ACHTECK

# CUTTING TOOL CATALOGUE

# 2025

In the Northern depths, a wondrous sight
A fish so vast, a true delight,
Named Kun, it spans a thousand miles
A creature of immense style.

Transformed to Peng, a bird so rare
Its wingspan vast, beyond compare
Thousands of miles, it takes to flight,
A soaring wonder, a true delight.

When Peng takes flight, its rage is seen,
Its wings a sight, like clouds serene,
A sight that leaves us all in awe,
A vision of beauty, without a flaw.

# Company Profile

Ganzhou Achteck Tool Technology Co, Ltd. is a wholly-owned subsidiary of Chongyi Zhangyuan Tungsten Co, Ltd. (Listed Company with stock code 002378). The registered capital of Achteck is 260 million USD with 800 employees. The main products include: Coated Carbide Inserts, Carbide Rod and supporting tool holders. Achteck is known for its outstanding R&D competence, production & testing equipment and its coated carbide insert production technology. Achteck produces inserts for Turning, Grooving, Milling and Drilling that are widely applied in automotive, energy, die & mold, general machinery, aerospace and other industries.

Achteck Tool is technology oriented, owns a strong research team that keeps on innovating Having "Benefits from Resources, Reliance on Technologies, Devotion to Humanity and Top with Trust" as the operating philosophy and "Safety, Harmony, Efficiency and Innovation" as the target Achteck aims to become a wellknown brand in the world and a first-class cemented carbide manufacturer in China.

# Small tools

## Product Features and Applications

- Small tools has a wide range of product offering combined with various grades to meet the machining requests of different applications.
- Ground inserts with geometry UF and LF are good for high precision finishing and good chip breaking.
- Multi-function ASW series could combine with parting off, backturning and threading inserts for multipurpose machining to reduce the cost.
- Small Dia. solid carbide cutting tools can cover different machining, such as grooving, threading and small diameter boring.

AP010S Heat-Resistant Alloy Machining Grade

# ISO Turning Insert

## Product Features and Applications

- AP010S employs substrate strengthening technology to enhance the bonding force between cobalt and tungsten carbide, as well as the heat-resistant resistance of the binder phase, thereby improving substrate strength.
- The innovative nano-coating with ultra-high aluminum content delivers exceptional hardness, superior structural and chemical stability. The specially treated smooth coating surface reduces the friction coefficient, enhances anti-built-up edge (BUE) resistance, and significantly boosts tool wear resistance and service life.
- It is the first choice for high-speed cutting of S-class iron-based, cobalt-based, nickelbased heat-resistant alloys, as well as titanium and titanium alloys, and is also suitable for high-speed precision machining of stainless steel and light cutting of hardened materials.
- ISO application range: S01-S15, M01-M15, H05-H15.

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# AROWANA SERIES

## Product Features and Applications

- Arowana Series - Heat-resistant Alloy Grooving Tools, featuring AP130S grade, are primarily used for machining hard-to-cut materials such as Ni-based, Ti-based, Fe-based heat-resistant alloys, titanium alloys, and stainless steel.
- With a variety of grooving walls such as CS, CM, GS, TSR, RMR, RS, etc., they comprehensively meet customers' needs for cutting, grooving, slotting, and profiling operations.
- Compared to previous materials, significant improvements in performance have been made, resulting in a substantial increase in tool life, which has gained the favor of many users.
- Excellent high-temperature resistance, wear resistance, shock resistance, and high-temperature oxidation resistance provide stable and long-lasting machining performance.

2025 NEW

AP130S Grade

# Heat-Resistant Alloy Grooving Tools

## Product Features and Applications

**External machining holder:**

- Multiple insert clamping methods and a wide range of tool holder types cover various applications for external turning.
- Good clamping performance ensures secured insert installation, maintaining cutting stability while reducing holder deformation.
- The tool body surface is nickel-plated, nice looking and good wear resistance.

**Internal machining holder:**

- Bi-directional chip pocket design for better chip removal.
- The holder adopts the strongest structural design to effectively prevent high-frequency vibration.
- Minimum machining diameter: Φ5mm.
- Holders for different materials meet the application requirements for various hole depths.

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# Turning Tool Holders

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## Steel Turning – Upgraded Grades AC052P/AC152P/AC252P

# ISO Turning Insert

2025 NEW

### Product Features and Applications

- Unique grain alignment and advanced gradient sintering technology, which enhances substrate thermal stability and wear resistance.
- Nano-coating with specially structured alumina significantly improves crater wear resistance. Combined with superior post-coating treatment, it reduces built-up edge (BUE) formation and flank wear by over 30% compared to previous generations.
- Three grades cover medium-to-high-speed steel turning, from continuous finishing to interrupted semi-roughing and general roughing, ensuring efficient and stable machining for most steel types.

AFM45-SE12

# Face Milling Cutter

## Product Features and Applications

- Positive-type 4-flute design with large rake angle for smooth cutting and low resistance.
- Multiple geometries adapt to diverse machining conditions.
- Including short and long wiper inserts for roughing, semi-finishing, and finishing.
- 45° approach angle with coarse/fine pitch options for broad versatility.
- Integrated shim protect the cutter body, ensuring safety and reliability.
- Diameter range: Φ32–250mm (arbor-type, cylindrical shank, side-lock variants).
- Black oxide surface treatment enhances corrosion resistance and precision.

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## Product Features and Applications

- Precise 90° approach angle ensures accurate square shoulder machining.
- Helical insert design with low resistance and light cutting, offering good versatility.
- Inserts with wipers to achieve good surface roughness.
- Three insert sizes available: 06/10/12, with a full range of materials.
- The helical milling cutter is available in both solid and segmented versions. with a maximum cutting depth of up to 85mm, offering high machining efficiency.
- Various connection methods, including shank-style, cylindrical, and sidelock, to meet different application needs.

2025 NEW

### ASM90-AO06/10/12 Series

# Square Shoulder Milling Cutter

ASM90-SO12

# Square Shoulder Milling Cutter

## Product Features and Applications

- Precise 90° approach angle ensures accurate square shoulder machining.
- Positive 4-flute pressed inserts to offer cost efficiency.
- Dual-relief helical cutting edges reduce cutting forces; short wiper design improves surface roughness.
- Multi-material compatibility across ISO groups (P, M, K, etc.).
- Diameter range: Φ 32–250mm (arbor-type, cylindrical shank, side-lock variants).

# Round Tool Series

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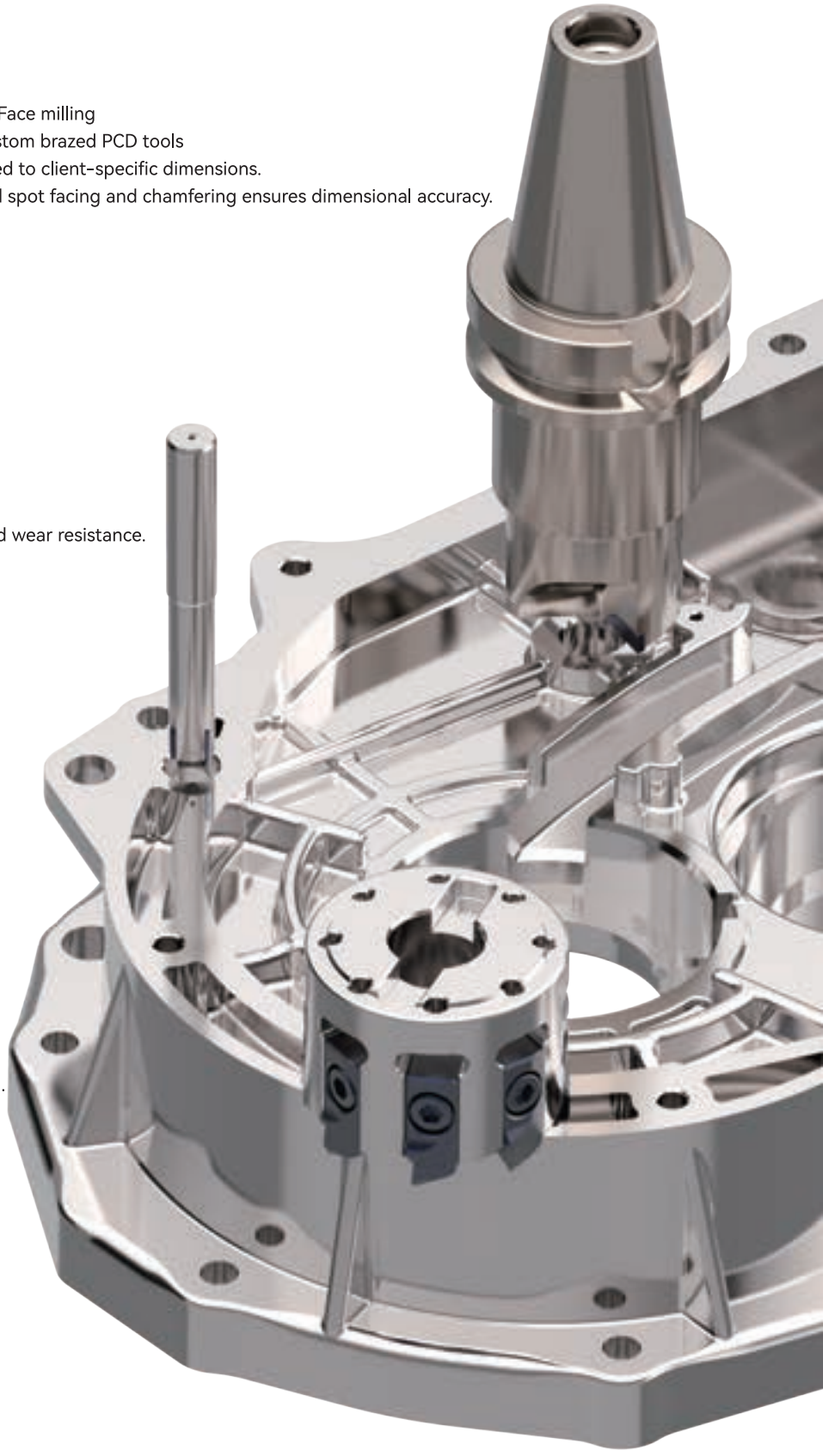
## Product Features and Applications

- "Sharpen your tools to excel in your craft." ACHTECK delivers high-efficiency, cost-effective solutions for drilling, milling, and threading.
- Three major product lines: ECO (general-purpose), PRO (high-efficiency), and XP (expert), covering a variety of tools required for small to medium batch production, large batch production, and specialized high-efficiency production.
- Drilling solutions: D105/D106/D108/D151 standard drills: Diameter range 3–20mm, with 3×D to 8×D lengths (general and specialized variants).
- Milling: M200/M210/M216/M150/M170 carbide milling cutters, 2–6 flutes, corner-radius to wavy-edge designs, covering general to specialized machining.

Application: Face milling
Solution: Custom brazed PCD tools
- Customized to client-specific dimensions.
- Integrated spot facing and chamfering ensures dimensional accuracy.

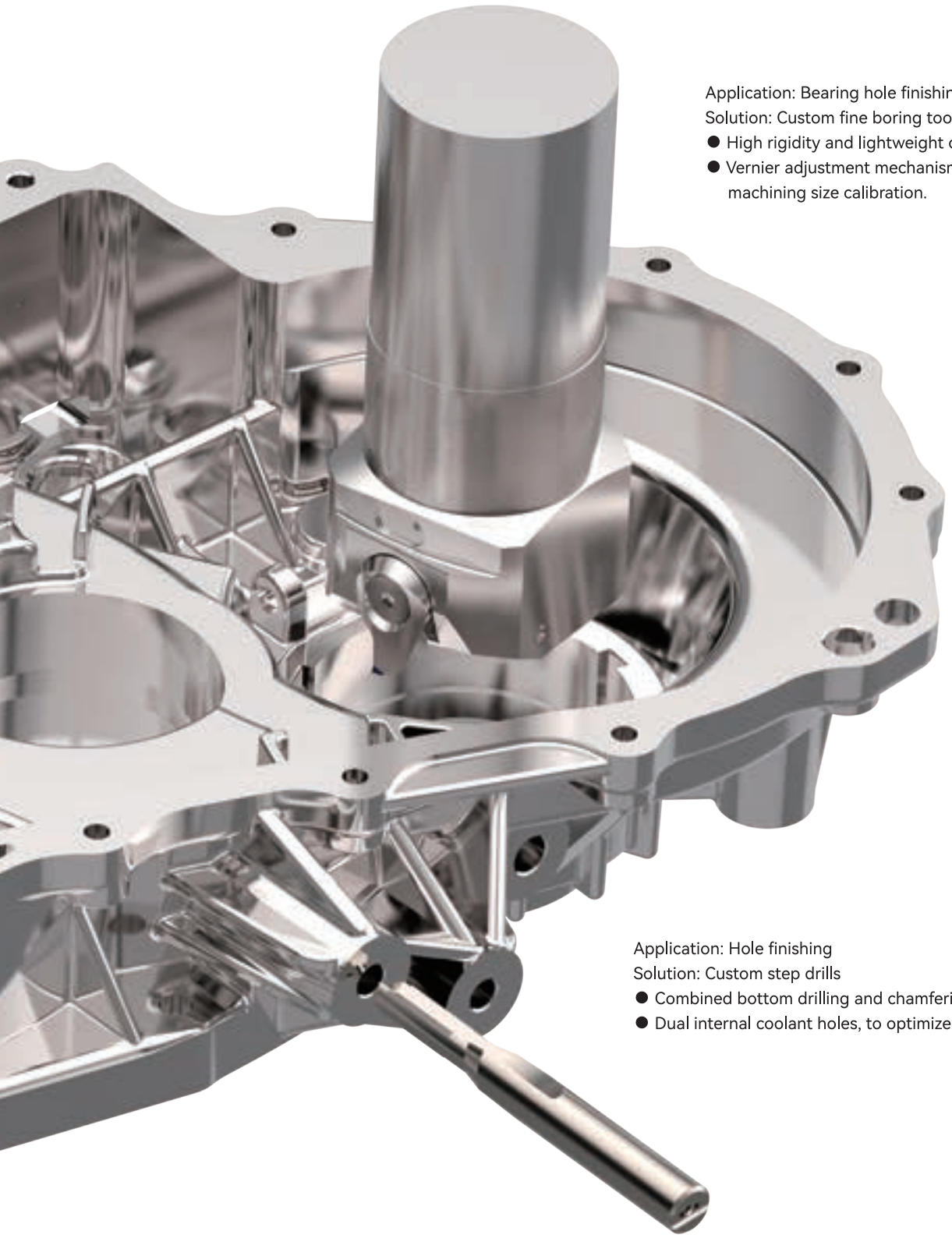
Application: Joint surface machining
Solution: Brazed PCD reamers
- Semi-custom design for fast delivery.
- PD10 grade delivers high efficiency and wear resistance.

Application: Pin hole machining
Solution: Adjustable PCD face milling cutters
- Bore diameter range: D50–D250.
- Aluminum alloy cutter body (for D80+ sizes).
- Precision internal coolant channels + variable pitch design.
- Optional types: face milling, square shoulder milling, overlapping curve surface milling, wiper edge.



# New Energy Vehicle Tooling Solutions

# Reducer Housing



Application: Bearing hole finishing
Solution: Custom fine boring tools
- High rigidity and lightweight compact design.
- Vernier adjustment mechanism for rapid machining size calibration.

Application: Hole finishing
Solution: Custom step drills
- Combined bottom drilling and chamfering in one operation.
- Dual internal coolant holes, to optimize cooling and chip evacuation.

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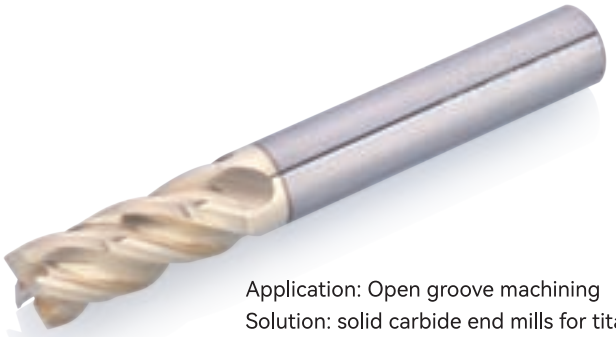
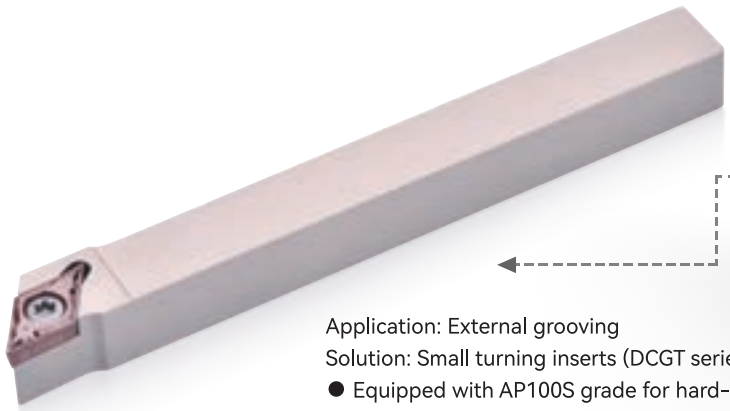
# Orthopedics – Cervical Pedicle Screw DovetailHead



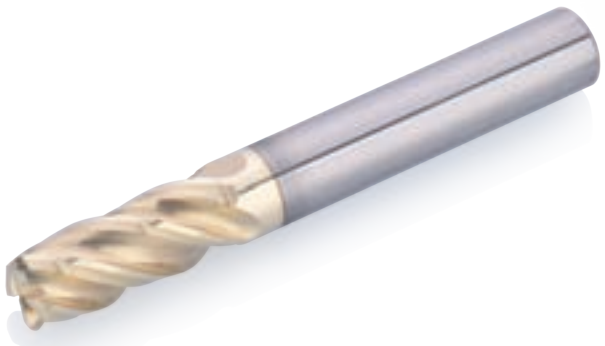
Application: Open groove machining
Solution: solid carbide end mills for titanium (M150 Series)

- New substrate grade AK12E, with superior impact resistance and thermal fatigue resistance.
- Unequal pitch and fluted geometry, which reduces vibration and enhances chip evacuation.



Application: External grooving
Solution: Small turning inserts (DCGT series)

- Equipped with AP100S grade for hard-to-cut materials.

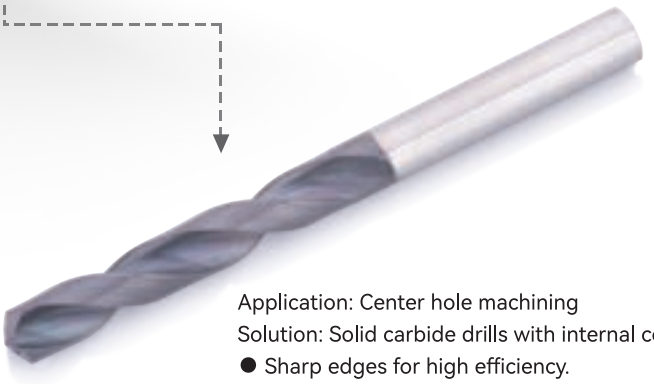


Application: Side lug hole machining
Solution: solid carbide end mills for titanium (M150 series)

- New substrate grade AK12E, with superior impact resistance and thermal fatigue resistance.
- Unequal pitch and fluted geometry, which reduces vibration and enhances chip evacuation.

Application: Internal thread machining
Solution: Solid internal threading tool
- AP220U grade with PVD coating, able to handle stainless steel, titanium, heat-resistant alloys.
- Available in various thread specifications, including universal threads, ISO, UN, NPT, etc.

Application: Internal groove machining
Solution: Solid internal grooving cutter
- AP220U grade with PVD coating, able to handle stainless steel, titanium, heat-resistant alloys.
- Available in various standard geometries, such as flat and radius grooves.



Application: Center hole machining
Solution: Solid carbide drills with internal coolant (D151 Series)
- Sharp edges for high efficiency.
- Formed groove design and polished chip removal grooves ensure excellent chip flow and removal.

## Material: Titanium alloy

# Material: Heat-resistant stainless steel, heatresistant alloy

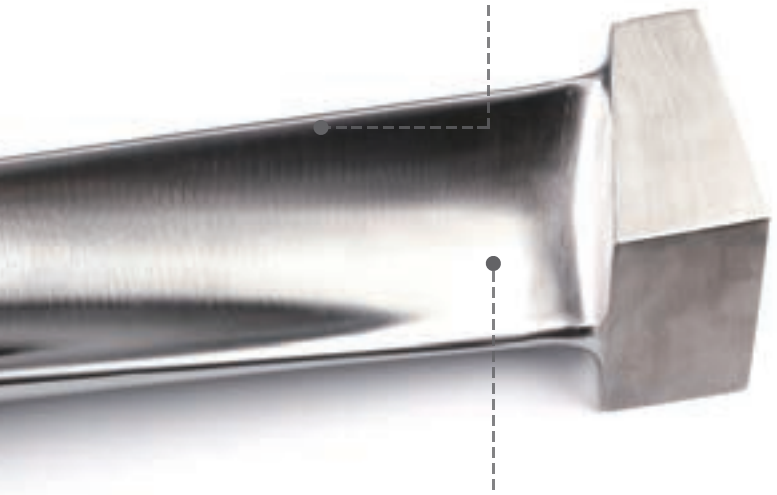
Application: Blade root face machining
Solution: AFM90-SD09 precision face milling cutter
- Single-sided square inserts for cost efficiency.
- Multiple geometries and grades, adapted to diverse materials.

Application: Blade root groove roughing
Solution: ASM90-AO12 square shoulder milling cutter
- Wiper edge design, to improve surface finish.
- Helical cutting edges, which reduce cutting forces and offers good versatility.

Application: Root-to-aerofoil transition arc finishing
Solution: Custom tapered ball-nose milling cutter
- Self-made carbide rods.
- Multiple taper angles for various blade maching。

Application: Blade aerofoil roughing
Solution: APM00-RO10/12 milling cutters

- Anti-rotation slot design, to prevent tool displacement and extend tool life.
- Versatile insert geometries and grades for complex materials.



Application: Root-to-aerofoil transition arc machining
Solution: APM00-RP08/10 milling cutters

- Anti-rotation slot design, to enhance insert stability.
- Versatile insert geometries and grades for complex materials.

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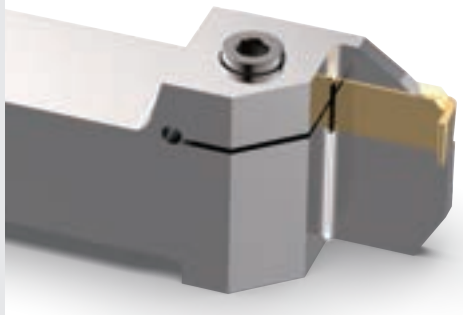
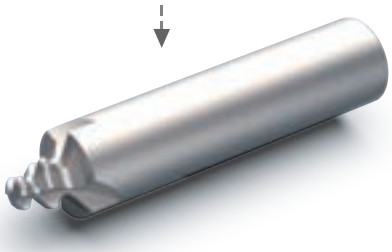
# Energy Industry-Turbine Blades

Application: External grooving
Solution: Standard external grooving tools
- V-shaped insert base ensures secure positioning.
- High-strength alloy steel shanks for extended service life.
- High-pressure coolant for hard-to-cut materials.

Application: Face grooving
Solution: Face grooving tools
- V-shaped insert base ensures secure positioning.
- High-strength alloy steel shanks for extended service life.
- High-pressure coolant for hard-to-cut materials.



Application: Profile grooving
Solution: Custom grooving tools
- Semi-finished blanks for fast delivery.
- Precision-ground edges for high dimensional accuracy.
- Optimized substrates/coatings for hard-to-cut materials.



Application: Christmas tree milling
Solution: Custom Christmas tree milling cutters
- Complete roughing-to-finishing solutions.
- Multi-axis grinding ensures contour accuracy.
- Substrate/coating options for hard-to-cut materials.

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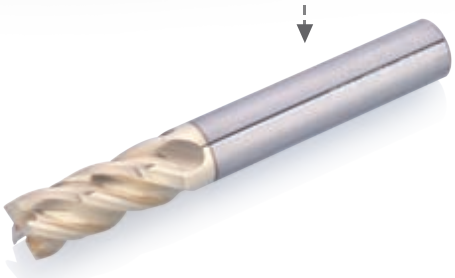
# Aerospace-Blisk Solutions

Application: High-Efficiency turning of hard-tocut materials
Solution: Standard high-pressure coolant turning tool holders

Application: Internal grooving for disc/ring parts
Solution: High-pressure ID grooving tools with internal coolant
- Rigid custom inserts for narrow grooves.
- Precision-ground inserts+high-pressure internal coolant clamp.
- AP130S grade recommended for semifinishing/finishing.



Application: Contour milling
Solution: Solid carbide end mills for titanium (M150 Series)
- New substrate grade AK12E, with superior impact resistance and thermal fatigue resistance.
- Unequal pitch and fluted geometry, to reduce vibration and enhance chip evacuation.

Application: Boss hole machining
Solution: Solid carbide drills with internal coolant (D106 Series)
- Nano-composite coating for extreme wear resistance and toughness.
- 3×D / 5×D length options.

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**THE EXPERT OF DIFFICULT MACHINING**

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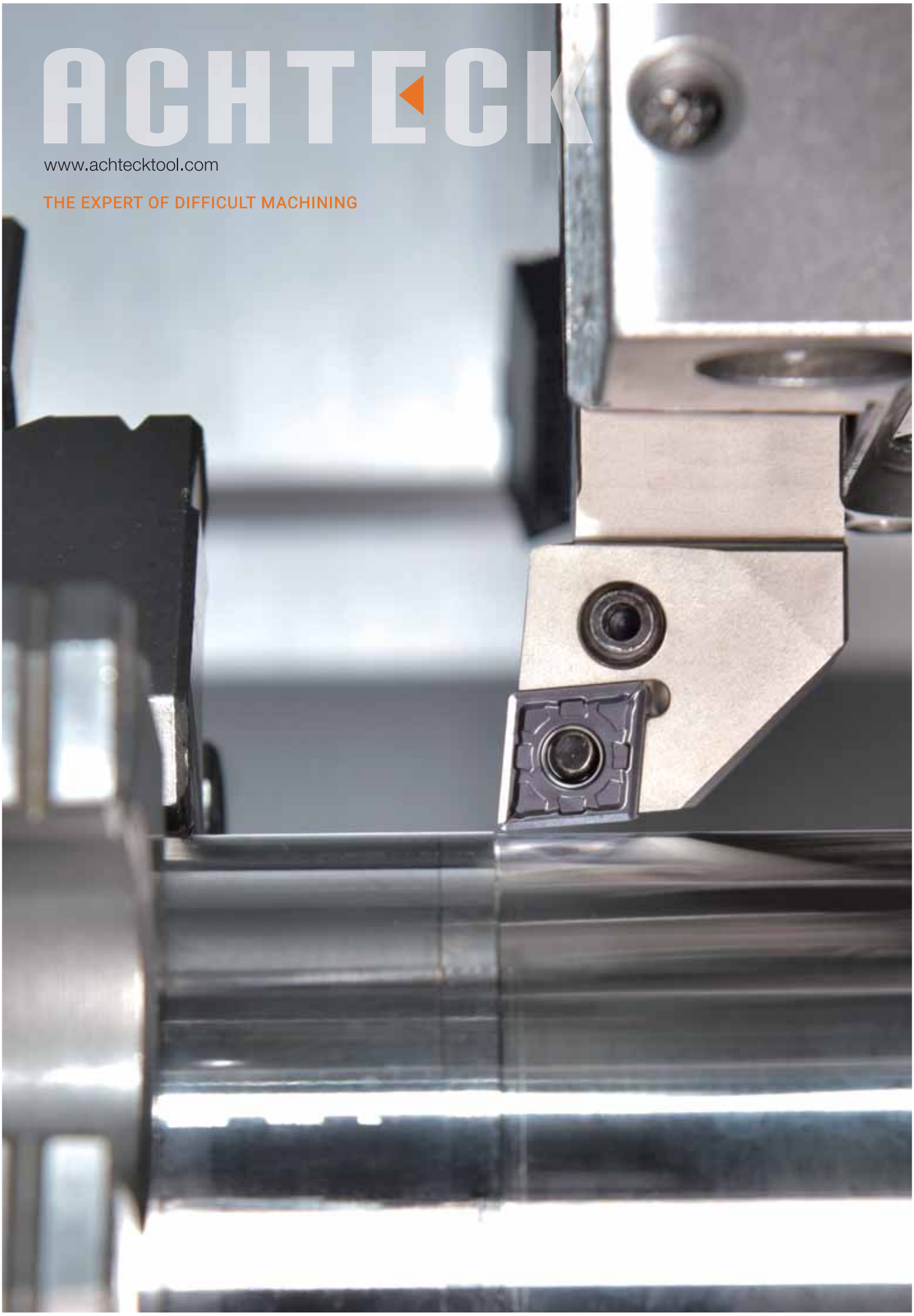

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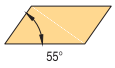
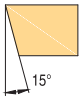
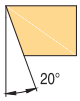
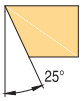
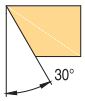
## ISO Turning Insert Denomination System

| C | N | M | G |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

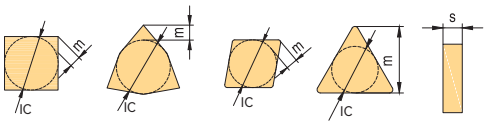
### 1- Shape/Code

| A | B | C | D | E |
|---|---|---|---|---|
| | | | | |
| 85° | 82° | 80° | 55° | 75° |
| **H** | **K** | **L** | **M** | **O** |
| |  | | | |
| 120° | 55° | 90° | 86° | 135° |
| **P** | **R** | **S** | **T** | **V** |
| | | | | |
| 108° | 360° | 90° | 60° | 35° |
| **W** | **Z** | | | |
| | Others | | | |
| 80° | | | | |

### 2- Clearance Angle

| A | B | C | D |
|---|---|---|---|
| | | |  |
| 3° | 5° | 7° | 15° |
| **E** | **F** | **G** | **N** |
|  |  |  | |
| 20° | 25° | 30° | 0° |
| **P** | **O** | | |
| | Others clearance angle | | |
| 11° | | | |

### 3- Tolerance




| Class | Unit | In.Circle dimension IC | Nose height m | Thickness s |
|---|---|---|---|---|
| **A** | mm | ± 0,025 | ± 0,005 | ± 0,025 |
| **C** | mm | ± 0,025 | ± 0,013 | ± 0,025 |
| **E** | mm | ± 0,025 | ± 0,025 | ± 0,025 |
| **F** | mm | ± 0,013 | ± 0,005 | ± 0,025 |
| **G** | mm | ± 0,025 | ± 0,025 | ± 0,130 |
| **H** | mm | ± 0,013 | ± 0,013 | ± 0,025 |
| **J** | mm | * | ± 0,005 | ± 0,025 |
| **K** | mm | * | ± 0,013 | ± 0,025 |
| **L** | mm | * | ± 0,025 | ± 0,025 |
| **M** | mm | * | * | ± 0,127 |
| **U** | mm | * | * | ± 0,127 |
| **N** | mm | * | * | ± 0,025 |

* For details refer to right and below tables

| Shape: C, E, H, M, O, P, S, T, R, W | | | | |
|---|---|---|---|---|
| IC | IC | | m | |
| | J,K,L,M,N | U | M, N | U |
| 4.76 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 5.56 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 6.00 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 6.35 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 7.94 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 8.00 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 9.525 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 10.00 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 12.00 | ± 0,08 | ± 0,13 | ± 0,13 | ± 0,20 |
| 12.70 | ± 0,08 | ± 0,13 | ± 0,13 | ± 0,20 |
| 15.875 | ± 0,10 | ± 0,18 | ± 0,15 | ± 0,27 |
| 16.00 | ± 0,10 | ± 0,18 | ± 0,15 | ± 0,27 |
| 19.05 | ± 0,10 | ± 0,18 | ± 0,15 | ± 0,27 |
| 20.00 | ± 0,10 | ± 0,18 | ± 0,15 | ± 0,27 |
| 25.00 | ± 0,13 | ± 0,25 | ± 0,18 | ± 0,38 |
| 25.40 | ± 0,13 | ± 0,25 | ± 0,18 | ± 0,38 |
| 31.75 | ± 0,15 | ± 0,25 | ± 0,20 | ± 0,38 |
| 32.00 | ± 0,15 | ± 0,25 | ± 0,20 | ± 0,38 |

| M&N class | D shape | | V shape | |
|---|---|---|---|---|
| IC | ic | m | ic | m |
| 5.56 | ± 0,05 | ± 0,11 | | |
| 6.35 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 7.94 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 9.525 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 12.70 | ± 0,08 | ± 0,15 | ± 0,08 | ± 0,20 |
| 15.875 | ± 0,10 | ± 0,18 | ± 0,10 | ± 0,27 |
| 19.05 | ± 0,10 | ± 0,18 | ± 0,10 | ± 0,27 |

### 4- Type of Insert

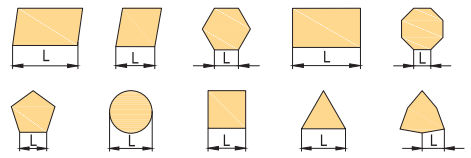
| A | B | C | F | G |
|---|---|---|---|---|
| | 70°-90° | 70°-90° | | |
| **H** | **J** | **M** | **N** | **Q** |
| 70°-90° | 70°-90° | | | 40°-60° |
| **R** | **T** | **U** | **W** | **Z** |
| | 40°-60° | 40°-60° | 40°-60° | Special |

| 12 | | | | 04 | | | |
|---|---|---|---|---|---|---|---|
| 5 | | | | 6 | | | |

| 08 | E | - | KC4 |
|---|---|---|---|
| 7 | 8 | - | 9 |

## 5- Cutting Edge Length

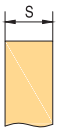
| In.Circle Dimension (mm) | Insert shape C | D | R | S | T | V | W | K |
|---|---|---|---|---|---|---|---|---|
| 3.97 | | | | | 06 | | 02 | |
| 5.00 | | | 05 | | | | | |
| 5.56 | | | | | 09 | | | |
| 6.00 | | 06 | | | | | | |
| 6.35 | 06 | 07 | | | 11 | 11 | 04 | |
| 8.00 | | | 08 | | | | | |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 | 06 | 16 |
| 10.00 | | | 10 | | | | | |
| 12.00 | | | 12 | | | | | |
| 12.70 | 12 | 15 | 12 | 12 | 22 | 22 | 08 | |
| 15.875 | 16 | | 15 | 15 | 27 | | | |
| 16.00 | | | 16 | | | | | |
| 19.05 | 19 | | 19 | 19 | 33 | | | |
| 20.00 | | | 20 | | | | | |
| 25.00 | | | 25 | | | | | |
| 25.40 | 25 | | 25 | 25 | | | | |
| 31.75 | | | 31 | | | | | |
| 32.00 | | | 32 | | | | | |



## 6- Thickness

Round down plus zero or T

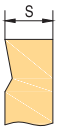
A, B, C, N, O, W




Example:

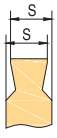
01 = 1.59
T1 = 1.98
02 = 2.38

H, M, R, T




03 = 3.18
T3 = 3.97
04 = 4.76
05 = 5.56
06 = 6.35
07 = 7.94

F, G, J, U




09 = 9.525
11 = 11.11
12 = 12.70
14 = 14.29
15 = 15.88

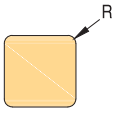
## 7- Nose Radius

Corner radius

Example:

M0 = Round insert (metric)

| | |
|---|---|
| 00 = Sharp | 20 = 2.00 |
| 003 = 0.03 | 24 = 2.40 |
| 005 = 0.05 | 28 = 2.80 |
| 01 = 0.10 | 32 = 3.20 |
| 02 = 0.20 | 40 = 4.00 |
| 04 = 0.40 | 48 = 4.80 |
| 08 = 0.80 | 56 = 5.60 |
| 12 = 1.20 | 64 = 6.40 |
| 16 = 1.60 | X = Others |




## 8- Edge Preparation

| Code | Edge shape | Description |
|---|---|---|
| F | | Sharp cutting edge |
| E | | Honed cutting edge |
| T | | T-land |
| S | | T-land+Honed cutting edge |

## 9- Chip Breaker Description

Refer to page: P28-43

## Ground Positive Insert Example

CCET 09 T3 01 F P R - F

| F | P | R | F |
|---|---|---|---|
| E: Honing edge<br>F: Sharp edge | P: Insert polishing treatment | L: Left<br>R: Right | Geometry |

# ACHTECK

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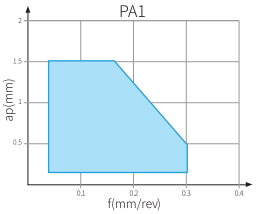
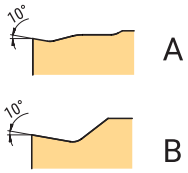
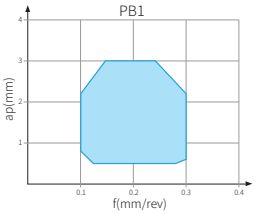
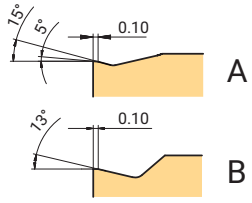
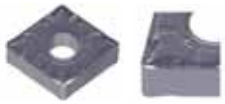
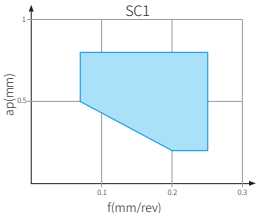
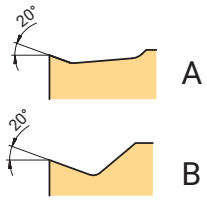
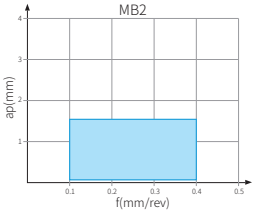
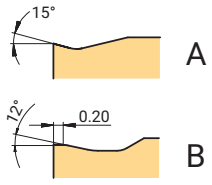
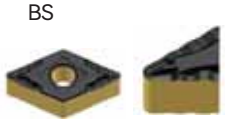
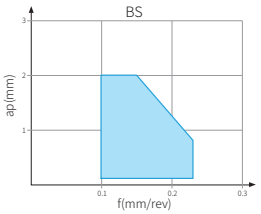
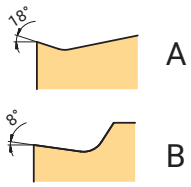
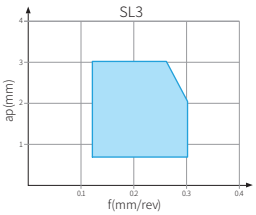
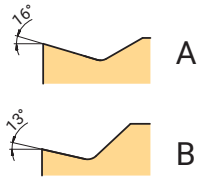
## Turning Inserts

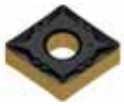
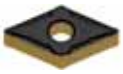
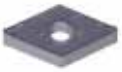
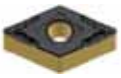
## Turning and Grooving Grade Application Guide

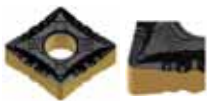
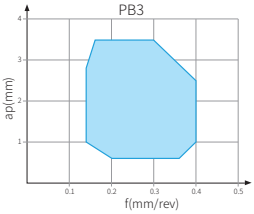
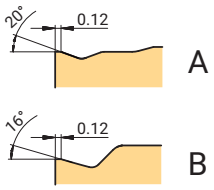
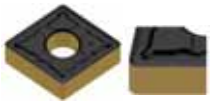
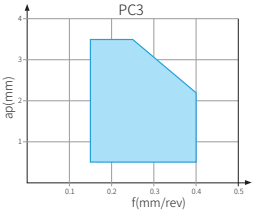
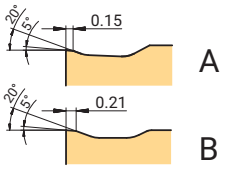
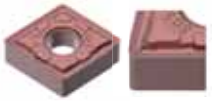
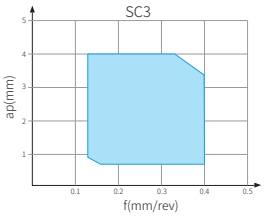
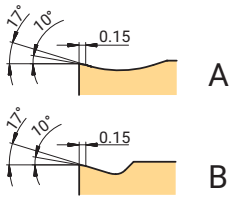
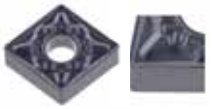
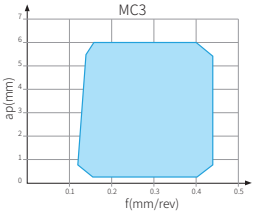
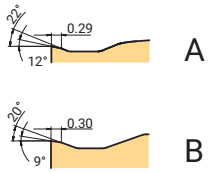
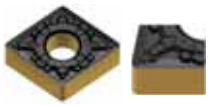
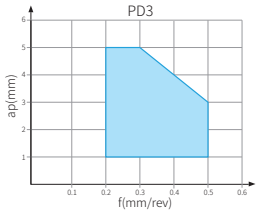
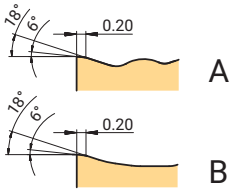
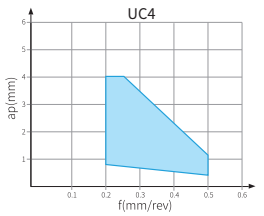
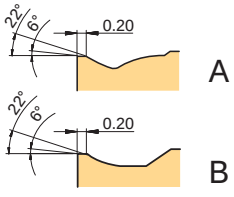
| Material Group | | ISO | Turning | | | | | | | | | | | | | | | | Grooving/Parting off | | | | | | ISO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Coated | | | | | | | | | | Cermet | | Uncoated | PCBN | | | PCD | | | Coated | | | | Uncoated | |
| | | | CVD | | | | | | PVD | | | | | | | | | | | | | CVD | PVD | | | | |
| P | Non-alloy steels/ Alloyed steels | P01 | AC052P | | | | | | | | | | AT202 | AT210A | | | | | | | | | | | | | P01 |
| | | P10 | | AC152P | | AC252P | | | | | | AP200U | | | | | | | | | | AC230P | AP301U | | | | P10 |
| | | P20 | | | | | AC200M | | | | | | | | | | | | | | | | | | AP330M | | P20 |
| | | P30 | | | | AC350P | | | | | | | | | | | | | | | | | | | | | P30 |
| | | P40 | | | | | | | | | | | | | | | | | | | | | | | | | P40 |
| | | P50 | | | | | | | | | | | | | | | | | | | | | | | | | P50 |
| M | Stainless steels | M01 | AC100M | | | | | | AP010S | | | | | | | | | | | | | | | AP130S | | | M01 |
| | | M10 | | AC200M | | | | | | AP200U | AP301M | | | | | | | | | | | | AP301U | | | | M10 |
| | | M20 | | | | | | | | | | | | | | | | | | | | | | | AP330M | | M20 |
| | | M30 | | | | | | | | | | | | | | | | | | | | | | | | | M30 |
| | | M40 | | | | | | | | | | | | | | | PB90 | | | | | | | | | | M40 |
| K | Cast iron | K01 | AC100K | | | | | | | | | | | | | | | | | | | | | | | | K01 |
| | | K10 | | AC102K | | AC202K | | | | | | | AT202 | AT210A | | | | | | | | | | | | | K10 |
| | | K20 | | | | | | | | | | | | | | | | | | | | | | | | | K20 |
| | | K30 | | | | | | | | | | | | | | | | | | | | | | | | | K30 |
| | | K40 | | | | | | | | | | | | | | | | | | | | | | | | | K40 |
| | | K50 | | | | | | | | | | | | | | | | | | | | | | | | | K50 |
| N | Aluminum/ Aluminum alloys | N01 | | | | | | | | | | | | | AW100K | | | | PD20 | | | | | | AW100K | | N01 |
| | | N10 | | | | | | | | | | | | | | | | | | | | | | | | | N10 |
| | | N20 | | | | | | | | | | | | | | | | | | | | | | | | | N20 |
| | | N30 | | | | | | | | | | | | | | | | | | | | | | | | | N30 |
| S | Heat resistant alloys | S01 | AC100M | | | | | | AP010S | AP100S | | | | | | | | | | | | | | AP130S | | | S01 |
| | | S10 | | AC200M | | | | | | | AP301M | | | | | | | | | | | | | | | | S10 |
| | | S20 | | | | | | | | | | | | | | | | | | | | | | | | | S20 |
| | | S30 | | | | | | | | | | | | | | | | | | | | | | | | | S30 |
| | | S40 | | | | | | | | | | | | | | | | | | | | | | | | | S40 |
| H | Hardened steels/ Chilled cast iron | H01 | | | | | | | | | | | | | | PB30 | | | | | | | | | | | H01 |
| | | H10 | | | | | | | | | | | | | | | PB60 | | | | | | | | | | H10 |
| | | H20 | | | | | | | | | | | | | | | | | | | | | | | | | H20 |
| | | H30 | | | | | | | | | | | | | | | | | | | | | | | | | H30 |

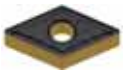
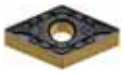
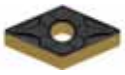
## Overview of Turning Insert Geometries

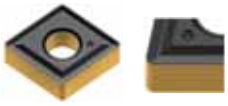
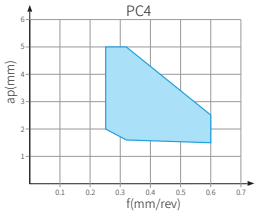
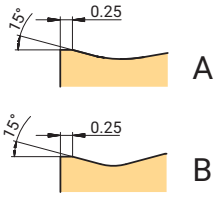
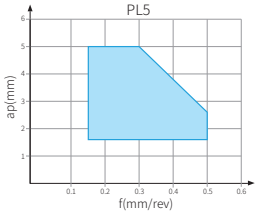
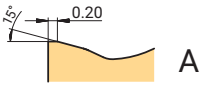
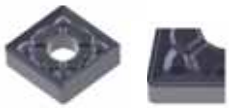
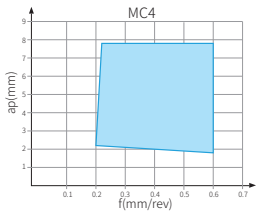
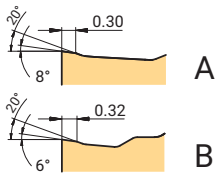
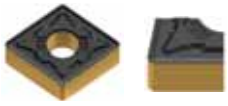
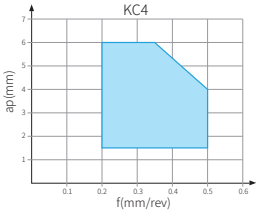
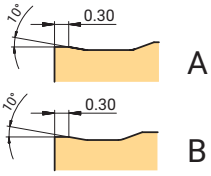
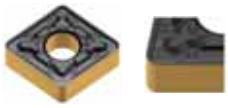
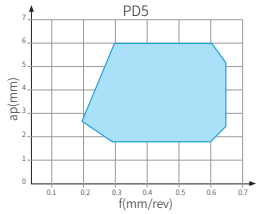
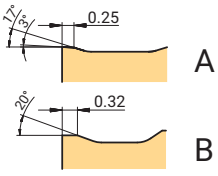
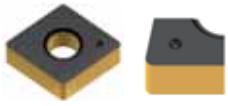
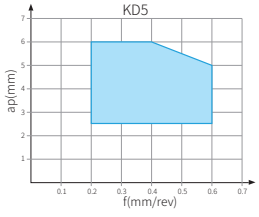
Negative Inserts

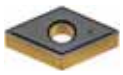
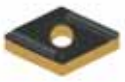
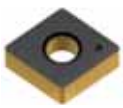
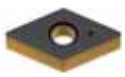
| Application | Chip breaker | Features | Chip breaking range | Cross section geometry A/B |
|---|---|---|---|---|
| Finishing | PA1 | **Steel finishing machining chip breaker**<br>Chip breaker structure design to break chips at varied depths of cut, featuring good sharpness and smooth edge inclination design, which can effectively improve the chip flow and reduce cutting force. |  |  |
| | PB1 | **1st choice for steel finish to semi-finishing turning**<br>Light cutting chip breaker, low cutting force, suitable for slender shaft, thin walled and poorly clamped parts. Overall good cutting performance. |  |  |
| | SC1  | **1st choice for heat resistant alloy finish turning**<br>Excellent performance at low depth of cut. |  |  |
| | MB2 | **1st choice for stainless steel finish turning**<br>High positive rake angle reduced cutting force and built-up edge, can obtain much better surface quality. Very good chip breaking at low feed and cutting depth. |  |  |
| Profiling | BS  | **Recommended for profile turning**<br>Suitable for profiling with changing depth of cut. Smooth chip evacuation |  |  |
| Light cutting | SL3 | **Recommended for heat resistant alloy light turning.**<br>Suitable for heat resistant alloy, Ti-alloy. Sharp and wavy cutting edge can get good surface finish and good chip breaking results. |  |  |

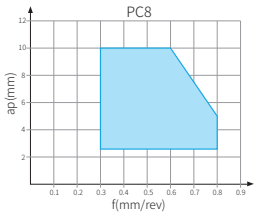
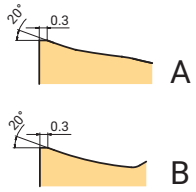
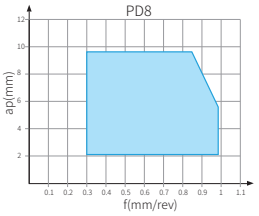
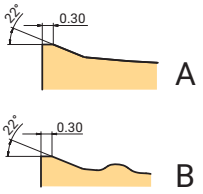
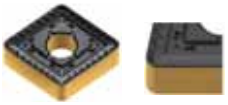
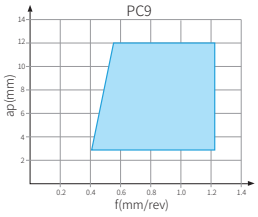
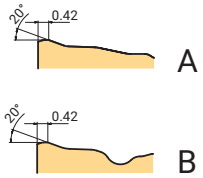
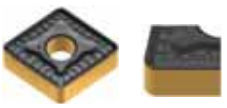
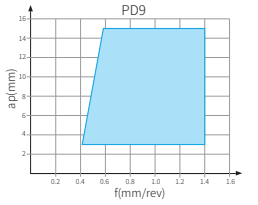
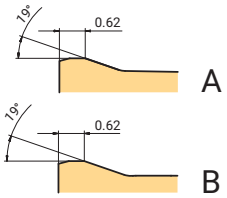
| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | CNMG-PA1  P54 | DNMG-PA1  P58 | | TNMG-PA1 P66 | VNMG-PA1 P70 | WNMG-PA1 P72 | |
| | CNMG-PB1 P54 | DNMG-PB1 P58 | SNMG-PB1 P62 | TNMG-PB1 P66 | VNMG-PB1 P70 | WNMG-PB1 P72 | |
| | CNMG-SC1 P54 | DNMG-SC1  P58 | | TNMG-SC1 P66 | VNMG-SC1 P70 | WNMG-SC1 P72 | |
| | CNMG-MB2 P54 | DNMG-MB2 P58 | SNMG-MB2 P62 | TNMG-MB2 P66 | VNMG-MB2 P70 | WNMG-MB2 P72 | |
| | | DNMG-BS  P58 | | | VNMG-BS P70 | | |
| | CNMG-SL3 P54 | DNMG-SL3 P58 | SNMG-SL3 P62 | TNMG-SL3 P66 | VNMG-SL3 P70 | WNMG-SL3 P73 | |

| Application | Chip breaker | Features | Chip breaking range | Cross section geometry A/B |
|---|---|---|---|---|
| Semi-finishing | PB3  | **1st choice for steel semi finish turning**<br>The positive rake angle combined with small land guaranteed edge strength and sharpness, reduced the cutting force. The wavy side edge design has a good chip breaking result in small leading angle turning on the shoulder, and in profile turning at different cutting depths. |  |  |
| | PC3  | **Alternative chipbreaker for steel semi-finish turning**<br>Unique geometry design offers wider chip breaking range. Double rake angle makes the cutting smoothly. Enhanced insert tip reduced crater wear. |  |  |
| | SC3  | **1st choice for heat resistant alloy medium turning**<br>Used in heat resistant alloy and titanium alloy medium turning. Large rake angle + small land width design, easy cutting, is also suitable for soft steel turning. |  |  |
| | MC3  | **1st choice for stainless steel medium turning**<br>Sharp cutting edge, low cutting force, wide chip breaking range and good chip removal ability. |  |  |
| Medium | PD3  | **1st choice for steel medium turning**<br>It has a strong chip control ability at low feed and cutting depth, and reduces crater wear. The chip breaking is also very good at high feed and cutting depth due to the geometry design. Double rake angle design makes sharp cutting edge and reduces cutting force. |  |  |
| | UC4 | **1st choice for carbon steel & alloyed steel (medium-cutting conditions)**<br>**Alternative chip breaker for cast iron finishing & light-duty machining**<br>Wide applicability across P, M, K-class workpiece materials for general-purpose medium-duty machining. Positive land angle geometry for reduced cutting forces and enhanced process stability. Features an optimized edge preparation technique to balance cutting-edge sharpness and strength. |  |  |

| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | CNMG-PB3 P54 | DNMG-PB3 P59 | | TNMG-PB3 P67 | VNMG PB3 P70 | WNMG-PB3 P73 | |
| | CNMG-PC3 P54 | DNMG-PC3  P59 | SNMG-PC3 P62 | TNMG-PC3 P67 | VNMG-PC3 P70 | WNMG-PC3 P73 | |
| | CNMG-SC3 P55 | DNMG-SC3 P59 | SNMG-SC3 P62 | TNMG-SC3 P67 | VNMG-SC3 P70 | WNMG-SC3 P73 | |
| | CNMG-MC3 P55 | DNMG-MC3 P59 | SNMG-MC3 P62 | TNMG-MC3 P67 | VNMG-MC3 P70 | WNMG-MC3 P73 | |
| | CNMG-PD3 P55 | DNMG-PD3  P60 | SNMG-PD3 P63 | TNMG-PD3 P67 | VNMG-PD3 P71 | WNMG-PD3 P73 | |
| | CNMG-UC4 P55 | DNMG-UC4  P60 | SNMG-UC4 P62 | TNMG-UC4 P67 | VNMG-UC4 P71 | WNMG-UC4 P73 | |

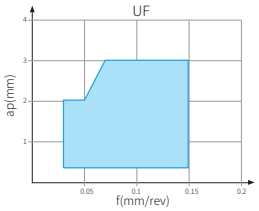
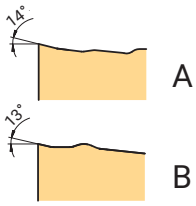
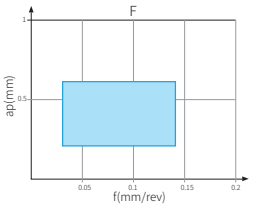
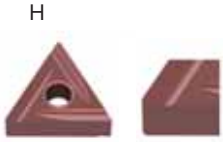
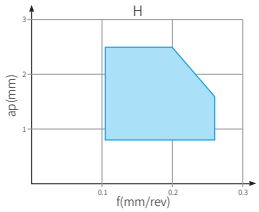
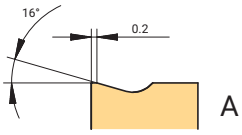
| Application | Chip breaker | Features | Chip breaking range | Cross section geometry |
|---|---|---|---|---|
| Medium | PC4  | **1st choice for cast iron medium turning Alternative chipbreaker for carbon steel and alloy steel medium turning**<br>Flat T-land guarantee the strength of cutting edge. This multi-purpose geometry can be used in universal applications. |  |  |
| | PL5 | **1st choice for steel slender bar turning**<br>Open chip breaker leads to smooth cutting with low cutting force, which is suitable for slender shaft turning. |  |  |
| Roughing | MC4  | **Alternative chipbreaker for stainless steel and heat resistant alloy rough turning**<br>Large chip breaker design, smooth chip evacuation, good chip breaking, with high metal removal rate. |  |  |
| | KC4  | **1st choice for cast iron turning**<br>It has strong cutting edge, reliable and stable performance. |  |  |
| | PD5  | **Alternative chipbreaker for steel rough turning**<br>A strong cutting edge. Double rake angle design effectively reduces the cutting force, can still have good chip breaking at small cutting depth. |  |  |
| | KD5  | **1st choice for cast iron rough turning**<br>High cutting edge strength, suitable for interrupt cutting and unstable cutting. |  | |

| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | CNMG-PC4 P55 | DNMG-PC4  P60 | SNMG-PC4 P63 | TNMG-PC4 P67 | VNMG-PC4 P71 | WNMG-PC4 P74 | |
| | | DNMG-PL5  P60 | | TNMG-PL5 P67 | | WNMG-PL5 P74 | |
| | CNMG-MC4 P56 | DNMG-MC4 P61 | SNMG-MC4 P63 | TNMG-MC4 P68 | | WNMG-MC4 P74 | |
| | CNMG-KC4 P56 | DNMG-KC4 P61 | SNMG-KC4 P64 | TNMG-KC4 P68 | VNMG-KC4 P71 | WNMG-KC4 P74 | |
| | CNMG-PD5 P56 | DNMG-PD5 P61 | SNMG-PD5 P64 | TNMG-PD5 P68 | | WNMG-PD5 P74 | |
| | CNMA-KD5  P57 | DNMA-KD5  P61 | SNMA-KD5 P64 | TNMA-KD5 P68 | | WNMA-KD5 P74 | |

| Application | Chip breaker | Features | Chip breaking range | Cross section geometry | |
|---|---|---|---|---|---|
| Heavy roughing | PC8 | **Light cutting geometry for heavy turning**<br>Positive rake angle and curved cutting edge design, low cutting force. |   |   | |
| | PD8 | **Heavy turning geometry for soft steel and stainless steel**<br>The geometry design ensures low cutting force. Suitable for low power machine tools. Applied in steel, stainless steel and cast iron heavy turning. |   |   | |
| | PC9  | **1st choice for steel heavy rough turning**<br>Wavy geometry is good for chip breaking. The geometry has a big space for chips, which is suitable for high metal removal rate. |   |   | |
| | PD9  | **Alternative chipbreaker for steel heavy rough turning**<br>High edge strength is suitable for large cutting depth and high feed turning. High machining reliability. |   |   | |

| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | CNMM-PC8<br> <br>P57 | | | | | | |
| | CNMM-PD8<br> <br>P57 | | SNMM-PD8<br> <br>P65 | TNMM-PD8<br> <br>P69 | | | |
| | CNMM-PC9<br> <br>P57 | | SNMM-PC9<br> <br>P65 | | | | |
| | CNMM-PD9<br> <br>P57 | | SNMM-PD9<br> <br>P65 | | | | |

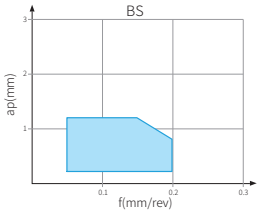
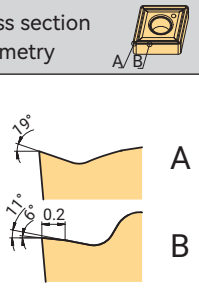
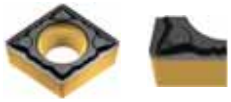
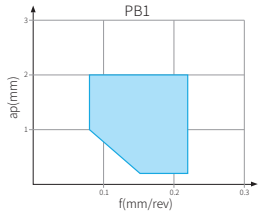
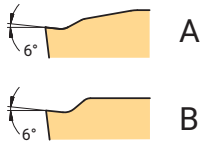
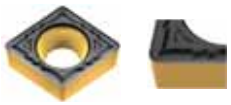
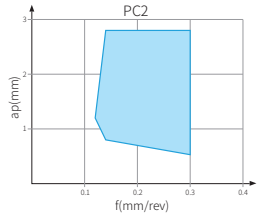
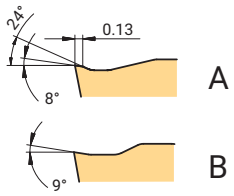
Negative Ground Insert

| Application | Chip breaker | Features | Chip breaking range | Cross section geometry A/B | |
|---|---|---|---|---|---|
| Finishing | UF | **Suitable for precision turning**<br>Low cutting forces, good chip breaking, suitable for finish turning. |  |  | |
| | F | **Finish turning**<br>Low cutting force, good chip control. The sharp edge produces a good surface finish. |  | | |
| Semi-finishing-Rough machining | H  | **Light turning**<br>Excellent chip control at low to medium feed rates. Strong edge strength. |  |  | |

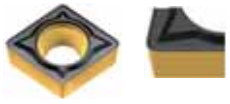
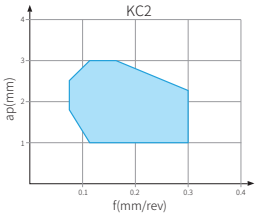
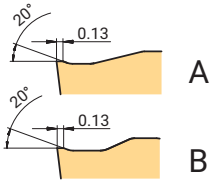
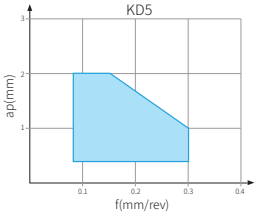
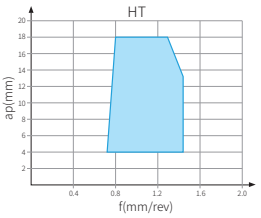
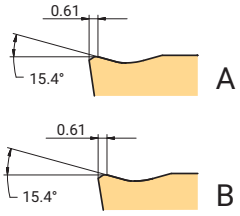
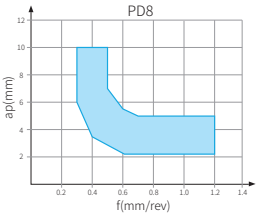
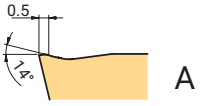
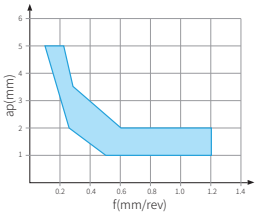
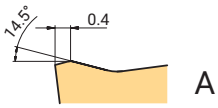
| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | CNGG-UF P54 | DNGG-UF P58 | | TNGG-UF P66 | VNGG-UF P70 | | |
| | | | | TNGG-F P69 | | | |
| | | | | TNGG-H P69 | | | |

## Overview of Turing Insert Geometry

Positive Pressed Insert

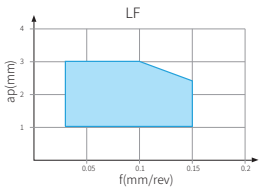
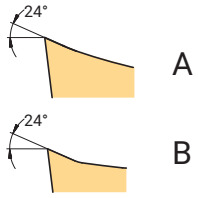
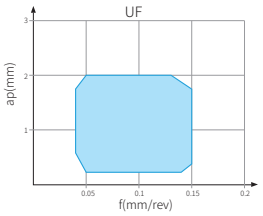
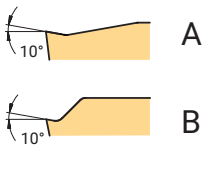
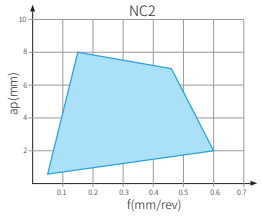
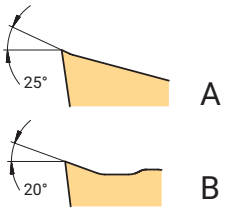
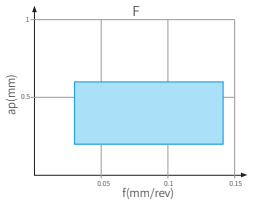
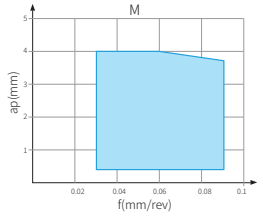
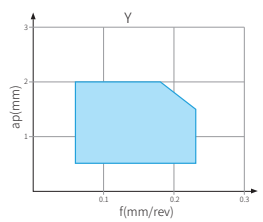
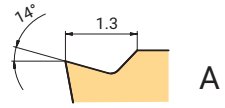
| Application | Chip breaker | Features | Chip breaking range | Cross section geometry A/ B |
|---|---|---|---|---|
| Profiling | BS | **Finish turning**<br>Profile turning or turning with changing depth of cut, smooth chip evacuation. |  |  |
| Finishing | PB1  | **1st choice for steel finish turning**<br>Positive rake angle reduces cutting force and built-up edge, and obtains better surface finish and longer tool life. Also can be used in stainless steel turning. |  |  |
| Semi-finishing | PC2  | **1st choice for steel and stainless steel semi-finish turning**<br>Sharp geometry design ensures low cutting force, less built-up edge and excellent chip control. |  |  |

| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | | | | | VBMT-BS P90 | | |
| | CCMT-PB1<br>CPMT-PB1 P77、80 | DCMT-PB1 P82 | SCMT-PB1 P84 | TCMT-PB1<br>TPMT-PB1 P86、88 | VBMT-PB1<br>VCMT-PB1 P90、93 | | |
| | CCMT-PC2<br>CPMT-PC2 P77、80 | DCMT-PC2 P82 | SCMT-PC2 P84 | TCMT-PC2<br>TPMT-PC2 P86、88 | VBMT-PC2<br>VCMT-PC2 P91、93 | | |

| Application | Chip breaker | Features | Chip breaking range | Cross section geometry | |
|---|---|---|---|---|---|
| Medium | KC2  | **General purpose geometry for steel, stainless steel and cast iron turning**<br>Suitable for medium and rough turning. Simple and durable chip breaker design, very good versatility and wide application range. |  |  | |
| Roughing | KD5 | **Geometry for cast iron rough turning**<br>Suitable for unstable machining due to its strong cutting edge. Reduced chipping. |  | | |
| | HT | **Geometry for steel turning with large cutting depth**<br>Open chip breaker is suitable for large cutting depth with smooth chip evacuation. Good cost efficiency. |  |  | |
| Semi-finishing | PD8 | **Geometry for carbon steel and alloy steel semi-finishing turning**<br>A wide chipbreaker avoid chip jam at large cutting depth. Chip control can be also good at small cutting depth. |  |  | |
| Medium | No code | **Alternative chipbreaker for cast iron and alloy steel medium turning**<br>Negative land and large rake angle design ensure cutting edge strength and sharpness. |  |  | |

| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | CCMT-KC2 P78 | DCMT-KC2 P82 | SCMT-KC2 P84 | TCMT-KC2 P87 | VBMT-KC2 P91 | | |
| | CCMW-KD5 P78 | DCMW-KD5 P82 | SCMW-KD5 P84 | TCMW-KD5 P87 | | | |
| | | | SCMT-HT P84 | | | | |
| | | | | | | | RCMX-PD8 P96 |
| | | | | | | | RCMX P96 |

正型磨制 Inserts

| Application | Chip breaker | Features | Chip breaking range | Cross section geometry |
|---|---|---|---|---|
| Finishing | LF | **Finish turning**<br>Sharp cutting edge, low cutting force, suitable for Swiss-type automatic lathe with 2 direction machining. |  |  |
| | UF | **1st choice for heat resistant alloy turning**<br>Peripheral ground finish turning inserts. High repeatability on insert positioning. Sharp cutting edge can achieve good machining tolerance. |  |  |
| Semi-finishing | NC2 | **Choice for aluminium alloy turning**<br>Very positive rake angle is designed for non-ferrous metal finish and semi-finish turning. It reduces the cutting force and make smooth chip evacuation. The polished rake surface, with reduced friction and built-up edge. |  |  |
| Finishing | F | **Choice for finish turning**<br>Excellent chip control at low feed rate. Very low cutting force. |  | |
| Low feed | M | **Suitable for medium turning in automatic lathes**<br>Excellent chip control at low to medium feed rate. Reliable machining. large rake angle avoid work hardening. |  | |
| Semi-finishing | Y | **Choice for semi-finish to rough turning in automatic lathe**<br>The strong edge can be used in rough turning. Good chip control for low to medium feed rate |  |  |

| | 80° Rhombus | 55° Rhombus | 90° Square | 60° Triangle | 35° Rhombus | 80° Trigon | Round |
|---|---|---|---|---|---|---|---|
| | CCGT-LF P76 | DCGT-LF P81 | | TCGT-LF P85 | VBGT-LF VCGT-LF VPGT-LF P90、93、94 | | |
| | CCGT-UF P76 | DCGT-UF P81 | | TCGT-UF P85、86 | VBGT-UF VCGT-UF VPGT-UF P90、93、94 | | |
| | CCGT-NC2 P76 | DCGT-NC2 P81 | SCGT-NC2 P84 | TCGT-NC2 P86 | VCGT-NC2 VPGT-NC2 P93、94 | | RCGT-NC2 P96 |
| | CCET-F P78 | DCET-F P82、83 | | TBET-F TCET-F TPEH-F P85、87、89 | VBET-F VCET-F VPET-F P91、93、94 | WBET-F P95 | |
| | CCET-M P79 | DCET-M P83 | | TCET-M P87 | VBET-M VPET-M P92、94 | | |
| | | | | | VBET-Y P92 | | |

## Turning Grade Description

### Basic Grades for Turning

### P Steel, cast steel, ferrite/martensite stainless steel and malleable cast iron

#### Basic grade

**AC052P P05(P01-P15)**

CVD coated grade, has good crater resistance and chipping resistance, which is recommanded for high productivity medium and rough turning in stable condition, can keep edge reliability in dry or wet machining with high temperature.

**AC152P P15(P05-P25)**

CVD coated grade, can be used in finish to rough turning on steel and cast steel, and is recommanded in continuous and light interrupted cutting where it can keep high metal removal rate.

**AC252P P25(P15-P35)**

CVD coated grade, 1st choice for steel turning, used in finish to rough turning on steel and cast steel. It's recommanded for continuous and interrupted machining.

**AC350P P35(P30-P45)**

CVD coated grade, can be used in rough turning on steel and cast steel under poor conditions. Reliable cutting edge made this grade good for interrupted machining with high metal removal rate.

**AT210A P15(P10-P20)**

Coated cermet grade, the combination of ultra-fine crystalline hard phase and composite bonding phase to realize the balance of wear resistance and chipping resistance; suitable for continuous medium to fine turning processing of steel materials, and offer high-quality machining surface.

**AT202 P15(P10-P20)**

Uncoated cermet grade. It has excellent built-up edge resistance and chipping resistance which can be used in finish turning with good surface quality or low cutting force requests.

#### Supplemental grade

**AP200U P25(P15-P35)**

PVD coated grade, recommanded for finish turning on low carbon steel with low cutting speed or low feed.

### M Austenitic stainless steel, cast steel, manganese steel, alloyed cast iron, malleable cast iron and free cutting iron

#### Basic grade

**AC100M M15(M05-M20)**

CVD coated grade. It's recommanded for finish machining and light rough machining. It's suitable for machining at medium to high cutting speed due to its heat resistance feature of wear resistant coating.

**AC200M M25(M15-M30)**

CVD coated grade, optimised for semi-finish to rough turning, can be used in interrupted machining in which it can keep edge reliability due to good thermal shock stability and mechanical shock resistance.

**AP301M M25(M15-M35)**

PVD coated grade. Mainly used in machining steel and stainless steel small parts. It has excellent built-up edge resistance, good machining stability, can obtain good surface quality, and achieve longer tool life.

#### Supplemental grade

**AP010S (M01-M15)**

PVD coated grade, recommanded for finish turning due to its high hardness and resistance to plastic deformation.

**AP200U M25(M15-M35)**

PVD coated grade, used in complementary stainless steel applications at low to medium cutting speeds and also in interrupted turning due to excellent thermal stability, outstanding performance in machining when sharp edge and edge toughness or good surface quality are requeste

## K Cast iron, chilled cast iron and short chip malleable cast iron

### Basic grade

**AC100K K05(K01-K15)**
CVD coated grade, has thick and smooth wear resistant coating and very hard substrate, recommanded for grey cast iron high speed turning.

**AC102K K10(K05-K20)**
CVD coated grade, has thick and smooth wear resistant coating and hard substrate, recommanded for nodular cast iron high speed turning.

**AC202K K15(K10-K30)**
1st choice for cast iron turning. It can deal with interrupted cutting due to its high wear-resitant CVD coating, used in finish to rough turning on cast iron at low to medium cutting speed.

### Supplemental grade

**PB90 K10(K01-K20)**
CBN grade. Suitable for grey cast iron and chilled cast iron interrupted finish turning due to its good edge strength and wear resistance.

**AT210A K15(K10-K20)**
Coated cermet grade. The combination of ultra-fine crystalline hard phase and composite bonding phase to provide a balance of abrasion resistance and chipping resistance; suitable for continuous and medium turning of cast iron materials; offer high-quality machining surfaces.

**AT202 K15(K10-K20)**
Uncoated cermet grade. It has excellent built-up edge resistance and good plastic deformation resistance. It can be used in nodular cast iron finish turning when surface quality, small tolerance or low cutting force are requested.

## N Non-ferrous metals

### Basic grade

**AW100K N15(N05-N25)**
Uncoated grade. It has both excellent wear resistance and sharp edge. Used in Al alloy rough to finish machining.

**PD20 N10 (N01-N20)**
PCD grade, used in non-ferrous material and non-metal material machining which can have longer tool life, completely clean cutting and good surface quality.

## S Heat resistant alloys

### Basic grade

**AP010S S05(S01-S15)**
With extremely high hardness, structural and chemical stability, it can not only meet the needs of high cutting speed finishing stable working conditions, but also suitable for high toughness of medium or semi-finishing and other general working conditions.

**AP100S S10(S05-S20)**
1st choice for heat resistant alloy. PVD coated grade has high hardness and plastic deformation resistance, can keep high performance and good wear resistance.

**AP301M S25(S15-S35)**
PVD coated grade. Used in low cutting speed or light interrupted cutting. Suitable for semi-roughing or continuous machining for a short time due to its good notch wear resistance and anti-heat shock capability.

### Supplemental grade

**AC100M S15(S05-S20)**
CVD coated grade, suitable for heat resistant alloy continuous high speed machining .

**AC200M S25(S15-S35)**
CVD coated grade, suitable for heat resistant alloy general machining.

## H Hardened materials

### Basic grade

**PB30 H10(H05-H15)**
CBN grade with low CBN content, is used in hardened steel continuous machining at high speed and light interrupted machining.

**PB60 H15(H10-H25)**
1st choice of CBN grade medium CBN content for hardened steel interrupted machining and continuous machining at medium speed.

## Cutting Data Recommendation--Negative Insert

| Materials | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness (HB) | Tensile strength ($N/mm^2$) | AT202 f (mm/rev) | | | AT210A f (mm/rev) | | | |
| | | | | | | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 | |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 200 | 100 | 70 | 310 | 200 | 160 | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 200 | 100 | 70 | 310 | 200 | 160 | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | | C > 0.55% | Annealed | 190 | 639 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | | Free cutting steel(short chip) | Annealed | 220 | 745 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | Low-alloyed steel | Annealed | | 175 | 591 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | | Heat-treated | | 300 | 1013 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | | Heat-treated | | 380 | 1282 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | | Heat-treated | | 430 | 1477 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | High-alloyed steel and high-alloyed tool steel | Annealed | | 200 | 675 | 160 | 80 | 50 | 270 | 180 | 140 | |
| | | Hardened and tempered | | 300 | 1013 | 160 | 80 | 50 | 270 | 180 | 140 | |
| | | Hardened and tempered | | 400 | 1361 | 150 | 80 | 50 | 270 | 180 | 140 | |
| | Stainless steel | Ferritic/Martensite, Annealed | | 200 | 675 | | | | | | | |
| | | Martensite, Heat-treated | | 330 | 1114 | | | | | | | |
| M | Stainless steel | Austenitic,hardened | | 200 | 675 | | | | | | | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | | | | | | | |
| | | Austenitic, ferritic, duplex | | 230 | 778 | | | | | | | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy (bronze/brass) | Unalloyed, electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass, bronze, red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy, short chip | | 110 | 380 | | | | | | | |
| | | High tensile, Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Heat-resistant alloy | Fe-based | Annealed | 200 | 680 | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | | | | | | | | |
| | | Hardened and tempered | | 55HRC | | | | | | | | |
| | | Hardened and tempered | | 60HRC | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | | | | | | | | |

* The recommended cutting data always refer to general cutting conditions. The actual selection should be adjusted according to the factors such as machine rigidity, tool body, workpiece conditions and coolant (f should be adjust according to insert radius)

| Achteck turning grade | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial value of cutting speed Vc(m/min) | | | | | | | | | | | | | | | | | | |
| | AC052P | | | AC152P | | | AC252P | | | AC350P | | | AC100M | | | AC200M | | |
| | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | |
| | 0.10 | 0.40 | 0.60 | 0.10 | 0.40 | 0.60 | 0.10 | 0.40 | 0.60 | 0.10 | 0.40 | 0.60 | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 |
| | 620 | 450 | 330 | 485 | 360 | 270 | 380 | 260 | 210 | 250 | 170 | 140 | | | | | | |
| | 560 | 405 | 295 | 370 | 270 | 210 | 280 | 200 | 150 | 200 | 135 | 110 | | | | | | |
| | 400 | 280 | 200 | 260 | 220 | 170 | 200 | 160 | 135 | 150 | 125 | 90 | | | | | | |
| | 530 | 385 | 275 | 270 | 220 | 160 | 240 | 160 | 125 | 170 | 110 | 90 | | | | | | |
| | 380 | 245 | 180 | 210 | 180 | 150 | 160 | 120 | 110 | 125 | 75 | 65 | | | | | | |
| | 600 | 420 | 300 | 440 | 310 | 250 | 340 | 220 | 175 | 220 | 145 | 115 | | | | | | |
| | 610 | 410 | 285 | 350 | 260 | 220 | 240 | 175 | 135 | 200 | 165 | 150 | | | | | | |
| | 530 | 350 | 250 | 220 | 170 | 150 | 140 | 100 | 85 | 135 | 90 | 70 | | | | | | |
| | 330 | 230 | 175 | 160 | 120 | 100 | 100 | 70 | 55 | 90 | 65 | 45 | | | | | | |
| | 265 | 185 | 140 | 90 | 70 | | | | | | | | | | | | | |
| | 445 | 295 | 215 | 330 | 230 | 150 | 210 | 145 | 85 | 180 | 150 | 85 | | | | | | |
| | 300 | 200 | 160 | 230 | 140 | 110 | 130 | 85 | 65 | 110 | 85 | 65 | | | | | | |
| | 220 | 140 | 105 | 80 | 70 | | | | | | | | | | | | | |
| | | | | | | | 180 | 150 | 120 | 150 | 120 | 95 | 220 | 180 | 150 | 190 | 160 | 130 |
| | | | | | | | 140 | 100 | 70 | 110 | 80 | 60 | 170 | 140 | 130 | 140 | 110 | 100 |
| | | | | | | | | | | | | | 250 | 190 | 150 | 200 | 160 | 110 |
| | | | | | | | | | | | | | 180 | 160 | | 150 | 120 | |
| | | | | | | | | | | | | | 190 | 170 | 130 | 160 | 130 | 100 |
| | | | | | | | | | | | | | 360 | 300 | 260 | | | |
| | | | | | | | | | | | | | 330 | 280 | 250 | | | |
| | | | | | | | | | | | | | 450 | 400 | 350 | | | |
| | | | | | | | | | | | | | 350 | 300 | 250 | | | |
| | | | | | | | | | | | | | 300 | 250 | 200 | | | |
| | | | | | | | | | | | | | 300 | 250 | 200 | | | |
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| | | | | | | | | | | | | | 80 | 60 | 40 | 70 | 50 | 30 |
| | | | | | | | | | | | | | 70 | 50 | 30 | 60 | 40 | 20 |
| | | | | | | | | | | | | | 70 | 50 | 35 | 60 | 40 | 25 |
| | | | | | | | | | | | | | 70 | 50 | 30 | 60 | 40 | 20 |
| | | | | | | | | | | | | | 70 | 50 | 30 | 60 | 40 | 20 |
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## Cutting Data Recommendation--Negative Insert

| Materials | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness (HB) | Tensile strength ($N/mm^2$) | AP200U f (mm/rev) | | | AP301M f (mm/rev) | | | |
| | | | | | | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 | |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 220 | 210 | | | | | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 170 | 150 | | | | | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 140 | 120 | | | | | |
| | | C > 0.55% | Annealed | 190 | 639 | 130 | 120 | | | | | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | | | | | | | |
| | | Free cutting steel(short chip) | Annealed | 220 | 745 | 190 | 170 | | | | | |
| | Low-alloyed steel | Annealed | | 175 | 591 | 130 | 110 | | | | | |
| | | Heat-treated | | 300 | 1013 | | | | | | | |
| | | Heat-treated | | 380 | 1282 | | | | | | | |
| | | Heat-treated | | 430 | 1477 | | | | | | | |
| | High-alloyed steel and high-alloyed tool steel | Annealed | | 200 | 675 | 120 | 80 | | | | | |
| | | Hardened and tempered | | 300 | 1013 | | | | | | | |
| | | Hardened and tempered | | 400 | 1361 | | | | | | | |
| | Stainless steel | Ferritic/Martensite, Annealed | | 200 | 675 | 145 | 130 | 90 | | | | |
| | | Martensite, Heat-treated | | 330 | 1114 | 105 | 80 | 70 | | | | |
| M | Stainless steel | Austenitic,hardened | | 200 | 675 | 180 | 120 | 80 | 180 | 120 | 80 | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 110 | 90 | | 110 | 90 | | |
| | | Austenitic, ferritic, duplex | | 230 | 778 | 120 | 100 | 70 | 120 | 100 | 70 | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy (bronze/brass) | Unalloyed, electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass, bronze, red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy, short chip | | 110 | 380 | | | | | | | |
| | | High tensile, Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Heat-resistant alloy | Fe-based | Annealed | 200 | 680 | | | | 40 | 25 | | |
| | | | Aged | 280 | 940 | | | | 30 | 20 | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | 30 | 25 | | |
| | | | Aged | 350 | 1180 | | | | 30 | 20 | | |
| | | | Cast | 320 | 1080 | | | | 30 | 20 | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | | | | | | | | |
| | | Hardened and tempered | | 55HRC | | | | | | | | |
| | | Hardened and tempered | | 60HRC | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | | | | | | | | |

* The recommended cutting data always refer to general cutting conditions. The actual selection should be adjusted according to the factors such as machine rigidity, tool body, workpiece conditions and coolant (f should be adjust according to insert radius)

| Achteck turning grade | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial value of cutting speed Vc(m/min) | | | | | | | | | | | | | | | | | | |
| | AC100K | | | AC102K | | | AC202K | | | AW100K | | | AP010S | | | AP100S | | |
| | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | |
| | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 | 0.10 | 0.20 | 0.40 | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 |
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| | | | | | | | | | | | | | 240 | 190 | 150 | 240 | 190 | 150 |
| | | | | | | | | | | | | | 150 | 85 | | 150 | 85 | |
| | | | | | | | | | | | | | 170 | 145 | 100 | 170 | 145 | 100 |
| | 280 | 200 | 170 | 270 | 190 | 160 | 240 | 160 | 130 | | | | | | | | | |
| | 250 | 170 | 130 | 245 | 160 | 125 | 200 | 120 | 95 | | | | | | | | | |
| | 490 | 260 | 200 | 490 | 250 | 190 | 400 | 210 | 150 | | | | | | | | | |
| | 250 | 180 | 140 | 240 | 170 | 130 | 200 | 150 | 100 | | | | | | | | | |
| | 270 | 200 | 150 | 260 | 190 | 250 | 230 | 170 | 120 | | | | | | | | | |
| | 210 | 160 | 140 | 200 | 150 | 130 | 170 | 120 | 100 | | | | | | | | | |
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| | | | | | | | | | | | | | 100 | 65 | | 100 | 65 | |
| | | | | | | | | | | | | | 80 | 55 | | 80 | 55 | |
| | | | | | | | | | | | | | 80 | 55 | | 80 | 55 | |
| | | | | | | | | | | | | | 70 | 45 | | 70 | 45 | |
| | | | | | | | | | | | | | 60 | 30 | | 60 | 30 | |
| | | | | | | | | | | | | | 200 | 180 | 140 | 200 | 180 | 140 |
| | | | | | | | | | | | | | 90 | 55 | 45 | 90 | 55 | 45 |
| | | | | | | | | | | | | | 55 | 35 | 30 | 55 | 35 | 30 |
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## Cutting Data Recommendation--Positive Insert

| Materials | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness (HB) | Tensile strength ($N/mm^2$) | AT202 f (mm/rev) | | | AT210A f (mm/rev) | | | |
| | | | | | | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 | |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 200 | 100 | 70 | 310 | 200 | 160 | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 200 | 100 | 70 | 310 | 200 | 160 | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | | C > 0.55% | Annealed | 190 | 639 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | | Free cutting steel(short chip) | Annealed | 220 | 745 | 200 | 80 | 50 | 310 | 180 | 140 | |
| | Low-alloyed steel | Annealed | | 175 | 591 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | | Heat-treated | | 300 | 1013 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | | Heat-treated | | 380 | 1282 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | | Heat-treated | | 430 | 1477 | 180 | 80 | 50 | 290 | 180 | 140 | |
| | High-alloyed steel and high-alloyed tool steel | Annealed | | 200 | 675 | 160 | 80 | 50 | 270 | 180 | 140 | |
| | | Hardened and tempered | | 300 | 1013 | 160 | 80 | 50 | 270 | 180 | 140 | |
| | | Hardened and tempered | | 400 | 1361 | 150 | 80 | 50 | 270 | 180 | 140 | |
| | Stainless steel | Ferritic/Martensite, Annealed | | 200 | 675 | | | | | | | |
| | | Martensite, Heat-treated | | 330 | 1114 | | | | | | | |
| M | Stainless steel | Austenitic,hardened | | 200 | 675 | | | | | | | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | | | | | | | |
| | | Austenitic, ferritic, duplex | | 230 | 778 | | | | | | | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy (bronze/brass) | Unalloyed, electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass, bronze, red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy, short chip | | 110 | 380 | | | | | | | |
| | | High tensile, Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Heat-resistant alloy | Fe-based | Annealed | 200 | 680 | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | | | | | | | | |
| | | Hardened and tempered | | 55HRC | | | | | | | | |
| | | Hardened and tempered | | 60HRC | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | | | | | | | | |

* The recommended cutting data always refer to general cutting conditions. The actual selection should be adjusted according to the factors such as machine rigidity, tool body, workpiece conditions and coolant (f should be adjust according to insert radius)

| Achteck turning grade | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial value of cutting speed Vc(m/min) | | | | | | | | | | | | | | | | | | |
| | AC052P | | | AC152P | | | AC252P | | | AC350P | | | AC100M | | | AC200M | | |
| | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | |
| | 0.10 | 0.40 | 0.60 | 0.10 | 0.40 | 0.60 | 0.10 | 0.40 | 0.60 | 0.10 | 0.40 | 0.60 | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 |
| | 600 | 430 | 310 | 465 | 400 | 330 | 360 | 310 | 260 | 230 | 150 | 120 | | | | | | |
| | 540 | 385 | 275 | 360 | 330 | 260 | 290 | 250 | 190 | 180 | 115 | 100 | | | | | | |
| | 380 | 260 | 180 | 270 | 240 | 220 | 200 | 180 | 160 | 130 | 115 | 85 | | | | | | |
| | 520 | 365 | 255 | 330 | 300 | 290 | 250 | 220 | 210 | 150 | 100 | 85 | | | | | | |
| | 360 | 225 | 160 | 210 | 180 | 170 | 160 | 130 | 120 | 115 | 65 | 55 | | | | | | |
| | 580 | 400 | 280 | 440 | 400 | 380 | 320 | 290 | 275 | 210 | 135 | 105 | | | | | | |
| | 590 | 390 | 265 | 330 | 310 | 300 | 260 | 240 | 220 | 190 | 155 | 130 | | | | | | |
| | 510 | 330 | 230 | 180 | 170 | 160 | 135 | 120 | 100 | 125 | 80 | 65 | | | | | | |
| | 320 | 210 | 155 | 120 | 100 | 90 | 100 | 85 | 65 | 90 | 65 | 45 | | | | | | |
| | 265 | 165 | 120 | 80 | 70 | | 65 | 55 | | | | | | | | | | |
| | 425 | 275 | 195 | 320 | 290 | 280 | 270 | 240 | 220 | 170 | 140 | 75 | | | | | | |
| | 280 | 180 | 140 | 200 | 170 | 150 | 170 | 140 | 120 | 100 | 80 | 60 | | | | | | |
| | 200 | 120 | 105 | 80 | 70 | | 65 | 66 | | | | | | | | | | |
| | | | | | | | 190 | 170 | 150 | 120 | 100 | 90 | 200 | 170 | 140 | 180 | 150 | 120 |
| | | | | | | | 90 | 80 | 60 | 70 | 60 | 50 | 160 | 140 | 130 | 130 | 110 | 100 |
| | | | | | | | | | | | | | 230 | 180 | 140 | 190 | 150 | 110 |
| | | | | | | | | | | | | | 170 | 150 | | 140 | 110 | |
| | | | | | | | | | | | | | 180 | 160 | 130 | 150 | 120 | 100 |
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| | | | | | | | | | | | | | 80 | 60 | 40 | 70 | 50 | 30 |
| | | | | | | | | | | | | | 70 | 50 | 30 | 60 | 40 | 20 |
| | | | | | | | | | | | | | 70 | 50 | 35 | 60 | 40 | 25 |
| | | | | | | | | | | | | | 70 | 50 | 30 | 60 | 40 | 20 |
| | | | | | | | | | | | | | 70 | 50 | 30 | 60 | 40 | 20 |
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## Cutting Data Recommendation--Positive Insert

| Materials | | | | | | AP200U | | | AP301M | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness (HB) | Tensile strength ($N/mm^2$) | f (mm/rev) | | | f (mm/rev) | | |
| | | | | | | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 210 | 200 | | | | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 160 | 140 | | | | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 140 | 120 | | | | |
| | | C > 0.55% | Annealed | 190 | 639 | 130 | 120 | | | | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | | | | | | |
| | | Free cutting steel(short chip) | Annealed | 220 | 745 | 190 | 170 | | | | |
| | Low-alloyed steel | Annealed | | 175 | 591 | 130 | 110 | | | | |
| | | Heat-treated | | 300 | 1013 | | | | | | |
| | | Heat-treated | | 380 | 1282 | | | | | | |
| | | Heat-treated | | 430 | 1477 | | | | | | |
| | High-alloyed steel and high-alloyed tool steel | Annealed | | 200 | 675 | 120 | 80 | | | | |
| | | Hardened and tempered | | 300 | 1013 | | | | | | |
| | | Hardened and tempered | | 400 | 1361 | | | | | | |
| | Stainless steel | Ferritic/Martensite, Annealed | | 200 | 675 | 135 | 120 | 90 | | | |
| | | Martensite, Heat-treated | | 330 | 1114 | 105 | 80 | 70 | | | |
| M | Stainless steel | Austenitic,hardened | | 200 | 675 | 170 | 110 | 80 | 170 | 110 | 80 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 110 | 80 | | 110 | 80 | |
| | | Austenitic, ferritic, duplex | | 230 | 778 | 110 | 90 | 70 | 110 | 90 | 70 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | |
| | Copper and copper alloy (bronze/brass) | Unalloyed, electrolytic copper | | 100 | 340 | | | | | | |
| | | Brass, bronze, red brass | | 90 | 310 | | | | | | |
| | | Cu alloy, short chip | | 110 | 380 | | | | | | |
| | | High tensile, Ampco alloy | | 300 | 1010 | | | | | | |
| S | Heat-resistant alloy | Fe-based | Annealed | 200 | 680 | | | | 40 | 25 | |
| | | | Aged | 280 | 940 | | | | 30 | 20 | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | 30 | 25 | |
| | | | Aged | 350 | 1180 | | | | 30 | 20 | |
| | | | Cast | 320 | 1080 | | | | 30 | 20 | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | 65 | 45 | 35 |
| | | β alloy | | 410 | 1400 | | | | 35 | 35 | 30 |
| | Tungsten alloy | | | 300 | 1010 | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | | | | | | | |
| | | Hardened and tempered | | 55HRC | | | | | | | |
| | | Hardened and tempered | | 60HRC | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | | | | | | | |

* The recommended cutting data always refer to general cutting conditions. The actual selection should be adjusted according to the factors such as machine rigidity, tool body, workpiece conditions and coolant (f should be adjust according to insert radius)

| Achteck turning grade | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial value of cutting speed Vc(m/min) | | | | | | | | | | | | | | | |
| | AC102K | | | AC202K | | | AW100K | | | AP010S | | | AP100S | | |
| | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | |
| | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 | 0.10 | 0.20 | 0.40 | 0.10 | 0.30 | 0.50 | 0.10 | 0.30 | 0.50 |
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| | | | | | | | | | | 240 | 190 | 150 | 220 | 200 | 130 |
| | | | | | | | | | | 150 | 85 | | 160 | 140 | |
| | | | | | | | | | | 170 | 145 | 100 | 170 | 150 | 110 |
| | 260 | 190 | 160 | 250 | 180 | 150 | | | | | | | | | |
| | 230 | 160 | 120 | 235 | 150 | 115 | | | | | | | | | |
| | 470 | 250 | 190 | 470 | 240 | 180 | | | | | | | | | |
| | 230 | 170 | 130 | 220 | 160 | 120 | | | | | | | | | |
| | 250 | 190 | 140 | 240 | 180 | 140 | | | | | | | | | |
| | 190 | 150 | 130 | 180 | 140 | 120 | | | | | | | | | |
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| | | | | | | | | | | | | | | | |
| | | | | | | | 750 | 600 | 300 | | | | | | |
| | | | | | | | 800 | 450 | 300 | | | | | | |
| | | | | | | | 500 | 300 | 200 | | | | | | |
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| | | | | | | | | | | | | | | | |
| | | | | | | | 600 | 400 | 270 | | | | | | |
| | | | | | | | 400 | 300 | 200 | | | | | | |
| | | | | | | | 280 | 200 | 130 | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | 100 | 65 | | 100 | 70 | |
| | | | | | | | | | | 80 | 55 | | 80 | 60 | |
| | | | | | | | | | | 80 | 55 | | 80 | 60 | |
| | | | | | | | | | | 70 | 45 | | 70 | 50 | |
| | | | | | | | | | | 60 | 30 | | 60 | 40 | |
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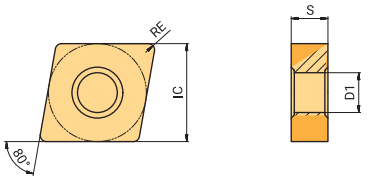
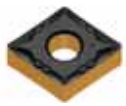
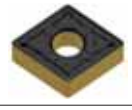
## Negative 80° (C)



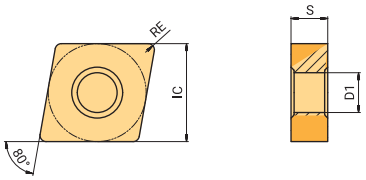

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| CN_1204_ | 12.70 | 4.76 | 5.16 |
| CN_1606_ | 15.875 | 6.35 | 6.35 |
| CN_1906_ | 19.05 | 6.35 | 7.94 |

| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions | ● Good Conditions ◖◗ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ● | ● | ◖◗ | ✱ | ✱ | ● | ◖◗ | ◖◗ | ◖◗ | ● | ◖◗ | ✱ | ● | ● | ● |
| | | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | f (mm/rev) | ap (mm) | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Finishing | | **CNGG 120401FP-UF** | 0.10 | 0.02-0.12 | 0.50-2.50 | | | | | | | | | | ○ | ● | | | | | ● | ○ |
| | | **120402FP-UF** | 0.20 | 0.02-0.12 | 0.50-2.50 | | | | | | | | | | ○ | ● | | | | | ● | ○ |
| | | **120404FP-UF** | 0.40 | 0.02-0.12 | 0.50-2.50 | | | | | | | | | | ○ | ● | | | | | ● | ○ |
| |  | **CNMG 120402E-PA1** | 0.20 | 0.04-0.25 | 0.20-1.50 | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | **120404E-PA1** | 0.40 | 0.04-0.28 | 0.20-1.50 | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | **120408E-PA1** | 0.80 | 0.05-0.35 | 0.20-1.50 | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | **120412E-PA1** | 1.20 | 0.05-0.42 | 0.20-1.50 | | ● | ● | | ● | | | | | | | | | | | | |
| | | **CNMG 120404E-PB1** | 0.40 | 0.05-0.15 | 0.26-3.20 | | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **120408E-PB1** | 0.80 | 0.10-0.30 | 0.52-3.20 | | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | **120412E-PB1** | 1.20 | 0.15-0.45 | 0.78-3.20 | | ○ | ○ | ● | ● | ● | | | | | | | | | | | |
| | | **CNMG 120404E-SC1** | 0.40 | 0.07-0.18 | 0.20-0.80 | | | | | | | | | | ● | | | | | | ● | |
| | | **120408E-SC1** | 0.80 | 0.10-0.25 | 0.20-0.80 | | | | | | | | | | ● | | | | | | ● | |
| | | **CNMG 120404E-MB2** | 0.40 | 0.05-0.15 | 0.26-3.20 | | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **120408E-MB2** | 0.80 | 0.10-0.30 | 0.52-3.20 | | | | | | | | ● | ● | ● | ● | | | | | | |
| Semi-finishing | | **CNMG 120404E-SL3** | 0.40 | 0.12-0.25 | 0.60-3.00 | | | | | | | | | | ● | | | | | | ● | ● |
| | | **120408E-SL3** | 0.80 | 0.15-0.30 | 0.80-3.00 | | | | | | | | | | ● | | | | | | ● | ● |
| | | **CNMG 120404-F2K** | 0.40 | 0.12-0.24 | 0.50-2.50 | | ● | | | | | | | | | | | | | | | |
| | | **120408-F2K** | 0.80 | 0.15-0.30 | 0.50-2.50 | | ● | | | | | | | | | | | | | | | |
| | | **CNMG 120404E-PB3** | 0.40 | 0.06-0.18 | 0.30-3.50 | | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **120408E-PB3** | 0.80 | 0.12-0.36 | 0.60-3.50 | | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **120412E-PB3** | 1.20 | 0.18-0.54 | 0.90-3.50 | | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| |  | **CNMG 120404E-PC3** | 0.40 | 0.07-0.20 | 0.34-3.90 | | ● | ● | | ○ | | | | | | | | | | | | |
| | | **120408E-PC3** | 0.80 | 0.14-0.40 | 0.68-3.90 | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | **120412E-PC3** | 1.20 | 0.20-0.60 | 1.02-3.90 | | ● | ● | | ○ | ○ | | | | | | | | | | | |
| | | **CNMG 120404E-SC3** | 0.40 | 0.08-0.22 | 0.40-4.30 | | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **120408E-SC3** | 0.80 | 0.15-0.44 | 0.80-4.30 | | | | | | | | ● | ● | ● | ● | | | | | ● | ● |
| | | **120412E-SC3** | 1.20 | 0.23-0.66 | 1.20-4.30 | | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **160612E-SC3** | 1.20 | 0.23-0.66 | 1.20-5.30 | | | | | | | | ● | ● | ● | | | | | | ● | ● |

● : Standard stock ○ : Made-to-Order

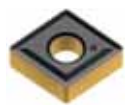
## Negative 80° (C)




(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| CN_1204_ | 12.70 | 4.76 | 5.16 |
| CN_1606_ | 15.875 | 6.35 | 6.35 |
| CN_1906_ | 19.05 | 6.35 | 7.94 |



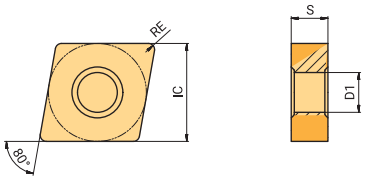
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | Machining conditions ● Good Conditions ◖◗ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ◖◗ | ✱ | ✱ | ● | ◖◗ | ◖◗ | ◖◗ | ● | ◖◗ | ✱ | ● | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Semi-finishing | | **CNMG 160616E-SC3** | 1.60 | 0.30-0.88 | 1.60-5.30 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **190612E-SC3** | 1.20 | 0.23-0.66 | 1.20-6.40 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **190616E-SC3** | 1.60 | 0.30-0.88 | 1.60-6.40 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **CNMG 120404E-MC3** | 0.40 | 0.08-0.22 | 0.32-4.30 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **120408E-MC3** | 0.80 | 0.15-0.44 | 0.64-4.30 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | **120412E-MC3** | 1.20 | 0.23-0.66 | 0.96-4.30 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **120416E-MC3** | 1.60 | 0.30-0.88 | 1.28-4.30 | | | | | | | ● | ● | ● | | | | | | | |
| | | **160608E-MC3** | 0.80 | 0.15-0.44 | 0.64-5.30 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **160612E-MC3** | 1.20 | 0.23-0.66 | 0.96-5.30 | | | | | | | ● | ● | ● | | | | | | | |
| | | **190608E-MC3** | 0.80 | 0.15-0.44 | 0.64-6.40 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **190612E-MC3** | 1.20 | 0.23-0.66 | 0.96-6.40 | | | | | | | ● | ● | ● | | | | | | | |
| Medium | | **CNMG 120404E-PD3** | 0.40 | 0.08-0.22 | 0.40-4.30 | ● | ● | | ● | ● | | | | | | | | | | | |
| | | **120408E-PD3** | 0.80 | 0.15-0.44 | 0.80-4.30 | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| | | **120412E-PD3** | 1.20 | 0.23-0.66 | 1.20-4.30 | ● | ● | ● | ● | ○ | ● | | | | | | | | | | |
| | | **160608E-PD3** | 0.80 | 0.15-0.44 | 0.80-5.30 | | | ○ | ○ | ● | | | | | | | | | | | |
| | | **160612E-PD3** | 1.20 | 0.23-0.66 | 1.20-5.30 | | | ● | ● | ○ | ● | | | | | | | | | | |
| | | **190608E-PD3** | 0.80 | 0.15-0.44 | 0.80-6.40 | | | ● | ○ | ○ | | | | | | | | | | | |
| | | **190612E-PD3** | 1.20 | 0.23-0.66 | 1.20-6.40 | | | ○ | ● | ● | | | | | | | | | | | |
| | | **190616E-PD3** | 1.60 | 0.30-0.66 | 1.60-6.40 | | | ● | ○ | ● | | | | | | | | | | | |
| | | **CNMG 120404E-UC4** | 0.40 | 0.08-0.24 | 0.40-5.00 | | | ● | ● | ● | | | | ● | | | | | | | |
| | | **120408E-UC4** | 0.80 | 0.15-0.48 | 0.80-5.00 | | | ● | ● | ● | | | | ● | | | | | | | |
| | | **120412E-UC4** | 1.20 | 0.23-0.72 | 1.20-5.00 | | | ● | ● | ● | | | | ● | | | | | | | |
| | | **160608E-UC4** | 0.80 | 0.15-0.48 | 0.80-5.50 | | | ● | ● | ● | | | | | | | | | | | |
| | | **160612E-UC4** | 1.20 | 0.23-0.72 | 1.20-5.50 | | | ● | ● | ● | | | | | | | | | | | |
| |  | **CNMG 120404E-PC4** | 0.40 | 0.08-0.22 | 0.40-4.30 | | | | ● | ○ | | | | | | | ● | ● | | | |
| | | **120408E-PC4** | 0.80 | 0.15-0.44 | 0.80-4.30 | | | ○ | ○ | ● | | | | | | | ● | ● | | | |
| | | **120412E-PC4** | 1.20 | 0.23-0.66 | 1.20-4.30 | | | ○ | ● | ○ | | | | | | | ● | ● | | | |
| | | **160612E-PC4** | 1.20 | 0.23-0.66 | 1.20-5.30 | | | ○ | ● | | | | | | | | ● | ● | | | |
| | | **160616E-PC4** | 1.60 | 0.30-0.88 | 1.60-5.30 | | | ○ | ○ | | | | | | | | ● | ● | | | |
| | | **190612E-PC4** | 1.20 | 0.23-0.66 | 1.20-6.40 | | | ○ | ○ | | | | | | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## Negative 80° (C)

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| CN_0903_ | 9.525 | 3.18 | 3.81 |
| CN_1204_ | 12.70 | 4.76 | 5.16 |
| CN_1606_ | 15.875 | 6.35 | 6.35 |
| CN_1906_ | 19.05 | 6.35 | 7.94 |




● Good Conditions ◐ General Conditions ✱ Bad Conditions

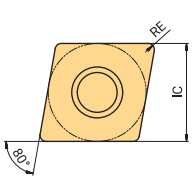
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP010S | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Roughing | | **CNMG 120408E-MC4** | 0.80 | 0.20-0.60 | 1.20-6.40 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | **120412E-MC4** | 1.20 | 0.30-0.90 | 1.80-6.40 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | **160612E-MC4** | 1.20 | 0.30-0.90 | 1.80-8.10 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | **160616E-MC4** | 1.60 | 0.40-1.20 | 2.40-8.10 | | | | | | | ● | ● | ● | | | | | | | |
| | | **190612E-MC4** | 1.20 | 0.30-0.90 | 1.80-9.70 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **190616E-MC4** | 1.60 | 0.40-1.20 | 2.40-9.70 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **CNMG 090308E-KC4** | 0.80 | 0.18-0.48 | 0.96-3.90 | | | | | | | | | | | | ● | ● | | | |
| | | **120404E-KC4** | 0.40 | 0.09-0.24 | 0.48-5.20 | | | | | | | | | | | | ● | ● | | | |
| | | **120408E-KC4** | 0.80 | 0.18-0.48 | 0.96-5.20 | | | | | | | | | | | ● | ● | ● | | | |
| | | **120412E-KC4** | 1.20 | 0.26-0.72 | 1.44-5.20 | | | | | | | | | | | ● | ● | ● | | | |
| | | **120416E-KC4** | 1.60 | 0.35-0.96 | 1.92-5.20 | | | | | | | | | | | | ● | ● | | | |
| | | **160608E-KC4** | 0.80 | 0.18-0.48 | 0.96-6.40 | | | | | | | | | | | | ● | ● | | | |
| | | **160612E-KC4** | 1.20 | 0.26-0.72 | 1.44-6.40 | | | | | | | | | | | | ● | ● | | | |
| | | **160616E-KC4** | 1.60 | 0.35-0.96 | 1.92-6.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **190608E-KC4** | 0.80 | 0.18-0.48 | 0.96-7.70 | | | | | | | | | | | | ● | ● | | | |
| | | **190612E-KC4** | 1.20 | 0.26-0.72 | 1.44-7.70 | | | | | | | | | | | | ● | ● | | | |
| | | **190616E-KC4** | 1.60 | 0.35-0.96 | 1.92-7.70 | | | | | | | | | | | | ● | ● | | | |
| | | **190624E-KC4** | 2.40 | 0.53-1.44 | 2.88-7.70 | | | | | | | | | | | | ● | ● | | | |
| | | **CNMG 120408E-PD5** | 0.80 | 0.20-0.60 | 1.20-6.40 | | | ● | ● | ● | ● | | | | | | | | | | |
| | | **120412E-PD5** | 1.20 | 0.30-0.90 | 1.80-6.40 | | | ○ | ● | ● | ● | | | | | | | | | | |
| | | **160608E-PD5** | 0.80 | 0.20-0.60 | 1.20-8.10 | | | ● | ○ | | | | | | | | | | | | |
| | | **160612E-PD5** | 1.20 | 0.30-0.90 | 1.80-8.10 | | | ● | ● | ● | ● | | | | | | | | | | |
| | | **160616E-PD5** | 1.60 | 0.40-1.20 | 2.40-8.10 | | | ○ | ○ | ○ | ● | | | | | | | | | | |
| | | **160624E-PD5** | 2.40 | 0.60-1.80 | 3.60-8.10 | | | ○ | ● | ○ | | | | | | | | | | | |
| | | **190612E-PD5** | 1.20 | 0.30-0.90 | 1.80-9.70 | | | ● | ● | ● | ● | | | | | | | | | | |
| | | **190616E-PD5** | 1.60 | 0.40-1.20 | 2.40-9.70 | | | ○ | ● | ● | | | | | | | | | | | |

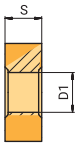
● : Standard stock ○ : Made-to-Order

## Negative 80° (C)

(mm)

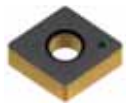
| Product code | IC | S | D1 |
|---|---|---|---|
| CN_1204_ | 12.70 | 4.76 | 5.16 |
| CN_1606_ | 15.875 | 6.35 | 6.35 |
| CN_1906_ | 19.05 | 6.35 | 7.94 |
| CN_2507_ | 25.40 | 7.94 | 9.12 |
| CN_2509_ | 25.40 | 9.52 | 9.12 |



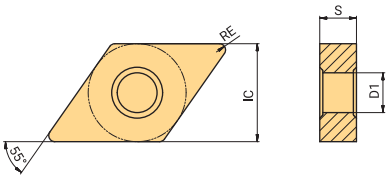



Machining conditions: ● Good Conditions ◖◗ General Conditions ✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P | | | | | | M | | | | K | | | N | S | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| | | | | | | ● | ● | ● | ◖◗ | ✱ | ✱ | ● | ◖◗ | ◖◗ | ◖◗ | ● | ◖◗ | ✱ | ● | ● | ● |
| Roughing |  | **CNMA 120404E-KD5** | 0.40 | 0.10-0.30 | 0.60-6.40 | | | | | | | | | | | | ● | ● | | | |
| | | **120408E-KD5** | 0.80 | 0.20-0.60 | 1.20-6.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **120412E-KD5** | 1.20 | 0.30-0.90 | 1.80-6.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **120416E-KD5** | 1.60 | 0.40-1.20 | 2.40-6.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **160608E-KD5** | 0.80 | 0.20-0.60 | 1.20-8.10 | | | | | | | | | | | | ● | ● | | | |
| | | **160612E-KD5** | 1.20 | 0.30-0.90 | 1.80-8.10 | | | | | | | | | | | ● | ● | ● | | | |
| | | **160616E-KD5** | 1.60 | 0.40-1.20 | 2.40-8.10 | | | | | | | | | | | ● | ● | ● | | | |
| | | **160620E-KD5** | 2.00 | 0.50-1.50 | 3.00-8.10 | | | | | | | | | | | | ● | ● | | | |
| | | **190608E-KD5** | 0.80 | 0.20-0.60 | 1.20-9.70 | | | | | | | | | | | ● | ● | ● | | | |
| | | **190612E-KD5** | 1.20 | 0.30-0.90 | 1.80-9.70 | | | | | | | | | | | ● | ● | ● | | | |
| | | **190616E-KD5** | 1.60 | 0.40-1.20 | 2.40-9.70 | | | | | | | | | | | ● | ● | ● | | | |
| Heavy roughing | | **CNMM 190616E-PC8** | 1.60 | 0.32-0.64 | 2.88-7.70 | | | | ○ | ○ | | | | | | | | | | | |
| | | **190624E-PC8** | 2.40 | 0.48-0.96 | 4.32-7.70 | | | | ○ | ○ | | | | | | | | | | | |
| | | **CNMM 120408E-PD8** | 0.80 | 0.16-0.32 | 1.44-5.20 | | | | ○ | ○ | | | | | | | | | | | |
| | | **120412E-PD8** | 1.20 | 0.24-0.48 | 2.16-5.20 | | | | ○ | ○ | ● | | | | | | | | | | |
| | | **160612E-PD8** | 1.20 | 0.24-0.48 | 2.16-6.40 | | | | ○ | ● | ● | | | | | | | | | | |
| | | **160616E-PD8** | 1.60 | 0.32-0.64 | 2.88-6.40 | | | | ○ | ● | | | | | | | | | | | |
| | | **160624E-PD8** | 2.40 | 0.48-0.96 | 4.32-6.40 | | | | ○ | ○ | | | | | | | | | | | |
| | | **190612E-PD8** | 1.20 | 0.24-0.48 | 2.16-7.70 | | | ○ | ○ | ● | | | | | | | | | | | |
| | | **190616E-PD8** | 1.60 | 0.32-0.64 | 2.88-7.70 | | | ○ | ○ | ● | | | | | | | | | | | |
| | | **190624E-PD8** | 2.40 | 0.48-0.96 | 4.32-7.70 | | | ○ | ○ | ○ | ● | | | | | | | | | | |
| | | **250724E-PD8** | 2.40 | 0.48-0.96 | 4.32-10.30 | | | | ○ | ○ | | | | | | | | | | | |
| | | **250924E-PD8** | 2.40 | 0.48-0.96 | 4.32-10.30 | | | | ○ | ○ | | | | | | | | | | | |
| | | **CNMM 190612S-PC9** | 1.20 | 0.26-0.60 | 2.40-9.70 | | | | ○ | ● | | | | | | | | | | | |
| | | **190616S-PC9** | 1.60 | 0.35-0.80 | 3.20-9.70 | | | ● | ● | ● | | | | | | | | | | | |
| | | **190624S-PC9** | 2.40 | 0.53-1.20 | 4.80-9.70 | | | | ● | ○ | | | | | | | | | | | |
| | | **250724S-PC9** | 2.40 | 0.53-1.20 | 4.80-12.90 | | | | ○ | ○ | | | | | | | | | | | |
| | | **250924S-PC9** | 2.40 | 0.53-1.20 | 4.80-12.90 | | | | ● | ● | | | | | | | | | | | |
| | | **CNMM 190612S-PD9** | 1.20 | 0.30-0.72 | 2.64-11.60 | | | | ○ | ○ | ● | | | | | | | | | | |
| | | **190616S-PD9** | 1.60 | 0.40-0.96 | 3.52-11.60 | | | | ○ | ○ | | | | | | | | | | | |
| | | **190624S-PD9** | 2.40 | 0.60-1.44 | 5.28-11.60 | | | | ● | ○ | | | | | | | | | | | |
| | | **250724S-PD9** | 2.40 | 0.60-1.44 | 5.28-15.50 | | | | ○ | ○ | | | | | | | | | | | |
| | | **250924S-PD9** | 2.40 | 0.60-1.44 | 5.28-15.50 | | | | ○ | ○ | ● | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 55° (D)

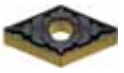
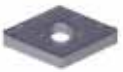
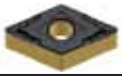



(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| DN_1104_ | 9.525 | 4.76 | 3.81 |
| DN_1504_ | 12.70 | 4.76 | 5.16 |
| DN_1506_ | 12.70 | 6.35 | 5.16 |

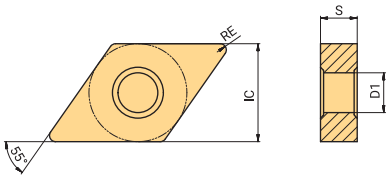


● Good Conditions ◐ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Finishing | | DNGG 150401FP-UF | 0.10 | 0.02-0.12 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | | |
| | | 150402FP-UF | 0.20 | 0.02-0.12 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | | |
| | | 150404FP-UF | 0.40 | 0.02-0.12 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | | |
| | | DNMG 150402E-PA1 | 0.20 | 0.04-0.25 | 0.20-1.50 | ● | ● | | ○ | | | | | | | | | | | | |
| | | 150404E-PA1 | 0.40 | 0.04-0.28 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | 150408E-PA1 | 0.80 | 0.05-0.35 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | 150412E-PA1 | 1.20 | 0.05-0.42 | 0.20-1.50 | ● | ● | ○ | ○ | | | | | | | | | | | | |
| | | 150602E-PA1 | 0.20 | 0.04-0.25 | 0.20-1.50 | ● | ● | | ○ | | | | | | | | | | | | |
| | | 150604E-PA1 | 0.40 | 0.04-0.28 | 0.20-1.50 | ● | ● | ○ | ○ | | | | | | | | | | | | |
| | | 150608E-PA1 | 0.80 | 0.05-0.35 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | 150612E-PA1 | 1.20 | 0.05-0.42 | 0.20-1.50 | ● | ● | | | | | | | | | | | | | | |
| |  | DNMG 110404E-PB1 | 0.40 | 0.05-0.15 | 0.26-2.30 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | 150404E-PB1 | 0.40 | 0.05-0.15 | 0.26-3.10 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | 150408E-PB1 | 0.80 | 0.10-0.30 | 0.52-3.10 | ● | ● | ○ | ● | ● | | | | | | | | | | | |
| | | 150604E-PB1 | 0.40 | 0.05-0.15 | 0.26-3.10 | ● | ● | | ● | ● | | | | | | | | | | | |
| | | 150608E-PB1 | 0.80 | 0.10-0.30 | 0.52-3.10 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | 150612E-PB1 | 0.80 | 0.10-0.30 | 0.52-3.10 | | | | ● | ○ | | | | | | | | | | | |
| |  | DNMG 150404E-SC1 | 0.40 | 0.07-0.18 | 0.20-0.80 | | | | | | | | | | ● | | | | | ● | |
| | | 150408E-SC1 | 0.80 | 0.10-0.25 | 0.20-0.80 | | | | | | | | | | ● | | | | | ● | |
| | | 150604E-SC1 | 0.40 | 0.07-0.18 | 0.20-0.80 | | | | | | | | | | ● | | | | | ● | |
| | | 150608E-SC1 | 0.80 | 0.10-0.25 | 0.20-0.80 | | | | | | | | | | ● | | | | | ● | |
| | | DNMG 150404E-MB2 | 0.40 | 0.05-0.15 | 0.26-2.90 | | | | | | | ● | | ● | | | | | | | ● |
| | | 150408E-MB2 | 0.80 | 0.10-0.30 | 0.52-2.90 | | | | | | | ● | | | | | | | | | ● |
| | | 150604E-MB2 | 0.40 | 0.05-0.15 | 0.26-2.90 | | | | | | | ● | | ● | | | | | | | ● |
| | | 150608E-MB2 | 0.80 | 0.10-0.30 | 0.52-2.90 | | | | | | | ● | | ● | | | | | | | ● |
| Semi-finishing | | DNMG 110408E-SL3 | 0.80 | 0.12-0.30 | 0.80-2.50 | | | | | | | | | | ● | | | | | ● | ● |
| | | 150404E-SL3 | 0.40 | 0.12-0.25 | 0.60-2.50 | | | | | | | | | | ● | | | | | ● | ● |
| | | 150408E-SL3 | 0.80 | 0.12-0.30 | 0.80-2.50 | | | | | | | | | | ● | | | | | ● | ● |
| | | 150604E-SL3 | 0.40 | 0.12-0.25 | 0.60-2.50 | | | | | | | | | | ● | | | | | ● | ● |
| | | 150608E-SL3 | 0.80 | 0.12-0.30 | 0.80-2.50 | | | | | | | | | | ● | | | | | ● | ● |
| |  | DNMG 110408E-BS | 0.80 | 0.10-0.25 | 0.70-2.00 | | | ● | ○ | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

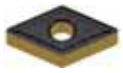
## Negative 55° (D)




(mm)

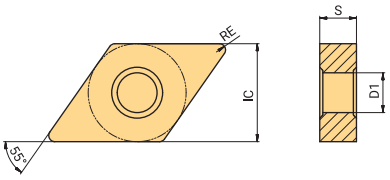
| Product code | IC | S | D1 |
|---|---|---|---|
| DN_1104_ | 9.525 | 4.76 | 3.81 |
| DN_1504_ | 12.70 | 4.76 | 5.16 |
| DN_1506_ | 12.70 | 6.35 | 5.16 |



| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | Machining conditions: ● Good Conditions ⬮ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ⬮ | ✱ | ✱ | ● | ⬮ | ⬮ | ⬮ | ● | ⬮ | ✱ | ● | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Semi-finishing | | **DNMG 150404R-M1T** | 0.40 | 0.10-0.35 | 0.70-4.50 | ● | ● | | | | | | | | | | | | | | |
| | | **150404L-M1T** | 0.40 | 0.10-0.35 | 0.70-4.50 | ● | ● | | | | | | | | | | | | | | |
| | | **DNMG 150404E-PB3** | 0.40 | 0.06-0.18 | 0.30-3.10 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **150408E-PB3** | 0.80 | 0.12-0.36 | 0.60-3.10 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **150412E-PB3** | 1.20 | 0.18-0.54 | 0.90-3.10 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | **150604E-PB3** | 0.40 | 0.06-0.18 | 0.30-3.10 | ● | ● | | ● | ● | | | | | | | | | | | |
| | | **150608E-PB3** | 0.80 | 0.12-0.36 | 0.60-3.10 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **150612E-PB3** | 1.20 | 0.18-0.54 | 0.90-3.10 | ● | ● | ○ | ● | ● | | | | | | | | | | | |
| |  | **DNMG 110408E-PC3** | 0.80 | 0.14-0.40 | 0.68-2.60 | | | | ○ | | | | | | | | | | | | |
| | | **110412E-PC3** | 1.20 | 0.20-0.60 | 1.02-2.60 | | | | ● | | | | | | | | | | | | |
| | | **150404E-PC3** | 0.40 | 0.07-0.20 | 0.34-3.50 | ● | ● | | ○ | | | | | | | | | | | | |
| | | **150408E-PC3** | 0.80 | 0.14-0.40 | 0.68-3.50 | ● | ● | ○ | ○ | | | | | | | | | | | | |
| | | **150412E-PC3** | 1.20 | 0.20-0.60 | 1.02-3.50 | ● | ● | | ○ | | | | | | | | | | | | |
| | | **150604E-PC3** | 0.40 | 0.07-0.20 | 0.34-3.50 | ● | ● | | ○ | | | | | | | | | | | | |
| | | **150608E-PC3** | 0.80 | 0.14-0.40 | 0.68-3.50 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | **150612E-PC3** | 1.20 | 0.20-0.60 | 1.02-3.50 | ● | ● | | ● | | | | | | | | | | | | |
| | | **DNMG 150404E-SC3** | 0.40 | 0.08-0.22 | 0.40-3.90 | | | | | | | ● | | | ● | | | | | ● | ● |
| | | **150408E-SC3** | 0.80 | 0.15-0.44 | 0.80-3.90 | | | | | | | ● | | | ● | | | | | ● | ● |
| | | **150412E-SC3** | 1.20 | 0.23-0.66 | 1.20-3.90 | | | | | | | ● | | | ● | | | | | ● | ● |
| | | **150604E-SC3** | 0.40 | 0.08-0.22 | 0.40-3.90 | | | | | | | ● | | | ● | | | | | ● | ● |
| | | **150608E-SC3** | 0.80 | 0.15-0.44 | 0.80-3.90 | | | | | | | ● | | | ● | | | | | ● | ● |
| | | **150612E-SC3** | 1.20 | 0.23-0.66 | 1.20-3.90 | | | | | | | ● | | | ● | | | | | ● | ● |
| | | **DNMG 110404E-MC3** | 0.40 | 0.08-0.22 | 0.32-2.90 | | | | | | | ● | | ● | ● | | | | | | |
| | | **110408E-MC3** | 0.80 | 0.15-0.44 | 0.64-2.90 | | | | | | | ● | | ● | ● | | | | | | |
| | | **150404E-MC3** | 0.40 | 0.08-0.22 | 0.32-3.90 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **150408E-MC3** | 0.80 | 0.15-0.44 | 0.64-3.90 | | | | | | | ● | | ● | ● | | | | | | |
| | | **150412E-MC3** | 1.20 | 0.23-0.66 | 0.96-3.90 | | | | | | | ● | | ● | ● | | | | | | |
| | | **150604E-MC3** | 0.40 | 0.08-0.22 | 0.32-3.90 | | | | | | | ● | | ● | ● | | | | | | |
| | | **150608E-MC3** | 0.80 | 0.15-0.44 | 0.64-3.90 | | | | | | | ● | | ● | ● | | | | | | |
| | | **150612E-MC3** | 1.20 | 0.23-0.66 | 0.96-3.90 | | | | | | | ● | | ● | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

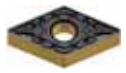
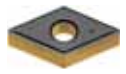
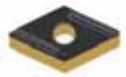
## Negative 55° (D)




(mm)

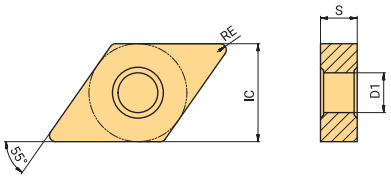
| Product code | IC | S | D1 |
|---|---|---|---|
| DN_1104_ | 9.525 | 4.76 | 3.81 |
| DN_1504_ | 12.70 | 4.76 | 5.16 |
| DN_1506_ | 12.70 | 6.35 | 5.16 |

● Good Conditions ◐ General Conditions ✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| | | | | Machining conditions | | ● | ● | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● | ● |
| Medium |  | **DNMG 110404E-PD3** | 0.40 | 0.08-0.22 | 0.40-2.90 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | **110408E-PD3** | 0.80 | 0.15-0.44 | 0.80-2.90 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | **110412E-PD3** | 1.20 | 1.20-2.90 | 0.23-0.66 | | | | ○ | | | | | | | | | | | | |
| | | **150404E-PD3** | 0.40 | 0.08-0.22 | 0.40-3.90 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | **150408E-PD3** | 0.80 | 0.15-0.44 | 0.80-3.90 | ● | ● | ○ | ● | ○ | ● | | | | | | | | | | |
| | | **150412E-PD3** | 1.20 | 0.23-0.66 | 1.20-3.90 | | | ○ | ● | ● | ● | | | | | | | | | | |
| | | **150604E-PD3** | 0.40 | 0.08-0.22 | 0.40-3.90 | | | | ● | ● | ● | | | | | | | | | | |
| | | **150608E-PD3** | 0.80 | 0.15-0.44 | 0.80-3.90 | | | ● | ● | ● | ● | | | | | | | | | | |
| | | **150612E-PD3** | 1.20 | 0.23-0.66 | 1.20-3.90 | | | ● | ● | ● | ● | | | | | | | | | | |
| | | **DNMG 150408E-UC4** | 0.80 | 0.15-0.48 | 0.80-4.50 | | | ● | ● | ● | | | | | | | | | | | |
| | | **150608E-UC4** | 0.80 | 0.15-0.48 | 0.80-4.50 | | | ● | ● | ● | | | | | | | | | | | |
| | | **150612E-UC4** | 1.20 | 0.23-0.72 | 1.20-4.50 | | | ● | ● | ● | | | | | | | | | | | |
| |  | **DNMG 150404E-PC4** | 0.40 | 0.08-0.22 | 0.40-3.90 | ● | ● | | ○ | ○ | | | | | | | ● | ● | | | |
| | | **150408E-PC4** | 0.80 | 0.15-0.44 | 0.80-3.90 | ● | ● | ○ | ○ | ○ | | | | | | | ● | ● | | | |
| | | **150412E-PC4** | 1.20 | 0.23-0.66 | 1.20-3.90 | | | ○ | ○ | ○ | | | | | | | ● | ● | | | |
| | | **150604E-PC4** | 0.40 | 0.08-0.22 | 0.40-3.90 | ● | ● | | ○ | ○ | | | | | | | ● | ● | | | |
| | | **150608E-PC4** | 0.80 | 0.15-0.44 | 0.80-3.90 | ● | ● | ● | ● | ● | | | | | | | ● | ● | | | |
| | | **150612E-PC4** | 1.20 | 0.23-0.66 | 1.20-3.90 | | | ● | ● | ○ | | | | | | | ● | ● | | | |
| |  | **DNMG 150608R-PL5** | 0.80 | 0.15-0.44 | 0.80-3.90 | | | | ● | ● | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

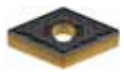
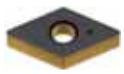
## Negative 55° (D)




(mm)

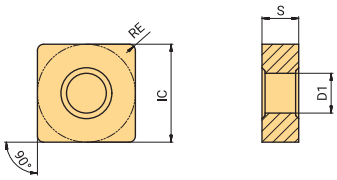
| Product code | IC | S | D1 |
|---|---|---|---|
| DN_1104_ | 9.525 | 4.76 | 3.81 |
| DN_1504_ | 12.70 | 4.76 | 5.16 |
| DN_1506_ | 12.70 | 6.35 | 5.16 |



| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | Machining conditions ● Good Conditions ◖◗ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ◖◗ | ✱ | ✱ | ● | ◖◗ | ◖◗ | ◖◗ | ● | ◖◗ | ✱ | ● | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Roughing | | **DNMG 150408E-MC4** | 0.80 | 0.20-0.60 | 1.20-5.40 | | | | | | | ● | | ● | ● | | | | | | |
| | | **150412E-MC4** | 1.20 | 0.30-0.90 | 1.80-5.40 | | | | | | | ● | | | ● | | | | | | |
| | | **150608E-MC4** | 0.80 | 0.20-0.60 | 1.20-5.40 | | | | | | | ● | | ● | ● | | | | | | ● |
| | | **150612E-MC4** | 1.20 | 0.30-0.90 | 1.80-5.40 | | | | | | | ● | | ● | ● | | | | | | ● |
| |  | **DNMG 110404E-KC4** | 0.40 | 0.09-0.24 | 0.48-3.50 | | | | | | | | | | | | ● | ● | | | |
| | | **110408E-KC4** | 0.80 | 0.18-0.48 | 0.96-3.50 | | | | | | | | | | | | ● | ● | | | |
| | | **150404E-KC4** | 0.40 | 0.09-0.24 | 0.48-4.60 | | | | | | | | | | | | ● | ● | | | |
| | | **150408E-KC4** | 0.80 | 0.18-0.48 | 0.96-4.60 | | | | | | | | | | | | ● | ● | | | |
| | | **150412E-KC4** | 1.20 | 0.26-0.72 | 1.44-4.60 | | | | | | | | | | | | ● | ● | | | |
| | | **150604E-KC4** | 0.40 | 0.09-0.24 | 0.48-4.60 | | | | | | | | | | | | ● | ● | | | |
| | | **150608E-KC4** | 0.80 | 0.18-0.48 | 0.96-4.60 | | | | | | | | | | | | ● | ● | | | |
| | | **150612E-KC4** | 1.20 | 0.26-0.72 | 1.44-4.60 | | | | | | | | | | | | ● | ● | | | |
| | | **DNMG 150408E-PD5** | 0.80 | 0.20-0.60 | 1.20-5.40 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **150412E-PD5** | 1.20 | 0.30-0.90 | 1.80-5.40 | | | ● | ○ | ○ | | | | | | | | | | | |
| | | **150416E-PD5** | 1.60 | 0.40-1.20 | 2.40-5.40 | | | ○ | ○ | ● | | | | | | | | | | | |
| | | **150608E-PD5** | 0.80 | 0.20-0.60 | 1.20-5.40 | | | ○ | ○ | ● | ● | | | | | | | | | | |
| | | **150612E-PD5** | 1.20 | 0.30-0.90 | 1.80-5.40 | | | ○ | ● | ● | ● | | | | | | | | | | |
| | | **150616E-PD5** | 1.60 | 0.40-1.20 | 2.40-5.40 | | | ● | ● | ○ | | | | | | | | | | | |
| |  | **DNMA 150404E-KD5** | 0.40 | 0.10-0.30 | 0.60-5.40 | | | | | | | | | | | | ● | ● | | | |
| | | **150408E-KD5** | 0.80 | 0.20-0.60 | 1.20-5.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **150412E-KD5** | 1.20 | 0.30-0.90 | 1.80-5.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **150604E-KD5** | 0.40 | 0.10-0.30 | 0.60-5.40 | | | | | | | | | | | | ● | ● | | | |
| | | **150608E-KD5** | 0.80 | 0.20-0.60 | 1.20-5.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **150612E-KD5** | 1.20 | 0.30-0.90 | 1.80-5.40 | | | | | | | | | | | ● | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## Negative 90° (S)



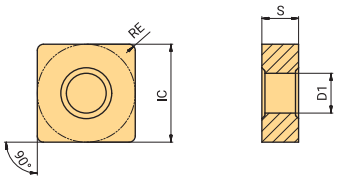

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| SN_1204_ | 12.70 | 4.76 | 5.16 |
| SN_1506_ | 15.875 | 6.35 | 6.35 |
| SN_1906_ | 19.05 | 6.35 | 7.94 |

| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ◖◗ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Finishing | | SNMG 120404E-PB1 | 0.40 | 0.05-0.15 | 0.26-3.20 | ● | ● | ● | ○ | ○ | | | | | | | | | | | |
| | | 120408E-PB1 | 0.80 | 0.10-0.30 | 0.52-3.20 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | 120412E-PB1 | 1.20 | 0.15-0.45 | 0.78-3.20 | | | ● | ● | ○ | | | | | | | | | | | |
| | | SNMG 120404E-MB2 | 0.40 | 0.05-0.15 | 0.26-3.20 | | | | | | | ● | ● | | ● | | | | | | ● |
| | | 120408E-MB2 | 0.80 | 0.10-0.30 | 0.52-3.20 | | | | | | | ● | ● | | ● | | | | | | ● |
| | | 120412E-MB2 | 1.20 | 0.15-0.45 | 0.78-3.20 | | | | | | | ● | ● | | ● | | | | | | ● |
| Semi-finishing | | SNMG 120404E-SL3 | 0.40 | 0.12-0.25 | 0.60-3.00 | | | | | | | | | | ● | | | | | ● | ● |
| | | 120408E-SL3 | 0.80 | 0.15-0.30 | 0.80-3.00 | | | | | | | | | | ● | | | | | ● | ● |
| | | 120412E-SL3 | 1.20 | 0.18-0.35 | 1.00-3.00 | | | | | | | | | | ● | | | | | ● | ● |
| | | SNMG 120404E-PC3 | 0.40 | 0.07-0.20 | 0.34-3.80 | ● | ● | | ○ | | | | | | | | | | | | |
| | | 120408E-PC3 | 0.80 | 0.14-0.40 | 0.68-3.80 | ● | ● | | ● | | | | | | | | | | | | |
| | | 120412E-PC3 | 1.20 | 0.20-0.60 | 1.02-3.80 | ● | ● | | ○ | | | | | | | | | | | | |
| | | SNMG 120408E-SC3 | 0.80 | 0.15-0.44 | 0.80-4.20 | | | | | | | ● | ● | | ● | | | | | ● | ● |
| | | 120412E-SC3 | 1.20 | 0.23-0.66 | 1.20-4.20 | | | | | | | ● | ● | | ● | | | | | ● | ● |
| | | 150612E-SC3 | 1.20 | 0.23-0.66 | 1.20-5.20 | | | | | | | ● | ● | | ● | | | | | ● | ● |
| | | 150616E-SC3 | 1.60 | 0.30-0.88 | 1.60-5.20 | | | | | | | ● | ● | | ● | | | | | ● | ● |
| | | 190612E-SC3 | 1.20 | 0.23-0.66 | 1.20-6.30 | | | | | | | ● | ● | | ● | | | | | ● | ● |
| | | SNMG 120404E-MC3 | 0.40 | 0.08-0.22 | 0.32-4.20 | | | | | | | ● | ● | | ● | | | | | | |
| | | 120408E-MC3 | 0.80 | 0.15-0.44 | 0.64-4.20 | | | | | | | ● | ● | | ● | | | | | | |
| | | 120412E-MC3 | 1.20 | 0.23-0.66 | 0.96-4.20 | | | | | | | ● | ● | | ● | | | | | | |
| | | 150612E-MC3 | 1.20 | 0.23-0.66 | 0.96-5.20 | | | | | | | ● | ● | | ● | | | | | | |
| | | 150616E-MC3 | 1.60 | 0.30-0.88 | 1.28-5.20 | | | | | | | ● | ● | | ● | | | | | | |
| | | 190612E-MC3 | 1.20 | 0.23-0.66 | 0.96-6.30 | | | | | | | ● | ● | | ● | | | | | | |
| | | 190616E-MC3 | 1.60 | 0.30-0.88 | 1.28-6.30 | | | | | | | ● | ● | | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 90° (S)




(mm)

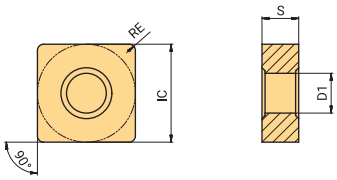
| Product code | IC | S | D1 |
|---|---|---|---|
| SN_1204_ | 12.70 | 4.76 | 5.16 |
| SN_1506_ | 15.875 | 6.35 | 6.35 |
| SN_1906_ | 19.05 | 6.35 | 7.94 |



| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Medium | | **SNMG 120404E-PD3** | 0.40 | 0.08-0.22 | 0.40-4.20 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | **120408E-PD3** | 0.80 | 0.15-0.44 | 0.80-4.20 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | **120412E-PD3** | 1.20 | 0.23-0.66 | 1.20-4.20 | ● | ● | ○ | ○ | ○ | | | | | | | | | | | |
| | | **190608E-PD3** | 0.80 | 0.15-0.44 | 0.80-6.30 | | | ○ | ○ | ○ | ● | | | | | | | | | | |
| | | **SNMG 120404E-M3T** | 0.40 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |
| | | **120408E-M3T** | 0.80 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |
| | | **SNMG 120408E-UC4** | 0.80 | 0.15-0.48 | 0.80-4.50 | | | ● | ● | ● | | | | | | | | | | | |
| | | **120412E-UC4** | 1.20 | 0.23-0.72 | 1.20-4.50 | | | ● | ● | ● | | | | | | | | | | | |
| | | **150612E-UC4** | 1.20 | 0.23-0.72 | 1.20-5.50 | | | ○ | ● | ● | | | | | | | | | | | |
| | | **SNMG 120404E-PC4** | 0.40 | 0.08-0.22 | 0.40-4.20 | ● | ● | | ○ | | | | | | | | ● | ● | | | |
| | | **120408E-PC4** | 0.80 | 0.15-0.44 | 0.80-4.20 | ● | ● | ○ | ○ | ○ | | | | | | ● | ● | ● | | | |
| | | **120412E-PC4** | 1.20 | 0.23-0.66 | 1.20-4.20 | ● | ● | ○ | ○ | ● | | | | | | ● | ● | ● | | | |
| Roughing | | **SNMG 120408E-MC4** | 0.80 | 0.20-0.60 | 1.20-6.40 | | | | | | | ● | ● | | ● | | | | | | ● |
| | | **120412E-MC4** | 1.20 | 0.30-0.90 | 1.80-6.40 | | | | | | | ● | ● | | ● | | | | | | ● |
| | | **150612E-MC4** | 1.20 | 0.30-0.90 | 1.80-7.90 | | | | | | | ● | ● | | ● | | | | | | |
| | | **150616E-MC4** | 1.60 | 0.40-1.20 | 2.40-7.90 | | | | | | | ● | ● | | ● | | | | | | |
| | | **190612E-MC4** | 1.20 | 0.30-0.90 | 1.80-9.50 | | | | | | | ● | ● | | ● | | | | | | |
| | | **190616E-MC4** | 1.60 | 0.40-1.20 | 2.40-9.50 | | | | | | | ● | ● | | ● | | | | | | ● |

● : Standard stock ○ : Made-to-Order

## Negative 90° (S)



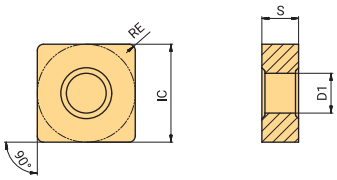

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| SN_0903_ | 9.525 | 3.18 | 3.81 |
| SN_1204_ | 12.70 | 4.76 | 5.16 |
| SN_1506_ | 15.875 | 6.35 | 6.35 |
| SN_1906_ | 19.05 | 6.35 | 7.94 |

| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | Machining conditions: ● Good Conditions ◖◗ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ◖◗ | ✱ | ✱ | ● | ◖◗ | ◖◗ | ◖◗ | ● | ◖◗ | ✱ | ● | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Roughing | | **SNMG 090304E-KC4** | 0.40 | 0.09-0.24 | 0.48-3.80 | | | | | | | | | | | | ● | ● | | | |
| | | **090308E-KC4** | 0.80 | 0.18-0.48 | 0.96-3.80 | | | | | | | | | | | | ● | ● | | | |
| | | **120404E-KC4** | 0.40 | 0.09-0.24 | 0.48-5.10 | | | | | | | | | | | | ● | ● | | | |
| | | **120408E-KC4** | 0.80 | 0.18-0.48 | 0.96-5.10 | | | | | | | | | | | | ● | ● | | | |
| | | **120412E-KC4** | 1.20 | 0.26-0.72 | 1.44-5.10 | | | | | | | | | | | | ● | ● | | | |
| | | **150608E-KC4** | 0.80 | 0.18-0.48 | 0.96-6.40 | | | | | | | | | | | | ● | ● | | | |
| | | **150612E-KC4** | 1.20 | 0.26-0.72 | 1.44-6.40 | | | | | | | | | | | | ● | ● | | | |
| | | **150616E-KC4** | 1.60 | 0.35-0.96 | 1.92-6.40 | | | | | | | | | | | | ● | ● | | | |
| | | **190608E-KC4** | 0.80 | 0.18-0.48 | 0.96-7.60 | | | | | | | | | | | | ● | ● | | | |
| | | **190612E-KC4** | 1.20 | 0.26-0.72 | 1.44-7.60 | | | | | | | | | | | | ● | ● | | | |
| | | **190616E-KC4** | 1.60 | 0.35-0.96 | 1.92-7.60 | | | | | | | | | | | | ● | ● | | | |
| | | **190624E-KC4** | 2.40 | 0.53-1.44 | 2.88-7.60 | | | | | | | | | | | | ○ | ○ | | | |
| | | **SNMG 150412E-PD5** | 1.20 | 1.80-6.40 | 0.30-0.90 | | | ○ | ○ | ● | | | | | | | | | | | |
| | | **150608E-PD5** | 0.80 | 0.20-0.60 | 1.20-7.90 | | | ● | ● | ○ | | | | | | | | | | | |
| | | **150612E-PD5** | 1.20 | 0.30-0.90 | 1.80-7.90 | | | ○ | ○ | ● | ● | | | | | | | | | | |
| | | **150616E-PD5** | 1.60 | 0.40-1.20 | 2.40-7.90 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **190612E-PD5** | 1.20 | 0.30-0.90 | 1.80-9.50 | | | ○ | ● | ● | ● | | | | | | | | | | |
| | | **190616E-PD5** | 1.60 | 0.40-1.20 | 2.40-9.50 | | | ● | ● | ○ | ● | | | | | | | | | | |
| | | **SNMA 120408E-KD5** | 0.80 | 0.20-0.60 | 1.20-6.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **120412E-KD5** | 1.20 | 0.30-0.90 | 1.80-6.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **120416E-KD5** | 1.60 | 0.40-1.20 | 2.40-6.40 | | | | | | | | | | | ● | ● | ● | | | |
| | | **150612E-KD5** | 1.20 | 0.30-0.90 | 1.80-7.90 | | | | | | | | | | | | ● | ● | | | |
| | | **150616E-KD5** | 1.60 | 0.40-1.20 | 2.40-7.90 | | | | | | | | | | | | ● | ● | | | |
| | | **190612E-KD5** | 1.20 | 0.30-0.90 | 1.80-9.50 | | | | | | | | | | | | ● | ● | | | |
| | | **190616E-KD5** | 1.60 | 0.40-1.20 | 2.40-9.50 | | | | | | | | | | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## Negative 90° (S)




(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| SN_1204_ | 12.70 | 4.76 | 5.16 |
| SN_1506_ | 15.875 | 6.35 | 6.35 |
| SN_1906_ | 19.05 | 6.35 | 7.94 |
| SN_2507_ | 25.40 | 7.94 | 9.12 |
| SN_2509_ | 25.40 | 7.94 | 9.12 |
| SN_3109_ | 31.75 | 9.52 | 9.45 |



● Good Conditions ◖◗ General Conditions ✱ Bad Conditions

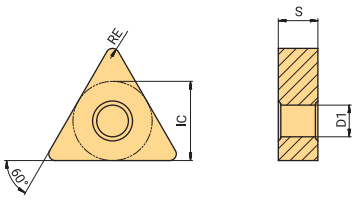
| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Heavy roughing | | **SNMM 120408E-PD8** | 0.80 | 0.16-0.32 | 1.44-5.10 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **120412E-PD8** | 1.20 | 0.24-0.48 | 2.16-5.10 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **150612E-PD8** | 1.20 | 0.24-0.48 | 2.16-6.40 | | | ○ | ○ | ○ | ● | | | | | | | | | | |
| | | **150616E-PD8** | 1.60 | 0.32-0.64 | 2.88-6.40 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **190612E-PD8** | 1.20 | 0.24-0.48 | 2.16-7.60 | | | ○ | ○ | ● | ● | | | | | | | | | | |
| | | **190616E-PD8** | 1.60 | 0.32-0.64 | 2.88-7.60 | | | ● | ● | ● | ● | | | | | | | | | | |
| | | **190624E-PD8** | 2.40 | 0.48-0.96 | 4.32-7.60 | | | ○ | ● | ○ | | | | | | | | | | | |
| | | **250724E-PD8** | 2.40 | 0.48-0.96 | 4.32-10.20 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **250924E-PD8** | 2.40 | 0.48-0.96 | 4.32-10.20 | | | ○ | ● | ● | | | | | | | | | | | |
| | | **SNMM 190612S-PC9** | 1.20 | 0.26-0.60 | 2.40-9.50 | | | ○ | ○ | ● | | | | | | | | | | | |
| | | **190616S-PC9** | 1.60 | 0.35-0.80 | 3.20-9.50 | | | ○ | ● | ○ | | | | | | | | | | | |
| | | **190624S-PC9** | 2.40 | 0.53-1.20 | 4.80-9.50 | | | ○ | ● | ● | | | | | | | | | | | |
| | | **250724S-PC9** | 2.40 | 0.53-1.20 | 4.80-12.70 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **250924S-PC9** | 2.40 | 0.53-1.20 | 4.80-12.70 | | | ○ | ● | ● | | | | | | | | | | | |
| | | **SNMH 310924S-PC9** | 2.40 | 0.53-1.20 | 4.80-15.90 | | | | ○ | | | | | | | | | | | | |
| | | **SNMM 190612S-PD9** | 1.20 | 0.30-0.72 | 2.64-11.40 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **190616S-PD9** | 1.60 | 0.40-0.96 | 3.52-11.40 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **190624S-PD9** | 2.40 | 0.60-1.44 | 5.28-11.40 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **250724S-PD9** | 2.40 | 0.60-1.44 | 5.28-15.20 | | | ○ | ● | ○ | ● | | | | | | | | | | |
| | | **250924S-PD9** | 2.40 | 0.60-1.44 | 5.28-15.20 | | | ○ | ● | ● | | | | | | | | | | | |
| | | **SNMX 310924S-PD9** | 2.40 | 0.60-1.44 | 5.28-19.10 | | | | ○ | | ● | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 60° (T)

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| TN_1604_ | 9.525 | 4.76 | 3.81 |




● Good Conditions ◖◗ General Conditions ✱ Bad Conditions

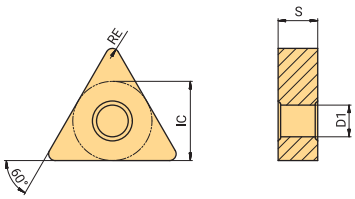
| | Inserts | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP010S | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Finishing | | TNGG 160401FP-UF | 0.10 | 0.03-0.11 | 0.30-2.50 | | | | | | | | | | ● | | | | | | |
| | | 160402FP-UF | 0.20 | 0.03-0.11 | 0.30-2.50 | | | | | | | | | | ● | | | | | | |
| | | 160404FP-UF | 0.40 | 0.03-0.11 | 0.30-2.50 | | | | | | | | | | ● | | | | | | |
| | | TNMG 160404-F1T | 0.40 | 0.05-0.15 | 0.50-2.50 | ● | ● | | | | | | | | | | | | | | |
| | | 160408-F1T | 0.80 | 0.05-0.15 | 0.50-2.50 | ● | ● | | | | | | | | | | | | | | |
| | | TNMG 160404-F1Y | 0.40 | 0.08-0.20 | 0.30-1.50 | ● | ● | | | | | | | | | | | | | | |
| | | TNMG 160408-F1Y | 0.80 | 0.08-0.20 | 0.30-1.50 | ● | ● | | | | | | | | | | | | | | |
| | | TNMG 160402E-PA1 | 0.20 | 0.04-0.25 | 0.20-1.50 | ● | ● | ○ | ○ | | | | | | | | | | | | |
| | | 160404E-PA1 | 0.40 | 0.04-0.28 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | 160408E-PA1 | 0.80 | 0.05-0.35 | 0.20-1.50 | ● | ● | ● | ○ | | | | | | | | | | | | |
| | | 160412E-PA1 | 1.20 | 0.05-0.42 | 0.20-1.50 | ● | ● | | ○ | | | | | | | | | | | | |
| | | TNMG 160404E-PB1 | 0.40 | 0.05-0.15 | 0.26-3.10 | ● | ● | ○ | ● | ○ | | | | | ● | | | | | | |
| | | 160408E-PB1 | 0.80 | 0.10-0.30 | 0.52-3.10 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | 160412E-PB1 | 1.20 | 0.15-0.45 | 0.78-3.10 | ● | ● | ○ | ○ | ○ | | | | | | | | | | | |
| | | TNMG 160404E-SC1 | 0.40 | 0.07-0.18 | 0.20-0.80 | | | | | | | | | ● | | | | | | ● | |
| | | 160408E-SC1 | 0.80 | 0.10-0.25 | 0.20-0.80 | | | | | | | | | ● | | | | | | ● | |
| | | TNMG 160404E-MB2 | 0.40 | 0.05-0.15 | 0.26-3.10 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | 160408E-MB2 | 0.80 | 0.10-0.30 | 0.52-3.10 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| Semi-finishing | | TNMG 160404E-SL3 | 0.40 | 0.12-0.25 | 0.60-3.00 | | | | | | | | | ● | | | | | | ● | ● |
| | | 160408E-SL3 | 0.80 | 0.15-0.30 | 0.80-3.00 | | | | | | | | | ● | | | | | | ● | ● |
| | | 160412E-SL3 | 1.20 | 0.18-0.30 | 1.00-3.00 | | | | | | | | | ● | | | | | | ● | ● |
| | | TNMG 160404-F2K | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | | |
| | | 160408-F2K | 0.80 | 0.10-0.25 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | | |
| | | TNMG 160404R-M1T | 0.40 | 0.10-0.30 | 0.10-0.30 | ● | ● | | | | | | | | | | | | | | |
| | | 160404L-M1T | 0.40 | 0.10-0.30 | 0.10-0.30 | ● | ● | | | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 60° (T)

