 20 | 90° | links | TC..1102 | MBO501-L-090-20-TC_1102 | 30353989 |
| C | 36 | 20 | 90° | rückwärts | CC..0602 | MBO501-B-090-20-CC_0602 | 30415297 |
| A | 45,5 | 16 | 95° | rechts | CC..0602 | MBO501-R-095-16-CC_0602 | 10078197 |
| A | 45,5 | 16 | 95° | links | CC..0602 | MBO501-L-095-16-CC_0602 | 30415299 |
| E | 45,5 | 16 | 90° | rechts | CC..0602 | MBO501-R-090-16-CC_0602 | 10078198 |
| E | 45,5 | 16 | 90° | links | CC..0602 | MBO501-L-090-16-CC_0602 | 10078199 |

With 10 µm fine adjustment feature | Adjustment range related to dimension B + 0.6 mm Ø
Delivery time available on request.

Available on request

| Typ | l | B | k | Ausführung | WSP | Spezifikation | Bestell-Nr. |
|-----|------|----|-----------|------------|----------|-------------------------|-------------|
| F | 48,5 | 16 | 120° (5°) | links | DC..0702 | MBO501-L-120-16-DC_0702 | 30415305 |
| F | 45,8 | 16 | 120° (5°) | rechts | DC..0702 | MBO501-R-120-16-DC_0702 | 30415302 |
| A | 45,5 | 22 | 95° | links | CC..09T3 | MBO501-L-095-22-CC_09T3 | 30415304 |
| A | 45,5 | 22 | 95° | rechts | CC..09T3 | MBO501-R-095-22-CC_09T3 | 30415301 |

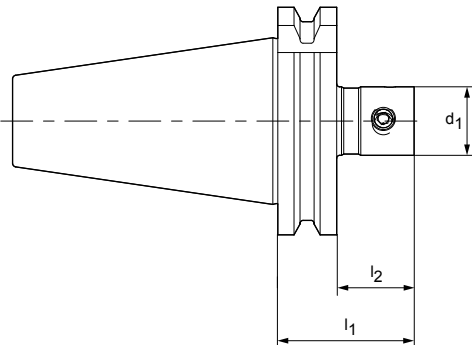
ModulBore Plus – fine boring head cartridges

| Type | l | B | K | Design | Indexable insert | Specification | Order no. |
|------|------|----|-----|--------|------------------|-------------------------|-----------|
| A | 45,5 | 16 | 93° | rechts | CC..0602 | MBO511-R-093-16-CC_0602 | 30415307 |
| A | 45,5 | 16 | 95° | rechts | CC..0602 | MBO511-R-095-16-CC_0602 | 30415308 |
| A | 45,5 | 16 | 90° | rechts | CC..0602 | MBO511-R-090-16-CC_0602 | 30415306 |

With 2 µm fine adjustment feature | Adjustment range based on dimension B + 0.5 mm Ø
Delivery time available on request.

MBS adapter

Shank SK according to ISO 7388-1 Form AD/AF

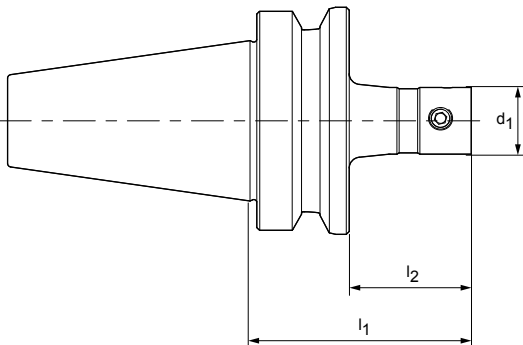


| Steep taper | d ₁ MBS size | l ₁ | l ₂ | Specification | Order no. |
|-------------|----------------------------|----------------|----------------|--------------------------|-----------|
| 40 | 18,5 | 60 | 40 | MBS101-N-185-040-SK040-S | 30415332 |
| 40 | 24,5 | 60 | 40 | MBS101-N-245-060-SK040-S | 30415333 |
| 40 | 32 | 60 | 40 | MBS101-N-320-060-SK040-S | 30415334 |
| 40 | 42 | 60 | 40 | MBS101-N-420-060-SK040-S | 30415335 |
| 40 | 55 | 65 | 45 | MBS101-N-550-065-SK040-S | 30415336 |
| 50 | 18,5 | 40 | 20 | MBS101-N-185-040-SK050-S | 30415337 |
| 50 | 24,5 | 40 | 20 | MBS101-N-245-040-SK050-S | 30415338 |
| 50 | 32 | 60 | 40 | MBS101-N-320-060-SK050-S | 30415339 |
| 50 | 42 | 60 | 40 | MBS101-N-420-060-SK050-S | 30415340 |
| 50 | 55 | 60 | 40 | MBS101-N-550-060-SK050-S | 30415341 |
| 50 | 72 | 65 | 45 | MBS101-N-720-065-SK050-S | 30415342 |

Delivery time available on request.

MBS adapter

Shank BT as per ISO 7388-2, form J (JIS B 6339)

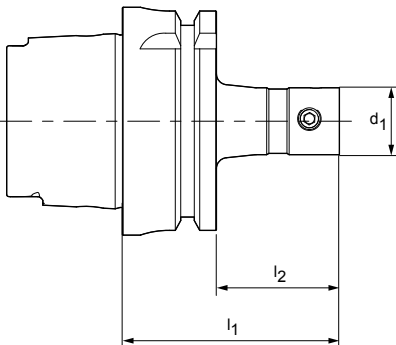


| BT | d_1 MBS size | l_1 | l_2 | Specification | Order no. |
|----|-------------------|-------|-------|--------------------------|-----------|
| 40 | 18,5 | 40 | 33 | MBS101-N-185-060-BT040-S | 30415344 |
| 40 | 24,5 | 40 | 33 | MBS101-N-245-060-BT040-S | 30415345 |
| 40 | 32 | 60 | 33 | MBS101-N-320-060-BT040-S | 30415346 |
| 40 | 42 | 60 | 33 | MBS101-N-420-060-BT040-S | 30415347 |
| 40 | 55 | 60 | 33 | MBS101-N-550-065-BT040-S | 30415348 |
| 50 | 18,5 | 40 | - | MBS101-N-185-040-BT050-S | 30415349 |
| 50 | 24,5 | 40 | - | MBS101-N-245-040-BT050-S | 30415350 |
| 50 | 32 | 60 | 22 | MBS101-N-320-060-BT050-S | 30415351 |
| 50 | 42 | 60 | 22 | MBS101-N-420-060-BT050-S | 30415352 |
| 50 | 55 | 60 | 27 | MBS101-N-550-065-BT050-S | 30415353 |
| 50 | 72 | 60 | 32 | MBS101-N-720-070-BT050-S | 30415354 |

Delivery time available on request.

MBS adapter

Shank hollow shank taper-A according to DIN 69893-1

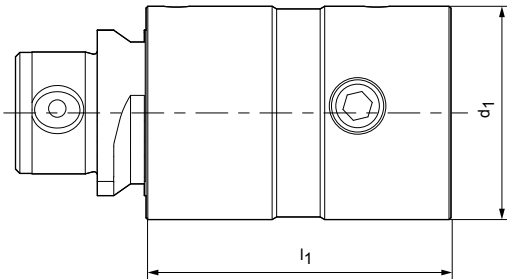


| HSK-A | d_1 MBS size | l_1 | l_2 | Specification | Order no. |
|-------|-------------------|-------|-------|-----------------------------|-----------|
| 63 | 18,5 | 60 | 34 | MBS101-N-185-060-HSK-A063-S | 30415367 |
| 63 | 24,5 | 60 | 34 | MBS101-N-245-060-HSK-A063-S | 30415368 |
| 63 | 32 | 60 | 34 | MBS101-N-320-060-HSK-A063-S | 30415369 |
| 63 | 42 | 70 | 44 | MBS101-N-420-070-HSK-A063-S | 30415370 |
| 63 | 55 | 80 | 54 | MBS101-N-550-080-HSK-A063-S | 30415371 |
| 63 | 72 | 95 | 69 | MBS101-N-720-095-HSK-A063-S | 30415372 |
| 100 | 32 | 70 | 41 | MBS101-N-320-070-HSK-A100-S | 30415373 |
| 100 | 42 | 80 | 51 | MBS101-N-420-080-HSK-A100-S | 30415374 |
| 100 | 55 | 90 | 61 | MBS101-N-420-550-HSK-A100-S | 30415375 |
| 100 | 72 | 105 | 76 | MBS101-N-720-105-HSK-A100-S | 30415376 |

Delivery time available on request.

MBS extensions

MBS to MBS

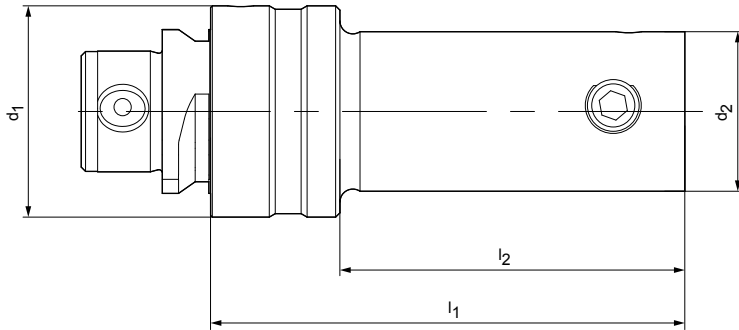


| d ₁ MBS size | l ₁ | Specification | Order no. |
|----------------------------|----------------|----------------------|-----------|
| 18,5 | 30 | MBS185-MBS185-030-01 | 30415380 |
| 18,5 | 35 | MBS185-MBS185-035-01 | 30415381 |
| 24,5 | 30 | MBS245-MBS245-030-01 | 30415382 |
| 24,5 | 35 | MBS245-MBS245-035-01 | 30415383 |
| 24,5 | 45 | MBS245-MBS245-045-01 | 30415384 |
| 32 | 40 | MBS320-MBS320-040-01 | 30415385 |
| 32 | 50 | MBS320-MBS320-050-01 | 30415386 |
| 32 | 60 | MBS320-MBS320-060-01 | 30415387 |
| 42 | 50 | MBS420-MBS420-050-01 | 30415388 |
| 42 | 60 | MBS420-MBS420-060-01 | 30415389 |
| 42 | 80 | MBS420-MBS420-080-01 | 30415390 |
| 55 | 70 | MBS550-MBS550-070-01 | 30415391 |
| 55 | 90 | MBS550-MBS550-090-01 | 30415392 |
| 55 | 105 | MBS550-MBS550-105-01 | 30415393 |
| 72 | 75 | MBS720-MBS720-075-01 | 30415394 |
| 72 | 100 | MBS720-MBS720-100-01 | 30415395 |
| 72 | 135 | MBS720-MBS720-135-01 | 30415396 |

Delivery time available on request.

MBS reducers

MBS to MBS

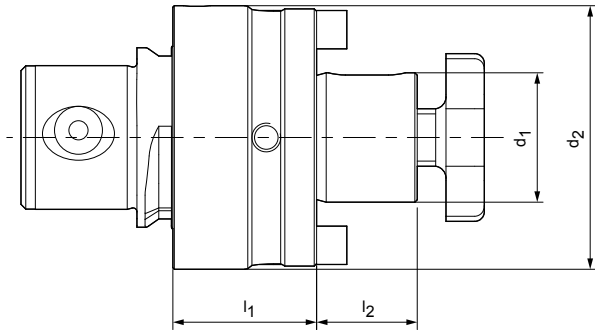


| d_1 MBS size | d_2 MBS size | l_1 | l_2 | Specification | Order no. |
|-------------------|-------------------|-------|-------|----------------------|-----------|
| 24,5 | 18,5 | 30 | 15 | MBS245-MBS185-030-01 | 30415399 |
| 32 | 18,5 | 30 | 51 | MBS320-MBS185-030-01 | 30415401 |
| 32 | 24,5 | 40 | 25 | MBS320-MBS245-040-01 | 30415403 |
| 42 | 18,5 | 35 | 15 | MBS420-MBS185-035-01 | 30415405 |
| 42 | 24,5 | 45 | 25 | MBS420-MBS245-045-01 | 30415407 |
| 42 | 32 | 45 | 25 | MBS420-MBS320-045-01 | 30415409 |
| 55 | 18,5 | 40 | 15 | MBS550-MBS185-040-01 | 30415411 |
| 55 | 24,5 | 50 | 25 | MBS550-MBS245-050-01 | 30415413 |
| 55 | 32 | 50 | 25 | MBS550-MBS320-050-01 | 30415415 |
| 55 | 42 | 55 | 30 | MBS550-MBS420-055-01 | 30415417 |
| 72 | 42 | 60 | 30 | MBS720-MBS420-060-01 | 30415419 |
| 72 | 55 | 60 | 30 | MBS720-MBS550-060-01 | 30415420 |

Delivery time available on request.

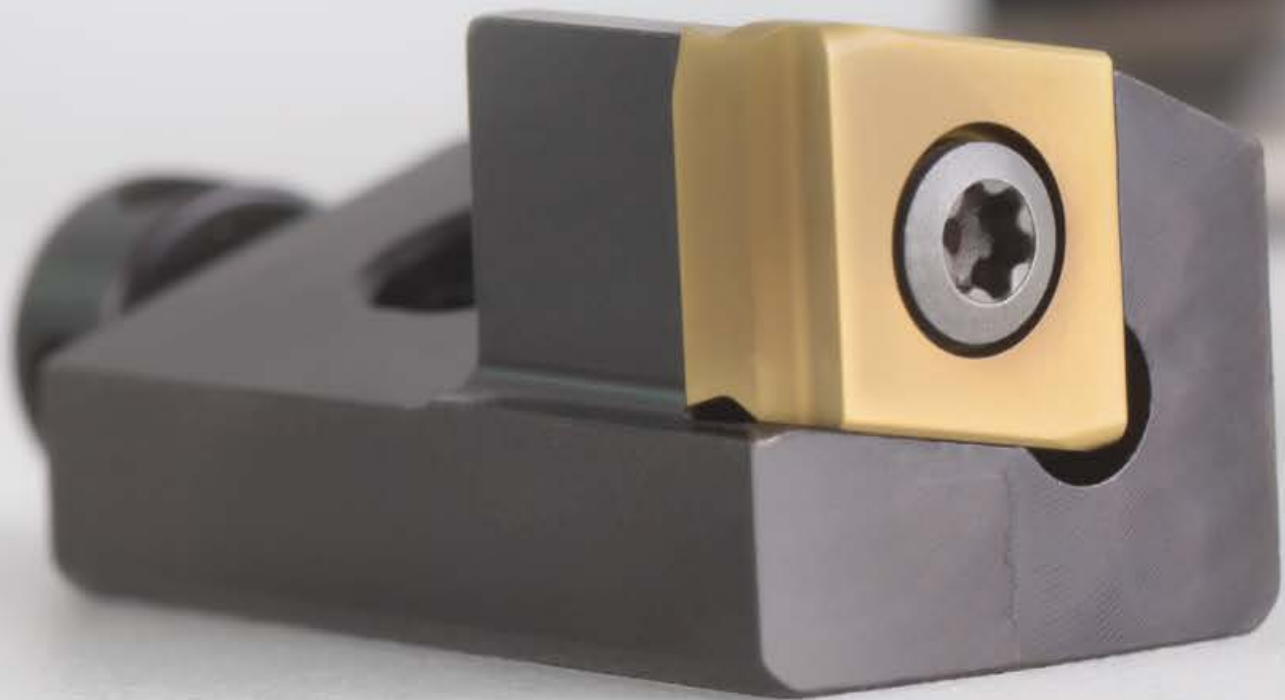
ModulBore – arbors

With cross slot and MBS
Shank MBS



| MBS size | d_1 | d_2 | l_1 | l_2 | Specification | Order no. |
|----------|-------|-------|-------|-------|------------------------|-----------|
| MBS420 | 27 | 42 | 30 | 21 | MCA-MBS420-27-30-1-0-W | 30415312 |
| MBS550 | 27 | 55 | 30 | 21 | MCA-MBS550-27-30-1-0-W | 30415313 |
| MBS720 | 40 | 72 | 35 | 27 | MCA-MBS720-40-35-1-0-W | 30415314 |

Delivery time available on request.



CARTRIDGES

Along with the adjusting feature with a long adjustment range, cartridges offer numerous possibilities for various applications as they can be interchanged quickly and straightforwardly. Cartridges are used for both internal and external machining tasks. In case of changes, for example, to chamfer angles, or in case of repair, cartridges can be interchanged without major effort.

The range of MAPAL cartridges covers the bulk of installation variants in engineering. Along with the standardised ISO cartridges, a series of compact cartridges for radial and tangential indexable inserts are available. Due to short lengths, these offer even more engineering freedom during the design of custom tools.

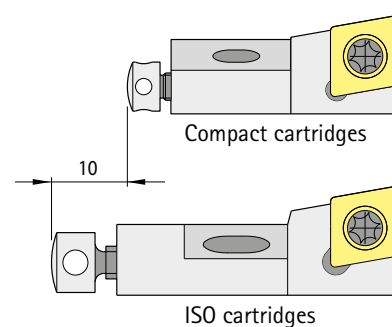
On request, MAPAL also supplies cartridges and compact cartridges in custom designs.

Cartridges

| | |
|---|-----|
| Product ID codes | 644 |
| ISO cartridges | 646 |
| Compact cartridges | 650 |
| Compact cartridges for tangential indexable inserts | 656 |
| Accessories | 660 |

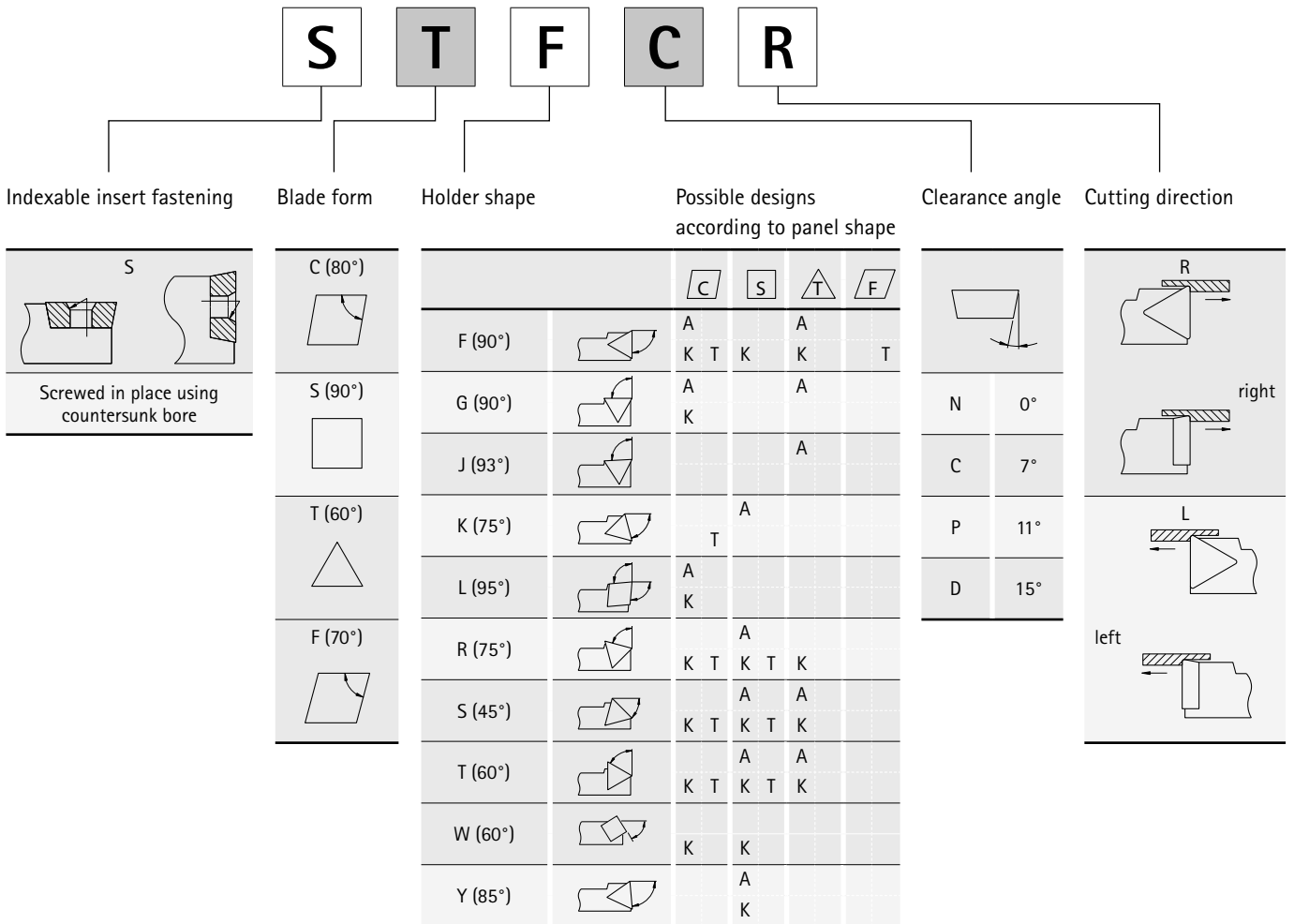
MAPAL compact cartridge sizes compared to ISO cartridges

Example: Indexable insert size 09



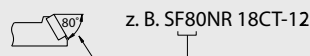
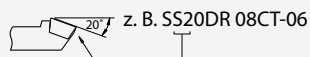
Product ID codes

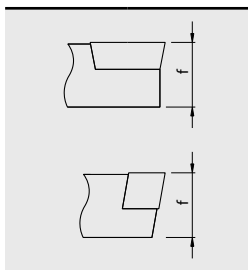
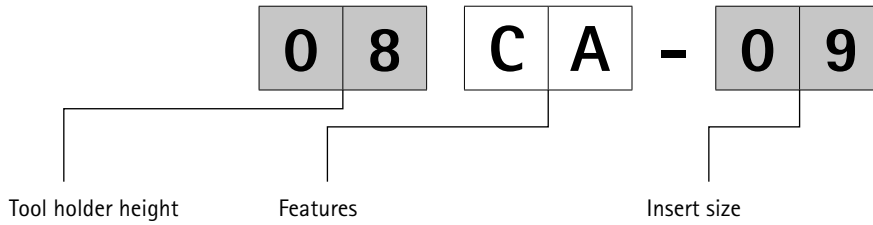
Cartridges and compact cartridges



A = Cartridge
K = Compact cartridge
T = Compact cartridges for tangential indexable inserts

Compact cartridges with custom angle
Data on the holder shape directly via the setting angle





| Height data | |
|-----------------------|------|
| Identification number | [mm] |
| 06 | 6,0 |
| 08 | 8,0 |
| 10 | 10,0 |
| 12 | 12,0 |
| 14 | 14,0 |
| 18 | 18,0 |

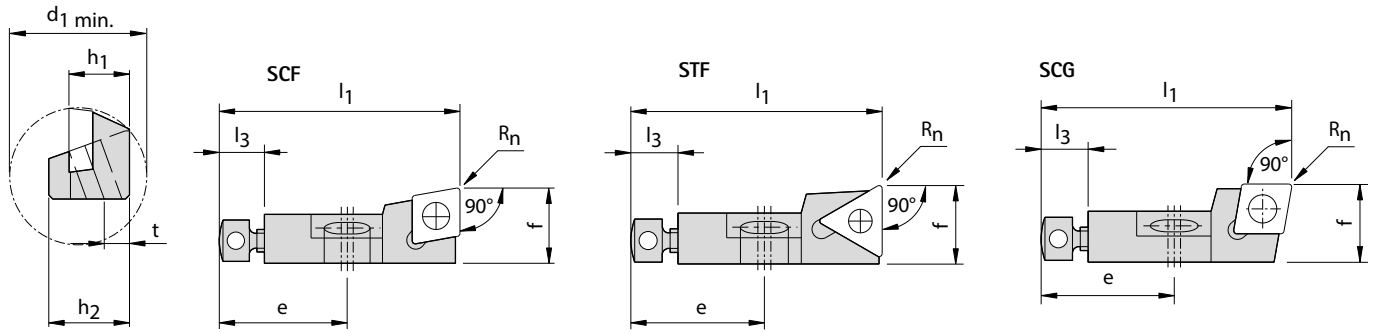
| 1st letter | Significance |
|------------|--------------|
| C | Cartridge |

| 2nd letter | Significance |
|------------|---|
| A | Cartridges in accordance with DIN 4985 |
| K | Compact cartridges similar to DIN 4985 |
| T | Compact cartridges similar to DIN 4985 for tangential indexable inserts |

| Incircle | d | | | |
|----------|----|----|----|----|
| | C | S | T | F |
| d [mm] | C | S | T | F |
| 5,56 | 05 | - | 09 | - |
| 6,35 | 06 | 06 | 11 | 06 |
| 9,525 | 09 | 09 | 16 | 09 |
| 12,7 | 12 | 12 | - | 12 |

ISO cartridges

Form F, G



Drawings of right design, example SCFCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | Accessory group * | Order no. |
|--------|------------------|--------------------------|------------|---------------------------|-------|-------|-----|-------|-------|-----|--------------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SCF... | SCFCR 08CA-06 | CC_0602_ | 8 | 10 | 0,4 | 32 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011050 |
| | SCFCL 08CA-06 | CC_0602_ | 8 | 10 | 0,4 | 32 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011051 |
| | SCFPR 08CA-06 | CP_0602_ | 8 | 10 | 0,4 | 32 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011052 |
| | SCFPL 08CA-06 | CP_0602_ | 8 | 10 | 0,4 | 32 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011053 |
| | SCFCR 10CA-09 | CC_09T3_ | 10 | 14 | 0,8 | 50 | 20 | 8 | 13 | 5 | 40 | 5 | 30011054 |
| | SCFCR 12CA-12 | CC_1204_ | 12 | 20 | 0,8 | 55 | 20 | 8 | 17 | 6 | 50 | 1 | 30011056 |
| | SCFCL 12CA-12 | CC_1204_ | 12 | 20 | 0,8 | 55 | 20 | 8 | 17 | 6 | 50 | 1 | 30011057 |
| STF... | STFCR 08CA-09 | TC_0902_ | 8 | 10 | 0,4 | 32 | 17 | 6 | 9,5 | 4,5 | 25 | 2 | 30011058 |
| | STFCR 10CA-11-02 | TC_1102_ | 10 | 14 | 0,4 | 50 | 20 | 8 | 13 | 5 | 40 | 4 | 30011060 |
| | STFCR 12CA-16 | TC_16T3_ | 12 | 20 | 0,8 | 55 | 20 | 8 | 17 | 6 | 50 | 6 | 30011062 |
| SCG... | SCGCR 08CA-06 | CC_0602_ | 8 | 10 | 0,4 | 32 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011064 |
| | SCGCL 08CA-06 | CC_0602_ | 8 | 10 | 0,4 | 32 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011065 |
| | SCGCR 10CA-09 | CC_09T3_ | 10 | 14 | 0,8 | 50 | 20 | 8 | 13 | 5 | 40 | 5 | 30011068 |

* see pages 660-661

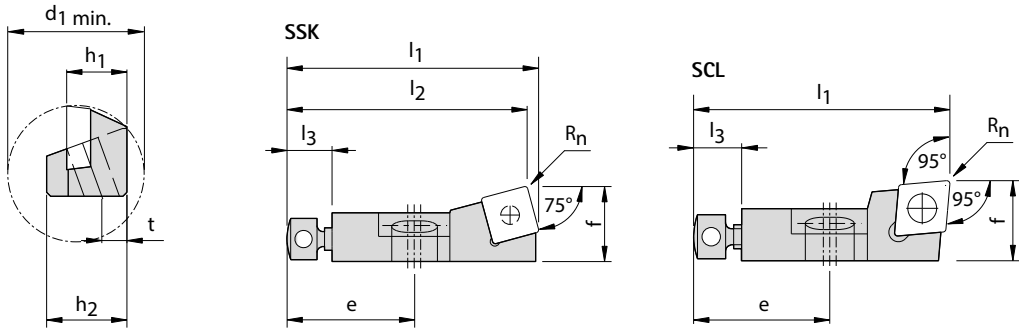
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

ISO cartridges

Form J, K, L



Drawings of right design, example STJCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group | Order no. |
|--------|---------------|--------------------------|------------|---------------------|-------|-------|-------|----|-------|-------|---|------------|-----------------|-----------|
| | | | h_1 | f (refers to Rn) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | d_1 min. | | |
| SSK... | SSKCR 10CA-09 | SC_09T3__ | 10 | 14 | 0,8 | 52,2 | 50 | 20 | 8 | 13 | 5 | 40 | 5 | 30011086 |
| | SSKCL 10CA-09 | SC_09T3__ | 10 | 14 | 0,8 | 52,2 | 50 | 20 | 8 | 13 | 5 | 40 | 5 | 30011087 |
| | SSKCR 12CA-12 | SC_1204__ | 12 | 20 | 0,8 | 58,1 | 55 | 20 | 8 | 17 | 6 | 50 | 1 | 30011088 |
| SCL... | SCLCR 10CA-09 | CC_09T3__ | 10 | 14 | 0,8 | 50 | - | 20 | 8 | 13 | 5 | 40 | 5 | 30011094 |
| | SCLCL 10CA-09 | CC_09T3__ | 10 | 14 | 0,8 | 50 | - | 20 | 8 | 13 | 5 | 40 | 5 | 30011095 |
| | SCLCL 12CA-12 | CC_1204__ | 12 | 20 | 0,8 | 55 | - | 20 | 8 | 17 | 6 | 50 | 1 | 30011097 |

* see pages 660-661

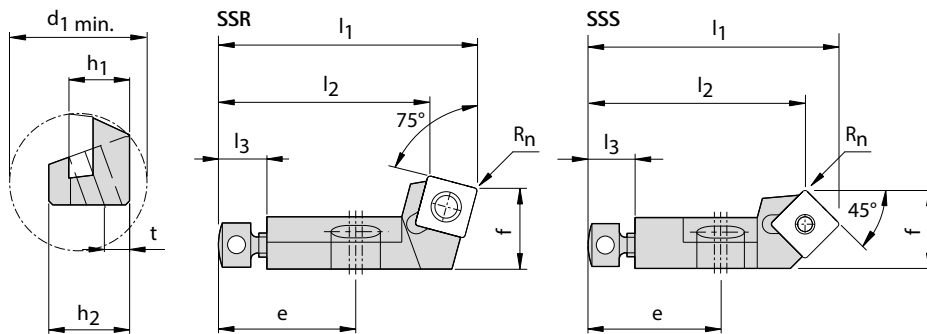
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

ISO cartridges

Form R, S



Drawings of right design, example SSRCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group * | Order no. |
|--------|---------------|--------------------------|------------|---------------------------|-------|-------|-------|-----|-------|-------|-----|------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | d_1 min. | | |
| SSR... | SSRCR 08CA-06 | SC_0602__ | 8 | 10 | 0,4 | 32 | 26,4 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011098 |
| | SSRCR 10CA-09 | SC_09T3__ | 10 | 14 | 0,8 | 50 | 41,3 | 20 | 8 | 13 | 5 | 40 | 5 | 30011100 |
| | SSRCR 12CA-12 | SC_1204__ | 12 | 20 | 0,8 | 55 | 43,5 | 20 | 8 | 17 | 6 | 50 | 1 | 30011102 |
| | SSRCL 12CA-12 | SC_1204__ | 12 | 20 | 0,8 | 55 | 43,5 | 20 | 8 | 17 | 6 | 50 | 1 | 30011103 |
| SSS... | SSSCR 08CA-06 | SC_0602__ | 8 | 10 | 0,4 | 32,4 | 28 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011104 |
| | SSSCL 08CA-06 | SC_0602__ | 8 | 10 | 0,4 | 32,4 | 28 | 17 | 6 | 9,5 | 4,5 | 25 | 3 | 30011105 |
| | SSSCR 10CA-09 | SC_09T3__ | 10 | 14 | 0,8 | 50,1 | 44 | 20 | 8 | 13 | 5 | 40 | 5 | 30011106 |

* see pages 660-661

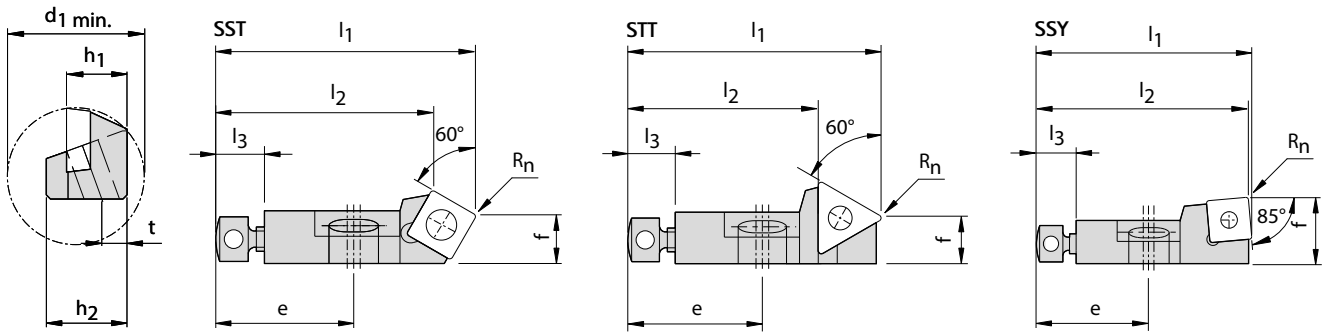
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

ISO cartridges

Form T, Y



Drawings of right design, example SSTCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group | Order no. |
|--------|------------------|--------------------------|------------|---------------------------|-------|-------|-------|-----|-------|-------|-----|--------------------|-----------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SST... | SSTCR 10CA-09 | SC_09T3__ | 10 | 13,3 | 0,8 | 50 | 40,6 | 20 | 8 | 13 | 5 | 40 | 5 | 30011118 |
| | SSTCL 10CA-09 | SC_09T3__ | 10 | 13,3 | 0,8 | 50 | 40,6 | 20 | 8 | 13 | 5 | 40 | 5 | 30011119 |
| | SSTCR 12CA-12 | SC_1204__ | 12 | 18,9 | 0,8 | 55 | 44,8 | 20 | 8 | 17 | 6 | 50 | 1 | 30011120 |
| STT... | STTCR 08CA-09 | TC_0902__ | 8 | 10,3 | 0,4 | 32 | 24,6 | 17 | 6 | 9,5 | 4,5 | 25 | 2 | 30011122 |
| | STTCR 10CA-11-02 | TC_1102__ | 10 | 14 | 0,4 | 50 | 41,4 | 20 | 8 | 13 | 5 | 40 | 4 | 30011124 |
| SSY... | SSYCR 10CA-09 | SC_09T3__ | 10 | 14 | 0,8 | 50,8 | 50 | 20 | 8 | 13 | 5 | 40 | 5 | 30011130 |
| | SSYCR 12CA-12 | SC_1204__ | 12 | 20 | 0,8 | 56 | 55 | 20 | 8 | 17 | 6 | 50 | 1 | 30011132 |

* see pages 660-661

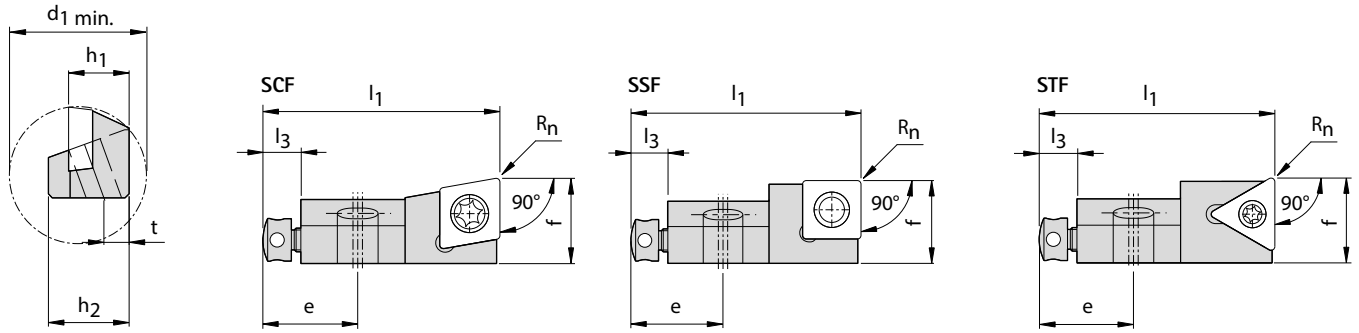
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges

Form F



Drawings of right design, example SCFCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | Accessory group * | Order no. |
|--------|------------------|--------------------------|------------|-----------------------|-------|-------|-----|-------|-------|-----|--------------------|-------------------|-----------|
| | | | h_1 | f (refers to Rn) | R_n | l_1 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SCF... | SCFCR 06CK-06 V1 | CC_0602_ | 6 | 8,5 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011134 |
| | SCFCL 06CK-06 V1 | CC_0602_ | 6 | 8,5 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011135 |
| | SCFCR 06CK-06 V2 | CC_0602_ | 6 | 9,7 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011136 |
| | SCFCR 10CK-09 | CC_09T3_ | 10 | 14 | 0,8 | 40 | 17 | 8 | 15 | 5 | 33 | 14 | 30011138 |
| | SCFCL 10CK-09 | CC_09T3_ | 10 | 14 | 0,8 | 40 | 17 | 8 | 15 | 5 | 33 | 14 | 30011139 |
| | SCFCR 12CK-12 | CC_1204_ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 7 | 30011140 |
| | SCFCL 12CK-12 | CC_1204_ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 7 | 30011141 |
| SSF... | SSFPR 08CK-06 | SP_0603_ | 8 | 10 | 0,4 | 32 | 17 | 5 | 10 | 4,5 | 24 | 13 | 30011142 |
| | SSFCR 10CK-09 | SC_09T3_ | 10 | 14 | 0,8 | 44 | 17 | 8 | 15 | 5 | 33 | 16 | 30011144 |
| | SSFCR 12CK-12 | SC_1204_ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 7 | 30011146 |
| | SSFCL 12CK-12 | SC_1204_ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 7 | 30011147 |
| STF... | STFCR 06CK-09 | TC_0902_ | 6 | 10 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 17 | 30011148 |
| | STFCR 10CK-11 | TC_1102_ | 10 | 14 | 0,4 | 40 | 17 | 8 | 15 | 5 | 33 | 11 | 30011150 |
| | STFCR 12CK-16 | TC_16T3_ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 12 | 30011152 |

* see pages 660-661

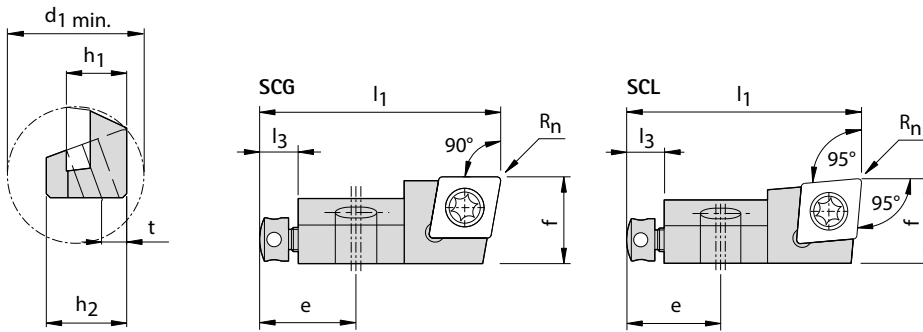
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges

Form G, L



Drawings of right design, example SCGCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | Accessory group * | Order no. |
|--------|------------------|--------------------------|------------|---------------------------|-------|-------|-----|-------|-------|-----|----------------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | e | l_3 | h_2 | t | $d_{1 \text{ min.}}$ | | |
| SCG... | SCGCR 06CK-06 V1 | CC_0602__ | 6 | 8,5 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 10 | 30011154 |
| | SCGCL 06CK-06 V1 | CC_0602__ | 6 | 8,5 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 10 | 30011155 |
| | SCGCR 10CK-09 | CC_09T3__ | 10 | 14 | 0,8 | 40 | 17 | 8 | 15 | 5 | 33 | 15 | 30011158 |
| | SCGCL 10CK-09 | CC_09T3__ | 10 | 14 | 0,8 | 40 | 17 | 8 | 15 | 5 | 33 | 15 | 30011159 |
| | SCGCR 12CK-12 | CC_1204__ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 8 | 30011160 |
| | SCGCL 12CK-12 | CC_1204__ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 8 | 30011161 |
| SCL... | SCLCR 06CK-06 V1 | CC_0602__ | 6 | 8,5 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 10 | 30011162 |
| | SCLCL 06CK-06 V1 | CC_0602__ | 6 | 8,5 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 10 | 30011163 |
| | SCLCR 06CK-06 V2 | CC_0602__ | 6 | 9,7 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 10 | 30011164 |
| | SCLCL 06CK-06 V2 | CC_0602__ | 6 | 9,7 | 0,4 | 25 | 11 | 5 | 6 | 2,5 | 18 | 10 | 30011165 |
| | SCLCR 10CK-09 | CC_09T3__ | 10 | 14 | 0,8 | 40 | 17 | 8 | 15 | 5 | 33 | 15 | 30011166 |
| | SCLCL 10CK-09 | CC_09T3__ | 10 | 14 | 0,8 | 40 | 17 | 8 | 15 | 5 | 33 | 15 | 30011167 |
| | SCLCR 12CK-12 | CC_1204__ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 7 | 30011168 |
| | SCLCL 12CK-12 | CC_1204__ | 12 | 18 | 0,8 | 50 | 20 | 8 | 16 | 5 | 37 | 7 | 30011169 |

* see pages 660-661

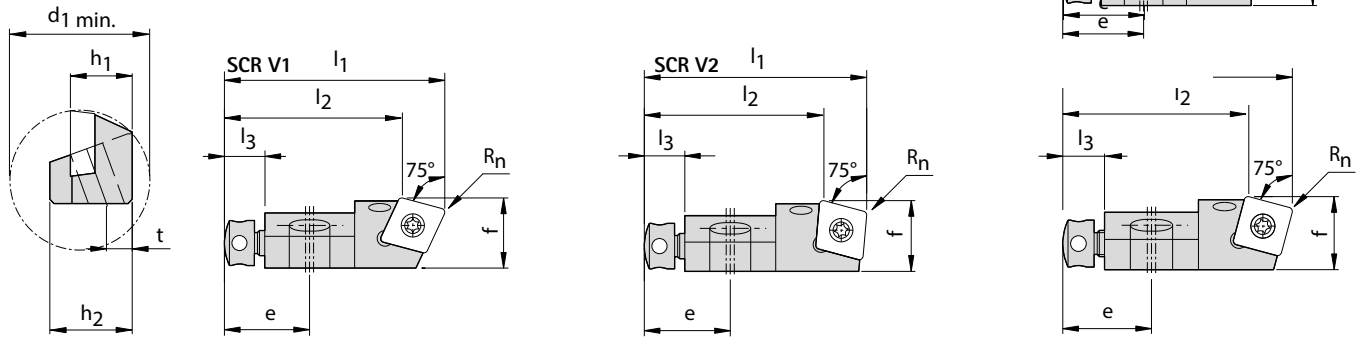
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges

Form R



Drawings of right design, example SCRCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group * | Order no. |
|----------|------------------|--------------------------|------------|---------------------------|-------|-------|-------|-----|-------|-------|-----|--------------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SCR...V1 | SCRCR 06CK-06 V1 | CC_0602__ | 6 | 9,7 | 0,4 | 25 | 19,2 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011170 |
| | SCRCR 10CK-09 V1 | CC_09T3__ | 10 | 14 | 0,8 | 44 | 35,5 | 17 | 8 | 15 | 5 | 33 | 14 | 30011172 |
| SCR...V2 | SCRCR 06CK-06 V2 | CC_0602__ | 6 | 10 | 0,4 | 25 | 19,2 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011174 |
| | SCRCR 10CK-09 V2 | CC_09T3__ | 10 | 14 | 0,8 | 44 | 35,5 | 17 | 8 | 15 | 5 | 33 | 16 | 30011176 |
| SSR... | SSRPR 08CK-06 | SP_0603__ | 8 | 10 | 0,4 | 32 | 26,3 | 17 | 5 | 10 | 4,5 | 24 | 13 | 30011178 |
| | SSRCR 10CK-09 | SC_09T3__ | 10 | 14 | 0,8 | 44 | 35,7 | 17 | 8 | 15 | 5 | 33 | 16 | 30011180 |
| | SSRCL 10CK-09 | SC_09T3__ | 10 | 14 | 0,8 | 44 | 35,7 | 17 | 8 | 15 | 5 | 33 | 16 | 30011181 |
| | SSRCR 12CK-12 | SC_1204__ | 12 | 18 | 0,8 | 50 | 38,6 | 20 | 8 | 16 | 5 | 37 | 7 | 30011182 |
| STR... | STRCR 10CK-11 | TC_1102__ | 10 | 14 | 0,4 | 40 | 30,4 | 17 | 8 | 15 | 5 | 33 | 11 | 30011186 |
| | STRCR 12CK-16 | TC_16T3__ | 12 | 18 | 0,8 | 50 | 36,1 | 20 | 8 | 16 | 5 | 37 | 12 | 30011188 |

* see pages 660-661

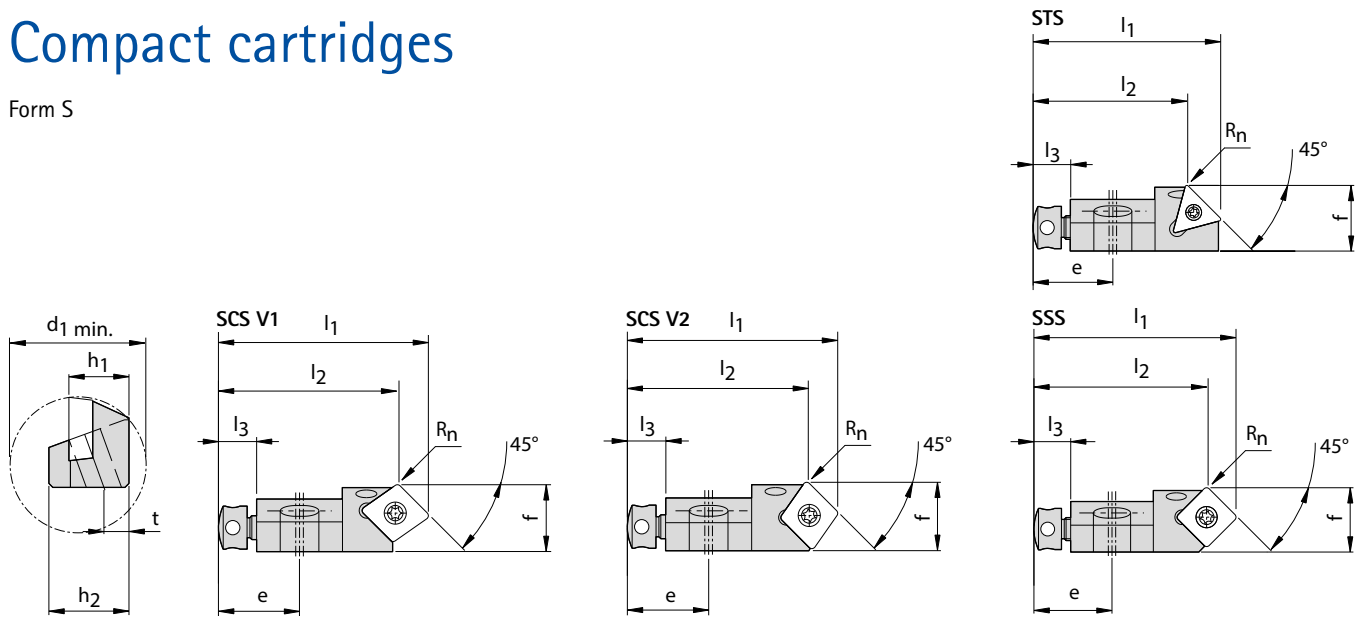
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges

Form S



Drawings of right design, example SCSCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group * | Order no. |
|----------|------------------|--------------------------|------------|---------------------------|-------|-------|-------|-----|-------|-------|-----|--------------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SCS...V1 | SCSCR 06CK-06 V1 | CC_0602__ | 6 | 9,7 | 0,4 | 25 | 20,8 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011190 |
| | SCSCR 10CK-09 V1 | CC_09T3__ | 10 | 14 | 0,8 | 44 | 37,8 | 17 | 8 | 15 | 5 | 33 | 14 | 30011192 |
| SCS...V2 | SCSCR 06CK-06 V2 | CC_0602__ | 6 | 10 | 0,4 | 25 | 20,8 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011194 |
| | SCSCR 10CK-09 V2 | CC_09T3__ | 10 | 14,3 | 0,8 | 44 | 37,8 | 17 | 8 | 15 | 5 | 33 | 14 | 30011196 |
| SSS... | SSSPR 08CK-06 | SP_0603__ | 8 | 10 | 0,4 | 32 | 27,8 | 17 | 5 | 10 | 4,5 | 24 | 13 | 30011198 |
| | SSSPL 08CK-06 | SP_0603__ | 8 | 10 | 0,4 | 32 | 27,8 | 17 | 5 | 10 | 4,5 | 24 | 13 | 30011199 |
| | SSSCR 10CK-09 | SC_09T3__ | 10 | 14 | 0,8 | 44 | 37,9 | 17 | 8 | 15 | 5 | 33 | 14 | 30011200 |
| | SSSCL 10CK-09 | SC_09T3__ | 10 | 14 | 0,8 | 44 | 37,9 | 17 | 8 | 15 | 5 | 33 | 14 | 30011201 |
| | SSSCR 12CK-12 | SC_1204__ | 12 | 18 | 0,8 | 50 | 41,7 | 20 | 8 | 16 | 5 | 37 | 7 | 30011202 |
| STS... | STSCR 06CK-09 | TC_0902__ | 6 | 10 | 0,4 | 25 | 18,9 | 11 | 5 | 6 | 2,5 | 18 | 17 | 30011204 |
| | STSCR 10CK-11 | TC_1102__ | 10 | 14 | 0,4 | 40 | 33 | 17 | 8 | 15 | 5 | 33 | 11 | 30011206 |

* see pages 660-661

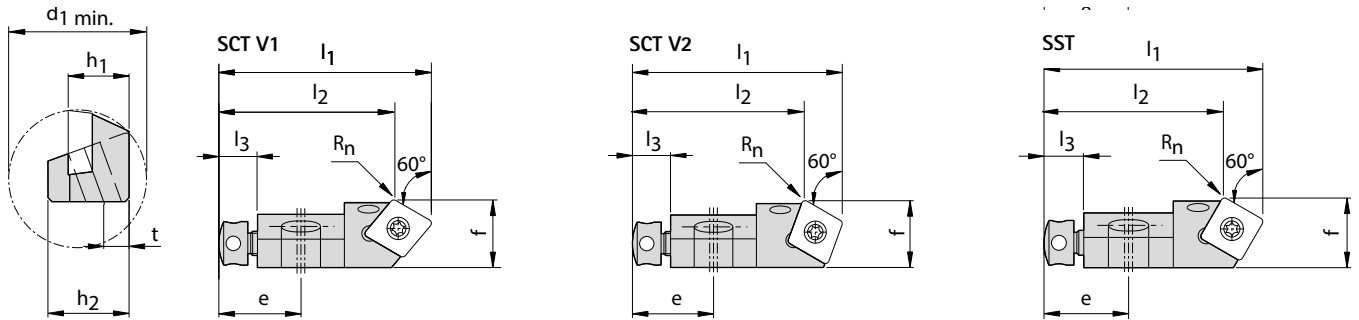
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges

Form T



Drawings of right design, example SCTCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group * | Order no. |
|----------|------------------|--------------------------|------------|---------------------------|-------|-------|-------|-----|-------|-------|-----|--------------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SCT...V1 | SCTCR 06CK-06 V1 | CC_0602__ | 6 | 9,7 | 0,4 | 25 | 19,8 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011210 |
| | SCTCR 10CK-09 V1 | CC_09T3__ | 10 | 14 | 0,8 | 44 | 36,5 | 17 | 8 | 15 | 5 | 33 | 14 | 30011212 |
| SCT...V2 | SCTCR 06CK-06 V2 | CC_0602__ | 6 | 10 | 0,4 | 25 | 19,8 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011214 |
| | SCTCR 10CK-09 V2 | CC_09T3__ | 10 | 14 | 0,8 | 44 | 36,5 | 17 | 8 | 15 | 5 | 33 | 16 | 30011216 |
| SST... | SSTPR 08CK-06 | SP_0603__ | 8 | 10 | 0,4 | 32 | 26,9 | 17 | 5 | 10 | 4,5 | 24 | 13 | 30011218 |
| | SSTCR 10CK-09 | SC_09T3__ | 10 | 14 | 0,8 | 44 | 36,6 | 17 | 8 | 15 | 5 | 33 | 14 | 30011220 |
| | SSTCR 12CK-12 | SC_1204__ | 12 | 18 | 0,8 | 50 | 39,8 | 20 | 8 | 16 | 5 | 37 | 7 | 30011222 |
| STTCR... | STTCR 06CK-09 | TC_0902__ | 6 | 10 | 0,4 | 25 | 17,6 | 11 | 5 | 6 | 2,5 | 18 | 17 | 30011224 |
| | STTCR 10CK-11 | TC_1102__ | 10 | 14 | 0,4 | 40 | 31,4 | 17 | 8 | 15 | 5 | 33 | 11 | 30011226 |
| | STTCR 12CK-16 | TC_16T3__ | 12 | 18 | 0,8 | 50 | 37,5 | 20 | 8 | 16 | 5 | 37 | 12 | 30011228 |

* see pages 660-661

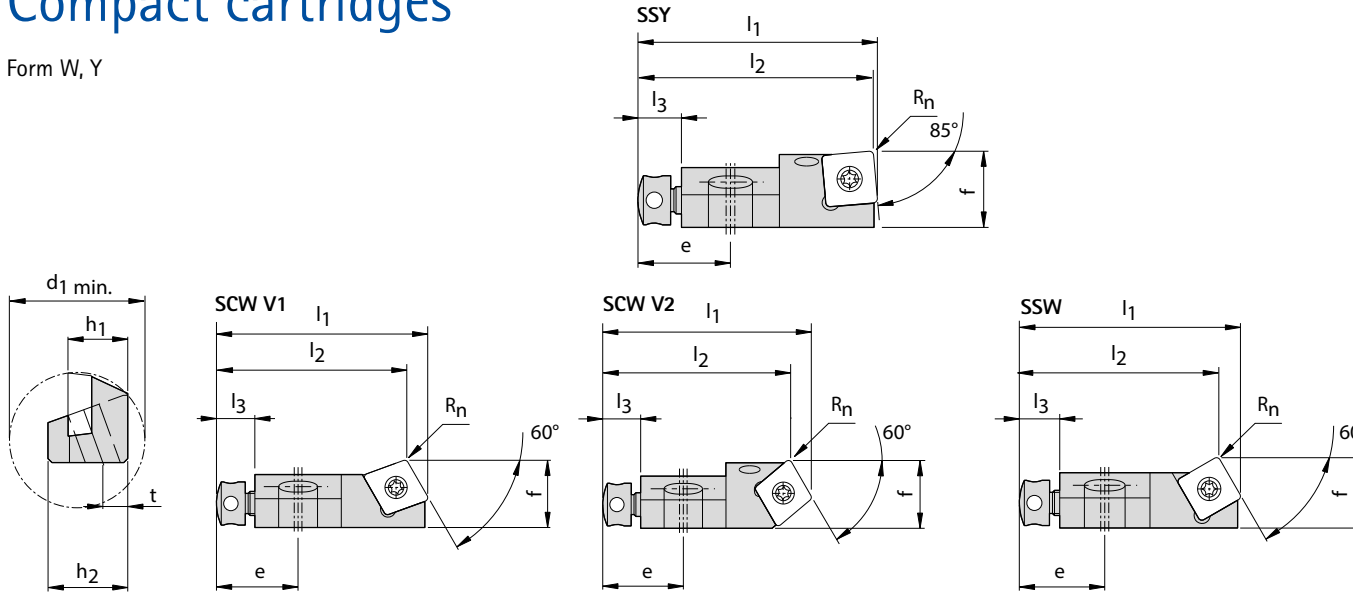
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges

Form W, Y



Drawings of right design, example SCWCR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group * | Order no. |
|----------|------------------|--------------------------|----------------|----------------------------------|----------------|----------------|----------------|----|----------------|----------------|-----|---------------------|-------------------|-----------|
| | | | h ₁ | f (refers to R _n) | R _n | l ₁ | l ₂ | e | l ₃ | h ₂ | t | d _{1 min.} | | |
| SCW...V1 | SCWCR 06CK-06 V1 | CC__0602__ | 6 | 9,7 | 0,4 | 25 | 22 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011230 |
| | SCWCR 10CK-09 V1 | CC__09T3__ | 10 | 14 | 0,8 | 44 | 39,6 | 17 | 8 | 15 | 5 | 33 | 16 | 30011232 |
| SCW...V2 | SCWCL 06CK-06 V2 | CC__0602__ | 6 | 10 | 0,4 | 25 | 22 | 11 | 5 | 6 | 2,5 | 18 | 9 | 30011235 |
| SSW... | SSWPR 08CK-06 | SP__0603__ | 8 | 10 | 0,4 | 32 | 29,1 | 17 | 5 | 10 | 4,5 | 24 | 13 | 30011238 |
| | SSWCL 10CK-09 | SC__09T3__ | 10 | 14 | 0,8 | 44 | 39,7 | 17 | 8 | 15 | 5 | 33 | 16 | 30011241 |
| | SSWCR 12CK-12 | SC__1204__ | 12 | 18 | 0,8 | 50 | 44,1 | 20 | 8 | 16 | 5 | 37 | 7 | 30011242 |
| | SSWCL 12CK-12 | SC__1204__ | 12 | 18 | 0,8 | 50 | 44,1 | 20 | 8 | 16 | 5 | 37 | 7 | 30011243 |
| SSY... | SSYPR 08CK-06 | SP__0603__ | 8 | 10 | 0,4 | 32 | 31,5 | 17 | 5 | 10 | 4,5 | 24 | 13 | 30011250 |
| | SSYCR 10CK-09 | SC__09T3__ | 10 | 14 | 0,8 | 44 | 43,2 | 17 | 8 | 15 | 5 | 33 | 16 | 30011252 |
| | SSYCL 10CK-09 | SC__09T3__ | 10 | 14 | 0,8 | 44 | 43,2 | 17 | 8 | 15 | 5 | 33 | 16 | 30011253 |
| | SSYCR 12CK-12 | SC__1204__ | 12 | 18 | 0,8 | 50 | 49 | 20 | 8 | 16 | 5 | 37 | 7 | 30011254 |

* see pages 660-661

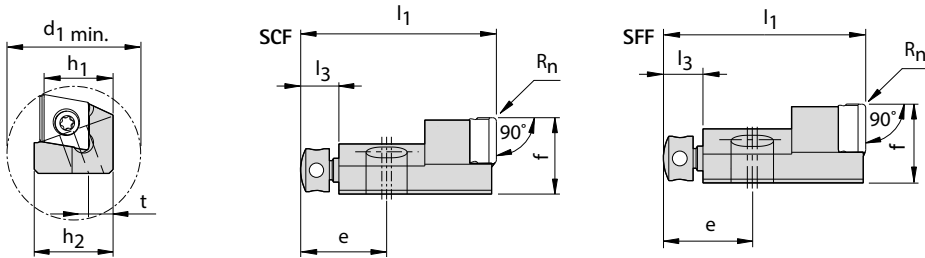
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges for tangential indexable inserts

Form F, K



Drawings of right design, example SCFNR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group * | Order no. |
|--------|----------------|--------------------------|------------|---------------------------|-------|-------|-------|-----|-------|-------|-----|--------------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SCF... | SCFNR 10CT-06 | CTHQ0604__ | 10 | 11 | 0,8 | 29 | - | 12 | 5 | 10,5 | 5 | 40 | 22 | 30305015 |
| | SCFNR 14CT-09 | CTHQ0905__ | 14 | 16 | 0,8 | 41 | - | 18 | 8 | 16 | 7 | 65 | 24 | 30305018 |
| | SCFNR 18CT-12 | CTHQ1206__ | 18 | 22 | 0,8 | 43 | - | 18 | 8 | 20 | 7 | 75 | 26 | 30305020 |
| | SCFDR 10 CT-06 | CTHD0603__ | 10 | 11 | 0,8 | 29 | - | 12 | 5 | 10,5 | 5 | 40 | 22 | 30552260 |
| | SCFDR 14 CT-09 | CTHD09T3__ | 14 | 16 | 0,8 | 41 | - | 18 | 8 | 16 | 7 | 65 | 20 | 30552263 |
| | SCFDR 18 CT-12 | CTHD1204__ | 18 | 22 | 0,8 | 43 | - | 18 | 8 | 20 | 7 | 75 | 18 | 30552264 |
| SFF... | SFFNR 10CT-06 | FTHQ0604__ | 10 | 11 | 0,8 | 29 | - | 12 | 5 | 10,5 | 5 | 35 | 22 | 30305022 |
| | SFFNR 14CT-09 | FTHQ0905__ | 14 | 16 | 0,8 | 41 | - | 18 | 8 | 16 | 7 | 44 | 24 | 30305024 |
| | SFFNR 18CT-12 | FTHQ1206__ | 18 | 22 | 0,8 | 43 | - | 18 | 8 | 20 | 7 | 59,5 | 26 | 30305026 |

* see pages 660-661

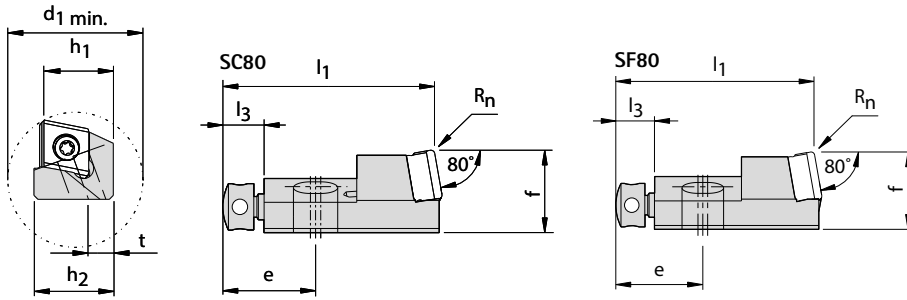
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges for tangential indexable inserts

Form 80, W



Drawings of right design, example SC80NR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | | Accessory group * | Order no. |
|---------|----------------|--------------------------|------------|---------------------------|-------|-------|-------|-----|-------|-------|-----|--------------------|-------------------|-----------|
| | | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | |
| SC80... | SC80NR 10CT-06 | CTHQ0604__ | 10 | 11 | 0,8 | 29 | - | 12 | 5 | 10,5 | 5 | 40 | 23 | 30305016 |
| | SC80NR 14CT-09 | CTHQ0905__ | 14 | 16 | 0,8 | 41 | - | 18 | 8 | 16 | 7 | 65 | 25 | 30305019 |
| | SC80NR 18CT-12 | CTHQ1206__ | 18 | 22 | 0,8 | 43 | - | 18 | 8 | 20 | 7 | 75 | 27 | 30305021 |
| SF80... | SF80NR 10CT-06 | FTHQ0604__ | 10 | 11 | 0,8 | 29 | - | 12 | 5 | 10,5 | 5 | 35 | 23 | 30305023 |
| | SF80NR 14CT-09 | FTHQ0905__ | 14 | 16 | 0,8 | 41 | - | 18 | 8 | 16 | 7 | 44 | 25 | 30305025 |
| | SF80NR 18CT-12 | FTHQ1206__ | 18 | 22 | 0,8 | 43 | - | 18 | 8 | 20 | 7 | 59,5 | 27 | 30305027 |

* see pages 660-661

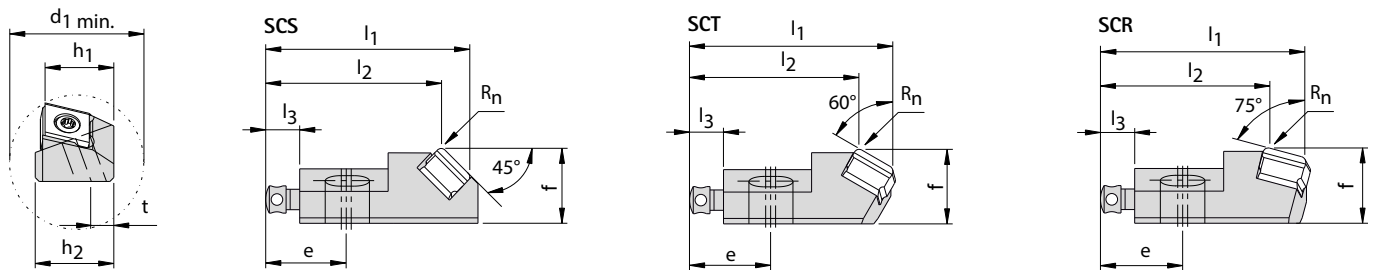
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

Compact cartridges for tangential indexable inserts

Form S, T, R



Drawings of right design, example SCSNR.

Preferred series in stock

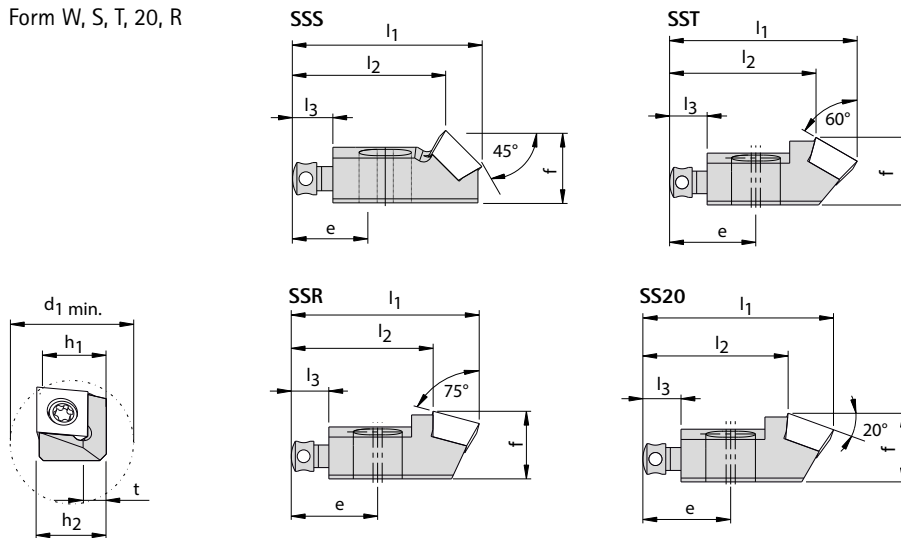
| Specification | Related indexable insert | Dimensions | | | | | | | | | | | Accessory group * | Order no. |
|--------------------------|--------------------------|------------|---------------------------|-------|-------|-------|------|-------|-------|------|--------------------|----|-------------------|-----------|
| | | h_1 | f (refers to R_n) | R_n | l_1 | l_2 | e | l_3 | h_2 | t | $d_1 \text{ min.}$ | | | |
| SCS... SCSNR 14 CT-09 | CTHQ0905__ | 14 | 16 | 0,8 | 42,5 | 36 | 18 | 8 | 16 | 7 | 65 | 30 | 30552283 | |
| SCT... SCTNR 10 CT-06 | CTHQ0604__ | 10 | 11 | 0,8 | 30 | 24,7 | 12 | 5 | 10,5 | 5 | 40 | 22 | 30552284 | |
| | SCTNR 14 CT-09 | 14 | 16 | 0,8 | 42,5 | 34,4 | 18 | 8 | 16 | 7 | 65 | 20 | 30552285 | |
| | SCTDR 10 CT-06 | CTHD0603__ | 10 | 11 | 0,8 | 30 | 24,7 | 12 | 5 | 10,5 | 5 | 40 | 22 | 30552274 |
| SCR... SCRNR 14 CT-09 | CTHQ0905__ | 14 | 16 | 0,8 | 42,5 | 33,3 | 18 | 8 | 16 | 7 | 65 | 20 | 30552287 | |

* see pages 660-661

Other cutting edge forms, sizes and contact angles available upon request.
 Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.
 Dimensions in mm.

Compact cartridges for tangential indexable inserts

Form W, S, T, 20, R



Drawings of right design, example SSSDR.

Preferred series in stock

| | Specification | Related indexable insert | Dimensions | | | | | | | | | Accessory group * | Order no. |
|---------|-----------------|--------------------------|------------|------|-------|-------|------|-------|-------|-----|----------------------|-------------------|-----------|
| | | | h_1 | f | l_1 | l_2 | e | l_3 | h_2 | t | $d_{1 \text{ min.}}$ | | |
| SSS... | SSSDR 08CT-06 | STHD0603__ | 8,5 | 9 | 23,5 | 19 | 11,5 | 5 | 8,2 | 3,2 | 33 | 28 | 30474905 |
| | SSSDR 14CT-09 | STHD09T3__ | 14 | 13,5 | 35,7 | 29 | 18 | 8 | 13,5 | 5 | 50 | 32 | 30474906 |
| SST... | SSTDR 08 CT-06 | STHD0603__ | 8,5 | 9 | 25 | 19,5 | 11,5 | 5 | 8,2 | 3,2 | 33 | 28 | 30552292 |
| | SSTDR 14 CT-09 | STHD09T3__ | 14 | 13,5 | 38 | 29,8 | 18 | 8 | 13,5 | 5 | 50 | 32 | 30552293 |
| SS20... | SS20DR 08 CT-06 | STHD0603__ | 8,5 | 9 | 25 | 19 | 11,5 | 5 | 8,2 | 3,2 | 33 | 28 | 30552294 |
| | SS20DR 14 CT-09 | STHD09T3__ | 14 | 13,5 | 38 | 29 | 18 | 8 | 13,5 | 5 | 50 | 32 | 30552295 |
| SSR... | SSRDR 08 CT-06 | STHD0603__ | 8,2 | 9 | 25 | 18,9 | 11,5 | 5 | 8,2 | 3,2 | 33 | 28 | 30552288 |
| | SSRDR 14 CT-09 | STHD09T3__ | 14 | 13,5 | 38 | 28,8 | 18 | 8 | 13,5 | 5 | 50 | 32 | 30552289 |

* see pages 660-661

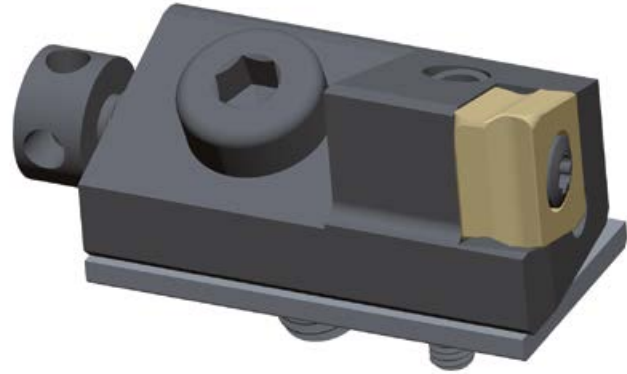
Other cutting edge forms, sizes and contact angles available upon request.

Scope of delivery: Cartridge with add-on parts. Please order indexable inserts and accessories separately.

Dimensions in mm.

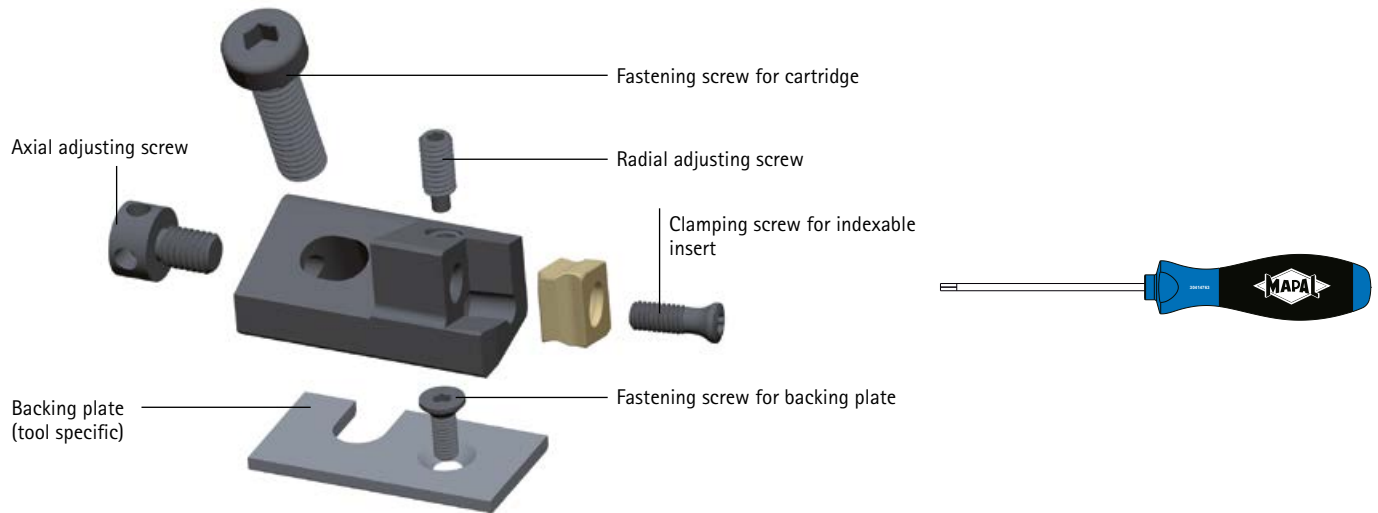
Accessories for ISO cartridges and compact cartridges

Radial and tangential design



| Accessory group | Fastening screw for cartridge | | | Axial adjusting screw | | Radial adjusting screw | | |
|-------------------------------|----------------------------------|------------------------|-----------|----------------------------|-----------|---------------------------|-----------------------|----------|
| | Cylinder head screw product code | Tightening torque [Nm] | Order no. | Capstan screw product code | Order no. | Threaded pin product code | Order no. | |
| ISO cartridges | 1 | DIN 7984 M6x20-10.9 | 12 | 10019671 | M5 x 10 | 10029150 | DIN 913 M4x10-45H | 10003433 |
| | 2 | DIN 7984 M4x12-10.9 | 3 | 10019695 | M3 x 8 | 10002641 | DIN 913 M3x6-45H | 10003422 |
| | 3 | DIN 7984 M4x12-10.9 | 3 | 10019695 | M3 x 8 | 10002641 | DIN 913 M3x6-45H | 10003422 |
| | 4 | DIN 7984 M6x16-10.9 | 12 | 10019703 | M5 x 10 | 10029150 | DIN 913 M4x8-45H | 10003432 |
| | 5 | DIN 7984 M6x16-10.9 | 12 | 10019703 | M5 x 10 | 10029150 | DIN 913 M4x8-45H | 10003432 |
| | 6 | DIN 7984 M6x20-10.9 | 12 | 10019671 | M5 x 10 | 10029150 | DIN 913 M4x10-45H | 10003433 |
| Compact cartridges | 7 | MN685 M6x25-TX25-IP | 12 | 30606074 | M5 x 7 | 10018493 | DIN 915 M4x10-45H | 10003900 |
| | 8 | MN685 M6x25-TX25-IP | 12 | 30606074 | M5 x 7 | 10018493 | DIN 915 M4x10-45H | 10003900 |
| | 9 | MN685 M3x10-TX9-IP | 1.8 | 30606065 | M3 x 5 | 10025039 | DIN 915 M3x6-45H | 10003894 |
| | 10 | MN685 M3x10-TX9-IP | 1.8 | 30606065 | M3 x 5 | 10025039 | DIN 915 M3x6-45H | 10003894 |
| | 11 | MN685 M6x20-TX25-IP | 12 | 30606068 | M5 x 7 | 10018493 | DIN 915 M4x10-45H | 10003900 |
| | 12 | MN685 M6x25-TX25-IP | 12 | 30606074 | M5 x 7 | 10018493 | DIN 915 M4x10-45H | 10003900 |
| | 13 | MN685 M4x14-TX15-IP | 3 | 30606067 | M3 x 5 | 10025039 | DIN 915 M3x6-45H | 10003894 |
| | 14 | MN685 M6x20-TX25-IP | 12 | 30606068 | M5 x 7 | 10018493 | DIN 915 M4x10-45H | 10003900 |
| | 15 | MN685 M6x20-TX25-IP | 12 | 30606068 | M5 x 7 | 10018493 | DIN 915 M4x10-45H | 10003900 |
| | 16 | MN685 M6x20-TX25-IP | 12 | 30606068 | M5 x 7 | 10018493 | DIN 915 M4x10-45H | 10003900 |
| | 17 | MN685 M3x10-TX9-IP | 1.8 | 30606065 | M3 x 5 | 10025039 | DIN 915 M3x6-45H | 10003894 |
| Tangential compact cartridges | 18 | ISO 4762-M6X25-12.9 | 12 | 10003620 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 19 | ISO 4762-M6X25-12.9 | 12 | 10003620 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 20 | DIN 7984-M6X20-10.9 | 12 | 10019671 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 21 | DIN 7984-M6X20-10.9 | 12 | 10019671 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 22 | DIN 7984-M4X16-10.9 | 3 | 10019685 | M3 x 5 | 10025039 | ISO 4028-M3x6-45H-KL | 30351529 |
| | 23 | DIN 7984-M4X16-10.9 | 3 | 10019685 | M3 x 5 | 10025039 | ISO 4028-M3x6-45H-KL | 30351529 |
| | 24 | DIN 7984-M6X20-10.9 | 12 | 10019671 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 25 | DIN 7984-M6X20-10.9 | 12 | 10019671 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 26 | ISO 4762-M6X25-12.9 | 12 | 10003620 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 27 | ISO 4762-M6X25-12.9 | 12 | 10003620 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 28 | MN685 M4x14-TX15-IP | 3 | 30606067 | M3 x 5 | 10025039 | - | - |
| | 29 | ISO 4762-M6X25-12.9 | 12 | 10003620 | M5 x 7 | 10018493 | - | - |
| | 30 | DIN 7984-M6X20-10.9 | 12 | 10019671 | M5 x 7 | 10018493 | ISO 4028-M4x10-45H-KL | 30351530 |
| | 31 | DIN 7984-M4X16-10.9 | 3 | 10019685 | M3 x 5 | 10025039 | ISO 4028-M3x6-45H-KL | 30351529 |
| | 32 | MN685 M6x20-TX25-IP | 12 | 30606068 | M5 x 7 | 10018493 | - | - |

* Tightening torques according to MN678



| | Backing plate right | | Backing plate left | | Fastening screw for backing plate | | |
|--|----------------------------|------------------------|----------------------------|------------------------|-----------------------------------|------------------------|-----------|
| | Backing plate product code | Order no. | Backing plate product code | Order no. | Countersunk screw product code | Tightening torque [Nm] | Order no. |
| | UR 12-1A | available upon request | UL 12-1A | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 08-1A | available upon request | UL 08-1A | available upon request | ISO 10642-M3X6-10.9 | 1.8 | 10003768 |
| | UR 08-1A | available upon request | UL 08-1A | available upon request | ISO 10642-M3X6-10.9 | 1.8 | 10003768 |
| | UR 10-1A | available upon request | UL 10-1A | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 10-1A | available upon request | UL 10-1A | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 12-1A | available upon request | UL 12-1A | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 12-1K | available upon request | UL 12-1K | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 12-2K | available upon request | UL 12-2K | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 06-1K | available upon request | UL 06-1K | available upon request | ISO 2009-M2X4-4.8 | 0.5 | 10029153 |
| | UR 06-2K | available upon request | UL 06-2K | available upon request | ISO 2009-M2X4-4.8 | 0.5 | 10029153 |
| | UR 10-1K | available upon request | UL101K | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 12-1K | available upon request | UL 12-1K | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 08-1K | available upon request | UL 08-1K | available upon request | ISO 10642-M3X6-10.9 | 1.8 | 10003768 |
| | UR 10-1K | available upon request | UL 10-1K | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 10-2K | available upon request | UL 10-2K | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 10-3K | available upon request | UL 10-3K | available upon request | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 06-1K | available upon request | UL 06-1K | available upon request | ISO 2009-M2X4-4.8 | 0.5 | 10029153 |
| | UR 18-1T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 18-4T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 14-1T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 14-4T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 10-1T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 10-2T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 14-2T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 14-3T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 18-2T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 18-3T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - |
| | UR 14-5T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | UR 10-3T | available upon request | - | - | ISO 10642-M3X8-10.9 | 1.8 | 10003769 |
| | - | - | - | - | - | - | - |



INDEXABLE INSERT

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Indexable inserts

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Technical appendix

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| Cutting data recommendations | 732 |
|------------------------------------|-----|

Cutting material series – the right cutting material for every application

MAPAL offers a wide range of radial and tangential indexable inserts that covers all requirements for different cutting materials and coatings as well as the related cutting edge geometries and accuracies.

Performance Line cutting material series

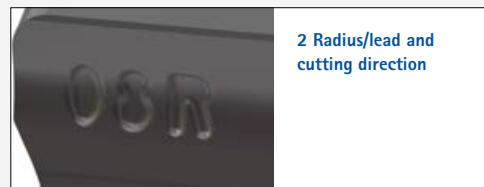


The cutting material series of the Performance Line offers a wide range of radial and tangential indexable inserts that covers all requirements for different cutting materials and coatings as well as the related cutting edge geometries and accuracies.

The high-precision, ground indexable inserts from tolerance class H are truly multi-cutting-edge capable even with fixed cutting edges. This is because, in conjunction with precisely manufactured insert seats, the cutting edges show only minimal deviations from each other. This means that all cutting edges are in use at the same time during machining. As a result, considerable increases in performance are possible.

Sintered tangential indexable inserts in tolerance class N add particularly cost-effective alternatives to the range, especially for machining with larger permissible tolerances. New to the range are the circumferentially ground radial and tangential indexable insert of tolerance class G, which represent a cost-effective alternative to the high-precision indexable inserts.

Marking on "press-to-size" indexable inserts



Basic Line cutting material series

P M K



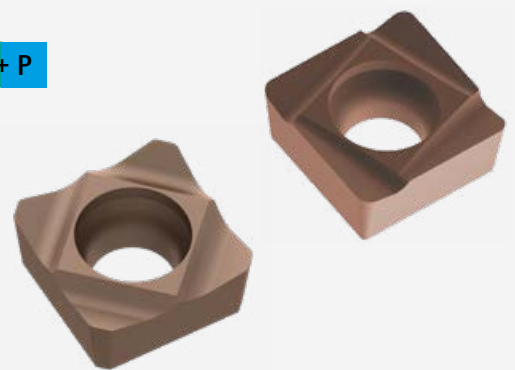
The Basic Line series of positive radial inserts for boring and turning impresses due to an excellent price/performance ratio. For machining cast iron, steel and stainless steel, CVD- and PVD-coated cutting materials are available that cover a wide range, whether wear resistant or ductile. So it is possible to select the optimal indexable insert for every application. Depending on the machining, different basic shapes are available with different chip guiding stages in the tolerance classes M and G for roughing, medium machining and finishing.

AT A GLANCE

- Positive radial inserts for boring and turning
- Excellent price-performance ratio
- CVD- and PVD-coated cutting materials for P, M and K workpiece material
- Cermet cutting edges for high surface finish in steel
- Different chip guiding stages for roughing, medium machining and finishing

Cutting material series for mixed machining

N + K N + P



Material combinations of aluminium and sintered steel or aluminium and cast iron, such as those used in the manufacturing of the crankcase, place special demands on machining. MAPAL offers a specially adapted cutting material series for such machining operations. Both their carbide substrates and the micro and macro geometries of the cutting edges were specially developed for mixed machining.

A PVD coating as part of the cutting material series prevents both a built-up edge during aluminium machining and excessive wear and tear during machining of the cast iron or sintered steel portion of the workpiece. This is because it ensures that the cutting material is particularly wear-and-tear and heat resistant. In this way, machining can be carried out in the highest quality.

AT A GLANCE

- Cutting material for the machining of the material combinations aluminium and cast iron as well as aluminium and sintered steel
- Modified carbide substrate, optimised micro and macro geometries on the insert, PVD coating based on TiAlN alloy with special dopant
- Standard and custom ISO indexable inserts available
- Long tool life and therefore high economic efficiency

Product overview for indexable inserts 1/2

Radial technology

| Insert type | Radial technology – Basic Line | | | | | | | |
|-------------|---|---|---|---|--|---|---|---|
| | CCMT | CCGT | DCMT | SCMT SPMT | SCGT | TCMT | VCMT | VCGT |
| |  |  |  |  |  |  |  |  |

Features

| | | | | | | | | |
|-----------------------------|--------------|--------------|--------------|--------------|------------|-------------------|----|----|
| Number of cutting edges | 2 | 2 | 2 | 4 | 4 | 3 | 2 | 2 |
| Insert size | 06 / 09 / 12 | 06 / 09 / 12 | 07 / 11 / 15 | 06 / 09 / 12 | 09 | 09 / 11 / 16 / 22 | 16 | 11 |
| Diameter range | from 17 mm | from 17 mm | | from 17 mm | from 25 mm | from 17 mm | | |
| Cutting direction | N | N | N | N | N | N | N | N |
| Boring – neutral | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Boring – arc shaped land | | | | | | | | |
| Countersinking / chamfering | | | | | | | | |

Application

| | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|
| Roughing | ■ | | ■ | ■ | | ■ | ■ | |
| Medium machining | ■ | ■ | ■ | ■ | | ■ | ■ | ■ |
| Finishing | ■ | ■ | ■ | ■ | ■ | ■ | | |

Cutting material

| | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|
| Ground carbide | | ■ | | | | | | ■ |
| Pressed carbide | ■ | | ■ | ■ | | ■ | ■ | |
| Cermet | | ■ | ■ | | ■ | ■ | ■ | |
| PcBN | | | | | | | | |
| PCD | | | | | | | | |

Material suitability

| | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|
| P | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| M ₁ | ■ | ■ | ■ | ■ | | ■ | | ■ |
| M ₂ | ■ | ■ | ■ | ■ | | ■ | | ■ |
| K | ■ | | ■ | ■ | | ■ | ■ | |
| N | | | | | | | | |
| N K | | | | | | | | |
| N P | | | | | | | | |

| | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|
| Page | 686 | 688 | 692 | 694 | 694 | 700 | 704 | 704 |
|------|-----|-----|-----|-----|-----|-----|-----|-----|




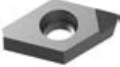




* With favourable installation situation

Stainless steel

Heat-resistant cast steel (turbocharger materials)

Product overview for indexable inserts 2/2

Tangential technology

| Insert type | Radial technology – Performance Line | | | | | | | |
|-------------|---|---|---|---|--|---|---|---|
| | CCGT | CCGW | DCGT | DCGW | SCGT SPGT | SCGW SPGW | TCGW | VBGW VCGW |
| |  |  |  |  |  |  |  |  |

Features

| | | | | | | | | |
|-----------------------------|------------|------------|----|----|------------|--------------|------------|----|
| Number of cutting edges | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Insert size | 06 / 09 | 06 / 09 | 11 | 11 | 06 / 09 | 06 / 09 / 12 | 11 | 16 |
| Diameter range | from 17 mm | from 17 mm | | | from 17 mm | from 17 mm | from 17 mm | |
| Cutting direction | N | N | N | N | L / R / N | N | N | N |
| Neutral – boring | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Boring – arc shaped land | | | | | | | | |
| Countersinking / chamfering | | | | | | | | |

Application

| | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|
| Roughing | | | | | | | | |
| Medium machining | ■ | ■ | ■ | | | ■ | ■ | |
| Finishing | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |



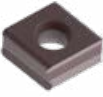







Cutting material

| | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|
| Ground carbide | | | | | | | | |
| Pressed carbide | | | | | | | | |
| Cermet | | | | | | | | |
| PcBN | | ■ | | ■ | | ■ | ■ | ■ |
| PCD | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |

Material suitability

| | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|
| P | | | | | | | | |
| M ₁ | | | | | | | | |
| M ₂ | | | | | | | | |
| K | | ■ | | ■ | | ■ | ■ | ■ |
| N | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| N K | | | | | | | | |
| N P | | | | | | | | |

| | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|
| Page | 688 | 689 | 692 | 692 | 694 | 696 | 700 | 704 |
|------|-----|-----|-----|-----|-----|-----|-----|-----|

| Tangential technology – Performance Line | | | | | | | | | |
|--|---|---|---|---|---|--|---|---|---|
| CTNQ | CTGQ | CTHQ | | FTNQ | FTGQ | FTHQ | | STHD / STHE | |
|  |  |  |  |  |  |  |  |  |  |
| 4 | 4 | 4 | 1 | 4 | 4 | 4 | 1 | 4 | 1 |
| 09 / 12 | 09 / 12 | 06 / 09 / 12 | 06 / 09 / 12 | 09 / 12 | 09 / 12 | 06 / 09 / 12 | 06 / 09 / 12 | 06 / 09 | 06 / 09 |
| from 41 mm | from 65 mm | from 28 mm | from 28 mm | from 30 mm | from 30 mm | from 22 mm | from 22 mm | | |
| L / R | L | L / R | L / R | L / R | L | L / R | L / R | N | N |
| ■ | | ■ | ■ | ■ | | ■ | ■ | | |
| | ■ | ■ | ■ | | ■ | ■ | ■ | | |
| | | | | | | | | ■ | ■ |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| ■ | | ■ | | | ■ | ■ | | ■ | |
| | ■ | | | ■ | | | | | |
| | | | | | | | | | |
| | | | ■ | | | | ■ | | ■ |
| ■ | ■ | ■ | | ■ | ■ | ■ | | | |
| ■ | ■ | ■ | | ■ | | ■ | | | |
| ■ | ■ | ■ | | ■ | | ■ | | ■ | |
| ■ | | ■ | | ■ | ■ | ■ | | ■ | |
| | | ■ | ■ | | | ■ | ■ | ■ | ■ |
| 708 | 710 | 712 | 712 | 718 | 720 | 722 | 722 | 728 | 728 |

Cutting material overview: Selection of the correct cutting material

Selection of cutting material

A wide spectrum of cutting material is available, whether wear resistant or ductile. The designation of the cutting material indicates the level of ductility; the ductility increases as the number increases.