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| TN_1604_ | 9.525 | 4.76 | 3.81 |
| TN_2204_ | 12.70 | 4.76 | 5.16 |

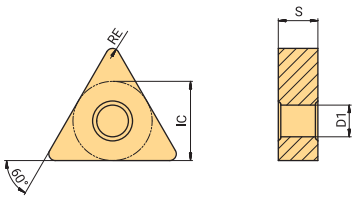



● Good Conditions ◖◗ General Conditions ✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | | K | | | N | S | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Semi-finishing | | **TNMG 160404E-PB3** | 0.40 | 0.06-0.18 | 0.30-3.30 | ● | ● | | ● | ● | | | | | | | | | | | |
| | | **160408E-PB3** | 0.80 | 0.12-0.36 | 0.60-3.30 | ● | ● | ○ | ○ | ○ | | | | | | | | | | | |
| | | **160412E-PB3** | 1.20 | 0.18-0.54 | 0.90-3.30 | ● | ● | ○ | ○ | ○ | | | | | | | | | | | |
| | | **TNMG 160404E-PC3** | 0.40 | 0.07-0.20 | 0.34-3.70 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | **160408E-PC3** | 0.80 | 0.14-0.40 | 0.68-3.70 | ● | ● | | ○ | ○ | | | | | | | | | | | |
| | | **160412E-PC3** | 1.20 | 0.20-0.60 | 1.02-3.70 | ● | ● | | ● | | | | | | | | | | | | |
| | | **TNMG 160404E-SC3** | 0.40 | 0.08-0.22 | 0.40-4.10 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **160408E-SC3** | 0.80 | 0.15-0.44 | 0.80-4.10 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **160412E-SC3** | 1.20 | 0.23-0.66 | 1.20-4.10 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | **TNMG 160404E-MC3** | 0.40 | 0.08-0.22 | 0.32-4.10 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **160408E-MC3** | 0.80 | 0.15-0.44 | 0.64-4.10 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **160412E-MC3** | 1.20 | 0.23-0.66 | 0.96-4.10 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | **220408E-MC3** | 0.80 | 0.15-0.44 | 0.64-4.90 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | **220412E-MC3** | 1.20 | 0.23-0.66 | 0.96-4.90 | | | | | | | ● | ● | ● | ● | | | | | | |
| Medium | | **TNMG 160404E-PD3** | 0.40 | 0.08-0.22 | 0.40-4.10 | ● | ● | ○ | ● | ● | | | | | | | | | | | |
| | | **160408E-PD3** | 0.80 | 0.15-0.44 | 0.80-4.10 | ● | ● | ● | ● | ○ | ● | | | | | | | | | | |
| | | **160412E-PD3** | 1.20 | 0.23-0.66 | 1.20-4.10 | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| | | **TNMG 160404-M3T** | 0.40 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |
| | | **160408-M3T** | 0.80 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |
| | | **TNMG 160408E-UC4** | 0.80 | 0.15-0.48 | 0.80-4.50 | | | ● | ● | ● | ● | | | | | | | | | | |
| | | **160412E-UC4** | 1.20 | 0.23-0.72 | 1.20-4.50 | | | ● | ● | ● | | | | | | | | | | | |
| | | **TNMG 160404E-PC4** | 0.40 | 0.08-0.22 | 0.40-4.10 | ● | ● | | ○ | | | | | | | | | | | | |
| | | **160408E-PC4** | 0.80 | 0.15-0.44 | 0.80-4.10 | ● | ● | ○ | ● | | | | | | | | | | | | |
| | | **160412E-PC4** | 1.20 | 0.23-0.66 | 1.20-4.10 | | | ● | ● | | | | | | | | | | | | |
| | | **220412E-PC4** | 1.20 | 0.23-0.66 | 1.20-4.90 | | | | ○ | ● | | | | | | | | | | | |
| | | **TNMG 160404R-M2T** | 0.40 | 0.10-0.30 | 0.70-3.50 | ● | ● | | | | | | | | | | | | | | |
| | | **160404L-M2T** | 0.40 | 0.10-0.30 | 0.70-3.50 | ● | ● | | | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 60° (T)




(mm)

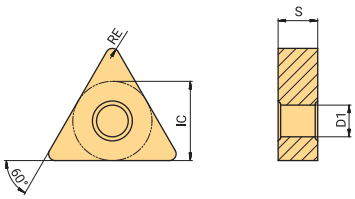
| Product code | IC | S | D1 |
|---|---|---|---|
| TN_1103_ | 6.35 | 3.18 | 2.26 |
| TN_1604_ | 9.525 | 4.76 | 3.81 |
| TN_2204_ | 12.70 | 4.76 | 5.16 |

● Good Conditions ◐ General Conditions ✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Medium | | **TNMG 160404R-PL5** | 0.40 | 0.08-0.22 | 0.40-4.10 | ● | ● | | ● | ● | | | | | | | | | | | |
| | | **160404L-PL5** | 0.80 | 0.15-0.44 | 0.80-4.10 | ● | ● | ○ | ○ | ● | | | | | | | | | | | |
| | | **160408R-PL5** | 0.40 | 0.08-0.22 | 0.40-4.10 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | **160408L-PL5** | 0.80 | 0.15-0.44 | 0.80-4.10 | ● | ● | ● | ○ | ● | | | | | | | | | | | |
| Roughing | | **TNMG 160408E-MC4** | 0.80 | 0.20-0.60 | 1.20-5.80 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | **160412E-MC4** | 1.20 | 0.30-0.90 | 1.80-5.80 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | **220408E-MC4** | 0.80 | 0.20-0.60 | 1.20-6.60 | | | | | | | ● | ● | ● | | | | | | | |
| | | **220412E-MC4** | 1.20 | 0.30-0.90 | 1.80-6.60 | | | | | | | ● | ● | ● | | | | | | | |
| | | **TNMG 110304E-KC4** | 0.40 | 0.09-0.24 | 0.48-3.30 | | | | | | | | | | | | ● | ● | | | |
| | | **160404E-KC4** | 0.40 | 0.09-0.24 | 0.48-4.90 | | | | | | | | | | | | ● | ● | | | |
| | | **160408E-KC4** | 0.80 | 0.18-0.48 | 0.96-4.90 | | | | | | | | | | | ● | ● | ● | | | |
| | | **160412E-KC4** | 1.20 | 0.26-0.72 | 1.44-4.90 | | | | | | | | | | | ● | ● | ● | | | |
| | | **160416E-KC4** | 1.60 | 0.35-0.96 | 1.92-4.90 | | | | | | | | | | | | ● | ● | | | |
| | | **220412E-KC4** | 1.20 | 0.26-0.72 | 1.44-6.00 | | | | | | | | | | | | ● | ● | | | |
| | | **220416E-KC4** | 1.60 | 0.35-0.96 | 1.92-6.00 | | | | | | | | | | | | ● | ● | | | |
| | | **TNMG 160408E-PD5** | 0.80 | 0.20-0.60 | 1.20-5.80 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **160412E-PD5** | 1.20 | 0.30-0.90 | 1.80-5.80 | | | ○ | ○ | ○ | ● | | | | | | | | | | |
| | | **220408E-PD5** | 0.80 | 0.20-0.60 | 1.20-7.70 | | | ○ | ● | ○ | | | | | | | | | | | |
| | | **220412E-PD5** | 1.20 | 0.30-0.90 | 1.80-7.70 | | | ○ | ○ | ● | | | | | | | | | | | |
| | | **220416E-PD5** | 1.60 | 0.40-1.20 | 2.40-7.70 | | | ○ | ● | ● | | | | | | | | | | | |
| | | **TNMA 160404E-KD5** | 0.40 | 0.10-0.30 | 0.60-5.80 | | | | | | | | | | | | ● | ● | | | |
| | | **160408E-KD5** | 0.80 | 0.20-0.60 | 1.20-5.80 | | | | | | | | | | | ● | ● | ● | | | |
| | | **160412E-KD5** | 1.20 | 0.30-0.90 | 1.80-5.80 | | | | | | | | | | | ● | ● | ● | | | |
| | | **160416E-KD5** | 1.60 | 0.40-1.20 | 2.40-5.80 | | | | | | | | | | | ● | ● | ● | | | |
| | | **220408E-KD5** | 0.80 | 0.20-0.60 | 1.20-7.70 | | | | | | | | | | | | ● | ● | | | |
| | | **220412E-KD5** | 1.20 | 0.30-0.90 | 1.80-7.70 | | | | | | | | | | | | ● | ● | | | |
| | | **220416E-KD5** | 1.60 | 0.40-1.20 | 2.40-7.70 | | | | | | | | | | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## Negative 60° (T)




(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| TN_1604_ | 9.525 | 4.76 | 3.81 |
| TN_2204_ | 12.70 | 4.76 | 5.16 |



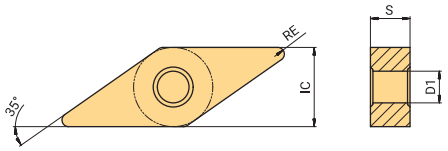
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | Machining conditions: ● Good Conditions ⬮ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ⬮ | ✱ | ✱ | ● | ⬮ | ⬮ | ⬮ | ● | ⬮ | ✱ | ● | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S | |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Heavy roughing | | **TNMM 160408E-PD8** | 0.80 | 0.16-0.32 | 1.44-4.90 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **160412E-PD8** | 1.20 | 0.24-0.48 | 2.16-4.90 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **220408E-PD8** | 0.80 | 0.16-0.32 | 1.44-6.00 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **220412E-PD8** | 1.20 | 0.24-0.48 | 2.16-6.00 | | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **220416E-PD8** | 1.60 | 0.32-0.64 | 2.88-6.00 | | | ○ | ○ | ○ | | | | | | | | | | | |
| Finishing | | **TNGG 160402FR-F** | 0.20 | 0.08-0.20 | 0.50-2.30 | | | | | | | | | | ● | | | | | | |
| | | **160402FL-F** | 0.20 | 0.08-0.20 | 0.50-2.30 | | | | | | | | | | ● | | | | | | |
| | | **160404FR-F** | 0.40 | 0.08-0.20 | 0.50-2.30 | | | | | | | | | | ● | | | | | | |
| | | **160404FL-F** | 0.40 | 0.08-0.20 | 0.50-2.30 | | | | | | | | | | ● | | | | | | |
| Semi-finishing--Roughing | | **TNGG 160404R-H** | 0.40 | 0.22-0.38 | 1.20-3.80 | | | | | | | | | | ● | | | | | | |
| | | **160404L-H** | 0.40 | 0.22-0.38 | 1.20-3.80 | | | | | | | | | | ● | | | | | | |
| | | **160408R-H** | 0.80 | 0.22-0.38 | 1.20-3.80 | | | | | | | | | | ● | | | | | | |
| | | **160408L-H** | 0.80 | 0.22-0.38 | 1.20-3.80 | | | | | | | | | | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 35° (V)

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| VN_1604_ | 9.525 | 4.76 | 3.81 |




● Good Conditions ◖◗ General Conditions ✱ Bad Conditions

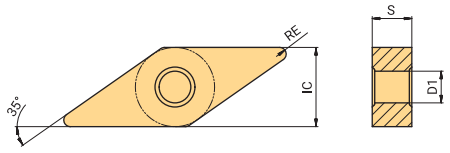
| | Inserts | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP010S | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Finishing | | VNGG 160401FP-UF | 0.10 | 0.02-0.10 | 0.50-2.00 | | | | | | | | | | ● | | | | | | |
| | | 160402FP-UF | 0.20 | 0.02-0.10 | 0.50-2.00 | | | | | | | | | | ● | | | | | | |
| | | 160404FP-UF | 0.40 | 0.02-0.10 | 0.50-2.00 | | | | | | | | | | ● | | | | | | |
| | | VNMG 160402E-PA1 | 0.20 | 0.04-0.25 | 0.20-1.50 | ● | ● | ● | ○ | | | | | | | | | | | | |
| | | 160404E-PA1 | 0.40 | 0.04-0.28 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | 160408E-PA1 | 0.80 | 0.05-0.35 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | 160412E-PA1 | 1.20 | 0.05-0.42 | 0.20-1.50 | ● | ● | | | | | | | | | | | | | | |
| | | VNMG 160404E-PB1 | 0.40 | 0.05-0.15 | 0.26-2.10 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | 160408E-PB1 | 0.80 | 0.10-0.30 | 0.52-2.10 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | VNMG 160404E-SC1 | 0.40 | 0.10-0.25 | 0.20-0.80 | | | | | | | | | ● | | | | | | ● | |
| | | 160408E-SC1 | 0.80 | 0.15-0.30 | 0.20-0.80 | | | | | | | | | ● | | | | | | ● | |
| | | VNMG 160404E-MB2 | 0.40 | 0.05-0.15 | 0.26-2.10 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| | | 160408E-MB2 | 0.80 | 0.10-0.30 | 0.52-2.10 | | | | | | | ● | ● | ● | ● | | | | | | ● |
| Semi-finishing | | VNMG 160404E-SL3 | 0.40 | 0.10-0.20 | 0.60-2.50 | | | | | | | | | ● | | | | | | ● | ● |
| | | 160408E-SL3 | 0.80 | 0.12-0.25 | 0.80-2.50 | | | | | | | | | ● | | | | | | ● | ● |
| | | VNMG 160404E-BS | 0.40 | 0.07-0.16 | 0.30-2.00 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | 160408E-BS | 0.80 | 0.08-0.20 | 0.30-2.00 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | 160412E-BS | 1.20 | 0.09-0.22 | 0.30-2.00 | ● | ○ | ○ | ● | | | | | | | | | | | | |
| | | VNMG 160404-F2K | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | | |
| | | 160408-F2K | 0.80 | 0.10-0.25 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | | |
| | | VNMG 160404E-PB3 | 0.40 | 0.06-0.18 | 0.30-3.10 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | 160408E-PB3 | 0.80 | 0.12-0.36 | 0.60-3.10 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | 160412E-PB3 | 1.20 | 0.18-0.54 | 0.90-3.10 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | VNMG 160404E-PC3 | 0.40 | 0.07-0.20 | 0.34-3.30 | ● | ● | | ● | | | | | | | | | | | | |
| | | 160408E-PC3 | 0.80 | 0.14-0.40 | 0.68-3.30 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | 160412E-PC3 | 1.20 | 0.20-0.60 | 1.02-3.30 | ● | ● | | ○ | | | | | | | | | | | | |
| | | VNMG 160404E-SC3 | 0.40 | 0.08-0.22 | 0.40-3.30 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | 160408E-SC3 | 0.80 | 0.15-0.44 | 0.80-3.30 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | 160412E-SC3 | 1.20 | 0.23-0.66 | 1.20-3.30 | | | | | | | ● | ● | ● | | | | | | ● | ● |
| | | VNMG 160404E-MC3 | 0.40 | 0.08-0.22 | 0.32-3.30 | | | | | | | ● | ● | ● | ● | | | | | | |
| | | 160408E-MC3 | 0.80 | 0.15-0.44 | 0.64-3.30 | | | | | | | ● | ● | ● | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 35° (V)

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| VN_12T3 _ | 7.15 | 3.97 | 3.81 |
| VN_1604_ | 9.525 | 4.76 | 3.81 |




● Good Conditions ◐ General Conditions
✱ Bad Conditions

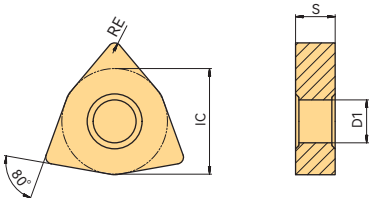
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP010S | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Machining conditions | | ● | ● | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● | ● |
| Medium | | **VNMG 12T304E-PD3** | 0.40 | 0.08-0.22 | 0.40-2.50 | | | | ● | ○ | | | | | | | | | | | |
| | | **12T308E-PD3** | 0.80 | 0.15-0.44 | 0.80-2.50 | | | | ● | ○ | | | | | | | | | | | |
| | | **160404E-PD3** | 0.40 | 0.08-0.22 | 0.40-3.30 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | **160408E-PD3** | 0.80 | 0.15-0.44 | 0.80-3.30 | ● | ● | ○ | ● | ○ | ● | | | | | | | | | | |
| | | **160412E-PD3** | 1.20 | 0.23-0.66 | 1.20-3.30 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **VNMG 160404-M3T** | 0.40 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |
| | | **160408-M3T** | 0.80 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |
| | | **VNMG 160408E-UC4** | 0.80 | 0.15-0.48 | 0.80-4.50 | | | ● | ● | ● | ● | | | ● | ○ | | ○ | ○ | | | |
| | | **160412E-UC4** | 1.20 | 0.23-0.72 | 1.20-4.50 | | | ● | ● | ● | | | | | | | | | | | |
| | | **VNMG 160404E-PC4** | 0.40 | 0.08-0.22 | 0.40-3.30 | ● | ● | | ○ | | | | | | | | ● | ● | | | |
| | | **160408E-PC4** | 0.80 | 0.15-0.44 | 0.80-3.30 | ● | ● | ○ | ○ | | | | | | | | ● | ● | | | |
| | | **160412E-PC4** | 1.20 | 0.23-0.66 | 1.20-3.30 | ● | ● | ○ | ○ | | | | | | | | ● | ● | | | |
| Roughing | | **VNMG 160404E-KC4** | 0.40 | 0.09-0.24 | 0.48-3.30 | | | | | | | | | | | | ● | ● | | | |
| | | **160408E-KC4** | 0.80 | 0.18-0.48 | 0.96-3.30 | | | | | | | | | | | | ● | ● | | | |
| | | **160412E-KC4** | 1.20 | 0.26-0.72 | 1.44-3.30 | | | | | | | | | | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## Negative 80° (W)

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| WN_0604_ | 9.525 | 4.76 | 3.81 |
| WN_0804_ | 12.70 | 4.76 | 5.16 |




● Good Conditions ◖◗ General Conditions ✱ Bad Conditions

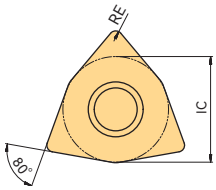
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP010S | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Machining conditions | | ● | ● | ● | ◖◗ | ✱ | ✱ | ● | ◖◗ | ◖◗ | ◖◗ | ● | ◖◗ | ✱ | ● | ● | ● |
| Finishing | | **WNMG 080404-F1T** | 0.40 | 0.05-0.15 | 0.50-2.50 | ● | ● | | | | | | | | | | | | | | |
| | | **080408-F1T** | 0.80 | 0.05-0.15 | 0.50-2.50 | ● | ● | | | | | | | | | | | | | | |
| | | **WNMG 080404-F1Y** | 0.40 | 0.08-0.20 | 0.30-1.50 | ● | ● | | | | | | | | | | | | | | |
| | | **080408-F1Y** | 0.80 | 0.08-0.20 | 0.30-1.50 | ● | ● | | | | | | | | | | | | | | |
| | | **WNMG 080402E-PA1** | 0.20 | 0.04-0.25 | 0.20-1.50 | ● | ● | ○ | ○ | | | | | | | | | | | | |
| | | **080404E-PA1** | 0.40 | 0.04-0.28 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | **080408E-PA1** | 0.80 | 0.05-0.35 | 0.20-1.50 | ● | ● | ● | ● | | | | | | | | | | | | |
| | | **080412E-PA1** | 1.20 | 0.05-0.42 | 0.20-1.50 | ● | ● | | ○ | | | | | | | | | | | | |
| | | **WNMG 080404E-PB1** | 0.40 | 0.05-0.15 | 0.26-2.20 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | **080408E-PB1** | 0.80 | 0.10-0.30 | 0.52-2.20 | ● | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **080412E-PB1** | 1.20 | 0.15-0.45 | 0.78-2.20 | ● | ● | ○ | ● | ○ | | | | | | | | | | | |
| | | **WNMG 080404E-SC1** | 0.40 | 0.10-0.25 | 0.20-0.80 | | | | | | | | ● | | | | | | ● | | ● |
| | | **080408E-SC1** | 0.80 | 0.15-0.30 | 0.20-0.80 | | | | | | | | ● | | | | | | ● | | ● |
| | | **WNMG 080404E-MB2** | 0.40 | 0.05-0.15 | 0.26-2.20 | | | | | | ● | ● | | | | | | | | ● | ● |
| | | **080408E-MB2** | 0.80 | 0.10-0.30 | 0.52-2.20 | | | | | | ● | ● | | | | | | | | ● | ● |

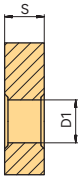
● : Standard stock ○ : Made-to-Order

## Negative 80° (W)

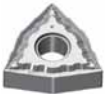
(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| WN_0604_ | 9.525 | 4.76 | 3.81 |
| WN_0804_ | 12.70 | 4.76 | 5.16 |




● Good Conditions ◖◗ General Conditions ✱ Bad Conditions

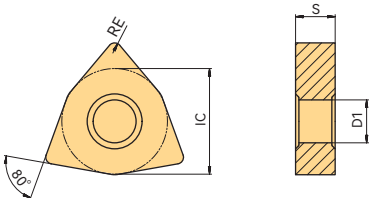
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP010S | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Machining conditions | | ● | ● | ● | ◖◗ | ✱ | ✱ | ● | ◖◗ | ◖◗ | ◖◗ | ● | ◖◗ | ✱ | ● | ● | ● |
| Semi-finishing | | **WNMG 060404E-SL3** | 0.40 | 0.12-0.25 | 0.60-2.50 | | | | | | | | ● | | | | | | ● | ● | |
| | | **060408E-SL3** | 0.80 | 0.15-0.25 | 0.80-2.50 | | | | | | | | ● | | | | | | ● | ● | |
| | | **080404E-SL3** | 0.40 | 0.12-0.25 | 0.60-3.00 | | | | | | | | ● | | | | | | ● | ● | |
| | | **080408E-SL3** | 0.80 | 0.15-0.25 | 0.80-3.00 | | | | | | | | ● | | | | | | ● | ● | |
| | | **080412E-SL3** | 1.20 | 0.18-0.30 | 1.00-3.00 | | | | | | | | ● | | | | | | ● | ● | |
| | | **WNMG 080404-F2K** | 0.40 | 0.12-0.24 | 0.50-2.50 | ● | ● | | | | | | | | | | | | | | |
| | | **080408-F2K** | 0.80 | 0.12-0.24 | 0.50-2.50 | ● | ● | | | | | | | | | | | | | | |
| | | **WNMG 080404E-PB3** | 0.40 | 0.06-0.18 | 0.30-2.30 | ● | ● | | ● | ○ | | | | | | | | | | | |
| | | **080408E-PB3** | 0.80 | 0.12-0.36 | 0.60-2.30 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | **080412E-PB3** | 1.20 | 0.18-0.54 | 0.90-2.30 | ● | ● | ● | ○ | ● | | | | | | | | | | | |
| | | **WNMG 080404E-PC3** | 0.40 | 0.07-0.20 | 0.34-2.60 | ● | ● | | ○ | | | | | | | | | | | | |
| | | **080408E-PC3** | 0.80 | 0.14-0.40 | 0.68-2.60 | ● | ● | ● | ● | ○ | | | | | | | | | | | ● |
| | | **080412E-PC3** | 1.20 | 0.20-0.60 | 1.02-2.60 | ● | ● | ○ | ● | | | | | | | | | | | | ● |
| | | **WNMG 080404E-SC3** | 0.40 | 0.08-0.22 | 0.40-2.90 | | | | | | ● | ● | ● | | | | | | ● | ● | |
| | | **080408E-SC3** | 0.80 | 0.15-0.44 | 0.80-2.90 | | | | | | ● | ● | ● | | | | | | ● | ● | |
| | | **080412E-SC3** | 1.20 | 0.23-0.66 | 1.20-2.90 | | | | | | ● | ● | ● | | | | | | ● | ● | |
| | | **WNMG 060408E-MC3** | 0.80 | 0.15-0.44 | 0.64-2.10 | | | | | | ● | ● | ● | | | | | | | | |
| | | **060412E-MC3** | 1.20 | 0.23-0.66 | 0.96-2.10 | | | | | | ● | ● | ● | | | | | | | | |
| | | **080404E-MC3** | 0.40 | 0.08-0.22 | 0.32-2.90 | | | | | | ● | ● | ● | | | | | | | | |
| | | **080408E-MC3** | 0.80 | 0.15-0.44 | 0.64-2.90 | | | | | | ● | ● | ● | ● | | | | | | ● | |
| | | **080412E-MC3** | 1.20 | 0.23-0.66 | 0.96-2.90 | | | | | | ● | ● | ● | | | | | | | | |
| Medium | | **WNMG 060408E-PD3** | 0.80 | 0.15-0.44 | 0.80-2.10 | | | ● | ● | ● | | | | | | | | | | | |
| | | **080404E-PD3** | 0.40 | 0.08-0.22 | 0.40-2.90 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | **080408E-PD3** | 0.80 | 0.15-0.44 | 0.80-2.90 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| | | **080412E-PD3** | 1.20 | 0.23-0.66 | 1.20-2.90 | ● | ● | ● | ● | ● | | | | | | | | | | | |
| |  | **WNMG 080404-M3T** | 0.40 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |
| | | **080408-M3T** | 0.80 | 0.20-0.40 | 1.00-4.00 | ● | ● | | | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 80° (W)

(mm)

| Product code | IC | S | D1 |
|---|---|---|---|
| WN_0604_ | 9.525 | 4.76 | 3.81 |
| WN_0804_ | 12.70 | 4.76 | 5.16 |






● Good Conditions ◐ General Conditions ✱ Bad Conditions

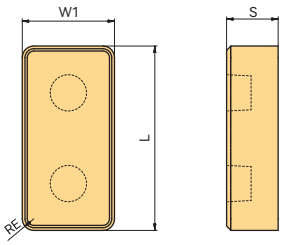
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP010S | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | ● | ● | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● | ● |
| Medium | | WNMG 060412E-UC4 | 1.20 | 0.23-0.72 | 1.20-3.20 | | | ● | ● | ● | | | | | | | | | | | |
| | | 080404E-UC4 | 0.40 | 0.08-0.24 | 0.40-3.20 | | | ● | ● | ● | | | | | | | | | | | |
| | | 080408E-UC4 | 0.80 | 0.15-0.48 | 0.80-3.20 | | | ● | ● | ● | | | | | | | | | | | |
| | | 080412E-UC4 | 1.20 | 0.23-0.72 | 1.20-3.20 | | | ● | ● | ● | | | | | | | | | | | |
| | | WNMG 080404E-PC4 | 0.40 | 0.08-0.22 | 0.40-2.90 | ● | ● | | ○ | | | | | | | ● | ● | | | | |
| | | 080408E-PC4 | 0.80 | 0.15-0.44 | 0.80-2.90 | ● | ● | ○ | ● | | | | | | | ● | ● | | | | |
| | | 080412E-PC4 | 1.20 | 0.23-0.66 | 1.20-2.90 | ● | ● | ● | ● | ○ | | | | | | ● | ● | | | | |
| | | WNMG 080404R-PL5 | 0.40 | 0.20-0.50 | 0.40-4.00 | | | | ○ | ○ | | | | | | | | | | | ● |
| | | 080404L-PL5 | 0.40 | 0.20-0.50 | 0.40-4.00 | | | | ○ | ○ | | | | | | | | | | | |
| | | 080408R-PL5 | 0.80 | 0.20-0.50 | 0.40-5.00 | | | | ○ | ○ | | | ● | | | | | | | | |
| | | 080408L-PL5 | 0.80 | 0.20-0.50 | 0.40-5.00 | | | | ○ | ● | | | ● | | | | | | | | |
| Roughing | | WNMG 060408E-MC4 | 0.80 | 0.20-0.60 | 1.20-3.30 | | | | | | ○ | ○ | ○ | | | | | | | | |
| | | 060412E-MC4 | 1.20 | 0.30-0.90 | 1.80-3.30 | | | | | | ● | ● | ● | | | | | | | | |
| | | 080408E-MC4 | 0.80 | 0.20-0.60 | 1.20-4.30 | | | | | | ● | ● | ● | | | | | | | ● | |
| | | 080412E-MC4 | 1.20 | 0.30-0.90 | 1.80-4.30 | | | | | | ● | ● | ● | | | | | | | ● | |
| | | WNMG 060404E-KC4 | 0.40 | 0.09-0.24 | 0.48-2.60 | | | | | | | | | | | ● | ● | | | | |
| | | 060408E-KC4 | 0.80 | 0.18-0.48 | 0.96-2.60 | | | | | | | | | | | ● | ● | | | | |
| | | 080404E-KC4 | 0.40 | 0.09-0.24 | 0.48-3.50 | | | | | | | | | | | ● | ● | | | | ● |
| | | 080408E-KC4 | 0.80 | 0.18-0.48 | 0.96-3.50 | | | | | | | | | | ● | ● | ● | | | | ● |
| | | 080412E-KC4 | 1.20 | 0.26-0.72 | 1.44-3.50 | | | | | | | | | | ● | ● | ● | | | | |
| | | 080416E-KC4 | 1.60 | 0.35-0.96 | 1.92-3.50 | | | | | | | | | | | ● | ● | | | | ● |
| | | WNMG 080408E-PD5 | 0.80 | 0.20-0.60 | 1.20-4.30 | | | ○ | ● | ○ | | | | | | | | | | | ● |
| | | 080412E-PD5 | 1.20 | 0.30-0.90 | 1.80-4.30 | | | ● | ● | ● | | | | | | | | | | | |
| | | WNMA 080404E-KD5 | 0.40 | 0.10-0.30 | 0.60-4.30 | | | | | | | | | | | ● | ● | | | | |
| | | 080408E-KD5 | 0.80 | 0.20-0.60 | 1.20-4.30 | | | | | | | | | | ● | ● | ● | | | | |
| | | 080412E-KD5 | 1.20 | 0.30-0.90 | 1.80-4.30 | | | | | | | | | | ● | ● | ● | | | | |
| | | 080416E-KD5 | 1.60 | 0.40-1.20 | 2.40-4.30 | | | | | | | | | | | ● | ● | | | | |

● : Standard stock ○ : Made-to-Order

## Negative 90° (L)

(mm)

| Product code | L | S | W1 |
|---|---|---|---|
| LN_5014_ | 50.80 | 14.20 | 25.40 |



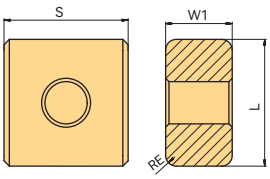

| Inserts | | Product code | RE (mm) | Machining conditions: Recommanded parameters f (mm/rev) | ap (mm) | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● | ● |
| | | | | | | P | | | | M | | | | K | | | N | S | |
| | | | | | | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Heavy roughing | | **LNMX 501432S-HE** | 3.20 | 0.70-1.60 | 6.00-40.00 | | | | ● | | | | | | | | | | |

## Negative 90° (L)

Railway wheel reconditioning

(mm)

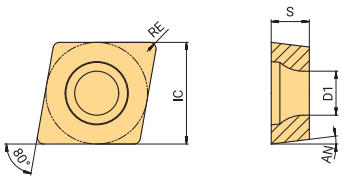
| Product code | L | S | W1 |
|---|---|---|---|
| LN_1919_ | 19.05 | 19.05 | 10 |
| LN_3019_ | 30 | 19.05 | 12 |




| Inserts | | Product code | RE (mm) | Machining conditions: Recommanded parameters f (mm/rev) | ap (mm) | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● | ● |
| | | | | | | P | | | | M | | | | K | | | N | S | |
| | | | | | | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP010S | AP100S |
| Finishing | | **LNMX 191940-AS** | 4.00 | 0.70-1.20 | 2.00-10.00 | ○ | ○ | | | | | | | | | | | | |
| Medium | | **LNMX 191940-AM** | 4.00 | 0.70-1.20 | 2.00-10.00 | ● | ● | ● | | | | | | | | | | | |
| | | **LNMX 301940-AM** | 4.00 | 0.70-1.20 | 2.00-20.00 | ● | ● | ● | | | | | | | | | | | |
| Roughing | | **LNMX 301940-AR** | 4.00 | 0.70-1.20 | 2.00-20.00 | ● | ● | ● | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 80° (C)



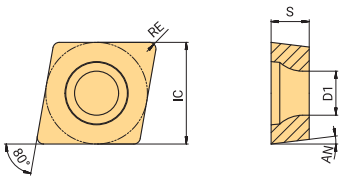

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| CC_0602_ | 6.35 | 2.38 | 2.80 | 7° |
| CC_09T3_ | 9.525 | 3.97 | 4.40 | 7° |
| CC_1204_ | 12.688 | 4.76 | 5.50 | 7° |

| | Inserts | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ⧓ | ✱ | ✱ | ● | ⧓ | ⧓ | ⧓ | ● | ⧓ | ✱ | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | CCGT 060201FP-LF | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | 060202FP-LF | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | 060204FP-LF | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | 09T301FP-LF | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | 09T302FP-LF | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | 09T304FP-LF | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | CCGT 060201FP-UF | 0.10 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | 060202FP-UF | 0.20 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ● | ● | | | | | |
| | | 060204FP-UF | 0.40 | 0.03-0.20 | 0.10-1.40 | | | | | | | | | ● | ● | | | | | |
| | | 09T301FP-UF | 0.10 | 0.02-0.15 | 0.10-2.40 | | | | | | | | | ○ | ● | | | | | |
| | | 09T302FP-UF | 0.20 | 0.02-0.15 | 0.10-2.40 | | | | | | | | | ○ | ● | | | | | |
| | | 09T304FP-UF | 0.40 | 0.03-0.20 | 0.10-2.40 | | | | | | | | | ○ | ● | | | | | |
| | | CCGT 060201F-UF | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | 060202F-UF | 0.20 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | 060204F-UF | 0.40 | 0.03-0.20 | 0.10-1.40 | | ● | | | | | | | | | | | | | |
| | | 09T301F-UF | 0.10 | 0.02-0.15 | 0.10-2.40 | | ○ | | | | | | | | | | | | | |
| | | 09T302F-UF | 0.20 | 0.02-0.15 | 0.10-2.40 | | ○ | | | | | | | | | | | | | |
| | | 09T304F-UF | 0.40 | 0.03-0.20 | 0.10-2.40 | | ○ | | | | | | | | | | | | | |
| | | 09T308F-UF | 0.80 | 0.03-0.25 | 0.10-2.40 | | ○ | | | | | | | | | | | | | |
| | | CCGT 060201E-UF | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | 060202E-UF | 0.20 | 0.02-0.15 | 0.10-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | 060204E-UF | 0.40 | 0.03-0.20 | 0.10-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | 09T301E-UF | 0.10 | 0.02-0.15 | 0.10-2.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | 09T302E-UF | 0.20 | 0.02-0.15 | 0.10-2.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | 09T304E-UF | 0.40 | 0.03-0.20 | 0.10-2.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | 09T308E-UF | 0.80 | 0.03-0.25 | 0.10-2.40 | | ● | | | | | | | ● | ● | | | | | ● |
| Semi-finishing | | CCGT 060204F-NC2 | 0.40 | 0.05-0.20 | 0.32-2.90 | | | | | | | | | | | | | | ● | |
| | | 09T302F-NC2 | 0.20 | 0.02-0.10 | 0.16-4.40 | | | | | | | | | | | | | | ● | |
| | | 09T304F-NC2 | 0.40 | 0.05-0.20 | 0.32-4.40 | | | | | | | | | | | | | | ● | |
| | | 09T308F-NC2 | 0.80 | 0.10-0.40 | 0.64-4.40 | | | | | | | | | | | | | | ● | |
| | | 120404F-NC2 | 0.40 | 0.05-0.20 | 0.32-5.80 | | | | | | | | | | | | | | ● | |
| | | 120408F-NC2 | 0.80 | 0.10-0.40 | 0.64-5.80 | | | | | | | | | | | | | | ● | |

● : Standard stock ○ : Made-to-Order

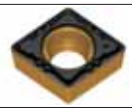
## Turning Inserts Positive 80° (C)




(mm)

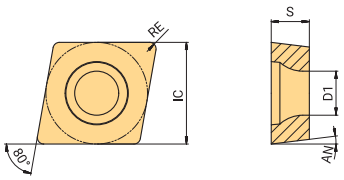
| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| CC_0602_ | 6.35 | 2.38 | 2.80 | 7° |
| CC_09T3_ | 9.525 | 3.97 | 4.40 | 7° |
| CC_1204_ | 12.688 | 4.76 | 5.50 | 7° |



| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | P | | | | | | M | | | | K | | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **CCMT 060202-F1T** | 0.20 | 0.05-0.15 | 0.30-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **060204-F1T** | 0.40 | 0.05-0.15 | 0.30-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **09T304-F1T** | 0.40 | 0.10-0.25 | 0.60-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **09T308-F1T** | 0.80 | 0.10-0.25 | 0.60-1.50 | ● | ● | | | | | | | | | | | | | |
| |  | **CCMT 060202E-PA1** | 0.20 | 0.04-0.25 | 0.10-0.80 | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **09T308E-PA1** | 0.80 | 0.05-0.30 | 0.10-0.80 | ● | ● | ● | ● | | | | | | | | | | | |
| | | **CCMT 060202E-PB1** | 0.20 | 0.02-0.07 | 0.15-1.60 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | |
| | | **060204E-PB1** | 0.40 | 0.04-0.14 | 0.30-1.60 | ● | ● | | ● | ○ | | ● | ● | ● | | | | | | |
| | | **060208E-PB1** | 0.80 | 0.09-0.28 | 0.60-1.60 | ● | ● | | ○ | ○ | | ● | ● | ● | | | | | | |
| | | **09T302E-PB1** | 0.20 | 0.02-0.07 | 0.15-2.40 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | |
| | | **09T304E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.40 | ● | ● | | ● | ○ | | ● | ● | ● | | | | | | ● |
| | | **09T308E-PB1** | 0.80 | 0.09-0.28 | 0.60-2.40 | ● | ● | ● | ● | ○ | | ● | ● | ● | | | | | | |
| | | **CCMT 060202-F2K** | 0.20 | 0.06-0.15 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **060204-F2K** | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **09T302-F2K** | 0.20 | 0.06-0.15 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **09T304-F2K** | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **09T308-F2K** | 0.80 | 0.10-0.25 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| Semi-finishing | | **CCMT 060204E-PC2** | 0.40 | 0.05-0.16 | 0.35-1.90 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | ● |
| | | **060208E-PC2** | 0.80 | 0.10-0.32 | 0.70-1.90 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | ● |
| | | **09T304E-PC2** | 0.40 | 0.05-0.16 | 0.35-2.90 | ● | ● | ● | ● | ● | | ● | ● | ● | | | | | | ● |
| | | **09T308E-PC2** | 0.80 | 0.10-0.32 | 0.70-2.90 | ● | ● | ○ | ● | ○ | | ● | ● | ● | | | | | | ● |
| | | **09T312E-PC2** | 1.20 | 0.16-0.48 | 1.05-2.90 | | | | ● | ○ | | ● | ● | ● | | | | | | |
| | | **120404E-PC2** | 0.40 | 0.05-0.16 | 0.35-3.90 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | ● |
| | | **120408E-PC2** | 0.80 | 0.10-0.32 | 0.70-3.90 | ● | ● | | ● | ○ | | ● | ● | ● | | | | | | ● |
| | | **120412E-PC2** | 1.20 | 0.16-0.48 | 1.05-3.90 | ● | ● | | ○ | ○ | | ● | ● | ● | | | | | | ● |
| | | **CCMT 09T304E-M2T** | 0.40 | 0.10-0.25 | 0.70-3.50 | ● | ● | | | | | | | | | | | | | |
| | | **09T308E-M2T** | 0.80 | 0.10-0.25 | 0.70-3.50 | ● | ● | | | | | | | | | | | | | |
| | | **CCMT 060204-M2Y** | 0.40 | 0.08-0.25 | 0.50-2.50 | ● | ● | | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

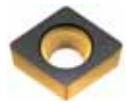
## Turning Inserts Positive 80° (C)




(mm)

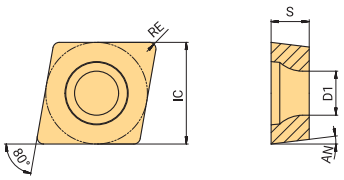
| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| CC_0301_ | 3.50 | 1.43 | 2.20 | 7° |
| CC_0401_ | 4.30 | 1.83 | 2.30 | 7° |
| CC_0602_ | 6.35 | 2.38 | 2.80 | 7° |
| CC_09T3_ | 9.525 | 3.97 | 4.40 | 7° |
| CC_1204_ | 12.688 | 4.76 | 5.50 | 7° |

● Good Conditions ⬌ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | P | | | | | | M | | | | K | | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Medium | | **CCMT 060204E-KC2** | 0.40 | 0.06-0.18 | 0.40-2.10 | ● | ● | | ● | ● | | ● | ● | ● | | | ● | ● | | ● |
| | | **060208E-KC2** | 0.80 | 0.12-0.36 | 0.80-2.10 | ● | ● | | ● | ● | ● | ● | ● | ● | | | ● | ● | | |
| | | **09T304E-KC2** | 0.40 | 0.06-0.18 | 0.40-3.20 | ● | ● | ○ | ○ | ● | ● | ● | ● | ● | | ● | ● | ● | | |
| | | **09T308E-KC2** | 0.80 | 0.12-0.36 | 0.80-3.20 | ● | ● | ○ | ● | ○ | | ● | ● | ● | | ● | ● | ● | | |
| | | **120404E-KC2** | 0.40 | 0.06-0.18 | 0.40-4.30 | ● | ● | ● | ○ | ○ | | ● | ● | ● | | | ● | ● | | |
| | | **120408E-KC2** | 0.80 | 0.12-0.36 | 0.80-4.30 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | |
| | | **120412E-KC2** | 1.20 | 0.18-0.54 | 1.20-4.30 | ● | ● | | ○ | ○ | | ● | ● | ● | | | ● | ● | | |
| Roughing |  | **CCMW 060204E-KD5** | 0.40 | 0.10-0.22 | 0.40-3.20 | | | | | | | | | | | | ● | ● | | |
| | | **09T304E-KD5** | 0.40 | 0.10-0.22 | 0.40-4.80 | | | | | | | | | | | | ● | ● | | |
| | | **09T308E-KD5** | 0.80 | 0.20-0.44 | 0.80-4.80 | | | | | | | | | | | | ● | ● | | |
| | | **120404E-KD5** | 0.40 | 0.10-0.22 | 0.40-6.40 | | | | | | | | | | | | ● | ● | | |
| | | **120408E-KD5** | 0.80 | 0.20-0.44 | 0.80-6.40 | | | | | | | | | | | | ● | ● | | |
| | | **120412E-KD5** | 1.20 | 0.30-0.66 | 1.20-6.40 | | | | | | | | | | | | ● | ● | | |
| Finishing | | **CCET 0301003FR-F** | <0.03 | 0.01-0.05 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **0301003FL-F** | <0.03 | 0.01-0.05 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **0301005FR-F** | <0.05 | 0.01-0.05 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **0301005FL-F** | <0.05 | 0.01-0.05 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **030101FR-F** | <0.10 | 0.01-0.05 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **030101FL-F** | <0.10 | 0.01-0.05 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **030102FR-F** | <0.20 | 0.01-0.05 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **030102FL-F** | <0.20 | 0.01-0.05 | 0.10-0.30 | | ● | | | | | | | ○ | ● | | | | | |
| | | **030104FR-F** | <0.40 | 0.01-0.05 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **030104FL-F** | <0.40 | 0.01-0.05 | 0.10-0.30 | | ● | | | | | | | ○ | ● | | | | | |
| | | **CCET 0401003FR-F** | <0.03 | 0.01-0.06 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **0401003FL-F** | <0.03 | 0.01-0.06 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **0401005FR-F** | <0.05 | 0.01-0.06 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **0401005FL-F** | <0.05 | 0.01-0.06 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **040101FR-F** | <0.10 | 0.01-0.06 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **040101FL-F** | <0.10 | 0.01-0.06 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **040102FR-F** | <0.20 | 0.01-0.06 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **040102FL-F** | <0.20 | 0.01-0.06 | 0.10-0.40 | | ● | | | | | | | ○ | ● | | | | | |
| | | **040104FR-F** | <0.40 | 0.01-0.06 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **040104FL-F** | <0.40 | 0.01-0.06 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 80° (C)




(mm)

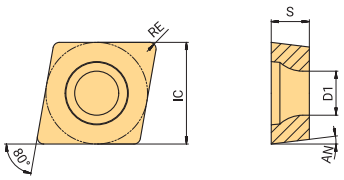
| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| CC_0602_ | 6.35 | 2.38 | 2.80 | 7° |
| CC_09T3_ | 9.525 | 3.97 | 4.40 | 7° |



| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⬮ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| | | | | f (mm/rev) | ap (mm) | P | | | | | | M | | | | K | | | N | S |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Low feed | | **CCET 0602003FR-M** | <0.03 | 0.02-0.10 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | |
| | | **0602003FL-M** | <0.03 | 0.02-0.10 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | |
| | | **0602005FR-M** | <0.05 | 0.02-0.10 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | |
| | | **0602005FL-M** | <0.05 | 0.02-0.10 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | |
| | | **060201FR-M** | <0.10 | 0.02-0.10 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060201FL-M** | <0.10 | 0.02-0.10 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060202FR-M** | <0.20 | 0.02-0.10 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060202FL-M** | <0.20 | 0.02-0.10 | 0.50-2.50 | | ● | | | | | | | ○ | ● | | | | | |
| | | **060204FR-M** | <0.40 | 0.01-0.10 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060204FL-M** | <0.40 | 0.01-0.10 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **CCET 09T3003FR-M** | <0.03 | 0.02-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **09T3003FL-M** | <0.03 | 0.02-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **09T3005FR-M** | <0.05 | 0.02-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **09T3005FL-M** | <0.05 | 0.02-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **09T301FR-M** | <0.10 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **09T301FL-M** | <0.10 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **09T302FR-M** | <0.20 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **09T302FL-M** | <0.20 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **09T304FR-M** | <0.40 | 0.02-0.10 | 0.50-4.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | **09T304FL-M** | <0.40 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 80° (C)



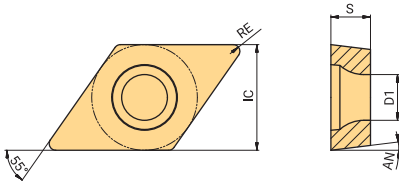

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| CP_0802 _ | 7.94 | 3.40 | 2.38 | 11° |
| CP_0903 _ | 9.513 | 3.18 | 4.40 | 11° |

| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ⧓ | ✱ | ✱ | ● | ⧓ | ⧓ | ⧓ | ● | ⧓ | ✱ | ● | ● |
| | | | | | | P | | | | | | M | | | | K | | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **CPMT 080202E-PB1** | 0.20 | 0.02-0.07 | 0.15-2.00 | ● | ● | ○ | | | | | | | | | | | | |
| | | **080204E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.00 | ● | ● | ○ | | | | | | | | | | | | |
| | | **090302E-PB1** | 0.20 | 0.02-0.07 | 0.15-2.40 | ● | ● | ○ | | | | | | | | | | | | |
| | | **090304E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.40 | ● | ● | ○ | | | | | | | | | | | | |
| | | **090308E-PB1** | 0.80 | 0.09-0.28 | 0.60-2.40 | ● | ● | ○ | | | | | | | | | | | | |
| Semi-finishing | | **CPMT 090304E-PC2** | 0.40 | 0.05-0.15 | 0.35-2.90 | ● | ● | ○ | | | | | | | | | | | | |
| | | **090308E-PC2** | 0.80 | 0.10-0.32 | 0.70-2.90 | ● | ● | ○ | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 55° (D)




(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| DC_0702_ | 6.35 | 2.38 | 2.80 | 7° |
| DC_11T3_ | 9.525 | 3.97 | 4.40 | 7° |

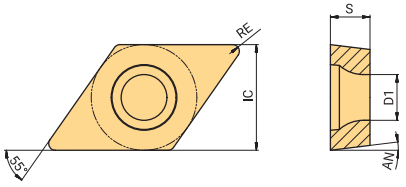


● Good Conditions ◐ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| | | | | Machining conditions | | ● | ● | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● |
| Finishing | | **DCGT 0702005FP-LF** | <0.05 | 0.05-0.15 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **070201FP-LF** | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **070202FP-LF** | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **070204FP-LF** | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **11T301FP-LF** | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **11T302FP-LF** | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **11T304FP-LF** | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **DCGT 0702005FP-UF** | <0.05 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | **070201FP-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | **070202FP-UF** | 0.20 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | **070204FP-UF** | 0.40 | 0.03-0.20 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | **11T301FP-UF** | 0.10 | 0.02-0.15 | 0.10-2.40 | | | | | | | | | ● | ● | | | | | |
| | | **11T302FP-UF** | 0.20 | 0.02-0.15 | 0.10-2.40 | | | | | | | | | ● | ● | | | | | |
| | | **11T304FP-UF** | 0.40 | 0.03-0.20 | 0.10-2.40 | | | | | | | | | ● | ● | | | | | |
| | | **DCGT 070201F-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ● | | | | | | | | | | | | | |
| | | **070202F-UF** | 0.20 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | **070204F-UF** | 0.40 | 0.03-0.20 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | **11T301F-UF** | 0.10 | 0.02-0.15 | 0.10-2.40 | | ○ | | | | | | | | | | | | | |
| | | **11T302F-UF** | 0.20 | 0.02-0.15 | 0.10-2.40 | | ● | | | | | | | | | | | | | |
| | | **11T304F-UF** | 0.40 | 0.03-0.20 | 0.10-2.40 | | ● | | | | | | | | | | | | | |
| | | **DCGT 070201E-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | **070202E-UF** | 0.20 | 0.02-0.15 | 0.10-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | **070204E-UF** | 0.40 | 0.03-0.20 | 0.10-1.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | **11T301E-UF** | 0.10 | 0.02-0.15 | 0.10-2.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | **11T302E-UF** | 0.20 | 0.02-0.15 | 0.10-2.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | **11T304E-UF** | 0.40 | 0.03-0.20 | 0.10-2.40 | | ● | | | | | | | ● | ● | | | | | ● |
| Semi-finishing | | **DCGT 070202F-NC2** | 0.20 | 0.02-0.10 | 0.16-3.50 | | | | | | | | | | | | | | ● | |
| | | **070204F-NC2** | 0.40 | 0.05-0.20 | 0.32-3.50 | | | | | | | | | | | | | | ● | |
| | | **11T302F-NC2** | 0.20 | 0.02-0.10 | 0.16-5.20 | | | | | | | | | | | | | | ● | |
| | | **11T304F-NC2** | 0.40 | 0.05-0.20 | 0.32-5.20 | | | | | | | | | | | | | | ● | |
| | | **11T308F-NC2** | 0.80 | 0.10-0.40 | 0.64-5.20 | | | | | | | | | | | | | | ● | |
| Finishing | | **DCMT 070202-F1T** | 0.20 | 0.07-0.20 | 0.40-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **070204-F1T** | 0.40 | 0.07-0.20 | 0.40-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **11T302-F1T** | 0.20 | 0.07-0.20 | 0.40-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **11T304-F1T** | 0.40 | 0.10-0.25 | 0.60-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **11T308-F1T** | 0.80 | 0.10-0.25 | 0.60-1.50 | ● | ● | | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

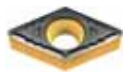
## Turning Inserts Positive 55° (D)




(mm)

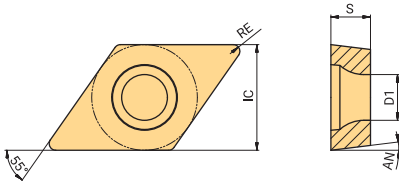
| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| DC_0702_ | 6.35 | 2.38 | 2.80 | 7° |
| DC_11T3_ | 9.525 | 3.97 | 4.40 | 7° |

● Good Conditions ⧓ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | DCMT 11T304-F1Y | 0.40 | 0.08-0.25 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | DCMT 11T302E-PA1 | 0.20 | 0.04-0.25 | 0.10-1.00 | ● | ● | ● | ○ | | | | | | | | | | | |
| | | 11T304E-PA1 | 0.40 | 0.04-0.25 | 0.10-1.00 | ● | ● | ● | ● | | | | | | | | | | | |
| | | 11T308E-PA1 | 0.80 | 0.05-0.30 | 0.10-1.00 | ● | ● | ● | ● | | | | | | | | | | | |
| | | DCMT 070202E-PB1 | 0.20 | 0.02-0.07 | 0.15-1.50 | ● | ● | | ○ | ● | | ● | ● | ● | | | | | | |
| | | 070204E-PB1 | 0.40 | 0.04-0.14 | 0.30-1.50 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | |
| | | 11T302E-PB1 | 0.20 | 0.02-0.07 | 0.15-2.30 | ● | ● | | ○ | ○ | | ● | ● | ● | | | | | | |
| | | 11T304E-PB1 | 0.40 | 0.04-0.14 | 0.30-2.30 | ● | ● | ● | ● | ● | | ● | ● | ● | | | | | | |
| | | 11T308E-PB1 | 0.80 | 0.09-0.28 | 0.60-2.30 | ● | ● | ● | ○ | ● | | ● | ● | ● | | | | | | |
| | | DCMT 070202-F2K | 0.20 | 0.06-0.15 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | 070204-F2K | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | 11T302-F2K | 0.20 | 0.06-0.15 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | 11T304-F2K | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | 11T308-F2K | 0.80 | 0.10-0.25 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| Semi-finishing |  | DCMT 070204E-PC2 | 0.40 | 0.05-0.16 | 0.35-2.10 | ● | ● | | ● | ○ | | ● | ● | ● | | | | | | ● |
| | | 070208E-PC2 | 0.80 | 0.10-0.32 | 0.70-2.10 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | ● |
| | | 11T304E-PC2 | 0.40 | 0.05-0.16 | 0.35-3.10 | ● | ● | ● | ● | ● | | ● | ● | ● | | | | | | ● |
| | | 11T308E-PC2 | 0.80 | 0.10-0.32 | 0.70-3.10 | ● | ● | ○ | ● | ● | | ● | ● | ● | | | | | | ● |
| | | 11T312E-PC2 | 1.20 | 0.16-0.48 | 1.05-3.10 | ● | ● | | ● | ○ | | ● | ● | ● | | | | | | ● |
| | | DCMT 11T304-M2T | 0.40 | 0.10-0.25 | 0.50-3.00 | ● | ● | | | | | | | | | | | | | |
| | | 11T308-M2T | 0.80 | 0.10-0.25 | 0.50-3.00 | ● | ● | | | | | | | | | | | | | |
| Medium | | DCMT 070204E-KC2 | 0.40 | 0.06-0.18 | 0.40-2.30 | ● | ● | | ● | ○ | | | | | | | ● | ● | | |
| | | 070208E-KC2 | 0.80 | 0.12-0.36 | 0.80-2.30 | ● | ● | | ○ | ○ | | | | | | | ● | ● | | |
| | | 11T304E-KC2 | 0.40 | 0.06-0.18 | 0.40-3.50 | ● | ● | | ● | ● | | | | | | | ● | ● | | |
| | | 11T308E-KC2 | 0.80 | 0.12-0.36 | 0.80-3.50 | ● | ● | ○ | ● | ● | | | | | | ● | ● | ● | | |
| | | 11T312E-KC2 | 1.20 | 0.18-0.54 | 1.20-3.50 | | | ○ | ● | ○ | | | | | | | ● | ● | | |
| Roughing | | DCMW 070204E-KD5 | 0.40 | 0.06-0.18 | 0.40-3.90 | | | | | | | | | | | | ● | ● | | |
| | | 070208E-KD5 | 0.80 | 0.12-0.36 | 0.80-3.90 | | | | | | | | | | | | ● | ● | | |
| | | 11T304E-KD5 | 0.40 | 0.06-0.18 | 0.40-5.80 | | | | | | | | | | | | ● | ● | | |
| | | 11T308E-KD5 | 0.80 | 0.12-0.36 | 0.80-5.80 | | | | | | | | | | | | ● | ● | | |
| Finishing | | DCET 0702003FR-F | <0.03 | 0.02-0.18 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | 0702003FL-F | <0.03 | 0.02-0.18 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | 0702005FR-F | <0.05 | 0.02-0.18 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | 0702005FL-F | <0.05 | 0.02-0.18 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | 070201FR-F | <0.10 | 0.02-0.18 | 0.10-0.40 | | ● | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 55° (D)




(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| DC_0702_ | 6.35 | 2.38 | 2.80 | 7° |
| DC_11T3_ | 9.525 | 3.97 | 4.40 | 7° |



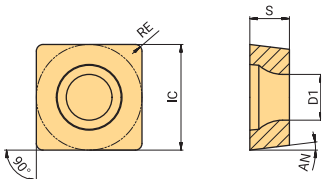
| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | P | | | | | | M | | | | K | | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **DCET 070201FL-F** | <0.10 | 0.02-0.18 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070202FR-F** | <0.20 | 0.02-0.18 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070202FL-F** | <0.20 | 0.02-0.18 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070204FR-F** | <0.40 | 0.02-0.18 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070204FL-F** | <0.40 | 0.02-0.18 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **DCET 11T3003FR-F** | <0.03 | 0.02-0.20 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **11T3003FL-F** | <0.03 | 0.02-0.20 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **11T3005FR-F** | <0.05 | 0.02-0.20 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **11T3005FL-F** | <0.05 | 0.02-0.20 | 0.10-0.40 | | | | | | | | | ○ | ● | | | | | |
| | | **11T301FR-F** | <0.10 | 0.02-0.20 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **11T301FL-F** | <0.10 | 0.02-0.20 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **11T302FR-F** | <0.20 | 0.02-0.20 | 0.10-0.40 | | ● | | | | | | | ○ | ● | | | | | |
| | | **11T302FL-F** | <0.20 | 0.02-0.20 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **11T304FR-F** | <0.40 | 0.02-0.20 | 0.10-0.40 | | ● | | | | | | | ○ | ● | | | | | |
| | | **11T304FL-F** | <0.40 | 0.02-0.20 | 0.10-0.40 | | ○ | | | | | | | ○ | ● | | | | | |
| Low feed | | **DCET 0702003FR-M** | <0.03 | 0.01-0.08 | 0.50-2.80 | | | | | | | | | ○ | ● | | | | | |
| | | **0702003FL-M** | <0.03 | 0.01-0.08 | 0.50-2.80 | | | | | | | | | ○ | ● | | | | | |
| | | **0702005FR-M** | <0.05 | 0.01-0.08 | 0.50-2.80 | | | | | | | | | ○ | ● | | | | | |
| | | **0702005FL-M** | <0.05 | 0.01-0.08 | 0.50-2.80 | | | | | | | | | ○ | ● | | | | | |
| | | **070201FR-M** | <0.10 | 0.01-0.08 | 0.50-2.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070201FL-M** | <0.10 | 0.01-0.08 | 0.50-2.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070202FR-M** | <0.20 | 0.01-0.08 | 0.50-2.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | **070202FL-M** | <0.20 | 0.01-0.08 | 0.50-2.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070204FR-M** | <0.40 | 0.01-0.08 | 0.50-2.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **070204FL-M** | <0.40 | 0.01-0.08 | 0.50-2.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **DCET 11T3003FR-M** | <0.03 | 0.01-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **11T3003FL-M** | <0.03 | 0.01-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **11T3005FR-M** | <0.05 | 0.01-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **11T3005FL-M** | <0.05 | 0.01-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **11T301FR-M** | <0.10 | 0.01-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **11T301FL-M** | <0.10 | 0.01-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **11T302FR-M** | <0.20 | 0.01-0.10 | 0.50-4.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | **11T302FL-M** | <0.20 | 0.01-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **11T304FR-M** | <0.40 | 0.01-0.10 | 0.50-4.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | **11T304FL-M** | <0.40 | 0.01-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 90° (S)

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| SC_09T3_ | 9.525 | 3.97 | 4.40 | 7° |
| SC_1204_ | 12.70 | 4.76 | 5.50 | 7° |
| SC_3809_ | 38.10 | 9.525 | 9.80 | 7° |




● Good Conditions ◐ General Conditions
✱ Bad Conditions

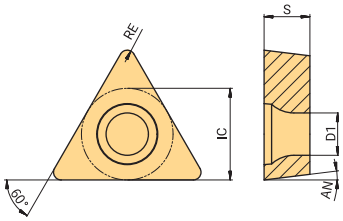
| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Semi-finishing | | **SCGT 09T308F-NC2** | 0.80 | 0.10-0.40 | 0.64-4.30 | | | | | | | | | | | | | | ● | |
| Finishing | | **SCMT 09T304E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.40 | ● | ● | | ○ | ● | | ● | ● | ● | | | | | | |
| | | **09T308E-PB1** | 0.80 | 0.09-0.28 | 0.60-2.40 | ● | ● | | ● | ○ | | ● | ● | ● | ● | | | | | |
| | | **120404E-PB1** | 0.40 | 0.04-0.14 | 0.30-3.20 | | | | ○ | ○ | | ● | ● | ● | | | | | | |
| Semi-finishing | | **SCMT 09T304E-PC2** | 0.40 | 0.05-0.16 | 0.35-2.90 | ● | ● | | ○ | ● | | ● | ● | ● | ● | | | | | ● |
| | | **09T308E-PC2** | 0.80 | 0.10-0.32 | 0.70-2.90 | ● | ● | | ○ | ● | | ● | ● | ● | ● | | | | | ● |
| | | **120404E-PC2** | 0.40 | 0.05-0.16 | 0.35-3.80 | ● | ● | | ● | ○ | | ● | ● | ● | ● | | | | | ● |
| | | **120408E-PC2** | 0.80 | 0.10-0.32 | 0.70-3.80 | ● | ● | ○ | ● | ○ | | ● | ● | ● | ● | | | | | ● |
| | | **120412E-PC2** | 1.20 | 0.16-0.48 | 1.05-3.80 | | | ○ | ○ | ● | | ● | ● | ● | | | | | | ● |
| | | **SCMT 09T304-M2T** | 0.40 | 0.10-0.25 | 0.70-3.50 | ● | ● | | | | | | | | | | | | | |
| | | **09T308-M2T** | 0.80 | 0.10-0.25 | 0.70-3.50 | ● | ● | | | | | | | | | | | | | |
| Medium | | **SCMT 09T304E-KC2** | 0.40 | 0.06-0.18 | 0.40-3.10 | ● | ● | | ○ | ○ | | | | | | | ● | ● | | |
| | | **09T308E-KC2** | 0.80 | 0.12-0.36 | 0.80-3.10 | ● | ● | | ● | ○ | | | | | ● | | ● | ● | | |
| | | **120404E-KC2** | 0.40 | 0.06-0.18 | 0.40-4.20 | ● | ● | | ● | ○ | | | | | | | ● | ● | | |
| | | **120408E-KC2** | 0.80 | 0.12-0.36 | 0.80-4.20 | ● | ● | | ● | ○ | | | | | | | ● | ● | | |
| | | **120412E-KC2** | 1.20 | 0.18-0.54 | 1.20-4.20 | | | | ● | ● | | | | | | | ● | ● | | |
| | | **SCMW 09T304E-KD5** | 0.40 | 0.10-0.22 | 0.40-4.80 | | | | | | | | | | | | ● | ● | | |
| | | **09T308E-KD5** | 0.80 | 0.20-0.44 | 0.80-4.80 | | | | | | | | | | | ● | ● | ● | | |
| | | **120404E-KD5** | 0.40 | 0.10-0.22 | 0.40-6.40 | | | | | | | | | | | | ● | ● | | |
| | | **120408E-KD5** | 0.80 | 0.20-0.44 | 0.80-6.40 | | | | | | | | | | | | ● | ● | | |
| | | **120412E-KD5** | 1.20 | 0.30-0.66 | 1.20-6.40 | | | | | | | | | | | ● | ● | ● | | |
| Roughing | | **SCMT 380932S-HT** | 3.20 | 0.70-1.40 | 4.00-18.00 | | | | | | ● | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive60° (T)

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| TBET_0601_ | 3.97 | 1.59 | 2.30 | 5° |

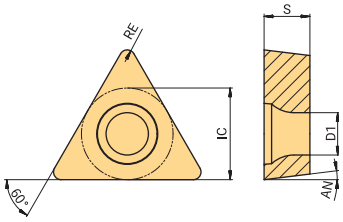



| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | P | | | | | | M | | | | K | | | N | S |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **TBET 0601003FR-F** | <0.03 | 0.03-0.08 | 0.10-0.50 | | | | | | | | | ○ | ● | | | | | |
| | | **0601003FL-F** | <0.03 | 0.03-0.08 | 0.10-0.50 | | | | | | | | | ○ | ● | | | | | |
| | | **0601005FR-F** | <0.05 | 0.03-0.08 | 0.10-0.50 | | | | | | | | | ○ | ● | | | | | |
| | | **0601005FL-F** | <0.05 | 0.03-0.08 | 0.10-0.50 | | | | | | | | | ○ | ● | | | | | |
| | | **060101FR-F** | <0.10 | 0.03-0.08 | 0.10-0.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060101FL-F** | <0.10 | 0.03-0.08 | 0.10-0.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060102FR-F** | <0.20 | 0.03-0.08 | 0.10-0.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060102FL-F** | <0.20 | 0.03-0.08 | 0.10-0.50 | | ● | | | | | | | ○ | ● | | | | | |
| | | **060104FR-F** | <0.40 | 0.03-0.08 | 0.10-0.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **060104FL-F** | <0.40 | 0.03-0.08 | 0.10-0.50 | | ● | | | | | | | ○ | ● | | | | | |

## Turning Inserts Positive 60° (T)

(mm)

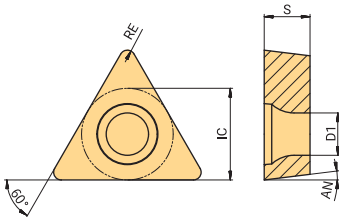
| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| TC_1102_ | 6.35 | 2.38 | 2.80 | 7° |
| TC_16T3_ | 9.525 | 3.97 | 4.40 | 7° |




| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | P | | | | | | M | | | | K | | | N | S |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **TCGT 110201FP-LF** | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **110202FP-LF** | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **110204FP-LF** | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **16T304FP-LF** | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **TCGT 110201FP-UF** | <0.10 | 0.02-0.15 | 0.10-2.40 | | | | | | | | | ○ | ● | | | | | |
| | | **110202FP-UF** | 0.20 | 0.02-0.15 | 0.20-2.40 | | | | | | | | | ○ | ● | | | | | |
| | | **110204FP-UF** | 0.40 | 0.03-0.20 | 0.20-2.40 | | | | | | | | | ○ | ● | | | | | |
| | | **16T304FP-UF** | 0.40 | 0.03-0.20 | 0.20-2.40 | | | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

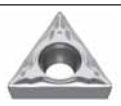
## Turning Inserts Positive 60° (T)




(mm)

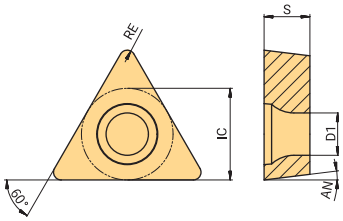
| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| TC_0902_ | 5.56 | 2.38 | 2.50 | 7° |
| TC_1102_ | 6.35 | 2.38 | 2.80 | 7° |
| TC_16T3_ | 9.525 | 3.97 | 4.40 | 7° |

● Good Conditions ⧓ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| | | | | Machining conditions | | ● | ● | ● | ⧓ | ✱ | ✱ | ● | ⧓ | ⧓ | ⧓ | ● | ⧓ | ✱ | ● | ● |
| Finishing | | **TCGT 110201F-UF** | 0.10 | 0.02-0.15 | 0.10-2.40 | | ○ | | | | | | | | | | | | | |
| | | **110202F-UF** | 0.20 | 0.02-0.15 | 0.20-2.40 | | ○ | | | | | | | | | | | | | |
| | | **110204F-UF** | 0.40 | 0.03-0.20 | 0.20-2.40 | | ○ | | | | | | | | | | | | | |
| | | **16T304F-UF** | 0.40 | 0.03-0.20 | 0.20-2.40 | | ○ | | | | | | | | | | | | | |
| | | **TCGT 110201E-UF** | 0.10 | 0.02-0.15 | 0.10-2.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | **110202E-UF** | 0.20 | 0.02-0.15 | 0.20-2.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | **110204E-UF** | 0.40 | 0.03-0.20 | 0.20-2.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | **16T304E-UF** | 0.40 | 0.03-0.20 | 0.20-2.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| Semi-finishing | | **TCGT 110204F-NC2** | 0.40 | 0.05-0.20 | 0.32-4.90 | | | | | | | | | | | | | | ● | |
| | | **16T304F-NC2** | 0.40 | 0.05-0.20 | 0.32-7.40 | | | | | | | | | | | | | | ● | |
| | | **16T308F-NC2** | 0.80 | 0.10-0.40 | 0.64-7.40 | | | | | | | | | | | | | | ● | |
| Finishing |  | **TCMT 110204-F1T** | 0.40 | 0.07-0.20 | 0.40-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **16T304-F1T** | 0.40 | 0.10-0.25 | 0.60-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **TCMT 090204E-PB1** | 0.40 | 0.04-0.14 | 0.30-1.90 | ● | ● | | ○ | ● | | ● | ● | ● | ● | | | | | |
| | | **110202E-PB1** | 0.20 | 0.02-0.07 | 0.15-2.20 | ● | ● | | ○ | ○ | | ● | ● | ● | | | | | | |
| | | **110204E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.20 | ● | ● | | ● | ● | | ● | ● | ● | | | | | | |
| | | **110208E-PB1** | 0.80 | 0.09-0.28 | 0.60-2.20 | ● | ● | | ○ | ○ | | ● | ● | ● | | | | | | |
| | | **16T304E-PB1** | 0.40 | 0.04-0.14 | 0.30-3.30 | ● | ● | | ● | ● | | ● | ● | ● | ● | | | | | |
| | | **16T308E-PB1** | 0.80 | 0.09-0.28 | 0.60-3.30 | ● | ● | | ● | ○ | | ● | ● | ● | | | | | | |
| | | **TCMT 110204-F2K** | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **110208-F2K** | 0.80 | 0.10-0.25 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| Semi-finishing | | **TCMT 090204E-PC2** | 0.40 | 0.05-0.16 | 0.35-2.60 | ● | ● | | ● | ● | | ● | ● | ● | ● | | | | | ● |
| | | **090208E-PC2** | 0.80 | 0.10-0.32 | 0.70-2.60 | ● | ● | | ● | ○ | | ● | ● | ● | ● | | | | | ● |
| | | **110204E-PC2** | 0.40 | 0.05-0.16 | 0.35-3.00 | ● | ● | | ● | ● | | ● | ● | ● | ● | | | | | ● |
| | | **110208E-PC2** | 0.80 | 0.10-0.32 | 0.70-3.00 | ● | ● | | ● | ○ | | ● | ● | ● | ● | | | | | ● |
| | | **16T304E-PC2** | 0.40 | 0.05-0.16 | 0.35-4.50 | ● | ● | ○ | ○ | ● | | ● | ● | ● | ● | | | | | ● |
| | | **16T308E-PC2** | 0.80 | 0.10-0.32 | 0.70-4.50 | ● | ● | ● | ● | ● | | ● | ● | ● | ● | | | | | ● |
| | | **16T312E-PC2** | 1.20 | 0.16-0.48 | 1.05-4.50 | ● | ● | | ○ | ○ | | ● | ● | ● | | | | | | ● |
| | | **TCMT 110204-M2T** | 0.40 | 0.10-0.25 | 0.60-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **110208-M2T** | 0.80 | 0.10-0.25 | 0.60-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **110302-M2T** | 0.20 | 0.06-0.18 | 0.60-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **TCMT 16T304-M2T** | 0.40 | 0.06-0.18 | 0.40-2.90 | ● | ● | | | | | | | | | | | | | |
| | | **16T308-M2T** | 0.80 | 0.12-0.36 | 0.80-2.90 | ● | ● | | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 60° (T)



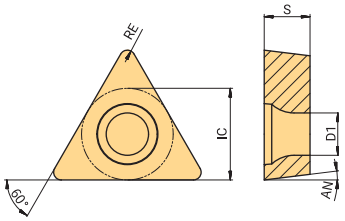

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| TC_0802_ | 4.76 | 2.38 | 2.30 | 7° |
| TC-0902_ | 5.56 | 2.38 | 2.50 | 7° |
| TC_1102_ | 6.35 | 2.38 | 2.80 | 7° |
| TC_16T3_ | 9.525 | 3.97 | 4.40 | 7° |

| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | P | | | | | | M | | | | K | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Medium | | **TCMT 090204E-KC2** | 0.40 | 0.06-0.18 | 0.40-2.90 | ● | ● | | ○ | ● | | ● | ● | ● | | | ● | ● | | |
| | | **090208E-KC2** | 0.80 | 0.12-0.36 | 0.80-2.90 | ● | ● | | ○ | ○ | | ● | ● | ● | | | ● | ● | | |
| | | **110204E-KC2** | 0.40 | 0.06-0.18 | 0.40-3.30 | ● | ● | | ● | ○ | | ● | ● | ● | | | ● | ● | | |
| | | **110208E-KC2** | 0.80 | 0.12-0.36 | 0.80-3.30 | ● | ● | | ○ | ○ | | ● | ● | ● | | | ● | ● | | |
| | | **16T304E-KC2** | 0.40 | 0.06-0.18 | 0.40-4.90 | ● | ● | ○ | ○ | ● | | ● | ● | ● | | | ● | ● | | |
| | | **16T308E-KC2** | 0.80 | 0.12-0.36 | 0.80-4.90 | ● | ● | ○ | ● | ○ | | ● | ● | ● | | | ● | ● | | |
| | | **16T312E-KC2** | 1.20 | 0.18-0.54 | 1.20-4.90 | ● | ● | | ● | ● | | ● | ● | ● | | ● | ● | ● | | |
| Roughing | | **TCMW 110204E-KD5** | 0.40 | 0.06-0.18 | 0.40-5.50 | | | | | | | | | | | | ● | ● | | |
| | | **110208E-KD5** | 0.80 | 0.12-0.36 | 0.80-5.50 | | | | | | | | | | | | ● | ● | | |
| | | **16T304E-KD5** | 0.40 | 0.06-0.18 | 0.40-8.20 | | | | | | | | | | | | ● | ● | | |
| | | **16T308E-KD5** | 0.80 | 0.12-0.36 | 0.80-8.20 | | | | | | | | | | | | ● | ● | | |
| Finishing | | **TCET 110201FR-F** | <0.10 | 0.03-0.13 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110201FL-F** | <0.10 | 0.03-0.13 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110202FR-F** | <0.20 | 0.03-0.13 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110202FL-F** | <0.20 | 0.03-0.13 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110204FR-F** | <0.40 | 0.03-0.13 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110204FL-F** | <0.40 | 0.03-0.13 | 0.10-0.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | **110208FR-F** | <0.80 | 0.03-0.13 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110208FL-F** | <0.80 | 0.03-0.13 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| Low feed | | **TCET 0802003FR-M** | <0.03 | 0.01-0.08 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | |
| | | **0802003FL-M** | <0.03 | 0.01-0.08 | 0.50-2.50 | | | | | | | | | ○ | ● | | | | | |
| | | **080201FR-M** | <0.10 | 0.01-0.08 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **080201FL-M** | <0.10 | 0.01-0.08 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **080202FR-M** | <0.20 | 0.01-0.08 | 0.50-2.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **080202FL-M** | <0.20 | 0.01-0.08 | 0.50-2.50 | | ● | | | | | | | ○ | ● | | | | | |
| | | **TCET 1103003FR-M** | <0.03 | 0.02-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **1103003FL-M** | <0.03 | 0.02-0.10 | 0.50-4.00 | | | | | | | | | ○ | ● | | | | | |
| | | **110301FR-M** | <0.10 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110301FL-M** | <0.10 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110302FR-M** | <0.20 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110302FL-M** | <0.20 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110304FR-M** | <0.40 | 0.02-0.10 | 0.50-4.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | **110304FL-M** | <0.40 | 0.02-0.10 | 0.50-4.00 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 60° (T)



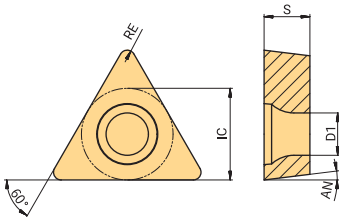

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| TP_0902_ | 5.56 | 2.38 | 2.50 | 11° |
| TP_1103_ | 6.35 | 3.18 | 3.40 | 11° |
| TP_1603_ | 9.525 | 3.18 | 4.40 | 11° |

| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⬍ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| | | | | f (mm/rev) | ap (mm) | P | | | | | | M | | | | K | | | N | S |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **TPMT 110304-F1T** | 0.40 | 0.07-0.20 | 0.40-1.50 | ● | ● | | | | | | | | | | | | | |
| | | **TPMT 110308E-PA1** | 0.80 | 0.05-0.30 | 0.10-1.00 | ● | ● | ● | ● | | | | | | | | | | | |
| | | **TPMT 090202E-PB1** | 0.20 | 0.02-0.07 | 0.15-1.90 | ● | ● | ● | | | | | | | | | | | | |
| | | **090204E-PB1** | 0.40 | 0.04-0.14 | 0.30-1.90 | ● | ● | ○ | | | | | | | ● | | | | | |
| | | **090208E-PB1** | 0.80 | 0.09-0.28 | 0.60-1.90 | ● | ● | ○ | | | | | | | | | | | | |
| | | **110302E-PB1** | 0.20 | 0.02-0.07 | 0.15-2.20 | ● | ● | ● | | | | | | | | | | | | |
| | | **110304E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.20 | ● | ● | ● | | | | | | | ● | | | | | |
| | | **110308E-PB1** | 0.80 | 0.09-0.28 | 0.60-2.20 | ● | ● | ○ | | | | | | | | | | | | |
| | | **160304E-PB1** | 0.40 | 0.04-0.14 | 0.30-3.30 | ● | ● | ○ | | | | | | | | | | | | |
| | | **160308E-PB1** | 0.80 | 0.09-0.28 | 0.60-3.30 | ● | ● | ○ | | | | | | | | | | | | |
| | | **TPMT 110304-F2K** | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| Semi-finishing | | **TPMT 090204E-PC2** | 0.40 | 0.05-0.16 | 0.35-2.60 | ● | ● | ○ | | | | ● | ● | ● | | | | | | |
| | | **090208E-PC2** | 0.80 | 0.10-0.32 | 0.70-2.60 | ● | ● | ○ | | | | ● | ● | ● | ● | | | | | |
| | | **110304E-PC2** | 0.40 | 0.05-0.16 | 0.35-3.00 | ● | ● | ○ | | | | ● | ● | ● | | | | | | ● |
| | | **110308E-PC2** | 0.80 | 0.10-0.32 | 0.70-3.00 | ● | ● | ○ | | | | ● | ● | ● | ● | | | | | |
| | | **160304E-PC2** | 0.40 | 0.10-0.25 | 0.60-2.00 | ● | ● | ○ | | | | ● | ● | ● | | | | | | |
| | | **160308E-PC2** | 0.80 | 0.10-0.25 | 0.60-2.00 | ● | ● | ○ | | | | ● | ● | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 60° (T)




(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| TP_0802_ | 4.76 | 2.38 | 2.30 | 11° |
| TP_0902_ | 5.56 | 2.38 | 2.50 | 11° |
| TP_1103_ | 6.35 | 3.18 | 3.40 | 11° |



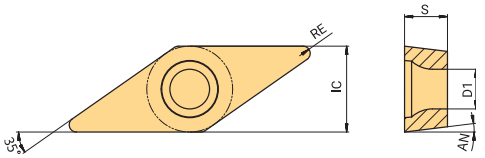
| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⬮ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| | | | | f (mm/rev) | ap (mm) | P | | | | | | M | | | | K | | | N | S |
| | | | | | | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **TPEH 080201FR-F** | <0.10 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **080201FL-F** | <0.10 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **080202FR-F** | <0.20 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **080202FL-F** | <0.20 | 0.01-0.10 | 0.10-0.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | **080204FR-F** | <0.40 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **080204FL-F** | <0.40 | 0.01-0.10 | 0.10-0.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | **TPEH 090201FR-F** | <0.10 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **090201FL-F** | <0.10 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **090202FR-F** | <0.20 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **090202FL-F** | <0.20 | 0.01-0.10 | 0.10-0.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | **090204FR-F** | <0.40 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **090204FL-F** | <0.40 | 0.01-0.10 | 0.10-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **TPEH 110302FR-F** | <0.20 | 0.01-0.12 | 0.20-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110302FL-F** | <0.20 | 0.01-0.12 | 0.20-0.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | **110304FR-F** | <0.40 | 0.01-0.12 | 0.20-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110304FL-F** | <0.40 | 0.01-0.12 | 0.20-0.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | **110308FR-F** | <0.80 | 0.01-0.12 | 0.20-0.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110308FL-F** | <0.80 | 0.01-0.12 | 0.20-0.80 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 35° (V)

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| VB_1103_ | 6.35 | 3.18 | 2.80 | 5° |
| VB_1604_ | 9.52 | 4.76 | 4.40 | 5° |

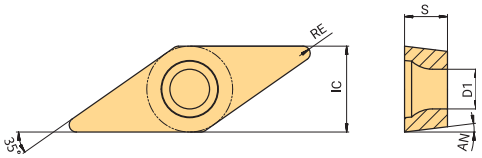



● Good Conditions ⬮ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Finishing | | **VBGT 1103005FP-LF** | <0.05 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **110301FP-LF** | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **110302FP-LF** | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **110304FP-LF** | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **160401FP-LF** | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **160402FP-LF** | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **VBGT 110301FP-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ● | ● | | | | | |
| | | **110302FP-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | | | | | | | | ● | ● | | | | | |
| | | **110304FP-UF** | 0.40 | 0.03-0.20 | 0.20-1.40 | | | | | | | | | ● | ● | | | | | |
| | | **160401FP-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | **160402FP-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | **VBGT 110301F-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | **110302F-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | ● | | | | | | | | | | | | | |
| | | **110304F-UF** | 0.40 | 0.03-0.20 | 0.20-1.40 | | ● | | | | | | | | | | | | | |
| | | **160401F-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | **160402F-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | ● | | | | | | | | | | | | | |
| | | **VBGT 110301E-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | **110302E-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | **110304E-UF** | 0.40 | 0.03-0.20 | 0.20-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | **160401E-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | ○ | ● | | | | | ● |
| | | **160402E-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| Profiling | | **VBMT 110302E-BS** | 0.20 | 0.10-0.32 | 0.70-2.10 | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **110304E-BS** | 0.40 | 0.05-0.16 | 0.35-3.10 | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **110308E-BS** | 0.80 | 0.10-0.32 | 0.70-3.10 | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **160402E-BS** | 0.20 | 0.04-0.14 | 0.30-1.50 | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **160404E-BS** | 0.40 | 0.06-0.18 | 0.40-3.30 | ● | ● | ● | ○ | | | | | | | | | | | |
| | | **160408E-BS** | 0.80 | 0.12-0.36 | 0.80-3.30 | ● | ● | ● | ○ | ○ | | | | | | | | | | |
| | | **160412E-BS** | 1.20 | 0.18-0.54 | 1.20-3.30 | ● | ● | ● | ○ | | | | | | | | | | | |
| Finishing | | **VBMT 110302E-PA1** | 0.20 | 0.04-0.25 | 0.10-1.00 | ● | ● | ● | ● | | | | | | | | | | | |
| | | **160404E-PA1** | 0.40 | 0.04-0.25 | 0.10-1.00 | ● | ● | ● | ● | | | | | | | | | | | |
| | | **160408E-PA1** | 0.80 | 0.05-0.30 | 0.10-1.00 | ● | ● | ● | ● | | | | | | | | | | | |
| | | **VBMT 110304E-PB1** | 0.40 | 0.04-0.14 | 0.30-1.40 | ● | ● | | ● | ○ | | ● | ● | ● | ● | | | | | |
| | | **110308E-PB1** | 0.80 | 0.09-0.28 | 0.60-1.40 | ● | ● | | ○ | ○ | | ● | ● | ● | ● | | | | | |
| | | **160402E-PB1** | 0.20 | 0.02-0.07 | 0.15-2.10 | ● | ● | | ○ | ● | | ● | ● | ● | ● | | | | | |
| | | **160404E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.10 | ● | ● | | ○ | ○ | | ● | ● | ● | ● | | | | | |
| | | **160408E-PB1** | 0.80 | 0.09-0.28 | 0.60-2.10 | ● | ● | ○ | ● | ● | | ● | ● | ● | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 35° (V)




(mm)

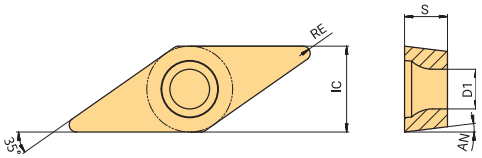
| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| VB_1103_ | 6.35 | 3.18 | 2.80 | 5° |
| VB_1604_ | 9.52 | 4.76 | 4.40 | 5° |

● Good Conditions ⬮ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Finishing | | **VBMT 110304-F2K** | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **160404-F2K** | 0.40 | 0.08-0.20 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| | | **160408-F2K** | 0.80 | 0.10-0.25 | 0.50-2.00 | ● | ● | | | | | | | | | | | | | |
| Semi-finishing | | **VBMT 110304E-PC2** | 0.40 | 0.05-0.16 | 0.35-2.10 | ● | ● | | | | | ● | ● | ● | ● | | | | | ● |
| | | **110308E-PC2** | 0.80 | 0.10-0.32 | 0.70-2.10 | ● | ● | | | | | ● | ● | ● | ● | | | | | ● |
| | | **160404E-PC2** | 0.40 | 0.05-0.16 | 0.35-3.10 | ● | ● | ● | | | | ● | ● | ● | ● | | | | | ● |
| | | **160408E-PC2** | 0.80 | 0.10-0.32 | 0.70-3.10 | ● | ● | ● | | | | ● | ● | ● | ● | | | | | ● |
| | | **160412E-PC2** | 1.20 | 0.16-0.48 | 1.05-3.10 | | | ● | | | | ● | ● | ● | ● | | | | | ● |
| Medium | | **VBMT 160404E-KC2** | 0.40 | 0.06-0.18 | 0.40-3.30 | ● | ● | | ● | ○ | | ● | ● | ● | | | ● | ● | | |
| | | **160408E-KC2** | 0.80 | 0.12-0.36 | 0.80-3.30 | ● | ● | ● | ● | ● | | ● | ● | ● | | | ● | ● | | |
| | | **160412E-KC2** | 1.20 | 0.18-0.54 | 1.20-3.30 | ● | ● | ● | ● | ○ | | ● | ● | ● | | | ● | ● | | |
| Finishing | | **VBET 1103003FR-F** | <0.03 | 0.01-0.18 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **1103003FL-F** | <0.03 | 0.01-0.18 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **1103005FR-F** | <0.05 | 0.01-0.18 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **1103005FL-F** | <0.05 | 0.01-0.18 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **110301FR-F** | <0.10 | 0.01-0.18 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110301FL-F** | <0.10 | 0.01-0.18 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110302FR-F** | <0.20 | 0.01-0.18 | 0.10-0.30 | | ● | | | | | | | ○ | ● | | | | | |
| | | **110302FL-F** | <0.20 | 0.01-0.18 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 35° (V)




(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| VB_1103_ | 6.35 | 3.18 | 2.80 | 5° |
| VB_1604_ | 9.52 | 4.76 | 4.40 | 5° |

Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions

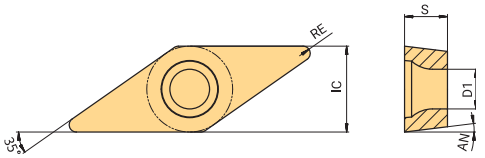
| Inserts | | Product code | RE (mm) | Recommanded parameters f (mm/rev) | Recommanded parameters ap (mm) | P AT202 | P AT210A | P AC052P | P AC152P | P AC252P | P AC350P | M AC100M | M AC200M | M AP200U | M AP301M | K AC100K | K AC102K | K AC202K | N AW100K | S AP100S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ● | ● | ⧓ | ✱ | ✱ | ● | ⧓ | ⧓ | ⧓ | ● | ⧓ | ✱ | ● | ● |
| Low feed | | VBET 1103005FR-M | <0.05 | 0.01-0.06 | 0.20-2.00 | | | | | | | | | ○ | ● | | | | | |
| | | 1103005FL-M | <0.05 | 0.01-0.06 | 0.20-2.00 | | | | | | | | | ○ | ● | | | | | |
| | | 110301FR-M | <0.10 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110301FL-M | <0.10 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110302FR-M | <0.20 | 0.01-0.06 | 0.20-2.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | 110302FL-M | <0.20 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110304FR-M | <0.40 | 0.01-0.06 | 0.20-2.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | 110304FL-M | <0.40 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | VBET 1103003FR-Y | <0.03 | 0.08-0.22 | 0.50-1.80 | | | | | | | | | ○ | ● | | | | | |
| | | 1103003FL-Y | <0.03 | 0.08-0.22 | 0.50-1.80 | | | | | | | | | ○ | ● | | | | | |
| | | 1103005FR-Y | <0.05 | 0.08-0.22 | 0.50-1.80 | | | | | | | | | ○ | ● | | | | | |
| | | 1103005FL-Y | <0.05 | 0.08-0.22 | 0.50-1.80 | | | | | | | | | ○ | ● | | | | | |
| | | 110301FR-Y | <0.10 | 0.08-0.22 | 0.50-1.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110301FL-Y | <0.10 | 0.08-0.22 | 0.50-1.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110302FR-Y | <0.20 | 0.08-0.22 | 0.50-1.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | 110302FL-Y | <0.20 | 0.08-0.22 | 0.50-1.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110304FR-Y | <0.40 | 0.08-0.22 | 0.50-1.80 | | ● | | | | | | | ○ | ● | | | | | |
| | | 110304FL-Y | <0.40 | 0.08-0.22 | 0.50-1.80 | | ○ | | | | | | | ○ | ● | | | | | |
| | | VBET 160402FR-Y | <0.20 | 0.10-0.25 | 0.80-2.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | 160402FL-Y | <0.20 | 0.10-0.25 | 0.80-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 160404FR-Y | <0.40 | 0.10-0.25 | 0.80-2.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | 160404FL-Y | <0.40 | 0.10-0.25 | 0.80-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 160408FR-Y | 0.80 | 0.10-0.25 | 0.80-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 160408FL-Y | 0.80 | 0.10-0.25 | 0.80-2.00 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 35° (V)

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| VC_1103_ | 6.35 | 3.18 | 2.80 | 7° |
| VC_1604_ | 9.525 | 4.76 | 4.40 | 7° |
| VC_2205_ | 12.70 | 5.56 | 5.50 | 7° |

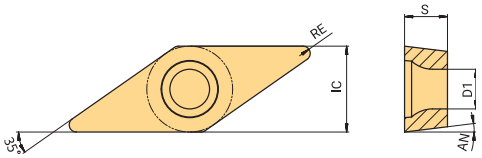



● Good Conditions ◐ General Conditions ✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | P | | | | | M | | | | K | | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | **VCGT 1103005FP-LF** | <0.05 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | **110301FP-LF** | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **110302FP-LF** | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **110304FP-LF** | 0.40 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ● | ● | | | | | |
| | | **VCGT 1103005FP-UF** | <0.05 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | **110301FP-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ● | ● | | | | | |
| | | **110302FP-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | | | | | | | | ● | ● | | | | | |
| | | **110304FP-UF** | 0.40 | 0.03-0.20 | 0.20-1.40 | | | | | | | | | ● | ● | | | | | |
| | | **VCGT 1103005F-UF** | <0.05 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | | ○ | | | | | |
| | | **110301F-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | **110302F-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | ● | | | | | | | | | | | | | |
| | | **110304F-UF** | 0.40 | 0.03-0.20 | 0.20-1.40 | | ○ | | | | | | | | | | | | | |
| | | **VCGT 110301E-UF** | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | ● | ● | | | | | ● |
| | | **110302E-UF** | 0.20 | 0.02-0.15 | 0.20-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| | | **110304E-UF** | 0.40 | 0.03-0.20 | 0.20-1.40 | | ● | | | | | | | ● | ● | | | | | ● |
| Semi-finishing | | **VCGT 110302F-NC2** | 0.20 | 0.02-0.10 | 0.16-2.80 | | | | | | | | | | | | | | ● | |
| | | **110304F-NC2** | 0.40 | 0.05-0.20 | 0.32-2.80 | | | | | | | | | | | | | | ● | |
| | | **160404F-NC2** | 0.40 | 0.05-0.20 | 0.32-4.20 | | | | | | | | | | | | | | ● | |
| | | **160408F-NC2** | 0.80 | 0.10-0.40 | 0.64-4.20 | | | | | | | | | | | | | | ● | |
| | | **160412F-NC2** | 1.20 | 0.14-0.60 | 0.96-4.20 | | | | | | | | | | | | | | ● | |
| | | **220530F-NC2** | 3.00 | 0.36-1.50 | 2.40-5.50 | | | | | | | | | | | | | | ● | |
| Finishing | | **VCMT 160404E-PB1** | 0.40 | 0.04-0.14 | 0.30-2.10 | | | | ● | ○ | | ● | ● | ● | | | | | | |
| | | **160408E-PB1** | 0.80 | 0.09-0.28 | 0.60-2.10 | | | | ● | ○ | | ● | ● | ● | | | | | | |
| Semi-finishing | | **VCMT 110304E-PC2** | 0.40 | 0.05-0.16 | 0.35-2.10 | | | | ● | ○ | | ● | ● | ● | ● | | | | | |
| | | **110308E-PC2** | 0.80 | 0.10-0.32 | 0.70-2.10 | | | | ● | ● | | ● | ● | ● | ● | | | | | |
| | | **160404E-PC2** | 0.40 | 0.05-0.16 | 0.35-3.10 | | | ○ | ● | ○ | | ● | ● | ● | ● | | | | | |
| | | **160408E-PC2** | 0.80 | 0.10-0.32 | 0.70-3.10 | | | ● | ● | ● | | ● | ● | ● | ● | | | | | |
| | | **160412E-PC2** | 1.20 | 0.16-0.48 | 1.05-3.10 | | | ● | ● | ○ | | ● | ● | ● | | | | | | |
| Finishing |  | **VCET 1103005FR-F** | <0.05 | 0.01-0.18 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **1103005FL-F** | <0.05 | 0.01-0.18 | 0.10-0.30 | | | | | | | | | ○ | ● | | | | | |
| | | **110301FR-F** | <0.10 | 0.01-0.18 | 0.10-0.30 | | ● | | | | | | | ○ | ● | | | | | |
| | | **110301FL-F** | <0.10 | 0.01-0.18 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110302FR-F** | <0.20 | 0.01-0.18 | 0.10-0.30 | | ● | | | | | | | ○ | ● | | | | | |
| | | **110302FL-F** | <0.20 | 0.01-0.18 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110304FR-F** | <0.40 | 0.01-0.18 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |
| | | **110304FL-F** | <0.40 | 0.01-0.18 | 0.10-0.30 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 35° (V)




(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| VP_0802_ | 4.76 | 2.38 | 2.30 | 11° |
| VP_1103_ | 6.35 | 3.18 | 2.80 | 11° |
| VP_2205_ | 12.70 | 5.56 | 5.50 | 11° |

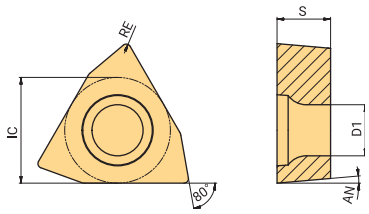
| Inserts | | Product code | RE (mm) | Recommanded parameters | | Machining conditions: ● Good Conditions ⬍ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | P | | | | | | M | | | | K | | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Finishing | | VPGT 1103005FP-LF | <0.05 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | 110301FP-LF | <0.10 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | 110302FP-LF | 0.20 | 0.05-0.20 | 0.35-3.00 | | | | | | | | | ○ | ● | | | | | |
| | | VPGT 110301FP-UF | 0.10 | 0.02-0.15 | 0.10-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | 110302FP-UF | 0.20 | 0.02-0.15 | 0.20-1.40 | | | | | | | | | ○ | ● | | | | | |
| | | VPGT 110301F-UF | 0.10 | 0.02-0.15 | 0.10-1.40 | | ○ | | | | | | | | | | | | | |
| | | 110302F-UF | 0.20 | 0.02-0.15 | 0.20-1.40 | | ○ | | | | | | | | | | | | | |
| Semi-finishing | | VPGT 220520E-NC2 | 2.00 | 0.24-1.00 | 1.60-5.50 | | | | | | | | | | | | | | ● | |
| | | 220520F-NC2 | 2.00 | 0.24-1.00 | 1.60-5.50 | | | | | | | | | | | | | | ● | |
| Finishing | | VPET 080201FR-F | <0.10 | 0.02-0.15 | 0.05-0.20 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 080201FL-F | <0.10 | 0.02-0.15 | 0.05-0.20 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 080202FR-F | <0.20 | 0.02-0.15 | 0.05-0.20 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 080202FL-F | <0.20 | 0.02-0.15 | 0.05-0.20 | | ● | | | | | | | ○ | ● | | | | | |
| Low feed | | VPET 080201FR-M | <0.10 | 0.01-0.06 | 0.20-1.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 080201FL-M | <0.10 | 0.01-0.06 | 0.20-1.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 080202FR-M | <0.20 | 0.01-0.06 | 0.20-1.50 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 080202FL-M | <0.20 | 0.01-0.06 | 0.20-1.50 | | ● | | | | | | | ○ | ● | | | | | |
| | | VPET 110301FR-M | <0.10 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110301FL-M | <0.10 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110302FR-M | <0.20 | 0.01-0.06 | 0.20-2.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | 110302FL-M | <0.20 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |
| | | 110304FR-M | <0.40 | 0.01-0.06 | 0.20-2.00 | | ● | | | | | | | ○ | ● | | | | | |
| | | 110304FL-M | <0.40 | 0.01-0.06 | 0.20-2.00 | | ○ | | | | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive 80° (W)

(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| WB_0601_ | 3.97 | 1.59 | 2.30 | 5° |
| WB_0802_ | 4.76 | 2.38 | 2.30 | 5° |

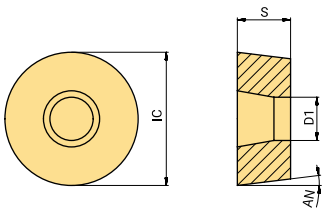



● Good Conditions ⬮ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| | | | | | | ● | ● | ● | ⬮ | ✱ | ✱ | ● | ⬮ | ⬮ | ⬮ | ● | ⬮ | ✱ | ● | ● |
| Finishing | | **WBET 0601003FR-F** | <0.03 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **0601003FL-F** | <0.03 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **060101FR-F** | <0.10 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **060101FL-F** | <0.10 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **060102FR-F** | <0.20 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **060102FL-F** | <0.20 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **060104FR-F** | <0.40 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **060104FL-F** | <0.40 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **WBET 0802003FR-F** | <0.03 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **0802003FL-F** | <0.03 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **080201FR-F** | <0.10 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **080201FL-F** | <0.10 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **080202FR-F** | <0.20 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **080202FL-F** | <0.20 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **080204FR-F** | <0.40 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |
| | | **080204FL-F** | <0.40 | 0.05-0.08 | 0.10-0.80 | | | | | | | | | | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## Turning Inserts Positive Round (R)




(mm)

| Product code | IC | S | D1 | AN |
|---|---|---|---|---|
| RCGT_0803_ | 8.00 | 3.18 | 3.40 | 7° |
| RCGT_1003_ | 10.00 | 3.18 | 4.40 | 7° |
| RCGT_10T3_ | 10.00 | 3.97 | 4.40 | 7° |
| RCMX_1003_ | 10.00 | 3.18 | 3.60 | 7° |
| RCMX_1204_ | 12.00 | 4.76 | 4.20 | 7° |
| RCMX_1606_ | 16.00 | 6.35 | 5.20 | 7° |
| RCMX_2006_ | 20.00 | 6.35 | 6.50 | 7° |
| RCMX_2507_ | 25.00 | 7.94 | 7.20 | 7° |
| RCMX_3209_ | 32.00 | 9.525 | 9.60 | 7° |

● Good Conditions ◐ General Conditions
✱ Bad Conditions

| Inserts | | Product code | RE (mm) | Machining conditions | | ● | ● | ● | ◐ | ✱ | ✱ | ● | ◐ | ◐ | ◐ | ● | ◐ | ✱ | ● | ● |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Recommanded parameters | | P | | | | | | M | | | | K | | | N | S |
| | | | | f (mm/rev) | ap (mm) | AT202 | AT210A | AC052P | AC152P | AC252P | AC350P | AC100M | AC200M | AP200U | AP301M | AC100K | AC102K | AC202K | AW100K | AP100S |
| Semi-finishing | | **RCGT 0803MOF-NC2** | - | 0.10-1.00 | 0.70-3.30 | | | | | | | | | | | | | | ● | |
| | | **1003MOF-NC2** | - | 0.20-1.30 | 0.90-4.00 | | | | | | | | | | | | | | ● | |
| | | **10T3MOF-NC2** | - | 0.20-1.30 | 0.90-4.00 | | | | | | | | | | | | | | ● | |
| | | **RCMT 0803MOE-PD8** | - | 0.06-0.31 | 0.80-3.20 | | | | | | | | | | | | | | | |
| | | **10T3MOS-PD8** | - | 0.06-0.31 | 1.00-4.00 | | | | | | | | | | | | | | | |
| | | **1204MOS-PD8** | - | 0.08-0.38 | 1.20-4.80 | | ○ | ○ | ○ | | | | | | | | | | | |
| | | **1606MOS-PD8** | - | 0.10-0.50 | 1.60-6.40 | | | | | | | | | | | | | | | |
| | | **2006MOS-PD8** | - | 0.21-1.26 | 2.00-8.00 | | | | | | | | | | | | | | | |
| | | **2507MOS-PD8** | - | 0.28-1.53 | 2.50-10 | | ○ | | | | | | | | | | | | | |
| | | **RCMX 2006MOS-PD8** | - | 0.48-0.90 | 3.50-9.00 | | | ● | ● | | | | | | | | | | | |
| | | **2507MOS-PD8** | - | 0.55-1.20 | 4.00-12.00 | | | ● | ● | | | | | | | | | | | |
| | | **3209MOS-PD8** | - | 0.65-1.50 | 5.00-15.00 | | | ● | ● | | | | | | | | | | | |
| Medium | | **RCMX 100300S** | - | 0.25-0.50 | 1.50-4.00 | | ○ | ○ | ● | | | | | | | | | | | |
| | | **120400S** | - | 0.30-0.60 | 2.50-5.00 | | | ● | ○ | | | | | | | | | | | |
| | | **160600S** | - | 0.40-0.75 | 3.00-7.00 | | | ● | ○ | | | | | | | | | | | |
| | | **200600S** | - | 0.48-0.90 | 3.50-9.00 | | | ● | ○ | | | | | | | | | | | |
| | | **250700S** | - | 0.55-1.20 | 4.00-12.00 | | | ○ | ○ | | | | | | | | | | | |
| | | **320900S** | - | 0.65-1.50 | 5.00-15.00 | | ○ | ● | ○ | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

# ACHTECK

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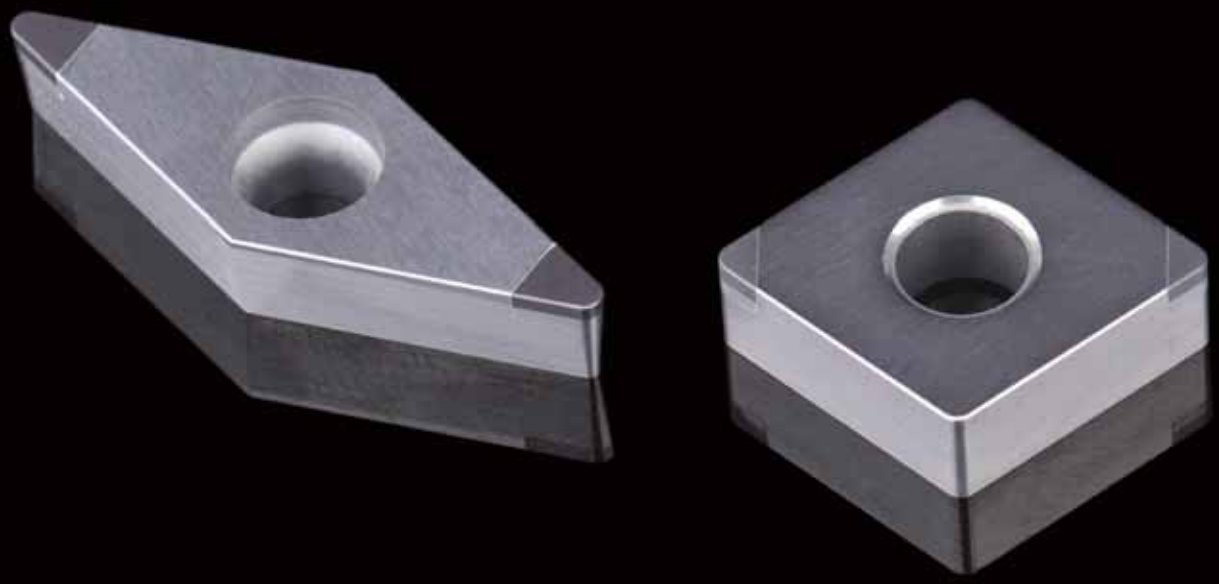
THE EXPERT OF DIFFICULT MACHINING



## PCBN/PCD Inserts

PCBN/PCD

# CUTTING TOOL CATALOGUE


## PCBN Inserts 97

PCBN Insert Denomination System 99
PCBN Negative Inserts 101
PCBN Positive Inserts 102

## PCD Inserts 104

PCD Insert Denomination System 104
PCD Negative Inserts 106
PCD Positive Inserts 107

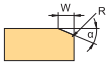
## PCBN Insert Denomination System

| CNGA 120408 | - | S | 010 | 20 | - | SL | - | 2 | - | CB | PB30 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | | 5 | | 6 | | 7 | 8 |

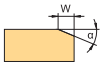
### 1- Standard ISO Code System

### 2- Cutting Edge Shape

S-- Land + Honed




T-- Land




### 3- T-land Width

005--0.05mm
010--0.10mm
015--0.15mm
020--0.20mm

### 4- T-land Angle

10--10°
15--15°
20--20°
25--25°

### 5- CBN Insert Structure

FT-- Full-face composite

SD-- Solid CBN

SL-- Standard

QL-- Heavy-duty through-cut

### 6- Number Of Cutting Edges

2-- Two cutting edges
3-- Three cutting edges

### 7- Cutting Edge Preparation

CB-- With chip breaker
WG-- With wiper edge
"None"-- Without chip breaker

### 8- Grade

PB30-- Low content CBN
PB60-- Medium content CBN
PB90-- High content CBN

## PCBN Insert Grade Introduction

| Grade | Grade Characteristics | Main Applications | ISO Group |
|---|---|---|---|
| PB30 | Excellent wear resistance for medium-to-high-speed machining | Versatile; suitable for continuous and light interrupted cutting of hardened steel | H05-H15 |
| PB60 | Balanced toughness for medium cutting speeds | Moderate-interrupted cutting of hardened steel, interrupted and continuous machining of powder metallurgy, gray cast iron machining | H10-H25 |
| PB90 | High CBN content with superior hardness & fracture resistance | K- Mainly for cast iron machining<br>H- Severe interrupted cutting of hardened steel, powder metallurgy machining | K01-K20 |

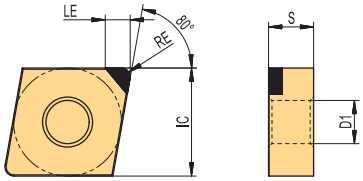
## Recommended Parameters for PCBN Insert

| Grade | Workpiece Material | Hardness Range | Cutting Speed Vc (m/min) | Feed fn (mm/rev) | Depth of Cut ap (mm) | Recommended Application Conditions |
|---|---|---|---|---|---|---|
| PB30 | Hardened steel | HRC58-62 | 150--250 | 0.03--0.2 | 0.05-0.3 | Continuous |
| PB60 | Hardened steel | HRC55-60 | 50--150 | 0.03--0.2 | 0.05-0.5 | Interrupted |
| | Cast iron | HB180-220 | 150--450 | 0.03--0.3 | 0.30-0.5 | Continuous/Interrupted |
| | Powder metallurgy | - | 200--500 | 0.03--0.3 | 0.10-0.3 | Continuous/Interrupted |
| PB90 | Hardened steel | HRC55-60 | 30--120 | 0.03--0.2 | 0.05-0.5 | Heavy interrupted |
| | Cast iron | HB180-220 | 150--450 | 0.03--0.3 | 0.30-0.5 | Continuous/Interrupted |
| | Powder metallurgy | - | 300--800 | 0.03--0.3 | 0.10-0.3 | Continuous/Interrupted |

## Grade Application Guide

| Material Group | | ISO | ISO Group of PCBN Insert Grade | | | ISO |
|---|---|---|---|---|---|---|
| | | | Uncoated | | | |
| | | | PB30 | PB60 | PB90 | |
| P | Non-alloy steels/ Alloyed steels | P01 | | | | P01 |
| | | P10 | | | | P10 |
| | | P20 | | | | P20 |
| | | P30 | | | | P30 |
| | | P40 | | | | P40 |
| | | P50 | | | | P50 |
| M | Stainless steels | M01 | | | | M01 |
| | | M10 | | | | M10 |
| | | M20 | | | | M20 |
| | | M30 | | | | M30 |
| | | M40 | | | | M40 |
| K | Cast iron | K01 | | | PB90 | K01 |
| | | K10 | | | | K10 |
| | | K20 | | | | K20 |
| | | K30 | | | | K30 |
| | | K40 | | | | K40 |
| | | K50 | | | | K50 |
| N | Aluminum/ Aluminum alloys | N01 | | | | N01 |
| | | N10 | | | | N10 |
| | | N20 | | | | N20 |
| | | N30 | | | | N30 |
| S | Heat resistant alloys | S01 | | | | S01 |
| | | S10 | | | | S10 |
| | | S20 | | | | S20 |
| | | S30 | | | | S30 |
| | | S40 | | | | S40 |
| H | Hardened steels/ Chilled cast iron | H01 | PB30 | | | H01 |
| | | H10 | | PB60 | | H10 |
| | | H20 | | | | H20 |
| | | H30 | | | | H30 |

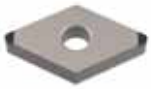
## Overview of PCBN Negative Inserts




(mm)

| Product code | IC | S | LE | D1 |
|---|---|---|---|---|
| CN_1204_ | 12.7 | 4.76 | 2.2 | 5.16 |
| DN_1504_ | 12.7 | 4.76 | 2.2 | 5.16 |
| DN_1506_ | 12.7 | 6.35 | 2.2 | 5.16 |
| TN_1604_ | 9.525 | 4.76 | 2.2 | 3.81 |
| VN_1604_ | 9.525 | 4.76 | 2.2 | 3.81 |
| WN_0804_ | 12.7 | 4.76 | 2.2 | 5.16 |

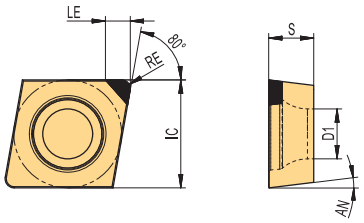


| Inserts | Product code | RE (mm) | Machining conditions: Recommanded parameters f (mm/rev) | ap (mm) | ● Good Conditions ◐ General Conditions ✱ Bad Conditions ● | ◐ | ● |
|---|---|---|---|---|---|---|---|
| | | | | | H | | K |
| | | | | | PB30 | PB60 | PB90 |
| | **CNGA 120404-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **120408-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **120412-S01020-SL-2** | 1.2 | 0.03-0.3 | 0.05-0.5 | | | ● |
|  | **DNGA 150404-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **150408-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **150412-S01020-SL-2** | 1.2 | 0.03-0.3 | 0.05-0.5 | | | ● |
| | **150604-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **150608-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **150612-S01020-SL-2** | 1.2 | 0.03-0.3 | 0.05-0.5 | | | ● |
| | **TNGA 160404-S01020-SL-3** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160408-S01020-SL-3** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160412-S01020-SL-3** | 1.2 | 0.03-0.3 | 0.05-0.5 | | | ● |
| | **VNGA 160404-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160408-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160412-S01020-SL-2** | 1.2 | 0.03-0.3 | 0.05-0.5 | | | ● |
| | **WNGA 080404-S01020-SL-3** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **080408-S01020-SL-3** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **080412-S01020-SL-3** | 1.2 | 0.03-0.3 | 0.05-0.5 | | | ● |

For hard material turning, negative PCBN Inserts are preferred to use double-clamped D-type tool holders to reduce vibration and chipping.

● : Standard stock ○ : Made-to-Order

## Overview of PCBN Positive Inserts




(mm)

| Product code | IC | S | LE | D1 | AN |
|---|---|---|---|---|---|
| CC_0602_ | 6.35 | 2.38 | 2.2 | 2.8 | 7° |
| CC_09T3_ | 9.525 | 3.97 | 2.2 | 4.4 | 7° |
| CC_1204_ | 12.7 | 4.76 | 2.2 | 5.5 | 7° |
| TC_1102_ | 6.35 | 2.38 | 2.2 | 2.8 | 7° |
| TP_0802_ | 4.76 | 2.38 | 2.2 | 2.3 | 11° |
| TP_0902_ | 5.56 | 2.38 | 2.2 | 2.8 | 11° |
| TP_1103_ | 6.35 | 3.18 | 2.2 | 3.4 | 11° |
| TP_1604_ | 9.525 | 3.18 | 2.2 | 4.4 | 11° |



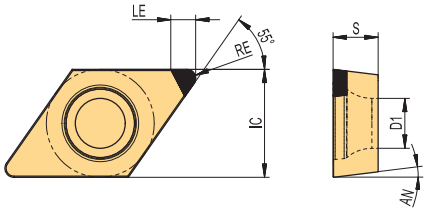
| Inserts | Product code | RE (mm) | Machining conditions: Recommanded parameters f (mm/rev) | ap (mm) | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | |
|---|---|---|---|---|---|---|---|
| | | | | | ● | ◐ | ● |
| | | | | | H | | K |
| | | | | | PB30 | PB60 | PB90 |
| | **CCGW 060202-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | ● | |
| | **060204-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **09T302-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | | |
| | **09T304-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **09T308-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **120404-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **120408-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **120412-S01020-SL-2** | 1.2 | 0.03-0.3 | 0.05-0.5 | | | ● |
| | **TPGW 080202-S01020-SL-3** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | ● | |
| | **080204-S01020-SL-3** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **090202-S01020-SL-3** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | ● | |
| | **090204-S01020-SL-3** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **090208-S01020-SL-3** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **110302-S01020-SL-3** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | ● | |
| | **110304-S01020-SL-3** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160402-S01020-SL-3** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | ● | |
| | **160404-S01020-SL-3** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160408-S01020-SL-3** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **TCGW 110204-S01020-SL-3** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **110208-S01020-SL-3** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |

● : Standard stock ○ : Made-to-Order

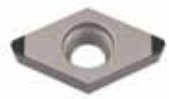
## Overview of PCBN Positive Inserts

(mm)

| Product code | IC | S | LE | D1 | AN |
|---|---|---|---|---|---|
| DC_0702_ | 6.35 | 2.38 | 2.2 | 2.8 | 7° |
| DC_11T3_ | 9.525 | 3.97 | 2.2 | 4.4 | 7° |
| VB_1103_ | 6.35 | 3.18 | 2.2 | 2.8 | 5° |
| VC_1103_ | 6.35 | 3.18 | 2.2 | 2.8 | 7° |
| VB_1604_ | 9.525 | 4.76 | 2.2 | 4.4 | 5° |
| VC_1604_ | 9.525 | 4.76 | 2.2 | 4.4 | 7° |






| Inserts | Product code | RE (mm) | Machining conditions: Recommanded parameters f (mm/rev) | ap (mm) | ● Good Conditions ⬍ General Conditions ✱ Bad Conditions: ● | ⬍ | ● |
|---|---|---|---|---|---|---|---|
| | | | | | H | | K |
| | | | | | PB30 | PB60 | PB90 |
|  | **DCGW 070202-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | | |
| | **070204-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **070208-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **11T302-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | | |
| | **11T304-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **11T308-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **11T312-S01020-SL-2** | 1.2 | 0.03-0.3 | 0.05-0.5 | | ● | ● |
| | **VBGW 110302-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | | |
| | **110304-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **110308-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160402-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | | |
| | **160404-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160408-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **VCGW 110302-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | | |
| | **110304-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **110308-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160402-S01020-SL-2** | 0.2 | 0.03-0.3 | 0.05-0.5 | ● | | |
| | **160404-S01020-SL-2** | 0.4 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |
| | **160408-S01020-SL-2** | 0.8 | 0.03-0.3 | 0.05-0.5 | ● | ● | ● |

● : Standard stock ○ : Made-to-Order

## PCD Insert Denomination System

| CCGW 09T304 | - | 1 | - | NL | - | 05 | - | CB | PD20 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | | 3 | | 4 | | 5 | 6 |

### 1- Standard ISO Code System

### 2- Number Of Cutting Edges

1-- One cutting edge

### 3- PCD Insert Structure

NL--Standard

LL--Full edge tippde

### 4- Rake Angle

00--0°　　07--7°
05--5°　　10--10°

### 5- Cutting Edge Preparation

CB-- With chip breaker
WG-- With wiper edge
" - " -- Without chip breaker

### 6- Grade

PD01-- Fine grain PCD
PD10-- Medium grain PCD
PD20-- Mixed grain PCD

## PCD Insert Grade Introduction

| Grade | Grade Characteristics | Main Applications | ISO Group |
|---|---|---|---|
| PD20 | 2-30μm mixed grain size; superior wear resistance & edge integrity; excellent surface finish | 1st choice for general aluminum machining, roughing of high-silicon Al, graphite, carbide rolls | N01-N20 |
| PD10 | 10μm avg. grain size; balanced toughness & wear resistance; premium finish | Single-workpiece roughing/finishing; medium/low-silicon aluminum | N01-N20 |

## PCD Recommended Cutting Parameter

| Grade | Workpiece Material | Cutting Speed Vc (m/min) | Feed fn (mm/rev) | Depth of Cut ap (mm) |
|---|---|---|---|---|
| PD20 | Low-Si Al (si ≤ 12%) | 600-2000 | 0.03-0.3 | 0.05-0.5 |
| | High-Si Al (si > 12%) | 300-500 | 0.03-0.2 | 0.05-0.2 |
| | Copper alloys | 400-1000 | 0.1-0.3 | 0.1-2 |
| | Sintered carbides | 20-40 | 0.03-0.2 | 0.05-0.2 |
| | CFRP/graphite | 100-600 | 0.1-0.3 | 0.1-2 |

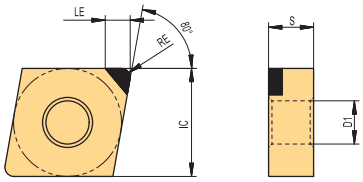
## Grade Application Guide

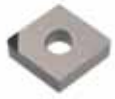
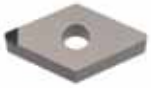
| Material Group | | ISO | ISO Group of PCD Insert Grade<br>Uncoated<br>PD20 | ISO |
|---|---|---|---|---|
| P | Non-alloy steels/ Alloyed steels | P01 | | P01 |
| | | P10 | | P10 |
| | | P20 | | P20 |
| | | P30 | | P30 |
| | | P40 | | P40 |
| | | P50 | | P50 |
| M | Stainless steels | M01 | | M01 |
| | | M10 | | M10 |
| | | M20 | | M20 |
| | | M30 | | M30 |
| | | M40 | | M40 |
| K | Cast iron | K01 | | K01 |
| | | K10 | | K10 |
| | | K20 | | K20 |
| | | K30 | | K30 |
| | | K40 | | K40 |
| | | K50 | | K50 |
| N | Aluminum/ Aluminum alloys | N01 | PD20 | N01 |
| | | N10 | | N10 |
| | | N20 | | N20 |
| | | N30 | | N30 |
| S | Heat resistant alloys | S01 | | S01 |
| | | S10 | | S10 |
| | | S20 | | S20 |
| | | S30 | | S30 |
| | | S40 | | S40 |
| H | Hardened steels/ Chilled cast iron | H01 | | H01 |
| | | H10 | | H10 |
| | | H20 | | H20 |
| | | H30 | | H30 |

## Overview of PCD Negative Inserts

(mm)

| Product code | IC | S | LE | D1 |
|---|---|---|---|---|
| CN_1204_ | 12.7 | 4.76 | 3.0 | 5.16 |
| DN_1504_ | 12.7 | 4.76 | 3.0 | 5.16 |
| TN_1604_ | 9.525 | 4.76 | 3.0 | 3.81 |
| VN_1604_ | 9.525 | 4.76 | 3.0 | 3.81 |



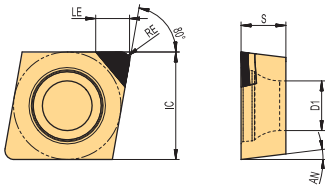

| Inserts | Product code | RE (mm) | Machining conditions: Recommanded parameters f (mm/rev) | Machining conditions: Recommanded parameters ap (mm) | ● Good Conditions: N: PD20 |
|---|---|---|---|---|---|
|  | **CNGA 120404-1-NL-00** | 0.4 | 0.03-0.2 | 0.05-0.5 | ● |
| | **120408-1-NL-00** | 0.8 | 0.03-0.2 | 0.05-0.5 | ● |
|  | **DNGA 150404-1-NL-00** | 0.4 | 0.03-0.2 | 0.05-0.5 | ● |
| | **150408-1-NL-00** | 0.8 | 0.03-0.2 | 0.05-0.5 | ● |
| | **TNGA 160404-1-NL-00** | 0.4 | 0.03-0.2 | 0.05-0.5 | ● |
| | **160408-1-NL-00** | 0.8 | 0.03-0.2 | 0.05-0.5 | ● |
| | **VNGA 160404-1-NL-00** | 0.4 | 0.03-0.2 | 0.05-0.5 | ● |
| | **160408-1-NL-00** | 0.8 | 0.03-0.2 | 0.05-0.5 | ● |

● : Standard stock ○ : Made-to-Order

## Overview of PCD Positive Inserts

(mm)

| Product code | IC | S | LE | D1 | AN |
|---|---|---|---|---|---|
| CC_0602_ | 6.35 | 2.38 | 3.0 | 2.8 | 7° |
| CC_09T3_ | 9.525 | 3.97 | 3.0 | 4.4 | 7° |
| CC_1204_ | 12.7 | 4.76 | 3.0 | 5.5 | 7° |





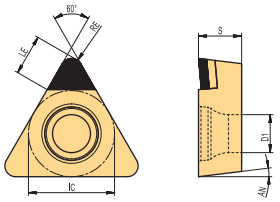

| Inserts | Product code | RE (mm) | Rake Angle (°) | Machining conditions: Recommanded parameters f (mm/rev) | Machining conditions: Recommanded parameters ap (mm) | ● Good Conditions: N: PD20 |
|---|---|---|---|---|---|---|
| | **CCGW 060202-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **060204-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **09T302-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **09T304-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **09T308-1-NL-05** | 0.8 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **120402-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **120404-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **120408-1-NL-05** | 0.8 | 5° | 0.03-0.2 | 0.05-0.5 | ● |

● : Standard stock ○ : Made-to-Order

## Overview of PCD Positive Inserts

(mm)

| Product code | IC | S | LE | D1 | AN |
|---|---|---|---|---|---|
| TB_0601_ | 3.97 | 1.59 | 2.0 | 2.2 | 5° |
| TC_1102_ | 6.35 | 2.38 | 3.0 | 2.8 | 7° |
| TC_1103_ | 6.35 | 3.18 | 3.0 | 2.8 | 7° |
| TC_16T3_ | 9.525 | 3.97 | 3.0 | 4.4 | 7° |
| TP_0802_ | 4.76 | 2.38 | 3.0 | 2.4 | 11° |
| TP_0902_ | 5.56 | 2.38 | 3.0 | 2.8 | 11° |





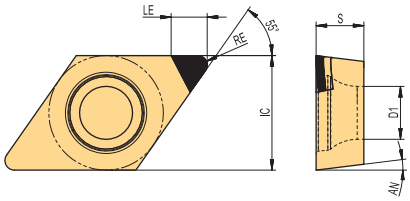

| Inserts | Product code | RE (mm) | Rake Angle (°) | Machining conditions | | ● Good Conditions |
|---|---|---|---|---|---|---|
| | | | | | | ● |
| | | | | Recommanded parameters | | N |
| | | | | f (mm/rev) | ap (mm) | PD20 |
| | **TBGW 060102-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **060104-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **TCGW 110202-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **110204-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **110302-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **110304-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **110308-1-NL-05** | 0.8 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **16T302-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **16T304-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **16T308-1-NL-05** | 0.8 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **TPGW 080202-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **080204-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **090202-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **090204-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |

● : Standard stock ○ : Made-to-Order

## Overview of PCD Positive Inserts

(mm)

| Product code | IC | S | LE | D1 | AN |
|---|---|---|---|---|---|
| DC_0702_ | 6.35 | 2.38 | 3.0 | 2.8 | 7° |
| DC_11T3_ | 9.525 | 3.97 | 3.0 | 4.4 | 7° |
| VB_1103_ | 6.35 | 3.18 | 3.0 | 2.8 | 5° |
| VB_1604_ | 9.525 | 4.76 | 3.0 | 4.4 | 5° |






| Inserts | Product code | RE (mm) | Rake Angle (°) | Machining conditions: Recommanded parameters f (mm/rev) | Machining conditions: Recommanded parameters ap (mm) | ● Good Conditions ● N PD20 |
|---|---|---|---|---|---|---|
| | **DCGW 070202-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **070204-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **11T302-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **11T304-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **11T308-1-NL-05** | 0.8 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **VBGW 110302-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **110304-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **160402-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **160404-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **110302-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **110304-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **160402-1-NL-05** | 0.2 | 5° | 0.03-0.2 | 0.05-0.5 | ● |
| | **160404-1-NL-05** | 0.4 | 5° | 0.03-0.2 | 0.05-0.5 | ● |

● : Standard stock ○ : Made-to-Order

# CUTTING TOOL CATALOGUE


## Turning Tools 110

External Turning 111
External Turning Toolholder Denomination System 111
External Turning Toolholder
CN ☐☐ Inserts MCLNR/L DCLNR/L PCLNR/L 112
DN ☐☐ Inserts MDJNR/L DDJNR/L PDJNR/L 114
SN ☐☐ Inserts DSBNR/L PSBNR/L PSSNR/L PSDNN 116
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MVVNN DVVNN PVVNN
WN ☐☐ Inserts MWLNR/L DWLNR/L PWLNR/L 123

Internal Turning 125
Boring Bar Denomination System 125
Boring Bar with positive inserts
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CP ☐☐ Inserts 128
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CN ☐☐ Inserts 141
DN ☐☐ Inserts 142
SN ☐☐ Inserts 146
TN ☐☐ Inserts 146
WN ☐☐ Inserts 147

## External Turning Toolholder Denomination System

| D | C | L | N | R | 20 | 20 | K | 12 | Other Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | Height of Shank | Width of Shank | 8 | 9 | - |

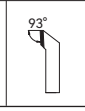
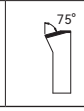
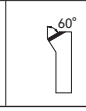
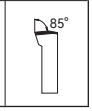
### 1- Clamping Type

| | |
|---|---|
| A: Back clamping | C: Top clamping |
| D: Double clamping | M: Multiple clamping |
| P: Lever clamping | S: Screw clamping |
| W: Wedge clamping | |

### 2- Insert Shape

| | |
|---|---|
| C: 80° Rhombic | D: 55° Rhombic |
| R: Round | S: 90° Square |
| T: 60° Triangle | V: 35° Rhombic |
| W: 80° Trigon | |

### 3- Approaching Angle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | | B | | L | | N | |
| C | | D | | P | | R | |
| E | | F | | S | | T | |
| G | | H | | U | | V | |
| J |  | K |  | W |  | Y |  |

### 4- Clearance Angle

| | |
|---|---|
| B:<br>5° positive angle | C:<br>7° positive angle |
| D:<br>15° positive angle | E:<br>20° positive angle |
| N:<br>0° negative angle | P:<br>11° positive angle |

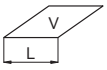
### 5-Hand of Tool

| |
|---|
| R:<br>Right hand |
| L:<br>Left hand |
| N:<br>Left Neutral |

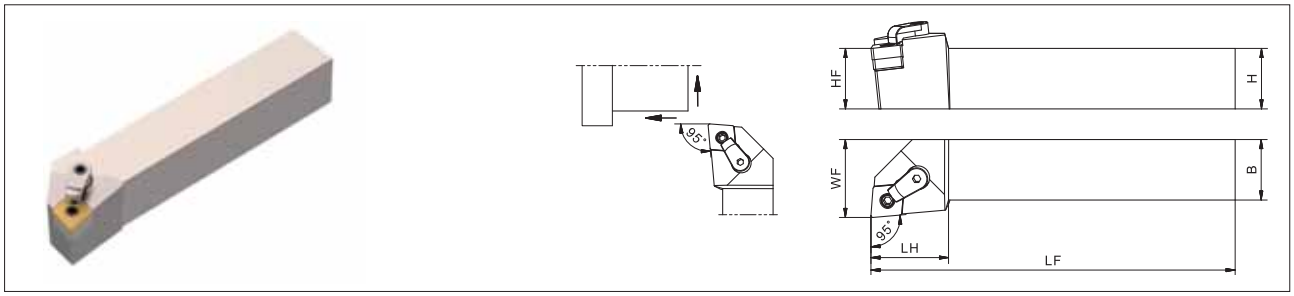
### 8- Toolholder Length

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

### 9- Length of Cutting Edge

| | | |
|---|---|---|
| | | |
| | |  |

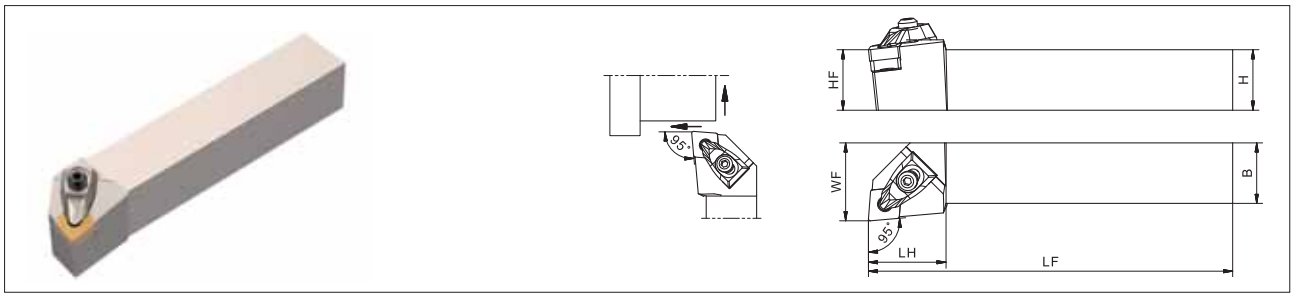
## MCLN (External/Face Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Clamp screw | Clamp | Lock pin | Shim | |
| MCLN$^{R/L}$ | 2020K-12 | ● | ● | 20 | 20 | 20 | 125 | 33 | 35 | 0.8 | LT-H3 | CD060255X | CLM180130 | CS060170 | S-MCN12048 | CN*A 1204…<br>CN*G 1204…<br>CN*M 1204… |
| | 2525M-12 | ● | ● | 25 | 25 | 25 | 150 | 32 | 32 | | | | | | | |

● : Standard stock ○ : Made-to-Order

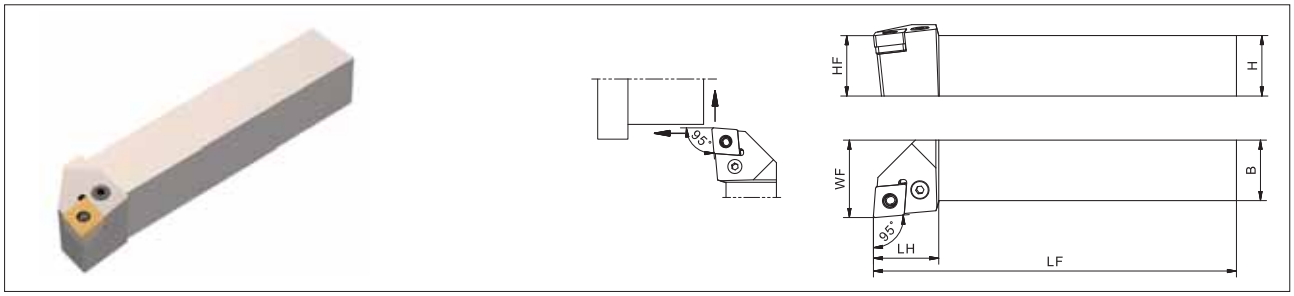
## DCLN (External/Face Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Clamp screw | Clamp | Spring | Shim screw | Shim | |
| DCLN$^{R/L}$ | 2020K-12 | ● | ● | 20 | 20 | 20 | 125 | 32 | 25 | 0.8 | LT-H3 | CH050215 | CLD255090 | YB0.20-2.50-12-5.5 | SH060100X | S-DCN12048 | CN*A 1204…<br>CN*G 1204…<br>CN*M 1204… |
| | 2525M-12 | ● | ● | 25 | 25 | 25 | 150 | | 32 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

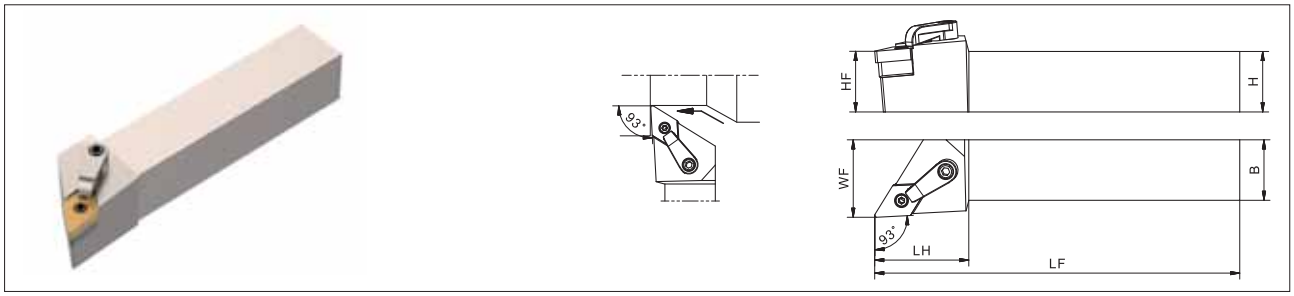
## PCLN (External/Face Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | |
| PCLN$^{R}/_{L}$ | **1616H-0903** | ○ | ○ | 16 | 16 | 16 | 100 | 22 | 20 | 0.8 | LT-H2.5 | LH060170 | LV3 | S-PCN09032 | SP3 | CN*G 0903… |
| | **2020K-0903** | ○ | ○ | 20 | 20 | 20 | 125 | | 25 | | | | | | | |
| | **2525M-0903** | ○ | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | |
| PCLN$^{R}/_{L}$ | **1616H-12** | ○ | ○ | 16 | 16 | 16 | 100 | 27 | 20 | | LT-H3 | LH080200 | LV4C | S-PCN12032 | SP4N | CN*A 1204…<br>CN*G 1204…<br>CN*M 1204… |
| | **2020K-12** | ○ | ● | 20 | 20 | 20 | 125 | | 25 | | | | | | | |
| | **2525M-12** | ● | ● | 25 | 25 | 25 | 150 | | 32 | | | | | | | |
| | **3232P-12** | ○ | ○ | 32 | 32 | 32 | 170 | | 40 | | | | | | | |
| PCLN$^{R}/_{L}$ | **2525M-16** | ○ | ○ | 25 | 25 | 25 | 150 | 32 | 32 | | | LH080235 | LV5 | S-PCN16048 | SP5 | CN*A 1606…<br>CN*G 1606…<br>CN*M 1606… |
| | **3232P-16** | ○ | ○ | 32 | 32 | 32 | 170 | | 40 | | | | | | | |
| | **4040S-16** | ○ | ○ | 40 | 40 | 40 | 250 | | 50 | | | | | | | |
| PCLN$^{R}/_{L}$ | **3232P-19** | ○ | ○ | 32 | 32 | 32 | 170 | 38 | 40 | 1.2 | LT-H4 | LH100270 | LV6 | S-PCN19048 | SP6 | CN*A 1906…<br>CN*G 1906…<br>CN*M 1906… |
| | **4040S-19** | ○ | ○ | 40 | 40 | 40 | 250 | | 50 | | | | | | | |
| PCLN$^{R}/_{L}$ | **3232P-2507** | ○ | ○ | 32 | 32 | 32 | 170 | 45 | 45 | 2.4 | LT-H5 | LH120360 | LV8 | S-PCN25080 | SP8N | CN*A 2507…<br>CN*G 2507…<br>CN*M 2507… |
| | **4040S-2507** | ○ | ○ | 40 | 40 | 40 | 250 | | 45 | | | | | | | |
| PCLN$^{R}/_{L}$ | **3232P-2509** | ○ | ○ | 32 | 32 | 32 | 170 | | 45 | | | | | S-PCN25064 | | CN*A 2509…<br>CN*G 2509…<br>CN*M 2509… |
| | **4040S-2509** | ○ | ○ | 40 | 40 | 40 | 250 | | 45 | | | | | | | |

● : Standard stock ○ : Made-to-Order

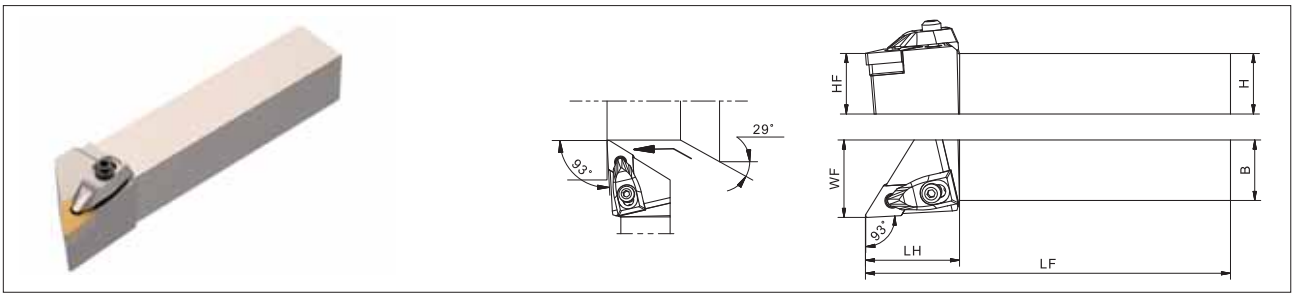
## MDJN (External/Profile Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Clamp screw | Clamp | Lock pin | Shim | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | |
| MDJN$^{R}_{L}$ | 2020K-1504 | ○ | ○ | 20 | 20 | 20 | 125 | 39 | 25 | 0.8 | LT-H3 | CD060255X | CLM210140 | CS060190 | S-MDN15064 | DN*A 1504…<br>DN*G 1504…<br>DN*M 1504… |
| | 2525M-1504 | ● | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | |
| MDJN$^{R}_{L}$ | 2020K-1506 | ○ | ○ | 20 | 20 | 20 | 125 | | 25 | | | | | | S-MDN15048 | DN*A 1506…<br>DN*G 1506…<br>DN*M 1506… |
| | 2525M-1506 | ○ | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | |

● : Standard stock ○ : Made-to-Order

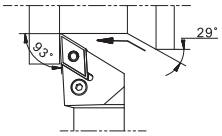
## DDJN (External/Profile Turning)

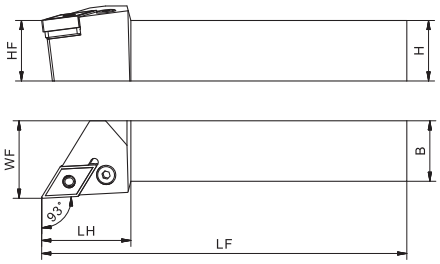



| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Clamp screw | Clamp | Spring | Shim screw | Shim | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | | |
| DDJN$^{R}_{L}$ | 2020K-1504 | ○ | ○ | 20 | 20 | 20 | 125 | 39 | 25 | 0.8 | LT-H3 | CH050215 | CLD283090 | YB0.20-2.50-12-5.5 | SH060100X | S-DDN15064 | DN*A 1504…<br>DN*G 1504…<br>DN*M 1504… |
| | 2525M-1504 | ● | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | | |
| DDJN$^{R}_{L}$ | 2020K-1506 | ○ | ○ | 20 | 20 | 20 | 125 | | 25 | | | | | | | S-DDN15048 | DN*A 1506…<br>DN*G 1506…<br>DN*M 1506… |
| | 2525M-1506 | ○ | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## PDJN (External/Profile Turning)

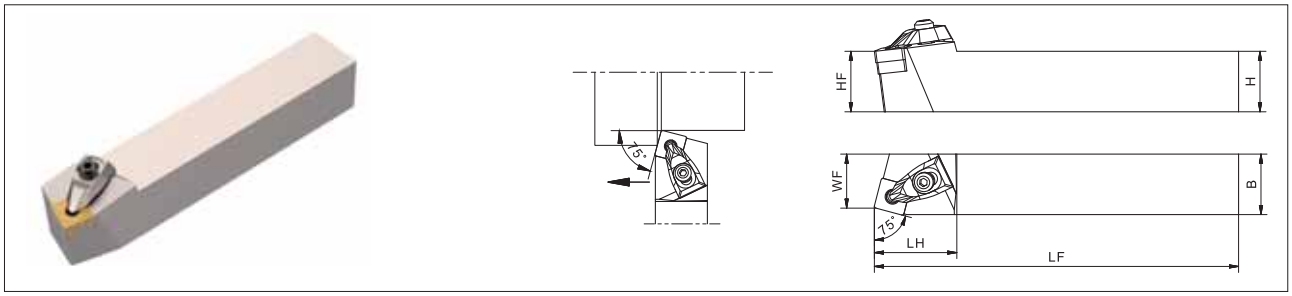



| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| PDJN$^{R}/_{L}$ | **1616H-11** | ○ | ○ | 16 | 16 | 16 | 100 | 28 | 20 | 0.4 | LT-H2.5 | LH060170 | LV3B | S-PDN11027 | SP3 | DN*G 1104… |
| | **2020K-11** | ● | ● | 20 | 20 | 20 | 125 | | 25 | | | | | | | |
| | **2525M-11** | ● | ● | 25 | 25 | 25 | 150 | 36 | 32 | 0.8 | | | | | | |
| PDJN$^{R}/_{L}$ | **2020K-1504** | ● | ○ | 20 | 20 | 20 | 125 | 36 | 25 | | LT-H3 | LH080200 | LV4B | S-PDN15048 | SP4N | DN*A 1504…<br>DN*G 1504…<br>DN*M 1504… |
| | **2525M-1504** | ● | ● | 25 | 25 | 25 | 150 | | 32 | | | | | | | |
| | **3232P-1504** | ○ | ○ | 32 | 32 | 32 | 170 | | 40 | | | | | | | |
| PDJN$^{R}/_{L}$ | **2020K-1506** | ○ | ○ | 20 | 20 | 20 | 125 | | 25 | | | | | S-PDN15032 | | DN*A 1506…<br>DN*G 1506…<br>DN*M 1506… |
| | **2525M-1506** | ○ | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | |
| | **3232P-1506** | ○ | ○ | 32 | 32 | 32 | 170 | | 40 | | | | | | | |

● : Standard stock ○ : Made-to-Order

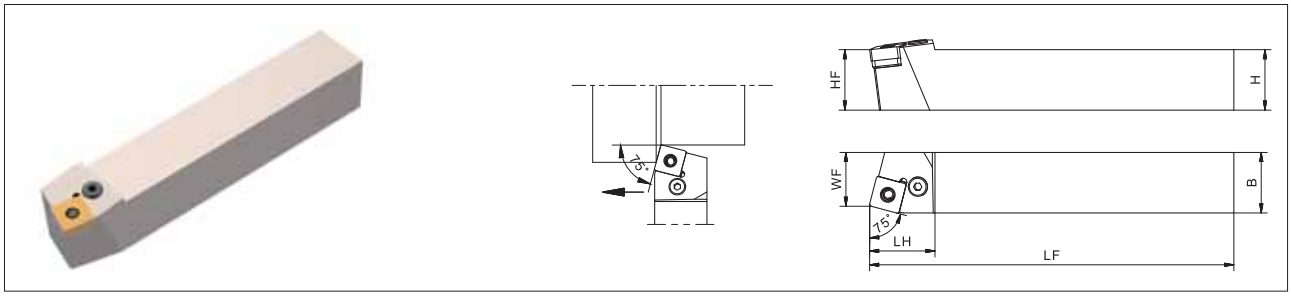
## DSBN (External Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Clamp screw | Clamp | Spring | Shim screw | Shim | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | | |
| DSBN$^{R}_{L}$ | 2020K-12 | ○ | ○ | 20 | 20 | 20 | 125 | 34 | 17 | 0.8 | LT-H3 | CH050215 | CLD255090 | YB0.20-2.50-12-5.5 | SH060080X | S-DSN12048 | SN*A 1204…<br>SN*G 1204…<br>SN*M 1204… |
| | 2525M-12 | ● | ○ | 25 | 25 | 25 | 150 | | 22 | | | | | | | | |
| | 3232P-12 | ○ | ○ | 32 | 32 | 32 | 170 | | 27 | | | | | | | | |
| DSBN$^{R}_{L}$ | 2525M-15 | ○ | ○ | 25 | 25 | 25 | 150 | 41 | 22 | 0.8 | | | CLD283090 | | SH060100X | S-DSN15048 | SN*A 1506…<br>SN*G 1506…<br>SN*M 1506… |
| | 3232P-15 | ○ | ○ | 32 | 32 | 32 | 170 | | 27 | | | | | | | | |
| DSBN$^{R}_{L}$ | 4040S-2507 | ○ | ○ | 40 | 40 | 40 | 250 | 56 | 35 | 1.6 | | CH080235 | CLD380150 | YB0.40-2.50-15-8.5 | SH060130X | S-DSN25080 | SN*A 2507…<br>SN*G 2507…<br>SN*M 2507… |
| DSBN$^{R}_{L}$ | 4040S-2509 | ○ | ○ | | | | | | | | | | | | | S-DSN25064 | SN*A 2509…<br>SN*G 2509…<br>SN*M 2509… |

● : Standard stock ○ : Made-to-Order

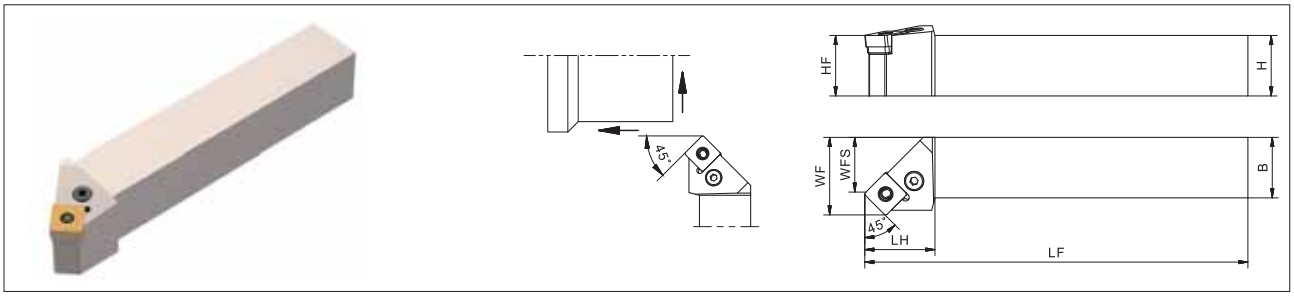
## PSBN (External Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | |
| PSBN$^{R}_{L}$ | 2020K-12 | ● | ○ | 20 | 20 | 20 | 125 | 27 | 17 | 0.8 | LT-H3 | LH080200 | LV4C | S-PSN12032 | SP4N | SN*A 1204…<br>SN*G 1204…<br>SN*M 1204… |
| | 2525M-12 | ● | ● | 25 | 25 | 25 | 150 | | 22 | | | | | | | |

● : Standard stock ○ : Made-to-Order

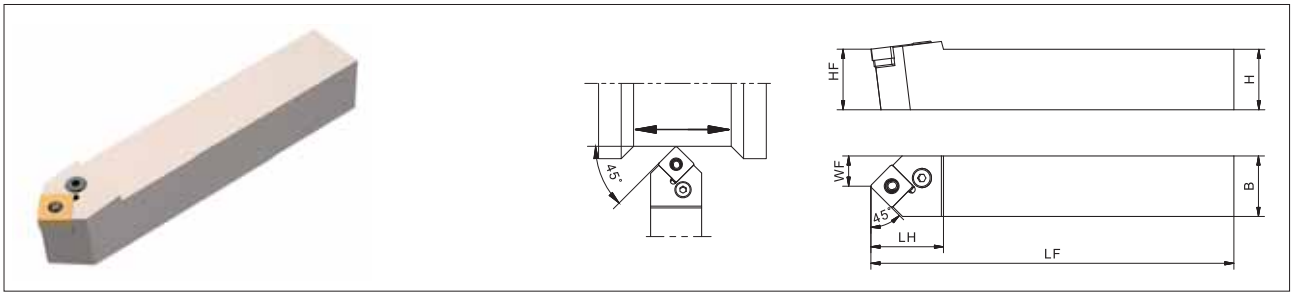
## DSBN (External Turning)




| Product code | | Stock | | Dimension | | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | WFS | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| PSSN$^{R}_{L}$ | 2020K-12 | ○ | ○ | 20 | 20 | 20 | 125 | 29 | 25 | 16.4 | 0.8 | LT-H3 | LH080200 | LV4C | S-PSN12032 | SP4N | SN*A 1204…<br>SN*G 1204…<br>SN*M 1204… |
| | 2525M-12 | ● | ● | 25 | 25 | 25 | 150 | | 32 | 23.4 | | | | | | | |
| | 3232P-12 | ○ | ○ | 32 | 32 | 32 | 170 | | 40 | 31.4 | | | | | | | |
| PSSN$^{R}_{L}$ | 2525M-15 | ○ | ○ | 25 | 25 | 25 | 150 | 32 | 32 | 21.27 | | | LH080235 | LV5 | S-PSN15048 | SP5 | SN*A 1506…<br>SN*G 1506…<br>SN*M 1506… |
| | 3232P-15 | ○ | ○ | 32 | 32 | 32 | 170 | | 40 | 29.1 | | | | | | | |
| PSSN$^{R}_{L}$ | 3232P-19 | ○ | ○ | | | | | 40 | | 27 | 1.2 | LT-H4 | LH100270 | LV6 | S-PSN19048 | SP6 | SN*G 1906…<br>SN*M 1906… |
| | 4040S-19 | ○ | ○ | 40 | 40 | 40 | 250 | | 50 | 37 | | | | | | | |

● : Standard stock ○ : Made-to-Order

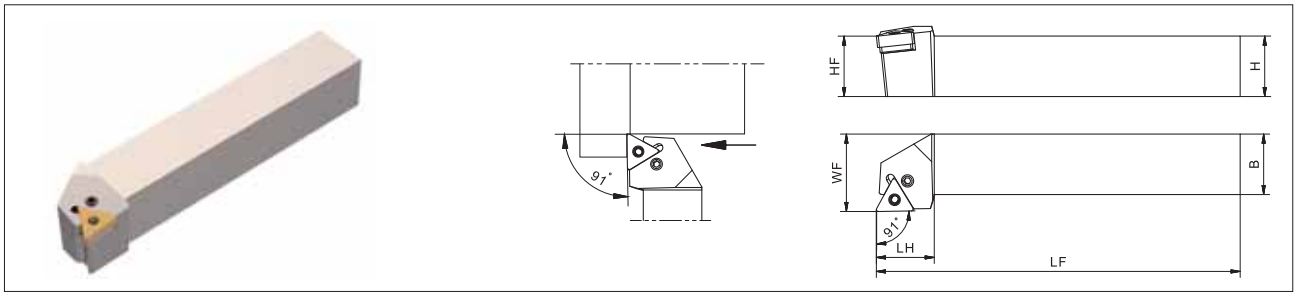
## PSDN (External/Chamfer Turning)




| Product code | | Stock | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | H | HF | B | LF | LH | WF | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| PSDNN | 2020K-12 | ○ | 20 | 20 | 20 | 125 | 30 | 10 | 0.8 | LT-H3 | LH080200 | LV4C | S-PSN12032 | SP4N | SN*A 1204…<br>SN*G 1204…<br>SN*M 1204… |
| | 2525M-12 | ● | 25 | 25 | 25 | 150 | | 12.5 | | | | | | | |

● : Standard stock ○ : Made-to-Order

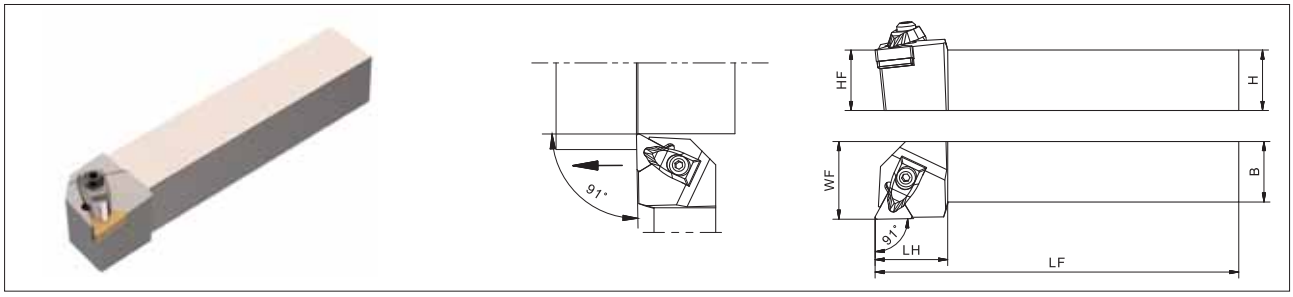
## PTGN (External Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | |
| **PTGN$^{R}_{L}$** | **1616H-16** | ○ | ○ | 16 | 16 | 16 | 100 | 24 | 20 | 0.8 | LT-H2.5 | LH060170 | LV3 | S-PTN16027 | SP3 | TN*A 1604…<br>TN*G 1604…<br>TN*M 1604… |
| | **2020K-16** | ● | ● | 20 | 20 | 20 | 125 | | 25 | | | | | | | |
| | **2525M-16** | ● | ● | 25 | 25 | 25 | 150 | | 32 | | | | | | | |
| **PTGN$^{R}_{L}$** | **2525M-22** | ● | ● | | | | | 28 | | | LT-H3 | LH080200 | LV4C | S-PTN22032 | SP4N | TN*A 2204…<br>TN*G 2204…<br>TN*M 2204… |

● : Standard stock ○ : Made-to-Order

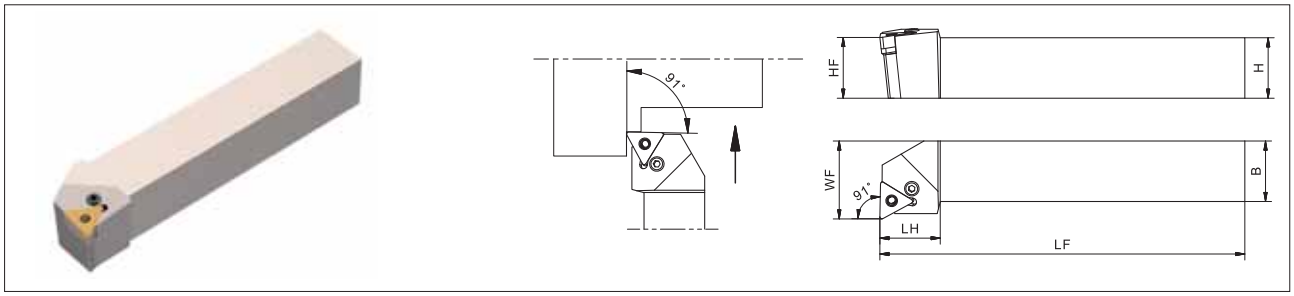
## DTGN (External Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Clamp screw | Clamp | Spring | Shim screw | Shim | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | | |
| **DTGN$^{R}_{L}$** | **2020K-16** | ○ | ○ | 20 | 20 | 20 | 125 | 25 | 25 | 0.8 | LT-H3 | CH050215 | CLD225075 | YB0.20-2.50-12-5.5 | SH050140X | S-DTN16032 | TN*A 1604…<br>TN*G 1604…<br>TN*M 1604… |
| | **2525M-16** | ○ | ○ | 25 | 25 | 25 | 150 | | 32 | | LT-H2 | | | | | | |

● : Standard stock ○ : Made-to-Order

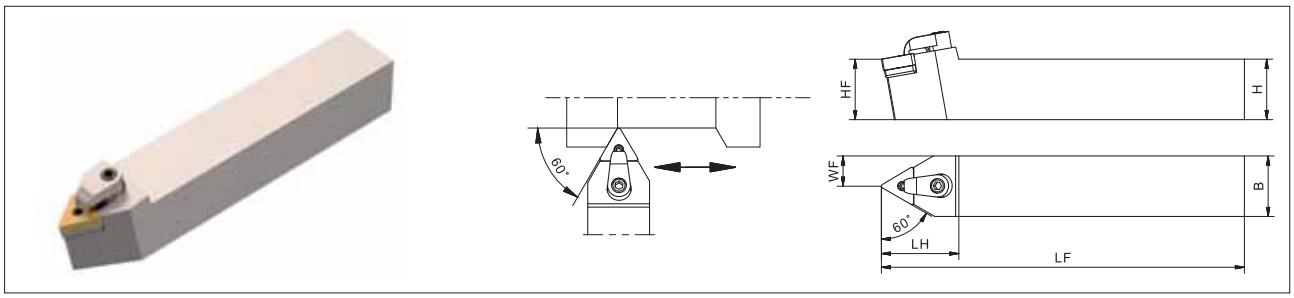
## PTFN (Face Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| PTFN$^{R}/_{L}$ | **2020K-16** | ● | ● | 20 | 20 | 20 | 125 | 22 | 25 | 0.8 | LT-H2.5 | LH060170 | LV3 | S-PTN16027 | SP3 | TN*A 1604…<br>TN*G 1604…<br>TN*M 1604… |
| | **2525M-16** | ● | ● | 25 | 25 | 25 | 150 | 25 | 32 | | | | | | | |

● : Standard stock ○ : Made-to-Order

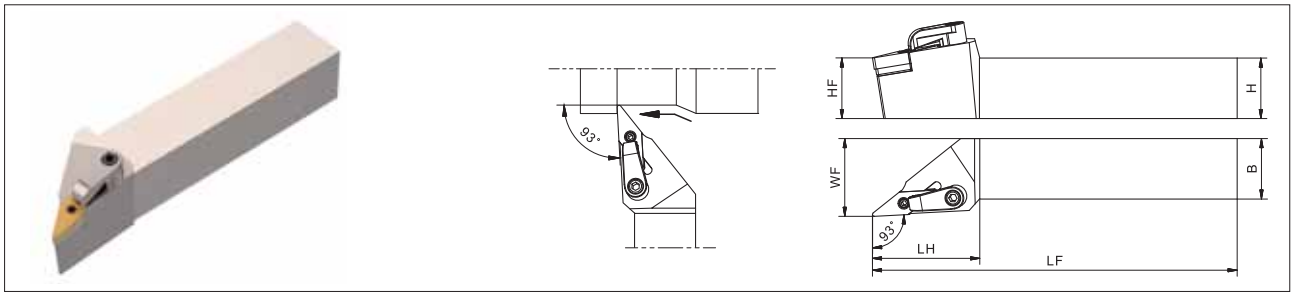
## MTEN (External/Chamfer Turning)




| Product code | | Stock | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | H | HF | B | LF | LH | WF | | Wrench | Clamp screw | Clamp | Lock pin | Shim | |
| MTENN | **2020K-16** | ○ | 20 | 20 | 20 | 125 | 32 | 10 | 0.8 | LT-H2/LT-H3 | CD060255X | CLM198138 | CS050140 | S-MTN16032 | TN*A 1604…<br>TN*G 1604…<br>TN*M 1604… |
| | **2525M-16** | ○ | 25 | 25 | 25 | 150 | | 12.5 | | | | | | | |

● : Standard stock ○ : Made-to-Order

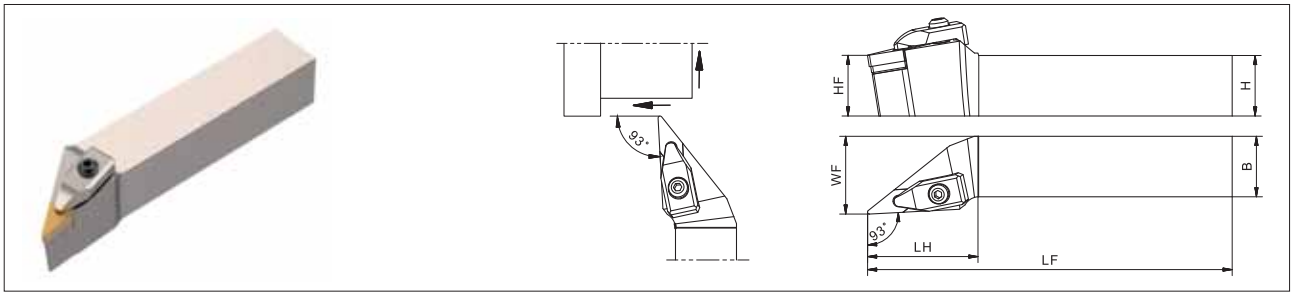
## MVJN (External/Profile Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Clamp screw | Clamp | Lock pin | Shim | |
| | | R | L | H | HF | B | LF | LH | WF | | | | | | | |
| **MVJN**R/L | **2020K-16** | ● | ● | 20 | 20 | 20 | 125 | 44 | 25 | 0.8 | LT-H2/LT-H3 | CD060255X | CLM240130 | CS050140 | S-MVN16032 | VN*A 1604…<br>VN*G 1604…<br>VN*M 1604… |
| | **2525M-16** | ● | ● | 25 | 25 | 25 | 150 | 44 | 32 | 0.8 | | | | | | |

● : Standard stock ○ : Made-to-Order

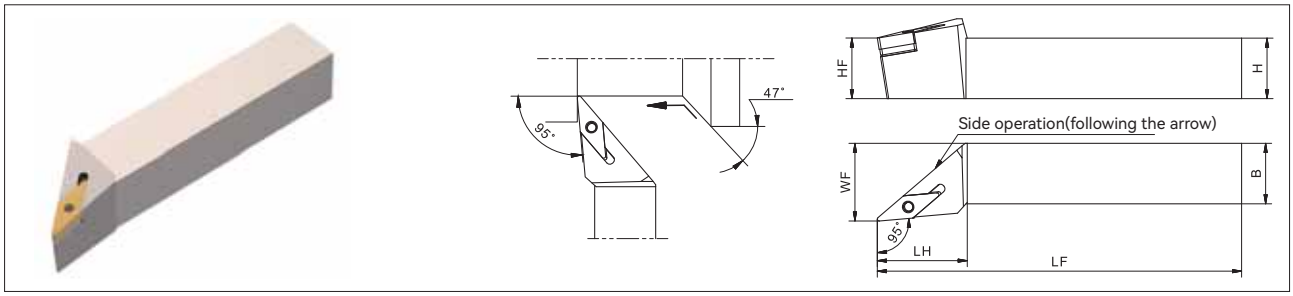
## DVJN (Exteral/Profile Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Wrench | Clamp screw | Clamp | Spring | Shim screw | Shim | |
| | | R | L | H | HF | B | LF | LH | WF | |  | | | | | | |
| **DVJN**R/L | **2020K-16** | ○ | ○ | 20 | 20 | 20 | 125 | 46 | 25 | 0.8 | LT-H3 | CH050215 | CLD296090 | YB0.20-2.50-12-5.5 | SH050080X | S-DVN16033 | VN*A 1604…<br>VN*G 1604…<br>VN*M 1604… |
| | **2525M-16** | ○ | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

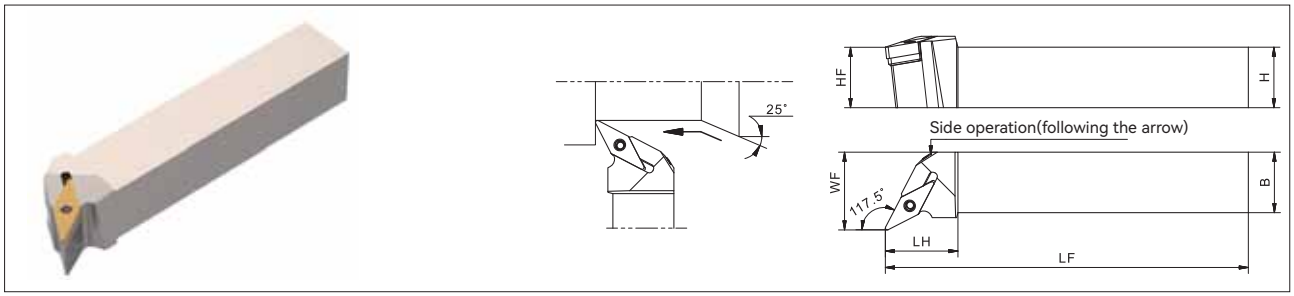
## PVLN (External/Profile Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Lever screw | Lever | Shim | |
| **PVLN**$^{R}/_{L}$ | **2020K-16** | ○ | ○ | 20 | 20 | 20 | 125 | 37 | 25 | 0.8 | LT-H3 | AH060125 | LC3 | S-PVN16032 | VN*A 1604…<br>VN*G 1604…<br>VN*M 1604… |
| | **2525M-16** | ● | ● | 25 | 25 | 25 | 150 | | 32 | | | | | | |

● : Standard stock ○ : Made-to-Order

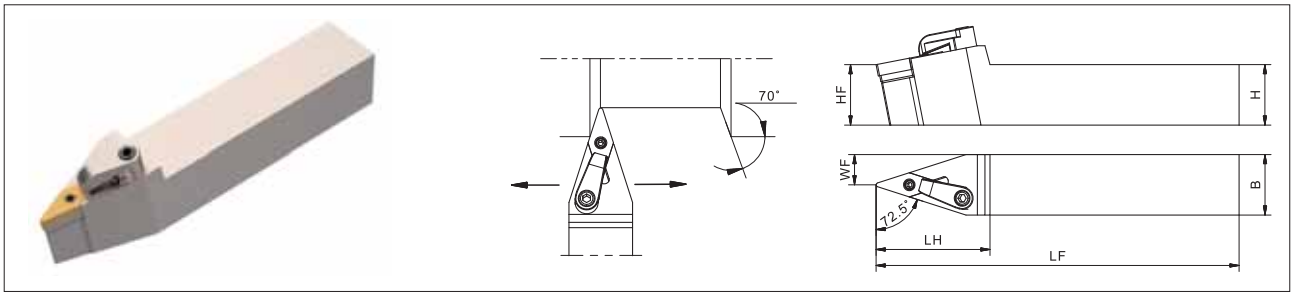
## PVPN (External/Face/Profile/undercut Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Lever screw | Lever | Shim | |
| **PVPN**$^{R}/_{L}$ | **2020K-16** | ○ | ○ | 20 | 20 | 20 | 125 | 30 | 25 | 0.8 | LT-H3 | AH060125 | LC3 | S-PVN16032 | VN*A 1604…<br>VN*G 1604…<br>VN*M 1604… |
| | **2525M-16** | ● | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | |

● : Standard stock ○ : Made-to-Order

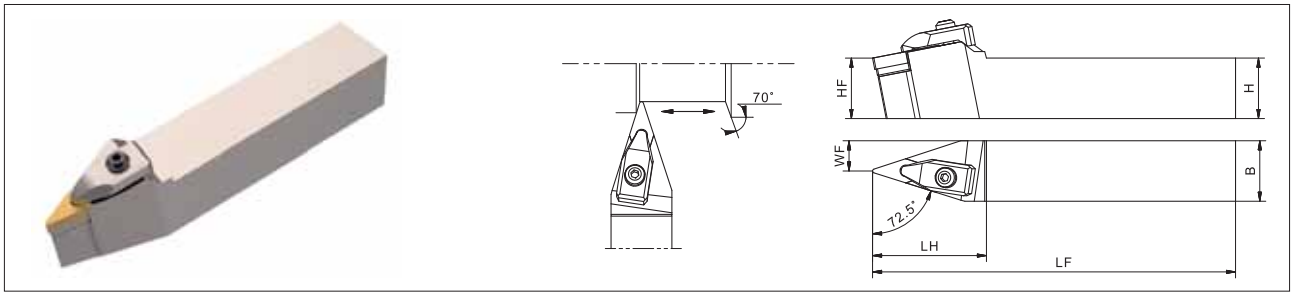
## MVVN (External/Profile Turning)




| Product code | | Stock | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | H | HF | B | LF | LH | WF | | Wrench | Clamp screw | Clamp | Lock pin | Shim | |
| MVVNN | 2020K-16 | ● | 20 | 20 | 20 | 125 | 47 | 10 | 0.8 | LT-H2/LT-H3 | CD060255X | CLM240130 | CS050140 | S-MVN16032 | VN*A 1604…<br>VN*G 1604…<br>VN*M 1604… |
| | 2525M-16 | ● | 25 | 25 | 25 | 150 | 47 | 12.5 | 0.8 | | | | | | |

● : Standard stock ○ : Made-to-Order

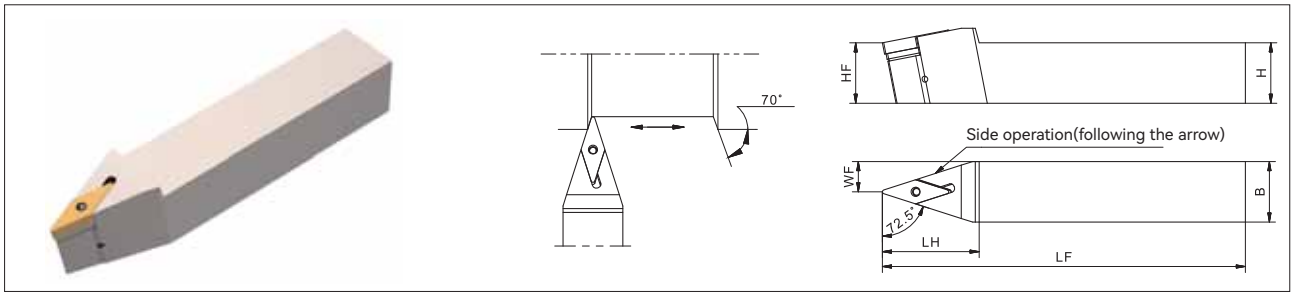
## DVVN (External/Profile Turning)




| Product code | | Stock | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | H | HF | B | LF | LH | WF | | Wrench | Clamp screw | Clamp | Spring | Shim screw | Shim | |
| DVVNN | 2020K-16 | ○ | 20 | 20 | 20 | 125 | 47 | 10 | 0.8 | LT-H3 | CH050215 | CLD296090 | YB0.20-2.50-12-5.5 | SH050080X | S-DVN16033 | VN*A 1604…<br>VN*G 1604…<br>VN*M 1604… |
| | 2525M-16 | ○ | 25 | 25 | 25 | 150 | | 12.5 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

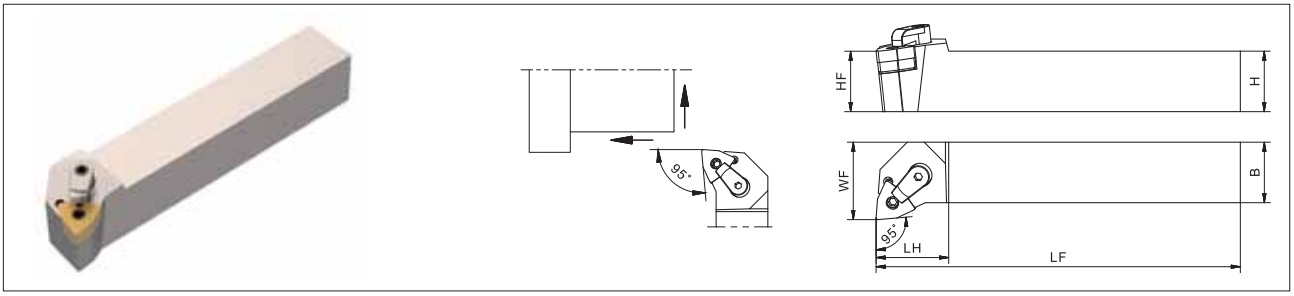
## PVVN (External/Profile Turning)




| Product code | | Stock | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | H | HF | B | LF | LH | WF | | Wrench | Lever screw | Lever | Shim | |
| **PVVNN** | **2020K-16** | ○ | 20 | 20 | 20 | 125 | 35 | 10 | 0.8 | LT-H3 | AH060125 | LC3 | S-PVN16032 | VN*A 1604…<br>VN*G 1604…<br>VN*M 1604… |
| | **2525M-16** | ● | 25 | 25 | 25 | 150 | 40 | 12.5 | | | | | | |

● : Standard stock ○ : Made-to-Order

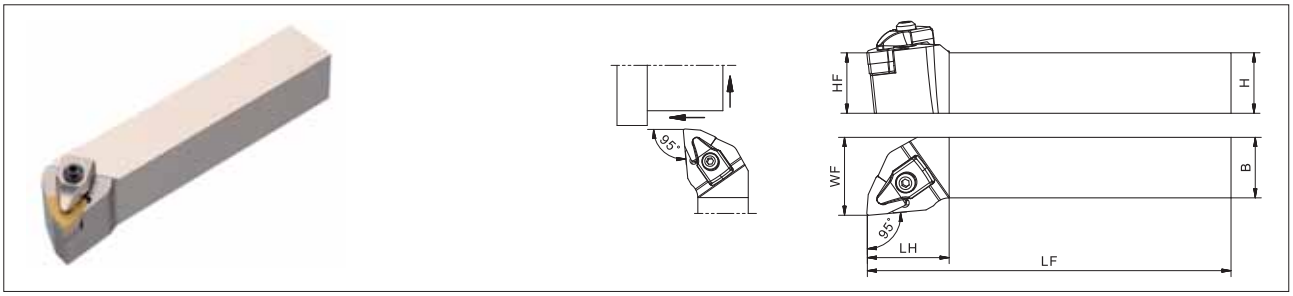
## MWLN (External/Profile Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Clamp screw | Clamp | Lock pin | Shim | |
| **MWLN$^{R}/_{L}$** | **2020K-08** | ● | ● | 20 | 20 | 20 | 125 | 34 | 25 | 0.8 | LT-H3 | CD060255X | CLM180130 | CS060170 | S-MWN08048 | WN*A 0804…<br>WN*G 0804…<br>WN*M 0804… |
| | **2525M-08** | ● | ● | 25 | 25 | 25 | 150 | 30 | 32 | | | | | | | |

● : Standard stock ○ : Made-to-Order

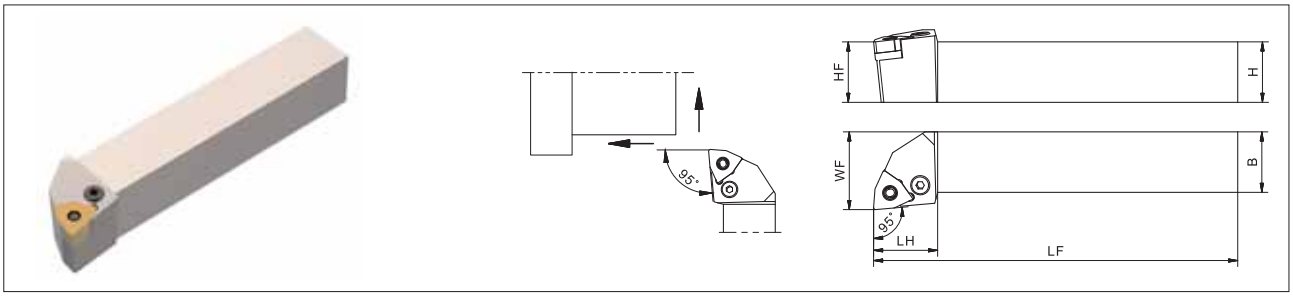
## DWLN (External/Face Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Clamp screw | Clamp | Spring | Shim screw | Shim | |
| **DWLN**R/L | **2020K-08** | ○ | ○ | 20 | 20 | 20 | 125 | 34 | 25 | 0.8 | LT-H3 | CH050215 | CLD245088 | YB0.20-2.50-12-5.5 | SH060100X | S-DWN08048 | WN*A 0804…<br>WN*G 0804…<br>WN*M 0804… |
| | **2525M-08** | ○ | ○ | 25 | 25 | 25 | 150 | | 32 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## PWLN (External/Face Turning)




| Product code | | Stock | | Dimension | | | | | | Insert corner radius (RE) | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | H | HF | B | LF | LH | WF | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| **PWLN**R/L | **1616H-06** | ○ | ○ | 16 | 16 | 16 | 100 | 22 | 20 | 0.8 | LT-H2.5 | LH060170 | LV3 | S-PWN06027 | SP3 | WN*G 0604… |
| | **2020K-06** | ● | ○ | 20 | 20 | 20 | 125 | | 25 | | | | | | | |
| | **2525M-06** | ● | ● | 25 | 25 | 25 | 150 | | 32 | | | | | | | |
| **PWLN**R/L | **2020K-08** | ● | ● | 20 | 20 | 20 | 125 | 26 | 25 | | LT-H3 | LH080200 | LV4C | S-PWN08032 | SP4N | WN*A 0804…<br>WN*G 0804…<br>WN*M 0804… |
| | **2525M-08** | ● | ● | 25 | 25 | 25 | 150 | | 32 | | | | | | | |

● : Standard stock ○ : Made-to-Order

## Internal Boring Bar Denomination System

| A | 20 | R | - | S | C | L | C | R | 09 | - | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | | 4 | 5 | 6 | 7 | 8 | 9 | | Min. Boring Dia. |

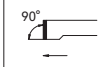
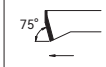
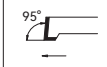
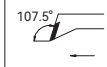
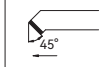
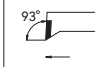
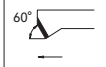
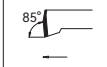
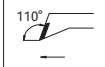
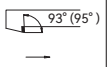
| 1-boring Bar Material | |
|---|---|
| S:<br>Steel shank | A:<br>Steel shank<br>(with internal coolant) |
| C:<br>Carbide shank | E:<br>Carbide shank<br>(with internal coolant) |

| 2- Shank Diameter |
|---|
| 20mm |

| 3-boring Bar Length | |
|---|---|
| Q: 180 | R: 200 |
| S: 250 | T: 300 |
| U: 350 | V: 400 |
| W: 450 | Y: 500 |

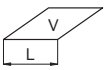
| 4-Clamping Type | |
|---|---|
| C:<br>Top clamping | W:<br>Wedge clamping |
| S:<br>Screw clamping | P:<br>Lever clamping |
| M:<br>Multiple clamping | |

| 5-Insert Shape | |
|---|---|
| C: 80° Rhombic | D: 55° Rhombic |
| R: Round | S: 90° Square |
| T: 60° Triangle | V: 35° Rhombic |
| W: Trigon | |

| 6-Approaching Angle | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F |  | E |  | L |  | P | | Q |  | S |  |
| U |  | W |  | Y |  | X |  | Z |  | | |

| 7-Clearance Angle | |
|---|---|
| B:<br>5° positive angle | C:<br>7° positive angle |
| D:<br>15° positive angle | E:<br>20° positive angle |
| N:<br>0° Negative angle | P:<br>11° positive angle |

| 8-Hand of Tool |
|---|
| R:<br>Right hand |
| L:<br>left hand |
| N:<br>Neutral |

| 9-Length of Cutting Edge | | |
|---|---|---|
| | | |
| | |  |

## S/A-SCLC Steel Boring Bar (Internal /Internal Face Boring)

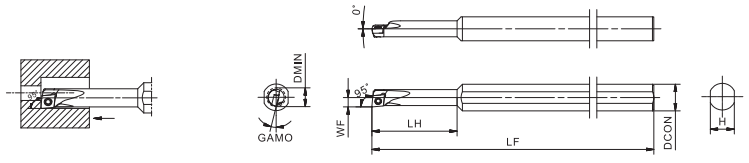



Illustration 1

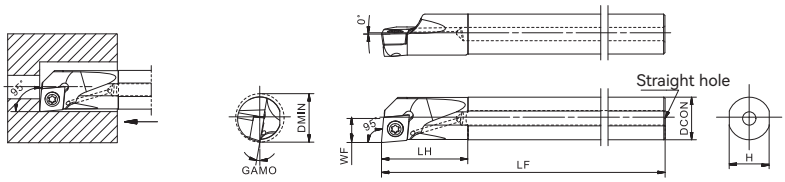



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | |
| **S10H-SCLCR/L03-05** | ○ | ○ | 5 | 10 | 9 | 100 | 24 | 2.5 | 15° | 0.2 | Without | 1 | SP016032 | FT-TP05 | CC*T 0301…<br>CC*W 0301… |
| **S10H-SCLCR/L03-06** | ○ | ○ | 6 | | | | 28 | 3 | 13° | | | | | | |
| **S10H-SCLCR/L04-07** | ● | ● | 7 | | | | 32 | 3.5 | 14° | | | | SP020035 | FT-TP06 | CC*T 0401…<br>CC*W 0401… |
| **S10H-SCLCR/L04-08** | ○ | ○ | 8 | | | | 37 | 4 | 11° | | | | | | |
| **A08H-SCLCR/L06-10** | ● | ● | 10 | 8 | 7 | 100 | 16 | 5 | 14° | 0.4 | With | 2 | SP025045 | FT-TP08 | CC*T 0602…<br>CC*W 0602… |
| **A10K-SCLCR/L06-12** | ● | ● | 12 | 10 | 9 | 125 | 22 | 6 | 12° | | | | | | |
| **A12M-SCLCR/L06-14** | ● | ● | 14 | 12 | 11 | 150 | 26 | 7 | 10° | | | | | | |
| **A16Q-SCLCR/L09-18** | ● | ● | 18 | 16 | 15 | 180 | 32.4 | 9 | | | | | SP040065 | FT-TP15 | CC*T 09T3…<br>CC*W 09T3… |
| **A20R-SCLCR/L09-22** | ● | ● | 22 | 20 | 19 | 200 | 38.5 | 11 | 8° | | | | SP040093X | | |
| **A25S-SCLCR/L09-27** | ○ | ○ | 27 | 25 | 24 | 250 | 46 | 13.5 | 6° | | | | | | |

● : Standard stock ○ : Made-to-Order

## C/E-SCLC Carbide Boring Bar (Internal/Internal Face Boring)

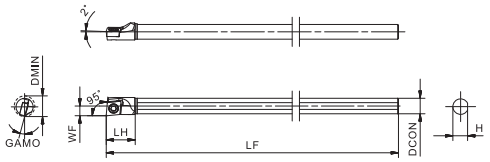



Illustration 1

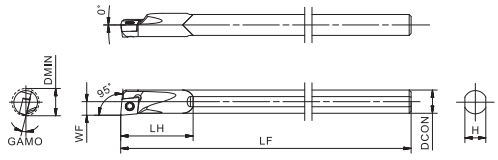



Illustration 2

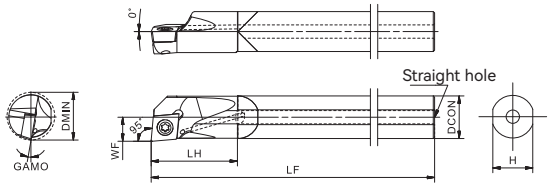



Illustration 3

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | |
| **C04F-SCLCR/L03-05** | ○ | ○ | 5 | 4 | 3.8 | 80 | 7 | 2.5 | 15° | 0.2 | Without | 1 | SP016032 | FT-TP05 | CC*T 0301…<br>CC*W 0301… |
| **C05G-SCLCR/L03-06** | ○ | ○ | 6 | 5 | 4.4 | 90 | 9 | 3 | 13° | | | | | | |
| **C06H-SCLCR/L04-07** | ● | ● | 7 | 6 | 5.4 | 100 | 14 | 3.5 | 14° | | | 2 | SP020035 | FT-TP06 | CC*T 0401…<br>CC*W 0401… |
| **C07J-SCLCR/L04-08** | ○ | ○ | 8 | 7 | 6.4 | 110 | 11 | 4 | 11° | | | | | | |
| **E08K-SCLCR/L06-10** | ○ | ○ | 10 | 8 | 7 | 125 | 14 | 5 | 14° | 0.4 | With | 3 | SP025045 | FT-TP08 | CC*T 0602…<br>CC*W 0602… |
| **E10M-SCLCR/L06-12** | ○ | ○ | 12 | 10 | 9 | 150 | 18 | 6 | 12° | | | | | | |
| **E12M-SCLCR/L06-14** | ● | ● | 14 | 12 | 11 | 150 | 27 | 7 | 10° | | | | | | |
| **E16Q-SCLCR/L09-18** | ● | ● | 18 | 16 | 15 | 180 | 32.4 | 9 | 10° | | | | SP040065 | FT-TP15 | CC*T 09T3…<br>CC*W 09T3… |
| **E20R-SCLCR/L09-22** | ○ | ○ | 22 | 20 | 19 | 200 | 32 | 11 | 8° | | | | SP040093X | | |
| **E25S-SCLCR/L09-27** | ○ | ○ | 27 | 25 | 24 | 250 | 38 | 13.5 | 6° | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-SCLP Steel Boring Bar(Internal/Internal Face Boring)

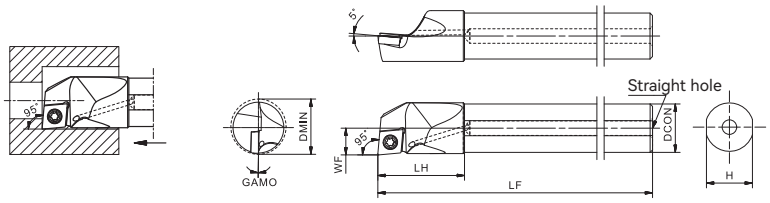



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | |
| **A10K-SCLPR/L08-12** | ○ | ○ | 12 | 10 | 9 | 125 | 20 | 6 | 5° | 0.4 | With | 1 | SP030065 | FT-TP08 | CP*T 0802… |
| **A12M-SCLPR/L08-14** | ○ | ○ | 14 | 12 | 11 | 150 | 24 | 7 | 4° | | | | | | |
| **A16Q-SCLPR/L09-18** | ○ | ○ | 18 | 16 | 15 | 180 | 30 | 9 | 3.5° | | | | SP040065 | FT-TP15 | CP*T 0903… |
| **A20R-SCLPR/L09-22** | ○ | ○ | 22 | 20 | 19 | 200 | 36 | 11 | 2° | | | | SP040093X | | |
| **A25S-SCLPR/L09-27** | ○ | ○ | 27 | 25 | 24 | 250 | 46 | 13.5 | 0° | | | | | | |

● : Standard stock ○ : Made-to-Order

## E-SCLP Carbide Boring Bar (Internal/Internal Face Boring)

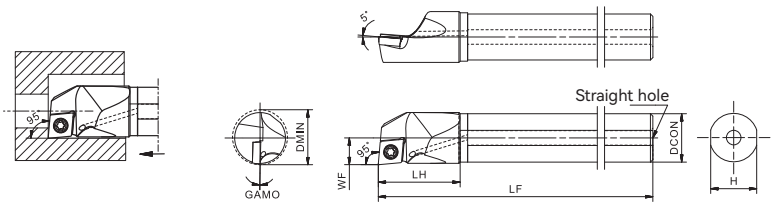



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | |
| **E10M-SCLPR/L08-12** | ○ | ○ | 12 | 10 | 9 | 150 | 18 | 6 | 5° | 0.4 | With | 1 | SP030065 | FT-TP08 | CP*T 0802… |
| **E12M-SCLPR/L08-14** | ○ | ○ | 14 | 12 | 11 | 150 | 23 | 7 | 4° | | | | | | |
| **E16Q-SCLPR/L09-18** | ○ | ○ | 18 | 16 | 15 | 180 | 28 | 9 | 3.5° | | | | SP040065 | FT-TP15 | CP*T 0903… |
| **E20R-SCLPR/L09-22** | ○ | ○ | 22 | 20 | 19 | 200 | 32 | 11 | 2° | | | | SP040093X | | |
| **E25S-SCLPR/L09-27** | ○ | ○ | 27 | 25 | 24 | 250 | 38 | 13.5 | 0° | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-SDUC Steel Boring Bar (Internal/Internal Profile Boring)

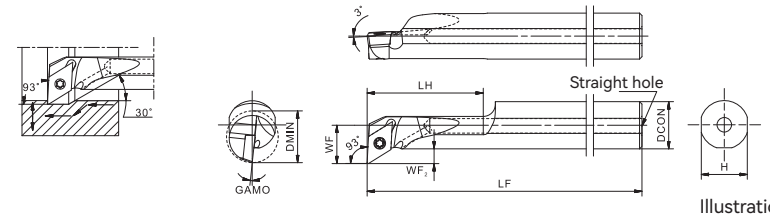



Illustration 1

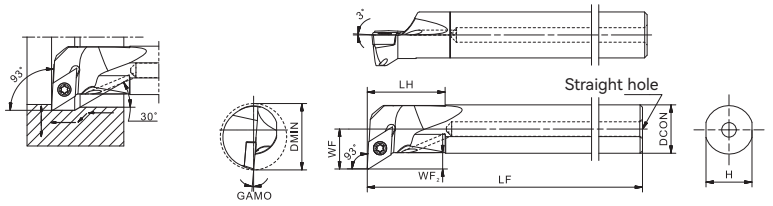
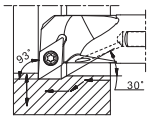



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | | |
| **A10K-SDUCR/L07-14** | ○ | ○ | 14 | 10 | 9 | 125 | 19 | 8.7 | 3.3 | 5° | 0.4 | With | 2 | SP025064 | FT-TP08 | DC*T 0702…<br>DC*W 0702… |
| **A16Q-SDUCR/L07-14** | ○ | ○ | | 16 | 15 | 180 | 28 | 10.8 | 4.4 | | | | 1 | | | |
| **A12M-SDUCR/L07-16** | ○ | ○ | 16 | 12 | 11 | 150 | 21 | 9.7 | 3.3 | | | | 2 | | | |
| **A16Q-SDUCR/L07-20** | ● | ● | 20 | 16 | 15 | 180 | 27 | 11.3 | 3.5 | | | | | | | |
| **A20R-SDUCR/L11-20** | ● | ● | | 20 | 19 | 200 | 53 | 15.6 | 6.1 | | | | 1 | SP040065 | FT-TP15 | DC*T 11T3…<br>DC*W11T3… |
| **A16Q-SDUCR/L11-23** | ● | ● | 23 | 16 | 15 | 180 | 25.8 | 14.5 | 6.5 | | | | 2 | SP040093X | | |
| **A20R-SDUCR/L11-27** | ● | ● | 27 | 20 | 19 | 200 | 32.2 | 16.5 | | | | | | | | |
| **A25S-SDUCR/L11-32** | ● | ● | 32 | 25 | 24 | 250 | 36.9 | 19 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## E-SDUC Carbide Boring Bar (Internal/Internal Profile Boring)



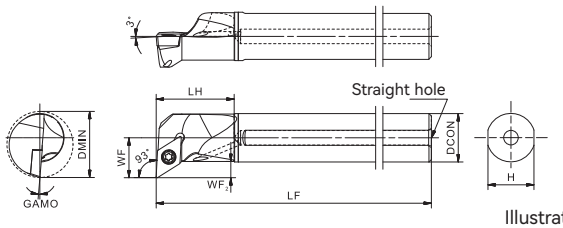
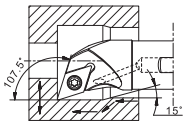




Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | | |
| **E10M-SDUCR/L07-14** | ○ | ○ | 14 | 10 | 9 | 150 | 20 | 8.7 | 3.3 | 5° | 0.4 | With | 1 | SP025064 | FT-TP08 | DC*T 0702…<br>DC*W 0702… |
| **E12M-SDUCR/L07-16** | ○ | ○ | 16 | 12 | 11 | 150 | 23 | 9.7 | | | | | | | | |
| **E16Q-SDUCR/L07-20** | ○ | ○ | 20 | 16 | 15 | 180 | 28 | 11.7 | | | | | | | | |
| **E16Q-SDUCR/L11-23** | ● | ● | 23 | 16 | 15 | 180 | 25.8 | 14.5 | 6.5 | | | | | SP040065 | FT-TP15 | DC*T 11T3…<br>DC*W11T3… |
| **E20R-SDUCR/L11-27** | ● | ● | 27 | 20 | 19 | 200 | 32 | 16.5 | | | | | | SP040093X | | |
| **E25S-SDUCR/L11-32** | ○ | ○ | 32 | 25 | 24 | 250 | 38 | 19 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-SDQC Steel Boring Bar (Internal/Internal Profile Boring)



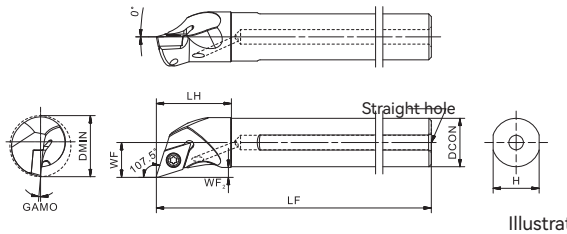




Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | | |
| **A10K-SDQCR/L07-13** | ○ | ○ | 13 | 10 | 9 | 125 | 19 | 7.5 | 2.1 | 10° | 0.4 | With | 1 | SP025064 | FT-TP08 | DC*T 0702…<br>DC*W 0702… |
| **A12M-SDQCR/L07-16** | ○ | ○ | 16 | 12 | 11 | 150 | 22 | 9.25 | 2.6 | 8° | | | | | | |
| **A16Q-SDQCR/L07-20** | ○ | ○ | 20 | 16 | 15 | 180 | 25 | 11.3 | | 6° | | | | | | |
| **A20R-SDQCR/L11-25** | ● | ● | 25 | 20 | 19 | 200 | 31 | 14.4 | 3.7 | 5° | | | | SP040065 | FT-TP15 | DC*T 11T3…<br>DC*W11T3… |
| **A25S-SDQCR/L11-30** | ○ | ○ | 30 | 25 | 24 | 250 | 38 | 16.9 | | 4° | | | | SP040093X | | |

● : Standard stock ○ : Made-to-Order

## E-SDQC Carbide Boring Bar (Internal/Internal Profile Boring)

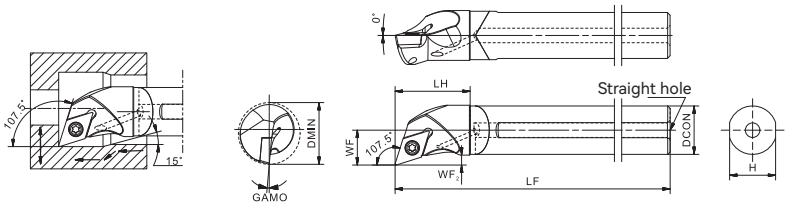



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | | |
| **E10M-SDQCR/L07-13** | ○ | ○ | 13 | 10 | 9 | 150 | 20 | 7.5 | 2.1 | 10° | 0.4 | With | 1 | SP025064 | FT-TP08 | DC*T 0702…<br>DC*W 0702… |
| **E12M-SDQCR/L07-16** | ○ | ○ | 16 | 12 | 11 | 150 | 23 | 9.25 | 2.6 | 8° | | | | | | |
| **E16Q-SDQCR/L07-20** | ○ | ○ | 20 | 16 | 15 | 180 | 28 | 11.3 | | 6° | | | | | | |
| **E20R-SDQCR/L11-25** | ● | ● | 25 | 20 | 19 | 200 | 31 | 14.4 | 3.7 | 5° | | | | SP040065 | FT-TP15 | DC*T 11T3…<br>DC*W11T3… |
| **E25S-SDQCR/L11-30** | ○ | ○ | 30 | 25 | 24 | 250 | 38 | 16.9 | | 4° | | | | SP040093X | | |

● : Standard stock ○ : Made-to-Order

## A-STLC Steel Boring Bar (Internal/Internal Face Boring)

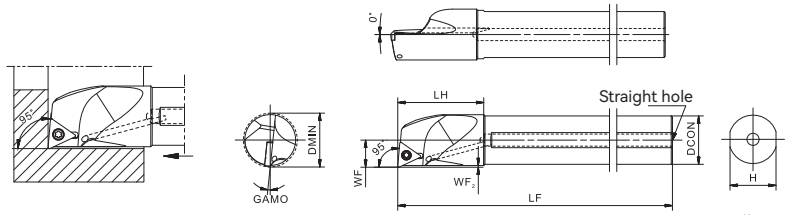



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | | |
| **A08H-STLCR/L09-10** | ○ | ○ | 10 | 8 | 7 | 100 | 16 | 5 | 0.5 | 14° | 0.4 | With | 1 | SP022052 | FT-TP07 | TC*T 0902… |
| **A10K-STLCR/L09-12** | ○ | ○ | 12 | 10 | 9 | 125 | 20 | 6.2 | 0.9 | 12° | | | | | | |
| **A10K-STLCR/L11-12** | ● | ● | | | | | 18.6 | | | | | | | SP025064 | FT-TP08 | TC*T 1102…<br>TC*W 1102… |
| **A12M-STLCR/L11-14** | ● | ○ | 14 | 12 | 11 | 150 | 24 | 7.2 | 0.7 | 10° | | | | | | |
| **A16Q-STLCR/L11-18** | ○ | ○ | 18 | 16 | 15 | 180 | 30 | 9.2 | | 8° | | | | | | |
| **A20R-STLCR/L11-22** | ● | ● | 22 | 20 | 19 | 200 | 36 | 11.2 | | 6° | | | | | | |
| **A16Q-STLCR/L16-18** | ○ | ○ | 18 | 16 | 15 | 180 | 32 | 9.2 | | 8° | | | | SP040065 | FT-TP15 | TC*T 16T3…<br>TC*W 16T3… |
| **A20Q-STLCR/L16-22** | ○ | ○ | 22 | 20 | 18 | | | 11.2 | | 6° | | | | | | |
| **A25R-STLCR/L16-27** | ○ | ○ | 27 | 25 | 23 | 200 | 46 | 13.7 | | 4° | | | | SP040093X | | |

● : Standard stock ○ : Made-to-Order

## A-STLP Steel Boring Bar (Internal/Internal Face Boring)

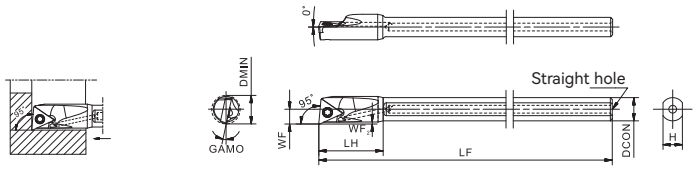



Illustration 1

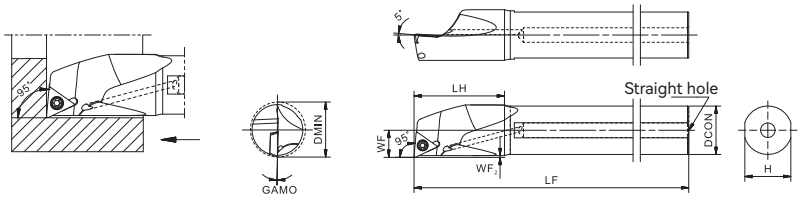



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | | |
| **A06F-STLBR/L06-08** | ● | ● | 8 | 6 | 5 | 80 | 15.3 | 3.8 | 0.5 | 12° | 0.2 | With | 1 | SP020035 | FT-TP06 | TB*T 0601… |
| **A08H-STLPR/L08-10** | ○ | ○ | 10 | 8 | 7 | 100 | 16 | 5 | | 10° | 0.4 | | 2 | SP022052 | FT-TP07 | TP*H 0802… |
| **A08H-STLPR/L09-10** | ○ | ○ | | | | | | | | | | | | SP025045 | FT-TP08 | TP*T 0902… TP*H 0902… |
| **A08H-STLPR/L09-10 (M2.2)** | ○ | ○ | | | | | | | | | | | | SP022052 | FT-TP07 | |
| **A10K-STLPR/L09-12** | ● | ● | 12 | 10 | 9 | 125 | 25.7 | 6.2 | 0.9 | 8° | 0.2 | | | SP025045 | FT-TP08 | |
| **A10K-STLPR/L09-12 (M2.2)** | ● | ○ | | | | | 20 | | | | 0.4 | | | SP022052 | FT-TP07 | |
| **A10K-STLPR/L11-12** | ○ | ○ | | | | | | 6 | 0.7 | 10° | | | | SP030065 | FT-TP08 | TP*T 1103… TP*H 1103… |
| **A12M-STLPR/L11-14** | ○ | ○ | 14 | 12 | 11 | 150 | 24 | 7.2 | 0.8 | 7° | | | | | | |
| **A12M-STLPR/L09-16** | ○ | ○ | 16 | | | | | 8 | 0.6 | 5° | | | | SP025045 | FT-TP08 | TP*T 0902… TP*H 0902… |
| **A12M-STLPR/L09-16 (M2.2)** | ○ | ○ | | | | | | | | | | | | SP022052 | FT-TP07 | |
| **A16Q-STLPR/L11-18** | ● | ● | 18 | 16 | 15 | 180 | 30 | 9.2 | 0.7 | 3.5° | | | | SP030065 | FT-TP08 | TP*T 1103… TP*H 1103… |
| **A20R-STLPR/L11-22** | ● | ○ | 22 | 20 | 19 | 200 | 37.4 | 11.2 | | 2° | | | | | | |
| **A25S-STLPR/L16-27** | ○ | ○ | 27 | 25 | 24 | 250 | 46 | 13.7 | | 0° | | | | SP040065 | FT-TP15 | TP*T 1603… |

● : Standard stock ○ : Made-to-Order

## E-STLP Carbide Boring Bar (Internal/Internal Face Boring)

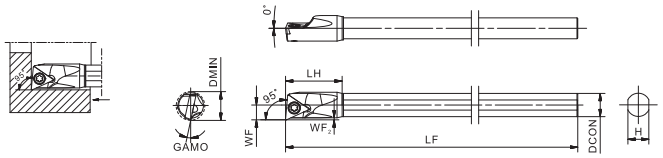



Illustration 1

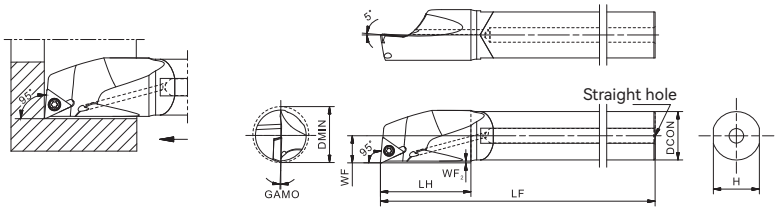



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Screw | Wrench | |
| | R | L | DMIN | | | | | | | | | | | | | |
| **C06F-STLBR/L06-08** | ○ | ○ | 8 | 6 | 5.4 | 80 | 10 | 3.8 | 0.5 | 12° | 0.2 | Without | 1 | SP020035 | FT-TP06 | TB*T 0601… |
| **E08K-STLPR/L08-10** | ○ | ○ | 10 | 8 | 7 | 125 | 14 | 5 | 0.5 | 10° | 0.4 | With | 2 | SP022052 | FT-TP07 | TP*H 0802… |
| **E08K-STLPR/L09-10** | ○ | ○ | | | | | | | | | | | | SP025045 | FT-TP08 | TP*T 0902…<br>TP*H 0902… |
| **E08H-STLPR/L09-10 (M2.2)** | ○ | ○ | | | | 100 | | | | | | | | SP022052 | FT-TP07 | |
| **E10M-STLPR/L09-12** | ○ | ○ | 12 | 10 | 9 | 150 | 18 | 6.2 | 0.9 | 8° | | | | SP025045 | FT-TP08 | |
| **E10K-STLPR/L09-12 (M2.2)** | ○ | ○ | | | | 125 | | | | | | | | SP022052 | FT-TP07 | |
| **E10M-STLPR/L11-12** | ○ | ○ | | | | 150 | | 6 | 0.7 | 10° | | | | SP030065 | FT-TP08 | TP*T 1103…<br>TP*H 1103… |
| **E12M-STLPR/L11-14** | ○ | ○ | 14 | 12 | 11 | | 23 | 7.2 | 0.8 | 7° | | | | | | |
| **E12M-STLPR/L09-16** | ○ | ○ | 16 | | | | | 8 | 0.6 | 5° | | | | SP025045 | | TP*T 0902…<br>TP*H 0902… |
| **E12M-STLPR/L09-16 (M2.2)** | ○ | ○ | | | | | | | | | | | | SP022052 | FT-TP07 | |
| **E16Q-STLPR/L11-18** | ● | ● | 18 | 16 | 15 | 180 | 30 | 9.2 | 0.7 | 3.5° | | | | SP030065 | FT-TP08 | TP*T 1103…<br>TP*H 1103… |
| **E20R-STLPR/L11-22** | ● | ○ | 22 | 20 | 19 | 200 | 37.5 | 11.2 | | 2° | | | | | | |
| **E20R-STLPR/L16-25** | ○ | ○ | 25 | | | | 32 | 13 | | 0° | | | | SP040065 | FT-TP15 | TP*T 1603… |
| **E25S-STLPR/L16-27** | ○ | ○ | 27 | 25 | 24 | 250 | 38 | 13.7 | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-SVJC/B Steel Boring Bar (Internal Face/Internal Profile Boring)

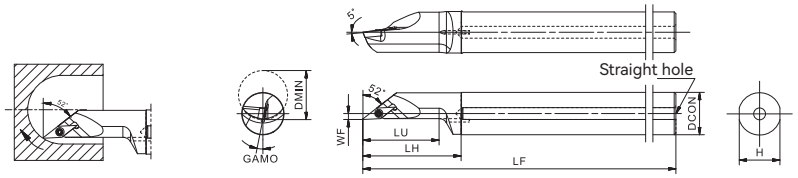



Illustration 1

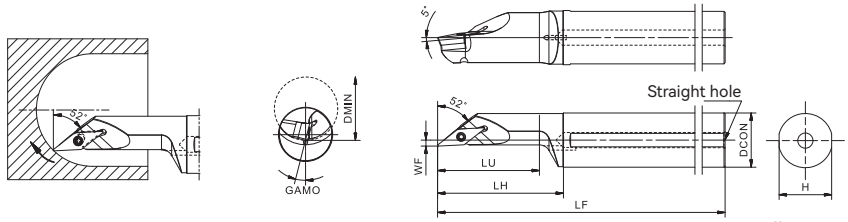



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LU | LH | WF | GAMO | | | | Shim | Shim screw | Wrench (Shim screw) | Screw | Wrench | |
| **A12M-SVJPR/L08-16** | ○ | ○ | 16 | 12 | 11 | 150 | 26 | 33 | 2 | 5° | 0.2 | With | 1 | - | - | - | SP020050 | FT-TP06 | VP*T 0802… |
| **A12M-SVJCR/L08-16** | ○ | ○ | | | | | | | | | 0.4 | | | - | - | - | | | VC*T 0802… |
| **A16Q-SVJCR/L08-20** | ○ | ○ | 20 | 16 | 15 | 180 | 36 | 43 | 2 | | | | | - | - | - | | | |
| **A20R-SVJBR/L11-25** | ○ | ○ | 25 | 20 | 19 | 200 | 37.5 | 48 | 2 | | | | | - | - | - | SP025064 | FT-TP08 | VB*T 1103… |
| **A25S-SVJBR/L11-30** | ● | ● | 30 | 25 | 24 | 250 | 45 | 58 | 3.5 | | | | | - | - | - | | | |
| **A32S-SVJBR/L16-40** | ○ | ○ | 40 | 32 | 31 | | 60 | 74 | | 8° | | | 2 | S-SVN16032 | SH050084X | LT-H3.5 | SP035120 | FT-TP15 | VB*T 1604… |
| **A40T-SVJBR/L16-50** | ○ | ○ | 50 | 40 | 39 | 300 | 75 | 91 | 4.5 | 7° | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-SVPP/B Steel Boring Bar (Internal Profile/Internal Undercut Boring)

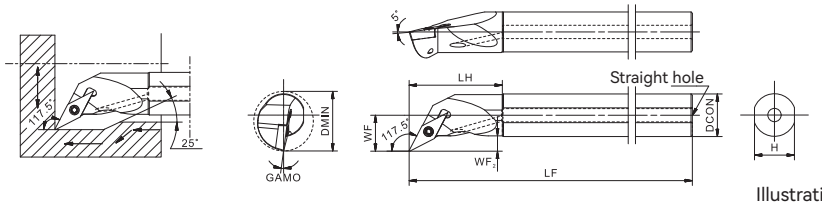



Illustration 1

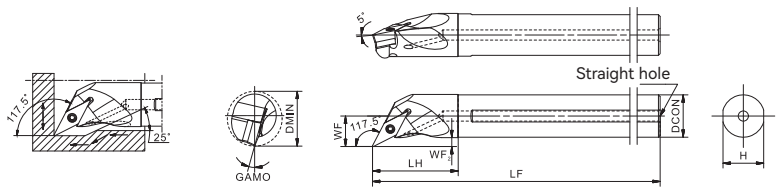



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Shim | Shim screw | Wrench (Shim screw) | Screw | Wrench | |
| **A10K-SVPPR/L08-14** | ○ | ○ | 14 | 10 | 9 | 125 | 24 | 8.5 | 3 | 8° | 0.4 | With | 1 | - | - | - | SP020050 | FT-TP06 | VP*T 0802... |
| **A12M-SVPBR/L11-18** | ○ | ○ | 18 | 12 | 11 | 150 | 29 | 11 | 4.5 | | | | | - | - | - | SP025064 | FT-TP08 | VB*T 1103... |
| **A16Q-SVPBR/L11-22** | ● | ● | 22 | 16 | 15 | 180 | 35 | 13.5 | 5.5 | 5° | | | | - | - | - | | | |
| **A20R-SVPBR/L11-26** | ○ | ○ | 26 | 20 | 19 | 200 | 41 | 15.5 | 5 | | | | | - | - | - | | | |
| **A25S-SVPBR/L16-31** | ○ | ○ | 31 | 25 | 24 | 250 | 51 | 18 | 5 | 13° | | | 2 | S-SVN16032 | SH050084X | LT-H3.5 | SP035120 | FT-TP15 | VB*T 1604... |
| **A32S-SVPBR/L16-40** | ○ | ○ | 40 | 32 | 31 | | 54 | 23 | 6.5 | 9° | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## E-SVPP/B Carbide Boring Bar (Internal Profile/Internal Undercut Boring)

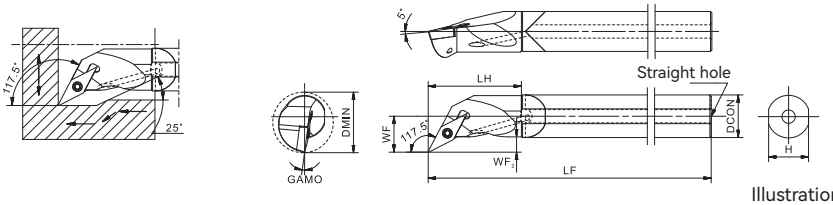



Illustration 1

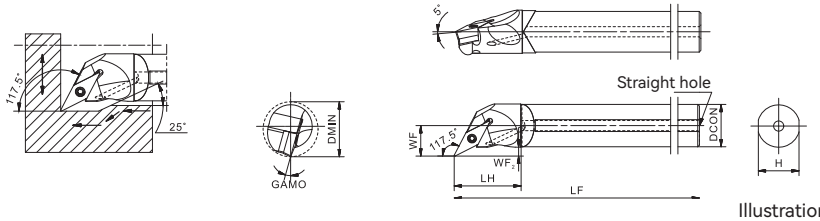



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Shim | Shim screw | Wrench (Shim screw) | Screw | Wrench | |
| **E10M-SVPPR/L08-14** | ○ | ○ | 14 | 10 | 9 | 150 | 21.5 | 8.5 | 3 | 8° | 0.4 | With | 1 | - | - | - | SP020050 | FT-TP06 | VP*T 0802... |
| **E12M-SVPBR/L11-18** | ○ | ○ | 18 | 12 | 11 | | 23 | 11 | 4.5 | | | | | - | - | - | SP025064 | FT-TP08 | VB*T 1103... |
| **E16Q-SVPBR/L11-22** | ● | ● | 22 | 16 | 15 | 180 | 35 | 13.5 | 5.5 | 5° | | | | - | - | - | | | |
| **E20R-SVPBR/L11-26** | ○ | ○ | 26 | 20 | 19 | 200 | 32 | 15.5 | 5 | | | | | - | - | - | | | |
| **E25S-SVPBR/L16-31** | ○ | ○ | 31 | 25 | 24 | 250 | 38 | 18 | 5 | 13° | | | 2 | S-SVN16032 | SH050084X | LT-H3.5 | SP035120 | FT-TP15 | VB*T 1604... |

● : Standard stock ○ : Made-to-Order

## A-SVIP/B Steel Boring Bar (Internal Profile Boring)

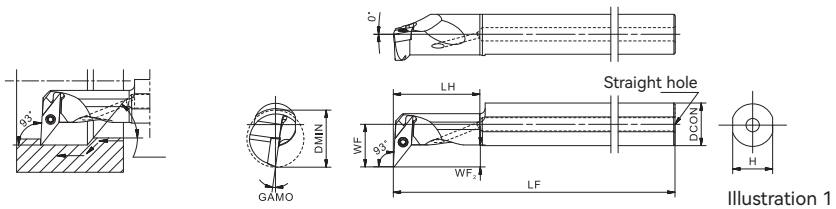



Illustration 1

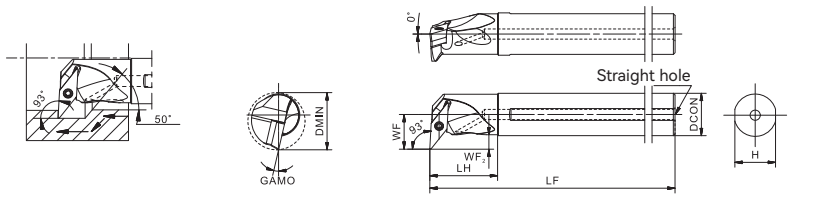



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Shim | Shim screw | Wrench (Shim screw) | Screw | Wrench | |
| **A12M-SVUPR/L08-16** | ○ | ○ | 16 | 12 | 11 | 150 | 25.5 | 11.5 | 5.5 | 8° | 0.4 | With | 1 | - | - | - | SP020050 | FT-TP06 | VP*T 0802... |
| **A16Q-SVUBR/L11-20** | ● | ● | 20 | 16 | 15 | 180 | 32.5 | 16 | 8 | | | | | - | - | - | SP025064 | FT-TP08 | VB*T 1103... |
| **A20R-SVUBR/L11-25** | ● | ● | 25 | 20 | 19 | 200 | 40.5 | 18 | | 7° | | | | - | - | - | | | |
| **A25S-SVUBR/L16-34** | ● | ○ | 34 | 25 | 24 | 250 | 40 | 20.5 | 8.5 | 13° | | | 2 | S-SVN16032 | SH050084X | LT-H3.5 | SP035120 | FT-TP15 | VB*T 1604... |
| **A32S-SVUBR/L16-40** | ○ | ○ | 40 | 32 | 31 | 250 | 84 | 28 | 12 | 9° | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## E-SVUP/B Carbide Boring Bar (Internal Profile Boring)

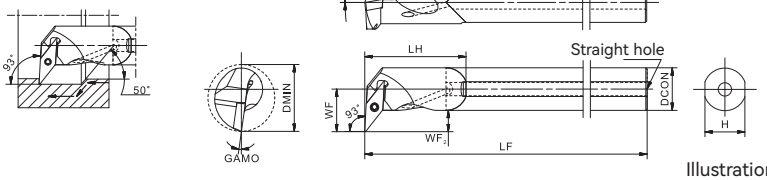



Illustration 1

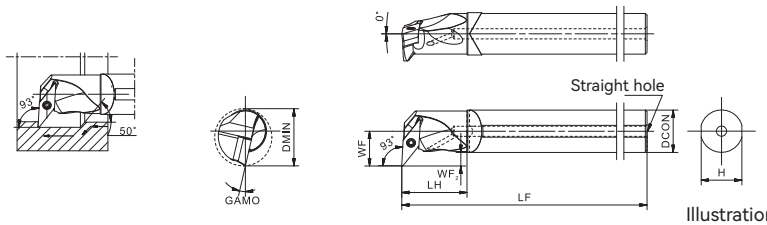



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Shim | Shim screw | Wrench (Shim screw) | Screw | Wrench | |
| **E12M-SVUPR/L08-18** | ○ | ○ | 18 | 12 | 11 | 150 | 23 | 11.5 | 5.5 | 8° | 0.4 | With | 1 | - | - | - | SP020050 | FT-TP06 | VP*T 0802... |
| **E16Q-SVUBR/L11-25** | ● | ● | 25 | 16 | 15 | 180 | 28 | 16 | 8 | 8° | | | | - | - | - | SP025064 | FT-TP08 | VB*T 1103... |
| **E20R-SVUBR/L11-29** | ○ | ○ | 29 | 20 | 19 | 200 | 32 | 18 | | 7° | | | | - | - | - | | | |
| **E25S-SVUBR/L16-34** | ● | ○ | 34 | 25 | 24 | 250 | 38 | 20.5 | 8.5 | 13° | | | 2 | S-SVN16032 | SH050084X | LT-H3.5 | SP035120 | FT-TP15 | VB*T 1604... |

● : Standard stock ○ : Made-to-Order

## A-SWUB Steel Boring Bar (Internal Boring)

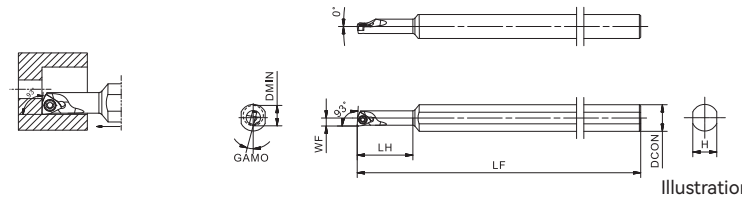



Illustration 1

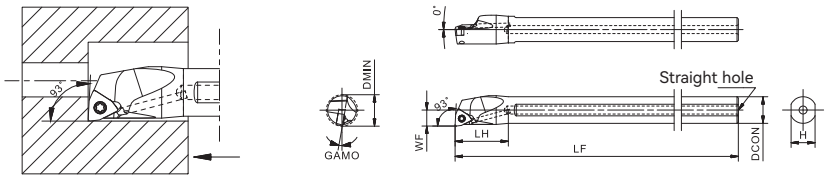



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Screw | Wrench | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | GAMO | | | | | | |
| **S10H-SWUBR/L06-06** | ● | ● | 6 | 10 | 9 | 100 | 21 | 3 | 15° | 0.4 | Without | 1 | SP020035 | FT-TP06 | WB*T 0601… |
| **S10H-SWUBR/L06-07** | ○ | ○ | 7 | | | | 25 | 3.5 | 13° | 0.2 | | | | | |
| **S10H-SWUBR/L08-08** | ○ | ○ | 8 | | | | 28 | 4 | 15° | | | | | | WB*T 0802… |
| **A08H-SWUBR/L08-10** | ○ | ○ | 10 | 8 | 7 | | 16 | 5 | 13° | | With | 2 | SP020050 | | |
| **A10K-SWUBR/L-08-12** | ● | ● | 12 | 10 | 9 | 125 | 20 | 6 | 10° | 0.4 | | | | | |

● : Standard stock ○ : Made-to-Order

## E-SWUB Carbide Boring Bar (Internal Boring)

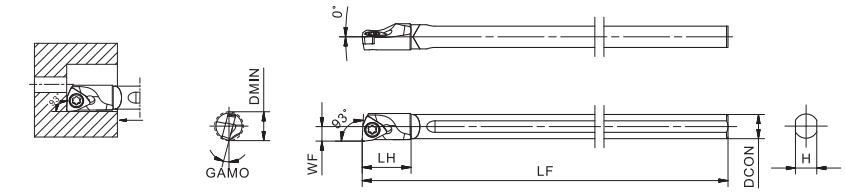



Illustration 1

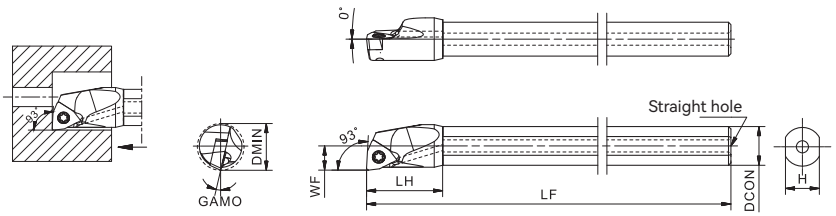



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Screw | Wrench | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | GAMO | | | | | | |
| **C05G-SWUBR/L06-06** | ● | ● | 6 | 5 | 4.4 | 90 | 10 | 3 | 15° | 0.4 | Without | 1 | SP020035 | FT-TP06 | WB*T 0601… |
| **C06H-SWUBR/L06-07** | ○ | ○ | 7 | 6 | 5.4 | 100 | | 3.5 | 13° | 0.2 | | | | | |
| **C07J-SWUBR/L08-08** | ○ | ○ | 8 | 7 | 6.4 | 110 | 11 | 4 | 15° | | | | | | WB*T 0802… |
| **E08K-SWUBR/L08-10** | ● | ● | 10 | 8 | 7 | 125 | 14 | 5 | 13° | 0.4 | With | 2 | SP020050 | | |
| **E10M-SWUBR/L08-12** | ● | ● | 12 | 10 | 9 | 150 | 20 | 6 | 10° | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-DCLN Steel Boring Bar(Internal/Internal Face Boring)

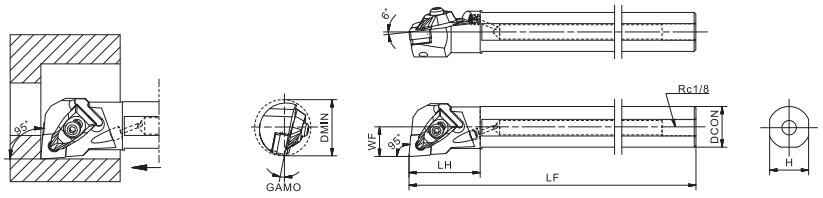



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | GAMO | | | | Wrench | Lever screw | Clamp | Spring | Shim | Shim screw | Nozzle | |
| **A25R-DCLNR/L12-32** | ● | ● | 32 | 25 | 23 | 200 | 42 | 17 | 11° | 0.8 | With | 1 | LT-H3 | CH 050215 | CLD 255090 | YB0.20-2.50-12-5.5 | S-DCN 12032 | SH 060080X | NZ 060020 | CN*A 1204…<br>CN*G 1204…<br>CN*M 1204… |
| **A32S-DCLNR/L12-40** | ● | ● | 40 | 32 | 30 | 250 | 50 | 22 | | | | | | | | | | | | |
| **A40T-DCLNR/L12-50** | ○ | ○ | 50 | 40 | 37 | 300 | 60 | 27 | 14° | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## S-PCLN Steel Boring Bar(Internal/Internal Face Boring)

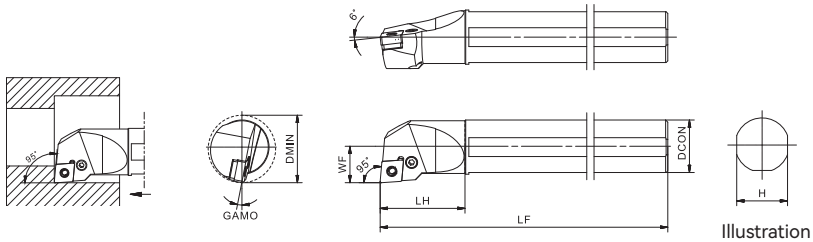
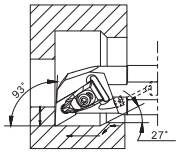



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | GAMO | | | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| **S25R-PCLNR/L12-32** | ○ | ○ | 32 | 25 | 24 | 200 | 42 | 16.3 | 16° | 0.8 | Without | 1 | LT-H3 | LH080200 | LV4C | S-PCN12032 | SP4N | CN*A 1204…<br>CN*G 1204…<br>CN*M 1204… |
| **S32S-PCLNR/L12-40** | ● | ● | 40 | 32 | 30 | 250 | 50 | 21 | 10° | | | | | | | | | |
| **S40T-PCLNR/L12-50** | ○ | ○ | 50 | 40 | 37 | 300 | 60 | 25 | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-DDUN Steel Boring Bar(Internal/Internal Profile Boring)



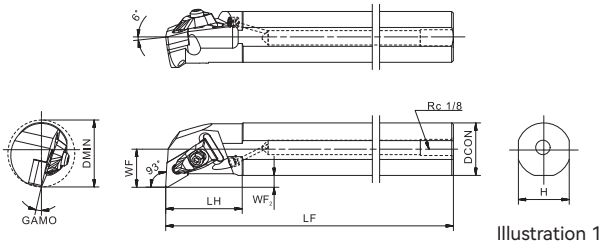
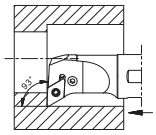




Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Wrench | Lever screw | Clamp | Spring | Shim | Shim screw | Nozzle | |
| **A32S-DDUNR/L15-40** | ● | ● | 40 | 32 | 30 | 250 | 45 | 22 | 8 | 13° | 0.8 | With | 1 | LT-H3 | CH 050215 | CLD 255090 | YB0.20-2.50-12-5.5 | S-DDN 15032 | SH 060100X | NZ 060020 | DN*A 1504…<br>DN*G 1504…<br>DN*M 1504… |
| **A40T-DDUNR/L15-50** | ○ | ○ | 50 | 40 | 37 | 300 | 55 | 27 | 8.5 | 12° | | | | | | | | | | | |
| **A50U-DDUNR/L15-63** | ○ | ○ | 63 | 50 | 47 | 350 | 65 | 35 | 10.5 | | | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## S-PDUN Steel Boring Bar(Internal/Internal Profile Boring)



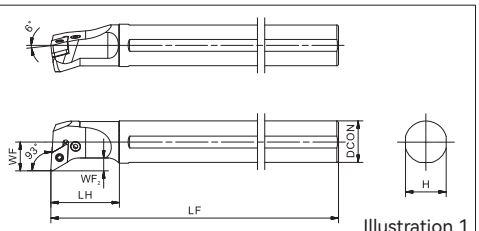




Illustration 1

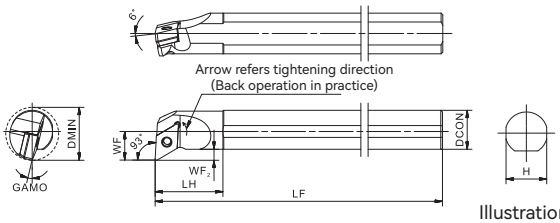



Illustration 2

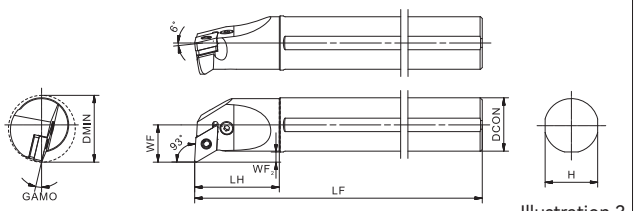



Illustration 3

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Wrench | Lever screw | Lever | Shim | Shim pin | Eccentric pin | |
| **S20Q-PDUNR/L11-27** | ○ | ○ | 27 | 20 | 19 | 180 | 35 | 16 | 7.6 | 17° | 0.8 | Without | 1 | LT-H2.5 | LH060142 | LV3 | S-PDN11027 | SP3 | - | DN*G 1104… |
| **S25R-PDUNR/L11-32** | ○ | ○ | 32 | 25 | 24 | 200 | 40 | 17 | | 15° | | | | | | | | | | |
| **S32S-PDUNR/L11-40** | ○ | ○ | 40 | 32 | 31 | 250 | 45 | 22 | 8.5 | 12° | | | | | | | | | | |
| **S25R-PDUNR/L15-32** | ○ | ○ | 32 | 25 | 24 | 200 | 40 | 17 | 6.5 | 13° | | | 2 | LT-H3 | - | - | S-PDN15032X | - | EP046140 | DN*A 1504…<br>DN*G 1504…<br>DN*M 1504… |
| **S32S-PDUNR/L15-44** | ○ | ○ | 44 | 32 | 31 | 250 | 50 | 22 | | | | | 3 | | LH080200 | LV4B | S-PDN15032 | SP4N | - | |
| **S40T-PDUNR/L15-54** | ○ | ○ | 54 | 40 | 39 | 300 | 65 | 27 | 7.5 | 12° | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## S-PDQN Steel Boring Bar(Internal/Internal Profile Boring)

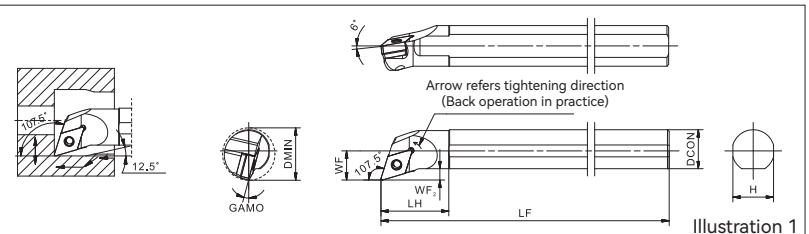



Illustration 1

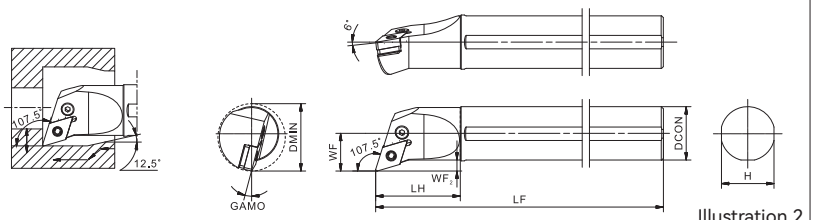
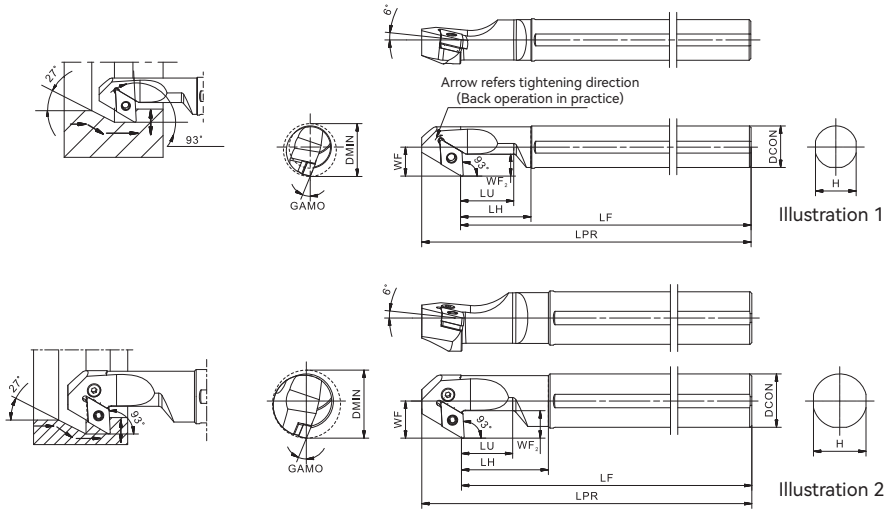



Illustration 2

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Wrench | Lever screw | Lever | Shim | Shim pin | Eccentric pin | |
| **S25R-PDQNR/L15-32** | ○ | ○ | 32 | 25 | 24 | 200 | 40 | 17 | 6.5 | 13° | 0.8 | Without | 1 | LT-H3 | SP020050 | - | S-PDN15032X | - | EP046140 | DN*A 1504…<br>DN*G 1504…<br>DN*M 1504… |
| **S32S-PDQNR/L15-44** | ○ | ○ | 44 | 32 | 31 | 250 | 50 | 22 | | | | | 2 | | LH080200 | LV4B | S-PDN15032 | SP4N | - | |
| **S40T-PDQNR/L15-54** | ○ | ○ | 54 | 40 | 39 | 300 | 65 | 27 | 7.5 | 12° | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## S-PDZN Steel Boring Bar(Internal Back Boring)




| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | | GAMO | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LPR | LF | LH | LU | WF | WF2 | | | | | GAMO | Lever screw | Lever | Shim | Shim pin | Eccentric pin | |
| **S25R-PDZNR/L15-32** | ○ | ○ | 32 | 25 | 24 | 225 | 200 | 40 | 30 | 17 | 13 | 13° | 0.8 | Without | 1 | LT-H3 | SP 020050 | - | S-PDN 15032X | - | EP 046140 | DN*A 1504…<br>DN*G 1504…<br>DN*M 1504… |
| **S32S-PDZNR/L15-44** | ○ | ○ | 44 | 32 | 31 | 275 | 250 | 50 | | 22 | 16 | | | | 2 | | LH 080200 | LV4B | S-PDN 15032 | SP4N | - | |
| **S40T-PDZNR/L15-54** | ○ | ○ | 54 | 40 | 39 | 325 | 300 | 65 | 50 | 27 | | 12° | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-DSKN Steel Boring Bar(Internal Boring)

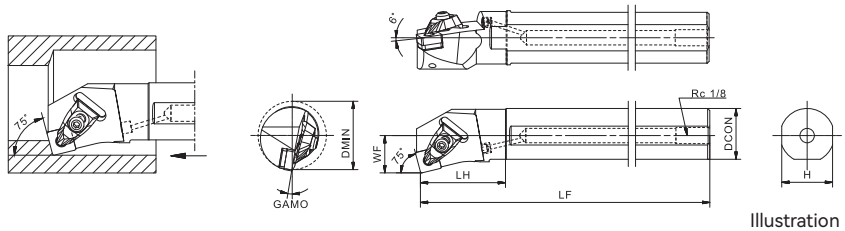



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | GAMO | | | | Wrench | Lever screw | Clamp | Spring | Shim | Shim screw | Nozzle | |
| **A25R-DSKNR/L12-32** | ○ | ○ | 32 | 25 | 23 | 200 | 43 | 17 | 11° | 0.8 | With | 1 | LT-H3 | CH 050215 | CLD 255090 | YB0.20-2.50-12-5.5 | S-DSN 12032 | SH 060080X | NZ 060020 | SN*A 1204…<br>SN*G 1204…<br>SN*M 1204… |
| **A32S-DSKNR/L12-40** | ○ | ○ | 40 | 32 | 30 | 250 | 43 | 22 | | | | | | | | | | | | |
| **A40T-DSKNR/L12-50** | ○ | ○ | 50 | 40 | 37 | 300 | 53 | 27 | | | | | | | | | | | NZ 100040 | |

● : Standard stock ○ : Made-to-Order

## A-DTFN Steel Boring Bar(Internal Boring)

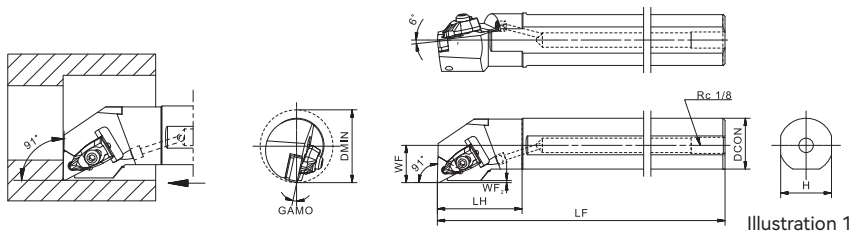
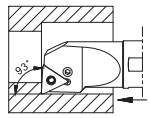



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Wrench | Lever screw | Clamp | Spring | Shim | Shim screw | Nozzle | |
| **A25R-DTFNR/L16-32** | ○ | ○ | 32 | 25 | 23 | 200 | 42 | 17 | 0.8 | 12° | 0.8 | With | 1 | LT-H3 | CH 050215 | CLD 222075 | YB0.20-2.50-12-5.5 | S-DTN 16027 | SH 050090X | NZ 060020 | TN*A 1604…<br>TN*G 1604…<br>TN*M 1604… |
| **A32S-DTFNR/L16-40** | ○ | ○ | 40 | 32 | 30 | 250 | 50 | 22 | 1.2 | | | | | | | | | | | | |
| **A40T-DTFNR/L22-50** | ○ | ○ | 50 | 40 | 37 | 300 | 60 | 27 | 1.5 | | | | | | | CLD 255090 | | S-DTN 22048 | SH 060100X | NZ 100040 | TN*A 2204…<br>TN*G 2204…<br>TN*M 2204… |

● : Standard stock ○ : Made-to-Order

## S-PTUN Steel Boring Bar(Internal Boring)



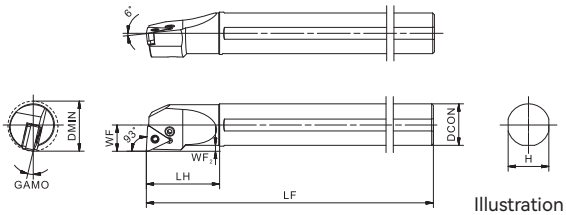
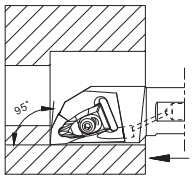



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | WF2 | GAMO | | | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| **S32S-PTUNR/L16-40** | ○ | ○ | 40 | 32 | 30 | 250 | 50 | 22 | 0.7 | 13° | 0.8 | Without | 1 | LT-H2.5 | LH060170 | LV3 | S-PTN16027 | SP3 | TN*A 1604…<br>TN*G 1604…<br>TN*M 1604… |
| **S40T-PTUNR/L16-50** | ○ | ○ | 50 | 40 | 37 | 300 | 60 | 27 | 0.6 | 11° | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

## A-DWLN Steel Boring Bar(Internal/Internal Face Boring)



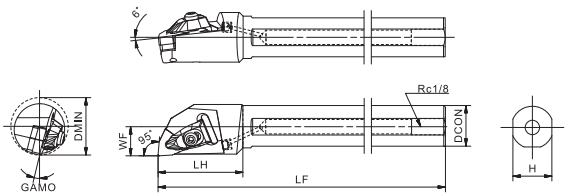



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | GAMO | | | | Wrench | Lever screw | Clamp | Spring | Shim | Shim screw | Nozzle | |
| **A25R-DWLNR/L08-32** | ● | ● | 32 | 25 | 23 | 200 | 50 | 17 | 13° | 0.8 | With | 1 | LT-H3 | CH 050215 | CLD 255090 | YB0.20-2.50-12-5.5 | S-DWN 08032 | SH 060080X | NZ 060020 | WN*A 0804…<br>WN*G 0804…<br>WN*M 0804… |
| **A32S-DWLNR/L08-40** | ○ | ○ | 40 | 32 | 30 | 250 | 50 | 22 | | | | | | | | | | | | |
| **A40T-DWLNR/L08-50** | ○ | ○ | 50 | 40 | 37 | 300 | 60 | 27 | | | | | | | | | | | NZ 100040 | |

● : Standard stock ○ : Made-to-Order

## S-PWLN Steel Boring Bar(Internal/Internal Face Boring)

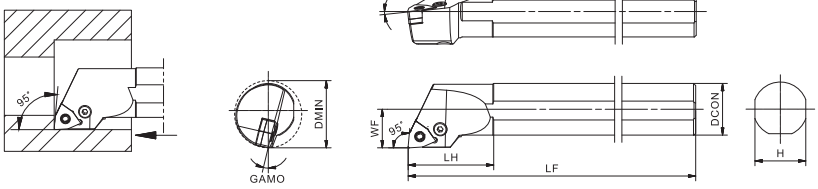



Illustration 1

| Product code | Stock | | Minimum boring hole diameter (mm) | Dimension | | | | | | Insert corner radius (RE) | Internal coolant | Illustration | Spare parts | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | DMIN | DCON | H | LF | LH | WF | GAMO | | | | Wrench | Lever screw | Lever | Shim | Shim pin | |
| **S16M-PWLNR/L06-20** | ○ | ○ | 20 | 16 | 15 | 150 | 34 | 11 | 16° | 0.8 | Without | 1 | LT-H2.5 | LH060170 | LV3 | S-PWN06027 | SP3 | WN*G 0604… |
| **S20Q-PWLNR/L06-27** | ● | ● | 27 | 20 | 19 | 180 | 36.5 | 14.2 | 17° | | | | | | | | | |
| **S25R-PWLNR/L06-32** | ○ | ○ | 32 | 25 | 24 | 200 | 42 | 15.7 | 15° | | | | | | | | | |
| **S32S-PWLNR/L08-40** | ○ | ○ | 40 | 32 | 30 | 250 | 50 | 22 | 10° | | | | LT-H3 | LH080200 | LV4C | S-PWN08032 | SP4N | WN*A 0804…<br>WN*G 0804…<br>WN*M 0804… |
| **S40T-PWLNR/L08-50** | ○ | ○ | 50 | 40 | 37 | 300 | 60 | 27 | | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

Note

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## Small Tools

# CUTTING TOOL CATALOGUE


## Small Tools 150

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TC ☐☐ Insert 157
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VP ☐☐ Insert 161
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ASWB Backturning Series Inserts 170
ASWT Threading Series Inserts 170
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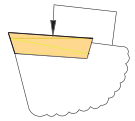
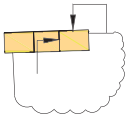
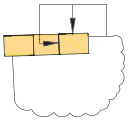
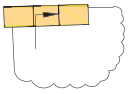
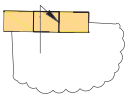
ASIG Solid Inner Grooving Inserts 177
ASIF Solid Face Grooving Inserts 182
ASIT Solid Threading Inserts 183
Boring Holder Sleeves 186

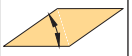
## Turning Shank Denomination System

| S | C | L | C | R |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

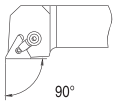
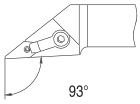
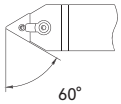
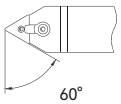
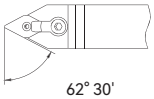
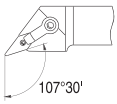
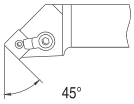
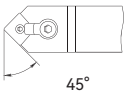
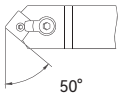
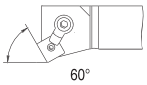
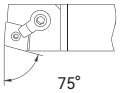
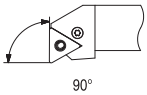
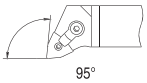
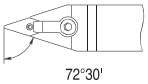
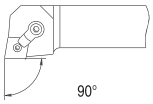
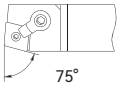
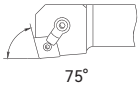
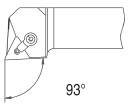
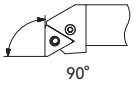
### 1- Clamping Type

| C: Top clamp | M: Top wedge clamping | D: Rigid clamping | P: lever clamping | S: Screw clamping |
|---|---|---|---|---|
|  |  |  |  |  |

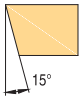
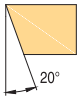
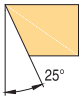
### 2- Insert Shape

| C | D | H | K | O | R | S | T | V | W |
|---|---|---|---|---|---|---|---|---|---|
| 80° | 55° | 120° | 55° | 135° | 360° | 90° | 60° |  35° | 80° |

### 3- Approach Angle

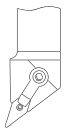
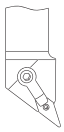
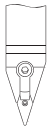
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A |  90° | J |  93° | T |  60° | E |  60° | N |  62° 30' |
| H |  107°30' | S |  45° | D |  45° | M |  50° | W |  60° |
| R |  75° | C |  90° | L |  95° | V |  72°30' | G |  90° |
| B |  75° | K |  75° | U |  93° | F |  90° | X | Special Approach angle, explanation needed. |

### 4- Clearance Angle

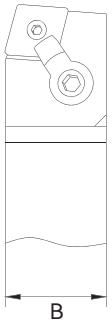
| B | C | D | E | F | N | P | O |
|---|---|---|---|---|---|---|---|
| 5° | 7° |  15° |  20° |  25° | 0° | 11° | Other clearance angle |

| 12 | 12 | JX | 09 | F |
|---|---|---|---|---|
| 6 | 7 | 8 | 9 | 10 |

### 5- Hand of Tool

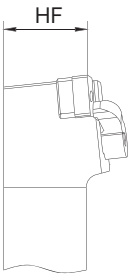
| | |
|---|---|
| L Left hand |  |
| R Right hand |  |
| N Neutral |  |

### 6- Center Height of Tool (mm)



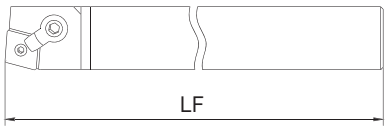

| |
|---|
| 06=6 |
| 08=8 |
| 10=10 |
| 12=12 |
| 14=14 |
| 16=16 |
| 20=20 |
| 25=25 |
| 30=30 |
| 40=40 |
| 50=50 |

### 7- Width of Shank (mm)




| |
|---|
| 06=6 |
| 08=8 |
| 10=10 |
| 12=12 |
| 14=14 |
| 16=16 |
| 20=20 |
| 25=25 |
| 30=30 |
| 40=40 |
| 50=50 |

### 8- Tool Length (mm)




| | |
|---|---|
| A=32 | M=150 |
| B=40 | N=160 |
| C=50 | P=170 |
| D=60 | Q=180 |
| E=70 | R=200 |
| F=80 | S=250 |
| FX=85 | T=300 |
| G=90 | U=350 |
| H=100 | V=400 |
| J=110 | W=450 |
| JX=120 | Y=500 |
| K=125 | |
| L=140 | X=Special |

### 9- Length of Cutting Edge

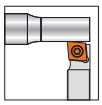
| C、D、E、M、V | H | O |
|---|---|---|
| | | |

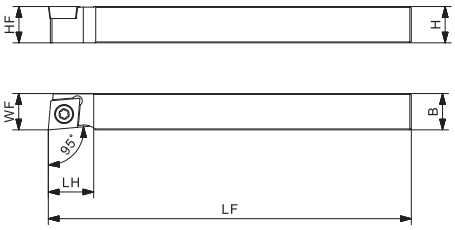
| R | S | T | W |
|---|---|---|---|
| | | | |

### 10- Added Symbol

| | |
|---|---|
| F | Without Offset |
| J | With high pressure coolant |

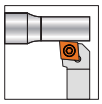
## SCLC External Turning Shank - Without Offset

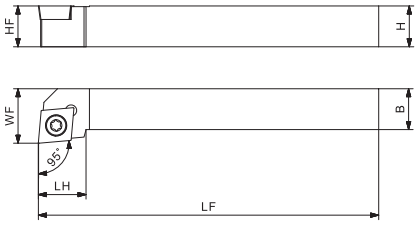





| Product code | Dimension (mm) | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | LH | WF | R | L | Screw | Wrench |
| **SCLCR/L 0808F-06F** | 8 | 8 | 8 | 80 | - | 8 | ○ | ○ | SP025065 | FT-TP08 |
| **SCLCR/L 1010JX-06F** | 10 | 10 | 10 | 120 | - | 10 | ● | ● | | |
| **SCLCR/L 1010JX-09F** | 10 | 10 | 10 | 120 | 15 | 10 | ● | ● | SP040090X | FT-TP15 |
| **SCLCR/L 1212F-09F** | 12 | 12 | 12 | 80 | - | 12 | ● | ● | | |
| **SCLCR/L 1212JX-09F** | 12 | 12 | 12 | 120 | - | 12 | ● | ● | | |
| **SCLCR/L 1616JX-09F** | 16 | 16 | 16 | 120 | - | 16 | ● | ● | | |

## SCLC External Turning Shank - With Offset





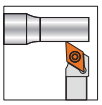

| Product code | Dimension (mm) | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | LH | WF | R | L | Screw | Wrench |
| **SCLCR/L 1010F-06** | 10 | 10 | 10 | 80 | 9 | 12 | ● | ● | SP025065 | FT-TP08 |
| **SCLCR/L 1010F-09** | 10 | 10 | 10 | 80 | 14 | 14 | ● | ● | SP040090X | FT-TP15 |
| **SCLCR/L 1212H-09** | 12 | 12 | 12 | 100 | 14 | 16 | ● | ● | | |
| **SCLCR/L 1616H-09** | 16 | 16 | 16 | 100 | 15 | 20 | ● | ● | | |

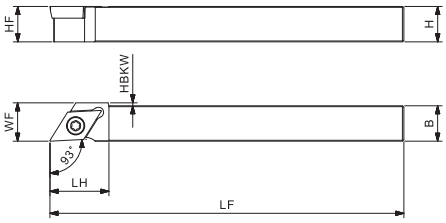
## Applicable Insert

| Applicaiton | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|
| Insert shape / Product code | M | LF | UF |
| | | | |
| **SCLCR/L···-06/06F** | CCET 0602 | CCGT 0602 | CCGT 0602 |
| **SCLCR/L···-09/09F** | CCET 09T3 | CCGT 09T3 | CCGT 09T3 |
| Reference page | P79 | P76 | P76 |

● : Standard stock ○ : Made-to-Order

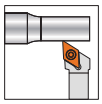
## SDJC External Turning Shank - Without Offset

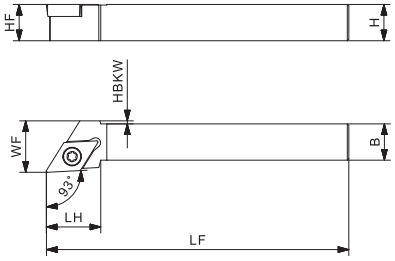





| Product code | Dimension (mm) | | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | LH | WF | HBKW | R | L | Screw | Wrench |
| **SDJCR/L 0808F-07F** | 8 | 8 | 8 | 80 | 14 | 8 | 0.5 | ○ | ○ | SP025065 | FT-TP08 |
| **SDJCR/L 1010JX-07F** | 10 | 10 | 10 | 120 | - | 10 | - | ● | ● | | |
| **SDJCR/L 1010JX-11F** | 10 | 10 | 10 | 120 | 20 | 10 | 3 | ● | ● | SP040090X | FT-TP15 |
| **SDJCR/L 1212F-11F** | 12 | 12 | 12 | 80 | 20 | 12 | 1 | ● | ● | | |
| **SDJCR/L 1212JX-11F** | 12 | 12 | 12 | 120 | 20 | 12 | 1 | ● | ● | | |
| **SDJCR/L 1616JX-11F** | 16 | 16 | 16 | 120 | - | 16 | - | ● | ● | | |

## SDJC External Turning Shank - With Offset





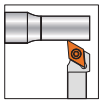

| Product code | Dimension (mm) | | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | LH | WF | HBKW | R | L | Screw | Wrench |
| **SDJCR/L 1010F-07** | 10 | 10 | 10 | 80 | 12 | 12 | - | ● | ● | SP025065 | FT-TP08 |
| **SDJCR/L 1010F-11** | 10 | 10 | 10 | 80 | 18 | 12 | 3 | ● | ● | SP040090X | FT-TP15 |
| **SDJCR/L 1212H-11** | 12 | 12 | 12 | 100 | 18 | 16 | 1 | ● | ● | | |
| **SDJCR/L 1616H-11** | 16 | 16 | 16 | 100 | 18 | 20 | - | ● | ● | | |

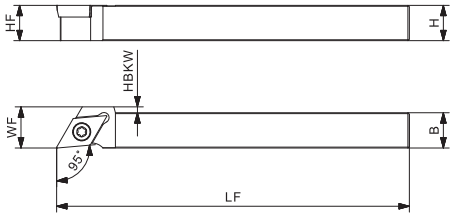
## Applicable Insert

| Applicaiton | Finishing | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|---|
| Insert shape / Product code | F | M | LF | UF |
| **SDJCR/L···-07/07F** | DCET 0702 | DCET 0702 | DCGT 0702 | DCGT 0702 |
| **SDJCR/L···-11/11F** | DCET 11T3 | DCET 11T3 | DCGT 11T3 | DCGT 11T3 |
| Reference page | P82 | P83 | P81 | P81 |

● : Standard stock ○ : Made-to-Order

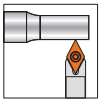
## SDLC External Turning Shank - Without Offset

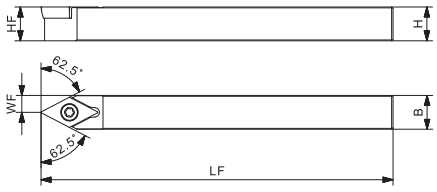





| Product code | Dimension (mm) | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | HBKW | R | L | Screw | Wrench |
| **SDLCR/L 1010JX-07F** | 10 | 10 | 10 | 120 | 10 | - | ● | ● | SP025065 | FT-TP08 |
| **SDLCR/L 1212F-07F** | 12 | 12 | 12 | 80 | 12 | - | ● | ● | | |
| **SDLCR/L 1212JX-07F** | 12 | 12 | 12 | 120 | 12 | - | ● | ● | | |
| **SDLCR/L 1616JX-07F** | 16 | 16 | 16 | 120 | 16 | - | ● | ● | | |
| **SDLCR 1010F-11F** | 10 | 10 | 10 | 80 | 10 | 4 | ● | - | SP040090X | FT-TP15 |
| **SDLCR/L 1010JX-11F** | 10 | 10 | 10 | 120 | 10 | 4 | ● | ● | | |
| **SDLCR 1212F-11F** | 12 | 12 | 12 | 80 | 12 | 2 | ● | - | | |
| **SDLCR/L 1212JX-11F** | 12 | 12 | 12 | 120 | 12 | 2 | ● | ● | | |
| **SDLCR 1616H-11F** | 16 | 16 | 16 | 100 | 16 | - | ● | - | | |
| **SDLCR/L 1616JX-11F** | 16 | 16 | 16 | 120 | 16 | - | ● | ● | | |

## SDNC External Turning Shank - Neutral





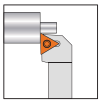

| Product code | Dimension (mm) | | | | | Stock | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | N | Screw | Wrench |
| **SDNCN 0808F-07** | 8 | 8 | 8 | 80 | 4 | ○ | SP025065 | FT-TP08 |
| **SDNCN 1010JX-07** | 10 | 10 | 10 | 120 | 5 | ● | | |
| **SDNCN 1212JX-07** | 12 | 12 | 12 | 120 | 6 | ● | | |
| **SDNCN 1010F-11** | 10 | 10 | 10 | 80 | 5 | ● | SP040090X | FT-TP15 |
| **SDNCN 1010JX-11** | 10 | 10 | 10 | 120 | 5 | ● | | |
| **SDNCN 1212F-11** | 12 | 12 | 12 | 80 | 6 | ● | | |
| **SDNCN 1212JX-11** | 12 | 12 | 12 | 120 | 6 | ● | | |
| **SDNCN 1616H-11** | 16 | 16 | 16 | 100 | 8 | ● | | |
| **SDNCN 1616JX-11** | 16 | 16 | 16 | 120 | 8 | ● | | |

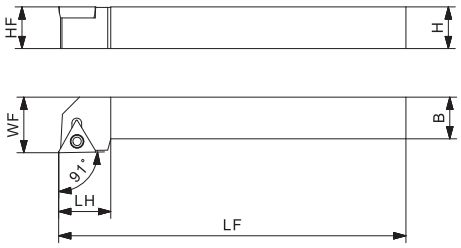
## Applicable Insert

| Applicaiton | Finishing | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|---|
| Insert shape / Product code | F | M | LF | UF |
| | | | | |
| **SDLCR/L···-07F**<br>**SDNCN ···-07** | DCET 0702 | DCET 0702 | DCGT 0702 | DCGT 0702 |
| **SDLCR/L···-11F**<br>**SDNCN ···-11** | DCET 11T3 | DCET 11T3 | DCGT 11T3 | DCGT 11T3 |
| Reference page | P82 | P83 | P81 | P81 |

● : Standard stock ○ : Made-to-Order

## STGC/STGP External Turning Shank - With Offset





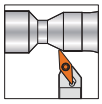

| Product code | Dimension (mm) | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | LH | WF | R | L | Screw | Wrench |
| **STGCR 0808F-08** | 8 | 8 | 8 | 80 | 12 | 10 | ○ | - | SP020049 | FT-TP06 |
| **STGCR/L 1010F-11** | 10 | 10 | 10 | 80 | 15 | 14 | ● | ● | SP025065 | FT-TP08 |
| **STGCR/L 1212H-11** | 12 | 12 | 12 | 100 | 15 | 16 | ● | ● | | |
| **STGCR/L 1616H-11** | 16 | 16 | 16 | 100 | 15 | 20 | ● | ● | | |
| **STGPR 0808F-08** | 8 | 8 | 8 | 80 | 12 | 10 | ○ | - | SP020049 | FT-TP06 |
| **STGPR/L 1010F-11** | 10 | 10 | 10 | 80 | 15 | 14 | ● | ● | SP030082 | FT-TP09 |
| **STGPR/L 1212H-11** | 12 | 12 | 12 | 100 | 15 | 16 | ● | ● | | |
| **STGPR/L 1616H-11** | 16 | 16 | 16 | 100 | 15 | 20 | ● | ● | | |

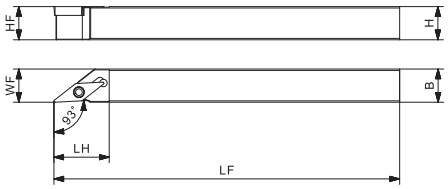
## Applicable Insert

| Applicaiton | Finishing | Finishing |
|---|---|---|
| Insert shape / Product code | F | M |
| | | |
| **STGCR 0808F-08** | - | TCET 0802 |
| **STGPR 0808F-08** | TPEH 0802 | - |
| **STGC··· -11** | - | TCET 1103 |
| **STGP··· -11** | TPEH 1103 | - |
| Reference page | P89 | P87 |

● : Standard stock ○ : Made-to-Order

## SVJB External Turning Shank - Without Offset





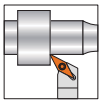

| Product code | Dimension (mm) | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | LH | WF | R | L | Screw | Wrench |
| **SVJBR/L 1010JX-11F** | 10 | 10 | 10 | 120 | - | 10 | ● | ● | SP025065 | FT-TP08 |
| **SVJBR/L 1212JX-11F** | 12 | 12 | 12 | 120 | - | 12 | ● | ● | | |
| **SVJBR/L 1616JX-11F** | 16 | 16 | 16 | 120 | - | 16 | ● | ● | | |
| **SVJBR/L 2020JX-11F** | 20 | 20 | 20 | 120 | 20 | 20 | ● | ● | | |

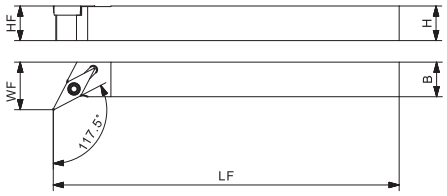
## Applicable Insert

| Applicaiton | Finishing | Finishing | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|---|---|
| Insert shape / Product code | F | M | Y | LF | UF |
| | | | | | |
| **SVJBR/L···-11F** | VBET 1103 | VBET 1103 | VBET 1103 | VBGT 1103 | VBGT 1103 |
| Reference page | P91 | P92 | P92 | P90 | P90 |

● : Standard stock ○ : Made-to-Order

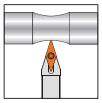
## SVPB External Turning Shank - With Offset

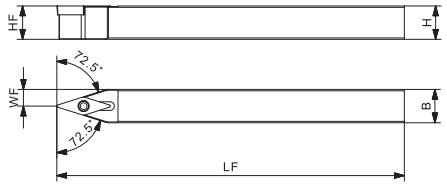





| Product code | Dimension (mm) | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | R | L | Screw | Wrench |
| **SVPBR/L 1010JX-11** | 10 | 10 | 10 | 120 | 14.5 | ● | ● | SP025065 | FT-TP08 |
| **SVPBR/L 1212JX-11** | 12 | 12 | 12 | 120 | 16.5 | ● | ● | | |
| **SVPBR/L 1616JX-11** | 16 | 16 | 16 | 120 | 20.5 | ● | ● | | |
| **SVPBR/L 2020K-11** | 20 | 20 | 20 | 125 | 25 | ● | ● | | |

## SVVBN External Turning Shank - Neutral





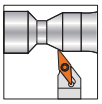

| Product code | Dimension (mm) | | | | | Stock | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | N | Screw | Wrench |
| **SVVBN 1010JX-11** | 10 | 10 | 10 | 120 | 5 | ● | SP025065 | FT-TP08 |
| **SVVBN 1212JX-11** | 12 | 12 | 12 | 120 | 6 | ● | | |
| **SVVBN 1616JX-11** | 16 | 16 | 16 | 120 | 8 | ● | | |
| **SVVBN 2020K-11** | 20 | 20 | 20 | 125 | 10 | ● | | |

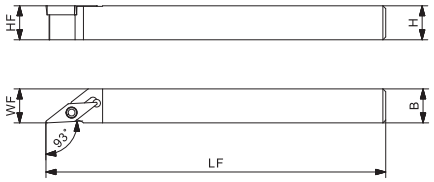
## Applicable Insert

| Applicaiton | Finishing | Finishing | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|---|---|
| Insert shape / Product code | F | M | Y | LF | UF |
| | | | | | |
| **SVPBR/L···-11**<br>**SVVBN ···-11** | VBET 1103 | VBET 1103 | VBET 1103 | VBGT 1103 | VBGT 1103 |
| Reference page | P91 | P92 | P92 | P90 | P90 |

● : Standard stock ○ : Made-to-Order

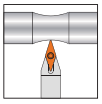
## SVJC External Turning Shank - Without Offset

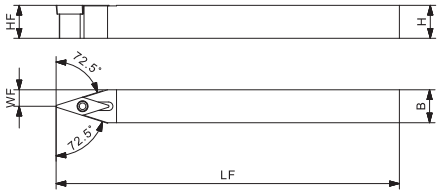





| Product code | Dimension (mm) | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | R | L | Screw | Wrench |
| **SVJCR/L 1010JX-11F** | 10 | 10 | 10 | 120 | 10 | ● | ● | SP025065 | FT-TP08 |
| **SVJCR/L 1212JX-11F** | 12 | 12 | 12 | 120 | 12 | ● | ● | | |
| **SVJCR/L 1616JX-11F** | 16 | 16 | 16 | 120 | 16 | ● | ● | | |
| **SVJCR/L 2020JX-11F** | 20 | 20 | 20 | 120 | 20 | ● | ● | | |

## SVVCN External Turning Shank - Neutral





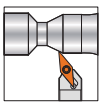

| Product code | Dimension (mm) | | | | | Stock | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | N | Screw | Wrench |
| **SVVCN 1010JX-11** | 10 | 10 | 10 | 120 | 5 | ● | SP025065 | FT-TP08 |
| **SVVCN 1212JX-11** | 12 | 12 | 12 | 120 | 6 | ● | | |
| **SVVCN 1616JX-11** | 16 | 16 | 16 | 120 | 8 | ● | | |

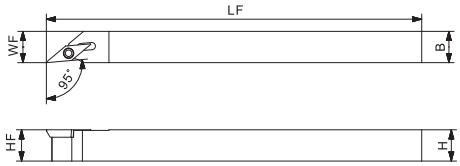
## Applicable Insert

| Applicaiton | Finishing | Finishing | Finishing |
|---|---|---|---|
| Insert shape / Product code | F | LF | UF |
| | | | |
| **SVJCR/L···-11F**<br>**SVVCN ····-11** | VCET 1103 | VCGT 1103 | VCGT 1103 |
| Reference page | P93 | P93 | P93 |

● : Standard stock ○ : Made-to-Order

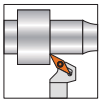
## SVLP External Turning Shank - Without Offset

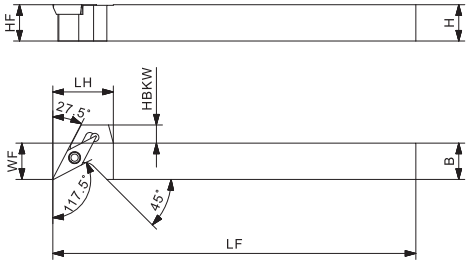





| Product code | Dimension (mm) | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | R | L | Screw | Wrench |
| **SVLPR/L 1010JX-08F** | 10 | 10 | 10 | 120 | 10 | ● | ● | SP020049 | FT-TP06 |
| **SVLPR/L 1212JX-08F** | 12 | 12 | 12 | 120 | 12 | ● | ● | | |
| **SVLPR/L 1616JX-08F** | 16 | 16 | 16 | 120 | 16 | ● | ● | | |
| **SVLPR/L 1212JX-11F** | 10 | 10 | 10 | 120 | 10 | ● | ● | SP025065 | FT-TP08 |
| **SVLPR/L 1616JX-11F** | 12 | 12 | 12 | 120 | 12 | ● | ● | | |
| **SVLPR/L 2020K-11F** | 16 | 16 | 16 | 120 | 16 | ● | ● | | |

## SVPP External Turning Shank - Step Style






| Product code | Dimension (mm) | | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | LH | WF | HBKW | R | L | Screw | Wrench |
| **SVPPR/L 1010JX-08F** | 10 | 10 | 10 | 120 | 16 | 10 | 4 | ● | ● | SP020049 | FT-TP06 |
| **SVPPR/L 1212JX-08F** | 12 | 12 | 12 | 120 | 16 | 12 | 2 | ● | ● | | |
| **SVPPR/L 1616JX-08F** | 16 | 16 | 16 | 120 | 20 | 16 | - | ● | ● | | |
| **SVPPR/L 1010JX-11F** | 10 | 10 | 10 | 120 | 20 | 10 | 8 | ● | ● | SP025065 | FT-TP08 |
| **SVPPR/L 1212JX-11F** | 12 | 12 | 12 | 120 | 20 | 12 | 6 | ● | ● | | |
| **SVPPR/L 1616JX-11F** | 16 | 16 | 16 | 120 | 20 | 16 | 2 | ● | ● | | |

## Applicable Insert

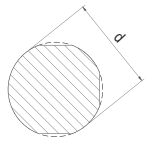
| Applicaiton | Finishing | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|---|
| Insert shape / Product code | F | M | LF | UF |
| **SVLPR/L···-08F**<br>**SVPPR/L···-08F** | VPET 0802 | VPET 0802 | - | - |
| **SVLPR/L···-11F**<br>**SVPPR/L···-11F** | - | VPET 1103 | VPGT 1103 | VPGT 1103 |
| Reference page | P94 | P94 | P94 | P94 |

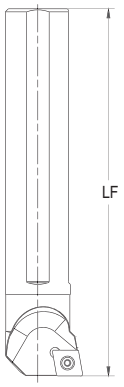
● : Standard stock ○ : Made-to-Order

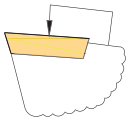
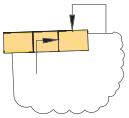
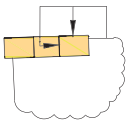
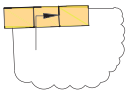
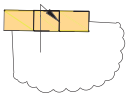
## External Sleeve Holder Denomination System

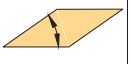
| S | 20 | JX | S | C |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

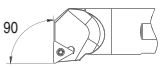
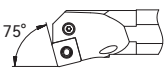
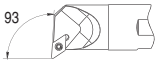
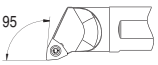
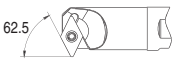
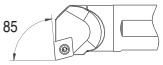
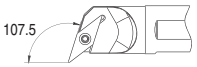
| 1- Holder Structure | |
|---|---|
| A | Steel shank with internal coolant |
| C | Carbide |
| E | Carbide with internal coolant |
| S | Steel shank |

| 2- Holder Diameter (mm) | | | |
|---|---|---|---|
|  | 06 = 6 | 16 = 16 | 25.0 = 25.4 |
| | 08 = 8 | 19.0 = 19.05 | 32 = 32 |
| | 10 = 10 | 20 = 20 | 40 = 40 |
| | 12 = 12 | 22 = 22 | 50 = 50 |
| | 15.0 = 15.875 | 25 = 25 | |

| 3- Holder Length (mm) | | |
|---|---|---|
|  | E=70 | K=125 |
| | F=80 | L=140 |
| | FX=85 | M=150 |
| | G=90 | N=160 |
| | H=100 | P=170 |
| | J=110 | Q=180 |
| | JX=120 | R=200 |

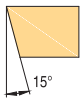
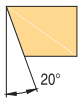
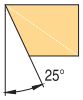
| 4- Clamping Type | | | | |
|---|---|---|---|---|
| C: Top clamp | M: Top wedge clamping | D: Rigid clamping | P: lever clamping | S: Screw clamping |
|  |  |  |  |  |

| 5- Insert Shape | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| C | D | H | K | O | R | S | T | V | W |
| 80° | 55° | 120° | 55° | 135° | 360° | 90° | 60° |  35° | 80° |

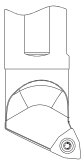
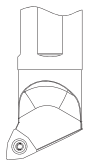
| 6- Approach Angle | | | | | | | |
|---|---|---|---|---|---|---|---|
| F |  90 | S | 45 | K |  75° | U |  93 |
| L |  95 | W |  62.5 | Y |  85 | Q |  107.5 |

| L | C | L | 09 |
|---|---|---|---|
| 6 | 7 | 8 | 9 |

**7- Clearance Angle**

| B | C | D | E |
|---|---|---|---|
| | |   |   |
| **F** | **N** | **P** | **O** |
|   | | | Other clearance angle |

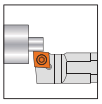
**8- Hand of Tool**

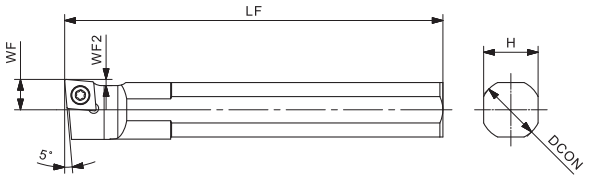
| | |
|---|---|
| R Right hand |  |
| L Left hand |  |

**9- Length of Cutting Edge**

| C、D、E、M、V | H | O |
|---|---|---|
| | | |
| **R** | **S** | **T** | **W** |
| | | | |

## External Sleeve Holder -Suitable for C Type Insert





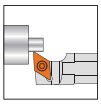

| Product code | Dimension (mm) | | | | | Stock | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | DCON | LF | H | WF | WF2 | L | Screw | Wrench |
| **S12F-SCLCL06** | 12 | 80 | 11 | 6 | 1 | ● | SP025065 | FT-TP08 |
| **S14H-SCLCL06** | 14 | 100 | 13 | 6 | 1 | ● | | |
| **S15.0H-SCLCL06** | 15.875 | 100 | 15 | 6 | 1 | ● | | |
| **S16H-SCLCL06** | 16 | 100 | 15 | 6 | 1 | ● | | |
| **S19.0JX-SCLCL06** | 19.05 | 120 | 17 | 6 | 1 | ● | | |
| **S20JX-SCLCL06** | 20 | 120 | 18 | 6 | 1 | ● | | |
| **S19.0JX-SCLCL09** | 19.05 | 120 | 17 | 10 | 2 | ● | SP040090X | FT-TP15 |
| **S20JX-SCLCL09** | 20 | 120 | 18 | 10 | 2 | ● | | |
| **S22JX-SCLCL09** | 22 | 120 | 20 | 10 | 2 | ● | | |
| **S25JX-SCLCL09** | 25 | 120 | 23 | 10 | 2 | ● | | |
| **S25.0JX-SCLCL09** | 25.4 | 120 | 23 | 10 | 2 | ● | | |

## Applicable Insert

| Applicaiton | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|
| Insert shape / Product code | M | LF | UF |
| | | | |
| **S-SCLC06** | CCET 0602 | CCGT 0602 | CCGT 0602 |
| **S-SCLC09** | CCET 09T3 | CCGT 09T3 | CCGT 09T3 |
| Reference page | P79 | P76 | P76 |

● : Standard stock ○ : Made-to-Order

## External Sleeve Holder-Suitable for D Type Insert



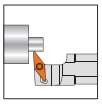
| Product code | Dimension (mm) | | | | | Stock | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | DCON | LF | H | WF | WF2 | L | Screw | Wrench |
| **S12F-SDUCL07** | 12 | 80 | 11 | 6 | 3.8 | ● | SP025065 | FT-TP08 |
| **S14H-SDUCL07** | 14 | 100 | 13 | 6 | 3.8 | ● | | |
| **S15.0H-SDUCL07** | 15.875 | 100 | 15 | 6 | 3.8 | ● | | |
| **S16H-SDUCL07** | 16 | 100 | 15 | 6 | 3.8 | ● | | |
| **S19.0JX-SDUCL07** | 19.05 | 120 | 17 | 6 | 3.8 | ● | | |
| **S20JX-SDUCL07** | 20 | 120 | 18 | 6 | 3.8 | ● | | |
| **S19.0JX-SDUCL11** | 19.05 | 120 | 17 | 10 | 5.8 | ● | SP040090X | FT-TP15 |
| **S20JX-SDUCL11** | 20 | 120 | 20 | 10 | 5.8 | ● | | |
| **S22JX-SDUCL11** | 22 | 120 | 20 | 10 | 5.8 | ● | | |
| **S25JX-SDUCL11** | 25 | 120 | 23 | 10 | 5.8 | ● | | |
| **S25.0JX-SDUCL11** | 25.4 | 120 | 23 | 10 | 5.8 | ● | | |

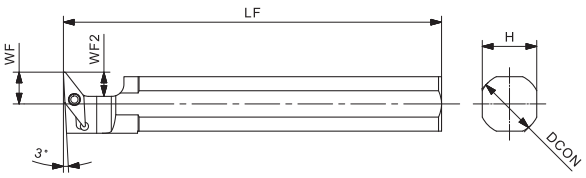
## Applicable Insert

| Applicaiton | Finishing | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|---|
| Insert shape / Product code | F | M | LF | UF |
| **S-SDUCL07** | DCET 0702 | DCET 0702 | DCGT 0702 | DCGT 0702 |
| **S-SDUCL11** | DCET 11T3 | DCET 11T3 | DCGT 11T3 | DCGT 11T3 |
| Reference page | P82 | P83 | P80 | P80 |

● : Standard stock ○ : Made-to-Order

## External Sleeve Holder-Suitable for V Type Insert





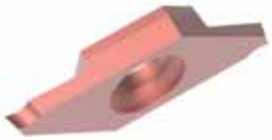

| Product code | Dimension (mm) | | | | | Stock | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | DCON | LF | H | WF | WF2 | L | Screw | Wrench |
| **S12F-SVUPL08** | 12 | 80 | 11 | 7.5 | 5.5 | ● | SP020049 | FT-TP06 |
| **S14H-SVUPL08** | 14 | 100 | 13 | 7.5 | 5.5 | ● | | |
| **S15.0H-SVUPL08** | 15.875 | 100 | 15 | 8 | 5.5 | ● | | |
| **S16H-SVUPL08** | 16 | 100 | 15 | 8 | 5.5 | ● | | |
| **S19.0JX-SVUBL11** | 19.05 | 120 | 17 | 10.5 | 8 | ● | SP025065 | FT-TP08 |
| **S20JX-SVUBL11** | 20 | 120 | 18 | 10.5 | 8 | ● | | |
| **S22JX-SVUBL11** | 22 | 120 | 20 | 10.5 | 8 | ● | | |
| **S25JX-SVUBL11** | 25 | 120 | 23 | 10.5 | 8 | ● | | |
| **S25.0JX-SVUBL11** | 25.4 | 120 | 23 | 10.5 | 8 | ● | | |

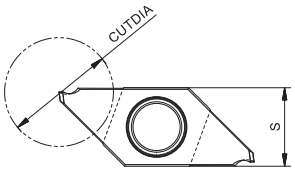
## Applicable Insert

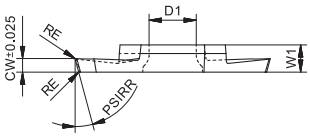
| Applicaiton | Finishing | Finishing | Finishing | Finishing | Semi-finishing--Finishing |
|---|---|---|---|---|---|
| Insert shape / Product code | F | M | Y | LF | UF |
| | | | | | |
| **S-SVUPL08** | VPET 0802 | VPET 0802 | - | - | - |
| **S-SVUBL11** | VBET 1103 | VBET 1103 | VBET 1103 | VBGT 1103 | VBGT 1103 |
| Reference page | P91 | P92 | P92 | P90 | P90 |

● : Standard stock ○ : Made-to-Order

## Parting off Insert



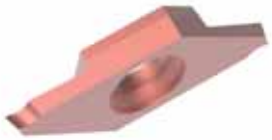


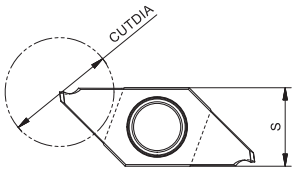



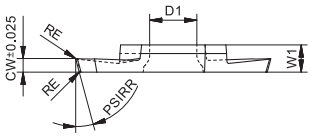

| Product code | Dimension (mm) | | | | | | | | Grade | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CW | CUTDIA | RE | PSIRR | GAN | W1 | S | D1 | AP301U | AP301M |
| **ASWP 09R050D05-F** | 0.5 | 5 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09L050D05-F** | 0.5 | 5 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R070D08-F** | 0.7 | 8 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L070D08-F** | 0.7 | 8 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09R100D12-F** | 1 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L100D12-F** | 1 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R120D12-F** | 1.2 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L120D12-F** | 1.2 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09R150D12-F** | 1.5 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L150D12-F** | 1.5 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09R200D12-F** | 2 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09L200D12-F** | 2 | 12 | 0.03 | 0° | 15° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09R050D05-F16R** | 0.5 | 5 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09L050D05-F16R** | 0.5 | 5 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R070D08-F16R** | 0.7 | 8 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L070D08-F16R** | 0.7 | 8 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R100D12-F16R** | 1 | 12 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L100D12-F16R** | 1 | 12 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09R120D12-F16R** | 1.2 | 12 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09L120D12-F16R** | 1.2 | 12 | 0.03 | 16° | 25° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R150D12-F16R** | 1.5 | 12 | 0.03 | 16° | 15° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L150D12-F16R** | 1.5 | 12 | 0.03 | 16° | 15° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09R200D12-F16R** | 2 | 12 | 0.03 | 16° | 15° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L200D12-F16R** | 2 | 12 | 0.03 | 16° | 15° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09R100D12-M** | 1 | 12 | 0.08 | 0° | 12° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09L100D12-M** | 1 | 12 | 0.08 | 0° | 12° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09R150D12-M** | 1.5 | 12 | 0.08 | 0° | 12° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L150D12-M** | 1.5 | 12 | 0.08 | 0° | 12° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09R200D12-M** | 2 | 12 | 0.08 | 0° | 12° | 3 | 8.7 | 5.2 | ● | ○ |
| **ASWP 09L200D12-M** | 2 | 12 | 0.08 | 0° | 12° | 3 | 8.7 | 5.2 | ○ | ○ |

● : Standard stock ○ : Made-to-Order

## Parting off Insert



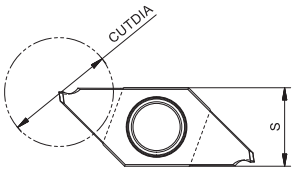


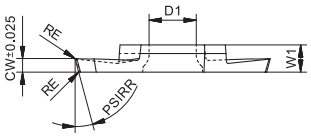




| Product code | Dimension (mm) | | | | | | | | Grade | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CW | CUTDIA | RE | PSIRR | GAN | W1 | S | D1 | AP301U | AP301M |
| **ASWP 09R100D12-M16R** | 1 | 12 | 0.08 | 16° | 12° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L100D12-M16R** | 1 | 12 | 0.08 | 16° | 12° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R150D12-M16R** | 1.5 | 12 | 0.08 | 16° | 12° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L150D12-M16R** | 1.5 | 12 | 0.08 | 16° | 12° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09R200D12-M16R** | 2 | 12 | 0.08 | 16° | 12° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L200D12-M16R** | 2 | 12 | 0.08 | 16° | 12° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R050D05-T** | 0.5 | 5 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09L050D05-T** | 0.5 | 5 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R070D08-T** | 0.7 | 8 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWP 09L070D08-T** | 0.7 | 8 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R100D12-T** | 1 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ● | ○ |
| **ASWP 09L100D12-T** | 1 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09R120D12-T** | 1.2 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L120D12-T** | 1.2 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R150D12-T** | 1.5 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L150D12-T** | 1.5 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R200D12-T** | 2 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L200D12-T** | 2 | 12 | 0 | 0° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R050D05-T20R** | 0.5 | 5 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L050D05-T20R** | 0.5 | 5 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R070D08-T20R** | 0.7 | 8 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L070D08-T20R** | 0.7 | 8 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R100D12-T20R** | 1 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L100D12-T20R** | 1 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R120D12-T20R** | 1.2 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09L120D12-T20R** | 1.2 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R150D12-T20R** | 1.5 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L150D12-T20R** | 1.5 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWP 09R200D12-T20R** | 2 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ● | ● |
| **ASWP 09L200D12-T20R** | 2 | 12 | 0 | 20° | 0° | 3 | 8.7 | 5.2 | ○ | ○ |

● : Standard stock ○ : Made-to-Order

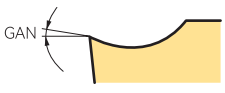
## Parting off Insert




| Product code | Dimension (mm) | | | | | | | | Grade | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CW | CUTDIA | RE | PSIRR | GAN | W1 | S | D1 | AP301U | AP301M |
| **ASWP 10R150D16-F** | 1.5 | 16 | 0.05 | 0° | 20° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10L150D16-F** | 1.5 | 16 | 0.05 | 0° | 20° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10R200D16-F** | 2 | 16 | 0.05 | 0° | 20° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10L200D16-F** | 2 | 16 | 0.05 | 0° | 20° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10R150D16-F16R** | 1.5 | 16 | 0.05 | 16° | 20° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10L150D16-F16R** | 1.5 | 16 | 0.05 | 16° | 20° | 4 | 9.5 | 5.2 | ○ | ○ |
| **ASWP 10R200D16-F16R** | 2 | 16 | 0.05 | 16° | 20° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10L200D16-F16R** | 2 | 16 | 0.05 | 16° | 20° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10R150D16-M** | 1.5 | 16 | 0.08 | 0° | 12° | 4 | 9.5 | 5.2 | ○ | ○ |
| **ASWP 10L150D16-M** | 1.5 | 16 | 0.08 | 0° | 12° | 4 | 9.5 | 5.2 | ○ | ○ |
| **ASWP 10R200D16-M** | 2 | 16 | 0.08 | 0° | 12° | 4 | 9.5 | 5.2 | ● | ○ |
| **ASWP 10L200D16-M** | 2 | 16 | 0.08 | 0° | 12° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10R150D16-M16R** | 1.5 | 16 | 0.08 | 16° | 12° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10L150D16-M16R** | 1.5 | 16 | 0.08 | 16° | 12° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10R200D16-M16R** | 2 | 16 | 0.08 | 16° | 12° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10L200D16-M16R** | 2 | 16 | 0.08 | 16° | 12° | 4 | 9.5 | 5.2 | ○ | ○ |
| **ASWP 10R150D16-T** | 1.5 | 16 | 0 | 0° | 0° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10L150D16-T** | 1.5 | 16 | 0 | 0° | 0° | 4 | 9.5 | 5.2 | ○ | ○ |
| **ASWP 10R200D16-T** | 2 | 16 | 0 | 0° | 0° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10L200D16-T** | 2 | 16 | 0 | 0° | 0° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10R150D16-T20R** | 1.5 | 16 | 0 | 20° | 0° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10L150D16-T20R** | 1.5 | 16 | 0 | 20° | 0° | 4 | 9.5 | 5.2 | ○ | ● |
| **ASWP 10R200D16-T20R** | 2 | 16 | 0 | 20° | 0° | 4 | 9.5 | 5.2 | ● | ● |
| **ASWP 10L200D16-T20R** | 2 | 16 | 0 | 20° | 0° | 4 | 9.5 | 5.2 | ○ | ○ |

## Descriptions of Geometry Edge Shape



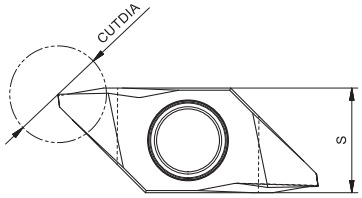

| Geometry | Rake Angle/GAN |
|---|---|
| ASWP 09...F | 15 |
| ASWP 09...F16R | 25 |
| ASWP 10...F/F16R | 20 |
| ASWP.....M/M16R | 12 |
| ASWP.....T/T20R | 0 |

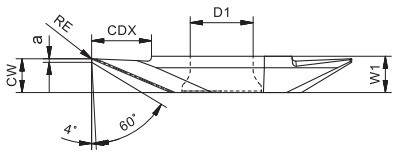
## Recommended Cutting Parameters

| Machining Material | Recommend ed Grade | Linear Speed Vc (m/min) | Feed Rate f (mm/ rev) |
|---|---|---|---|
| **P** | AP301U | 70-150 | 0.01-0.03 |
| **M** | AP301M | 60-100 | 0.01-0.03 |

● : Standard stock ○ : Made-to-Order

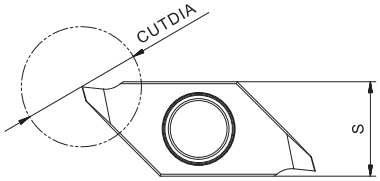
## Backturning Insert

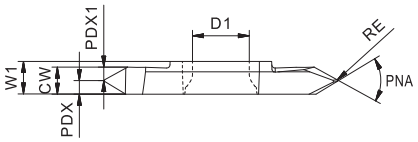



| Product code | Dimension (mm) | | | | | | | Grade | |
|---|---|---|---|---|---|---|---|---|---|
| | CW | a | CDX | W1 | S | D1 | RE | AP301U | AP301M |
| **ASWB 09R150005-FR** | 1.5 | 0.25 | 2.6 | 3 | 8.7 | 5.2 | 0.05 | ○ | ● |
| **ASWB 09R280005-FR** | 2.8 | 0.3 | 4.6 | 3 | 8.7 | 5.2 | 0.05 | ○ | ● |
| **ASWB 09L280005-FR** | 2.8 | 0.3 | 4.6 | 3 | 8.7 | 5.2 | 0.05 | ○ | ● |
| **ASWB 09R280010-FR** | 2.8 | 0.3 | 4.6 | 3 | 8.7 | 5.2 | 0.1 | ● | ● |
| **ASWB 09L280010-FR** | 2.8 | 0.3 | 4.6 | 3 | 8.7 | 5.2 | 0.1 | ○ | ● |
| **ASWB 10R380005-FR** | 3.8 | 0.3 | 6.3 | 4 | 9.5 | 5.2 | 0.05 | ○ | ● |
| **ASWB 10L380005-FR** | 3.8 | 0.3 | 6.3 | 4 | 9.5 | 5.2 | 0.05 | ○ | ● |
| **ASWB 10R380010-FR** | 3.8 | 0.3 | 6.3 | 4 | 9.5 | 5.2 | 0.1 | ○ | ● |
| **ASWB 10L380010-FR** | 3.8 | 0.3 | 6.3 | 4 | 9.5 | 5.2 | 0.1 | ○ | ● |

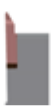
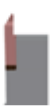
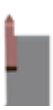
## Threading Insert




| Product code | Angle | Applicable Thread | | Dimension (mm) | | | | | | Grade | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PNA | mm | Thread/Inch | PDX | RE | CW | W1 | S | D1 | AP301U | AP301M |
| **ASWT 09R60000-FR** | 60 | 0.2~0.6 | 64~48 | 0.4 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ● | ● |
| **ASWT 09R60000-FL** | 60 | 0.2~0.6 | 64~48 | 2.1 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWT 09R60005-FR** | 60 | 0.5~1.25 | 48~24 | 0.8 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ● | ● |
| **ASWT 09R60005-FL** | 60 | 0.5~1.25 | 48~24 | 1.7 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWT 09R60010-FN** | 60 | 1.0~1.5 | 24~18 | 1.25 | 0.1 | 2.5 | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWT 09R55005-FR** | 55 | - | 40~16 | 0.8 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWT 09R55005-FL** | 55 | - | 40~16 | 1.7 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ○ | ○ |
| **ASWT 09L60000-FR** | 60 | 0.2~0.6 | 64~48 | 2.1 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ○ | ● |
| **ASWT 09L60000-FL** | 60 | 0.2~0.6 | 64~48 | 0.4 | 0.05 | 2.5 | 3 | 8.7 | 5.2 | ○ | ○ |

## Nose Position Fig.

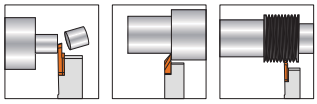
| Code | -FR | -FL | -FN |
|---|---|---|---|
| **Fig. (Right-hand tool)** |  |  |  |

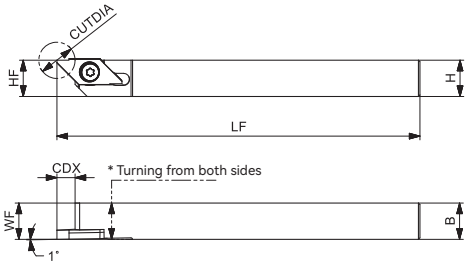
## ASWT Insert Denomination System

| **ASWT** | 09 | R | 60 | 005 | - | F | R |
|---|---|---|---|---|---|---|---|
| **Series Name** | Insert dimensions | Insert direction | Thread angle | Nose Rounding Radius | | Sharp Type | Nose position |

● : Standard stock ○ : Made-to-Order

## ASW Multifunctional Tool Holder





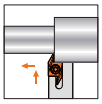

| Product code | Dimension (mm) | | | | | | | Stock | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | HF | B | LF | LH | WF | CDX | R | L | Screw | Wrench |
| **ASWSR/L 1010-09** | 10 | 10 | 10 | 120 | 15 | 10 | 6 | ○ | ○ | SP04509357 | FT-TP10 |
| **ASWSR/L 1212-09** | 12 | 12 | 12 | 120 | - | 12 | 6 | ● | ● | | |
| **ASWSR/L 1616-09** | 16 | 16 | 16 | 120 | - | 16 | 6 | ● | ● | | |
| **ASWSR/L 2020-09** | 20 | 20 | 20 | 120 | - | 20 | 6 | ● | ● | | |
| **ASWSR/L 1010-10** | 10 | 10 | 10 | 120 | 20 | 10 | 8 | ○ | ○ | | |
| **ASWSR/L 1212-10** | 12 | 12 | 12 | 120 | - | 12 | 8 | ● | ● | | |
| **ASWSR/L 1616-10** | 16 | 16 | 16 | 120 | - | 16 | 8 | ● | ● | | |
| **ASWSR/L 2020-10** | 20 | 20 | 20 | 120 | - | 20 | 8 | ● | ● | | |

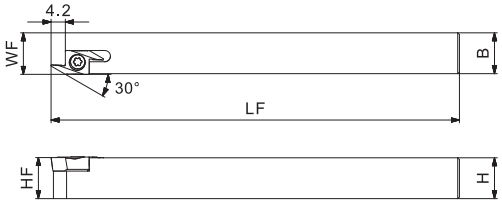
## Applicable Insert

| Applicaiton | Parting off | Backturning | Threading |
|---|---|---|---|
| Insert shape / Product code | | | |
| **ASWSR/L···-09** | ASWP 09R/L | ASWB 09R/L | ASWT 09R/L |
| **ASWSR/L···-10** | ASWP 10R/L | ASWB 10R/L | - |
| Reference page | P167 | P170 | P170 |

● : Standard stock ○ : Made-to-Order

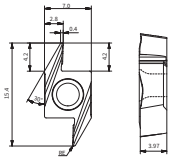
## ABF Backturning Tool Hoder





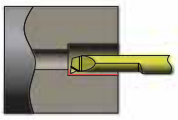

| Product code | Dimension (mm) | | | | | Stock | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | H | B | HF | LF | WF | R | Screw | Wrench |
| **ABFSR 1010-07** | 10 | 10 | 10 | 120 | 10.2 | ● | SP030082 | FT-TP09 |
| **ABFSR 1212-07** | 12 | 12 | 12 | 120 | 12.2 | ● | | |
| **ABFSR 1616-07** | 16 | 16 | 16 | 120 | 16.2 | ● | | |

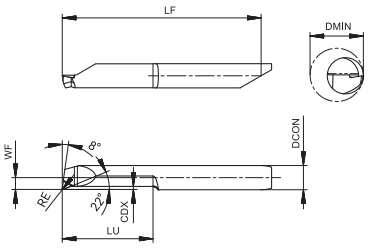
## ABF Backturning Insert

| Insert | Dimension (mm) | Product code | Dimension (mm) | Grade |
|---|---|---|---|---|
| | | | RE | AP301M |
| |  | **ABF 07R280005-FR** | 0.05 | ● |
| | | **ABF 07R280010-FR** | 0.1 | ● |
| | | **ABF 07R280015-FR** | 0.15 | ● |
| | | **ABF 07R280020-FR** | 0.2 | ● |

● : Standard stock ○ : Made-to-Order

## ASIB T Type-Small Dia. Boring Tool

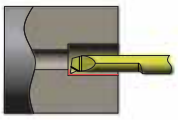


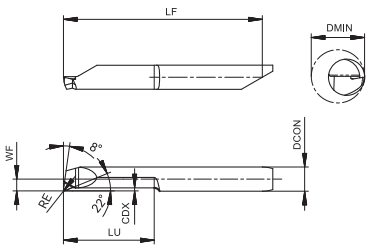



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | RE | WF | LF | DMIN | LU | CDX | R | L |
| **ASIBR/L 04T000-0602** | 4 | 0 | 0.3 | 27.3 | 0.6 | 2.5 | 0.1 | ● | ○ |
| **ASIBR/L 04T000-0703** | 4 | 0 | 0.3 | 27.3 | 0.7 | 3.5 | 0.1 | ○ | ○ |
| **ASIBR/L 04T000-0804** | 4 | 0 | 0.4 | 27.3 | 0.8 | 4 | 0.1 | ○ | ○ |
| **ASIBR/L 04T000-0905** | 4 | 0 | 0.4 | 27.3 | 0.9 | 5 | 0.1 | ● | ○ |
| **ASIBR/L 04T005-1004** | 4 | 0.05 | 0.5 | 27.3 | 1 | 4 | 0.1 | ● | ○ |
| **ASIBR/L 04T005-1006** | 4 | 0.05 | 0.5 | 27.3 | 1 | 6 | 0.1 | ○ | ○ |
| **ASIBR/L 04T010-1004** | 4 | 0.1 | 0.5 | 27.3 | 1 | 4 | 0.1 | ● | ○ |
| **ASIBR/L 04T010-1006** | 4 | 0.1 | 0.5 | 27.3 | 1 | 6 | 0.1 | ● | ○ |
| **ASIBR/L 04T005-1706** | 4 | 0.05 | 0.7 | 27.3 | 1.7 | 6 | 0.2 | ● | ○ |
| **ASIBR/L 04T005-1709** | 4 | 0.05 | 0.7 | 27.3 | 1.7 | 9 | 0.2 | ● | ○ |
| **ASIBR/L 04T010-1706** | 4 | 0.1 | 0.7 | 27.3 | 1.7 | 6 | 0.2 | ● | ○ |
| **ASIBR/L 04T010-1709** | 4 | 0.1 | 0.7 | 27.3 | 1.7 | 9 | 0.2 | ● | ○ |
| **ASIBR/L 04T005-2206** | 4 | 0.05 | 1 | 27.3 | 2.2 | 6 | 0.2 | ● | ○ |
| **ASIBR/L 04T005-2209** | 4 | 0.05 | 1 | 27.3 | 2.2 | 9 | 0.2 | ● | ○ |
| **ASIBR/L 04T010-2206** | 4 | 0.1 | 1 | 27.3 | 2.2 | 6 | 0.2 | ● | ○ |
| **ASIBR/L 04T010-2209** | 4 | 0.1 | 1 | 27.3 | 2.2 | 9 | 0.2 | ● | ○ |
| **ASIBR/L 04T010-2213** | 4 | 0.1 | 1 | 32.3 | 2.2 | 13 | 0.2 | ● | ● |
| **ASIBR/L 04T003-2710** | 4 | 0.03 | 1.2 | 27.3 | 2.7 | 10 | 0.2 | ● | ○ |
| **ASIBR/L 04T005-2710** | 4 | 0.05 | 1.2 | 27.3 | 2.7 | 10 | 0.2 | ● | ○ |
| **ASIBR/L 04T005-2715** | 4 | 0.05 | 1.2 | 32.3 | 2.7 | 15 | 0.2 | ● | ○ |
| **ASIBR/L 04T015-2710** | 4 | 0.15 | 1.2 | 27.3 | 2.7 | 10 | 0.2 | ● | ○ |
| **ASIBR/L 04T015-2715** | 4 | 0.15 | 1.2 | 32.3 | 2.7 | 15 | 0.2 | ● | ○ |
| **ASIBR/L 04T003-3210** | 4 | 0.03 | 1.5 | 27.3 | 3.2 | 10 | 0.2 | ○ | ○ |
| **ASIBR/L 04T005-3215** | 4 | 0.05 | 1.5 | 32.3 | 3.2 | 15 | 0.2 | ● | ○ |
| **ASIBR/L 04T005-3220** | 4 | 0.05 | 1.5 | 37.3 | 3.2 | 20 | 0.2 | ● | ○ |
| **ASIBR/L 04T015-3210** | 4 | 0.15 | 1.5 | 27.3 | 3.2 | 10 | 0.2 | ● | ○ |
| **ASIBR/L 04T015-3215** | 4 | 0.15 | 1.5 | 32.3 | 3.2 | 15 | 0.2 | ● | ● |
| **ASIBR/L 04T015-3220** | 4 | 0.15 | 1.5 | 37.3 | 3.2 | 20 | 0.2 | ● | ● |
| **ASIBR/L 04T003-4210** | 4 | 0.03 | 2 | 27.3 | 4.2 | 10 | 0.3 | ○ | ○ |
| **ASIBR/L 04T005-4215** | 4 | 0.05 | 2 | 32.3 | 4.2 | 15 | 0.3 | ● | ○ |
| **ASIBR/L 04T005-4220** | 4 | 0.05 | 2 | 37.3 | 4.2 | 20 | 0.3 | ● | ○ |
| **ASIBR/L 04T005-4225** | 4 | 0.05 | 2 | 42.3 | 4.2 | 25 | 0.3 | ● | ○ |
| **ASIBR/L 04T015-4210** | 4 | 0.15 | 2 | 27.3 | 4.2 | 10 | 0.3 | ● | ○ |
| **ASIBR/L 04T015-4215** | 4 | 0.15 | 2 | 32.3 | 4.2 | 15 | 0.3 | ● | ● |
| **ASIBR/L 04T015-4220** | 4 | 0.15 | 2 | 37.3 | 4.2 | 20 | 0.3 | ● | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