CVD-coated cutting materials (HC...) are the first choice for boring K, P and M workpiece materials. This achieves the longest tool life.

Example: HC830 is more ductile than HC815 (the more ductile the cutting material, the less resistant it is to wear).

For non-ferrous workpiece materials, uncoated and PCD-coated carbide types (HU.../HP...) are the first choice. From a silicon content of ≥12%, PCD (PU...) is recommended due to increasing abrasiveness. With PCD, the longest tool life can be achieved, which is why this cutting material is particularly suitable for large series.

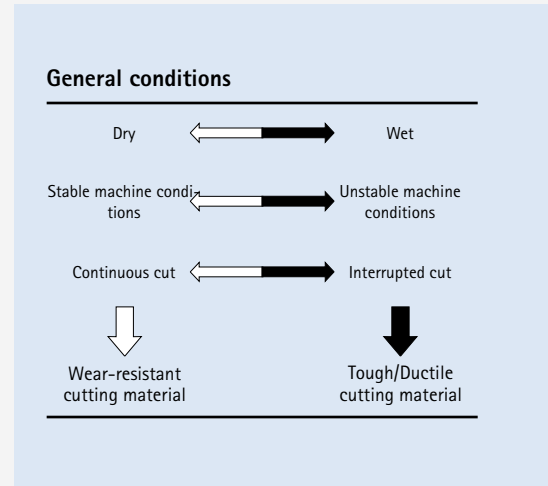
1. Select your workpiece material according

to the MMG (MAPAL machining groups, see fold-out page on inside cover).

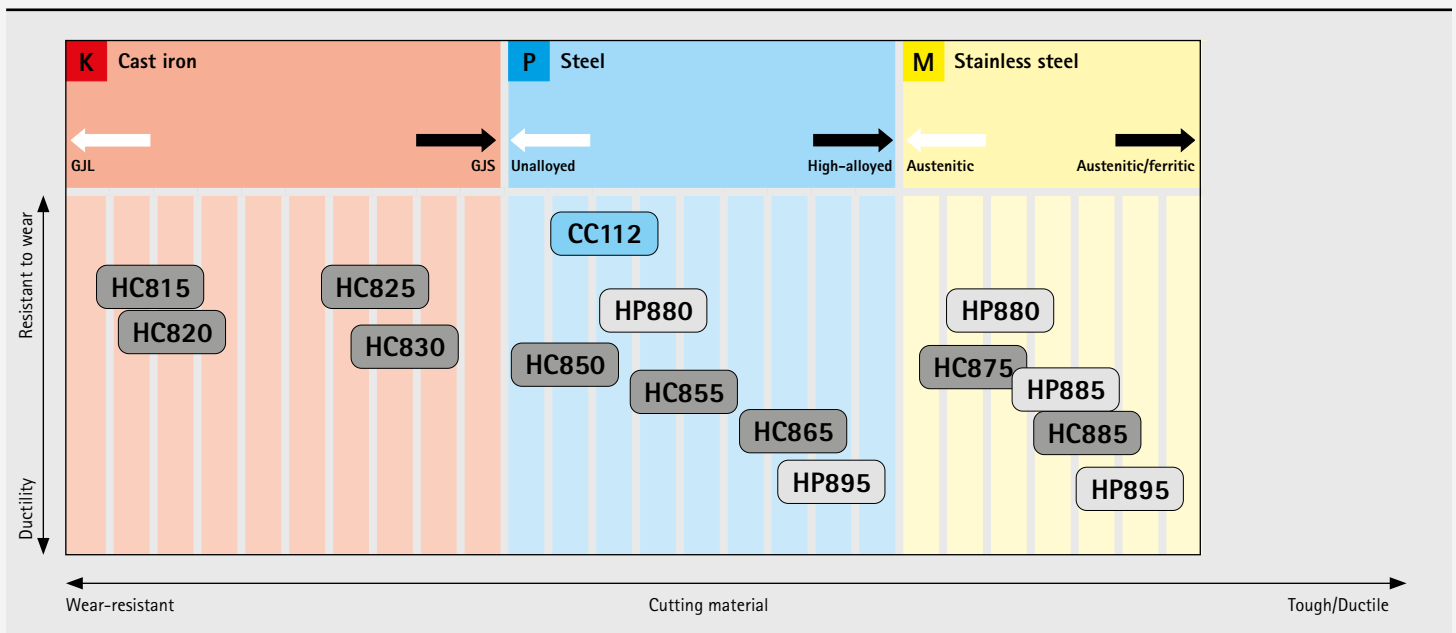
2. Depending on the product line, select the type below the desired workpiece material from the corresponding **"Cutting material overview [...]"** table.

3. Depending on the general conditions (see **"General conditions" table**), a wear-resistant or rather ductile CVD-coated cutting material should be selected.

4. If general conditions in the direction of the black arrow predominate and breakages cannot be prevented despite a ductile CVD grade, you should change to PVD-coated cutting materials.



Basic Line cutting material overview

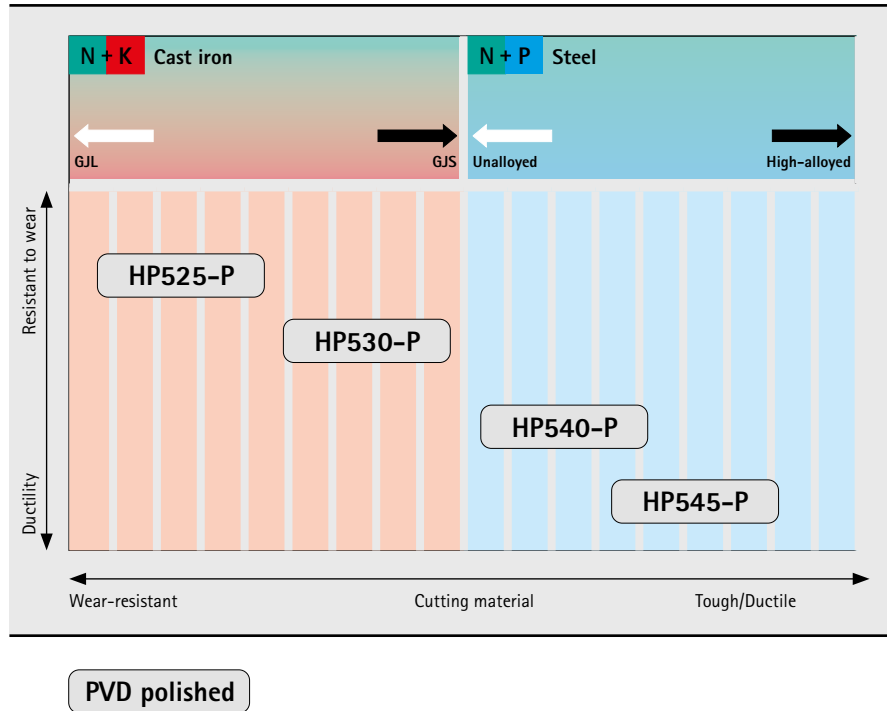


CVD PVD Cermet, CVD

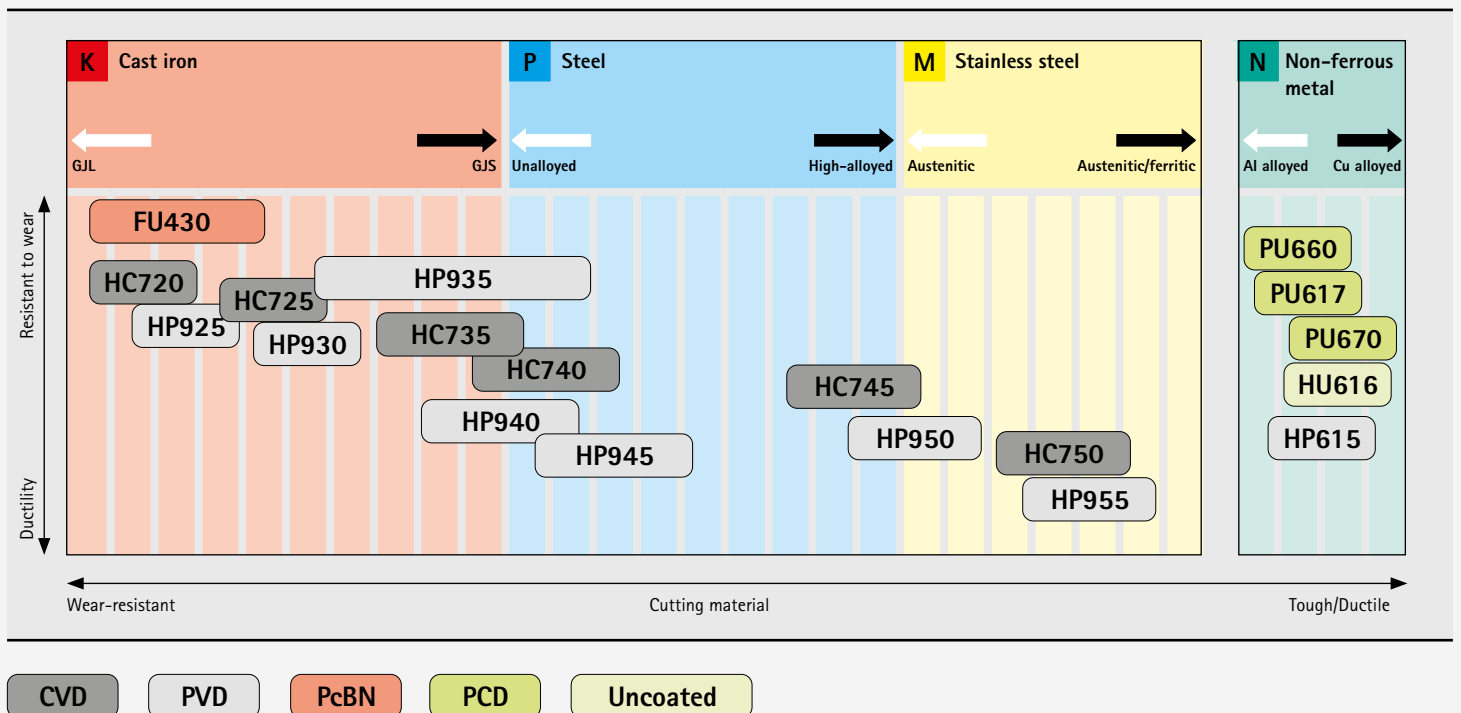
Selection of cutting material

1. Select the material type below the desired workpiece material in the "Cutting material overview" table.
2. For the mixed machining of aluminium–cast-iron, the grade HP530-P is the first choice, for aluminium–steel the grade HP545-P.
3. If a stable process is ensured with normal wear and tear, a wear-resistant grade (HP525-P for aluminium–cast-iron or HP540-P for aluminium–steel) can be selected for improved tool life.

Cutting material overview for mixed machining



Performance Line cutting material overview



Cutting material overview: Types and type description 1/2

| Substrate | Coating | Cutting material | Coating composition | Colour of coating | Field of application | Recommended application |
|-----------|------------|------------------|---|-------------------|----------------------|---|
| Cermet | CVD-coated | CC112 | TiCN+Al ₂ O ₃ | Multi-coloured | ● | Finest grain cermet grade with Al ₂ O ₃ coating for finishing and semi-machining steel and cast iron materials with elevated cutting speeds. |
| PcBN | Un-coated | FU430 | - | - | ● | PcBN grade with high CBN content for finishing and semi-finishing GJL and sintered metal. |
| Carbide | CVD-coated | HC698* | Diamond | Black an-thracite | ● | Carbide with CVD diamond coating for machining aluminium. |
| | | HC725 | TiCN +Al ₂ O ₃ | Black | ● | Fine-grain carbide with high wear resistance and a multi-layer CVD coating with Al ₂ O ₃ top coating for machining GJL and GJS at high cutting speeds. For smooth to slightly interrupted cut for medium machining to roughing. |
| | | HC740 | TiCN +Al ₂ O ₃ | Black | ● | Fine-grain carbide with high wear resistance and a multi-layer CVD coating with Al ₂ O ₃ top coating. For smooth to slightly interrupted cut for medium machining to roughing in GJS, non-alloy steels as well as heat-resistant cast steel. |
| | | HC745 | TiCN +Al ₂ O ₃ | Black | ⚡ | Fine grain carbide with a balanced proportion of wear-and-tear and ductility and a multi-layer CVD coating with Al ₂ O ₃ top coating for machining at higher cutting speeds. For interrupted cut or unstable conditions and workpiece materials with increased tensile strength, from high-alloy steels to stainless steels as well as heat-resistant cast steel. |
| | | HC750 | TiCN +Al ₂ O ₃ | Black | ⚡ | Fine grain carbide with a balanced amount of ductility and a multi-layer CVD coating with Al ₂ O ₃ top coating. For interrupted cut or unstable conditions and workpiece materials with highest tensile strength, from stainless steels to heat-resistant steel castings. |
| | | HC815 | TiCN +Al ₂ O ₃ | Black | ● | Wear-resistant fine-grain carbide grade with Al ₂ O ₃ coating. Suitable for machining cast iron materials in stable conditions. |
| | | HC820 | TiCN +Al ₂ O ₃ | Black | ● | Al ₂ O ₃ -coated carbide with optimised post-treatment to increase edge stability. Suitable for machining GJL in stable conditions and with slightly interrupted cut. |
| | | HC825 | TiCN +Al ₂ O ₃ | Black | ● | Increased wear resistance due to thicker CVD coating. Suitable for machining cast iron in unstable conditions. |
| | | HC830 | TiCN +Al ₂ O ₃ | Black | ● | Fine-grain carbide grade with thick coating and improved edge stability. Suitable for heavily interrupted cut in cast iron. |
| | | HC850 | TiCN +Al ₂ O ₃ +TiN | Gold | ● | Gradient carbide with MT-TiCN and Al ₂ O ₃ coating and TiN surface layer. Suitable for machining steel due to reduced surface roughness. |
| | | HC855 | TiCN +Al ₂ O ₃ +TiN | Gold | ● | Gradient carbide with balanced proportion of ductility and wear resistance. Suitable for semi-finishing and for medium machining of steel. |
| | | HC865 | TiCN +Al ₂ O ₃ +TiN | Gold | ⚡ | Ductile gradient carbide grade with Al ₂ O ₃ coating and smooth TiN surface layer. Suitable for semi-finishing and for medium machining of steel and alloyed steel. |
| | | HC875 | TiCN +Al ₂ O ₃ +TiN | Gold | ● | Fine grain gradient carbide grade with thin CVD coating. Suitable for machining high-alloy steel and stainless steel. |
| | | HC885 | TiCN +Al ₂ O ₃ +TiN | Gold | ⚡ | Carbide grade with increased ductility and CVD coating. Suitable for machining stainless steel. |

* Cutting material for drilling aluminium from solid.







Cutting material overview: Types and type description 2/2

| Substrate | Coating | Cutting material | Coating composition | Colour of coating | Field of application | Recommended application | |
|-----------|-----------------------------|------------------|---------------------|-------------------|----------------------|--|---|
| Carbide | PVD-coated | HP615 | TiB2 | Anthracite | ● | Fine grain carbide with a partially reduced PVD coating for machining adhesive materials. First choice for increasing tool life compared to uncoated cutting edges in aluminium alloys with 7-12 per cent silicon. | |
| | | HP880 | TiAlN | Anthracite | ● | Outstanding wear and heat resistance due to new PVD coating. Suitable for finishing stainless steel. | |
| | | HP885 | TiAlN + TiAlSiN | Copper | ● | Temperature-resistant cutting material type, finest grain carbide with multilayer PVD coating for universal machining of stainless steels. | |
| | | HP895 | TiAlN | Anthracite | ↔ | TiAlN-coated finest grain carbide with high binder content. Optimised interaction of wear resistance and ductility. Suitable for semi-finishing stainless steel. | |
| | | HP930 | AlTiCrN | Black anthracite | ● | Fine grain carbide with PVD top coating. Grade for semi-machining and roughing, for machining GJL and GJS. | |
| | | HP945 | AlTiCrN | Black anthracite | ↔ | Fine grain carbide with PVD top coating. For boring steels or stainless steels as well as heat-resistant cast steel. | |
| | | HP950 | TiAlSiN | Copper | ↔ | Ductile fine-grain carbide with PVD coating. For boring workpiece material with highest tensile strength, stainless steels and heat-resistant cast steel. | |
| | PVD-coated, mixed machining | HP525-P | TiAlXN | Gold brown | ● | PVD-coated carbide, particularly suitable for the mixed machining of aluminium and GJL/GJS with smooth cut. | |
| | | HP530-P | TiAlXN | Gold brown | ● | PVD-coated carbide, particularly suitable for the mixed machining of aluminium and GJL/GJS with smooth cut to slightly interrupted cut. | |
| | | HP540-P | TiAlXN | Gold brown | ● | PVD-coated carbide, particularly suitable for the mixed machining of aluminium and sintered steel with smooth cut to slightly interrupted cut. | |
| | | HP545-P | TiAlXN | Gold brown | ● | PVD-coated carbide with a balanced amount of ductility, particularly suitable for the mixed machining of aluminium and sintered steel with smooth cut to slightly interrupted cut. | |
| | PCD | I | PU617 | - | - | ● | PCD grade with medium particle size for roughing to semi-machining in non-ferrous metals and for machining very abrasive materials. |
| | | | PU660 | - | - | ● | Fine grain PCD grade for finishing non-ferrous metals as well as non-metallic workpiece materials such as fibre-reinforced plastics. The fine grain lends the insert very good sharpness (chipping) with good resistant to wear and achieves high surface finishes. |
| | | | PU670 | - | - | ↔ | PCD cutting material with medium to coarse particle size. Excellent mechanical resistant to wear with good ductility, particularly suitable for machining abrasive workpiece materials. |




Product ID codes: Radial indexable inserts

S
C
H
T
0
9
T
3

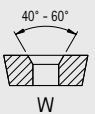
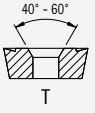
Blade form

| |
|---|
| S (90°) |
|  |
| C (80°) |
|  |
| T (60°) |
|  |
| D (55°) |
|  |
| V (35°) |
|  |
| W (82°)** |
|  |





Tolerance

| |  |  |  |
|---|---|---|---|
| | d [mm] | m [mm] | s [mm] |
| H | ±0.013 | ±0.013 | ±0.025 |
| G | ±0.025 | ±0.025 | from ±0.05 to ±0.13 * |
| M | from ±0.05 to ±0.15 * | from ±0.08 to ±0.20 * | from ±0.05 to ±0.13 * |


Insert type

| |
|---|
|  |
| W |
|  |
| T |

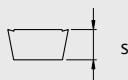
Insert size

| Incircle |  |  |  |  | |
|----------|---|---|---|---|----|
| d [mm] | S | C | T | D | V |
| 5.56 | - | - | 09 | - | - |
| 6.35 | 06 | 06 | 11 | 07 | 11 |
| 6.70 | - | - | - | - | - |
| 9.525 | 09 | 09 | 16 | 11 | 16 |
| 12.70 | 12 | 12 | 22 | - | - |

Clearance angle

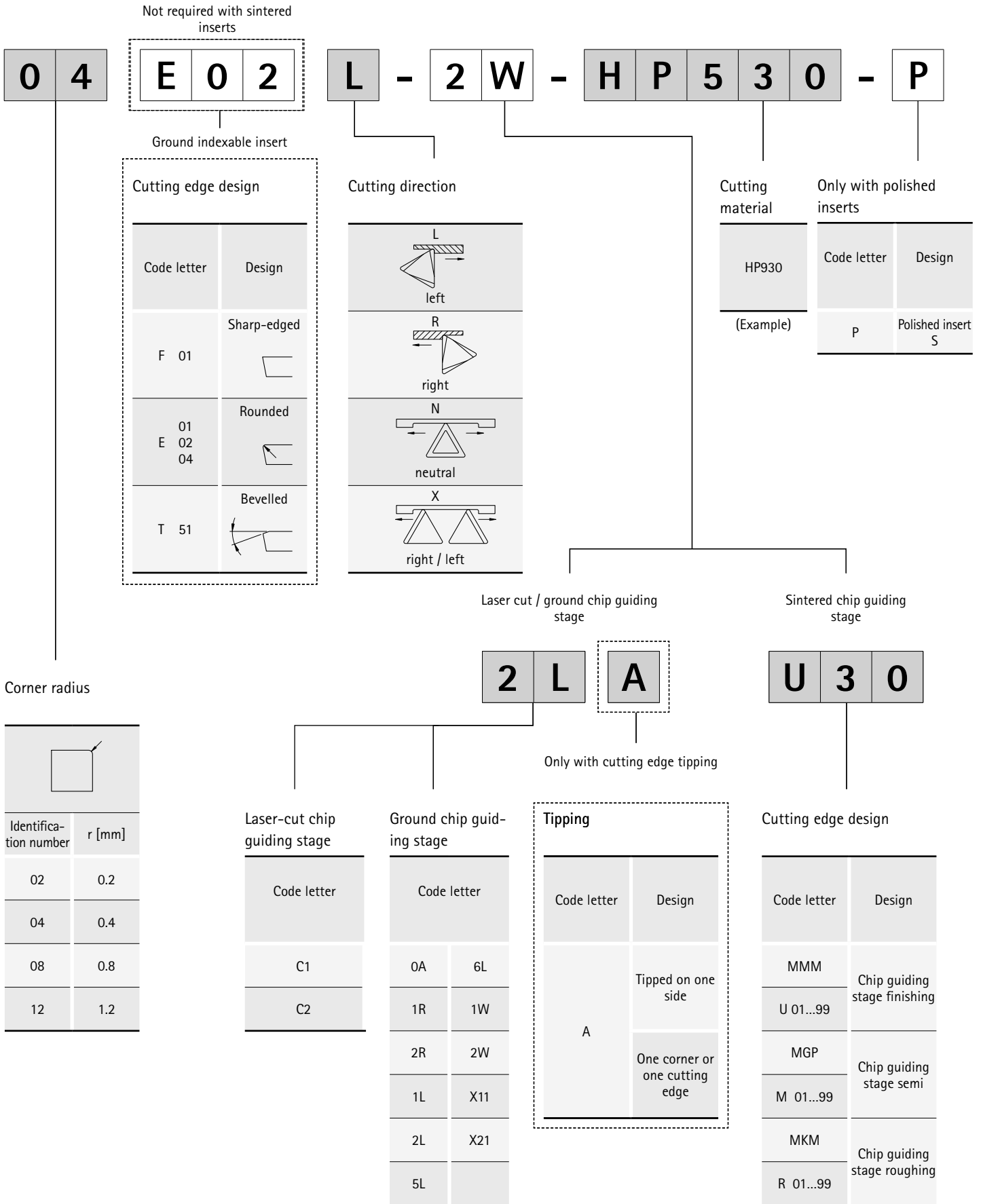
|  | |
|---|----------------|
| B | 5° |
| C | 7° |
| P | 11° |
| O | Special shapes |

Insert thickness

|  | |
|---|--------|
| Identification number | s [mm] |
| T1 | 1.98 |
| 02 | 2.38 |
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |

* Tolerance independent of the insert size

** Drilling from solid



Product ID codes: Tangential indexable inserts

C
T
H
Q
0
9
0
5
0
8

Blade form

Tolerance

Insert type

Insert size

| | | |
|---------|--|--|
| C (80°) | | |
| F (70°) | | |
| S (90°) | | |

| | d [mm] | s [mm] |
|---|---------------------|--------|
| H | ±0.013 | ±0.025 |
| G | ±0.025 | ±0.13 |
| N | ±0.05 - ±0.15 | ±0.25 |

| | | |
|-------------------------|-------------------------|-------------------------|
| | | |
| D 15° | F 20° | Q |
| 40° - 60° | 40° - 60° | 40° - 60° |

| Incircle | | | |
|----------|-------|----|----|
| d [mm] | C | F | S |
| 6.35 | 06/09 | 06 | 06 |
| 9.525 | 09/13 | 09 | 09 |
| 12.7 | 12/18 | 12 | - |

Indexable insert

T

Tangential

Insert thickness

| | s [mm] |
|----|--------|
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |
| 05 | 5.56 |
| 06 | 6.35 |

Corner radius

| | r [mm] |
|----|--------|
| 00 | 0 |
| 04 | 0.4 |
| 08 | 0.8 |
| 12 | 1.2 |

H 0 2

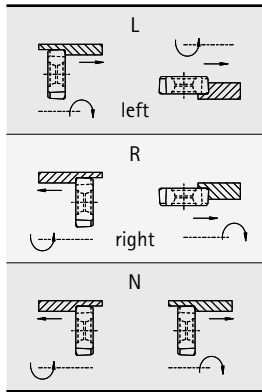
L

0 0

B 0 4 1

- H P 9 4 5

Cutting direction



Contact angle

Boring

Arc shaped land

| Identification number | Angle |
|-----------------------|-------|
| 00 | 0° |
| 10 | 10° |

Cutting material

| |
|-------|
| HP950 |
|-------|

(Example)

Chip guiding stage

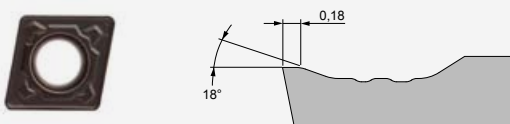
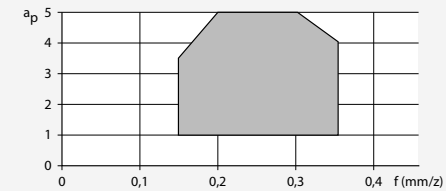
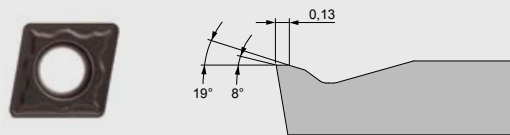
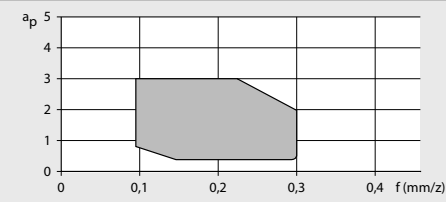
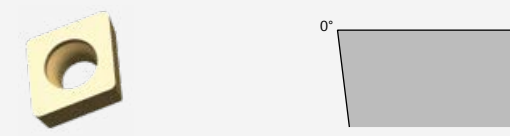
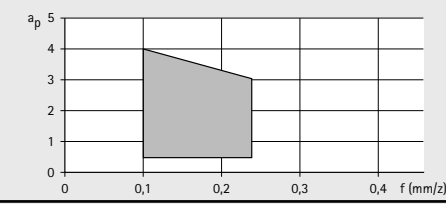
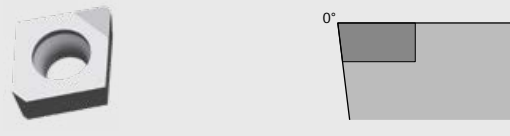
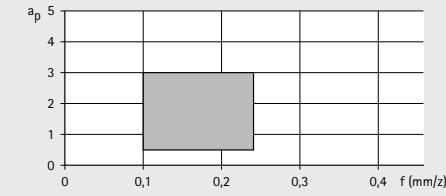
| Code letter |
|-------------|
| A 01...99 |
| D 01...99 |
| G 01...99 |
| H 01...99 |

Arc shaped land

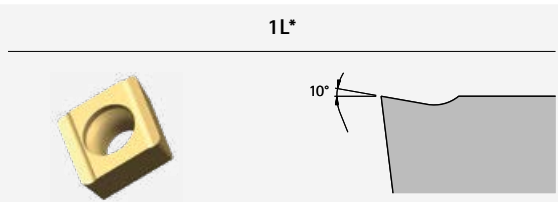
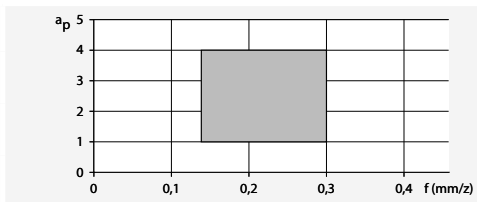
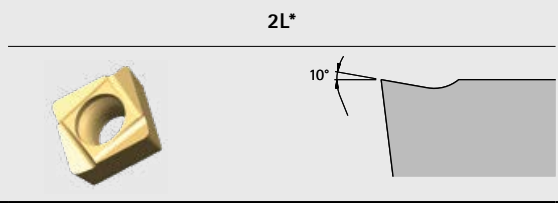
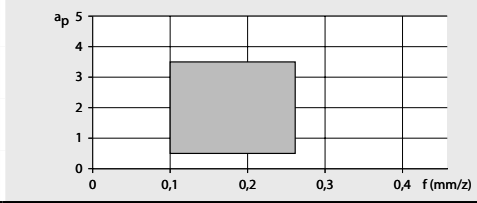
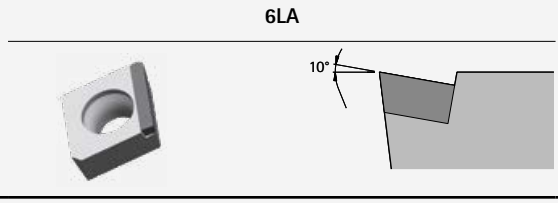
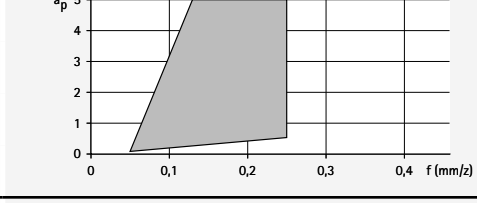
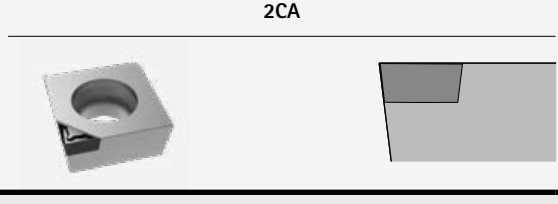
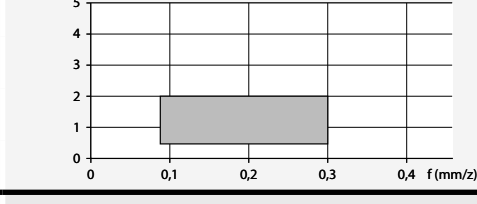
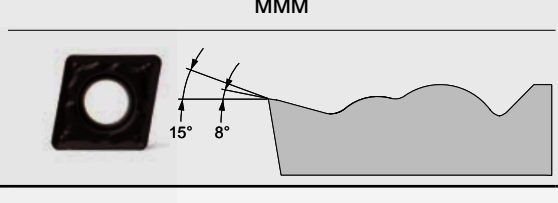
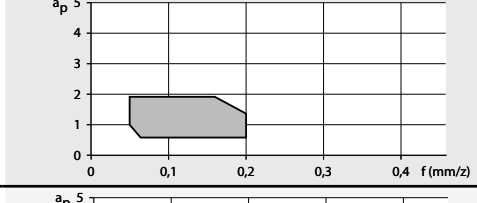
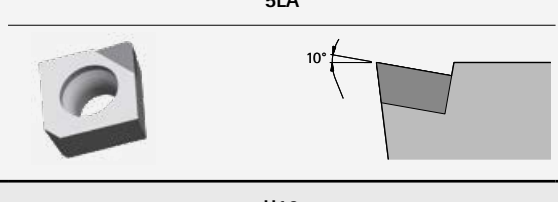
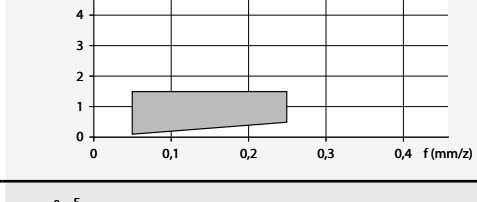
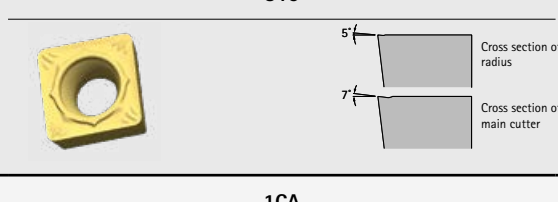
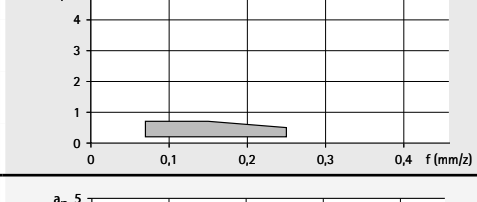

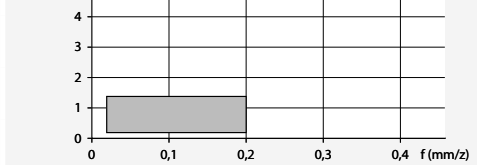
| Installation position | Identifica- tion number | Radius | CTHQ/FTHQ |
|-----------------------|----------------------------|--------|-----------|
| | B012 | 12 | |
| | B016 | 16 | |
| | B021 | 21 | |
| | B041 | 40 | |
| | B081 | 80 | |

Overview of chip guiding stages – boring

Radial indexable inserts



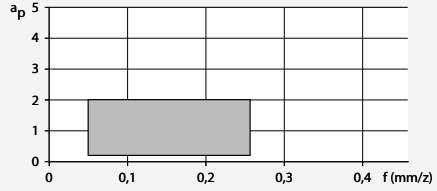
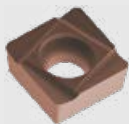

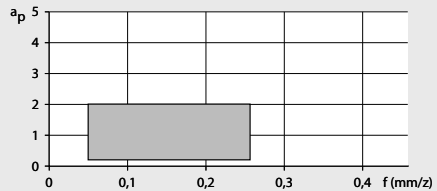


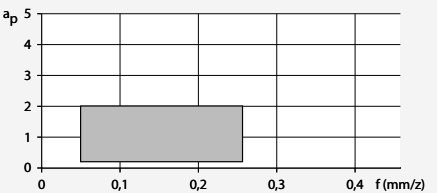
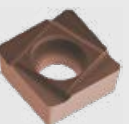

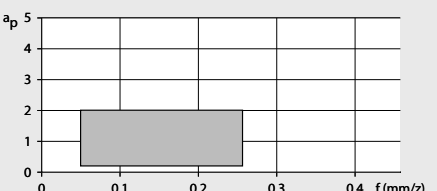
| | Type | Workpiece material group | Edge rounding | Diagram |
|------------------|--|--------------------------|---------------|--|
| Roughing | MKM  | P M K N | +++ |  |
| | MGP  | P M K N | ++ |  |
| Medium machining | OA*  | P M K N | + ++ |  |
| | OAA*  | P M K N | 0 + ++ |  |

* This chip guiding stage is available with different edge rounding.
 0 = sharp edged | + = slightly rounded | ++ = medium rounded | +++ = heavily rounded

| | Type | Workpiece material group | Edge rounding | Diagram |
|------------------|---|--------------------------|---------------|--|
| Medium machining | 1L*  | P M K N | + ++ |  |
| | 2L*  | P M K N | + ++ |  |
| | 6LA  | P M K N | 0 |  |
| | 2CA  | P M K N | 0 |  |
| Finishing | MMM  | P M K N | ++ |  |
| | 5LA  | P M K N | 0 |  |
| | U19  | P M K N | + |  |
| | 1CA  | P M K N | 0 |  |

Overview of chip guiding stages – boring

Radial indexable inserts

| | Type | Workpiece material group | Edge rounding | Diagram |
|-----------------|--|--------------------------|---------------|--|
| Mixed machining | 1R*   | P M K N | 0 + |  |
| | 2R*   | P M K N | 0 + |  |
| | 1W   | P M K N | + |  |
| | 2W   | P M K N | + |  |

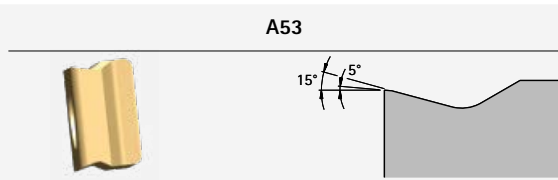
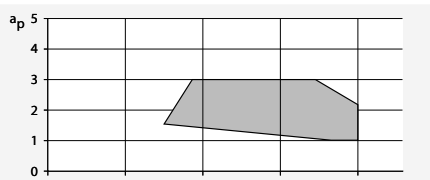
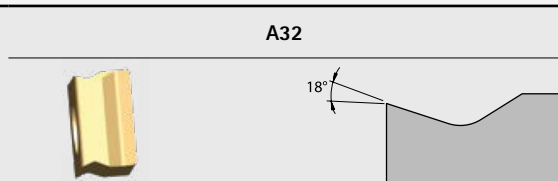
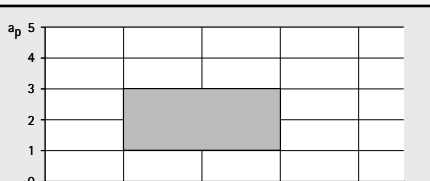
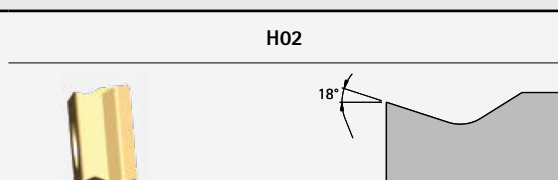
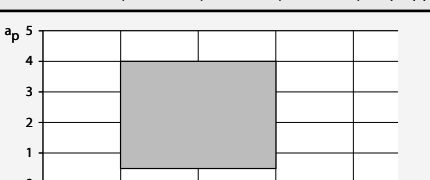
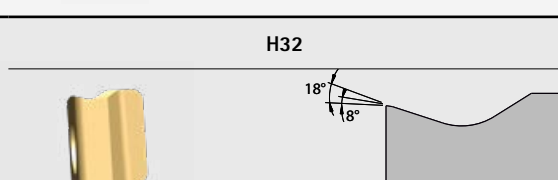
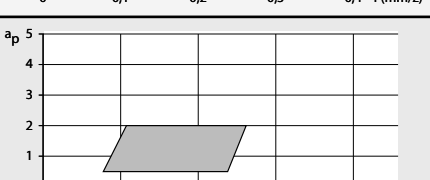
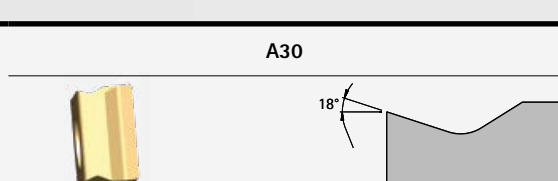
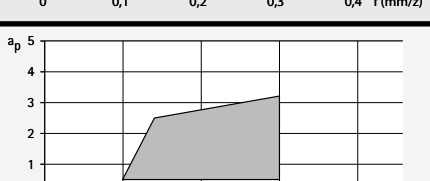
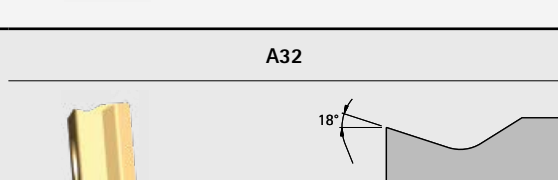
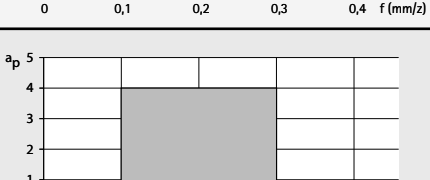
Marking on "press-to-size" indexable inserts

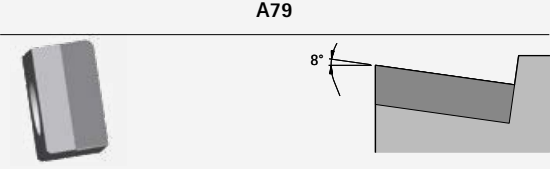
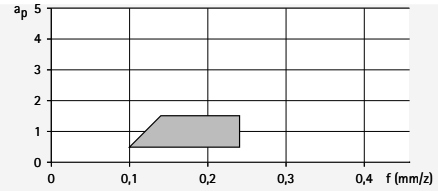
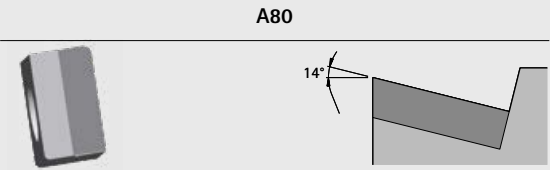
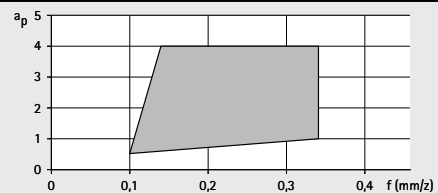
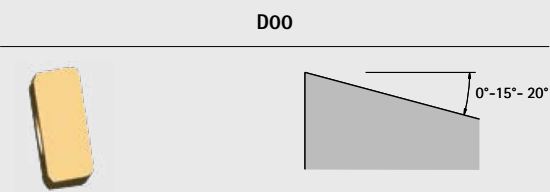
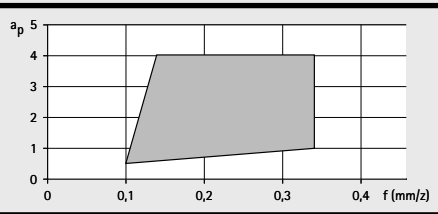
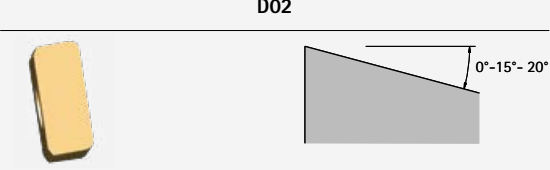
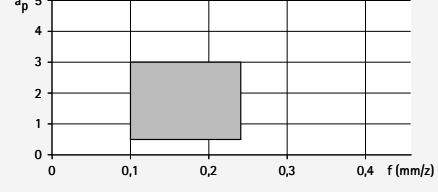
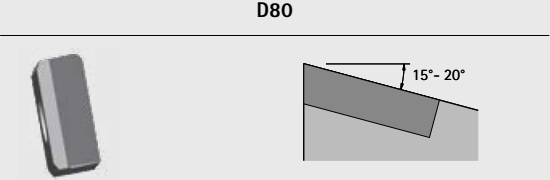
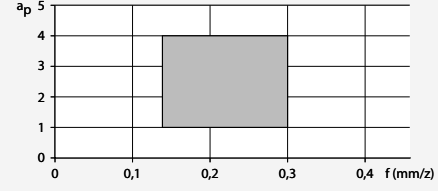


* This chip guiding stage is available with different edge rounding.
 0 = sharp edged | + = slightly rounded | ++ = medium rounded | +++ = heavily rounded

Overview of chip guiding stages – boring

Tangential indexable inserts

| | Type | Workpiece material group | Edge rounding | Diagram |
|------------------|---|--------------------------|---------------|---|
| Roughing | A53  | P M K N | ++ |  |
| | A32  | P M K N | ++ |  |
| | H02  | P M K N | ++ |  |
| | H32  | P M K K | ++ |  |
| Medium machining | A30  | P M K N | 0 |  |
| | A32  | P M K N | ++ |  |

| | Type | Workpiece material group | Edge rounding | Diagram |
|------------------|---|--------------------------|---------------|--|
| Medium machining | A79  | P M K N | 0 |  |
| | A80  | P M K N | 0 |  |
| Universal | D00  | P M K N | 0 |  |
| | D02  | P M K N | ++ |  |
| | D80  | P M K N | 0 |  |

CCMT

Radial indexable insert, two cutting edges, neutral design



| Workpiece material | P | | | | |
|-----------------------|-----------------------------|-------|--------------------------|-----------------------------|--------------------------|
| | Unalloyed Wear-resistant | | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile |
| Substrate | Carbide | | | | |
| Coating | CVD | | | PVD | |
| Cutting material type | HC850 | HC855 | HC865 | HP880 | HP895 |

| Cutting edge design | | MKM | | MKM | | | |
|---------------------|--------------------------------|-----------|----------|-----|----------|--|--|
| CCMT06 | a_p max. [mm] | | | | | | |
| Roughing | CCMT060204N-...- | 1.5 - 2.5 | | | | | |
| | CCMT09 | | | | | | |
| | CCMT09T304N-...- | 1.5 - 3.0 | | | 30966062 | | |
| | | 1.5 - 4.0 | | | | | |
| | CCMT09T308N-...- | 1.5 - 3.0 | 31265843 | | 30985462 | | |
| | | 1.5 - 4.0 | | | | | |
| | CCMT12 | | | | | | |
| | CCMT120408N-...- | 1.5 - 4.0 | 31265844 | | 30985477 | | |
| | | 1.5 - 5.0 | | | | | |
| | CCMT120412N-...- | 1.5 - 4.0 | 31265846 | | 30985485 | | |
| 1.5 - 5.0 | | | | | | | |

| Cutting edge design | | MGP | MGP | MGP | MGP | MGP | |
|---------------------|--------------------------------|------------|----------|----------|----------|----------|----------|
| CCMT06 | a_p max. [mm] | | | | | | |
| Medium machining | CCMT060202N-...- | 0.25 - 2.0 | | | | | |
| | CCMT060204N-...- | 0.5 - 2.0 | | 30985423 | | 30985422 | |
| | CCMT060208N-...- | 0.75 - 2.0 | 30985443 | | | 30985442 | |
| | CCMT09 | | | | | | |
| | CCMT09T302N-...- | 0.25 - 3.0 | 30985451 | | | | |
| | CCMT09T304N-...- | 0.5 - 3.0 | | 30985455 | 31092654 | 30966057 | 30966058 |
| | CCMT09T308N-...- | 0.75 - 3.0 | 31265842 | 30985892 | 30985461 | 30985891 | 30985460 |
| | CCMT12 | | | | | | |
| | CCMT120404N-...- | 0.5 - 3.0 | 30985470 | | | | |
| | CCMT120408N-...- | 0.75 - 3.0 | 30985473 | | 30985474 | | |
| CCMT120412N-...- | 1.0 - 3.0 | 31265845 | | 31092655 | | | |

| Cutting edge design | | MMM | | MMM | MMM | MMM | |
|---------------------|--------------------------------|-----------|----------|-----|----------|----------|----------|
| CCMT06 | a_p max. [mm] | | | | | | |
| Finishing | CCMT060202N-...- | 0.5 - 1.0 | 30985415 | | | 30985414 | |
| | CCMT060204N-...- | 0.5 - 1.0 | 30985435 | | 30985436 | 30985432 | 30985433 |
| | CCMT060208N-...- | 0.5 - 1.0 | | | | | 30985448 |
| | CCMT09 | | | | | | |
| | CCMT09T302N-...- | 0.5 - 1.0 | 30985453 | | | | 30985452 |
| | CCMT09T304N-...- | 0.5 - 1.0 | 30985887 | | 30966053 | 30966070 | 30955706 |
| | CCMT09T308N-...- | 0.5 - 1.0 | 30985465 | | 30985896 | 30985894 | 30985895 |

Specified a_p ranges are recommendations and may vary depending on the material being machined.