## ASIB T Type-Small Dia. Boring Tool

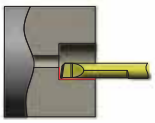


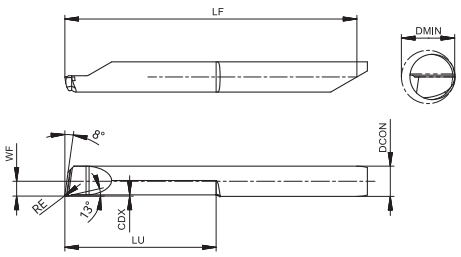



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | RE | WF | LF | DMIN | LU | CDX | R | L |
| **ASIBR/L 04T015-4225** | 4 | 0.15 | 2 | 42.3 | 4.2 | 25 | 0.3 | ● | ○ |
| **ASIBR/L 05T005-5220** | 5 | 0.05 | 2.5 | 42.3 | 5.2 | 20 | 0.5 | ● | ● |
| **ASIBR/L 05T005-5230** | 5 | 0.05 | 2.5 | 52.3 | 5.2 | 30 | 0.5 | ● | ○ |
| **ASIBR/L 05T020-5210** | 5 | 0.2 | 2.5 | 32.3 | 5.2 | 10 | 0.5 | ● | ○ |
| **ASIBR/L 05T020-5215** | 5 | 0.2 | 2.5 | 42.3 | 5.2 | 15 | 0.5 | ● | ○ |
| **ASIBR/L 05T020-5220** | 5 | 0.2 | 2.5 | 42.3 | 5.2 | 20 | 0.5 | ● | ○ |
| **ASIBR/L 05T020-5225** | 5 | 0.2 | 2.5 | 47.3 | 5.2 | 25 | 0.5 | ● | ○ |
| **ASIBR/L 05T020-5230** | 5 | 0.2 | 2.5 | 52.3 | 5.2 | 30 | 0.5 | ● | ○ |
| **ASIBR/L 05T020-5235** | 5 | 0.2 | 2.5 | 57.3 | 5.2 | 35 | 0.5 | ● | ○ |
| **ASIBR/L 05T020-5240** | 5 | 0.2 | 2.5 | 62.3 | 5.2 | 40 | 0.5 | ● | ○ |
| **ASIBR/L 06T005-6220** | 6 | 0.05 | 3 | 42.3 | 6.2 | 20 | 0.5 | ● | ● |
| **ASIBR/L 06T020-6215** | 6 | 0.2 | 3 | 37.3 | 6.2 | 15 | 0.5 | ● | ○ |
| **ASIBR/L 06T020-6220** | 6 | 0.2 | 3 | 42.3 | 6.2 | 20 | 0.5 | ● | ○ |
| **ASIBR/L 06T020-6225** | 6 | 0.2 | 3 | 47.3 | 6.2 | 25 | 0.5 | ○ | ● |
| **ASIBR/L 06T020-6230** | 6 | 0.2 | 3 | 52.3 | 6.2 | 30 | 0.5 | ● | ● |
| **ASIBR/L 06T020-6235** | 6 | 0.2 | 3 | 57.3 | 6.2 | 35 | 0.5 | ● | ○ |
| **ASIBR/L 06T020-6240** | 6 | 0.2 | 3 | 62.3 | 6.2 | 40 | 0.5 | ● | ● |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

## ASIB E Type-Small Dia. Boring Tool

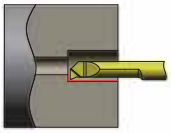


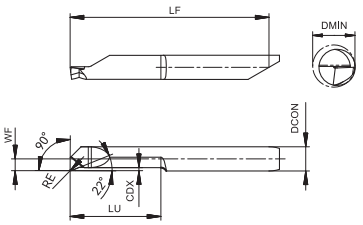



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | RE | WF | LF | DMIN | LU | CDX | R | L |
| **ASIBR 04E008-4230** | 4 | 0.08 | 2 | 52.3 | 4.2 | 30 | 0.5 | ● | - |
| **ASIBR/L 04E015-4210** | 4 | 0.15 | 2 | 27.3 | 4.2 | 10.3 | 0.5 | ● | ○ |
| **ASIBR/L 04E015-4220** | 4 | 0.15 | 2 | 37.3 | 4.2 | 20.3 | 0.5 | ● | ● |
| **ASIBR/L 04E015-4225** | 4 | 0.15 | 2 | 42.3 | 4.2 | 25.3 | 0.5 | ● | ● |
| **ASIBR/L 04E020-4215** | 4 | 0.2 | 2 | 32.3 | 4.2 | 15.3 | 0.3 | ● | ○ |
| **ASIBR 05E008-5240** | 5 | 0.08 | 2.5 | 67.3 | 5.2 | 40 | 0.5 | ● | - |
| **ASIBR/L 05E020-5210** | 5 | 0.2 | 2.5 | 32.3 | 5.2 | 10.2 | 0.6 | ○ | ○ |
| **ASIBR/L 05E020-5215** | 5 | 0.2 | 2.5 | 37.3 | 5.2 | 15 | 0.5 | ● | ○ |
| **ASIBR/L 05E020-5220** | 5 | 0.2 | 2.5 | 42.3 | 5.2 | 20.3 | 0.6 | ● | ○ |
| **ASIBR/L 05E020-5225** | 5 | 0.2 | 2.5 | 47.3 | 5.2 | 25.4 | 0.5 | ● | ○ |
| **ASIBR/L 05E020-5230** | 5 | 0.2 | 2.5 | 52.3 | 5.2 | 30.5 | 0.6 | ○ | ○ |
| **ASIBR 06E008-6245** | 6 | 0.08 | 3 | 72.3 | 6.2 | 45 | 0.5 | ○ | - |
| **ASIBR/L 06E020-6215** | 6 | 0.2 | 3 | 37.3 | 6.2 | 15.2 | 0.8 | ● | ○ |
| **ASIBR/L 06E020-6220** | 6 | 0.2 | 3 | 42.3 | 6.2 | 20.3 | 0.8 | ● | ○ |
| **ASIBR/L 06E020-6225** | 6 | 0.2 | 3 | 47.3 | 6.2 | 25.4 | 0.8 | ● | ○ |
| **ASIBR/L 06E020-6230** | 6 | 0.2 | 3 | 52.3 | 6.2 | 30.5 | 0.5 | ● | ○ |
| **ASIBR/L 06E020-6240** | 6 | 0.2 | 3 | 62.3 | 6.2 | 40 | 0.5 | ● | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

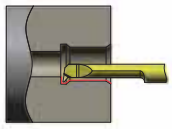
## ASIB S Type-Small Dia. Boring Tool

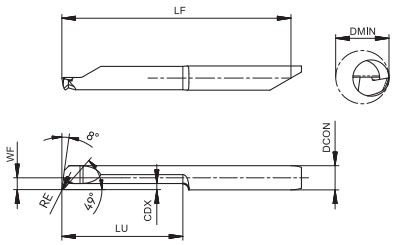





| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | RE | WF | LF | DMIN | LU | APMX | R | L |
| **ASIBR/L 04S015-3212** | 4 | 0.15 | 1.5 | 29.3 | 3.2 | 12 | 0.2 | ● | ○ |
| **ASIBR/L 04S015-4215** | 4 | 0.15 | 2 | 32.3 | 4.2 | 15 | 0.3 | ● | ○ |
| **ASIBR/L 05S020-5210** | 5 | 0.2 | 2.5 | 32.3 | 5.2 | 10 | 0.5 | ○ | ○ |
| **ASIBR/L 05S020-5215** | 5 | 0.2 | 2.5 | 37.3 | 5.2 | 15 | 0.5 | ● | ● |
| **ASIBR/L 05S020-5220** | 5 | 0.2 | 2.5 | 42.3 | 5.2 | 20 | 0.5 | ● | ○ |

## ASIB V Type-Small Dia. Boring Tool

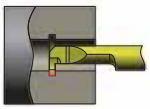


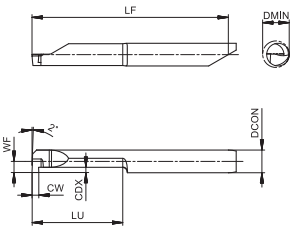



| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | RE | WF | LF | DMIN | LU | APMX | CDX | R | L |
| **ASIBR/L 04V015-4220** | 4 | 0.15 | 2 | 37.3 | 4.2 | 20 | 0.8 | 1 | ● | ● |
| **ASIBR/L 05V015-5225** | 5 | 0.15 | 2.5 | 47.3 | 5.2 | 25 | 1 | 1.2 | ● | ● |
| **ASIBR/L 06V015-6230** | 6 | 0.15 | 3 | 52.3 | 6.2 | 30 | 1.8 | 2 | ● | ● |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

## ASIG S Type-Small Dia. Internal Grooving Tool

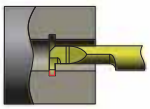


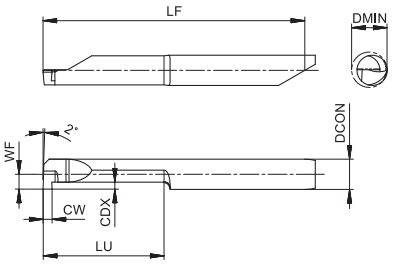



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | LF | DMIN | LU | CDX | R | L |
| **ASIGR/L 04S050-2006** | 4 | 0.5 | 2 | 23.3 | 2 | 6 | 0.4 | ● | ○ |
| **ASIGR/L 04S050-2009** | 4 | 0.5 | 2 | 26.3 | 2 | 9 | 0.4 | ● | ○ |
| **ASIGR/L 04S050-2012** | 4 | 0.5 | 2 | 29.3 | 2 | 12 | 0.4 | ● | ○ |
| **ASIGR/L 04S070-3008** | 4 | 0.7 | 1.4 | 25.3 | 3 | 8 | 0.6 | ● | ● |
| **ASIGR/L 04S070-3012** | 4 | 0.7 | 1.4 | 29.3 | 3 | 12 | 0.6 | ● | ○ |
| **ASIGR/L 04S070-3016** | 4 | 0.7 | 1.4 | 33.3 | 3 | 16 | 0.6 | ● | ○ |
| **ASIGR/L 04S100-4210** | 4 | 1 | 2 | 27.3 | 4.2 | 10 | 0.8 | ● | ○ |
| **ASIGR/L 04S100-4215** | 4 | 1 | 2 | 32.3 | 4.2 | 15 | 0.8 | ● | ○ |
| **ASIGR/L 04S100-4220** | 4 | 1 | 2 | 37.3 | 4.2 | 20 | 0.8 | ● | ○ |
| **ASIGR/L 05S100-5210** | 5 | 1 | 2.5 | 32.3 | 5.2 | 10 | 1 | ● | ○ |
| **ASIGR/L 05S100-5215** | 5 | 1 | 2.5 | 37.3 | 5.2 | 15 | 1 | ● | ○ |
| **ASIGR/L 05S100-5220** | 5 | 1 | 2.5 | 42.3 | 5.2 | 20 | 1 | ● | ○ |
| **ASIGR/L 05S100-5225** | 5 | 1 | 2.5 | 47.3 | 5.2 | 25 | 1 | ● | ○ |
| **ASIGR/L 05S100-5230** | 5 | 1 | 2.5 | 52.3 | 5.2 | 30 | 1 | ○ | ○ |
| **ASIGR/L 05S100-5235** | 5 | 1 | 2.5 | 57.3 | 5.2 | 35 | 1 | ● | ○ |
| **ASIGR/L 05S150-5210** | 5 | 1.5 | 2.5 | 32.3 | 5.2 | 10 | 1 | ● | ○ |
| **ASIGR/L 05S150-5215** | 5 | 1.5 | 2.5 | 37.3 | 5.2 | 15 | 1 | ○ | ○ |
| **ASIGR/L 05S150-5220** | 5 | 1.5 | 2.5 | 42.3 | 5.2 | 20 | 1 | ● | ○ |
| **ASIGR/L 05S150-5225** | 5 | 1.5 | 2.5 | 47.3 | 5.2 | 25 | 1 | ○ | ○ |
| **ASIGR/L 05S150-5230** | 5 | 1.5 | 2.5 | 52.3 | 5.2 | 30 | 1 | ○ | ○ |
| **ASIGR/L 05S150-5235** | 5 | 1.5 | 2.5 | 57.3 | 5.2 | 35 | 1 | ○ | ○ |
| **ASIGR/L 05S200-5210** | 5 | 2 | 2.5 | 32.3 | 5.2 | 10 | 1 | ○ | ○ |
| **ASIGR/L 05S200-5215** | 5 | 2 | 2.5 | 37.3 | 5.2 | 15 | 1 | ● | ○ |
| **ASIGR/L 05S200-5220** | 5 | 2 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 05S200-5225** | 5 | 2 | 2.5 | 47.3 | 5.2 | 25 | 1 | ● | ○ |
| **ASIGR/L 05S200-5230** | 5 | 2 | 2.5 | 52.3 | 5.2 | 30 | 1 | ○ | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

## ASIG S Type-Small Dia. Internal Grooving Tool

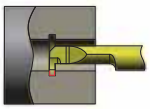


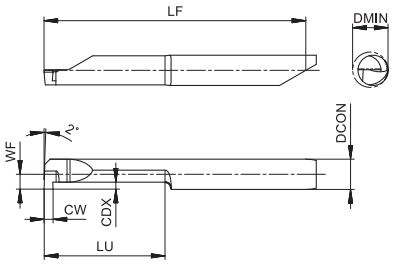



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | LF | DMIN | LU | CDX | R | L |
| **ASIGR/L 06S100-6210** | 6 | 1 | 3 | 32.3 | 6.2 | 10 | 1.8 | ● | ○ |
| **ASIGR/L 06S100-6215** | 6 | 1 | 3 | 37.3 | 6.2 | 15 | 1.8 | ● | ● |
| **ASIGR/L 06S100-6220** | 6 | 1 | 3 | 42.3 | 6.2 | 20 | 1.8 | ● | ○ |
| **ASIGR/L 06S100-6225** | 6 | 1 | 3 | 47.3 | 6.2 | 25 | 1.8 | ● | ○ |
| **ASIGR/L 06S100-6230** | 6 | 1 | 3 | 52.3 | 6.2 | 30 | 1.8 | ● | ○ |
| **ASIGR/L 06S100-6235** | 6 | 1 | 3 | 57.3 | 6.2 | 35 | 1.8 | ○ | ○ |
| **ASIGR/L 06S100-6240** | 6 | 1 | 3 | 62.3 | 6.2 | 40 | 1.8 | ○ | ○ |
| **ASIGR/L 06S150-6210** | 6 | 1.5 | 3 | 32.3 | 6.2 | 10 | 1.8 | ○ | ○ |
| **ASIGR/L 06S150-6215** | 6 | 1.5 | 3 | 37.3 | 6.2 | 15 | 1.8 | ○ | ○ |
| **ASIGR/L 06S150-6220** | 6 | 1.5 | 3 | 42.3 | 6.2 | 20 | 1.8 | ● | ○ |
| **ASIGR/L 06S150-6225** | 6 | 1.5 | 3 | 47.3 | 6.2 | 25 | 1.8 | ● | ○ |
| **ASIGR/L 06S150-6230** | 6 | 1.5 | 3 | 52.3 | 6.2 | 30 | 1.8 | ○ | ○ |
| **ASIGR/L 06S150-6235** | 6 | 1.5 | 3 | 57.3 | 6.2 | 35 | 1.8 | ○ | ○ |
| **ASIGR/L 06S200-6210** | 6 | 2 | 3 | 32.3 | 6.2 | 10 | 1.8 | ○ | ○ |
| **ASIGR/L 06S200-6215** | 6 | 2 | 3 | 37.3 | 6.2 | 15 | 1.8 | ● | ● |
| **ASIGR/L 06S200-6220** | 6 | 2 | 3 | 42.3 | 6.2 | 20 | 1.8 | ● | ○ |
| **ASIGR/L 06S200-6225** | 6 | 2 | 3 | 47.3 | 6.2 | 25 | 1.8 | ● | ○ |
| **ASIGR/L 06S200-6230** | 6 | 2 | 3 | 52.3 | 6.2 | 30 | 1.8 | ● | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

## ASIG S Type-Small Dia. Internal Grooving Tool (For Circlip Groove)

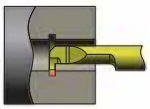


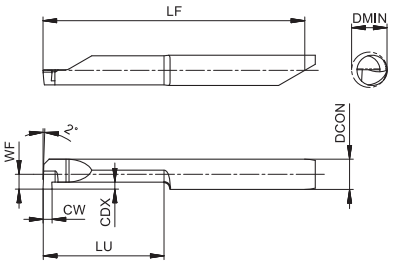



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | LF | DMIN | LU | CDX | R | L |
| **ASIGR/L 04S078-4210** | 4 | 0.78 | 2 | 27.3 | 4.2 | 10 | 0.8 | ○ | ○ |
| **ASIGR/L 04S078-4215** | 4 | 0.78 | 2 | 32.3 | 4.2 | 15 | 0.8 | ○ | ○ |
| **ASIGR/L 04S078-4220** | 4 | 0.78 | 2 | 37.3 | 4.2 | 20 | 0.8 | ○ | ○ |
| **ASIGR/L 04S078-4225** | 4 | 0.78 | 2 | 42.3 | 4.2 | 25 | 0.8 | ○ | ○ |
| **ASIGR/L 05S078-5210** | 5 | 0.78 | 2.5 | 32.3 | 5.2 | 10 | 1 | ○ | ○ |
| **ASIGR/L 05S078-5215** | 5 | 0.78 | 2.5 | 37.3 | 5.2 | 15 | 1 | ○ | ○ |
| **ASIGR/L 05S078-5220** | 5 | 0.78 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 05S078-5225** | 5 | 0.78 | 2.5 | 47.3 | 5.2 | 25 | 1 | ○ | ○ |
| **ASIGR/L 05S078-5230** | 5 | 0.78 | 2.5 | 52.3 | 5.2 | 30 | 1 | ○ | ○ |
| **ASIGR/L 05S078-5235** | 5 | 0.78 | 2.5 | 57.3 | 5.2 | 35 | 1 | ○ | ○ |
| **ASIGR/L 05S117-5210** | 5 | 1.17 | 2.5 | 32.3 | 5.2 | 10 | 1 | ○ | ○ |
| **ASIGR/L 05S117-5215** | 5 | 1.17 | 2.5 | 37.3 | 5.2 | 15 | 1 | ○ | ○ |
| **ASIGR/L 05S117-5220** | 5 | 1.17 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 05S117-5225** | 5 | 1.17 | 2.5 | 47.3 | 5.2 | 25 | 1 | ○ | ○ |
| **ASIGR/L 05S117-5230** | 5 | 1.17 | 2.5 | 52.3 | 5.2 | 30 | 1 | ○ | ○ |
| **ASIGR/L 05S117-5235** | 5 | 1.17 | 2.5 | 57.3 | 5.2 | 35 | 1 | ○ | ○ |
| **ASIGR/L 05S157-5210** | 5 | 1.57 | 2.5 | 32.3 | 5.2 | 10 | 1 | ○ | ○ |
| **ASIGR/L 05S157-5215** | 5 | 1.57 | 2.5 | 37.3 | 5.2 | 15 | 1 | ○ | ○ |
| **ASIGR/L 05S157-5220** | 5 | 1.57 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 05S157-5225** | 5 | 1.57 | 2.5 | 47.3 | 5.2 | 25 | 1 | ○ | ○ |
| **ASIGR/L 05S157-5230** | 5 | 1.57 | 2.5 | 52.3 | 5.2 | 30 | 1 | ○ | ○ |
| **ASIGR/L 05S198-5210** | 5 | 1.98 | 2.5 | 32.3 | 5.2 | 10 | 1 | ○ | ○ |
| **ASIGR/L 05S198-5215** | 5 | 1.98 | 2.5 | 37.3 | 5.2 | 15 | 1 | ○ | ○ |
| **ASIGR/L 05S198-5220** | 5 | 1.98 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 05S198-5225** | 5 | 1.98 | 2.5 | 47.3 | 5.2 | 25 | 1 | ○ | ○ |
| **ASIGR/L 05S198-5230** | 5 | 1.98 | 2.5 | 52.3 | 5.2 | 30 | 1 | ○ | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

## ASIG S Type-Small Dia. Internal Grooving Tool (For Circlip Groove)

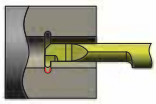


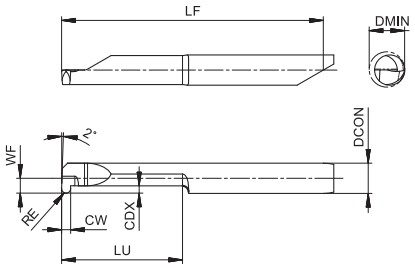



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | LF | DMIN | LU | CDX | R | L |
| **ASIGR/L 06S078-6210** | 6 | 0.78 | 3 | 32.3 | 6.2 | 10 | 1.8 | ○ | ○ |
| **ASIGR/L 06S078-6215** | 6 | 0.78 | 3 | 37.3 | 6.2 | 15 | 1.8 | ○ | ○ |
| **ASIGR/L 06S078-6220** | 6 | 0.78 | 3 | 42.3 | 6.2 | 20 | 1.8 | ○ | ○ |
| **ASIGR/L 06S078-6225** | 6 | 0.78 | 3 | 47.3 | 6.2 | 25 | 1.8 | ○ | ○ |
| **ASIGR/L 06S078-6230** | 6 | 0.78 | 3 | 52.3 | 6.2 | 30 | 1.8 | ○ | ○ |
| **ASIGR/L 06S078-6235** | 6 | 0.78 | 3 | 57.3 | 6.2 | 35 | 1.8 | ○ | ○ |
| **ASIGR/L 06S117-6210** | 6 | 1.17 | 3 | 32.3 | 6.2 | 10 | 1.8 | ○ | ○ |
| **ASIGR/L 06S117-6215** | 6 | 1.17 | 3 | 37.3 | 6.2 | 15 | 1.8 | ○ | ○ |
| **ASIGR/L 06S117-6220** | 6 | 1.17 | 3 | 42.3 | 6.2 | 20 | 1.8 | ○ | ○ |
| **ASIGR/L 06S117-6225** | 6 | 1.17 | 3 | 47.3 | 6.2 | 25 | 1.8 | ○ | ○ |
| **ASIGR/L 06S117-6230** | 6 | 1.17 | 3 | 52.3 | 6.2 | 30 | 1.8 | ○ | ○ |
| **ASIGR/L 06S117-6235** | 6 | 1.17 | 3 | 57.3 | 6.2 | 35 | 1.8 | ○ | ○ |
| **ASIGR/L 06S117-6240** | 6 | 1.17 | 3 | 62.3 | 6.2 | 40 | 1.8 | ○ | ○ |
| **ASIGR/L 06S157-6210** | 6 | 1.57 | 3 | 32.3 | 6.2 | 10 | 1.8 | ○ | ○ |
| **ASIGR/L 06S157-6215** | 6 | 1.57 | 3 | 37.3 | 6.2 | 15 | 1.8 | ○ | ○ |
| **ASIGR/L 06S157-6220** | 6 | 1.57 | 3 | 42.3 | 6.2 | 20 | 1.8 | ○ | ○ |
| **ASIGR/L 06S157-6225** | 6 | 1.57 | 3 | 47.3 | 6.2 | 25 | 1.8 | ○ | ○ |
| **ASIGR/L 06S157-6230** | 6 | 1.57 | 3 | 52.3 | 6.2 | 30 | 1.8 | ○ | ○ |
| **ASIGR/L 06S157-6235** | 6 | 1.57 | 3 | 57.3 | 6.2 | 35 | 1.8 | ○ | ○ |
| **ASIGR/L 06S157-6240** | 6 | 1.57 | 3 | 62.3 | 6.2 | 40 | 1.8 | ○ | ○ |
| **ASIGR/L 06S198-6210** | 6 | 1.98 | 3 | 32.3 | 6.2 | 10 | 1.8 | ○ | ○ |
| **ASIGR/L 06S198-6215** | 6 | 1.98 | 3 | 37.3 | 6.2 | 15 | 1.8 | ● | ○ |
| **ASIGR/L 06S198-6225** | 6 | 1.98 | 3 | 47.3 | 6.2 | 25 | 1.8 | ○ | ○ |
| **ASIGR/L 06S198-6235** | 6 | 1.98 | 3 | 57.3 | 6.2 | 35 | 1.8 | ○ | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

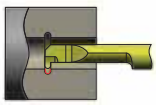
## ASIG R Type-Small Dia. Internal Grooving Tool

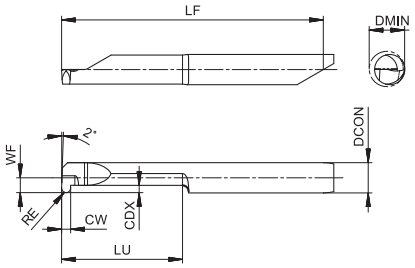





| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | LF | DMIN | LU | CDX | R | L |
| **ASIGR/L 04R100-4215** | 4 | 1 | 2 | 32.3 | 4.2 | 15 | 0.8 | ● | ● |
| **ASIGR/L 05R100-5220** | 5 | 1 | 2.5 | 42.3 | 5.2 | 20 | 1 | ● | ● |
| **ASIGR/L 05R150-5220** | 5 | 1.5 | 2.5 | 42.3 | 5.2 | 20 | 1 | ● | ○ |
| **ASIGR/L 05R200-5220** | 5 | 2 | 2.5 | 42.3 | 5.2 | 20 | 1 | ● | ○ |
| **ASIGR/L 06R100-6225** | 6 | 1 | 3 | 47.3 | 6.2 | 25 | 1.8 | ● | ● |
| **ASIGR/L 06R150-6225** | 6 | 1.5 | 3 | 47.3 | 6.2 | 25 | 1.8 | ● | ○ |
| **ASIGR/L 06R200-6225** | 6 | 2 | 3 | 47.3 | 6.2 | 25 | 1.8 | ● | ● |

## ASIG R Type-Small Dia. Internal Grooving Tool（For Circlip Groove）

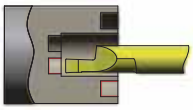


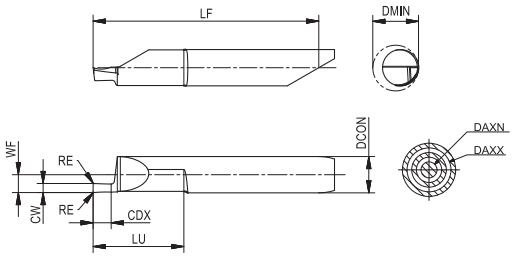



| Product code | Dimension (mm) | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | LF | DMIN | LU | CDX | R | L |
| **ASIGR/L 04R117-4215** | 4 | 1.17 | 2 | 32.3 | 4.2 | 15 | 0.8 | ○ | ○ |
| **ASIGR/L 05R117-5220** | 5 | 1.17 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 05R163-5220** | 5 | 1.63 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 05R198-5220** | 5 | 1.98 | 2.5 | 42.3 | 5.2 | 20 | 1 | ○ | ○ |
| **ASIGR/L 06R117-6225** | 6 | 1.17 | 3 | 47.3 | 6.2 | 25 | 1.8 | ○ | ○ |
| **ASIGR/L 06R163-6225** | 6 | 1.63 | 3 | 47.3 | 6.2 | 25 | 1.8 | ○ | ○ |
| **ASIGR/L 06R198-6225** | 6 | 1.98 | 3 | 47.3 | 6.2 | 25 | 1.8 | ○ | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

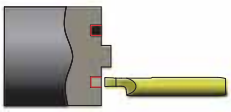
## ASIF A Type - Small Dia. Internal Face Grooving (Inward Deviation)

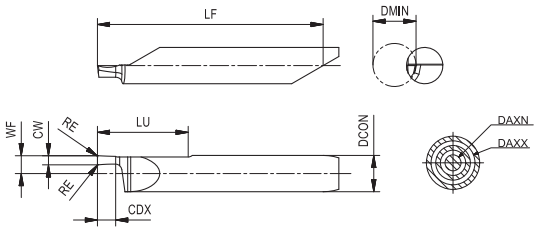





| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | RE | LF | DAXN | LU | CDX | R | L |
| **ASIFR/L 06A100-6215** | 6 | 1 | 3 | 0.15 | 37.3 | 4.2 | 15 | 2 | ● | ○ |
| **ASIFR/L 06A150-6215** | 6 | 1.5 | 3 | 0.15 | 37.3 | 3.2 | 15 | 3 | ● | ○ |
| **ASIFR/L 06A200-6215** | 6 | 2 | 3 | 0.15 | 37.3 | 2.2 | 15 | 4 | ● | ○ |
| **ASIFR/L 06A250-6215** | 6 | 2.5 | 3 | 0.15 | 37.3 | 1.2 | 15 | 5 | ● | ○ |
| **ASIFR/L 06A300-6215** | 6 | 3 | 3 | 0.15 | 37.3 | 0.2 | 15 | 6 | ● | ○ |
| **ASIFR/L 08A200-8015** | 8 | 2 | 3 | 0.2 | 44.3 | 11 | 15 | 15 | ● | ● |
| **ASIFR/L 08A250-8010** | 8 | 2.5 | 3 | 0.2 | 39.3 | 5 | 10 | 10 | ○ | ○ |
| **ASIFR/L 08A300-8010** | 8 | 3 | 3 | 0.2 | 39.3 | 4 | 10 | 10 | ○ | ● |
| **ASIFR/L 08A300-8015** | 8 | 3 | 3 | 0.2 | 44.3 | 9 | 15 | 15 | ● | ○ |
| **ASIFR/L 08A400-8010** | 8 | 4 | 3 | 0.2 | 39.3 | 2 | 10 | 10 | ○ | ○ |
| **ASIFR/L 08A400-8015** | 8 | 4 | 3 | 0.2 | 44.3 | 7 | 15 | 15 | ○ | ○ |

## ASIF B Type - Small Dia. Internal Face Grooving (Outward Deviation)

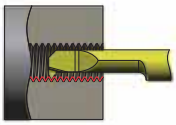


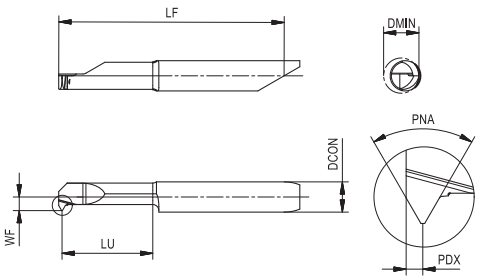



| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | CW | WF | RE | LF | DAXN | LU | CDX | R | L |
| **ASIFR/L 06B100-6215** | 6 | 1 | 3 | 0.15 | 37.3 | 4.2 | 15 | 2 | ● | ○ |
| **ASIFR/L 06B150-6215** | 6 | 1.5 | 3 | 0.15 | 37.3 | 3.2 | 15 | 3 | ● | ○ |
| **ASIFR/L 06B200-6215** | 6 | 2 | 3 | 0.15 | 37.3 | 2.2 | 15 | 4 | ○ | ○ |
| **ASIFR/L 06B250-6215** | 6 | 2.5 | 3 | 0.15 | 37.3 | 1.2 | 15 | 5 | ● | ● |
| **ASIFR/L 06B300-6215** | 6 | 3 | 3 | 0.15 | 37.3 | 0.2 | 15 | 6 | ● | ● |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

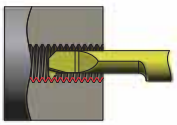
## ASIT V Type - Small Dia. Internal 60° Partial Profile Threading Tool

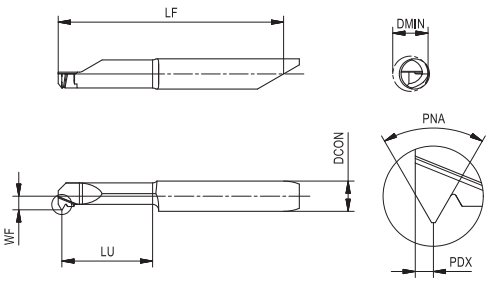





| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | PDX | PNA | WF | LF | P | DMIN | LU | R | L |
| **ASITR/L 04V050-4215** | 4 | 0.4 | 60° | 2 | 32.7 | 0.5~0.7 | 4.2 | 15 | ● | ● |
| **ASITR 05V050-5215** | 5 | 0.4 | 60° | 2.5 | 37.7 | 0.5~0.75 | 5.2 | 15 | ● | - |
| **ASITR 05V070-5115** | 5 | 0.5 | 60° | 2.4 | 37.8 | 0.7~1 | 5.1 | 15 | ● | - |
| **ASITR/L 05V100-4815** | 5 | 0.6 | 60° | 2.3 | 37.9 | 1~1.25 | 4.8 | 15 | ● | ● |
| **ASITR 06V100-6215** | 6 | 0.6 | 60° | 3 | 37.9 | 1~1.25 | 6.2 | 15 | ● | - |
| **ASITR/L 06V125-6215** | 6 | 0.8 | 60° | 3 | 38.1 | 1.25~1.5 | 6.2 | 15 | ● | ● |
| **ASITR/L 06V150-6215** | 6 | 1 | 60° | 3 | 38.3 | 1.5~1.75 | 6.2 | 15 | ● | ● |

## ASIT M Type - Small Dia. Internal ISO Threading Tool

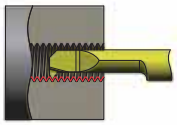


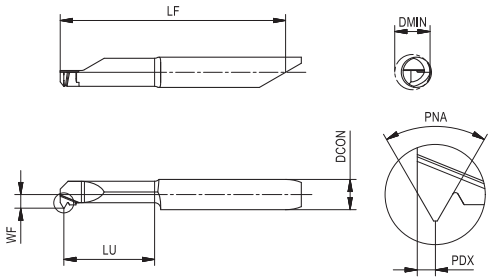



| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | PDX | PNA | WF | LF | P | DMIN | LU | R | L |
| **ASITR 04M050-4215** | 4 | 0.4 | 60° | 2 | 32.7 | 0.5 | 4.4 | 15 | ○ | - |
| **ASITR 04M070-4215** | 4 | 0.5 | 60° | 1.9 | 32.8 | 0.7 | 4.4 | 15 | ○ | - |
| **ASITR 04M080-4015** | 4 | 0.5 | 60° | 1.9 | 32.8 | 0.8 | 4 | 15 | ● | - |
| **ASITR 05M050-5215** | 5 | 0.4 | 60° | 2.5 | 37.7 | 0.5 | 5.2 | 15 | ○ | - |
| **ASITR 05M075-5115** | 5 | 0.5 | 60° | 2.4 | 37.8 | 0.75 | 5.1 | 15 | ● | - |
| **ASITR 05M100-4815** | 5 | 0.6 | 60° | 2.3 | 37.9 | 1 | 4.8 | 15 | ● | - |
| **ASITR 06M100-6215** | 6 | 0.6 | 60° | 3 | 37.9 | 1 | 6.2 | 15 | ○ | - |
| **ASITR 06M125-6215** | 6 | 0.7 | 60° | 3 | 38 | 1.25 | 6.2 | 15 | ○ | - |
| **ASITR 06M150-6215** | 6 | 0.8 | 60° | 3 | 38.1 | 1.5 | 6.2 | 15 | ● | - |
| **ASITR 06M175-6215** | 6 | 0.9 | 60° | 3 | 38.2 | 1.75 | 6.2 | 15 | ○ | - |
| **ASITR 06M200-6215** | 6 | 1 | 60° | 3 | 38.3 | 2 | 6.2 | 15 | ● | - |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

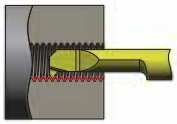
## ASIT U Type - Small Dia. Internal UN Threading Tool

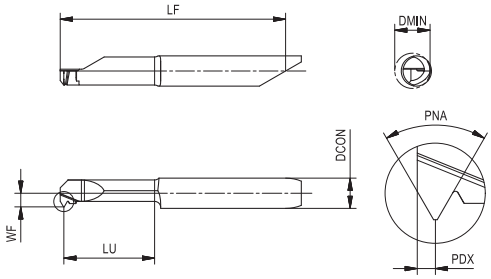





| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | PDX | PNA | WF | LF | P | DMIN | LU | R | L |
| **ASITR 04U032-4015** | 4 | 0.6 | 60° | 1.9 | 32.9 | 28 | 4 | 15 | ○ | - |
| **ASITR 04U028-4015** | 4 | 0.6 | 60° | 1.9 | 32.9 | 32 | 4 | 15 | ○ | - |
| **ASITR 04U024-4215** | 4 | 0.7 | 60° | 2 | 33 | 24 | 4.2 | 15 | ○ | - |
| **ASITR 05U020-5215** | 5 | 0.7 | 60° | 2.5 | 38 | 20 | 5.2 | 15 | ○ | - |
| **ASITR 06U018-6215** | 6 | 0.6 | 60° | 3 | 38.1 | 18 | 6.2 | 15 | ○ | - |
| **ASITR 06U016-6215** | 6 | 0.9 | 60° | 3 | 38.2 | 16 | 6.2 | 15 | ● | - |

## ASIT W Type - Small Dia. Internal Worth Threading Tool

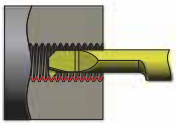


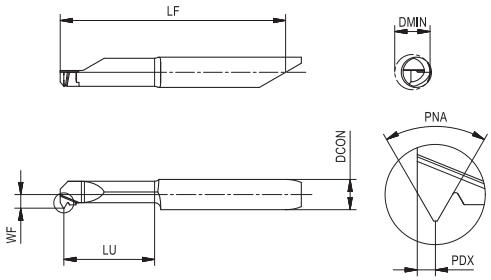



| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | PDX | PNA | WF | LF | P | DMIN | LU | R | L |
| **ASITR 05W028-5215** | 5 | 0.8 | 55° | 2.5 | 38.1 | 28 | 5.2 | 15 | ○ | - |
| **ASITR 05W026-5215** | 5 | 0.8 | 55° | 2.5 | 38.1 | 26 | 5.2 | 15 | ○ | - |
| **ASITR 05W024-5215** | 5 | 0.8 | 55° | 2.5 | 38.1 | 24 | 5.2 | 15 | ○ | - |
| **ASITR 06W028-6215** | 6 | 0.8 | 55° | 3 | 38.1 | 28 | 6.2 | 15 | ○ | - |
| **ASITR 06W026-6215** | 6 | 0.8 | 55° | 3 | 38.1 | 26 | 6.2 | 15 | ○ | - |
| **ASITR 06W024-6215** | 6 | 0.8 | 55° | 3 | 38.1 | 24 | 6.2 | 15 | ○ | - |
| **ASITR 06W022-6215** | 6 | 1 | 55° | 3 | 38.3 | 22 | 6.2 | 15 | ○ | - |
| **ASITR 06W020-6215** | 6 | 1 | 55° | 3 | 38.3 | 20 | 6.2 | 15 | ○ | - |
| **ASITR/L 06W019-6215** | 6 | 1 | 55° | 3 | 38.3 | 19 | 6.2 | 15 | ○ | ○ |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

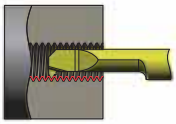
## ASIT N Type - Small Dia. Internal NPT Threading Tool

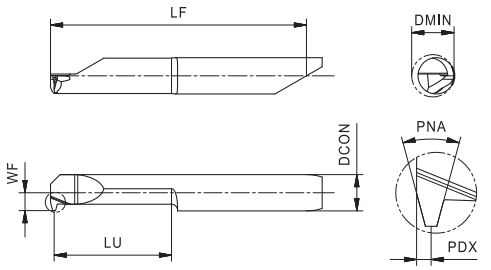





| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | PDX | PNA | WF | LF | P | DMIN | LU | R | L |
| **ASITR 06N027-6215** | 6 | 0.8 | 60° | 3 | 38.1 | 27 | 6.2 | 15 | ○ | - |
| **ASITR/L 06N018-6215** | 6 | 1 | 60° | 3 | 38.3 | 18 | 6.2 | 15 | ● | ○ |

## ASIT T Type - Small Dia. Internal TR Threading Tool

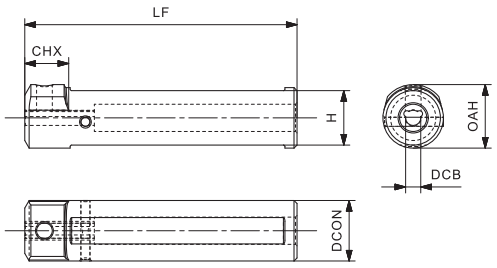





| Product code | Dimension (mm) | | | | | | | | AP220U | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCON | PDX | PNA | WF | LF | P | DMIN | LU | R | L |
| **ASITR 06T150-6220** | 6 | 0.6 | 30° | 3 | 38.2 | 1.5 | 6.2 | 20 | ● | - |
| **ASITR 06T200-6220** | 6 | 0.8 | 30° | 3 | 38.4 | 2 | 6.2 | 20 | ● | - |

● : Standard stock ○ : Made-to-Order (MOQ: 30 pcs)

## Boring Tool Sleeves




| Product code | DCB | DCON | LF | H | Stock |
|---|---|---|---|---|---|
| **ASI 0010-04** | 4 | 10 | 65 | 8 | ● |
| **ASI 0010-05** | 5 | | | | ● |
| **ASI 0012-04** | 4 | 12 | 70 | 10 | ● |
| **ASI 0012-05** | 5 | | | | ● |
| **ASI 0012-06** | 6 | | | | ● |
| **ASI 0016-04** | 4 | 16 | 75 | 14 | ● |
| **ASI 0016-05** | 5 | | | | ● |
| **ASI 0016-06** | 6 | | | | ● |
| **ASI 0016-08** | 8 | | | | ● |
| **ASI 0020-04** | 4 | 20 | 90 | 18 | ● |
| **ASI 0020-05** | 5 | | | | ● |
| **ASI 0020-06** | 6 | | | | ● |
| **ASI 0020-08** | 8 | | | | ● |
| **ASI 0025-04** | 4 | 25 | 110 | 23 | ● |
| **ASI 0025-05** | 5 | | | | ● |
| **ASI 0025-06** | 6 | | | | ● |
| **ASI 0025-08** | 8 | | | | ● |

● : Standard stock ○ : Made-to-Order

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## Grooving Tool Holder

# CUTTING TOOL CATALOGUE


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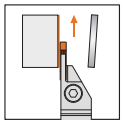
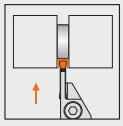
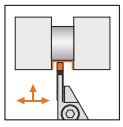
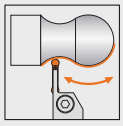
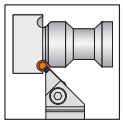
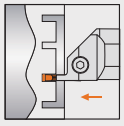
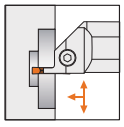
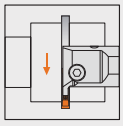
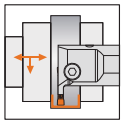
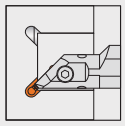
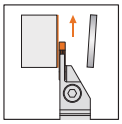
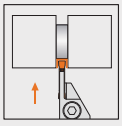
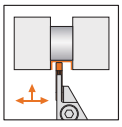
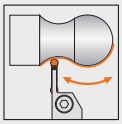
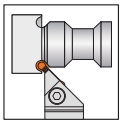
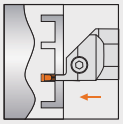
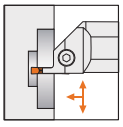
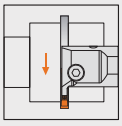
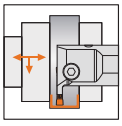
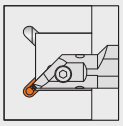
## Overview of Grooving Holders

| Application \ Holder | | | External Grooving | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ASGHR/L | S...ASGHL | ATGHR/L | ATSER/L | ATSER/L-J | ATSER/L-D |
| | | | | | | | | |
| Page | | | P192 | P193 | P194 | P196 | P199 | P200 |
| External Grooving | Parting off |  | | | | ● | ● | ● |
| | Grooving |  | ● | ● | ● | ● | ● | ● |
| | Turning |  | | | | ● | ● | ● |
| | Profiling |  | ● | ● | ● | ● | ● | ● |
| | Undercutting |  | | | | | | |
| Face Grooving | Grooving |  | | | | | | |
| | Turning |  | | | | | | |
| Internal Machining | Grooving |  | | | | | | |
| | Turning |  | | | | | | |
| | Undercutting |  | | | | | | |

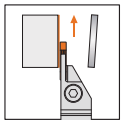
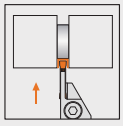
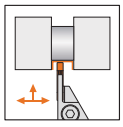
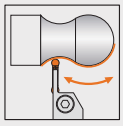
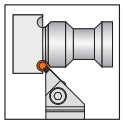
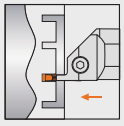
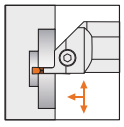
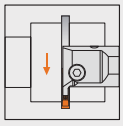
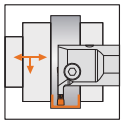
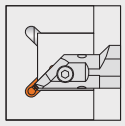
Marked: ● : Primary application ○ : Secondary application

## Overview of Grooving Holders

| Application \ Holder | | | External Grooving | | Face Grooving | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ATSER/L-SW | AGUER/L | ATSFR/L | ATSFR/L-OB | AGSFR/L | AGPFR/L |
| | | | | | | | | |
| Page | | | P202 | P203 | P204 | P207 | P211 | P212 |
| External Grooving | Parting off |  | ● | | | | | |
| | Grooving |  | ● | | | | | ● |
| | Turning |  | ● | | | | | ○ |
| | Profiling |  | ● | | | | | |
| | Undercutting |  | | ● | | | | |
| Face Grooving | Grooving |  | | | ● | ● | ● | ● |
| | Turning |  | | | ● | ● | ● | ● |
| Internal Machining | Grooving |  | | | | | | |
| | Turning |  | | | | | | |
| | Undercutting |  | | | | | | |

Marked: ● : Primary application ○ : Secondary application

## Overview of Grooving Holders

| Application \ Holder | | | Face Grooving | Internal Machining | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ATPFR/L | ATPIR/L | ATGIR/L | ATSIR/L | AGSIR/L | AGUIR/L |
| | | | | | | | | |
| Page | | | P213 | P215 | P217 | P218 | P219 | P220 |
| External Grooving | Parting off |  | | | | | | |
| | Grooving |  | | | | | | |
| | Turning |  | | | | | | |
| | Profiling |  | | | | | | |
| | Undercutting |  | | | | | | ● |
| Face Grooving | Grooving |  | ● | | | ● | ● | |
| | Turning |  | ● | | | ● | ● | |
| Internal Machining | Grooving |  | | ● | ● | | | |
| | Turning |  | | ● | | | | |
| | Undercutting |  | | | | | | ● |

Marked: ● : Primary application ○ : Secondary application

## ASGH Grooving Holder Denomination System

| A | S | G | H | R | 20 | 20 | JX | - | 32 | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | - | 9 | 10 |

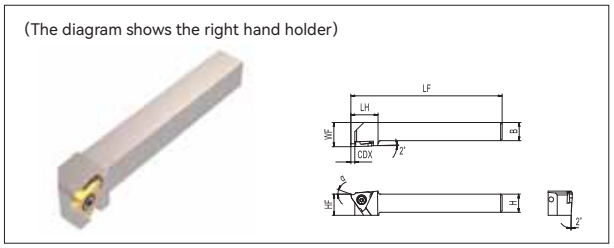
| 1- Company Name | 2- Matching Insert Type | | 3- Application | | 4- Holder Type | | 5- Hand of Tool | |
|---|---|---|---|---|---|---|---|---|
| ACHTECK | S | For swiss lathe | G | Grooving | H | Holder | L | Left |
| | | | | | | | R | Right |

| 6- Holder Height | 7- Holder Width | 8- Holder Length | 9- Matching Insert Size (IC) | 10- Shape of Holder Head |
|---|---|---|---|---|
| 20=20.0mm | 20=20.0mm | JX=120mm | 32=9.525mm | F: Without dimple |

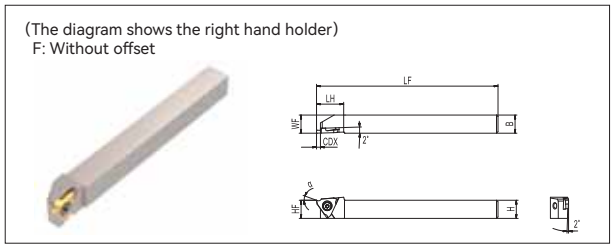


## ASGHR/L External Shallow Grooving Holder for Swiss Lathe

(The diagram shows the right hand holder)




(The diagram shows the right hand holder)
F: Without offset




| Product code | | Dimension (mm) | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|
| | | H | B | LF | LH | CDX | Screw | Wrench |
| ASGHR/L | **1010JX-32F** | 10 | 10 | 120 | 18.5 | 2.5 | SP040070 | FT-TP08 |
| | **1212FX-32F** | 12 | 12 | 85 | 18.5 | 2.5 | | |
| | **1212JX-32F** | 12 | 12 | 120 | 18.5 | 2.5 | | |
| | **1616JX-32F** | 16 | 16 | 120 | 18.5 | 2.5 | | |
| | **2020JX-32F** | 16 | 16 | 120 | 18.5 | 2.5 | | |
| | **1010F-32** | 10 | 10 | 80 | 18.5 | 2.5 | | |
| | **1212H-32** | 12 | 12 | 100 | 18.5 | 2.5 | | |
| | **1616H-32** | 16 | 16 | 100 | 18.5 | 2.5 | | |
| | **2020K-32** | 20 | 20 | 125 | 20 | 2.5 | | |
| | **2525M-32** | 25 | 25 | 150 | 20 | 2.5 | | |

## Insert Application

| Application | Grooving |
|---|---|
| Insert shape / Product code | |
| **ASGHR**** | ASG 32R |
| **ASGHL**** | ASG 32L |
| Reference page | P227 |

## S...ASGH Sleeve Tool Holder Denomination System

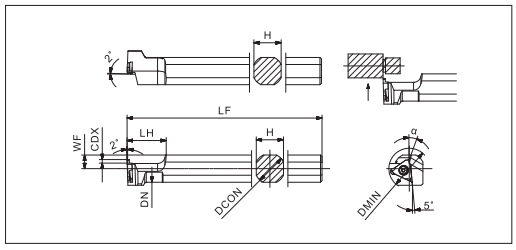
| S | 20 | JX | - | A | S | G | H | L | 32 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | - | 4 | 5 | 6 | 7 | 8 | 9 |

| 1- Holder Material | 2- Holder Shank Diameter | 3- Holder Length | 4- Company Name |
|---|---|---|---|
| S=Steel | 20=20mm | JX=120mm | ACHTECK |

| 5- Matching Insert Type | | 6- Application | | 7- Holder Type | | 8- Hand of Tool | |
|---|---|---|---|---|---|---|---|
| S | Swiss | G | Grooving | H | Holder | L | Left |

| 9- Matching Insert Size (IC) |
|---|
| 32=9.525mm |

## S..ASGHL External Shallow Grooving Sleeve Holder for Swiss Lathe




| Product code | Dimension (mm) | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|
| | DCON | LF | WF | DN | DMIN | Screw | Wrench |
| **S12F-ASGHL32** | 12 | 80 | 6 | 11 | 27 | SP040070 | FT-TP08 |
| **S14H-ASGHL32** | 14 | 100 | | 13 | | | |
| **S15.0H-ASGHL32** | 15.875 | | | 15.875 | | | |
| **S16H-ASGHL32** | 16 | | | | | | |
| **S19.0JX-ASGHL32** | 19.05 | 120 | | 17.6 | | | |
| **S20JX-ASGHL32** | 20 | 120 | | 18.6 | | | |
| **S22JX-ASGHL32** | 22 | 120 | | | | | |
| **S25JX-ASGHL32** | 25 | 120 | | 23.6 | 32 | | |
| **S25.0JX-ASGHL32** | 25.4 | 120 | 10 | 23.6 | | | |

## Insert Application

| Application | Grooving |
|---|---|
| Insert shape / Product code | |
| **S....ASGHL**** | ASG 32R |
| Reference page | P227 |

## ATGH Tool Holder Denomination System

| A | T | G | H | R | 25 | 25 | M | 43 | - | 10 | T25 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | - | 10 | 11 |

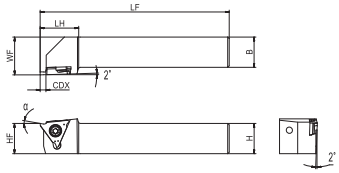
| 1- Company Name | 2- Matching Insert Type | | 3- Application | | 4- Holder Type | |
|---|---|---|---|---|---|---|
| ACHTECK | T | Triangular | G | Grooving | H | Holder |

| 5- Hand of Tool | | 6- Holder Height | 7- Holder Width | 8- Holder Length |
|---|---|---|---|---|
| L | Left | 20=20.0mm<br>25=25.0mm | 20=20.0mm<br>25=25.0mm | K=125mm<br>M=150mm |
| R | Right | | | |

| 9- Matching Insert Size (IC) | 10- Matching Insert Minimun Width | 11- Maximum CDX |
|---|---|---|
| 32=9.525mm | 10=1.0mm | T25=2.5mm |

## ATGHR/L External Shallow Grooving Holder

(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|
| | | H | B | LF | LH | WF | CDX | Screw | Wrench |
| ATGHR/L | **2020K32-T25** | 20 | 20 | 125 | 24 | 25 | 2.5 | SP040085 | FT-TP15 |
| | **2525M32-T25** | 25 | 25 | 150 | 24 | 30 | 2.5 | | |
| | **2020K43-10T40** | 20 | 20 | 125 | 25.5 | 25 | 4.0 | SP05008550 | FT-TP20 |
| | **2525M43-10T40** | 25 | 25 | 150 | 25.5 | 30 | 4.0 | | |
| | **2020K43-20T45** | 20 | 20 | 125 | 25.5 | 25 | 4.5 | | |
| | **2525M43-20T45** | 25 | 25 | 150 | 25.5 | 30 | 4.5 | | |
| | **2020K43-20T55** | 20 | 20 | 125 | 25.5 | 25 | 5.5 | | |
| | **2525M43-20T55** | 25 | 25 | 150 | 25.5 | 30 | 5.5 | | |
| | **2020K43-30T55** | 20 | 20 | 125 | 25.5 | 25 | 5.5 | | |
| | **2525M43-30T55** | 25 | 25 | 150 | 25.5 | 30 | 5.5 | | |

## Insert Application

| Application | Grooving | Profiling |
|---|---|---|
| Insert shape / Product code | | |
| **ATGHR** 32** | ATG 32R | ATG 32R |
| **ATGHR** 43** | ATG 43R | ATG 43R |
| **ATGHL** 32** | ATG 32L | ATG 32L |
| **ATGHL** 43** | ATG 43L | ATG 43L |
| Reference page | P228 | P228 |

## Grooving Holder Denomination System

| A | G | U | E | R | 25 | 25 | - | 4 | T25 | - | 40 | - | 80 | - | SW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 7 | 8 | - | 9 | 10 | - | 11 | - | 12 | - | 13 |

| | |
|---|---|
| | 32 |
| | 6 |

### 1- Company Name

ACHTECK

### 2- Application

| | |
|---|---|
| G | Grooving |
| T | Turning |

### 3- Shape of Holder Head

S: Straight
U: Undercutting
P: Perpendicular

### 4- Machining Type

E: External
I: Internal
F: Facing

### 5- Hand of Tool

| | |
|---|---|
| L | Left |
| R | Right |

### 6- Holder Diameter

20=20.0mm
25=25.0mm
32=32.0mm

### 7- Holder Height

20=20.0mm
25=25.0mm
32=32.0mm

### 8- Holder Width

20=20.0mm
25=25.0mm
32=32.0mm

### 9- Insert Width

2=2.0mm
3=3.0mm
4=4.0mm

### 10- Maximum CDX

T25=25.0mm

### 11- Minimum Cutting Diameter

40=40.0mm

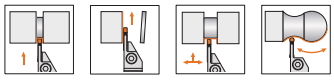
### 12- Maximum Cutting Diameter

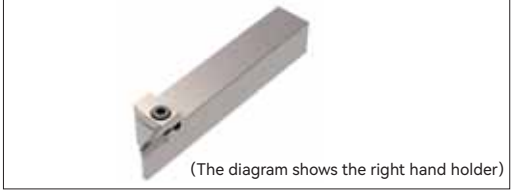
80=80.0mm

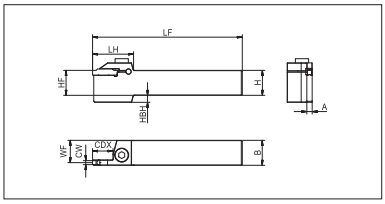
### 13- Special Code

SW: For swiss lathe
OB: Outside bulge holders
C: With internal coolant
D: Reinforced holders
J: High-pressure internal coolant

## ATSER/L External Turning and Grooving Holder




(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | HBH | A | LF | LH | WF | CDX | Screw | Wrench |
| ATSER/L | **1616-2T08** | 16 | 16 | 16 | 4 | 1.8 | 110 | 33 | 15.1 | 8 | SH050160 | LT-H4 |
| | **1616-2T12** | 16 | 16 | 16 | 4 | 1.8 | 110 | 32 | 15.1 | 12 | | |
| | **1616-2T17** | 16 | 16 | 16 | 4 | 1.8 | 110 | 37 | 15.1 | 17 | | |
| | **2020-2T08** | 20 | 20 | 20 | 0 | 1.8 | 125 | 33 | 19.1 | 8 | SH050200 | |
| | **2020-2T12** | 20 | 20 | 20 | 0 | 1.8 | 125 | 32 | 19.1 | 12 | | |
| | **2020-2T17** | 20 | 20 | 20 | 0 | 1.8 | 125 | 37 | 19.1 | 17 | | |
| | **2525-2T08** | 25 | 25 | 25 | 0 | 1.8 | 150 | 33 | 24.1 | 8 | SH050250 | |
| | **2525-2T12** | 25 | 25 | 25 | 0 | 1.8 | 150 | 32 | 24.1 | 12 | | |
| | **2525-2T17** | 25 | 25 | 25 | 0 | 1.8 | 150 | 37 | 24.1 | 17 | | |
| | **3232-2T08** | 32 | 32 | 32 | 0 | 1.8 | 170 | 37 | 31.1 | 8 | | |
| | **3232-2T12** | 32 | 32 | 32 | 0 | 1.8 | 170 | 37 | 31.1 | 12 | | |
| | **3232-2T17** | 32 | 32 | 32 | 0 | 1.8 | 170 | 37 | 31.1 | 17 | | |
| | **1616-3T09** | 16 | 16 | 16 | 4 | 2.4 | 110 | 32 | 14.8 | 9 | SH050160 | |
| | **1616-3T12** | 16 | 16 | 16 | 4 | 2.4 | 110 | 32 | 14.8 | 12 | | |
| | **1616-3T16** | 16 | 16 | 16 | 4 | 2.4 | 110 | 35 | 14.8 | 16 | | |
| | **1616-3T20** | 16 | 16 | 16 | 4 | 2.4 | 110 | 38.5 | 14.8 | 20 | | |
| | **2020-3T09** | 20 | 20 | 20 | 0 | 2.4 | 125 | 32 | 18.8 | 9 | SH050200 | |
| | **2020-3T12** | 20 | 20 | 20 | 0 | 2.4 | 125 | 32 | 18.8 | 12 | | |
| | **2020-3T16** | 20 | 20 | 20 | 0 | 2.4 | 125 | 35 | 18.8 | 16 | | |
| | **2020-3T20** | 20 | 20 | 20 | 0 | 2.4 | 125 | 38.5 | 18.8 | 20 | | |
| | **2525-3T09** | 25 | 25 | 25 | 0 | 2.4 | 150 | 32 | 23.8 | 9 | SH050250 | |
| | **2525-3T12** | 25 | 25 | 25 | 0 | 2.4 | 150 | 32 | 23.8 | 12 | | |
| | **2525-3T16** | 25 | 25 | 25 | 0 | 2.4 | 150 | 35 | 23.8 | 16 | | |
| | **2525-3T20** | 25 | 25 | 25 | 0 | 2.4 | 150 | 37.5 | 23.8 | 20 | | |
| | **2525-3T25** | 25 | 25 | 25 | 0 | 2.4 | 150 | 44.5 | 23.8 | 25 | | |
| | **3232-3T09** | 32 | 32 | 32 | 0 | 2.4 | 170 | 35 | 30.8 | 9 | | |
| | **3232-3T12** | 32 | 32 | 32 | 0 | 2.4 | 170 | 35 | 30.8 | 12 | | |
| | **3232-3T16** | 32 | 32 | 32 | 0 | 2.4 | 170 | 35 | 30.8 | 16 | | |
| | **3232-3T20** | 32 | 32 | 32 | 0 | 2.4 | 170 | 42 | 30.8 | 20 | | |
| | **3232-3T25** | 32 | 32 | 32 | 0 | 2.4 | 170 | 44.5 | 30.8 | 25 | | |
| | **1616-4T10** | 16 | 16 | 16 | 4 | 3.35 | 110 | 32 | 14.3 | 10 | SH060160 | LT-H5 |
| | **1616-4T15** | 16 | 16 | 16 | 4 | 3.35 | 110 | 33 | 14.3 | 15 | | |
| | **1616-4T25** | 16 | 16 | 16 | 4 | 3.35 | 110 | 45 | 14.3 | 25 | | |
| | **2020-4T10** | 20 | 20 | 20 | 0 | 3.35 | 125 | 32 | 18.3 | 10 | SH060200 | |
| | **2020-4T15** | 20 | 20 | 20 | 0 | 3.35 | 125 | 33 | 18.3 | 15 | | |
| | **2020-4T20** | 20 | 20 | 20 | 0 | 3.35 | 125 | 40 | 18.3 | 20 | | |
| | **2020-4T25** | 20 | 20 | 20 | 0 | 3.35 | 125 | 45 | 18.3 | 25 | | |

## ATSER/L External Turning and Grooving Holder

| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | HBH | A | LF | LH | WF | CDX | Screw | Wrench |
| ATSER/L | **2525-4T10** | 25 | 25 | 25 | 0 | 3.35 | 150 | 32 | 23.3 | 10 | SH060250 | LT-H5 |
| | **2525-4T15** | 25 | 25 | 25 | 0 | 3.35 | 150 | 33 | 23.3 | 15 | | |
| | **2525-4T20** | 25 | 25 | 25 | 0 | 3.35 | 150 | 40 | 23.3 | 20 | | |
| | **2525-4T25** | 25 | 25 | 25 | 0 | 3.35 | 150 | 45 | 23.3 | 25 | | |
| | **3232-4T10** | 32 | 32 | 32 | 0 | 3.35 | 170 | 32 | 30.3 | 10 | | |
| | **3232-4T15** | 32 | 32 | 32 | 0 | 3.35 | 170 | 33 | 30.3 | 15 | | |
| | **3232-4T20** | 32 | 32 | 32 | 0 | 3.35 | 170 | 40 | 30.3 | 20 | | |
| | **3232-4T25** | 32 | 32 | 32 | 0 | 3.35 | 170 | 45 | 30.3 | 25 | | |
| | **2020-5T12** | 20 | 20 | 20 | 0 | 4.35 | 125 | 37 | 17.8 | 12 | SH060200 | |
| | **2020-5T16** | 20 | 20 | 20 | 0 | 4.35 | 125 | 37 | 17.8 | 16 | | |
| | **2020-5T20** | 20 | 20 | 20 | 0 | 4.35 | 125 | 37 | 17.8 | 20 | | |
| | **2525-5T12** | 25 | 25 | 25 | 0 | 4.35 | 150 | 37 | 22.8 | 12 | SH060250 | |
| | **2525-5T16** | 25 | 25 | 25 | 0 | 4.35 | 150 | 37 | 22.8 | 16 | | |
| | **2525-5T20** | 25 | 25 | 25 | 0 | 4.35 | 150 | 37 | 22.8 | 20 | | |
| | **2525-5T25** | 25 | 25 | 25 | 0 | 4.35 | 150 | 46 | 22.8 | 25 | | |
| | **2525-5T32** | 25 | 25 | 25 | 0 | 4.35 | 150 | 54 | 22.8 | 32 | | |
| | **3232-5T12** | 32 | 32 | 32 | 0 | 4.35 | 170 | 37 | 29.8 | 12 | | |
| | **3232-5T16** | 32 | 32 | 32 | 0 | 4.35 | 170 | 38 | 29.8 | 16 | | |
| | **3232-5T20** | 32 | 32 | 32 | 0 | 4.35 | 170 | 39 | 29.8 | 20 | | |
| | **3232-5T25** | 32 | 32 | 32 | 0 | 4.35 | 170 | 46 | 29.8 | 25 | | |
| | **3232-5T32** | 32 | 32 | 32 | 0 | 4.35 | 170 | 56 | 29.8 | 32 | | |
| | **2020-6T12** | 20 | 20 | 20 | 0 | 5.35 | 125 | 37 | 17.3 | 12 | SH080200 | LT-H6 |
| | **2020-6T16** | 20 | 20 | 20 | 0 | 5.35 | 125 | 37 | 17.3 | 16 | | |
| | **2020-6T20** | 20 | 20 | 20 | 0 | 5.35 | 125 | 41 | 17.3 | 20 | | |
| | **2525-6T16** | 25 | 25 | 25 | 7 | 5.35 | 150 | 37 | 22.3 | 16 | SH080250 | |
| | **2525-6T12** | 25 | 25 | 25 | 7 | 5.35 | 150 | 37 | 22.3 | 12 | | |
| | **2525-6T20** | 25 | 25 | 25 | 7 | 5.35 | 150 | 41 | 22.3 | 20 | | |
| | **2525-6T25** | 25 | 25 | 25 | 7 | 5.35 | 150 | 46 | 22.3 | 25 | | |
| | **2525-6T32** | 25 | 25 | 25 | 7 | 5.35 | 150 | 56 | 22.3 | 32 | | |
| | **3232-6T12** | 32 | 32 | 32 | 0 | 5.35 | 170 | 37 | 29.3 | 12 | | |
| | **3232-6T16** | 32 | 32 | 32 | 0 | 5.35 | 170 | 37 | 29.3 | 16 | | |
| | **3232-6T20** | 32 | 32 | 32 | 0 | 5.35 | 170 | 41 | 29.3 | 20 | | |
| | **3232-6T25** | 32 | 32 | 32 | 0 | 5.35 | 170 | 46 | 29.3 | 25 | | |
| | **3232-6T32** | 32 | 32 | 32 | 0 | 5.35 | 170 | 56.2 | 29.3 | 32 | | |
| | **2525-8T16** | 25 | 25 | 25 | 7 | 6.2 | 150 | 47 | 21.9 | 16 | | |
| | **2525-8T25** | 25 | 25 | 25 | 7 | 6.2 | 150 | 47 | 21.9 | 25 | | |
| | **2525-8T36** | 25 | 25 | 25 | 7 | 6.2 | 150 | 60 | 21.9 | 36 | | |
| | **3232-8T16** | 32 | 32 | 32 | 0 | 6.2 | 170 | 47 | 28.9 | 16 | | |
| | **3232-8T25** | 32 | 32 | 32 | 0 | 6.2 | 170 | 47 | 28.9 | 25 | | |
| | **3232-8T36** | 32 | 32 | 32 | 0 | 6.2 | 170 | 60 | 28.9 | 36 | | |

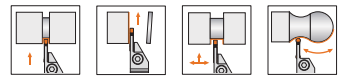
## Insert Application

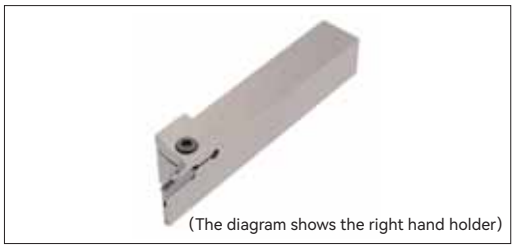
| Application | Low feed rate | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|---|
| Insert shape / Product code | CS | CM | CH | GS | TS | TM | RM |
| **ATSER/L**** | ACD 202<br>ACD 302 | ACD/ACS 202<br>……<br>ACD/ACS 603 | ACD/ACS 202<br>……<br>ACD/ACS 603 | ATD 300E<br>……<br>ATD 400E | ATD 203<br>……<br>ATD 808 | ATD 304<br>……<br>ATD 812 | ATD 210<br>……<br>ATD 840 |
| Reference page | P230 | P231 | P232 | P233 | P234 | P235 | P236 |

| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code | TSR | TMR | RMR | RA | RS | G |
| **ATSER/L**** | ATD 203<br>……<br>ATD 808 | ATD 304<br>……<br>ATD 812 | ATD 210<br>……<br>ATD 840 | ATD 315<br>……<br>ATD 840 | ATD 210<br>……<br>ATD 840 | ATD 100E<br>……<br>ATD 800E |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

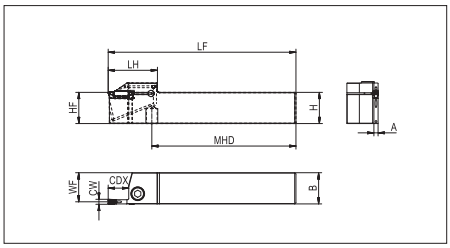
Inserts*: ACD/ACS series are only applicable to grooving and parting off machining.

## ATSER/L-J External High-Pressure Turning and Grooving Holder with Internal Coolant





(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | | | | MHD | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | HBH | A | LF | LH | WF | CDX | | Screw | Wrench |
| ATSER/L | **2020-2T12-J** | 20 | 20 | 20 | 0 | 1.8 | 125 | 37 | 19.1 | 12 | 73 | SH050200 | LT-H4 |
| | **2020-3T12-J** | 20 | 20 | 20 | 0 | 2.4 | 125 | 37 | 18.8 | 12 | 73 | | |
| | **2020-4T10-J** | 20 | 20 | 20 | 0 | 3.35 | 125 | 37 | 18.3 | 10 | 73 | SH060200 | LT-H5 |
| | **2525-2T12-J** | 25 | 25 | 25 | 0 | 1.8 | 125 | 39 | 24.1 | 12 | 115.5 | SH050250 | LT-H4 |
| | **2525-3T12-J** | 25 | 25 | 25 | 0 | 2.4 | 150 | 39 | 23.8 | 12 | 115.5 | | |
| | **2525-4T15-J** | 25 | 25 | 25 | 0 | 3.35 | 150 | 39 | 23.3 | 15 | 115.5 | SH060250 | LT-H5 |
| | **2525-5T20-J** | 25 | 25 | 25 | 0 | 4.35 | 150 | 45 | 22.8 | 20 | 111 | | |
| | **2525-6T20-J** | 25 | 25 | 25 | 0 | 5.35 | 150 | 52 | 22.3 | 20 | 120.5 | SH080250 | LT-H6 |
| | **2525-8T25-J** | 25 | 25 | 25 | 0 | 6.2 | 150 | 58 | 21.9 | 25 | 115 | | |

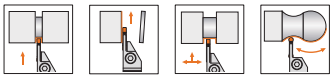
## Insert Application

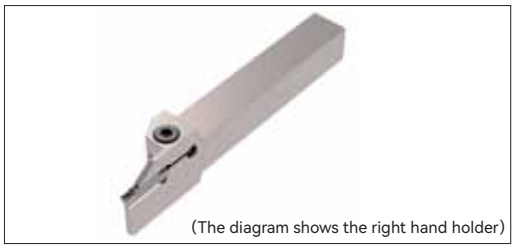
| Application | Low feed rate | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|---|
| Insert shape / Product code | CS | CM | CH | GS | TS | TM | RM |
| | | | | | | | |
| **ATSER/L**-J** | ACD 202<br>ACD 302 | ACD/ACS 202<br>.....<br>ACD/ACS 603 | ACD/ACS 202<br>.....<br>ACD/ACS 603 | ATD 300E<br>.....<br>ATD 400E | ATD 203<br>.....<br>ATD 808 | ATD 304<br>.....<br>ATD 812 | ATD 210<br>.....<br>ATD 840 |
| Reference page | P230 | P231 | P232 | P233 | P234 | P235 | P236 |

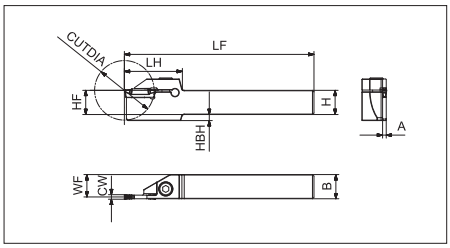
| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code | TSR | TMR | RMR | RA | RS | G |
| | | | | | | |
| **ATSER/L**-J** | ATD 203<br>.....<br>ATD 808 | ATD 304<br>.....<br>ATD 812 | ATD 210<br>.....<br>ATD 840 | ATD 315<br>.....<br>ATD 840 | ATD 210<br>.....<br>ATD 840 | ATD 100E<br>.....<br>ATD 800E |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

Inserts*: ACD/ACS series are only applicable to grooving and parting off machining

## ATSER/L-D Reinforced External Turning and Grooving Holder




(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | | | | CUTDIA | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | HBH | A | LF | LH | WF | CDX | | Screw | Wrench |
| ATSER/L | **1010-2T15-D40** | 10 | 10 | 10 | 6 | 1.8 | 125 | 32 | 9.1 | 15 | 40 | SH050160 | LT-H4 |
| | **1212-2T15-D40** | 12 | 12 | 12 | 4 | 1.8 | 125 | 32 | 11.1 | 15 | 40 | | |
| | **1616-2T20-D45** | 16 | 16 | 16 | 4 | 1.8 | 125 | 38 | 15.1 | 20 | 45 | | |
| | **2020-2T20-D45** | 20 | 20 | 20 | 0 | 1.8 | 125 | 38 | 19.1 | 20 | 45 | SH050200 | |
| | **2525-2T20-D45** | 25 | 25 | 25 | 0 | 1.8 | 150 | 38 | 24.1 | 20 | 45 | SH050250 | |
| | **1212-3T15-D40** | 12 | 12 | 12 | 4 | 2.4 | 125 | 32 | 10.8 | 15 | 40 | SH050160 | |
| | **1616-3T20-D45** | 16 | 16 | 16 | 4 | 2.4 | 125 | 38 | 14.8 | 20 | 45 | SH050200 | |
| | **2020-3T20-D45** | 20 | 20 | 20 | 0 | 2.4 | 125 | 38 | 18.8 | 20 | 45 | | |
| | **2525-3T20-D45** | 25 | 25 | 25 | 0 | 2.4 | 150 | 38 | 23.8 | 20 | 45 | SH050250 | |
| | **2525-3T25-D60** | 25 | 25 | 25 | 7 | 2.4 | 150 | 43 | 23.8 | 25 | 60 | | |

## Insert Application

| Application | Low feed rate | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|---|
| Insert shape / Product code | CS | CM | CH | GS | TS | TM | RM |
| | | | | | | | |
| **ATSER/L**-D** | ACD 202<br>ACD 302 | ACD/ACS 202<br>.....<br>ACD/ACS 603 | ACD/ACS 202<br>.....<br>ACD/ACS 603 | ATD 300E<br>.....<br>ATD 400E | ATD 203<br>.....<br>ATD 808 | ATD 304<br>.....<br>ATD 812 | ATD 210<br>.....<br>ATD 840 |
| Reference page | P230 | P231 | P232 | P233 | P234 | P235 | P236 |

| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code | TSR | TMR | RMR | RA | RS | G |
| | | | | | | |
| **ATSER/L**-D** | ATD 203<br>.....<br>ATD 808 | ATD 304<br>.....<br>ATD 812 | ATD 210<br>.....<br>ATD 840 | ATD 315<br>.....<br>ATD 840 | ATD 210<br>.....<br>ATD 840 | ATD 100E<br>.....<br>ATD 800E |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

Inserts*: ACD/ACS series are only applicable to grooving and parting off machining

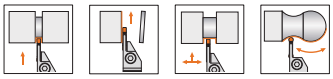
## ATSER/L-D Reinforced External Turning and Grooving Holder

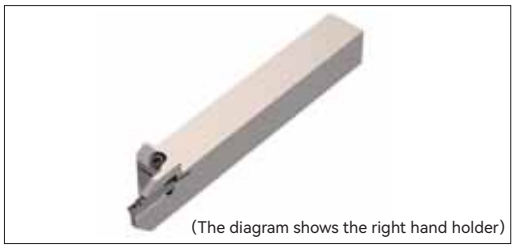
The max. cutting depth vs workpiece diameter

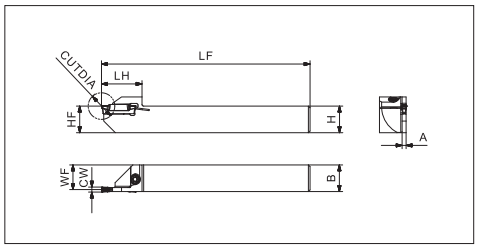
| Product code | | Workpiece diameter | CDX | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ≤ 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| ATSER/L | 1010-2T15-D40 | CUTDIA | ∞ | ∞ | ∞ | 269 | 120 | 79 | 59 | 40 | - | - | - | - | - | - | - | - | - |
| | 1212-2T15-D40 | | ∞ | ∞ | ∞ | 269 | 120 | 79 | 59 | 40 | - | - | - | - | - | - | - | - | - |
| | 1616-2T20-D45 | | ∞ | ∞ | ∞ | ∞ | ∞ | 432 | 193 | 125 | 76 | 64 | 57 | 45 | - | - | - | - | - |
| | 2020-2T20-D45 | | ∞ | ∞ | ∞ | ∞ | ∞ | 432 | 193 | 125 | 76 | 64 | 57 | 45 | - | - | - | - | - |
| | 2525-2T20-D45 | | ∞ | 1468 | 339 | 193 | 136 | 106 | 87 | 75 | 60 | 56 | 52 | 45 | - | - | - | - | - |
| | 1212-3T15-D40 | | ∞ | ∞ | ∞ | 269 | 120 | 79 | 59 | 40 | - | - | - | - | - | - | - | - | - |
| | 1616-3T20-D45 | | ∞ | ∞ | ∞ | ∞ | ∞ | 432 | 193 | 125 | 76 | 64 | 57 | 45 | - | - | - | - | - |
| | 2020-3T20-D45 | | ∞ | ∞ | ∞ | ∞ | ∞ | 432 | 193 | 125 | 76 | 64 | 57 | 45 | - | - | - | - | - |
| | 2525-3T20-D45 | | ∞ | 1468 | 339 | 193 | 136 | 106 | 87 | 75 | 60 | 56 | 52 | 45 | - | - | - | - | - |
| | 2525-3T25-D60 | | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | 418 | 237 | 167 | 130 | 107 | 91 | 81 | 73 | 60 |

“∞”: The diameter is infinite

## ATSER/L-SW External Turning and Grooving Holder for Swiss Lathe




(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | HBH | A | LF | LH | WF | CUTDIA | Screw | Wrench |
| ATSER/L | **1010-2D20-SW** | 10 | 10 | 10 | 2 | 1.8 | 125 | 19 | 9.1 | 20 | SP040125 | LT-TP15 |
| | **1212-2D24-SW** | 12 | 12 | 12 | 2 | 1.8 | 125 | 19 | 11.1 | 24 | | |
| | **1414-2D24-SW** | 14 | 14 | 14 | 0 | 1.8 | 125 | 19 | 13.1 | 24 | | |
| | **1616-2D32-SW** | 16 | 16 | 16 | 0 | 1.8 | 125 | 24 | 15.1 | 32 | | |
| | **1212-3D24-SW** | 12 | 12 | 12 | 2 | 2.4 | 125 | 19 | 10.8 | 24 | | |
| | **1616-3D32-SW** | 16 | 16 | 16 | 0 | 2.4 | 125 | 24 | 14.8 | 32 | | |
| | **1616-3D38-SW** | 16 | 16 | 16 | 0 | 2.4 | 125 | 27 | 14.8 | 38 | | |
| | **2020-3D45-SW** | 20 | 20 | 20 | 0 | 2.4 | 125 | 30.5 | 18.8 | 45 | | |



## ATSER/L-SW External Turning and Grooving Holder for Swiss Lathe

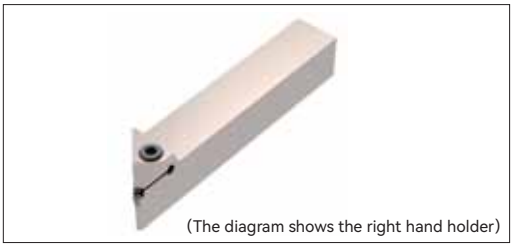
### Insert Application

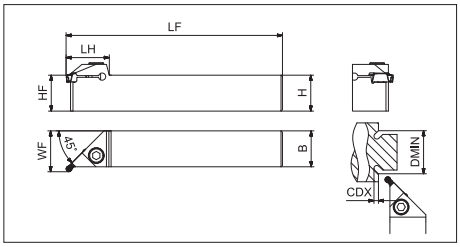
| Application | Low feed rate | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|---|
| Insert shape / Product code | CS | CM | CH | GS | TS | TM | RM |
| | | | | | | | |
| **ATSER/L**SW** | ACD 202<br>ACD 302 | ACD/ACS 302<br>.....<br>ACD/ACS 302 | ACD/ACS 302<br>.....<br>ACD/ACS 302 | ATD 300E<br>.....<br>ATD 318E | ATD 203<br>.....<br>ATD 303 | ATD 304 | ATD 210<br>.....<br>ATD 315 |
| Reference page | P230 | P231 | P232 | P233 | P234 | P235 | P236 |

| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code | TSR | TMR | RMR | RA | RS | G |
| | | | | | | |
| **ATSER/L**SW** | ATD 203<br>.....<br>ATD 303 | ATD 304 | ATD 210<br>.....<br>ATD 315 | ATD 315 | ATD 210<br>ATD 315 | ATD 100E<br>.....<br>ATD 300E |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

Inserts*: ACD/ACS series are only applicable to grooving and parting off machining

## AGUER/L External Undercutting Holder


(The diagram shows the right hand holder)

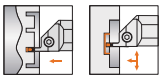


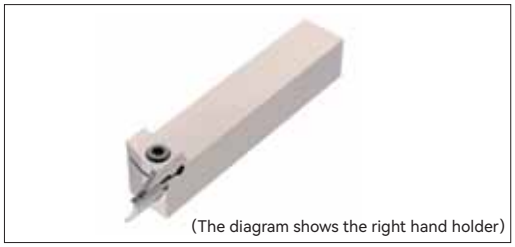

| Product code | | Insert width (mm) | Dimension (mm) | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | H | B | HF | LF | LH | WF | CDX | DMIN | Screw | Wrench |
| AGUER/L | **1616-3** | 2，3 | 16 | 16 | 16 | 110 | 30.2 | 19.6 | 3 | 60 | SH050160 | LT-H4 |
| | **1616-4** | 4 | 16 | 16 | 16 | 110 | 30.2 | 19.8 | 3 | 55 | SH060160 | |
| | **2020-3** | 2，3 | 20 | 20 | 20 | 125 | 30.2 | 23.6 | 3 | 60 | SH050200 | |
| | **2020-4** | 4 | 20 | 20 | 20 | 125 | 30.2 | 23.8 | 3 | 55 | SH060200 | LT-H5 |
| | **2525-3** | 2，3 | 25 | 25 | 25 | 150 | 30.2 | 28.6 | 3 | 60 | SH050250 | |
| | **2525-4** | 4 | 25 | 25 | 25 | 150 | 30.2 | 28.8 | 3 | 55 | SH060250 | |
| | **2525-6** | 5，6 | 25 | 25 | 25 | 150 | 33.6 | 29.2 | 3.5 | 55 | | |

## Insert Application

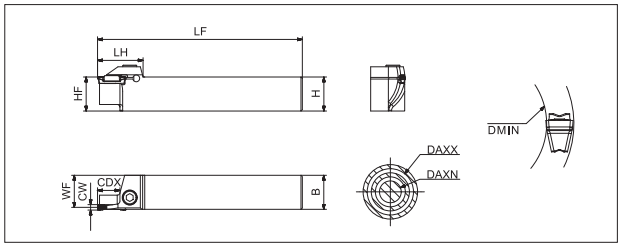
| Application | Profiling | Ground Profiling | Ground Profiling | Ground | Profiling |
|---|---|---|---|---|---|
| Insert shape / Product code | RM | RA | RS | G | RMR |
| | | | | | |
| **AGUER/L**** | ATD 210 ..... ATD 630 | ATD 315 ..... ATD 630 | ATD 210 ..... ATD 630 | ATD 100E ..... ATD 600E | ATD 210 ..... ATD 630 |
| Reference page | P236 | P237 | P237 | P239 | P236 |

## ATSFR/L Face Grooving and Turning Holder





(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | LF | LH | WF | CDX | DAXN | DAXX | Screw | Wrench |
| ATSFR/L | 2020-3T10-35-45 | 20 | 20 | 20 | 140 | 32 | 18.95 | 10 | 35 | 45 | SH050200 | LT-H4 |
| | 2020-3T10-40-55 | 20 | 20 | 20 | 140 | 32 | 18.95 | 10 | 40 | 55 | | |
| | 2020-3T10-50-85 | 20 | 20 | 20 | 140 | 32 | 18.95 | 10 | 50 | 85 | | |
| | 2020-3T10-80-130 | 20 | 20 | 20 | 140 | 32 | 18.95 | 10 | 80 | 130 | | |
| | 2020-3T10-125-250 | 20 | 20 | 20 | 140 | 32 | 18.95 | 10 | 125 | 250 | | |
| | 2020-3T10-200-000 | 20 | 20 | 20 | 140 | 32 | 18.95 | 10 | 200 | ∞ | | |
| | 2020-3T15-45-65 | 20 | 20 | 20 | 140 | 32 | 18.95 | 15 | 45 | 65 | | |
| | 2020-3T15-55-85 | 20 | 20 | 20 | 140 | 32 | 18.95 | 15 | 55 | 85 | | |
| | 2020-3T15-80-130 | 20 | 20 | 20 | 140 | 32 | 18.95 | 15 | 80 | 130 | | |
| | 2020-3T15-125-250 | 20 | 20 | 20 | 140 | 32 | 18.95 | 15 | 125 | 250 | | |
| | 2020-3T15-200-000 | 20 | 20 | 20 | 140 | 35 | 18.95 | 15 | 200 | ∞ | | |
| | 2020-4T15-55-85 | 20 | 20 | 20 | 140 | 33 | 18.3 | 15 | 55 | 85 | SH060200 | LT-H5 |
| | 2020-4T15-80-130 | 20 | 20 | 20 | 140 | 33 | 18.3 | 15 | 80 | 130 | | |
| | 2020-4T15-125-250 | 20 | 20 | 20 | 140 | 33 | 18.3 | 15 | 125 | 250 | | |
| | 2525-3T10-35-45 | 25 | 25 | 25 | 150 | 32 | 23.95 | 10 | 35 | 45 | SH050250 | LT-H4 |
| | 2525-3T10-40-55 | 25 | 25 | 25 | 150 | 32 | 23.95 | 10 | 40 | 55 | | |
| | 2525-3T10-50-85 | 25 | 25 | 25 | 150 | 32 | 23.95 | 10 | 50 | 85 | | |
| | 2525-3T10-80-130 | 25 | 25 | 25 | 150 | 32 | 23.95 | 10 | 80 | 130 | | |
| | 2525-3T10-125-250 | 25 | 25 | 25 | 150 | 32 | 23.95 | 10 | 125 | 250 | | |
| | 2525-3T10-200-000 | 25 | 25 | 25 | 150 | 32 | 23.95 | 10 | 200 | ∞ | | |
| | 2525-3T15-45-65 | 25 | 25 | 25 | 150 | 32 | 23.95 | 15 | 45 | 65 | | |
| | 2525-3T15-55-85 | 25 | 25 | 25 | 150 | 32 | 23.95 | 15 | 55 | 85 | | |
| | 2525-3T15-80-130 | 25 | 25 | 25 | 150 | 32 | 23.95 | 15 | 80 | 130 | | |
| | 2525-3T15-125-250 | 25 | 25 | 25 | 150 | 32 | 23.95 | 15 | 125 | 250 | | |
| | 2525-3T15-200-000 | 25 | 25 | 25 | 150 | 32 | 23.95 | 15 | 200 | ∞ | | |
| | 2525-4T10-35-50 | 25 | 25 | 25 | 150 | 32 | 23.55 | 10 | 35 | 50 | | |
| | 2525-4T10-45-65 | 25 | 25 | 25 | 150 | 32 | 23.55 | 10 | 45 | 65 | | |
| | 2525-4T10-55-85 | 25 | 25 | 25 | 150 | 32 | 23.55 | 10 | 55 | 85 | | |
| | 2525-4T10-80-130 | 25 | 25 | 25 | 150 | 32 | 23.55 | 10 | 80 | 130 | | |
| | 2525-4T10-125-250 | 25 | 25 | 25 | 150 | 32 | 23.55 | 10 | 125 | 250 | | |
| | 2525-4T15-35-50 | 25 | 25 | 25 | 150 | 33 | 23.55 | 15 | 35 | 50 | SH060250 | LT-H5 |
| | 2525-4T15-45-65 | 25 | 25 | 25 | 150 | 33 | 23.55 | 15 | 45 | 65 | | |
| | 2525-4T15-55-85 | 25 | 25 | 25 | 150 | 33 | 23.55 | 15 | 55 | 85 | | |
| | 2525-4T15-80-130 | 25 | 25 | 25 | 150 | 32 | 23.55 | 15 | 80 | 130 | | |
| | 2525-4T15-125-250 | 25 | 25 | 25 | 150 | 32 | 23.55 | 15 | 125 | 250 | | |
| | 2525-5T15-70-110 | 25 | 25 | 25 | 150 | 41 | 23.05 | 15 | 70 | 110 | SH080250 | LT-H6 |
| | 2525-5T15-100-150 | 25 | 25 | 25 | 150 | 37 | 22.8 | 15 | 100 | 150 | | |
| | 2525-5T15-140-200 | 25 | 25 | 25 | 150 | 37 | 22.8 | 15 | 140 | 200 | | |
| | 2525-5T15-190-000 | 25 | 25 | 25 | 150 | 37 | 22.8 | 15 | 190 | ∞ | | |
| | 2525-5T20-50-80 | 25 | 25 | 25 | 150 | 41 | 23.05 | 20 | 50 | 80 | | |
| | 2525-5T20-70-110 | 25 | 25 | 25 | 150 | 41 | 23.05 | 20 | 70 | 110 | | |
| | 2525-5T20-100-150 | 25 | 25 | 25 | 150 | 41 | 23.05 | 20 | 100 | 150 | | |
| | 2525-5T20-140-200 | 25 | 25 | 25 | 150 | 41 | 23.05 | 20 | 140 | 200 | | |

## ATSFR/L Face Grooving and Turning Holder

| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | LF | LH | WF | CDX | DAXN | DAXX | Screw | Wrench |
| ATSFR/L | 2525-5T20-190-000 | 25 | 25 | 25 | 150 | 40 | 23.05 | 20 | 190 | ∞ | SH080250 | LT-H6 |
| | 2525-6T12-50-85 | 25 | 25 | 25 | 150 | 37 | 22.3 | 12 | 50 | 85 | | |
| | 2525-6T12-75-150 | 25 | 25 | 25 | 150 | 37 | 22.3 | 12 | 75 | 150 | | |
| | 2525-6T12-140-250 | 25 | 25 | 25 | 150 | 37 | 22.3 | 12 | 140 | 250 | | |
| | 2525-6T12-200-000 | 25 | 25 | 25 | 150 | 37 | 22.3 | 12 | 200 | ∞ | | |
| | 2525-6T20-50-85 | 25 | 25 | 25 | 150 | 41 | 22.55 | 20 | 50 | 85 | | |
| | 2525-6T20-75-150 | 25 | 25 | 25 | 150 | 41 | 22.55 | 20 | 75 | 150 | | |
| | 2525-6T20-140-250 | 25 | 25 | 25 | 150 | 41 | 22.55 | 20 | 140 | 250 | | |
| | 2525-6T20-200-000 | 25 | 25 | 25 | 150 | 41 | 22.55 | 20 | 200 | ∞ | | |
| | 2525-8T25-75-150 | 25 | 25 | 25 | 150 | 49 | 21.9 | 25 | 75 | 150 | | |
| | 2525-8T25-140-250 | 25 | 25 | 25 | 150 | 49 | 21.9 | 25 | 140 | 250 | | |
| | 2525-8T25-200-000 | 25 | 25 | 25 | 150 | 49 | 21.9 | 25 | 200 | ∞ | | |
| | 2525-8T25-80-115 | 25 | 25 | 25 | 150 | 49 | 21.9 | 25 | 80 | 115 | | |
| | 3232-3T10-50-85 | 32 | 32 | 32 | 170 | 32 | 30.8 | 32 | 50 | 85 | SH060250 | LT-H5 |
| | 3232-3T10-80-130 | 32 | 32 | 32 | 170 | 32 | 30.8 | 32 | 80 | 130 | | |
| | 3232-3T10-125-250 | 32 | 32 | 32 | 170 | 32 | 30.8 | 32 | 125 | 250 | | |
| | 3232-3T10-200-000 | 32 | 32 | 32 | 170 | 32 | 30.8 | 32 | 200 | ∞ | | |
| | 3232-3T15-80-130 | 32 | 32 | 32 | 170 | 35 | 30.8 | 32 | 80 | 130 | | |
| | 3232-3T15-125-250 | 32 | 32 | 32 | 170 | 35 | 30.8 | 32 | 125 | 250 | | |
| | 3232-3T15-200-000 | 32 | 32 | 32 | 170 | 35 | 30.8 | 32 | 200 | ∞ | | |
| | 3232-4T10-35-50 | 32 | 32 | 32 | 170 | 32 | 30.5 | 32 | 35 | 50 | | |
| | 3232-4T10-45-65 | 32 | 32 | 32 | 170 | 32 | 30.5 | 32 | 45 | 65 | | |
| | 3232-4T10-55-85 | 32 | 32 | 32 | 170 | 32 | 30.5 | 32 | 55 | 85 | | |
| | 3232-4T10-80-130 | 32 | 32 | 32 | 170 | 32 | 30.5 | 32 | 80 | 130 | | |
| | 3232-4T10-125-250 | 32 | 32 | 32 | 170 | 32 | 30.5 | 32 | 125 | 250 | | |
| | 3232-4T15-35-50 | 32 | 32 | 32 | 170 | 35 | 30.5 | 32 | 35 | 50 | | |
| | 3232-4T15-45-65 | 32 | 32 | 32 | 170 | 35 | 30.5 | 32 | 45 | 65 | | |
| | 3232-4T15-55-85 | 32 | 32 | 32 | 170 | 35 | 30.5 | 32 | 55 | 85 | | |
| | 3232-4T15-80-130 | 32 | 32 | 32 | 170 | 35 | 30.5 | 32 | 80 | 130 | | |
| | 3232-4T15-125-250 | 32 | 32 | 32 | 170 | 35 | 30.5 | 32 | 125 | 250 | | |
| | 3232-5T15-50-80 | 32 | 32 | 32 | 170 | 37 | 30.05 | 32 | 50 | 80 | SH080250 | LT-H6 |
| | 3232-5T15-70-110 | 32 | 32 | 32 | 170 | 37 | 30.05 | 32 | 70 | 110 | | |
| | 3232-5T15-100-150 | 32 | 32 | 32 | 170 | 37 | 30.05 | 32 | 100 | 150 | | |
| | 3232-5T15-140-200 | 32 | 32 | 32 | 170 | 37 | 30.05 | 32 | 140 | 200 | | |
| | 3232-5T15-190-000 | 32 | 32 | 32 | 170 | 37 | 30.05 | 32 | 190 | ∞ | | |
| | 3232-5T20-50-80 | 32 | 32 | 32 | 170 | 39 | 30.05 | 32 | 50 | 80 | | |
| | 3232-5T20-70-110 | 32 | 32 | 32 | 170 | 39 | 30.05 | 32 | 70 | 110 | | |
| | 3232-5T20-100-150 | 32 | 32 | 32 | 170 | 39 | 30.05 | 32 | 100 | 150 | | |
| | 3232-5T20-140-200 | 32 | 32 | 32 | 170 | 39 | 30.05 | 32 | 140 | 200 | | |
| | 3232-5T20-190-000 | 32 | 32 | 32 | 170 | 39 | 30.05 | 32 | 190 | ∞ | | |
| | 3232-6T12-50-85 | 32 | 32 | 32 | 170 | 37 | 29.55 | 32 | 50 | 85 | | |
| | 3232-6T12-75-150 | 32 | 32 | 32 | 170 | 37 | 29.55 | 32 | 75 | 150 | | |
| | 3232-6T12-140-250 | 32 | 32 | 32 | 170 | 37 | 29.55 | 32 | 140 | 250 | | |
| | 3232-6T12-200-000 | 32 | 32 | 32 | 170 | 37 | 29.55 | 32 | 200 | ∞ | | |
| | 3232-6T20-50-85 | 32 | 32 | 32 | 170 | 41 | 29.55 | 32 | 50 | 85 | | |
| | 3232-6T20-75-150 | 32 | 32 | 32 | 170 | 41 | 29.55 | 32 | 75 | 150 | | |
| | 3232-6T20-140-250 | 32 | 32 | 32 | 170 | 41 | 29.55 | 32 | 140 | 250 | | |
| | 3232-6T20-200-000 | 32 | 32 | 32 | 170 | 41 | 29.55 | 32 | 200 | ∞ | | |
| | 3232-8T25-75-150 | 32 | 32 | 32 | 170 | 47 | 28.9 | 32 | 75 | 150 | | |
| | 3232-8T25-140-250 | 32 | 32 | 32 | 170 | 47 | 28.9 | 32 | 140 | 250 | | |
| | 3232-8T25-200-000 | 32 | 32 | 32 | 170 | 47 | 28.9 | 32 | 200 | ∞ | | |

## ATSFR/L Face Grooving and Turning Holder

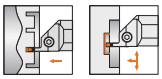
### Insert Application

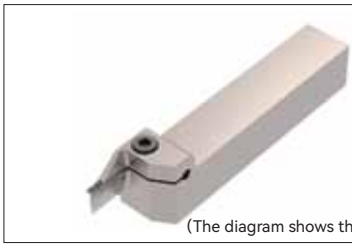
| Application | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | CM | CH | GS | TS | TM | RM |
| | | | | | | |
| **ATSFR/L 3232/2525-3T** | 79 | 79 | 59 | 35 | 35 | 59 |
| **ATSFR/L 3232/2525-4T** | 42 | 42 | 42 | 35 | 35 | 42 |
| **ATSFR/L 3232/2525-5T** | 50 | 50 | 50 | 50 | 50 | 50 |
| **ATSFR/L 3232/2525-6T** | 50 | 50 | 50 | 50 | 50 | 50 |
| **ATSFR/L 3232/2525-8T** | - | 60 | - | 60 | 60 | 60 |
| Reference page | P231 | P232 | P233 | P234 | P235 | P236 |

| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | TSR | TMR | RMR | RA | RS | G |
| | | | | | | |
| **ATSFR/L 3232/2525-3T** | 79 | 79 | 79 | 59 | 79 | 59 |
| **ATSFR/L 3232/2525-4T** | 55 | 55 | 55 | 42 | 55 | 42 |
| **ATSFR/L 3232/2525-5T** | 60 | 60 | 60 | 50 | 60 | 50 |
| **ATSFR/L 3232/2525-6T** | 60 | 60 | 60 | 50 | 60 | 50 |
| **ATSFR/L 3232/2525-8T** | 60 | 60 | 60 | 60 | 60 | 60 |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

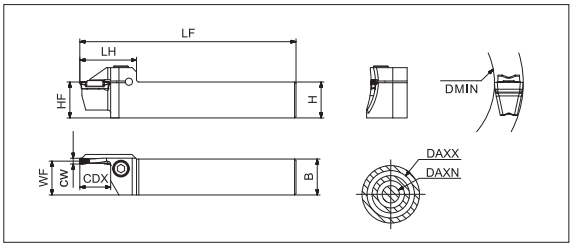
1. Inserts*: ACD/ACS series are only applicable to grooving
2. –: Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## ATSFR/L-OB Face Grooving and Turning Holder (Outside Bluge Type)





(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | LF | LH | WF | CDX | DAXN | DAXX | Screw | Wrench |
| ATSFR/L | 2020-3T10-30-40-OB | 20 | 20 | 20 | 140 | 31 | 18.95 | 10 | 30 | 40 | SH060200 | LT-H5 |
| | 2020-3T10-35-50-OB | 20 | 20 | 20 | 140 | 31 | 18.95 | 10 | 35 | 50 | | |
| | 2020-3T10-45-70-OB | 20 | 20 | 20 | 140 | 31 | 18.95 | 10 | 45 | 70 | | |
| | 2020-3T10-65-100-OB | 20 | 20 | 20 | 140 | 31 | 18.95 | 10 | 65 | 100 | | |
| | 2020-3T10-95-200-OB | 20 | 20 | 20 | 140 | 31 | 18.95 | 10 | 95 | 200 | | |
| | 2020-3T10-190-000-OB | 20 | 20 | 20 | 140 | 31 | 18.95 | 10 | 190 | ∞ | | |
| | 2020-3T15-45-70-OB | 20 | 20 | 20 | 140 | 35 | 18.95 | 15 | 45 | 70 | | |
| | 2020-3T15-65-100-OB | 20 | 20 | 20 | 140 | 35 | 18.95 | 15 | 65 | 100 | | |
| | 2020-4T10-20-30-OB | 20 | 20 | 20 | 140 | 31 | 18.55 | 10 | 20 | 30 | | |
| | 2020-4T10-25-35-OB | 20 | 20 | 20 | 140 | 31 | 18.55 | 10 | 25 | 35 | | |
| | 2020-4T10-30-45-OB | 20 | 20 | 20 | 140 | 31 | 18.55 | 10 | 30 | 45 | | |
| | 2020-4T10-35-50-OB | 20 | 20 | 20 | 140 | 31 | 18.55 | 10 | 35 | 50 | | |
| | 2020-4T10-45-70-OB | 20 | 20 | 20 | 140 | 31 | 18.55 | 10 | 45 | 70 | | |
| | 2020-4T10-65-120-OB | 20 | 20 | 20 | 140 | 31 | 18.55 | 10 | 65 | 120 | | |
| | 2020-4T10-115-200-OB | 20 | 20 | 20 | 140 | 31 | 18.55 | 10 | 115 | 200 | | |
| | 2020-4T16-30-45-OB | 20 | 20 | 20 | 140 | 36 | 18.55 | 16 | 30 | 45 | | |
| | 2020-4T16-35-50-OB | 20 | 20 | 20 | 140 | 36 | 18.55 | 16 | 35 | 50 | | |
| | 2020-4T16-45-70-OB | 20 | 20 | 20 | 140 | 36 | 18.55 | 16 | 45 | 70 | | |
| | 2020-4T16-65-120-OB | 20 | 20 | 20 | 140 | 36 | 18.55 | 16 | 65 | 120 | | |
| | 2020-4T16-115-200-OB | 20 | 20 | 20 | 140 | 36 | 18.55 | 16 | 115 | 200 | | |
| | 2525-3T10-35-50-OB | 25 | 25 | 25 | 150 | 38 | 23.95 | 10 | 35 | 50 | SH060250 | LT-H5 |
| | 2525-3T10-45-70-OB | 25 | 25 | 25 | 150 | 38 | 23.95 | 10 | 45 | 70 | | |
| | 2525-3T10-65-100-OB | 25 | 25 | 25 | 150 | 38 | 23.95 | 10 | 65 | 100 | | |
| | 2525-3T10-95-200-OB | 25 | 25 | 25 | 150 | 38 | 23.95 | 10 | 95 | 200 | | |
| | 2525-3T10-190-000-OB | 25 | 25 | 25 | 150 | 38 | 23.95 | 10 | 190 | ∞ | | |
| | 2525-3T15-45-70-OB | 25 | 25 | 25 | 150 | 38 | 23.95 | 15 | 45 | 70 | | |
| | 2525-3T15-65-100-OB | 25 | 25 | 25 | 150 | 38 | 23.95 | 15 | 65 | 100 | | |
| | 2525-4T10-25-35-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 10 | 25 | 35 | | |
| | 2525-4T10-30-45-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 10 | 30 | 45 | | |
| | 2525-4T10-35-50-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 10 | 35 | 50 | | |
| | 2525-4T10-45-70-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 10 | 45 | 70 | | |
| | 2525-4T10-65-120-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 10 | 65 | 120 | | |
| | 2525-4T10-115-200-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 10 | 115 | 200 | | |
| | 2525-4T10-190-000-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 10 | 190 | ∞ | | |
| | 2525-4T20-30-45-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 20 | 30 | 45 | | |
| | 2525-4T20-35-50-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 20 | 35 | 50 | | |
| | 2525-4T20-45-70-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 20 | 45 | 70 | | |
| | 2525-4T20-65-125-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 20 | 65 | 125 | | |
| | 2525-4T20-115-200-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 20 | 115 | 200 | | |
| | 2525-4T20-190-000-OB | 25 | 25 | 25 | 150 | 39 | 23.55 | 20 | 190 | ∞ | | |

## ATSFR/L-OB Face Grooving and Turning Holder (Outside Bluge Type)

| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | LF | LH | WF | CDX | DAXN | DAXX | Screw | Wrench |
| ATSFR/L | 2525-5T15-50-80-OB | 25 | 25 | 25 | 150 | 41 | 23.05 | 15 | 50 | 80 | SH080250 | LT-H6 |
| | 2525-5T15-70-110-OB | 25 | 25 | 25 | 150 | 41 | 23.05 | 15 | 70 | 110 | | |
| | 2525-5T15-100-150-OB | 25 | 25 | 25 | 150 | 41 | 23.05 | 15 | 100 | 150 | | |
| | 2525-5T15-140-200-OB | 25 | 25 | 25 | 150 | 41 | 23.05 | 15 | 140 | 200 | | |
| | 2525-5T15-190-000-OB | 25 | 25 | 25 | 150 | 41 | 23 | 15 | 190 | ∞ | | |
| | 2525-5T25-50-80-OB | 25 | 25 | 25 | 150 | 49 | 23.05 | 25 | 50 | 80 | | |
| | 2525-5T25-70-110-OB | 25 | 25 | 25 | 150 | 49 | 23.05 | 25 | 70 | 110 | | |
| | 2525-5T25-100-150-OB | 25 | 25 | 25 | 150 | 49 | 23.05 | 25 | 100 | 150 | | |
| | 2525-5T25-140-200-OB | 25 | 25 | 25 | 150 | 49 | 23.05 | 25 | 140 | 200 | | |
| | 2525-5T25-190-000-OB | 25 | 25 | 25 | 150 | 49 | 23.05 | 25 | 190 | ∞ | | |
| | 2525-6T15-50-70-OB | 25 | 25 | 25 | 150 | 41 | 22.55 | 15 | 50 | 70 | | |
| | 2525-6T15-60-100-OB | 25 | 25 | 25 | 150 | 41 | 22.55 | 15 | 60 | 100 | | |
| | 2525-6T15-90-180-OB | 25 | 25 | 25 | 150 | 41 | 22.55 | 15 | 90 | 180 | | |
| | 2525-6T15-170-400-OB | 25 | 25 | 25 | 150 | 41 | 22.55 | 15 | 170 | 400 | | |
| | 2525-6T15-390-000-OB | 25 | 25 | 25 | 150 | 41 | 22.55 | 15 | 390 | ∞ | | |
| | 2525-6T25-50-70-OB | 25 | 25 | 25 | 150 | 49 | 22.55 | 25 | 50 | 70 | | |
| | 2525-6T25-60-100-OB | 25 | 25 | 25 | 150 | 49 | 22.55 | 25 | 60 | 100 | | |
| | 2525-6T25-90-180-OB | 25 | 25 | 25 | 150 | 49 | 22.55 | 25 | 90 | 180 | | |
| | 2525-6T25-170-400-OB | 25 | 25 | 25 | 150 | 49 | 22.55 | 25 | 170 | 400 | | |
| | 2525-6T25-390-000-OB | 25 | 25 | 25 | 150 | 49 | 22.55 | 25 | 390 | ∞ | | |
| | 2525-8T25-60-100-OB | 25 | 25 | 25 | 150 | 49 | 21.55 | 25 | 60 | 100 | | |
| | 2525-8T25-90-180-OB | 25 | 25 | 25 | 150 | 49 | 21.55 | 25 | 90 | 180 | | |
| | 2525-8T25-170-400-OB | 25 | 25 | 25 | 150 | 49 | 21.55 | 25 | 170 | 400 | | |
| | 2525-8T25-390-000-OB | 25 | 25 | 25 | 150 | 49 | 21.55 | 25 | 390 | ∞ | | |
| | 3232-3T10-45-70-OB | 32 | 32 | 38 | 170 | 38 | 30.95 | 10 | 45 | 70 | SH060250 | LT-H5 |
| | 3232-3T10-65-100-OB | 32 | 32 | 38 | 170 | 38 | 30.95 | 10 | 65 | 100 | | |
| | 3232-3T10-95-200-OB | 32 | 32 | 38 | 170 | 38 | 30.95 | 10 | 95 | 200 | | |
| | 3232-3T10-190-000-OB | 32 | 32 | 38 | 170 | 38 | 30.95 | 10 | 190 | ∞ | | |
| | 3232-3T15-45-70-OB | 32 | 32 | 38 | 170 | 38 | 30.95 | 15 | 45 | 70 | | |
| | 3232-3T15-65-100-OB | 32 | 32 | 38 | 170 | 38 | 30.95 | 15 | 65 | 100 | | |
| | 3232-3T15-95-200-OB | 32 | 32 | 38 | 170 | 38 | 30.95 | 15 | 95 | 200 | | |
| | 3232-3T15-190-000-OB | 32 | 32 | 38 | 170 | 38 | 30.8 | 15 | 190 | ∞ | | |
| | 3232-4T10-30-45-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 10 | 30 | 45 | | |
| | 3232-4T10-35-50-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 10 | 35 | 50 | | |
| | 3232-4T10-45-70-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 10 | 45 | 70 | | |
| | 3232-4T10-65-120-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 10 | 65 | 120 | | |
| | 3232-4T10-115-200-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 10 | 115 | 200 | | |
| | 3232-4T10-190-000-OB | 32 | 32 | 38 | 170 | 39 | 30.5 | 10 | 190 | ∞ | | |
| | 3232-4T20-30-45-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 20 | 30 | 45 | | |
| | 3232-4T20-35-50-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 20 | 35 | 50 | | |
| | 3232-4T20-45-70-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 20 | 45 | 70 | | |
| | 3232-4T20-65-120-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 20 | 65 | 120 | | |
| | 3232-4T20-115-200-OB | 32 | 32 | 38 | 170 | 39 | 30.55 | 20 | 115 | 200 | | |
| | 3232-4T20-190-000-OB | 32 | 32 | 38 | 170 | 39 | 30.5 | 20 | 190 | ∞ | | |

## ATSFR/L-OB Face Grooving and Turning Holder (Outside Bluge Type)

| Product code | | Dimension (mm) | | | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H | B | HF | LF | LH | WF | CDX | DAXN | DAXX | Screw | Wrench |
| | | | | | | | | | | | | |
| ATSFR/L | **3232-5T15-50-80-OB** | 32 | 32 | 32 | 170 | 41 | 30.05 | 15 | 50 | 80 | SH080250 | LT-H6 |
| | **3232-5T15-70-110-OB** | 32 | 32 | 32 | 170 | 41 | 30.05 | 15 | 70 | 110 | | |
| | **3232-5T15-100-150-OB** | 32 | 32 | 32 | 170 | 41 | 30.05 | 15 | 100 | 150 | | |
| | **3232-5T15-140-200-OB** | 32 | 32 | 32 | 170 | 41 | 30.05 | 15 | 140 | 200 | | |
| | **3232-5T15-190-000-OB** | 32 | 32 | 32 | 170 | 41 | 30.05 | 15 | 190 | ∞ | | |
| | **3232-5T25-50-80-OB** | 32 | 32 | 32 | 170 | 49 | 30.05 | 25 | 50 | 80 | | |
| | **3232-5T25-70-110-OB** | 32 | 32 | 32 | 170 | 49 | 30.05 | 25 | 70 | 110 | | |
| | **3232-5T25-100-150-OB** | 32 | 32 | 32 | 170 | 49 | 30.05 | 25 | 100 | 150 | | |
| | **3232-5T25-140-200-OB** | 32 | 32 | 32 | 170 | 49 | 30.05 | 25 | 140 | 200 | | |
| | **3232-5T25-190-000-OB** | 32 | 32 | 32 | 170 | 49 | 30.05 | 25 | 190 | ∞ | | |
| | **3232-6T15-50-70-OB** | 32 | 32 | 32 | 170 | 41 | 29.55 | 15 | 50 | 70 | | |
| | **3232-6T15-60-100-OB** | 32 | 32 | 32 | 170 | 41 | 29.55 | 15 | 60 | 100 | | |
| | **3232-6T15-90-180-OB** | 32 | 32 | 32 | 170 | 41 | 29.55 | 15 | 90 | 180 | | |
| | **3232-6T15-170-400-OB** | 32 | 32 | 32 | 170 | 41 | 29.55 | 15 | 170 | 400 | | |
| | **3232-6T15-390-000-OB** | 32 | 32 | 32 | 170 | 41 | 29.55 | 15 | 390 | ∞ | | |
| | **3232-6T25-50-70-OB** | 32 | 32 | 32 | 170 | 49 | 29.55 | 25 | 50 | 70 | | |
| | **3232-6T25-60-100-OB** | 32 | 32 | 32 | 170 | 49 | 29.55 | 25 | 60 | 100 | | |
| | **3232-6T25-90-180-OB** | 32 | 32 | 32 | 170 | 49 | 29.55 | 25 | 90 | 180 | | |
| | **3232-6T25-170-400-OB** | 32 | 32 | 32 | 170 | 49 | 29.55 | 25 | 170 | 400 | | |
| | **3232-6T25-390-000-OB** | 32 | 32 | 32 | 170 | 49 | 29.5 | 25 | 390 | ∞ | | |
| | **3232-8T25-60-100-OB** | 32 | 32 | 32 | 170 | 49 | 28.55 | 25 | 60 | 100 | | |
| | **3232-8T25-90-180-OB** | 32 | 32 | 32 | 170 | 49 | 28.55 | 25 | 90 | 180 | | |
| | **3232-8T25-170-400-OB** | 32 | 32 | 32 | 170 | 49 | 28.55 | 25 | 170 | 400 | | |
| | **3232-8T25-390-000-OB** | 32 | 32 | 32 | 170 | 49 | 28.55 | 25 | 390 | ∞ | | |

## ATSFR/L-OB Face Grooving and Turning Holder (Outside Bluge Type)

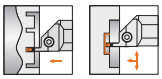
### Insert Application

| Application | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | CM | CH | GS | TS | TM | RM |
| | | | | | | |
| **ATSFR/L 2020-3T...OB** | 79 | 79 | 59 | 30 | 30 | 59 |
| **ATSFR/L 2020-4T...OB** | 42 | 42 | 42 | 22 | 22 | 42 |
| **ATSFR/L 2525/3232-3T...OB** | 79 | 79 | 59 | 35 | 35 | 59 |
| **ATSFR/L 2525/3232-4T...OB** | 42 | 42 | 42 | 25 | 25 | 42 |
| **ATSFR/L 2525/3232-5T...OB** | 50 | 50 | 50 | 50 | 50 | 50 |
| **ATSFR/L 2525/3232-6T...OB** | 50 | 50 | 50 | 50 | 50 | 50 |
| **ATSFR/L 2525/3232-8T...OB** | - | 60 | - | 60 | 60 | 60 |
| Reference page | P231 | P232 | P233 | P234 | P235 | P236 |

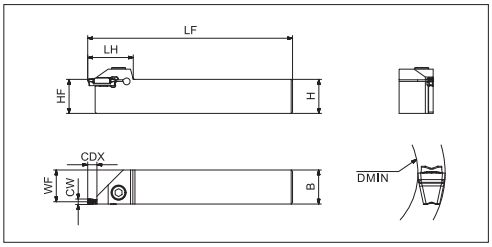
| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | TSR | TMR | RMR | RA | RS | G |
| | | | | | | |
| **ATSFR/L 2020-3T...OB** | 79 | 79 | 79 | 59 | 79 | 59 |
| **ATSFR/L 2020-4T...OB** | 55 | 55 | 55 | 42 | 55 | 42 |
| **ATSFR/L 2525/3232-3T...OB** | 79 | 79 | 79 | 59 | 79 | 59 |
| **ATSFR/L 2525/3232-4T...OB** | 55 | 55 | 55 | 42 | 55 | 42 |
| **ATSFR/L 2525/3232-5T...OB** | 60 | 60 | 60 | 50 | 60 | 50 |
| **ATSFR/L 2525/3232-6T...OB** | 60 | 60 | 60 | 50 | 60 | 50 |
| **ATSFR/L 2525/3232-8T...OB** | 60 | 60 | 60 | 60 | 60 | 60 |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

1. Inserts*: ACD/ACS series are only applicable to grooving
2. -: Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## AGSFR/L External & Face Grooving and Turning Holder



(The diagram shows the right hand holder)




| Product code | | Insert width (mm) | Dimension (mm) | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | H | B | HF | LF | LH | WF | CDX | Screw | Wrench |
| AGSFR/L | **1616-4** | 2, 3, 4 | 16 | 16 | 16 | 110 | 33 | 14.30 | 4.6 | SH060160 | LT-H5 |
| | **2020-4** | 2, 3, 4 | 20 | 20 | 20 | 125 | 33 | 18.30 | 4.6 | SH060200 | |
| | **2020-6** | 5, 6 | 20 | 20 | 20 | 125 | 37 | 17.30 | 4.6 | | |
| | **2525-4** | 2, 3, 4 | 25 | 25 | 25 | 150 | 33 | 23.30 | 4.6 | SH060250 | |
| | **2525-6** | 5, 6 | 25 | 25 | 25 | 150 | 37 | 22.30 | 4.6 | | |

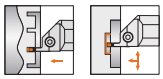
## Insert Application

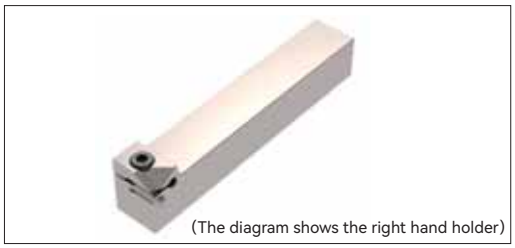
| Application / Insert shape / Product code / Minimum machining diameter DMIN (mm) | Insert width (mm) | Low feed rate | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|---|---|
| | | CS | CM | CH | GS | TS | TM | RM |
| **AGSFR/L.....** | 2 | 196 | 196 | 196 | 100 | 196 | - | 196 |
| | 3 | 79 | 79 | 79 | 59 | 24 | 24 | 59 |
| | 4 | - | 42 | 42 | 42 | 22 | 22 | 42 |
| | 5 | - | 50 | 50 | 40 | 20 | 20 | 40 |
| | 6 | - | 48 | 48 | 38 | 18 | 18 | 38 |
| Reference page | | P230 | P231 | P232 | P233 | P234 | P235 | P236 |

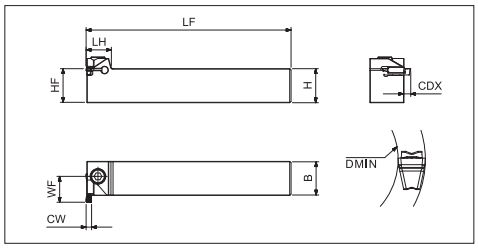
| Application / Insert shape / Product code / Minimum machining diameter DMIN (mm) | Insert width (mm) | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|---|
| | | TSR | TMR | RMR | RA | RS | G |
| **AGSFR/L.....** | 2 | 300 | - | 300 | - | 300 | 100 |
| | 3 | 79 | 79 | 79 | 59 | 79 | 59 |
| | 4 | 55 | 55 | 55 | 42 | 55 | 42 |
| | 5 | 60 | 60 | 60 | 50 | 60 | 40 |
| | 6 | 60 | 60 | 60 | 50 | 60 | 38 |
| Reference page | | P234 | P235 | P236 | P237 | P237 | P239 |

1. Inserts*: ACD/ACS series are only applicable to grooving
2. — : Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## AGPFR/L Face Grooving and Turning Holder






| Product code | | Insert width (mm) | Dimension (mm) | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | H | B | HF | LF | LH | CDX | Screw | Wrench |
| AGPFR/L | 2020-4 | 2, 3, 4 | 20 | 20 | 20 | 125 | 18 | 4.6 | SH060200 | LT-H5 |
| | 2525-4 | 2, 3, 4 | 25 | 25 | 25 | 150 | 18 | 4.6 | SH060250 | LT-H5 |
| | 2525-6 | 5, 6 | 25 | 25 | 25 | 150 | 22 | 4.6 | | |

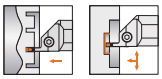
## Insert Application

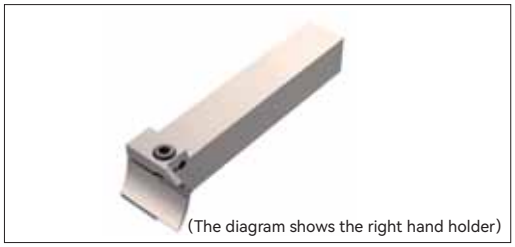
| Application | Insert width (mm) | Low feed rate | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | | CS | CM | CH | GS | TS | TM | RM |
| AGPFR/L..... | 2 | 196 | 196 | 196 | 100 | 196 | - | 196 |
| | 3 | 79 | 79 | 79 | 59 | 24 | 24 | 59 |
| | 4 | - | 42 | 42 | 42 | 22 | 22 | 42 |
| | 5 | - | 50 | 50 | 40 | 20 | 20 | 40 |
| | 6 | - | 48 | 48 | 38 | 18 | 18 | 38 |
| Reference page | | P230 | P231 | P232 | P233 | P234 | P235 | P236 |

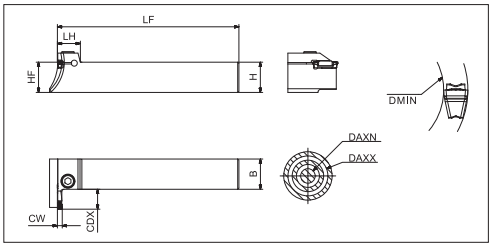
| Application | Insert width (mm) | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | | TSR | TMR | RMR | RA | RS | G |
| AGPFR/L..... | 2 | 300 | - | 300 | - | 300 | 100 |
| | 3 | 79 | 79 | 79 | 59 | 79 | 59 |
| | 4 | 55 | 55 | 55 | 42 | 55 | 42 |
| | 5 | 60 | 60 | 60 | 50 | 60 | 40 |
| | 6 | 60 | 60 | 60 | 50 | 60 | 38 |
| Reference page | | P234 | P235 | P236 | P237 | P237 | P239 |

1. Inserts*: ACD/ACS series are only applicable to grooving
2. — : Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## ATPFR/L Face Grooving and Turning Holder




(The diagram shows the right hand holder)




| Product code | | Insert width (mm) | Dimension (mm) | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | H | B | LF | LH | CDX | DAXN | DAXX | Screw | Wrench |
| ATPFR/L | **2525-3T10-30-40** | 3 | 25 | 25 | 150 | 18 | 10 | 30 | 40 | SH050250 | LT-H4 |
| | **2525-3T10-35-50** | 3 | 25 | 25 | 150 | 18 | 10 | 35 | 50 | | |
| | **2525-3T15-45-60** | 3 | 25 | 25 | 150 | 18 | 15 | 45 | 60 | | |
| | **2525-3T15-55-85** | 3 | 25 | 25 | 150 | 18 | 15 | 55 | 85 | | |
| | **2525-4T12-25-40** | 4 | 25 | 25 | 150 | 18.5 | 12 | 25 | 40 | SH060250 | LT-H5 |
| | **2525-4T15-35-50** | 4 | 25 | 25 | 150 | 18.5 | 15 | 35 | 50 | | |
| | **2525-4T15-45-60** | 4 | 25 | 25 | 150 | 18.5 | 15 | 45 | 60 | | |
| | **2525-4T15-55-85** | 4 | 25 | 25 | 150 | 18.5 | 15 | 55 | 85 | | |
| | **2525-5T20-50-80** | 5 | 25 | 25 | 150 | 22 | 20 | 50 | 80 | SH080250 | LT-H6 |
| | **2525-5T20-70-110** | 5 | 25 | 25 | 150 | 22 | 20 | 70 | 110 | | |
| | **2525-5T20-100-150** | 5 | 25 | 25 | 150 | 22 | 20 | 100 | 150 | | |
| | **2525-5T20-140-200** | 5 | 25 | 25 | 150 | 22 | 20 | 140 | 200 | | |
| | **2525-5T20-190-000** | 5 | 25 | 25 | 150 | 22 | 20 | 190 | ∞ | | |
| | **2525-6T20-50-85** | 6 | 25 | 25 | 150 | 22 | 20 | 50 | 85 | | |
| | **2525-6T20-75-150** | 6 | 25 | 25 | 150 | 22 | 20 | 75 | 150 | | |
| | **2525-6T20-140-250** | 6 | 25 | 25 | 150 | 22 | 20 | 140 | 250 | | |
| | **2525-6T20-240-000** | 6 | 25 | 25 | 150 | 22 | 20 | 240 | ∞ | | |

## ATPFR/L Face Grooving and Turning Holder

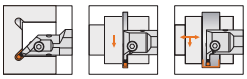
### Insert Application

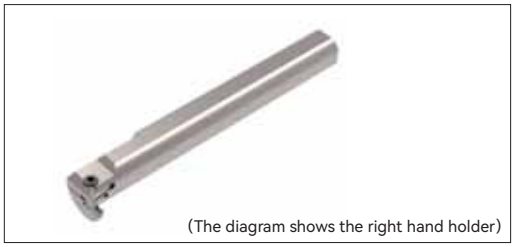
| Application | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | CM | CH | GS | TS | TM | RM |
| | | | | | | |
| **ATPFR/L 2525-3T** | 79 | 79 | 59 | 35 | 35 | 59 |
| **ATPFR/L 2525-4T** | 42 | 42 | 42 | 35 | 35 | 42 |
| **ATPFR/L 2525-5T** | 50 | 50 | 50 | 50 | 50 | 50 |
| **ATPFR/L 2525-6T** | 50 | 50 | 50 | 50 | 50 | 50 |
| Reference page | P231 | P232 | P233 | P234 | P235 | P236 |

| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | TSR | TMR | RMR | RA | RS | G |
| | | | | | | |
| **ATPFR/L 2525-3T** | 79 | 79 | 79 | 59 | 79 | 59 |
| **ATPFR/L 2525-4T** | 55 | 55 | 55 | 42 | 55 | 42 |
| **ATPFR/L 2525-5T** | 60 | 60 | 60 | 50 | 60 | 50 |
| **ATPFR/L 2525-6T** | 60 | 60 | 38 | 50 | 60 | 50 |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

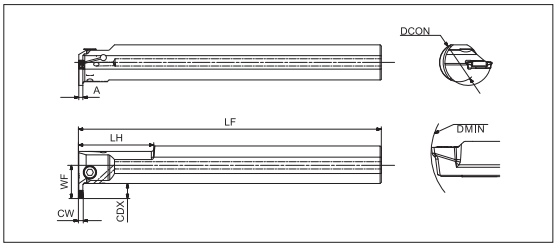
1. Inserts*: ACD/ACS series are only applicable to grooving
2. — : Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## ATPIR/L Internal Turning, Grooving and Profiling Holder





(The diagram shows the right hand holder)




| Product code | | Dimension (mm) | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DCON | LF | LH | WF | A | CDX | DMIN | Screw | Wrench |
| ATPIR/L | **20-2T6-25-C** | 20 | 160 | 40 | 15.8 | 1.8 | 6 | 25 | SH050120 | LT-H4 |
| | **25-2T5-25-C** | 25 | 200 | 40.2 | 17.5 | 1.8 | 5 | 25 | SH050160 | |
| | **32-2T5-30-C** | 32 | 250 | 40 | 19.8 | 1.8 | 5 | 30 | | |
| | **20-3T6-25-C** | 20 | 160 | 40 | 15.8 | 2.4 | 6 | 25 | SH050120 | |
| | **25-3T5-25-C** | 25 | 200 | 40.3 | 17.5 | 2.4 | 5 | 25 | SH050160 | |
| | **25-3T8-32-C** | 25 | 200 | 40 | 21.5 | 2.4 | 8 | 32 | | |
| | **32-3T5-30-C** | 32 | 250 | 60 | 19.8 | 2.4 | 5 | 30 | | |
| | **32-3T10-40-C** | 32 | 200 | 60 | 27 | 2.4 | 10 | 40 | | |
| | **40-3T12-50-C** | 40 | 300 | 65 | 33 | 2.4 | 12 | 50 | | |
| | **20-4T6-25-C** | 20 | 160 | 40 | 15.8 | 3.35 | 6 | 25 | SH050120 | |
| | **25-4T5-25-C** | 25 | 200 | 40.5 | 17.5 | 3.35 | 5 | 25 | SH050160 | |
| | **25-4T8-32-C** | 25 | 200 | 40.4 | 21.5 | 3.35 | 8 | 32 | | |
| | **32-4T5-30-C** | 32 | 250 | 60 | 20.8 | 3.35 | 5 | 30 | SH060160 | LT-H5 |
| | **32-4T10-40-C** | 32 | 250 | 60 | 27 | 3.35 | 10 | 40 | | |
| | **40-4T12-50-C** | 40 | 300 | 65.4 | 33 | 3.35 | 12 | 50 | | |
| | **50-4T14-60-C** | 50 | 350 | 70.4 | 40 | 3.35 | 14 | 60 | SH060200 | |
| | **25-5T5-31-C** | 25 | 200 | 40.5 | 17.3 | 4.35 | 5 | 31 | SH060160 | |
| | **32-5T5-31-C** | 32 | 250 | 60.5 | 20.8 | 4.35 | 5 | 31 | SH060200 | |
| | **32-5T10-40-C** | 32 | 250 | 60 | 27 | 4.35 | 10 | 40 | | |
| | **40-5T12-50-C** | 40 | 300 | 65.5 | 33 | 4.35 | 12 | 50 | SH060250 | |
| | **50-5T14-60-C** | 50 | 350 | 70.5 | 40 | 4.35 | 14 | 60 | | |
| | **32-6T5-31-C** | 32 | 250 | 60.5 | 20.8 | 5.35 | 5 | 31 | SH060200 | |
| | **32-6T10-40-C** | 32 | 250 | 60.5 | 27 | 5.35 | 10 | 40 | | |
| | **40-6T12-50-C** | 40 | 300 | 65.5 | 33 | 5.35 | 12 | 50 | SH060250 | |
| | **50-6T14-60-C** | 50 | 350 | 70.5 | 40 | 5.35 | 14 | 60 | | |
| | **32-8T6-38-C** | 32 | 250 | 60 | 21.3 | 7.35 | 6 | 38 | SH060200 | |
| | **40-8T6-42-C** | 40 | 300 | 65 | 25.8 | 7.35 | 6 | 42 | SH060250 | |

## ATPIR/L Internal Turning, Grooving and Profiling Holder

### Insert Application

| Application | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | CM | CH | GS | TS | TM | RM |
| **ATPIR/L **-2T** | - | - | 25 | 25 | - | 25 |
| **ATPIR/L **-3T** | 50 | 50 | 25 | 25 | 25 | 25 |
| **ATPIR/L **-4T** | 50 | 50 | 25 | 25 | 25 | 25 |
| **ATPIR/L **-5T** | 50 | 50 | 31 | 31 | 31 | 31 |
| **ATPIR/L **-6T** | 50 | 50 | 31 | 31 | 31 | 31 |
| **ATPIR/L **-8T** | - | - | - | 38 | 38 | 38 |
| Reference page | P231 | P232 | P233 | P234 | P235 | P236 |

| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | TSR | TMR | RMR | RA | RS | G |
| **ATPIR/L **-2T** | 25 | - | 25 | - | 25 | 25 |
| **ATPIR/L **-3T** | 25 | 25 | 25 | 25 | 25 | 25 |
| **ATPIR/L **-4T** | 25 | 25 | 31 | 25 | 25 | 25 |
| **ATPIR/L **-5T** | 31 | 31 | 31 | 31 | 31 | 31 |
| **ATPIR/L **-6T** | 31 | 31 | 38 | 31 | 31 | 31 |
| **ATPIR/L **-8T** | 38 | 38 | 38 | 38 | 38 | 38 |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

1. Inserts*: ACD/ACS series are only applicable to grooving
2. — : Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## ATGI Tool Holder Denomination System

| A | T | G | I | R | 25 | S | 43 | - | 40 | T30 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | - | 9 | 10 |

| 1- Company Name |
|---|
| ACHTECK |

| 2- Matching Insert Type | |
|---|---|
| T | Triangular |

| 3- Application | |
|---|---|
| G | Grooving |

| 4- Holder Type | |
|---|---|
| I | Internal machining |

| 5- Hand of Tool | |
|---|---|
| L | Left |
| R | Right |

| 6- Holder Size |
|---|
| 25=25.0mm<br>32=32.0mm |

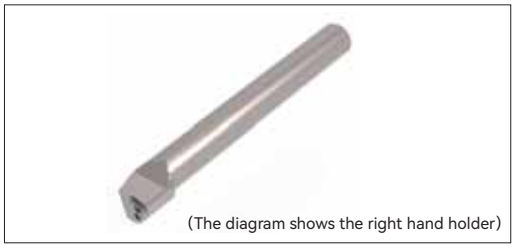
| 7- Holder Length |
|---|
| R:220mm<br>S:250mm |

| 8- Matching Insert Size (IC) |
|---|
| 43=12.70mm |

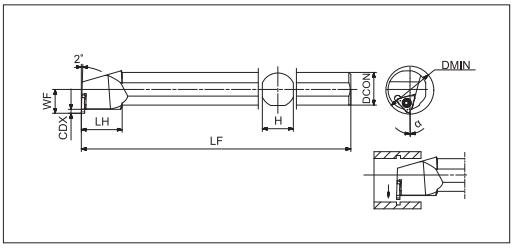
| 9- Minimum Internal Machining Diameter |
|---|
| 40=40mm |

| 10- Maximum CDX |
|---|
| T30=3.0mm |

## ATGIR/L Internal Shallow Grooving Holder



(The diagram shows the right hand holder)

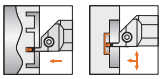


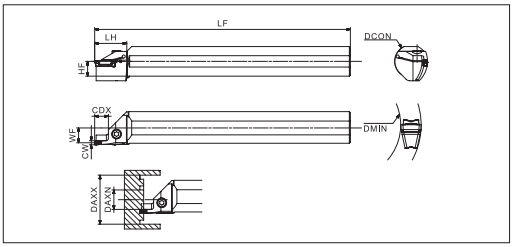

| Product code | | Dimension (mm) | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|
| | | DMIN | DCON | LF | LH | WF | CDX | Screw | Wrench |
| **ATGIR/L** | 25R32-35T28 | 35 | 25 | 220 | 30 | 17.5 | 2.8 | SP040085 | FT-TP15 |
| | 32S43-40T30 | 40 | 32 | 250 | 30 | 23.0 | 3.0 | SP05008550 | FT-TP20 |

## Insert Application

| Application | Grooving | Profiling |
|---|---|---|
| Insert shape / Product code | | |
| **ATGIR** 32 | ATG 32L | ATG 32L |
| **ATGIR** 43 | ATG 43L | ATG 43L |
| **ATGIL** 32 | ATG 32R | ATG 32R |
| **ATGIL** 43 | ATG 43R | ATG 43R |
| Reference page | P228 | P228 |

## ATSIR/L Internal Face Grooving and Turning Holder






| Product code | | Dimension (mm) | | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DCON | LF | LH | WF | CDX | DAXN | DAXX | Screw | Wrench |
| ATSIR/L | **25-3T12-35-45-C** | 25 | 200 | 31 | 11.4 | 12 | 35 | 45 | SH050160 | LT-H4 |
| | **25-3T12-40-60-C** | 25 | 200 | 31 | 11.4 | 12 | 40 | 60 | | |
| | **25-3T12-55-90-C** | 25 | 200 | 31 | 11.4 | 12 | 55 | 90 | | |
| | **25-3T12-80-150-C** | 25 | 200 | 31 | 11.4 | 12 | 80 | 150 | | |
| | **25-4T12-20-35-C** | 25 | 200 | 31 | 11 | 12 | 20 | 35 | | |
| | **25-4T12-28-45-C** | 25 | 200 | 31 | 11 | 12 | 28 | 45 | | |
| | **25-4T12-35-55-C** | 25 | 200 | 31 | 11 | 12 | 35 | 55 | | |
| | **32-4T12-45-70-C** | 32 | 250 | 31 | 14.5 | 12 | 45 | 70 | | |
| | **32-4T12-60-100-C** | 32 | 250 | 31 | 14.5 | 12 | 60 | 100 | | |
| | **32-4T12-90-180-C** | 32 | 250 | 31 | 14.5 | 12 | 90 | 180 | | |

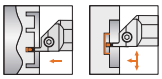
## Insert Application

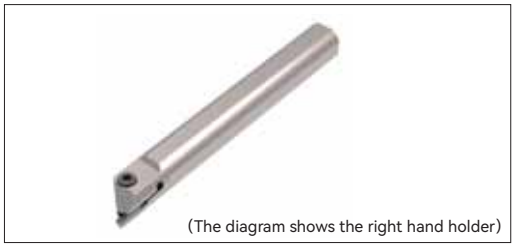
| Application | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | CM | CH | GS | TS | TM | RM |
| **ATSIR/L **3T** | 80 | 80 | 59 | 35 | 35 | 59 |
| **ATSIR/L **4T** | 42 | 42 | 42 | 22 | 22 | 42 |
| Reference page | P231 | P232 | P233 | P234 | P235 | P236 |

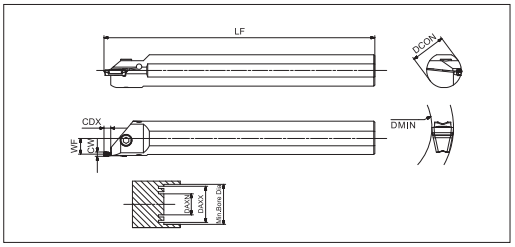
| Application | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|
| Insert shape / Product code / Minimum machining diameter DMIN (mm) | TSR | TMR | RMR | RA | RS | G |
| **ATSIR/L **3T** | 80 | 80 | 80 | 59 | 80 | 59 |
| **ATSIR/L **4T** | 55 | 55 | 55 | 42 | 55 | 42 |
| Reference page | P234 | P235 | P236 | P237 | P237 | P239 |

1. Inserts*: ACD/ACS series are only applicable to grooving
2. — : Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## AGSIR/L Internal Face Grooving and Turning Holder




(The diagram shows the right hand holder)




| Product code | | Insert width (mm) | Dimension (mm) | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|
| | | | DCON | LF | LH | WF | CDX | Screw | Wrench |
| AGSIR/L | **25-4T5-C** | 2, 3, 4 | 25 | 200 | 12.3 | 10.9 | 5.8 | SH060160 | LT-H5 |
| | **25-6T5-C** | 5, 6 | 25 | 200 | 12.3 | 10.3 | 5.8 | | |
| | **32-4T5-C** | 2, 3, 4 | 32 | 250 | 15.8 | 14.5 | 5.8 | | |
| | **32-6T5-C** | 5, 6 | 32 | 250 | 15.8 | 13.8 | 5.8 | | |

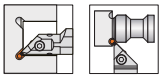
## Insert Application

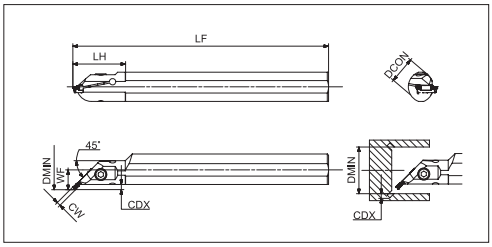
| Application / Insert shape / Product code / Minimum machining diameter DMIN (mm) | Insert width (mm) | Low feed rate | Low-Medium feed rate | Medium feed rate | Finishing | Low Cutting Force | Medium feed rate | Profiling |
|---|---|---|---|---|---|---|---|---|
| | | CS | CM | CH | GS | TS | TM | RM |
| **AGSIR/L.....** | 2 | 196 | 196 | 196 | 100 | 196 | - | 196 |
| | 3 | 79 | 79 | 79 | 59 | 24 | 24 | 59 |
| | 4 | - | 42 | 42 | 42 | 22 | 22 | 42 |
| | 5 | - | 50 | 50 | 40 | 20 | 20 | 40 |
| | 6 | - | 48 | 48 | 38 | 18 | 18 | 38 |
| Reference page | | P230 | P231 | P232 | P233 | P234 | P235 | P236 |

| Application / Insert shape / Product code / Minimum machining diameter DMIN (mm) | Insert width (mm) | Low Cutting Force | Medium feed rate | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|---|---|---|
| | | TSR | TMR | RMR | RA | RS | G |
| **AGSIR/L.....** | 2 | 300 | - | 300 | - | 300 | 100 |
| | 3 | 79 | 79 | 79 | 59 | 79 | 59 |
| | 4 | 55 | 55 | 55 | 42 | 55 | 42 |
| | 5 | 60 | 60 | 60 | 50 | 60 | 40 |
| | 6 | 60 | 60 | 60 | 50 | 60 | 38 |
| Reference page | | P234 | P235 | P236 | P237 | P237 | P239 |

1. Inserts*: ACD/ACS series are only applicable to grooving
2. — : Indicates that the insert is not available
3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

## AGUIR/L Internal Undercutting Holder






| Product code | | Dimension (mm) | | | | | | Spare parts | |
|---|---|---|---|---|---|---|---|---|---|
| | | DCON | LF | LH | WF | CDX | DIMN | Screw | Wrench |
| AGUIR/L | **20-3T3-45** | 20 | 160 | 40 | 12.3 | 3 | 45 | SH050120 | LT-H4 |
| | **20-4T3-45** | 20 | 160 | 40 | 12.3 | 3 | 45 | | |
| | **25-3T3-45** | 25 | 200 | 40 | 14.4 | 3 | 45 | SH050160 | |
| | **25-4T3-45** | 25 | 200 | 40 | 14.4 | 3 | 45 | | |
| | **25-6T3-45** | 25 | 200 | 40 | 14.4 | 3 | 45 | SH060160 | LT-H5 |

## Insert Application

| Application | Profiling | Ground Profiling | Ground Profiling | Ground |
|---|---|---|---|---|
| Insert shape / Product code | RM | RA | RS | G |
| | | | | |
| **AGUER/L**** | ATD 315 ..... ATD 630 | ATD 315 ..... ATD 630 | ATD 210 ..... ATD 630 | ATD 300E ..... ATD 600E |
| Reference page | P236 | P237 | P237 | P239 |

# ACHTECK

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THE EXPERT OF DIFFICULT MACHINING

## Grooving Inserts

## Turning Grade Description

### Grooving Grade Description

## P Steel, cast steel, long chiping malleable cast iron

### Basic grade

**AP301U P25(P15-P35)**

PVD coated grade, suitable for steel, stainless steel and heat resistant alloy grooving. High strength and wear resistant submicron carbide substrate with nanostructured PVD coating. Good coating adhesion, high wear resistance.

**AC230P P20(P10-P30)**

CVD coated grade. It's mainly used in steel, grey cast iron and nodular cast iron grooving, turning and profiling under high cutting speed. High toughness and wear resistant substrate combined with nano-structured coating offered good wear resistance, coating adhesion, machining stability and longer tool life.

### Supplemental grade

**AP330M P35(P25-P45)**

Brand new PVD coated grade. Suitable for stainless steel and steel finishing, semi-finishing and rough grooving. It's the 1st choice for stainless steel turning, and good for steel turning as well. It has high thermal stability, wear resistance, and excellent thermal crack resistance. Enriched cobalt superfine grain substrate offers high hardness and good anti shock capability which reduces the edge chipping problem.



## M Austenitic/ferrite/martensite, cast iron, manganese steel, alloyed cast iron, malleable cast iron, free cutting iron

### Basic grade

**AP330M M35(M25-M45)**

Brand new PVD coated grade. Suitable for stainless steel and steel finishing, semi-finishing and rough grooving. It's the 1st choice for stainless steel turning, and good for steel turning as well. It has high thermal stability, wear resistance, and excellent thermal crack resistance. Enriched cobalt superfine grain substrate offers high hardness and good anti shock capability which reduces the edge chipping problem.

### Supplemental grade

**AP301U M20(M15-M35)**

PVD coated grade. Suitable for steel, stainless steel and heat resistant alloy grooving. High strength and wear resistant submicron carbide substrate with nanostructured PVD coating. Good coating adhesion, high wear resistance.

**AP130S M10(M05-M20)**

PVD coated carbide material. Suitable for turning grooves in nickel-based, titanium-based, iron-based superalloys, titanium alloys, stainless steel, and other materials. The substrate adopts binder phase strengthening technology, enhancing the tool's high-temperature resistance and impact resistance. Paired with the newly developed PVD coating, which features a dense structure and low surface friction coefficient, the tool's resistance to built-up edge, wear resistance, and high-temperature oxidation resistance are improved.

## N Non-ferrous metal

### Basic grade

**AW100K N15 (N05-N25)**

Uncoated ultra-fine grain substrate, specially treated cutting edge, suitable for aluminum alloy grooving.

## S Heat resistant alloys

### Basic grade

**AP130S S15(S10-S20)**

PVD coated carbide material. Suitable for turning grooves in nickel-based, titanium-based, iron-based superalloys, titanium alloys, stainless steel, and other materials. The substrate adopts binder phase strengthening technology, enhancing the tool's high-temperature resistance and impact resistance. Paired with the newly developed PVD coating, which features a dense structure and low surface friction coefficient, the tool's resistance to built-up edge, wear resistance, and high-temperature oxidation resistance are improved.

## Grade Application Guide

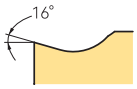
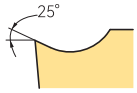
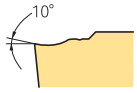
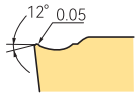
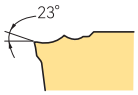
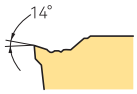
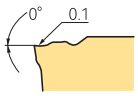
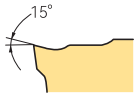
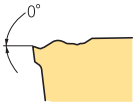
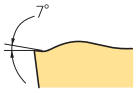
| Material Group | | ISO | ISO Group of Grooving Insert Grades | | | | | ISO |
|---|---|---|---|---|---|---|---|---|
| | | | PVD coated | | | CVD coated | Uncoated | |
| | | | AP301U | AP130S | AP330M | AC230P | AW100K | |
| P | Unalloyed steels /Alloyed steels | P01 | | | | | | P01 |
| | | P10 | AP301U | | | AC230P | | P10 |
| | | P20 | | | AP330M | | | P20 |
| | | P30 | | | | | | P30 |
| | | P40 | | | | | | P40 |
| | | P50 | | | | | | P50 |
| M | Stainless steels | M01 | | AP130S | | | | M01 |
| | | M10 | AP301U | | | | | M10 |
| | | M20 | | | AP330M | | | M20 |
| | | M30 | | | | | | M30 |
| | | M40 | | | | | | M40 |
| K | Cast iron | K01 | | | | | | K01 |
| | | K10 | | | | | | K10 |
| | | K20 | | | | | | K20 |
| | | K30 | | | | | | K30 |
| | | K40 | | | | | | K40 |
| | | K50 | | | | | | K50 |
| N | Aluminum/ Aluminum alloys | N01 | | | | | AW100K | N01 |
| | | N10 | | | | | | N10 |
| | | N20 | | | | | | N20 |
| | | N30 | | | | | | N30 |
| S | Heat resistant alloys | S01 | | | | | | S01 |
| | | S10 | | | | | | S10 |
| | | S20 | | AP130S | | | | S20 |
| | | S30 | | | | | | S30 |
| | | S40 | | | | | | S40 |
| H | Hardened steels/ Chilled cast iron | H01 | | | | | | H01 |
| | | H10 | | | | | | H10 |
| | | H20 | | | | | | H20 |
| | | H30 | | | | | | H30 |

## Grade Application Guide

| Materials | | | | Turning grade application | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | PVD coated | | | CVD coated | Uncoated |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | AP301U | AP130S | AP330M | AC230P | AW100K |
| P | Unalloyed steel | <600 | <180 | ● | ◐ | ● | ● | - |
| | | <950 | <280 | ● | ◐ | ● | ● | - |
| | Alloyed steel | 700-950 | 200-280 | ● | ◐ | ● | ● | - |
| | | 950-1200 | 280-355 | ● | ◐ | ● | ● | - |
| | | 1200-1400 | 355-415 | ● | ◐ | ● | ● | - |
| M | Duplex stainless steel | 778 | 230 | ● | ● | ● | - | - |
| | Austenitic stainless steel | 675 | 200 | ● | ● | ● | - | - |
| | Precipitation-hardening stainless steel | 1013 | 300 | ● | ● | ● | - | - |
| K | Grey cast iron | 700 | 220 | ◐ | - | - | ● | - |
| | Nodular cast iron | 880 | 260 | ◐ | - | - | ● | - |
| | Malleable cast iron | 800 | 250 | ◐ | - | - | ● | - |
| N | Aluminum | 260 | 75 | - | - | - | - | ● |
| | Aluminum alloy | 447 | 130 | - | - | - | - | ● |
| S | Fe-based alloy | 943 | 280 | - | ● | - | - | - |
| | Co-based alloy | 1076 | 320 | - | ● | - | - | - |
| | Ni-based alloy | 1177 | 350 | - | ● | - | - | - |
| | Ti-alloy | 1262 | 370 | - | ● | - | - | - |
| H | Hardened steel | - | 50-60HRC | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | - | - | - | - | - |

● 1st choice
◐ 2nd choice
- Inapplicable

## Insert Geometry Introduction

| Geometry | Insert | Shape of cutting edge | Description | Geometry width (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | External grooving | | | | | Face grooving | | Internal grooving | |
| | | | | Grooving | Parting off | Turning | Profiling | Undercutting | Grooving | Turning | Grooving | Turning |
| **ATG** | |   | • High precision insert<br>• Positive rake angle reduces the vibration<br>• 3 teeth design, with good flexibility. | 0.33<br>\|<br>4.5 | - | - | 0.5<br>1.0<br>1.5<br>2.0<br>3.0<br>4.0 | - | - | - | 0.33<br>\|<br>4.5 | - |
| **ASG** | |   | • High precision insert<br>• Big rake angle and sharp teeth design obtain good surface quality.<br>• 3 teeth design | 0.8<br>\|<br>2.5 | - | - | - | - | - | - | 0.8<br>\|<br>2.5 | |
| **CS** | |   | • Used in parting off & grooving stainless steel, heat resistant alloy and low carbon steel<br>• For low feed rate application | 2.0<br>\|<br>3.0 | 2.0<br>\|<br>3.0 | - | - | - | 3.0 | - | 3.0 | - |
| **CM** | | | • Used in parting off & grooving low carbon steel and stainless steel<br>• For sticky material, pipe fitting, thin-walled part parting off, low cutting force<br>• For low to medium feed rate | 2.0<br>3.0<br>4.0<br>5.0<br>6.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0 | - | - | - | 3.0<br>4.0<br>5.0<br>6.0 | - | 3.0<br>4.0<br>5.0<br>6.0 | - |
| **CH** | |   | • Used in parting off and grooving steel, alloy steel and stainless steel with high hardness and toughness.<br>• Strong cutting edge<br>• For parting off and grooving at medium to high feed rate | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | - | - | - | 3.0<br>4.0<br>5.0<br>6.0 | - | 3.0<br>4.0<br>5.0<br>6.0 | - |
| **GS** | |   | • Excellent chip breaking, suitable for grooving and finish turning.<br>• Geometry for finish machining, low cutting force, low feed, excellent surface quality.<br>• Ground insert, better precision control and positioning repeatability. | 2.0<br>\|<br>4.00 | 2.0<br>\|<br>4.00 | 2.0<br>\|<br>4.00 | - | - | 3.0<br>\|<br>4.00 | 3.0<br>\|<br>4.00 | 2.0<br>\|<br>4.00 | 2.0<br>\|<br>4.00 |
| **TS** | |   | • Multifunctional insert for external, internal turning and grooving, parting off, face grooving and face turning<br>• Excellent chip control<br>• For low and medium feed rate<br>• Extended diameter range for internal and face machining | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | - | - | 3.0<br>4.0<br>5.0<br>6.0 | 3.0<br>4.0<br>5.0<br>6.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 |
| **TM** | | | • Multifunctional insert for external, internal turning and grooving, parting off, face grooving and face turning<br>• Stronger cutting edge design<br>• For medium feed rate<br>• Extended diameter range for internal and face machining | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | - | - | 3.0<br>4.0<br>5.0<br>6.0 | 3.0<br>4.0<br>5.0<br>6.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 |
| **RM** | |   | • External grooving, turning, profiling<br>• Medium feed rate | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | - | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>5.0<br>6.0 | 3.0<br>4.0<br>5.0<br>6.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 |
| **RA** | |   | • For turning and profiling aluminum alloy<br>• High positive rake angle and sharp cutting edge<br>• Ground inserts with high precision | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 | - | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>5.0<br>6.0<br>8.0 |
| **RS** | |   | • External grooving, turning, profiling<br>• Robust cutting edge design<br>• Low feed applications<br>• Sharpened grade circular inserts with high precision control<br>• Good surface quality | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | - | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | -<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | -<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 | 2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>8.0 |
| **Precision ground** | |   | • Ground insert with high precision, better precision control<br>• Complete product offering<br>• Good surface quality | 1.0<br>\|<br>8.0 | - | 2.22<br>\|<br>8.0 | 3.0<br>4.0<br>4.8<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>4.8<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>4.8<br>5.0<br>6.0<br>8.0 | 3.0<br>4.0<br>4.8<br>5.0<br>6.0<br>8.0 | 2.22<br>\|<br>8.0 | 2.22<br>\|<br>8.0 |

## Triangular Shallow Grooving Insert Denomination System

| A | T | G | 32 | R/L | 050 | T12 | - | R005 |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | - | 8 |

| 1- Company Name |
|---|
| ACHTECK |

| 2- Insert Type | |
|---|---|
| T | Triangular |
| S | Only applied to Swiss lathe |

| 3- Application | |
|---|---|
| G | Grooving |

| 4- Insert IC Size |
|---|
| 32=9.525mm |
| 43=12.70mm |

| 5- Hand of Tool | |
|---|---|
| L | Left |
| R | Right |

| 6- Insert Width |
|---|
| 050=0.5mm |

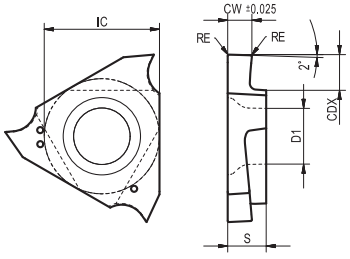
| 7- Maximum CDX |
|---|
| T12=1.2mm |

| 8- Insert Corner |
|---|
| R005=0.05mm |

## Shallow Grooving Series

ASG: Applied to external shallow grooving for Swiss lathe

| Product code | IC | S | D1 |
|---|---|---|---|
| ASG 32- | 9.525 | 3.18 | 4.6 |




(The diagram shows the right hand insert)

● Good Conditions ⬍ General Conditions
✱ Bad Conditions

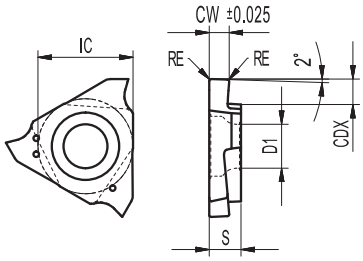
| Inserts | Product code | Cutting parameter | | Dimensions | | P | | | M | | K | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Grooving f (mm/rev) | CDX | CW | RE | AP301U | AP330M | AC230P | AP330M | AP301U | AC230P | AP301U | AW100K |
| | **ASG 32R/L033T08-R005** | 0.01-0.05 | 0.8 | 0.33 | 0.05 | ● | | | | ● | | ● | |
| | **ASG 32R/L050T12-R005** | 0.01-0.05 | 1.2 | 0.50 | 0.05 | ● | | | | ● | | ● | |
| | **ASG 32R/L075T20-R010** | 0.02-0.07 | 2.0 | 0.75 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L095T20-R010** | 0.02-0.07 | 2.0 | 0.95 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L100T20-R010** | 0.03-0.08 | 2.0 | 1.00 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L120T20-R010** | 0.03-0.08 | 2.0 | 1.20 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L125T20-R010** | 0.03-0.08 | 2.0 | 1.25 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L140T20-R010** | 0.03-0.08 | 2.0 | 1.40 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L145T20-R010** | 0.03-0.08 | 2.0 | 1.45 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L150T20-R010** | 0.03-0.08 | 2.0 | 1.50 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L175T20-R010** | 0.03-0.08 | 2.0 | 1.75 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L200T25-R010** | 0.03-0.08 | 2.5 | 2.00 | 0.10 | ● | | | | ● | | ● | |
| | **ASG 32R/L250T25-R010** | 0.03-0.08 | 2.5 | 2.50 | 0.10 | ● | | | | ● | | ● | |

● : Standard stock ○ : Made-to-Order

## Shallow Grooving Series

ATG: Applied to external and internal shallow grooving

| Product code | IC | S | D1 |
|---|---|---|---|
| ATG 32- | 9.525 | 3.18 | 4.4 |
| ATG 43- | 12.7 | 4.76 | 5.5 |
| ATG 43R/L450 | 12.7 | 5.0 | 5.5 |




(The diagram shows the right hand insert)

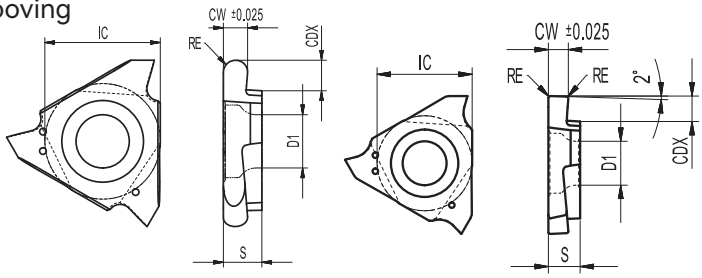
| Inserts | Product code | Machining conditions | | | | ● Good Conditions ⇕ General Conditions ✱ Bad Conditions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ● | ✱ | ⇕ | ✱ | ● | ⇕ | ● | ● |
| | | Cutting parameter | | Dimensions | | P | | | M | | K | | N |
| | | Grooving f (mm/rev) | CDX | CW | RE | AP301U | AP330M | AC230P | AP330M | AP301U | AC230P | AP301U | AW100K |
| | **ATG 32R/L033T08-R005** | 0.03-0.08 | 0.8 | 0.33 | 0.05 | ● | | | | ● | | ● | |
| | **ATG 32R/L050T12-R005** | 0.03-0.08 | 1.2 | 0.50 | 0.05 | ● | | | | ● | | ● | |
| | **ATG 32R/L075T20-R005** | 0.03-0.08 | 2.0 | 0.75 | 0.05 | ● | | | | ● | | ● | |
| | **ATG 32R/L095T20-R005** | 0.03-0.08 | 2.0 | 0.95 | 0.05 | ● | | | | ● | | ● | |
| | **ATG 32R/L100T20-R005** | 0.03-0.08 | 2.0 | 1.00 | 0.05 | ● | | | | ● | | ● | |
| | **ATG 32R/L110T20-R005** | 0.03-0.08 | 2.0 | 1.10 | 0.05 | ● | | | | ● | | ● | |
| | **ATG 32R/L120T20-R005** | 0.03-0.08 | 2.0 | 1.20 | 0.05 | ● | | | | ● | | ● | |
| | **ATG 32R/L125T20-R020** | 0.04-0.09 | 2.0 | 1.25 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L130T20-R020** | 0.04-0.09 | 2.0 | 1.30 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L140T25-R020** | 0.04-0.09 | 2.5 | 1.40 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L145T25-R020** | 0.04-0.09 | 2.5 | 1.45 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L150T25-R020** | 0.04-0.09 | 2.5 | 1.50 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L160T25-R020** | 0.04-0.09 | 2.5 | 1.60 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L170T25-R020** | 0.04-0.09 | 2.5 | 1.70 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L175T25-R020** | 0.04-0.09 | 2.5 | 1.75 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L200T25-R020** | 0.04-0.09 | 2.5 | 2.00 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L225T25-R020** | 0.04-0.09 | 2.5 | 2.25 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L250T25-R020** | 0.05-0.10 | 2.5 | 2.50 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 32R/L300T25-R020** | 0.05-0.10 | 2.5 | 3.00 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L100T20-R010** | 0.03-0.08 | 2.0 | 1.00 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L125T20-R010** | 0.04-0.09 | 2.0 | 1.25 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L125T20-R020** | 0.04-0.09 | 2.0 | 1.25 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L130T30-R010** | 0.04-0.09 | 3.0 | 1.30 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L130T30-R020** | 0.04-0.09 | 3.0 | 1.30 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L140T35-R020** | 0.04-0.09 | 3.5 | 1.40 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L145T35-R020** | 0.04-0.09 | 3.5 | 1.45 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L150T35-R010** | 0.04-0.09 | 3.5 | 1.50 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L150T35-R020** | 0.04-0.09 | 3.5 | 1.50 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L170T35-R020** | 0.04-0.09 | 3.5 | 1.70 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L175T35-R020** | 0.04-0.09 | 3.5 | 1.75 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L185T35-R020** | 0.04-0.09 | 3.5 | 1.85 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L195T35-R020** | 0.04-0.09 | 3.5 | 1.95 | 0.20 | ● | | | | ● | | ● | |

● : Standard stock ○ : Made-to-Order

## Shallow Grooving Series

ATG: Applied to external and internal shallow grooving

| Product code | IC | S | D1 |
|---|---|---|---|
| ATG 32- | 9.525 | 3.18 | 4.4 |
| ATG 43- | 12.7 | 4.76 | 5.5 |
| ATG 43R/L450 | 12.7 | 5.0 | 5.5 |




(The diagram shows the right hand insert)

● Good Conditions ◐ General Conditions
✱ Bad Conditions

| Inserts | Product code | Machining conditions | | | | ● | ✱ | ◐ | ✱ | ● | ◐ | ● | ● |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cutting parameter | | Dimensions | | P | | | M | | K | | N |
| | | Grooving f (mm/rev) | CDX | CW | RE | AP301U | AP330M | AC230P | AP330M | AP301U | AC230P | AP301U | AW100K |
| | **ATG 43R/L200T35-R010** | 0.04-0.09 | 3.5 | 2.00 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L200T35-R020** | 0.04-0.09 | 3.5 | 2.00 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L225T35-R020** | 0.04-0.09 | 3.5 | 2.25 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L230T35-R020** | 0.05-0.10 | 3.5 | 2.30 | 0.20 | ● | | | | ● | | ● | |
| | **ATG 43R/L250T50-R010** | 0.05-0.10 | 5.0 | 2.50 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L250T50-R030** | 0.05-0.10 | 5.0 | 2.50 | 0.30 | ● | | | | ● | | ● | |
| | **ATG 43R/L265T50-R030** | 0.05-0.10 | 5.0 | 2.65 | 0.30 | ● | | | | ● | | ● | |
| | **ATG 43R/L280T50-R030** | 0.05-0.10 | 5.0 | 2.80 | 0.30 | ● | | | | ● | | ● | |
| | **ATG 43R/L300T50-R010** | 0.05-0.10 | 5.0 | 3.00 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L300T50-R030** | 0.05-0.10 | 5.0 | 3.00 | 0.30 | ● | | | | ● | | ● | |
| | **ATG 43R/L325T50-R030** | 0.05-0.10 | 5.0 | 3.25 | 0.30 | ● | | | | ● | | ● | |
| | **ATG 43R/L330T50-R030** | 0.05-0.12 | 5.0 | 3.30 | 0.30 | ● | | | | ● | | ● | |
| | **ATG 43R/L350T50-R010** | 0.05-0.12 | 5.0 | 3.50 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L350T50-R030** | 0.05-0.12 | 5.0 | 3.50 | 0.30 | ● | | | | ● | | ● | |
| | **ATG 43R/L400T50-R010** | 0.05-0.12 | 5.0 | 4.00 | 0.10 | ● | | | | ● | | ● | |
| | **ATG 43R/L400T50-R040** | 0.05-0.12 | 5.0 | 4.00 | 0.40 | ● | | | | ● | | ● | |
| | **ATG 43R/L430T50-R040** | 0.05-0.12 | 5.0 | 4.30 | 0.40 | ● | | | | ● | | ● | |
| | **ATG 43R/L450T50-R040** | 0.05-0.12 | 5.0 | 4.50 | 0.40 | ● | | | | ● | | ● | |
| | **ATG 32R/L050T12-R025** | 0.03-0.08 | 1.2 | 0.50 | 0.25 | ● | | | | ● | | ● | |
| | **ATG 32R/L100T12-R050** | 0.03-0.08 | 1.2 | 1.00 | 0.50 | ● | | | | ● | | ● | |
| | **ATG 32R/L150T25-R075** | 0.04-0.09 | 2.5 | 1.50 | 0.75 | ● | | | | ● | | ● | |
| | **ATG 32R/L200T25-R100** | 0.04-0.09 | 2.5 | 2.00 | 1.00 | ● | | | | ● | | ● | |
| | **ATG 32R/L300T25-R150** | 0.05-0.10 | 2.5 | 3.00 | 1.50 | ● | | | | ● | | ● | |
| | **ATG 43R/L100T20-R050** | 0.03-0.08 | 2.0 | 1.00 | 0.50 | ● | | | | ● | | ● | |
| | **ATG 43R/L150T35-R075** | 0.04-0.09 | 3.5 | 1.50 | 0.75 | ● | | | | ● | | ● | |
| | **ATG 43R/L200T35-R100** | 0.04-0.09 | 3.5 | 2.00 | 1.00 | ● | | | | ● | | ● | |
| | **ATG 43R/L250T40-R125** | 0.05-0.10 | 5.0 | 2.50 | 1.25 | ● | | | | ● | | ● | |
| | **ATG 43R/L300T40-R150** | 0.05-0.10 | 5.0 | 3.00 | 1.50 | ● | | | | ● | | ● | |
| | **ATG 43R/L400T50-R200** | 0.05-0.12 | 5.0 | 4.00 | 2.00 | ● | | | | ● | | ● | |

● : Standard stock ○ : Made-to-Order

## Insert Denomination System (Pressing Insert)

| A | C | D | 4 | 0 | 3 | - | CM | 6 | R |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | | - | 6 | 7 | 8 |

**1- Company Name**

ACHTECK

**2- Application**

| | |
|---|---|
| C | Grooving/Parting off |
| T | Turning/Grooving |

**3- Insert Shape**

| | |
|---|---|
| S | Single-edged |
| D | Double-edged |

**4- Insert Width**

2=2.0mm
3=3.0mm
4=4.0mm

**5-Insert Corner**

02=0.2mm
03=0.3mm
04=0.4mm

**6-Geometry**

CS
CM
CH
GS
TS
TM
RM
RA

**7-Cutting Edge Angle**

6=6°
15=15°

**8-Hand of Tool**

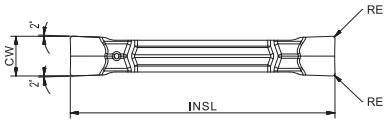
L: Left

R: Right



## Parting Off-Grooving Series

CS: Double-edged inserts applicable to parting off and grooving

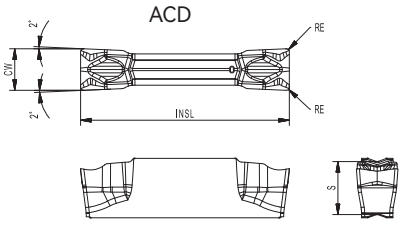


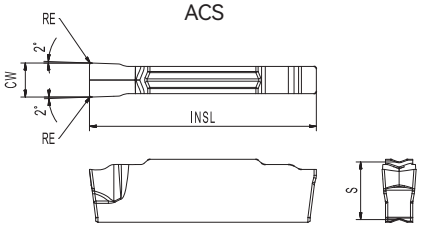
| Inserts | Product code | Machining conditions: ● Good Conditions ⇕ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ✱ | ⇕ | ✱ | ✱ | ● | ⇕ | ● | ✱ | ● |
| | | Cutting parameter | | Dimensions | | | | P | | | M | | | K | | S | N |
| | | CDX | f (mm/rev) | CW | RE | INSL | S | AP301U | AP330M | AC230P | AP330M | AP130S | AP301U | AC230P | AP301U | AP130S | AW100K |
| | **ACD 202 CS** | 19.7 | 0.04-0.13 | 2 | 0.2 | 20 | 5.1 | ● | ● | | ● | ● | ● | | ● | ● | |
| | **ACD 302 CS** | 19.7 | 0.05-0.15 | 3 | 0.2 | 20 | 5.1 | ● | ● | | ● | ● | ● | | ● | ● | |

● : Standard stock ○ : Made-to-Order

## Parting Off-Grooving Series

CM: Double-edged inserts applicable to parting off and grooving



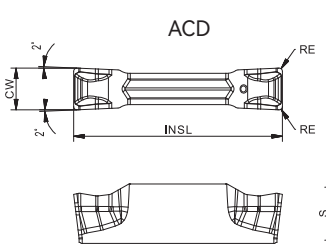

| Inserts | Product code | Machining conditions: ● Good Conditions ⧓ General Conditions ✱ Bad Conditions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● | ✱ | ⧓ | ✱ | ✱ | ● | ⧓ | ● | ✱ | ● | | | | |
| | | Cutting parameter | | Dimensions | | | | P | | | M | | | K | | S | N |
| | | CDX | f (mm/rev) | CW | RE | INSL | S | AP301U | AP330M | AC230P | AP330M | AP130S | AP301U | AC230P | AP301U | AP130S | AW100K |
| | **ACD 202-CM** | 19.7 | 0.04-0.15 | 2 | 0.2 | 20 | 5.1 | ● | ● | | ● | ● | ● | | ● | ● | |
| | **ACD 202-CM-6R** | 19.7 | 0.03-0.09 | 2 | 0.2 | 20.7 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACD 202-CM-6L** | 19.7 | 0.03-0.09 | 2 | 0.2 | 20.7 | 5.1 | ● | ○ | | ○ | | ● | | ● | | |
| | **ACD 202-CM-15R** | 19.7 | 0.03-0.09 | 2 | 0.2 | 21 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACD 202-CM-15L** | 19.7 | 0.03-0.09 | 2 | 0.2 | 21 | 5.1 | ● | ○ | | ○ | | ● | | ● | | |
| | **ACD 302-CM** | 19.7 | 0.05-0.16 | 3 | 0.2 | 20 | 5.1 | ● | ● | | ● | ● | ● | | ● | ● | |
| | **ACD 302-CM-6R** | 19.7 | 0.04-0.14 | 3 | 0.2 | 20.7 | 5.1 | ● | ○ | | ○ | | ● | | ● | | |
| | **ACD 302-CM-6L** | 19.7 | 0.04-0.14 | 3 | 0.2 | 20.7 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACD 302-CM-15R** | 19.7 | 0.04-0.14 | 3 | 0.2 | 21 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACD 302-CM-15L** | 19.7 | 0.04-0.14 | 3 | 0.2 | 21 | 5.1 | ● | ○ | | ○ | | ● | | ● | | |
| | **ACD 403-CM** | 19.7 | 0.06-0.18 | 4 | 0.3 | 20 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACD 403-CM-4R** | 19.7 | 0.05-0.16 | 4 | 0.3 | 20.7 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACD 403-CM-4L** | 19.7 | 0.05-0.16 | 4 | 0.3 | 20.7 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACD 503-CM** | 24.7 | 0.06-0.20 | 5 | 0.3 | 25 | 5.0 | ● | ○ | | ○ | | ● | | ● | | |
| | **ACD 503-CM-4R** | 24.7 | 0.06-0.18 | 5 | 0.3 | 25.7 | 5.0 | ○ | ○ | | ○ | | ○ | | ○ | | |
| | **ACD 503-CM-4L** | 24.7 | 0.06-0.18 | 5 | 0.3 | 25.7 | 5.0 | ○ | ○ | | ○ | | ○ | | ○ | | |
| | **ACD 603-CM** | 29.7 | 0.06-0.22 | 6 | 0.3 | 25 | 5.0 | ● | ○ | | ○ | | ● | | ● | | |
| | **ACS 202-CM** | — | 0.04-0.15 | 2 | 0.2 | 20 | 5.1 | ● | ● | | ● | | ● | | ● | | |
| | **ACS 302-CM** | — | 0.05-0.16 | 3 | 0.2 | 20 | 5.1 | ● | ○ | | ○ | | ● | | ● | | |
| | **ACS 403-CM** | — | 0.06-0.18 | 4 | 0.3 | 20 | 5.1 | ○ | ○ | | ○ | | ○ | | ○ | | |
| | **ACS 503-CM** | — | 0.06-0.20 | 5 | 0.3 | 25 | 5.0 | ○ | ○ | | ○ | | ○ | | ○ | | |
| | **ACS 603-CM** | — | 0.06-0.22 | 6 | 0.3 | 25 | 5.0 | ○ | ○ | | ○ | | ○ | | ○ | | |

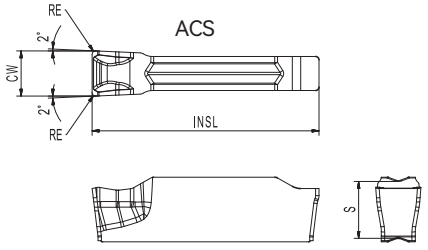
● : Standard stock ○ : Made-to-Order

Remark: 1. if R/L style inserts are selected, the feed need to be reduced by 20-40%.
2. ACS single edged insert's Tmax is determined according to the tool holder.

## Parting Off-Grooving Series

CH: Double-edged inserts applicable to parting off and grooving



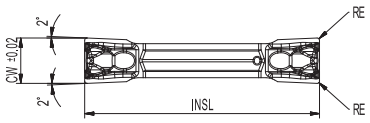

| Inserts | Product code | Machining conditions: ● Good Conditions ❶ General Conditions ✱ Bad Conditions | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● | ✱ | ❶ | ✱ | ● | ❶ | ● | ● | | | | | |
| | | Cutting parameter | | Dimensions | | | | P | | | M | | K | | N |
| | | CDX | f (mm/rev) | CW | RE | INSL | S | AP301U | AP330M | AC230P | AP330M | AP301U | AC230P | AP301U | AW100K |
| | **ACD 202-CH** | 19.7 | 0.05-0.20 | 2 | 0.2 | 20 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 202-CH-6R** | 19.7 | 0.04-0.16 | 2 | 0.2 | 20.7 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 202-CH-6L** | 19.7 | 0.04-0.16 | 2 | 0.2 | 20.7 | 5.1 | ● | ○ | | ○ | ● | | ● | |
| | **ACD 202-CH-15R** | 19.7 | 0.04-0.15 | 2 | 0.2 | 21 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 202-CH-15L** | 19.7 | 0.04-0.15 | 2 | 0.2 | 21 | 5.1 | ● | ○ | | ○ | ● | | ● | |
| | **ACD 2.502-CH** | 19.7 | 0.07-0.20 | 2.5 | 0.2 | 20 | 5.1 | ● | ○ | | ○ | ● | | ● | |
| | **ACD 302-CH** | 19.7 | 0.07-0.25 | 3 | 0.2 | 20 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 302-CH-6R** | 20.7 | 0.05-0.20 | 3 | 0.2 | 20.7 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 302-CH-6L** | 21.7 | 0.05-0.20 | 3 | 0.2 | 20.7 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 302-CH-15R** | 20 | 0.05-0.18 | 3 | 0.2 | 21 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 302-CH-15L** | 20 | 0.05-0.18 | 3 | 0.2 | 21 | 5.1 | ● | ○ | | ○ | ● | | ● | |
| | **ACD 403-CH** | 19 | 0.08-0.30 | 4 | 0.3 | 20 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 403-CH-4R** | 19.7 | 0.06-0.25 | 4 | 0.3 | 20.7 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 403-CH-4L** | 19.7 | 0.06-0.25 | 4 | 0.3 | 20.7 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACD 503-CH** | 24 | 0.09-0.35 | 5 | 0.3 | 25 | 5.0 | ● | ● | | ● | ● | | ● | |
| | **ACD 503-CH-4R** | 24.7 | 0.08-0.30 | 5 | 0.3 | 25.7 | 5.0 | ● | ● | | ● | ● | | ● | |
| | **ACD 503-CH-4L** | 25.7 | 0.08-0.30 | 5 | 0.3 | 25.7 | 5.0 | ● | ● | | ● | ● | | ● | |
| | **ACD 603-CH** | 24 | 0.12-0.40 | 6 | 0.3 | 25 | 5.0 | ● | ● | | ● | ● | | ● | |
| | **ACD 804-CH** | 29 | 0.15-0.45 | 8 | 0.4 | 30 | 6.1 | ● | ● | | ● | ● | | ● | |
| | **ACS 202-CH** | — | 0.05-0.20 | 2 | 0.2 | 20 | 5.1 | ● | ○ | | ○ | ● | | ● | |
| | **ACS 302-CH** | — | 0.07-0.25 | 3 | 0.2 | 20 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACS 403-CH** | — | 0.08-0.30 | 4 | 0.3 | 20 | 5.1 | ● | ● | | ● | ● | | ● | |
| | **ACS 503-CH** | — | 0.09-0.35 | 5 | 0.3 | 25 | 5.0 | ● | ● | | ● | ● | | ● | |
| | **ACS 603-CH** | — | 0.12-0.40 | 6 | 0.3 | 25 | 5.0 | ○ | ○ | | ○ | ○ | | ○ | |

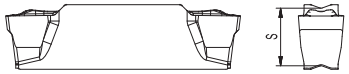
● : Standard stock ○ : Made-to-Order

Remark: 1. if R/L style inserts are selected, the feed need to be reduced by 20-40%.
2. ACS single edged insert's Tmax is determined according to the tool holder.

## Grooving-Turning Series

GS: Double-edged inserts applicable to external, internal and face turning, grooving and parting off



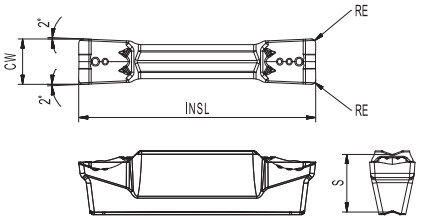




| Inserts | Product code | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ✱ | ◐ | ✱ | ✱ | ● | ◐ | ● | ✱ | ● |
| | | Cutting parameter | | | Dimensions | | | | P | | | M | | | K | | S | N |
| | | Grooving | Turning | | CW | RE | INSL | S | AP301U | AP330M | AC230P | AP330M | AP130S | AP301U | AC230P | AP301U | AP130S | AW100K |
| | | f (mm/rev) | f (mm/rev) | Ap (mm) | | | | | | | | | | | | | | |
| | **ATD 200E020-GS** | 0.04-0.20 | 0.05-0.20 | 0.30-1.5 | 2 | 0.20 | 20.70 | 5.1 | ● | | | | ● | | | | ● | |
| | **ATD 300E020-GS** | 0.04-0.20 | 0.05-0.20 | 0.30-2.0 | 3.00 | 0.20 | 20.70 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 300E040-GS** | 0.04-0.20 | 0.05-0.20 | 0.45-2.0 | 3.00 | 0.40 | 20.70 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 310E020-GS** | 0.04-0.20 | 0.05-0.20 | 0.25-2.0 | 3.15 | 0.20 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 318E020-GS** | 0.04-0.20 | 0.05-0.20 | 0.25-2.0 | 3.18 | 0.20 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 318E040-GS** | 0.04-0.20 | 0.05-0.20 | 0.45-2.0 | 3.18 | 0.40 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 318E080-GS** | 0.04-0.20 | 0.05-0.20 | 0.85-2.0 | 3.18 | 0.80 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 361E030-GS** | 0.04-0.20 | 0.06-0.23 | 0.35-2.0 | 3.61 | 0.30 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 396E020-GS** | 0.05-0.25 | 0.07-0.25 | 0.25-2.50 | 3.96 | 0.20 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 396E040-GS** | 0.05-0.25 | 0.07-0.25 | 0.45-2.50 | 3.96 | 0.40 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 396E080-GS** | 0.05-0.25 | 0.07-0.25 | 0.85-2.50 | 3.96 | 0.80 | 20.70 | 5.1 | ● | | | | | ● | | ● | | |
| | **ATD 400E020-GS** | 0.05-0.25 | 0.07-0.25 | 0.25-2.50 | 4.00 | 0.20 | 20.70 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 400E040-GS** | 0.05-0.25 | 0.07-0.25 | 0.45-2.50 | 4.00 | 0.40 | 20.70 | 5.1 | ● | | | | ● | ● | | ● | ● | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

TS: Double-edged inserts applicable to external, internal and face turning, grooving and parting off

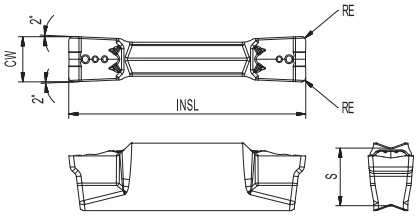



| Inserts | Product code | Machining conditions: Cutting parameter CDX | Grooving f (mm/rev) | Turning f (mm/rev) | Turning Ap (mm) | Dimensions CW | RE | INSL | S | P AP301U | P AP330M | P AC230P | M AP330M | M AP130S | M AP301U | K AC230P | K AP301U | S AP130S | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | ● | ✱ | ⬌ | ✱ | ✱ | ● | ⬌ | ● | ✱ | ● |
| | **ATD 203-TS** | 19.7 | 0.04-0.20 | 0.12-0.19 | 0.40-1.50 | 2 | 0.3 | 20.7 | 5.1 | ● | ○ | ○ | ○ | | ● | ○ | ● | | |
| | **ATD 303-TS** | 19.7 | 0.05-0.25 | 0.15-0.23 | 0.45-2.00 | 3 | 0.3 | 20.7 | 5.1 | ● | ● | ○ | ● | | ● | ○ | ● | ● | |
| | **ATD 404-TS** | 19.7 | 0.06-0.27 | 0.18-0.25 | 0.50-2.50 | 4 | 0.4 | 20.7 | 5.1 | ● | ● | ○ | ● | ● | ● | ○ | ● | | |
| | **ATD 408-TS** | 19.7 | 0.06-0.27 | 0.18-0.25 | 1.00-2.50 | 4 | 0.8 | 20.7 | 5.1 | ● | ○ | ● | ○ | | ● | ● | ● | | |
| | **ATD 504-TS** | 24.7 | 0.07-0.30 | 0.20-0.30 | 0.55-3.50 | 5 | 0.4 | 25.7 | 5.0 | ● | ● | ○ | ● | | ● | ○ | ● | | |
| | **ATD 508-TS** | 24.7 | 0.07-0.30 | 0.20-0.30 | 1.00-3.50 | 5 | 0.8 | 25.7 | 5.0 | ● | ● | ○ | ● | | ● | ○ | ● | | |
| | **ATD 604-TS** | 24.7 | 0.10-0.40 | 0.22-0.45 | 0.65-3.80 | 6 | 0.4 | 25.7 | 5.0 | ● | ○ | ○ | ○ | | ● | ○ | ● | | |
| | **ATD 608-TS** | 24.7 | 0.10-0.40 | 0.22-0.45 | 1.0-3.80 | 6 | 0.8 | 25.7 | 5.0 | ● | ● | ● | ● | | ● | ● | ● | | |
| | **ATD 808-TS** | 30.5 | 0.12-0.45 | 0.28-0.50 | 1.0-4.50 | 8 | 0.8 | 31.5 | 6.1 | ● | ○ | ○ | ○ | | ● | ○ | ● | | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

TSR: Double-edged inserts applicable to external, internal and face turning, grooving and parting off

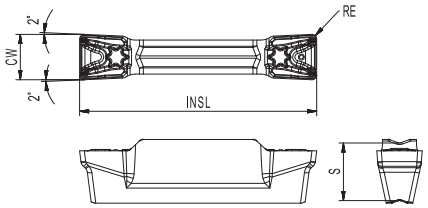



| Inserts | Product code | Machining conditions: Cutting parameter CDX | Grooving f (mm/rev) | Turning f (mm/rev) | Turning Ap (mm) | Dimensions CW | RE | INSL | S | P AP301U | P AP330M | P AC230P | M AP330M | M AP130S | M AP301U | K AC230P | K AP301U | S AP130S | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | ● | ✱ | ⬌ | ✱ | ✱ | ● | ⬌ | ● | ✱ | ● |
| | **ATD 203-TSR** | 19.7 | 0.04-0.20 | 0.12-0.19 | 0.40-1.50 | 2 | 0.3 | 20.7 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 303-TSR** | 19.7 | 0.05-0.25 | 0.15-0.23 | 0.45-2.00 | 3 | 0.3 | 20.7 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 404-TSR** | 19.7 | 0.06-0.27 | 0.18-0.25 | 0.50-2.50 | 4 | 0.4 | 20.7 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 408-TSR** | 19.7 | 0.06-0.27 | 0.18-0.25 | 1.00-2.50 | 4 | 0.8 | 20.7 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 504-TSR** | 24.7 | 0.07-0.30 | 0.20-0.30 | 0.55-3.50 | 5 | 0.4 | 25.7 | 5.0 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 508-TSR** | 24.7 | 0.07-0.30 | 0.20-0.30 | 1.00-3.50 | 5 | 0.8 | 25.7 | 5.0 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 604-TSR** | 24.7 | 0.10-0.40 | 0.22-0.45 | 0.65-3.80 | 6 | 0.4 | 25.7 | 5.0 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 608-TSR** | 24.7 | 0.10-0.40 | 0.22-0.45 | 1.0-3.80 | 6 | 0.8 | 25.7 | 5.0 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 808-TSR** | 30.5 | 0.12-0.45 | 0.28-0.50 | 1.0-4.50 | 8 | 0.8 | 31.5 | 6.1 | ● | | | | ○ | ● | | ● | ○ | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

TM: Double-edged inserts applicable to external turning, grooving and parting off

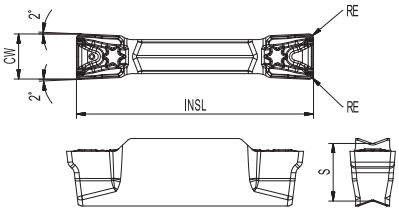



| Inserts | Product code | Machining conditions: Cutting parameter CDX | Grooving f (mm/rev) | Turning f (mm/rev) | Turning Ap (mm) | Dimensions CW | RE | INSL | S | P AP301U | P AP330M | P AC230P | M AP330M | M AP301U | K AC230P | K AP301U | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | ● | ✱ | ◐ | ✱ | ● | ◐ | ● | ● |
| | **ATD 304-TM** | 19.7 | 0.1-0.25 | 0.15-0.22 | 0.5-2.0 | 3 | 0.4 | 20.7 | 5.1 | ● | ○ | ○ | ○ | ● | ○ | ○ | |
| | **ATD 404-TM** | 19.7 | 0.15-0.30 | 0.18-0.27 | 0.5-2.50 | 4 | 0.4 | 20.7 | 5.1 | ● | ● | ● | ● | ● | ● | ● | |
| | **ATD 408-TM** | 19.7 | 0.15-0.30 | 0.18-0.27 | 1.0-2.50 | 4 | 0.8 | 20.7 | 5.1 | ● | ● | ○ | ● | ● | ○ | ● | |
| | **ATD 504-TM** | 24.7 | 0.18-0.35 | 0.20-0.35 | 0.55-3.50 | 5 | 0.4 | 25.7 | 5.0 | ● | ● | ● | ● | ● | ● | ● | |
| | **ATD 508-TM** | 24.7 | 0.18-0.35 | 0.20-0.35 | 1.0-3.50 | 5 | 0.8 | 25.7 | 5.0 | ● | ● | ○ | ● | ● | ○ | ● | |
| | **ATD 604-TM** | 24.7 | 0.20-0.45 | 0.22-0.45 | 0.65-4.0 | 6 | 0.4 | 25.7 | 5.0 | ● | ● | ● | ● | ● | ● | ● | |
| | **ATD 608-TM** | 24.7 | 0.20-0.45 | 0.22-0.45 | 1.0-4.0 | 6 | 0.8 | 25.7 | 5.0 | ● | ● | ● | ● | ● | ● | ● | |
| | **ATD 808-TM** | 30.5 | 0.22-0.50 | 0.28-0.5 | 1.0-5.0 | 8 | 0.8 | 31.5 | 6.1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| | **ATD 812-TM** | 30.5 | 0.22-0.50 | 0.28-0.5 | 1.5-5.0 | 8 | 1.2 | 31.5 | 6.1 | ● | ○ | ○ | ○ | ● | ○ | ○ | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

TMR: Double-edged ground inserts applicable to aluminium alloy turning and parting off

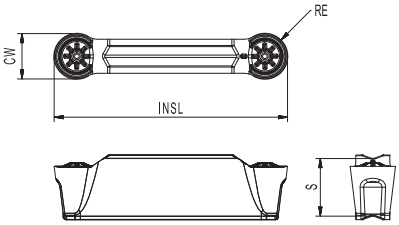



| Inserts | Product code | Machining conditions: Cutting parameter CDX | Grooving f (mm/rev) | Turning f (mm/rev) | Turning Ap (mm) | Dimensions CW | RE | INSL | S | P AP301U | P AP330M | P AC230P | M AP330M | M AP301U | K AC230P | K AP301U | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | ● | ✱ | ◐ | ✱ | ● | ◐ | ● | ● |
| | **ATD 304-TMR** | 19.7 | 0.1-0.25 | 0.15-0.22 | 0.5-2.0 | 3 | 0.4 | 20.7 | 5.1 | ● | | | | ● | | ● | |
| | **ATD 404-TMR** | 19.7 | 0.15-0.30 | 0.18-0.27 | 0.5-2.50 | 4 | 0.4 | 20.7 | 5.1 | ● | | | | ● | | ● | |
| | **ATD 408-TMR** | 19.7 | 0.15-0.30 | 0.18-0.27 | 1.0-2.50 | 4 | 0.8 | 20.7 | 5.1 | ● | | | | ● | | ● | |
| | **ATD 504-TMR** | 24.7 | 0.18-0.35 | 0.20-0.35 | 0.55-3.50 | 5 | 0.4 | 25.7 | 5.0 | ● | | | | ● | | ● | |
| | **ATD 508-TMR** | 24.7 | 0.18-0.35 | 0.20-0.35 | 1.0-3.50 | 5 | 0.8 | 25.7 | 5.0 | ● | | | | ● | | ● | |
| | **ATD 604-TMR** | 24.7 | 0.20-0.45 | 0.22-0.45 | 0.65-4.0 | 6 | 0.4 | 25.7 | 5.0 | ● | | | | ● | | ● | |
| | **ATD 608-TMR** | 24.7 | 0.20-0.45 | 0.22-0.45 | 1.0-4.0 | 6 | 0.8 | 25.7 | 5.0 | ● | | | | ● | | ● | |
| | **ATD 812-TMR** | 30.5 | 0.22-0.50 | 0.28-0.5 | 1.5-5.0 | 8 | 1.2 | 31.5 | 6.1 | ● | | | | ● | | ● | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

RM: Double-edged inserts applicable to external turning, grooving and profiling

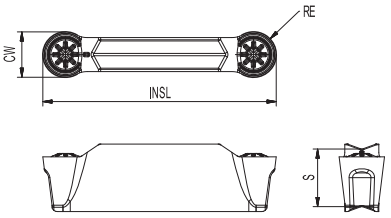



| Inserts | Product code | Machining conditions: Cutting parameter – Grooving f (mm/rev) | Machining conditions: Cutting parameter – Turning f (mm/rev) | Machining conditions: Cutting parameter – Turning Ap (mm) | Dimensions CW | Dimensions RE | Dimensions INSL | Dimensions S | P: AP301U | P: AP330M | P: AC230P | M: AP330M | M: AP301U | K: AC230P | K: AP301U | N: AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | ● | ✱ | ◐ | ✱ | ● | ◐ | ● | ● |
| | **ATD 210-RM** | 0.06-0.15 | 0.12-0.25 | 0.4-1.0 | 2 | 1 | 20.7 | 5.1 | ● | ● | ○ | ● | ● | ○ | ● | |
| | **ATD 315-RM** | 0.08-0.18 | 0.15-0.30 | 0.5-1.5 | 3 | 1.5 | 20.7 | 5.1 | ● | ● | ● | ● | ● | ● | ● | |
| | **ATD 420-RM** | 0.10-0.20 | 0.18-0.35 | 0.6-2.0 | 4 | 2 | 20.7 | 5.1 | ● | ● | ● | ● | ● | ● | ● | |
| | **ATD 525-RM** | 0.12-0.25 | 0.20-0.40 | 0.7-2.5 | 5 | 2.5 | 25.7 | 5.0 | ● | ● | ● | ● | ● | ● | ● | |
| | **ATD 630-RM** | 0.15-0.30 | 0.25-0.50 | 0.9-3.0 | 6 | 3 | 25.7 | 5.0 | ● | ● | ○ | ● | ● | ○ | ● | |
| | **ATD 840-RM** | 0.18-0.35 | 0.30-0.60 | 1.0-4.0 | 8 | 4 | 31.5 | 6.1 | ● | ○ | ○ | ○ | ● | ○ | ● | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

RMR: Double-edged round inserts applicable to external turning, grooving and profiling

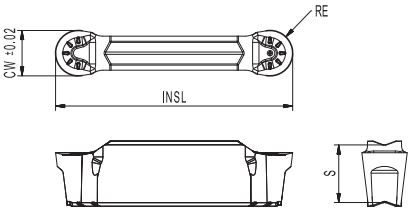



| Inserts | Product code | Machining conditions: Cutting parameter – Grooving f (mm/rev) | Machining conditions: Cutting parameter – Turning f (mm/rev) | Machining conditions: Cutting parameter – Turning Ap (mm) | Dimensions CW | Dimensions RE | Dimensions INSL | Dimensions S | P: AP301U | P: AP330M | P: AC230P | M: AP330M | M: AP130S | M: AP301U | K: AC230P | K: AP301U | S: AP130S | N: AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | ● | ✱ | ◐ | ✱ | ✱ | ● | ◐ | ● | ✱ | ● |
| | **ATD 210-RMR** | 0.06-0.15 | 0.12-0.25 | 0.4-1.0 | 2 | 1 | 20.7 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 315-RMR** | 0.08-0.18 | 0.15-0.30 | 0.5-1.5 | 3 | 1.5 | 20.7 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 420-RMR** | 0.10-0.20 | 0.18-0.35 | 0.6-2.0 | 4 | 2 | 20.7 | 5.1 | ● | | | | ● | ● | | ● | ● | |
| | **ATD 525-RMR** | 0.12-0.25 | 0.20-0.40 | 0.7-2.5 | 5 | 2.5 | 25.7 | 5.0 | ● | | | | ○ | ● | | ● | ○ | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

RA: Double-edged ground inserts applicable to aluminium alloy turning and profiling

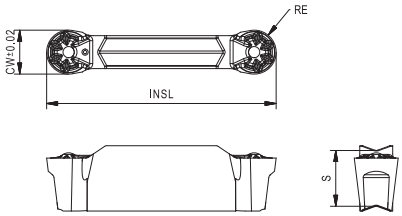



| Inserts | Product code | Machining conditions: Cutting parameter – Grooving f (mm/rev) | Cutting parameter – Turning f (mm/rev) | Cutting parameter – Turning Ap (mm) | Dimensions CW | Dimensions RE | Dimensions INSL | Dimensions S | P AP301U | P AP330M | P AC230P | M AP330M | M AP301U | K AC230P | K AP301U | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | ● | ✱ | ⬌ | ✱ | ● | ⬌ | ● | ● |
| | **ATD 315-RA** | 0.08-0.18 | 0.15-0.30 | 0.5-1.5 | 3 | 1.5 | 20.7 | 5.1 | | | | | | | | ● |
| | **ATD 420-RA** | 0.10-0.25 | 0.2-0.45 | 0.6-0.2 | 4 | 2 | 20.7 | 5.1 | | | | | | | | ● |
| | **ATD 525-RA** | 0.11-0.28 | 0.2-0.50 | 0.7-2.5 | 5 | 2.5 | 25.7 | 5.0 | | | | | | | | ● |
| | **ATD 630-RA** | 0.12-0.30 | 0.22-0.60 | 0.9-3.0 | 6 | 3 | 25.7 | 5.0 | | | | | | | | ● |
| | **ATD 840-RA** | 0.15-0.40 | 0.25-0.65 | 1.0-4.0 | 8 | 4 | 31.5 | 6.1 | | | | | | | | ● |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Series

RS: Double-edged precision ground inserts, turning and profiling




| Inserts | Product code | Machining conditions: Cutting parameter – Grooving f (mm/rev) | Cutting parameter – Turning f (mm/rev) | Cutting parameter – Turning Ap (mm) | Dimensions CW | Dimensions RE | Dimensions INSL | Dimensions S | P AP301U | P AP330M | P AC230P | M AP330M | M AP130S | M AP301U | K AC230P | K AP301U | S AP130S | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | ● | ✱ | ⬌ | ✱ | ✱ | ● | ⬌ | ● | ✱ | ● |
| | **ATD 210-RS** | 0.08-0.15 | 0.10-0.22 | 0-1.0 | 2.0 | 1.0 | 20.7 | 5.1 | | | | | ● | | | | ● | |
| | **ATD 315-RS** | 0.08-0.18 | 0.15-0.30 | 0-1.5 | 3.0 | 1.5 | 20.7 | 5.1 | | | | | ● | | | | ● | |
| | **ATD 420-RS** | 0.10-0.20 | 0.18-0.35 | 0-2.0 | 4.0 | 2 | 20.7 | 5.1 | | | | | ● | | | | ● | |
| | **ATD 525-RS** | 0.13-0.25 | 0.25-0.55 | 0-2.5 | 5.0 | 2.5 | 25.7 | 5.0 | | | | | ● | | | | ● | |
| | **ATD 630-RS** | 0.15-0.28 | 0.30-0.65 | 0-3.0 | 6.0 | 3 | 25.7 | 5.0 | | | | | ● | | | | ● | |
| | **ATD 840-RS** | 0.18-0.35 | 0.35-0.65 | 0-4.0 | 8.0 | 4 | 31.5 | 6.1 | | | | | ○ | | | | ○ | |

● : Standard stock ○ : Made-to-Order

## Insert Denomination System (Ground Insert)

| A | T | D | 215 | E | 010 | G | R/L |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

| 1- Company Name |
|---|
| ACHTECK |

| 2- Application | |
|---|---|
| C | Grooving/Parting off |
| T | Turning/Grooving |

| 3- Insert Shape | |
|---|---|
| S | Single-edged |
| D | Double-edged |

| 4- Insert Width |
|---|
| 215=2.15mm |
| 145=1.45mm |

| 5- Application |
|---|
| E: External<br>F: Facing<br>I: Internal |

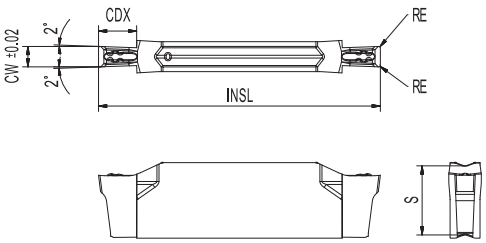
| 6- Insert Corner |
|---|
| 010=0.10mm<br>020=0.20mm<br>200=2.00mm |

| 7- Application Limited | |
|---|---|
| G | only applicable to parting off |

| 8- Hand of Tool | |
|---|---|
| | L: Left |
| | R: Right |

## Grooving-Turning Ground Series

Ground inserts applicable to turning and grooving



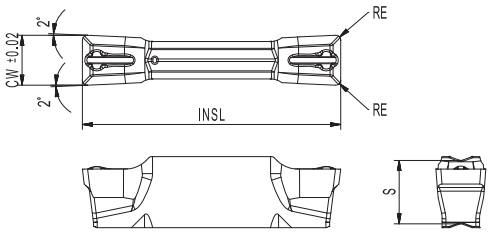

| Inserts | Product code | Suitable tool holder (mm) | Machining conditions: Cutting parameter Grooving f (mm/rev) | Dimensions: CW | RE | CDX | S | INSL | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ✱ | ⬌ | ✱ | ● | ⬌ | ● | ● |
| | | | | | | | | | P | | | M | | K | | N |
| | | | | | | | | | AP301U | AP330M | AC230P | AP330M | AP301U | AC230P | AP301U | AW100K |
| | **ATD 100E000G** | 2 | 0.02-0.05 | 1.00 | 0.00 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 104E000G** | 2 | 0.02-0.05 | 1.04 | 0.00 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 115E000G** | 2 | 0.02-0.05 | 1.15 | 0.00 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 120E000G** | 2 | 0.03-0.05 | 1.20 | 0.00 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 125E010G** | 2 | 0.03-0.05 | 1.25 | 0.10 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 130E000G** | 2 | 0.03-0.05 | 1.30 | 0.00 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 135E000G** | 2 | 0.03-0.05 | 1.35 | 0.00 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 140E000G** | 2 | 0.03-0.06 | 1.40 | 0.00 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 145E010G** | 2 | 0.03-0.06 | 1.45 | 0.10 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 147E000G** | 2 | 0.03-0.06 | 1.47 | 0.00 | 2.50 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 150E010G** | 2 | 0.03-0.06 | 1.50 | 0.10 | 2.50 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 157E015G** | 2 | 0.03-0.07 | 1.57 | 0.15 | 2.70 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 165E010G** | 2 | 0.03-0.07 | 1.65 | 0.10 | 2.70 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 170E010G** | 2 | 0.03-0.07 | 1.70 | 0.10 | 3.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 178E018G** | 2 | 0.03-0.07 | 1.78 | 0.18 | 3.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 190E010G** | 2 | 0.04-0.09 | 1.90 | 0.10 | 3.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 196E015G** | 2 | 0.04-0.09 | 1.96 | 0.15 | 3.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 200E020G** | 2 | 0.04-0.09 | 2.00 | 0.20 | 3.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 215E010G** | 2 | 0.04-0.10 | 2.15 | 0.10 | 3.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 222E015G** | 2 | 0.04-0.10 | 2.22 | 0.15 | - | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 230E020G** | 2 | 0.04-0.10 | 2.30 | 0.20 | - | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 100E050G** | 2 | 0.03-0.06 | 1.00 | 0.50 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 140E070G** | 2 | 0.04-0.07 | 1.40 | 0.70 | 2.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 157E079G** | 2 | 0.04-0.08 | 1.57 | 0.785 | 2.70 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 200E100G** | 2 | 0.05-0.11 | 2.00 | 1.00 | 3.00 | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 239E120G** | 2 | 0.06-0.12 | 2.39 | 1.195 | - | 5.1 | 20.700 | ● | | | | ● | | ● | |

● : Standard stock ○ : Made-to-Order

1. When the width of insert is less than 1.78mm, please pay attention to size A of the holder.

## Grooving-Turning Ground Series

Ground inserts applicable to turning and grooving

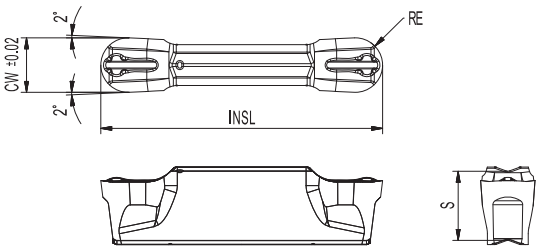



| Inserts | Product code | Suitable tool holder (mm) | Machining conditions: Turning f (mm/rev) | Turning Ap (mm) | Grooving f (mm/rev) | Dimensions CW | RE | CDX | S | INSL | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: ● | ✱ | ◐ | ✱ | ● | ◐ | ● | ● |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | P | | | M | | K | | N |
| | | | | | | | | | | | AP301U | AP330M | AC230P | AP330M | AP301U | AC230P | AP301U | AW100K |
| | **ATD 265E015** | 3 | 0.10-0.18 | 0.20-1.80 | 0.04-0.12 | 2.65 | 0.15 | - | 5.1 | 20.70 | ● | | | | ● | | ● | |
| | **ATD 300E020** | 3 | 0.11-0.20 | 0.30-2.00 | 0.06-0.14 | 3.00 | 0.20 | - | 5.1 | 20.70 | ● | | | | ● | | ● | |
| | **ATD 300E040** | 3 | 0.15-0.23 | 0.50-2.20 | 0.06-0.15 | 3.00 | 0.40 | - | 5.1 | 20.70 | ● | | | | ● | | ● | |
| | **ATD 400E040** | 4 | 0.16-0.30 | 0.50-2.50 | 0.08-0.19 | 4.00 | 0.40 | - | 5.1 | 20.70 | ● | | | | ● | | ● | |
| | **ATD 400E080** | 4 | 0.16-0.30 | 1.00-2.50 | 0.08-0.19 | 4.00 | 0.80 | - | 5.1 | 20.70 | ● | | | | ● | | ● | |
| | **ATD 415E015** | 4 | 0.16-0.30 | 0.20-2.50 | 0.08-0.19 | 4.15 | 0.15 | - | 5.1 | 20.70 | ● | | | | ● | | ● | |
| | **ATD 478E055** | 5 | 0.20-0.35 | 0.60-2.60 | 0.10-0.20 | 4.78 | 0.55 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 500E040** | 5 | 0.20-0.35 | 0.50-2.60 | 0.10-0.20 | 5.00 | 0.40 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 500E080** | 5 | 0.22-0.35 | 1.00-3.00 | 0.10-0.20 | 5.00 | 0.80 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 515E015** | 5 | 0.22-0.35 | 0.20-3.00 | 0.10-0.22 | 5.15 | 0.15 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 555E055** | 6 | 0.23-0.40 | 0.60-3.00 | 0.12-0.28 | 5.55 | 0.55 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 600E080** | 6 | 0.25-0.45 | 1.00-3.50 | 0.12-0.30 | 6.00 | 0.80 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 600E120** | 6 | 0.25-0.45 | 1.30-3.50 | 0.12-0.30 | 6.00 | 1.20 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 635E080** | 6 | 0.25-0.45 | 1.00-3.50 | 0.13-0.30 | 6.35 | 0.80 | - | 5.0 | 25.70 | ● | | | | ● | | ● | |
| | **ATD 800E080** | 8 | 0.30-0.55 | 1.00-4.80 | 0.15-0.40 | 8.00 | 0.80 | - | 6.1 | 31.50 | ● | | | | ● | | ● | |
| | **ATD 800E120** | 8 | 0.30-0.55 | 1.20-4.80 | 0.15-0.40 | 8.00 | 1.20 | - | 6.1 | 31.50 | ● | | | | ● | | ● | |

● : Standard stock ○ : Made-to-Order

## Grooving-Turning Ground Series

Ground inserts applicable to turning and grooving

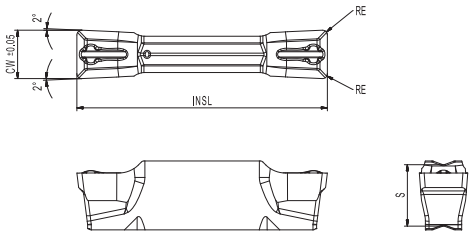



| Inserts | Product code | Suitable tool holder (mm) | Machining conditions: Turning f (mm/rev) | Turning Ap (mm) | Grooving f (mm/rev) | Dimensions CW | RE | CDX | S | INSL | P AP301U | P AP330M | P AC230P | M AP330M | M AP301U | K AC230P | K AP301U | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | ● | ✱ | ◐ | ✱ | ● | ◐ | ● | ● |
| | **ATD 300E150** | 3 | 0.15-0.30 | 0-1.50 | 0.08-0.19 | 3.00 | 1.50 | - | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 400E200** | 4 | 0.18-0.35 | 0-2.00 | 0.10-0.20 | 4.00 | 2.00 | - | 5.1 | 20.700 | ● | | | | ● | | ● | |
| | **ATD 478E239** | 5 | 0.22-0.45 | 0-2.40 | 0.12-0.24 | 4.78 | 2.39 | - | 5.0 | 25.700 | ● | | | | ● | | ● | |
| | **ATD 500E250** | 5 | 0.22-0.45 | 0-2.50 | 0.12-0.24 | 5.00 | 2.50 | - | 5.0 | 25.700 | ● | | | | ● | | ● | |
| | **ATD 600E300** | 6 | 0.25-0.50 | 0-3.00 | 0.15-0.30 | 6.00 | 3.00 | - | 5.0 | 25.700 | ● | | | | ● | | ● | |
| | **ATD 800E400** | 8 | 0.30-0.65 | 0-4.00 | 0.18-0.35 | 8.00 | 4.00 | - | 6.1 | 31.50 | ● | | | | ● | | ● | |

● : Standard stock ○ : Made-to-Order



## Blank Inserts of ATBD




| Inserts | Product code | Suitable tool holder (mm) | Dimensions CW | RE | INSL | S | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ATBD 2.6 M200** | 2 | 2.60 | 0.10 | 21.2 | 5.1 | ● | ● | ● | ● | ● | |
| | **ATBD 3.5 M200** | 3 | 3.50 | 0.10 | 21.2 | 5.1 | ● | ● | ● | ● | ● | |
| | **ATBD 4.5 M200** | 4 | 4.50 | 0.10 | 21.2 | 5.1 | ● | ● | ● | ● | ● | |
| | **ATBD 5.5 M200** | 5 | 5.50 | 0.10 | 26.2 | 5.0 | ● | ● | ● | ● | ● | |
| | **ATBD 6.5 M200** | 6 | 6.50 | 0.10 | 26.2 | 5.0 | ● | ● | ● | ● | ● | |
| | **ATBD 8.5 M200** | 8 | 8.74 | 0.12 | 32.0 | 6.1 | ● | ● | ● | ● | ● | |

● : Standard stock ○ : Made-to-Order

Finished inserts need to be used together with Achteck grooving holder.

## Cutting Data Recommandation Table

| Materials | | | | | Brinell hardness (HB/HRC) | Tensile strength ($N/mm^2$) | Cutting parameter recommended table of parting off and grooving application | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece material | | | | | | AP301U | | | AP130S | | | AP330M | | | AC230P | | | AW100K | | |
| | | | | | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | | f (mm/rev) | | |
| | | | | | | | 0.1 | 0.3 | 0.5 | 0.1 | 0.3 | 0.5 | 0.1 | 0.3 | 0.5 | 0.1 | 0.3 | 0.5 | 0.1 | 0.2 | 0.4 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | | 125 | 428 | 180 | 145 | 130 | 180 | 145 | 130 | 160 | 130 | 100 | 220 | 180 | 160 | - | - | - |
| | | 0.25 < C ≤ 0.55% | Annealed | | 190 | 639 | 145 | 130 | 115 | 145 | 130 | 115 | 120 | 100 | 90 | 160 | 130 | 115 | - | - | - |
| | | 0.25 < C ≤ 0.55% | Heat-treated | | 210 | 708 | 130 | 115 | 100 | 130 | 115 | 100 | 120 | 100 | 90 | 130 | 115 | 100 | - | - | - |
| | | C > 0.55% | Annealed | | 190 | 639 | 145 | 130 | 115 | 145 | 130 | 115 | 145 | 130 | 80 | 160 | 130 | 115 | - | - | - |
| | | C > 0.55% | Heat-treated | | 300 | 1013 | 115 | 100 | 80 | 115 | 100 | 80 | 115 | 100 | 80 | 115 | 100 | 80 | - | - | - |
| | | Free cutting steel (short-chip) | Annealed | | 220 | 745 | 130 | 115 | 100 | 130 | 115 | 100 | 130 | 115 | 100 | 130 | 115 | 100 | - | - | - |
| | Low-alloyed steel | Annealed | | | 175 | 591 | 180 | 145 | 130 | 180 | 145 | 130 | - | - | - | - | - | - | - | - | - |
| | | Heat-treated | | | 300 | 1013 | 115 | 100 | 80 | 115 | 100 | 80 | - | - | - | - | - | - | - | - | - |
| | | Heat-treated | | | 380 | 1282 | 170 | 90 | 105 | 170 | 90 | 105 | - | - | - | - | - | - | - | - | - |
| | | Heat-treated | | | 430 | 1477 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | High-alloyed steel and high-alloyed tool steel | Annealed | | | 200 | 675 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | Hardened and tempered | | | 300 | 1013 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | Hardened and tempered | | | 400 | 1361 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Stainless steel | Ferritic/martensitic, annealed | | | 200 | 675 | 165 | 135 | 105 | 165 | 135 | 105 | - | - | - | - | - | - | - | - | - |
| | | Martensitic, heat-treated | | | 330 | 1114 | 150 | 115 | 70 | 150 | 115 | 70 | - | - | - | - | - | - | - | - | - |
| M | Stainless steel | Austenitic, quench hardened | | | 200 | 675 | 165 | 135 | 105 | 165 | 135 | 105 | 165 | 135 | 105 | - | - | - | - | - | - |
| | | Austenitic, precipitation hardened (PH) | | | 300 | 1013 | 155 | 120 | 80 | 155 | 120 | 80 | 155 | 120 | 80 | - | - | - | - | - | - |
| | | Austenitic/ferritic, duplex | | | 230 | 778 | 135 | 110 | 85 | 135 | 110 | 85 | 135 | 110 | 85 | - | - | - | - | - | - |
| K | Malleable cast iron | Ferritic | | | 200 | 400 | 115 | 90 | 65 | - | - | - | - | - | - | 115 | 90 | 65 | - | - | - |
| | | Pearlitic | | | 260 | 700 | 115 | 90 | 65 | - | - | - | - | - | - | 115 | 90 | 65 | - | - | - |
| | Grey cast iron | Low tensile strength | | | 180 | 200 | 185 | 140 | 95 | - | - | - | - | - | - | 200 | 160 | 120 | - | - | - |
| | | High tensile strength/austenitic | | | 245 | 350 | 185 | 140 | 95 | - | - | - | - | - | - | 200 | 160 | 120 | - | - | - |
| | Nodular cast iron | Ferritic | | | 155 | 400 | 145 | 110 | 80 | - | - | - | - | - | - | 160 | 130 | 100 | - | - | - |
| | | Pearlitic | | | 265 | 700 | 145 | 110 | 80 | - | - | - | - | - | - | 160 | 130 | 100 | - | - | - |
| | GGV(CGI) | | | | 230 | 400 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N | Wrought aluminium alloys | Non-aging | | | 30 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | Aged | | | 100 | 340 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Cast aluminium alloys | ≤ 12% Si, non-aging | | | 75 | 260 | - | - | - | - | - | - | - | - | - | - | - | - | 850 | 500 | 200 |
| | | ≤ 12% Si, aged | | | 90 | 310 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | 12% Si, non-aging | | | 130 | 450 | - | - | - | - | - | - | - | - | - | - | - | - | 450 | 250 | 40 |
| | Magnesium alloys | | | | 70 | 250 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Copper and copper alloys | Unalloyed, electrolytic copper | | | 100 | 340 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | Brass, bronze, red brass | | | 90 | 310 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | Cu alloys, short-chipping | | | 110 | 380 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | High-tensile, Ampco alloy | | | 300 | 1010 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| S | Heat-resistant alloys | Fe-based | Annealed | | 200 | 680 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | | | Hardened | | 280 | 940 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | | Ni or Co based | Annealed | | 250 | 840 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | | | Hardened | | 350 | 1180 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | | | Cast | | 320 | 1080 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | Titanium alloys | Pure titanium | | | 200 | 680 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | | α and β alloys, hardened | | | 375 | 1260 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | | β alloys | | | 410 | 1400 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | Tungsten alloys | | | | 300 | 1010 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| | Molybdenum alloys | | | | 300 | 1010 | - | - | - | 80 | 60 | 40 | - | - | - | - | - | - | - | - | - |
| H | Hardened steel | Hardened and tempered | | | 50HRC | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | Hardened and tempered | | | 55HRC | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | Hardened and tempered | | | 60HRC | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Chilled cast iron | Hardened and tempered | | | 55HRC | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

The recommended cutting data always refer to general cutting conditions. The actual selection should be adjusted according to machine rigidity, tool body and workpiece conditions and coolant.
(f=mm/rev to be adjusted for insert radius)

Note

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# CUTTING TOOL CATALOGUE


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## Milling Cutter Denomination System

| A | FM | 88 | - | 080 | - | Z07 | A | 27 | R | - | SN12 | - | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | | 4 | | 5 | 6 | 7 | 8 | | 9 | | 10 |

### 1- A--ACHTECK

### 2- Machining Method

| | |
|---|---|
| Face milling | FM |
| Square shoulder milling | SM |
| Profile milling | PM |
| High feed milling | HM |
| Side & face milling | DM |
| Thread milling | TM |
| Chamfer milling | CM |
| Finish milling | FF |

### 3- Approach Angle (Kr)

| Figure | Angle |
|---|---|
| 90 | 90° |
| 88 | 88° |
| 75 | 75° |
| 60 | 60° |
| 45 | 45° |
| 42 | 42° |
| * | * |
| 15 | 15° |
| 00 | Profile milling |

### 4- Cutter Dia.

| | |
|---|---|
| 025 | 25mm |
| 063 | 63mm |
| 080 | 80mm |
| * | * |
| 250 | 250mm |

### 5- Number of Teeth

| | |
|---|---|
| Z02 | 2 teeth |
| Z04 | 4 teeth |
| Z05 | 5 teeth |
| * | * |
| Z30 | 30 teeth |

### 6- Connection Type

| | |
|---|---|
| A | Arbor |
| W | Weldon shank |
| C | Cylindrical shank |
| N | Whistle notch shank |
| M | Screw clamping modular head |

### 7- Coupling Size

27-Coupling diameter 27mm

### 8- Direction of Tool

| | |
|---|---|
| R | Right |
| L | Left |
| N | Neutral |

### 9- Insert Info

SN12-SN12 series insert

### 10- Others

| | |
|---|---|
| C | Internal coolant |
| M | Wedge clamping type |
| S | Carbide shim type |
| No mark | Without internal coolant |

## Helical Milling Cutter Denomination System

| A | PE | 90 | - | 063 | - | Z04 | - | A | 27 | R | - | LN13 | - | L56 | - | F | - | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | | 4 | | 5 | | 6 | 7 | 8 | | 9 | | 10 | | 11 | | 12 |

| 1- A--ACHTECK |
|---|

| 2- Machining Method | |
|---|---|
| Helical Milling cutter | PE |

| 3- Approach Angle（Kr） | |
|---|---|
| 90 | 90° |
| 88 | 88° |
| 75 | 75° |
| 60 | 60° |
| 45 | 45° |
| 42 | 42° |
| * | * |

| 4- Cutter Dia. | |
|---|---|
| 025 | 25mm |
| 063 | 63mm |
| 080 | 80mm |
| * | * |
| 250 | 250mm |

| 5- Number of Teeth | |
|---|---|
| Z02 | 2 teeth |
| Z04 | 4 teeth |
| Z05 | 5 teeth |
| * | * |
| Z30 | 30 teeth |

| 6- Connection Type | |
|---|---|
| A | Arbor |
| W | Weldon shank |
| C | Cylindrical shank |
| N | Whistle notch shank |
| M | Screw clamping modular head |

| 7- Coupling Size |
|---|
| 27-Coupling diameter 27mm |

| 8- Direction of Tool | |
|---|---|
| R | Right |
| L | Left |
| N | Neutral |

| 9- Insert Info |
|---|
| LN13--LN13 series insert |

| 10- Max.Cutting Depth | |
|---|---|
| L30 | 30mm |
| L45 | 45mm |
| L56 | 56mm |

| 11- Tool Type | |
|---|---|
| F | Full teeth |
| H | Half teeth |

| 12- Others | |
|---|---|
| C | Internal coolant |
| No mark | Without internal coolant |

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## Milling Cutters

## Overview of Milling Products

| Product family | | | AFM42-OD06 | AFM40-ON05 | AFM45-SE12 | AFM45-SD09 | AFM90-SD09 |
|---|---|---|---|---|---|---|---|
| Page | | | P259 | P261 | P263 | P266 | P268 |
| Approach angle | | | 42° | 40° | 45° | 45° | 90° |
| Max.ap (mm) | | | 3 | 2.5 | 6 | 4 | 7 |
| Diameter range (mm) | | | ⌀50-160 | ⌀50-160 | ⌀32-250 | ⌀16-125 | ⌀25-100 |
| Insert type | | | OD..0605.. | ON..0504.. | SE..12T3.. | SD..09T3..EN.. | SD..09T3..EN.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | | | | | |
| | Slot milling | | | | | | |
| | Ramping | | ● | | | | |
| | Helical interpolate milling | | ● | | | | |
| | Plunging | | | | | | |
| | Profile milling | | | | | | |
| | Chamfer milling | | | | | ● | |
| | Pocket milling | | ● | | | | |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | AFM89-SD09 | AFM45-SD12 | AFM90-SD12 | AFM89-SD12 | AFM45-SN12 |
|---|---|---|---|---|---|---|---|
| Page | | | P270 | P272 | P274 | P276 | P278 |
| Approach angle | | | 89.5° | 45° | 90° | 89.5° | 45° |
| Max.ap (mm) | | | 7 | 6 | 11 | 9 | 6 |
| Diameter range (mm) | | | ∅25-80 | ∅50-125 | ∅50-125 | ∅50-125 | ∅50-315 |
| Insert type | | | SD..09T3..N.. | SD..1204..EN.. | SD..1204..EN.. | SD..1204..N.. | SN..1206.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | | | | | |
| | Slot milling | | | | | | |
| | Ramping | | | | | | |
| | Helical interpolate milling | | | | | | |
| | Plunging | | | | | | |
| | Profile milling | | | | | | |
| | Chamfer milling | | | ● | | | |
| | Pocket milling | | | | | | |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | AFM75-SN12 | AFM88-SN12 | AFM45-SN19 | AFM45-HN09 | AFM45-XN07 |
|---|---|---|---|---|---|---|---|
| Page | | | P281 | P284 | P287 | P289 | P291 |
| Approach angle | | | 75° | 88° | 45° | 45° | 45° |
| Max.ap (mm) | | | 8 | 9 | 10 | 5 | 3.5 |
| Diameter range (mm) | | | ⌀50-250 | ⌀50-315 | ⌀160-250 | ⌀63-160 | ⌀40-250 |
| Insert type | | | SN..1206.. | SN..1206.. | SN..1909.. | HN..0906.. | XN..0705.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | | | | | |
| | Slot milling | | | | | | |
| | Ramping | | | | | | |
| | Helical interpolate milling | | | | | | |
| | Plunging | | | | | | |
| | Profile milling | | | | | | |
| | Chamfer milling | | | | | | |
| | Pocket milling | | | | | | |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | AFM45-XN09 | AFM45-XN09(W) | AFF40-LN12 | AFF40-LN15 | ASM90-LN12 |
|---|---|---|---|---|---|---|---|
| Page | | | P295 | P296 | P299 | P299 | P302 |
| Approach angle | | | 45° | 45° | 40° | 40° | 90° |
| Max.ap (mm) | | | 5 | 5 | 0.5 | 0.5 | 5 |
| Diameter range (mm) | | | ∅63-315 | ∅80-315 | ∅80-100 | ∅125-250 | ∅63-250 |
| Insert type | | | XN..0906.. | XN..0906.. | ON..0504..<br>LN..1204.. | ON..0504..<br>LN..1504.. | LN..1206.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | | | | | ● |
| | Slot milling | | | | | | |
| | Ramping | | | | | | |
| | Helical interpolate milling | | | | | | |
| | Plunging | | | | | | |
| | Profile milling | | | | | | |
| | Chamfer milling | | | | | | |
| | Pocket milling | | | | | | |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | ASM90-LN09 | ASM90-LN13 | ASM90-LN16 | ASM90-WN04 | ASM90-WN08 |
|---|---|---|---|---|---|---|---|
| Page | | | P304 | P307 | P310 | P312 | P314 |
| Approach angle | | | 90° | 90° | 90° | 90° | 90° |
| Max.ap (mm) | | | 8 | 12 | 15 | 4 | 7 |
| Diameter range (mm) | | | ∅20-80 | ∅40-315 | ∅63-160 | ∅20-40 | ∅40-250 |
| Insert type | | | LN..0904.. | LN..1306.. | LN..1607.. | WN..0403.. | WN..0806.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | ● | ● | ● | ● | ● |
| | Slot milling | | ● | ● | ● | ● | ● |
| | Ramping | | | | | | |
| | Helical interpolate milling | | | | | | |
| | Plunging | | | | | | |
| | Profile milling | | | | | | |
| | Chamfer milling | | | | | | |
| | Pocket milling | | | | | | |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | ASM90-WN08-N | ASM90-TD15 | ASM90-SO12 | ASM90-AP10 | ASM90-AP17 |
|---|---|---|---|---|---|---|---|
| Page | | | P317 | P319 | P323 | P335 | P337 |
| Approach angle | | | 90° | 90° | 90° | 90° | 90° |
| Max.ap (mm) | | | 7 | 11 | 9 | 9 | 15.5 |
| Diameter range (mm) | | | ⌀40-250 | ⌀32-250 | ⌀32-250 | ⌀16-63 | ⌀25-100 |
| Insert type | | | WNMU 0806.. | TD..1505.. | SO..1204.. | AP..1003.. | AP..1705.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | ● | ● | ● | ● | ● |
| | Slot milling | | ● | ● | ● | ● | ● |
| | Ramping | | | ● | | ● | ● |
| | Helical interpolate milling | | | ● | | ● | ● |
| | Plunging | | | | | | |
| | Profile milling | | | | | | |
| | Chamfer milling | | | | | | |
| | Pocket milling | | | ● | ● | ● | ● |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | ASM90-AO06 | ASM90-AO10 | ASM90-AO12 | APE90-LN09 | APE90-LN13 |
|---|---|---|---|---|---|---|---|
| Page | | | P326 | P328 | P331 | P340 | P343 |
| Approach angle | | | 90° | 90° | 90° | 90° | 90° |
| Max.ap (mm) | | | 5 | 9 | 10 | 46 | 56 |
| Diameter range (mm) | | | ⌀10-25 | ⌀16-40 | ⌀20-80 | ⌀25-50 | ⌀40-80 |
| Insert type | | | AO..0602.. | AO..10T3.. | AO..1204.. | LN..0904.. | LN..1306.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | ● | ● | ● | ● | ● |
| | Slot milling | | ● | ● | ● | | |
| | Ramping | | ● | ● | ● | | |
| | Helical interpolate milling | | ● | ● | ● | | |
| | Plunging | | | | | | |
| | Profile milling | | | | | | |
| | Chamfer milling | | | | | | |
| | Pocket milling | | ● | ● | ● | | |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | APE90-AO12 | AHM20-LN06 | AHM25-LN10 | AHM15-XD09 | AHM15-XD12 |
|---|---|---|---|---|---|---|---|
| Page | | | P346 | P350 | P354 | P358 | P360 |
| Approach angle | | | 90° | 20° | 25° | 15° | 15° |
| Max.ap (mm) | | | 84 | 0.65 | 1.2 | 1.2 | 1.6 |
| Diameter range (mm) | | | ⌀25-80 | ⌀16-63 | ⌀25-125 | ⌀25-50 | ⌀32-125 |
| Insert type | | | AO..1204.. | LN..0604.. | LN..1005.. | XD..0904.. | XD..1205.. |
| Application | Face milling | | ● | ● | ● | ● | ● |
| | Square shoulder milling | | ● | | | | |
| | Slot milling | | | ● | ● | ● | ● |
| | Ramping | | | ● | ● | ● | ● |
| | Helical interpolate milling | | | ● | ● | ● | ● |
| | Plunging | | | ● | ● | ● | ● |
| | Profile milling | | | | | | |
| | Chamfer milling | | | | | | |
| | Pocket milling | | | ● | ● | ● | ● |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | AHM15-SD09 | AHM15-SD12 | APM00-RP | APM00-RO08 | APM00-RO10 |
|---|---|---|---|---|---|---|---|
| Page | | | P365 | P369 | P372 | P374 | P378 |
| Approach angle | | | 15° | 15° | — | — | — |
| Max.ap (mm) | | | 1.5 | 2.0 | 28 | 4 | 5 |
| Diameter range (mm) | | | ⌀25-63 | ⌀50-125 | ⌀16-32 | ⌀16-25 | ⌀25-50 |
| Insert type | | | SD..09T3..N.. | SD..1204..N.. | RPM 080/100/160 | RO.. 0803.. | RO..10T3.. |
| Application | Face milling | | ● | ● | | ● | ● |
| | Square shoulder milling | | | | | | |
| | Slot milling | | ● | ● | | | |
| | Ramping | | ● | ● | ● | ● | ● |
| | Helical interpolate milling | | ● | ● | | ● | ● |
| | Plunging | | ● | ● | | | |
| | Profile milling | | | | ● | ● | ● |
| | Chamfer milling | | | | | | |
| | Pocket milling | | ● | ● | | ● | ● |

Remark: ● Recommended application

## Overview of Milling Products

| Product family | | | APM00-RO12 | APM00-RO16 | APM00-RO20 | ACM45-SD09 | ACM45-SD12 |
|---|---|---|---|---|---|---|---|
| Page | | | P380 | P382 | P384 | P386 | P388 |
| Approach angle | | | — | — | — | 45° | 45° |
| Max.ap (mm) | | | 6 | 8 | 10 | 5.5 | 7.5 |
| Diameter range (mm) | | | ∅32-80 | ∅63-100 | ∅100-160 | ∅12-32 | ∅25-32 |
| Insert type | | | RO..1204.. | RO..1605.. | RO..2006.. | SD..09T3..N.. | SD..1204..N.. |
| Application | Face milling | | ● | ● | ● | | |
| | Square shoulder milling | | | | | | |
| | Slot milling | | | | | | |
| | Ramping | | ● | ● | ● | | |
| | Helical interpolate milling | | ● | ● | ● | | |
| | Plunging | | | | | | |
| | Profile milling | | ● | ● | ● | | |
| | Chamfer milling | | | | | ● | ● |
| | Pocket milling | | ● | ● | ● | | |

Remark: ● Recommended application

## AFM42-OD06

42° Approach angle face milling cutter

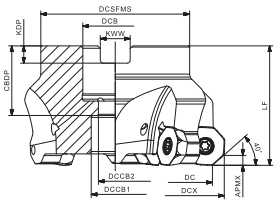



Fig. 1

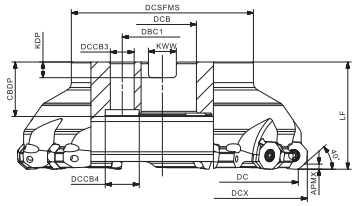
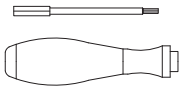



Fig. 2

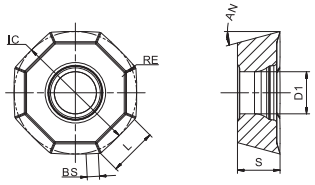
| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM42-050-Z04-A16R-OD06-C** | 50 | 60.4 | 40 | 16 | - | 14 | 9 | - | - | 40 | 24 | 5.8 | 8.4 | 3 | | 0.4 | 4 | 1 | OD..0605.. |
| **063-Z05-A22R-OD06-C** | 63 | 73.4 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 3 | | 0.5 | 5 | | |
| **080-Z05-A27R-OD06-C** | 80 | 90.4 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 3 | | 1.0 | 5 | | |
| **080-Z06-A27R-OD06-C** | 80 | 90.4 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 3 | | 1.1 | 6 | | |
| **100-Z06-A32R-OD06-C** | 100 | 110.4 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 3 | | 2.0 | 6 | | |
| **100-Z07-A32R-OD06-C** | 100 | 110.4 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 3 | | 2.0 | 7 | | |
| **125-Z07-A40R-OD06-C** | 125 | 135.4 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 3 | | 3.7 | 7 | | |
| **125-Z08-A40R-OD06-C** | 125 | 135.4 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 3 | | 3.7 | 8 | | |
| **160-Z10-A40R-OD06** | 160 | 170.4 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 32 | 9.2 | 16.4 | 3 | | 4.4 | 10 | 2 | |

Note: With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅50-160 | |  | 5.0Nm |
| | SP04512043 | DT-TP20 | |

## Compatible Inserts




| Insert shape | Product code | Machining conditions: L | IC | S | RE | BS | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **ODET 0605APFN-FM2** | 6.3 | 16 | 5.56 | 0.8 | 1.6 | 5.5 | 15° | | | | | | | | | ● | |
| | **ODMT 060508EN-MM3** | 6.3 | 16 | 5.56 | 0.8 | - | 5.5 | 15° | ● | ● | ● | | | ● | ● | | | |
| | **ODMT 060512EN-MM3** | 6.1 | 16 | 5.56 | 1.2 | - | 5.5 | 15° | ● | | | | ○ | | | | | ● |
| | **ODHT 0605APEN-MM3** | 6.3 | 16 | 5.56 | 0.8 | 1.6 | 5.5 | 15° | ● | ● | ● | ● | | ● | ● | ● | | ● |
| | **ODEW 0605APSR-HR2** | 6.5 | 16 | 5.56 | - | 1.6 | 5.5 | 15° | | | | | | ● | ● | | | |
| | **ODMW 060512EN-HR2** | 6.1 | 16 | 5.56 | 1.2 | - | 5.5 | 15° | | | | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

| Materials: ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: OD..0605.. ap (mm) min | ap (mm) max | HR2 fz (mm) min | HR2 fz (mm) max | MM3 fz (mm) min | MM3 fz (mm) max | FM2 fz (mm) min | FM2 fz (mm) max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 3.00 | 0.15 | 0.40 | 0.12 | 0.35 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.35 | 0.10 | 0.30 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | - | - | 0.08 | 0.28 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.15 | 0.40 | 0.12 | 0.35 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.10 | 0.35 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | 0.10 | 0.25 | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM40-ON05

40° Approach angle face milling cutter

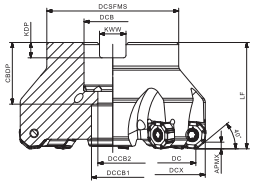



Fig. 1

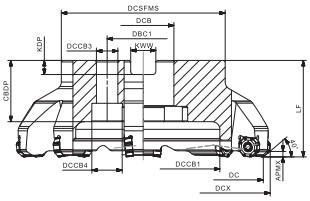
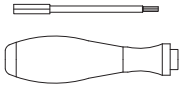


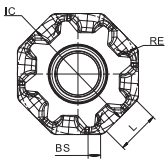

Fig. 2

| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM40-050-Z04-A22R-ON05-N-C** | 50 | 58.8 | 47 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 2.5 | ● | 0.5 | 4 | 1 | ON..0504.. |
| **050-Z06-A22R-ON05-N-C** | 50 | 58.8 | 47 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 2.5 | ● | 0.5 | 6 | | |
| **063-Z05-A22R-ON05-N-C** | 63 | 71.8 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 2.5 | ● | 0.7 | 5 | | |
| **063-Z06-A22R-ON05-N-C** | 63 | 71.8 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 2.5 | ● | 0.7 | 6 | | |
| **063-Z08-A22R-ON05-N-C** | 63 | 71.8 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 2.5 | ● | 0.7 | 8 | | |
| **080-Z06-A27R-ON05-N-C** | 80 | 88.8 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 2.5 | ● | 1.4 | 6 | | |
| **080-Z08-A27R-ON05-N-C** | 80 | 88.8 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 2.5 | ● | 1.4 | 8 | | |
| **080-Z09-A27R-ON05-N-C** | 80 | 88.8 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 2.5 | ● | 1.4 | 9 | | |
| **100-Z07-A32R-ON05-N-C** | 100 | 108.8 | 77 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 2.5 | ● | 2.0 | 7 | | |
| **100-Z09-A32R-ON05-N-C** | 100 | 108.8 | 77 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 2.5 | ● | 2.1 | 9 | | |
| **100-Z11-A32R-ON05-N-C** | 100 | 108.8 | 77 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 2.5 | ● | 2.1 | 11 | | |
| **125-Z07-A40R-ON05-N-C** | 125 | 133.8 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 2.5 | ● | 3.8 | 7 | | |
| **125-Z09-A40R-ON05-N-C** | 125 | 133.8 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 2.5 | ● | 3.8 | 9 | | |
| **125-Z14-A40R-ON05-N-C** | 125 | 133.8 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 2.5 | ● | 3.8 | 14 | | |
| **160-Z10-A40R-ON05-N** | 160 | 168.8 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 40 | 9.2 | 16.4 | 2.5 | ○ | 4.5 | 10 | 2 | |

Note: ● With internal coolant
○ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅50-160 | |  | 4.0Nm |
| | SP040090 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | L | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **ONHU 050408-MM3** | 4.9 | 12.7 | 4.76 | 0.8 | - | 4.4 | ● | | | | | | | | | |
| | **ONMU 050408-MM4** | 4.9 | 12.7 | 4.76 | 0.8 | - | 4.4 | ● | ● | | | | ● | ● | ● | | |
| | **ONHU 0504ZNR-MM3** | 5.0 | 12.7 | 4.76 | 0.8 | 1.4 | 4.4 | ○ | | | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | ON..0504.. | | | | | |
| | | | | ap | | Geometry | | | |
| | | | | | | MM3 | | MM4 | |
| | | | | | | fz | | | |
| | | | | (mm) | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 2.50 | 0.10 | 0.25 | 0.15 | 0.35 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | | | | |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.08 | 0.20 | 0.10 | 0.25 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.25 | 0.15 | 0.35 |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM45-SE12

45° Approach angle face milling cutter

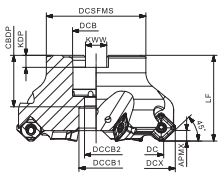



Fig. 1

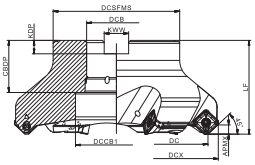



Fig. 2

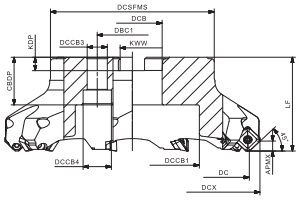
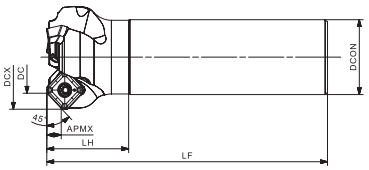



Fig. 3

| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM45-050-Z04-A22R-SE12-C-S** | 50 | 63 | 42 | 22 | - | 17 | 11 | - | - | 40 | 26 | 6.3 | 10.4 | 6 | | 0.4 | 4 | 1 | SE..12T3.. |
| **063-Z04-A22R-SE12-C-S** | 63 | 76 | 47 | 22 | - | 17 | 11 | - | - | 40 | 26 | 6.3 | 10.4 | 6 | | 0.6 | 4 | | |
| **063-Z05-A22R-SE12-C-S** | 63 | 76 | 47 | 22 | - | 17 | 11 | - | - | 40 | 26 | 6.3 | 10.4 | 6 | | 0.6 | 5 | | |
| **080-Z04-A27R-SE12-C-S** | 80 | 93 | 58 | 27 | - | 20 | 13.5 | - | - | 50 | 30 | 7 | 12.4 | 6 | | 1.2 | 4 | | |
| **080-Z06-A27R-SE12-C-S** | 80 | 93 | 58 | 27 | - | 20 | 13.5 | - | - | 50 | 30 | 7 | 12.4 | 6 | | 1.2 | 6 | | |
| **100-Z05-A32R-SE12-C-S** | 100 | 113 | 66 | 32 | - | 45 | - | - | - | 50 | 30 | 8 | 14.4 | 6 | | 1.5 | 5 | 2 | |
| **100-Z07-A32R-SE12-C-S** | 100 | 113 | 66 | 32 | - | 45 | - | - | - | 50 | 30 | 8 | 14.4 | 6 | | 1.5 | 7 | | |
| **125-Z06-A40R-SE12-C-S** | 125 | 138 | 85 | 40 | - | 55 | - | - | - | 63 | 35 | 9 | 16.4 | 6 | | 3.0 | 6 | | |
| **125-Z08-A40R-SE12-C-S** | 125 | 138 | 85 | 40 | - | 55 | - | - | - | 63 | 35 | 9 | 16.4 | 6 | | 3.0 | 8 | | |
| **160-Z07-A40R-SE12-S** | 160 | 173 | 110 | 40 | 66.7 | 90 | - | 14 | 20 | 63 | 32 | 9 | 16.4 | 6 | | 4.3 | 7 | 3 | |
| **160-Z10-A40R-SE12-S** | 160 | 173 | 110 | 40 | 66.7 | 90 | - | 14 | 20 | 63 | 32 | 9 | 16.4 | 6 | | 4.2 | 10 | | |
| **200-Z08-A60R-SE12-S** | 200 | 213 | 140 | 60 | 101.6 | 140 | - | 18 | 27 | 63 | 45 | 14 | 25.7 | 6 | | 6.3 | 8 | | |
| **200-Z12-A60R-SE12-S** | 200 | 213 | 140 | 60 | 101.6 | 140 | - | 18 | 27 | 63 | 45 | 14 | 25.7 | 6 | | 6.5 | 12 | | |
| **250-Z10-A60R-SE12-S** | 250 | 263 | 160 | 60 | 101.6 | 140 | - | 18 | 27 | 63 | 45 | 14 | 25.7 | 6 | | 10.4 | 10 | | |
| **250-Z14-A60R-SE12-S** | 250 | 263 | 160 | 60 | 101.6 | 140 | - | 18 | 27 | 63 | 45 | 14 | 25.7 | 6 | | 10.6 | 14 | | |



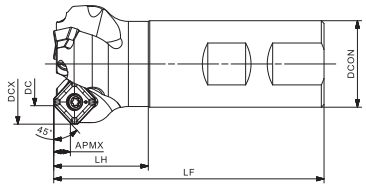

| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **AFM45-032-Z03-C32R-SE12-L120-C-S** | 32 | 45 | 32 | 120 | 35 | 6 | | 0.6 | 3 | SE..12T3.. |
| **040-Z03-C32R-SE12-L120-C-S** | 40 | 53 | 32 | 120 | 35 | 6 | | 0.8 | 3 | |

Note: With internal coolant

Without internal coolant

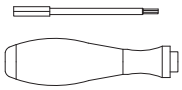
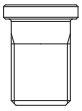
## AFM45-SE12

45° Approach angle face milling cutter

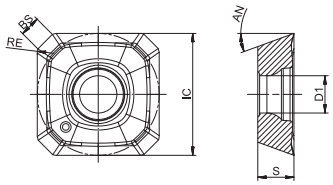



| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **AFM45-032-Z03-W32R-SE12-C-S** | 32 | 45 | 32 | 100 | 35 | 6 | ● | 0.6 | 3 | SE..12T3.. |
| **040-Z03-W32R-SE12-C-S** | 40 | 53 | 32 | 100 | 35 | 6 | ● | 0.6 | 3 | |

Note: ● With internal coolant
○ Without internal coolant

| Cutter diameter (mm) | Spare parts | | | | | |
|---|---|---|---|---|---|---|
| | Screw | Wrench | Shim | Shim screw | Shim screw wrench | Torque |
| ∅32-250 | |  | |  | | 3.5Nm |
| | SP035120H | DT-TP15 | S-SE12030 | SS050085F | LT-H3.5 | |

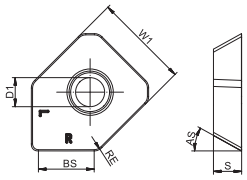
## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | | P | | | M | | K | | N | S | H |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC151K | AW100K | AP403S | AP151H |
| | **SEHT 12T3AEEN-FM2** | 13.4 | 3.97 | 1.5 | 2.3 | 4.1 | 20° | | | | | | | | ● | | |
| | **SEMT 12T3AEEN-MM3** | 13.4 | 3.97 | 1.5 | 2.0 | 4.1 | 20° | ● | | | ● | ● | ● | ● | | ● | |
| | **SEGT 12T3AEEN-MM4** | 13.4 | 3.97 | 1.5 | 2.1 | 4.1 | 20° | ● | | | | | ● | | | | ● |
| | **SEMT 12T3AEEN-MM4** | 13.4 | 3.97 | 1.5 | 2.0 | 4.1 | 20° | ● | | ● | ● | ● | ● | ● | | | |
| | **SEMT 12T3AEEN-MR6** | 13.4 | 3.97 | 1.5 | 2.0 | 4.1 | 20° | | | | | ● | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## Compatible Inserts

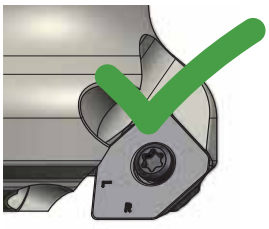


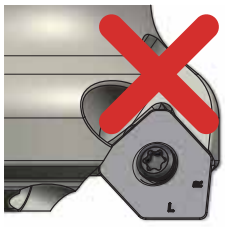

| Insert shape | Product code | W1 | S | RE | BS | D1 | AS | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | N | S | H | |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC151K | AW100K | AP403S | AP151H | |
| | **SEHT 12T3AEEN-W** | 13.4 | 3.97 | 1.5 | 7.8 | 4.1 | 29° | ● | | | | | | ● | | | | |

● : Standard stock ○ : Made-to-Order

## Precaution

When installing the wiper insert, refer to the left Fig. below (for example, the right-hand cutter); if installed as shown in the right Fig., the wiper effect will not be achieved.



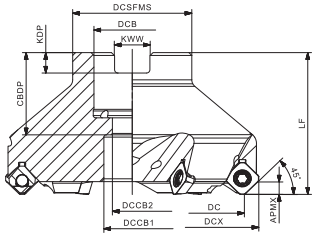


| Materials | | | | Cutting depth and feed | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SE..12T3.. | | | | | | | | | | | |
| | | | | ap | | Geometry | | | | | | | | | |
| | | | | | | MR6 | | MM4 | | MM3 | | FM2 | | | |
| | | | | | | fz | | | | | | | | | |
| | | | | | | (mm) | | | | | | | | | |
| ISO | Material classification | Tensile strength (N/mm²) | Hardness (HB) | min | max | min | max | min | max | min | max | min | max | | |
| P | Unalloyed steel | <600 | <180 | 0.20 | 6.00 | 0.10 | 0.35 | 0.10 | 0.30 | 0.05 | 0.28 | - | - | | |
| | | <950 | <280 | | | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.15 | 0.30 | 0.12 | 0.28 | 0.05 | 0.28 | - | - | | |
| | | 950-1200 | 280-355 | | | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.05 | 0.40 | 0.05 | 0.40 | 0.10 | 0.40 | - | - | | |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.40 | 0.10 | 0.40 | 0.10 | 0.40 | - | - | | |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | 0.10 | 0.22 | | |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | - | - | 0.10 | 0.40 | - | - | | |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | 0.10 | 0.30 | 0.10 | 0.30 | - | - | | |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | | | |

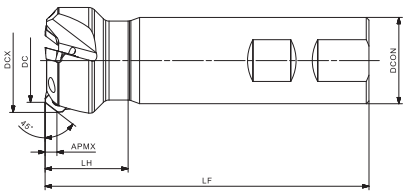
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM45-SD09

45° Approach angle face milling cutter



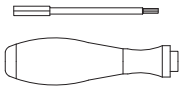

| Product code | Dimension (mm) | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AFM45-032-Z04-A16R-SD09-C** | 32 | 41.6 | 30 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 4 | ● | 0.3 | 4 | SD..09T3..EN.. |
| **040-Z05-A16R-SD09-C** | 40 | 49.6 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 4 | ● | 0.4 | 5 | |
| **050-Z05-A22R-SD09-C** | 50 | 59.6 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 4 | ● | 0.5 | 5 | |
| **050-Z06-A22R-SD09-C** | 50 | 59.6 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 4 | ● | 0.5 | 6 | |
| **063-Z05-A22R-SD09-C** | 63 | 72.6 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 4 | ● | 0.7 | 5 | |
| **063-Z07-A22R-SD09-C** | 63 | 72.6 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 4 | ● | 0.7 | 7 | |
| **080-Z06-A27R-SD09-C** | 80 | 89.6 | 42 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 4 | ● | 1.4 | 6 | |
| **080-Z09-A27R-SD09-C** | 80 | 89.6 | 42 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 4 | ● | 1.4 | 9 | |
| **100-Z07-A32R-SD09-C** | 100 | 109.6 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 4 | ● | 2.3 | 7 | |
| **100-Z11-A32R-SD09-C** | 100 | 109.6 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 4 | ● | 2.3 | 11 | |
| **125-Z08-A40R-SD09-C** | 125 | 134.6 | 87 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 4 | ● | 4.1 | 8 | |



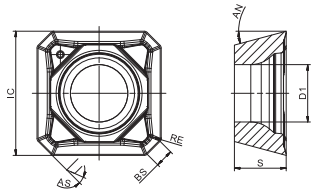

| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **AFM45-016-Z02-W16R-SD09-C** | 16 | 25.2 | 16 | 90 | 25 | 4 | ● | 0.2 | 2 | SD..09T3..EN.. |
| **020-Z02-W20R-SD09-C** | 20 | 29.2 | 20 | 110 | 27 | 4 | ● | 0.3 | 2 | |
| **025-Z03-W25R-SD09-C** | 25 | 34 | 25 | 120 | 27 | 4 | ● | 0.5 | 3 | |
| **032-Z03-W32R-SD09-C** | 32 | 41 | 32 | 120 | 31 | 4 | ● | 0.7 | 3 | |

Note: ● With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ⌀16-32 | |  | 3.5Nm |
| | ST040075 | DT-T15 | |
| ⌀40-125 | SP040090 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | Machining conditions: Dimension (mm) IC | S | RE | BS | D1 | AN | ● Good Conditions ⇳ General Conditions ⇲ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ⇳ | ● | ⇳ | ⇲ | ● | ● | ● | ● | ⇲ |
| | | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 09T304EN-MM3** | 9.525 | 3.97 | 0.4 | - | 4.4 | 15° | ● | ● | ● | | | ● | ● | | | |
| | **SDMT 09T308EN-MM3** | 9.525 | 3.97 | 0.8 | - | 4.4 | 15° | ● | ● | | | | | ● | ● | | |
| | **SDGT 09T3AEEN-MM4** | 9.252 | 3.97 | 0.3 | 1.4 | 4.4 | 15° | ○ | ○ | | | | | | | | |

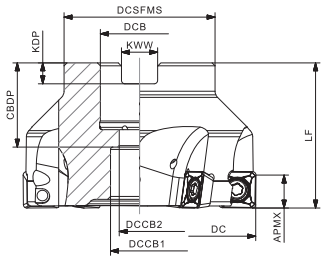
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD..09T3..EN.. | | | | | | |
| | | | | ap | | Geometry | | | | |
| | | | | | | MM3 | | MM4 | | |
| | | | | | | fz | | | | |
| | | | | (mm) | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max | |
| P | Unalloyed steel | <600 | <180 | 0.20 | 4.00 | 0.08 | 0.30 | 0.10 | 0.32 | |
| | | <950 | <280 | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.05 | 0.28 | 0.08 | 0.30 | |
| | | 950-1200 | 280-355 | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.05 | 0.25 | 0.08 | 0.28 | |
| | Austenitic stainless steel | 675 | 200 | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | - | - | |
| | Nodular cast iron | 880 | 260 | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | |
| | Aluminum alloy | 447 | 130 | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | - | - | |
| | Co-based alloy | 1076 | 320 | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | |
| | Chilled cast iron | - | 55HRC | | | | | | | |

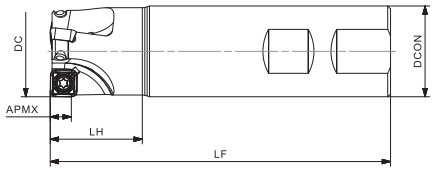
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM90-SD09

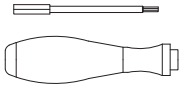
90° Approach angle face milling cutter




| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AFM90-040-Z04-A16R-SD09-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 7 | ● | 0.3 | 4 | SD..09T3..EN.. |
| **050-Z05-A22R-SD09-C** | 50 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 7 | ● | 0.4 | 5 | |
| **063-Z06-A22R-SD09-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 7 | ● | 0.6 | 6 | |
| **080-Z08-A27R-SD09-C** | 80 | 52 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 7 | ● | 1.2 | 8 | |
| **100-Z10-A32R-SD09-C** | 100 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 7 | ● | 2.1 | 10 | |

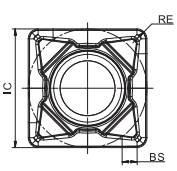


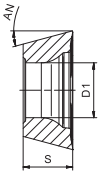

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AFM90-025-Z02-W25R-SD09-C** | 25 | 25 | 120 | 27.7 | 7 | ● | 0.4 | 2 | SD..09T3..EN.. |
| **032-Z03-W32R-SD09-C** | 32 | 32 | 120 | 32.4 | 7 | ● | 0.7 | 3 | |

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅25-32 | |  | 3.5Nm |
| | ST040075 | DT-T15 | |
| ∅40-100 | SP040090 | DT-TP15 | |

Note: ● With internal coolant
○ Without internal coolant

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⊕ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ⊕ | ● | ⊕ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AC301K | AP251K | AC151K | AW100K | AP403S |
| | **SDMT 09T304EN-MM3** | 9.525 | 3.97 | 0.4 | - | 4.4 | 15° | ● | ● | ● | | | ● | ● | | | |
| | **SDMT 09T308EN-MM3** | 9.525 | 3.97 | 0.8 | - | 4.4 | 15° | ● | ● | | | | ● | | ● | | |
| | **SDGT 09T3PDER-MR6** | 9.516 | 3.97 | 0.8 | 1.2 | 4.4 | 15° | ○ | ● | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: SD..09T3..EN.. ap (mm) min | ap (mm) max | Geometry MR6 fz (mm) min | MR6 fz (mm) max | Geometry MM3 fz (mm) min | MM3 fz (mm) max |
|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 7.00 | 0.10 | 0.35 | 0.08 | 0.30 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.08 | 0.30 | 0.05 | 0.28 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | - | - | 0.05 | 0.25 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.35 | 0.08 | 0.30 |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM89-SD09

89° Approach angle face milling cutter

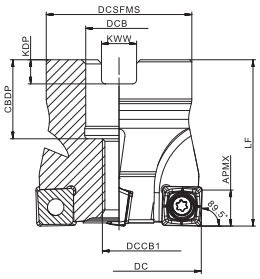



Fig. 1

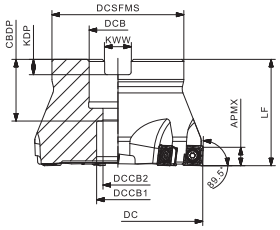
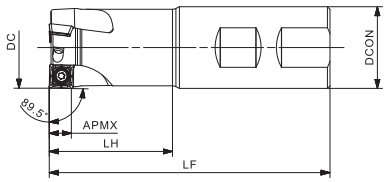


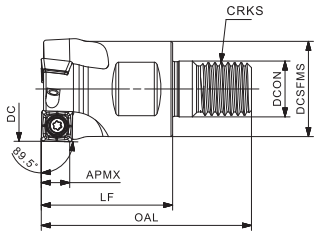

Fig. 2

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM89-040-Z04-A16R-SD09** | 40 | 35 | 16 | M8 | - | 40 | - | 5.8 | 8.4 | 7 | | 0.2 | 4 | 1 | SD..09T3..N.. |
| **050-Z05-A22R-SD09** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 7 | | 0.3 | 5 | 2 | |
| **063-Z06-A22R-SD09** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 7 | | 0.5 | 6 | | |
| **080-Z07-A27R-SD09** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 7 | | 1.1 | 7 | | |

Note: AFM89-040-Z04-A16R-SD09 is connected using a dowel screw.

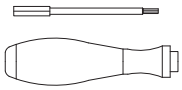



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AFM89-025-Z02-W25R-SD09** | 25 | 25 | 100 | 42 | 7 | | 0.3 | 2 | SD..09T3..N.. |
| **032-Z03-W32R-SD09** | 32 | 32 | 110 | 48 | 7 | | 0.6 | 3 | |
| **040-Z04-W40R-SD09** | 40 | 40 | 120 | 47 | 7 | | 1.0 | 4 | |

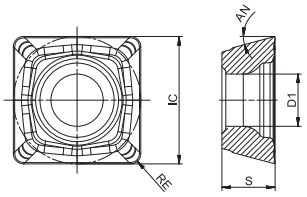



| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **AFM89-025-Z02-M12R-SD09** | 25 | 23 | 12.5 | 57 | 35 | M12 | 7 | | 0.1 | 2 | SD..09T3..N... |
| **032-Z02-M16R-SD09** | 32 | 29 | 17 | 64 | 40 | M16 | 7 | | 0.2 | 2 | |
| **032-Z03-M16R-SD09** | 32 | 29 | 17 | 64 | 40 | M16 | 7 | | 0.2 | 3 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅25-80 | |  | 3.0Nm |
| | SP035086 | DT-TP10 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 09T308N-MM4** | 9.525 | 3.97 | 0.8 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MM4** | 9.520 | 3.97 | 2.0 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | ● |
| | **SDMT 09T308N-MR2** | 9.525 | 3.97 | 0.8 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MR2** | 9.520 | 3.97 | 2.0 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |

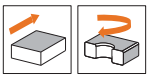
● : Standard stock ○ : Made-to-Order

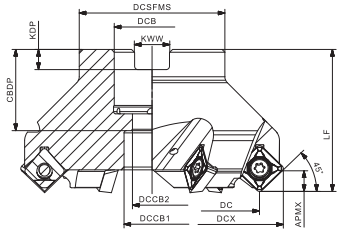
| Materials | | | | Cutting depth and feed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | SD..09T3..N.. | | | | | |
| | | | | ap | | Geometry | | | |
| | | | | | | MM4 | | MR2 | |
| | | | | | | fz | | | |
| | | | | (mm) | | | | | |
| ISO | Material classification | Tensile strength (N/mm²) | Hardness (HB) | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.10 | 7.00 | 0.05 | 0.25 | 0.05 | 0.35 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.05 | 0.22 | 0.05 | 0.30 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | - | - | 0.08 | 0.35 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.30 |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.05 | 0.30 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM45-SD12

45° Approach angle face milling cutter

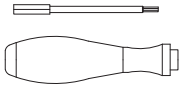




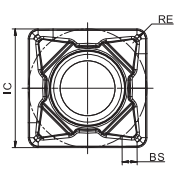

| Product code | Dimension (mm) | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AFM45-050-Z04-A22R-SD12-C** | 50 | 63 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 6 | ✓ | 0.5 | 4 | SD..1204..EN.. |
| **063-Z05-A22R-SD12-C** | 63 | 76 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 6 | ✓ | 0.6 | 5 | |
| **080-Z06-A27R-SD12-C** | 80 | 93 | 52 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 6 | ✓ | 1.1 | 6 | |
| **100-Z07-A32R-SD12-C** | 100 | 113 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 6 | ✓ | 2.0 | 7 | |
| **125-Z08-A40R-SD12-C** | 125 | 138 | 87 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 6 | ✓ | 3.8 | 8 | |

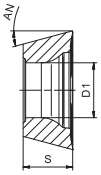
Note: ✓ With internal coolant

✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø50-125 | |  | 5.0Nm |
| | SP04511555 | DT-TP20 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⊕ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ⊕ | ⊕ | ⊕ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 120408EN-MM4** | 12.7 | 4.76 | 0.8 | - | 5.5 | 15° | ● | ● | ● | | ● | ● | ● | | | |
| | **SDMT 120412EN-MM3** | 12.7 | 4.76 | 1.2 | - | 5.5 | 15° | ● | ● | ○ | | | | ● | | | |
| | **SDKT 1204AEEN-MR2** | 12.7 | 4.76 | 2.3 | 1.5 | 5.5 | 15° | ○ | | ● | | | ● | | | | |

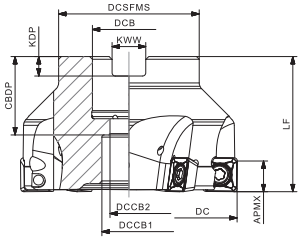
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD..1204..EN.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MR2 | | MM4 | | MM3 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 6.00 | 0.15 | 0.30 | 0.15 | 0.30 | 0.12 | 0.28 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.15 | 0.25 | 0.15 | 0.25 | 0.10 | 0.25 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.12 | 0.25 | 0.10 | 0.25 | 0.08 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.12 | 0.28 | 0.10 | 0.25 | 0.10 | 0.22 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | 0.08 | 0.20 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM90-SD12

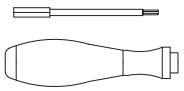
90° Approach angle face milling cutter



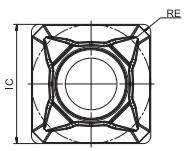

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AFM90-050-Z04-A22R-SD12-C** | 50 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 11 | ✓ | 0.3 | 4 | SD..1204..EN.. |
| **063-Z05-A22R-SD12-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 11 | ✓ | 0.5 | 5 | |
| **080-Z06-A27R-SD12-C** | 80 | 52 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 11 | ✓ | 1.1 | 6 | |
| **100-Z08-A32R-SD12-C** | 100 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 11 | ✓ | 2.0 | 8 | |
| **125-Z10-A40R-SD12-C** | 125 | 87 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 11 | ✓ | 3.8 | 10 | |

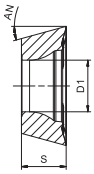
Note: ✓ With internal coolant

✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø50-125 | |  | 5.0Nm |
| | SP04511555 | DT-TP20 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⊕ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 120408EN-MM4** | 12.7 | 4.76 | 0.8 | - | 5.5 | 15° | ● | ● | ● | | ● | ● | ● | | | |
| | **SDMT 120412EN-MM3** | 12.7 | 4.76 | 1.2 | - | 5.5 | 15° | ● | ● | ○ | | | | ● | | | |

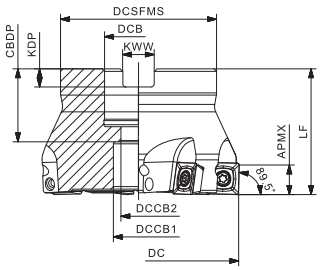
● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: SD..1204..EN.. ap (mm) min | ap (mm) max | Geometry MM4 fz (mm) min | Geometry MM4 fz (mm) max | Geometry MM3 fz (mm) min | Geometry MM3 fz (mm) max |
|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 11.00 | 0.15 | 0.30 | 0.12 | 0.28 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.15 | 0.25 | 0.10 | 0.25 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.10 | 0.25 | 0.08 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.25 | 0.10 | 0.22 |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.08 | 0.20 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

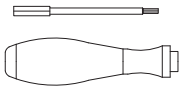
## AFM89-SD12

89° Approach angle face milling cutter

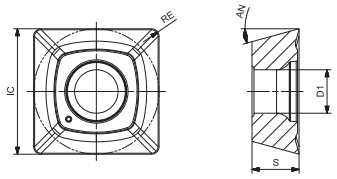



| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AFM89-050-Z04-A22R-SD12** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 9 | | 0.3 | 4 | SD..1204..N.. |
| **063-Z05-A22R-SD12** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 9 | | 0.5 | 5 | |
| **080-Z07-A27R-SD12** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 9 | | 1.1 | 7 | |
| **100-Z08-A32R-SD12** | 100 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 9 | | 1.7 | 8 | |
| **125-Z09-A40R-SD12** | 125 | 87 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 9 | | 3.0 | 9 | |
| **125-Z10-A40R-SD12** | 125 | 87 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 9 | | 3.0 | 10 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅50-125 | |  | 3.5Nm |
| | SP040112 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | D1 | AN | ● Good Conditions ⊕ General Conditions ⊕ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 120408N-MM4** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 120420N-MM4** | 12.7 | 4.76 | 2.0 | 4.4 | 15.3° | ○ | | | | | ● | | | | |
| | **SDMT 120425N-MM4** | 12.7 | 4.76 | 2.5 | 4.4 | 15.3° | | | | ○ | ● | | | | | ○ |
| | **SDMT 120430N-MM4** | 12.7 | 4.76 | 3.0 | 4.4 | 15.3° | | ○ | | | | ● | | | | |
| | **SDMT 120408N-MR2** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | ● | ● | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: SD..1204..N.. ap (mm) min | ap (mm) max | Geometry MM4 fz (mm) min | MM4 fz (mm) max | Geometry MR2 fz (mm) min | MR2 fz (mm) max |
|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 9.00 | 0.10 | 0.30 | 0.10 | 0.35 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.25 | 0.10 | 0.30 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 | 0.10 | 0.30 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.30 | 0.10 | 0.35 |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.12 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM45-SN12

45° Approach angle face milling cutter

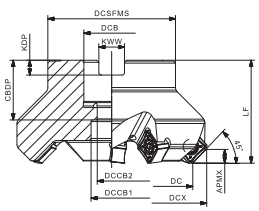



Fig. 1

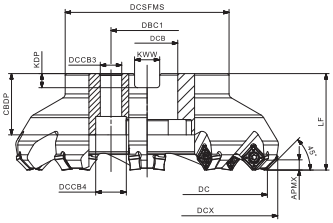
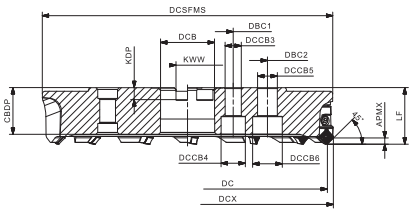



Fig. 2

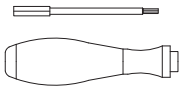
| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM45-050-Z04-A22R-SN12-N-C** | 50 | 64 | 47 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 6 | | 0.5 | 4 | | |
| **050-Z06-A22R-SN12-N-C** | 50 | 64 | 47 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 6 | | 0.5 | 6 | | |
| **063-Z04-A22R-SN12-N-C** | 63 | 77 | 52 | 22 | - | 18 | 11 | - | - | 40 | 24.5 | 6.3 | 10.4 | 6 | | 0.7 | 4 | | |
| **063-Z06-A22R-SN12-N-C** | 63 | 77 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 6 | | 0.6 | 6 | | |
| **063-Z08-A22R-SN12-N-C** | 63 | 77 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 6 | | 0.6 | 8 | | |
| **080-Z04-A27R-SN12-N-C** | 80 | 94 | 62 | 27 | - | 20 | 14 | - | - | 50 | 30 | 7 | 12.4 | 6 | | 1.3 | 4 | | |
| **080-Z05-A27R-SN12-N-C** | 80 | 94 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 6 | | 1.2 | 5 | 1 | |
| **080-Z07-A27R-SN12-N-C** | 80 | 94 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 6 | | 1.2 | 7 | | SN..1206ANN.. SN..1206.. |
| **100-Z06-A32R-SN12-N-C** | 100 | 114 | 77 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 6 | | 1.8 | 6 | | |
| **100-Z08-A32R-SN12-N-C** | 100 | 114 | 77 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 6 | | 1.8 | 8 | | |
| **125-Z07-A40R-SN12-N-C** | 125 | 139 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 6 | | 3.8 | 7 | | |
| **125-Z08-A40R-SN12-N-C** | 125 | 139 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 6 | | 3.8 | 8 | | |
| **125-Z10-A40R-SN12-N-C** | 125 | 139 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 6 | | 3.7 | 10 | | |
| **160-Z10-A40R-SN12-N** | 160 | 174 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 6 | | 4.7 | 10 | | |
| **200-Z14-A60R-SN12-N** | 200 | 214 | 130 | 60 | 101.6 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 6 | | 7.2 | 14 | 2 | |
| **250-Z16-A60R-SN12-N** | 250 | 264 | 180 | 60 | 101.6 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 6 | | 13.0 | 16 | | |

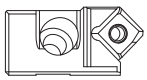
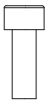



| Product code | Dimension (mm) | | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DBC2 | DCCB3 | DCCB4 | DCCB5 | DCCB6 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AFM45-315-Z14-A60R-SN12-M** | 315 | 329 | 220 | 60 | 101.6 | 177.8 | 18 | 27 | 22 | 33 | 63 | 52 | 14.2 | 25.6 | 6 | | 26.8 | 14 | SN..1206ANN SN..1206.. |

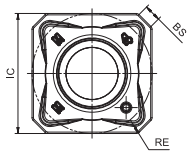
Note: With internal coolant

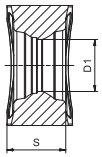
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅50-315 | |  | 3.5Nm |
| | SP050120 | DT-TP20 | |

| Cartridge | Cartridge screw | Cartridge screw wrench | Wedge | Wedge screw | Wedge screw wrench |
|---|---|---|---|---|---|
|  |  | | | | |
| C-SN1242-62-45 | ACH622 | LT-H5 | AWG-6H-6 | AWCH624 | LT-H3 |

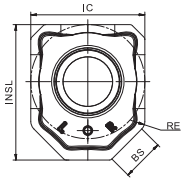
## Compatible Inserts

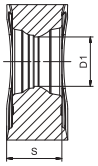



| Insert shape | Product code | Machining conditions | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SNHX 1206ANN-FM2** | 12.7 | 6.24 | 0.5 | 1.7 | 5.5 | | | | | | | | | ● | |
| | **SNGX 1206ANN-MM3** | 12.7 | 6.24 | 0.4 | 1.8 | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 1206ANN-MM3** | 12.7 | 6.25 | 0.4 | 1.8 | 5.5 | ● | ● | ○ | | | ● | ● | | | |
| | **SNGX 1206ANN-MM4** | 12.7 | 6.22 | 0.4 | 1.8 | 5.5 | ● | | ● | | ● | ● | | ● | | |
| | **SNMX 1206ANN-MM4** | 12.7 | 6.22 | 0.4 | 1.8 | 5.5 | ● | ● | ● | | ● | ● | ● | ● | | |
| | **SNGX 1206ANN-MR6** | 12.7 | 6.25 | 0.4 | 1.8 | 5.5 | ● | ● | ○ | | | ● | ● | ● | | |
| | **SNMX 1206ANN-MR6** | 12.7 | 6.25 | 0.4 | 1.8 | 5.5 | ○ | ● | ○ | | | ● | ● | ● | | |
| | **SNGX 1206ANN-RR2** | 12.7 | 6.29 | 0.5 | 1.7 | 5.5 | ○ | ● | ○ | | | ● | ● | ○ | | |

● : Standard stock ○ : Made-to-Order

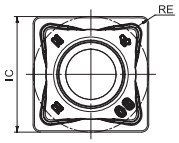


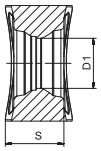




| Insert shape | Product code | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP405S |
| | **SNHX 1206ANN-W** | 15.1 | 12.7 | 6.15 | 1.2 | 4.7 | 5.5 | ● | | | | | ● | ● | ● | | |

● : Standard stock ○ : Made-to-Order

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP25IK | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **SNMX 120612-MM3** | 12.7 | 6.40 | 1.2 | - | 5.5 | ○ | ● | ○ | | ● | ● | ● | | | |
| | **SNGX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNGX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | | | | | | | | | |
| | **SNMX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | | | | ● | ● | ● | | |
| | **SNMX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120620-MM4** | 12.7 | 6.28 | 2.0 | - | 5.5 | | ● | ○ | | | ● | ● | ● | | |
| | **SNMX 120630-MM4** | 12.7 | 6.14 | 3.0 | - | 5.5 | | | | | | ● | | | | |
| | **SNMX 120612-MR6** | 12.7 | 6.41 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120612-RR2** | 12.7 | 6.44 | 1.2 | - | 5.5 | ● | ● | ○ | | | ● | ● | | | |
| | **SNMX 120620-RR2** | 12.7 | 6.34 | 2.0 | - | 5.5 | | ● | ● | | | ● | ● | | | |
| | **SNMX 120612R-MM4** | 12.7 | 6.85 | 1.2 | - | 5.5 | ● | ● | ○ | | ● | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | ap | | SN.. 1206.. Geometry MM3 fz (mm) | | MM4 | | MR6 | | RR2 | | FM2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | min | max | min | max | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 6.00 | 0.15 | 0.35 | 0.18 | 0.38 | 0.18 | 0.40 | 0.18 | 0.45 | - | - |
| | | <950 | <280 | | | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.32 | 0.15 | 0.35 | 0.15 | 0.38 | 0.15 | 0.38 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.12 | 0.30 | 0.12 | 0.32 | - | - | - | - | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.15 | 0.35 | 0.18 | 0.38 | 0.18 | 0.40 | 0.18 | 0.45 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | - | - | 0.15 | 0.35 |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.25 | 0.12 | 0.28 | - | - | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM75-SN12

75° Approach angle face milling cutter

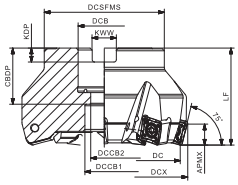



Fig. 1

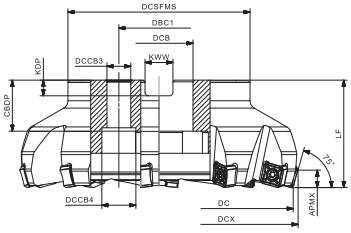
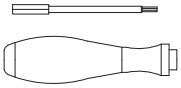


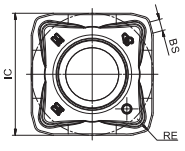

Fig. 2

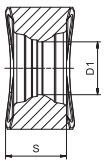
| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM75-050-Z04-A22R-SN12-N-C** | 50 | 56 | 42 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 8 | | 0.4 | 4 | 1 | SN..1206ENN.. SN..1206.. |
| **063-Z06-A22R-SN12-N-C** | 63 | 69 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 8 | | 0.6 | 6 | | |
| **080-Z07-A27R-SN12-N-C** | 80 | 86 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 8 | | 1.3 | 7 | | |
| **100-Z08-A32R-SN12-N-C** | 100 | 106 | 67 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 8 | | 1.9 | 8 | | |
| **125-Z08-A40R-SN12-N-C** | 125 | 131 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 8 | | 3.5 | 8 | | |
| **125-Z10-A40R-SN12-N-C** | 125 | 131 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 8 | | 3.8 | 10 | | |
| **160-Z10-A40R-SN12-N** | 160 | 166 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 8 | | 4.7 | 10 | 2 | |
| **200-Z14-A60R-SN12-N** | 200 | 206 | 130 | 60 | 101.6 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 8 | | 7.4 | 14 | | |
| **250-Z16-A60R-SN12-N** | 250 | 256 | 180 | 60 | 101.6 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 8 | | 13.4 | 16 | | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅50-250 | |  | 3.5Nm |
| | SP050120 | DT-TP20 | |

## Compatible Inserts

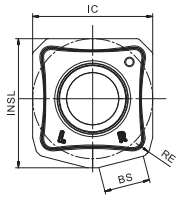



| Insert shape | Product code | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | Dimension (mm) | | | | | P | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SNGX 1206ENN-MM3** | 12.7 | 6.36 | 0.8 | 1.2 | 5.5 | ● | ● | ○ | | | ● | ● | ○ | | |
| | **SNGX 1206ENN-MM4** | 12.7 | 6.34 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | | ● | ● | | | |
| | **SNMX 1206ENN-MM4** | 12.7 | 6.34 | 0.8 | 1.2 | 5.5 | | | ○ | | ● | ● | | | | |
| | **SNGX 1206ENN-MR6** | 12.7 | 6.32 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

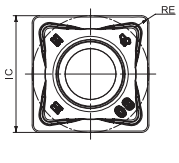
## Compatible Inserts




| Insert shape | Product code | Machining conditions: Dimension (mm) INSL | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SNHX 1206ENN-W** | 13.66 | 12.7 | 6.24 | 0.6 | 4.8 | 5.5 | ● | | ● | | | | | ● | | |

● : Standard stock ○ : Made-to-Order

## Compatible Inserts




| Insert shape | Product code | Machining conditions: Dimension (mm) IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SNMX 120612-MM3** | 12.7 | 6.40 | 1.2 | - | 5.5 | ○ | ● | ○ | | ● | ● | ● | | | |
| | **SNGX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNGX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | | | | | | | | | |
| | **SNMX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | | | | ● | ● | ● | | |
| | **SNMX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120620-MM4** | 12.7 | 6.28 | 2.0 | - | 5.5 | | ● | ○ | | | ● | ● | ● | | |
| | **SNMX 120630-MM4** | 12.7 | 6.14 | 3.0 | - | 5.5 | | | | | | ● | | | | |
| | **SNMX 120612-MR6** | 12.7 | 6.41 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120612-RR2** | 12.7 | 6.44 | 1.2 | - | 5.5 | ● | ● | ○ | | | ● | ● | | | |
| | **SNMX 120620-RR2** | 12.7 | 6.34 | 2.0 | - | 5.5 | | ● | ● | | | ● | ● | | | |
| | **SNMX 120612R-MM4** | 12.7 | 6.85 | 1.2 | - | 5.5 | ● | ● | ○ | | ● | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | SN.. 1206.. | | | | | | | | | |
| | | | | ap | | Geometry | | | | | | | |
| | | | | | | MM3 | | MM4 | | MR6 | | RR2 | |
| | | | | | | fz | | | | | | | |
| | | | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 8.00 | 0.12 | 0.32 | 0.19 | 0.35 | 0.15 | 0.38 | 0.18 | 0.40 |
| | | <950 | <280 | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.10 | 0.30 | 0.12 | 0.32 | 0.10 | 0.35 | 0.15 | 0.35 |
| | | 950-1200 | 280-355 | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.10 | 0.28 | 0.10 | 0.30 | - | - | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.12 | 0.32 | 0.15 | 0.35 | 0.12 | 0.35 | 0.18 | 0.40 |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.22 | 0.10 | 0.25 | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM88-SN12

88° Approach angle face milling cutter

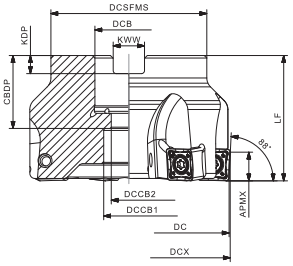



Fig. 1

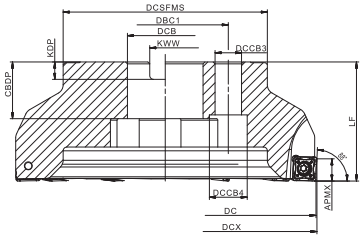



Fig. 2

| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM88-050-Z04-A22R-SN12-N-C** | 50 | 51 | 42 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 9 | ✓ | 0.4 | 4 | 1 | SN..1206ZNN.. SN..1206.. |
| **063-Z04-A22R-SN12-N-C** | 63 | 64 | 52 | 22 | - | 18 | 11 | - | - | 40 | 25 | 6.3 | 10.4 | 9 | ✓ | 0.6 | 4 | | |
| **063-Z06-A22R-SN12-N-C** | 63 | 64 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 9 | ✓ | 0.6 | 6 | | |
| **080-Z04-A27R-SN12-N-C** | 80 | 81 | 62 | 27 | - | 20 | 14 | - | - | 50 | 30 | 7.0 | 12.4 | 9 | ✓ | 1.2 | 4 | | |
| **080-Z07-A27R-SN12-N-C** | 80 | 81 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 9 | ✓ | 1.2 | 7 | | |
| **100-Z08-A32R-SN12-N-C** | 100 | 101 | 77 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 9 | ✓ | 1.8 | 8 | | |
| **100-Z11-A32R-SN12-N-C** | 100 | 101 | 77 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 9 | ✓ | 1.6 | 11 | | |
| **125-Z10-A40R-SN12-N-C** | 125 | 126 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 9 | ✓ | 3.5 | 10 | | |
| **125-Z13-A40R-SN12-N-C** | 125 | 126 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 9 | ✓ | 3.5 | 13 | | |
| **160-Z12-A40R-SN12-N** | 160 | 161 | 108 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 9 | ✗ | 4.5 | 12 | 2 | |
| **200-Z14-A60R-SN12-N** | 200 | 201 | 130 | 60 | 101.6 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 9 | ✗ | 7.2 | 14 | | |

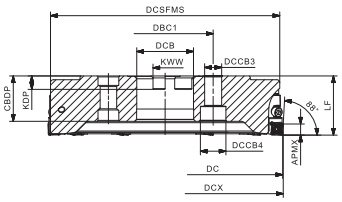



Fig. 3

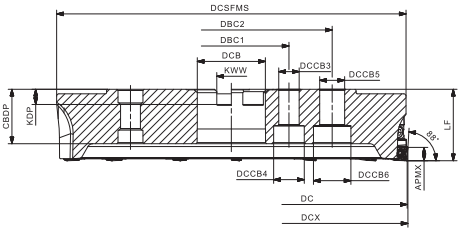
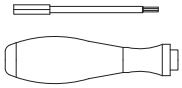


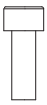
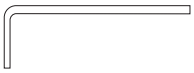
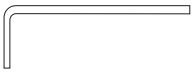

Fig. 4

| Product code | Dimension (mm) | | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DBC2 | DCCB3 | DCCB4 | DCCB5 | DCCB6 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM88-250-Z12-A60R-SN12-M** | 250 | 251 | 180 | 60 | 101.6 | - | 18 | 27 | - | - | 63 | 48 | 14.2 | 25.6 | 9 | ✗ | 15.7 | 12 | 3 | SN..1206ZNN.. SN..1206.. |
| **315-Z14-A60R-SN12-M** | 315 | 316 | 220 | 60 | 101.6 | 177.8 | 18 | 27 | 22 | 33 | 63 | 48 | 14.2 | 25.6 | 9 | ✗ | 24.4 | 14 | 4 | |

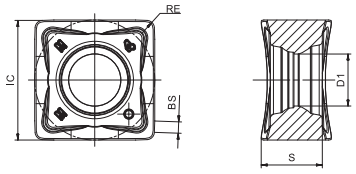
Note: ✓ With internal coolant

✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ⌀50-315 | |  | 3.5Nm |
| | SP050120 | DT-TP20 | |

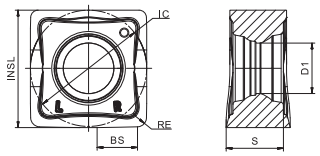
| Cartridge | Cartridge screw | Cartridge screw wrench | Wedge | Wedge screw | Wedge screw wrench |
|---|---|---|---|---|---|
| |  |  | | |  |
| C-SN1242-62-88 | ACH622 | LT-H5 | AWG-6H-6 | AWCH624 | LT-H3 |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SNHX 1206ZNN-FM2** | 12.7 | 6.56 | 0.8 | 1.2 | 5.5 | | | | | | | | | ● | |
| | **SNGX 1206ZNN-MM3** | 12.7 | 6.49 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNGX 1206ZNN-MM4** | 12.7 | 6.46 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | ● | ● | ● | ● | | ● |
| | **SNMX 1206ZNN-MM4** | 12.7 | 6.46 | 0.8 | 1.2 | 5.5 | ● | ○ | ● | | ● | ● | ○ | ○ | | |
| | **SNGX 1206ZNN-MR6** | 12.7 | 6.44 | 0.8 | 1.2 | 5.5 | ● | ● | ○ | | ● | ● | ● | ● | | |

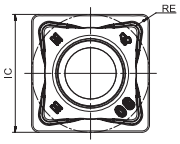
● : Standard stock ○ : Made-to-Order

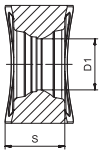



| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SNHX 1206ZNN-W** | 12.8 | 12.7 | 6.24 | 0.8 | 4.4 | 5.5 | ● | | ● | | | | ● | ● | | |

● : Standard stock ○ : Made-to-Order

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **SNMX 120612-MM3** | 12.7 | 6.40 | 1.2 | - | 5.5 | ○ | ● | ○ | | ● | ● | ● | | | |
| | **SNGX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNGX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | | | | | | | | | |
| | **SNMX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | | | | ● | ● | ● | | |
| | **SNMX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120620-MM4** | 12.7 | 6.28 | 2.0 | - | 5.5 | | ● | ○ | | | ● | ● | ● | | |
| | **SNMX 120630-MM4** | 12.7 | 6.14 | 3.0 | - | 5.5 | | | | | | ● | | | | |
| | **SNMX 120612-MR6** | 12.7 | 6.41 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120612-RR2** | 12.7 | 6.44 | 1.2 | - | 5.5 | ● | ● | ○ | | | ● | ● | | | |
| | **SNMX 120620-RR2** | 12.7 | 6.34 | 2.0 | - | 5.5 | | ● | ● | | | ● | ● | | | |
| | **SNMX 120612R-MM4** | 12.7 | 6.85 | 1.2 | - | 5.5 | ● | ● | ○ | | ● | ● | ● | | | |

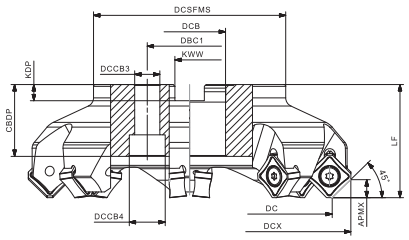
● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: SN.. 1206.. ap (mm) min | ap (mm) max | Geometry MM3 fz (mm) min | MM3 max | MM4 min | MM4 max | MR6 min | MR6 max | RR2 min | RR2 max | FM2 min | FM2 max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 9.00 | 0.12 | 0.32 | 0.19 | 0.35 | 0.15 | 0.38 | 0.18 | 0.40 | - | - |
| | | <950 | <280 | | | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.10 | 0.30 | 0.12 | 0.32 | 0.10 | 0.35 | 0.15 | 0.35 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.10 | 0.28 | 0.10 | 0.30 | - | - | - | - | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.12 | 0.32 | 0.15 | 0.35 | 0.12 | 0.35 | 0.18 | 0.40 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | - | - | 0.12 | 0.32 |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.22 | 0.10 | 0.25 | - | - | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

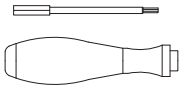
## AFM45-SN19

45° Approach angle face milling cutter

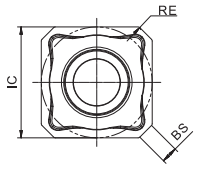


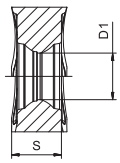

| Product code | Dimension (mm) | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AFM45-160-Z08-A40R-SN19** | 160 | 181.3 | 107 | 40 | 66.7 | 14 | 20 | 63 | 40 | 9.0 | 16.4 | 10 | | 4.9 | 8 | SN..1909ANN.. |
| **200-Z10-A60R-SN19** | 200 | 221.3 | 130 | 60 | 101.6 | 18 | 27 | 63 | 46 | 14.2 | 25.6 | 10 | | 7.7 | 10 | |
| **250-Z12-A60R-SN19** | 250 | 271.3 | 180 | 60 | 101.6 | 18 | 26 | 63 | 46 | 14.0 | 25.6 | 10 | | 12.7 | 12 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø160-250 | |  | 5.0Nm |
| | SP06018070 | DT-TP25 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ⇔ General Conditions ✱ Bad Conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ⇔ | ⇔ | ⇔ | ✱ | ● | ● | ● | ● | ✱ | |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S | |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S | |
| | **SNGX 1909ANN-MM3** | 19.05 | 8.58 | 0.4 | 2.8 | 8 | | ● | | | | | | | | | |
| | **SNGX 1909ANN-MR6** | 19.05 | 8.50 | 0.8 | 2.7 | 8 | | ● | | | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | SN.. 1909.. | | | | | |
| | | | | ap | | Geometry | | | |
| | | | | | | MM3 | | MR6 | |
| | | | | | | fz | | | |
| | | | | (mm) | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.80 | 10.00 | 0.10 | 0.40 | 0.13 | 0.43 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.08 | 0.35 | 0.10 | 0.40 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | - | - | 0.10 | 0.40 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM45-HN09

45° Approach angle face milling cutter

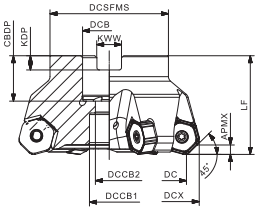



Fig. 1

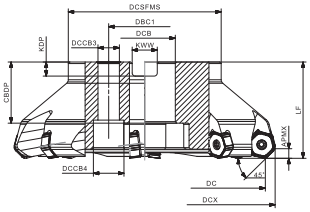
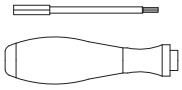


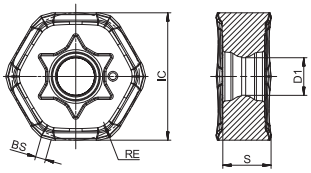

Fig. 2

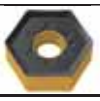
| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM45-063-Z04-A22R-HN09-C** | 63 | 75 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 5 | ✓ | 0.6 | 4 | 1 | HN..0906.. |
| **063-Z05-A22R-HN09-C** | 63 | 75 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 5 | ✓ | 0.5 | 5 | | |
| **080-Z05-A27R-HN09-C** | 80 | 92 | 60 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 5 | ✓ | 1.2 | 5 | | |
| **080-Z06-A27R-HN09-C** | 80 | 92 | 60 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 5 | ✓ | 1.2 | 6 | | |
| **100-Z06-A32R-HN09-C** | 100 | 112 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | ✓ | 1.8 | 6 | | |
| **100-Z08-A32R-HN09-C** | 100 | 112 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | ✓ | 1.8 | 8 | | |
| **100-Z10-A32R-HN09-C** | 100 | 112 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | ✓ | 1.9 | 10 | | |
| **125-Z06-A40R-HN09-C** | 125 | 137 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | ✓ | 3.7 | 6 | | |
| **125-Z10-A40R-HN09-C** | 125 | 137 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | ✓ | 3.5 | 10 | | |
| **125-Z12-A40R-HN09-C** | 125 | 137 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | ✓ | 3.7 | 12 | | |
| **160-Z08-A40R-HN09** | 160 | 172 | 100 | 40 | 66.7 | - | - | 14 | 20 | 63 | 40 | 9.2 | 16.4 | 5 | ✗ | 5.2 | 8 | 2 | |
| **160-Z12-A40R-HN09** | 160 | 172 | 100 | 40 | 66.7 | - | - | 14 | 20 | 63 | 40 | 9.2 | 16.4 | 5 | ✗ | 5.3 | 12 | | |

Note: ✓ With internal coolant
✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø63-160 | |  | 5.0Nm |
| | SP045120 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **HNGX 0906ANN-MR6** | 16.5 | 6.35 | 1.0 | 1.1 | 4.86 | ● | | ● | ○ | ● | ● | | ● | | |
| | **HNMX 0906ANN-MM4** | 16.5 | 6.35 | 1.0 | 1.1 | 4.86 | ● | | ● | ○ | ● | ● | | ● | | |
|  | **HNMX 090612-MM4** | 16.5 | 6.35 | 1.2 | - | 4.86 | ● | | ● | ○ | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | HN..0906.. | | | | | | |
| | | | | ap | | Geometry | | | | |
| | | | | | | MR6 | | MM4 | | |
| | | | | | | fz | | | | |
| | | | | (mm) | | | | | | |
| | | | | min | max | min | max | min | max | |
| P | Unalloyed steel | <600 | <180 | 0.20 | 5.00 | 0.30 | 0.50 | 0.17 | 0.35 | |
| | | <950 | <280 | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.28 | 0.45 | - | - | |
| | | 950-1200 | 280-355 | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | - | - | - | - | |
| | Austenitic stainless steel | 675 | 200 | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.30 | 0.50 | 0.17 | 0.35 | |
| | Nodular cast iron | 880 | 260 | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | |
| | Aluminum alloy | 447 | 130 | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | - | - | |
| | Co-based alloy | 1076 | 320 | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | |
| | Chilled cast iron | - | 55HRC | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM45-XN07

45° Approach angle face milling cutter

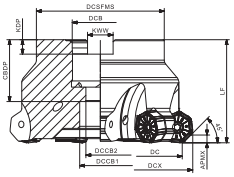


Fig. 1

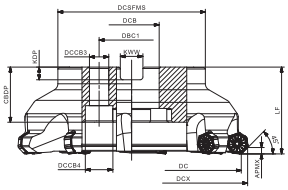


Fig. 2

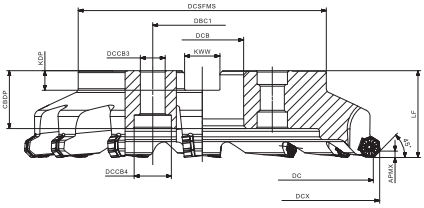
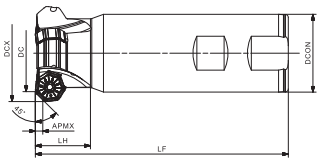


Fig. 3

| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM45-040-Z03-A16R-XN07-C** | 40 | 49.7 | 35 | 16 | - | 14 | 9 | - | - | 40 | 25 | 5.6 | 8.4 | 3.5 | ✓ | 0.3 | 3 | 1 | XN..0705.. |
| **050-Z04-A22R-XN07-C** | 50 | 59.7 | 42 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 3.5 | ✓ | 0.4 | 4 | | |
| **050-Z05-A22R-XN07-C** | 50 | 59.7 | 42 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 3.5 | ✓ | 0.4 | 5 | | |
| **063-Z05-A22R-XN07-C** | 63 | 72.7 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 3.5 | ✓ | 0.6 | 5 | | |
| **063-Z06-A22R-XN07-C** | 63 | 72.7 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 3.5 | ✓ | 0.6 | 6 | | |
| **080-Z06-A27R-XN07-C** | 80 | 89.7 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 3.5 | ✓ | 1.3 | 6 | | |
| **080-Z07-A27R-XN07-C** | 80 | 89.7 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 3.5 | ✓ | 1.3 | 7 | | |
| **100-Z07-A32R-XN07-C** | 100 | 109.7 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 3.5 | ✓ | 1.9 | 7 | | |
| **100-Z08-A32R-XN07-C** | 100 | 109.7 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 3.5 | ✓ | 1.9 | 8 | | |
| **125-Z08-A40R-XN07-C** | 125 | 134.7 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 3.5 | ✓ | 3.6 | 8 | | |
| **125-Z10-A40R-XN07-C** | 125 | 134.7 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 3.5 | ✓ | 3.6 | 10 | | |
| **160-Z09-A40R-XN07** | 160 | 169.7 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 40 | 9.2 | 16.4 | 3.5 | ✗ | 4.5 | 9 | 2 | |
| **160-Z12-A40R-XN07** | 160 | 169.7 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 40 | 9.2 | 16.4 | 3.5 | ✗ | 4.4 | 12 | | |
| **200-Z14-A60R-XN07** | 200 | 209.6 | 130 | 60 | 101.6 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 3.5 | ✗ | 7.0 | 14 | | |
| **250-Z14-A60R-XN07-S** | 250 | 259.6 | 180 | 60 | 101.6 | - | - | 18 | 27 | 63 | 42 | 14.2 | 25.6 | 3.5 | ✗ | 11.0 | 14 | 3 | |



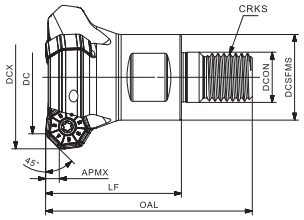
| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **AFM45-040-Z03-W40R-XN07-C** | 40 | 49.8 | 40 | 130 | 28.3 | 3.5 | ✓ | 1.2 | 3 | XN..0705.. |

Note: ✓ With internal coolant

✗ Without internal coolant

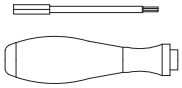
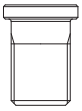
## AFM45-XN07

45° Approach angle face milling cutter

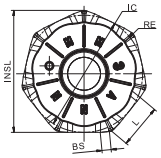


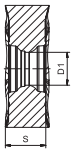

| Product code | Dimension (mm) | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **AFM45-040-Z03-M16R-XN07-C** | 40 | 49.3 | 29 | 17 | 70 | 46 | M16 | 3.5 | | 0.3 | 3 | XN..0705.. |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | | | | |
|---|---|---|---|---|---|---|
| | Screw | Wrench | Shim | Shim screw | Shim screw wrench | Torque |
| ∅40-250 | |  | |  | | 3.5Nm |
| | SP035120H | DT-TP15 | S-XN07030 | SS050085F | LT-H3.5 | |

## Compatible Inserts

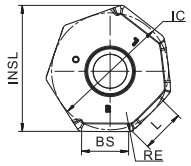


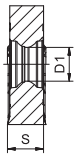




| Insert shape | Product code | Machining conditions: Dimension (mm) L | INSL | IC | S | RE | BS | D1 | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **XNGU 0705ANN-MM3** | 5.5 | 15.09 | 14.5 | 5.0 | 0.8 | 1.1 | 4.07 | ● | ● | | | | ● | ● | ● | | |
| | **XNGU 0705ANN-MM4** | 5.5 | 15.09 | 14.5 | 5.0 | 0.8 | 1.1 | 4.07 | ● | | | ● | ● | | ● | | | |
| | **XNMU 0705ANN-MM4** | 5.5 | 15.09 | 14.5 | 5.0 | 0.8 | 1.1 | 4.07 | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | **XNMU 0705ANN-MR6** | 5.5 | 15.09 | 14.5 | 5.05 | 0.8 | 1.1 | 4.07 | ● | ● | | | | ● | ● | | | |
| | **XNMU 0705ANN-MM4N** | 5.5 | 15.09 | 14.5 | 5.3 | 0.8 | 1.0 | 4.07 | ● | | ● | | ● | ● | | | | |

● : Standard stock ○ : Made-to-Order

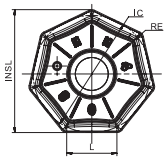
## Compatible Inserts

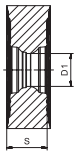



| Insert shape | Product code | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | | L | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **XNGX 0705ANN-W** | 5.4 | 15.09 | 14.5 | 5.0 | 0.8 | 5.6 | 4.07 | ● | | | | | ● | ● | ● | | |

● : Standard stock ○ : Made-to-Order




| Insert shape | Product code | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | | L | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **XNMU 070508-MM4** | 6.6 | 15.21 | 14.5 | 5.0 | 0.8 | - | 4.07 | ● | ● | ● | | ● | ● | ● | ● | | |
| | **XNMU 070508-MM4N** | 6.6 | 15.21 | 14.5 | 5.3 | 0.8 | - | 4.07 | | | | | | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

## Precautions for using XN07..W long wiper inserts

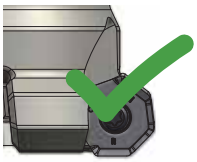


Fig.1 (correct)

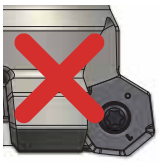


Fig.2 (wrong)

Fig.3 (wrong)

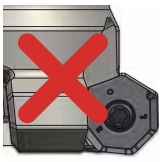


Fig.4 (wrong)

This insert features two right-hand cutting edges and two left-hand cutting edges.

While a single wiper insert can achieve satisfactory surface finish, when the feed rate equals or exceeds the wiper edge length, it is recommended to install two or more wiper inserts in the tool holder. For optimal performance, the long wiper insert XNGX 0705ANN-W should be used in combination with standard wiper inserts XN..0705ANN..