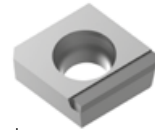
| M | | | | | | | |
|------------------------------|-------------------------------------|----------|------------------------------|-------------------------------------|----------|-----------------------|----------------------|
| Austenitic Wear-resistant | Ferritic ←————→ Tough/Ductile | | Austenitic Wear-resistant | Ferritic ←————→ Tough/Ductile | | GJL Wear-resistant | GJS Tough/Ductile |
| Carbide | | | | | | | |
| CVD | | PVD | | | CVD | | |
| HC875 | HC885 | HP880 | HP885 | HP895 | HC820 | HC830 | |
| | | | | | MKM | MKM | |
| | | | | | 30985425 | 30985427 | |
| | | | | | 30966120 | 30985884 | |
| | | | | | 30966113 | 30985893 | |
| | | | | | 30985475 | 30985476 | |
| | | | | | 30985481 | 30985483 | |
| MGP | MGP | MGP | MGP | MGP | MGP | MGP | |
| 30985420 | 30985421 | | 31245556 | 30985422 | 30985417 | 30985419 | |
| | | | 31245557 | 30985442 | 30985439 | 30985441 | |
| | | | | | 30985450 | | |
| 30985883 | 30966056 | 30966057 | 31245558 | 30966058 | 30985882 | 30985454 | |
| 30985459 | 30985890 | 30985891 | 31245559 | 30985460 | 30985888 | 30985889 | |
| | | | | | 30985467 | 30985469 | |
| 30985899 | | | | | 30985472 | 30985898 | |
| | | | | | 30985479 | | |
| | | MMM | MMM | MMM | MMM | MMM | |
| | | | | 30985414 | | | |
| | | 30985432 | 31245539 | 30985433 | 30985429 | 30985431 | |
| | | | 31245541 | 30985448 | 30985445 | 30985447 | |
| | | | | 30985452 | | | |
| | | 30966070 | 31245543 | 30955706 | 30985885 | 30985886 | |
| | | 30985894 | 31245545 | 30985895 | 30985463 | 30985464 | |

CCGT

Radial indexable insert, two cutting edges, neutral design



Carbide/Cermet



6LA



5LA



C1A



C2A

Tipped variants, single edge:

| Workpiece material | P | | M | N | | |
|-----------------------|--------|---------|---------|-------|-------|-------|
| | | | | ← | | → |
| Substrate | Cermet | Carbide | Carbide | PCD | | |
| Coating | CVD | PVD | PVD | - | | |
| Cutting material type | CC112 | HP895 | HP895 | PU617 | PU660 | PU670 |

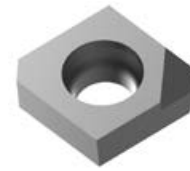
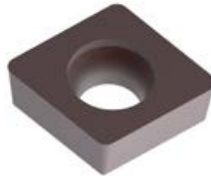
| Cutting edge design | a_p max. [mm] | MGP | | 6LA | C2A | |
|------------------------|-----------------|-----|----------|----------|-----|----------|
| | | | | | | |
| CCGT06 | | | | | | |
| CCGT060202N-...-... | 0.25 - 2.0 | | 30985376 | 30985376 | | |
| CCGT060204F01L-...-... | 0.1 - 3.0 | | | 30708850 | | |
| CCGT060204F01R-...-... | 0.1 - 3.0 | | | 31277722 | | |
| CCGT060204N-...-... | 0.5 - 2.0 | | 30985378 | 30985378 | | |
| CCGT060208F01L-...-... | 0.1 - 3.0 | | | 30375239 | | |
| CCGT060208F01R-...-... | 0.1 - 3.0 | | | 31204099 | | |
| CCGT060208N-...-... | 0.75 - 2.0 | | 30985393 | 30985393 | | |
| CCGT09 | | | | | | |
| CCGT09T302N-...-... | 0.25 - 3.0 | | 30985398 | 30985398 | | |
| CCGT09T304F01L-...-... | 0.1 - 4.5 | | | 30370125 | | |
| CCGT09T304F01R-...-... | 0.1 - 4.5 | | | 30497774 | | |
| CCGT09T304F01N-...-... | 0.4 - 1.6 | | | | | 30234061 |
| CCGT09T304N-...-... | 0.5 - 3.0 | | 30985400 | 30985400 | | |
| CCGT09T308F01L-...-... | 0.1 - 4.5 | | | 30370124 | | |
| CCGT09T308F01R-...-... | 0.1 - 4.5 | | | 30370397 | | |
| CCGT09T308F01N-...-... | 0.5 - 2.0 | | | | | 30234062 |
| CCGT09T308N-...-... | 0.75 - 3.0 | | 30985406 | 30985406 | | |
| CCGT12 | | | | | | |
| CCGT120404N-...-... | 0.5 - 3.0 | | 30985410 | 30985410 | | |
| CCGT120404F01L-...-... | 0.1 - 7.0 | | | 31025433 | | |
| CCGT120408N-...-... | 0.5 - 3.0 | | 30985411 | 30985411 | | |
| CCGT120408F01L-...-... | 0.1 - 7.0 | | | 30589862 | | |

| Cutting edge design | a_p max. [mm] | U19 | | | 5LA | C1A |
|------------------------|-----------------|----------|--|----------|----------|-----|
| | | | | | | |
| CCGT06 | | | | | | |
| CCGT060204N-...-... | 0.1 - 0.5 | 30874908 | | | | |
| CCGT060204F01N-...-... | 0.1 - 1.0 | | | 30708851 | 10104313 | |
| CCGT060208N-...-... | 0.2 - 0.5 | 30799422 | | | | |
| CCGT060208F01N-...-... | 0.1 - 1.5 | | | 31277724 | | |
| CCGT09 | | | | | | |
| CCGT09T304F01N-...-... | 0.1 - 2.0 | | | 31079089 | | |
| CCGT09T304F01N-...-... | 0.1 - 1.0 | | | | 10099042 | |
| CCGT09T308F01N-...-... | 0.1 - 2.0 | | | 31277725 | | |
| CCGT09T308F01N-...-... | 0.15 - 1.4 | | | | 30234050 | |

Specified a_p ranges are recommendations and may vary depending on the material being machined.

CCGW

Radial indexable inserts, double edge, neutral design



Tipped variant, single edge:

OAA

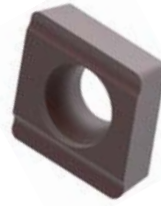
| | | | | | | |
|-----------------------|-------------------------|------------------------|-------------------------|------------------------|-------------------------|------------------------|
| Workpiece material | K | | | N | | |
| | GJL ← Wear-resistant | GJS → Tough/Ductile | GJL ← Wear-resistant | GJS → Tough/Ductile | GJL ← Wear-resistant | GJS → Tough/Ductile |
| Substrate | Carbide | | | PcBN | PCD | |
| Coating | CVD | | PVD | | - | |
| Cutting material type | HC740 | | HP930 | | FU430 | PU617 |

| Cutting edge design | | OA | OA | OAA | | |
|------------------------|------------------------|-----------------|----------|----------|----------|--|
| CCGW06 | | a_p max. [mm] | | | | |
| Medium machining | CCGW060204E04N-...-... | 0.5 - 3.2 | 31317178 | 30950259 | | |
| | CCGW060204T51N-...-... | 0.5 - 2.0 | | | 10105523 | |
| | CCGW060208E04N-...-... | 0.5 - 3.2 | 31317202 | 30950280 | | |
| | CCGW09 | | | | | |
| | CCGW09T304E04N-...-... | 0.5 - 4.0 | 31027805 | 30950281 | | |
| | CCGW09T304T51N-...-... | 0.5 - 2.5 | | | 10105636 | |
| | CCGW09T308E04N-...-... | 0.5 - 4.0 | 31023434 | 30950282 | | |
| | CCGW09T308T51N-...-... | 0.5 - 2.5 | | | 10105650 | |
| CCGW09T312E04N-...-... | 0.5 - 4.0 | 31317207 | 30950283 | | | |

| Cutting edge design | | | OA | OAA | OAA | |
|---------------------|------------------------|-----------------|----|----------|----------|----------|
| CCGW06 | | a_p max. [mm] | | | | |
| Finishing | CCGW060202F01N-...-... | 0.1 - 1.0 | | | 31277730 | |
| | CCGW060204F01N-...-... | 0.1 - 1.0 | | | 30492177 | |
| | CCGW060204E01N-...-... | 0.1 - 1.0 | | | 10105520 | |
| | CCGW060204E02N-...-... | 0.2 - 1.0 | | 30950284 | | |
| | CCGW060208E02N-...-... | 0.2 - 1.0 | | 30950285 | | |
| | CCGW09 | | | | | |
| | CCGW09T304F01N-...-... | 0.1 - 1.0 | | | | 30418983 |
| | CCGW09T304E01N-...-... | 0.1 - 1.0 | | | 10105634 | |
| | CCGW09T304E02N-...-... | 0.2 - 2.0 | | 30950286 | | |
| | CCGW09T308F01N-...-... | 0.1 - 1.0 | | | | 30492178 |
| | CCGW09T308E01N-...-... | 0.1 - 1.0 | | | 10105648 | |
| | CCGW09T308E02N-...-... | 0.2 - 2.0 | | 30950287 | | |

CCHT

Radial indexable inserts, double edge, left design



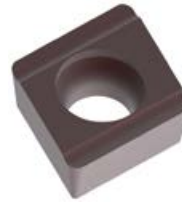
| | | | | |
|-----------------------|---------|--|---------|--|
| Workpiece material | K | | N | |
| | Carbide | | Carbide | |
| Substrate | CVD | | PVD | |
| Coating | HC740 | | HP930 | |
| Cutting material type | - | | - | |
| | HU616 | | HP615 | |

| Cutting edge design | | 1L | 1L | | 1R | |
|-------------------------------|------------------------|-----------|----------|----------|----|----------|
| CCHT06 a_p max. [mm] | | | | | | |
| Medium machining | CCHT060204E04L-...-... | 0.5 - 3.2 | 31041976 | 30950288 | | |
| | CCHT060208E04L-...-... | 0.5 - 3.2 | 31115820 | 30950289 | | |
| | CCHT09 | | | | | |
| | CCHT09T302F01L-...-... | 0.5 - 4.0 | | | | 30492197 |
| | CCHT09T304F01L-...-... | 0.5 - 4.0 | | | | 30478168 |
| | CCHT09T304E04L-...-... | 0.5 - 4.0 | 30963744 | 30950290 | | |
| | CCHT09T308F01L-...-... | 0.5 - 4.0 | | | | 30484471 |
| | CCHT09T308E04L-...-... | 0.5 - 4.0 | 30884324 | 30950291 | | |
| | CCHT09T312E04L-...-... | 0.5 - 4.0 | 30884469 | 30950292 | | |
| | CCHT12 | | | | | |
| | CCHT120404E04L-...-... | 0.5 - 5.0 | 30963715 | 30950293 | | |
| | CCHT120408E04L-...-... | 0.5 - 5.0 | 30894700 | 30950294 | | |
| CCHT120412E04L-...-... | 0.5 - 5.0 | 31317213 | 30950295 | | | |

| Cutting edge design | | | 1L | 1R | 1R | |
|-------------------------------|------------------------|-----------|----|----------|----------|--|
| CCHT06 a_p max. [mm] | | | | | | |
| Finishing | CCHT060202F01L-...-... | 0.1 - 1.0 | | 30010702 | | |
| | CCHT060204F01L-...-... | 0.1 - 1.4 | | 30010703 | | |
| | CCHT060204E02L-...-... | 0.1 - 1.0 | | 30950296 | | |
| | CCHT060208F01L-...-... | 0.1 - 1.8 | | 30010704 | | |
| | CCHT060208E02L-...-... | 0.1 - 1.0 | | 30950297 | | |
| | CCHT09 | | | | | |
| | CCHT09T302F01L-...-... | 0.1 - 2.0 | | 30010705 | 30492197 | |
| | CCHT09T304F01L-...-... | 0.1 - 2.0 | | 30010706 | 30478168 | |
| | CCHT09T304E02L-...-... | 0.1 - 2.0 | | 30950298 | | |
| | CCHT09T308F01L-...-... | 0.1 - 2.0 | | 30010707 | 30484471 | |
| | CCHT09T308E02L-...-... | 0.1 - 2.0 | | 30950299 | | |
| | CCHT09T312F01L-...-... | 0.1 - 2.0 | | 30084580 | | |
| | CCHT12 | | | | | |
| | CCHT120402F01L-...-... | 0.1 - 3.0 | | 30010708 | | |
| | CCHT120404F01L-...-... | 0.1 - 3.0 | | 30010709 | | |
| | CCHT120408F01L-...-... | 0.1 - 3.0 | | 30010710 | | |
| | CCHT120412F01L-...-... | 0.1 - 3.0 | | 30010711 | | |

CCHT

Radial indexable inserts, double edge, right design



| | | | | |
|-----------------------|---------|--|---------|--|
| Workpiece material | K | | N | |
| | Carbide | | Carbide | |
| Substrate | CVD | | PVD | |
| Coating | HC740 | | HP930 | |
| Cutting material type | - | | - | |
| | HU616 | | HP615 | |

| Cutting edge design | | 1L | 1L | | 1R | |
|-------------------------------|------------------------|-----------|----------|----------|----|----------|
| CCHT06 a_p max. [mm] | | | | | | |
| Medium machining | CCHT060204E04R-...-... | 0.5 - 3.2 | 31317208 | 30950300 | | |
| | CCHT060208E04R-...-... | 0.5 - 3.2 | 31317209 | 30950301 | | |
| | CCHT09 | | | | | |
| | CCHT09T304F01R-...-... | 0.5 - 4.0 | | | | 30478169 |
| | CCHT09T304E04R-...-... | 0.5 - 4.0 | 31115392 | 30950302 | | |
| | CCHT09T308F01R-...-... | 0.5 - 4.0 | | | | 30492211 |
| | CCHT09T308E04R-...-... | 0.5 - 4.0 | 31041977 | 30950303 | | |
| | CCHT09T312E04R-...-... | 0.5 - 4.0 | 31317210 | 30950304 | | |
| | CCHT12 | | | | | |
| | CCHT120404E04R-...-... | 0.5 - 5.0 | 31317211 | 30950305 | | |
| | CCHT120408E04R-...-... | 0.5 - 5.0 | 31317212 | 30950306 | | |
| | CCHT120412E04R-...-... | 0.5 - 5.0 | 31317214 | 30950307 | | |

| Cutting edge design | | | 1L | 1R | 1R | |
|-------------------------------|------------------------|-----------|----------|----------|----------|--|
| CCHT06 a_p max. [mm] | | | | | | |
| Finishing | CCHT060202F01R-...-... | 0.1 - 1.0 | | 30010732 | | |
| | CCHT060204F01R-...-... | 0.1 - 1.4 | | 30010733 | | |
| | CCHT060204E02R-...-... | 0.1 - 1.0 | | 30950308 | | |
| | CCHT060208F01R-...-... | 0.1 - 1.8 | | 30010734 | | |
| | CCHT060208E02R-...-... | 0.1 - 1.0 | | 30950309 | | |
| | CCHT09 | | | | | |
| | CCHT09T302F01R-...-... | 0.1 - 2.0 | | 30010735 | | |
| | CCHT09T304F01R-...-... | 0.1 - 2.0 | | 30010736 | 30478169 | |
| | CCHT09T304E02R-...-... | 0.1 - 2.0 | | 30950310 | | |
| | CCHT09T308F01R-...-... | 0.1 - 2.0 | | 30010737 | 30492211 | |
| | CCHT09T308E02R-...-... | 0.1 - 2.0 | | 30950311 | | |
| | CCHT09T312F01R-...-... | 0.1 - 2.0 | | 30492212 | | |
| | CCHT12 | | | | | |
| | CCHT120402F01R-...-... | 0.1 - 3.0 | | 30010738 | | |
| | CCHT120404F01R-...-... | 0.1 - 3.0 | | 30010739 | | |
| CCHT120408F01R-...-... | 0.1 - 3.0 | | 30010740 | | | |
| CCHT120412F01R-...-... | 0.1 - 3.0 | | 30010741 | | | |

DCMT | DCGT | DCGW

Radial indexable insert, two cutting edges, neutral design



| | | | | | |
|-----------------------|-------------------------------|--------------------------|-------|-------------------------------|----------------------------|
| Workpiece material | P | | | | |
| | ← Unalloyed Wear-resistant | Alloyed Tough/Ductile | | ← Unalloyed Wear-resistant | Alloyed Tough/Ductile → |
| Substrate | Carbide | | | | |
| Coating | CVD | | | PVD | |
| Cutting material type | HC850 | HC855 | HC865 | HP880 | HP895 |

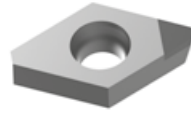
| | | | | | | |
|---------------------|---------------------|--------------------------------|--|----------|--|--|
| Cutting edge design | | | | MKM | | |
| DCMT11 | | <i>a_p max. [mm]</i> | | | | |
| Roughing | DCMT11T304N-...-... | 1.5 - 2.5 | | 30966087 | | |
| | | 1.5 - 3.0 | | | | |
| | DCMT11T308N-...-... | 1.5 - 3.0 | | 30966078 | | |
| | | 1.5 - 4.0 | | | | |

| | | | | | | | |
|---------------------|------------------------|--------------------------------|----------|----------|----------|----------|----------|
| Cutting edge design | | MGP | MGP | MGP | MGP | MGP | |
| DCMT07 | | <i>a_p max. [mm]</i> | | | | | |
| Medium machining | DCMT070202N-...-... | 0.25 - 1.8 | | | | | |
| | DCMT070204N-...-... | 0.5 - 2.0 | 30985499 | | | 30985498 | |
| | DCMT070208N-...-... | 0.75 - 2.0 | | 31092658 | | | |
| | DCMT11 | | | | | | |
| | DCMT11T304N-...-... | 0.25 - 2.0 | 31092656 | 30985510 | 30966101 | 30966092 | 30966093 |
| | DCMT11T308N-...-... | 0.5 - 2.5 | 30966103 | 30985518 | | 30966082 | 30966083 |
| | DCGT11 | | | | | | |
| | DCGT11T304F01N-...-... | 0.4 - 1.5 | | | | | |
| | DCGT11T308F01N-...-... | 0.5 - 1.8 | | | | | |
| | DCMT15 | | | | | | |
| DCMT150404N-...-... | 0.5 - 2.5 | | | | | | |
| DCMT150408N-...-... | 0.5 - 3.0 | | | | | | |
| DCMT150412N-...-... | 0.5 - 3.0 | | | | | | |

| | | | | | | |
|------------------------|------------------------|--------------------------------|----------|----------|----------|----------|
| Cutting edge design | | MMM | MMM | MMM | MMM | |
| DCMT07 | | <i>a_p max. [mm]</i> | | | | |
| Finishing | DCMT070202N-...-... | 0.5 - 1.0 | | 30985495 | 30985494 | |
| | DCMT070204N-...-... | 0.5 - 1.0 | 30986033 | | 30985500 | |
| | DCMT070208N-...-... | 0.5 - 1.0 | | | | |
| | DCMT11 | | | | | |
| | DCMT11T302N-...-... | 0.5 - 1.5 | 30966100 | | | 30985505 |
| | DCMT11T304N-...-... | 0.5 - 1.5 | 30985902 | 30966088 | 30966095 | 30966096 |
| | DCMT11T308N-...-... | 0.5 - 1.5 | 30966104 | 30966079 | 30966085 | 30966086 |
| | DCGT11 | | | | | |
| | DCGT11T304F01N-...-... | 0.1 - 1.0 | | | | |
| | DCGT11T308F01N-...-... | 0.15 - 1.4 | | | | |
| | DCGW11 | | | | | |
| | DCGW11T304F01N-...-... | 0.1 - 2.0 | | | | |
| | DCGW11T304E01N-...-... | 0.1 - 1.0 | | | | |
| | DCGW11T308F01N-...-... | 0.1 - 2.0 | | | | |
| DCGW11T308F01N-...-... | 0.1 - 1.0 | | | | | |

Specified *a_p* ranges are recommendations and may vary depending on the material being machined.

Tipped variant,
single edge:



OAA



C1A



C2A

| M | | | | | K | | | N | | | |
|------------------------------|----------|---------------------------|------------------------------|----------|---------------------------|-----------------------|----------|----------------------|----------|----------|--|
| Austenitic Wear-resistant | | Ferritic Tough/Ductile | Austenitic Wear-resistant | | Ferritic Tough/Ductile | GJL Wear-resistant | | GJS Tough/Ductile | | | |
| CVD | | Carbide | | | CVD | | PcBN | PCD | | | |
| HC875 | HC885 | HP880 | HP885 | HP895 | HC815 | HC825 | FU430 | PU617 | PU660 | PU670 | |
| | | | | | MKM | MKM | | | | | |
| | | | | | | 30985511 | 30985512 | | | | |
| | | | | | | 30985519 | 30985520 | | | | |
| | MGP | MGP | MGP | MGP | MGP | MGP | MGP | | | C2A | |
| | | | | | | 30985493 | | | | | |
| | | | | 30985498 | | 30985496 | 30985497 | | | | |
| | | | | | | 30985501 | 30985502 | | | | |
| | 30985508 | 30966091 | 30966092 | 31245560 | 30966093 | 30985506 | 30985507 | | | | |
| | 30985517 | | 30966082 | 31245562 | 30966083 | 30985515 | 30985516 | | | | |
| | | | | | | | | | | 30234066 | |
| | | | | | | | | | | 30234067 | |
| | | | | | | 30985522 | | | | | |
| | | | | | | 30985523 | | | | | |
| | | | | | | 30985524 | | | | | |
| | MMM | | MMM | MMM | MMM | MMM | | OAA | OAA | 1CA | |
| | 30966105 | | | | 30985494 | | | | | | |
| | 30966107 | | | 31245546 | 30985500 | | | | | | |
| | | | | 31245547 | | | | | | | |
| | | | | | 30985505 | | | | | | |
| | | 30966095 | 31245548 | 30966096 | 30985513 | | | | | | |
| | 30985903 | 30966085 | 31245549 | 30966086 | | | | | | | |
| | | | | | | | | | | 30234052 | |
| | | | | | | | | | | 30234053 | |
| | | | | | | | | | 31212079 | | |
| | | | | | | | 10105921 | | | | |
| | | | | | | | | 31277726 | | | |
| | | | | | | | 10105952 | | | | |

SCMT | SPMT | SCGT | SPGT

Radial indexable inserts, four cutting edges, neutral design



| Workpiece material | P | | | | | |
|-----------------------|--------|-----------------------------|-------|--------------------------|-----------------------------|--------------------------|
| | | Unalloyed Wear-resistant | | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile |
| Substrate | Cermet | | | Carbide | | |
| Coating | CVD | | CVD | | PVD | |
| Cutting material type | CC112 | HC850 | HC855 | HC865 | HP880 | HP895 |

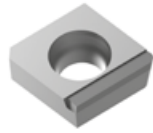
| Cutting edge design | | | MKM | | MKM | | |
|---------------------|--|-----------|----------|--|----------|--|--|
| Roughing | SCMT09 SCMT09T308N-...-... <i>a_p max. [mm]</i> | 1.5 - 3.0 | 31265847 | | 30966072 | | |
| | | 1.5 - 4.0 | | | | | |
| | SCMT12 SCMT120408N-...-... <i>a_p max. [mm]</i> | 1.5 - 4.0 | 31265848 | | 30985564 | | |
| | | 1.5 - 5.0 | | | | | |
| | | 1.5 - 4.0 | 31265849 | | | | |
| | | 1.5 - 5.0 | | | | | |

| Cutting edge design | | | MGP | MGP | MGP | | MGP |
|---------------------|---|------------|----------|----------|----------|--|----------|
| Medium machining | SPMT06 SPMT060304N-...-... <i>a_p max. [mm]</i> | 0.5 - 2.0 | 30985573 | | 30985575 | | |
| | | 0.75 - 2.0 | | | 31265851 | | |
| | SCMT09 SCMT09T304N-...-... <i>a_p max. [mm]</i> | 0.5 - 3.0 | 31085129 | | 31085141 | | 30985536 |
| | | 0.75 - 3.0 | 31085140 | 30985543 | 30966127 | | |
| | | 1 - 3.0 | 31276723 | | 31273621 | | |
| | SCGT09 SCGT09T308F01N-...-... <i>a_p max. [mm]</i> | 0.5 - 2.0 | | | | | |
| | SCMT12 SCMT120404N-...-... <i>a_p max. [mm]</i> | 0.5 - 3.0 | | | | | |
| | | 0.75 - 3.0 | 31085142 | 30985560 | 31085143 | | |

| Cutting edge design | | U19 | MMM | | MMM | MMM | MMM | |
|---------------------|---|------------|----------|----------|----------|----------|----------|----------|
| Finishing | SPMT06 SPMT060304N-...-... <i>a_p max. [mm]</i> | 0.5 - 2.0 | 30985579 | | 30985580 | 30985577 | 30985913 | |
| | SPGT06 SPGT060304F01N-...-... <i>a_p max. [mm]</i> | 0.1 - 0.8 | | | | | | |
| | | 0.1 - 3.0 | | | | | | |
| | | 0.1 - 3.0 | | | | | | |
| | | 0.1 - 0.8 | | | | | | |
| | | 0.1 - 3.0 | | | | | | |
| | | 0.1 - 3.0 | | | | | | |
| | SCMT09 SCMT09T304N-...-... <i>a_p max. [mm]</i> | 0.5 - 1.5 | | 31085144 | | 31085145 | | 30985540 |
| | | 0.5 - 1.5 | | 30983531 | | 30966073 | 30966076 | 30955704 |
| | SCGT09 SCGT09T304N-...-... <i>a_p max. [mm]</i> | 0.1 - 0.5 | 30647885 | | | | | |
| | | 0.1 - 0.5 | | | | | | |
| | | 0.1 - 4.5 | | | | | | |
| | | 0.1 - 4.5 | | | | | | |
| | | 0.1 - 0.5 | 10102893 | | | | | |
| | | 0.1 - 0.5 | | | | | | |
| | | 0.15 - 1.4 | | | | | | |
| | | 0.1 - 4.5 | | | | | | |
| | | 0.1 - 4.5 | | | | | | |

Specified a_p ranges are recommendations and may vary depending on the material being machined.

Tipped variants, single edge:



6LA



5LA



C1A

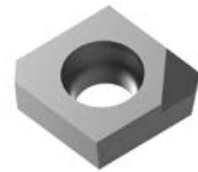
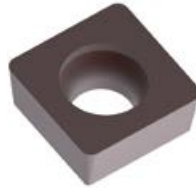


C2A

| M | | | | K | | N | | | | | |
|------------------------------|----------|---------------------------|----------|------------------------------|----------|---------------------------|----------|-----------------------|----------|----------------------|----------|
| Austenitic Wear-resistant | | Ferritic Tough/Ductile | | Austenitic Wear-resistant | | Ferritic Tough/Ductile | | GJL Wear-resistant | | GJS Tough/Ductile | |
| CVD | | | | PVD | | | | PCD | | | |
| HC875 | | HC885 | | HP880 | | HP895 | | HC820 | | HC830 | |
| | | | | | | | | PU617 | | PU660 | |
| | | | | | | | | | | PU670 | |
| | | | | | | MKM | | MKM | | | |
| | | | | | | 30985545 | 31092659 | | | | |
| | | | | | | 30985562 | 31092660 | | | | |
| | | | | | | 30985566 | 31092661 | | | | |
| | MGP | | | MGP | | MGP | MGP | | | | C2A |
| | | | | | | 30985574 | 30985576 | | | | |
| | | | | | | 30985914 | 30985915 | | | | |
| | 30985535 | | | 30985536 | | 30985908 | 30985534 | | | | |
| | 31092662 | | | | | 30985911 | 30985912 | | | | |
| | | | | | | | | | | | 30249457 |
| | | | | | | 30985552 | 30985554 | | | | |
| | 30985559 | | | | | 30985556 | 30985558 | | | | |
| | | MMM | MMM | MMM | MMM | MMM | MMM | 5LA | 6LA | C1A | |
| | | 30972033 | 30985577 | 30985913 | 30985578 | 31084646 | | | | | |
| | | | | | | | | 31277727 | | | |
| | | | | | | | | | 30373268 | | |
| | | | | | | | | | 31279699 | | |
| | | | | | | | | 31279698 | | | |
| | | | | | | | | | 31217111 | | |
| | | | | | | | | | 31279720 | | |
| | | | | 30985540 | 30985538 | 30985539 | | | | | |
| | | | 30966076 | 30955704 | 30985548 | 30985550 | | | | | |
| | | | | | | | | 30374908 | | | |
| | | | | | | | | | 30546951 | | |
| | | | | | | | | | 31279721 | | |
| | | | | | | | | 30692832 | | | |
| | | | | | | | | | | 30250261 | |
| | | | | | | | | | 30568596 | | |
| | | | | | | | | | 31279723 | | |

SCGW | SPGW

Radial indexable inserts, four cutting edges



Tipped variant, single edge:

OAA

| | | | | | | | |
|-----------------------|-------------------------|------------------------|-------------------------|------------------------|-------------------------|------------------------|-------|
| Workpiece material | K | | | N | | | |
| | GJL ← Wear-resistant | GJS → Tough/Ductile | GJL ← Wear-resistant | GJS → Tough/Ductile | GJL ← Wear-resistant | GJS → Tough/Ductile | |
| Substrate | Carbide | | | PcBN | | PCD | |
| Coating | CVD | | PVD | | - | | |
| Cutting material type | HC740 | | HP930 | | FU430 | | PU617 |

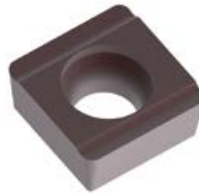
| Cutting edge design | | OA | OA | OAA | | |
|-------------------------------|------------------------|-----------|----------|----------|----------|--|
| SPGW06 a_p max. [mm] | | | | | | |
| Medium machining | SPGW060304E04N-...-... | 0.5 - 3.2 | 31070945 | 30950312 | | |
| | SPGW060308E04N-...-... | 0.5 - 3.2 | 31050739 | 30950313 | | |
| | SCGW09 | | | | | |
| | SCGW09T304E04N-...-... | 0.5 - 4.0 | 31022296 | 30950314 | | |
| | SCGW09T304T51N-...-... | 0.5 - 2.5 | | | 10106285 | |
| | SCGW09T308E04N-...-... | 0.5 - 4.0 | 31022297 | 30950315 | | |
| | SCGW09T308T51N-...-... | 0.5 - 2.5 | | | 10106299 | |
| | SCGW12 | | | | | |
| | SCGW120404E04N-...-... | 0.5 - 5.0 | 31317220 | 30950316 | | |
| | SCGW120408E04N-...-... | 0.5 - 5.0 | 30939413 | 30950317 | | |

| Cutting edge design | | | OA | OAA | OAA | |
|-------------------------------|------------------------|-----------|----|----------|----------|----------|
| SPGW06 a_p max. [mm] | | | | | | |
| Finishing | SPGW060304F01N-...-... | 0.1 - 1.2 | | | 31277731 | |
| | SPGW060304E02N-...-... | 0.2 - 1.0 | | 30950318 | | |
| | SPGW060308F01N-...-... | 0.1 - 1.0 | | | 31279738 | |
| | SPGW060308E02N-...-... | 0.2 - 1.0 | | 30950319 | | |
| | SCGW09 | | | | | |
| | SCGW09T304F01N-...-... | 0.1 - 1.4 | | | | 31277732 |
| | SCGW09T304E01N-...-... | 0.1 - 1.0 | | | 10106283 | |
| | SCGW09T304E02N-...-... | 0.2 - 2.0 | | 30950320 | | |
| | SCGW09T308F01N-...-... | 0.1 - 1.8 | | | | 30429723 |
| | SCGW09T308E01N-...-... | 0.1 - 1.0 | | | 10106297 | |
| | SCGW09T308E02N-...-... | 0.2 - 2.0 | | 30950321 | | |
| | SCGW12 | | | | | |
| | SCGW120404F01N-...-... | 0.1 - 1.4 | | | | 31279752 |
| | SCGW120408F01N-...-... | 0.1 - 1.8 | | | | 31279753 |

Specified a_p ranges are recommendations and may vary depending on the material being machined.

SCHT | SPHT

Radial indexable inserts, double edge, neutral design



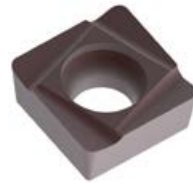
| | | | | |
|-----------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| Workpiece material | K | | N | |
| | GJL ← Wear-resistant | GJS → Tough/Ductile | GJL ← Wear-resistant | GJS → Tough/Ductile |
| Substrate | Carbide | | | Carbide |
| Coating | CVD | | PVD | |
| Cutting material type | HC740 | | HP930 | |

| Cutting edge design | | 1L | 1L | | |
|-------------------------------|------------------------|-----------|----------|----------|--|
| SPHT06 a_p max. [mm] | | | | | |
| Medium machining | SPHT060304E04X-...-... | 0.5 - 3.2 | 31042317 | 30953122 | |
| | SPHT060308E04X-...-... | 0.5 - 3.2 | 31317315 | 30953126 | |
| | SCHT09 | | | | |
| | SCHT09T304E04X-...-... | 0.5 - 4.0 | 31121604 | 30953127 | |
| | SCHT09T308E04X-...-... | 0.5 - 4.0 | 30963756 | 30953128 | |
| | SCHT09T312E04X-...-... | 0.5 - 4.0 | 31317219 | 30953150 | |
| | SCHT12 | | | | |
| | SCHT120404E04X-...-... | 0.5 - 5.0 | 31081857 | 30953151 | |
| | SCHT120408E04X-...-... | 0.5 - 5.0 | 31317304 | 30953152 | |
| SCHT120412E04X-...-... | 0.5 - 5.0 | 31317308 | 30953154 | | |

| Cutting edge design | | | 1L | 1R | |
|-------------------------------|------------------------|-----------|----|----------|----------|
| SPHT06 a_p max. [mm] | | | | | |
| Finishing | SPHT060304E02X-...-... | 0.1 - 1.0 | | 30953158 | |
| | SPHT060308E02X-...-... | 0.1 - 1.0 | | 30953164 | |
| | SCHT09 | | | | |
| | SCHT09T302F01X-...-... | 0.1 - 2.0 | | | 30141062 |
| | SCHT09T304F01X-...-... | 0.1 - 2.0 | | | 30010681 |
| | SCHT09T304E02X-...-... | 0.1 - 2.0 | | 30953159 | |
| | SCHT09T308F01X-...-... | 0.1 - 2.0 | | | 30010682 |
| | SCHT09T308E02X-...-... | 0.1 - 2.0 | | 30953168 | |
| | SCHT09T312F01X-...-... | 0.1 - 2.0 | | | 30492274 |
| | SCHT12 | | | | |
| SCHT120404F01X-...-... | 0.1 - 3.0 | | | 30010683 | |
| SCHT120408F01X-...-... | 0.1 - 3.0 | | | 30010684 | |

SCHT | SPHT

Radial indexable inserts, four cutting edges



Left design



Right design

| | | | | |
|-----------------------|-------------------------|------------------------|-------------------------|------------------------|
| Workpiece material | K | | N | |
| | GJL ← Wear-resistant | GJS → Tough/Ductile | GJL ← Wear-resistant | GJS → Tough/Ductile |
| Substrate | Carbide | | Carbide | |
| Coating | CVD | PVD | - | PVD |
| Cutting material type | HC740 | HP930 | HU616 | HP615 |

| Cutting edge design | | 2L | 2L | | 2R | |
|------------------------|------------------------|--------------------------------|----------|----------|----------|--|
| SPHT06 | | <i>a_p max. [mm]</i> | | | | |
| Medium machining | SPHT060302F01L-...-... | 0.5 - 3.2 | | | 30492231 | |
| | SPHT060302F01R-...-... | 0.5 - 3.2 | | | 30492248 | |
| | SPHT060304F01L-...-... | 0.5 - 3.2 | | | 30239958 | |
| | SPHT060304F01R-...-... | 0.5 - 3.2 | | | 30492249 | |
| | SPHT060304E04L-...-... | 0.5 - 3.2 | 31044035 | 30950322 | | |
| | SPHT060304E04R-...-... | 0.5 - 3.2 | 30939004 | 30950346 | | |
| | SPHT060308F01L-...-... | 0.5 - 3.2 | | | 30492232 | |
| | SPHT060308F01R-...-... | 0.5 - 3.2 | | | 30492250 | |
| | SPHT060308E04L-...-... | 0.5 - 3.2 | 31317311 | 30950323 | | |
| | SPHT060308E04R-...-... | 0.5 - 3.2 | 31317314 | 30950347 | | |
| | SCHT09 | | | | | |
| | SCHT09T304F01L-...-... | 0.5 - 4.0 | | | 30492235 | |
| | SCHT09T304F01R-...-... | 0.5 - 4.0 | | | 30492252 | |
| | SCHT09T304E04L-...-... | 0.5 - 4.0 | 31043583 | 30950324 | | |
| | SCHT09T304E04R-...-... | 0.5 - 4.0 | 30812298 | 30950348 | | |
| | SCHT09T308F01L-...-... | 0.5 - 4.0 | | | 30042582 | |
| | SCHT09T308F01R-...-... | 0.5 - 4.0 | | | 30492253 | |
| | SCHT09T308E04L-...-... | 0.5 - 4.0 | 31039585 | 30950325 | | |
| | SCHT09T308E04R-...-... | 0.5 - 4.0 | 31317215 | 30950349 | | |
| SCHT09T312E04L-...-... | 0.5 - 4.0 | 31317216 | 30950326 | | | |
| SCHT09T312E04R-...-... | 0.5 - 4.0 | 31317217 | 30950350 | | | |
| SCHT12 | | | | | | |
| SCHT120404E04L-...-... | 0.5 - 5.0 | 31317284 | 30950327 | | | |
| SCHT120404E04R-...-... | 0.5 - 5.0 | 31317287 | 30950351 | | | |
| SCHT120408E04L-...-... | 0.5 - 5.0 | 31317300 | 30950328 | | | |
| SCHT120408E04R-...-... | 0.5 - 5.0 | 31317301 | 30950352 | | | |
| SCHT120412E04L-...-... | 0.5 - 5.0 | 31317305 | 30950329 | | | |
| SCHT120412E04R-...-... | 0.5 - 5.0 | 31317307 | 30950353 | | | |

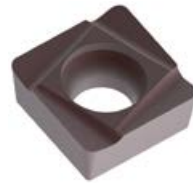
Next table:
Finishing



Specified *a_p* ranges are recommendations and may vary depending on the material being machined.

SCHT | SPHT

Radial indexable inserts, four cutting edges



Left design



Right design

| | | |
|-----------------------|-------|---------|
| Workpiece material | K | N |
| | | |
| Substrate | | Carbide |
| Coating | PVD | - |
| Coating | | PVD |
| Cutting material type | HP930 | HU616 |
| Cutting material type | | HP615 |

| Cutting edge design | | 2L | 2R | 2R | |
|------------------------|------------------------|-----------|----------|----------|----------|
| SPHT06 | | | | | |
| | a_p max. [mm] | | | | |
| Finishing | SPHT060302F01L-...-... | 0.1 - 1.0 | 30092077 | 30492231 | |
| | SPHT060302F01R-...-... | 0.1 - 1.0 | 30089678 | 30492248 | |
| | SPHT060304F01L-...-... | 0.1 - 1.0 | 30010644 | 30239958 | |
| | SPHT060304F01R-...-... | 0.1 - 1.0 | 30010662 | 30492249 | |
| | SPHT060304E02L-...-... | 0.1 - 1.0 | 30950330 | | |
| | SPHT060304E02R-...-... | 0.1 - 1.0 | 30950354 | | |
| | SPHT060308F01L-...-... | 0.1 - 1.0 | 30057636 | 30492232 | |
| | SPHT060308F01R-...-... | 0.1 - 1.0 | 30438143 | 30492250 | |
| | SPHT060308E02L-...-... | 0.1 - 1.0 | 30950331 | | |
| | SPHT060308E02R-...-... | 0.1 - 1.0 | 30950355 | | |
| | SCHT09 | | | | |
| | SCHT09T304F01L-...-... | 0.1 - 2.0 | | 30010645 | 30492235 |
| | SCHT09T304F01R-...-... | 0.1 - 2.0 | | 30010663 | 30492252 |
| | SCHT09T304E02L-...-... | 0.1 - 2.0 | 30950332 | | |
| SCHT09T304E02R-...-... | 0.1 - 2.0 | 30950356 | | | |
| SCHT09T308F01L-...-... | 0.1 - 2.0 | | 30010646 | 30042582 | |
| SCHT09T308F01R-...-... | 0.1 - 2.0 | | 30010664 | 30492253 | |
| SCHT09T308E02L-...-... | 0.1 - 2.0 | 30950333 | | | |
| SCHT09T308E02R-...-... | 0.1 - 2.0 | 30950357 | | | |

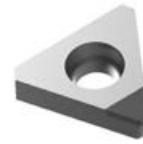
TCMT | TCGW

Radial indexable insert, three cutting edges, neutral design



| Workpiece material | P | | | | |
|-----------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|--------------------------|
| | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Alloyed Tough/Ductile |
| Substrate | Carbide | | | | |
| Coating | CVD | | PVD | | |
| Cutting material type | HC850 | HC865 | HP880 | HP895 | |
| Cutting edge design | | MKM | | | |
| TCMT11 | a_p max. [mm] | | | | |
| Roughing | TCMT110204N-...-... | 1.5 - 3.0 | 30985591 | | |
| | | 1.5 - 4.0 | | | |
| | TCMT16 | | | | |
| | TCMT16T304N-...-... | 1.5 - 3.0 | 30985608 | | |
| | | 1.5 - 5.0 | | | |
| | | 1.5 - 3.0 | 30985615 | | |
| | | 1.5 - 5.0 | | | |
| Cutting edge design | | MGP | MGP | | MGP |
| TCMT09 | a_p max. [mm] | | | | |
| Medium machining | TCMT090204N-...-... | 0.5 - 2.0 | 30985582 | | |
| | TCMT11 | | | | |
| | TCMT110204N-...-... | 0.5 - 2.5 | 30945048 | 30985589 | 30985588 |
| | TCMT110208N-...-... | 0.75 - 2.5 | 30985599 | 30985600 | 30985601 |
| | TCGW11 | | | | |
| | TCGW110204T51N-...-... | 0.5 - 2.5 | | | |
| | TCGW110208T51N-...-... | 0.75 - 2.5 | | | |
| | TCMT16 | | | | |
| | TCMT16T304N-...-... | 0.5 - 2.5 | 30985605 | 31092663 | 30985604 |
| | TCMT16T308N-...-... | 0.75 - 2.5 | 30985613 | 31092665 | 30985612 |
| | | | 31092666 | | |
| TCMT22 | | | | | |
| TCMT220408N-...-... | 0.75 - 3.0 | | | | |
| Cutting edge design | | MMM | MMM | MMM | MMM |
| TCMT11 | a_p max. [mm] | | | | |
| Finishing | TCMT110202N-...-... | 0.5 - 1.5 | 30985584 | 30985585 | 30985583 |
| | TCMT110204N-...-... | 0.5 - 1.5 | 30985595 | 30985596 | 30985594 |
| | TCMT110208N-...-... | 0.5 - 1.5 | | 30985593 | |
| | TCGW11 | | | | |
| | TCGW110204F01N-...-... | 0.1 - 1.0 | | | |
| | TCGW110204E01N-...-... | 0.1 - 1.0 | | | |
| | TCGW110208F01N-...-... | 0.1 - 1.5 | | | |
| | TCGW110208E01N-...-... | 0.1 - 1.0 | | | |
| | TCMT16 | | | | |
| TCMT16T304N-...-... | 0.5 - 1.5 | | | 30985609 | |
| TCMT16T308N-...-... | 0.5 - 1.5 | | | 30985617 | |

Specified a_p ranges are recommendations and may vary depending on the material being machined.