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | XN.. 0705.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MM3 | | MM4 | | MR6 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 3.50 | 0.15 | 0.35 | 0.18 | 0.38 | 0.18 | 0.40 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.32 | 0.15 | 0.35 | 0.15 | 0.38 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.12 | 0.30 | 0.12 | 0.32 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.15 | 0.35 | 0.18 | 0.38 | 0.18 | 0.40 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.25 | 0.12 | 0.28 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFM45-XN09

45° Approach angle face milling cutter

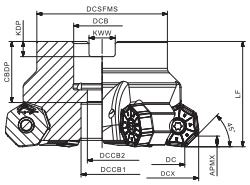



Fig. 1

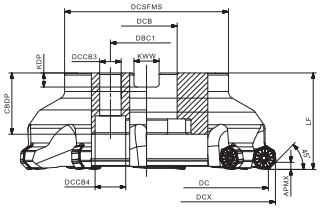



Fig. 2

| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM45-063-Z05-A22R-XN09-C** | 63 | 75.2 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 5 | ✓ | 0.6 | 5 | 1 | XN..0906.. |
| **080-Z06-A27R-XN09-C** | 80 | 92.2 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 5 | ✓ | 1.2 | 6 | | |
| **100-Z07-A32R-XN09-C** | 100 | 112.2 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | ✓ | 1.9 | 7 | | |
| **100-Z08-A32R-XN09-C** | 100 | 112.2 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | ✓ | 2.0 | 8 | | |
| **125-Z08-A40R-XN09-C** | 125 | 137.2 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | ✓ | 3.5 | 8 | | |
| **125-Z10-A40R-XN09-C** | 125 | 137.2 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | ✓ | 3.5 | 10 | | |
| **160-Z09-A40R-XN09** | 160 | 172.2 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 5 | ✗ | 4.4 | 9 | 2 | |
| **160-Z11-A40R-XN09** | 160 | 172.2 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 5 | ✗ | 4.3 | 11 | | |
| **200-Z12-A60R-XN09** | 200 | 212.2 | 130 | 60 | 101.6 | - | - | 18 | 27 | 63 | 48 | 14.2 | 25.6 | 5 | ✗ | 6.9 | 12 | | |

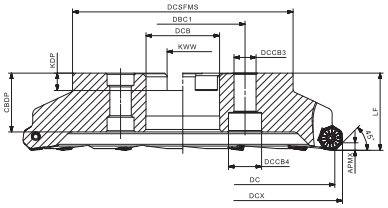



Fig. 3

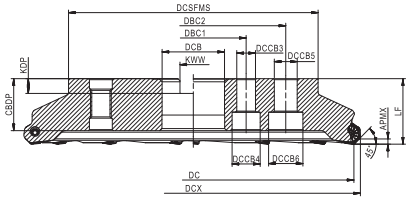
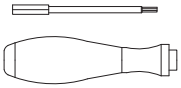
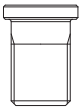



Fig. 4

| Product code | Dimension (mm) | | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DBC2 | DCCB3 | DCCB4 | DCCB5 | DCCB6 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM45-250-Z12-A60R-XN09-S** | 250 | 262.7 | 180 | 60 | 101.6 | - | 18 | 27 | - | - | 63 | 48 | 14.2 | 25.6 | 5 | ✗ | 12.4 | 12 | 3 | XN..0906.. |
| **315-Z14-A60R-XN09-S** | 315 | 327.7 | 240 | 60 | 101.6 | 177.8 | 18 | 27 | 22 | 33 | 63 | 50 | 14.2 | 25.6 | 5 | ✗ | 21.8 | 14 | 4 | |

Note: ✓ With internal coolant

✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | | | | |
|---|---|---|---|---|---|---|
| | Screw | Wrench | Shim | Shim screw | Shim screw wrench | Torque |
| ∅63-315 | |  | |  | | 5.0Nm |
| | SP050130 | DT-TP20 | S-XN09040 | SS080100F | LT-H5 | |

## AFM45-XN09-W

45° Wedge clamping face milling cutter

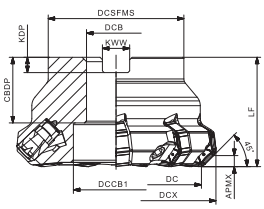



Fig. 1

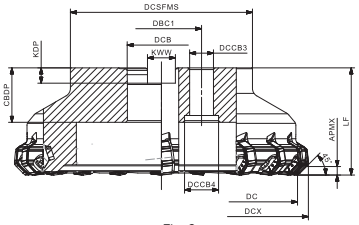



Fig. 2

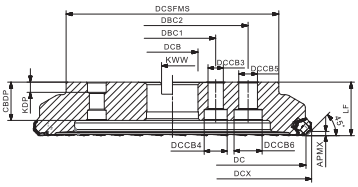
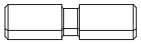



Fig. 3

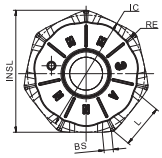
| Product code | Dimension (mm) | | | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DBC2 | DCCB1 | DCCB3 | DCCB4 | DCCB5 | DCCB6 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFM45-080-Z09-A27R-XN09-W** | 80 | 92.7 | 62 | 27 | - | - | 39 | - | - | - | - | 50 | 30 | 7.0 | 12.5 | 5 | | 1.2 | 9 | 1 | XN..0906.. |
| **100-Z12-A32R-XN09-W** | 100 | 112.7 | 80 | 32 | - | - | 48 | - | - | - | - | 50 | 28.5 | 8.2 | 14.4 | 5 | | 2.1 | 12 | | |
| **125-Z16-A40R-XN09-W** | 125 | 137.7 | 87 | 40 | - | - | 58 | - | - | - | - | 63 | 30 | 9.2 | 16.4 | 5 | | 3.9 | 16 | | |
| **125-Z16-A40L-XN09-W** | 125 | 137.7 | 87 | 40 | - | - | 58 | - | - | - | - | 63 | 30 | 9.2 | 16.4 | 5 | | 3.9 | 16 | | |
| **160-Z20-A40R-XN09-W** | 160 | 172.7 | 107 | 40 | 66.7 | - | - | 14 | 20 | - | - | 63 | 32 | 9.0 | 16.4 | 5 | | 4.9 | 20 | 2 | |
| **160-Z20-A40L-XN09-W** | 160 | 172.7 | 107 | 40 | 66.7 | - | - | 14 | 20 | - | - | 63 | 32 | 9.0 | 16.4 | 5 | | 4.9 | 20 | | |
| **200-Z26-A60R-XN09-W** | 200 | 212.7 | 130 | 60 | 101.6 | - | - | 18 | 27 | - | - | 63 | 48 | 14.2 | 25.6 | 5 | | 7.2 | 26 | | |
| **200-Z26-A60L-XN09-W** | 200 | 212.7 | 130 | 60 | 101.6 | - | - | 18 | 27 | - | - | 63 | 48 | 14.2 | 25.6 | 5 | | 7.2 | 26 | | |
| **250-Z30-A60R-XN09-W** | 250 | 262.2 | 170 | 60 | 101.6 | - | - | 18 | 27 | - | - | 63 | 45 | 14.2 | 25.6 | 5 | | 13.0 | 30 | | |
| **315-Z39-A60R-XN09-W** | 315 | 327.2 | 250 | 60 | 101.6 | 177.8 | - | 18 | 27 | 22 | 33 | 63 | 45 | 14.2 | 25.6 | 5 | | 23.2 | 39 | 3 | |

Note: With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | | |
|---|---|---|---|---|
| | Wedge | Screw | Wrench | Torque |
| ∅80-315 | |  | | 7.0Nm |
| | AWG-8H | WD080320F | LT-H4 | |

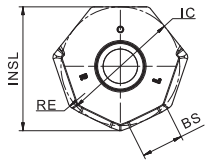
## Compatible Inserts




| Insert shape | Product code | L | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | **XNGU 0906ANN-MM3** | 7.3 | 19.86 | 19.0 | 5.875 | 0.8 | 1.4 | 5.5 | | ● | | | | | ● | | | |
| | **XNGU 0906ANN-MM4** | 7.3 | 19.86 | 19.0 | 5.875 | 0.8 | 1.4 | 5.5 | ○ | ● | ● | | | ● | ● | ● | | |
| | **XNMU 0906ANN-MR6** | 7.3 | 19.86 | 19.0 | 5.927 | 0.8 | 1.4 | 5.5 | ● | | ● | | | ● | ● | ● | | |
| | **XNMF 0906ANN-MR6** | 7.3 | 19.86 | 19.0 | 5.927 | 0.8 | 1.4 | 3.0 | | | | | | ● | ● | ● | | |

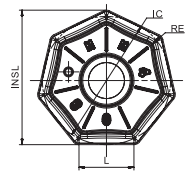
Note: XNMF inserts are for use with wedge cutter only.

● : Standard stock ○ : Made-to-Order




| Insert shape | Product code | L | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | **XNGX 0906ANN-W** | 7.2 | 19.86 | 19.0 | 5.88 | 1.0 | 7.6 | 5.5 | ● | | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order




| Insert shape | Product code | L | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | **XNMU 090612-MM4** | 8.6 | 19.97 | 19.0 | 5.875 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **XNMU 090612-MM4N** | 8.6 | 19.97 | 19.0 | 5.875 | 1.2 | - | 5.5 | | | | | | ● | | | | |

● : Standard stock ○ : Made-to-Order

## Precautions for using XN09..W long wiper inserts

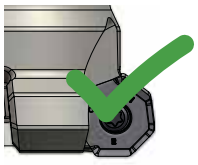


Fig.1 (correct)

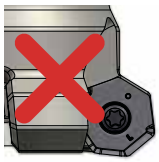


Fig.2 (wrong)

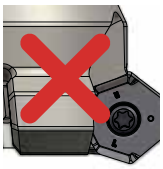


Fig.3 (wrong)

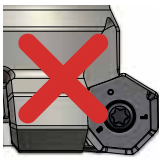


Fig.4 (wrong)

This insert features two right-hand cutting edges and two left-hand cutting edges.

While a single wiper insert can achieve satisfactory surface finish, when the feed rate equals or exceeds the wiper edge length, it is recommended to install two or more wiper inserts in the tool holder. For optimal performance, the long wiper insert XNGX 0906ANN-W should be used in combination with short wiper inserts XN..0906ANN..

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | XN..0906.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MM3 | | MM4 | | MR6 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 5.00 | 0.15 | 0.35 | 0.18 | 0.38 | 0.18 | 0.40 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.32 | 0.15 | 0.35 | 0.15 | 0.38 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.12 | 0.30 | 0.12 | 0.32 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.15 | 0.35 | 0.18 | 0.38 | 0.18 | 0.40 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.25 | 0.12 | 0.28 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AFF40-LN12/LN15

40° Approach angle cast iron finishing milling cutter

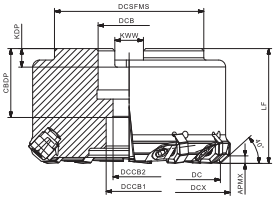


Fig. 1

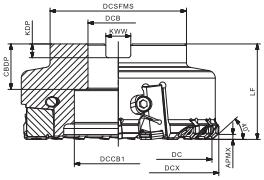


Fig. 2

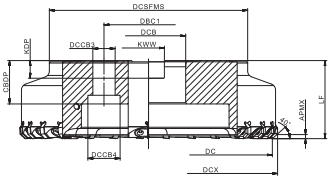
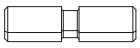


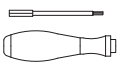
Fig. 3

| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AFF40-080-Z08-A27R-LN12** | 80 | 88.4 | 65 | 27 | - | 20 | 14 | - | - | 50 | 30 | 8.1 | 12.4 | 0.5 | | 1.6 | 8+2 | 1 | ONHF 050408-MM3<br>LNHQ 120408FN-W |
| **100-Z10-A32R-LN12** | 100 | 108.4 | 80 | 32 | - | 48 | - | - | - | 50 | 30 | 10.1 | 14.4 | 0.5 | | 2.4 | 10+2 | 2 | |
| **125-Z15-A40R-LN15** | 125 | 133.4 | 90 | 40 | - | 58 | - | - | - | 63 | 30 | 9.1 | 16.4 | 0.5 | | 3.9 | 15+3 | | ONHF 050408-MM3<br>LNHQ 150416FN-W |
| **160-Z18-A40R-LN15** | 160 | 168.4 | 120 | 40 | 66.7 | 92 | - | 14 | 20 | 63 | 30 | 9.1 | 16.4 | 0.5 | | 6.3 | 18+3 | 3 | |
| **200-Z24-A60R-LN15** | 200 | 208.4 | 160 | 60 | 101.6 | 130 | - | 18 | 26 | 63 | 35 | 14.2 | 25.64 | 0.5 | | 9.4 | 24+3 | | |
| **250-Z30-A60R-LN15** | 250 | 258.4 | 200 | 60 | 101.6 | 170 | - | 18 | 26 | 63 | 35 | 14.2 | 25.64 | 0.5 | | 14.8 | 30+3 | | |

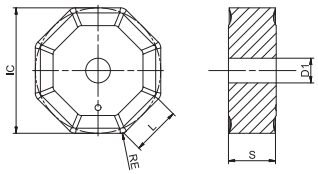
*Z=8+2 means 8pcs rough inserts and 2pcs finish inserts

Note: With internal coolant
Without internal coolant

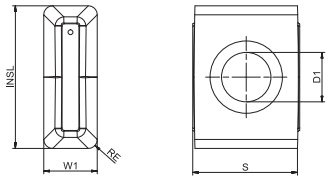
| Cutter diameter (mm) | Spare parts | | | | |
|---|---|---|---|---|---|
| | Wedge | Wedge locking screw | Wiper insert locking screw | Wiper insert adjusting screw | Wiper cartridge locking screw |
| ⌀80-250 | |  | | | |
| | AWG-6H-13B | WD060200 | SP040085H | AH050100F | SH060250 |

| Cutter diameter (mm) | Spare parts | | | | | |
|---|---|---|---|---|---|---|
| | Wedge screw Wrench | Wiper insert screw wrench | Wiper insert adjusting screw wrench | Wiper insert cartridge locking screw wrench | Wiper cartridge | |
| ⌀80-250 | |  | | | | |
| | LT-H3 | DT-TP10 | LT-H2.5 | LT-H5 | ⌀80-100 | ⌀125-250 |
| | | | | | C-LN1235-2545 | C-LN1535-2545 |

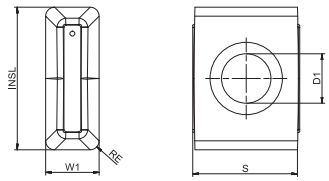
## Compatible Inserts




| Insert shape | Product code | L | INSL | IC | S | RE | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | **ONHF 050408-MM3** | 4.9 | - | 12.7 | 4.76 | 0.8 | 2.5 | | | | | | | | | | ● |




| Insert shape | Product code | W1 | INSL | IC | S | RE | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | **LNHQ 120408FN-W** | 4.76 | 12.7 | - | 9.4 | 0.8 | 4.4 | | | | | | | | | | ● |




| Insert shape | Product code | W1 | INSL | IC | S | RE | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | **LNHQ 150416FN-W** | 4.76 | 15.875 | - | 9.25 | 1.6 | 4.4 | | | | | | | | | | ● |

● : Standard stock ○ : Made-to-Order

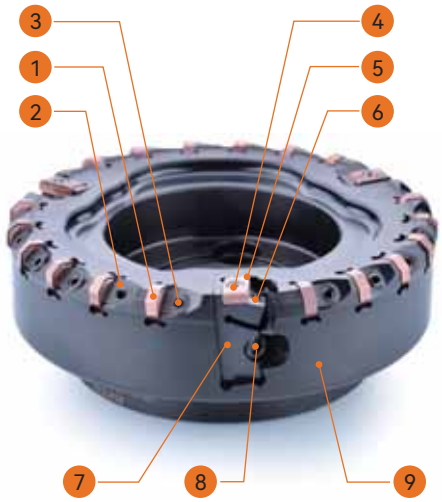
| Materials | | | | Cutting depth and feed | | | |
|---|---|---|---|---|---|---|---|
| | | | | ONHF 05.. + LNHQ 12/15.. | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | ap | | Geometry<br>MM3 + W<br>fz | |
| | | | | (mm) | | | |
| | | | | min | max | min | max |
| K | Grey cast iron | 700 | 220 | 0.20 | 0.50 | 0.08 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## Installation and Adjustment Method for Cast Iron Finishing Milling Cutter

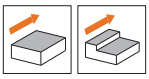
1. Clean wiper cartridge (7), completely release adjusting screw (6);
2. Clean each insert pocket, cartridge pocket, clean inserts and cartridges;
3. Install roughing inserts (1), wiper cartridges (7) and use finger to push them to the locating surface and lock the screws;
4. Install wiper inserts (5);
5. Measure the axial run out of each roughing (1) and wiper insert (5);
6. Adjusting wiper inserts height through adjusting screw (6);
7. Wiper inserts Max. run out should be higher than roughing inserts by 0.03-0.06mm.

1. Roughing inserts (ON..05..)
2. Locking wedge
3. Double-headed wedge locking screws
4. Wiper insert clamping screw
5. Wiper insert (LN12/15)
6. Adjusting screw
7. Wiper cartridge
8. Locking screw for wiper cartridge
9. Cutter



## ASM90-LN12

90° Approach angle square shoulder milling cutter



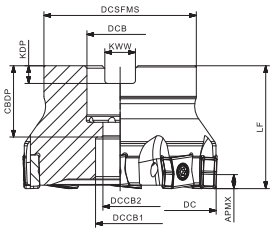



Fig. 1

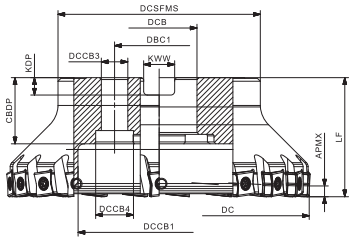
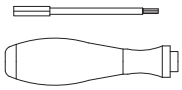



Fig. 2

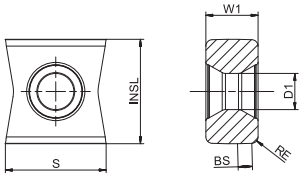
| Product code | Dimension (mm) | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **ASM90-063-Z06-A22R-LN12-C** | 63 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 5 | | 0.6 | 6 | 1 | LN..1206.. |
| **063-Z06-A22L-LN12-C** | 63 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 5 | | 0.6 | 6 | | |
| **063-Z08-A22R-LN12** | 63 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 5 | | 0.6 | 8 | | |
| **063-Z08-A22L-LN12** | 63 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 5 | | 0.6 | 8 | | |
| **080-Z08-A27R-LN12-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 5 | | 1.2 | 8 | | |
| **080-Z08-A27L-LN12-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 5 | | 1.2 | 8 | | |
| **080-Z10-A27R-LN12** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 5 | | 1.2 | 10 | | |
| **080-Z10-A27L-LN12** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 5 | | 1.2 | 10 | | |
| **100-Z09-A32R-LN12** | 100 | 78 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | | 1.9 | 9 | | |
| **100-Z09-A32L-LN12** | 100 | 78 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | | 1.9 | 9 | | |
| **100-Z13-A32R-LN12** | 100 | 78 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | | 1.9 | 13 | | |
| **100-Z13-A32L-LN12** | 100 | 78 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 5 | | 1.9 | 13 | | |
| **125-Z10-A40R-LN12** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | | 3.5 | 10 | | |
| **125-Z10-A40L-LN12** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | | 3.5 | 10 | | |
| **125-Z16-A40R-LN12** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | | 3.5 | 16 | | |
| **125-Z16-A40L-LN12** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 5 | | 3.5 | 16 | | |
| **160-Z13-A40R-LN12** | 160 | 107 | 40 | 66.7 | 98 | - | 14 | 20 | 63 | 35 | 9.2 | 16.4 | 5 | | 4.0 | 13 | 2 | |
| **160-Z13-A40L-LN12** | 160 | 107 | 40 | 66.7 | 98 | - | 14 | 20 | 63 | 35 | 9.2 | 16.4 | 5 | | 4.0 | 13 | | |
| **160-Z21-A40R-LN12** | 160 | 107 | 40 | 66.7 | 98 | - | 14 | 20 | 63 | 35 | 9.2 | 16.4 | 5 | | 4.1 | 21 | | |
| **160-Z21-A40L-LN12** | 160 | 107 | 40 | 66.7 | 98 | - | 14 | 20 | 63 | 35 | 9.2 | 16.4 | 5 | | 4.1 | 21 | | |
| **200-Z16-A60R-LN12** | 200 | 130 | 60 | 101.6 | 135 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 6.4 | 16 | | |
| **200-Z16-A60L-LN12** | 200 | 130 | 60 | 101.6 | 135 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 6.4 | 16 | | |
| **200-Z26-A60R-LN12** | 200 | 130 | 60 | 101.6 | 135 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 6.5 | 26 | | |
| **200-Z26-A60L-LN12** | 200 | 130 | 60 | 101.6 | 135 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 6.5 | 26 | | |
| **250-Z20-A60R-LN12** | 250 | 180 | 60 | 101.6 | 180 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 11.8 | 20 | | |
| **250-Z20-A60L-LN12** | 250 | 180 | 60 | 101.6 | 180 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 11.8 | 20 | | |
| **250-Z32-A60R-LN12** | 250 | 180 | 60 | 101.6 | 180 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 11.9 | 32 | | |
| **250-Z32-A60L-LN12** | 250 | 180 | 60 | 101.6 | 180 | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 5 | | 11.9 | 32 | | |

Note: With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ⌀63-250 | |  | 3.5Nm |
| | SP040112 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | INSL | W1 | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP403M | AP351M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ⬌ General Conditions ⬌ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **LNET 1206-MM4** | 12.7 | 6.35 | 12.3 | 0.8 | 1.7 | 4.4 | ● | | | ● | | ● | | ● | | ○ |

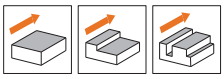
● : Standard stock ○ : Made-to-Order

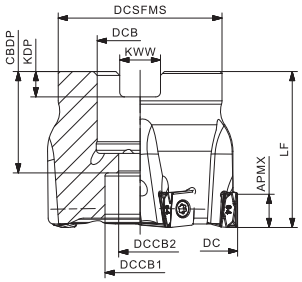
| Materials | | | | Cutting depth and feed | | | |
|---|---|---|---|---|---|---|---|
| | | | | LN..1206.. | | | |
| | | | | ap | | Geometry | |
| | | | | | | MM4 | |
| | | | | | | fz | |
| | | | | (mm) | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 5.00 | 0.08 | 0.35 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.08 | 0.30 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.05 | 0.25 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.35 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.05 | 0.20 |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | 0.08 | 0.20 |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

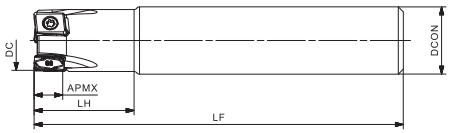
## ASM90-LN09

90° Approach angle square shoulder milling cutter






| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **ASM90-040-Z04-A16R-LN09-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 8 | ✓ | 0.3 | 4 | LN..0904.. |
| **040-Z06-A16R-LN09-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 8 | ✓ | 0.3 | 6 | |
| **050-Z05-A22R-LN09-C** | 50 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 8 | ✓ | 0.4 | 5 | |
| **050-Z07-A22R-LN09-C** | 50 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 8 | ✓ | 0.4 | 7 | |
| **063-Z07-A22R-LN09-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 8 | ✓ | 0.6 | 7 | |
| **063-Z10-A22R-LN09-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 8 | ✓ | 0.6 | 10 | |
| **080-Z09-A27R-LN09-C** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 8 | ✓ | 1.2 | 9 | |
| **080-Z13-A27R-LN09-C** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 8 | ✓ | 1.2 | 13 | |



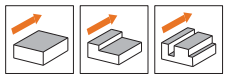

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-020-Z02-C20R-LN09-L110** | 20 | 20 | 110 | 30 | 8 | ✗ | 0.3 | 2 | LN..0904.. |
| **020-Z03-C20R-LN09-L110** | 20 | 20 | 110 | 30 | 8 | ✗ | 0.3 | 3 | |
| **021-Z02-C20R-LN09-L200** | 21 | 20 | 200 | 30 | 8 | ✗ | 0.5 | 2 | |
| **025-Z03-C25R-LN09-L200-C** | 25 | 25 | 200 | 34 | 8 | ✓ | 0.7 | 3 | |
| **025-Z04-C25R-LN09-L200-C** | 25 | 25 | 200 | 34 | 8 | ✓ | 0.7 | 4 | |
| **026-Z03-C25R-LN09-L200-C** | 26 | 25 | 200 | 34 | 8 | ✓ | 0.7 | 3 | |
| **028-Z03-C25R-LN09-L110-C** | 28 | 25 | 110 | 34 | 8 | ✓ | 0.4 | 3 | |
| **032-Z04-C32R-LN09-L250-C** | 32 | 32 | 250 | 45 | 8 | ✓ | 1.4 | 4 | |
| **032-Z05-C32R-LN09-L250-C** | 32 | 32 | 250 | 45 | 8 | ✓ | 1.5 | 5 | |
| **033-Z04-C32R-LN09-L250-C** | 33 | 32 | 250 | 45 | 8 | ✓ | 1.4 | 4 | |

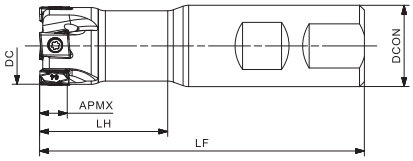
Note: ✓ With internal coolant

✗ Without internal coolant

## ASM90-LN09

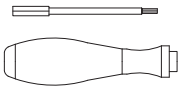
90° Approach angle square shoulder milling cutter



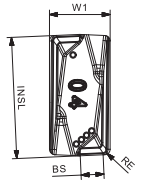


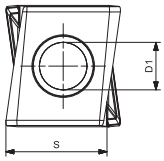

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-025-Z03-W25R-LN09-C** | 25 | 25 | 100 | 39 | 8 | | 0.3 | 3 | LN..0904.. |
| **025-Z04-W25R-LN09-C** | 25 | 25 | 100 | 39 | 8 | | 0.3 | 4 | |
| **032-Z04-W32R-LN09-C** | 32 | 32 | 110 | 44 | 8 | | 0.6 | 4 | |
| **032-Z05-W32R-LN09-C** | 32 | 32 | 110 | 44 | 8 | | 0.6 | 5 | |
| **040-Z04-W32R-LN09-C** | 40 | 32 | 110 | 25 | 8 | | 0.7 | 4 | |
| **040-Z06-W32R-LN09-C** | 40 | 32 | 110 | 25 | 8 | | 0.7 | 6 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ⌀20-80 | |  | 1.8Nm |
| | SP030083 | DT-TP09 | |

## Compatible Inserts




| Insert shape | Product code | Machining conditions: Dimension (mm) INSL | W1 | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **LNHU 090404ER-FM2** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | | | | | | | | | ● | |
| | **LNHU 090404ER-MM3** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | | ● | | | ● | | | | | |
| | **LNHU 090404ER-MM4** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | ● | | | | ● | ● | | | | |
| | **LNHU 090408ER-MM4** | 9 | 4.5 | 7.5 | 0.8 | 1.4 | 3.5 | ● | | | ● | ● | ● | | | | |
| | **LNHU 090404ER-MR2** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 090408ER-MR2** | 9 | 4.5 | 7.45 | 0.8 | 1.4 | 3.5 | ● | | ● | | ● | ● | ● | ● | | |
| | **LNHU 090412ER-MR2** | 9 | 4.5 | 7.4 | 1.2 | 1.0 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 090416ER-MR2** | 9 | 4.5 | 7.35 | 1.6 | 0.65 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 090420ER-MR2** | 9 | 4.5 | 7.3 | 2.0 | 0.2 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 0904PDER-W** | 9 | 4.5 | 7.48 | 0.4 | 3.6 | 3.5 | ● | | | | | | ● | | | |

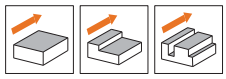
● : Standard stock ○ : Made-to-Order

| Materials: ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: LN..0904.. ap min | ap max | Geometry MR2 fz min (mm) | MR2 fz max (mm) | MM4 fz min (mm) | MM4 fz max (mm) | FM2 fz min (mm) | FM2 fz max (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 8.00 | 0.08 | 0.28 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.06 | 0.30 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ASM90-LN13

90° Approach angle square shoulder milling cutter



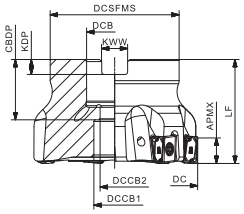



Fig. 1

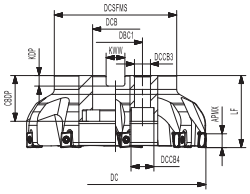



Fig. 2

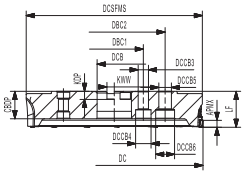



Fig. 3

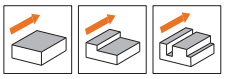
| Product code | Dimension (mm) | | | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DBC1 | DBC2 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | DCCB5 | DCCB6 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **ASM90-040-Z04-A16R-LN13-C** | 40 | 35 | 16 | - | - | 14 | 9 | - | - | - | - | 40 | 24 | 5.8 | 8.4 | 12 | | 0.2 | 4 | 1 | LN..1306.. |
| **040-Z05-A16R-LN13-C** | 40 | 35 | 16 | - | - | 14 | 9 | - | - | - | - | 40 | 24 | 5.8 | 8.4 | 12 | | 0.2 | 5 | | |
| **050-Z05-A22R-LN13-C** | 50 | 42 | 22 | - | - | 18 | 11 | - | - | - | - | 40 | 26 | 6.5 | 10.4 | 12 | | 0.3 | 5 | | |
| **050-Z06-A22R-LN13-C** | 50 | 42 | 22 | - | - | 18 | 11 | - | - | - | - | 40 | 26 | 6.5 | 10.4 | 12 | | 0.3 | 6 | | |
| **063-Z04-A22R-LN13-C** | 63 | 48 | 22 | - | - | 18 | 11 | - | - | - | - | 40 | 26 | 6.5 | 10.4 | 12 | | 0.6 | 4 | | |
| **063-Z06-A22R-LN13-C** | 63 | 48 | 22 | - | - | 18 | 11 | - | - | - | - | 40 | 26 | 6.5 | 10.4 | 12 | | 0.5 | 6 | | |
| **063-Z08-A22R-LN13-C** | 63 | 48 | 22 | - | - | 18 | 11 | - | - | - | - | 40 | 26 | 6.5 | 10.4 | 12 | | 0.5 | 8 | | |
| **080-Z05-A27R-LN13-C** | 80 | 62 | 27 | - | - | 20 | 14 | - | - | - | - | 50 | 29 | 7.2 | 12.4 | 12 | | 1.2 | 5 | | |
| **080-Z07-A27R-LN13-C** | 80 | 62 | 27 | - | - | 20 | 14 | - | - | - | - | 50 | 29 | 7.2 | 12.4 | 12 | | 1.1 | 7 | | |
| **080-Z10-A27R-LN13-C** | 80 | 62 | 27 | - | - | 20 | 14 | - | - | - | - | 50 | 29 | 7.2 | 12.4 | 12 | | 1.1 | 10 | | |
| **100-Z07-A32R-LN13-C** | 100 | 80 | 32 | - | - | 26 | 18 | - | - | - | - | 50 | 29 | 8.2 | 14.4 | 12 | | 2.0 | 7 | | |
| **100-Z09-A32R-LN13-C** | 100 | 80 | 32 | - | - | 26 | 18 | - | - | - | - | 50 | 29 | 8.2 | 14.4 | 12 | | 1.8 | 9 | | |
| **100-Z13-A32R-LN13-C** | 100 | 80 | 32 | - | - | 26 | 18 | - | - | - | - | 50 | 32 | 8.2 | 14.4 | 12 | | 1.9 | 13 | | |
| **125-Z09-A40R-LN13-C** | 125 | 87 | 40 | - | - | 33 | 22 | - | - | - | - | 63 | 32 | 9.2 | 16.4 | 12 | | 3.5 | 9 | | |
| **125-Z11-A40R-LN13-C** | 125 | 87 | 40 | - | - | 33 | 22 | - | - | - | - | 63 | 32 | 9.2 | 16.4 | 12 | | 3.4 | 11 | | |
| **125-Z16-A40R-LN13-C** | 125 | 87 | 40 | - | - | 33 | 22 | - | - | - | - | 63 | 38 | 9.2 | 16.4 | 12 | | 3.5 | 16 | | |
| **160-Z09-A40R-LN13** | 160 | 107 | 40 | 66.7 | - | - | - | 14 | 20 | - | - | 63 | 38 | 9.2 | 16.4 | 12 | | 4.8 | 9 | 2 | |
| **160-Z13-A40R-LN13** | 160 | 107 | 40 | 66.7 | - | - | - | 14 | 20 | - | - | 63 | 38 | 9.2 | 16.4 | 12 | | 4.4 | 13 | | |
| **200-Z12-A60R-LN13** | 200 | 140 | 60 | 101.6 | - | - | - | 18 | 27 | - | - | 63 | 35 | 14.2 | 25.6 | 12 | | 6.8 | 12 | | |
| **250-Z12-A60R-LN13-M** | 250 | 180 | 60 | 101.6 | - | - | - | 18 | 27 | - | - | 63 | 35 | 14.2 | 25.6 | 12 | | 15.8 | 12 | | |
| **315-Z14-A60R-LN13-M** | 315 | 220 | 60 | 101.6 | 177.8 | - | - | 18 | 27 | 22 | 33 | 63 | 35 | 14.2 | 25.6 | 12 | | 24.4 | 14 | 3 | |

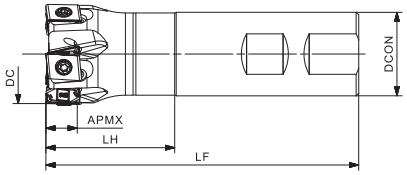
Note: With internal coolant

Without internal coolant

## ASM90-LN13

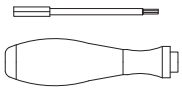
90° Approach angle square shoulder milling cutter

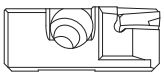
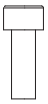




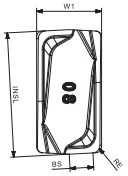

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-040-Z05-W32R-LN13-C** | 40 | 32 | 120 | 49 | 12 | | 0.8 | 5 | LN..1306.. |

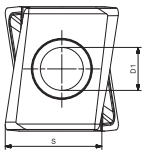
Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅40-315 | |  | 3.5Nm |
| | SP040115 | DT-TP15 | |

| Wedge | Wedge wrench | Wedge screw | Cartridge | Cartridge wrench | Cartridge screw |
|---|---|---|---|---|---|
| | | |  | |  |
| AWG-6H-6 | LT-H3 | AWCH624 | C-LN1342-62-90 | LT-H5 | ACH622 |

## Compatible Inserts





| Insert shape | Product code | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | INSL | W1 | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **LNHU 130608ER-FM2** | 13 | 6.8 | 10.1 | 0.8 | 2.5 | 4.5 | | | | | | | | | ● | |
| | **LNHU 130608ER-MM3** | 13 | 6.8 | 10.1 | 0.8 | 2.5 | 4.5 | | | | | ● | | | | | |
| | **LNHU 130608ER-MM4** | 13 | 6.8 | 10.15 | 0.8 | 2.5 | 4.5 | ● | | | ● | ● | ● | | | | |
| | **LNHU 130608ER-MR2** | 13 | 6.8 | 10.15 | 0.8 | 2.5 | 4.5 | ● | ● | ● | | ● | ● | ● | ● | | |
| | **LNHU 130612ER-MR2** | 13 | 6.8 | 10.09 | 1.2 | 2.1 | 4.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 130616ER-MR2** | 13 | 6.8 | 10.04 | 1.6 | 1.8 | 4.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 130620ER-MR2** | 13 | 6.8 | 9.98 | 2.0 | 1.4 | 4.5 | ● | ● | | ● | ● | | ● | | | |
| | **LNHU 130624ER-MR2** | 13 | 6.8 | 9.93 | 2.4 | 0.9 | 4.5 | | ● | | | ● | | ● | | | |
| | **LNHU 130631ER-MR2** | 13 | 6.8 | 9.84 | 3.1 | 0.3 | 4.5 | | ● | | | ● | | ● | | | |
| | **LNHU 1306PDR-W** | 13 | 6.8 | 10.08 | 0.9 | 5.2 | 4.5 | ● | | | | | ● | | | | |

● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LN..1306.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MR2 | | MM4 | | FM2 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.50 | 12.00 | 0.12 | 0.35 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.10 | 0.30 | 0.06 | 0.20 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.08 | 0.25 | 0.06 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.12 | 0.35 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.06 | 0.25 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ASM90-LN16

90° Approach angle square shoulder milling cutter

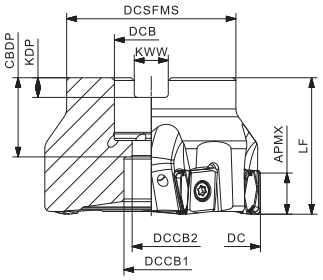



Fig. 1

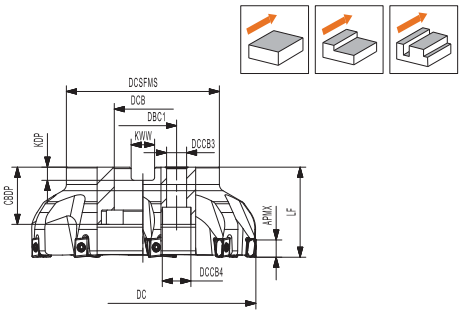
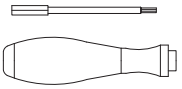


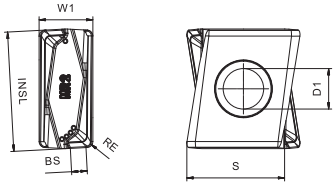

Fig. 2

| Product code | Dimension (mm) | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **ASM90-063-Z04-A22R-LN16-C** | 63 | 52 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 15 | ✓ | 0.6 | 4 | 1 | LN..1607.. |
| **080-Z05-A27R-LN16-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 15 | ✓ | 1.1 | 5 | | |
| **100-Z06-A32R-LN16-C** | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 15 | ✓ | 2 | 6 | | |
| **125-Z07-A40R-LN16-C** | 125 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 15 | ✓ | 3.6 | 7 | | |
| **160-Z08-A40R-LN16** | 160 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 15 | ✗ | 4.6 | 8 | 2 | |

Note: ✓ With internal coolant
✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅63-160 | |  | 5.0Nm |
| | ST05013063 | DT-T20 | |

## Compatible Inserts




| Insert shape | Product code | INSL | W1 | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **LNHU 160708ER-MR2** | 16 | 7.2 | 13 | 0.8 | 1.9 | 5.4 | ● | ● | | | | ● | ● | ● | | |
| | **LNHU 160716ER-MR2** | 16 | 7.2 | 13 | 1.6 | 1.5 | 5.4 | ● | | | | | | ● | | | |

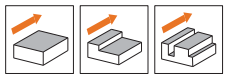
● : Standard stock ○ : Made-to-Order

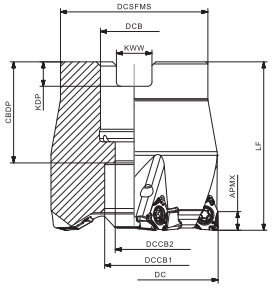
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: LN..1607.. ap (mm) min | ap (mm) max | Geometry MR2 fz (mm) min | fz (mm) max |
|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 1.00 | 15.00 | 0.10 | 0.30 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.08 | 0.28 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.08 | 0.25 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.30 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

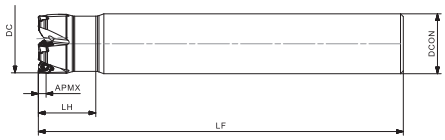
## ASM90-WN04

90° Approach angle square shoulder milling cutter





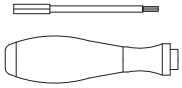

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **ASM90-040-Z05-A16R-WN04-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 4 | ✓ | 0.3 | 5 | WN..0403.. |



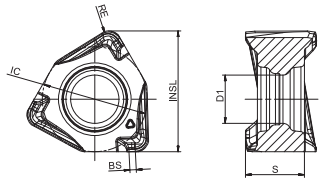

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-020-Z02-C20R-WN04-C** | 20 | 20 | 150 | 29 | 4 | ✓ | 0.3 | 2 | WN..0403.. |
| **025-Z04-C25R-WN04-C** | 25 | 25 | 170 | 35 | 4 | ✓ | 0.6 | 4 | |
| **032-Z05-C32R-WN04-C** | 32 | 32 | 195 | 31 | 4 | ✓ | 1.1 | 5 | |

Note: ✓ With internal coolant

✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅20-40 | |  | 1.2Nm |
| | SP02506450H | DT-TP08 | |

## Compatible Inserts




| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | H |
| | **WNGU 040308R-MM4** | 7.7 | 6.7 | 3.8 | 0.8 | 0.4 | 3.0 | ● | | | ● | ● | ● | | | | |

Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions

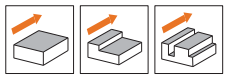
● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: WN..0403.. ap (mm) min | ap (mm) max | Geometry MM4 fz (mm) min | fz (mm) max |
|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.10 | 4.00 | 0.08 | 0.25 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | 0.06 | 0.30 |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ASM90-WN08

90° Approach angle square shoulder milling cutter



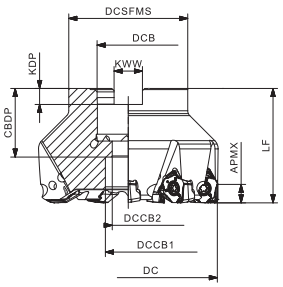



Fig. 1

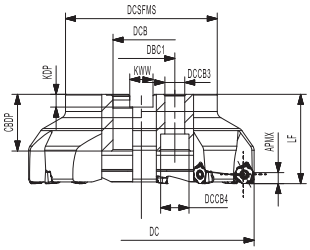
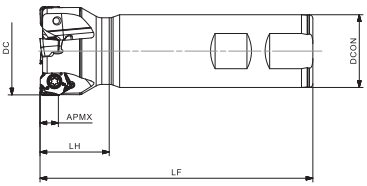



Fig. 2

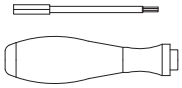
| Product code | Dimension (mm) | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **ASM90-050-Z04-A22R-WN08-C** | 50 | 42 | 22 | - | 17 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | ✓ | 0.4 | 4 | 1 | WN..0806.. |
| **050-Z05-A22R-WN08-C** | 50 | 42 | 22 | - | 17 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | ✓ | 0.3 | 5 | | |
| **063-Z04-A22R-WN08-C** | 63 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | ✓ | 0.6 | 4 | | |
| **063-Z06-A22R-WN08-C** | 63 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | ✓ | 0.6 | 6 | | |
| **063-Z07-A22R-WN08-C** | 63 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | ✓ | 0.6 | 7 | | |
| **080-Z05-A27R-WN08-C** | 80 | 52 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 7 | ✓ | 1.1 | 5 | | |
| **080-Z07-A27R-WN08-C** | 80 | 52 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 7 | ✓ | 1.1 | 7 | | |
| **080-Z09-A27R-WN08-C** | 80 | 52 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 7 | ✓ | 1.1 | 9 | | |
| **100-Z06-A32R-WN08-C** | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 7 | ✓ | 2.0 | 6 | | |
| **100-Z08-A32R-WN08-C** | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 7 | ✓ | 2.0 | 8 | | |
| **100-Z11-A32R-WN08-C** | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 7 | ✓ | 2.0 | 11 | | |
| **125-Z07-A40R-WN08-C** | 125 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 7 | ✓ | 3.5 | 7 | | |
| **125-Z11-A40R-WN08-C** | 125 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 7 | ✓ | 3.5 | 11 | | |
| **125-Z13-A40R-WN08-C** | 125 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 7 | ✓ | 3.5 | 13 | | |
| **160-Z08-A40R-WN08** | 160 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 7 | | 4.7 | 8 | 2 | |
| **160-Z12-A40R-WN08** | 160 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 7 | | 4.3 | 12 | | |
| **200-Z14-A60R-WN08** | 200 | 140 | 60 | 101.6 | - | - | 18 | 26 | 63 | 38 | 14.2 | 25.6 | 7 | | 6.7 | 14 | | |
| **250-Z16-A60R-WN08** | 250 | 180 | 60 | 101.6 | - | - | 18 | 26 | 63 | 38 | 14.2 | 25.6 | 7 | | 11.6 | 16 | | |



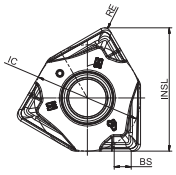

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-040-Z03-W32R-WN08-C** | 40 | 32 | 120 | 30 | 7 | ✓ | 0.7 | 3 | WN..0806.. |
| **040-Z04-W32R-WN08-C** | 40 | 32 | 120 | 30 | 7 | ✓ | 0.7 | 4 | |

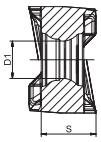
Note: ✓ With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅40-250 | |  | 3.5Nm |
| | SP040090 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | Machining conditions | | | | | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ● | ● |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | H |
| | | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H |
| | **WNHU 080608R-FM2** | 14.5 | 12.5 | 6.46 | 0.8 | 2.0 | 4.4 | | | | | | | | | ● | |
| | **WNGU 080604R-MM3** | 14.6 | 12.5 | 6.44 | 0.4 | 2.2 | 4.4 | | ● | | | | | | | | |
| | **WNGU 080608R-MM3** | 14.5 | 12.5 | 6.45 | 0.8 | 2.0 | 4.4 | ● | ● | | | ● | ● | | ● | | |
| | **WNGU 080604R-MM4** | 14.6 | 12.5 | 6.44 | 0.4 | 2.2 | 4.4 | ● | ● | | | | ● | | | | |
| | **WNGU 080608R-MM4** | 14.6 | 12.5 | 6.44 | 0.8 | 2.0 | 4.4 | ● | ● | ● | | | ● | ● | ● | | ● |
| | **WNGU 080612R-MM4** | 14.3 | 12.5 | 6.44 | 1.2 | 1.6 | 4.4 | ● | ● | | | | | | | | |
| | **WNGU 080616R-MM4** | 14.2 | 12.5 | 6.44 | 1.6 | 1.2 | 4.4 | ● | ● | | | | | | | | |
| | **WNGU 080608R-MR2** | 14.5 | 12.5 | 6.46 | 0.8 | 2.0 | 4.4 | ● | | | | ● | ● | ● | ● | | |
| | **WNGU 080612R-MR2** | 14.3 | 12.5 | 6.46 | 1.2 | 1.6 | 4.4 | ● | | | | | ● | | ● | | |
| | **WNGU 080616R-MR2** | 14.2 | 12.5 | 6.46 | 1.6 | 1.2 | 4.4 | ● | | | | | ● | | ● | | |
| | **WNHX 0806ZZR-W** | 14.4 | 12.5 | 6.47 | 1.1 | 4.7 | 4.4 | ● | | | | | | ● | | | |

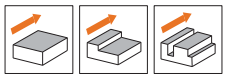
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | WN..0806.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MR2 | | MM4 | | FM2 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 7.00 | 0.12 | 0.30 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.10 | 0.28 | 0.10 | 0.25 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.08 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.15 | 0.30 | 0.10 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.10 | 0.30 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | 0.10 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | 0.08 | 0.25 | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ASM90-WN08-N

90° Approach angle square shoulder milling cutter



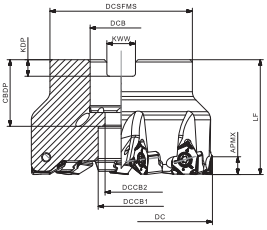



Fig. 1

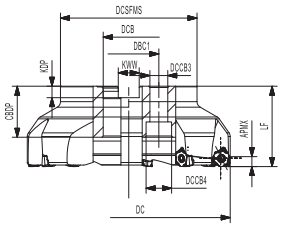
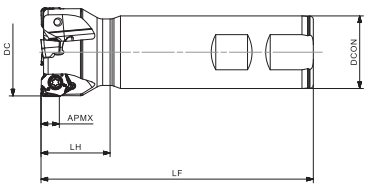



Fig. 2

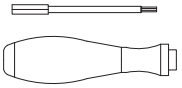
| Product code | Dimension (mm) | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **ASM90-050-Z04-A22R-WN08-N-C** | 50 | 42 | 22 | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | | 0.4 | 4 | 1 | WNMU 0806.. |
| **050-Z05-A22R-WN08-N-C** | 50 | 42 | 22 | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | | 0.4 | 5 | | |
| **063-Z04-A22R-WN08-N-C** | 63 | 48 | 22 | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | | 0.6 | 4 | | |
| **063-Z06-A22R-WN08-N-C** | 63 | 48 | 22 | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | | 0.6 | 6 | | |
| **063-Z07-A22R-WN08-N-C** | 63 | 48 | 22 | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 7 | | 0.6 | 7 | | |
| **080-Z05-A27R-WN08-N-C** | 80 | 62 | 27 | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 7 | | 1.2 | 5 | | |
| **080-Z07-A27R-WN08-N-C** | 80 | 62 | 27 | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 7 | | 1.1 | 7 | | |
| **080-Z09-A27R-WN08-N-C** | 80 | 62 | 27 | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 7 | | 1.2 | 9 | | |
| **100-Z06-A32R-WN08-N-C** | 100 | 80 | 32 | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 7 | | 1.9 | 6 | | |
| **100-Z08-A32R-WN08-N-C** | 100 | 80 | 32 | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 7 | | 1.9 | 8 | | |
| **100-Z11-A32R-WN08-N-C** | 100 | 80 | 32 | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 7 | | 1.8 | 11 | | |
| **125-Z07-A40R-WN08-N-C** | 125 | 87 | 40 | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 7 | | 3.6 | 7 | | |
| **125-Z11-A40R-WN08-N-C** | 125 | 87 | 40 | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 7 | | 3.6 | 11 | | |
| **125-Z13-A40R-WN08-N-C** | 125 | 87 | 40 | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 7 | | 3.5 | 13 | | |
| **160-Z08-A40R-WN08-N** | 160 | 107 | 40 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 7 | | 4.4 | 8 | 2 | |
| **160-Z12-A40R-WN08-N** | 160 | 107 | 40 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 7 | | 4.3 | 12 | | |
| **200-Z14-A60R-WN08-N** | 200 | 140 | 60 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 7 | | 6.4 | 14 | | |
| **250-Z16-A60R-WN08-N** | 250 | 180 | 60 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 7 | | 11.9 | 16 | | |



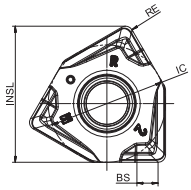

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-040-Z03-W32R-WN08-N-C** | 40 | 32 | 120 | 30 | 7 | | 0.7 | 3 | WNMU 0806.. |
| **040-Z04-W32R-WN08-N-C** | 40 | 32 | 120 | 30 | 7 | | 0.7 | 4 | |

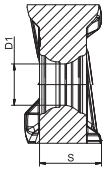
Note: With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅40-250 | |  | 3.5Nm |
| | SP040112 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ● |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | H |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H |
| | **WNMU 080608R-MM3** | 14.5 | 12.5 | 6.58 | 0.8 | 2.2 | 4.4 | ● | | ○ | ● | ● | ● | | | | |
| | **WNMU 080608R-MM4** | 14.5 | 12.5 | 6.58 | 0.8 | 2.2 | 4.4 | ● | ○ | ● | ● | ● | ● | ○ | | | |
| | **WNMU 080612R-MM4** | 14.3 | 12.5 | 6.47 | 1.2 | 1.2 | 4.4 | ● | | | ● | ● | ● | | ● | | |
| | **WNMU 080616R-MM4** | 14.3 | 12.5 | 6.50 | 1.6 | 0.8 | 4.4 | ● | | | ● | ● | ● | | ● | | |
| | **WNMU 080608R-MR2** | 14.5 | 12.5 | 6.60 | 0.8 | 2.2 | 4.4 | ● | ○ | | ● | ● | ● | ○ | | | |
| | **WNMU 080612R-MR2** | 14.3 | 12.5 | 6.47 | 1.2 | 1.2 | 4.4 | ● | | | ● | ● | ● | | | | |
| | **WNMU 080616R-MR2** | 14.3 | 12.5 | 6.50 | 1.6 | 0.8 | 4.4 | ● | | | | ● | ● | | ● | | |

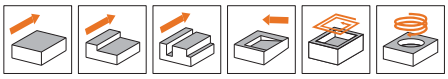
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | WNMU 0806.. | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | ap | | Geometry | | | | | |
| | | | | | | MR2 | | MM4 | | MM3 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.6 | 7.00 | 0.08 | 0.28 | 0.08 | 0.25 | 0.12 | 0.25 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 | 0.06 | 0.20 | 0.10 | 0.20 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.06 | 0.20 | 0.10 | 0.18 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ASM90-TD15

90° Approach angle square shoulder milling cutter



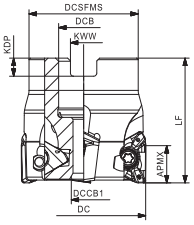



Fig. 1

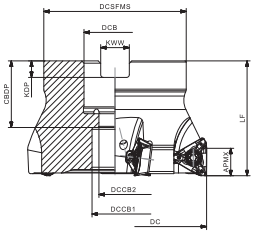



Fig. 2

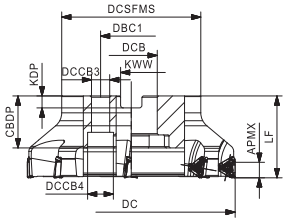



Fig. 3

| Product code | Dimension (mm) | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **ASM90-040-Z04-A16R-TD15-C** | 40 | 35 | 16 | - | M8 | - | - | - | 40 | - | 5.8 | 8.4 | 11 | ✓ | 0.2 | 4 | 1 | TD..1505.. |
| **050-Z04-A22R-TD15-C** | 50 | 46 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 11 | ✓ | 0.4 | 4 | 2 | |
| **050-Z05-A22R-TD15-C** | 50 | 46 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 11 | ✓ | 0.3 | 5 | | |
| **063-Z04-A22R-TD15-C** | 63 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 11 | ✓ | 0.5 | 4 | | |
| **063-Z05-A22R-TD15-C** | 63 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 11 | ✓ | 0.5 | 5 | | |
| **063-Z06-A22R-TD15-C** | 63 | 48 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 11 | ✓ | 0.5 | 6 | | |
| **080-Z05-A27R-TD15-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.6 | 11 | ✓ | 1.1 | 5 | | |
| **080-Z06-A27R-TD15-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.6 | 11 | ✓ | 1.1 | 6 | | |
| **080-Z07-A27R-TD15-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.6 | 11 | ✓ | 1.1 | 7 | | |
| **100-Z06-A32R-TD15-C** | 100 | 78 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 11 | ✓ | 1.8 | 6 | | |
| **100-Z08-A32R-TD15-C** | 100 | 78 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 11 | ✓ | 1.8 | 8 | | |
| **125-Z07-A40R-TD15-C** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 11 | ✓ | 3.2 | 7 | | |
| **125-Z09-A40R-TD15-C** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 11 | ✓ | 3.3 | 9 | | |
| **160-Z08-A40R-TD15** | 160 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 11 | ✗ | 4.2 | 8 | 3 | |
| **160-Z10-A40R-TD15** | 160 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 11 | ✗ | 4.2 | 10 | | |
| **200-Z09-A60R-TD15** | 200 | 130 | 60 | 101.6 | - | - | 18 | 27 | 63 | 48 | 14.2 | 25.6 | 11 | ✗ | 6.4 | 9 | | |
| **250-Z11-A60R-TD15-M** | 250 | 180 | 60 | 101.6 | - | - | 18 | 27 | 63 | 45 | 14.2 | 25.6 | 11 | ✗ | 14.6 | 11 | | |

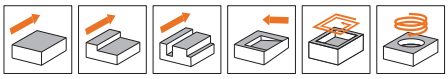
Note: ASM90-040-204-A16R-TD15-C is connected with dowel screws.

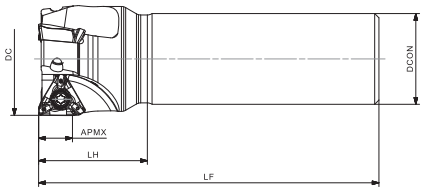
Note: ✓ With internal coolant

✗ Without internal coolant

## ASM90-TD15

90° Approach angle square shoulder milling cutter

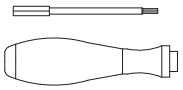




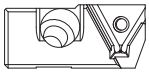
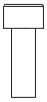
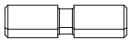

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-032-Z02-C32R-TD15-C** | 32 | 32 | 110 | 36 | 11 | | 0.6 | 2 | TD..1505.. |
| **032-Z02-C32R-TD15-L200-C** | 32 | 32 | 200 | 36 | 11 | | 1.1 | 2 | |
| **040-Z03-C32R-TD15-C** | 40 | 32 | 120 | 38 | 11 | | 0.7 | 3 | |
| **040-Z03-C32R-TD15-L200-C** | 40 | 32 | 200 | 38 | 11 | | 1.2 | 3 | |

Note: When the inserts' nose radius R ≥ 3.1mm, the cutters' nose area must be ground.
For R3.1 inserts, grind the tool body's nose area to R2.0mm.
For R4.0 inserts, grind the tool body's nose area to R4.0mm.

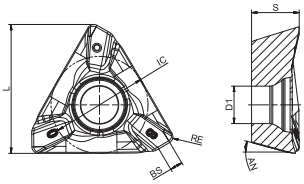
Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅32-250 | |  | 3.5Nm |
| | SP040100H | DT-TP15 | |

| Wedge | Wedge screw wrench | Wedge screw | Dowel screw wrench |
|---|---|---|---|
| | | | |
| AWG-6H-6 | LT-H3 | AWCH624 | LT-H4 |

| Cartridge | Cartridge screw wrench | Cartridge screw | Dowel screw |
|---|---|---|---|
|  | |  |  |
| C-TD1540-62-90 | LT-H5 | ACH622 | WD080300 |

## Compatible Inserts



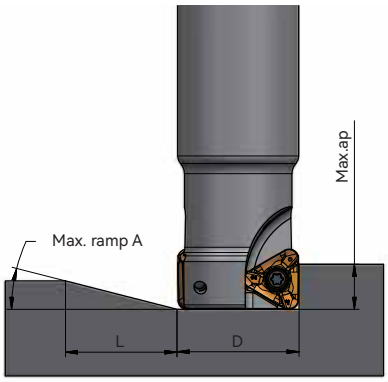

| Insert shape | Product code | L | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | | ● Good Conditions ⊕ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | | ● | ⊕ | ⊕ | ⊕ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | **TDHT 150508R-FM2** | 15.4 | 11.4 | 5.56 | 0.8 | 1.6 | 4.4 | 15° | | | | | | | | | ● | |
| | **TDMT 150508R-MM3** | 15.1 | 11.4 | 5.56 | 0.8 | 1.5 | 4.4 | 15° | ● | | | ● | ● | | | | | |
| | **TDHT 150508R-MM3** | 15.1 | 11.4 | 5.56 | 0.8 | 1.5 | 4.4 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **TDMT 150508R-MM4** | 15.1 | 11.4 | 5.6 | 0.8 | 1.5 | 4.4 | 15° | ● | | ● | ● | ● | ● | ● | | | |
| | **TDHT 150508R-MM4** | 15.1 | 11.4 | 5.6 | 0.8 | 1.5 | 4.4 | 15° | ● | ● | | | ● | ● | | | | |
| | **TDMT 150512R-MM4** | 15.0 | 11.4 | 5.6 | 1.2 | 1.0 | 4.4 | 15° | ● | | | ● | ● | ● | ● | | | |
| | **TDMT 150516R-MM4** | 14.9 | 11.4 | 5.6 | 1.6 | 0.9 | 4.4 | 15° | ● | | | ● | ● | ● | ● | | | |
| | **TDMT 150520R-MM4** | 14.7 | 11.4 | 5.6 | 2.0 | 0.7 | 4.4 | 15° | | | | | ● | | | | | |
| | **TDMT 150524R-MM4** | 14.6 | 11.4 | 5.6 | 2.4 | 0.6 | 4.4 | 15° | | | | | ● | | | | | |
| | **TDMT 150531R-MM4** | 14.1 | 11.4 | 5.56 | 3.1 | 0.4 | 4.4 | 15° | | | | | ● | | | | | |
| | **TDMT 150540R-MM4** | 13.4 | 11.4 | 5.56 | 4.0 | 0.4 | 4.4 | 15° | | | | | ● | | | | | |

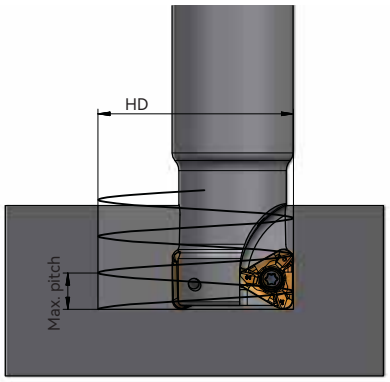
● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TD.. 1505.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MM4 | | MM3 | | FM2 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.30 | 11.00 | 0.08 | 0.28 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.06 | 0.35 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.08 | 0.15 | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## TD15 Milling Cutter Series




| Cutter diameter (D) | Straight Ramping | | | Circular interpolate milling | | |
|---|---|---|---|---|---|---|
| | Max. ramp-A | Min. length-L (mm) | Max.ap (mm) | Min. Dia. (HD) | Max. Dia. (HD) | Max. pitch (rev) |
| 32 | 1.4° | 479 | 11 | 53.5 | | 1.4 |
| | | | | | 64 | 2.1 |
| 40 | 1.0° | 633 | 11 | 70.1 | | 1.5 |
| | | | | | 80 | 1.3 |
| 50 | 0.8° | 824 | 11 | 90.1 | | 1.5 |
| | | | | | 100 | 1.9 |
| 63 | 0.6° | 1073 | 11 | 116.1 | | 1.5 |
| | | | | | 126 | 1.8 |
| 80 | 0.5° | 1399 | 11 | 150.3 | | 1.5 |
| | | | | | 160 | 1.8 |
| 100 | 0.3° | 2144 | 11 | 190.5 | | 1.3 |
| | | | | | 200 | 1.4 |
| 125 | 0.3° | 2262 | 11 | 240.3 | | 1.6 |
| | | | | | 250 | 1.7 |
| 160 | 0.2° | 2933 | 11 | 310.3 | | 1.6 |
| | | | | | 320 | 1.7 |
| 200 | 0.2° | 3692 | 11 | 390.3 | | 1.6 |
| | | | | | 400 | 1.7 |

## ASM90-SO12

90° Approach angle square shoulder milling cutter

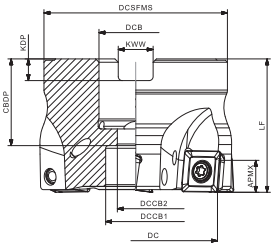



Fig. 1

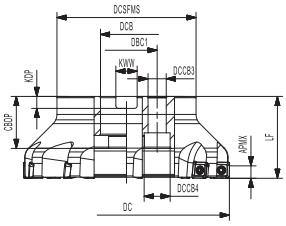
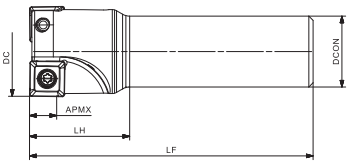



Fig. 2

| Product code | Dimension (mm) | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **ASM90-050-Z04-A22R-SO12-C** | 50 | 45 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 9 | ✓ | 0.3 | 4 | 1 | SO..1204.. |
| **050-Z05-A22R-SO12-C** | 50 | 45 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 9 | ✓ | 0.3 | 5 | | |
| **063-Z05-A22R-SO12-C** | 63 | 55 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 9 | ✓ | 0.5 | 5 | | |
| **063-Z06-A22R-SO12-C** | 63 | 55 | 22 | - | 18 | 11 | - | - | 40 | 26 | 6.5 | 10.4 | 9 | ✓ | 0.5 | 6 | | |
| **080-Z06-A27R-SO12-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 9 | ✓ | 1.1 | 6 | | |
| **080-Z08-A27R-SO12-C** | 80 | 62 | 27 | - | 20 | 14 | - | - | 50 | 29 | 7.2 | 12.4 | 9 | ✓ | 1.1 | 8 | | |
| **100-Z05-A32R-SO12-C** | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 9 | ✓ | 1.7 | 5 | | |
| **100-Z07-A32R-SO12-C** | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 9 | ✓ | 1.7 | 7 | | |
| **100-Z10-A32R-SO12-C** | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 9 | ✓ | 1.8 | 10 | | |
| **125-Z08-A40R-SO12-C** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 9 | ✓ | 3.3 | 8 | | |
| **125-Z12-A40R-SO12-C** | 125 | 90 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 9 | ✓ | 3.5 | 12 | | |
| **160-Z12-A40R-SO12** | 160 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 9 | ✗ | 4.0 | 12 | 2 | |
| **160-Z15-A40R-SO12** | 160 | 107 | 40 | 66.7 | - | - | 14 | 20 | 63 | 30 | 9.2 | 16.4 | 9 | ✗ | 4.0 | 15 | | |
| **200-Z16-A60R-SO12** | 200 | 130 | 60 | 101.6 | - | - | 18 | 27 | 63 | 48 | 14.2 | 25.6 | 9 | ✗ | 6.8 | 16 | | |
| **250-Z18-A60R-SO12** | 250 | 180 | 60 | 101.6 | - | - | 18 | 27 | 63 | 48 | 14.2 | 25.6 | 9 | ✗ | 12.8 | 18 | | |



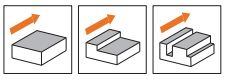

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-032-Z02-C25R-SO12-L100-C** | 32 | 25 | 100 | 35 | 9 | ✓ | 0.4 | 2 | SO..1204.. |
| **032-Z03-C32R-SO12-L130-C** | 32 | 32 | 130 | 29 | 9 | ✓ | 0.7 | 3 | |
| **040-Z03-C32R-SO12-L170-C** | 40 | 32 | 170 | 36 | 9 | ✓ | 1.0 | 3 | |
| **050-Z03-C32R-SO12-L120-C** | 50 | 32 | 120 | 37 | 9 | ✓ | 0.8 | 3 | |
| **050-Z04-C32R-SO12-L120-C** | 50 | 32 | 120 | 37 | 9 | ✓ | 0.8 | 4 | |

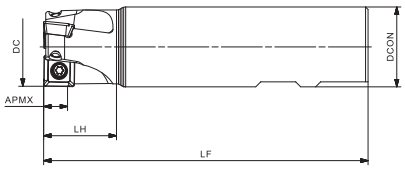
Note: ✓ With internal coolant

✗ Without internal coolant

## ASM90-SO12

90° Approach angle square shoulder milling cutter

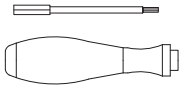




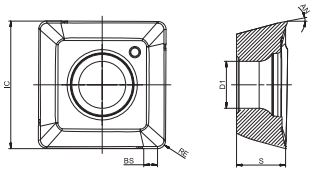

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-032-Z03-W32R-SO12-L130-C** | 32 | 32 | 130 | 29 | 9 | | 0.7 | 3 | SO..1204.. |
| **040-Z04-W32R-SO12-L110-C** | 40 | 32 | 110 | 36 | 9 | | 0.7 | 4 | |

Note: With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅32-250 | |  | 3.5Nm |
| | SP040112 | DT-TP15 | |

## Compatible Inserts



| Insert shape | Product code | IC | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **SOMT 120408PDER-MM4** | 12.46 | 4.8 | 0.8 | 1.3 | 4.6 | 15° | ● | | ● | ● | ● | ● | | ● | ● | |

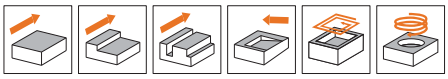
● : Standard stock ○ : Made-to-Order

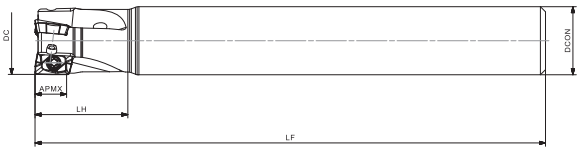
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: SO..1204.. ap (mm) min | ap (mm) max | Geometry MM4 fz (mm) min | fz (mm) max |
|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.50 | 9.00 | 0.08 | 0.25 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.18 |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ASM90-AO06

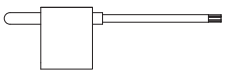
90° Approach angle square shoulder milling cutter



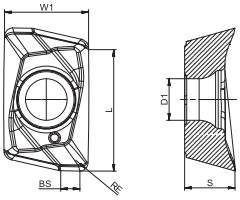



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-010-Z02-C10R-AO06-L060-C** | 10 | 10 | 60 | 18 | 5 | | 0.1 | 2 | AO..0602.. |
| **010-Z02-C10R-AO06-L100-C** | 10 | 10 | 100 | 32 | 5 | | 0.1 | 2 | |
| **012-Z03-C12R-AO06-L070-C** | 12 | 12 | 70 | 17 | 5 | | 0.1 | 3 | |
| **012-Z03-C12R-AO06-L120-C** | 12 | 12 | 120 | 32 | 5 | | 0.1 | 3 | |
| **014-Z03-C16R-AO06-L100-C** | 14 | 16 | 100 | 34 | 5 | | 0.1 | 3 | |
| **016-Z04-C16R-AO06-L090-C** | 16 | 16 | 90 | 32 | 5 | | 0.1 | 4 | |
| **016-Z03-C16R-AO06-L150-C** | 16 | 16 | 150 | 32 | 5 | | 0.2 | 3 | |
| **020-Z05-C20R-AO06-L100-C** | 20 | 20 | 100 | 32 | 5 | | 0.2 | 5 | |
| **020-Z04-C20R-AO06-L150-C** | 20 | 20 | 150 | 32 | 5 | | 0.3 | 4 | |
| **025-Z05-C25R-AO06-L100-C** | 25 | 25 | 100 | 32 | 5 | | 0.3 | 5 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅10-25 | |  | 0.3Nm |
| | SP01803655 | FT-TP05 | |

## Compatible Inserts

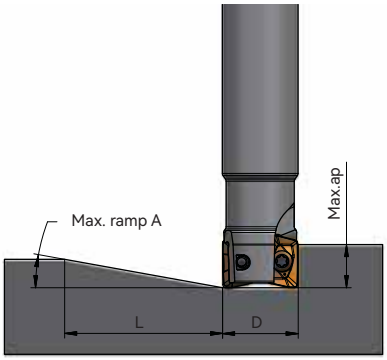


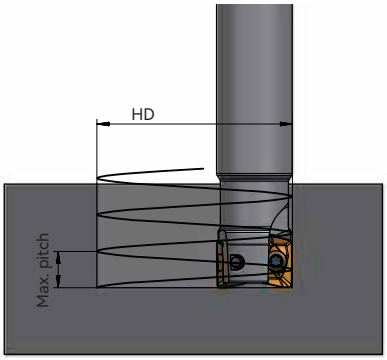

| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | | | | | | | | P | | | M | | K | | | S | H |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **AOMT 060204ER-MM3** | 5.8 | 4.1 | 2.45 | 0.4 | 0.9 | 2.0 | 15° | ● | | | ● | ● | | | | ● | |
| | **AOMT 060208ER-MM3** | 5.8 | 4.1 | 2.45 | 0.8 | 0.5 | 2.0 | 15° | ● | | | ● | ● | | | | ● | |

● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | |
|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | AO..0602.. | | | |
| | | | | ap | | Geometry MM3 fz | |
| | | | | (mm) | | | |
| | | | | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.10 | 5.00 | 0.08 | 0.25 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.18 |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

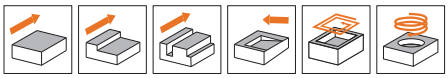


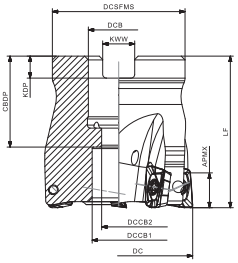




| Cutter diameter (D) | Straight Ramping | | | Circular interpolate milling | | |
|---|---|---|---|---|---|---|
| | Max. ramp-A | Min. length-L (mm) | Max.ap (mm) | Min. Dia. (HD) | Max. Dia. (HD) | Max. pitch (rev) |
| 10 | 3.8° | 84 | 5.0 | 12.2 | | 0.4 |
| | | | | | 20 | 1.8 |
| 12 | 3.6° | 89.6 | 5.0 | 16.2 | | 0.7 |
| | | | | | 24 | 2 |
| 14 | 2.9° | 112 | 5.0 | 20.2 | | 0.8 |
| | | | | | 28 | 1.9 |
| 16 | 1.9° | 168 | 5.0 | 24.2 | | 0.7 |
| | | | | | 32 | 1.4 |
| 20 | 1.4° | 224 | 5.0 | 32.2 | | 0.8 |
| | | | | | 40 | 1.3 |
| 25 | 1.1° | 294 | 5.0 | 42.2 | | 0.9 |
| | | | | | 50 | 1.3 |

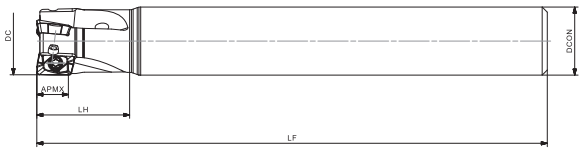
## ASM90-AO10

90° Approach angle square shoulder milling cutter

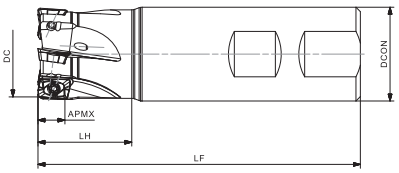





| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **ASM90-040-Z05-A16R-AO10-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 9 | ✓ | 0.2 | 5 | AO..10T3.. |



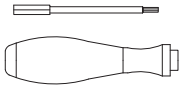

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-016-Z02-C16R-AO10-L130-C** | 16 | 16 | 130 | 24 | 9 | ✓ | 0.2 | 2 | AO..10T3.. |
| **020-Z03-C20R-AO10-L150-C** | 20 | 20 | 150 | 28 | 9 | ✓ | 0.4 | 3 | |



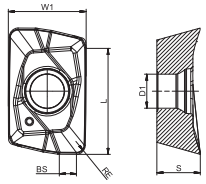

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-025-Z04-W25R-AO10-C** | 25 | 25 | 100 | 32.5 | 9 | ✓ | 0.4 | 4 | AO..10T3.. |
| **032-Z05-W32R-AO10-C** | 32 | 32 | 110 | 32.5 | 9 | ✓ | 0.6 | 5 | |

Note: ✓ With internal coolant

✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø16-40 | |  | 1.2Nm |
| | SP02506450H | DT-TP08 | |

## Compatible Inserts

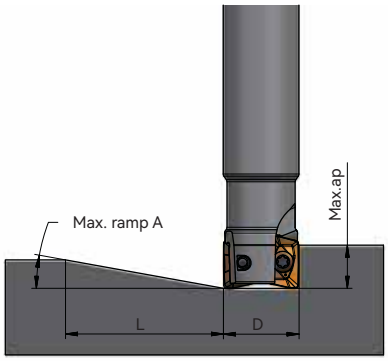


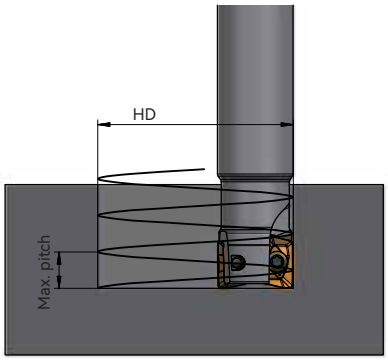

| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | S | H |
| | | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | **AOMT 10T308ER-MM4** | 9.3 | 6.85 | 3.83 | 0.8 | 1.5 | 3.0 | 15° | ● | | | ● | | | | | ● | ● |
| | **AOMT 10T316ER-MM4** | 9.3 | 6.85 | 3.83 | 1.6 | 1.2 | 3.0 | 15° | | | | ● | ● | | | | ● | |
| | **AOMT 10T331ER-MM4** | 9.4 | 6.85 | 3.83 | 3.1 | - | 3.0 | 15° | | ○ | | | | | | | ● | |

● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: AO..10T3.. ap (mm) min | ap (mm) max | Geometry MM4 fz (mm) min | fz (mm) max |
|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.10 | 9.00 | 0.08 | 0.25 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.18 |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

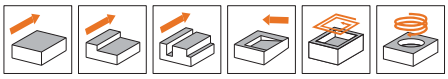


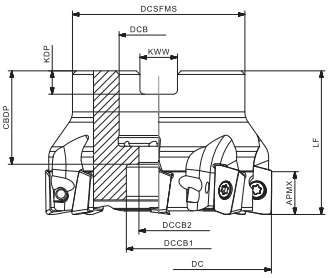




| Cutter diameter (D) | Straight Ramping | | | Circular interpolate milling | | |
|---|---|---|---|---|---|---|
| | Max. ramp-A | Min. length-L (mm) | Max.ap (mm) | Min. Dia. (HD) | Max. Dia. (HD) | Max. pitch (rev) |
| 16 | 5.0° | 103.5 | 9 | 18.6 | | 0.6 |
| | | | | | 32 | 3.7 |
| 20 | 3.5° | 148.5 | 9 | 26.6 | | 1.1 |
| | | | | | 40 | 3.2 |
| 25 | 1.9° | 273 | 9 | 36.6 | | 1 |
| | | | | | 50 | 2.2 |
| 32 | 1.4° | 378 | 9 | 50.6 | | 1.2 |
| | | | | | 64 | 2 |
| 40 | 1.0° | 498 | 9 | 66.6 | | 1.3 |
| | | | | | 80 | 1.9 |

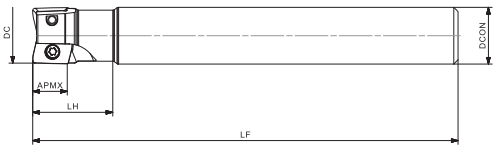
## ASM90-AO12

90° Approach angle square shoulder milling cutter






| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **ASM90-040-Z04-A16R-AO12-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 10 | ● | 0.2 | 4 | AO..1204.. |
| **050-Z05-A22R-AO12-C** | 50 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 10 | ● | 0.3 | 5 | |
| **050-Z07-A22R-AO12-C** | 50 | 42 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 10 | ● | 0.3 | 7 | |
| **063-Z06-A22R-AO12-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 10 | ● | 0.5 | 6 | |
| **063-Z08-A22R-AO12-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 10 | ● | 0.5 | 8 | |
| **080-Z07-A27R-AO12-C** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 10 | ● | 1.2 | 7 | |
| **080-Z10-A27R-AO12-C** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 10 | ● | 1.1 | 10 | |



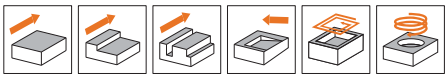

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-020-Z02-C20R-AO12-L150-C** | 20 | 20 | 150 | 28 | 10 | ● | 0.3 | 2 | AO..1204.. |
| **025-Z03-C25R-AO12-L170-C** | 25 | 25 | 170 | 33 | 10 | ● | 0.6 | 3 | |
| **032-Z04-C32R-AO12-L250-C** | 32 | 32 | 250 | 35 | 10 | ● | 1.4 | 4 | |

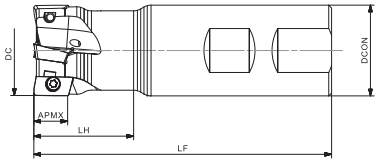
Note: ● With internal coolant

○ Without internal coolant

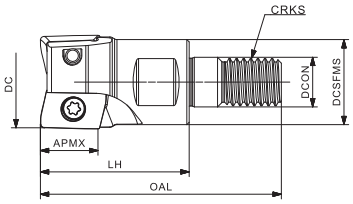
## ASM90-AO12

90° Approach angle square shoulder milling cutter





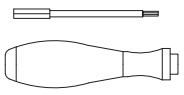

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-020-Z02-W20R-AO12-C** | 20 | 20 | 85 | 28.5 | 10 | | 0.2 | 2 | AO..1204.. |
| **025-Z03-W20R-AO12-C** | 25 | 20 | 95 | 33 | 10 | | 0.2 | 3 | |
| **032-Z04-W32R-AO12-C** | 32 | 32 | 105 | 36.5 | 10 | | 0.5 | 4 | |
| **040-Z04-W32R-AO12-C** | 40 | 32 | 120 | 43 | 10 | | 0.7 | 4 | |



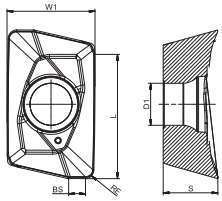

| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **ASM90-020-Z02-M10R-AO12-C** | 20 | 18 | 10.5 | 51 | 31.5 | M10 | 10 | | 0.1 | 2 | AO..1204.. |
| **025-Z03-M12R-AO12-C** | 25 | 23 | 12.5 | 59 | 37 | M12 | 10 | | 0.1 | 3 | |
| **032-Z04-M16R-AO12-C** | 32 | 29 | 17 | 72 | 48 | M16 | 10 | | 0.2 | 4 | |
| **035-Z04-M16R-AO12-C** | 35 | 29 | 17 | 72 | 48 | M16 | 10 | | 0.3 | 4 | |

Note: When the inserts' nose radius R ≥ 2.4mm, the cutters' nose area must be ground.
For R2.4 inserts, grind the tool body's nose area to R1.5mm.
For R3.1 inserts, grind the tool body's nose area to R2.0mm.
For R4.0 inserts, grind the tool body's nose area to R3.0mm.

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅20-35 | |  | 4.0Nm |
| | SP035078 | DT-TP10 | |
| ∅40-80 | SP035086 | | |

## Compatible Inserts

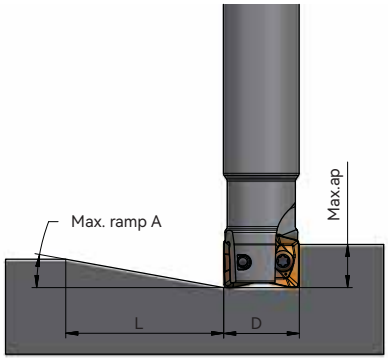


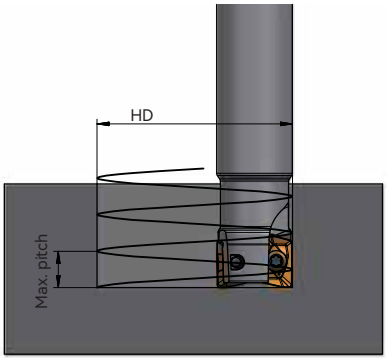

| Insert shape | Product code | Machining conditions: Dimension (mm) L | W1 | S | RE | BS | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **AOHT 120408ER-FM2** | 11.3 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | | | | | | | | | ● | |
| | **AOHT 120404ER-MM3** | 11.3 | 8.15 | 5.07 | 0.4 | 1.9 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOHT 120408ER-MM3** | 11.3 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120408ER-MM3** | 11.3 | 8.15 | 5.07 | 0.8 | 1.4 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120404ER-MM4** | 11.5 | 8.15 | 5.07 | 0.4 | 1.9 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120408ER-MM4** | 11.5 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | ● | ● | | ● | ● | ● | | | | ● |
| | **AOMT 120412ER-MM4** | 11.5 | 8.15 | 5.07 | 1.2 | 1.2 | 3.9 | 15° | | | | ● | ● | | | | | ● |
| | **AOMT 120416ER-MM4** | 11.3 | 8.15 | 5.07 | 1.6 | 1.2 | 3.9 | 15° | | | | ● | ● | | | | | ● |
| | **AOMT 120420ER-MM4** | 11.2 | 8.15 | 5.07 | 2.0 | 1.0 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120424ER-MM4** | 11.0 | 8.15 | 5.07 | 2.4 | 0.9 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120431ER-MM4** | 10.9 | 8.15 | 5.07 | 3.1 | 0.6 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120440ER-MM4** | 10.6 | 8.15 | 5.07 | 4.0 | 0.8 | 3.9 | 15° | | | | ● | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

| Materials: ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: AO..1204.. ap min | ap max | Geometry MM4 fz min (mm) | MM4 fz max (mm) | MM3 fz min (mm) | MM3 fz max (mm) | FM2 fz min (mm) | FM2 fz max (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.10 | 10.00 | 0.08 | 0.28 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.06 | 0.35 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.08 | 0.15 | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

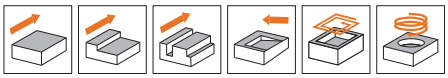


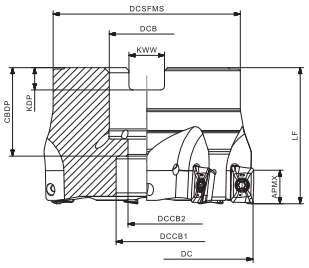




| Cutter diameter (D) | Straight Ramping | | | Circular interpolate milling | | |
|---|---|---|---|---|---|---|
| | Max. ramp-A | Min. length-L (mm) | Max.ap (mm) | Min. Dia. (HD) | Max. Dia. (HD) | Max. pitch (rev) |
| 20 | 5.3 | 119.6 | 10 | 25 | | 1.2 |
| | | | | | 40 | 4.9 |
| 25 | 3.6 | 175.6 | 10 | 35 | | 1.7 |
| | | | | | 50 | 4.2 |
| 32 | 1.7 | 378.0 | 10 | 49 | | 1.3 |
| | | | | | 64 | 2.5 |
| 35 | 1.5 | 424.5 | 10 | 55 | | 1.4 |
| | | | | | 70 | 2.4 |
| 40 | 1.3 | 468.9 | 10 | 65 | | 1.6 |
| | | | | | 80 | 2.5 |
| 50 | 1.3 | 501.5 | 10 | 85 | | 2.0 |
| | | | | | 100 | 2.9 |
| 63 | 0.9 | 708.6 | 10 | 111 | | 2.0 |
| | | | | | 126 | 2.6 |
| 80 | 0.7 | 875.2 | 10 | 145 | | 2.2 |
| | | | | | 160 | 2.7 |

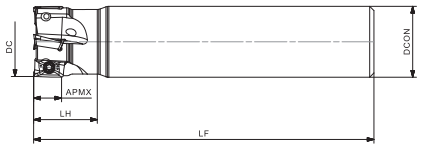
## ASM90-AP10

90° Approach angle square shoulder milling cutter

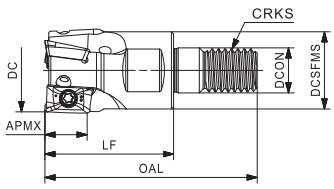





| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **ASM90-040-Z06-A16R-AP10-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 9 | | 0.2 | 6 | AP..1003.. |
| **050-Z07-A22R-AP10-C** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 9 | | 0.3 | 7 | |
| **063-Z07-A22R-AP10-C** | 63 | 55 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 9 | | 0.6 | 7 | |

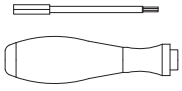



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-016-Z02-C16R-AP10-L90-C** | 16 | 16 | 90 | 22 | 9 | | 0.2 | 2 | AP..1003.. |
| **020-Z03-C20R-AP10-L110-C** | 20 | 20 | 110 | 22 | 9 | | 0.3 | 3 | |
| **025-Z04-C25R-AP10-L120-C** | 25 | 25 | 120 | 22 | 9 | | 0.5 | 4 | |
| **032-Z05-C32R-AP10-L130-C** | 32 | 32 | 130 | 26 | 9 | | 0.8 | 5 | |

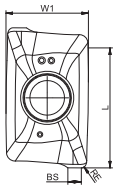



| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **ASM90-020-Z03-M10R-AP10-C** | 20 | 23 | 10.5 | 49.5 | 30 | M10 | 9 | | 0.1 | 3 | AP..1003.. |
| **025-Z04-M12R-AP10-C** | 25 | 30 | 12.5 | 57.2 | 35 | M12 | 9 | | 0.2 | 4 | |
| **032-Z05-M16R-AP10-C** | 32 | 30 | 17 | 67 | 43 | M16 | 9 | | 0.2 | 5 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø16-63 | |  | 1.2Nm |
| | SP02506450H | DT-TP08 | |

## Compatible Inserts




| Insert shape | Product code | Machining conditions: Dimension (mm) L | W1 | S | RE | BS | D1 | AS | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | | | | | | | | P | | | M | | K | | | S | H |
| | **APKT 1003PDER-IT** | 10.8 | 6.66 | 3.8 | 0.8 | 1.1 | 2.8 | 17° | ● | ● | | | | | | | ● | |

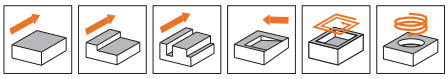
● : Standard stock ○ : Made-to-Order

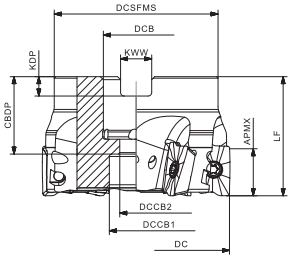
| Materials: ISO | Material classification | Tensile strength (N/mm²) | Hardness (HB) | Cutting depth and feed: AP..1003.. ap (mm) min | ap (mm) max | Geometry IT fz (mm) min | Geometry IT fz (mm) max |
|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.10 | 9.00 | 0.08 | 0.25 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.18 |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

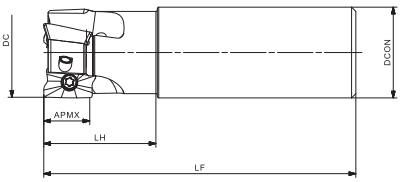
## ASM90-AP17

90° Approach angle square shoulder milling cutter



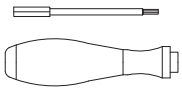



| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **ASM90-050-Z05-A22R-AP17-C** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 15.5 | | 0.4 | 5 | AP..1705.. |
| **063-Z06-A22R-AP17-C** | 63 | 55 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 15.5 | | 0.6 | 6 | |
| **080-Z06-A27R-AP17-C** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 15.5 | | 1.1 | 6 | |
| **100-Z08-A32R-AP17-C** | 100 | 78 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 15.5 | | 1.8 | 8 | |

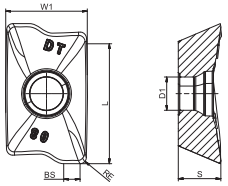



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **ASM90-025-Z02-C25R-AP17-L100-C** | 25 | 25 | 100 | 37 | 15.5 | | 0.4 | 2 | AP..1705.. |
| **032-Z03-C32R-AP17-L110-C** | 32 | 32 | 110 | 39 | 15.5 | | 0.6 | 3 | |
| **032-Z03-C32R-AP17-L200-C** | 32 | 32 | 200 | 39 | 15.5 | | 1.1 | 3 | |
| **040-Z04-C32R-AP17-L120-C** | 40 | 32 | 120 | 49 | 15.5 | | 0.8 | 4 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ⌀25 | |  | 4.0Nm |
| | SP040084 | DT-TP15 | |
| ⌀32-100 | SP040100H | DT-TP15 | |

## Compatible Inserts

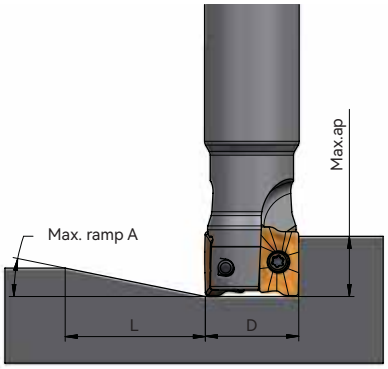


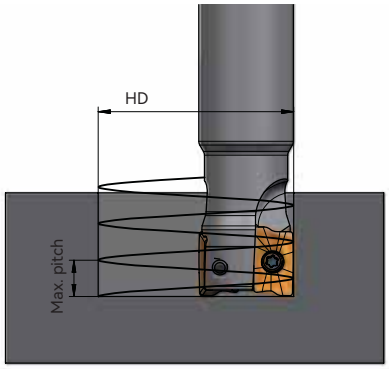

| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | H |
| | **APKT 1705PER-DT** | 16.5 | 10.76 | 5.63 | 0.8 | 2.2 | 4.4 | 11° | ● | ● | ○ | | ● | ● | | | | |
| | **APKT 170516R-DT** | 16.8 | 10.74 | 5.63 | 1.6 | 1.7 | 4.4 | 11° | ● | | | | | ● | | | | |

● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed | | | |
|---|---|---|---|---|---|---|---|
| | | | | AP..1705.. | | | |
| | | | | ap | | Geometry | |
| | | | | | | DT | |
| | | | | | | fz | |
| | | | | (mm) | | | |
| | | | | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.50 | 15.50 | 0.08 | 0.25 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.18 |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

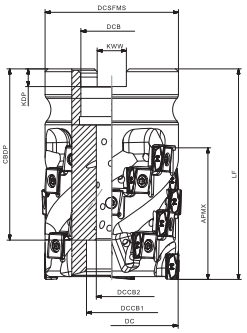
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.



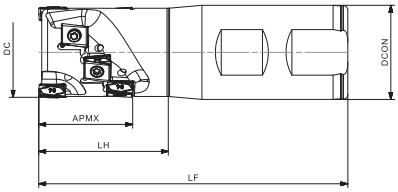




| Cutter diameter (D) | Straight Ramping | | | Circular interpolate milling | | |
|---|---|---|---|---|---|---|
| | Max. ramp-A | Min. length-L (mm) | Max.ap (mm) | Min. Dia. (HD) | Max. Dia. (HD) | Max. pitch (rev) |
| 25 | 5.0° | 184 | 15.5 | 30.6 | | 1.3 |
| | | | | | 50 | 5.8 |
| 32 | 9.0° | 102 | 15.5 | 44.6 | | 5.3 |
| | | | | | 64 | 13.5 |
| 40 | 5.0° | 184 | 15.5 | 40.6 | | 4.8 |
| | | | | | 80 | 9.3 |
| 50 | 4.4° | 209 | 15.5 | 80.6 | | 6.3 |
| | | | | | 100 | 10.3 |
| 63 | 3.2° | 288 | 15.5 | 106.6 | | 6.5 |
| | | | | | 126 | 9.4 |
| 80 | 2.3° | 401 | 15.5 | 140.6 | | 6.5 |
| | | | | | 160 | 8.6 |
| 100 | 1.8° | 513 | 15.5 | 180.6 | | 6.8 |
| | | | | | 200 | 8.4 |

## APE90-LN09 Helical Milling Cutter



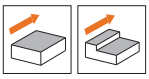

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Clamping screw | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | | | | |
| **APE90-040-Z03-A16R-LN09-L32-F-C** | 40 | 38 | 16 | 15 | 9 | 55 | 44 | 5.8 | 8.4 | 31 | | 0.3 | 3 | 4 | 12 | SH080400 | LN..0904.. |
| **040-Z03-A16R-LN09-L40-F-C** | 40 | 38 | 16 | 15 | 9 | 65 | 54 | 5.8 | 8.4 | 39 | | 0.4 | 3 | 5 | 15 | SH080500 | |
| **050-Z04-A22R-LN09-L48-F-C** | 50 | 47 | 22 | 18 | 11 | 75 | 61 | 6.5 | 10.4 | 46 | | 0.7 | 4 | 6 | 24 | SH100550 | |

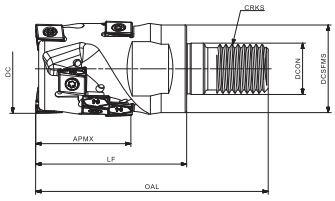



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | | | |
| **APE90-025-Z02-W25R-LN09-L32-F-C** | 25 | 25 | 100 | 43 | 31 | | 0.3 | 2 | 4 | 8 | LN..0904.. |
| **032-Z02-W32R-LN09-L32-F-C** | 32 | 32 | 105 | 44 | 31 | | 0.5 | 2 | 4 | 8 | |
| **032-Z02-W32R-LN09-L40-F-C** | 32 | 32 | 110 | 50 | 39 | | 0.5 | 2 | 5 | 10 | |
| **040-Z03-W40R-LN09-L40-F-C** | 40 | 40 | 125 | 55 | 39 | | 1.0 | 3 | 5 | 15 | |
| **040-Z03-W40R-LN09-L48-F-C** | 40 | 40 | 130 | 59 | 46 | | 1.0 | 3 | 6 | 18 | |

Note: With internal coolant
Without internal coolant

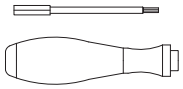
## APE90-LN09 Helical Milling Cutter

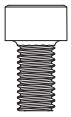




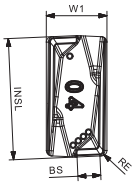

| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | | | |
| **APE90-025-Z02-M12R-LN09-L24-F-C** | 25 | 23 | 12.5 | 64 | 40 | M12 | 23 | | 0.1 | 2 | 3 | 6 | LN..0904.. |
| **032-Z02-M16R-LN09-L24-F-C** | 32 | 29 | 17 | 67 | 40 | M16 | 23 | | 0.2 | 2 | 3 | 6 | |
| **032-Z02-M16R-LN09-L32-F-C** | 32 | 29 | 17 | 77 | 50 | M16 | 31 | | 0.2 | 2 | 4 | 8 | |

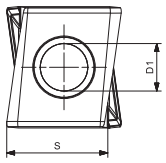
Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | | |
|---|---|---|---|---|
| | Screw | Wrench | Installation wrench | Torque |
| ∅25-50 | |  | | LN..0904.. |
| | SP030083 | DT-TP09 | AFW-15/24 | |

| Clamping screw | | Screw type | Torque |
|---|---|---|---|
|  | SH080400 | M8*40 | 41Nm |
| | SH080500 | M8*50 | 41Nm |
| | SH100550 | M10*55 | 81Nm |

## Compatible Inserts




| Insert shape | Product code | INSL | W1 | S | RE | BS | D1 | Machining conditions: ● Good Conditions ⬢ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **LNHU 090404ER-FM2** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | | | | | | | | | ● | |
| | **LNHU 090404ER-MM3** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | | ● | | | ● | | | | | |
| | **LNHU 090404ER-MM4** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | ● | | | | ● | ● | | | | |
| | **LNHU 090408ER-MM4** | 9 | 4.5 | 7.5 | 0.8 | 1.4 | 3.5 | ● | | | ● | ● | ● | | | | |
| | **LNHU 090404ER-MR2** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | ● | ● | | ● | ● | ● | ● | | | |
| | **LNHU 090408ER-MR2** | 9 | 4.5 | 7.45 | 0.8 | 1.4 | 3.5 | ● | | ● | | ● | ● | ● | ● | | |
| | **LNHU 090412ER-MR2** | 9 | 4.5 | 7.4 | 1.2 | 1.0 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 090416ER-MR2** | 9 | 4.5 | 7.35 | 1.6 | 0.7 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 090420ER-MR2** | 9 | 4.5 | 7.3 | 2.0 | 0.2 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 0904PDER-W** | 9 | 4.5 | 7.48 | 0.4 | 3.6 | 3.5 | ● | | | | | | ● | | | |

**Installing precautions for APE90-LN09 Helical Milling Cutter:**
1. APE90-LN09 front part is compatible with LNHU 090404ER/LNHU 090408ER inserts.
2. APE90-LN09 basic part is compatible with just LNHU 090404ER inserts.

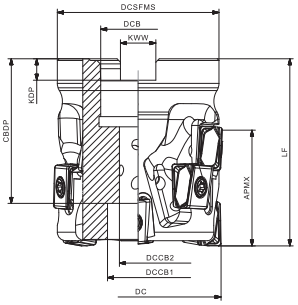
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | LN..0904.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MR2 | | MM4 | | FM2 | |
| | | | | | | fz | | | | | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 3.00 | 46.00 | 0.08 | 0.28 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.06 | 0.25 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## APE90-LN13 Helical Milling Cutter

90° Approach angle square shoulder milling cutter

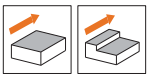


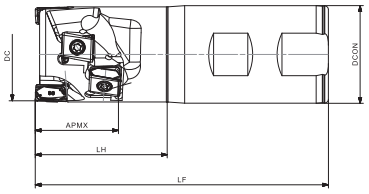

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Clamping screw | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | | | | |
| **APE90-040-Z02-A16R-LN13-L34-F-C** | 40 | 39 | 16 | 15 | 9 | 55 | 43 | 5.8 | 8.4 | 34 | | 0.4 | 2 | 3 | 6 | SH080400 | |
| **040-Z02-A16R-LN13-L45-F-C** | 40 | 39 | 16 | 15 | 9 | 65 | 54.5 | 5.8 | 8.4 | 45 | | 0.4 | 2 | 4 | 8 | SH080450 | |
| **050-Z03-A22R-LN13-L34-F-C** | 50 | 47.5 | 22 | 18 | 11 | 55 | 42.5 | 6.5 | 10.4 | 34 | | 0.5 | 3 | 3 | 9 | SH100400 | |
| **050-Z03-A22R-LN13-L45-F-C** | 50 | 47.5 | 22 | 18 | 11 | 65 | 52 | 6.5 | 10.4 | 45 | | 0.6 | 3 | 4 | 12 | SH100500 | LN..1306.. |
| **063-Z04-A27R-LN13-L56-F-C** | 63 | 59.5 | 27 | 20 | 14 | 80 | 63 | 7.2 | 12.4 | 56 | | 1.2 | 4 | 5 | 20 | SH120600 | |
| **063-Z04-A27R-LN13-L45-F-C** | 63 | 59.5 | 27 | 20 | 14 | 70 | 53 | 7.2 | 12.4 | 45 | | 1.0 | 4 | 4 | 16 | SH120500 | |
| **080-Z05-A32R-LN13-L56-F-C** | 80 | 75.6 | 32 | 26 | 18 | 85 | 65 | 8.2 | 14.4 | 56 | | 2.1 | 5 | 5 | 25 | SH160650 | |

Note: With internal coolant
Without internal coolant

## APE90-LN13 Helical Milling Cutter

90° Approach angle square shoulder milling cutter

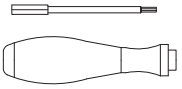


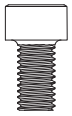



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | | | |
| **APE90-040-Z02-W40R-LN13-L34-F-C** | 40 | 40 | 120 | 54 | 34 | ✓ | 0.2 | 2 | 3 | 6 | LN..1306.. |
| **040-Z02-W40R-LN13-L45-F-C** | 40 | 40 | 135 | 64 | 45 | ✓ | 0.2 | 2 | 4 | 8 | |

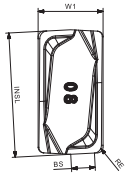
Note: ✓ With internal coolant

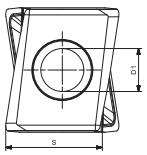
✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅40-80 | |  | 3.5Nm |
| | SP040115 | DT-TP15 | |

| Clamping screw | | Screw type | Torque |
|---|---|---|---|
|  | SH080400 | M8*40 | 41Nm |
| | SH080500 | M8*50 | 41Nm |
| | SH100550 | M10*55 | 81Nm |
| | SH100400 | M10*40 | 81Nm |
| | SH100500 | M10*50 | 81Nm |
| | SH120500 | M12*50 | 142Nm |
| | SH120600 | M12*60 | 142Nm |
| | SH160650 | M16*65 | 350Nm |

## Compatible Inserts




| Insert shape | Product code | Machining conditions: INSL | W1 | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **LNHU 130608ER-FM2** | 13 | 6.8 | 10.1 | 0.8 | 2.5 | 4.5 | | | | | | | | | ● | |
| | **LNHU 130608ER-MM3** | 13 | 6.8 | 10.1 | 0.8 | 2.5 | 4.5 | | | | | ● | | | | | |
| | **LNHU 130608ER-MM4** | 13 | 6.8 | 10.15 | 0.8 | 2.5 | 4.5 | ● | | | ● | ● | ● | | | | |
| | **LNHU 130608ER-MR2** | 13 | 6.8 | 10.15 | 0.8 | 2.5 | 4.5 | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | **LNHU 130612ER-MR2** | 13 | 6.8 | 10.09 | 1.2 | 2.1 | 4.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 130616ER-MR2** | 13 | 6.8 | 10.04 | 1.6 | 1.8 | 4.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 130620ER-MR2** | 13 | 6.8 | 9.98 | 2.0 | 1.4 | 4.5 | ● | ● | | ● | ● | | ● | | | |
| | **LNHU 130624ER-MR2** | 13 | 6.8 | 9.93 | 2.4 | 0.9 | 4.5 | | ● | | | ● | | ● | | | |
| | **LNHU 130631ER-MR2** | 13 | 6.8 | 9.84 | 3.1 | 0.3 | 4.5 | | ● | | | ● | | ● | | | |
| | **LNHU 1306PDR-W** | 13 | 6.8 | 10.08 | 0.9 | 5.2 | 4.5 | ● | | | | | ● | | | | |

**Precautions for APE90-LN13 Helical Milling cutter installation:**
1. APE90-LN13 front part is compatible with R ≤ 2.4mm inserts.
2. APE90-LN13 basic part is compatible with just LNHU 130608ER inserts.

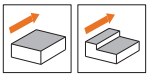
● : Standard stock ○ : Made-to-Order

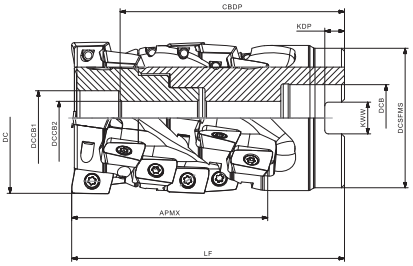
| Materials: ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: LN..1306.. ap (mm) min | ap (mm) max | Geometry MR2 fz (mm) min | MR2 fz (mm) max | MM4 fz (mm) min | MM4 fz (mm) max | FM2 fz (mm) min | FM2 fz (mm) max |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 3.00 | 56.00 | 0.08 | 0.28 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.06 | 0.25 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | - | - | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

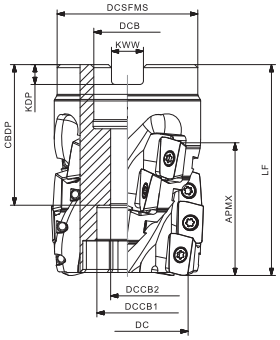
## APE90-AO12 Helical Milling Cutter

90° Approach angle square shoulder milling cutter

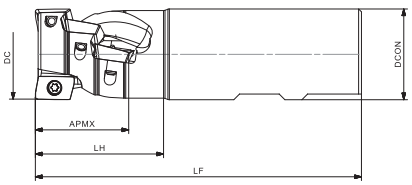





| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Clamping screw | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | | | | |
| **APE90S-050-Z04-A22R-AO12-L64-F** | 50 | 46 | 22 | 18 | 11 | 90 | 74 | 6.5 | 10.4 | 63 | | 0.7 | 4 | 6 | 24 | SH100700 | AO..1204.. |
| **063-Z05-A27R-AO12-L74-F** | 63 | 59 | 27 | 20 | 14 | 100 | 84 | 7.2 | 12.4 | 74 | | 1.4 | 5 | 7 | 35 | SH120800 | |
| **080-Z06-A32R-AO12-L85-F** | 80 | 76 | 32 | 26 | 18 | 110 | 92 | 8.2 | 14.4 | 84 | | 2.8 | 6 | 8 | 48 | SH160900 | |




| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Clamping screw | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | | | | |
| **APE90-050-Z04-A22R-AO12-L32-F-C** | 50 | 47 | 22 | 18 | 11 | 55 | 43 | 6.5 | 10.4 | 32 | | 0.4 | 4 | 3 | 12 | SH100400 | AO..1204.. |
| **063-Z05-A27R-AO12-L43-F-C** | 63 | 59.5 | 27 | 20 | 14 | 66 | 52 | 7.2 | 12.4 | 43 | | 1.0 | 5 | 4 | 20 | SH120500 | |
| **080-Z06-A32R-AO12-L64-F-C** | 80 | 76 | 32 | 26 | 18 | 88 | 69 | 8.2 | 14.4 | 63 | | 2.2 | 6 | 6 | 36 | SH160700 | |



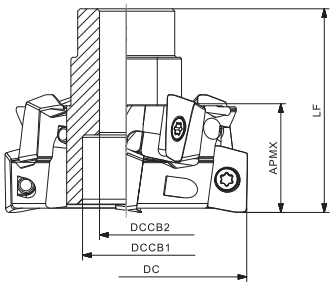

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | | | |
| **APE90-025-Z02-W25R-AO12-L32-F-C** | 25 | 25 | 115 | 38.5 | 31 | | 0.3 | 2 | 3 | 6 | AO..1204.. |
| **032-Z02-W32R-AO12-L32-F-C** | 32 | 32 | 115 | 45 | 32 | | 0.6 | 2 | 3 | 6 | |
| **040-Z03-W40R-AO12-L43-F-C** | 40 | 40 | 130 | 56 | 42 | | 1.0 | 3 | 4 | 12 | |

Note: With internal coolant

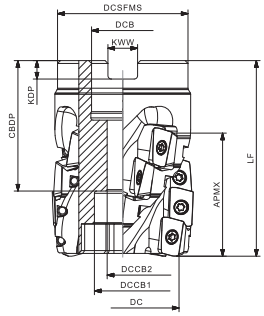
Without internal coolant

## APE90-AO12 Helical Milling Cutter

90° Approach angle square shoulder milling cutter

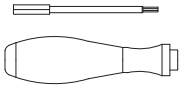



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCCB1 | DCCB2 | LF | APMX | | | | | | |
| **APE90H-050-Z04-AO12-L21-F** | 50 | 18 | 11 | 42 | 21 | | 0.2 | 4 | 2 | 8 | AO..1204.. |
| **063-Z05-AO12-L21-F** | 63 | 20 | 14 | 42 | 21 | | 0.4 | 5 | 2 | 10 | |
| **080-Z06-AO12-L21-F** | 80 | 26 | 18 | 42 | 21 | | 0.6 | 6 | 2 | 12 | |



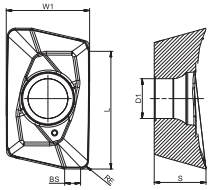

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Row | Insert QTY | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | | | |
| **APE90B-050-Z04-A22R-AO12-L43-F** | 50 | 46 | 22 | 20 | 11 | 69 | 46 | 6.5 | 10.4 | 43 | | 0.5 | 4 | 4 | 16 | AO..1204.. |
| **063-Z05-A27R-AO12-L53-F** | 63 | 59 | 27 | 22 | 14 | 79 | 56 | 7.2 | 12.4 | 53 | | 1.1 | 5 | 5 | 25 | |
| **080-Z06-A32R-AO12-L64-F** | 80 | 76 | 32 | 28 | 18 | 89 | 67.5 | 8.2 | 14.4 | 64 | | 2.2 | 6 | 6 | 36 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅25-80 | |  | 4.0Nm |
| | SP035086 | DT-TP10 | |

| Clamping screw | Bolt spc. | Torque |
|---|---|---|
| | SH100400 | M10*40 | 81N-m |
| | SH120500 | M12*50 | 142N-m |
| | SH160700 | M16*70 | 350N-m |
| | SH100700 | M10*70 | 81N-m |
| | SH120800 | M12*80 | 142N-m |
| | SH160900 | M16*90 | 350N-m |

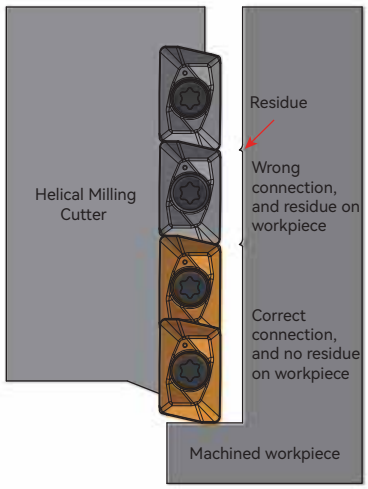
## Compatible Inserts




| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **AOHT 120408ER-FM2** | 11.3 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | | | | | | | | | ● | |
| | **AOHT 120404ER-MM3** | 11.3 | 8.15 | 5.07 | 0.4 | 1.9 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOHT 120408ER-MM3** | 11.3 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120408ER-MM3** | 11.3 | 8.15 | 5.07 | 0.8 | 1.4 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120404ER-MM4** | 11.5 | 8.15 | 5.07 | 0.4 | 1.9 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120408ER-MM4** | 11.5 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | ● | ● | | ● | ● | ● | | | | ● |
| | **AOMT 120412ER-MM4** | 11.5 | 8.15 | 5.07 | 1.2 | 1.2 | 3.9 | 15° | | | | ● | ● | | | | | ● |
| | **AOMT 120416ER-MM4** | 11.3 | 8.15 | 5.07 | 1.6 | 1.2 | 3.9 | 15. | | | | ● | ● | | | | | ● |
| | **AOMT 120420ER-MM4** | 11.2 | 8.15 | 5.07 | 2.0 | 1.0 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120424ER-MM4** | 11.0 | 8.15 | 5.07 | 2.4 | 0.9 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120431ER-MM4** | 10.9 | 8.15 | 5.07 | 3.1 | 0.6 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120440ER-MM4** | 10.6 | 8.15 | 5.07 | 4.0 | 0.8 | 3.9 | 15° | | | | ● | ● | | | | | ● |

**Installing precautions for APE90-AO12 Helical Milling cutter:**
1. APE90-AO12 front part is compatible with all AOMT 1204.. inserts.
2. APE90-AO12 basic part is compatible with R ≤ 1.2mm inserts.

● : Standard stock ○ : Made-to-Order

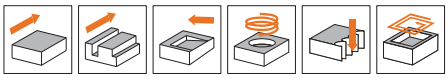


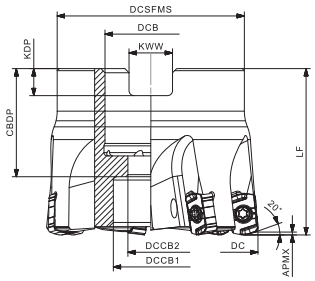
| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | AO..1204.. | | | | | | | |
| | | | | ap | | Geometry | | | | | |
| | | | | | | MM4 | | MM3 | | FM2 | |
| | | | | | | fz | | | | | |
| | | | | | | (mm) | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 3.00 | 85.00 | 0.08 | 0.28 | 0.08 | 0.25 | - | - |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.22 | 0.06 | 0.20 | - | - |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.28 | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | 0.06 | 0.35 |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.08 | 0.15 | 0.08 | 0.15 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

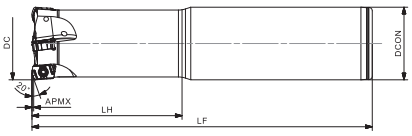
## AHM20-LN06

20° Approach angle high feed milling cutter






| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AHM20-040-Z06-A16R-LN06-C** | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 0.65 | ● | 0.3 | 6 | LN..0604.. |
| **050-Z07-A22R-LN06-C** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 0.65 | ● | 0.4 | 7 | |
| **052-Z07-A22R-LN06-C** | 52 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 0.65 | ● | 0.4 | 7 | |
| **063-Z08-A22R-LN06-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 0.65 | ● | 0.6 | 8 | |



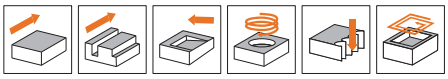

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AHM20-016-Z02-C16R-LN06-L100-C** | 16 | 16 | 100 | 25 | 0.65 | ● | 0.2 | 2 | LN..0604.. |
| **017-Z02-C16R-LN06-L150-C** | 17 | 16 | 150 | 21 | 0.65 | ● | 0.2 | 2 | |
| **020-Z03-C20R-LN06-L130-C** | 20 | 20 | 130 | 30 | 0.65 | ● | 0.3 | 3 | |
| **021-Z03-C20R-LN06-L160-C** | 21 | 20 | 160 | 26 | 0.65 | ● | 0.4 | 3 | |
| **025-Z03-C25R-LN06-L140-C** | 25 | 25 | 140 | 56 | 0.65 | ● | 0.5 | 3 | |
| **026-Z03-C25R-LN06-L180-C** | 26 | 25 | 180 | 30 | 0.65 | ● | 0.6 | 3 | |
| **032-Z04-C32R-LN06-L150-C** | 32 | 32 | 150 | 66 | 0.65 | ● | 0.8 | 4 | |
| **033-Z04-C32R-LN06-L200-C** | 33 | 32 | 200 | 31.5 | 0.65 | ● | 1.1 | 4 | |
| **035-Z05-C32R-LN06-L200-C** | 35 | 32 | 200 | 32 | 0.65 | ● | 1.2 | 5 | |

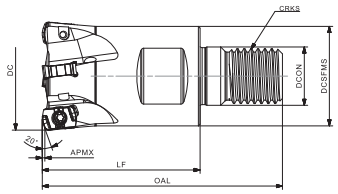
Note: ● With internal coolant

○ Without internal coolant

## AHM20-LN06

20° Approach angle high feed milling cutter

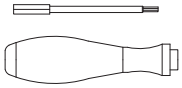




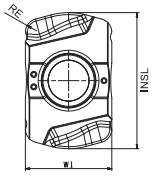

| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | DCSFMS | OAL | LF | CRKS | APMX | | | | |
| **AHM20-016-Z02-M08R-LN06-C** | 16 | 8.5 | 15 | 42 | 25 | M8 | 0.65 | | 0.1 | 2 | LN..0604.. |
| **017-Z02-M08R-LN06-C** | 17 | 8.5 | 14.5 | 42 | 25 | M8 | 0.65 | | 0.1 | 2 | |
| **020-Z03-M10R-LN06-C** | 20 | 10.5 | 18 | 49.5 | 30 | M10 | 0.65 | | 0.1 | 3 | |
| **021-Z03-M10R-LN06-C** | 21 | 10.5 | 18 | 51 | 31.5 | M10 | 0.65 | | 0.1 | 3 | |
| **025-Z04-M12R-LN06-C** | 25 | 12.5 | 23 | 59 | 35 | M12 | 0.65 | | 0.1 | 4 | |
| **026-Z03-M12R-LN06-C** | 26 | 12.5 | 23 | 59 | 35 | M12 | 0.65 | | 0.1 | 3 | |
| **026-Z04-M12R-LN06-C** | 26 | 12.5 | 23 | 59 | 35 | M12 | 0.65 | | 0.1 | 4 | |
| **032-Z04-M16R-LN06-C** | 32 | 17 | 29 | 70 | 46 | M16 | 0.65 | | 0.3 | 4 | |
| **032-Z05-M16R-LN06-C** | 32 | 17 | 29 | 70 | 46 | M16 | 0.65 | | 0.3 | 5 | |
| **033-Z05-M16R-LN06-C** | 33 | 17 | 29 | 70 | 46 | M16 | 0.65 | | 0.3 | 5 | |
| **035-Z05-M16R-LN06-C** | 35 | 17 | 29 | 70 | 46 | M16 | 0.65 | | 0.3 | 5 | |
| **040-Z06-M16R-LN06-C** | 40 | 17 | 29 | 70 | 46 | M16 | 0.65 | | 0.3 | 6 | |

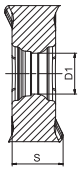
Note: With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅16-63 | |  | 1.0Nm |
| | SP02506450H | DT-TP08 | |

## Compatible Inserts



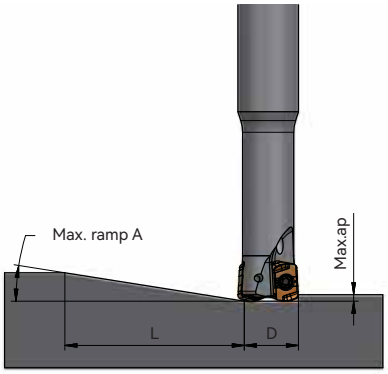

| Insert shape | Product code | INSL | W1 | S | RE | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | P | | | M | | K | | | S | H |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **LNMX 060410ER-MM3** | 10 | 6.35 | 3.6 | 1.0 | 3 | ● | ● | | | ● | | | | ● | ● |
| | **LNMX 060410ER-MM4** | 10 | 6.35 | 3.6 | 1.0 | 3 | ● | ● | ○ | | | ○ | | | ● | ● |
| | **LNMX 060410ER-MM4N** | 10 | 6.35 | 3.6 | 1.0 | 3 | ● | ● | | | ● | | ● | | ● | ● |

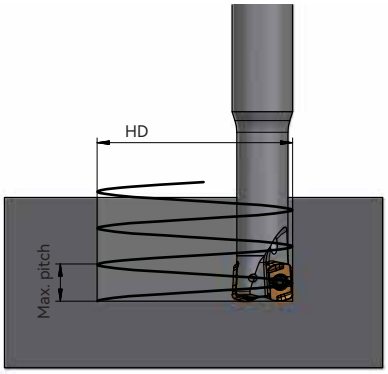
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LN..0604.. | | | | | | | |
| | | | | High feed milling | | | | Plunging | | | |
| | | | | ap | | fz | | ae | | fz | |
| | | | | (mm) | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.30 | 0.65 | 0.30 | 1.00 | 0.50 | 4.00 | 0.08 | 0.15 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.30 | 1.00 | | | 0.06 | 0.12 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.25 | 0.80 | | | 0.06 | 0.12 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | 0.25 | 0.60 | | | | |
| K | Grey cast iron | 700 | 220 | | | | | | | | |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | – | – | | | – | – |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.25 | 0.60 | | | 0.06 | 0.10 |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | 0.25 | 0.60 | | | 0.06 | 0.10 |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

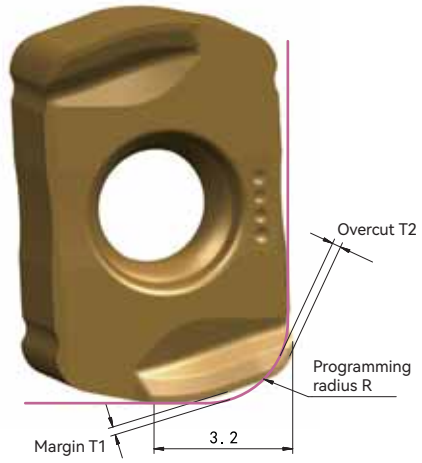
## LN06 Milling Cutter Series




| Cutter dia. (D) | Straight Ramping | | | Circular interpolate milling | | |
|---|---|---|---|---|---|---|
| | Max. ramp-A | Max. ap (mm) | Min. length-L (mm) | Min. Dia. (HD) | Max. Dia.(HD) | Max. pitch (rev) |
| ⌀16 | 2.9° | 0.65 | 13.8 | 23 | 32 | 0.65 |
| ⌀17 | 2.6° | 0.65 | 15.4 | 25 | 34 | 0.65 |
| ⌀20 | 1.9° | 0.65 | 21.1 | 31 | 40 | 0.65 |
| ⌀21 | 1.8° | 0.65 | 22.3 | 33 | 42 | 0.65 |
| ⌀25 | 1.3° | 0.65 | 30.8 | 41 | 50 | 0.65 |
| ⌀26 | 1.3° | 0.65 | 30.8 | 43 | 52 | 0.65 |
| ⌀32 | 0.9° | 0.65 | 44.6 | 55 | 64 | 0.65 |
| ⌀33 | 0.9° | 0.65 | 44.6 | 57 | 66 | 0.65 |
| ⌀40 | 0.7° | 0.65 | 57.3 | 71 | 80 | 0.65 |
| ⌀50 | 0.5° | 0.65 | 80.2 | 91 | 100 | 0.65 |
| ⌀63 | 0.4° | 0.65 | 100.3 | 117 | 126 | 0.65 |

### Tool programming radius



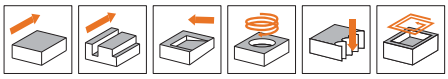

Programming radius R, margin and overcut analysis

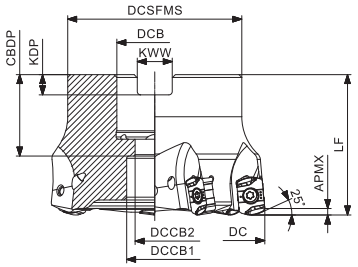
| | Programming radius R | Margin T1 | Overcut T2 |
|---|---|---|---|
| ✓ | R1.5 | 0.43 | 0 |
| ✗ | R2.0 | 0.29 | 0.06 |
| ✗ | R2.5 | 0.15 | 0.24 |

No overcutting of the workpiece when programmed with R1.5

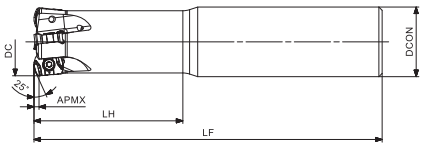
## AHM25-LN10

25° Approach angle high feed milling cutter






| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AHM25-040-Z04-A16R-LN10-C** | 40 | 38 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 1.2 | | 0.3 | 4 | LN..1005.. |
| **040-Z05-A16R-LN10-C** | 40 | 38 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 1.2 | | 0.3 | 5 | |
| **050-Z05-A22R-LN10-C** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.2 | | 0.4 | 5 | |
| **050-Z07-A22R-LN10-C** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.2 | | 0.4 | 7 | |
| **063-Z06-A22R-LN10-C** | 63 | 52 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.2 | | 0.6 | 6 | |
| **063-Z08-A22R-LN10-C** | 63 | 52 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.2 | | 0.6 | 8 | |
| **080-Z07-A27R-LN10-C** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 1.2 | | 1.1 | 7 | |
| **080-Z09-A27R-LN10-C** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 1.2 | | 1.1 | 9 | |
| **100-Z08-A32R-LN10-C** | 100 | 78 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 1.2 | | 1.7 | 8 | |
| **100-Z10-A32R-LN10-C** | 100 | 78 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 1.2 | | 1.8 | 10 | |
| **125-Z12-A40R-LN10-C** | 125 | 90 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 1.2 | | 3.3 | 12 | |



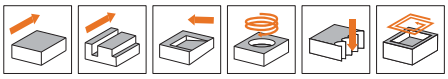

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AHM25-025-Z02-C25R-LN10-L150-C** | 25 | 25 | 150 | 68 | 1.2 | | 0.5 | 2 | LN..1005.. |
| **025-Z03-C25R-LN10-L150-C** | 25 | 25 | 150 | 68 | 1.2 | | 0.5 | 3 | |
| **026-Z03-C25R-LN10-L150-C** | 26 | 25 | 150 | 28 | 1.2 | | 0.5 | 3 | |
| **026-Z03-C25R-LN10-L220-C** | 26 | 25 | 220 | 28 | 1.2 | | 0.8 | 3 | |
| **032-Z03-C32R-LN10-L160-C** | 32 | 32 | 160 | 68 | 1.2 | | 0.9 | 3 | |
| **032-Z04-C32R-LN10-L160-C** | 32 | 32 | 160 | 68 | 1.2 | | 0.9 | 4 | |
| **033-Z04-C32R-LN10-L180-C** | 33 | 32 | 180 | 28 | 1.2 | | 1.0 | 4 | |
| **033-Z04-C32R-LN10-L250-C** | 33 | 32 | 250 | 28 | 1.2 | | 1.4 | 4 | |

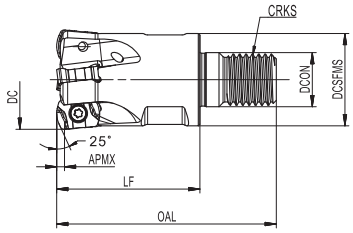
Note: With internal coolant

Without internal coolant

## AHM25-LN10

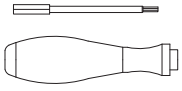
25° Approach angle high feed milling cutter



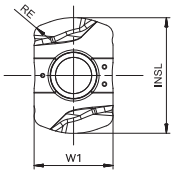


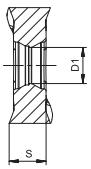

| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | DCSFMS | OAL | LF | CRKS | APMX | | | | |
| **AHM25-025-Z02-M12R-LN10-C** | 25 | 12.5 | 23 | 61 | 39 | M12 | 1.2 | ● | 0.2 | 2 | LN..1005.. |
| **025-Z03-M12R-LN10-C** | 25 | 12.5 | 23 | 61 | 39 | M12 | 1.2 | ● | 0.2 | 3 | |
| **026-Z03-M12R-LN10-C** | 26 | 12.5 | 23 | 61 | 39 | M12 | 1.2 | ● | 0.2 | 3 | |
| **032-Z03-M16R-LN10-C** | 32 | 17 | 29 | 69 | 45 | M16 | 1.2 | ● | 0.3 | 3 | |
| **032-Z04-M16R-LN10-C** | 32 | 17 | 29 | 69 | 45 | M16 | 1.2 | ● | 0.3 | 4 | |
| **033-Z04-M16R-LN10-C** | 33 | 17 | 29 | 69 | 45 | M16 | 1.2 | ● | 0.3 | 4 | |

Note: ● With internal coolant
○ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅25-125 | |  | 3.0Nm |
| | SP035087H | DT-TP10 | |

## Compatible Inserts



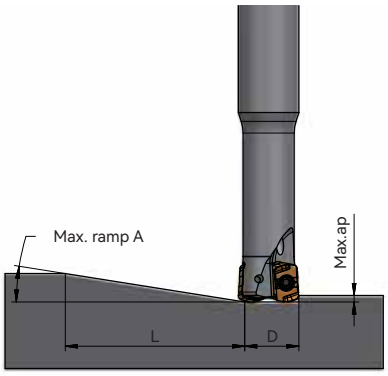

| Insert shape | Product code | INSL | W1 | S | RE | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | | | | | | Dimension (mm) | | | | | | | | | |
| | | | | | | | P | | | M | | K | | | S | H |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **LNMX 100512ER-MM3** | 13.5 | 9.2 | 4.55 | 1.2 | 4.21 | ● | ● | | ● | ● | | | | ● | ● |
| | **LNMX 100512ER-MM4** | 13.5 | 9.2 | 4.55 | 1.2 | 4.21 | ● | ● | | | ● | | | | | ● |

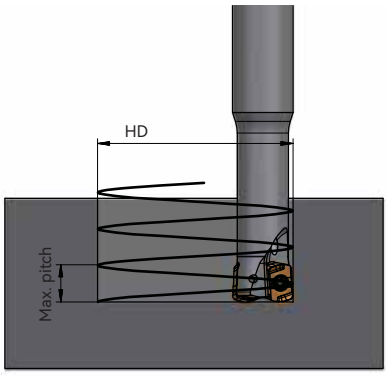
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LN.. 1005.. | | | | | | | |
| | | | | High feed milling | | | | Plunging | | | |
| | | | | ap | | fz | | ae | | fz | |
| | | | | (mm) | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.30 | 1.20 | 0.30 | 1.00 | 0.50 | 4.00 | 0.08 | 0.15 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.30 | 1.00 | | | 0.06 | 0.12 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.25 | 0.80 | | | 0.06 | 0.12 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | 0.25 | 0.60 | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.30 | 1.00 | | | 0.08 | 0.15 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | – | – | | | – | – |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.25 | 0.60 | | | 0.06 | 0.10 |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | 0.25 | 0.60 | | | 0.06 | 0.10 |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

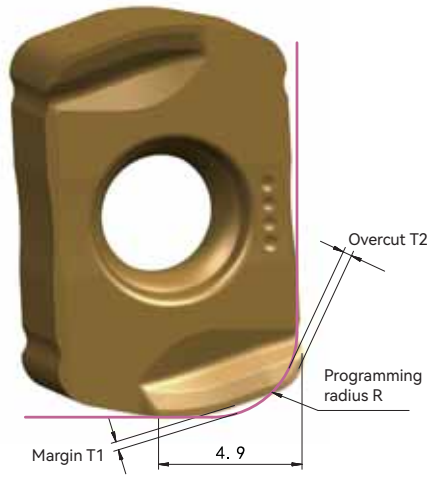
## LN10 Milling Cutter Series




| Cutter dia. (D) | Straight Ramping | | | Circular interpolate milling | | |
|---|---|---|---|---|---|---|
| | Max. ramp-A | Max.ap (mm) | Min. length-L (mm) | Min. Dia. (HD) | Max. Dia.(HD) | Max. pitch (rev) |
| ∅25 | 3.2 | 1.20 | 21.8 | 34 | 50 | 0.8 |
| ∅26 | 2.9 | 1.20 | 23.6 | 36 | 52 | 0.8 |
| ∅32 | 2.0 | 1.20 | 34.7 | 48 | 64 | 0.9 |
| ∅33 | 1.9 | 1.20 | 36.5 | 50 | 66 | 0.9 |
| ∅35 | 1.7 | 1.20 | 40.2 | 54 | 70 | 0.9 |
| ∅40 | 1.4 | 1.20 | 49.5 | 64 | 80 | 1.0 |
| ∅50 | 1.0 | 1.20 | 67.9 | 84 | 100 | 1.0 |
| ∅63 | 0.7 | 1.20 | 91.9 | 110 | 126 | 1.0 |
| ∅80 | 0.6 | 1.20 | 123.3 | 144 | 160 | 1.1 |
| ∅100 | 0.4 | 1.20 | 160.2 | 184 | 200 | 1.1 |
| ∅125 | 0.3 | 1.20 | 206.4 | 234 | 250 | 1.1 |

### Tool programming radius



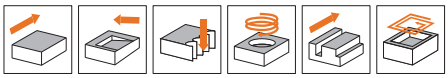

Programming radius R, margin and overcut analysis

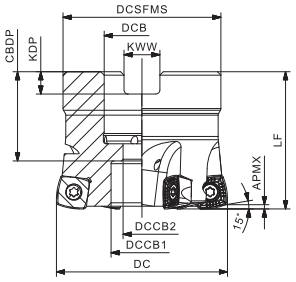
| | Programming radius R | Margin T1 | Overcut T2 |
|---|---|---|---|
| ✓ | R2.3 | 0.57 | 0 |
| ✗ | R2.5 | 0.53 | 0.03 |
| ✗ | R3.0 | 0.37 | 0.15 |

No overcutting of the workpiece when programmed with R1.5

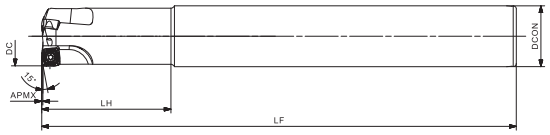
## AHM15-XD09

15° Approach angle high feed milling cutter

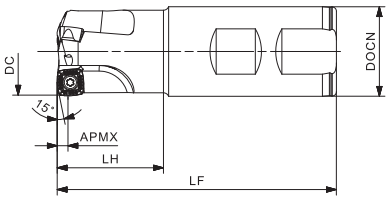





| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AHM15-040-Z03-A16R-XD09-C** | 40 | 35 | 16 | 14 | 9 | 32 | 24 | 5.8 | 8.4 | 1.2 | | 0.2 | 3 | XD..0904.. |
| **040-Z04-A16R-XD09-C** | 40 | 35 | 16 | 14 | 9 | 32 | 24 | 5.8 | 8.4 | 1.2 | | 0.2 | 4 | |
| **040-Z05-A16R-XD09-C** | 40 | 35 | 16 | 14 | 9 | 32 | 24 | 5.8 | 8.4 | 1.2 | | 0.2 | 5 | |
| **050-Z05-A22R-XD09-C** | 50 | 46 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.2 | | 0.4 | 5 | |
| **050-Z06-A22R-XD09-C** | 50 | 46 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.2 | | 0.4 | 6 | |



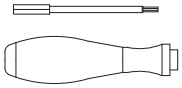

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AHM15-025-Z02-C25R-XD09-C** | 25 | 25 | 200 | 48 | 1.2 | | 0.7 | 2 | XD..0904.. |
| **026-Z02-C25R-XD09-L180-C** | 26 | 25 | 180 | 28 | 1.2 | | 0.6 | 2 | |
| **032-Z03-C32R-XD09-C** | 32 | 32 | 250 | 67 | 1.2 | | 1.4 | 3 | |



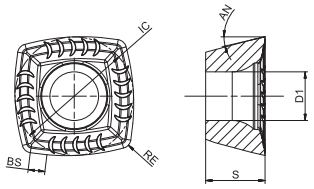

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AHM15-025-Z02-W25R-XD09-C** | 25 | 25 | 96 | 37 | 1.2 | | 0.3 | 2 | XD..0904.. |
| **032-Z03-W32R-XD09-C** | 32 | 32 | 100 | 37 | 1.2 | | 0.5 | 3 | |

Note: With internal coolant

Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅25-50 | |  | 3.0Nm |
| | SP035086 | DT-TP10 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **XDLT 090408ER-MM3** | 9.525 | 4.76 | 0.8 | 1.3 | 3.9 | 15° | ● | ● | ● | | | | ● | | ● | |
| | **XDMW 090408ER-HR2** | 9.506 | 4.76 | 0.8 | 1.6 | 3.9 | 15° | | | | | | ○ | ● | | | |

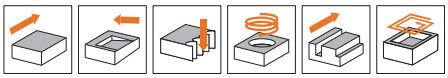
● : Standard stock ○ : Made-to-Order

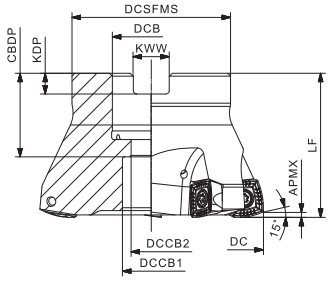
| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | XD..0904.. | | | | | | | |
| | | | | High feed milling | | | | Plunging | | | |
| | | | | ap | | fz | | ae | | fz | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 1.20 | 0.30 | 1.50 | 0.00 | 7.00 | 0.05 | 0.15 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.30 | 1.50 | | | 0.05 | 0.12 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.20 | 0.80 | | | 0.05 | 0.10 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.30 | 1.50 | | | 0.05 | 0.15 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | – | – | | | – | – |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.50 | | | 0.05 | 0.10 |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | 0.30 | 1.00 | | | 0.05 | 0.10 |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## AHM15-XD12

15° Approach angle high feed milling cutter





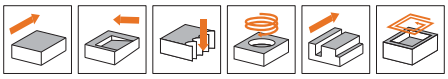

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AHM15-052-Z03-A22R-XD12-C** | 52 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.6 | ✓ | 0.4 | 3 | |
| **052-Z04-A22R-XD12-C** | 52 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.6 | ✓ | 0.4 | 4 | |
| **052-Z05-A22R-XD12-C** | 52 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.6 | ✓ | 0.4 | 5 | |
| **063-Z04-A22R-XD12-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.6 | ✓ | 0.5 | 4 | |
| **063-Z05-A22R-XD12-C** | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.6 | ✓ | 0.5 | 5 | |
| **063-Z04-60A22R-XD12-C** | 63 | 60 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.6 | ✓ | 0.6 | 4 | |
| **063-Z05-60A22R-XD12-C** | 63 | 60 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.6 | ✓ | 0.6 | 5 | |
| **066-Z04-A27R-XD12-C** | 66 | 50 | 27 | 20 | 14 | 45 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 0.5 | 4 | |
| **066-Z05-A27R-XD12-C** | 66 | 50 | 27 | 20 | 14 | 45 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 0.5 | 5 | |
| **066-Z04-63A27R-XD12-C** | 66 | 63 | 27 | 20 | 14 | 45 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 0.7 | 4 | |
| **066-Z05-63A27R-XD12-C** | 66 | 63 | 27 | 20 | 14 | 45 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 0.7 | 5 | |
| **080-Z05-A27R-XD12-C** | 80 | 55 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 0.9 | 5 | XD..1205.. |
| **080-Z08-A27R-XD12-C** | 80 | 55 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 0.9 | 8 | |
| **080-Z05-76A27R-XD12-C** | 80 | 76 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 1.2 | 5 | |
| **080-Z08-76A27R-XD12-C** | 80 | 76 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 1.6 | ✓ | 1.3 | 8 | |
| **100-Z06-A32R-XD12-C** | 100 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 1.6 | ✓ | 1.7 | 6 | |
| **100-Z09-A32R-XD12-C** | 100 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 1.6 | ✓ | 1.7 | 9 | |
| **100-Z06-96A32R-XD12-C** | 100 | 96 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 1.6 | ✓ | 2.0 | 6 | |
| **100-Z09-96A32R-XD12-C** | 100 | 96 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 1.6 | ✓ | 2.0 | 9 | |
| **125-Z08-A40R-XD12-C** | 125 | 89 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 1.6 | ✓ | 3.1 | 8 | |
| **125-Z11-A40R-XD12-C** | 125 | 89 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 1.6 | ✓ | 3.2 | 11 | |
| **125-Z08-100A40R-XD12-C** | 125 | 100 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 1.6 | ✓ | 3.4 | 8 | |
| **125-Z11-100A40R-XD12-C** | 125 | 100 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 1.6 | ✓ | 3.5 | 11 | |

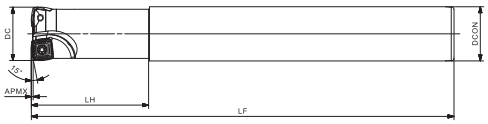
Note: ✓ With internal coolant

✗ Without internal coolant

## AHM15-XD12

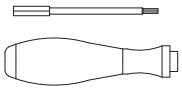
15° Approach angle high feed milling cutter



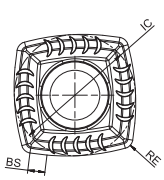


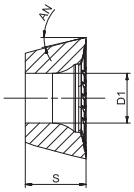

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AHM15-032-Z02-C32R-XD12-C** | 32 | 32 | 250 | 70 | 1.6 | ● | 1.5 | 2 | XD..1205.. |

Note: ● With internal coolant
○ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ⌀32-125 | |  | 3.5Nm |
| | SP040112 | DT-TP15 | |

## Compatible Inserts



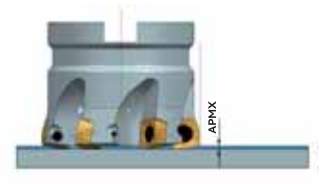

| Insert shape | Product code | IC | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⇔ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ⇔ | ⇔ | ⇔ | ✱ | ● | ● | ● | ✱ | ● |
| | | | | | | | | Dimension (mm) | | | | | | | | | |
| | | | | | | | | P | | | M | | K | | | S | H |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **XDLT 120508ER-MM3** | 12.7 | 5.56 | 0.8 | 2.2 | 4.4 | 15° | ● | ● | ● | | ○ | ● | ● | ● | ● | |
| | **XDLT 120512ER-MM3** | 12.7 | 5.56 | 1.2 | 2.2 | 4.4 | 15° | ● | ● | ● | | | ● | ● | | | |
| | **XDMW 120508ER-HR2** | 12.7 | 5.56 | 0.8 | 2.5 | 4.4 | 15° | ● | | | | | ○ | ● | | | |

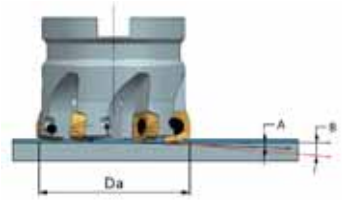
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | XD..1205.. | | | | | | | |
| | | | | High feed milling | | | | Plunging | | | |
| | | | | ap | | fz | | ae | | fz | |
| | | | | (mm) | | | | | | | |
| | | | | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.50 | 1.60 | 0.30 | 2.00 | 0.00 | 10.00 | 0.06 | 0.18 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.30 | 2.00 | | | 0.06 | 0.15 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.20 | 1.00 | | | 0.06 | 0.12 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | 0.10 | 0.60 | | | 0.50 | 0.10 |
| K | Grey cast iron | 700 | 220 | | | 0.30 | 2.00 | | | 0.06 | 0.18 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | – | – | | | – | – |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.30 | 2.00 | | | 0.05 | 0.12 |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | 0.30 | 1.00 | | | 0.05 | 0.12 |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

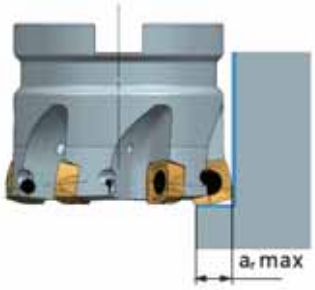
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

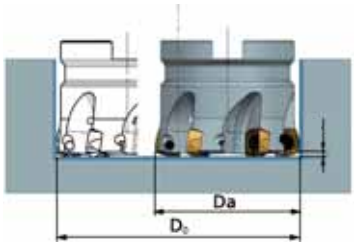
## Application of AHM15-XD High Feed Milling Cutter

| Face milling | ap (mm) | | |
|---|---|---|---|
|  | APMX | XD..0904.. | XD..1205.. |
| | | 1.2 | 1.6 |
| | | | |

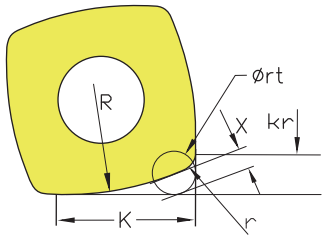
| Sloping | Max. bevel | | | |
|---|---|---|---|---|
|  | Da (mm) | XD..0904.. | | XD..1205.. | |
| | | Max. bevel A | Max. bevel B | Max. bevel A | Max. bevel B |
| | 25 | 2.80° | 6.30° | - | - |
| | 32 | 1.50° | 5.00° | - | - |
| | 40 | 0.80° | 2.70° | - | - |
| | 52 | - | - | 0.8° | 2.7° |
| | 63 | - | - | 0.6° | 1.8° |
| | 66 | - | - | 0.45° | 1.8° |
| | 100 | - | - | 0.32° | 1.45° |
| | 125 | - | - | 0.24° | 1.06° |

A = Max. bevel using full plane contact
B = Max. bevel using full contact and corner radius

| Plunging | Max. cutting depth a,(mm) | | |
|---|---|---|---|
|  | Da (mm) | XD..0904.. | XD..1205.. |
| | 25 | 6.0 | - |
| | 32 | 6.0 | - |
| | 40 | 6.0 | - |
| | 50 | 6.0 | - |
| | 52 | - | 9.0 |
| | 63 | - | 9.0 |
| | 66 | - | 9.0 |
| | 80 | - | 9.0 |
| | 100 | | 9.0 |
| | 125 | - | 9.0 |

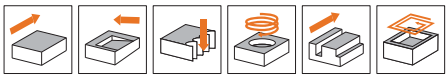
| Helical interpolate milling on soild materials | Diameter range (mm) of holes milled in one feed | | | | |
|---|---|---|---|---|---|
|   | Da (mm) | XD..0904.. | | XD..1205.. | |
| | | $D_o$ min (mm) | $D_o$ max (mm) | $D_o$ min (mm) | $D_o$ max (mm) |
| | 25 | 30 | 50 | - | - |
| | 32 | 51 | 64 | - | - |
| | 40 | 67 | 80 | - | - |
| | 50 | 87 | 100 | - | - |
| | 52 | - | - | 87.2 | 104 |
| | 63 | - | - | 109.2 | 126 |
| | 66 | - | - | 115.2 | 132 |
| | 80 | - | - | 143.2 | 160 |
| | 100 | - | - | 183.2 | 200 |
| | 125 | - | - | 233.2 | 250 |

## Programming information

| Helical interpolate milling on soild materials | | | | | | | |
|---|---|---|---|---|---|---|---|
|   | Indexable insert | R | r (Insert radius) | rt (Approximate radius) | k | kr | x |
| | XD..090408 | 17 | 0.8 | 2.0 | 6.5 | 1.9 | 1.47 |
| | XD..120508 | 22.8 | 0.8 | 2.5 | 8.4 | 2.4 | 1.00 |
| | XD..120512 | 20 | 1.2 | 3.0 | 8.3 | 2.8 | 0.86 |
| | XD..120520 | 20 | 2.0 | 3.0 | 8.0 | 3.4 | 0.90 |
| | Programming with the theoretical tool radius “rt” produces the maximum deviation from the final contour shown above.<br>The small deviations that occur only in the corners can be corrected by other tools in the subsequent process. | | | | | | |

## AHM15-SD09

15° Approach angle high feed milling cutter



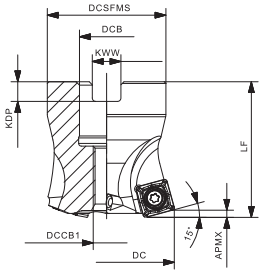



Fig. 1

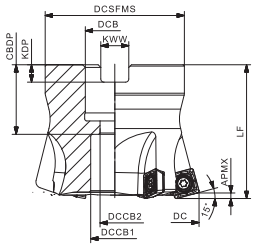
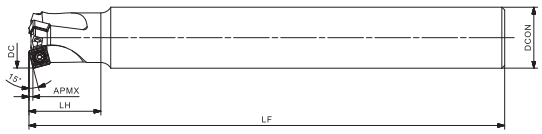



Fig. 2

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **AHM15-040-Z03-A16R-SD09** | 40 | 35 | 16 | M8 | - | 40 | - | 5.8 | 8.4 | 1.5 | | 0.2 | 3 | 1 | SD..09T3..N.. |
| **042-Z04-A16R-SD09** | 42 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 1.5 | | 0.2 | 4 | 2 | |
| **050-Z05-A22R-SD09** | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.5 | | 0.3 | 5 | | |
| **052-Z05-A22R-SD09** | 52 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 1.5 | | 0.3 | 5 | | |
| **063-Z06-A22R-SD09** | 63 | 52 | 22 | 18 | 11 | 50 | 26 | 6.5 | 10.4 | 1.5 | | 0.6 | 6 | | |

Note: AHM15-040-Z03-A16R-SD09 is connected using dowel screw



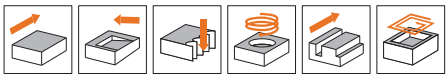

| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **AHM15-025-Z02-C25R-SD09-L200** | 25 | 25 | 200 | 25 | 1.5 | | 0.6 | 2 | SD..09T3..N.. |
| **032-Z03-C32R-SD09-L250** | 32 | 32 | 250 | 37 | 1.5 | | 1.4 | 3 | |