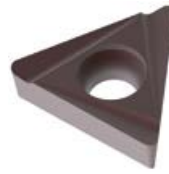
Tipped variant, single edge:

OAA

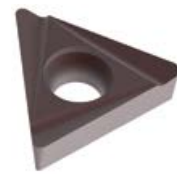
| M | | | | K | | | N |
|-----------------------------------|-------|--------------------------------|----------|----------------------------|---------------------------|----------|----------|
| Austenitic ← Wear-resistant | | Ferritic → Tough/Ductile | | GJL ← Wear-resistant | GJS → Tough/Ductile | | |
| Carbide | | | | Carbide | | PcBN | PCD |
| CVD | | PVD | | CVD | | - | - |
| HC875 | HP880 | HP885 | HP895 | HC815 | HC825 | FU430 | PU617 |
| | | | | MKM | | | |
| | | | | 30985590 | | | |
| | | | | 30985607 | | | |
| | | | | 30985614 | | | |
| | MGP | | MGP | MGP | MGP | OAA | |
| | | | | 30985917 | | | |
| 30985587 | | | 30985588 | 30985586 | | | |
| 30985598 | | 31245563 | 30985601 | 30985597 | | | |
| | | | | | | 30227880 | |
| | | | | | | 30227892 | |
| | | | 30985604 | 30985602 | 30985603 | | |
| | | | 30985612 | 30985610 | 30985611 | | |
| | | 31245564 | | 30985618 | 30985619 | | |
| | | | | 30985622 | 30985623 | | |
| | MMM | MMM | MMM | MMM | | OAA | OAA |
| | | 30985593 | 31245550 | 30985583 | | | |
| | | | 31245551 | 30985594 | 30985592 | | |
| | | | | | | | 31279724 |
| | | | | | | 30227878 | |
| | | | | | | 30227890 | 31279725 |
| | | | 31245552 | 30985609 | | | |
| 30985616 | | 31245553 | 30985617 | | | | |

TCHT

Radial indexable inserts, three-cutting edge, left/right design



Left design



Right design

| | | | | |
|-----------------------|---------|--|-------|---------|
| Workpiece material | K | | N | |
| | | | | |
| Substrate | Carbide | | | Carbide |
| Coating | CVD | | PVD | |
| Cutting material type | HC740 | | HP930 | HU616 |

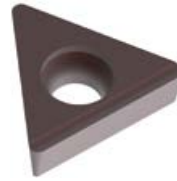
| Cutting edge design | | 2L | 2L | | |
|------------------------|------------------------|--------------------------------|----------|----------|--|
| TCHT09 | | <i>a_p max. [mm]</i> | | | |
| Medium machining | TCHT090204E04L-...-... | 0.5 - 2.5 | 31317317 | 30950224 | |
| | TCHT090204E04R-...-... | 0.5 - 2.5 | 31317318 | 30950235 | |
| | TCHT090208E04L-...-... | 0.5 - 2.5 | 31317319 | 30950225 | |
| | TCHT090208E04R-...-... | 0.5 - 2.5 | 31317320 | 30950236 | |
| | TCHT11 | | | | |
| | TCHT110204E04L-...-... | 0.5 - 3.0 | 31317321 | 30950226 | |
| | TCHT110204E04R-...-... | 0.5 - 3.0 | 31317322 | 30950237 | |
| | TCHT110208E04L-...-... | 0.5 - 3.0 | 31317325 | 30950227 | |
| | TCHT110208E04R-...-... | 0.5 - 3.0 | 31317326 | 30950238 | |
| | TCHT16 | | | | |
| | TCHT16T304E04L-...-... | 0.5 - 4.0 | 31317327 | 30950228 | |
| | TCHT16T304E04R-...-... | 0.5 - 4.0 | 31317328 | 30950239 | |
| TCHT16T308E04L-...-... | 0.5 - 4.0 | 31317340 | 30950229 | | |
| TCHT16T308E04R-...-... | 0.5 - 4.0 | 31317342 | 30950240 | | |

| Cutting edge design | | | 2L | 2R | |
|------------------------|------------------------|--------------------------------|----------|----------|--|
| TCHT06 | | <i>a_p max. [mm]</i> | | | |
| Finishing | TCHT06T104F01L-...-... | 0.1 - 1.0 | | 30492290 | |
| | TCHT06T104F01R-...-... | 0.1 - 1.0 | | 30492307 | |
| | TCHT06T104E02L-...-... | 0.1 - 1.0 | | 30950230 | |
| | TCHT06T104E02R-...-... | 0.1 - 1.0 | | 30950241 | |
| | TCHT09 | | | | |
| | TCHT090204F01L-...-... | 0.1 - 1.0 | | 30010759 | |
| | TCHT090204F01R-...-... | 0.1 - 1.0 | | 30010777 | |
| | TCHT090204E02L-...-... | 0.1 - 1.0 | | 30950231 | |
| | TCHT090204E02R-...-... | 0.1 - 1.0 | | 30950242 | |
| | TCHT090208E02L-...-... | 0.1 - 1.0 | | 30950232 | |
| | TCHT090208E02R-...-... | 0.1 - 1.0 | | 30950243 | |
| | TCHT11 | | | | |
| | TCHT110202F01L-...-... | 0.1 - 1.5 | | 30010761 | |
| | TCHT110202F01R-...-... | 0.1 - 1.5 | | 30010779 | |
| | TCHT110204F01L-...-... | 0.1 - 1.5 | | 30010762 | |
| | TCHT110204F01R-...-... | 0.1 - 1.5 | | 30010780 | |
| | TCHT110204E02L-...-... | 0.1 - 1.5 | | 30950233 | |
| | TCHT110204E02R-...-... | 0.1 - 1.5 | | 30950244 | |
| | TCHT110208F01L-...-... | 0.1 - 1.5 | | 30010763 | |
| | TCHT110208F01R-...-... | 0.1 - 1.5 | | 30478186 | |
| TCHT110208E02L-...-... | 0.1 - 1.5 | | 30950234 | | |
| TCHT110208E02R-...-... | 0.1 - 1.5 | | 30950245 | | |
| TCHT16 | | | | | |
| TCHT16T304F01L-...-... | 0.1 - 2.5 | | 30478187 | | |
| TCHT16T304F01R-...-... | 0.1 - 2.5 | | 30478188 | | |
| TCHT16T308F01L-...-... | 0.1 - 2.5 | | 30019882 | | |
| TCHT16T308F01R-...-... | 0.1 - 2.5 | | 30478189 | | |

Specified *a_p* ranges are recommendations and may vary depending on the material being machined.

TCHT

Radial indexable inserts, single edge, neutral design



| | | | |
|-----------------------|---------|--|---------|
| Workpiece material | K | | N |
| | Carbide | | Carbide |
| Substrate | CVD | | PVD |
| Coating | HC740 | | HP930 |
| Cutting material type | HC740 | | HP930 |

| | | | | |
|---------------------|------------------------|-----------------|----------|----------|
| Cutting edge design | | 1L | 1L | |
| TCHT09 | | a_p max. [mm] | | |
| Medium machining | TCHT090204E04X-...-... | 0.5 - 2.5 | 31319106 | 30950246 |
| | TCHT090208E04X-...-... | 0.5 - 2.5 | 31319107 | 30950247 |
| | TCHT11 | | | |
| | TCHT110204E04X-...-... | 0.5 - 3.0 | 31319108 | 30950248 |
| | TCHT110208E04X-...-... | 0.5 - 3.0 | 31319109 | 30950249 |
| | TCHT16 | | | |
| | TCHT16T304E04X-...-... | 0.5 - 4.0 | 31039581 | 30950250 |
| | TCHT16T308E04X-...-... | 0.5 - 4.0 | 31319140 | 30950251 |

| | | | | |
|---------------------|------------------------|-----------------|----------|----------|
| Cutting edge design | | | 1L | 1R |
| TCHT06 | | a_p max. [mm] | | |
| Finishing | TCHT06T104F01X-...-... | 0.1 - 1.0 | | 30492325 |
| | TCHT06T104E02X-...-... | 0.1 - 1.0 | 30950252 | |
| | TCHT09 | | | |
| | TCHT090204F01X-...-... | 0.1 - 1.0 | | 30010795 |
| | TCHT090204E02X-...-... | 0.1 - 1.0 | 30950253 | |
| | TCHT090208E02X-...-... | 0.1 - 1.0 | 30950254 | |
| | TCHT11 | | | |
| | TCHT110202F01X-...-... | 0.1 - 1.5 | | 30010797 |
| | TCHT110204F01X-...-... | 0.1 - 1.5 | | 30010798 |
| | TCHT110204E02X-...-... | 0.1 - 1.5 | 30950255 | |
| | TCHT110208F01X-...-... | 0.1 - 1.5 | | 30010799 |
| | TCHT110208E02X-...-... | 0.1 - 1.5 | 30950256 | |
| | TCHT16 | | | |
| | TCHT16T304F01X-...-... | 0.1 - 2.5 | | 30019940 |
| | TCHT16T308F01X-...-... | 0.1 - 2.5 | | 30019941 |

VCMT | VCGT | VBGW | VCGW

Radial indexable inserts, double edge, neutral design



| Workpiece material | P | | |
|-----------------------|-----------------------------|------------|--------------------------|
| | Unalloyed Wear-resistant | | Alloyed Tough/Ductile |
| Substrate | Carbide | | |
| Coating | CVD | | PVD |
| Cutting material type | HC850 | HC865 | HP880 |
| Cutting edge design | | MKM | |
| VCMT16 | a_p max. [mm] | | |
| Roughing | VCMT160408N-...-... | 1.5 - 3.0 | 30985630 |
| | | | |
| Cutting edge design | MGP | MGP | MGP |
| VCGT11 | a_p max. [mm] | | |
| Medium machining | VCGT110304N-...-... | 0.25 - 2.0 | 30966122 |
| | VCMT16 | | |
| | VCMT160404N-...-... | 0.5 - 2.0 | 30966097 |
| | VCMT160408N-...-... | 0.75 - 2.0 | 31093307 |
| | | | 30966098 |
| | | | 30985629 |
| Cutting edge design | | | |
| VBGW16 | a_p max. [mm] | | |
| Finishing | VBGW160404E01N-...-... | 0.1 - 1.0 | |
| | VBGW160408E01N-...-... | 0.1 - 1.0 | |
| | VCGW16 | | |
| | VCGW160404E01N-...-... | 0.1 - 1.0 | |
| | VCGW160408E01N-...-... | 0.1 - 1.0 | |

Specified a_p ranges are recommendations and may vary depending on the material being machined.



Tipped variant, single edge:

OAA

| | | | |
|--|----------|----------|----------|
| | M | K | |
| | | | |
| | Carbide | Carbide | PcBN |
| | PVD | CVD | - |
| | HP880 | HC815 | FU430 |
| | | | |
| | | | |
| | | | |
| | MGP | MGP | |
| | 30966122 | | |
| | | 30985627 | |
| | | 30985628 | |
| | | | OAA |
| | | | 10106686 |
| | | | 10106698 |
| | | | 10106768 |
| | | | 10106780 |

CCHT | Mixed machining

Radial indexable inserts, double edge, mixed machining



linke Ausführung



rechte Ausführung

| Workpiece material | N + K | | N + P | | | |
|-----------------------|------------------------|----------------------|-----------------------------|--------------------------|----------|----------|
| | GJL Wear-resistant | GJS Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | | |
| Substrate | Carbide | | Carbide | | | |
| Coating | PVD | | PVD | | | |
| Cutting material type | HP525-P | HP530-P | HP540-P | HP545-P | | |
| Cutting edge design | 1W | 1W | 1R | 1R | | |
| CCHT09 | a_p max. [mm] | | | | | |
| Radius | CCHT09T304E02L-...-... | 0.1 - 2.0 * | 30909374 | 30909375 | 30907411 | 30909351 |
| | CCHT09T304E02R-...-... | 0.1 - 2.0 | 30909376 | 30909377 | 30909352 | 30909353 |
| | CCHT09T308E02L-...-... | 0.1 - 2.0 | 30909378 | 30909379 | 30909354 | 30909355 |
| | CCHT09T308E02R-...-... | 0.1 - 2.0 | 30909380 | 30909381 | 30909356 | 30909357 |

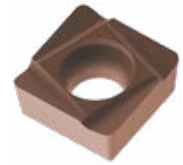
* Depending on the thrust bearing.
Also possible for custom inserts.

SCHT | Mixed machining

Radial indexable inserts, four cutting edges, mixed machining



with radius, left design



with radius, right design

| | | | | |
|-----------------------|-------------------------|---------|---|---------|
| Workpiece material | N + K | | N + P | |
| | GJL ← Wear-resistant | | GJS Unalloyed → Alloyed Wear-resistant Tough/Ductile | |
| Substrate | Carbide | | Carbide | |
| Coating | PVD | | PVD | |
| Cutting material type | HP525-P | HP530-P | HP540-P | HP545-P |

| Cutting edge design | | 2W | 2W | 2R | 2R | |
|---------------------|------------------------|-----------------|----------|----------|----------|----------|
| Radius | SCHT09 | a_p max. [mm] | | | | |
| | SCHT09T304E02L-...-... | 0.1 - 2.0 | 30909366 | 30909367 | 30909345 | 30909346 |
| | SCHT09T304E02R-...-... | 0.1 - 2.0 | 30909368 | 30909369 | 30909347 | 30909348 |
| | SCHT09T308E02L-...-... | 0.1 - 2.0 | 30909370 | 30909371 | 30909349 | 30909350 |
| | SCHT09T308E02R-...-... | 0.1 - 2.0 | 30909372 | 30909373 | 30903215 | 30907589 |

Specified a_p ranges are recommendations and may vary depending on the material being machined.

CTNQ

Tangential indexable inserts, four cutting edges, without arc shaped land



| | | | | | |
|-----------------------|-----------------------------|-------|-------|--------------------------|--|
| Workpiece material | P | | | M ₁ | |
| | Unalloyed Wear-resistant | | | Alloyed Tough/Ductile | |
| Substrate | Carbide | | | Carbide | |
| Coating | CVD | PVD | | CVD | |
| Cutting material type | HC740 | HP945 | HP950 | HC750 | |

| Cutting edge design | | H02 | H02 | H02 | A32 | |
|--|--------------------|-----------|----------|----------|----------|----------|
| CTNQ from ø 41 mm a _p max. [mm] | | | | | | |
| Roughing | CTNQ090508...L-... | 1.5 - 3.0 | 30933846 | 30933848 | 30933849 | 30950088 |
| | | 1.5 - 4.0 | | | | |
| | CTNQ090508...R-... | 1.5 - 3.0 | 30933850 | 30933851 | 30950091 | 30950092 |
| | | 1.5 - 4.0 | | | | |
| | CTNQ090512...L-... | 1.5 - 3.0 | 30933852 | 30933854 | 30933855 | 30950094 |
| | | 1.5 - 4.0 | | | | |
| | CTNQ090512...R-... | 1.5 - 3.0 | 30933856 | 30933857 | 30950097 | 30950099 |
| | | 1.5 - 4.0 | | | | |
| | CTNQ from ø 54 mm | | | | | |
| | CTNQ120608...L-... | 1.5 - 3.0 | 30933864 | 30933866 | 30933867 | |
| | | 1.5 - 5.0 | | | | |
| | CTNQ120612...L-... | 1.5 - 3.0 | 30933868 | 30933869 | 30980913 | |
| 1.5 - 5.0 | | | | | | |

| Cutting edge design | | A32 | A32 | A32 | A32 | |
|--|--------------------|-----------|----------|----------|----------|----------|
| CTNQ from ø 41 mm a _p max. [mm] | | | | | | |
| Medium machining | CTNQ090508...L-... | 0.5 - 2.0 | 30933892 | 30933894 | 30933895 | 30950088 |
| | CTNQ090508...R-... | 0.5 - 2.0 | 30933896 | 30933897 | 30950112 | 30950092 |
| | CTNQ090512...L-... | 0.5 - 2.0 | 30933898 | 30933900 | 30933901 | 30950094 |
| | CTNQ090512...R-... | 0.5 - 2.0 | 30933902 | 30933903 | 30950118 | 30950099 |

M₁ Stainless steelM₂ Heat-resistant cast steel (turbocharger materials)Specified a_p ranges are recommendations and may vary depending on the material being machined.

| M ₂ | | | K | | | |
|------------------------------|---------------------------|----------|-----------------------|----------------------|-----------------------|----------------------|
| Austenitic Wear-resistant | Ferritic Tough/Ductile | | GJL Wear-resistant | GJS Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile |
| Carbide | | | Carbide | | | |
| CVD | | PVD | CVD | | PVD | |
| HC740 | HC750 | HP945 | HC725 | HC740 | HP930 | HP945 |
| H02 | H02 | H02 | H02 | H02 | H02 | H02 |
| 30933846 | 30980873 | 30933848 | 30933926 | 30933846 | 30933929 | 30933848 |
| 30933850 | 30980900 | 30933851 | 30933931 | 30933850 | 30933934 | 30933851 |
| 30933852 | 30980902 | 30933854 | 30933936 | 30933852 | 30933939 | 30933854 |
| 30933856 | 30980905 | 30933857 | 30933941 | 30933856 | 30933944 | 30933857 |
| 30933864 | 30980907 | 30933866 | 30933956 | 30933864 | 30933959 | 30933866 |
| 30933868 | 30980911 | 30933869 | 30933961 | 30933868 | 30933964 | 30933869 |
| A32 | A32 | A32 | A32 | A32 | A32 | A32 |
| 30933892 | 30950088 | 30933894 | 30934005 | 30933892 | 30934008 | 30933894 |
| 30933896 | 30950092 | 30933897 | 30934010 | 30933896 | 30934013 | 30933897 |
| 30933898 | 30950094 | 30933900 | 30934015 | 30933898 | 30934018 | 30933900 |
| 30933902 | 30950099 | 30933903 | 30934020 | 30933902 | 30934023 | 30933903 |

CTGQ

Tangential indexable inserts, four cutting edges, blind bore, with arc shaped land



| Workpiece material | P | | | | K | | | |
|-----------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|-----------------------|----------------------|-----------------------|----------------------|
| | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile |
| Substrate | Carbide | | | | Carbide | | | |
| Coating | CVD | | PVD | | CVD | | PVD | |
| Cutting material type | HC740 | HC745 | HP945 | HP950 | HC725 | HC740 | HP930 | HP945 |

| Cutting edge design | | H02 | H02 | H02 | H02 | H02 | H02 | H02 | H02 | |
|---------------------|------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|
| CTGQ ø 65 mm | | a_p max. [mm] | | | | | | | | |
| Roughing | CTGQ090504... LOOB041-... | 1.5 - 3.0 | 31173955 | 31173956 | 31173957 | 31173958 | | | | |
| | | 1.5 - 4.0 | | | | | 31173959 | 31173955 | 31173980 | 31173957 |
| | CTGQ090508... LOOB041-... | 1.5 - 3.0 | 31173981 | 31173982 | 31173983 | 31173984 | | | | |
| | | 1.5 - 4.0 | | | | | 31173985 | 31173981 | 31173986 | 31173983 |
| | CTGQ090512... LOOB041-... | 1.5 - 3.0 | 31173987 | 31184714 | 31173988 | 31184715 | | | | |
| | | 1.5 - 4.0 | | | | | 31173989 | 31173987 | 31173990 | 31173988 |
| | CTGQ ø 78 mm | | | | | | | | | |
| | CTGQ120604... LOOB081-... | 1.5 - 3.0 | 31184725 | 31184726 | 31184728 | 31184729 | | | | |
| | | 1.5 - 5.0 | | | | | 31184724 | 31184725 | 31184727 | 31184728 |
| | CTGQ120608... LOOB081-... | 1.5 - 3.0 | 31173995 | 31173996 | 31173997 | 31173998 | | | | |
| | | 1.5 - 5.0 | | | | | 31173999 | 31173995 | 31174000 | 31173997 |
| | CTGQ120612... LOOB081-... | 1.5 - 3.0 | 31184731 | 31184732 | 31184734 | 31184735 | | | | |
| | 1.5 - 5.0 | | | | | 31184730 | 31184731 | 31184733 | 31184734 | |

| Cutting edge design | | A32 | A32 | A32 | A32 | A32 | A32 | A32 | A32 | |
|---------------------|------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|
| CTGQ ø 65 mm | | a_p max. [mm] | | | | | | | | |
| Medium machining | CTGQ090504... LOOB041-... | 0.5 - 2.0 | 31174001 | 31184716 | 31174002 | 31184717 | 31174003 | 31174001 | 31174004 | 31174002 |
| | CTGQ090508... LOOB041-... | 0.5 - 2.0 | 31174005 | 31184718 | 31174006 | 31184719 | 31174007 | 31174005 | 31174008 | 31174006 |
| | CTGQ090512... LOOB041-... | 0.5 - 2.0 | 31174009 | 31184720 | 31174010 | 31184721 | 31174011 | 31174009 | 31174012 | 31174010 |

CTGQ

Tangential indexable inserts, four cutting edges, through bore, with arc shaped land



| Workpiece material | P | | | | K | | | | |
|---|-------------------------------|--------------------------|-----------------------------|--------------------------|-----------------------|----------------------|-----------------------|----------------------|--|
| | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile | |
| Substrate | Carbide | | | | Carbide | | | | |
| Coating | CVD | | PVD | | CVD | | PVD | | |
| Cutting material type | HC740 | HC745 | HP945 | HP950 | HC725 | HC740 | HP930 | HP945 | |
| Cutting edge design | H02 | H02 | H02 | H02 | H02 | H02 | H02 | H02 | |
| CTGQ from \varnothing 65 mm a_p max. [mm] | | | | | | | | | |
| Roughing | CTGQ090508... L10B041-... | 1.5 - 3.0 | 31174013 | 31174014 | 31174015 | 31174016 | | | |
| | | 1.5 - 4.0 | | | | | 31174017 | 31174013 | |
| | CTGQ from \varnothing 78 mm | | | | | | | | |
| | CTGQ120608... L10B081-... | 1.5 - 3.0 | 31174019 | 31174020 | 31174021 | 31174022 | | | |
| | 1.5 - 5.0 | | | | | 31174023 | 31174019 | 31174024 | |
| Cutting edge design | A32 | A32 | A32 | A32 | A32 | A32 | A32 | A32 | |
| CTGQ from \varnothing 65 mm a_p max. [mm] | | | | | | | | | |
| Medium machining | CTGQ090508... L10B041-... | 0.5 - 2.0 | 31174029 | 31184722 | 31174031 | 31184723 | 31174030 | 31174029 | |
| | | | | | | | | 31174032 | |
| | | | | | | | | 31174031 | |

Specified a_p ranges are recommendations and may vary depending on the material being machined.

CTHQ

Tangential indexable inserts, four cutting edges, without arc shaped land



Left design

Right design

| | | | | | | |
|-----------------------|---------|-------|----------------|-----------------------------|--------------------------|----------------|
| Workpiece material | P | | M ₁ | M ₂ | | M ₂ |
| | | | | Unalloyed Wear-resistant | Alloyed Tough/Ductile | |
| Substrate | Carbide | | Carbide | Carbide | | Carbide |
| Coating | CVD | PVD | CVD | CVD | | PVD |
| Cutting material type | HC740 | HP945 | HC750 | HC740 | HC750 | HP945 |

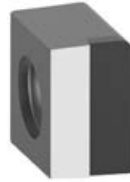
| | | | | | | | |
|---------------------|---------------------|--------------------------|--------------------------|----------|----------|----------|----------|
| Cutting edge design | | | | | | | |
| CTHQ from ø 28 mm | | a _p max. [mm] | | | | | |
| Roughing | CTHQ060408...L-... | 1.5 - 2.5 | | | | | |
| | CTHQ060408...R-... | 1.5 - 2.5 | | | | | |
| | Cutting edge design | | | A32 | H02 | H02 | M02 |
| | CTHQ from ø 41 mm | | a _p max. [mm] | | | | |
| | CTHQ090508...L-... | 1.5 - 3.0 | | 30950084 | 30980629 | 30980631 | 30980632 |
| | | 1.5 - 4.0 | | | | | |
| | CTHQ090508...R-... | 1.5 - 3.0 | | 30950086 | 30980712 | 30980714 | 30980751 |
| | | 1.5 - 4.0 | | | | | |
| | CTHQ from ø 54 mm | | | | | | |
| | CTHQ120608...L-... | 1.5 - 3.0 | | | 30980759 | 30980765 | 30980766 |
| 1.5 - 5.0 | | | | | | | |
| CTHQ120608...R-... | 1.5 - 3.0 | | | 30980784 | 30980786 | 30980787 | |
| | 1.5 - 5.0 | | | | | | |

| | | | | | | | |
|---------------------|--------------------|--------------------------|----------|----------|----------|----------|----------|
| Cutting edge design | | A32 | A32 | | A32 | A32 | M02 |
| CTHQ from ø 28 mm | | a _p max. [mm] | | | | | |
| Medium machining | CTHQ060404...R-... | 0.5 - 2.0 | | | | | |
| | CTHQ from ø 41 mm | | | | | | |
| | CTHQ090504...L-... | 0.5 - 2.0 | 30933878 | 30933880 | | 30933878 | 30980967 |
| | CTHQ090504...R-... | 0.5 - 2.0 | | | | 30980968 | |
| | CTHQ090508...L-... | 0.5 - 2.0 | 30813598 | 30933885 | | 30813598 | 30950084 |
| | CTHQ090508...R-... | 0.5 - 2.0 | | | | 30950086 | |
| | CTHQ from ø 54 mm | | | | | | |
| | CTHQ120604...L-... | 0.5 - 2.0 | 30933904 | | | 30933904 | |
| CTHQ120604...R-... | 0.5 - 2.0 | 30980051 | | | 30980051 | | |

M₁ Stainless steel

M₂ Heat-resistant cast steel (turbocharger materials)

Specified a_p ranges are recommendations and may vary depending on the material being machined.



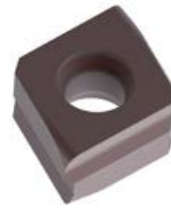
Tipped variants, single edge:

A79, A80

| K | | | | N | | |
|----------------------------|---------------------------|----------------------------|---------------------------|----------|----------|----------|
| GJL ← Wear-resistant | GJS → Tough/Ductile | GJL ← Wear-resistant | GJS → Tough/Ductile | | | |
| Carbide | | | | Carbide | | PCD |
| CVD | | PVD | | - | PVD | - |
| HC725 | HC740 | HP930 | HP945 | HU616 | HP615 | PU617 |
| H32 | H32 | H32 | H32 | | | |
| 30933907 | 30980615 | 30933910 | 30980618 | | | |
| 30933912 | 30980621 | | 30980625 | | | |
| H02 | H02 | H02 | H02 | | | A80 |
| 30921024 | 30980629 | 30933917 | 30980632 | | | 30492720 |
| 30921023 | 30980712 | 30933923 | 30980751 | | | 30515656 |
| 30933946 | 30980759 | 30933949 | 30980766 | | | |
| 30933951 | 30980784 | 30933954 | 30980787 | | | |
| A32 | A32 | A32 | A32 | A30 | A30 | A80 |
| 30679873 | 30942364 | | 30942366 | 30477914 | 31010211 | |
| 30679874 | 30933878 | 30933979 | 30933880 | 30492760 | 31010211 | 30492764 |
| 30679875 | | 30942374 | | 30492770 | | 30515411 |
| 30724676 | 30813598 | 30933994 | 30933885 | 31186236 | 30610917 | |
| 30789885 | | 30942382 | | 31264530 | 31203830 | |
| 30789886 | 30933904 | 30934028 | | 30477929 | | |
| 30789887 | 30980051 | 30980054 | | 30477930 | | |

CTHQ

Tangential indexable inserts, four cutting edges, blind bore, with arc shaped land



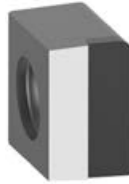
| | | | | | | |
|-----------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|----------------|--|
| Workpiece material | P | | | | M ₂ | |
| | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | | |
| Substrate | Carbide | | | | Carbide | |
| Coating | CVD | | PVD | | CVD | |
| Cutting material type | HC740 | HC745 | HP945 | HP950 | HC750 | |

| | | | | | | | | | |
|------------------------------|------------------------------|--------------------------|----------|----------|----------|----------|----------|--|--|
| Cutting edge design | | | A53 | A53 | A53 | A53 | A32 | | |
| CTHQ from ø 65 mm | | a _p max. [mm] | | | | | | | |
| Roughing | CTHQ090508... L00B041-... | 1.5 - 3.0 | 30933714 | 30933715 | 30933716 | 30933717 | 30933718 | | |
| | | 1.5 - 4.0 | | | | | | | |
| | CTHQ090512... L00B041-... | 1.5 - 3.0 | 30950047 | | | | | | |
| | | 1.5 - 4.0 | | | | | | | |
| | CTHQ from ø 78 mm | | | | | | | | |
| | CTHQ120608... L00B081-... | 1.5 - 3.0 | 30933733 | 30933734 | | | | | |
| | 1.5 - 5.0 | | | | | | | | |
| CTHQ120612... L00B081-... | 1.5 - 3.0 | 30950048 | | | | | | | |
| | 1.5 - 5.0 | | | | | | | | |

| | | | | | | | | | |
|------------------------------|------------------------------|--------------------------|----------|----------|----------|--|--|--|--|
| Cutting edge design | | | A32 | | A32 | | | | |
| CTHQ from ø 40 mm | | a _p max. [mm] | | | | | | | |
| Medium machining | CTHQ060404... L00B021-... | 0.5 - 2.0 | | | | | | | |
| | CTHQ060404... L00B021-... | 0.5 - 2.0 | | | | | | | |
| | CTHQ from ø 65 mm | | | | | | | | |
| | CTHQ090504... L00B041-... | 0.5 - 2.0 | 30950080 | | 30988741 | | | | |
| | CTHQ090508... L00B041-... | 0.5 - 2.0 | 30988732 | | 30988742 | | | | |
| | CTHQ from ø 78 mm | | | | | | | | |
| CTHQ120604... L00B081-... | 0.5 - 2.0 | | | | | | | | |
| CTHQ120608... L00B081-... | 0.5 - 2.0 | 30988734 | | 30988744 | | | | | |

M₂ Heat-resistant cast steel (turbocharger materials)

Specified a_p ranges are recommendations and may vary depending on the material being machined.



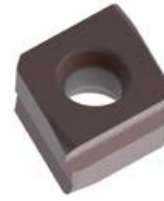
Tipped variants, single edge:

A79, A80

| K | | | | N | |
|-------------------------|----------|------------------------|----------|-------------------------|----------|
| GJL ← Wear-resistant | | GJS → Tough/Ductile | | GJL ← Wear-resistant | |
| GJS → Tough/Ductile | | GJS → Tough/Ductile | | | |
| Carbide | | | | Carbide | |
| CVD | | PVD | | PCD | |
| - | | - | | - | |
| HC725 | HC740 | HP930 | HP945 | HU616 | PU617 |
| H02 | H02 | H02 | H02 | | A80 |
| 30933721 | 30988707 | 30933724 | 30988736 | | 30492584 |
| 30933727 | 30988708 | 30933730 | 30988737 | | |
| 30933735 | 30988709 | 30933738 | 30988738 | | |
| | 30988730 | | 30988739 | | |
| A32 | A32 | A32 | A32 | A30 | A80 |
| 30679863 | 30988748 | 30933807 | 30988753 | 30477916 | 30492674 |
| 30679858 | 30950080 | 30933756 | 30988741 | 30328643 | |
| 30679859 | 30988732 | 30933765 | 30988742 | 30307194 | 30492584 |
| 30789881 | 31322355 | 31322356 | 31322357 | 30477928 | |
| 30789882 | 30988734 | 30933777 | 30988744 | 30477931 | 31213527 |

CTHQ

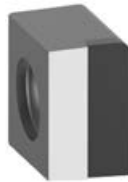
Tangential indexable inserts, four cutting edges, through bore, with arc shaped land



| Workpiece material | P | | | | M ₂ | | |
|---|------------------------------|--------------------------|-----------------------------|--------------------------|----------------|----------|----------|
| | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | | | |
| Substrate | Carbide | | | | Carbide | | |
| Coating | CVD | | PVD | | CVD | | |
| Cutting material type | HC740 | HC745 | HP945 | HP950 | HC750 | | |
| Cutting edge design | A53 | A53 | A53 | A53 | A32 | | |
| CTHQ from ø 65 mm <i>a_p max. [mm]</i> | | | | | | | |
| Roughing | CTHQ090508... L10B041-... | 1.5 - 3.0 | 30933783 | 30933784 | 30933785 | 30933786 | 30933787 |
| | CTHQ from ø 78 mm | | | | | | |
| | CTHQ120608... L10B081-... | 1.5 - 3.0 | 30950082 | | | | |
| | | 1.5 - 5.0 | | | | | |
| Cutting edge design | A32 | | A32 | | | | |
| CTHQ from ø 40 mm <i>a_p max. [mm]</i> | | | | | | | |
| Medium machining | CTHQ060408... L10B021-... | 0.5 - 2.0 | | | | | |
| | CTHQ from ø 65 mm | | | | | | |
| | CTHQ090508... L10B041-... | 0.5 - 2.0 | 30988749 | | 30988755 | | |
| | CTHQ from ø 78 mm | | | | | | |
| CTHQ120608... L10B081-... | 0.5 - 2.0 | 30988750 | | 30988756 | | | |

M₂ Heat-resistant cast steel (turbocharger materials)

Specified *a_p* ranges are recommendations and may vary depending on the material being machined.



Tipped variants, single edge:

A79, A80

| K | | | | N | |
|-------------------------|----------|----------------------------|----------|----------------------------|----------|
| GJL ← Wear-resistant | | GJS → GJL Tough/Ductile | | GJS → GJL Tough/Ductile | |
| Carbide | | | | Carbide | PCD |
| CVD | | PVD | | - | - |
| HC725 | HC740 | HP930 | HP945 | HU616 | PU617 |
| H02 | H02 | H02 | H02 | | A80 |
| 30933790 | 30988746 | 30933793 | 30988751 | | 30492657 |
| 30933796 | 30988747 | 30933799 | 30988752 | | |
| A32 | A32 | A32 | A32 | A30 | A80 |
| 30679863 | 30988748 | 30933807 | 30988753 | 30477916 | |
| 30679865 | 30988749 | 30933825 | 30988755 | 30307197 | 30492657 |
| | 30988750 | | 30988756 | 30477932 | |

FTNQ

Tangential indexable inserts, four cutting edges, without arc shaped land



| | | | | | |
|-----------------------|---------|-------|----------------|------------------------------|---------------------------|
| Workpiece material | P | | M ₁ | M ₂ | |
| | | | | Austenitic Wear-resistant | Ferritic Tough/Ductile |
| Substrate | Carbide | | Carbide | Carbide | |
| Coating | CVD | PVD | CVD | CVD | |
| Cutting material type | HC740 | HP945 | HC750 | HC740 | HC750 |

| | | | | | |
|---------------------|-----|-----|-----|-----|-----|
| Cutting edge design | H02 | H02 | A32 | H02 | H02 |
|---------------------|-----|-----|-----|-----|-----|

FTNQ from ø 30 mm a_p max. [mm]

| | | | | | | | | |
|-----------|--------------------|-----------|----------|----------|----------|----------|----------|--|
| Roughing | FTNQ090508...L-... | 1.5 - 3.0 | 30934169 | 30934170 | 30934171 | 30934169 | 30980508 | |
| | | 1.5 - 4.0 | | | | | | |
| | FTNQ from ø 40 mm | | | | | | | |
| | FTNQ120608...L-... | 1.5 - 3.0 | 30934188 | 30934189 | | 30934188 | 30980523 | |
| | | 1.5 - 5.0 | | | | | | |
| | FTNQ120608...R-... | 1.5 - 3.0 | 30934196 | 30934197 | | 30934196 | | |
| 1.5 - 5.0 | | | | | | | | |

| | | | | | |
|---------------------|-----|-----|--|-----|-----|
| Cutting edge design | A32 | A32 | | A32 | A32 |
|---------------------|-----|-----|--|-----|-----|

FTNQ from ø 30 mm a_p max. [mm]

| | | | | | | | |
|------------------|--------------------|-----------|----------|----------|--|----------|----------|
| Medium machining | FTNQ090508...L-... | 0.5 - 2.0 | 30934222 | 30934223 | | 30934222 | 30934171 |
| | | 0.5 - 2.0 | | | | | |

M₁ Stainless steelM₂ Heat-resistant cast steel (turbocharger materials)Specified a_p ranges are recommendations and may vary depending on the material being machined.

| | | | | | |
|--|----------------------|-------------------------|----------|--|----------|
| | M₂ | K | | | |
| | | GJL ← Wear-resistant | | GJS Tough/Ductile → GJL ← Wear-resistant | |
| | Carbide | Carbide | | | |
| | PVD | CVD | | PVD | |
| | HP945 | HC725 | HC740 | HP930 | HP945 |
| | H02 | H02 | H02 | H02 | H02 |
| | 30934170 | | | | |
| | | 30934173 | 30934169 | 30934175 | 30934170 |
| | 30934189 | | | | |
| | | 30934192 | 30934188 | 30934194 | 30934189 |
| | 30934197 | | | | |
| | | 30934198 | 30934196 | 30934200 | 30934197 |
| | A32 | A32 | A32 | A32 | A32 |
| | 30934223 | | | | |
| | | 30934173 | 30934222 | 30934175 | 30934223 |

FTGQ

Tangential indexable inserts, four cutting edges, blind bore, with arc shaped land



| Workpiece material | P | | | | K | | | |
|-----------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|-----------------------|----------------------|-----------------------|----------------------|
| | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile |
| Substrate | Carbide | | | | Carbide | | | |
| Coating | CVD | | PVD | | CVD | | PVD | |
| Cutting material type | HC740 | HC745 | HP945 | HP950 | HC725 | HC740 | HP930 | HP945 |

| Cutting edge design | | H02 | H02 | H02 | H02 | H02 | H02 | H02 | H02 | |
|-------------------------------|-------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|
| FTGQ from \varnothing 30 mm | | a_p max. [mm] | | | | | | | | |
| Roughing | FTGQ090504...L00B016-... | 1.5 - 3.0 | 31174033 | 31174034 | 31174035 | 31174036 | | | | |
| | | 1.5 - 4.0 | | | | | 31174037 | 31174033 | 31174038 | 31174035 |
| | FTGQ090508...L00B016-... | 1.5 - 3.0 | 31174039 | 31174040 | 31174041 | 31174042 | | | | |
| | | 1.5 - 4.0 | | | | | 31174043 | 31174039 | 31174044 | 31174041 |
| | FTGQ090512...L00B016-... | 1.5 - 3.0 | 31184737 | 31184738 | 31184740 | 31184741 | | | | |
| | | 1.5 - 4.0 | | | | | 31184736 | 31184737 | 31184739 | 31184740 |
| | FTGQ from \varnothing 40 mm | | | | | | | | | |
| | FTGQ120604...L00B021-... | 1.5 - 3.0 | 31184755 | 31184756 | 31184758 | 31184759 | | | | |
| | | 1.5 - 5.0 | | | | | 31184754 | 31184755 | 31184757 | 31184758 |
| | FTGQ120608...L00B021-... | 1.5 - 3.0 | 31174045 | 31174046 | 31174047 | 31174048 | | | | |
| | | 1.5 - 5.0 | | | | | 31174049 | 31174045 | 31174050 | 31174047 |
| | FTGQ120612...L00B021-... | 1.5 - 3.0 | 31184761 | 31184762 | 31184764 | 31184765 | | | | |
| 1.5 - 5.0 | | | | | | 31184760 | 31184761 | 31184763 | 31184764 | |

| Cutting edge design | | A32 | A32 | A32 | A32 | A32 | A32 | A32 | A32 | |
|-------------------------------|--------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|
| FTGQ from \varnothing 30 mm | | a_p max. [mm] | | | | | | | | |
| Medium machining | FTGQ090504...L00B016-... | 0.5 - 2.0 | 31174051 | 31184742 | 31174053 | 31184743 | 31174052 | 31174051 | 31174054 | 31174053 |
| | FTGQ090508...L00B016-... | 0.5 - 2.0 | 31174055 | 31184744 | 31174057 | 31184745 | 31174056 | 31174055 | 31174058 | 31174057 |
| | FTGQ090512...L00B016-... | 0.5 - 2.0 | 31184747 | 31184748 | 31184750 | 31184751 | 31184746 | 31184747 | 31184749 | 31184750 |

FTGQ

Tangential indexable inserts, four cutting edges, through bore, with arc shaped land



| Workpiece material | P | | | | K | | | | |
|---|---|--------------------------|-----------------------------|--------------------------|-----------------------|----------------------|-----------------------|----------------------|--|
| | Unalloyed Wear-resistant | Alloyed Tough/Ductile | Unalloyed Wear-resistant | Alloyed Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile | GJL Wear-resistant | GJS Tough/Ductile | |
| Substrate | Carbide | | | | Carbide | | | | |
| Coating | CVD | | PVD | | CVD | | PVD | | |
| Cutting material type | HC740 | HC745 | HP945 | HP950 | HC725 | HC740 | HP930 | HP945 | |
| Cutting edge design | H02 | H02 | H02 | H02 | H02 | H02 | H02 | H02 | |
| FTGQ from \varnothing 30 mm | a_p max. [mm] | | | | | | | | |
| Roughing | FTGQ090508...L10B016- | 1.5 - 3.0 | 31174059 | 31174060 | 31174061 | 31174062 | | | |
| | ... | 1.5 - 4.0 | | | | | 31174063 | 31174059 | |
| | FTGQ from \varnothing 40 mm | | | | | | | | |
| | FTGQ120608...L10B021- | 1.5 - 3.0 | 31174066 | 31174067 | 31174068 | 31174069 | | | |
| ... | 1.5 - 5.0 | | | | | 31174070 | 31174066 | 31174071 | |
| 31174068 | | | | | | | | | |
| Cutting edge design | A32 | A32 | A32 | A32 | A32 | A32 | A32 | A32 | |
| FTGQ from \varnothing 30 mm | a_p max. [mm] | | | | | | | | |
| Medium machining | FTGQ090508...L10B016- | 0.5 - 2.0 | 31174076 | 31184752 | 31174078 | 31184753 | 31174077 | 31174076 | |
| | ... | | | | | | 31174079 | 31174078 | |

FTHQ

Tangential indexable inserts, four cutting edges, without arc shaped land



| | | | | | |
|-----------------------|---------|-------|--|-------|-------|
| Workpiece material | P | | M ₁ | | |
| | | | Austenitic ← Wear-resistant → Ferritic Tough/Ductile | | |
| Substrate | Carbide | | Carbide | | |
| Coating | CVD | PVD | CVD | PVD | |
| Cutting material type | HC740 | HP945 | HC750 | HC740 | HC750 |

| Cutting edge design | | A53 | A53 | A32 | H02 | H02 | |
|--------------------------|--------------------------|--------------------------------|----------|----------|----------|----------|----------|
| FTHQ from ø 30 mm | | <i>a_p max. [mm]</i> | | | | | |
| Roughing | FTHQ090504...L-... | 1.5 - 3.0 | 30980167 | 30934159 | 30934160 | 30912756 | 30980484 |
| | FTHQ090504...R-... | 1.5 - 4.0 | | | | | |
| | FTHQ090508...L-... | 1.5 - 3.0 | 30934166 | 30934167 | 30950130 | 30980488 | |
| | FTHQ090508...R-... | 1.5 - 4.0 | | | | | |
| | FTHQ from ø 40 mm | | | | | | |
| | FTHQ120604...L-... | 1.5 - 3.0 | 30934177 | 30934178 | 30934179 | 30980491 | 30980493 |
| | FTHQ120604...R-... | 1.5 - 5.0 | | | | | |
| | FTHQ120608...L-... | 1.5 - 3.0 | 30934185 | 30934186 | 30950135 | 30980501 | |
| FTHQ120608...R-... | 1.5 - 5.0 | | | | | | |

| Cutting edge design | | A32 | A32 | | A32 | A32 | |
|--------------------------|--------------------------|--------------------------------|----------|----------|----------|----------|----------|
| FTHQ from ø 22 mm | | <i>a_p max. [mm]</i> | | | | | |
| Medium machining | FTHQ060404...L-... | 0.5 - 1.5 | | | | | |
| | FTHQ060404...R-... | 0.5 - 1.5 | | | | | |
| | FTHQ060408...L-... | 0.5 - 1.5 | | | | | |
| | FTHQ060408...R-... | 0.5 - 1.5 | | | | | |
| | FTHQ from ø 30 mm | | | | | | |
| | FTHQ090504...L-... | 0.5 - 2.0 | | | | | |
| | FTHQ090504...R-... | 0.5 - 2.0 | | | | | |
| | FTHQ090508...L-... | 0.5 - 2.0 | 30934214 | 30934215 | | 30934214 | 30934160 |
| | FTHQ090508...R-... | 0.5 - 2.0 | | | | | 30950130 |
| | FTHQ from ø 40 mm | | | | | | |
| | FTHQ120604...L-... | 0.5 - 2.0 | | | | | |
| | FTHQ120604...R-... | 0.5 - 2.0 | | | | | |
| FTHQ120608...L-... | 0.5 - 2.0 | 30934231 | 30934232 | | 30934231 | 30934179 | |
| FTHQ120608...R-... | 0.5 - 2.0 | | | | | 30950135 | |

M₁ Stainless steelM₂ Heat-resistant cast steel (turbocharger materials)Specified *a_p* ranges are recommendations and may vary depending on the material being machined.