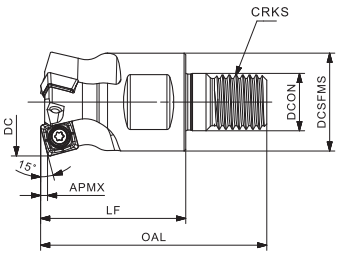
Note: With internal coolant

Without internal coolant

## AHM15-SD09

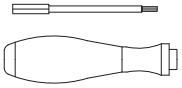
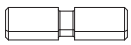
15° Approach angle high feed milling cutter



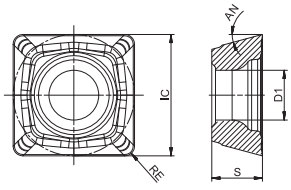



| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **AHM15-025-Z02-M12R-SD09** | 25 | 23 | 12.5 | 57 | 35 | M12 | 1.5 | | 0.1 | 2 | SD..09T3..N... |
| **026-Z02-M12R-SD09** | 26 | 23 | 12.5 | 57 | 35 | M12 | 1.5 | | 0.1 | 2 | |
| **032-Z03-M16R-SD09** | 32 | 29 | 17 | 67 | 43 | M16 | 1.5 | | 0.2 | 3 | |
| **033-Z03-M16R-SD09** | 33 | 29 | 17 | 67 | 43 | M16 | 1.5 | | 0.2 | 3 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | | |
|---|---|---|---|---|
| | Screw | Wrench | Dowel screw | Torque |
| ∅25-63 | |  |  | 3.0Nm |
| | SP035086 | DT-TP10 | WD080300 | |

### Compatible Inserts



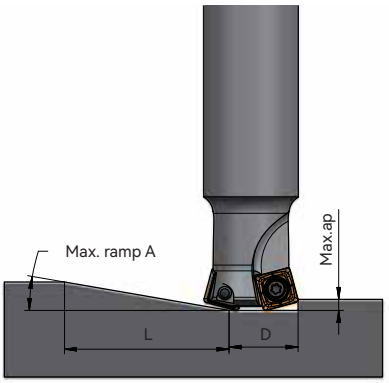

| Insert shape | Product code | Machining conditions: Dimension (mm) IC | S | RE | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 09T308N-MM4** | 9.525 | 3.97 | 0.8 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MM4** | 9.520 | 3.97 | 2.0 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | ● |
| | **SDMT 09T308N-MR2** | 9.525 | 3.97 | 0.8 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MR2** | 9.520 | 3.97 | 2.0 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |

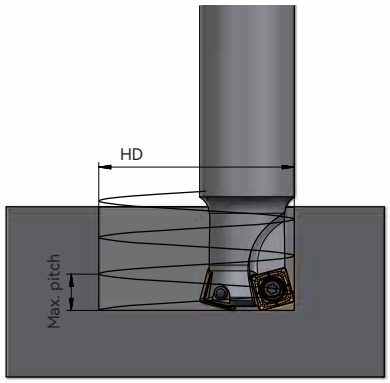
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD..09T3..N.. | | | | | | | |
| | | | | High feed milling | | | | Plunging | | | |
| | | | | ap | | fz | | ap | | fz | |
| | | | | (mm) | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.10 | 1.50 | 0.80 | 1.40 | 0.00 | 8.40 | 0.12 | 0.22 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.80 | 1.50 | | | 0.12 | 0.25 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.05 | 0.50 | | | 0.05 | 0.12 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.50 | 1.40 | | | 0.10 | 0.25 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.60 | | | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

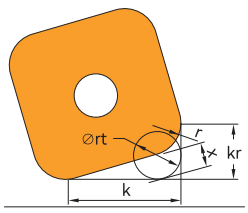
## Application of AHM15-SD09 High Feed Milling Cutter



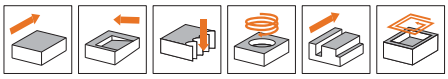

| Product family | Cutter dia. (D) | Sloping | | | Helical interpolate milling | | |
|---|---|---|---|---|---|---|---|
| | | Max. ramp -A | Max.ap (mm) | Min. length-L (mm) | Min. Dia.(mm) | Max. Dia.(mm) | Max. pitch (mm) |
| AHM15-SD09 | 25 | 6.2° | 1.5 | 17.6 | 32.4 | | 1.5 |
| | 25 | 6.2° | 1.5 | 17.6 | | 50.0 | 1.5 |
| | 26 | 5.4° | 1.5 | 20.0 | 34.4 | | 1.5 |
| | 26 | 5.4° | 1.5 | 20.0 | | 52.0 | 1.5 |
| | 32 | 3.2° | 1.5 | 34.2 | 46.4 | | 1.5 |
| | 32 | 3.2° | 1.5 | 34.2 | | 64.0 | 1.5 |
| | 33 | 3.0° | 1.5 | 36.6 | 48.4 | | 1.5 |
| | 33 | 3.0° | 1.5 | 36.6 | | 66.0 | 1.5 |
| | 40 | 2.0° | 1.5 | 53.2 | 62.4 | | 1.5 |
| | 40 | 2.0° | 1.5 | 53.2 | | 80.0 | 1.5 |
| | 42 | 1.9° | 1.5 | 58.0 | 66.4 | | 1.5 |
| | 42 | 1.9° | 1.5 | 58.0 | | 84.0 | 1.5 |
| | 50 | 1.4° | 1.5 | 77.0 | 82.4 | | 1.5 |
| | 50 | 1.4° | 1.5 | 77.0 | | 100.0 | 1.5 |
| | 52 | 1.3° | 1.5 | 81.7 | 86.4 | | 1.5 |
| | 52 | 1.3° | 1.5 | 81.7 | | 104.0 | 1.5 |
| | 63 | 1.0° | 1.5 | 107.8 | 108.4 | | 1.5 |
| | 63 | 1.0° | 1.5 | 107.8 | | 126.0 | 1.5 |

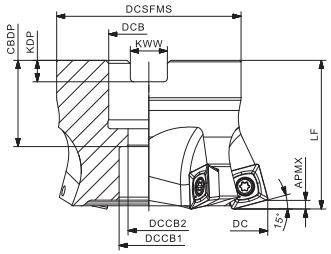
## Programming information

| Helical interpolate milling on soild materials | | | | | | |
|---|---|---|---|---|---|---|
|   | Indexable insert | r (Insert radius) | rt (Approximate radius) | k | kr | x |
| | SD..09T308 | 0.8 | 2.5 | 8.35 | 2.85 | 1.91 |
| | SD..09T320 | 2.0 | 3.0 | 7.04 | 3.43 | 1.51 |

## AHM15-SD12

15° Approach angle high feed milling cutter

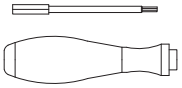
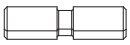




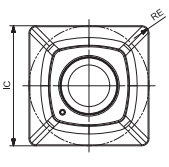

| Product code | Dimension (mm) | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **AHM15-050-Z04-A22R-SD12** | 50 | 45 | 22 | M10 | - | 40 | - | 6.5 | 10.4 | 2.0 | | 0.3 | 4 | SD..1204..N.. |
| **052-Z04-A22R-SD12** | 52 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 2.0 | | 0.3 | 4 | |
| **063-Z05-A22R-SD12** | 63 | 48 | 22 | 18 | 11 | 50 | 26 | 6.5 | 10.4 | 2.0 | | 0.5 | 5 | |
| **080-Z06-A27R-SD12** | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 2.0 | | 0.9 | 6 | |
| **100-Z07-A32R-SD12** | 100 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 2.0 | | 1.6 | 7 | |
| **125-Z08-A40R-SD12** | 125 | 87 | 40 | 33 | 22 | 63 | 38 | 9.2 | 16.4 | 2.0 | | 2.8 | 8 | |

Note: AHM15-050-204-A22R-SD12 is clamped using dowel screw

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | | |
|---|---|---|---|---|
| | Screw | Wrench | Dowel screw | Torque |
| ∅50-125 | |  |  | 3.5Nm |
| | SP040112 | DT-TP15 | WD100300 | |

## Compatible Inserts



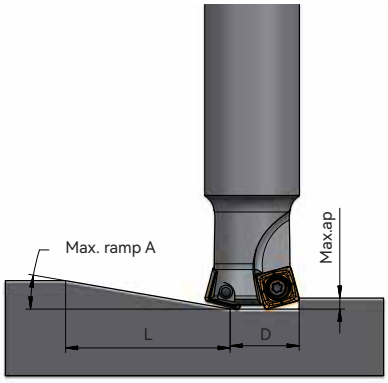

| Insert shape | Product code | IC | S | RE | D1 | AN | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 120408N-MM4** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 120420N-MM4** | 12.7 | 4.76 | 2.0 | 4.4 | 15.3° | ○ | | | | | ● | | | | |
| | **SDMT 120425N-MM4** | 12.7 | 4.76 | 2.5 | 4.4 | 15.3° | | | | ○ | ● | | | | | ○ |
| | **SDMT 120430N-MM4** | 12.7 | 4.76 | 3.0 | 4.4 | 15.3° | | ○ | | | | ● | | | | |
| | **SDMT 120408N-MR2** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | ● | ● | ● | ● | | ● | | |

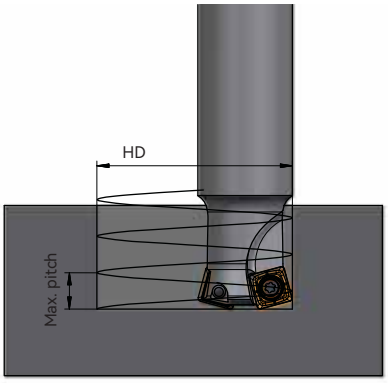
● : Standard stock ○ : Made-to-Order

| Materials | | | | Cutting depth and feed | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD..1204..N.. | | | | | | | |
| | | | | High feed milling | | | | Plunging | | | |
| | | | | ap | | fz | | ap | | fz | |
| | | | | (mm) | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.20 | 2.00 | 1.00 | 1.80 | 0.00 | 11.40 | 0.15 | 0.25 |
| | | <950 | <280 | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 1.00 | 1.20 | | | 0.15 | 0.30 |
| | | 950-1200 | 280-355 | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.05 | 0.80 | | | 0.05 | 0.15 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.80 | 1.60 | | | 0.10 | 0.30 |
| | Nodular cast iron | 880 | 260 | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.80 | | | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## Application of AHM15-SD12 High Feed Milling Cutter

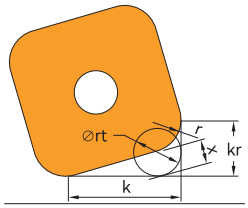



| Product family | Cutter dia. (D) | Sloping | | | Helical interpolate milling | | |
|---|---|---|---|---|---|---|---|
| | | Max. ramp -A | Max.ap (mm) | Min. length-L (mm) | Min. Dia.(mm) | Max. Dia.(mm) | Max. pitch (mm) |
| AHM15-SD12 | 50 | 1.5° | 2.0 | 89.1 | 76.0 | | 1.9 |
| | 50 | 1.5° | 2.0 | 89.1 | | 100.0 | 2.0 |
| | 52 | 1.4° | 2.0 | 96.0 | 80.0 | | 1.9 |
| | 52 | 1.4° | 2.0 | 96.0 | | 104.0 | 2.0 |
| | 63 | 1.0° | 2.0 | 133.7 | 102.0 | | 1.9 |
| | 63 | 1.0° | 2.0 | 133.7 | | 126.0 | 2.0 |
| | 80 | 0.7° | 2.0 | 192.0 | 136.0 | | 1.9 |
| | 80 | 0.7° | 2.0 | 192.0 | | 160.0 | 2.0 |
| | 100 | 0.5° | 2.0 | 260.6 | 176.0 | | 1.9 |
| | 100 | 0.5° | 2.0 | 260.6 | | 200.0 | 2.0 |
| | 125 | 0.4° | 2.0 | 346.3 | 226.0 | | 1.9 |
| | 125 | 0.4° | 2.0 | 346.3 | | 250.0 | 1.9 |

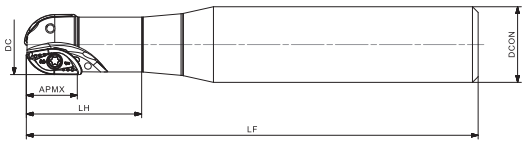
## Programming information

Helical interpolate milling on soild materials

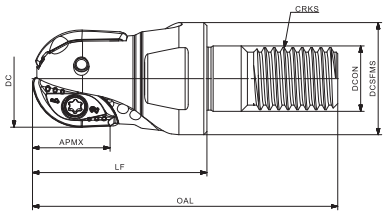



| Indexable insert | r (Insert radius) | rt (Approximate radius) | k | kr | x |
|---|---|---|---|---|---|
| SD..120408 | 0.8 | 3.0 | 11.43 | 3.65 | 2.62 |
| SD..120420.. | 2.0 | 3.0 | 10.12 | 4.28 | 2.32 |
| SD..120425 | 2.5 | 3.0 | 9.59 | 4.51 | 2.18 |
| SD..120430.. | 3.0 | 3.0 | 9.07 | 4.76 | 2.04 |

## APM00-RP
Profile milling cutter

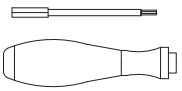



| Product code | Dimension (mm) | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|
| | DC | DCON | LF | LH | APMX | | | | |
| **APM00-016-Z02-C20R-RP080-L120-C** | 16 | 16 | 120 | 31 | 14 | ● | 0.3 | 2 | RPM 080ER-MM4 |
| **020-Z02-C25R-RP100-L126-C** | 20 | 20 | 126 | 42 | 18 | ● | 0.3 | 2 | RPM 100ER-MM4 |
| **020-Z02-C25R-RP100-L176-C** | 20 | 20 | 176 | 42 | 18 | ● | 0.5 | 2 | |
| **032-Z02-C32R-RP160-L130-C** | 32 | 32 | 130 | 53 | 28 | ● | 0.6 | 2 | RPM 160ER-MM4 |

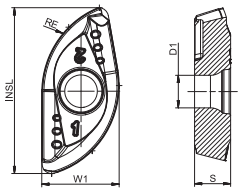



| Product code | Dimension (mm) | | | | | | | Internal coolant | Weight (kg) | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | |
| **APM00-016-Z02-M10R-RP080-C** | 16 | 18 | 10.5 | 50 | 28 | M10 | 14 | ● | 0.08 | RPM 080ER-MM4 |
| **020-Z02-M10R-RP100-C** | 20 | 18 | 10.5 | 50 | 30 | M10 | 18 | ● | 0.04 | RPM 100ER-MM4 |
| **032-Z02-M16R-RP160-C** | 32 | 29 | 17 | 64 | 40 | M16 | 28 | ● | 0.15 | RPM 160ER-MM4 |

Note: ● With internal coolant
○ Without internal coolant

| Cutter diameter (mm) | Spare parts | | | |
|---|---|---|---|---|
| | Screw | Wrench | Installation wrench | Torque |
| ∅16 | |  | | 1.2Nm |
| | SP02506450H | DT-TP08 | AFW-15 | |
| ∅20 | SP030072H | DT-TP09 | AFW-15 | 2.0Nm |
| ∅32 | SP040100H | DT-TP15 | AFW-24 | 3.5Nm |

## Compatible Inserts



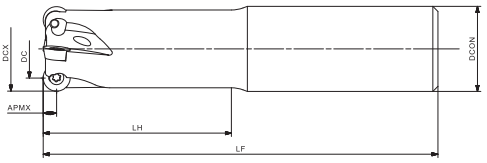

| Insert shape | Product code | INSL | W1 | S | RE | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **RPM 080ER-MM4** | 14.77 | 6.9 | 3.2 | 8.2 | 2.9 | ● | | | ● | ● | | | | | ● |
| | **RPM 100ER-MM4** | 18.85 | 8.63 | 3.9 | 10.3 | 3.5 | ● | | | ● | ○ | | | | | ● |
| | **RPM 160ER-MM4** | 29.54 | 12.68 | 6.2 | 16.4 | 4.6 | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

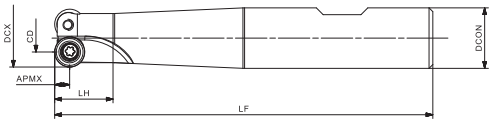
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: RPM.... ap (mm) min | ap (mm) max | MM4 fz (mm) min | MM4 fz (mm) max |
|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 28.00 | 0.10 | 0.20 |
| | | <950 | <280 | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.10 | 0.18 |
| | | 950-1200 | 280-355 | | | | |
| | | 1200-1400 | 355-415 | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.10 | 0.18 |
| | Austenitic stainless steel | 675 | 200 | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - |
| | Nodular cast iron | 880 | 260 | | | | |
| | Malleable cast iron | 800 | 250 | | | | |
| N | Aluminum | 260 | 75 | | | - | - |
| | Aluminum alloy | 447 | 130 | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.12 |
| | Co-based alloy | 1076 | 320 | | | | |
| | Ni-based alloy | 1177 | 350 | | | | |
| | Ti-alloy | 1262 | 370 | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - |
| | Chilled cast iron | - | 55HRC | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

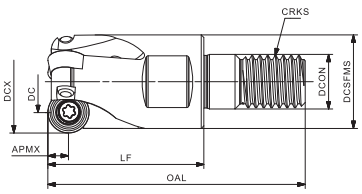
## APM00-RO08
Profile milling cutter




| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **APM00-025-Z04-C25R-RO08-L116-C** | 17 | 25 | 25 | 116 | 55.3 | 4 | ✓ | 0.4 | 4 | RO..08..MOE.. |

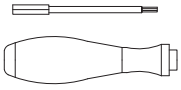


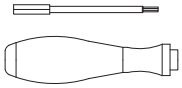

| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **APM00-016-Z02-W16R-RO08-L100** | 8 | 16 | 16 | 100 | 15.6 | 4 | ✗ | 0.1 | 2 | RO..08..MOE.. |



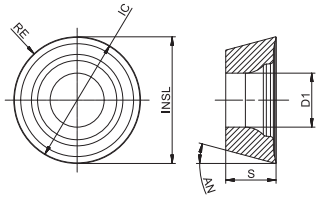

| Product code | Dimension (mm) | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **APM00-020-Z03-M10R-RO08-C** | 12 | 20 | 18 | 10.5 | 49.5 | 30 | M10 | 4 | ✓ | 0.1 | 3 | RO..08..MOE.. |

Note: ✓ With internal coolant
✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø16-25 | |  | 2.0Nm |
| | SP030072H | DT-TP09 | |

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø16-25 | |  | 2.0Nm |
| | SP030072H | DT-TP09 | |

## Compatible Inserts




| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 0803MOE-MM3** | 8 | 8 | 3.18 | - | 3.4 | 15° | | | | | ● | | | | | ● |

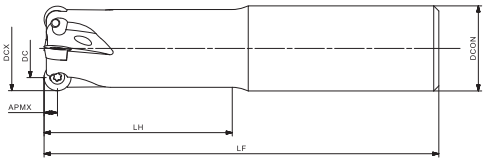
Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions

● : Standard stock ○ : Made-to-Order

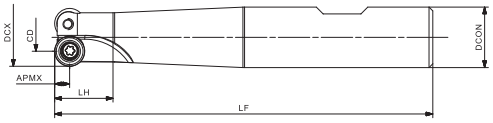
| Materials | | | | Cutting depth and feed | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | RO..0803.. | | | | | | |
| | | | | MM3 | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | ap | | fz | | | | |
| | | | | | | 0.1 < ap ≤ 1 | | 1 < ap ≤ 4 | | |
| | | | | (mm) | | | | | | |
| | | | | min | max | min | max | min | max | |
| P | Unalloyed steel | <600 | <180 | 0.50 | 4.00 | 0.15 | 0.50 | 0.08 | 0.30 | |
| | | <950 | <280 | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.45 | 0.06 | 0.28 | |
| | | 950-1200 | 280-355 | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.10 | 0.40 | 0.06 | 0.25 | |
| | Austenitic stainless steel | 675 | 200 | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - | - | - | |
| | Nodular cast iron | 880 | 260 | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | |
| | Aluminum alloy | 447 | 130 | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.35 | 0.06 | 0.25 | |
| | Co-based alloy | 1076 | 320 | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | |
| | Chilled cast iron | - | 55HRC | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

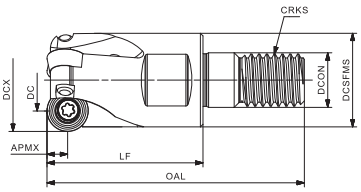
## APM00-RO08
Profile milling cutter




| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **APM00-020-Z03-C20R-RO08-L120-N-C** | 12 | 20 | 20 | 120 | 61.8 | 4 | ✓ | 0.3 | 4 | RO..08..M4E.. |
| **025-Z04-C25R-RO08-L116-N-C** | 17 | 25 | 25 | 116 | 53.2 | 4 | ✓ | 0.4 | 4 | |

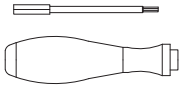



| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **APM00-016-Z02-W16R-RO08-L100-N** | 8 | 16 | 16 | 100 | 15.6 | 4 | ✗ | 0.1 | 2 | RO..08..M4E.. |

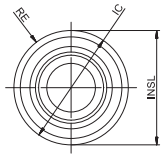


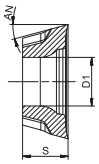

| Product code | Dimension (mm) | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **APM00-020-Z03-M10R-RO08-N-C** | 12 | 20 | 18 | 10.5 | 49.5 | 30 | M10 | 4 | ✓ | 0.1 | 3 | RO..08..M4E.. |

Note: ✓ With internal coolant
✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅16-25 | |  | 2.0Nm |
| | SP030072H | DT-TP09 | |

## Compatible Inserts



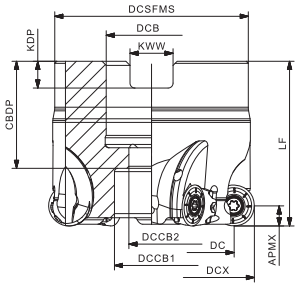

| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ⇕ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 0803M4E-MM3** | 8 | 8 | 3.18 | - | 3.4 | 15° | | | | | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

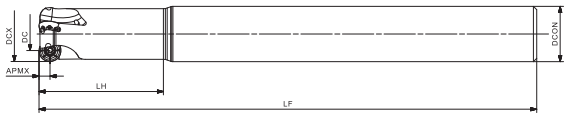
| Materials | | | | Cutting depth and feed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | RO..0803.. | | | | | |
| | | | | MM3 | | | | | |
| | | | | ap | | fz | | | |
| | | | | | | 0.1 < ap ≤ 1 | | 1 < ap ≤ 4 | |
| | | | | (mm) | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.50 | 4.00 | 0.15 | 0.50 | 0.08 | 0.30 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.45 | 0.06 | 0.28 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.10 | 0.40 | 0.06 | 0.25 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.35 | 0.06 | 0.25 |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

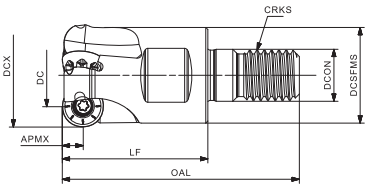
## APM00-RO10
Profile milling cutter




| Product code | Dimension (mm) | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **APM00-040-Z05-A16R-RO10-C** | 30 | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 5 | ✓ | 0.3 | 5 | RO..10T3.. |
| **050-Z06-A22R-RO10-C** | 40 | 50 | 47 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 5 | ✓ | 0.4 | 6 | |

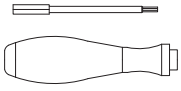



| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **APM00-025-Z03-C25R-RO10-L225-C** | 15 | 25 | 25 | 225 | 56.2 | 5 | ✓ | 0.8 | 3 | RO..10T3.. |
| **032-Z04-C32R-RO10-L130-C** | 22 | 32 | 32 | 130 | 65 | 5 | ✓ | 0.7 | 4 | |

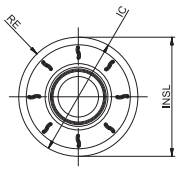


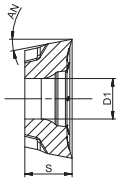

| Product code | Dimension (mm) | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **APM00-025-Z03-M12R-RO10-C** | 15 | 25 | 23 | 12.5 | 57 | 35 | M12 | 5 | ✓ | 0.1 | 3 | RO..10T3.. |
| **032-Z04-M16R-RO10-C** | 22 | 32 | 29 | 17 | 67 | 43 | M16 | 5 | ✓ | 0.3 | 4 | |

Note: ✓ With internal coolant
✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅25-50 | |  | 2.0Nm |
| | SP030072H | DT-TP09 | |

## Compatible Inserts



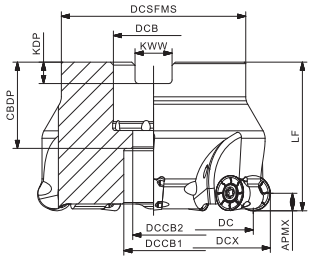

| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | Machining conditions: Dimension (mm) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● Good Conditions ⬢ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ⬢ | ⬢ | ⬢ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP403M | AP351M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **ROHT 10T3M8E-MM3** | 10 | 10 | 3.97 | - | 3.4 | 11° | | | | ● | | | | | | ● |
| | **ROMT 10T3M4E-MR6** | 10 | 10 | 3.97 | - | 3.4 | 11° | | ○ | | ● | | | | | | ● |

● : Standard stock ○ : Made-to-Order

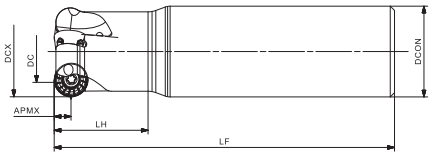
| Materials | | | | Cutting depth and feed | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | RO..10T3.. | | | | | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | ap | | MM3 | | | | MR6 | | | |
| | | | | | | fz | | | | | | | |
| | | | | | | 0.1 < ap ≤ 1.2 | | 1.2 < ap ≤ 5 | | 0.1 < ap ≤ 1.2 | | 1.2 < ap ≤ 5 | |
| | | | | (mm) | | | | | | | | | |
| | | | | min | max | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.80 | 5.00 | 0.15 | 0.55 | 0.10 | 0.30 | 0.15 | 0.60 | 0.10 | 0.32 |
| | | <950 | <280 | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.50 | 0.08 | 0.28 | 0.12 | 0.55 | 0.08 | 0.30 |
| | | 950-1200 | 280-355 | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.10 | 0.45 | 0.08 | 0.25 | 0.10 | 0.50 | 0.08 | 0.28 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - | - | - | - | - | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.10 | 0.40 | 0.08 | 0.25 | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

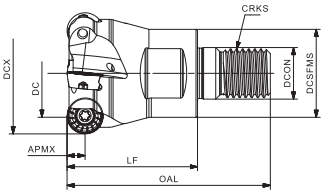
## APM00-RO12
Profile milling cutter




| Product code | Dimension (mm) | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **APM00-040-Z04-A16R-RO12-C** | 28 | 40 | 35 | 16 | 14 | 9 | 40 | 24 | 5.8 | 8.4 | 6 | ✓ | 0.3 | 4 | RO..1204.. |
| **050-Z05-A22R-RO12-C** | 38 | 50 | 45 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 6 | ✓ | 0.4 | 5 | |
| **063-Z06-A22R-RO12-C** | 51 | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 6 | ✓ | 0.6 | 6 | |
| **080-Z07-A27R-RO12-C** | 68 | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 6 | ✓ | 1.2 | 7 | |

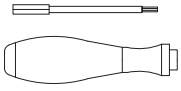



| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **APM00-032-Z03-C32R-RO12-L120-C** | 20 | 32 | 32 | 120 | 33 | 6 | ✓ | 0.7 | 3 | RO..1204.. |

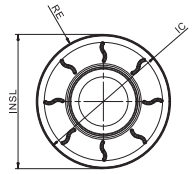


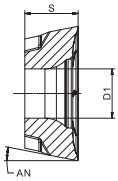

| Product code | Dimension (mm) | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **APM00-040-Z04-M16R-RO12-C** | 28 | 40 | 29 | 17 | 67 | 43 | M16 | 6 | ✓ | 0.3 | 4 | RO..1204.. |

Note: ✓ With internal coolant
✗ Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅32-80 | |  | 4.0Nm |
| | SP040085H | DT-TP10 | |

## Compatible Inserts



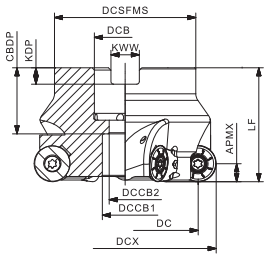

| Insert shape | Product code | Machining conditions: Dimension (mm) INSL | IC | S | RE | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ROHT 1204M4E-MM3** | 12 | 12 | 4.76 | - | 4.4 | 11° | | | | | ● | | | | | ● |
| | **ROHT 1204M6E-MM3** | 12 | 12 | 4.76 | - | 4.4 | 11° | | | | | ● | | | | | ● |
| | **ROMT 1204M6E-MR6** | 12 | 12 | 4.76 | - | 4.4 | 11° | ○ | | | | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

| Materials: ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: RO..1204.. ap (mm) min | ap (mm) max | MM3 fz 0.1 < ap ≤ 1.5 min | MM3 fz 0.1 < ap ≤ 1.5 max | MM3 fz 1.5 < ap ≤ 6 min | MM3 fz 1.5 < ap ≤ 6 max | MR6 fz 0.1 < ap ≤ 1.5 min | MR6 fz 0.1 < ap ≤ 1.5 max | MR6 fz 1.5 < ap ≤ 6 min | MR6 fz 1.5 < ap ≤ 6 max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.80 | 6.00 | 0.18 | 0.60 | 0.12 | 0.32 | 0.18 | 0.65 | 0.12 | 0.35 |
| | | <950 | <280 | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.15 | 0.55 | 0.10 | 0.30 | 0.15 | 0.60 | 0.10 | 0.32 |
| | | 950-1200 | 280-355 | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.12 | 0.50 | 0.10 | 0.28 | 0.12 | 0.55 | 0.10 | 0.30 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - | - | - | - | - | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.12 | 0.45 | 0.10 | 0.28 | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | |

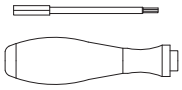
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## APM00-RO16
Profile milling cutter

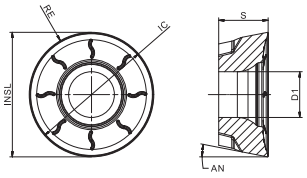



| Product code | Dimension (mm) | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DCCB1 | DCCB2 | LF | CBDP | KDP | KWW | APMX | | | | |
| **APM00-063-Z05-A22R-RO16-C** | 47 | 63 | 48 | 22 | 18 | 11 | 40 | 26 | 6.5 | 10.4 | 8 | | 0.5 | 5 | |
| **080-Z06-A27R-RO16-C** | 64 | 80 | 62 | 27 | 20 | 14 | 50 | 29 | 7.2 | 12.4 | 8 | | 1.2 | 6 | RO..1605.. |
| **100-Z07-A32R-RO16-C** | 84 | 100 | 80 | 32 | 26 | 18 | 50 | 32 | 8.2 | 14.4 | 8 | | 1.8 | 7 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅63-100 | |  | 5.0Nm |
| | SP050120 | DT-TP20 | |

## Compatible Inserts




| Insert shape | Product code | Machining conditions: INSL | IC | S | RE | D1 | AN | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions: AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 1605M8E-MM3** | 16 | 16 | 5.56 | - | 5.5 | 11° | | | | | ● | | | | | ● |
| | **ROMT 1605M6E-MR6** | 16 | 16 | 5.56 | - | 5.5 | 11° | | | ● | | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

| Materials: ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: RO..1605.. ap (mm) min | ap (mm) max | MM3 fz: 0.1 < ap ≤ 1.5 min | MM3 fz: 0.1 < ap ≤ 1.5 max | MM3 fz: 1.5 < ap ≤ 8 min | MM3 fz: 1.5 < ap ≤ 8 max | MR6 fz: 0.1 < ap ≤ 1.5 min | MR6 fz: 0.1 < ap ≤ 1.5 max | MR6 fz: 1.5 < ap ≤ 8 min | MR6 fz: 1.5 < ap ≤ 8 max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.80 | 8.00 | 0.20 | 0.65 | 0.12 | 0.35 | 0.20 | 0.68 | 0.12 | 0.38 |
| | | <950 | <280 | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.18 | 0.60 | 0.10 | 0.32 | 0.18 | 0.65 | 0.10 | 0.35 |
| | | 950-1200 | 280-355 | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.15 | 0.55 | 0.10 | 0.30 | 0.15 | 0.58 | 0.10 | 0.32 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - | - | - | - | - | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.15 | 0.50 | 0.10 | 0.30 | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## APM00-RO20
Profile milling cutter

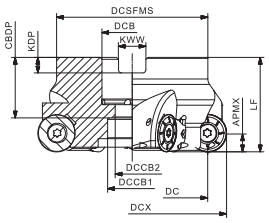



Fig. 1

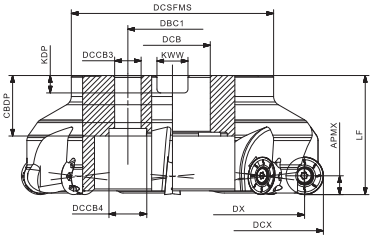
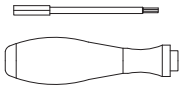


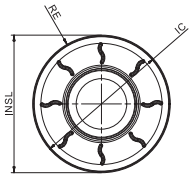

Fig. 2

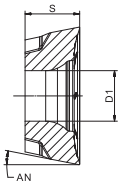
| Product code | Dimension (mm) | | | | | | | | | | | | | | Internal coolant | Weight (kg) | Z | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCB | DBC1 | DCCB1 | DCCB2 | DCCB3 | DCCB4 | LF | CBDP | KDP | KWW | APMX | | | | | |
| **APM00-100-Z06-A32R-RO20-C** | 80 | 100 | 80 | 32 | - | 26 | 18 | - | - | 50 | 32 | 8.2 | 14.4 | 10 | | 1.7 | 6 | 1 | RO..2006.. |
| **125-Z07-A40R-RO20-C** | 105 | 125 | 87 | 40 | - | 33 | 22 | - | - | 63 | 38 | 9.2 | 16.4 | 10 | | 3.5 | 7 | | |
| **160-Z08-A40R-RO20** | 140 | 160 | 107 | 40 | 66.7 | 58 | - | 14 | 20 | 63 | 32 | 9.2 | 16.4 | 10 | | 4.5 | 8 | 2 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| ∅100-160 | |  | 7.0Nm |
| | SP060180 | DT-TP25 | |

## Compatible Inserts



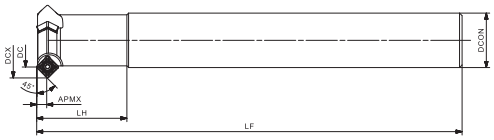

| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **ROHT 2006M8E-MM3** | 20 | 20 | 6.35 | - | 6.5 | 11° | | | | | ● | | | | | ● |
| | **ROMT 2006M8E-MR6** | 20 | 20 | 6.35 | - | 6.5 | 11° | | | | | ● | | ○ | | | ● |

● : Standard stock ○ : Made-to-Order

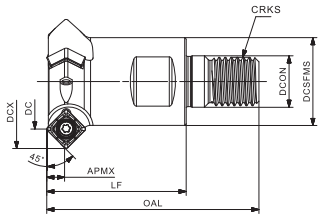
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: RO..2006.. ap | | MM3 fz: 0.1 < ap ≤ 2.5 | | MM3 fz: 2.5 < ap ≤ 10 | | MR6 fz: 0.1 < ap ≤ 2.5 | | MR6 fz: 2.5 < ap ≤ 10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (mm) | | | | | | | | | |
| | | | | min | max | min | max | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 1.00 | 10.00 | 0.20 | 0.70 | 0.15 | 0.38 | 0.20 | 0.80 | 0.15 | 0.40 |
| | | <950 | <280 | | | | | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.18 | 0.65 | 0.12 | 0.35 | 0.18 | 0.70 | 0.12 | 0.38 |
| | | 950-1200 | 280-355 | | | | | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.15 | 0.60 | 0.12 | 0.32 | 0.15 | 0.65 | 0.12 | 0.35 |
| | Austenitic stainless steel | 675 | 200 | | | | | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | | | | | |
| K | Grey cast iron | 700 | 220 | | | - | - | - | - | - | - | - | - |
| | Nodular cast iron | 880 | 260 | | | | | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.15 | 0.55 | 0.12 | 0.32 | - | - | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ACM45-SD09
Chamfer milling cutter

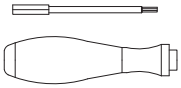



| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **ACM45-012-Z01-C16R-SD09-L160** | 12 | 24 | 16 | 160 | 25 | 5.5 | ✗ | 0.3 | 1 | SD..09T3..N.. |
| **016-Z02-C16R-SD09-L160** | 16 | 28 | 16 | 160 | 30 | 5.5 | ✗ | 0.2 | 2 | |
| **020-Z02-C20R-SD09-L180** | 20 | 32 | 20 | 180 | 35 | 5.5 | ✗ | 0.4 | 2 | |
| **025-Z03-C25R-SD09-L200** | 25 | 37 | 25 | 200 | 42 | 5.5 | ✗ | 0.7 | 3 | |
| **032-Z03-C32R-SD09-L250** | 32 | 44 | 32 | 250 | 53 | 5.5 | ✗ | 1.5 | 3 | |

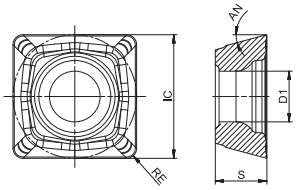



| Product code | Dimension (mm) | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **ACM45-016-Z02-M08R-SD09** | 16 | 28 | 15 | 8.5 | 42 | 25 | M08 | 5.5 | ✗ | 0.1 | 2 | SD..09T3..N.. |
| **020-Z02-M10R-SD09** | 20 | 32 | 18 | 10.5 | 51 | 31 | M10 | 5.5 | ✗ | 0.1 | 2 | |
| **025-Z03-M12R-SD09** | 25 | 37 | 23 | 12.5 | 59 | 37 | M12 | 5.5 | ✗ | 0.1 | 3 | |
| **032-Z03-M16R-SD09** | 32 | 44 | 29 | 17 | 70 | 46 | M16 | 5.5 | ✗ | 0.3 | 3 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø12-32 | |  | 3.0Nm |
| | SP035086 | DT-TP10 | |

## Compatible Inserts



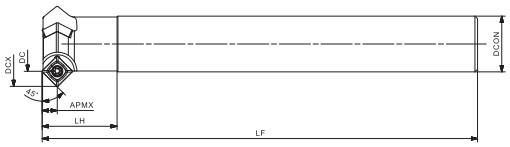

| Insert shape | Product code | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **SDMT 09T308N-MM4** | 9.525 | 3.97 | 0.8 | - | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MM4** | 9.520 | 3.97 | 2.0 | - | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | ● |
| | **SDMT 09T308N-MR2** | 9.525 | 3.97 | 0.8 | - | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MR2** | 9.520 | 3.97 | 2.0 | - | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

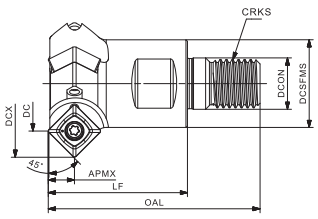
| Materials | | | | Cutting depth and feed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | SD..09T3..N.. | | | | | |
| | | | | ap | | Geometry | | | |
| | | | | | | MM4 | | MR2 | |
| | | | | | | fz | | | |
| | | | | (mm) | | | | | |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | min | max | min | max | min | max |
| P | Unalloyed steel | <600 | <180 | 0.10 | 5.50 | 0.05 | 0.25 | 0.05 | 0.35 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.05 | 0.22 | 0.05 | 0.30 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | - | - | 0.08 | 0.35 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.08 | 0.30 | 0.08 | 0.30 |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.05 | 0.30 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

## ACM45-SD12
Chamfer milling cutter

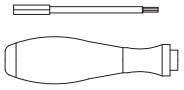



| Product code | Dimension (mm) | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCON | LF | LH | APMX | | | | |
| **ACM45-025-Z02-C25R-SD12-L200** | 25 | 41 | 25 | 200 | 30 | 7.5 | | 0.8 | 2 | SD..1204..N.. |
| **032-Z03-C32R-SD12-L250** | 32 | 48 | 32 | 250 | 43 | 7.5 | | 1.5 | 3 | |

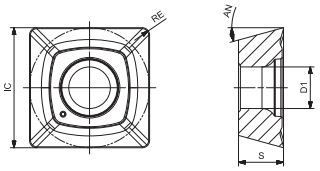



| Product code | Dimension (mm) | | | | | | | | Internal coolant | Weight (kg) | Z | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC | DCX | DCSFMS | DCON | OAL | LF | CRKS | APMX | | | | |
| **ACM45-025-Z02-M12R-SD12** | 25 | 41 | 23 | 12.5 | 59 | 37 | M12 | 7.5 | | 0.1 | 2 | SD..1204..N.. |
| **032-Z03-M16R-SD12** | 32 | 48 | 29 | 17 | 70 | 46 | M16 | 7.5 | | 0.2 | 3 | |

Note: With internal coolant
Without internal coolant

| Cutter diameter (mm) | Spare parts | | |
|---|---|---|---|
| | Screw | Wrench | Torque |
| Ø25-32 | |  | 3.5Nm |
| | SP040112 | DT-TP15 | |

## Compatible Inserts




| Insert shape | Product code | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **SDMT 120408N-MM4** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 120420N-MM4** | 12.7 | 4.76 | 2.0 | 4.4 | 15.3° | ○ | | | | | ● | | | | |
| | **SDMT 120425N-MM4** | 12.7 | 4.76 | 2.5 | 4.4 | 15.3° | | | | ○ | ● | | | | | ○ |
| | **SDMT 120430N-MM4** | 12.7 | 4.76 | 3.0 | 4.4 | 15.3° | | ○ | | | | ● | | | | |
| | **SDMT 120408N-MR2** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | ● | ● | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Cutting depth and feed: SD..1204..N.. ap (mm) min | ap (mm) max | Geometry MM4 fz (mm) min | MM4 fz (mm) max | Geometry MR2 fz (mm) min | MR2 fz (mm) max |
|---|---|---|---|---|---|---|---|---|---|
| P | Unalloyed steel | <600 | <180 | 0.20 | 7.50 | 0.10 | 0.30 | 0.10 | 0.35 |
| | | <950 | <280 | | | | | | |
| | Alloyed steel | 700-950 | 200-280 | | | 0.12 | 0.25 | 0.10 | 0.30 |
| | | 950-1200 | 280-355 | | | | | | |
| | | 1200-1400 | 355-415 | | | | | | |
| M | Duplex stainless steel | 778 | 230 | | | 0.06 | 0.20 | 0.10 | 0.30 |
| | Austenitic stainless steel | 675 | 200 | | | | | | |
| | Precipitation-hardening stainless steel | 1013 | 300 | | | | | | |
| K | Grey cast iron | 700 | 220 | | | 0.10 | 0.30 | 0.10 | 0.35 |
| | Nodular cast iron | 880 | 260 | | | | | | |
| | Malleable cast iron | 800 | 250 | | | | | | |
| N | Aluminum | 260 | 75 | | | - | - | - | - |
| | Aluminum alloy | 447 | 130 | | | | | | |
| S | Fe-based alloy | 943 | 280 | | | 0.06 | 0.12 | - | - |
| | Co-based alloy | 1076 | 320 | | | | | | |
| | Ni-based alloy | 1177 | 350 | | | | | | |
| | Ti-alloy | 1262 | 370 | | | | | | |
| H | Hardened steel | - | 50-60HRC | | | - | - | - | - |
| | Chilled cast iron | - | 55HRC | | | | | | |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

# ACHTECK

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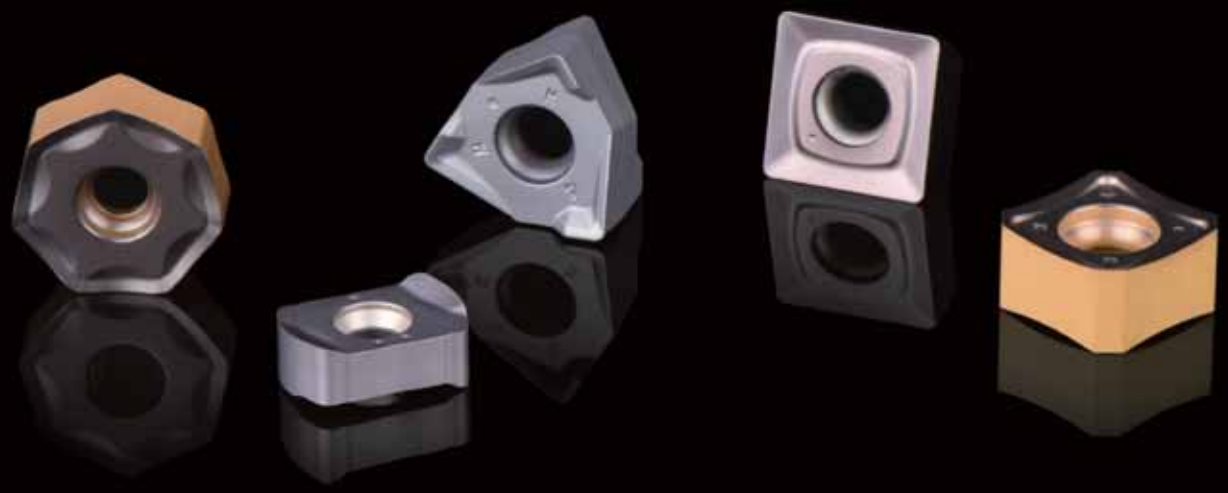
THE EXPERT OF DIFFICULT MACHINING



## Milling Inserts

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SN Milling Insert 404
XN Milling Insert 408
HN Milling Insert 411
ON Milling Insert 411
Cast Iron Finish Milling Insert 412
AO Milling Insert 413
AP Milling Insert 414
TD Milling Insert 416
SO Milling Insert 416
LN Milling Insert 417
WN Milling Insert 419
LNET Milling Insert 420
XD Milling Insert 421
LNMX Milling Insert 422
RPM Milling Insert 423
RO Milling Insert 423
RD/RP Milling Insert 425

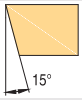
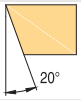
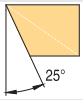
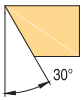
## Milling Insert Denomination System

| A | O | M | T |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

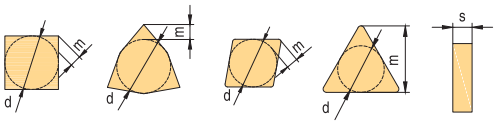
### 1- Shape/Code

| A | H | M | O | R |
|---|---|---|---|---|
| | | | | |
| 85° | 120° | 86° | 135° | 360° |
| **S** | **T** | **Z** | **X** | |
| | | | Special | |
| 90° | 60° | 86° | | |

### 2- Clearance Angle

| C | D | E | F |
|---|---|---|---|
| |  |  |  |
| 7° | 15° | 20° | 25° |
| **G** | **N** | **P** | **O** |
|  | | | Other clearance angle |
| 30° | 0° | 11° | |

### 3- Tolerance




| Class | Unit | In.Circle dimension d | Nose height m | Thickness s |
|---|---|---|---|---|
| **A** | mm | ± 0,025 | ± 0,005 | ± 0,025 |
| **C** | mm | ± 0,025 | ± 0,013 | ± 0,025 |
| **E** | mm | ± 0,025 | ± 0,025 | ± 0,025 |
| **F** | mm | ± 0,013 | ± 0,005 | ± 0,025 |
| **G** | mm | ± 0,025 | ± 0,025 | ± 0,13 |
| **H** | mm | ± 0,013 | ± 0,013 | ± 0,025 |
| **J** | mm | * | ± 0,005 | ± 0,025 |
| **K** | mm | * | ± 0,013 | ± 0,025 |
| **L** | mm | * | ± 0,025 | ± 0,025 |
| **M** | mm | * | * | ± 0,127 |
| **U** | mm | * | * | ± 0,127 |
| **N** | mm | * | * | ± 0,025 |

* For details refer to right and below tables

| Shape: C, E, H, M, O, P, S, T, R, W | | | | |
|---|---|---|---|---|
| IC | d | | m | |
| | J,K,L,M,N | U | M, N | U |
| 4.76 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 5.56 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 6 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 6.35 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 7.94 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 8 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 9.525 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 10 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 12 | ± 0,08 | ± 0,13 | ± 0,13 | ± 0,2 |
| 12.7 | ± 0,08 | ± 0,13 | ± 0,13 | ± 0,2 |
| 15.875 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 16 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 19.05 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 20 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 25 | ± 0,13 | ± 0,25 | ± 0,18 | ± 0,38 |
| 25.4 | ± 0,13 | ± 0,25 | ± 0,18 | ± 0,38 |
| 31.75 | ± 0,15 | ± 0,25 | ± 0,2 | ± 0,38 |
| 32 | ± 0,15 | ± 0,25 | ± 0,2 | ± 0,38 |

| M&N shape | D shape | | V shape | |
|---|---|---|---|---|
| IC | d | m | d | m |
| 5.56 | ± 0,05 | ± 0,11 | | |
| 6.35 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 7.94 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 9.525 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 12.7 | ± 0,08 | ± 0,15 | ± 0,08 | ± 0,2 |
| 15.875 | ± 0,10 | ± 0,18 | ± 0,10 | ± 0,27 |
| 19.05 | ± 0,10 | ± 0,18 | ± 0,10 | ± 0,27 |

### 4- Clamping Type

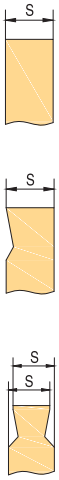
| A | B | C | F | G |
|---|---|---|---|---|
| | | | | |
| | 70°-90° | 70°-90° | | |
| **H** | **J** | **M** | **N** | **Q** |
| | | | | |
| 70°-90° | 70°-90° | | | 40°-60° |
| **R** | **T** | **U** | **W** | **Z** |
| | | | | Special |
| | 40°-60° | 40°-60° | 40°-60° | |

| 12 | 04 | 08 | E | R | - | MM4 |
|---|---|---|---|---|---|---|
| 5 | 6 | 7 | 8 | 9 | - | 10 |

## 5- Cutting Edge Length

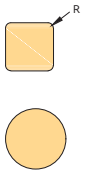
| In.Circle dimension (mm) | H | M | O | R | S | T | Z |
|---|---|---|---|---|---|---|---|
| 3.180 | | | | | | 05 | |
| 3.970 | | | | | | 06 | |
| 5.000 | | | | 05 | | | |
| 5.560 | | | | | | 09 | |
| 6.000 | | | | 06 | | | |
| 6.350 | | | | | | 11 | |
| 7.940 | | | | | | 13 | |
| 8.000 | | | | 08 | | | |
| 9.525 | | | | 09 | 09 | 16 | |
| 10.000 | | | | 10 | | | |
| 12.000 | | | | 12 | | | |
| 12.700 | | | 04 | 12 | 12 | 22 | |
| 15.875 | | | | 15 | 15 | 27 | |
| 16.000 | | | 06 | 16 | | | |
| 19.050 | | | | 19 | 19 | 33 | |
| 20.000 | | | | 20 | | | |
| 25.000 | | | | 25 | 25 | | |
| 25.400 | | | | 25 | | | |
| 31.750 | | | | 31 | | | |
| 32.000 | | | | 32 | | | |

## 6- Insert Thickness



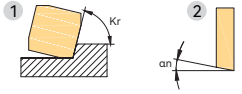

01=1.59mm
T1=1.98mm
02=2.38mm
T2=2.78mm
03=3.18mm
T3=3.97mm
04=4.76mm
05=5.56mm
06=6.35mm
07=7.94mm
09=9.52mm

## 7- Corner Radius and Wiper Edge




00 = sharp
01 = 0.1
02 = 0.2
04 = 0.4
08 = 0.8
12 = 1.2
16 = 1.6
20 = 2.0
24 = 2.4
28 = 2.8
32 = 3.2
40 = 4.0
48 = 4.8
56 = 5.6
64 = 6.4
X = others

Round insert:MO refers to metric dia. size



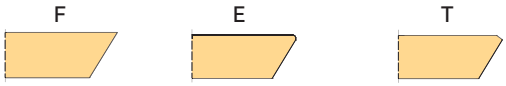

1 Approach angle (Entering angle) (Kr)

A = 45°
D = 60°
E = 75°
F = 85°
P = 90°
Z = Others

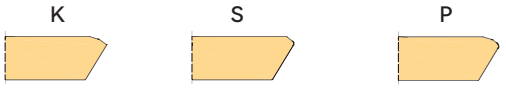
2 Clearance angle of wiper edge(n)

A = 3°
B = 5°
C = 7°
D = 15°
E = 20°
F = 25°
G = 30°
N = 0°
P = 11°
Z = Others

## 8- Edge Preparation

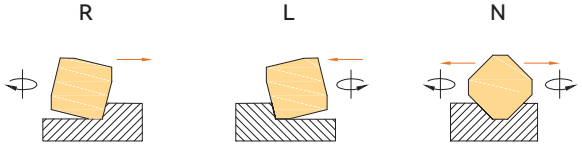



Sharp cutting edge | Honed cutting edge | Negative land




Double negative land | Negative land +honed | Double negative land +honed

## 9-Hand of Tool




Right hand | Left hand | Neutral

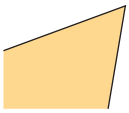
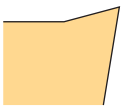
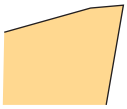
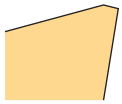
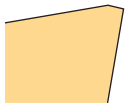
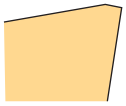
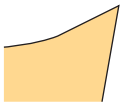
## 10- Geometry Refers to Geometry Introduction

## Geometry Application Guide

| Materials | | | | Milling geometry application | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FM2 | MM3 | MM4 | MR2 | MR6 | RR2 | HR2 |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | Suitable for machining aluminium alloy | Light cutting | General purpose | Medium machining | Roughing | Heavy roughing | Roughing |
| P | Unalloyed steel | <600 | <180 | - | ◐ | ● | ● | ● | - | - |
| | | <950 | <280 | - | ◐ | ● | ● | ● | - | - |
| | Alloyed steel | 700-950 | 200-280 | - | ◐ | ● | ● | ● | - | - |
| | | 950-1200 | 280-355 | - | ◐ | ● | ● | ● | - | - |
| | | 1200-1400 | 355-415 | - | ◐ | ● | ● | ● | - | - |
| M | Duplex stainless steel | 778 | 230 | - | ◐ | ● | ◐ | - | - | - |
| | Austenitic stainless steel | 675 | 200 | - | ◐ | ● | ◐ | - | - | - |
| | Precipitation-hardening stainless steel | 1013 | 300 | - | ◐ | ● | ◐ | - | - | - |
| K | Grey cast iron | 700 | 220 | - | - | ◐ | ● | ● | ● | ● |
| | Nodular cast iron | 880 | 260 | - | - | ◐ | ● | ● | ● | ● |
| | Malleable cast iron | 800 | 250 | - | - | ◐ | ● | ● | ● | ● |
| N | Aluminum | 260 | 75 | ● | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | ● | - | - | - | - | - | - |
| S | Fe-based alloy | 943 | 280 | - | ● | ◐ | ◐ | - | - | - |
| | Co-based alloy | 1076 | 320 | - | ● | ◐ | ◐ | - | - | - |
| | Ni-based alloy | 1177 | 350 | - | ● | ◐ | ◐ | - | - | - |
| | Ti-alloy | 1262 | 370 | - | ● | ◐ | ◐ | - | - | - |
| H | Hardened steel | - | 50-60HRC | - | - | ◐ | ● | - | - | - |
| | Chilled cast iron | - | 55HRC | - | - | ◐ | ● | - | - | - |

● 1st choice
◐ 2nd choice
- Inapplicable

## Milling Geometry Introduction

| Insert geometry | Edge shape | Application |
|---|---|---|
| FM2 |  | ▪ Low cutting force, for weak machining condition<br>▪ Sharp geometry<br>▪ For aluminium material machining |
| MM3 |  | ▪ Low cutting force, for weak machining condition<br>▪ Sharp geometry<br>▪ For steel, stainless-steel and heat resistant alloy machining |
| MM4 |  | ▪ For medium machining condition<br>▪ Universal geometry<br>▪ For machining most materials |
| MR2 |  | ▪ For medium or better machining condition<br>▪ Universal geometry<br>▪ For machining most materials |
| MR6 |  | ▪ For stable machining condition<br>▪ Roughing geometry<br>▪ For machining most materials |
| HR2 | | ▪ For stable machining condition<br>▪ Roughing geometry<br>▪ Mainly for cast iron machining |
| RR2 |  | ▪ For stable machining condition<br>▪ Heavy roughing geometry<br>▪ Mainly for cast iron and steel machining |
| IT |  | ▪ Sharp geometry, for specified product |
| DT | | ▪ Universal geometry, for specified product |

## Grade Application Guide

| Material List of Indexable Milling Inserts | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Group | Material classification | ISO | Coated | | | | | | | | | | | Uncoated |
| | | | PVD | | | | | | | CVD | | | | |
| P | unalloy steels / Alloyed steels | P01 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P05 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P10 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P15 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P20 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P25 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P30 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P35 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P40 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P45 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| | | P50 | AP251U | | AP351U | AP351M | AP403M | | | | | | AC251P | |
| M | Stainless steels | M01 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M05 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M10 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M15 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M20 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M25 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M30 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M35 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M40 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M45 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| | | M50 | AP251U | | AP351U | AP351M | AP403M | AP403S | | | | | | |
| K | Cast iron | K01 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K05 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K10 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K15 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K20 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K25 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K30 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K35 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K40 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K45 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| | | K50 | | | | | | | AP151H | AP251K | AC151K | AC301K | AC251P | |
| N | Aluminum/ Aluminum alloys | N01 | | | | | | | | | | | | AW100K |
| | | N05 | | | | | | | | | | | | AW100K |
| | | N10 | | | | | | | | | | | | AW100K |
| | | N15 | | | | | | | | | | | | AW100K |
| | | N20 | | | | | | | | | | | | AW100K |
| | | N25 | | | | | | | | | | | | AW100K |
| | | N30 | | | | | | | | | | | | AW100K |
| S | Heat resistant alloys | S01 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S05 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S10 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S15 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S20 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S25 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S30 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S35 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S40 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S45 | | | | AP351M | AP403M | AP403S | | | | | | |
| | | S50 | | | | AP351M | AP403M | AP403S | | | | | | |
| H | Hardened steels/ Chilled cast iron | H01 | | | | | | | AP151H | | | | | |
| | | H05 | | | | | | | AP151H | | | | | |
| | | H10 | | | | | | | AP151H | | | | | |
| | | H15 | | | | | | | AP151H | | | | | |
| | | H20 | | | | | | | AP151H | | | | | |
| | | H25 | | | | | | | AP151H | | | | | |
| | | H30 | | | | | | | AP151H | | | | | |

## Grade Application Guide

| Materials | | | | Milling grade application | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PVD coated | | | | | | | CVD coated | | | Uncoated |
| ISO | Material classification | Tensile strength ($N/mm^2$) | Hardness (HB) | AP251U | AP351U | AP351M | AP403M | AP251K | AP403S | AP151H | AC251P | AC151K | AC301K | AW100K |
| P | Unalloyed steel | <600 | <180 | ● | ● | ◐ | ◐ | - | - | - | ● | - | - | - |
| | | <950 | <280 | ● | ● | ◐ | ◐ | - | - | - | ● | - | - | - |
| | Alloyed steel | 700-950 | 200-280 | ● | ● | ◐ | ◐ | - | - | - | ● | - | - | - |
| | | 950-1200 | 280-355 | ● | ● | ◐ | ◐ | - | - | - | ● | - | - | - |
| | | 1200-1400 | 355-415 | ● | ● | ◐ | ◐ | - | - | - | ● | - | - | - |
| M | Duplex stainless steel | 778 | 230 | ◐ | ◐ | ● | ● | - | ◐ | - | - | - | - | - |
| | Austenitic stainless steel | 675 | 200 | ◐ | ◐ | ● | ● | - | ◐ | - | - | - | - | - |
| | Precipitation-hardening stainless steel | 1013 | 300 | ◐ | ◐ | ● | ● | - | ◐ | - | - | - | - | - |
| K | Grey cast iron | 700 | 220 | - | - | - | - | ● | - | ◐ | ◐ | ● | ● | - |
| | Nodular cast iron | 880 | 260 | - | - | - | - | ● | - | ◐ | ◐ | ● | ● | - |
| | Malleable cast iron | 800 | 250 | - | - | - | - | ● | - | ◐ | ◐ | ● | ● | - |
| N | Aluminum | 260 | 75 | - | - | - | - | - | - | - | - | - | - | ● |
| | Aluminum alloy | 447 | 130 | - | - | - | - | - | - | - | - | - | - | ● |
| S | Fe-based alloy | 943 | 280 | - | ◐ | ◐ | ◐ | - | ● | - | - | - | - | - |
| | Co-based alloy | 1076 | 320 | - | ◐ | ◐ | ◐ | - | ● | - | - | - | - | - |
| | Ni-based alloy | 1177 | 350 | - | ◐ | ◐ | ◐ | - | ● | - | - | - | - | - |
| | Ti-alloy | 1262 | 370 | - | ◐ | ◐ | ◐ | - | ● | - | - | - | - | ◐ |
| H | Hardened steel | - | 50-60HRC | - | - | - | - | - | - | ● | - | - | - | - |
| | Chilled cast iron | - | 55HRC | - | - | - | - | - | - | ● | - | - | - | - |

● 1st choice
◐ 2nd choice
- Inapplicable

## Grade for Milling

### P Steel, alloyed steel, unalloyed steel

#### Basic grade

**AP251U P25(P15-P35)**

PVD-coated grade, suitable for most applications. First choice for steel machining. It is recommended to be used in rough to finish machining of steel under stable working conditions, good for dry and wet machining with small cutting width, complex tool path and sticky materials.

**AC251P P35(P25-P40)**

CVD coated grade is suitable for big cutting depth, medium to high speed milling of steel under bad machining conditions.

#### Supplemental grade

**AP351M P35(P25-P45)**

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is requested.

**AP351U P35(P30-P45)**

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is requested.

### M Stainless steel, austenite stainless steel, martensite stainless steel

#### Basic grade

**AP351M M35(M25-M45)**

PVD coated grade is used for milling stainless steel and steel at medium and low speed under bad machining conditions.

**AP403M M35(M35-M50)**

Ultra-thick PVD coated grade is the first choice for stainless steel milling. It is suitable for rough milling of stainless steel under bad machining conditions.

#### Supplemental grade

**AP251U M25(M15-M35)**

PVD coated grade is used in rough and finish milling of stainless steel under very stable machining conditions.

**AP403S M45(M35-M50)**

PVD coated grade, the substrate has both toughness and red hardness characteristics, and is suitable for rough milling of stainless steel under bad machining conditions. Milling at low cutting speed can get longer tool life.

**AP351U M35(M30-M45)**

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is requested.

### K Cast iron, grey cast iron, nodular cast iron

#### Basic grade

**AC301K K25(K10-K35)**

CVD coated grade, suitable for semi-finish milling and rough milling of grey cast iron at medium and high cutting speed, Recommended for dry cutting conditions, can achieve longer tool life.

**AC151K K25(K10-K35)**

CVD coated grade, the combination of a high wear-resistant substrate and a high bonding strength CVD coating provides excellent performance in semi-finish and rough milling of cast iron materials.

**AP251K K25(K15-K40)**

PVD coated grade is suitable for semi-finish and rough milling of grey cast iron and nodular cast iron at medium and low cutting speed, and has good tool life under dry and wet conditions.

#### Supplemental grade

**AP151H K15(K10-K20)**

PVD coated grade is suitable for finish milling of grey cast iron and nodular cast iron, which can get constant surface quality and longer tool life.

**AC251P K35(K25-K40)**

PVD coated grade recommended for high speed dry cutting of cast iron.

## N Non-ferrous metals

### Basic grade

**AW100K N15 (N10-N20)**

Uncoated grade, combined with sharp cutting edge, used in aluminum alloy milling.

## S Heat resistant alloy

### Basic grade

**AP403S S45(S35-S50)**

PVD coated grade, the substrate has both toughness and red hardness characteristics, and is the first choice for titanium alloy machining, as well as the machining of heat resistant alloy under weak rigidity. It is applicable to the milling at low cutting speed and can get longer tool life.

### Supplemental grade

**AP351M S35(S25-S45)**

PVD coated grade is suitable for semi-finishing to light rough machining of heat resistant alloy and titanium alloys.

**AP403M S45(S35-S50)**

The ultra-thick PVD coated grade is suitable for low-speed milling of heat resistant alloy and titanium alloys when high toughness is requested, especially in case of large cutting width.

## H Hard material, hardened steel

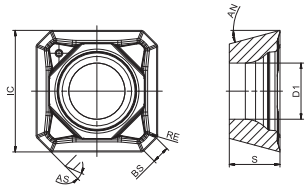
### Basic grade

**AP151H H15(H10-H20)**

PVD coated grade, suitable for milling hardened steel, can be used in rough and finish milling, meeting the needs of most occasions.

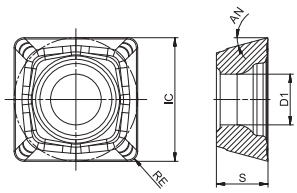
## SD..09T3..

Positive square milling inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 09T304EN-MM3** | 9.525 | 3.97 | 0.4 | - | 4.4 | 15° | ● | ● | ● | | | ● | ● | | | |
| | **SDMT 09T308EN-MM3** | 9.525 | 3.97 | 0.8 | - | 4.4 | 15° | ● | ● | | | | | ● | ● | | |
| | **SDGT 09T3AEEN-MM4** | 9.252 | 3.97 | 0.3 | 1.4 | 4.4 | 15° | ○ | ○ | | | | | | | | |
| | **SDGT 09T3PDER-MR6** | 9.516 | 3.97 | 0.8 | 1.2 | 4.4 | 15° | ○ | ● | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order

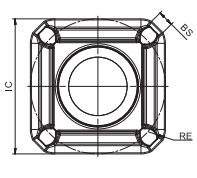


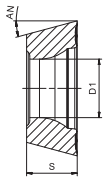

| Insert shape | Product code | IC | S | RE | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SDMT 09T308N-MM4** | 9.525 | 3.97 | 0.8 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MM4** | 9.520 | 3.97 | 2.0 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | ● |
| | **SDMT 09T308N-MR2** | 9.525 | 3.97 | 0.8 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 09T320N-MR2** | 9.520 | 3.97 | 2.0 | 3.9 | 15° | ● | | | ● | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

## SD..1204..

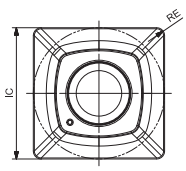
Positive square milling inserts

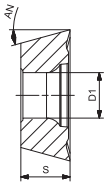



| Insert shape | Product code | Machining conditions<br>Dimension (mm)<br>IC | S | RE | BS | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions<br>P<br>AP251U | AP351U | AC251P | M<br>AP351M | AP403M | K<br>AP251K | AC301K | AC151K | N<br>AW100K | S<br>AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SDMT 120408EN-MM4** | 12.7 | 4.76 | 0.8 | - | 5.5 | 15° | ● | ● | ● | | ● | ● | ● | | | |
| | **SDMT 120412EN-MM3** | 12.7 | 4.76 | 1.2 | - | 5.5 | 15° | ● | ● | ○ | | | | ● | | | |
| | **SDKT 1204AEEN-MR2** | 12.7 | 4.76 | 2.3 | 1.5 | 5.5 | 15° | ○ | | ● | | | ● | | | | |

● : Standard stock ○ : Made-to-Order



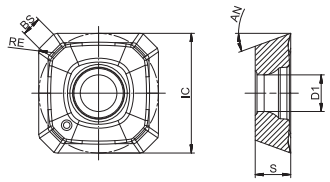




| Insert shape | Product code | Machining conditions<br>Dimension (mm)<br>IC | S | RE | D1 | AN | ● Good Conditions ◐ General Conditions ✱ Bad Conditions<br>P<br>AP251U | AP351U | AC251P | M<br>AP351M | AP403M | K<br>AP251K | AC301K | AC151K | N<br>AW100K | S<br>AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SDMT 120408N-MM4** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | | ● | ● | ● | | ● | | |
| | **SDMT 120420N-MM4** | 12.7 | 4.76 | 2.0 | 4.4 | 15.3° | ○ | | | | | ● | | | | |
| | **SDMT 120425N-MM4** | 12.7 | 4.76 | 2.5 | 4.4 | 15.3° | | | | ○ | ● | | | | | ○ |
| | **SDMT 120430N-MM4** | 12.7 | 4.76 | 3.0 | 4.4 | 15.3° | | ○ | | | | ● | | | | |
| | **SDMT 120408N-MR2** | 12.7 | 4.76 | 0.8 | 4.4 | 15.3° | ● | | ● | ● | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

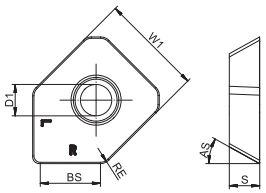
## SE..12T3..

Positive square short wiper milling cutter inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC151K | AW100K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | P | | | M | | K | | N | S | H |
| | **SEHT 12T3AEEN-FM2** | 13.4 | 3.97 | 1.5 | 2.3 | 4.1 | 20° | | | | | | | | ● | | |
| | **SEMT 12T3AEEN-MM3** | 13.4 | 3.97 | 1.5 | 2.0 | 4.1 | 20° | ● | | | ● | ● | ● | ● | | ● | |
| | **SEGT 12T3AEEN-MM4** | 13.4 | 3.97 | 1.5 | 2.1 | 4.1 | 20° | ● | | | | | ● | | | | ● |
| | **SEMT 12T3AEEN-MM4** | 13.4 | 3.97 | 1.5 | 2.0 | 4.1 | 20° | ● | | ● | ● | ● | ● | ● | | | |
| | **SEMT 12T3AEEN-MR6** | 13.4 | 3.97 | 1.5 | 2.0 | 4.1 | 20° | | | | | ● | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

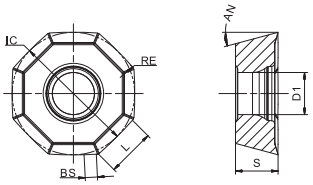



| Insert shape | Product code | W1 | S | RE | BS | D1 | AS | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC151K | AW100K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | P | | | M | | K | | N | S | H |
| | **SEHT 12T3AEEN-W** | 13.4 | 3.97 | 1.5 | 7.8 | 4.1 | 29° | ● | | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order

## OD..0605..

Positive octagonal milling inserts

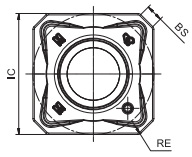


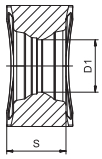

| Insert shape | Product code | L | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | **ODET 0605APFN-FM2** | 6.3 | 16 | 5.56 | 0.8 | 1.6 | 5.5 | 15° | | | | | | | | | ● | |
| | **ODMT 060508EN-MM3** | 6.3 | 16 | 5.56 | 0.8 | - | 5.5 | 15° | ● | ● | ● | | | ● | ● | | | |
| | **ODMT 060512EN-MM3** | 6.1 | 16 | 5.56 | 1.2 | - | 5.5 | 15° | ● | | | | ○ | | | | | ● |
| | **ODHT 0605APEN-MM3** | 6.3 | 16 | 5.56 | 0.8 | 1.6 | 5.5 | 15° | ● | ● | ● | ● | | ● | ● | ● | | ● |
| | **ODEW 0605APSR-HR2** | 6.5 | 16 | 5.56 | - | 1.6 | 5.5 | 15° | | | | | | ● | ● | | | |
| | **ODMW 060512EN-HR2** | 6.1 | 16 | 5.56 | 1.2 | - | 5.5 | 15° | | | | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## SN..1206ANN..

Negative short wiper milling inserts (applicable to AFM45-SN12 milling cutter)



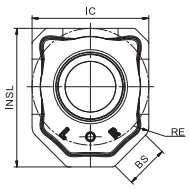



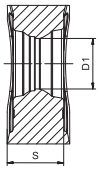

| Insert shape | Product code | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | Dimension (mm) | | | | | P | | | N | S |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **SNHX 1206ANN-FM2** | 12.7 | 6.24 | 0.5 | 1.7 | 5.5 | | | | | | | | | ● | |
| | **SNGX 1206ANN-MM3** | 12.7 | 6.24 | 0.4 | 1.8 | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 1206ANN-MM3** | 12.7 | 6.25 | 0.4 | 1.8 | 5.5 | ● | ● | ○ | | | ● | ● | | | |
| | **SNGX 1206ANN-MM4** | 12.7 | 6.22 | 0.4 | 1.8 | 5.5 | ● | | ● | | ● | ● | | ● | | |
| | **SNMX 1206ANN-MM4** | 12.7 | 6.22 | 0.4 | 1.8 | 5.5 | ● | ● | ● | | ● | ● | ● | ● | | |
| | **SNGX 1206ANN-MR6** | 12.7 | 6.25 | 0.4 | 1.8 | 5.5 | ● | ● | ○ | | | ● | ● | ● | | |
| | **SNMX 1206ANN-MR6** | 12.7 | 6.25 | 0.4 | 1.8 | 5.5 | ○ | ● | ○ | | | ● | ● | ● | | |
| | **SNGX 1206ANN-RR2** | 12.7 | 6.29 | 0.5 | 1.7 | 5.5 | ○ | ● | ○ | | | ● | ● | ○ | | |

● : Standard stock ○ : Made-to-Order

## SNHX 1206ANN..

Negative long wiper milling inserts (applicable to AFM45-SN12 milling cutter)



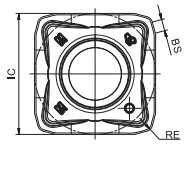



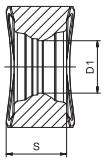

| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | | Dimension (mm) | | | | | P | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP405S |
| | **SNHX 1206ANN-W** | 15.1 | 12.7 | 6.15 | 1.2 | 4.7 | 5.5 | ● | | | | | ● | ● | ● | | |

● : Standard stock ○ : Made-to-Order

## SN..1206ENN..

Negative short wiper milling inserts (applicable to AFM75-SN12 milling cutter)



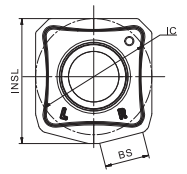



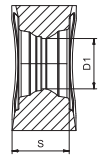

| Insert shape | Product code | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **SNGX 1206ENN-MM3** | 12.7 | 6.36 | 0.8 | 1.2 | 5.5 | ● | ● | ○ | | | ● | ● | ○ | | |
| | **SNGX 1206ENN-MM4** | 12.7 | 6.34 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | | ● | ● | | | |
| | **SNMX 1206ENN-MM4** | 12.7 | 6.34 | 0.8 | 1.2 | 5.5 | | | ○ | | ● | ● | | | | |
| | **SNGX 1206ENN-MR6** | 12.7 | 6.32 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## SNHX 1206ENN..

Negative long wiper milling inserts (applicable to AFM75-SN12 milling cutter)



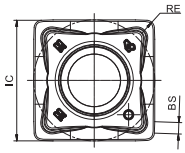



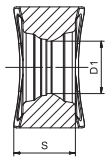

| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **SNHX 1206ENN-W** | 13.66 | 12.7 | 6.24 | 0.6 | 4.8 | 5.5 | ● | | ● | | | | | ● | | |

● : Standard stock ○ : Made-to-Order

## SN..1206ZNN..

Negative short wiper milling inserts (applicable to AFM88-SN12 milling cutter)



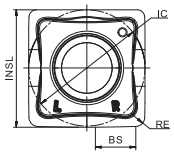



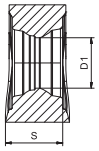

| Insert shape | Product code | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | | | | | | | ● AP251U | ◐ AP351U | ◐ AC251P | ◐ AP351M | ✱ AP403M | ● AP251K | ● AC301K | ● AC151K | ● AW100K | ✱ AP403S |
| | **SNHX 1206ZNN-FM2** | 12.7 | 6.56 | 0.8 | 1.2 | 5.5 | | | | | | | | | ● | |
| | **SNGX 1206ZNN-MM3** | 12.7 | 6.49 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNGX 1206ZNN-MM4** | 12.7 | 6.46 | 0.8 | 1.2 | 5.5 | ● | ● | ● | | ● | ● | ● | ● | | ● |
| | **SNMX 1206ZNN-MM4** | 12.7 | 6.46 | 0.8 | 1.2 | 5.5 | ● | ○ | ● | | ● | ● | ○ | ○ | | |
| | **SNGX 1206ZNN-MR6** | 12.7 | 6.44 | 0.8 | 1.2 | 5.5 | ● | ● | ○ | | ● | ● | ● | ● | | |

● : Standard stock ○ : Made-to-Order

## SNHX 1206ZNN..

Negative long wiper milling inserts (applicable to AFM88-SN12 milling cutter)



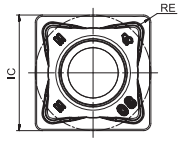




| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | ● AP251U | ◐ AP351U | ◐ AC251P | ◐ AP351M | ✱ AP403M | ● AP251K | ● AC301K | ● AC151K | ● AW100K | ✱ AP403S |
| | **SNHX 1206ZNN-W** | 12.8 | 12.7 | 6.24 | 0.8 | 4.4 | 5.5 | ● | | ● | | | | ● | ● | | |

● : Standard stock ○ : Made-to-Order

## SN..1206..

Negative milling cutter with corner radius

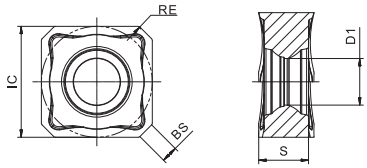



| Insert shape | Product code | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **SNMX 120612-MM3** | 12.7 | 6.40 | 1.2 | - | 5.5 | ○ | ● | ○ | | ● | ● | ● | | | |
| | **SNGX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNGX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | | | | | | | | | |
| | **SNMX 120608-MM4** | 12.7 | 6.43 | 0.8 | - | 5.5 | ● | ● | | | | ● | ● | ● | | |
| | **SNMX 120612-MM4** | 12.7 | 6.38 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120620-MM4** | 12.7 | 6.28 | 2.0 | - | 5.5 | | ● | ○ | | | ● | ● | ● | | |
| | **SNMX 120630-MM4** | 12.7 | 6.14 | 3.0 | - | 5.5 | | | | | | ● | | | | |
| | **SNMX 120612-MR6** | 12.7 | 6.41 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **SNMX 120612-RR2** | 12.7 | 6.44 | 1.2 | - | 5.5 | ● | ● | ○ | | | ● | ● | | | |
| | **SNMX 120620-RR2** | 12.7 | 6.34 | 2.0 | - | 5.5 | | ● | ● | | | ● | ● | | | |
| | **SNMX 120612R-MM4** | 12.7 | 6.85 | 1.2 | - | 5.5 | ● | ● | ○ | | ● | ● | ● | | | |

● : Standard stock ○ : Made-to-Order

## SN..1909ANN..

Negative short wiper milling inserts (applicable to AFM45-SN19 milling cutter)

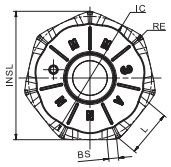


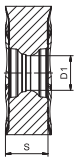

| Insert shape | Product code | IC | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **SNGX 1909ANN-MM3** | 19.05 | 8.58 | 0.4 | 2.8 | 8 | | ● | | | | | | | | |
| | **SNGX 1909ANN-MR6** | 19.05 | 8.50 | 0.8 | 2.7 | 8 | | ● | | | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## XN..0705ANN..

Negative heptagonal short wiper milling inserts



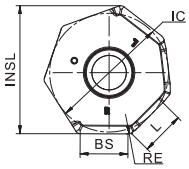



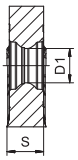

| Insert shape | Product code | Machining conditions: Dimension (mm) L | INSL | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **XNGU 0705ANN-MM3** | 5.5 | 15.09 | 14.5 | 5.0 | 0.8 | 1.1 | 4.07 | ● | ● | | | | ● | ● | ● | | |
| | **XNGU 0705ANN-MM4** | 5.5 | 15.09 | 14.5 | 5.0 | 0.8 | 1.1 | 4.07 | ● | | | ● | ● | | ● | | | |
| | **XNMU 0705ANN-MM4** | 5.5 | 15.09 | 14.5 | 5.0 | 0.8 | 1.1 | 4.07 | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | **XNMU 0705ANN-MR6** | 5.5 | 15.09 | 14.5 | 5.05 | 0.8 | 1.1 | 4.07 | ● | ● | | | | ● | ● | | | |
| | **XNMU 0705ANN-MM4N** | 5.5 | 15.09 | 14.5 | 5.3 | 0.8 | 1.0 | 4.07 | ● | | ● | | ● | ● | | | | |

● : Standard stock ○ : Made-to-Order

## XN..0705ANN..W

Negative heptagonal long wiper milling inserts



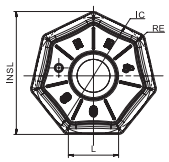



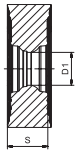

| Insert shape | Product code | Machining conditions: Dimension (mm) L | INSL | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: P AP251U | P AP351U | P AC251P | M AP351M | M AP403M | K AP251K | K AC301K | K AC151K | N AW100K | S AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **XNGX 0705ANN-W** | 5.4 | 15.09 | 14.5 | 5 | 0.8 | 5.6 | 4.07 | ● | | | | | ● | ● | ● | | |

● : Standard stock ○ : Made-to-Order

## XN..0705..

Negative heptagonal milling inserts with corner radius



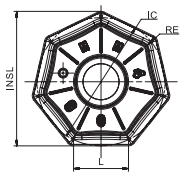



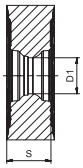

| Insert shape | Product code | L | INSL | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions, ⬢ General Conditions, ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ⬢ | ⬢ | ⬢ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | | | Dimension (mm) | P | | M | | K | | | N | S |
| | | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **XNMU 070508-MM4** | 6.6 | 15.21 | 14.5 | 5.0 | 0.8 | - | 4.07 | ● | ● | ● | | ● | ● | ● | ● | | |
| | **XNMU 070508-MM4N** | 6.6 | 15.21 | 14.5 | 5.3 | 0.8 | - | 4.07 | | | | | | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

## XN..0906..

Negative heptagonal milling inserts with corner radius



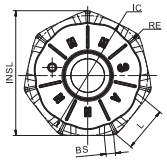



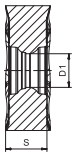

| Insert shape | Product code | L | INSL | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions, ⬢ General Conditions, ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ⬢ | ⬢ | ⬢ | ✱ | ● | ● | ● | ● | ✱ |
| | | | | | | | | | Dimension (mm) | P | | M | | K | | | N | S |
| | | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **XNMU 090612-MM4** | 8.6 | 19.97 | 19.0 | 5.875 | 1.2 | - | 5.5 | ● | ● | ● | | | ● | ● | ● | | |
| | **XNMU 090612-MM4N** | 8.6 | 19.97 | 19.0 | 5.875 | 1.2 | - | 5.5 | | | | | | ● | | | | |

● : Standard stock ○ : Made-to-Order

## XN..0906ANN..

Negative heptagonal short wiper milling inserts



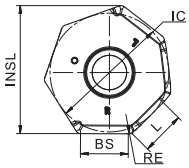



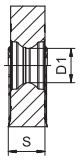

| Insert shape | Product code | L | INSL | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **XNGU 0906ANN-MM3** | 7.3 | 19.86 | 19.0 | 5.875 | 0.8 | 1.4 | 5.5 | | ● | | | | | ● | | | |
| | **XNGU 0906ANN-MM4** | 7.3 | 19.86 | 19.0 | 5.875 | 0.8 | 1.4 | 5.5 | ○ | ● | ● | | | ● | ● | ● | | |
| | **XNMU 0906ANN-MR6** | 7.3 | 19.86 | 19.0 | 5.927 | 0.8 | 1.4 | 5.5 | ● | | ● | | | ● | ● | ● | | |
| | **XNMF 0906ANN-MR6** | 7.3 | 19.86 | 19.0 | 5.927 | 0.8 | 1.4 | 3.0 | | | | | | ● | ● | ● | | |

● : Standard stock ○ : Made-to-Order

## XN..0906ANN..W

Negative heptagonal long wiper milling inserts



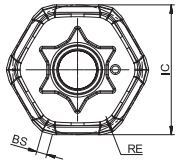



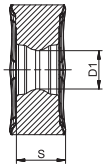

| Insert shape | Product code | L | INSL | IC | S | RE | BS | D1 | Machining conditions: ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **XNGX 0906ANN-W** | 7.2 | 19.86 | 19.0 | 5.88 | 1.0 | 7.6 | 5.5 | ● | | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order

## HN..0906..

Negative hexagonal milling inserts



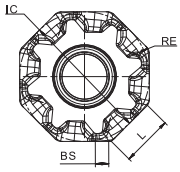



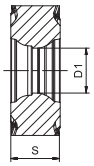

| Insert shape | Product code | Machining conditions: Dimension (mm) IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | P | | | M | | | K | | | N | S |
| | **HNGX 0906ANN-MR6** | 16.5 | 6.35 | 1.0 | 1.1 | 4.86 | ● | | ● | ○ | ● | ● | | ● | | |
| | **HNMX 0906ANN-MM4** | 16.5 | 6.35 | 1.0 | 1.1 | 4.86 | ● | | ● | ○ | ● | ● | | ● | | |
| | **HNMX 090612-MM4** | 16.5 | 6.35 | 1.2 | - | 4.86 | ● | | ● | ○ | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

## ON..0504..

Negative octagonal milling inserts



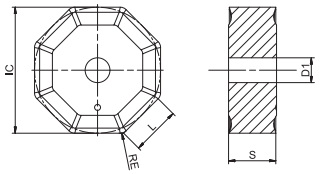




| Insert shape | Product code | Machining conditions: Dimension (mm) L | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions: AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | P | | | M | | | K | | | N | S |
| | **ONHU 050408-MM3** | 4.9 | 12.7 | 4.76 | 0.8 | - | 4.4 | ● | | | | | | | | | |
| | **ONMU 050408-MM4** | 4.9 | 12.7 | 4.76 | 0.8 | - | 4.4 | ● | ● | | | | ● | ● | ● | | |
| | **ONHU 0504ZNR-MM3** | 5.0 | 12.7 | 4.76 | 0.8 | 1.4 | 4.4 | ○ | | | ● | | | | | | |

● : Standard stock ○ : Made-to-Order

## ON..0504..

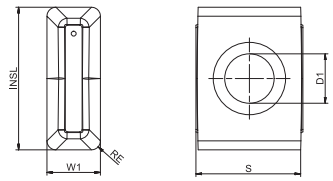
Cast iron finish milling cutter roughing inserts




| Insert shape | Product code | L | INSL | IC | S | RE | D1 | AP251U | AP351U | AP251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **ONHF 050408-MM3** | 4.9 | - | 12.7 | 4.76 | 0.8 | 2.5 | | | | | | | | | | ● |

## LN..1204..

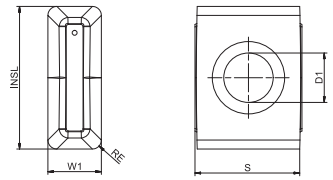
Cast iron finish milling cutter finishing inserts




| Insert shape | Product code | W1 | INSL | IC | S | RE | D1 | AP251U | AP351U | AP251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **LNHQ 120408FN-W** | 4.76 | 12.7 | - | 9.4 | 0.8 | 4.4 | | | | | | | | | | ● |

## LN..1504..

Cast iron finish milling cutter finishing inserts

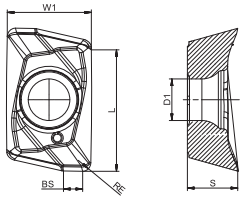



| Insert shape | Product code | W1 | INSL | IC | S | RE | D1 | AP251U | AP351U | AP251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **LNHQ 150416FN-W** | 4.76 | 15.875 | - | 9.25 | 1.6 | 4.4 | | | | | | | | | | ● |

● : Standard stock ○ : Made-to-Order

## AO..0602..

Positive square shoulder milling cutter inserts

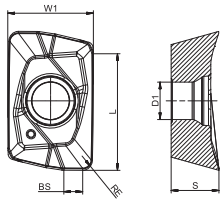



| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ✱ | ● | |
| | | | | | | | | | Dimension (mm) | | | | | | | | | | |
| | | | | | | | | | P | | | M | | K | | | S | H | |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H | |
| | **AOMT 060204ER-MM3** | 5.8 | 4.1 | 2.45 | 0.4 | 0.9 | 2.0 | 15° | ● | | | ● | ● | | | | ● | | |
| | **AOMT 060208ER-MM3** | 5.8 | 4.1 | 2.45 | 0.8 | 0.5 | 2.0 | 15° | ● | | | ● | ● | | | | ● | | |

● : Standard stock ○ : Made-to-Order

## AO..10T3..

Positive square shoulder milling cutter inserts

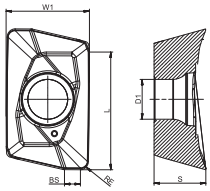



| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ✱ | ● | |
| | | | | | | | | | Dimension (mm) | | | | | | | | | | |
| | | | | | | | | | P | | | M | | K | | | S | H | |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H | |
| | **AOMT 10T308ER-MM4** | 9.3 | 6.85 | 3.83 | 0.8 | 1.5 | 3.0 | 15° | ● | | | ● | | | | | ● | ● | |
| | **AOMT 10T316ER-MM4** | 9.3 | 6.85 | 3.83 | 1.6 | 1.2 | 3.0 | 15° | | | | ● | ● | | | | ● | | |
| | **AOMT 10T331ER-MM4** | 9.4 | 6.85 | 3.83 | 3.1 | - | 3.0 | 15° | | ○ | | | | | | | ● | | |

● : Standard stock ○ : Made-to-Order

## AO..1204..

Positive square shoulder milling cutter inserts

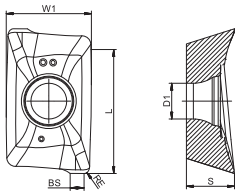


| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Machining conditions | | | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ● |
| Dimension (mm) | | | | | | | | | P | | | M | | K | | | N | S |
| | **AOHT 120408ER-FM2** | 11.3 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | | | | | | | | | ● | |
| | **AOHT 120404ER-MM3** | 11.3 | 8.15 | 5.07 | 0.4 | 1.9 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOHT 120408ER-MM3** | 11.3 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120408ER-MM3** | 11.3 | 8.15 | 5.07 | 0.8 | 1.4 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120404ER-MM4** | 11.5 | 8.15 | 5.07 | 0.4 | 1.9 | 3.9 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **AOMT 120408ER-MM4** | 11.5 | 8.15 | 5.07 | 0.8 | 1.5 | 3.9 | 15° | ● | ● | | ● | ● | ● | | | | ● |
| | **AOMT 120412ER-MM4** | 11.5 | 8.15 | 5.07 | 1.2 | 1.2 | 3.9 | 15° | | | | ● | ● | | | | | ● |
| | **AOMT 120416ER-MM4** | 11.3 | 8.15 | 5.07 | 1.6 | 1.2 | 3.9 | 15° | | | | ● | ● | | | | | ● |
| | **AOMT 120420ER-MM4** | 11.2 | 8.15 | 5.07 | 2.0 | 1.0 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120424ER-MM4** | 11.0 | 8.15 | 5.07 | 2.4 | 0.9 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120431ER-MM4** | 10.9 | 8.15 | 5.07 | 3.1 | 0.6 | 3.9 | 15° | ● | | | ● | ● | | | | | ● |
| | **AOMT 120440ER-MM4** | 10.6 | 8.15 | 5.07 | 4.0 | 0.8 | 3.9 | 15° | | | | ● | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

## AP..1003..

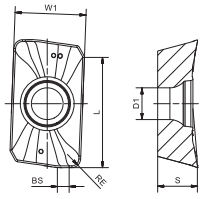
Positive square shoulder milling cutter inserts



| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Machining conditions | | | | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| Dimension (mm) | | | | | | | | | P | | | M | | K | | | S | H |
| | **APKT 1003PDER-IT** | 10.8 | 6.66 | 3.8 | 0.8 | 1.1 | 2.8 | 11° | ● | ● | | | | | | | ● | |

● : Standard stock ○ : Made-to-Order

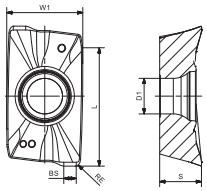
## AP..1135..
Positive square shoulder milling cutter inserts




| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⇔ General Conditions ✱ Bad Conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ⇔ | ⇔ | ⇔ | ✱ | ● | ● | ● | ● | ● | |
| | | | | | | | | | Dimension (mm) | | | | | P | | | M | | K | | | N | H |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H | |
| | **APMT 1135PDER** | 9.7 | 6.26 | 3.5 | 0.8 | 1.2 | 2.8 | 11° | ● | ● | | ● | | ● | | | | ● | |
| | **APMT 113508PDER** | 9.7 | 6.17 | 3.5 | 0.8 | 0.8 | 2.9 | 11° | ● | ● | | | | | | | | | |

● : Standard stock ○ : Made-to-Order

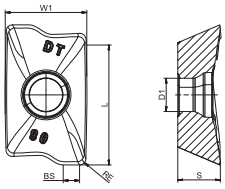
## AP..1604..
Positive square shoulder milling cutter inserts




| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⇔ General Conditions ✱ Bad Conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ⇔ | ⇔ | ⇔ | ✱ | ● | ● | ● | ● | ● | |
| | | | | | | | | | Dimension (mm) | | | | | P | | | M | | K | | | N | H |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H | |
| | **APMT 1604PDER** | 14.7 | 9.37 | 5.17 | 0.8 | 1.5 | 4.4 | 11° | ● | ● | ● | ● | | ● | | | | ● | |
| | **APHT 1604PDER -FM2** | 14.7 | 9.35 | 5.17 | 0.8 | 1.4 | 4.4 | 11° | | | | | | | | | ● | | |

● : Standard stock ○ : Made-to-Order

## AP..1705..
Positive square shoulder milling cutter inserts

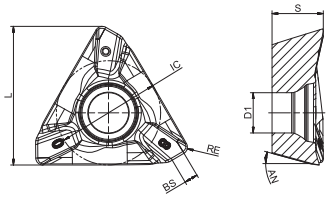



| Insert shape | Product code | L | W1 | S | RE | BS | D1 | AN | Machining conditions: ● Good Conditions ⇔ General Conditions ✱ Bad Conditions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ⇔ | ⇔ | ⇔ | ✱ | ● | ● | ● | ● | ● | |
| | | | | | | | | | Dimension (mm) | | | | | P | | | M | | K | | | N | H |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H | |
| | **APKT 1705PER-DT** | 16.5 | 10.76 | 5.63 | 0.8 | 2.2 | 4.4 | 11° | ● | ● | ○ | | ● | ● | | | | | |
| | **APKT 170516R-DT** | 16.8 | 10.74 | 5.63 | 1.6 | 1.7 | 4.4 | 11° | ● | | | | | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## TD..1505..

Positive square shoulder milling cutter inserts

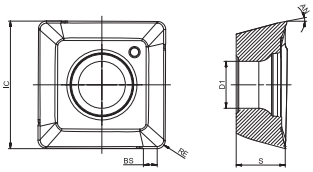



| Insert shape | Product code | L | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | | ● Good Conditions ⇹ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | | ● | ⇹ | ⇹ | ⇹ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | | P | | | M | | K | | | N | S |
| | **TDHT 150508R-FM2** | 15.4 | 11.4 | 5.56 | 0.8 | 1.6 | 4.4 | 15° | | | | | | | | | ● | |
| | **TDMT 150508R-MM3** | 15.1 | 11.4 | 5.56 | 0.8 | 1.5 | 4.4 | 15° | ● | | | ● | ● | | | | | |
| | **TDHT 150508R-MM3** | 15.1 | 11.4 | 5.56 | 0.8 | 1.5 | 4.4 | 15° | ● | | | ● | ● | ● | | | | ● |
| | **TDMT 150508R-MM4** | 15.1 | 11.4 | 5.6 | 0.8 | 1.5 | 4.4 | 15° | ● | | ● | ● | ● | ● | ● | | | |
| | **TDHT 150508R-MM4** | 15.1 | 11.4 | 5.6 | 0.8 | 1.5 | 4.4 | 15° | ● | ● | | | ● | ● | | | | |
| | **TDMT 150512R-MM4** | 15.0 | 11.4 | 5.6 | 1.2 | 1.0 | 4.4 | 15° | ● | | | ● | ● | ● | ● | | | |
| | **TDMT 150516R-MM4** | 14.9 | 11.4 | 5.6 | 1.6 | 0.9 | 4.4 | 15° | ● | | | ● | ● | ● | ● | | | |
| | **TDMT 150520R-MM4** | 14.7 | 11.4 | 5.6 | 2.0 | 0.7 | 4.4 | 15° | | | | | ● | | | | | |
| | **TDMT 150524R-MM4** | 14.6 | 11.4 | 5.6 | 2.4 | 0.6 | 4.4 | 15° | | | | | ● | | | | | |
| | **TDMT 150531R-MM4** | 14.1 | 11.4 | 5.56 | 3.1 | 0.4 | 4.4 | 15° | | | | | ● | | | | | |
| | **TDMT 150540R-MM4** | 13.4 | 11.4 | 5.56 | 4.0 | 0.4 | 4.4 | 15° | | | | | ● | | | | | |

● : Standard stock ○ : Made-to-Order

## SO..1204..

Positive square shoulder milling cutter inserts

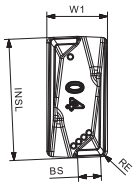


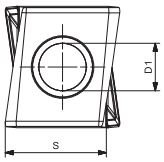

| Insert shape | Product code | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ⇹ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ⇹ | ⇹ | ⇹ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **SOMT 120408PDER-MM4** | 12.46 | 4.8 | 0.8 | 1.3 | 4.6 | 15° | ● | | ● | ● | ● | ● | | ● | ● | |

● : Standard stock ○ : Made-to-Order

## LN..0904..

Negative square shoulder milling cutter inserts



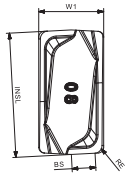

| Machining conditions | ● Good Conditions ◐ General Conditions ✱ Bad Conditions |
|---|---|

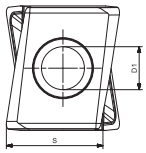
| Insert shape | Product code | INSL | W1 | S | RE | BS | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **LNHU 090404ER-FM2** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | | | | | | | | | ● | |
| | **LNHU 090404ER-MM3** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | | ● | | | ● | | | | | |
| | **LNHU 090404ER-MM4** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | ● | | | | ● | ● | | | | |
| | **LNHU 090408ER-MM4** | 9 | 4.5 | 7.5 | 0.8 | 1.4 | 3.5 | ● | | | ● | ● | ● | | | | |
| | **LNHU 090404ER-MR2** | 9 | 4.5 | 7.5 | 0.4 | 1.7 | 3.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 090408ER-MR2** | 9 | 4.5 | 7.45 | 0.8 | 1.4 | 3.5 | ● | | ● | | ● | ● | ● | ● | | |
| | **LNHU 090412ER-MR2** | 9 | 4.5 | 7.4 | 1.2 | 1.0 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 090416ER-MR2** | 9 | 4.5 | 7.35 | 1.6 | 0.65 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 090420ER-MR2** | 9 | 4.5 | 7.3 | 2.0 | 0.2 | 3.5 | ● | | | | ● | | ● | | | |
| | **LNHU 0904PDER-W** | 9 | 4.5 | 7.48 | 0.4 | 3.6 | 3.5 | ● | | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order

## LN..1306..

Negative square shoulder milling cutter inserts



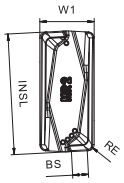



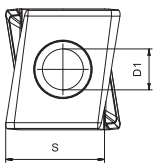

| Insert shape | Product code | INSL | W1 | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **LNHU 130608ER-FM2** | 13 | 6.8 | 10.1 | 0.8 | 2.5 | 4.5 | | | | | | | | | ● | |
| | **LNHU 130608ER-MM3** | 13 | 6.8 | 10.1 | 0.8 | 2.5 | 4.5 | | | | | ● | | | | | |
| | **LNHU 130608ER-MM4** | 13 | 6.8 | 10.15 | 0.8 | 2.5 | 4.5 | ● | | | ● | ● | ● | | | | |
| | **LNHU 130608ER-MR2** | 13 | 6.8 | 10.15 | 0.8 | 2.5 | 4.5 | ● | ● | ● | | ● | ● | ● | ● | | |
| | **LNHU 130612ER-MR2** | 13 | 6.8 | 10.09 | 1.2 | 2.1 | 4.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 130616ER-MR2** | 13 | 6.8 | 10.04 | 1.6 | 1.8 | 4.5 | ● | ● | | | ● | ● | ● | | | |
| | **LNHU 130620ER-MR2** | 13 | 6.8 | 9.98 | 2.0 | 1.4 | 4.5 | ● | ● | | ● | ● | | ● | | | |
| | **LNHU 130624ER-MR2** | 13 | 6.8 | 9.93 | 2.4 | 0.9 | 4.5 | | ● | | | ● | | ● | | | |
| | **LNHU 130631ER-MR2** | 13 | 6.8 | 9.84 | 3.1 | 0.3 | 4.5 | | ● | | | ● | | ● | | | |
| | **LNHU 1306PDR-W** | 13 | 6.8 | 10.08 | 0.9 | 5.2 | 4.5 | ● | | | | | ● | | | | |

● : Standard stock ○ : Made-to-Order

## LN..1607..

Negative square shoulder milling cutter inserts



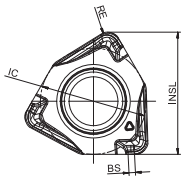



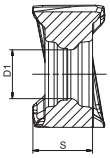

| Insert shape | Product code | INSL | W1 | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
| | **LNHU 160708ER-MR2** | 16 | 7.2 | 13 | 0.8 | 1.9 | 5.4 | ● | ● | | | | ● | ● | ● | | |
| | **LNHU 160716ER-MR2** | 16 | 7.2 | 13 | 1.6 | 1.5 | 5.4 | ● | | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order

## WN..0403..

Negative square shoulder milling cutter inserts



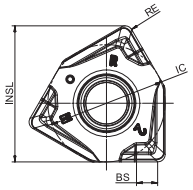



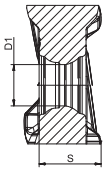

| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | Machining conditions: Dimension (mm) | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ● |
| | | | | | | | | | P | | | M | | K | | | N | H |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H |
| | **WNGU 040308R-MM4** | 7.7 | 6.7 | 3.8 | 0.8 | 0.4 | 3.0 | | ● | | | ● | ● | ● | | | | |

● : Standard stock ○ : Made-to-Order

## WN..0806..

Negative square shoulder milling cutter inserts



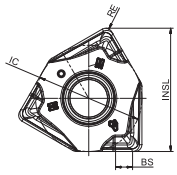



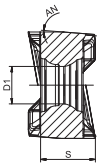

| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | Machining conditions: Dimension (mm) | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ● |
| | | | | | | | | | P | | | M | | K | | | N | H |
| | | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H |
| | **WNMU 080608R-MM3** | 14.5 | 12.5 | 6.58 | 0.8 | 2.2 | 4.4 | | ● | | ○ | ● | ● | ● | | | | |
| | **WNMU 080608R-MM4** | 14.5 | 12.5 | 6.58 | 0.8 | 2.2 | 4.4 | | ● | ○ | ● | ● | ● | ● | ○ | | | |
| | **WNMU 080612R-MM4** | 14.3 | 12.5 | 6.47 | 1.2 | 1.2 | 4.4 | | ● | | | ● | ● | ● | | ● | | |
| | **WNMU 080616R-MM4** | 14.3 | 12.5 | 6.50 | 1.6 | 0.8 | 4.4 | | ● | | | ● | ● | ● | | ● | | |
| | **WNMU 080608R-MR2** | 14.5 | 12.5 | 6.60 | 0.8 | 2.2 | 4.4 | | ● | ○ | | ● | ● | ● | ○ | | | |
| | **WNMU 080612R-MR2** | 14.3 | 12.5 | 6.47 | 1.2 | 1.2 | 4.4 | | ● | | | ● | ● | ● | | | | |
| | **WNMU 080616R-MR2** | 14.3 | 12.5 | 6.50 | 1.6 | 0.8 | 4.4 | | ● | | | | ● | ● | | ● | | |

● : Standard stock ○ : Made-to-Order

## WN..0806..

Negative square shoulder milling cutter inserts



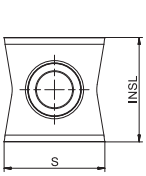



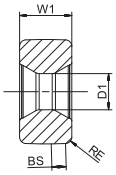

| Insert shape | Product code | INSL | IC | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | H |
| | | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP151H |
| | **WNHU 080608R-FM2** | 14.5 | 12.5 | 6.46 | 0.8 | 2.0 | 4.4 | | | | | | | | | ● | |
| | **WNGU 080604R-MM3** | 14.6 | 12.5 | 6.44 | 0.4 | 2.2 | 4.4 | | ● | | | | | | | | |
| | **WNGU 080608R-MM3** | 14.5 | 12.5 | 6.45 | 0.8 | 2.0 | 4.4 | ● | ● | | | ● | ● | | ● | | |
| | **WNGU 080604R-MM4** | 14.6 | 12.5 | 6.44 | 0.4 | 2.2 | 4.4 | ● | ● | | | | ● | | | | |
| | **WNGU 080608R-MM4** | 14.6 | 12.5 | 6.44 | 0.8 | 2.0 | 4.4 | ● | ● | ● | | | ● | ● | ● | | ● |
| | **WNGU 080612R-MM4** | 14.3 | 12.5 | 6.44 | 1.2 | 1.6 | 4.4 | ● | ● | | | | | | | | |
| | **WNGU 080616R-MM4** | 14.2 | 12.5 | 6.44 | 1.6 | 1.2 | 4.4 | ● | ● | | | | | | | | |
| | **WNGU 080608R-MR2** | 14.5 | 12.5 | 6.46 | 0.8 | 2.0 | 4.4 | ● | | | | ● | ● | ● | ● | | |
| | **WNGU 080612R-MR2** | 14.3 | 12.5 | 6.46 | 1.2 | 1.6 | 4.4 | ● | | | | | ● | | ● | | |
| | **WNGU 080616R-MR2** | 14.2 | 12.5 | 6.46 | 1.6 | 1.2 | 4.4 | ● | | | | | ● | | ● | | |
| | **WNHX 0806ZZR-W** | 14.4 | 12.5 | 6.47 | 1.1 | 4.7 | 4.4 | ● | | | | | | ● | | | |

● : Standard stock ○ : Made-to-Order

## LN..1206..

Square shoulder milling inserts

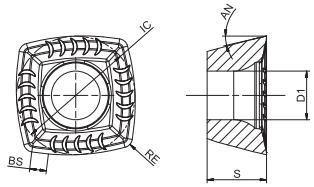



| Insert shape | Product code | INSL | W1 | S | RE | BS | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | | | | | | | | AP251U | AP351U | AC251P | AP403M | AP351M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **LNET 1206-MM4** | 12.7 | 6.35 | 12.3 | 0.8 | 1.7 | 4.4 | ● | | | ● | | ● | | ● | | ○ |

● : Standard stock ○ : Made-to-Order

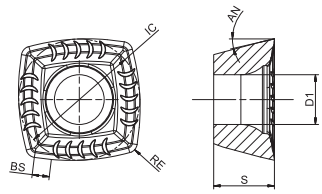
## XD..0904..
Positive high feed milling inserts




| Insert shape | Product code | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **XDLT 090408ER-MM3** | 9.525 | 4.76 | 0.8 | 1.3 | 3.9 | 15° | ● | ● | ● | | | | ● | | ● | |
| | **XDMW 090408ER-HR2** | 9.506 | 4.76 | 0.8 | 1.6 | 3.9 | 15° | | | | | | ○ | ● | | | |

● : Standard stock ○ : Made-to-Order

## XD..1205..
Positive high feed milling inserts

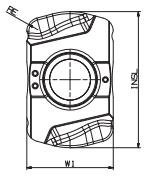


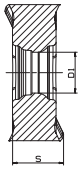

| Insert shape | Product code | IC | S | RE | BS | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **XDLT 120508ER-MM3** | 12.7 | 5.56 | 0.8 | 2.2 | 4.4 | 15° | ● | ● | ● | | ○ | ● | ● | ● | ● | |
| | **XDLT 120512ER-MM3** | 12.7 | 5.56 | 1.2 | 2.2 | 4.4 | 15° | ● | ● | ● | | | ● | ● | | | |
| | **XDMW 120508ER-HR2** | 12.7 | 5.56 | 0.8 | 2.5 | 4.4 | 15° | ● | | | | | ○ | ● | | | |

● : Standard stock ○ : Made-to-Order

## LN..0604..

Negative high feed milling inserts



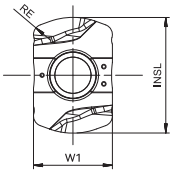



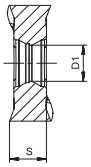

| Insert shape | Product code | INSL | W1 | S | RE | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | P | | | M | | K | | | S | H |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **LNMX 060410ER-MM3** | 10 | 6.35 | 3.6 | 1.0 | 3 | ● | ● | | | ● | | | | ● | ● |
| | **LNMX 060410ER-MM4** | 10 | 6.35 | 3.6 | 1.0 | 3 | ● | ● | ○ | | | ○ | | | ● | ● |
| | **LNMX 060410ER-MM4N** | 10 | 6.35 | 3.6 | 1.0 | 3 | ● | ● | | | ● | | ● | | ● | ● |

● : Standard stock ○ : Made-to-Order

## LN..1005..

Negative high feed milling inserts

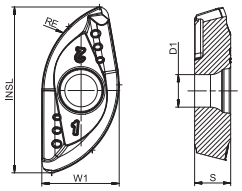



| Insert shape | Product code | INSL | W1 | S | RE | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | P | | | M | | K | | | S | H |
| | | | | | | | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
| | **LNMX 100512ER-MM3** | 13.5 | 9.2 | 4.55 | 1.2 | 4.21 | ● | ● | | ● | ● | | | | ● | ● |
| | **LNMX 100512ER-MM4** | 13.5 | 9.2 | 4.55 | 1.2 | 4.21 | ● | ● | | | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

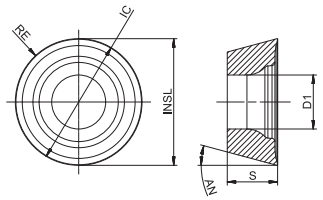
## RPM ..
Profile milling inserts




| Insert shape | Product code | INSL | W1 | S | RE | D1 | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | P | | | M | | K | | | N | S |
| | **RPM 080ER-MM4** | 14.77 | 6.9 | 3.2 | 8.2 | 2.9 | ● | | | ● | ● | | | | | ● |
| | **RPM 100ER-MM4** | 18.85 | 8.63 | 3.9 | 10.3 | 3.5 | ● | | | ● | ○ | | | | | ● |
| | **RPM 160ER-MM4** | 29.54 | 12.68 | 6.2 | 16.4 | 4.6 | | | | ○ | ● | | | | | |

● : Standard stock ○ : Made-to-Order

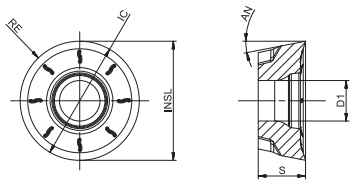
## RO..0803..
Profile milling inserts




| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 0803MOE-MM3** | 8 | 8 | 3.18 | - | 3.4 | 15° | | | | | ● | | | | | ● |
| | **ROHT 0803M4E-MM3** | 8 | 8 | 3.18 | - | 3.4 | 15° | | | | | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

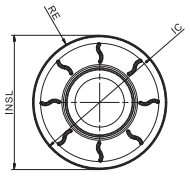
## RO..10T3..
Profile milling inserts




| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP403M | AP351M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 10T3M8E-MM3** | 10 | 10 | 3.97 | - | 3.4 | 11° | | | | ● | | | | | | ● |
| | **ROMT 10T3M4E-MR6** | 10 | 10 | 3.97 | - | 3.4 | 11° | | ○ | | ● | | | | | | ● |

● : Standard stock ○ : Made-to-Order

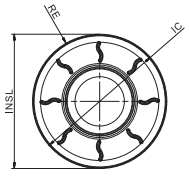
## RO..1204..
Profile milling inserts




| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 1204M4E-MM3** | 12 | 12 | 4.76 | - | 4.4 | 11° | | | | | ● | | | | | ● |
| | **ROHT 1204M6E-MM3** | 12 | 12 | 4.76 | - | 4.4 | 11° | | | | | ● | | | | | ● |
| | **ROMT 1204M6E-MR6** | 12 | 12 | 4.76 | - | 4.4 | 11° | ○ | | | | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

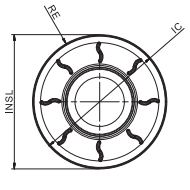
## RO..1605..
Profile milling inserts




| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 1605M8E-MM3** | 16 | 16 | 5.56 | - | 5.5 | 11° | | | | | ● | | | | | ● |
| | **ROMT 1605M6E-MR6** | 16 | 16 | 5.56 | - | 5.5 | 11° | | | ● | | ● | | | | | ● |

● : Standard stock ○ : Made-to-Order

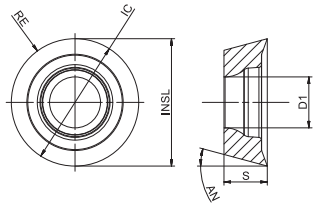
## RO..2006..
Profile milling inserts




| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AW100K | AP403S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ⬌ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ⬌ | ⬌ | ⬌ | ✱ | ● | ● | ● | ● | ✱ |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | N | S |
| | **ROHT 2006M8E-MM3** | 20 | 20 | 6.35 | - | 6.5 | 11° | | | | | ● | | | | | ● |
| | **ROMT 2006M8E-MR6** | 20 | 20 | 6.35 | - | 6.5 | 11° | | | | | ● | | ○ | | | ● |

● : Standard stock ○ : Made-to-Order

## RD/RP
Profile milling inserts




| Insert shape | Product code | INSL | IC | S | RE | D1 | AN | AP251U | AP351U | AC251P | AP351M | AP403M | AP251K | AC301K | AC151K | AP403S | AP151H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Machining conditions | | | | | | ● Good Conditions ◐ General Conditions ✱ Bad Conditions | | | | | | | | | |
| | | | | | | | | ● | ◐ | ◐ | ◐ | ✱ | ● | ● | ● | ✱ | ● |
| | | Dimension (mm) | | | | | | P | | | M | | K | | | S | H |
| | **RDHT 1003MOE-MM3** | 10 | 10 | 3.18 | - | 4.4 | 15° | ○ | | | | | | | | | |
| | **RDHT 12T3MOE-MM3** | 12 | 12 | 3.97 | - | 4.4 | 15° | | ● | ○ | | | ○ | | | | |
| | **RDHT 1606MOE-MM3** | 16 | 16 | 6.35 | - | 5.5 | 15° | | ● | | | | | ● | | | |
| | **RDHT 1604MOE-MM3** | 16 | 16 | 4.76 | - | 5.5 | 15° | ○ | ● | | | | ○ | | | | |
| | **RDHW 0702MOS-HR2** | 7 | 7 | 2.38 | - | 2.8 | 15° | ● | | | | | ○ | | | | ● |
| | **RDHW 1003MOS-HR2** | 10 | 10 | 3.18 | - | 4.4 | 15° | ○ | ● | | | | | | | | |
| | **RDHW 12T3MOS-HR2** | 12 | 12 | 3.97 | - | 4.4 | 15° | ○ | ● | | | | ● | | | | |
| | **RDHW 1606MOS-HR2** | 16 | 16 | 6.35 | - | 5.5 | 15° | ● | | | | | | | | | |
| | **RDMT 1003MOE-MM3** | 10 | 10 | 3.18 | - | 4.4 | 15° | ○ | ● | | | | | ○ | | | |
| | **RDMT 12T3MOE-MM3** | 12 | 12 | 3.97 | - | 4.4 | 15° | ● | ● | ○ | | | | | | | |
| | **RDMT 1606MOE-MM3** | 16 | 16 | 6.35 | - | 5.5 | 15° | ○ | | ○ | | | | ○ | | | |
| | **RDMT 1604MOE-MM3** | 16 | 16 | 4.76 | - | 5.5 | 15° | | | ○ | | | | ● | | | |
| | **RDMW 1204MOE-HR2** | 12 | 12 | 4.76 | - | 4.4 | 15° | ● | ● | | | | | | | | |
| | **RDMW 1606MOE-HR2** | 16 | 16 | 6.35 | - | 5.5 | 15° | | | | | | | ● | | | |
| | **RDMW 1604MOE-HR2** | 16 | 16 | 4.76 | | 5.5 | 15° | ● | ○ | | | | | | | | |
| | **RPMW 1003MOE-HR2** | 10 | 10 | 3.18 | - | 4.4 | 11° | ● | ● | | | | | | | | ● |
| | **RPMW 10T3MOE-HR2** | 10 | 10 | 3.97 | - | 4.4 | 11° | ● | ● | | | | | | | | ● |
| | **RPMT 1204MOE** | 12 | 12 | 4.76 | - | 4.4 | 12° | ● | ● | | | | | | | | ● |

● : Standard stock ○ : Made-to-Order

# ACHTECK

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THE EXPERT OF DIFFICULT MACHINING

## Solid End Mills

Solid Carbide End Mills

# CUTTING TOOL CATALOGUE


## Solid Carbide End Mills 426

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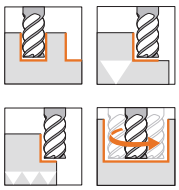
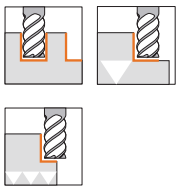
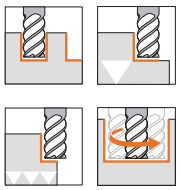
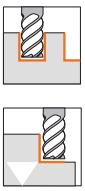
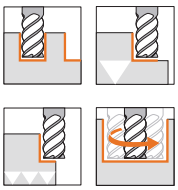
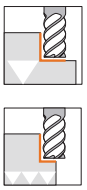
## Product Overview of Solid Carbide End Mill Series

| Product Name | Square Shoulder Milling | | | | |
|---|---|---|---|---|---|
| Machining Application |  | |  |  | |
| Category | ECO | ECO | ECO | PRO | |
| Series | M200 | M205 | M245 | M210 | |
| Illustration | | | | | |
| Diameter Range (mm) | 1-20 | 6-20 | 1-20 | 3-20 | |
| No. of Teeth | 2-4 | 6 | 2-3 | 4 | |
| Corner Radius (mm) | 0.2-5 | | | 0.2-3 | |
| Length | S/SP/L/LP/X | S | S/L | S | |
| Shank Type | Cylindrical/Weldon | Cylindrical | Cylindrical | Cylindrical/Weldon | |
| Dimension Table Page | P431 | P441 | P442 | P445 | |
| Cutting Data Table Page | P458 | P460 | P461 | P463 | |
| P | ●● | ●● | | ●● | |
| M | ● | ● | | ● | |
| K | ●● | ●● | | ●● | |
| N | | | ●● | | |
| S | | | | ● | |
| H | | | | | |

| | Square Shoulder Milling | | | Profile Milling | | Form Milling |
|---|---|---|---|---|---|---|
| |  |  |  | | | |
| | PRO | PRO | PRO | ECO | PRO | ECO |
| | M216 | M150 | M170 | M200 | M170 | M180 |
| | | | | | | |
| | 6–20 | 1–20 | 4–16 | 1–20 | 2–16 | 6–16 |
| | 4–6 | 4 | 4–6 | 2 | 2 | 4 |
| | | 0.2–2 | 0.2–3 | 0.5–10 | 1–8 | |
| | S | S/L | S | S/L/X | S | S |
| | Cylindrical | Cylindrical | Cylindrical | Cylindrical | Cylindrical | Cylindrical |
| | P448 | P449 | P451 | P454 | P456 | P457 |
| | P466 | P468 | P471 | P473 | P474 | P475 |
| | ●● | ●● | ● | ●● | ● | ●● |
| | ●● | ●● | | ● | | ● |
| | ● | | ● | ●● | ● | ●● |
| | | | | | | ● |
| | ● | ●● | | | | ● |
| | | | ●● | | ●● | |

## Icon Description

| Icon | Description |
|---|---|
| | Slot Milling And Square Shoulder Milling |
| | Square Shoulder Milling Rough Milling |
| | Square Shoulder Milling Finsih Milling |
| | High-Feed Milling |
| | Dynamic Milling Cycloid Milling |
| | Profifile Milling |
| | Chamfering & Deburring |

| Icon | Description |
|---|---|
| | Altin Coating |
| | Alcrn Coating |
| | Uncoated |
| | Tisialcrn Coating |
| | Altin/Zr Coating |
| | Cylindrical Shank |
| | Weldon Shank |

| Icon | Description |
|---|---|
| | 30° Helix Angle |
| | 35° Helix Angle |
| | 35° /38° Helix Angle |
| | 36° /38° Helix Angle |
| | 40° Helix Angle |
| | 37° /39° /41° Helix Angle |
| | 45° Helix Angle |

| Icon | Description |
|---|---|
| | Square |
| | Round Corner |
| | Ball Nose |
| | Corner Chamfer |
| | Chamfer |
| | Waved Edge |

## Solid Carbide End Mill Denomination System

| M | 2 | 00 | - | 4 | R | S | - | 060 | 002 | W |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | - | 4 | 5 | 6 | - | 7 | 8 | 9 |

| 1- Tool Category |
|---|
| M milling cutter |

| 2- Gen. |
|---|
| 1 |
| 2 |

| 3- Series |
|---|
| 00 Universal milling (HRC45) |
| 10 High-efficiency universal milling |
| 20 High-performance milling |
| 30 Steel-specific milling |
| 40 Aluminum milling |
| 50 S.S. milling |
| 60 Hard-to-cut materials milling |
| 70 Harden steel milling |
| 80&90 Others |

| 4- Number of |
|---|
| 2,3,4,5,6..... |

| 5- Tool Type |
|---|
| E Flat end |
| B Ball nose |
| R Corner radius |
| C Chamfer |
| P Wavy edge |
| W Form milling |
| T Tapered |
| H High-feed |

| 6- Length Standard |
|---|
| S Standard |
| L Long |
| X Extra-long |
| A Ultra-long |
| SN Shortened flute |
| SP Extended flute |
| LP Long & extended flute |

| 7- Tool Diameter |
|---|
| 060=6.0mm |
| 200=20.0mm |

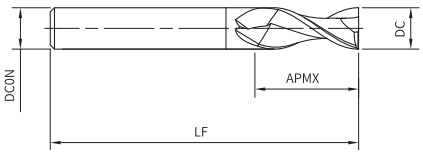
| 8- Corner Radius |
|---|
| 002=0.2mm |

| 9- Structure Type |
|---|
| N Straight neck |
| C Tapered neck |
| W Side lock shank |
| P Special shank dia. |
| Default: Standard necking |

## Solid Carbide End Mill M200

Eco line
2 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M200-2ES-010** | 1 | 4 | 3 | 50 | 2 | ● |
| **M200-2ES-015** | 1.5 | 4 | 4 | 50 | 2 | ● |
| **M200-2ES-020** | 2 | 4 | 6 | 50 | 2 | ● |
| **M200-2ES-025** | 2.5 | 4 | 8 | 50 | 2 | ● |
| **M200-2ES-030** | 3 | 4 | 8 | 50 | 2 | ● |
| **M200-2ES-040** | 4 | 4 | 12 | 50 | 2 | ● |
| **M200-2ES-050** | 5 | 6 | 13 | 50 | 2 | ● |
| **M200-2ES-060** | 6 | 6 | 16 | 50 | 2 | ● |
| **M200-2ES-070** | 7 | 8 | 20 | 60 | 2 | ● |
| **M200-2ES-080** | 8 | 8 | 20 | 60 | 2 | ● |
| **M200-2ES-090** | 9 | 10 | 23 | 75 | 2 | ● |
| **M200-2ES-100** | 10 | 10 | 25 | 75 | 2 | ● |
| **M200-2ES-120** | 12 | 12 | 30 | 75 | 2 | ● |
| **M200-2ES-140** | 14 | 14 | 34 | 100 | 2 | ● |
| **M200-2ES-160** | 16 | 16 | 36 | 100 | 2 | ● |
| **M200-2ES-180** | 18 | 18 | 40 | 100 | 2 | ● |
| **M200-2ES-200** | 20 | 20 | 45 | 100 | 2 | ● |

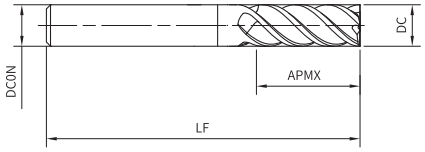


● :Standard stock ○ :Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

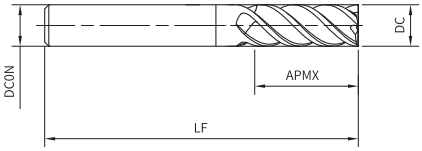
| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M200-4ES-010** | 1 | 4 | 3 | 50 | 4 | ● |
| **M200-4ES-015** | 1.5 | 4 | 4 | 50 | 4 | ● |
| **M200-4ES-020** | 2 | 4 | 6 | 50 | 4 | ● |
| **M200-4ES-025** | 2.5 | 4 | 8 | 50 | 4 | ● |
| **M200-4ES-030** | 3 | 4 | 8 | 50 | 4 | ● |
| **M200-4ES-030P** | 3 | 6 | 8 | 50 | 4 | ● |
| **M200-4ES-035** | 3.5 | 4 | 11 | 50 | 4 | ● |
| **M200-4ES-040** | 4 | 4 | 12 | 50 | 4 | ● |
| **M200-4ES-040P** | 4 | 6 | 12 | 50 | 4 | ● |
| **M200-4ES-045** | 4.5 | 6 | 12 | 50 | 4 | ● |
| **M200-4ES-050** | 5 | 6 | 13 | 50 | 4 | ● |
| **M200-4ES-055** | 5.5 | 6 | 16 | 50 | 4 | ● |
| **M200-4ES-060** | 6 | 6 | 16 | 50 | 4 | ● |
| **M200-4ES-065** | 6.5 | 8 | 16 | 60 | 4 | ● |
| **M200-4ES-070** | 7 | 8 | 20 | 60 | 4 | ● |
| **M200-4ES-075** | 7.5 | 8 | 20 | 60 | 4 | ● |
| **M200-4ES-080** | 8 | 8 | 20 | 60 | 4 | ● |
| **M200-4ES-085** | 8.5 | 10 | 23 | 75 | 4 | ● |
| **M200-4ES-090** | 9 | 10 | 23 | 75 | 4 | ● |
| **M200-4ES-095** | 9.5 | 10 | 25 | 75 | 4 | ● |
| **M200-4ES-100** | 10 | 10 | 25 | 75 | 4 | ● |
| **M200-4ES-110** | 11 | 12 | 28 | 75 | 4 | ● |
| **M200-4ES-120** | 12 | 12 | 30 | 75 | 4 | ● |
| **M200-4ES-140** | 14 | 14 | 34 | 100 | 4 | ● |
| **M200-4ES-160** | 16 | 16 | 36 | 100 | 4 | ● |
| **M200-4ES-180** | 18 | 18 | 40 | 100 | 4 | ● |
| **M200-4ES-200** | 20 | 20 | 45 | 100 | 4 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M200-4ESP-010** | 1 | 4 | 4 | 50 | 4 | ● |
| **M200-4ESP-020** | 2 | 4 | 10 | 50 | 4 | ● |
| **M200-4ESP-030** | 3 | 4 | 12 | 50 | 4 | ● |
| **M200-4ESP-040** | 4 | 4 | 16 | 50 | 4 | ● |
| **M200-4ESP-050** | 5 | 6 | 18 | 50 | 4 | ● |
| **M200-4ESP-060** | 6 | 6 | 20 | 50 | 4 | ● |
| **M200-4ESP-080** | 8 | 8 | 24 | 60 | 4 | ● |
| **M200-4ESP-100** | 10 | 10 | 30 | 75 | 4 | ● |
| **M200-4ESP-120** | 12 | 12 | 35 | 75 | 4 | ● |
| **M200-4ESP-140** | 14 | 14 | 40 | 100 | 4 | ● |
| **M200-4ESP-160** | 16 | 16 | 45 | 100 | 4 | ● |
| **M200-4ESP-180** | 18 | 18 | 45 | 100 | 4 | ● |

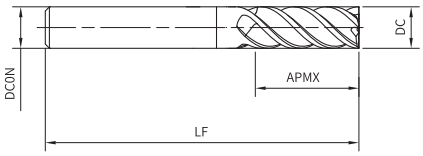
| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M200-4EL-030** | 3 | 4 | 15 | 60 | 4 | ● |
| **M200-4EL-030P** | 3 | 6 | 15 | 60 | 4 | ● |
| **M200-4EL-040** | 4 | 4 | 20 | 60 | 4 | ● |
| **M200-4EL-050** | 5 | 6 | 25 | 75 | 4 | ● |
| **M200-4EL-060** | 6 | 6 | 25 | 75 | 4 | ● |
| **M200-4EL-080** | 8 | 8 | 30 | 75 | 4 | ● |
| **M200-4EL-100** | 10 | 10 | 40 | 100 | 4 | ● |
| **M200-4EL-120** | 12 | 12 | 45 | 100 | 4 | ● |
| **M200-4EL-140** | 14 | 14 | 60 | 150 | 4 | ● |
| **M200-4EL-160** | 16 | 16 | 70 | 150 | 4 | ● |
| **M200-4EL-180** | 18 | 18 | 70 | 150 | 4 | ● |
| **M200-4EL-200** | 20 | 20 | 70 | 150 | 4 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M200-4ELP-050** | 5 | 6 | 30 | 75 | 4 | ● |
| **M200-4ELP-060** | 6 | 6 | 35 | 75 | 4 | ● |
| **M200-4ELP-100** | 10 | 10 | 50 | 100 | 4 | ● |
| **M200-4ELP-120** | 12 | 12 | 50 | 100 | 4 | ● |
| **M200-4ELP-200** | 20 | 20 | 80 | 150 | 4 | ● |

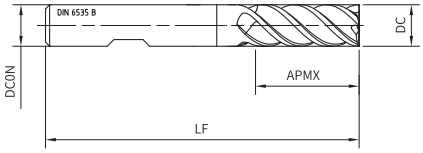
| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M200-4EX-040** | 4 | 4 | 30 | 75 | 4 | ● |
| **M200-4EX-040P** | 4 | 6 | 20 | 75 | 4 | ● |
| **M200-4EX-060** | 6 | 6 | 35 | 100 | 4 | ● |
| **M200-4EX-080** | 8 | 8 | 35 | 100 | 4 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M200-4ES-030W** | 3 | 6 | 8 | 50 | 4 | ● |
| **M200-4ES-050W** | 5 | 6 | 13 | 50 | 4 | ● |
| **M200-4ES-060W** | 6 | 6 | 16 | 50 | 4 | ● |
| **M200-4ES-080W** | 8 | 8 | 20 | 60 | 4 | ● |
| **M200-4ES-100W** | 10 | 10 | 25 | 75 | 4 | ● |
| **M200-4ES-120W** | 12 | 12 | 30 | 75 | 4 | ● |
| **M200-4ES-140W** | 14 | 14 | 34 | 100 | 4 | ● |
| **M200-4ES-160W** | 16 | 16 | 36 | 100 | 4 | ● |
| **M200-4ES-180W** | 18 | 18 | 40 | 100 | 4 | ● |
| **M200-4ES-200W** | 20 | 20 | 45 | 100 | 4 | ● |

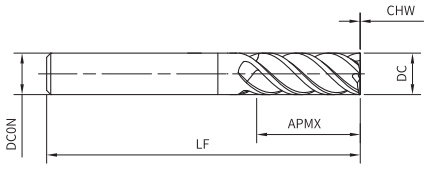


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes end mill with corner chamfer

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | CHW (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-4CS-040** | 4 | 4 | C0.1 | 12 | 50 | 4 | ● |
| **M200-4CS-050** | 5 | 6 | C0.1 | 13 | 50 | 4 | ● |
| **M200-4CS-060** | 6 | 6 | C0.1 | 16 | 50 | 4 | ● |
| **M200-4CS-080** | 8 | 8 | C0.1 | 20 | 60 | 4 | ● |
| **M200-4CS-100** | 10 | 10 | C0.1 | 25 | 75 | 4 | ● |
| **M200-4CS-120** | 12 | 12 | C0.1 | 30 | 75 | 4 | ● |
| **M200-4CS-140** | 14 | 14 | C0.15 | 34 | 100 | 4 | ● |
| **M200-4CS-160** | 16 | 16 | C0.15 | 36 | 100 | 4 | ● |
| **M200-4CS-180** | 18 | 18 | C0.15 | 40 | 100 | 4 | ● |
| **M200-4CS-200** | 20 | 20 | C0.15 | 45 | 100 | 4 | ● |

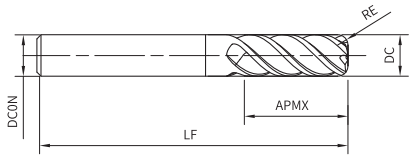


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes end mill with corner radius

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-4RS-010002** | 1 | 4 | R0.2 | 3 | 50 | 4 | ● |
| **M200-4RS-015002** | 1.5 | 4 | R0.2 | 4 | 50 | 4 | ● |
| **M200-4RS-020002** | 2 | 4 | R0.2 | 6 | 50 | 4 | ● |
| **M200-4RS-030002** | 3 | 4 | R0.2 | 8 | 50 | 4 | ● |
| **M200-4RS-030003** | 3 | 4 | R0.3 | 8 | 50 | 4 | ● |
| **M200-4RS-030005** | 3 | 4 | R0.5 | 8 | 50 | 4 | ● |
| **M200-4RS-040002** | 4 | 4 | R0.2 | 12 | 50 | 4 | ● |
| **M200-4RS-040003** | 4 | 4 | R0.3 | 12 | 50 | 4 | ● |
| **M200-4RS-040005** | 4 | 4 | R0.5 | 12 | 50 | 4 | ● |
| **M200-4RS-040010** | 4 | 4 | R1 | 12 | 50 | 4 | ● |
| **M200-4RS-050002** | 5 | 6 | R0.2 | 13 | 50 | 4 | ● |
| **M200-4RS-050005** | 5 | 6 | R0.5 | 13 | 50 | 4 | ● |
| **M200-4RS-050010** | 5 | 6 | R1 | 13 | 50 | 4 | ● |
| **M200-4RS-050015** | 5 | 6 | R1.5 | 13 | 50 | 4 | ● |
| **M200-4RS-060002** | 6 | 6 | R0.2 | 16 | 50 | 4 | ● |
| **M200-4RS-060005** | 6 | 6 | R0.5 | 16 | 50 | 4 | ● |
| **M200-4RS-060010** | 6 | 6 | R1 | 16 | 50 | 4 | ● |
| **M200-4RS-060015** | 6 | 6 | R1.5 | 16 | 50 | 4 | ● |
| **M200-4RS-080002** | 8 | 8 | R0.2 | 20 | 60 | 4 | ● |
| **M200-4RS-080003** | 8 | 8 | R0.3 | 20 | 60 | 4 | ● |
| **M200-4RS-080005** | 8 | 8 | R0.5 | 20 | 60 | 4 | ● |
| **M200-4RS-080010** | 8 | 8 | R1 | 20 | 60 | 4 | ● |
| **M200-4RS-080015** | 8 | 8 | R1.5 | 20 | 60 | 4 | ● |
| **M200-4RS-080020** | 8 | 8 | R2 | 20 | 60 | 4 | ● |
| **M200-4RS-100002** | 10 | 10 | R0.2 | 25 | 75 | 4 | ● |
| **M200-4RS-100003** | 10 | 10 | R0.3 | 25 | 75 | 4 | ● |
| **M200-4RS-100005** | 10 | 10 | R0.5 | 25 | 75 | 4 | ● |

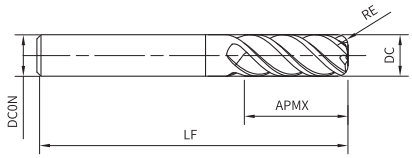


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes end mill with corner radius

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

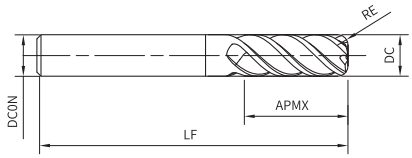
| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-4RS-100010** | 10 | 10 | R1 | 25 | 75 | 4 | ● |
| **M200-4RS-100015** | 10 | 10 | R1.5 | 25 | 75 | 4 | ● |
| **M200-4RS-100020** | 10 | 10 | R2 | 25 | 75 | 4 | ● |
| **M200-4RS-100025** | 10 | 10 | R2.5 | 25 | 75 | 4 | ● |
| **M200-4RS-100030** | 10 | 10 | R3 | 25 | 75 | 4 | ● |
| **M200-4RS-120005** | 12 | 12 | R0.5 | 30 | 75 | 4 | ● |
| **M200-4RS-120010** | 12 | 12 | R1 | 30 | 75 | 4 | ● |
| **M200-4RS-120015** | 12 | 12 | R1.5 | 30 | 75 | 4 | ● |
| **M200-4RS-120020** | 12 | 12 | R2 | 30 | 75 | 4 | ● |
| **M200-4RS-120025** | 12 | 12 | R2.5 | 30 | 75 | 4 | ● |
| **M200-4RS-120030** | 12 | 12 | R3 | 30 | 75 | 4 | ● |
| **M200-4RS-140010** | 14 | 14 | R1 | 34 | 100 | 4 | ● |
| **M200-4RS-140020** | 14 | 14 | R2 | 34 | 100 | 4 | ● |
| **M200-4RS-160005** | 16 | 16 | R0.5 | 36 | 100 | 4 | ● |
| **M200-4RS-160010** | 16 | 16 | R1 | 36 | 100 | 4 | ● |
| **M200-4RS-160020** | 16 | 16 | R2 | 36 | 100 | 4 | ● |
| **M200-4RS-160030** | 16 | 16 | R3 | 36 | 100 | 4 | ● |
| **M200-4RS-160040** | 16 | 16 | R4 | 36 | 100 | 4 | ● |
| **M200-4RS-180010** | 18 | 18 | R1 | 40 | 100 | 4 | ● |
| **M200-4RS-180020** | 18 | 18 | R2 | 40 | 100 | 4 | ● |
| **M200-4RS-180040** | 18 | 18 | R4 | 40 | 100 | 4 | ● |
| **M200-4RS-200010** | 20 | 20 | R1 | 45 | 100 | 4 | ● |
| **M200-4RS-200020** | 20 | 20 | R2 | 45 | 100 | 4 | ● |
| **M200-4RS-200030** | 20 | 20 | R3 | 45 | 100 | 4 | ● |
| **M200-4RS-200040** | 20 | 20 | R4 | 45 | 100 | 4 | ● |
| **M200-4RS-200050** | 20 | 20 | R5 | 45 | 100 | 4 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes end mill with corner radius

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

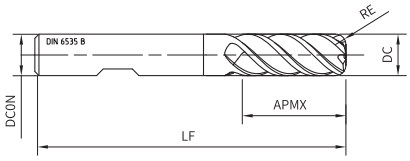
| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-4RL-030005** | 3 | 4 | R0.5 | 8 | 75 | 4 | ● |
| **M200-4RL-040002** | 4 | 4 | R0.2 | 12 | 75 | 4 | ● |
| **M200-4RL-040005** | 4 | 4 | R0.5 | 12 | 75 | 4 | ● |
| **M200-4RL-040010** | 4 | 4 | R1 | 12 | 75 | 4 | ● |
| **M200-4RL-060002** | 6 | 6 | R0.2 | 16 | 75 | 4 | ● |
| **M200-4RL-060005** | 6 | 6 | R0.5 | 16 | 75 | 4 | ● |
| **M200-4RL-060010** | 6 | 6 | R1 | 16 | 75 | 4 | ● |
| **M200-4RL-060015** | 6 | 6 | R1.5 | 16 | 75 | 4 | ● |
| **M200-4RL-080005** | 8 | 8 | R0.5 | 20 | 100 | 4 | ● |
| **M200-4RL-080010** | 8 | 8 | R1 | 20 | 100 | 4 | ● |
| **M200-4RL-080015** | 8 | 8 | R1.5 | 20 | 100 | 4 | ● |
| **M200-4RL-080020** | 8 | 8 | R2 | 20 | 100 | 4 | ● |
| **M200-4RL-100005** | 10 | 10 | R0.5 | 25 | 100 | 4 | ● |
| **M200-4RL-100010** | 10 | 10 | R1 | 25 | 100 | 4 | ● |
| **M200-4RL-100015** | 10 | 10 | R1.5 | 25 | 100 | 4 | ● |
| **M200-4RL-100020** | 10 | 10 | R2 | 25 | 100 | 4 | ● |
| **M200-4RL-120005** | 12 | 12 | R0.5 | 30 | 100 | 4 | ● |
| **M200-4RL-120010** | 12 | 12 | R1 | 30 | 100 | 4 | ● |
| **M200-4RL-120015** | 12 | 12 | R1.5 | 30 | 100 | 4 | ● |
| **M200-4RL-120020** | 12 | 12 | R2 | 30 | 100 | 4 | ● |
| **M200-4RL-120025** | 12 | 12 | R2.5 | 30 | 100 | 4 | ● |
| **M200-4RL-120030** | 12 | 12 | R3 | 30 | 100 | 4 | ● |
| **M200-4RL-140020** | 14 | 14 | R2 | 36 | 150 | 4 | ● |
| **M200-4RL-160005** | 16 | 16 | R0.5 | 36 | 150 | 4 | ● |
| **M200-4RL-160010** | 16 | 16 | R1 | 36 | 150 | 4 | ● |
| **M200-4RL-160020** | 16 | 16 | R2 | 36 | 150 | 4 | ● |
| **M200-4RL-160030** | 16 | 16 | R3 | 36 | 150 | 4 | ● |
| **M200-4RL-160040** | 16 | 16 | R4 | 36 | 150 | 4 | ● |
| **M200-4RL-180010** | 18 | 18 | R1 | 45 | 150 | 4 | ● |
| **M200-4RL-180020** | 18 | 18 | R2 | 45 | 150 | 4 | ● |
| **M200-4RL-200010** | 20 | 20 | R1 | 45 | 150 | 4 | ● |
| **M200-4RL-200020** | 20 | 20 | R2 | 45 | 150 | 4 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
4 flutes end mill with corner radius

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

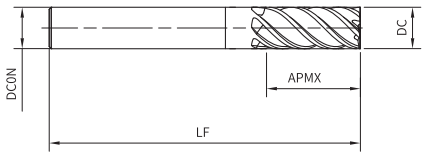
| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-4RS-060005W** | 6 | 6 | R0.5 | 16 | 50 | 4 | ● |
| **M200-4RS-060010W** | 6 | 6 | R1 | 16 | 50 | 4 | ● |
| **M200-4RS-080005W** | 8 | 8 | R0.5 | 20 | 60 | 4 | ● |
| **M200-4RS-080010W** | 8 | 8 | R1 | 20 | 60 | 4 | ● |
| **M200-4RS-100005W** | 10 | 10 | R0.5 | 25 | 75 | 4 | ● |
| **M200-4RS-100010W** | 10 | 10 | R1 | 25 | 75 | 4 | ● |
| **M200-4RS-100015W** | 10 | 10 | R1.5 | 25 | 75 | 4 | ● |
| **M200-4RS-100020W** | 10 | 10 | R2 | 25 | 75 | 4 | ● |
| **M200-4RS-120005W** | 12 | 12 | R0.5 | 30 | 75 | 4 | ● |
| **M200-4RS-120010W** | 12 | 12 | R1 | 30 | 75 | 4 | ● |
| **M200-4RS-120015W** | 12 | 12 | R1.5 | 30 | 75 | 4 | ● |
| **M200-4RS-120020W** | 12 | 12 | R2 | 30 | 75 | 4 | ● |

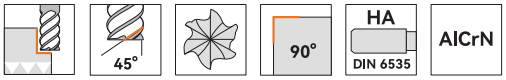
● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M205

Eco line
6 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45




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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M205-6ES-060** | 6 | 6 | 16 | 50 | 6 | ● |
| **M205-6ES-080** | 8 | 8 | 20 | 60 | 6 | ● |
| **M205-6ES-100** | 10 | 10 | 25 | 75 | 6 | ● |
| **M205-6ES-120** | 12 | 12 | 30 | 75 | 6 | ● |
| **M205-6ES-140** | 14 | 14 | 34 | 100 | 6 | ● |
| **M205-6ES-160** | 16 | 16 | 36 | 100 | 6 | ● |
| **M205-6ES-180** | 18 | 18 | 40 | 100 | 6 | ● |
| **M205-6ES-200** | 20 | 20 | 45 | 100 | 6 | ● |

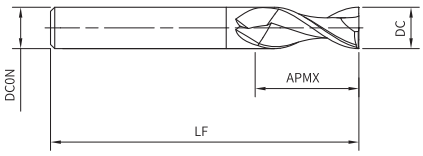


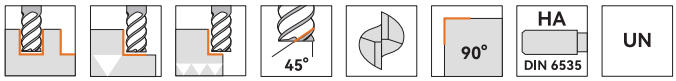
● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M245

Eco line
2 flutes square end mill for aluminum

Solid carbide end mill




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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M245-2ES-030** | 3 | 4 | 8 | 50 | 2 | ● |
| **M245-2ES-040** | 4 | 4 | 12 | 50 | 2 | ● |
| **M245-2ES-050** | 5 | 6 | 13 | 50 | 2 | ● |
| **M245-2ES-060** | 6 | 6 | 16 | 50 | 2 | ● |
| **M245-2ES-080** | 8 | 8 | 20 | 60 | 2 | ● |
| **M245-2ES-100** | 10 | 10 | 25 | 75 | 2 | ● |
| **M245-2ES-120** | 12 | 12 | 30 | 75 | 2 | ● |
| **M245-2ES-160** | 16 | 16 | 45 | 100 | 2 | ● |
| **M245-2ES-200** | 20 | 20 | 45 | 100 | 2 | ● |

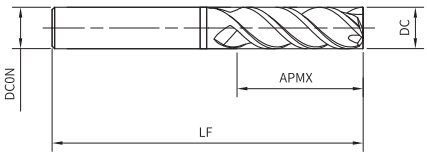


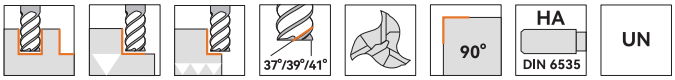
● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M245

Eco line
3 flutes square end mill for aluminum

Solid carbide end mill




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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M245-3ES-010** | 1 | 4 | 3 | 50 | 3 | ● |
| **M245-3ES-015** | 1.5 | 4 | 4 | 50 | 3 | ● |
| **M245-3ES-020** | 2 | 4 | 6 | 50 | 3 | ● |
| **M245-3ES-025** | 2.5 | 4 | 8 | 50 | 3 | ● |
| **M245-3ES-030** | 3 | 4 | 8 | 50 | 3 | ● |
| **M245-3ES-040** | 4 | 4 | 12 | 50 | 3 | ● |
| **M245-3ES-050** | 5 | 6 | 13 | 50 | 3 | ● |
| **M245-3ES-060** | 6 | 6 | 16 | 50 | 3 | ● |
| **M245-3ES-080** | 8 | 8 | 20 | 60 | 3 | ● |
| **M245-3ES-100** | 10 | 10 | 25 | 75 | 3 | ● |
| **M245-3ES-120** | 12 | 12 | 30 | 75 | 3 | ● |
| **M245-3ES-160** | 16 | 16 | 45 | 100 | 3 | ● |
| **M245-3ES-180** | 18 | 18 | 45 | 100 | 3 | ● |
| **M245-3ES-200** | 20 | 20 | 45 | 100 | 3 | ● |

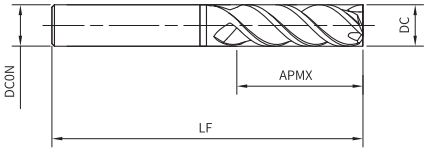


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M245

Eco line
3 flutes square end mill for aluminum

Solid carbide end mill



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M245-3EL-040** | 4 | 4 | 16 | 60 | 3 | ● |
| **M245-3EL-060** | 6 | 6 | 25 | 75 | 3 | ● |
| **M245-3EL-080** | 8 | 8 | 32 | 75 | 3 | ● |
| **M245-3EL-100** | 10 | 10 | 45 | 100 | 3 | ● |
| **M245-3EL-120** | 12 | 12 | 50 | 100 | 3 | ● |
| **M245-3EL-160** | 16 | 16 | 60 | 150 | 3 | ● |
| **M245-3EL-200** | 20 | 20 | 70 | 150 | 3 | ● |