FTHQ

Tangential indexable inserts, four cutting edges, blind bore, with arc shaped land

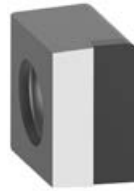


| Workpiece material | P | | M | |
|-----------------------|----------------------------------|-------------------------------|----------------------------------|-------------------------------|
| | Unalloyed ← Wear-resistant | Alloyed → Tough/Ductile | Unalloyed ← Wear-resistant | Alloyed → Tough/Ductile |
| Substrate | Carbide | | Carbide | |
| Coating | CVD | | CVD | |
| Cutting material type | HC740 | | HP945 | |

| | | | | | |
|--------------------------|--------------------------|-----------------|----------|----------|--|
| Cutting edge design | | A53 | A53 | A32 | |
| FTHQ from ø 30 mm | | a_p max. [mm] | | | |
| Roughing | FTHQ090508...L00B016-... | 1.5 - 3.0 | 30980181 | 30934058 | |
| | | 1.5 - 4.0 | | 30934059 | |
| | FTHQ090512...L00B016-... | 1.5 - 3.0 | 30934075 | 30934076 | |
| | | 1.5 - 4.0 | | | |
| | FTHQ from ø 40 mm | | | | |
| | FTHQ120608...L00B021-... | 1.5 - 3.0 | 30934081 | 30934082 | |
| | 1.5 - 5.0 | | | | |
| FTHQ120612...L00B021-... | 1.5 - 3.0 | 30934087 | 30934088 | | |
| | 1.5 - 5.0 | | | | |

| | | | | | |
|--------------------------|--------------------------|-----------------|----------|--|--|
| Cutting edge design | | A32 | | | |
| FTHQ from ø 22 mm | | a_p max. [mm] | | | |
| Medium machining | FTHQ060404...L00B012-... | 0.5 - 1.5 | | | |
| | FTHQ060408...L00B012-... | 0.5 - 1.5 | | | |
| | FTHQ from ø 30 mm | | | | |
| | FTHQ090504...L00B016-... | 0.5 - 2.0 | 30950123 | | |
| | FTHQ090508...L00B016-... | 0.5 - 2.0 | 30901249 | | |
| | FTHQ from ø 40 mm | | | | |
| FTHQ120604...L00B021-... | 0.5 - 2.0 | | | | |
| FTHQ120608...L00B021-... | 0.5 - 2.0 | 30934113 | | | |
| FTHQ120612...L00B021-... | 0.5 - 2.0 | | | | |

Specified a_p ranges are recommendations and may vary depending on the material being machined.



Tipped variant, single edge:

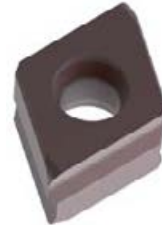
A79, A80

| K | | K | | N | | |
|-------------------------|----------|------------------------|----------|-------------------------|----------|------------------------|
| GJL ← Wear-resistant | | GJS → Tough/Ductile | | GJL ← Wear-resistant | | GJS → Tough/Ductile |
| Carbide | | Carbide | | Carbide | | PCD |
| CVD | | PVD | | - | | - |
| HC725 | HC740 | HP930 | HP945 | HU616 | | PU617 |
| H02 | H02 | H02 | H02 | | | A80 |
| 30934071 | 30934057 | 30934073 | 30988760 | | | 30492784 |
| 30934077 | 30988757 | 30934079 | 30988761 | | | |
| 30934083 | 30988758 | 30934085 | 30988762 | | | |
| 30934089 | 30988759 | 30934091 | 30988763 | | | |
| A32 | A32 | A32 | A32 | A30 | A79 | A80 |
| 30679879 | 30950121 | 30934095 | 30988764 | 30477935 | | |
| 30679880 | 30950122 | 30934099 | 30988765 | 30477936 | 30492816 | |
| 30679881 | 30950123 | 30934103 | 30988766 | 30477942 | | |
| 30679882 | 30901249 | 30934111 | 30934106 | 30478043 | | 30492784 |
| 30934115 | 30934113 | 30934118 | 30934114 | 30477950 | | |
| | | | | 30477952 | | |
| | | | | 30492842 | | |

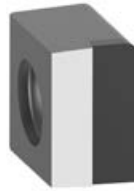
Specified a_p ranges are recommendations and may vary depending on the material being machined.

FTHQ

Tangential indexable inserts, four cutting edges, through bore, with arc shaped land



| Workpiece material | P | | M | K | | |
|-----------------------|-------------------------------|----------|-------------------------------|----------|-------------------------------|----------|
| | Carbide | | Carbide | Carbide | | |
| Substrate | CVD | | PVD | CVD | | |
| Coating | HC740 | | HP945 | HC750 | HC725 | HC740 |
| Cutting material type | A53 | | A53 | A32 | H02 | H02 |
| Cutting edge design | FTHQ from \varnothing 30 mm | | FTHQ from \varnothing 40 mm | | FTHQ from \varnothing 22 mm | |
| a_p max. [mm] | 1.5 - 3.0 | | 1.5 - 4.0 | | 0.5 - 1.5 | |
| Roughing | FTHQ090508...L10B016-... | 30934120 | 30934121 | 30934122 | 30934124 | 30988767 |
| | FTHQ120608...L10B021-... | 30934128 | 30934129 | | 30934130 | 30988768 |
| Medium machining | FTHQ060408...L10B012-... | | | | 30679886 | 30942386 |
| | FTHQ090508...L10B016-... | 30942389 | 30942390 | | 30679888 | 30942389 |
| | FTHQ120608...L10B021-... | 30942391 | 30942392 | | 30789889 | 30942391 |
| | | | | | | |



Tipped variant, single edge:

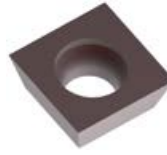
A79, A80

| K | | N | | |
|-------------------------|----------|------------------------|----------|----------|
| GJL ← Wear-resistant | | GJS → Tough/Ductile | | |
| Carbide | | Carbide | PCD | |
| PVD | | - | - | |
| HP930 | HP945 | HU616 | PU617 | |
| H02 | H02 | | | A80 |
| 30934126 | 30988769 | | | 30492850 |
| 30934132 | 30988770 | | | 30668155 |
| A32 | A32 | A30 | A79 | A80 |
| 30942394 | 30942388 | 30477937 | 30492868 | |
| 30942397 | 30942390 | 30477944 | | 30492850 |
| 30942400 | 30942392 | 30477953 | | 30668155 |

Specified a_p ranges are recommendations and may vary depending on the material being machined.

STHD - STHE

Tangential indexable inserts, four cutting edges, chamfers, neutral design



Tipped variant, single edge:




D80

| Workpiece material | M ₂ | K | | | N | | |
|-----------------------|--------------------------------|-----------|----------|----------|----------|----------|----------|
| | Substrate | Carbide | Carbide | | Carbide | PCD | |
| Coating | PVD | CVD | PVD | - | - | | |
| Cutting material type | HP930 | HC725 | HP930 | HU616 | PU617 | | |
| Cutting edge design | D02 | D02 | D02 | D00 | D80 | | |
| STH_06 | <i>a_p max. [mm]</i> | | | | | | |
| Chamfering | STHD060300...N-... | 0.1 - 4.2 | 30950141 | 30774242 | 30950141 | 30213884 | 30493003 |
| | STHE060300...N-... | 0.1 - 4.2 | 30950142 | 30789899 | 30950142 | 30228119 | 30370122 |
| | STH_09 | | | | | | |
| | STHD09T300...N-... | 0.1 - 6.3 | 30950143 | 30631370 | 30950143 | 30215016 | 30493005 |
| STHE09T300...N-... | 0.1 - 6.3 | 30950144 | 30631351 | 30950144 | 30257365 | 30493006 | |

M₂ Heat-resistant cast steel (turbocharger materials)

Specified *a_p* ranges are recommendations and may vary depending on the material being machined.







Accessories for tangential indexable inserts

| Indexable insert | Size of indexable insert | Clamping screw | | | | | Screwdriver |
|---|--------------------------|-----------------|-----------------------|------------------------|-----------|-----------|-------------|
| | | Dimension [MxL] | Description | Tightening torque [Nm] | Torx size | Order no. | Order no. |
| CT...  | 0604 | M2.5 x 8.7 | MN659 M2.5x8.7-TX8-IP | 1 | TX8-IP | 30533284 | 30414760 |
| | 0905 | M3.5 x 11 | MN659 M3.5x11-TX10-IP | 2.8 | TX10-IP | 10105079 | 30414763 |
| | 1206 | M5 x 14 | MN659 M5x14-TX20-IP | 7.5 | TX20-IP | 10006485 | 30414766 |
| FT...  | 0604 | M2.5 x 8.7 | MN659 M2.5x8.7-TX8-IP | 1 | TX8-IP | 30533284 | 30414760 |
| | 0905 | M3.5 x 11 | MN659 M3.5x11-TX10-IP | 2.8 | TX10-IP | 10105079 | 30414763 |
| | 1206 | M5x14 | MN659 M5x14-TX20-IP | 7.5 | TX20-IP | 10006485 | 30414766 |
| ST...  | 0603 | M2.5 x 6 | MN659 M2.5x6-TX8-IP | 1 | TX8-IP | 10105073 | 30414760 |
| | 09T3 | M3.5x9 | MN659 M3.5x9-TX15-IP | 2.8 | TX15-IP | 10105078 | 30414764 |

High-temperature screw paste

| | | |
|--|----------|--|
| Ceramic paste/re-sealable PE tube 30 g | 30861389 | |
|--|----------|--|

Accessories for radial indexable inserts

| Indexable insert | Size of indexable insert | Clamping screw | | | | | Screwdriver |
|---|--------------------------|-----------------|-----------------------|------------------------|-----------|-----------|-------------|
| | | Dimension [MxL] | Description | Tightening torque [Nm] | Torx size | Order no. | Order no. |
| CC...  | 0602 | M2.5 x 6 | MN659 M2.5x6-TX8-IP | 1 | TX8-IP | 10105073 | 30414760 |
| | 09T3 | M3.5 x 9 | MN659 M3.5x9-TX15-IP | 2.8 | TX15-IP | 10105078 | 30414764 |
| | 1204 | M5 x 11 | MN659 M5x11-TX20-IP | 7.5 | TX20-IP | 10105082 | 30414766 |
| DC...  | 0702 | M2.5 x 6 | MN659 M2.5x6-TX8-IP | 1 | TX8-IP | 10105073 | 30414760 |
| | 11T3 | M3.5 x 9 | MN659 M3.5x9-TX15-IP | 2.8 | TX15-IP | 10105078 | 30414764 |
| | 1504 | M5x11 | MN659 M5x11-TX20-IP | 7.5 | TX20-IP | 10105082 | 30414766 |
| SP...  | 0603 | M2.5 x 6 | MN659 M2.5x6-TX8-IP | 1 | TX8-IP | 10105073 | 30414760 |
| TC...  | 06T1 | M2 x 4.95 | MN659 M2x4.95-TX6-IP | 0.5 | TX6-IP | 10002712 | 30414758 |
| | 0902 | M2.2 x 5.5 | MN659 M2.2x5.5-TX7-IP | 0.8 | TX7-IP | 10105070 | 30414759 |
| | 1102 | M2.5 x 6 | MN659 MN2.5x6-TX8-IP | 1 | TX8-IP | 10105073 | 30414760 |
| | 16T3 | M3.5 x 9 | MN659 M3.5x9-TX15-IP | 2.8 | TX15-IP | 10105078 | 30414764 |
| | 2204 | M5x11 | MN659 M5x11-TX20-IP | 7.5 | TX20-IP | 10105082 | 30414766 |
| SC...  | 09T3 | M3.5 x 9 | MN659 M3.5x9-TX15-IP | 2.8 | TX15-IP | 10105078 | 30414764 |
| | 1204 | M5 x 11 | MN659 M5x11-TX20-IP | 7.5 | TX20-IP | 10105082 | 30414766 |
| VB-/VC...  | 1103 | M2.5 x 6 | MN659 MN2.5x6-TX8-IP | 1 | TX8-IP | 10105073 | 30414760 |
| | 1604 | M3.5 x 9 | MN659 M3.5x9-TX15-IP | 2.8 | TX15-IP | 10105078 | 30414764 |

Cutting data recommendation for boring tools with indexable inserts (1/2)

Cutting speed [m/min]

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | PVD-coated | | | | |
|-------|--------------------|--|--|------------|---------|---------|---------|---------|
| | | | | HP615 | HP880 | HP885 | HP895 | |
| | | | | | | | | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 | | 100-220 | | 100-220 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 | | 100-220 | | 100-220 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 | | 100-220 | | 100-220 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1,400 | | 100-200 | | 100-200 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 | | 80-200 | | 80-200 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1,000 | | 80-200 | | 80-200 |
| | | P3.3 | Tool steels, roller bearing steels, spring steels and high-speed steels** | < 1500 | | | | |
| | P4 | P4.1 | Tool, bearing, spring and high-speed steels** | | | 80-200 | | 80-200 |
| | P5 | P5.1 | Stainless steels, ferritic and martensitic | | | 80-200 | | 80-200 |
| | P6 | P6.1 | Cast steel | | | | | |
| M | M1 | M1.1 | Stainless cast steel, ferritic and martensitic | < 700 | | 150-220 | 100-180 | 150-220 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1,000 | | 120-200 | 100-160 | 120-200 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 | | 100-180 | 80-150 | 100-180 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 | | 100-180 | 60-140 | 100-180 |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 | | | | |
| | | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 | | | | |
| | K2 | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 | | | | |
| | | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 | | | | |
| | K3 | K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 | | | | |
| | | K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 | | | | |
| N | N1 | N1.1 | Aluminium, unalloyed and alloyed < 3 % Si | | 150-600 | | | |
| | | N1.2 | Aluminium, alloyed ≤ 7 % Si | | 100-500 | | | |
| | | N1.3 | Aluminium, alloyed > 7-12 % Si | | 100-400 | | | |
| | | N1.4 | Aluminium, alloyed > 12 % Si | | | | | |
| | N2 | N2.1 | Copper, non-alloy and low-alloy | < 300 | 100-350 | | | |
| | | N2.2 | Copper, alloy | > 300 | 100-300 | | | |
| | | N2.3 | Brass, bronze, gunmetal | < 1,200 | 100-250 | | | |
| | N3 | N3.1 | Graphite, > 8 μm | < 1,200 | | | | |
| | | N3.2 | Graphite, ≤ 8 μm | | | | | |
| | N4 | N4.1 | Plastic, thermoplastics | | | | | |
| N4.2 | | Plastic, thermosets | | | | | | |
| N4.3 | | Plastic, foams | | | | | | |
| K1+K2 | K1.1, K1.2 | Mixed machining of cast iron (GJL and GJS) | | | | | | |
| K+P | K1.1, sintered | Mixed machining of cast iron and sintered steel | | | | | | |
| N+K | N1.2, K1.1 | Mixed machining of aluminium and cast iron (GJL) | | | | | | |
| | N1.2, K1.2 | Mixed machining of aluminium and cast iron (GJS) | | | | | | |
| N+P | N1.2, sintered | Mixed machining of aluminium and sintered steel | | | | | | |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8 % then select the next highest MAPAL machining group.

| Carbide | | | | | | | PCD | | | |
|---------|---------|---------|-----------------------------|---------|---------|---------|----------|----------|----------|----------|
| | | | PVD-coated, mixed machining | | | | uncoated | uncoated | | |
| HP930 | HP945 | HP950 | HP525-P | HP530-P | HP540-P | HP545-P | HU616 | PU617 | PU660 | PU670 |
| | 100-180 | 100-160 | | | | | | | | |
| | 100-180 | 100-160 | | | | | | | | |
| | 100-180 | 100-160 | | | | | | | | |
| | 80-150 | 80-150 | | | | | | | | |
| | 100-180 | 100-160 | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | | | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | 70-120 | 70-120 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 140-220 | 120-200 | | | | | | | | | |
| 120-200 | 120-180 | | | | | | | | | |
| 120-180 | 120-180 | | | | | | | | | |
| 80-140 | 80-120 | | | | | | | | | |
| 60-130 | 60-100 | | | | | | | | | |
| 60-120 | 60-100 | | | | | | | | | |
| | | | | | | | 150-500 | 450-2200 | 450-2200 | 410-1980 |
| | | | | | | | 100-450 | 400-1700 | 400-1700 | 360-1530 |
| | | | | | | | 100-400 | 350-1300 | 350-1300 | 320-1170 |
| | | | | | | | | 200-800 | 200-800 | 180-720 |
| | | | | | | | 100-250 | 250-600 | 250-600 | 230-540 |
| | | | | | | | 100-220 | 200-600 | 200-600 | 180-540 |
| | | | | | | | 80-220 | 200-500 | 200-500 | 180-450 |
| | | | | | | | 120-480 | 300-600 | 300-600 | 270-540 |
| | | | | | | | | | | |
| | | | | | | | 250-500 | 400-1000 | 400-1000 | 360-900 |
| | | | | | | | 250-500 | 400-1000 | 400-1000 | 360-900 |
| | | | | | | | | | | |
| | | | 120-220 | 120-220 | 120-200 | | | | | |
| | | | | 120-200 | 120-200 | 110-200 | | | | |
| | | | 120-300 | 120-300 | 120-230 | | | | | |
| | | | 120-280 | 120-280 | 120-230 | | | | | |
| | | | | 120-220 | 120-230 | 110-200 | | | | |

The specified machining values are guide values.
 The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendation for boring tools with indexable inserts (2/2)

Cutting speed [m/min]

| MMG* | Workpiece material | | Strength/hardness [N/mm ²] [HRC] | PVD-coated | | | | |
|-------|--------------------|--|--|------------|---------|---------|---------|---------|
| | | | | HP615 | HP880 | HP885 | HP895 | |
| | | | | | | | | |
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 | | 100-220 | | 100-220 |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1,200 | | 100-220 | | 100-220 |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 | | 100-220 | | 100-220 |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1,400 | | 100-200 | | 100-200 |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels** | < 800 | | 80-200 | | 80-200 |
| | | P3.2 | Tool, bearing, spring and high-speed steels** | < 1,000 | | 80-200 | | 80-200 |
| | | P3.3 | Tool steels, roller bearing steels, spring steels and high-speed steels** | < 1500 | | | | |
| | P4 | P4.1 | Tool, bearing, spring and high-speed steels** | | | 80-200 | | 80-200 |
| P5 | P5.1 | Stainless steels, ferritic and martensitic | | | 80-200 | | 80-200 | |
| P6 | P6.1 | Cast steel | | | | | | |
| M | M1 | M1.1 | Stainless cast steel, ferritic and martensitic | < 700 | | 150-220 | 100-180 | 150-220 |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1,000 | | 120-200 | 100-160 | 120-200 |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 | | 100-180 | 80-150 | 100-180 |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1,000 | | 100-180 | 60-140 | 100-180 |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 | | | | |
| | | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 | | | | |
| | K2 | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 | | | | |
| | | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 | | | | |
| | K3 | K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 | | | | |
| | | K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 | | | | |
| N | N1 | N1.1 | Aluminium, unalloyed and alloyed < 3 % Si | | 150-600 | | | |
| | | N1.2 | Aluminium, alloyed ≤ 7 % Si | | 100-500 | | | |
| | | N1.3 | Aluminium, alloyed > 7-12 % Si | | 100-400 | | | |
| | | N1.4 | Aluminium, alloyed > 12 % Si | | | | | |
| | N2 | N2.1 | Copper, non-alloy and low-alloy | < 300 | 100-350 | | | |
| | | N2.2 | Copper, alloy | > 300 | 100-300 | | | |
| | | N2.3 | Brass, bronze, gunmetal | < 1,200 | 100-250 | | | |
| | N3 | N3.1 | Graphite, > 8 µm | < 1,200 | | | | |
| | | N3.2 | Graphite, ≤ 8 µm | | | | | |
| | N4 | N4.1 | Plastic, thermoplastics | | | | | |
| N4.2 | | Plastic, thermosets | | | | | | |
| N4.3 | | Plastic, foams | | | | | | |
| K1+K2 | K1.1, K1.2 | Mixed machining of cast iron (GJL and GJS) | | | | | | |
| K+P | K1.1, sintered | Mixed machining of cast iron and sintered steel | | | | | | |
| N+K | N1.2, K1.1 | Mixed machining of aluminium and cast iron (GJL) | | | | | | |
| | N1.2, K1.2 | Mixed machining of aluminium and cast iron (GJS) | | | | | | |
| N+P | N1.2, sintered | Mixed machining of aluminium and sintered steel | | | | | | |

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8 % then select the next highest MAPAL machining group.

| Carbide | | | | | | | PCD | | | |
|---------|---------|---------|-----------------------------|---------|---------|---------|----------|----------|----------|----------|
| | | | PVD-coated, mixed machining | | | | uncoated | uncoated | | |
| HP930 | HP945 | HP950 | HP525-P | HP530-P | HP540-P | HP545-P | HU616 | PU617 | PU660 | PU670 |
| | 100-180 | 100-160 | | | | | | | | |
| | 100-180 | 100-160 | | | | | | | | |
| | 100-180 | 100-160 | | | | | | | | |
| | 80-150 | 80-150 | | | | | | | | |
| | 100-180 | 100-160 | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | | | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | 80-130 | 90-130 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | 70-120 | 70-120 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 140-220 | 120-200 | | | | | | | | | |
| 120-200 | 120-180 | | | | | | | | | |
| 120-180 | 120-180 | | | | | | | | | |
| 80-140 | 80-120 | | | | | | | | | |
| 60-130 | 60-100 | | | | | | | | | |
| 60-120 | 60-100 | | | | | | | | | |
| | | | | | | | 150-500 | 450-2200 | 450-2200 | 410-1980 |
| | | | | | | | 100-450 | 400-1700 | 400-1700 | 360-1530 |
| | | | | | | | 100-400 | 350-1300 | 350-1300 | 320-1170 |
| | | | | | | | | 200-800 | 200-800 | 180-720 |
| | | | | | | | 100-250 | 250-600 | 250-600 | 230-540 |
| | | | | | | | 100-220 | 200-600 | 200-600 | 180-540 |
| | | | | | | | 80-220 | 200-500 | 200-500 | 180-450 |
| | | | | | | | 120-480 | 300-600 | 300-600 | 270-540 |
| | | | | | | | | | | |
| | | | | | | | 250-500 | 400-1000 | 400-1000 | 360-900 |
| | | | | | | | 250-500 | 400-1000 | 400-1000 | 360-900 |
| | | | | | | | | | | |
| | | | 120-220 | 120-220 | 120-200 | | | | | |
| | | | | 120-200 | 120-200 | 110-200 | | | | |
| | | | 120-300 | 120-300 | 120-230 | | | | | |
| | | | 120-280 | 120-280 | 120-230 | | | | | |
| | | | | 120-220 | 120-230 | 110-200 | | | | |

The specified machining values are guide values.
 The optimum data for the respective machining task should be determined during the test or machining.



TECHNICAL APPENDIX

Notes on application, handling and cutting data





Drivingsanstellung - Anzeige

50.5

01/07

NC/UES/4_1471_SPL_STANDARDPROG/SPL_2_2

RESET

UES

| Position [mm] | |
|---------------|---------|
| X | 226.533 |
| Y | 33.867 |
| Z | 46.362 |
| C | 0.000 |
| B | 0.000 |

TFS

| | | | | | |
|----|--------------|----|-------|--------|-----------|
| T | SPL_STANDARD | 01 | 0.000 | 1100 | 1.137.750 |
| F | SPL_STANDARD | | 0.000 | | |
| S1 | Master | | 0 | mm/min | 0.0% |

Planfräsen

Schwenken

Zoom betuert

Control console with keyboard and rotary knobs.

Emergency stop button (red)

Rotary knobs (silver)

Keyboard (white)

Touchscreen area

Technical appendix

Drilling from solid

| | |
|---|-----|
| Application notes | |
| TTD-Tritan replaceable head drill | 740 |
| Deep drilling | 742 |
| Indexable insert drills | 744 |
| Instructions for use | |
| QTD indexable insert drill | 746 |
| TTD replaceable head drill..... | 748 |
| TTD-Tritan replaceable head drill | 750 |

Reaming and fine boring

| | |
|--|-----|
| Lead geometries and rake angles | 752 |
| Instructions for use | |
| HFS system | 754 |
| HPR400 and HPR400 plus | 756 |
| Single-bladed reamers | 758 |
| EasyAdjust system | 760 |
| Troubleshooting | 764 |

Boring and turning

| | |
|---|-----|
| Terminology and formulae | 766 |
| Guide values for the minimum boring diameter | 770 |
| Troubleshooting | |
| Forms of wear and tear on indexable inserts | 772 |
| Inspired by practical applications, designed for practical applications | 773 |

Application notes for TTD-Tritan replaceable head drills

The triple-edge TTD-Tritan replaceable head drill guarantees optimal torque transmission at the connection and high changeover and radial run-out accuracy at the same time. The replaceable head can be changed quickly and reliably. Incorrect positioning is impossible. A suitable TORX® wrench with a handle is included with the tool to clamp the replaceable head to the replaceable head holder precisely via the special clamping screw.

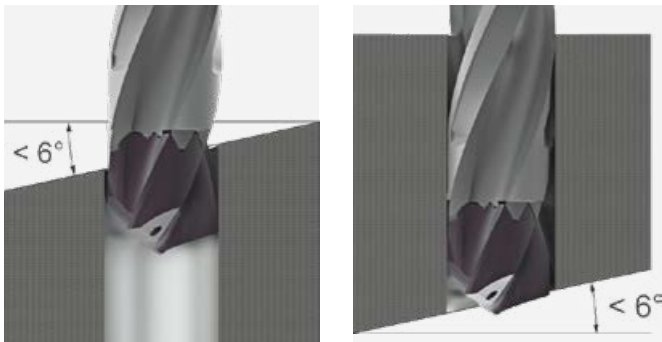
Coolant situation:

Coolant pressure as a function of the drilling depth: 3xD: 8 bar | 5xD: 12 bar



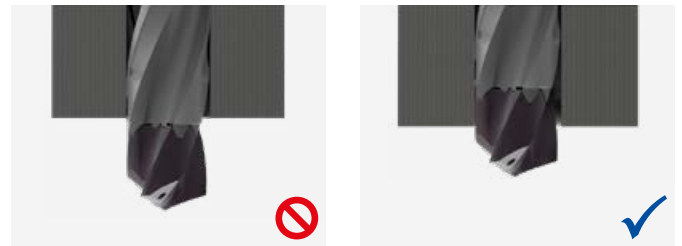
Maximum entry and outlet angle:

When tapping and at the outlet from inclined surfaces, reduce v_f by 50%.

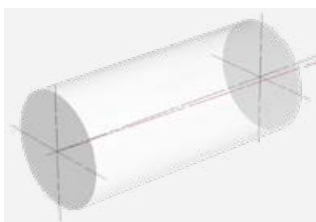


Through hole:

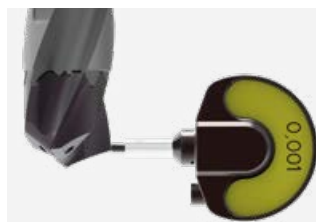
Do not reduce the cutting data at the bore outlet.



Radial run-out accuracy:



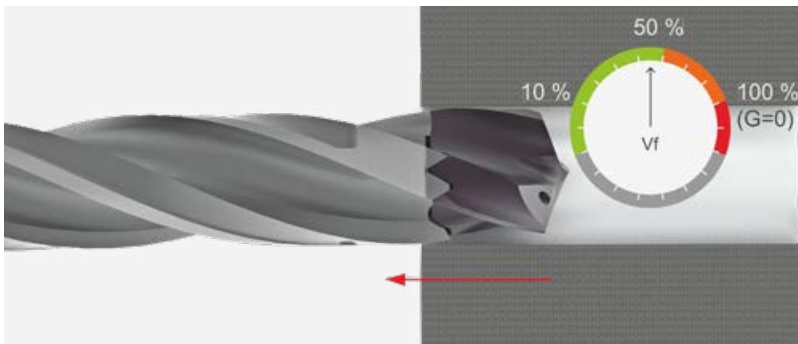
Max. 0.02 mm



Max. 0.04 mm

No rapid traverse on withdrawal:

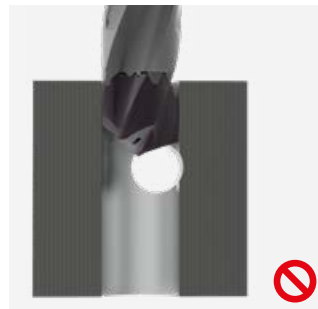
Five times the feed rate is recommended for the withdrawal speed.



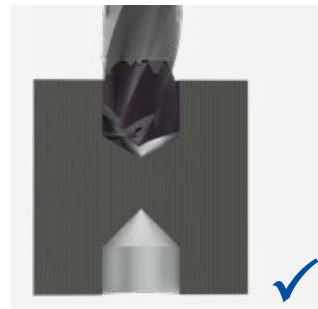
Machining situations:



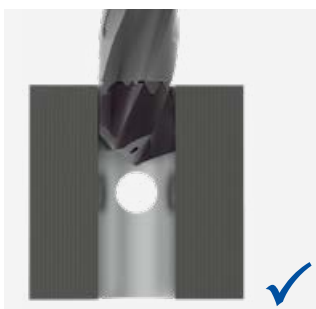
Bore eccentric;
chisel edge cutting



Bore eccentric;
chisel edge not cutting



Breakthrough to bore in opposite direc-
tion; $v_f = -50\%$



Bore centred and $\ll D$



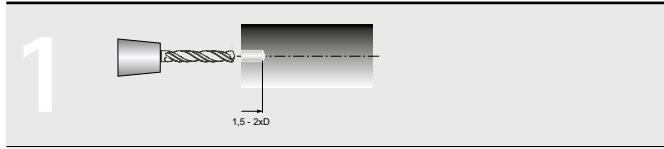
Bore centred and $\approx D$



Bore centred and $\gg D$

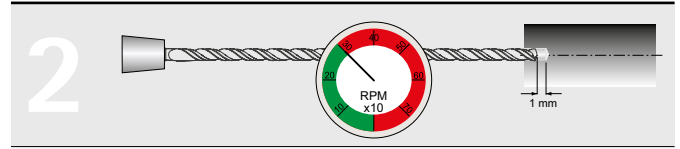
Deep drilling

For MEGA-Deep-Drill | MEGA-Deep-Drill-Alu



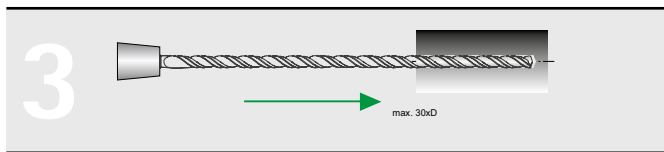
Making a pilot bore

- Recommendation for pilot drill, see following page (oder 0,01-0,02 mm größer als der Tiefbohrerdurchmesser)
- Pilot bore depth between 1.5 and 2xD



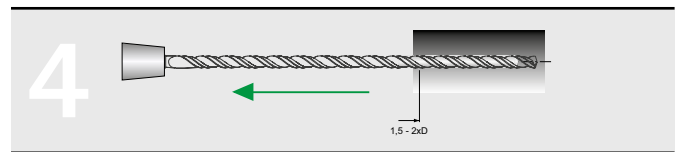
MEGA-Deep-Drill – entry into the pilot bore

- Entry at max. 300 min⁻¹ and v_f = 1000 mm/min
- Without coolant – up to 1 mm before the bottom of the pilot bore
- Turn on coolant



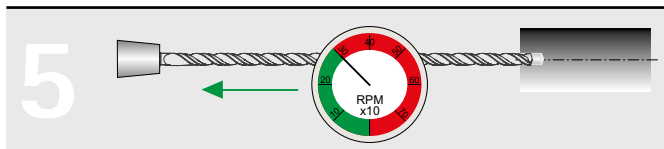
Drilling using a MEGA-Deep-Drill

- Cutting speed (v_c) and feed rate (f) according to table (see page 286). Drill without chip removal cycles



MEGA-Deep-Drill – moving back

- Move back at current spindle speed and double the feed (= 2 x v_f) to 1.5 – 2xD until you reach the end of the bore



MEGA-Deep-Drill – run out of the bore

- Switch off coolant
- Run out at max. 300 min⁻¹ and v_f = 1,000 mm/min

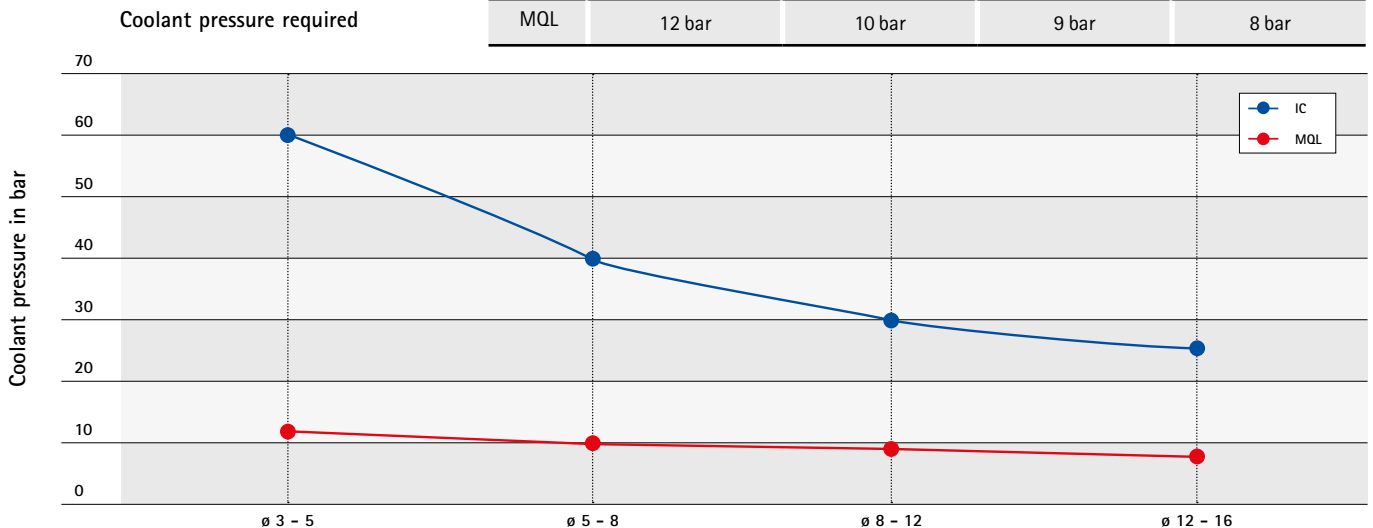
Application instructions for diameter ≤ 3 mm:

- Select a coolant type suitable for small tools for optimum cooling lubrication
- Effective filtration of the cooling medium prevents the cooling channels from becoming clogged up
- Select a suitable drilling cycle (drilling with chip removal cycles if necessary)

Coolant pressure required

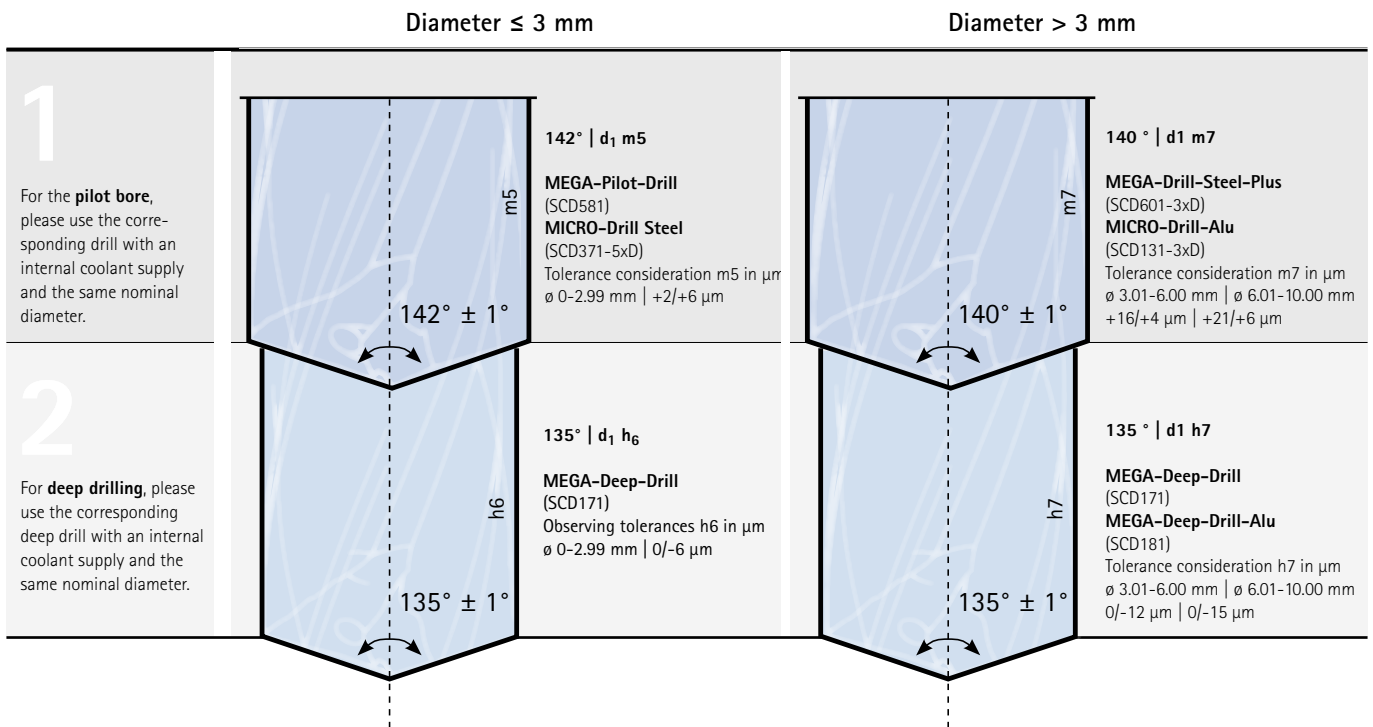
For MEGA-Deep-Drill | MEGA-Deep-Drill-Alu

| | ø 3 – 5 mm | ø 5 – 8 mm | ø 8 – 12 mm | ø 12 – 16 mm |
|-----|------------|------------|-------------|--------------|
| IC | 60 bar | 40 bar | 30 bar | 25 bar |
| MQL | 12 bar | 10 bar | 9 bar | 8 bar |



Deep drilling 15xD – 30xD in two steps:

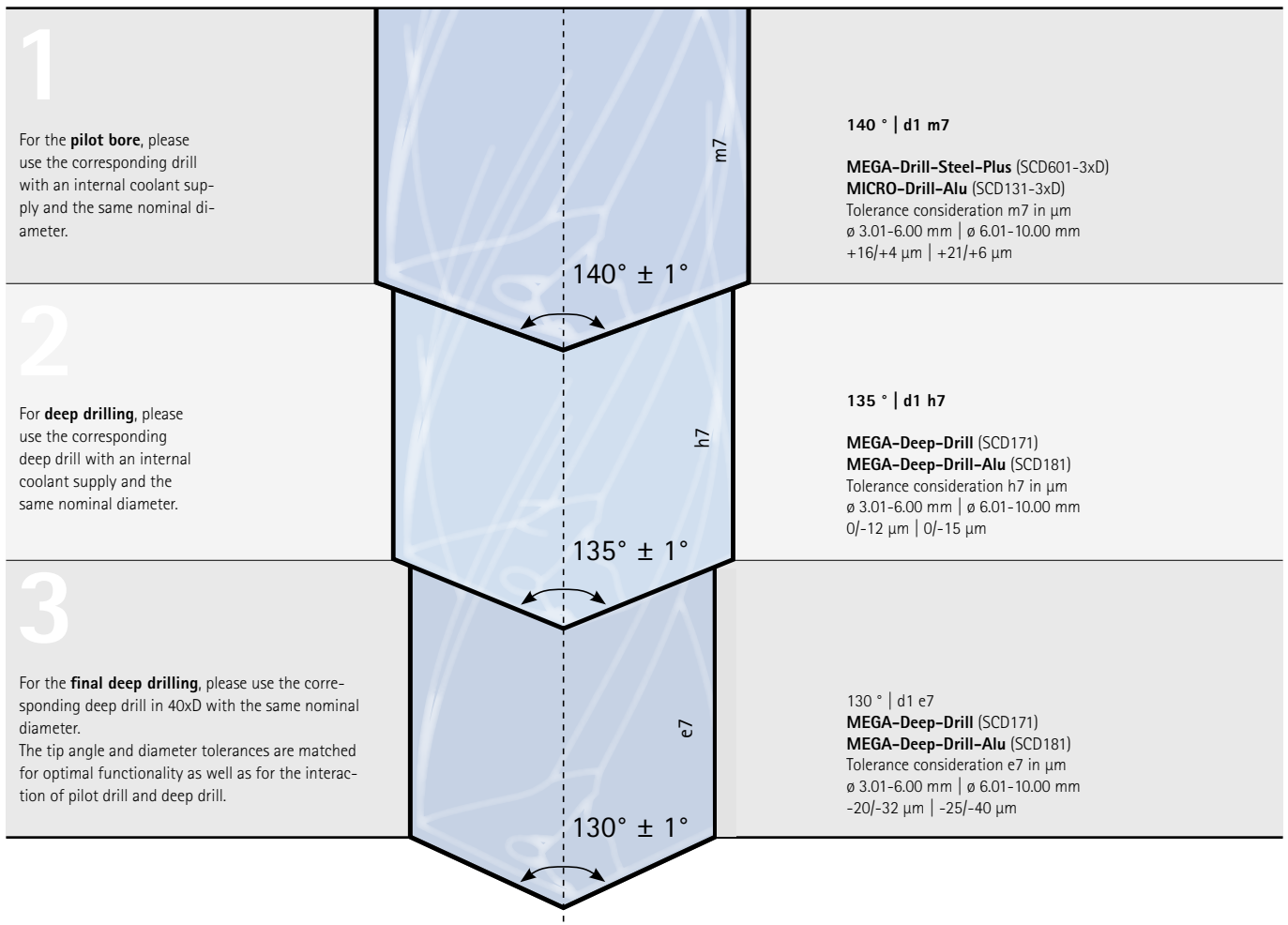
Deep drilling 15xD – 30xD with MEGA-Deep-Drill (SCD171) and/or MEGA-Deep-Drill-Alu (SCD181)



Deep drilling 40xD in three steps:

Deep drilling 40xD with MEGA-Deep-Drill (SCD171) and/or MEGA-Deep-Drill-Alu (SCD181)

Optimally designed for reliable machining.



Application notes for indexable insert drills

NOTES

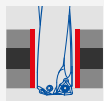
- Maximum tool length 5xD
- When using drills with a length/diameter ratio of more than three, the following reductions are recommended during tapping as well as during drill exit in relation to the cutting speed v_c and feed f :
 - 3xD: v_c -20 % | f -30 %
 - 4xD: v_c -30 % | f -40 %
 - 5xD: v_c -40 % | f -50 %



Ideally, the drilling situation is flat, countersunk or pre-milled.

If this is not the case, a feed reduction of 30 to 60 per cent is necessary in the following cases:

- Tapping and drill outlet on inclined and concave surfaces
- Bore entry into cross bores
- Stack bores
- Tapping on uneven surfaces
- Tapping on an edge
- Tapping on a spherical surface
- Tapping on a pointed contour
- Series of bores with overlaps
- Tapping a centring
- Boring not possible



Stack bores



Tapping on a spherical surface



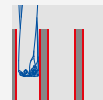
Through drilling with cross bore



Tapping on a pointed contour



Tapping on uneven surface



Series of bores are possible to a limited extent depending on the material



Tapping on an edge



Tapping a centring or recess bore



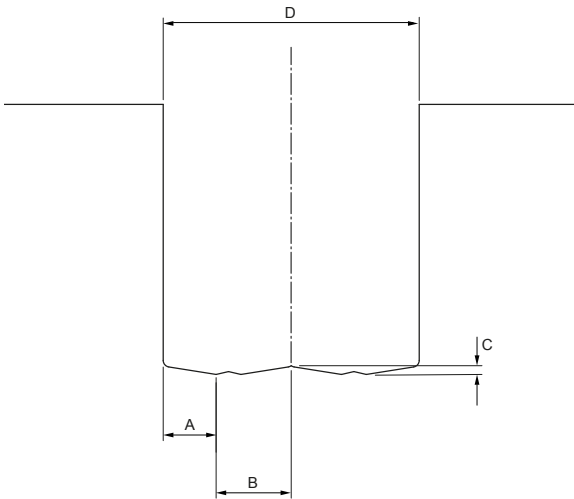
Tapping inclined surfaces / inclined bore outlet



Boring not possible

Topography at the bottom of the bore for blind bores

| | Diameter D [mm] | A* [mm] | B* [mm] | C* [mm] |
|-----------------------|--------------------|--|--|--|
| WOGT030206N-X40-HC698 | 16.00 - 20.90 | 3.61 (at \varnothing 16) - 3.52 (at \varnothing 20.9) | 3.89 (at \varnothing 16) - 6.93 (at \varnothing 20.9) | 0.40 (at \varnothing 16) - 0.71 (at \varnothing 20.9) |
| WOGT040206N-X40-HC698 | 21.00 - 25.90 | 4.06 (at \varnothing 21) - 4.00 (at \varnothing 25.9) | 6.44 (at \varnothing 21) - 8.95 (at \varnothing 25.9) | 0.76 (at \varnothing 21) - 0.98 (at \varnothing 25.9) |
| WOGT053006N-X40-HC698 | 26.00 - 30.90 | 5.18 (at \varnothing 26) - 5.11 (at \varnothing 30.9) | 7.82 (at \varnothing 26) - 10.34 (at \varnothing 30.9) | 0.81 (at \varnothing 26) - 1.04 (at \varnothing 30.9) |
| WOGT063008N-X40-HC698 | 31.00 - 44.90 | 6.41 (at \varnothing 31) - 6.28 (at \varnothing 44.9) | 9.09 (at \varnothing 31) - 16.18 (at \varnothing 44.9) | 1.06 (at \varnothing 31) - 1.62 (at \varnothing 44.9) |
| WOGT073808N-X40-HC698 | 45.00 - 54.90 | 7.70 (at \varnothing 45) - 7.63 (at \varnothing 54.9) | 14.80 (at \varnothing 45) - 19.82 (at \varnothing 54.9) | 1.57 (at \varnothing 45) - 7.63 (at \varnothing 54.9) |

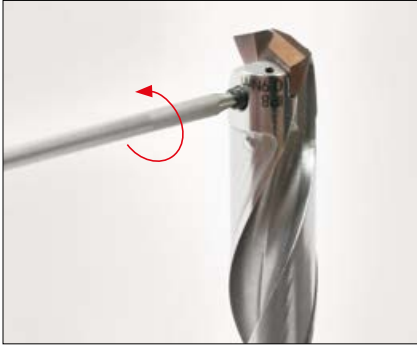
**Safety instruction:**

When drilling through holes, a sharp-edged bore cover or disc falls off as the drill leaves the bore. There is a danger that this disc will be thrown off and cause damage or injuries. To prevent this situation arising, appropriate safety precautions are to be taken.

* A, B and C vary due to the installation position and contact angle of the indexable inserts.

Instructions for using the QTD indexable insert drill

Easily change and set the QTD cutting edge



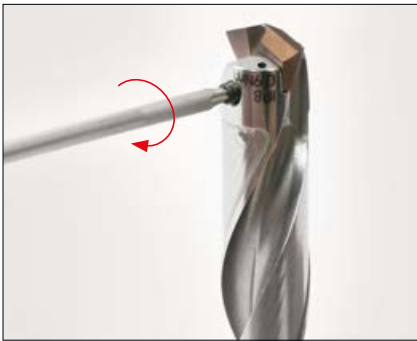
1. Undo the special clamping screw using the supplied TORX® PLUS wrench by turning it anticlockwise.



2. Remove the indexable insert from the insert seat.



3. Clean the insert seat using compressed air.



4. Fit the new indexable insert in the insert seat. Hand tighten the special clamping screw using the supplied TORX® PLUS wrench by turning it clockwise.



5. Tighten the special clamping screw to the specified tightening torque.

NOTES

- Use original screws only!
- The special clamping screw must be replaced upon the 5th drill head change at the latest
- The applicable tightening torque is printed on the tool

Result:

The indexable insert has now been successfully changed and the tool can be used.



Instructions for using the TTD replaceable head drill

Practical notes

PILOTING

- A pilot bore is recommended for drilling depths $\geq 8xD$
- For type 02 replaceable drill heads, a pilot bore is recommended for drilling depth $\geq 5xD$
- For a pilot bore with type 02 replaceable drill heads, a reduction of the feed stated by 50% is recommended
- For a pilot bore with type 01 and type 03 replaceable drill heads, the recommended machining values can be used
- Drill into the pilot bore with the same drill head geometry and reduced machining values (recommendation: $v_c = 50\%$ and approx. $f = 50\%$) up to 1 mm before the bottom of the bore
- Tapping after piloting is then undertaken using the recommended machining values (see pages 224–227)

NOTES ON DRILLING USING 12xD TOOL HOLDERS

- At a drilling depth of 12xD a pilot bore is necessary
- Coolant pressure must be at least 40 bar
- During the machining of steel materials, chip removal may be necessary
- Usage on a lathe is possible with a powered tool
- Increasing the cutting speed by 30% over the standard value is recommended

Stationary tool

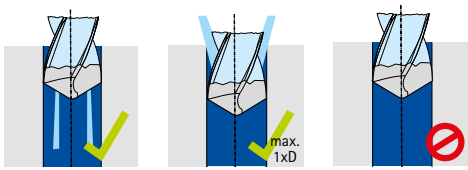
If the tool is stationary, position the chip space runout horizontally so that chip congestion does not occur.

Through hole

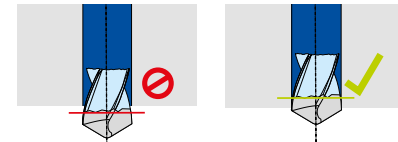
Do not reduce the cutting data at the bore outlet.

Coolant situation

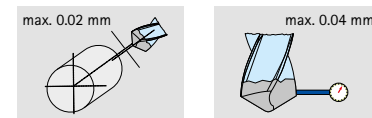
Coolant pressure as a function of the drilling depth:



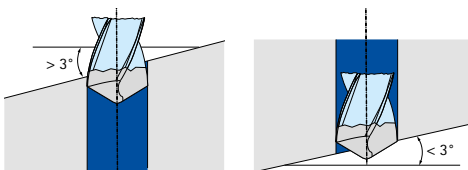
1xD: 8 bar | 3xD: 8 bar | 5xD: 12 bar | 8xD: 25 bar | 12xD: 40 bar



Radial run-out accuracy

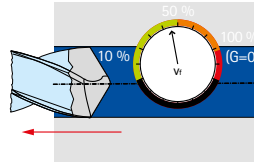


Max. entry and exit angle

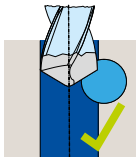


No rapid traverse on withdrawal

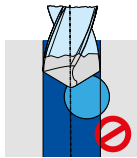
Five times the feed speed is recommended for the withdrawal speed.



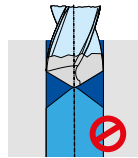
Machining situations



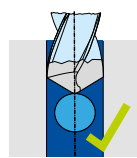
Bore eccentric;
chisel edge cutting



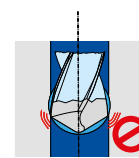
Bore eccentric;
chisel edge not cutting



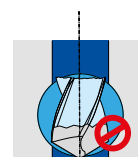
Breakthrough to bore in
opposite direction



Bore centred and
<< D



Bore centred and $\approx D$



Bore centred and $\gg D$

Assembly

Undoing the drill head

1. Whenever the drill head is changed, check that the clamping screw is tight. If the clamping screw can be undone easily, the clamping screw must be replaced. Only use the original clamping screws!



2. Undo the clamping screw with the aid of the supplied hex-wrench.



3. Pull the drill head out of the serration.

Note:

At the latest on the 8th drill head change, the clamping screw must be replaced.

Clamping the drill head



1. Clean the TTS connection on the tool holder with a brush.



2. Fit the new drill head to the tool holder.



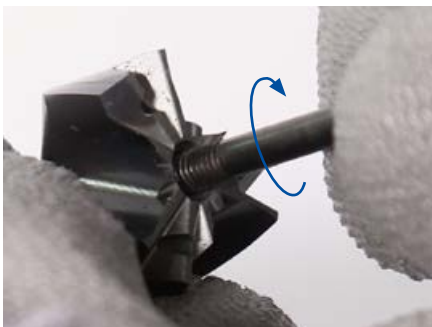
3. Hand tighten the clamping screw clockwise.

Note:

Ensure the positioning aid on the drill head is engaged in the positioning aid on the tool holder and that the chip flute and serration on the drill head and tool holder are aligned.

Instructions for using the TTD-Tritan replaceable head drill

Tool assembly



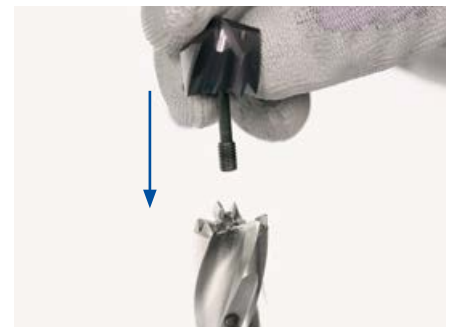
1. Insert and tighten the special clamping screw

Fit the special clamping screw into the bore on the replaceable drill head with the small thread end facing forward. Then screw in the special clamping screw clockwise to the stop.



2. Clean with compressed air

Clean the replaceable head holder and replaceable drill head using compressed air.

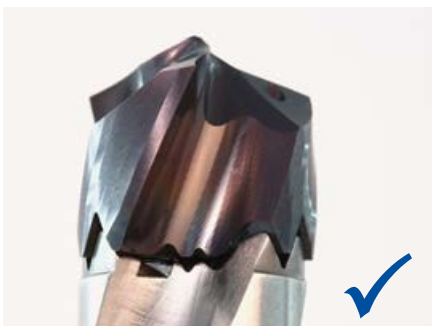


3. Fitting the replaceable drill head

Fit the replaceable drill head onto the replaceable head holder.

Note:

The special clamping screw is already installed on the replaceable drill head on delivery. If removed, the special clamping screw can be attached to the replaceable drill head again by screwing it in.



4. Check positioning of the drill head

Check whether chip flute and serrations of replaceable drill head and replaceable head holder are aligned. If they are not aligned, turn the replaceable drill head until chip flute and serrations are aligned.

Result:

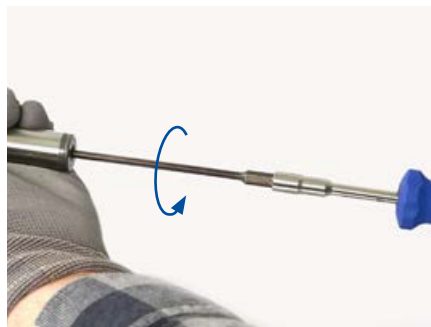
Chip flute and serrations are aligned (left) | are not aligned (right)



- 1 Handle for TORX® wrench
- 2 TTS replaceable head holder
- 3 TORX® wrench
- 4 Replaceable drill head with special clamping screw



5. Tighten the special clamping screw up to the stop. Hold the replaceable drill head lightly against the replaceable head holder so that it maintains its fitted position. Then insert the TORX® wrench in the central bore of the replaceable head holder to the threaded bore of the special clamping screw. Hand tighten the special clamping screw using the TORX® wrench by turning it anticlockwise to the stop.



6. Tighten the special clamping screw to the prescribed tightening torque

Using a suitable torque wrench with internal hexagon bit in combination with the TORX® wrench, tighten the special clamping screw to the stipulated tightening torque.

Note:

The stipulated tightening torque for the special clamping screw is noted on the bottom of the replaceable head holder.

Result:

The special clamping screw is tightened to the specified tightening torque and the replaceable drill head is securely connected to the replaceable head holder. Installation is complete.

Scope of delivery:

- 1 Handle for TORX® wrench
- 2 TTS replaceable head holder
- 3 TORX® wrench

Tightening torques for the special clamping screw

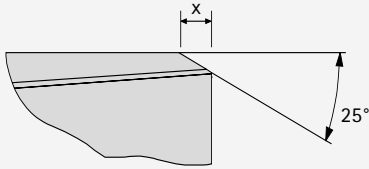
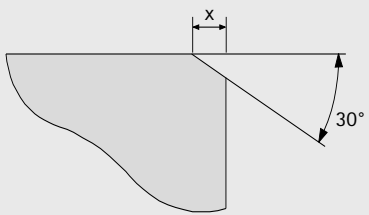
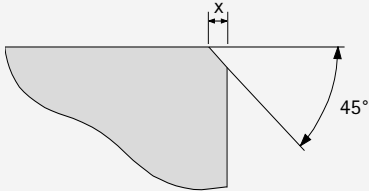
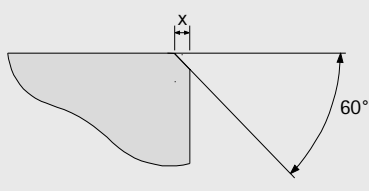
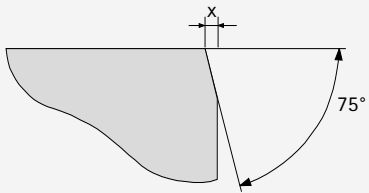
| Diameter range [mm] | Thread of replaceable head holder | TORX® size | Permissible transferable tightening torque [Nm] |
|---------------------|-----------------------------------|------------|---|
| 12,00 - 13,99 | M3 x 0,5 | T6 | 0,40 |
| 14,00 - 17,49 | M3,5 x 0,6 | T7 | 0,70 |
| 17,50 - 19,49 | M4 x 0,7 | T8 | 1,30 |
| 19,50 - 24,49 | M5 x 0,8 | T10 | 2,00 |
| 24,50 - 28,49 | M6 x 1,0 | T15 | 3,10 |
| 28,50 - 32,49 | M6 x 1,0 | T15 | 5,60 |

Lead geometries and rake angles

Multi-bladed reamers

Series FXR, MOR, MPR, HPR

Lead

| Geometry | Lead geometry | |
|---|---------------|----------|
| | Name | Geometry |
|  | ML | 25° |
|  | ME | 30° |
| | MF | |
| | MG | |
| | MY | |
|  | MC | 45° |
| | MO | |
| | MU | |
|  | MV | 60° |
| | MT | |
|  | MA | 75° |

Chip shape / rake angle

| Rake angle | |
|------------|---------------------|
| Name | Angle |
| 0A | 0° |
| 1 F | 5° |
| 1G | 6° |
| 1M | 13° |
| 2A | 0° (for blind bore) |
| 2G | 6° (for blind bore) |
| 3C | -2° |

| Cutting material definition | |
|-----------------------------|--------------------|
| Name | Type |
| HU | Carbide uncoated |
| HP | Carbide PVD-coated |
| HC | Carbide CVD-coated |
| CU | Cermet uncoated |
| CP | Cermet PVD-coated |
| PU | PCD |

x = lead length

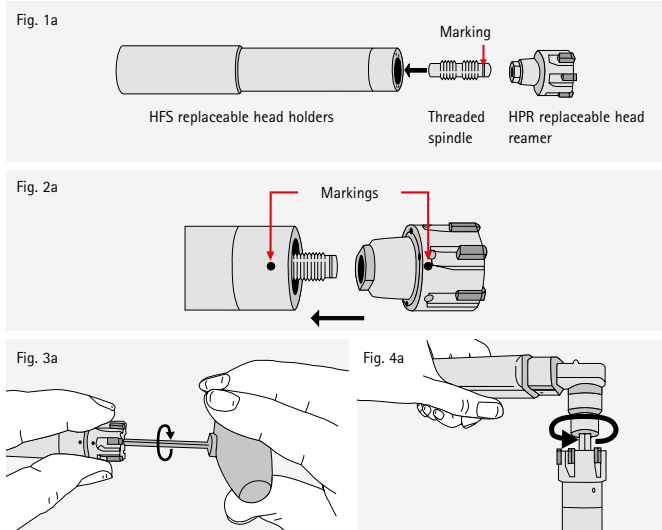
Series overview | diameter range | lead designation | lead length

| Series | Lead designation | Diameter range | Lead length x |
|--------|------------------|----------------|---------------|
| FXR | MC | 2,81 - 3,35 | 0,30 |
| | | 3,36 - 4,05 | 0,40 |
| | | 4,06 - 5,60 | 0,50 |
| | | 5,61 - 6,60 | 0,60 |
| | | 6,61 - 7,60 | 0,70 |
| | | 7,61 - 11,60 | 0,80 |
| | | 11,61 - 20,10 | 1,00 |
| | MF | 2,81 - 3,70 | 0,70 |
| | | 3,71 - 6,20 | 0,90 |
| | | 6,21 - 12,20 | 1,20 |
| | | 12,21 - 20,20 | 1,50 |
| | MG | 2,81 - 3,70 | 0,70 |
| | | 3,71 - 6,20 | 0,90 |
| | | 6,21 - 12,20 | 1,20 |
| | | 12,21 - 20,20 | 1,50 |
| | MT | 2,81 - 6,20 | 0,30 |
| | | 6,21 - 10,70 | 0,40 |
| | | 10,71 - 16,20 | 0,50 |
| | | 16,21 - 20,20 | 0,60 |
| | MV | 2,81 - 6,20 | 0,30 |
| | | 6,21 - 10,70 | 0,40 |
| | | 10,71 - 16,20 | 0,50 |
| | | 16,21 - 20,20 | 0,60 |

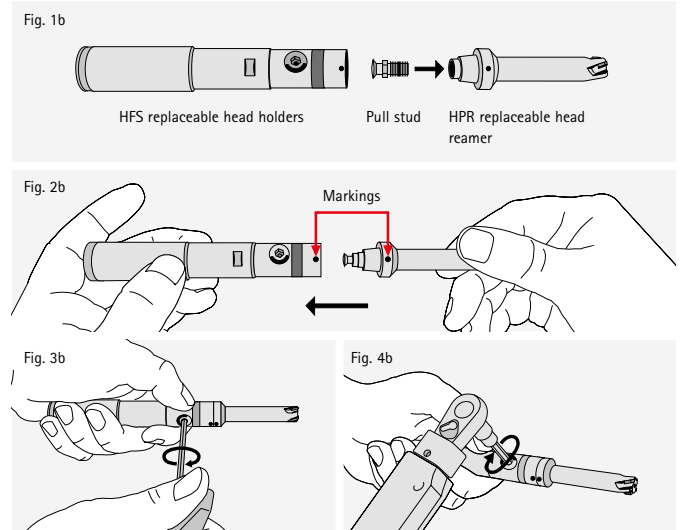
| Series | Lead designation | Diameter range | Lead length x |
|--------|------------------|----------------|---------------|
| MOR | MY | 7,70 - 40,20 | 1,00 |
| | MU | 7,70 - 40,20 | 0,60 |
| MRP | MG | 3,85 - 6,20 | 0,90 |
| | | 6,21 - 10,70 | 1,20 |
| | | 10,71 - 20,20 | 1,50 |
| | | 20,21 - 40,20 | 1,50 |
| | MV | 3,85 - 6,20 | 0,30 |
| | | 6,21 - 10,70 | 0,40 |
| | | 10,71 - 20,20 | 0,50 |
| | | 20,21 - 26,20 | 0,60 |
| | 26,21 - 40,20 | 0,80 | |
| HPR | MA | 7,00 - 65,00 | 0,40 |
| | MC | 7,00 - 65,00 | 0,55 |
| | ME | 7,00 - 65,00 | 1,40 |
| | MF | 7,00 - 65,00 | 1,40 |
| | ML | 7,00 - 65,00 | 1,00 |
| | MO | 7,00 - 65,00 | 0,60 |

Instructions for using the HFS® system

MAPAL HFS® system with axial clamping



MAPAL HFS® system with radial clamping



Cleaning

Clean all individual parts and make sure that the internal and external taper as well as the face surface on the HFS taper are free of foreign bodies (e.g. chips). To clean the internal taper, we recommend the special taper wiper (see page 474).

Clamping

1. Fit the end of the threaded spindle without marking into the HFS replaceable head holder, without screwing in the threaded spindle (see Fig. 1a).
2. Place the HPR replaceable head reamer onto the threaded spindle. In doing so, align the markings on the HPR replaceable head reamer and the HFS replaceable head holder "point to point" (see Fig. 2a). Then fit the HPR replaceable head reamer all the way into the HFS replaceable head holder and hold both parts firmly.
3. Screw together the HPR replaceable head reamer and the HFS replaceable head holder using a hex-wrench and tighten firmly. Make sure that the markings are aligned and the face surface touches (see Fig. 3a).
Note: HPR 100, 110, 150 are tightened through the reamer (direction of rotation clockwise). HPR 130, 131, 180 are tightened through the tool holder (direction of rotation anticlockwise). The directions of rotation are stated on the tool holder.
4. **Note:** The HFS replaceable head holders are labelled with the necessary tightening torque. Tighten the HPR replaceable head reamer clockwise using a torque wrench (see Fig. 4a).

Undoing

1. **Note:** The direction of rotation to undo the HPR replaceable head reamer is opposite to the direction of rotation for the clamping process. To undo the HPR replaceable head reamer, turn the threaded spindle using a hex-wrench.
2. Remove the HPR replaceable head reamer.

Adjusting the HPR replaceable head reamer with fine adjustment feature

1. **Note:** The opposite pair of cutting edges directly above the round marking points on the HFS replaceable head holder and HPR replaceable head reamer serves as a reference for measuring and adjusting the tool diameter. Fasten the HPR replaceable head reamer in the HFS replaceable head holder.
2. Set the desired tool diameter by means of the vernier micrometer. Then place the vernier micrometer against the reference blades.
3. Place the TORX® wrench on the adjusting screw and slowly turn it clockwise. Set the HPR replaceable head reamer to the desired dimension.



Clamping

1. Screw the threaded end of the pull stud into the HPR replaceable head reamer using the left-hand thread (see Fig. 1b).
2. Fit the HPR replaceable head reamer all the way into the HFS replaceable head holder. In doing so, align the markings on the HPR replaceable head reamer and the HFS replaceable head holder "point to point" (see Fig. 2b). Then hold both parts firmly.
3. Turn the clamping stud clockwise using a hex-wrench (see Fig. 3b). The direction of rotation is stated on the HFS replaceable head holders.
4. **Note:** The HFS replaceable head holders are labelled with the necessary tightening torque. Tighten the HPR replaceable head reamer clockwise using a torque wrench (see Fig. 4b).

| Connection size HFS | Tightening torque [Nm] | |
|---------------------|------------------------|--------|
| | Axial | Radial |
| 10 | 4 | - |
| 12 | 6 | 7 |
| 14 | 6 | 7 |
| 16 | 15 | 12 |
| 20 | 15 | 12 |
| 24 | 20 | - |

Undoing

1. To undo the reamer, turn the clamping stud anticlockwise to the stop using a hex-wrench.
→ The HPR replaceable head reamer is ejected and can be removed.

Please note for HPR variants with adjustment system:

For fine-adjustable HPR replaceable head reamers up to \varnothing 30 mm and HFS size 12 to 20, the HPR replaceable head reamer can only be clamped radially. From \varnothing 30 mm and HFS size 24, the HPR replaceable head reamer can also be clamped via the threaded spindle.

Coolant supply for the HFS® system

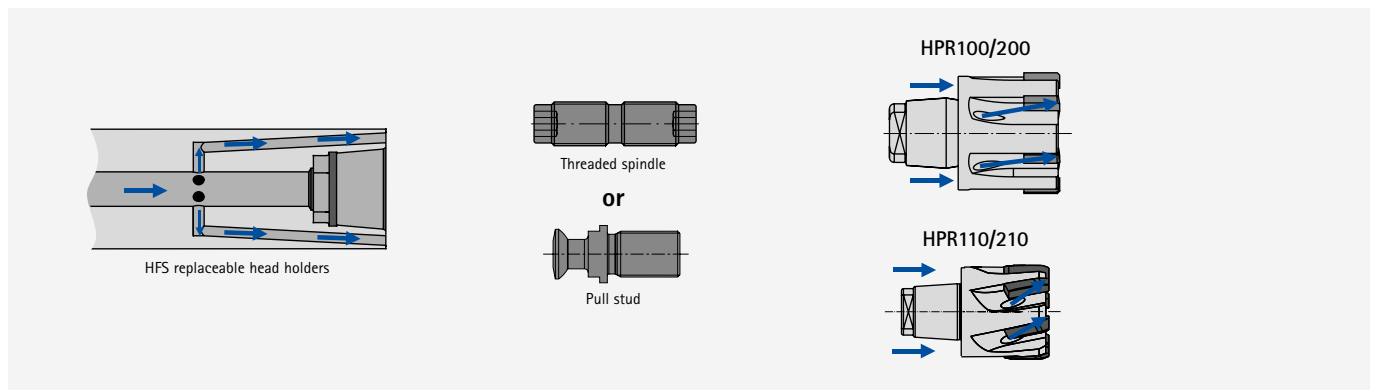
To fully exploit the high performance of the HPR reamers, the different series of replaceable heads each require the appropriate coolant supply. The difference in the parts lies in the threaded spindle or the pull studs. Depending on the head variant, these are used with coolant through-bore or without coolant through-bore, so that a direct coolant supply is ensured via the connection head directly to the cutting edges.

For all tool holders with HFS size 12, both designs are always included in the scope of delivery. When mounting, care must therefore be taken to select the system that matches the replaceable head. (see Fig. below)

Note:

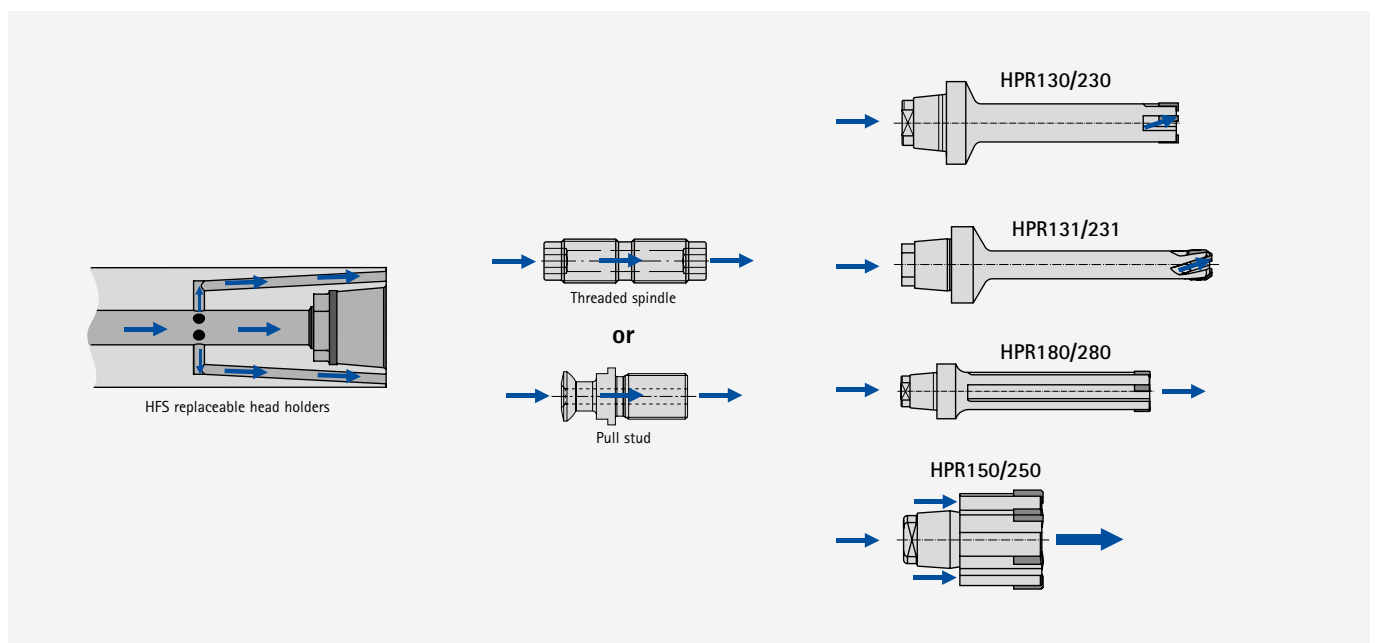
Coolant supply without central through-bore

The reamers must be mounted without a central coolant through-bore. The coolant is transferred from the tool holder to the replaceable head via the face surface.



Coolant supply with central through-bore

All the listed reamers must be mounted with a central coolant through-bore. The coolant is transferred centrally and, in the case of the HPR150 and HPR250, additionally via the face surface.



Instructions for using the HPR400

The HPR400 offers a system where the tool can be reloaded quickly and economically directly at the customer's site. The replaceable indexable inserts are pushed axially into the insert seat and fixed stably in the tool body with a TORX® screw. The usual μm -accurate machining quality is always maintained.

Changing the indexable inserts

Note:

When changing the indexable inserts, all indexable inserts must always be completely changed!

Comment:

For trained personnel only.



1. Clean the HPR400 with compressed air and a cloth. Loosen the TORX® screw by turning it anticlockwise with a suitable TORX® screwdriver. After loosening, remove the TORX® screw.



2. Carefully push the indexable insert up out of the insert seat in the axial direction and remove. Remove the remaining indexable inserts by repeating steps 1 and 2.



3. **Note:** Clean the contact surfaces of the indexable inserts if they are dirty.

Clean the insert seats using compressed air. Then clean the insert seats properly using alcohol.



4. Fit the new indexable insert half-way into the insert seat. Then press the indexable insert gently into the insert seat using your thumb and at the same time push the insert axially downward into the end position.

To prevent the indexable insert from falling out, fix the indexable insert with the TORX® screw.



5. **Note:** Only tighten the TORX® screws using a suitable torque wrench.

Tighten the TORX® screws to a tightening torque of 3.1 Nm.

Result:

The indexable inserts have been completely changed and the HPR400 is ready for use.

Instructions for using the HPR400 plus

The four-edged indexable inserts on the HPR400 plus are manufactured so accurately that they can be rotated or changed on site by the customer's staff without problems.



Changing the indexable inserts

Requirements:

Clean the tool before starting to change the indexable inserts.

Comment:

For trained personnel only.



1. Undo the TORX® PLUS screw using a suitable screwdriver. To do this, turn the TORX® PLUS screw anticlockwise. Then remove the TORX® PLUS screw.



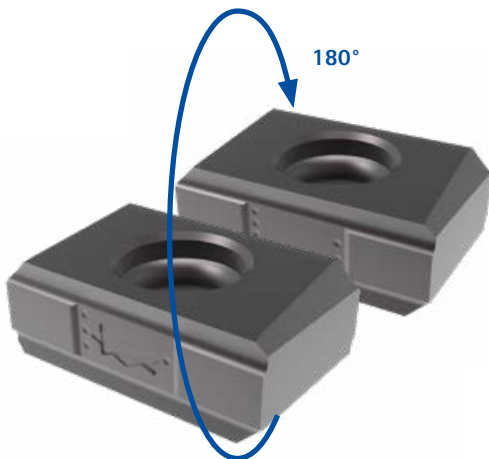
2. Carefully push the indexable insert up out of the insert seat in the axial direction and remove. Remove the remaining indexable inserts.



3. Clean the insert seats using compressed air and clean the insert seats properly using alcohol. Clean the contact surfaces of the indexable inserts using cleaning compound.

Note:

When changing the inserts, all indexable inserts must be rotated or changed!



Note:

When rotating the indexable insert, pay attention to the cutting edge sequence with the aid of the marking points (one to four points).



4. Fit the new or rotated indexable insert half-way into the insert seat. Then press the indexable insert gently into the insert seat using your thumb and at the same time push the insert axially downward into the insert seat. Then fix the indexable insert using the TORX® PLUS screw.



5. Tighten TORX® PLUS screw clockwise to the stipulated tightening torque.

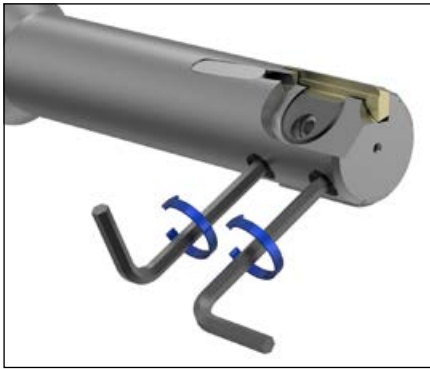
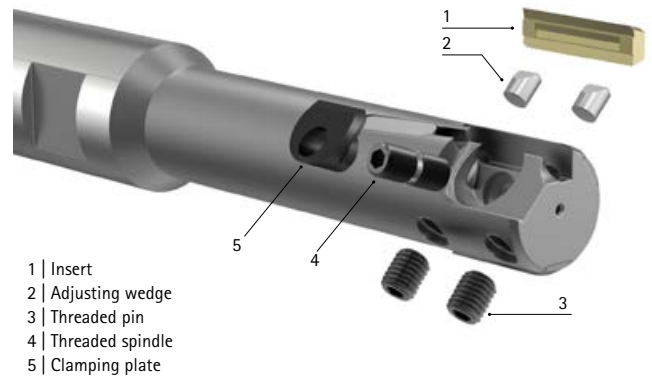
Note:

Only tighten the TORX® PLUS screws using a suitable torque wrench. The tightening torque for TORX® PLUS screws is 3.5 Nm.

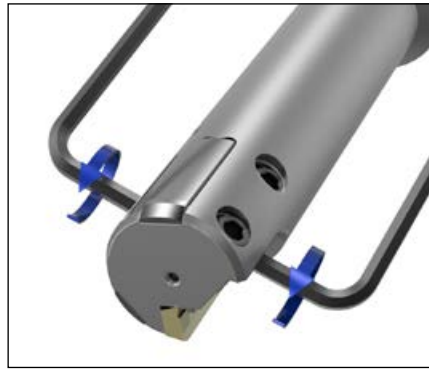
Result:

The indexable inserts have been completely changed and the tool is ready for use.

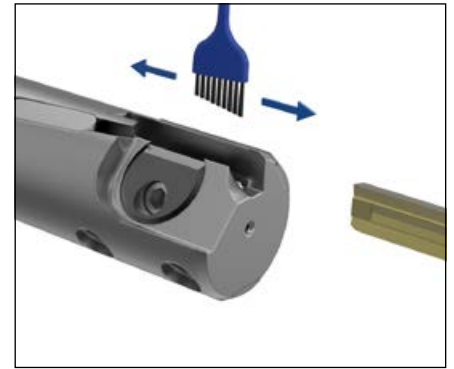
Adjustment instructions for WP single bladed reamers



1. Turn both threaded pins 1/2 turn anticlockwise.

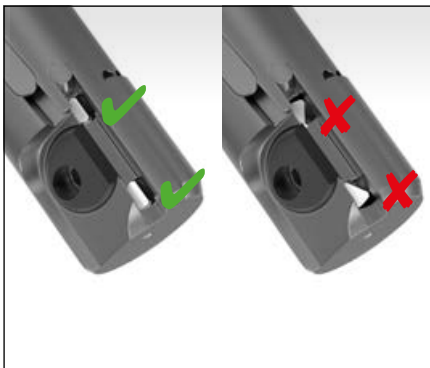


2. Loosen clamping plate:
Turn the threaded spindle anticlockwise by 2-3 turns from both sides (insert points downward).



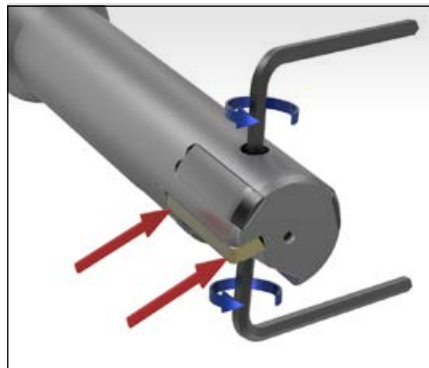
3. Remove the insert.

4. Clean insert und insert seat.



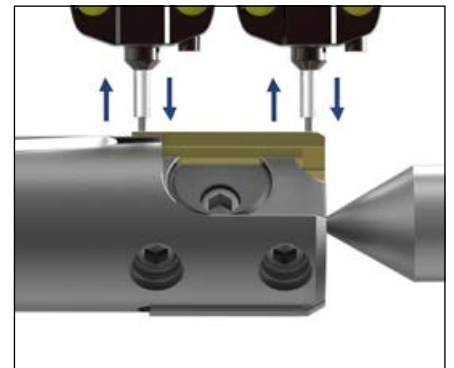
5. Ensure that the adjusting wedges are positioned straight.

6. Fit the new or rotated insert into the insert seat.



7. Hold down the insert and tighten the threaded spindle clockwise from both sides to the required tightening torque.

8. Turn both threaded pins 1/4 turn clockwise.



9. Adjust the front and rear setting dimensions at alternating intervals using the threaded pins. Back taper to the rear approx. 1 µm/mm.

NOTE:

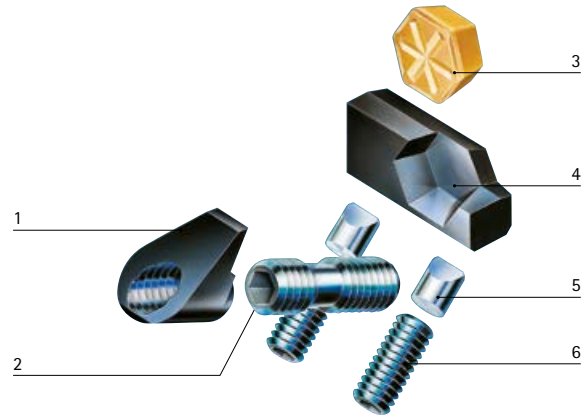
An overview of the tightening torques in PDF format can be found on the MAPAL website:

www.mapal.com → Media → Manuals and instructions → General technical information → Tightening torque for MAPAL clamping screws

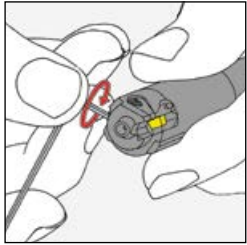
Adjustment instructions for HX single-bladed reamers

Size 2 and size 3

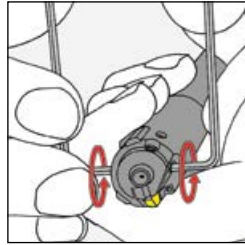
- | | |
|----------------------|---------------------|
| 1 Clamping plate | 4 Cassette |
| 2 Threaded spindle | 5 Adjusting wedge |
| 3 HX blades | 6 Threaded pin |



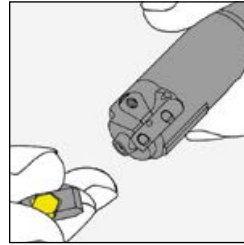
Indexable insert change and setting



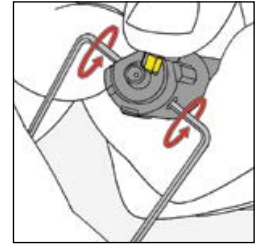
1. Turn the front and rear threaded pin half a turn to the left.



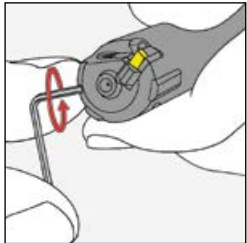
2. **Note:** Two wrenches must be used for opening. To loosen the clamping plate and the cassette, turn the threaded spindle clockwise and anticlockwise.



3. Remove the insert and the cassette. Clean the insert, the cassette and the insert seat (do not use compressed air, mind the adjusting wedge). Turn the insert 60° or insert a new insert into the cassette. Reinstall the cassette.

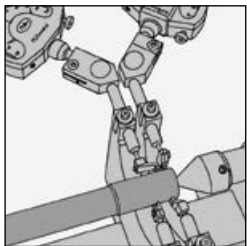


4. **Note:** Two wrenches must be used for tightening. Press the insert and the cassette against the back stop and the adjusting wedge. Turn the threaded spindle from the top to the right and from the bottom to the left and tighten them.

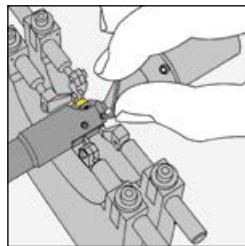


5. For coarse setting, turn the front and rear threaded pin a quarter turn to the right.

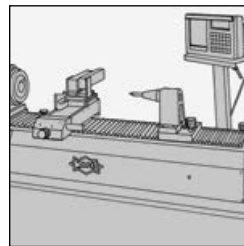
For the simplest handling and guaranteed reliable setting, we recommend using a MAPAL setting fixture.



7. Calibrate the MAPAL MASTERSET with setting gauge (must be ordered separately). The setting gauge has the minimum size of the bore.



8. Adjust the front and rear setting dimensions at alternating intervals using the threaded pins. The back taper to the rear is approx. 0.005 to 0.010 mm.



9. MAPAL UNISSET: MAPAL offers electronic setting fixtures in vertical and horizontal designs to conveniently set reamers. You can find more information in the catalogue "SETTING | MEASURING | DISPENSING".

For detailed setting instructions, see the operating manual for the fixture.

Instructions for using the EasyAdjust system

Replacing and setting the insert

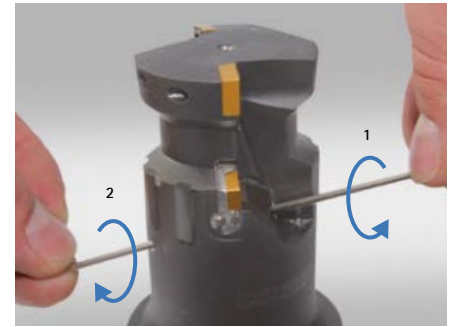
The EasyAdjust system permits quick and easy indexable insert changes. The inserts are replaced and set with μ precision in just a few steps.



1. Loosen the adjusting wedge using a hex-wrench and turn it half a turn anticlockwise.

Comment:

Only to be used by trained personnel.



2 **Note:** Two hex-wrenches are needed to loosen it.

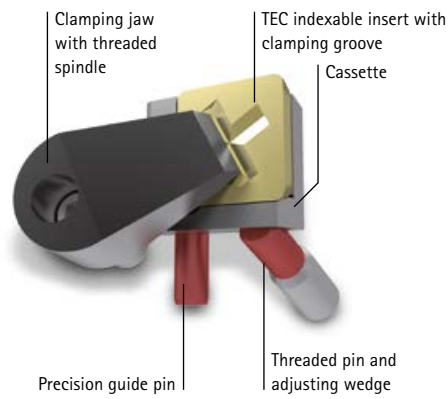
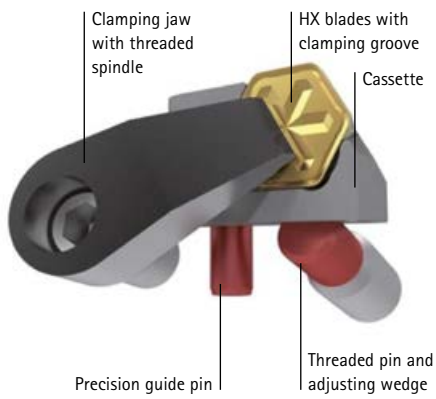
Loosen the clamping jaw by turning hex-wrench 1 anticlockwise while turning hex wrench 2 in a clockwise direction.



3. Push the cassette together with the adjusting wedge forward towards the tool.



4. Remove the insert from the cassette.



5. Replace or rotate the insert. Then fit the insert into the cassette.



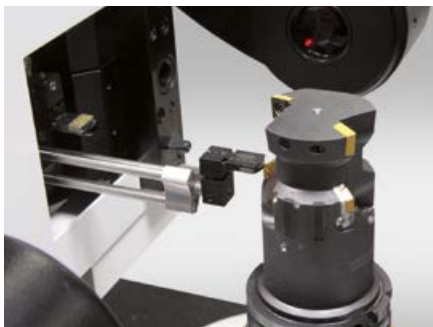
6. **Note:** Two hex-wrench are needed to tighten it.

Tighten the clamping jaw by turning hex-wrench 1 in a clockwise direction while turning hex wrench 2 in an anticlockwise direction.



7. **Note:** You can now proceed with either the protrusion measurement or the absolute measurement.

Clamp the tool in the connection of a setting fixture. Move the measuring sensor to the highest point of the guide pad and zero the measured value at this point.



8. Move the measuring sensor to the highest point of the insert.



9. Set the protrusion dimension or absolute dimension of the insert by turning the threaded pin in a clockwise direction using a hex-wrench.

Result:

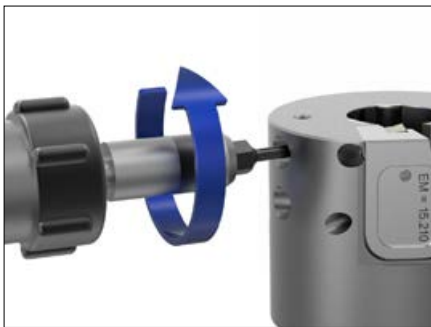
The desired protrusion or absolute dimension of the insert is set.



Installation and setting instructions for external reamer with the EA system



Replacing the insert



1. Turn both TORX fastening screws anticlockwise and remove the cassette.



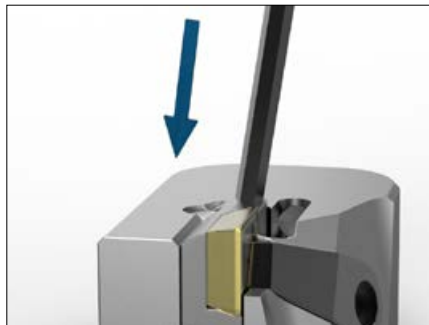
2. The insert must be reset to the basic setting: Turn back the adjusting screw half a turn anticlockwise.



3. Turn threaded spindle 1.5 turns anticlockwise.

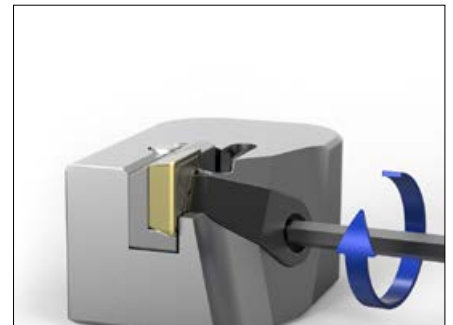


4. Remove the TEC indexable insert. Clean the insert seat and TEC indexable insert.



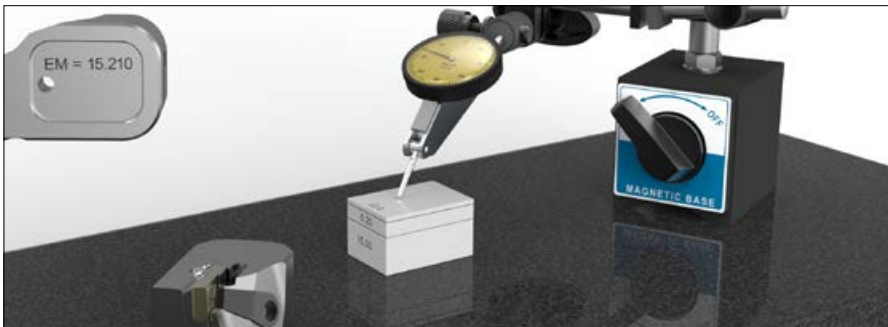
5. Fit the new or rotated insert in the insert seat, paying attention to the axial and radial pressure. Press the insert cassette back slightly against the adjustment direction.

- The insert has now been reset to the basic setting.



6. Hand tighten the threaded spindle of the clamping jaw clockwise.

Adjusting the insert



7. Adjust the gauge block according to the marking on the cassette and set the feeler to zero.



8. Place the feeler onto the highest point of the TEC indexable insert.
Turn the adjusting screw clockwise until the pointer of the dial gauge shows zero.

Assembly

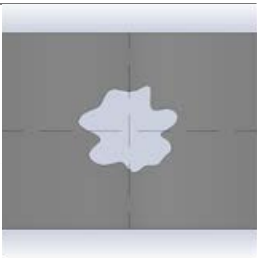


9. Insert the cassette into the cassette seat. Lightly tighten both TORX fastening screws. Then tighten the TORX fastening screws to 2.8 Nm.

Troubleshooting for fine boring tool and fixed reamer

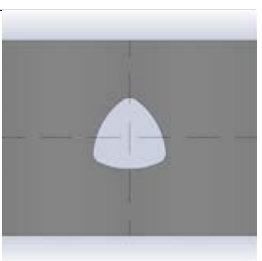
Bore out of round – random / systematic

| Causes | | Solution |
|--------------------------|-----------------------------|--|
| Fine boring tool | Multi-bladed reamer | |
| Protrusion set too large | - | Check tool setting / set |
| - | fz too small / vc too large | Adjust cutting data (for recommendation see catalogue) |
| Advance too large | | Check advance |



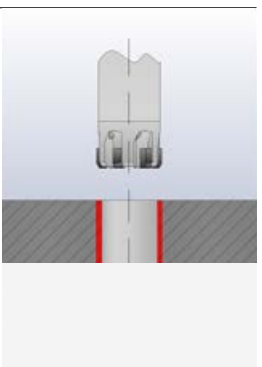
Bore out of round – random / systematic

| Causes | | Solution |
|--|---------------------|--|
| Fine boring tool | Multi-bladed reamer | |
| Part clamped (polygon typical jaw chuck) | | Clamping setup / check clamping pressure |
| Part with asymmetrical cross sections | | Reduce cutting pressure (back taper larger, number of teeth smaller, lead steeper, feed smaller) |



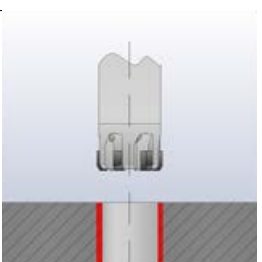
Bore too large

| Causes | | Solution |
|--------------------------------|---------------------------|---|
| Fine boring tool | Multi-bladed reamer | |
| Radial run-out error too large | | Check radial run-out / use alignment adapter |
| Bad positioning | | Check the position of the bore |
| Built-up edge | | Increase vc, check cooling lubricant / check suitability of cutting material / check suitability of lead (see catalogue for recommendation) |
| Vibrations / rattling | | Adjust cutting parameter / stock removal (see catalogue for recommendation) |
| Protrusion too large | - | Check / correct setting diameter |
| - | Tool diameter not correct | Check diameter |



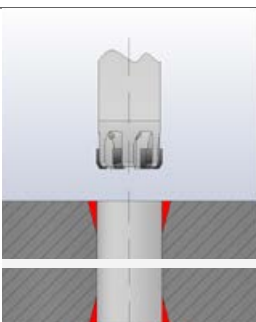
Bore too small

| Causes | | Solution |
|--|---------------------|--|
| Fine boring tool | Multi-bladed reamer | |
| Cutting edge / cutting edges worn | | Replace / regrind |
| Check cutting depth a_p (pre-machining) | | Adjust cutting depth, see catalogue for recommendation |
| Thin-walled part (elastic deformation of the part) | | Reduce cutting forces (back taper larger, number of teeth smaller, lead steeper, feed smaller) |
| Protrusion too small | - | Check setting / reset |

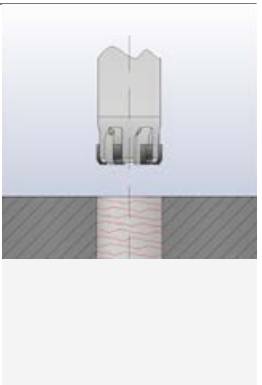


Bohrungseintritt konisch | Bohrungsausritt konisch

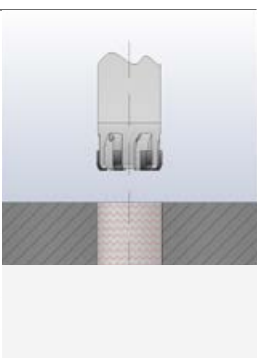
| Causes | | Solution |
|---|--------------------------|---|
| Fine boring tool | Multi-bladed reamer | |
| Radial run-out error too large | | Check radial run-out / use alignment adapter |
| Positioning problem / axle misalignment | | Check position of pre-machining or straightness of axle |
| - | Overrun amount too large | Max. lead length + 1 mm overrun on bore outlet |
| Advance too large | - | Check advance |
| Coolant pressure too great | | Reduce coolant pressure |



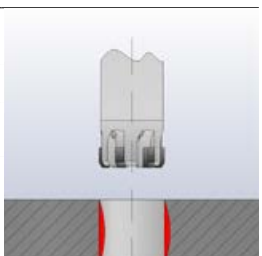
Bore surface not correct – irregularly

| Causes | | Solution |  |
|----------------------------------|---------------------|---|---|
| Fine boring tool | Multi-bladed reamer | | |
| Structure / macroscopic flaws | | Check, replace tool/cutting edges, if necessary; see catalogue recommendation for cutting values | |
| Stock removal too low | | Check pre-machining und stock removal | |
| Insufficient lubrication/cooling | | Check coolant/MQL supply and oil content. Check the suitability of the coolant/additives for this machining operation | |
| Chip removal disrupted | | Increase coolant pressure / adjust cutting edge geometry | |
| Wear and tear | | Replace cutting edge / tool | |
| Imbalance | | Check the connection / adapter and tool for sufficient balancing | |

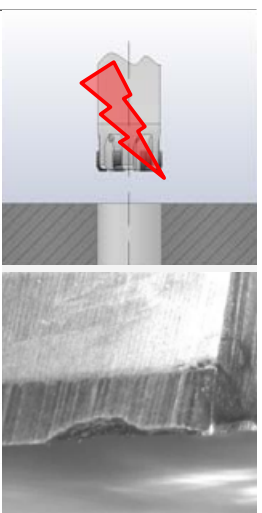
Bore surface not correct – regularly

| Causes | | Solution |  |
|---------------------------------------|---------------------|--|--|
| Fine boring tool | Multi-bladed reamer | | |
| Axis misalignment / wrong positioning | | Check bore offset and position | |
| fz too small / vc too large | | Adjust cut value, (see catalogue for recommendation) | |
| Critical diameter/length ratio | | Check critical diameter/length ratio | |
| Influences of spindle and drive unit | | Change cutting parameters | |
| Imbalance | | Is the combination of connection/adapter and tool sufficiently balanced? | |
| Back taper too small | | Check/set | |
| Protrusion too large | | Check/set | |

Bore pattern / cylindrical form not correct

| Causes | | Solution |  |
|--------------------------------------|---------------------|--|---|
| Fine boring tool | Multi-bladed reamer | | |
| Pre-machining incorrect | | Consultation with specialist department / product specialist | |
| Lead geometry and/or tool unsuitable | | Consultation with specialist department / product specialist | |
| Machining strategy unsuitable | | Consultation with specialist department / product specialist | |

Lead breaks off completely

| Causes | | Solution |  |
|----------------------------|---------------------|--|---|
| Fine boring tool | Multi-bladed reamer | | |
| Chip removal | | Increase coolant pressure / cutting edge geometry | |
| Back taper too large/small | | Check/set | |
| Stock removal ap too big | | Check/adjust | |
| Wear and tear too high | | Replace cutting edge / tool | |
| Vibrations | | Determine cause and stop | |
| Cutting values not correct | | Adjust cut value, (see catalogue for recommendation) | |
| Advance too large | | Reduce advance if necessary | |

General machining formulae, boring

Speed and feed

| | | |
|------------------|---|--|
| Spindle speed | $n = \left[\frac{1}{\text{min}} \right]$ | $n = \frac{v_c \cdot 1000}{\pi \cdot D_c}$ |
| Cutting speed | $v_c = \left[\frac{\text{m}}{\text{min}} \right]$ | $v_c = \frac{\pi \cdot D_c \cdot n}{1000}$ |
| Feed rate | $v_f = \left[\frac{\text{mm}}{\text{min}} \right]$ | $v_f = f_z \cdot z \cdot n$ |
| Feed/tooth | $f_z = [\text{mm}]$ | $f_z = \frac{v_f}{z \cdot n}$ |
| Feed | $f = [\text{mm}]$ | $f = f_z \cdot z$ |
| Number of blades | z | |

Cutting force

| | | |
|------------------------|---|--|
| Cutting force F_c | $F_c = A \cdot k_c = b \cdot h \cdot k_c$ | F_c in N k_c in N/mm ² |
| Specific cutting force | $k_c = \left[\frac{k_c \cdot 1.1}{h \cdot mc} \right]$ | |

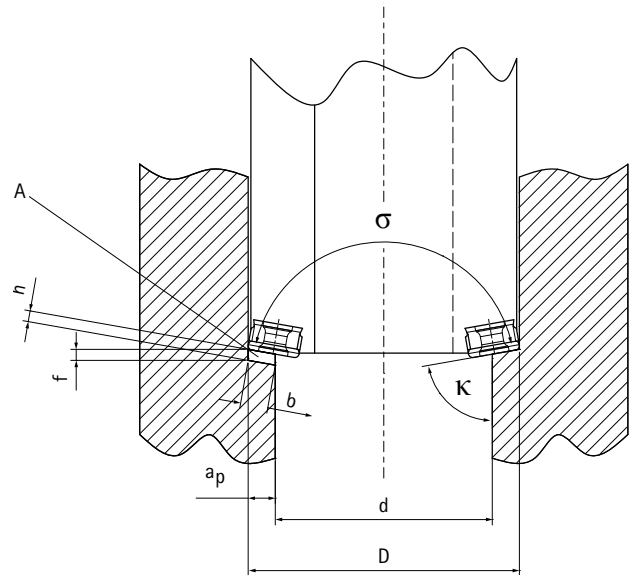
Cutting parameters during boring

Along with the specific cutting force for the workpiece material, the cutting cross section A essentially defines the machining force. The feed element per cutting edge f_z and cutting depth a_p are key parameters here.

The following relationships apply:

| | | |
|--------------------|---------------------|-------------------------------|
| Feed | $f = [\text{mm}]$ | $f = f_z \cdot z$ |
| Setting angle | $\kappa = [^\circ]$ | $\kappa = \frac{\sigma}{2}$ |
| Cutting width | $b = [\text{mm}]$ | $b = \frac{a_p}{\sin \kappa}$ |
| Chipping thickness | $h = [\text{mm}]$ | $h = f_z \cdot \sin \kappa$ |
| Cutting depth | $a_p = [\text{mm}]$ | $a_p = \frac{(D - d)}{2}$ |

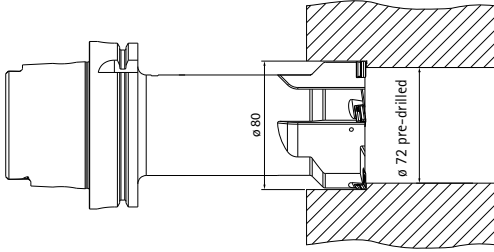
The figure shows the cutting cross section A during boring.



| | | | | |
|----------------------------------|---------------------|-----------------------------------|----|---------------------|
| Cutting cross section for boring | $A = [\text{mm}^2]$ | $A = \frac{(D - d) \cdot f_z}{2}$ | or | $A = a_p \cdot f_z$ |
|----------------------------------|---------------------|-----------------------------------|----|---------------------|

Calculation of cutting forces, boring

Simplified



Example calculation:

Boring tool ø 80 mm;
Z = 5; pre-drilled ø 72 mm $\kappa = 90^\circ$

Workpiece material: EN-GJL-250
 $k_{c1.1}^* = 1160$, $M_c = 0.26$
 $v_c = 200$ m/min, $f_z = 0.2$ mm
Blunting 30%

| | Basic formula | Calculation | Result |
|--|---|---|--|
| 1. Spindle speed | $n = \frac{V_c \cdot 1000}{\pi \cdot D}$ | $n = \frac{200 \cdot 1000}{\pi \cdot 80}$ | $n = 800$ 1/min |
| 2. Cutting depth | $a_p = \frac{(D - d)}{2}$ | $a_p = \frac{(80 - 72)}{2}$ | $a_p = 4$ mm |
| 3. Cutting cross section | $A = a_p \cdot f \cdot z$ | $A = 4 \text{ mm} \cdot 0,2 \text{ mm} \cdot 5$ | $A = 4$ mm ² |
| 4. Chipping thickness | $h = f_z \cdot \sin \kappa$ | $h = 0,2 \text{ mm} \cdot \sin 90^\circ$ | $h = 0,2$ mm |
| 5. Specific cutting force without blunting factor | $k_c = \frac{k_{c1.1}}{h^{m_c}}$ | $k_c = \frac{1160}{0,2^{0,26}}$ | $k_c = 1763$ N/mm ² with 30% blunting: $1763 \text{ N/mm}^2 \times 1.3 = 2292 \text{ N/mm}^2$ |
| 6. Cutting force | $F_c = A \cdot k_c = b \cdot h \cdot k_c$ | $F_c = 4 \text{ mm}^2 \cdot 2292 \text{ N/mm}^2$ | $F_c = 9,17$ kN |
| 7. Cutting torque d_m = average diameter in metres | $M_c = F_c \cdot \frac{d_m}{2}$ | $M_c = 9167,3 \text{ N} \cdot \frac{0,076 \text{ m}}{2}$ | $M_c = 348,3$ Nm |
| 8. Cutting power | $P_c = \frac{2 \cdot \pi \cdot n \cdot M_c}{60s}$ | $P_c = \frac{2 \cdot \pi \cdot 800 \text{ min}^{-1} \cdot 348,3 \text{ Nm}}{60s}$ | $P_c = 29,2$ kW |

* Value for cutting force calculation, WTO GmbH

Note: The efficiency of the main spindle drive is not taken into account.
Corresponding power calculations can be made by MAPAL.

Machine tool selection

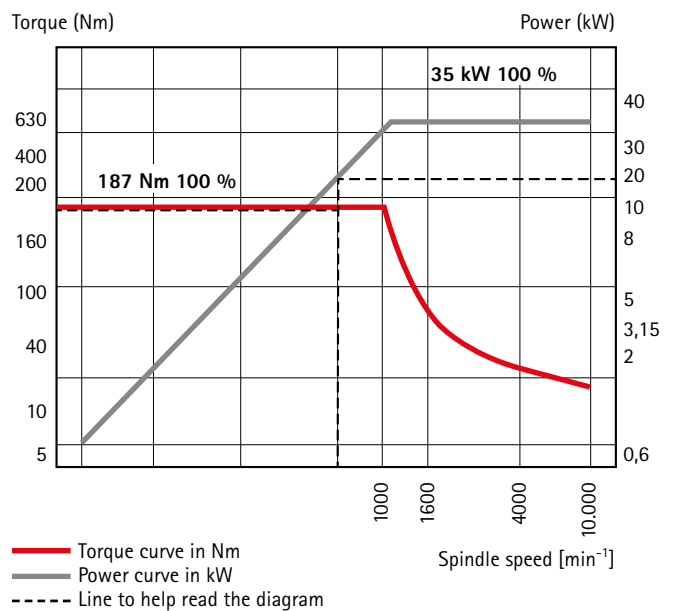
Comparison with torque and output power of the machine tool

Two spindle speed/power diagrams follow.

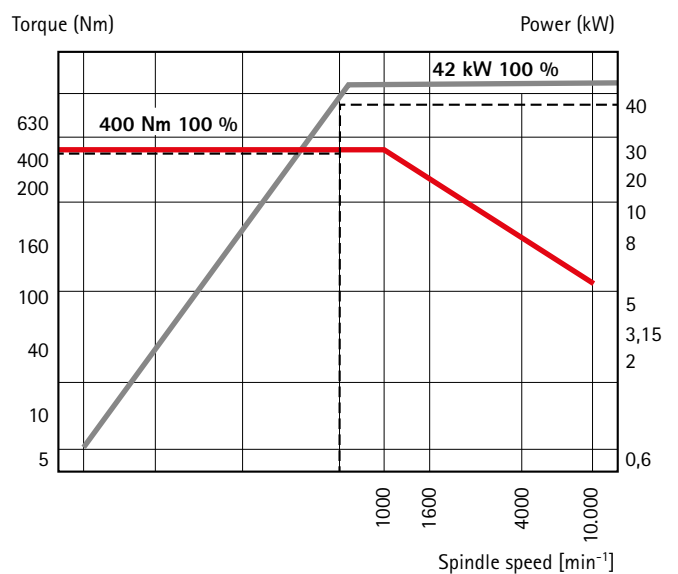
The number of teeth and cutting parameters are to be defined as a function of the machine.

In the example calculation the machine with the motor spindle is unsuitable, as here at a spindle speed of 800 min^{-1} only a torque of 187 Nm and a power of approx. 20 kW are achieved (Figure 1).

Motor spindle (Figure 1)



Geared spindle (Figure 2)



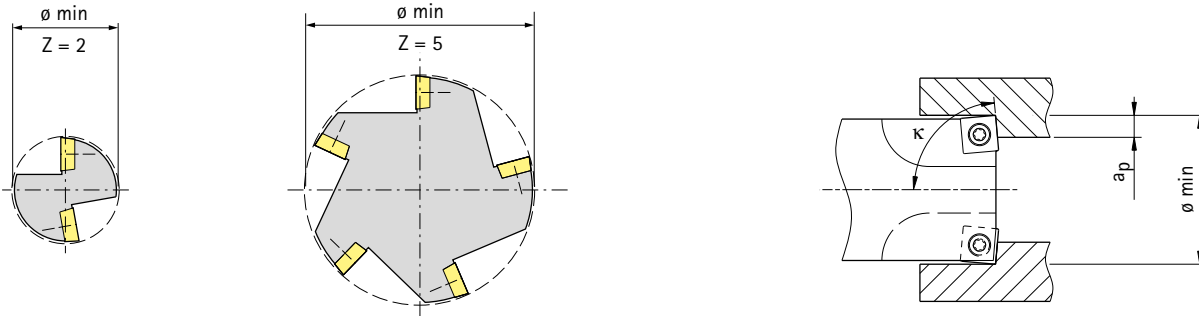
Solution:

Reduce number of teeth, reduce cutting speed and feed, divide cut between two tools or select a more powerful machine (e.g. with geared spindle, Figure 2).




The example diagrams are shown in a simplified form.

Guide values for the minimum boring diameter – radial

As a function of the number of teeth and indexable insert

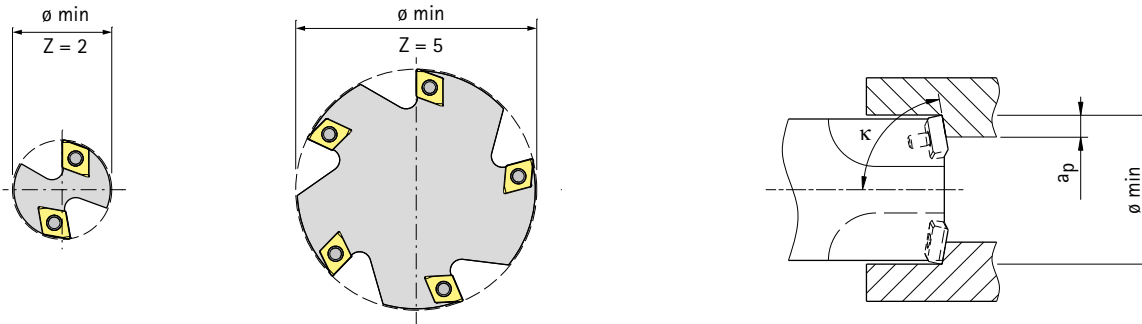


Radial boring cutting edges without arc shaped land

| Indexable insert form | Size of indexable insert | | | | Number of teeth | Comment |
|---|----------------------------------|------|------|------|-----------------|--|
| | 0603 | 09T3 | 1204 | | | |
| S (90°) | Minimum boring diameter at κ 85° | | | | | Suitable for through hole |
|  | 17 | 25 | 28 | | 1 | |
| | 17 | 25 | 31 | | 2 | |
| | 23 | 32 | 39 | | 3 | |
| | 31 | 43 | 53 | | 4 | |
| | 51 | 63 | 73 | | 5 | |
| C (80°) | 0602 | 09T3 | 1204 | | | Suitable for 90° shoulder machining |
|  | Minimum boring diameter at κ 90° | | | | | |
| | 17 | 24 | 28 | | 1 | |
| | 18 | 26 | 33 | | 2 | |
| | 23 | 34 | 41 | | 3 | |
| | 31 | 45 | 54 | | 4 | |
| 49 | 63 | 77 | | 5 | | |
| T (60°) | 06T1 | 0902 | 1102 | 16T3 | | Suitable in some situations for through holes and 90° shoulder machining |
|  | Minimum boring diameter at κ 90° | | | | | |
| | 15 | 17 | 17 | 24 | 1 | |
| | 18 | 21 | 24 | 37 | 2 | |
| | 21 | 25 | 28 | 43 | 3 | |
| | 27 | 34 | 37 | 57 | 4 | |
| 37 | 51 | 67 | 76 | 5 | | |

Guide values for the minimum boring diameter – tangential

As a function of the number of teeth and indexable insert



Tangential boring cutting edges without arc shaped land

| Indexable insert form | Size of indexable insert | | | Number of teeth | Comment |
|-----------------------|---|-----------|-----------|-----------------|---|
| | 0603/0604 | 09T3/0905 | 1204/1206 | | |
| C (80°) | Minimum boring diameter at κ 80° and 90° | | | | |
| | 28 | 41 | 54 | 1 | Suitable for through holes and 90° shoulder machining |
| | 28 | 41 | 54 | 2 | |
| | 30 | 41 | 54 | 3 | |
| | 40 | 56 | 64 | 4 | |
| | 59 | 84 | 94 | 5 | |

Tangential boring cutting edges with arc shaped land

| Indexable insert form | Size of indexable insert | | | Number of teeth | Comment |
|-----------------------|---|------|------|-----------------|--|
| | 0604 | 0905 | 1206 | | |
| C (80°) | Minimum boring diameter at κ 80° and 90° | | | | |
| | 40 | 65 | 78 | 1 | Suitable for through hole and 90° shoulder machining |
| | 40 | 65 | 78 | 2 | |
| | 40 | 65 | 78 | 3 | |
| | 41 | 65 | 78 | 4 | |
| | 64 | 86 | 102 | 5 | |

Tangential boring cutting edges with and without arc shaped land

| Indexable insert form | Size of indexable insert | | | Number of teeth | Comment |
|-----------------------|---|------|------|-----------------|---|
| | 0604 | 0905 | 1206 | | |
| F (70°) | Minimum boring diameter at κ 80° and 90° | | | | |
| | 22 | 30 | 40 | 1 | Suitable for through holes and 90° shoulder machining |
| | 22 | 30 | 40 | 2 | |
| | 31 | 43 | 53 | 3 | |
| | 42 | 56 | 67 | 4 | |
| | 64 | 83 | 99 | 5 | |

Troubleshooting

Forms of wear and tear on indexable inserts

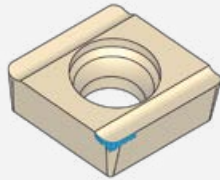
Form of wear and tear

Clearance surface wear

tangential



Radial

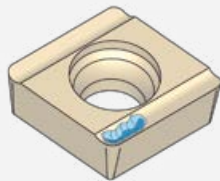


Crater wear

tangential



Radial

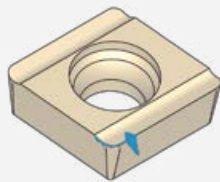


Notch wear

tangential



Radial

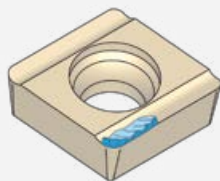


Built-up edge

tangential



Radial

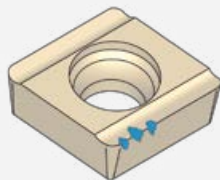


Macroscopic flaws

tangential



Radial

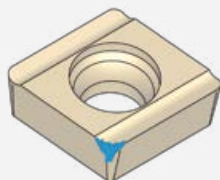


Blade breakage

tangential



Radial



Rectification measures

- Reduce cutting speed
- Select more wear-resistant cutting material type

- Reduce feed
- Reduce cutting speed
- Select more wear-resistant cutting material type
- Use coolant

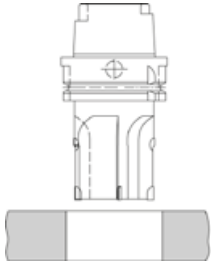
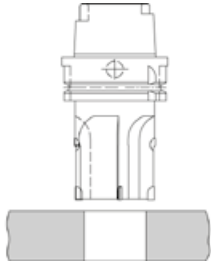
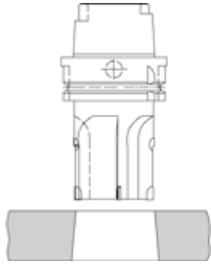
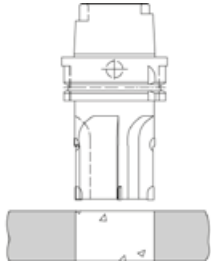
- Reduce cutting speed
- Select smaller setting angle
- Reduce feed

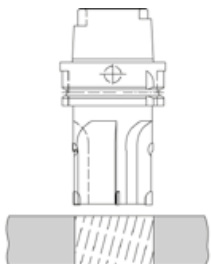
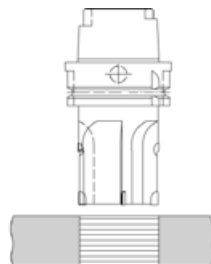
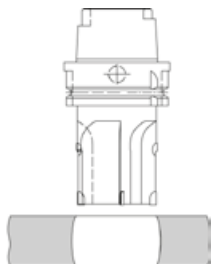
- Increase cutting speed
- Increase feed
- Select geometry with lighter cut (sharp cutting edges)

- Increase cutting speed
- Reduce feed
- Select tougher carbide grade
- Select stronger geometry
- Improve stability (for example short tool)
- Cooling, continuous or dry (avoid thermal shock)

- Reduce feed
- Reduce cutting depth
- Select stronger indexable insert geometry
- Select tougher carbide grade
- Select thicker indexable insert




























Practical application – troubleshooting during boring


















| Bore becomes too large | Bore becomes too small | Bore becomes conical | Poor surface finish in the bore |
|---|--|--|---|
| <p>Cause?</p> <ul style="list-style-type: none"> - Tool diameter possibly too large - Cutting speed too high - Feed too high - Radial run-out error too large - Lead uneven - Cooling lubricant unsuitable | <p>Cause?</p> <ul style="list-style-type: none"> - Tool worn - Cutting speed too low - Feed too low - Workpiece material ductile, pulls together after machining - Stock removal too low | <p>Cause?</p> <ul style="list-style-type: none"> - Radial run-out error too large - Lead not correct - Pre-machining not correct | <p>Cause?</p> <ul style="list-style-type: none"> - Cooling lubricant unsuitable - Build up on the cutting edge - Tool blunt, possibly chipping on the cutting edge - Chip removal poor - Residual imbalance too large |
|  |  |  |  |

| Bore has chatter marks | Bore shows signs of feed scoring | Bore becomes convex |
|---|--|--|
| <p>Cause?</p> <ul style="list-style-type: none"> - Build up on the cutting edge - Tool blunt - Cooling lubricant unsuitable - Radial run-out error too large - Residual imbalance too large - Clamping setup not correct | <p>Cause?</p> <ul style="list-style-type: none"> - Tool blunt, possibly chipping on the cutting edge - Build up on the cutting edge - Cooling lubricant unsuitable | <p>Cause?</p> <ul style="list-style-type: none"> - Workpiece not clamped correctly |
|  |  |  |



Pictograms

| | | | | | | | | |
|--------|---|--------------------------------------|---|--------------------------------------|--|--------------------------------------|--|--------------------------------|
| Boring |  | Drilling from solid |  | Tapping |  | Stepped drilling |  | Deep drilling |
| |  | Drilling reaming |  | High-feed machining |  | High-speed machining |  | Drilling in packages |
| |  | Cross bore |  | Inclined bore entrance |  | Inclined bore exit |  | Flat bottom of the bore |
| |  | tapping bore |  | pilot bore |  | maximum reachable bore tolerance |  | Stocked preferred series in H7 |
| |  | tolerance tool grinding diameter |  | maximum drilling depth |  | Internal cooling |  | Connection CFS |
| |  | with indexable insert |  | Connection QTS |  | Connection TTS-100 |  | Connection TTS-300 |
| |  | Shank form HA in accordance with DIN |  | Shank form HB in accordance with DIN |  | Shank form HE in accordance with DIN | | |


| | | | | | | | | |
|-----------------------|---|---------------------------------------|---|--|--|--------------------------------------|---|--------------------------------------|
| Reaming Fine Boring |  | Through bore |  | Blind bore |  | HFS axial clamping system |  | HFS radial clamping system |
| |  | Stocked preferred series in H7 |  | maximum reachable bore tolerance |  | tolerance tool grinding diameter |  | Single-bladed reamer |
| |  | WP-blades |  | Internal cooling |  | Connection HFS |  | Connection Modul |
| |  | Connection Shank hollow shank taper-A |  | Connection with morse taper shank (MK) |  | Shank form HA in accordance with DIN |  | Shank form HE in accordance with DIN |
| |  | Zylinderschaft mit Spannfläche | | | | | | |

| | | | | |
|----------------|---|------------------------------|---|--------------------|
| Countersinking |  | Countersink according to DIN |  | 90° countersinking |
|----------------|---|------------------------------|---|--------------------|

| | | |
|---------------|---|------------------------------------|
| Configuration |  | Product with configurable features |
|---------------|---|------------------------------------|


Pictograms

Product line




Basic
LINE

Basic Line:
Universal tools, broad field of application,
low procurement costs



Performance
LINE


Performance Line:
High-performance tools, broad field of application,
high productivity in series production manufacturing



Expert
LINE

Expert Line:
Specialist tools for selected applications,
maximum precision and productivity

Material suitability



Highly suitable

Suitable in some situations

E.g. Standard material suitability table

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|---|---|---|---|---|----------|---|---|---|----------|---|---|---|----------|---|---|---|---|----------|---|---|---|---|---|----------|---|---|---|
| P | 1 | 2 | 3 | 4 | 5 | 6 | M | 1 | 2 | 3 | K | 1 | 2 | 3 | N | 1 | 2 | 3 | 4 | S | 1 | 2 | 3 | 4 | 5 | H | 1 | 2 | 3 |
| | ■ | ■ | ■ | ■ | | | | | | | | ■ | ■ | | | | | | | | | | | | | | | | |

E.g. Material suitability table for non-ferrous metal and lightweight materials

| | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| N | 1.1 | 1.2 | 1.3 | 1.4 | 2.1 | 2.2 | 2.3 | 3.1 | 4.1 | 4.2 | 4.3 | G | 1.1 | 1.2 | 1.3 | 2.1 | 3.1 | 4.1 | 4.2 | 5.1 | 5.2 | 5.3 | | |
| | | | | | | | | | | ■ | | | | | | ■ | | ■ | | ■ | ■ | | | |

MAPAL machining groups

| Machining group | | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Frequently machined workpiece materials | |
|-----------------|------|--|--|---|---|
| P | P1 | P1.1 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 700 N/mm ² | 1.0122 (S235/St 37), 1.0401 (C15), 1.0503 (C45), 1.0570 (S355/St 52), 1.1213 (Cf63) |
| | | P1.2 | Structural, free-cutting, case hardened and heat-treated steels, non-alloy | < 1.200 N/mm ² | 1.1249 (Cf70) |
| | P2 | P2.1 | Nitrided, case hardened and heat-treated steels, alloy | < 900 N/mm ² | 1.7131 (16MnCr5) |
| | | P2.2 | Nitrided, case hardened and heat-treated steels, alloy | < 1.400 N/mm ² | 1.7227 (42CrMo54) |
| | P3 | P3.1 | Tool, bearing, spring and high-speed steels* | < 800 N/mm ² | 1.2343 (X37CrMoV5-1), 1.2762 (75CrMoNiW6-7) |
| | | P3.2 | Tool, bearing, spring and high-speed steels* | < 1.000 N/mm ² | 1.2367 (X38CrMoV5-3), 1.2713 (55NiCrMoV6) |
| | | P3.3 | Tool, bearing, spring and high-speed steels* | < 1.500 N/mm ² | 1.2379 (X153CrMoV12), 1.2738 (40CrMnNiMo8-6-4) |
| | P4 | P4.1 | Stainless steels, ferritic and martensitic | | 1.4510 (X3CrTi17), 1.4589 (X5CrNiMoTi15-2) |
| P5 | P5.1 | Cast steel | | 1.7231 (G42CrMo4) | |
| P6 | P6.1 | Stainless cast steel, ferritic and martensitic | | | |
| M | M1 | M1.1 | Stainless steels, austenitic | < 700 N/mm ² | 1.4301 (V2A), 1.4571 (V4A) |
| | | M1.2 | Stainless steels, ferritic/austenitic (duplex) | < 1.000 N/mm ² | 1.4362 (Alloy 2304), 1.4501, 1.4662 (LDX 2404) |
| | M2 | M2.1 | Stainless/heat-resistant cast steel, austenitic | < 700 N/mm ² | |
| | M3 | M3.1 | Stainless cast steel, ferritic/austenitic (duplex) | < 1.000 N/mm ² | |
| K | K1 | K1.1 | Cast iron with lamellar graphite (grey cast iron), GJL | < 300 N/mm ² | GJL-250 (GG-25), GJL-260 (GG-26 Cr) |
| | | K2.1 | Cast iron with spheroidal graphite, GJS | < 500 N/mm ² | GJS-400 (GGG-40), GJS-450 (GGG-45) |
| | | K2.2 | Cast iron with spheroidal graphite, GJS | ≤ 800 N/mm ² | GJS-600 (GGG-60), GJS-800-2 (GGG-80), GJS-800-8 (ADI 800) |
| | K2 | K2.3 | Cast iron with spheroidal graphite, GJS | > 800 N/mm ² | GJS-900-2 (GGG-90), GJS-1000-5 (ADI 1000), GJS-1200-2 (ADI 1200), GJS-1400-1 (ADI 1400) |
| | | K3.1 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | < 500 N/mm ² | GJV-300, GJV-400, GJM-W-400-5 (GTW-40) |
| | K3 | K3.2 | Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM | > 500 N/mm ² | GJV-500, GJV-700 |
| N | N1 | N1.1 | Aluminium, non-alloy and alloy < 3 % Si | | Alloy 2024, Alloy 7075, Al99 |
| | | N1.2 | Aluminium, alloy ≤ 7 % Si | | AlSi7 |
| | | N1.3 | Aluminium, alloy > 7-12 % Si | | AlSi9, AlSi9Cu |
| | | N1.4 | Aluminium, alloy > 12 % Si | | AlSi12, AlSi17 |
| | N2 | N2.1 | Copper, non-alloy and low-alloy | < 300 N/mm ² | SE-Cu |
| | | N2.2 | Copper, alloy | > 300 N/mm ² | CuSn6 |
| | N2 | N2.3 | Brass, bronze, gunmetal | < 1.200 N/mm ² | CuZn33, CuAl9Mn3 |
| | | N3 | N3.1 | Graphite, > 8 µm | |
| | N3.2 | | Graphite, ≤ 8 µm | | |
| | N4 | N4.1 | Plastic, thermoplastics | | PA, PE, PC, PS, PVC, PP, PTFE, POM, PMMA |
| | | N4.2 | Plastic, thermosets | | PU, PF, EP, UP, VE, CR |
| | | N4.3 | Plastic, foams | | EPS, PUR, PVC-E, PS-E, PP-E |
| | C | C1 | C1.1 | Plastic matrix, aramide fibre-reinforced (AFRP) | |
| C1.2 | | | Plastic matrix (thermosetting), CFRP/GFRP | | IMS, HTA |
| C1.3 | | | Plastic matrix (thermoplastic), CFRP/GFRP | | GMT-PP, PEEK |
| C2 | | C2.1 | Carbon matrix, carbon fibre-reinforced (CFC) | | CF222, CF225, CF226, CF227, CF260 |
| | | C3 | C3.1 | Metal matrix (MMC) | |
| C4 | | C4.1 | Sandwich construction, honeycomb core | | |
| | | C4.2 | Sandwich construction, foam core | | PLASCORE PAMG-XR1 5052, PCGA-XR1 3003, PAMG-XR1 5056, Micro-Cell (core made of alloy 5052/5056) |
| C5 | | C5.1 | Composite (stack), non-metal - non-ferrous metal composite | | CFK-aluminium, IMS/HTA + Alloy 2024/6061/7075 |
| | | C5.2 | Composite (stack), non-metal - metal composite | | CFK-titanium, IMS/HTA + TiAl6V4/AMS4905 |
| | | C5.3 | Composite (stack), non-metal - non-metallic composite | | CFK-CFK |
| | | C5.4 | Composite (stack), non-ferrous metal - non-ferrous metal composite | | Aluminium-aluminium |
| | | C5.5 | Composite (stack), non-ferrous metal - metal composite | | Aluminium-titanium |
| | C5.6 | Composite (stack), metal - metal composite | | Titanium Inox | |
| S | S1 | S1.1 | Titanium, titanium alloys | < 400 N/mm ² | |
| | | S2.1 | Titanium, titanium alloys | < 1.200 N/mm ² | TiAl6V4 |
| | S2 | S2.2 | Titanium, titanium alloys | > 1.200 N/mm ² | |
| | | S3 | S3.1 | Nickel, non-alloy and alloy | < 900 N/mm ² |
| | S3.2 | | Nickel, non-alloy and alloy | > 900 N/mm ² | |
| | S4 | S4.1 | High-temperature super alloy Ni, Co and Fe-based | | Hardox, Hastelloy, Incoloy, Inconel, NIMONIC, Stellite, Waspaloy |
| S5 | S5.1 | Tungsten and molybdenum alloys | | | |
| H | H1 | H1.1 | Hardened steel / cast steel | < 44 HRC | 1.2738 HH, 1.2085, Toolox 33, Toolox 44 |
| | | H1.2 | Hardened steel / cast steel | < 55 HRC | 1.2343, 1.2311, 1.2312, 1.2714, 1.2083, 1.2738 |
| | H2 | H2.1 | Hardened steel / cast steel | < 60 HRC | 1.1730, 1.2379, 1.2358, 1.2767, 1.4112, ASP 2012 |
| | | H2.2 | Hardened steel / cast steel | < 65 HRC | 1.2379, 1.2363, 1.2436, 1.2842, ASP 2005, Vanadis 23 |
| | H2 | H2.3 | Hardened steel / cast steel | < 68 HRC | ASP 2017, ASP 2023, Vanadis 30, Vanadis 60 |
| | | H3 | H3.1 | Wear-resistant cast/chill casting, GJN | |

* If the alloy parts Cr, Mo, Ni, V, W in total > 8 % then select the next highest MAPAL machining group.



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