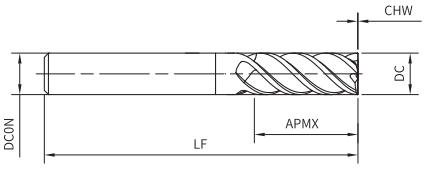


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M210

Pro line
4 flutes end mill with corner chamfer

Solid carbide end mill
Workpiece materials <HRC50



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | CHW (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M210-4CS-030** | 3 | 4 | C0.04 | 8 | 50 | 4 | ● |
| **M210-4CS-040** | 4 | 4 | C0.06 | 12 | 50 | 4 | ● |
| **M210-4CS-050** | 5 | 6 | C0.06 | 13 | 50 | 4 | ● |
| **M210-4CS-060** | 6 | 6 | C0.08 | 16 | 50 | 4 | ● |
| **M210-4CS-080** | 8 | 8 | C0.1 | 20 | 60 | 4 | ● |
| **M210-4CS-100** | 10 | 10 | C0.1 | 25 | 75 | 4 | ● |
| **M210-4CS-120** | 12 | 12 | C0.12 | 30 | 75 | 4 | ● |
| **M210-4CS-140** | 14 | 14 | C0.12 | 34 | 100 | 4 | ○ |
| **M210-4CS-160** | 16 | 16 | C0.15 | 36 | 100 | 4 | ● |
| **M210-4CS-180** | 18 | 18 | C0.15 | 40 | 100 | 4 | ○ |
| **M210-4CS-200** | 20 | 20 | C0.15 | 45 | 100 | 4 | ○ |

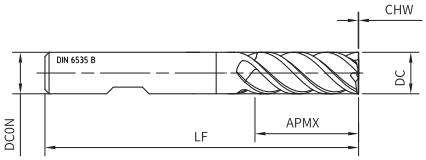


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M210

Pro line
4 flutes end mill with corner chamfer

Solid carbide end mill
Workpiece materials <HRC50



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | CHW (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M210-4CS-050W** | 5 | 6 | C0.06 | 13 | 50 | 4 | ○ |
| **M210-4CS-060W** | 6 | 6 | C0.08 | 16 | 50 | 4 | ● |
| **M210-4CS-080W** | 8 | 8 | C0.1 | 20 | 60 | 4 | ● |
| **M210-4CS-100W** | 10 | 10 | C0.1 | 25 | 75 | 4 | ● |
| **M210-4CS-120W** | 12 | 12 | C0.12 | 30 | 75 | 4 | ● |
| **M210-4CS-140W** | 14 | 14 | C0.12 | 34 | 100 | 4 | ○ |
| **M210-4CS-160W** | 16 | 16 | C0.15 | 36 | 100 | 4 | ○ |
| **M210-4CS-180W** | 18 | 18 | C0.15 | 40 | 100 | 4 | ○ |
| **M210-4CS-200W** | 20 | 20 | C0.15 | 45 | 100 | 4 | ○ |

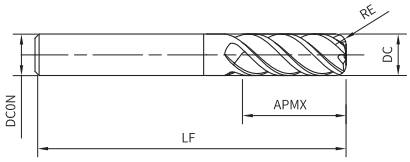


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M210

Pro line
4 flutes end mill

Solid carbide end mill
Workpiece materials <HRC50



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M210-4RS-040002** | 4 | 4 | R0.2 | 12 | 50 | 4 | ○ |
| **M210-4RS-040005** | 4 | 4 | R0.5 | 12 | 50 | 4 | ● |
| **M210-4RS-040010** | 4 | 4 | R1 | 12 | 50 | 4 | ● |
| **M210-4RS-060002** | 6 | 6 | R0.2 | 16 | 50 | 4 | ○ |
| **M210-4RS-060005** | 6 | 6 | R0.5 | 16 | 50 | 4 | ● |
| **M210-4RS-060010** | 6 | 6 | R1 | 16 | 50 | 4 | ● |
| **M210-4RS-080005** | 8 | 8 | R0.5 | 20 | 60 | 4 | ● |
| **M210-4RS-080010** | 8 | 8 | R1 | 20 | 60 | 4 | ● |
| **M210-4RS-080015** | 8 | 8 | R1.5 | 20 | 60 | 4 | ○ |
| **M210-4RS-080020** | 8 | 8 | R2 | 20 | 60 | 4 | ● |
| **M210-4RS-100005** | 10 | 10 | R0.5 | 25 | 75 | 4 | ● |
| **M210-4RS-100010** | 10 | 10 | R1 | 25 | 75 | 4 | ● |
| **M210-4RS-100015** | 10 | 10 | R1.5 | 25 | 75 | 4 | ○ |
| **M210-4RS-100020** | 10 | 10 | R2 | 25 | 75 | 4 | ● |
| **M210-4RS-100025** | 10 | 10 | R2.5 | 25 | 75 | 4 | ○ |
| **M210-4RS-120005** | 12 | 12 | R0.5 | 30 | 75 | 4 | ● |
| **M210-4RS-120010** | 12 | 12 | R1 | 30 | 75 | 4 | ● |
| **M210-4RS-120015** | 12 | 12 | R1.5 | 30 | 75 | 4 | ○ |
| **M210-4RS-120020** | 12 | 12 | R2 | 30 | 75 | 4 | ● |
| **M210-4RS-120025** | 12 | 12 | R2.5 | 30 | 75 | 4 | ○ |
| **M210-4RS-120030** | 12 | 12 | R3 | 30 | 75 | 4 | ○ |

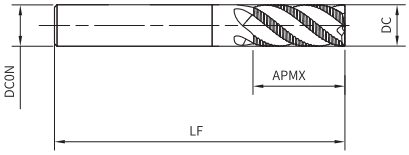


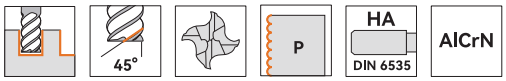
● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M216

Pro line
4/6 flutes end mill with roughing profile

Solid carbide end mill
Workpiece materials <HRC40




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

●● 1st choice ● 2nd choice

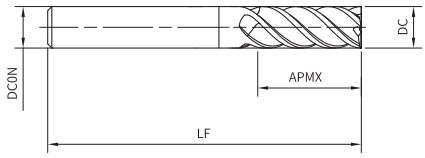
| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M216-4PS-060** | 6 | 6 | 16 | 50 | 4 | ● |
| **M216-4PS-080** | 8 | 8 | 20 | 60 | 4 | ● |
| **M216-4PS-100** | 10 | 10 | 25 | 75 | 4 | ● |
| **M216-4PS-120** | 12 | 12 | 30 | 75 | 4 | ● |
| **M216-5PS-160** | 16 | 16 | 45 | 100 | 5 | ● |
| **M216-6PS-200** | 20 | 20 | 45 | 100 | 6 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M150

Pro line
4 flutes square end mill

Solid carbide end mill



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M150-4ES-010** | 1 | 4 | 3 | 50 | 4 | ○ |
| **M150-4ES-015** | 1.5 | 4 | 4 | 50 | 4 | ○ |
| **M150-4ES-020** | 2 | 4 | 6 | 50 | 4 | ○ |
| **M150-4ES-025** | 2.5 | 4 | 8 | 50 | 4 | ○ |
| **M150-4ES-030** | 3 | 4 | 8 | 50 | 4 | ● |
| **M150-4ES-040** | 4 | 4 | 12 | 50 | 4 | ● |
| **M150-4ES-050** | 5 | 6 | 13 | 50 | 4 | ● |
| **M150-4ES-060** | 6 | 6 | 16 | 50 | 4 | ● |
| **M150-4ES-080** | 8 | 8 | 20 | 60 | 4 | ● |
| **M150-4ES-100** | 10 | 10 | 25 | 75 | 4 | ● |
| **M150-4ES-120** | 12 | 12 | 30 | 75 | 4 | ● |
| **M150-4ES-160** | 16 | 16 | 36 | 100 | 4 | ● |
| **M150-4ES-200** | 20 | 20 | 45 | 100 | 4 | ○ |

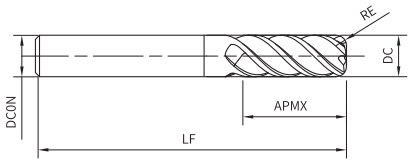
| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M150-4EL-030** | 3 | 4 | 15 | 60 | 4 | ○ |
| **M150-4EL-040** | 4 | 4 | 20 | 60 | 4 | ○ |
| **M150-4EL-060** | 6 | 6 | 25 | 75 | 4 | ○ |
| **M150-4EL-080** | 8 | 8 | 30 | 75 | 4 | ○ |
| **M150-4EL-100** | 10 | 10 | 40 | 100 | 4 | ○ |
| **M150-4EL-120** | 12 | 12 | 45 | 100 | 4 | ○ |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M150

Pro line
4 flutes end mill

Solid carbide end mill



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

●● 1st choice ● 2nd choice

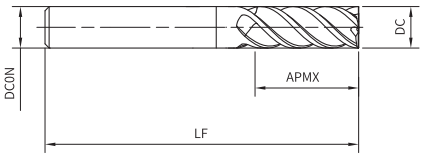
| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M150-4RS-010002** | 1 | 4 | R0.2 | 3 | 50 | 4 | ○ |
| **M150-4RS-015002** | 1.5 | 4 | R0.2 | 4 | 50 | 4 | ○ |
| **M150-4RS-020002** | 2 | 4 | R0.2 | 6 | 50 | 4 | ○ |
| **M150-4RS-020005** | 2 | 4 | R0.5 | 6 | 50 | 4 | ○ |
| **M150-4RS-025005** | 2.5 | 4 | R0.5 | 8 | 50 | 4 | ○ |
| **M150-4RS-030002** | 3 | 4 | R0.2 | 8 | 50 | 4 | ○ |
| **M150-4RS-030005** | 3 | 4 | R0.5 | 8 | 50 | 4 | ○ |
| **M150-4RS-040002** | 4 | 4 | R0.2 | 12 | 50 | 4 | ● |
| **M150-4RS-040005** | 4 | 4 | R0.5 | 12 | 50 | 4 | ○ |
| **M150-4RS-040010** | 4 | 4 | R1 | 12 | 50 | 4 | ○ |
| **M150-4RS-060002** | 6 | 6 | R0.2 | 16 | 50 | 4 | ● |
| **M150-4RS-060005** | 6 | 6 | R0.5 | 16 | 50 | 4 | ○ |
| **M150-4RS-060010** | 6 | 6 | R1 | 16 | 50 | 4 | ○ |
| **M150-4RS-080002** | 8 | 8 | R0.2 | 20 | 60 | 4 | ● |
| **M150-4RS-080005** | 8 | 8 | R0.5 | 20 | 60 | 4 | ● |
| **M150-4RS-080010** | 8 | 8 | R1 | 20 | 60 | 4 | ● |
| **M150-4RS-100005** | 10 | 10 | R0.5 | 25 | 75 | 4 | ● |
| **M150-4RS-100010** | 10 | 10 | R1 | 25 | 75 | 4 | ● |
| **M150-4RS-100020** | 10 | 10 | R2 | 25 | 75 | 4 | ● |
| **M150-4RS-120005** | 12 | 12 | R0.5 | 30 | 75 | 4 | ● |
| **M150-4RS-120010** | 12 | 12 | R1 | 30 | 75 | 4 | ● |
| **M150-4RS-120020** | 12 | 12 | R2 | 30 | 75 | 4 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M170

Pro line
4 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45-60



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

•• 1st choice • 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M170-4ES-040** | 4 | 4 | 12 | 50 | 4 | ● |
| **M170-4ES-060** | 6 | 6 | 16 | 50 | 4 | ● |
| **M170-4ES-080** | 8 | 8 | 20 | 60 | 4 | ● |
| **M170-4ES-100** | 10 | 10 | 25 | 75 | 4 | ● |
| **M170-4ES-120** | 12 | 12 | 30 | 75 | 4 | ● |
| **M170-4ES-160** | 16 | 16 | 36 | 100 | 4 | ● |

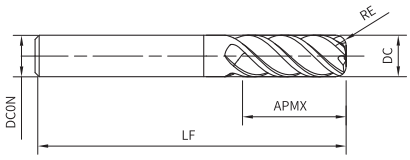


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M170

Pro line
4 flutes end mill

Solid carbide end mill
Workpiece materials <HRC45-60



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

•• 1st choice • 2nd choice

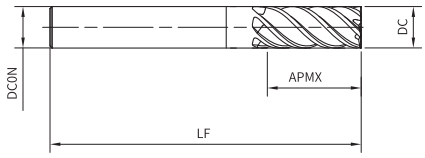
| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEEP | Stock |
|---|---|---|---|---|---|---|---|
| **M170-4RS-040002** | 4 | 4 | R0.2 | 12 | 50 | 4 | ● |
| **M170-4RS-040005** | 4 | 4 | R0.5 | 12 | 50 | 4 | ● |
| **M170-4RS-060002** | 6 | 6 | R0.2 | 16 | 50 | 4 | ● |
| **M170-4RS-060005** | 6 | 6 | R0.5 | 16 | 50 | 4 | ● |
| **M170-4RS-060010** | 6 | 6 | R1 | 16 | 50 | 4 | ● |
| **M170-4RS-080002** | 8 | 8 | R0.2 | 20 | 60 | 4 | ● |
| **M170-4RS-080005** | 8 | 8 | R0.5 | 20 | 60 | 4 | ● |
| **M170-4RS-080010** | 8 | 8 | R1 | 20 | 60 | 4 | ● |
| **M170-4RS-100002** | 10 | 10 | R0.2 | 25 | 75 | 4 | ● |
| **M170-4RS-100005** | 10 | 10 | R0.5 | 25 | 75 | 4 | ● |
| **M170-4RS-100010** | 10 | 10 | R1 | 25 | 75 | 4 | ● |
| **M170-4RS-100020** | 10 | 10 | R2 | 25 | 75 | 4 | ● |
| **M170-4RS-120005** | 12 | 12 | R0.5 | 30 | 75 | 4 | ● |
| **M170-4RS-120010** | 12 | 12 | R1 | 30 | 75 | 4 | ● |
| **M170-4RS-120020** | 12 | 12 | R2 | 30 | 75 | 4 | ● |
| **M170-4RS-120030** | 12 | 12 | R3 | 30 | 75 | 4 | ● |

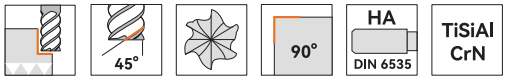
● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M170

Pro line
5/6 flutes square end mill

Solid carbide end mill
Workpiece materials <HRC45-60




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

•• 1st choice • 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|
| **M170-5ES-040** | 4 | 4 | 12 | 50 | 5 | ● |
| **M170-5ES-060** | 6 | 6 | 16 | 50 | 5 | ● |
| **M170-6ES-080** | 8 | 8 | 20 | 60 | 6 | ● |
| **M170-6ES-100** | 10 | 10 | 25 | 75 | 6 | ● |
| **M170-6ES-120** | 12 | 12 | 30 | 75 | 6 | ● |
| **M170-6ES-160** | 16 | 16 | 36 | 100 | 6 | ● |

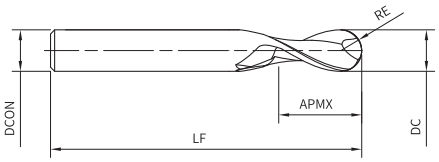


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
2 flutes ball nose end mill

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-2BS-010** | 1 | 4 | R0.5 | 2 | 50 | 2 | ● |
| **M200-2BS-015** | 1.5 | 4 | R0.75 | 3 | 50 | 2 | ● |
| **M200-2BS-020** | 2 | 4 | R1 | 4 | 50 | 2 | ● |
| **M200-2BS-025** | 2.5 | 4 | R1.25 | 5 | 50 | 2 | ● |
| **M200-2BS-030** | 3 | 4 | R1.5 | 6 | 50 | 2 | ● |
| **M200-2BS-040** | 4 | 4 | R2 | 8 | 50 | 2 | ● |
| **M200-2BS-050** | 5 | 6 | R2.5 | 10 | 50 | 2 | ● |
| **M200-2BS-060** | 6 | 6 | R3 | 12 | 50 | 2 | ● |
| **M200-2BS-070** | 7 | 8 | R3.5 | 14 | 60 | 2 | ● |
| **M200-2BS-080** | 8 | 8 | R4 | 14 | 60 | 2 | ● |
| **M200-2BS-100** | 10 | 10 | R5 | 18 | 75 | 2 | ● |
| **M200-2BS-110** | 11 | 12 | R5.5 | 20 | 75 | 2 | ● |
| **M200-2BS-120** | 12 | 12 | R6 | 22 | 75 | 2 | ● |
| **M200-2BS-140** | 14 | 14 | R7 | 26 | 100 | 2 | ● |
| **M200-2BS-160** | 16 | 16 | R8 | 30 | 100 | 2 | ● |
| **M200-2BS-180** | 18 | 18 | R9 | 34 | 100 | 2 | ● |
| **M200-2BS-200** | 20 | 20 | R10 | 38 | 100 | 2 | ● |

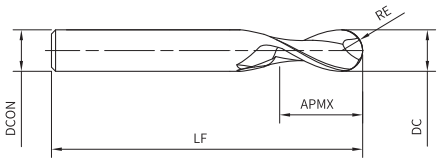


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200

Eco line
2 flutes ball nose end mill

Solid carbide end mill
Workpiece materials <HRC45



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

●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-2BL-010P** | 1 | 6 | R0.5 | 2 | 75 | 2 | ● |
| **M200-2BL-015P** | 1.5 | 6 | R0.75 | 3 | 75 | 2 | ● |
| **M200-2BL-020** | 2 | 4 | R1 | 4 | 75 | 2 | ● |
| **M200-2BL-020P** | 2 | 6 | R1 | 4 | 75 | 2 | ● |
| **M200-2BL-030** | 3 | 4 | R1.5 | 6 | 75 | 2 | ● |
| **M200-2BL-030P** | 3 | 6 | R1.5 | 6 | 75 | 2 | ● |
| **M200-2BL-040** | 4 | 4 | R2 | 8 | 75 | 2 | ● |
| **M200-2BL-050** | 5 | 6 | R2.5 | 10 | 75 | 2 | ● |
| **M200-2BL-060** | 6 | 6 | R3 | 12 | 75 | 2 | ● |
| **M200-2BL-080** | 8 | 8 | R4 | 14 | 75 | 2 | ● |
| **M200-2BL-090** | 9 | 10 | R4.5 | 16 | 100 | 2 | ● |
| **M200-2BL-100** | 10 | 10 | R5 | 18 | 100 | 2 | ● |
| **M200-2BL-110** | 11 | 12 | R5.5 | 20 | 100 | 2 | ● |
| **M200-2BL-120** | 12 | 12 | R6 | 22 | 100 | 2 | ● |
| **M200-2BL-140** | 14 | 14 | R7 | 26 | 150 | 2 | ● |
| **M200-2BL-160** | 16 | 16 | R8 | 30 | 150 | 2 | ● |
| **M200-2BL-180** | 18 | 18 | R9 | 34 | 150 | 2 | ● |
| **M200-2BL-200** | 20 | 20 | R10 | 38 | 150 | 2 | ● |

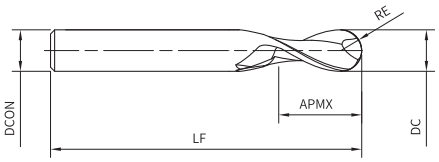
| Product code | DC (mm) h7 | DCON (mm) h6 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M200-2BX-040** | 4 | 4 | R2 | 8 | 100 | 2 | ● |
| **M200-2BX-060** | 6 | 6 | R3 | 12 | 100 | 2 | ● |
| **M200-2BX-070** | 7 | 8 | R3.5 | 14 | 100 | 2 | ● |
| **M200-2BX-080** | 8 | 8 | R4 | 14 | 100 | 2 | ● |
| **M200-2BX-100** | 10 | 10 | R5 | 18 | 150 | 2 | ● |
| **M200-2BX-120** | 12 | 12 | R6 | 22 | 150 | 2 | ● |

● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M170

Pro line
2 flutes ball nose end mill

Solid carbide end mill
Workpiece materials <HRC45-60



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

•• 1st choice • 2nd choice

| Product code | DC (mm) h7 | DCON (mm) h5 | RE (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M170-2BS-020** | 2 | 4 | R1 | 4 | 50 | 2 | ○ |
| **M170-2BS-030** | 3 | 4 | R1.5 | 6 | 50 | 2 | ○ |
| **M170-2BS-040** | 4 | 4 | R2 | 8 | 50 | 2 | ○ |
| **M170-2BS-060** | 6 | 6 | R3 | 12 | 50 | 2 | ○ |
| **M170-2BS-080** | 8 | 8 | R4 | 16 | 60 | 2 | ○ |
| **M170-2BS-100** | 10 | 10 | R5 | 18 | 75 | 2 | ○ |
| **M170-2BS-120** | 12 | 12 | R6 | 22 | 75 | 2 | ○ |
| **M170-2BS-160** | 16 | 16 | R8 | 30 | 100 | 2 | ○ |

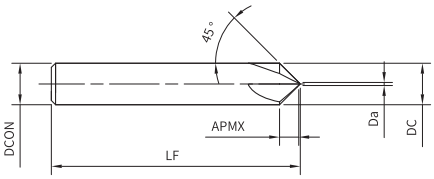


● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M180

Eco line
4 flutes chamfer mill

Solid carbide end mill



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

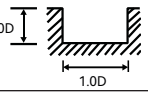
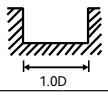
●● 1st choice ● 2nd choice

| Product code | DC (mm) h9 | DCON (mm) h6 | Da (mm) | APMX (mm) | LF (mm) | ZEFP | Stock |
|---|---|---|---|---|---|---|---|
| **M180-4WS-060** | 6 | 6 | 1 | 2.5 | 50 | 4 | ● |
| **M180-4WS-080** | 8 | 8 | 2 | 3 | 60 | 4 | ● |
| **M180-4WS-100** | 10 | 10 | 1.5 | 4.25 | 75 | 4 | ● |
| **M180-4WS-120** | 12 | 12 | 3 | 4.5 | 75 | 4 | ● |
| **M180-4WS-160** | 16 | 16 | 4 | 6 | 100 | 4 | ● |



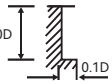
● : Standard stock ○ : Made-to-Order

## Solid Carbide End Mill M200 Cutting Data Recommendation

| Materials | | | | | | M200-2ES Slot milling 1.0D ( ISO P/K)  Slot milling 0.5D ( ISO M)  | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] | | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 85-120 | 0.007 | 0.018 | 0.027 | 0.045 | 0.054 | 0.059 | 0.063 | 0.072 | 0.099 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 95-130 | 0.008 | 0.020 | 0.030 | 0.050 | 0.060 | 0.065 | 0.070 | 0.080 | 0.110 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 95-130 | 0.008 | 0.020 | 0.030 | 0.050 | 0.060 | 0.065 | 0.070 | 0.080 | 0.100 |
| | | C > 0.55% | Annealed | 190 | 639 | 95-130 | 0.008 | 0.019 | 0.029 | 0.048 | 0.057 | 0.062 | 0.067 | 0.076 | 0.105 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 75-100 | 0.007 | 0.018 | 0.027 | 0.045 | 0.054 | 0.059 | 0.063 | 0.072 | 0.099 |
| | | Free cutting steel | Annealed | 220 | 745 | 80-120 | 0.008 | 0.019 | 0.029 | 0.048 | 0.057 | 0.062 | 0.067 | 0.076 | 0.105 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 100-120 | 0.008 | 0.019 | 0.029 | 0.048 | 0.057 | 0.062 | 0.067 | 0.076 | 0.105 |
| | | Heat-treated | | 300 | 1013 | 60-100 | 0.007 | 0.018 | 0.027 | 0.045 | 0.054 | 0.059 | 0.063 | 0.072 | 0.099 |
| | | Heat-treated | | 380 | 1282 | 60-100 | 0.007 | 0.017 | 0.026 | 0.043 | 0.052 | 0.056 | 0.060 | 0.069 | 0.095 |
| | | Heat-treated | | 430 | 1477 | 50-75 | 0.007 | 0.016 | 0.025 | 0.041 | 0.049 | 0.053 | 0.057 | 0.066 | 0.090 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 90-120 | 0.007 | 0.018 | 0.027 | 0.045 | 0.054 | 0.059 | 0.063 | 0.072 | 0.099 |
| | | Hardened and tempered | | 300 | 1013 | 75-100 | 0.007 | 0.018 | 0.027 | 0.045 | 0.054 | 0.059 | 0.063 | 0.072 | 0.099 |
| | | Hardened and tempered | | 400 | 1361 | 50-80 | 0.007 | 0.017 | 0.026 | 0.043 | 0.052 | 0.056 | 0.060 | 0.069 | 0.095 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 40-70 | 0.006 | 0.015 | 0.023 | 0.038 | 0.045 | 0.049 | 0.053 | 0.060 | 0.083 |
| | | Martensite,Heat-treated | | 330 | 1114 | 40-50 | 0.005 | 0.013 | 0.020 | 0.033 | 0.039 | 0.042 | 0.046 | 0.052 | 0.072 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 50-70 | 0.006 | 0.020 | 0.035 | 0.043 | 0.050 | 0.055 | 0.060 | 0.067 | 0.080 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 30-50 | 0.005 | 0.016 | 0.028 | 0.034 | 0.040 | 0.044 | 0.048 | 0.054 | 0.064 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 40-50 | 0.006 | 0.019 | 0.033 | 0.041 | 0.048 | 0.052 | 0.057 | 0.064 | 0.076 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 110-145 | 0.012 | 0.020 | 0.042 | 0.060 | 0.075 | 0.085 | 0.100 | 0.110 | 0.125 |
| | | Pearlitic | | 260 | 700 | 90-120 | 0.010 | 0.017 | 0.036 | 0.051 | 0.064 | 0.072 | 0.085 | 0.094 | 0.106 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 120-130 | 0.012 | 0.020 | 0.042 | 0.060 | 0.075 | 0.085 | 0.100 | 0.110 | 0.125 |
| | | High tensile strength/Austenitic | | 245 | 350 | 100-120 | 0.011 | 0.018 | 0.038 | 0.054 | 0.068 | 0.077 | 0.090 | 0.099 | 0.113 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 100-120 | 0.012 | 0.020 | 0.042 | 0.060 | 0.075 | 0.085 | 0.100 | 0.110 | 0.125 |
| | | Pearlitic | | 265 | 700 | 85-115 | 0.010 | 0.017 | 0.036 | 0.051 | 0.064 | 0.072 | 0.085 | 0.094 | 0.106 |
| | GGV(CGI) | | | 230 | 400 | 60-95 | 0.010 | 0.016 | 0.034 | 0.048 | 0.060 | 0.068 | 0.080 | 0.088 | 0.100 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

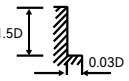
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M200 Cutting Data Recommendation

| Materials | | | | | | M200-4ES, M200-4ESP<br>M200-4EL, M200-4ELP<br>M200-4EX, M200-4RS<br>M200-4RL, M200-4CS<br>Square shoudler milling (rough machining)  | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 100-220 | 0.018 | 0.036 | 0.063 | 0.072 | 0.090 | 0.108 | 0.135 | 0.153 | 0.180 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 140-250 | 0.020 | 0.040 | 0.070 | 0.080 | 0.100 | 0.120 | 0.150 | 0.170 | 0.200 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 160-250 | 0.020 | 0.040 | 0.070 | 0.080 | 0.100 | 0.120 | 0.150 | 0.170 | 0.200 |
| | | C > 0.55% | Annealed | 190 | 639 | 160-250 | 0.019 | 0.038 | 0.067 | 0.076 | 0.095 | 0.114 | 0.143 | 0.162 | 0.190 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 120-190 | 0.018 | 0.036 | 0.063 | 0.072 | 0.090 | 0.108 | 0.135 | 0.153 | 0.180 |
| | | Free cutting steel | Annealed | 220 | 745 | 170-230 | 0.019 | 0.038 | 0.067 | 0.076 | 0.095 | 0.114 | 0.143 | 0.162 | 0.190 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 170-220 | 0.019 | 0.038 | 0.067 | 0.076 | 0.095 | 0.114 | 0.143 | 0.162 | 0.190 |
| | | Heat-treated | | 300 | 1013 | 100-180 | 0.018 | 0.036 | 0.063 | 0.072 | 0.090 | 0.108 | 0.135 | 0.153 | 0.180 |
| | | Heat-treated | | 380 | 1282 | 95-170 | 0.017 | 0.034 | 0.060 | 0.069 | 0.086 | 0.103 | 0.129 | 0.146 | 0.172 |
| | | Heat-treated | | 430 | 1477 | 80-120 | 0.016 | 0.033 | 0.057 | 0.066 | 0.082 | 0.098 | 0.123 | 0.139 | 0.164 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 160-180 | 0.018 | 0.036 | 0.063 | 0.072 | 0.090 | 0.108 | 0.135 | 0.153 | 0.180 |
| | | Hardened and tempered | | 300 | 1013 | 120-180 | 0.018 | 0.036 | 0.063 | 0.072 | 0.090 | 0.108 | 0.135 | 0.153 | 0.180 |
| | | Hardened and tempered | | 400 | 1361 | 90-130 | 0.017 | 0.034 | 0.060 | 0.069 | 0.086 | 0.103 | 0.129 | 0.146 | 0.172 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 75-100 | 0.015 | 0.030 | 0.053 | 0.060 | 0.075 | 0.090 | 0.113 | 0.128 | 0.150 |
| | | Martensite,Heat-treated | | 330 | 1114 | 55-980 | 0.013 | 0.026 | 0.046 | 0.052 | 0.065 | 0.078 | 0.098 | 0.111 | 0.130 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 80-130 | 0.012 | 0.032 | 0.050 | 0.060 | 0.080 | 0.100 | 0.120 | 0.140 | 0.160 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 50-80 | 0.010 | 0.026 | 0.040 | 0.048 | 0.064 | 0.080 | 0.096 | 0.112 | 0.128 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 50-90 | 0.011 | 0.030 | 0.048 | 0.057 | 0.076 | 0.095 | 0.114 | 0.133 | 0.152 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 180-250 | 0.020 | 0.040 | 0.070 | 0.090 | 0.120 | 0.140 | 0.160 | 0.180 | 0.220 |
| | | Pearlitic | | 260 | 700 | 150-165 | 0.017 | 0.034 | 0.060 | 0.077 | 0.102 | 0.119 | 0.136 | 0.153 | 0.187 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 180-200 | 0.020 | 0.040 | 0.070 | 0.090 | 0.120 | 0.140 | 0.160 | 0.180 | 0.220 |
| | | High tensile strength/Austenitic | | 245 | 350 | 160-200 | 0.018 | 0.036 | 0.063 | 0.081 | 0.108 | 0.126 | 0.144 | 0.162 | 0.198 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 150-230 | 0.020 | 0.040 | 0.070 | 0.090 | 0.120 | 0.140 | 0.160 | 0.180 | 0.220 |
| | | Pearlitic | | 265 | 700 | 150-195 | 0.017 | 0.034 | 0.060 | 0.077 | 0.102 | 0.119 | 0.136 | 0.153 | 0.187 |
| | GGV(CGI) | | | 230 | 400 | 125-160 | 0.016 | 0.032 | 0.056 | 0.072 | 0.096 | 0.112 | 0.128 | 0.144 | 0.176 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

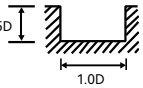
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M200/M205 Cutting Data Recommendation

| Materials | | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | M200-4ES, M200-4ESP, M200-4ELP<br>M200-4EL, M200-4EX<br>M200-4RS, M200-4RL<br>M200-4CS, M205-6ES<br>Square shoulder milling (Finsih milling)  | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | | | | fz [mm/Tooth] | | | | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 160-280 | 0.027 | 0.045 | 0.099 | 0.126 | 0.153 | 0.180 | 0.225 | 0.270 | 0.315 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 180-300 | 0.030 | 0.050 | 0.110 | 0.140 | 0.170 | 0.200 | 0.250 | 0.300 | 0.350 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 160-280 | 0.030 | 0.050 | 0.110 | 0.140 | 0.170 | 0.200 | 0.250 | 0.300 | 0.350 |
| | | C > 0.55% | Annealed | 190 | 639 | 180-300 | 0.029 | 0.048 | 0.105 | 0.133 | 0.162 | 0.190 | 0.238 | 0.285 | 0.333 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 100-210 | 0.027 | 0.045 | 0.099 | 0.126 | 0.153 | 0.180 | 0.225 | 0.270 | 0.315 |
| | | Free cutting steel | Annealed | 220 | 745 | 130-240 | 0.029 | 0.048 | 0.105 | 0.133 | 0.162 | 0.190 | 0.238 | 0.285 | 0.333 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 160-240 | 0.029 | 0.048 | 0.105 | 0.133 | 0.162 | 0.190 | 0.238 | 0.285 | 0.333 |
| | | Heat-treated | | 300 | 1013 | 100-190 | 0.027 | 0.045 | 0.099 | 0.126 | 0.153 | 0.180 | 0.225 | 0.270 | 0.315 |
| | | Heat-treated | | 380 | 1282 | 95-160 | 0.026 | 0.043 | 0.095 | 0.120 | 0.146 | 0.172 | 0.215 | 0.258 | 0.301 |
| | | Heat-treated | | 430 | 1477 | 80-150 | 0.025 | 0.041 | 0.090 | 0.115 | 0.139 | 0.164 | 0.205 | 0.246 | 0.287 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 160-280 | 0.027 | 0.045 | 0.099 | 0.126 | 0.153 | 0.180 | 0.225 | 0.270 | 0.315 |
| | | Hardened and tempered | | 300 | 1013 | 120-190 | 0.027 | 0.045 | 0.099 | 0.126 | 0.153 | 0.180 | 0.225 | 0.270 | 0.315 |
| | | Hardened and tempered | | 400 | 1361 | 85-120 | 0.026 | 0.043 | 0.095 | 0.120 | 0.146 | 0.172 | 0.215 | 0.258 | 0.301 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 65-100 | 0.023 | 0.038 | 0.083 | 0.105 | 0.128 | 0.150 | 0.188 | 0.225 | 0.263 |
| | | Martensite,Heat-treated | | 330 | 1114 | 55-90 | 0.020 | 0.033 | 0.072 | 0.091 | 0.111 | 0.130 | 0.163 | 0.195 | 0.228 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 75-150 | 0.023 | 0.040 | 0.060 | 0.080 | 0.110 | 0.140 | 0.180 | 0.240 | 0.300 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 50-80 | 0.018 | 0.032 | 0.048 | 0.064 | 0.088 | 0.112 | 0.144 | 0.192 | 0.240 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 70-80 | 0.022 | 0.038 | 0.057 | 0.076 | 0.105 | 0.133 | 0.171 | 0.228 | 0.285 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 200-300 | 0.030 | 0.080 | 0.130 | 0.160 | 0.200 | 0.250 | 0.300 | 0.350 | 0.400 |
| | | Pearlitic | | 260 | 700 | 150-250 | 0.026 | 0.068 | 0.111 | 0.136 | 0.170 | 0.213 | 0.255 | 0.298 | 0.340 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 180-200 | 0.030 | 0.080 | 0.130 | 0.160 | 0.200 | 0.250 | 0.300 | 0.350 | 0.400 |
| | | High tensile strength/Austenitic | | 245 | 350 | 160-260 | 0.027 | 0.072 | 0.117 | 0.144 | 0.180 | 0.225 | 0.270 | 0.315 | 0.360 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 180-260 | 0.030 | 0.080 | 0.130 | 0.160 | 0.200 | 0.250 | 0.300 | 0.350 | 0.400 |
| | | Pearlitic | | 265 | 700 | 150-220 | 0.026 | 0.068 | 0.111 | 0.136 | 0.170 | 0.213 | 0.255 | 0.298 | 0.340 |
| | GGV(CGI) | | | 230 | 400 | 135-190 | 0.024 | 0.064 | 0.104 | 0.128 | 0.160 | 0.200 | 0.240 | 0.280 | 0.320 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

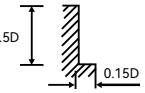
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M245 Cutting Data Recommendation

| Materials | | | | | | M245-2ES<br>M245-3ES<br>M245-3EL | Slot milling  | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | | | | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | | | | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | | | | | | | | | | |
| | | C > 0.55% | Annealed | 190 | 639 | | | | | | | | | | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | | | | | | | | | | |
| | | Free cutting steel | Annealed | 220 | 745 | | | | | | | | | | |
| | Low-alloyed steel | Annealed | | 175 | 591 | | | | | | | | | | |
| | | Heat-treated | | 300 | 1013 | | | | | | | | | | |
| | | Heat-treated | | 380 | 1282 | | | | | | | | | | |
| | | Heat-treated | | 430 | 1477 | | | | | | | | | | |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | | | | | | | | | | |
| | | Hardened and tempered | | 300 | 1013 | | | | | | | | | | |
| | | Hardened and tempered | | 400 | 1361 | | | | | | | | | | |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | | | | | | | | | | |
| | | Martensite,Heat-treated | | 330 | 1114 | | | | | | | | | | |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | | | | | | | | | | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | | | | | | | | | | |
| | | Austenitic,ferritic,duplex | | 230 | 778 | | | | | | | | | | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | 330-500 | 0.020 | 0.040 | 0.060 | 0.100 | 0.120 | 0.140 | 0.160 | 0.180 | 0.200 |
| | | Aged alloy | | 100 | 340 | 330-400 | 0.020 | 0.040 | 0.060 | 0.100 | 0.120 | 0.140 | 0.160 | 0.180 | 0.200 |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | 330-400 | 0.020 | 0.040 | 0.060 | 0.100 | 0.120 | 0.140 | 0.160 | 0.180 | 0.200 |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | 330-400 | 0.020 | 0.040 | 0.060 | 0.100 | 0.120 | 0.140 | 0.160 | 0.180 | 0.200 |
| | | > 12% Si, non-aging alloy | | 130 | 450 | 150-300 | 0.017 | 0.034 | 0.051 | 0.085 | 0.102 | 0.119 | 0.136 | 0.153 | 0.170 |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | 250-400 | 0.018 | 0.036 | 0.054 | 0.090 | 0.108 | 0.126 | 0.144 | 0.162 | 0.180 |
| | | Brass,bronze,red brass | | 90 | 310 | 250-300 | 0.018 | 0.036 | 0.054 | 0.090 | 0.108 | 0.126 | 0.144 | 0.162 | 0.180 |
| | | Cu alloy,short chip | | 110 | 380 | 200-250 | 0.018 | 0.036 | 0.054 | 0.090 | 0.108 | 0.126 | 0.144 | 0.162 | 0.180 |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

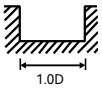
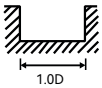
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M245 Cutting Data Recommendation

| Materials | | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | M245-2ES M245-3ES M245-3EL Square shoulder milling   | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | | | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | | | | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | | | | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | | | | | | | | | | |
| | | C > 0.55% | Annealed | 190 | 639 | | | | | | | | | | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | | | | | | | | | | |
| | | Free cutting steel | Annealed | 220 | 745 | | | | | | | | | | |
| | Low-alloyed steel | Annealed | | 175 | 591 | | | | | | | | | | |
| | | Heat-treated | | 300 | 1013 | | | | | | | | | | |
| | | Heat-treated | | 380 | 1282 | | | | | | | | | | |
| | | Heat-treated | | 430 | 1477 | | | | | | | | | | |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | | | | | | | | | | |
| | | Hardened and tempered | | 300 | 1013 | | | | | | | | | | |
| | | Hardened and tempered | | 400 | 1361 | | | | | | | | | | |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | | | | | | | | | | |
| | | Martensite,Heat-treated | | 330 | 1114 | | | | | | | | | | |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | | | | | | | | | | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | | | | | | | | | | |
| | | Austenitic,ferritic,duplex | | 230 | 778 | | | | | | | | | | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | 380-450 | 0.022 | 0.040 | 0.055 | 0.065 | 0.090 | 0.110 | 0.120 | 0.140 | 0.160 |
| | | Aged alloy | | 100 | 340 | 320-380 | 0.022 | 0.040 | 0.055 | 0.065 | 0.090 | 0.110 | 0.120 | 0.140 | 0.160 |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | 260-300 | 0.022 | 0.040 | 0.055 | 0.065 | 0.090 | 0.110 | 0.120 | 0.140 | 0.160 |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | 260-300 | 0.022 | 0.040 | 0.055 | 0.065 | 0.090 | 0.110 | 0.120 | 0.140 | 0.160 |
| | | > 12% Si, non-aging alloy | | 130 | 450 | 250-290 | 0.019 | 0.034 | 0.047 | 0.055 | 0.077 | 0.094 | 0.102 | 0.119 | 0.136 |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | 280-350 | 0.020 | 0.036 | 0.050 | 0.059 | 0.081 | 0.099 | 0.108 | 0.126 | 0.144 |
| | | Brass,bronze,red brass | | 90 | 310 | 250-300 | 0.020 | 0.036 | 0.050 | 0.059 | 0.081 | 0.099 | 0.108 | 0.126 | 0.144 |
| | | Cu alloy,short chip | | 110 | 380 | 200-250 | 0.020 | 0.036 | 0.050 | 0.059 | 0.081 | 0.099 | 0.108 | 0.126 | 0.144 |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M210 Cutting Data Recommendation

| Materials | | | | | | M210-4CS M210-4RS Slot milling 1.0D ( ISO P/K)  Slot milling 0.3-0.5D ( ISO M/S)  | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] | | | | | | | | |
| | | | | | | | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 85-150 | 0.016 | 0.023 | 0.032 | 0.040 | 0.054 | 0.059 | 0.063 | 0.072 | 0.081 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 110-150 | 0.018 | 0.025 | 0.035 | 0.044 | 0.060 | 0.065 | 0.070 | 0.080 | 0.090 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 110-150 | 0.018 | 0.025 | 0.035 | 0.044 | 0.060 | 0.065 | 0.070 | 0.080 | 0.090 |
| | | C > 0.55% | Annealed | 190 | 639 | 100-120 | 0.017 | 0.024 | 0.033 | 0.042 | 0.057 | 0.062 | 0.067 | 0.076 | 0.086 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 80-110 | 0.016 | 0.023 | 0.032 | 0.040 | 0.054 | 0.059 | 0.063 | 0.072 | 0.081 |
| | | Free cutting steel | Annealed | 220 | 745 | 100-120 | 0.017 | 0.024 | 0.033 | 0.042 | 0.057 | 0.062 | 0.067 | 0.076 | 0.086 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 100-120 | 0.017 | 0.024 | 0.033 | 0.042 | 0.057 | 0.062 | 0.067 | 0.076 | 0.086 |
| | | Heat-treated | | 300 | 1013 | 80-110 | 0.016 | 0.023 | 0.032 | 0.040 | 0.054 | 0.059 | 0.063 | 0.072 | 0.081 |
| | | Heat-treated | | 380 | 1282 | 80-100 | 0.015 | 0.022 | 0.030 | 0.038 | 0.052 | 0.056 | 0.060 | 0.069 | 0.077 |
| | | Heat-treated | | 430 | 1477 | 70-110 | 0.015 | 0.021 | 0.029 | 0.036 | 0.049 | 0.053 | 0.057 | 0.066 | 0.074 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 100-120 | 0.016 | 0.023 | 0.032 | 0.040 | 0.054 | 0.059 | 0.063 | 0.072 | 0.081 |
| | | Hardened and tempered | | 300 | 1013 | 80-100 | 0.016 | 0.023 | 0.032 | 0.040 | 0.054 | 0.059 | 0.063 | 0.072 | 0.081 |
| | | Hardened and tempered | | 400 | 1361 | 70-110 | 0.015 | 0.022 | 0.030 | 0.038 | 0.052 | 0.056 | 0.060 | 0.069 | 0.077 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 50-70 | 0.014 | 0.019 | 0.026 | 0.033 | 0.045 | 0.049 | 0.053 | 0.060 | 0.068 |
| | | Martensite,Heat-treated | | 330 | 1114 | 40-60 | 0.012 | 0.016 | 0.023 | 0.029 | 0.039 | 0.042 | 0.046 | 0.052 | 0.059 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 60-80 | 0.017 | 0.025 | 0.035 | 0.040 | 0.045 | 0.050 | 0.060 | 0.070 | 0.080 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 30-45 | 0.014 | 0.020 | 0.028 | 0.032 | 0.036 | 0.040 | 0.048 | 0.056 | 0.064 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 40-50 | 0.016 | 0.024 | 0.033 | 0.038 | 0.043 | 0.048 | 0.057 | 0.067 | 0.076 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 100-130 | 0.020 | 0.035 | 0.050 | 0.070 | 0.080 | 0.090 | 0.090 | 0.100 | 0.110 |
| | | Pearlitic | | 260 | 700 | 90-120 | 0.017 | 0.030 | 0.043 | 0.060 | 0.068 | 0.077 | 0.077 | 0.085 | 0.094 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 120-130 | 0.020 | 0.035 | 0.050 | 0.070 | 0.080 | 0.090 | 0.090 | 0.100 | 0.110 |
| | | High tensile strength/Austenitic | | 245 | 350 | 95-110 | 0.018 | 0.032 | 0.045 | 0.063 | 0.072 | 0.081 | 0.081 | 0.090 | 0.099 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 110-130 | 0.020 | 0.035 | 0.050 | 0.070 | 0.080 | 0.090 | 0.090 | 0.100 | 0.110 |
| | | Pearlitic | | 265 | 700 | 85-110 | 0.017 | 0.030 | 0.043 | 0.060 | 0.068 | 0.077 | 0.077 | 0.085 | 0.094 |
| | GGV(CGI) | | | 230 | 400 | 95-110 | 0.016 | 0.028 | 0.040 | 0.056 | 0.064 | 0.072 | 0.072 | 0.080 | 0.088 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 40-55 | 0.011 | 0.019 | 0.025 | 0.035 | 0.045 | 0.060 | 0.070 | 0.070 | 0.080 |
| | | | Aged | 280 | 940 | 30-40 | 0.009 | 0.015 | 0.020 | 0.028 | 0.036 | 0.048 | 0.056 | 0.056 | 0.064 |
| | | Ni or Co based | Annealed | 250 | 840 | 40-55 | 0.011 | 0.019 | 0.025 | 0.035 | 0.045 | 0.060 | 0.070 | 0.070 | 0.080 |
| | | | Aged | 350 | 1180 | 30-40 | 0.009 | 0.015 | 0.020 | 0.028 | 0.036 | 0.048 | 0.056 | 0.056 | 0.064 |
| | | | Cast | 320 | 1080 | 30-40 | 0.009 | 0.015 | 0.020 | 0.028 | 0.036 | 0.048 | 0.056 | 0.056 | 0.064 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 40-55 | 0.012 | 0.021 | 0.028 | 0.039 | 0.050 | 0.066 | 0.077 | 0.077 | 0.088 |
| | | α and β alloy, aged | | 375 | 1260 | 40-55 | 0.012 | 0.021 | 0.028 | 0.039 | 0.050 | 0.066 | 0.077 | 0.077 | 0.088 |
| | | β alloy | | 410 | 1400 | 30-40 | 0.008 | 0.014 | 0.019 | 0.026 | 0.034 | 0.045 | 0.053 | 0.053 | 0.060 |
| | Tungsten alloy | | | 300 | 1010 | 50-60 | 0.013 | 0.023 | 0.030 | 0.042 | 0.054 | 0.072 | 0.084 | 0.084 | 0.096 |
| | Molybdenum alloy | | | 300 | 1010 | 50-60 | 0.013 | 0.023 | 0.030 | 0.042 | 0.054 | 0.072 | 0.084 | 0.084 | 0.096 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M210 Cutting Data Recommendation

| Materials | | | | | | M210-4CS M210-4RS Square shoulder milling (Rough milling) 1.0D 0.1D | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] | | | | | | | | |
| | | | | | | | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 140-280 | 0.045 | 0.059 | 0.077 | 0.099 | 0.117 | 0.135 | 0.153 | 0.171 | 0.180 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 180-280 | 0.050 | 0.065 | 0.085 | 0.110 | 0.130 | 0.150 | 0.170 | 0.190 | 0.200 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 160-250 | 0.050 | 0.065 | 0.085 | 0.110 | 0.130 | 0.150 | 0.170 | 0.190 | 0.200 |
| | | C > 0.55% | Annealed | 190 | 639 | 160-280 | 0.048 | 0.062 | 0.081 | 0.105 | 0.124 | 0.143 | 0.162 | 0.181 | 0.190 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 120-200 | 0.045 | 0.059 | 0.077 | 0.099 | 0.117 | 0.135 | 0.153 | 0.171 | 0.180 |
| | | Free cutting steel | Annealed | 220 | 745 | 190-280 | 0.048 | 0.062 | 0.081 | 0.105 | 0.124 | 0.143 | 0.162 | 0.181 | 0.190 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 200-280 | 0.048 | 0.062 | 0.081 | 0.105 | 0.124 | 0.143 | 0.162 | 0.181 | 0.190 |
| | | Heat-treated | | 300 | 1013 | 120-190 | 0.045 | 0.059 | 0.077 | 0.099 | 0.117 | 0.135 | 0.153 | 0.171 | 0.180 |
| | | Heat-treated | | 380 | 1282 | 110-160 | 0.043 | 0.056 | 0.073 | 0.095 | 0.112 | 0.129 | 0.146 | 0.163 | 0.172 |
| | | Heat-treated | | 430 | 1477 | 90-110 | 0.041 | 0.053 | 0.070 | 0.090 | 0.107 | 0.123 | 0.139 | 0.156 | 0.164 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 160-250 | 0.045 | 0.059 | 0.077 | 0.099 | 0.117 | 0.135 | 0.153 | 0.171 | 0.180 |
| | | Hardened and tempered | | 300 | 1013 | 120-190 | 0.045 | 0.059 | 0.077 | 0.099 | 0.117 | 0.135 | 0.153 | 0.171 | 0.180 |
| | | Hardened and tempered | | 400 | 1361 | 90-110 | 0.043 | 0.056 | 0.073 | 0.095 | 0.112 | 0.129 | 0.146 | 0.163 | 0.172 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 75-100 | 0.038 | 0.049 | 0.064 | 0.083 | 0.098 | 0.113 | 0.128 | 0.143 | 0.150 |
| | | Martensite,Heat-treated | | 330 | 1114 | 60-90 | 0.033 | 0.042 | 0.055 | 0.072 | 0.085 | 0.098 | 0.111 | 0.124 | 0.130 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 100-130 | 0.036 | 0.050 | 0.068 | 0.085 | 0.100 | 0.115 | 0.130 | 0.150 | 0.160 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 60-90 | 0.029 | 0.040 | 0.054 | 0.068 | 0.080 | 0.092 | 0.104 | 0.120 | 0.128 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 70-100 | 0.034 | 0.048 | 0.065 | 0.081 | 0.095 | 0.109 | 0.124 | 0.143 | 0.152 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 200-280 | 0.055 | 0.080 | 0.100 | 0.130 | 0.150 | 0.170 | 0.190 | 0.220 | 0.220 |
| | | Pearlitic | | 260 | 700 | 180-250 | 0.047 | 0.068 | 0.085 | 0.111 | 0.128 | 0.145 | 0.162 | 0.187 | 0.187 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 200-280 | 0.055 | 0.080 | 0.100 | 0.130 | 0.150 | 0.170 | 0.190 | 0.220 | 0.220 |
| | | High tensile strength/Austenitic | | 245 | 350 | 180-240 | 0.050 | 0.072 | 0.090 | 0.117 | 0.135 | 0.153 | 0.171 | 0.198 | 0.198 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 180-240 | 0.055 | 0.080 | 0.100 | 0.130 | 0.150 | 0.170 | 0.190 | 0.220 | 0.220 |
| | | Pearlitic | | 265 | 700 | 160-200 | 0.047 | 0.068 | 0.085 | 0.111 | 0.128 | 0.145 | 0.162 | 0.187 | 0.187 |
| | GGV(CGI) | | | 230 | 400 | 145-195 | 0.044 | 0.064 | 0.080 | 0.104 | 0.120 | 0.136 | 0.152 | 0.176 | 0.176 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 55-70 | 0.035 | 0.050 | 0.070 | 0.090 | 0.110 | 0.130 | 0.150 | 0.160 | 0.160 |
| | | | Aged | 280 | 940 | 40-60 | 0.028 | 0.040 | 0.056 | 0.072 | 0.088 | 0.104 | 0.120 | 0.128 | 0.128 |
| | | Ni or Co based | Annealed | 250 | 840 | 60-80 | 0.035 | 0.050 | 0.070 | 0.090 | 0.110 | 0.130 | 0.150 | 0.160 | 0.160 |
| | | | Aged | 350 | 1180 | 30-50 | 0.028 | 0.040 | 0.056 | 0.072 | 0.088 | 0.104 | 0.120 | 0.128 | 0.128 |
| | | | Cast | 320 | 1080 | 30-50 | 0.028 | 0.040 | 0.056 | 0.072 | 0.088 | 0.104 | 0.120 | 0.128 | 0.128 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 40-55 | 0.039 | 0.055 | 0.077 | 0.099 | 0.121 | 0.143 | 0.165 | 0.176 | 0.176 |
| | | α and β alloy, aged | | 375 | 1260 | 50-70 | 0.039 | 0.055 | 0.077 | 0.099 | 0.121 | 0.143 | 0.165 | 0.176 | 0.176 |
| | | β alloy | | 410 | 1400 | 35-50 | 0.026 | 0.038 | 0.053 | 0.068 | 0.083 | 0.098 | 0.113 | 0.120 | 0.120 |
| | Tungsten alloy | | | 300 | 1010 | 60-85 | 0.042 | 0.060 | 0.084 | 0.108 | 0.132 | 0.156 | 0.180 | 0.192 | 0.192 |
| | Molybdenum alloy | | | 300 | 1010 | 70-95 | 0.042 | 0.060 | 0.084 | 0.108 | 0.132 | 0.156 | 0.180 | 0.192 | 0.192 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

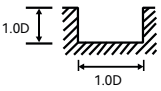
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M210 Cutting Data Recommendation

| Materials | | | | | | M210-4CS / M210-4RS Square shoulder milling (Finsih milling) 1.5D 0.03D | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 160-280 | 0.063 | 0.090 | 0.117 | 0.144 | 0.171 | 0.198 | 0.234 | 0.261 | 0.288 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 220-340 | 0.070 | 0.100 | 0.130 | 0.160 | 0.190 | 0.220 | 0.260 | 0.290 | 0.320 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 220-340 | 0.070 | 0.100 | 0.130 | 0.160 | 0.190 | 0.220 | 0.260 | 0.290 | 0.320 |
| | | C > 0.55% | Annealed | 190 | 639 | 200-320 | 0.067 | 0.095 | 0.124 | 0.152 | 0.181 | 0.209 | 0.247 | 0.276 | 0.304 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 150-270 | 0.063 | 0.090 | 0.117 | 0.144 | 0.171 | 0.198 | 0.234 | 0.261 | 0.288 |
| | | Free cutting steel | Annealed | 220 | 745 | 200-320 | 0.067 | 0.095 | 0.124 | 0.152 | 0.181 | 0.209 | 0.247 | 0.276 | 0.304 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 200-320 | 0.067 | 0.095 | 0.124 | 0.152 | 0.181 | 0.209 | 0.247 | 0.276 | 0.304 |
| | | Heat-treated | | 300 | 1013 | 150-270 | 0.063 | 0.090 | 0.117 | 0.144 | 0.171 | 0.198 | 0.234 | 0.261 | 0.288 |
| | | Heat-treated | | 380 | 1282 | 120-240 | 0.060 | 0.086 | 0.112 | 0.138 | 0.163 | 0.189 | 0.224 | 0.249 | 0.275 |
| | | Heat-treated | | 430 | 1477 | 100-210 | 0.057 | 0.082 | 0.107 | 0.131 | 0.156 | 0.180 | 0.213 | 0.238 | 0.262 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 150-270 | 0.063 | 0.090 | 0.117 | 0.144 | 0.171 | 0.198 | 0.234 | 0.261 | 0.288 |
| | | Hardened and tempered | | 300 | 1013 | 150-270 | 0.063 | 0.090 | 0.117 | 0.144 | 0.171 | 0.198 | 0.234 | 0.261 | 0.288 |
| | | Hardened and tempered | | 400 | 1361 | 120-240 | 0.060 | 0.086 | 0.112 | 0.138 | 0.163 | 0.189 | 0.224 | 0.249 | 0.275 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 80-160 | 0.053 | 0.075 | 0.098 | 0.120 | 0.143 | 0.165 | 0.195 | 0.218 | 0.240 |
| | | Martensite,Heat-treated | | 330 | 1114 | 60-120 | 0.046 | 0.065 | 0.085 | 0.104 | 0.124 | 0.143 | 0.169 | 0.189 | 0.208 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 100-160 | 0.056 | 0.077 | 0.099 | 0.120 | 0.144 | 0.168 | 0.192 | 0.216 | 0.240 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 70-120 | 0.045 | 0.062 | 0.079 | 0.096 | 0.115 | 0.134 | 0.154 | 0.173 | 0.192 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 80-140 | 0.042 | 0.058 | 0.074 | 0.090 | 0.108 | 0.126 | 0.144 | 0.162 | 0.180 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 210-310 | 0.080 | 0.110 | 0.140 | 0.170 | 0.208 | 0.246 | 0.284 | 0.322 | 0.360 |
| | | Pearlitic | | 260 | 700 | 180-280 | 0.068 | 0.094 | 0.119 | 0.145 | 0.177 | 0.209 | 0.241 | 0.274 | 0.306 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 210-310 | 0.080 | 0.110 | 0.140 | 0.170 | 0.208 | 0.246 | 0.284 | 0.322 | 0.360 |
| | | High tensile strength/Austenitic | | 245 | 350 | 180-270 | 0.072 | 0.099 | 0.126 | 0.153 | 0.187 | 0.221 | 0.256 | 0.290 | 0.324 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 210-310 | 0.080 | 0.110 | 0.140 | 0.170 | 0.208 | 0.246 | 0.284 | 0.322 | 0.360 |
| | | Pearlitic | | 265 | 700 | 180-280 | 0.068 | 0.094 | 0.119 | 0.145 | 0.177 | 0.209 | 0.241 | 0.274 | 0.306 |
| | GGV(CGI) | | | 230 | 400 | 150-210 | 0.064 | 0.088 | 0.112 | 0.136 | 0.166 | 0.197 | 0.227 | 0.258 | 0.288 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 55-75 | 0.040 | 0.060 | 0.080 | 0.100 | 0.116 | 0.132 | 0.148 | 0.164 | 0.180 |
| | | | Aged | 280 | 940 | 40-60 | 0.032 | 0.048 | 0.064 | 0.080 | 0.093 | 0.106 | 0.118 | 0.131 | 0.144 |
| | | Ni or Co based | Annealed | 250 | 840 | 55-75 | 0.040 | 0.060 | 0.080 | 0.100 | 0.116 | 0.132 | 0.148 | 0.164 | 0.180 |
| | | | Aged | 350 | 1180 | 40-60 | 0.032 | 0.048 | 0.064 | 0.080 | 0.093 | 0.106 | 0.118 | 0.131 | 0.144 |
| | | | Cast | 320 | 1080 | 40-60 | 0.032 | 0.048 | 0.064 | 0.080 | 0.093 | 0.106 | 0.118 | 0.131 | 0.144 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 40-60 | 0.044 | 0.066 | 0.088 | 0.110 | 0.128 | 0.145 | 0.163 | 0.180 | 0.198 |
| | | α and β alloy, aged | | 375 | 1260 | 40-60 | 0.044 | 0.066 | 0.088 | 0.110 | 0.128 | 0.145 | 0.163 | 0.180 | 0.198 |
| | | β alloy | | 410 | 1400 | 35-55 | 0.030 | 0.045 | 0.060 | 0.075 | 0.087 | 0.099 | 0.111 | 0.123 | 0.135 |
| | Tungsten alloy | | | 300 | 1010 | 60-90 | 0.048 | 0.072 | 0.096 | 0.120 | 0.139 | 0.158 | 0.178 | 0.197 | 0.216 |
| | Molybdenum alloy | | | 300 | 1010 | 60-90 | 0.048 | 0.072 | 0.096 | 0.120 | 0.139 | 0.158 | 0.178 | 0.197 | 0.216 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M216 Cutting Data Recommendation

| Materials | | | | | | M216-4PS<br>M216-5PS<br>M216-6PS | Slot milling  | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | |
| | | | | | | | 6 | 8 | 10 | 12 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 95-145 | 0.024 | 0.032 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 155-220 | 0.027 | 0.035 | 0.043 | 0.052 | 0.070 | 0.089 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 155-220 | 0.027 | 0.035 | 0.043 | 0.052 | 0.070 | 0.089 |
| | | C > 0.55% | Annealed | 190 | 639 | 130-190 | 0.026 | 0.033 | 0.041 | 0.049 | 0.067 | 0.085 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 95-145 | 0.024 | 0.032 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | Free cutting steel | Annealed | 220 | 745 | 130-190 | 0.026 | 0.033 | 0.041 | 0.049 | 0.067 | 0.085 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 130-190 | 0.026 | 0.033 | 0.041 | 0.049 | 0.067 | 0.085 |
| | | Heat-treated | | 300 | 1013 | 95-145 | 0.024 | 0.032 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | Heat-treated | | 380 | 1282 | 75-110 | 0.023 | 0.030 | 0.037 | 0.045 | 0.060 | 0.077 |
| | | Heat-treated | | 430 | 1477 | 65-95 | 0.022 | 0.029 | 0.035 | 0.043 | 0.057 | 0.073 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 95-145 | 0.024 | 0.032 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | Hardened and tempered | | 300 | 1013 | 95-145 | 0.024 | 0.032 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | Hardened and tempered | | 400 | 1361 | 75-110 | 0.023 | 0.030 | 0.037 | 0.045 | 0.060 | 0.077 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 45-70 | 0.020 | 0.026 | 0.032 | 0.039 | 0.053 | 0.067 |
| | | Martensite,Heat-treated | | 330 | 1114 | 32-50 | 0.018 | 0.023 | 0.028 | 0.034 | 0.046 | 0.058 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 45-65 | 0.020 | 0.026 | 0.032 | 0.038 | 0.050 | 0.062 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 28-42 | 0.016 | 0.021 | 0.026 | 0.030 | 0.040 | 0.050 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 38-58 | 0.019 | 0.025 | 0.030 | 0.036 | 0.048 | 0.059 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 120-180 | 0.026 | 0.036 | 0.047 | 0.057 | 0.076 | 0.098 |
| | | Pearlitic | | 260 | 700 | 95-145 | 0.022 | 0.031 | 0.040 | 0.048 | 0.065 | 0.083 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 120-180 | 0.026 | 0.036 | 0.047 | 0.057 | 0.076 | 0.098 |
| | | High tensile strength/Austenitic | | 245 | 350 | 100-150 | 0.023 | 0.032 | 0.042 | 0.051 | 0.068 | 0.088 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 120-180 | 0.026 | 0.036 | 0.047 | 0.057 | 0.076 | 0.098 |
| | | Pearlitic | | 265 | 700 | 95-145 | 0.022 | 0.031 | 0.040 | 0.048 | 0.065 | 0.083 |
| | GGV(CGI) | | | 230 | 400 | 80-120 | 0.021 | 0.029 | 0.038 | 0.046 | 0.061 | 0.078 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 30-48 | 0.018 | 0.025 | 0.032 | 0.038 | 0.052 | 0.066 |
| | | | Aged | 280 | 940 | 20-30 | 0.014 | 0.020 | 0.026 | 0.030 | 0.042 | 0.053 |
| | | Ni or Co based | Annealed | 250 | 840 | 30-48 | 0.018 | 0.025 | 0.032 | 0.038 | 0.052 | 0.066 |
| | | | Aged | 350 | 1180 | 20-30 | 0.014 | 0.020 | 0.026 | 0.030 | 0.042 | 0.053 |
| | | | Cast | 320 | 1080 | 20-30 | 0.014 | 0.020 | 0.026 | 0.030 | 0.042 | 0.053 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 30-50 | 0.020 | 0.028 | 0.035 | 0.042 | 0.057 | 0.073 |
| | | α and β alloy, aged | | 375 | 1260 | 30-50 | 0.020 | 0.028 | 0.035 | 0.042 | 0.057 | 0.073 |
| | | β alloy | | 410 | 1400 | 16-28 | 0.014 | 0.019 | 0.024 | 0.029 | 0.039 | 0.050 |
| | Tungsten alloy | | | 300 | 1010 | 42-65 | 0.022 | 0.030 | 0.038 | 0.046 | 0.062 | 0.079 |
| | Molybdenum alloy | | | 300 | 1010 | 42-65 | 0.022 | 0.030 | 0.038 | 0.046 | 0.062 | 0.079 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | |

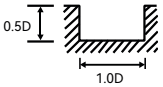
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M216 Cutting Data Recommendation

| Materials | | | | | | M216-4PS<br>M216-5PS<br>M216-6PS | Square shoulder milling (Rough milling) 1.0D, 0.1D | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | |
| | | | | | | | 6 | 8 | 10 | 12 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 170-260 | 0.050 | 0.065 | 0.079 | 0.095 | 0.131 | 0.164 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 280-400 | 0.055 | 0.072 | 0.088 | 0.105 | 0.145 | 0.182 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 280-400 | 0.055 | 0.072 | 0.088 | 0.105 | 0.145 | 0.182 |
| | | C > 0.55% | Annealed | 190 | 639 | 240-340 | 0.052 | 0.068 | 0.084 | 0.100 | 0.138 | 0.173 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 168-248 | 0.050 | 0.065 | 0.079 | 0.095 | 0.131 | 0.164 |
| | | Free cutting steel | Annealed | 220 | 745 | 240-340 | 0.052 | 0.068 | 0.084 | 0.100 | 0.138 | 0.173 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 240-340 | 0.052 | 0.068 | 0.084 | 0.100 | 0.138 | 0.173 |
| | | Heat-treated | | 300 | 1013 | 168-248 | 0.050 | 0.065 | 0.079 | 0.095 | 0.131 | 0.164 |
| | | Heat-treated | | 380 | 1282 | 140-200 | 0.047 | 0.062 | 0.076 | 0.090 | 0.125 | 0.157 |
| | | Heat-treated | | 430 | 1477 | 118-168 | 0.045 | 0.059 | 0.072 | 0.086 | 0.119 | 0.149 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 168-248 | 0.050 | 0.065 | 0.079 | 0.095 | 0.131 | 0.164 |
| | | Hardened and tempered | | 300 | 1013 | 168-248 | 0.050 | 0.065 | 0.079 | 0.095 | 0.131 | 0.164 |
| | | Hardened and tempered | | 400 | 1361 | 140-200 | 0.047 | 0.062 | 0.076 | 0.090 | 0.125 | 0.157 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 85-125 | 0.041 | 0.054 | 0.066 | 0.079 | 0.109 | 0.137 |
| | | Martensite,Heat-treated | | 330 | 1114 | 55-85 | 0.036 | 0.047 | 0.057 | 0.068 | 0.094 | 0.118 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 85-125 | 0.041 | 0.054 | 0.066 | 0.079 | 0.108 | 0.136 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 50-80 | 0.033 | 0.043 | 0.053 | 0.063 | 0.086 | 0.109 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 70-110 | 0.039 | 0.051 | 0.063 | 0.075 | 0.103 | 0.129 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 220-320 | 0.061 | 0.078 | 0.095 | 0.112 | 0.158 | 0.201 |
| | | Pearlitic | | 260 | 700 | 175-255 | 0.052 | 0.066 | 0.081 | 0.095 | 0.134 | 0.171 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 220-320 | 0.061 | 0.078 | 0.095 | 0.112 | 0.158 | 0.201 |
| | | High tensile strength/Austenitic | | 245 | 350 | 190-270 | 0.055 | 0.070 | 0.086 | 0.101 | 0.142 | 0.181 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 220-320 | 0.061 | 0.078 | 0.095 | 0.112 | 0.158 | 0.201 |
| | | Pearlitic | | 265 | 700 | 175-255 | 0.052 | 0.066 | 0.081 | 0.095 | 0.134 | 0.171 |
| | GGV(CGI) | | | 230 | 400 | 150-210 | 0.049 | 0.062 | 0.076 | 0.090 | 0.126 | 0.161 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 55-80 | 0.041 | 0.054 | 0.066 | 0.079 | 0.108 | 0.136 |
| | | | Aged | 280 | 940 | 34-50 | 0.033 | 0.043 | 0.053 | 0.063 | 0.086 | 0.109 |
| | | Ni or Co based | Annealed | 250 | 840 | 55-80 | 0.041 | 0.054 | 0.066 | 0.079 | 0.108 | 0.136 |
| | | | Aged | 350 | 1180 | 34-50 | 0.033 | 0.043 | 0.053 | 0.063 | 0.086 | 0.109 |
| | | | Cast | 320 | 1080 | 34-50 | 0.033 | 0.043 | 0.053 | 0.063 | 0.086 | 0.109 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 60-90 | 0.045 | 0.059 | 0.073 | 0.087 | 0.119 | 0.150 |
| | | α and β alloy, aged | | 375 | 1260 | 60-90 | 0.045 | 0.059 | 0.073 | 0.087 | 0.119 | 0.150 |
| | | β alloy | | 410 | 1400 | 30-45 | 0.031 | 0.041 | 0.050 | 0.059 | 0.081 | 0.102 |
| | Tungsten alloy | | | 300 | 1010 | 75-115 | 0.049 | 0.065 | 0.079 | 0.095 | 0.130 | 0.163 |
| | Molybdenum alloy | | | 300 | 1010 | 75-115 | 0.049 | 0.065 | 0.079 | 0.095 | 0.130 | 0.163 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | |

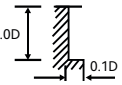
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M150 Cutting Data Recommendation

| Materials | | | | | | M150-4ES<br>M150-4EL<br>M150-4RS | Slot milling  | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 90-140 | 0.014 | 0.022 | 0.031 | 0.039 | 0.047 | 0.056 | 0.075 | 0.095 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 135-200 | 0.015 | 0.024 | 0.034 | 0.043 | 0.052 | 0.062 | 0.083 | 0.106 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 135-200 | 0.015 | 0.024 | 0.034 | 0.043 | 0.052 | 0.062 | 0.083 | 0.106 |
| | | C > 0.55% | Annealed | 190 | 639 | 115-175 | 0.014 | 0.023 | 0.032 | 0.041 | 0.049 | 0.059 | 0.079 | 0.101 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 90-140 | 0.014 | 0.022 | 0.031 | 0.039 | 0.047 | 0.056 | 0.075 | 0.095 |
| | | Free cutting steel | Annealed | 220 | 745 | 115-175 | 0.014 | 0.023 | 0.032 | 0.041 | 0.049 | 0.059 | 0.079 | 0.101 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 115-175 | 0.014 | 0.023 | 0.032 | 0.041 | 0.049 | 0.059 | 0.079 | 0.101 |
| | | Heat-treated | | 300 | 1013 | 90-140 | 0.014 | 0.022 | 0.031 | 0.039 | 0.047 | 0.056 | 0.075 | 0.095 |
| | | Heat-treated | | 380 | 1282 | 75-115 | 0.013 | 0.021 | 0.029 | 0.037 | 0.045 | 0.053 | 0.071 | 0.091 |
| | | Heat-treated | | 430 | 1477 | 65-95 | 0.012 | 0.020 | 0.028 | 0.035 | 0.043 | 0.051 | 0.068 | 0.087 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 90-140 | 0.014 | 0.022 | 0.031 | 0.039 | 0.047 | 0.056 | 0.075 | 0.095 |
| | | Hardened and tempered | | 300 | 1013 | 90-140 | 0.014 | 0.022 | 0.031 | 0.039 | 0.047 | 0.056 | 0.075 | 0.095 |
| | | Hardened and tempered | | 400 | 1361 | 75-115 | 0.013 | 0.021 | 0.029 | 0.037 | 0.045 | 0.053 | 0.071 | 0.091 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 60-90 | 0.011 | 0.018 | 0.026 | 0.032 | 0.039 | 0.047 | 0.062 | 0.080 |
| | | Martensite,Heat-treated | | 330 | 1114 | 50-70 | 0.010 | 0.016 | 0.022 | 0.028 | 0.034 | 0.040 | 0.054 | 0.069 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 60-90 | 0.011 | 0.018 | 0.025 | 0.033 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 45-65 | 0.009 | 0.014 | 0.020 | 0.026 | 0.031 | 0.038 | 0.050 | 0.064 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 55-80 | 0.010 | 0.017 | 0.024 | 0.031 | 0.037 | 0.045 | 0.060 | 0.076 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 45-65 | 0.011 | 0.018 | 0.025 | 0.033 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | | Aged | 280 | 940 | 35-50 | 0.009 | 0.014 | 0.020 | 0.026 | 0.031 | 0.038 | 0.050 | 0.064 |
| | | Ni or Co based | Annealed | 250 | 840 | 45-65 | 0.011 | 0.018 | 0.025 | 0.033 | 0.039 | 0.047 | 0.063 | 0.080 |
| | | | Aged | 350 | 1180 | 35-50 | 0.009 | 0.014 | 0.020 | 0.026 | 0.031 | 0.038 | 0.050 | 0.064 |
| | | | Cast | 320 | 1080 | 35-50 | 0.009 | 0.014 | 0.020 | 0.026 | 0.031 | 0.038 | 0.050 | 0.064 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 55-75 | 0.012 | 0.020 | 0.028 | 0.036 | 0.043 | 0.052 | 0.069 | 0.088 |
| | | α and β alloy, aged | | 375 | 1260 | 55-75 | 0.012 | 0.020 | 0.028 | 0.036 | 0.043 | 0.052 | 0.069 | 0.088 |
| | | β alloy | | 410 | 1400 | 33-48 | 0.008 | 0.014 | 0.019 | 0.025 | 0.029 | 0.035 | 0.047 | 0.060 |
| | Tungsten alloy | | | 300 | 1010 | 70-90 | 0.013 | 0.022 | 0.030 | 0.040 | 0.047 | 0.056 | 0.076 | 0.096 |
| | Molybdenum alloy | | | 300 | 1010 | 70-90 | 0.013 | 0.022 | 0.030 | 0.040 | 0.047 | 0.056 | 0.076 | 0.096 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | |

The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M150 Cutting Data Recommendation

| Materials | | | | | | M150-4ES M150-4EL M150-4RS Square shoulder milling (Rough milling)  | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 120-220 | 0.031 | 0.050 | 0.068 | 0.086 | 0.106 | 0.125 | 0.162 | 0.201 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 220-320 | 0.034 | 0.055 | 0.076 | 0.096 | 0.118 | 0.139 | 0.180 | 0.223 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 220-320 | 0.034 | 0.055 | 0.076 | 0.096 | 0.118 | 0.139 | 0.180 | 0.223 |
| | | C > 0.55% | Annealed | 190 | 639 | 180-280 | 0.032 | 0.052 | 0.072 | 0.091 | 0.112 | 0.132 | 0.171 | 0.212 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 110-210 | 0.031 | 0.050 | 0.068 | 0.086 | 0.106 | 0.125 | 0.162 | 0.201 |
| | | Free cutting steel | Annealed | 220 | 745 | 180-280 | 0.032 | 0.052 | 0.072 | 0.091 | 0.112 | 0.132 | 0.171 | 0.212 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 180-280 | 0.032 | 0.052 | 0.072 | 0.091 | 0.112 | 0.132 | 0.171 | 0.212 |
| | | Heat-treated | | 300 | 1013 | 110-210 | 0.031 | 0.050 | 0.068 | 0.086 | 0.106 | 0.125 | 0.162 | 0.201 |
| | | Heat-treated | | 380 | 1282 | 85-165 | 0.029 | 0.047 | 0.065 | 0.083 | 0.101 | 0.119 | 0.155 | 0.192 |
| | | Heat-treated | | 430 | 1477 | 65-135 | 0.028 | 0.045 | 0.062 | 0.079 | 0.097 | 0.114 | 0.147 | 0.183 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 110-210 | 0.031 | 0.050 | 0.068 | 0.086 | 0.106 | 0.125 | 0.162 | 0.201 |
| | | Hardened and tempered | | 300 | 1013 | 110-210 | 0.031 | 0.050 | 0.068 | 0.086 | 0.106 | 0.125 | 0.162 | 0.201 |
| | | Hardened and tempered | | 400 | 1361 | 85-165 | 0.029 | 0.047 | 0.065 | 0.083 | 0.101 | 0.119 | 0.155 | 0.192 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 70-130 | 0.026 | 0.041 | 0.057 | 0.072 | 0.088 | 0.104 | 0.135 | 0.167 |
| | | Martensite,Heat-treated | | 330 | 1114 | 40-80 | 0.022 | 0.036 | 0.049 | 0.062 | 0.077 | 0.090 | 0.117 | 0.145 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 70-130 | 0.023 | 0.037 | 0.051 | 0.065 | 0.078 | 0.092 | 0.121 | 0.158 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 45-75 | 0.018 | 0.029 | 0.041 | 0.052 | 0.062 | 0.074 | 0.097 | 0.127 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 70-110 | 0.022 | 0.035 | 0.049 | 0.062 | 0.074 | 0.088 | 0.115 | 0.150 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 40-80 | 0.025 | 0.040 | 0.055 | 0.088 | 0.085 | 0.099 | 0.126 | 0.151 |
| | | | Aged | 280 | 940 | 20-45 | 0.020 | 0.032 | 0.044 | 0.071 | 0.068 | 0.079 | 0.101 | 0.121 |
| | | Ni or Co based | Annealed | 250 | 840 | 40-80 | 0.025 | 0.040 | 0.055 | 0.088 | 0.085 | 0.099 | 0.126 | 0.151 |
| | | | Aged | 350 | 1180 | 20-45 | 0.020 | 0.032 | 0.044 | 0.071 | 0.068 | 0.079 | 0.101 | 0.121 |
| | | | Cast | 320 | 1080 | 20-45 | 0.020 | 0.032 | 0.044 | 0.071 | 0.068 | 0.079 | 0.101 | 0.121 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 55-85 | 0.028 | 0.044 | 0.061 | 0.097 | 0.094 | 0.109 | 0.139 | 0.166 |
| | | α and β alloy, aged | | 375 | 1260 | 55-85 | 0.028 | 0.044 | 0.061 | 0.097 | 0.094 | 0.109 | 0.139 | 0.166 |
| | | β alloy | | 410 | 1400 | 18-40 | 0.019 | 0.030 | 0.041 | 0.066 | 0.064 | 0.074 | 0.095 | 0.113 |
| | Tungsten alloy | | | 300 | 1010 | 80-120 | 0.030 | 0.048 | 0.066 | 0.106 | 0.102 | 0.119 | 0.151 | 0.181 |
| | Molybdenum alloy | | | 300 | 1010 | 80-120 | 0.030 | 0.048 | 0.066 | 0.106 | 0.102 | 0.119 | 0.151 | 0.181 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | |

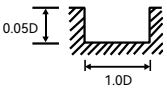
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M150 Cutting Data Recommendation

| Materials | | | | | | M150-4ES M150-4EL M150-4RS Square shoulder milling (Finsih milling) 1.5D 0.03D | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] 2 | 4 | 6 | 8 | 10 | 12 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 160-260 | 0.050 | 0.080 | 0.110 | 0.140 | 0.171 | 0.202 | 0.261 | 0.324 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 260-360 | 0.055 | 0.089 | 0.122 | 0.155 | 0.190 | 0.224 | 0.290 | 0.360 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 260-360 | 0.055 | 0.089 | 0.122 | 0.155 | 0.190 | 0.224 | 0.290 | 0.360 |
| | | C > 0.55% | Annealed | 190 | 639 | 220-320 | 0.052 | 0.085 | 0.116 | 0.147 | 0.181 | 0.213 | 0.276 | 0.342 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 150-250 | 0.050 | 0.080 | 0.110 | 0.140 | 0.171 | 0.202 | 0.261 | 0.324 |
| | | Free cutting steel | Annealed | 220 | 745 | 220-320 | 0.052 | 0.085 | 0.116 | 0.147 | 0.181 | 0.213 | 0.276 | 0.342 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 220-320 | 0.052 | 0.085 | 0.116 | 0.147 | 0.181 | 0.213 | 0.276 | 0.342 |
| | | Heat-treated | | 300 | 1013 | 150-250 | 0.050 | 0.080 | 0.110 | 0.140 | 0.171 | 0.202 | 0.261 | 0.324 |
| | | Heat-treated | | 380 | 1282 | 125-205 | 0.047 | 0.077 | 0.105 | 0.133 | 0.163 | 0.193 | 0.249 | 0.310 |
| | | Heat-treated | | 430 | 1477 | 105-175 | 0.045 | 0.073 | 0.100 | 0.127 | 0.156 | 0.184 | 0.238 | 0.295 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 150-250 | 0.050 | 0.080 | 0.110 | 0.140 | 0.171 | 0.202 | 0.261 | 0.324 |
| | | Hardened and tempered | | 300 | 1013 | 150-250 | 0.050 | 0.080 | 0.110 | 0.140 | 0.171 | 0.202 | 0.261 | 0.324 |
| | | Hardened and tempered | | 400 | 1361 | 125-205 | 0.047 | 0.077 | 0.105 | 0.133 | 0.163 | 0.193 | 0.249 | 0.310 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 90-150 | 0.041 | 0.067 | 0.092 | 0.116 | 0.143 | 0.168 | 0.218 | 0.270 |
| | | Martensite,Heat-treated | | 330 | 1114 | 60-100 | 0.036 | 0.058 | 0.079 | 0.101 | 0.124 | 0.146 | 0.189 | 0.234 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 90-150 | 0.042 | 0.067 | 0.093 | 0.118 | 0.142 | 0.168 | 0.220 | 0.288 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 65-95 | 0.034 | 0.054 | 0.074 | 0.094 | 0.114 | 0.134 | 0.176 | 0.230 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 90-130 | 0.040 | 0.064 | 0.088 | 0.112 | 0.135 | 0.160 | 0.209 | 0.274 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | | | | | | | | | |
| | | Pearlitic | | 260 | 700 | | | | | | | | | |
| | Grey cast iron | Low tensile strength | | 180 | 200 | | | | | | | | | |
| | | High tensile strength/Austenitic | | 245 | 350 | | | | | | | | | |
| | Nodular cast iron | Ferritic | | 155 | 400 | | | | | | | | | |
| | | Pearlitic | | 265 | 700 | | | | | | | | | |
| | GGV(CGI) | | | 230 | 400 | | | | | | | | | |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 55-95 | 0.042 | 0.067 | 0.092 | 0.147 | 0.142 | 0.165 | 0.210 | 0.252 |
| | | | Aged | 280 | 940 | 35-60 | 0.034 | 0.054 | 0.074 | 0.118 | 0.114 | 0.132 | 0.168 | 0.202 |
| | | Ni or Co based | Annealed | 250 | 840 | 55-95 | 0.042 | 0.067 | 0.092 | 0.147 | 0.142 | 0.165 | 0.210 | 0.252 |
| | | | Aged | 350 | 1180 | 35-60 | 0.034 | 0.054 | 0.074 | 0.118 | 0.114 | 0.132 | 0.168 | 0.202 |
| | | | Cast | 320 | 1080 | 35-60 | 0.034 | 0.054 | 0.074 | 0.118 | 0.114 | 0.132 | 0.168 | 0.202 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 70-100 | 0.046 | 0.074 | 0.101 | 0.162 | 0.156 | 0.182 | 0.231 | 0.277 |
| | | α and β alloy, aged | | 375 | 1260 | 70-100 | 0.046 | 0.074 | 0.101 | 0.162 | 0.156 | 0.182 | 0.231 | 0.277 |
| | | β alloy | | 410 | 1400 | 30-55 | 0.032 | 0.050 | 0.069 | 0.110 | 0.107 | 0.124 | 0.158 | 0.189 |
| | Tungsten alloy | | | 300 | 1010 | 100-140 | 0.050 | 0.080 | 0.110 | 0.176 | 0.170 | 0.198 | 0.252 | 0.302 |
| | Molybdenum alloy | | | 300 | 1010 | 100-140 | 0.050 | 0.080 | 0.110 | 0.176 | 0.170 | 0.198 | 0.252 | 0.302 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | |

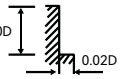
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M170 Cutting Data Recommendation

| Materials | | | | | | M170-4ES M170-4RS Slot milling  | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] Mill diameter [mm] | | | | | |
| | | | | | | | 4 | 6 | 8 | 10 | 12 | 16 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | | | | | | | |
| | | C > 0.55% | Annealed | 190 | 639 | | | | | | | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 140-200 | 0.019 | 0.041 | 0.064 | 0.087 | 0.106 | 0.128 |
| | | Free cutting steel | Annealed | 220 | 745 | | | | | | | |
| | Low-alloyed steel | Annealed | | 175 | 591 | | | | | | | |
| | | Heat-treated | | 300 | 1013 | 140-200 | 0.019 | 0.041 | 0.064 | 0.087 | 0.106 | 0.128 |
| | | Heat-treated | | 380 | 1282 | 120-170 | 0.018 | 0.037 | 0.058 | 0.079 | 0.097 | 0.116 |
| | | Heat-treated | | 430 | 1477 | 110-150 | 0.016 | 0.034 | 0.053 | 0.072 | 0.088 | 0.106 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | | | | | | | |
| | | Hardened and tempered | | 300 | 1013 | 140-200 | 0.019 | 0.041 | 0.064 | 0.087 | 0.106 | 0.128 |
| | | Hardened and tempered | | 400 | 1361 | 120-170 | 0.018 | 0.037 | 0.058 | 0.079 | 0.097 | 0.116 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | | | | | | | |
| | | Martensite,Heat-treated | | 330 | 1114 | | | | | | | |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | | | | | | | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | | | | | | | |
| | | Austenitic,ferritic,duplex | | 230 | 778 | | | | | | | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 200-300 | 0.026 | 0.052 | 0.076 | 0.105 | 0.125 | 0.150 |
| | | Pearlitic | | 260 | 700 | 180-260 | 0.022 | 0.044 | 0.065 | 0.089 | 0.106 | 0.128 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 200-300 | 0.026 | 0.052 | 0.076 | 0.105 | 0.125 | 0.150 |
| | | High tensile strength/Austenitic | | 245 | 350 | 190-280 | 0.023 | 0.047 | 0.068 | 0.095 | 0.113 | 0.135 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 200-300 | 0.026 | 0.052 | 0.076 | 0.105 | 0.125 | 0.150 |
| | | Pearlitic | | 265 | 700 | 180-260 | 0.022 | 0.044 | 0.065 | 0.089 | 0.106 | 0.128 |
| | GGV(CGI) | | | 230 | 400 | 160-240 | 0.021 | 0.042 | 0.061 | 0.084 | 0.100 | 0.120 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | 90-130 | 0.010 | 0.021 | 0.033 | 0.045 | 0.055 | 0.066 |
| | | Hardened and tempered | | 55HRC | - | 35-80 | 0.007 | 0.015 | 0.023 | 0.032 | 0.039 | 0.046 |
| | | Hardened and tempered | | 60HRC | - | 30-75 | 0.006 | 0.013 | 0.020 | 0.027 | 0.033 | 0.040 |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | 80-120 | 0.009 | 0.019 | 0.030 | 0.041 | 0.050 | 0.059 |

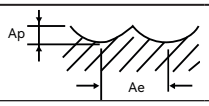
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M170 Cutting Data Recommendation

| Materials | | | | | | M170-4ES<br>M170-4RS<br>M170-6ES | Square shoulder milling (Finsih milling)  | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | |
| | | | | | | | 4 | 6 | 8 | 10 | 12 | 16 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | | | | | | | |
| | | C > 0.55% | Annealed | 190 | 639 | | | | | | | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 200-300 | 0.080 | 0.126 | 0.170 | 0.216 | 0.237 | 0.266 |
| | | Free cutting steel | Annealed | 220 | 745 | | | | | | | |
| | Low-alloyed steel | Annealed | | 175 | 591 | | | | | | | |
| | | Heat-treated | | 300 | 1013 | 200-300 | 0.080 | 0.126 | 0.170 | 0.216 | 0.237 | 0.266 |
| | | Heat-treated | | 380 | 1282 | 180-260 | 0.076 | 0.120 | 0.162 | 0.206 | 0.226 | 0.254 |
| | | Heat-treated | | 430 | 1477 | 170-260 | 0.073 | 0.115 | 0.155 | 0.197 | 0.216 | 0.242 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | | | | | | | |
| | | Hardened and tempered | | 300 | 1013 | 200-300 | 0.080 | 0.126 | 0.170 | 0.216 | 0.237 | 0.266 |
| | | Hardened and tempered | | 400 | 1361 | 180-260 | 0.076 | 0.120 | 0.162 | 0.206 | 0.226 | 0.254 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | | | | | | | |
| | | Martensite,Heat-treated | | 330 | 1114 | | | | | | | |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | | | | | | | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | | | | | | | |
| | | Austenitic,ferritic,duplex | | 230 | 778 | | | | | | | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 230-340 | 0.090 | 0.140 | 0.190 | 0.240 | 0.164 | 0.296 |
| | | Pearlitic | | 260 | 700 | 220-310 | 0.077 | 0.119 | 0.162 | 0.204 | 0.139 | 0.252 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 230-340 | 0.090 | 0.140 | 0.190 | 0.240 | 0.164 | 0.296 |
| | | High tensile strength/Austenitic | | 245 | 350 | 230-320 | 0.081 | 0.126 | 0.171 | 0.216 | 0.148 | 0.266 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 230-340 | 0.090 | 0.140 | 0.190 | 0.240 | 0.164 | 0.296 |
| | | Pearlitic | | 265 | 700 | 220-310 | 0.077 | 0.119 | 0.162 | 0.204 | 0.139 | 0.252 |
| | GGV(CGI) | | | 230 | 400 | 210-310 | 0.072 | 0.112 | 0.152 | 0.192 | 0.131 | 0.237 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | 190-280 | 0.045 | 0.070 | 0.095 | 0.120 | 0.132 | 0.148 |
| | | Hardened and tempered | | 55HRC | - | 110-160 | 0.032 | 0.049 | 0.067 | 0.084 | 0.092 | 0.104 |
| | | Hardened and tempered | | 60HRC | - | 80-140 | 0.027 | 0.042 | 0.057 | 0.072 | 0.079 | 0.089 |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | 170-260 | 0.041 | 0.063 | 0.086 | 0.108 | 0.119 | 0.133 |

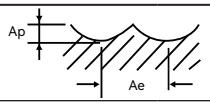
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M200 Cutting Data Recommendation

| Materials | | | | | | M200-2BS<br>M200-2BL<br>M200-2BX | Profifile milling<br>(Finsih milling)<br>Ap = 0.2 D<br>Ae = 0.3 D  | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | | | | |
| | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 140-240 | 0.018 | 0.047 | 0.076 | 0.104 | 0.135 | 0.149 | 0.162 | 0.176 | 0.189 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 230-330 | 0.020 | 0.052 | 0.084 | 0.116 | 0.150 | 0.165 | 0.180 | 0.195 | 0.210 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 230-330 | 0.020 | 0.052 | 0.084 | 0.116 | 0.150 | 0.165 | 0.180 | 0.195 | 0.210 |
| | | C > 0.55% | Annealed | 190 | 639 | 190-310 | 0.019 | 0.049 | 0.080 | 0.110 | 0.143 | 0.157 | 0.171 | 0.185 | 0.200 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 140-240 | 0.018 | 0.047 | 0.076 | 0.104 | 0.135 | 0.149 | 0.162 | 0.176 | 0.189 |
| | | Free cutting steel | Annealed | 220 | 745 | 190-310 | 0.019 | 0.049 | 0.080 | 0.110 | 0.143 | 0.157 | 0.171 | 0.185 | 0.200 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 190-310 | 0.019 | 0.049 | 0.080 | 0.110 | 0.143 | 0.157 | 0.171 | 0.185 | 0.200 |
| | | Heat-treated | | 300 | 1013 | 140-240 | 0.018 | 0.047 | 0.076 | 0.104 | 0.135 | 0.149 | 0.162 | 0.176 | 0.189 |
| | | Heat-treated | | 380 | 1282 | 110-210 | 0.017 | 0.045 | 0.072 | 0.100 | 0.129 | 0.142 | 0.155 | 0.168 | 0.181 |
| | | Heat-treated | | 430 | 1477 | 90-190 | 0.016 | 0.043 | 0.069 | 0.095 | 0.123 | 0.135 | 0.148 | 0.160 | 0.172 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 140-240 | 0.018 | 0.047 | 0.076 | 0.104 | 0.135 | 0.149 | 0.162 | 0.176 | 0.189 |
| | | Hardened and tempered | | 300 | 1013 | 140-240 | 0.018 | 0.047 | 0.076 | 0.104 | 0.135 | 0.149 | 0.162 | 0.176 | 0.189 |
| | | Hardened and tempered | | 400 | 1361 | 110-210 | 0.017 | 0.045 | 0.072 | 0.100 | 0.129 | 0.142 | 0.155 | 0.168 | 0.181 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 65-135 | 0.015 | 0.039 | 0.063 | 0.087 | 0.113 | 0.124 | 0.135 | 0.146 | 0.158 |
| | | Martensite,Heat-treated | | 330 | 1114 | 48-108 | 0.013 | 0.034 | 0.055 | 0.075 | 0.098 | 0.107 | 0.117 | 0.127 | 0.137 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 85-145 | 0.014 | 0.040 | 0.065 | 0.090 | 0.120 | 0.145 | 0.168 | 0.190 | 0.210 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 40-100 | 0.011 | 0.032 | 0.052 | 0.072 | 0.096 | 0.116 | 0.134 | 0.152 | 0.168 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 55-125 | 0.013 | 0.038 | 0.062 | 0.086 | 0.114 | 0.138 | 0.160 | 0.181 | 0.200 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 190-310 | 0.020 | 0.050 | 0.080 | 0.110 | 0.145 | 0.160 | 0.178 | 0.190 | 0.212 |
| | | Pearlitic | | 260 | 700 | 150-260 | 0.017 | 0.043 | 0.068 | 0.094 | 0.123 | 0.136 | 0.151 | 0.162 | 0.180 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 190-310 | 0.020 | 0.050 | 0.080 | 0.110 | 0.145 | 0.160 | 0.178 | 0.190 | 0.212 |
| | | High tensile strength/Austenitic | | 245 | 350 | 160-270 | 0.018 | 0.045 | 0.072 | 0.099 | 0.131 | 0.144 | 0.160 | 0.171 | 0.191 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 190-310 | 0.020 | 0.050 | 0.080 | 0.110 | 0.145 | 0.160 | 0.178 | 0.190 | 0.212 |
| | | Pearlitic | | 265 | 700 | 150-260 | 0.017 | 0.043 | 0.068 | 0.094 | 0.123 | 0.136 | 0.151 | 0.162 | 0.180 |
| | GGV(CGI) | | | 230 | 400 | 120-230 | 0.016 | 0.040 | 0.064 | 0.088 | 0.116 | 0.128 | 0.142 | 0.152 | 0.170 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

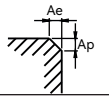
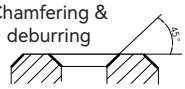
The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M170 Cutting Data Recommendation

| Materials | | | | | | M170-2BS | Profifile milling (Finsih milling) Ap = 0.1 D Ae = 0.02 D   | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | | |
| | | | | | | | Mill diameter [mm] | | | | | |
| | | | | | | | 4 | 6 | 8 | 10 | 12 | 16 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | | | | | | | |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | | | | | | | |
| | | C > 0.55% | Annealed | 190 | 639 | | | | | | | |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 180-250 | 0.064 | 0.096 | 0.128 | 0.150 | 0.165 | 0.190 |
| | | Free cutting steel | Annealed | 220 | 745 | | | | | | | |
| | Low-alloyed steel | Annealed | | 175 | 591 | | | | | | | |
| | | Heat-treated | | 300 | 1013 | 180-250 | 0.064 | 0.096 | 0.128 | 0.150 | 0.165 | 0.190 |
| | | Heat-treated | | 380 | 1282 | 150-220 | 0.061 | 0.092 | 0.122 | 0.143 | 0.158 | 0.182 |
| | | Heat-treated | | 430 | 1477 | 140-210 | 0.058 | 0.087 | 0.117 | 0.137 | 0.150 | 0.173 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | | | | | | | |
| | | Hardened and tempered | | 300 | 1013 | 180-250 | 0.064 | 0.096 | 0.128 | 0.150 | 0.165 | 0.190 |
| | | Hardened and tempered | | 400 | 1361 | 150-220 | 0.061 | 0.092 | 0.122 | 0.143 | 0.158 | 0.182 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | | | | | | | |
| | | Martensite,Heat-treated | | 330 | 1114 | | | | | | | |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | | | | | | | |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | | | | | | | |
| | | Austenitic,ferritic,duplex | | 230 | 778 | | | | | | | |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 220-300 | 0.120 | 0.160 | 0.200 | 0.250 | 0.270 | 0.310 |
| | | Pearlitic | | 260 | 700 | 210-290 | 0.102 | 0.136 | 0.170 | 0.213 | 0.230 | 0.264 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 220-300 | 0.120 | 0.160 | 0.200 | 0.250 | 0.270 | 0.310 |
| | | High tensile strength/Austenitic | | 245 | 350 | 215-285 | 0.108 | 0.144 | 0.180 | 0.225 | 0.243 | 0.279 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 220-300 | 0.120 | 0.160 | 0.200 | 0.250 | 0.270 | 0.310 |
| | | Pearlitic | | 265 | 700 | 210-290 | 0.102 | 0.136 | 0.170 | 0.213 | 0.230 | 0.264 |
| | GGV(CGI) | | | 230 | 400 | 200-280 | 0.096 | 0.128 | 0.160 | 0.200 | 0.216 | 0.248 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | | | | |
| | | Aged alloy | | 100 | 340 | | | | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | | | | | | | |
| | | > 12% Si, non-aging alloy | | 130 | 450 | | | | | | | |
| | Magnesium alloy | | | 70 | 250 | | | | | | | |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | | | | | | | |
| | | Brass,bronze,red brass | | 90 | 310 | | | | | | | |
| | | Cu alloy,short chip | | 110 | 380 | | | | | | | |
| | | High tensile,Ampco alloy | | 300 | 1010 | | | | | | | |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | | | | | | | |
| | | | Aged | 280 | 940 | | | | | | | |
| | | Ni or Co based | Annealed | 250 | 840 | | | | | | | |
| | | | Aged | 350 | 1180 | | | | | | | |
| | | | Cast | 320 | 1080 | | | | | | | |
| | Titanium alloy | Pure Titanium | | 200 | 680 | | | | | | | |
| | | α and β alloy, aged | | 375 | 1260 | | | | | | | |
| | | β alloy | | 410 | 1400 | | | | | | | |
| | Tungsten alloy | | | 300 | 1010 | | | | | | | |
| | Molybdenum alloy | | | 300 | 1010 | | | | | | | |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | 180-250 | 0.064 | 0.096 | 0.128 | 0.150 | 0.165 | 0.190 |
| | | Hardened and tempered | | 55HRC | - | 140-210 | 0.045 | 0.067 | 0.090 | 0.105 | 0.116 | 0.133 |
| | | Hardened and tempered | | 60HRC | - | 70-140 | 0.038 | 0.058 | 0.077 | 0.090 | 0.099 | 0.114 |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | 150-220 | 0.058 | 0.086 | 0.115 | 0.135 | 0.149 | 0.171 |

The cutting data are average recommended values. For special applications, adjustment is needed.

## Solid Carbide End Mill M180 Cutting Data Recommendation

| Materials | | | | | | M180-4WS<br>Chamfer<br>Ap = 0.3 D<br>Ae = 0.3 D |  | Chamfering & deburring  | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness(HB) | Tensile strength ($N/mm^2$) | Cutting speed Vc(m/min) | fz [mm/Tooth] | | | | |
| | | | | | | | Mill diameter [mm] | | | | |
| | | | | | | | 6 | 8 | 10 | 12 | 16 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 320-380 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 320-380 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 260-320 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | C > 0.55% | Annealed | 190 | 639 | 260-300 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 180-230 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Free cutting steel | Annealed | 220 | 745 | 260-320 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 260-320 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Heat-treated | | 300 | 1013 | 180-230 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Heat-treated | | 380 | 1282 | 150-170 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Heat-treated | | 430 | 1477 | 130-160 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 260-320 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Hardened and tempered | | 300 | 1013 | 180-230 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Hardened and tempered | | 400 | 1361 | 130-160 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | Stainless steels | Ferritic/Martensite,Annealed | | 200 | 675 | 90-110 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Martensite,Heat-treated | | 330 | 1114 | 70-90 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| M | Stainless steels | Austenitic,hardened | | 200 | 675 | 110-130 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | Austenitic,precipitation hardened stainless steel(PH stainless steel) | | 300 | 1013 | 70-90 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | Austenitic,ferritic,duplex | | 230 | 778 | 90-110 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 240-300 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Pearlitic | | 260 | 700 | 190-230 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 240-300 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | High tensile strength/Austenitic | | 245 | 350 | 240-300 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 240-300 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | | Pearlitic | | 265 | 700 | 190-230 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| | GGV(CGI) | | | 230 | 400 | 160-200 | 0.040 | 0.070 | 0.100 | 0.100 | 0.120 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | 400-500 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | | Aged alloy | | 100 | 340 | 400-500 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | 370-450 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | 370-450 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | | > 12% Si, non-aging alloy | | 130 | 450 | 240-300 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | Magnesium alloy | | | 70 | 250 | 380-450 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | Copper and copper alloy(bronze/ brass) | Unalloyed,electrolytic copper | | 100 | 340 | 340-420 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | | Brass,bronze,red brass | | 90 | 310 | 340-420 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | | Cu alloy,short chip | | 110 | 380 | 340-420 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| | | High tensile,Ampco alloy | | 300 | 1010 | 100-120 | 0.100 | 0.150 | 0.220 | 0.220 | 0.260 |
| S | Fe-based alloy | Fe-based | Annealed | 200 | 680 | 90-110 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | | Aged | 280 | 940 | 50-70 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | Ni or Co based | Annealed | 250 | 840 | 90-110 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | | Aged | 350 | 1180 | 50-70 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | | Cast | 320 | 1080 | 50-70 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 290-370 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | α and β alloy, aged | | 375 | 1260 | 90-120 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | | β alloy | | 410 | 1400 | 90-120 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | Tungsten alloy | | | 300 | 1010 | 100-120 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| | Molybdenum alloy | | | 300 | 1010 | 100-120 | 0.040 | 0.060 | 0.080 | 0.080 | 0.100 |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | | | | | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | |

The cutting data are average recommended values. For special applications, adjustment is needed.

# ACHTECK

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# CUTTING TOOL CATALOGUE


## Drilling 476

Indexable Drilling Holder Denomination System 478
HP Series Drilling Holder 480
HY Series Drilling Holder 492

## Drilling Insert 489

SPMT-DP Drilling Insert 489
WCMT-DU Drilling Insert 489
HP Series Drilling Parameter Recommendation 490
XONT-DM/DL Drilling Insert 501
SPET-DM/DL Drilling Insert 501
HY Series Drilling Parameter Recommendation 502
BTA Ejector Drilling Tools 505
Ejector Drilling Inserts 506
Ejector Drilling Parameter Recommendation 509

## Drilling Holder Denomination System

| HP | - | 2D | - | 255 | - | S32 | - | S07 |
|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | | 3 | | 4 | | 5 |

**1- Drilling Holder Series**

HP Series
HY Series

**2- Aspectratio**

Lu/Dc=2
Lu/Dc=3
Lu/Dc=4
Lu/Dc=5

**3- Nominal Diameter of Drilling Holder**

255-- Drill Dia. Dc 25.5mm

**4- Shank Dia.**

S32--- Fully flattened side
Side lock, Shank Dia. 32mm

**4- Insert**

S07-- Suitable for SPMT07 insert
SP03-- Suitable for N0.03 insert

## Drilling Holder Tolerance and Hole Tolerance---HPseries

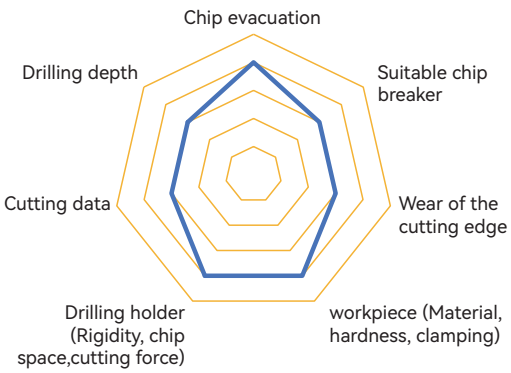
| HP Series | | Ø13 - Ø21.5mm | Ø22 - Ø50mm |
|---|---|---|---|
| 2*DC | Holder tolerance | 0,-0.1 | 0,-0.1 |
| | Hole tolerance | -0.1 ~ +0.15 | -0.1 ~ +0.15 |
| 3*DC | Holder tolerance | 0,-0.1 | 0,-0.1 |
| | Hole tolerance | -0.1 ~ +0.18 | -0.12 ~ +0.2 |
| 4*DC | Holder tolerance | 0,-0.1 | 0,-0.1 |
| | Hole tolerance | -0.15 ~ +0.20 | -0.15 ~ +0.25 |

## Drilling Holder Tolerance and Hole Tolerance---HYseries

| HY Series | | Ø13 - Ø21.5mm | Ø22 - Ø50mm |
|---|---|---|---|
| 2*DC | Holder tolerance | 0,+0.1 | 0,+0.1 |
| | Hole tolerance | -0.1 ~ +0.15 | -0.1 ~ +0.15 |
| 3*DC | Holder tolerance | 0,+0.1 | 0,+0.1 |
| | Hole tolerance | -0.1 ~ +0.18 | -0.12 ~ +0.2 |
| 4*DC | Holder tolerance | 0,+0.1 | 0,+0.1 |
| | Hole tolerance | -0.15 ~ +0.20 | -0.15 ~ +0.25 |

HY series drilling holder is easier to obtain positive tolerance hole diameters, but machining strategies need to be adjusted by the influence factors of drilling diameter.

Influence factors of drilling diameter



## Grade Introduction

### P Carbon steel, alloy steel, cast steel/forged steel

#### Basic grade

AP301U P25(P15-P35)
PVD coated carbide grade, suitable for drilling of steels, stainless steel. High strength and wear resistance ultra fine carbide substrate with nanostructured PVD coating in controllable layers, high coating adhesion, wear-resistance and strength.

AP351U P35(P30-P45)
PVD coated carbide grade for drilling of steels, stainless steel, heat-resistant alloys under unstable working conditions. Composite nanostructured coatings are deposited on the high toughness carbide substrate, offering better wear resistance and impact resistance.

AP351M P30(P25-P40)
PVD coated carbide grade. Suitable for drilling of steels, stainless steel, heat-resistant alloys in general working conditions. Good toughness and wear resistance ultrafine crystalline substrate combined with nanostructure PVD coating. Good thermal cracking resistance, wear resistance and coating strength.

### M Austenitic/artensitic stainless steel

#### Basic grade

AP351M M30(M20-M35)
PVD coated carbide grade. Suitable for drilling and machining of steels, stainless steel, heat-resistant alloys under general working conditions. Nanostructured coatings are deposited on the high strength, high wear resistance ultra-fine grain structure carbide substrate. Good thermal cracking resistance, wear resistance and coating strength.

### S Heat-resistant alloys (Ni-based), titanium alloys

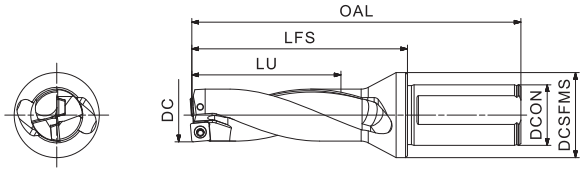
#### Basic grade

AP351M S30(S20-S35)
PVD coated carbide grade. Suitable for drilling and machining of steels, stainless steel, heat-resistant alloys under general working conditions. Nanostructured coatings are deposited on the high strength, high wear resistance ultra-fine grain structure carbide substrate. Good thermal cracking resistance, wear resistance and coating strength.

AP351U S35(S25-S40)
PVD coated carbide grade for drilling of steels, stainless steel, heat-resistant alloys under unstable working conditions. Composite nanostructured coatings are deposited on the high toughness carbide substrate, offering better wear resistance and impact resistance.

## HP Series Drilling Holder

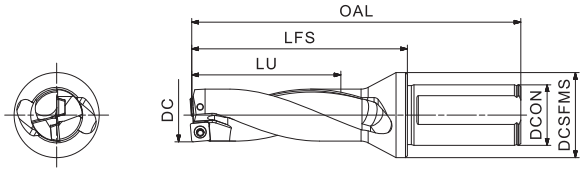
LU/DC=2




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HP-2D130-S20-S05** | 13.0 | 29 | 99 | 20 | 49 | 25 | 0.15 | SPMT 050204E-DP | ST020043 | FT-T06 |
| **HP-2D135-S20-S05** | 13.5 | 30 | 100 | 20 | 50 | 25 | 0.15 | | | |
| **HP-2D140-S20-S05** | 14.0 | 31 | 101 | 20 | 51 | 25 | 0.15 | | | |
| **HP-2D145-S20-S05** | 14.5 | 32 | 102 | 20 | 52 | 25 | 0.16 | | | |
| **HP-2D150-S20-S05** | 15.0 | 33 | 103 | 20 | 53 | 25 | 0.16 | | | |
| **HP-2D155-S25-S06** | 15.5 | 34 | 115 | 25 | 59 | 32 | 0.25 | SPMT 060204E-DP | ST022055 | FT-T06 |
| **HP-2D160-S25-S06** | 16.0 | 35 | 116 | 25 | 60 | 32 | 0.25 | | | |
| **HP-2D165-S25-S06** | 16.5 | 36 | 117 | 25 | 61 | 32 | 0.25 | | | |
| **HP-2D170-S25-S06** | 17.0 | 37 | 118 | 25 | 62 | 32 | 0.28 | | | |
| **HP-2D175-S25-S06** | 17.5 | 38 | 119 | 25 | 63 | 32 | 0.28 | | | |
| **HP-2D180-S25-S06** | 18.0 | 39 | 120 | 25 | 64 | 32 | 0.29 | | | |
| **HP-2D185-S25-S06** | 18.5 | 40 | 121 | 25 | 65 | 32 | 0.29 | | | |
| **HP-2D190-S25-S06** | 19.0 | 41 | 122 | 25 | 66 | 32 | 0.30 | | | |
| **HP-2D195-S25-S06** | 19.5 | 42 | 123 | 25 | 67 | 32 | 0.30 | | | |
| **HP-2D200-S25-S06** | 20.0 | 43 | 124 | 25 | 68 | 32 | 0.31 | | | |
| **HP-2D205-S25-S06** | 20.5 | 44 | 125 | 25 | 69 | 32 | 0.32 | | | |
| **HP-2D210-S25-S06** | 21.0 | 45 | 126 | 25 | 70 | 32 | 0.32 | | | |
| **HP-2D215-S25-S06** | 21.5 | 46 | 127 | 25 | 71 | 32 | 0.32 | | | |
| **HP-2D220-S32-S07** | 22.0 | 47 | 137 | 32 | 77 | 40 | 0.52 | SPMT 07T308E-DP | ST025065 | FT-T08 |
| **HP-2D225-S32-S07** | 22.5 | 48 | 138 | 32 | 78 | 40 | 0.52 | | | |
| **HP-2D230-S32-S07** | 23.0 | 49 | 139 | 32 | 79 | 40 | 0.54 | | | |
| **HP-2D235-S32-S07** | 23.5 | 50 | 140 | 32 | 80 | 40 | 0.54 | | | |
| **HP-2D240-S32-S07** | 24.0 | 51 | 141 | 32 | 81 | 40 | 0.55 | | | |
| **HP-2D245-S32-S07** | 24.5 | 52 | 142 | 32 | 82 | 40 | 0.55 | | | |
| **HP-2D250-S32-S07** | 25.0 | 53 | 143 | 32 | 83 | 40 | 0.56 | | | |
| **HP-2D255-S32-S07** | 25.5 | 54 | 144 | 32 | 84 | 40 | 0.56 | | | |
| **HP-2D260-S32-S07** | 26.0 | 55 | 145 | 32 | 85 | 40 | 0.58 | | | |
| **HP-2D265-S32-S07** | 26.5 | 56 | 146 | 32 | 86 | 40 | 0.58 | | | |
| **HP-2D270-S32-S07** | 27.0 | 57 | 147 | 32 | 87 | 40 | 0.60 | | | |
| **HP-2D275-S32-S07** | 27.5 | 58 | 148 | 32 | 88 | 40 | 0.60 | | | |

## HP Series Drilling Holder

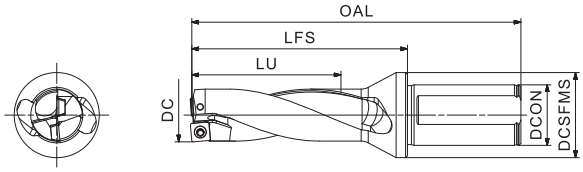
**LU/DC=2**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HP-2D280-S32-S09** | 28.0 | 59 | 149 | 32 | 89 | 40 | 0.63 | SPMT 090408E-DP | ST035084X | FT-T15 |
| **HP-2D285-S32-S09** | 28.5 | 60 | 150 | 32 | 90 | 40 | 0.63 | | | |
| **HP-2D290-S32-S09** | 29.0 | 61 | 151 | 32 | 91 | 40 | 0.65 | | | |
| **HP-2D295-S32-S09** | 29.5 | 63 | 153 | 32 | 93 | 40 | 0.65 | | | |
| **HP-2D300-S32-S09** | 30.0 | 65 | 155 | 32 | 95 | 40 | 0.65 | | | |
| **HP-2D310-S32-S09** | 31.0 | 67 | 157 | 32 | 97 | 40 | 0.68 | | | |
| **HP-2D320-S32-S09** | 32.0 | 69 | 159 | 32 | 99 | 40 | 0.70 | | | |
| **HP-2D330-S32-S09** | 33.0 | 71 | 161 | 32 | 101 | 40 | 0.70 | | | |
| **HP-2D340-S40-S11** | 34.0 | 73 | 178 | 40 | 108 | 50 | 1.00 | SPMT 110408E-DP | ST040100H | FT-T15 |
| **HP-2D350-S40-S11** | 35.0 | 75 | 180 | 40 | 110 | 50 | 1.10 | | | |
| **HP-2D360-S40-S11** | 36.0 | 77 | 182 | 40 | 112 | 50 | 1.10 | | | |
| **HP-2D370-S40-S11** | 37.0 | 79 | 184 | 40 | 114 | 50 | 1.15 | | | |
| **HP-2D380-S40-S11** | 38.0 | 81 | 186 | 40 | 116 | 50 | 1.20 | | | |
| **HP-2D390-S40-S11** | 39.0 | 83 | 188 | 40 | 118 | 50 | 1.20 | | | |
| **HP-2D400-S40-S11** | 40.0 | 85 | 190 | 40 | 120 | 50 | 1.30 | | | |
| **HP-2D410-S40-S11** | 41.0 | 87 | 192 | 40 | 122 | 50 | 1.40 | | | |
| **HP-2D420-S40-S14** | 42.0 | 89 | 194 | 40 | 124 | 50 | 1.40 | SPMT 140512E-DP | ST050126 | FT-T20 |
| **HP-2D430-S40-S14** | 43.0 | 91 | 196 | 40 | 126 | 50 | 1.60 | | | |
| **HP-2D440-S40-S14** | 44.0 | 93 | 198 | 40 | 128 | 50 | 1.60 | | | |
| **HP-2D450-S40-S14** | 45.0 | 95 | 200 | 40 | 130 | 50 | 1.70 | | | |
| **HP-2D460-S40-S14** | 46.0 | 97 | 202 | 40 | 132 | 50 | 1.70 | | | |
| **HP-2D470-S40-S14** | 47.0 | 99 | 204 | 40 | 134 | 50 | 1.75 | | | |
| **HP-2D480-S40-S14** | 48.0 | 101 | 206 | 40 | 136 | 50 | 1.80 | | | |
| **HP-2D490-S40-S14** | 49.0 | 103 | 208 | 40 | 138 | 50 | 1.85 | | | |
| **HP-2D500-S40-S14** | 50.0 | 105 | 210 | 40 | 140 | 50 | 1.90 | | | |

## HP Series Drilling Holder

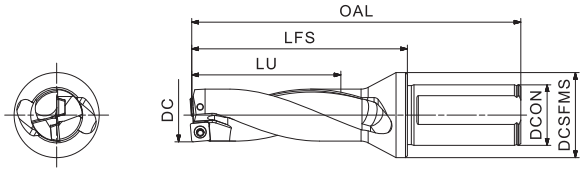
LU/DC=3




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HP-3D130-S20-S05** | 13.0 | 42 | 112 | 20 | 62 | 25 | 0.16 | SPMT 050204E-DP | ST020043 | FT-T06 |
| **HP-3D135-S20-S05** | 13.5 | 44 | 114 | 20 | 64 | 25 | 0.16 | | | |
| **HP-3D140-S20-S05** | 14.0 | 45 | 115 | 20 | 65 | 25 | 0.16 | | | |
| **HP-3D145-S20-S05** | 14.5 | 47 | 117 | 20 | 67 | 25 | 0.16 | | | |
| **HP-3D150-S20-S05** | 15.0 | 48 | 118 | 20 | 68 | 25 | 0.17 | | | |
| **HP-3D155-S25-S06** | 15.5 | 50 | 131 | 25 | 75 | 32 | 0.27 | SPMT 060204E-DP | ST022055 | FT-T06 |
| **HP-3D160-S25-S06** | 16.0 | 51 | 132 | 25 | 76 | 32 | 0.27 | | | |
| **HP-3D165-S25-S06** | 16.5 | 53 | 134 | 25 | 78 | 32 | 0.27 | | | |
| **HP-3D170-S25-S06** | 17.0 | 54 | 135 | 25 | 79 | 32 | 0.29 | | | |
| **HP-3D175-S25-S06** | 17.5 | 56 | 137 | 25 | 81 | 32 | 0.29 | | | |
| **HP-3D180-S25-S06** | 18.0 | 57 | 138 | 25 | 82 | 32 | 0.30 | | | |
| **HP-3D185-S25-S06** | 18.5 | 59 | 140 | 25 | 84 | 32 | 0.30 | | | |
| **HP-3D190-S25-S06** | 19.0 | 60 | 141 | 25 | 85 | 32 | 0.31 | | | |
| **HP-3D195-S25-S06** | 19.5 | 62 | 143 | 25 | 87 | 32 | 0.31 | | | |
| **HP-3D200-S25-S06** | 20.0 | 63 | 144 | 25 | 88 | 32 | 0.31 | | | |
| **HP-3D205-S25-S06** | 20.5 | 65 | 146 | 25 | 90 | 32 | 0.33 | | | |
| **HP-3D210-S25-S06** | 21.0 | 66 | 147 | 25 | 91 | 32 | 0.33 | | | |
| **HP-3D215-S25-S06** | 21.5 | 68 | 149 | 25 | 93 | 32 | 0.33 | | | |
| **HP-3D220-S32-S07** | 22.0 | 69 | 159 | 32 | 99 | 40 | 0.57 | SPMT 07T308E-DP | ST025065 | FT-T08 |
| **HP-3D225-S32-S07** | 22.5 | 71 | 161 | 32 | 101 | 40 | 0.57 | | | |
| **HP-3D230-S32-S07** | 23.0 | 72 | 162 | 32 | 102 | 40 | 0.60 | | | |
| **HP-3D235-S32-S07** | 23.5 | 74 | 164 | 32 | 104 | 40 | 0.60 | | | |
| **HP-3D240-S32-S07** | 24.0 | 75 | 165 | 32 | 105 | 40 | 0.62 | | | |
| **HP-3D245-S32-S07** | 24.5 | 77 | 167 | 32 | 107 | 40 | 0.62 | | | |
| **HP-3D250-S32-S07** | 25.0 | 78 | 168 | 32 | 108 | 40 | 0.63 | | | |
| **HP-3D255-S32-S07** | 25.5 | 80 | 170 | 32 | 110 | 40 | 0.63 | | | |
| **HP-3D260-S32-S07** | 26.0 | 81 | 171 | 32 | 111 | 40 | 0.63 | | | |
| **HP-3D265-S32-S07** | 26.5 | 83 | 173 | 32 | 113 | 40 | 0.64 | | | |
| **HP-3D270-S32-S07** | 27.0 | 84 | 174 | 32 | 114 | 40 | 0.65 | | | |
| **HP-3D275-S32-S07** | 27.5 | 86 | 176 | 32 | 116 | 40 | 0.67 | | | |

## HP Series Drilling Holder

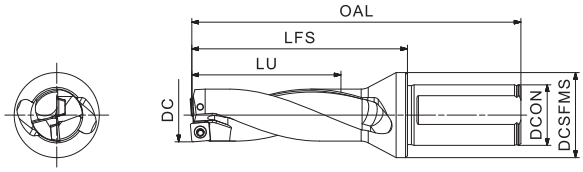
**LU/DC=3**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HP-3D280-S32-S09** | 28.0 | 87 | 177 | 32 | 117 | 40 | 0.67 | SPMT 090408E-DP | ST035084X | FT-T15 |
| **HP-3D285-S32-S09** | 28.5 | 89 | 179 | 32 | 119 | 40 | 0.69 | | | |
| **HP-3D290-S32-S09** | 29.0 | 90 | 180 | 32 | 120 | 40 | 0.70 | | | |
| **HP-3D295-S32-S09** | 29.5 | 93 | 183 | 32 | 123 | 40 | 0.72 | | | |
| **HP-3D300-S32-S09** | 30.0 | 95 | 185 | 32 | 125 | 40 | 0.71 | | | |
| **HP-3D310-S32-S09** | 31.0 | 98 | 188 | 32 | 128 | 40 | 0.75 | | | |
| **HP-3D320-S32-S09** | 32.0 | 101 | 191 | 32 | 131 | 40 | 0.80 | | | |
| **HP-3D330-S32-S09** | 33.0 | 104 | 194 | 32 | 134 | 40 | 0.85 | | | |
| **HP-3D340-S40-S11** | 34.0 | 107 | 212 | 40 | 142 | 50 | 1.20 | SPMT 110408E-DP | ST040100H | FT-T15 |
| **HP-3D350-S40-S11** | 35.0 | 110 | 215 | 40 | 145 | 50 | 1.20 | | | |
| **HP-3D360-S40-S11** | 36.0 | 113 | 218 | 40 | 148 | 50 | 1.20 | | | |
| **HP-3D370-S40-S11** | 37.0 | 116 | 221 | 40 | 151 | 50 | 1.30 | | | |
| **HP-3D380-S40-S11** | 38.0 | 119 | 224 | 40 | 154 | 50 | 1.35 | | | |
| **HP-3D390-S40-S11** | 39.0 | 122 | 227 | 40 | 157 | 50 | 1.40 | | | |
| **HP-3D400-S40-S11** | 40.0 | 125 | 230 | 40 | 160 | 50 | 1.45 | | | |
| **HP-3D410-S40-S11** | 41.0 | 128 | 233 | 40 | 163 | 50 | 1.60 | | | |
| **HP-3D420-S40-S14** | 42.0 | 131 | 236 | 40 | 166 | 50 | 1.65 | SPMT 140512E-DP | ST050126 | FT-T20 |
| **HP-3D430-S40-S14** | 43.0 | 134 | 239 | 40 | 169 | 50 | 1.70 | | | |
| **HP-3D440-S40-S14** | 44.0 | 137 | 242 | 40 | 172 | 50 | 1.75 | | | |
| **HP-3D450-S40-S14** | 45.0 | 140 | 245 | 40 | 175 | 50 | 1.90 | | | |
| **HP-3D460-S40-S14** | 46.0 | 143 | 248 | 40 | 178 | 50 | 1.95 | | | |
| **HP-3D470-S40-S14** | 47.0 | 146 | 251 | 40 | 181 | 50 | 2.10 | | | |
| **HP-3D480-S40-S14** | 48.0 | 149 | 254 | 40 | 184 | 50 | 2.30 | | | |
| **HP-3D490-S40-S14** | 49.0 | 152 | 257 | 40 | 187 | 50 | 2.30 | | | |
| **HP-3D500-S40-S14** | 50.0 | 155 | 260 | 40 | 190 | 50 | 2.35 | | | |

## HP Series Drilling Holder

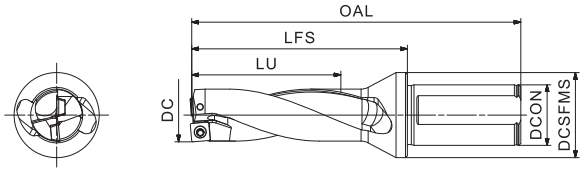
LU/DC=4




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HP-4D130-S20-S05** | 13.0 | 55 | 125 | 20 | 75 | 25 | 0.17 | SPMT 050204E-DP | ST020043 | FT-T06 |
| **HP-4D135-S20-S05** | 13.5 | 57 | 127 | 20 | 77 | 25 | 0.17 | | | |
| **HP-4D140-S20-S05** | 14.0 | 59 | 129 | 20 | 79 | 25 | 0.17 | | | |
| **HP-4D145-S20-S05** | 14.5 | 61 | 131 | 20 | 81 | 25 | 0.17 | | | |
| **HP-4D150-S20-S05** | 15.0 | 63 | 133 | 20 | 83 | 25 | 0.18 | | | |
| **HP-4D155-S25-S06** | 15.5 | 65 | 146 | 25 | 90 | 32 | 0.28 | SPMT 060204E-DP | ST022055 | FT-T06 |
| **HP-4D160-S25-S06** | 16.0 | 67 | 148 | 25 | 92 | 32 | 0.28 | | | |
| **HP-4D165-S25-S06** | 16.5 | 69 | 150 | 25 | 94 | 32 | 0.30 | | | |
| **HP-4D170-S25-S06** | 17.0 | 71 | 152 | 25 | 96 | 32 | 0.30 | | | |
| **HP-4D175-S25-S06** | 17.5 | 73 | 154 | 25 | 98 | 32 | 0.31 | | | |
| **HP-4D180-S25-S06** | 18.0 | 75 | 156 | 25 | 100 | 32 | 0.32 | | | |
| **HP-4D185-S25-S06** | 18.5 | 77 | 158 | 25 | 102 | 32 | 0.33 | | | |
| **HP-4D190-S25-S06** | 19.0 | 79 | 160 | 25 | 104 | 32 | 0.34 | | | |
| **HP-4D195-S25-S06** | 19.5 | 81 | 162 | 25 | 106 | 32 | 0.35 | | | |
| **HP-4D200-S25-S06** | 20.0 | 83 | 164 | 25 | 108 | 32 | 0.36 | | | |
| **HP-4D205-S25-S06** | 20.5 | 85 | 166 | 25 | 110 | 32 | 0.37 | | | |
| **HP-4D210-S25-S06** | 21.0 | 87 | 168 | 25 | 112 | 32 | 0.37 | | | |
| **HP-4D215-S25-S06** | 21.5 | 89 | 170 | 25 | 114 | 32 | 0.38 | | | |
| **HP-4D220-S32-S07** | 22.0 | 91 | 181 | 32 | 121 | 40 | 0.57 | SPMT 07T308E-DP | ST025065 | FT-T08 |
| **HP-4D225-S32-S07** | 22.5 | 93 | 183 | 32 | 123 | 40 | 0.57 | | | |
| **HP-4D230-S32-S07** | 23.0 | 95 | 185 | 32 | 125 | 40 | 0.62 | | | |
| **HP-4D235-S32-S07** | 23.5 | 97 | 187 | 32 | 127 | 40 | 0.62 | | | |
| **HP-4D240-S32-S07** | 24.0 | 99 | 189 | 32 | 129 | 40 | 0.65 | | | |
| **HP-4D245-S32-S07** | 24.5 | 101 | 191 | 32 | 131 | 40 | 0.65 | | | |
| **HP-4D250-S32-S07** | 25.0 | 103 | 193 | 32 | 133 | 40 | 0.65 | | | |
| **HP-4D255-S32-S07** | 25.5 | 105 | 195 | 32 | 135 | 40 | 0.65 | | | |
| **HP-4D260-S32-S07** | 26.0 | 107 | 197 | 32 | 137 | 40 | 0.68 | | | |
| **HP-4D265-S32-S07** | 26.5 | 109 | 199 | 32 | 139 | 40 | 0.70 | | | |
| **HP-4D270-S32-S07** | 27.0 | 111 | 201 | 32 | 141 | 40 | 0.71 | | | |
| **HP-4D275-S32-S07** | 27.5 | 113 | 203 | 32 | 143 | 40 | 0.72 | | | |

## HP Series Drilling Holder

**LU/DC=4**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HP-4D280-S32-S09** | 28.0 | 115 | 205 | 32 | 145 | 40 | 0.74 | SPMT 090408E-DP | ST035084X | FT-T15 |
| **HP-4D285-S32-S09** | 28.5 | 117 | 207 | 32 | 147 | 40 | 0.76 | | | |
| **HP-4D290-S32-S09** | 29.0 | 120 | 210 | 32 | 150 | 40 | 0.78 | | | |
| **HP-4D295-S32-S09** | 29.5 | 123 | 213 | 32 | 153 | 40 | 0.80 | | | |
| **HP-4D300-S32-S09** | 30.0 | 125 | 215 | 32 | 155 | 40 | 0.80 | | | |
| **HP-4D310-S32-S09** | 31.0 | 129 | 219 | 32 | 159 | 40 | 0.85 | | | |
| **HP-4D320-S32-S09** | 32.0 | 133 | 223 | 32 | 163 | 40 | 0.90 | | | |
| **HP-4D330-S32-S09** | 33.0 | 137 | 227 | 32 | 167 | 40 | 0.95 | | | |
| **HP-4D340-S40-S11** | 34.0 | 141 | 246 | 40 | 176 | 50 | 1.30 | SPMT 110408E-DP | ST040100H | FT-T15 |
| **HP-4D350-S40-S11** | 35.0 | 145 | 250 | 40 | 180 | 50 | 1.36 | | | |
| **HP-4D360-S40-S11** | 36.0 | 149 | 254 | 40 | 184 | 50 | 1.43 | | | |
| **HP-4D370-S40-S11** | 37.0 | 153 | 258 | 40 | 188 | 50 | 1.48 | | | |
| **HP-4D380-S40-S11** | 38.0 | 157 | 262 | 40 | 192 | 50 | 1.54 | | | |
| **HP-4D390-S40-S11** | 39.0 | 161 | 266 | 40 | 196 | 50 | 1.62 | | | |
| **HP-4D400-S40-S11** | 40.0 | 165 | 270 | 40 | 200 | 50 | 1.77 | | | |
| **HP-4D410-S40-S11** | 41.0 | 169 | 274 | 40 | 204 | 50 | 1.86 | | | |
| **HP-4D420-S40-S14** | 42.0 | 173 | 278 | 40 | 208 | 50 | 1.98 | SPMT 140512E-DP | ST050126 | FT-T20 |
| **HP-4D430-S40-S14** | 43.0 | 177 | 282 | 40 | 212 | 50 | 2.01 | | | |
| **HP-4D440-S40-S14** | 44.0 | 181 | 286 | 40 | 216 | 50 | 2.18 | | | |
| **HP-4D450-S40-S14** | 45.0 | 185 | 290 | 40 | 220 | 50 | 2.22 | | | |
| **HP-4D460-S40-S14** | 46.0 | 189 | 294 | 40 | 224 | 50 | 2.60 | | | |
| **HP-4D470-S40-S14** | 47.0 | 193 | 298 | 40 | 228 | 50 | 2.60 | | | |
| **HP-4D480-S40-S14** | 48.0 | 197 | 302 | 40 | 232 | 50 | 2.90 | | | |
| **HP-4D490-S40-S14** | 49.0 | 201 | 306 | 40 | 236 | 50 | 2.90 | | | |
| **HP-4D500-S40-S14** | 50.0 | 205 | 310 | 40 | 240 | 50 | 3.09 | | | |

## Drilling Insert Denomination System

| S | P | M | T |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

### 1- Shape/Code

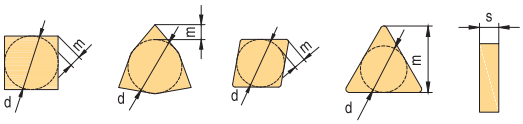
S

W

### 2- Clearance Angle

| A | B | C | D | E |
|---|---|---|---|---|
| | | | | |
| **F** | **G** | **N** | **P** | **O** |
| | | | | Other clearance angle |

### 3- Tolerance




| Class | Unit | In.Circle dimension d | Nose height m | Thicknessss |
|---|---|---|---|---|
| A | mm | ± 0,025 | ± 0,005 | ± 0,025 |
| C | mm | ± 0,025 | ± 0,013 | ± 0,025 |
| E | mm | ± 0,025 | ± 0,025 | ± 0,025 |
| F | mm | ± 0,013 | ± 0,005 | ± 0,025 |
| G | mm | ± 0,025 | ± 0,025 | ± 0,13 |
| H | mm | ± 0,013 | ± 0,013 | ± 0,025 |
| J | mm | * | ± 0,005 | ± 0,025 |
| K | mm | * | ± 0,013 | ± 0,025 |
| L | mm | * | ± 0,025 | ± 0,025 |
| M | mm | * | * | ± 0,127 |
| U | mm | * | * | ± 0,127 |
| N | mm | * | * | ± 0,025 |

* For details refer to right and below tables

| Shape: C, E, H, M, O, P, S, T, R, W | | | | |
|---|---|---|---|---|
| IC | d | | m | |
| | J,K,L,M,N | U | M, N | U |
| 4.76 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 5.56 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 6 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 6.35 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 7.94 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 8 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 9.525 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 10 | ± 0,05 | ± 0,08 | ± 0,08 | ± 0,13 |
| 12 | ± 0,08 | ± 0,13 | ± 0,13 | ± 0,2 |
| 12.7 | ± 0,08 | ± 0,13 | ± 0,13 | ± 0,2 |
| 15.875 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 16 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 19.05 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 20 | ± 0,1 | ± 0,18 | ± 0,15 | ± 0,27 |
| 25 | ± 0,13 | ± 0,25 | ± 0,18 | ± 0,38 |
| 25.4 | ± 0,13 | ± 0,25 | ± 0,18 | ± 0,38 |
| 31.75 | ± 0,15 | ± 0,25 | ± 0,2 | ± 0,38 |
| 32 | ± 0,15 | ± 0,25 | ± 0,2 | ± 0,38 |

| M&N shape | D shape | | V shape | |
|---|---|---|---|---|
| IC | d | m | d | m |
| 5.56 | ± 0,05 | ± 0,11 | | |
| 6.35 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 7.94 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 9.525 | ± 0,05 | ± 0,11 | ± 0,05 | ± 0,16 |
| 12.7 | ± 0,08 | ± 0,15 | ± 0,08 | ± 0,2 |
| 15.875 | ± 0,10 | ± 0,18 | ± 0,10 | ± 0,27 |
| 19.05 | ± 0,10 | ± 0,18 | ± 0,10 | ± 0,27 |

### 4- Clamping Type

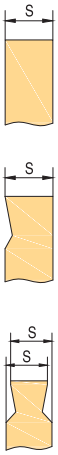
| A | B | C | F | G |
|---|---|---|---|---|
| | | | | |
| **H** | **J** | **M** | **N** | **Q** |
| | |  |  | |
| **R** | **T** | **U** | **W** | **Z** |
| | | | | |

| 06 | 02 | 04 | E | - | DP |
|---|---|---|---|---|---|
| 5 | 6 | 7 | 8 | - | 9 |

## 5- Cutting Edge Length

| In.Circle Dimension (mm) | S Code | S Length | W Code | W Length |
|---|---|---|---|---|
| 5.56 | | | 03 | 3.8 |
| 6.35 | 06 | 6.35 | 04 | 4.3 |
| 7.94 | | | 05 | 5.4 |
| 8.0 | 08 | 8.0 | | |
| 9.525 | 09 | 9.525 | 06 | 6.5 |
| 12.7 | 12 | 12.7 | 08 | 8.7 |

## 6- Insert Thickness

| Thickness description | Thickness mark | Example | | |
|---|---|---|---|---|
| Insert thickness "S" refers to the distance between cutting edge nose and bottom |  | 00 | = | 0.79 |
| | | T0 | = | 0.99 |
| | | 01 | = | 1.59 |
| | | T1 | = | 1.98 |
| | | 02 | = | 2.38 |
| | | T2 | = | 2.58 |
| | | 03 | = | 3.18 |
| | | T3 | = | 3.97 |
| | | 04 | = | 4.76 |
| | | T4 | = | 4.96 |
| | | 05 | = | 5.56 |
| | | T5 | = | 5.95 |
| | | 06 | = | 6.35 |
| | | 07 | = | 7.94 |
| | | 09 | = | 9.53 |
| | | 11 | = | 11.11 |
| | | 12 | = | 12.70 |
| | | 14 | = | 14.29 |
| | | 15 | = | 15.88 |

## 7- Corner Radius

| Example | | |
|---|---|---|
| 04 | = | 0.4 |
| 08 | = | 0.8 |
| 12 | = | 1.2 |

## 8- Cutting Edge Shape

| Example | Description |
|---|---|
| E | Honed cutting edge |
| F | Sharp cutting edge |
| T | Negative land |

## 9- Geometry Code

### DP

1. DP geometry has high efficiency. Suitable for short hole high speed drilling.
2. Strong square insert with reinforced geometry offers excellent hole straightness.
3. Drilling holder with helical flute provides excellent chip evacuation and high hole precision.

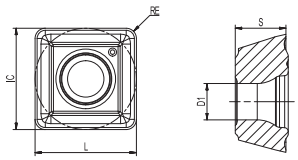
### DU

1. Suitable cutting angle makes perfect balance for the cutting force.
2. General purpose geometry combined with two grades are suitable for P, M, K, S materials, especially good for the chip control in soft materials.
3. Obtains good surface finish.
4. Good versatility. It's suitable for rotating and non-rotating machining.

## Drilling Grade Application Guide

| Drilling insert grade ISO group | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Group | Materials | ISO | Coated | | | | | | | | | Uncoated |
| | | | PVD | PVD | PVD | PVD | PVD | PVD | PVD | PVD | CVD | CVD | |
| P | Unalloy steels / Alloyed steels | P01 | AP301U | | | | | | | | | | |
| | | P05 | | | | | | | | | | | |
| | | P10 | | | | | | | | | | | |
| | | P15 | | | | | | | | | | | |
| | | P20 | | AP351M | AP351U | | | | | | | | |
| | | P25 | | | | | | | | | | | |
| | | P30 | | | | | | | | | | | |
| | | P35 | | | | | | | | | | | |
| | | P40 | | | | | | | | | | | |
| | | P45 | | | | | | | | | | | |
| | | P50 | | | | | | | | | | | |
| M | Stainless steels | M01 | | | | | | | | | | | |
| | | M05 | | | | | | | | | | | |
| | | M10 | | | | | | | | | | | |
| | | M15 | | | | | | | | | | | |
| | | M20 | | | | | | | | | | | |
| | | M25 | | AP351M | | | | | | | | | |
| | | M30 | | | AP351U | | | | | | | | |
| | | M35 | | | | | | | | | | | |
| | | M40 | | | | | | | | | | | |
| | | M45 | | | | | | | | | | | |
| K | Cast iron | K01 | | | | | | | | | | | |
| | | K05 | | | | | | | | | | | |
| | | K10 | | | | | | | | | | | |
| | | K15 | | | | | | | | | | | |
| | | K20 | | | | | | | | | | | |
| | | K25 | | | | | | | | | | | |
| | | K30 | | | | | | | | | | | |
| | | K35 | | | | | | | | | | | |
| | | K40 | | | | | | | | | | | |
| | | K45 | | | | | | | | | | | |
| | | K50 | | | | | | | | | | | |
| N | Aluminum/ Aluminum alloys | N01 | | | | | | | | | | | |
| | | N05 | | | | | | | | | | | |
| | | N10 | | | | | | | | | | | |
| | | N15 | | | | | | | | | | | |
| | | N20 | | | | | | | | | | | |
| | | N25 | | | | | | | | | | | |
| | | N30 | | | | | | | | | | | |
| S | Heat resistant alloys | S01 | | | | | | | | | | | |
| | | S05 | | | | | | | | | | | |
| | | S10 | | | | | | | | | | | |
| | | S15 | | | | | | | | | | | |
| | | S20 | | | | | | | | | | | |
| | | S25 | | AP351M | | | | | | | | | |
| | | S30 | | | AP351U | | | | | | | | |
| | | S35 | | | | | | | | | | | |
| | | S40 | | | | | | | | | | | |
| | | S45 | | | | | | | | | | | |

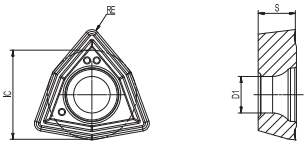
## SPMT-DP Drilling Insert




| Inserts | Product code | Machining conditions: Dimension (mm) L | IC | S | RE | D1 | ● Good Conditions ⇳ General Conditions ⇵ Bad Conditions: P ● AP301U | P ⇵ AP351U | P ⇳ AC301P | M ● AP351M | K ● AP301U | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SPMT 050204E-DP** | 5 | 5 | 2.38 | 0.4 | 2.25 | ● | ● | ● | ● | ● | |
| | **SPMT 060204E-DP** | 6 | 6 | 2.38 | 0.4 | 2.61 | ● | ● | ● | ● | ● | |
| | **SPMT 07T308E-DP** | 7.94 | 7.94 | 3.97 | 0.8 | 2.85 | ● | ● | ● | ● | ● | |
| | **SPMT 090408E-DP** | 9.8 | 9.8 | 4.3 | 0.8 | 4.05 | ● | ● | ● | ● | ● | |
| | **SPMT 110408E-DP** | 11.5 | 11.5 | 4.8 | 0.8 | 4.45 | ● | ● | ● | ● | ● | |
| | **SPMT 140512E-DP** | 14.3 | 14.3 | 5.2 | 1.2 | 5.75 | ● | ● | ● | ● | ● | |

● : Standard stock ○ : Made-to-Order

## WCMT-DU Drilling Insert




| Inserts | Product code | Machining conditions: Dimension (mm) IC | S | RE | D1 | ● Good Conditions ⇳ General Conditions ⇵ Bad Conditions: P ● AP301U | P ⇵ AP351U | P ⇳ AC301P | M ● AP351M | K ● AP301U | N AW100K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **WCMT 030208E-DU** | 5.56 | 2.38 | 0.8 | 2.8 | ● | ● | | | | |
| | **WCMT 040208E-DU** | 6.35 | 2.38 | 0.8 | 3.0 | ● | ● | | | | |
| | **WCMT 050308E-DU** | 7.94 | 3.18 | 0.8 | 3.4 | ● | ● | | | | |
| | **WCMT 06T308E-DU** | 9.53 | 3.97 | 0.8 | 3.9 | ● | ● | | | | |
| | **WCMT 080412E-DU** | 12.7 | 4.76 | 1.2 | 4.4 | ● | ● | | | | |

Remark: DU series are universal inserts, drilling holders are not provided.

● : Standard stock ○ : Made-to-Order

## Cutting Data Recommendation

| Materials | | | | SP drilling insert series grade application range & cutting parameter recommendation | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength (N/mm²) | Brinell hardness (HB) | Grade | | | | | | | | | | | | Feed (mm/rev) | | | | | |
| | | | | AP301U | | | AP351U | | | AP351M | | | AC301P | | | | | | | | |
| | | | | P15-35 | | | P30-45 | | | P20-35 | | | P25-40 | | | | | | | | |
| | | | | M15-35 | | | M30-45 | | | M20-35 | | | - | | | | | | | | |
| | | | | - | | | - | | | - | | | - | | | | | | | | |
| | | | | - | | | S 30-45 | | | S20-35 | | | - | | | | | | | | |
| | | | | - | | | - | | | - | | | - | | | | | | | | |
| | | | | - | | | - | | | - | | | | | | | | | | | |
| | | | | Feed (mm/rev) | | | | | | | | | | | | | | | | | |
| | | | | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | ∅13mm ~ ∅15mm | ∅15.5mm ~ ∅21.5mm | ∅22mm ~ ∅27.5mm | ∅28mm ~ ∅33mm | ∅34mm ~ ∅41mm | ∅42mm ~ ∅50mm |
| | | | | Cutting speed (m/min) | | | | | | | | | | | | SPMT 050204E-DP | SPMT 060204E-DP | SPMT 07T308E-DP | SPMT 090408E-DP | SPMT 110408E-DP | SPMT 140512E-DP |
| P | Non-alloyed steel | <600 | <180 | 260 | 240 | 224 | 220 | 185 | 150 | 240 | 220 | 200 | 200 | 175 | 150 | 0.05-0.08 | 0.06-0.10 | 0.06-0.12 | 0.07-0.13 | 0.08-0.15 | 0.08-0.16 |
| | | <950 | <280 | 250 | 210 | 170 | 200 | 170 | 140 | 230 | 190 | 160 | 190 | 160 | 135 | 0.06-0.12 | 0.08-0.15 | 0.10-0.18 | 0.12-0.22 | 0.12-0.24 | 0.13-0.25 |
| | Alloyed steel | 700-950 | 200-280 | 240 | 200 | 160 | 190 | 160 | 130 | 220 | 180 | 150 | 180 | 150 | 120 | 0.06-0.10 | 0.08-0.14 | 0.10-0.18 | 0.12-0.22 | 0.12-0.23 | 0.13-0.24 |
| | | 950-1200 | 280-355 | 210 | 170 | 130 | 170 | 130 | 90 | 190 | 150 | 110 | 160 | 130 | 100 | 0.06-0.12 | 0.08-0.15 | 0.10-0.18 | 0.12-0.22 | 0.12-0.24 | 0.13-0.25 |
| | | 1200-1400 | 355-415 | 170 | 140 | 110 | 160 | 120 | 80 | 150 | 120 | 90 | 140 | 110 | 80 | 0.06-0.10 | 0.08-0.14 | 0.10-0.18 | 0.12-0.22 | 0.12-0.23 | 0.13-0.24 |
| M | Duplex stainless steel | 778 | 230 | 260 | 200 | 140 | 180 | 135 | 90 | 240 | 180 | 120 | - | - | - | 0.05-0.10 | 0.06-0.12 | 0.08-0.15 | 0.09-0.16 | 0.10-0.17 | 0.11-0.18 |
| | AusteniticStainless steel | 675 | 200 | 220 | 170 | 120 | 120 | 65 | 60 | 200 | 150 | 100 | - | - | - | 0.05-0.10 | 0.06-0.12 | 0.08-0.15 | 0.09-0.16 | 0.10-0.17 | 0.11-0.18 |
| | Precipitation-hardening stainless steel | 1013 | 300 | 180 | 140 | 100 | 90 | 65 | 40 | 160 | 120 | 80 | - | - | - | - | - | - | - | - | - |
| K | Grey cast iron | 700 | 220 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Nodular cast iron | 880 | 260 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Malleable cast iron | 800 | 250 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| N | Aluminum | 260 | 75 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| S | Fe-based alloy | 943 | 280 | - | - | - | 40 | 30 | 20 | 45 | 35 | 25 | - | - | - | - | - | - | - | - | - |
| | Co-based alloy | 1076 | 320 | - | - | - | 35 | 25 | 15 | 40 | 30 | 20 | - | - | - | - | - | - | - | - | - |
| | Ni-based alloy | 1177 | 350 | - | - | - | 35 | 25 | 15 | 40 | 30 | 20 | - | - | - | - | - | - | - | - | - |
| | Titanium alloys | 1262 | 370 | - | - | - | 40 | 30 | 20 | 45 | 35 | 25 | - | - | - | 0.05-0.10 | 0.06-0.14 | 0.08-0.18 | 0.10-0.22 | 0.14-0.23 | 0.15-0.24 |
| H | Hardened steel | - | 50-60HRC | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant.

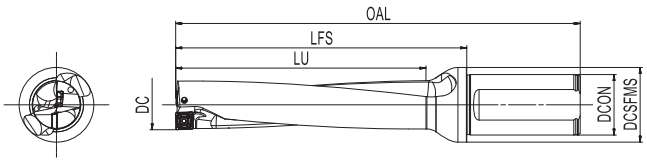
## Cutting Data Recommendation

| Materials | | | | WC drilling insert series grade application range & cutting parameter recommendation | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Material classification | Tensile strength ($N/mm^2$) | Brinell hardness (HB) | Grade | | | | | | Feed (mm/rev) | | | | |
| | | | | AP301U | | | AP351U | | | | | | | |
| | | | | PVD Coated | | | PVD Coated | | | | | | | |
| | | | | P15-35 | | | P30-45 | | | | | | | |
| | | | | M15-35 | | | M30-45 | | | | | | | |
| | | | | - | | | - | | | | | | | |
| | | | | - | | | S 30-45 | | | | | | | |
| | | | | - | | | - | | | | | | | |
| | | | | - | | | - | | | | | | | |
| | | | | Feed (mm/rev) | | | | | | | | | | |
| | | | | Max | Med | Min | Max | Med | Min | ∅16mm ~ ∅20 mm | ∅20.5mm ~ ∅25mm | ∅25.5mm ~ ∅30 mm | ∅31mm ~ ∅41 mm | ∅41mm ~ ∅58 mm |
| | | | | Cutting speed (m/min) | | | | | | WCMT 030204E-DU | WCMT 040204E-DU | WCMT 050308E-DU | WCMT 06T308E-DU | WCMT 080408E-DU |
| P | Non-alloyed steel | <600 | <180 | 260 | 240 | 224 | 220 | 185 | 150 | 0.04-0.065 | 0.07-0.09 | 0.07-0.10 | 0.08-0.11 | 0.09-0.13 |
| | | <950 | <280 | 250 | 210 | 170 | 200 | 170 | 140 | 0.05-0.07 | 0.09-0.09 | 0.07-0.10 | 0.08-0.11 | 0.09-0.13 |
| | Alloyed steel | 700-950 | 200-280 | 240 | 200 | 160 | 190 | 160 | 130 | 0.05-0.09 | 0.065-0.14 | 0.08-0.16 | 0.10-0.18 | 0.10-0.20 |
| | | 950-1200 | 280-355 | 210 | 170 | 130 | 170 | 130 | 90 | 0.04-0.07 | 0.065-0.11 | 0.07-0.14 | 0.09-0.15 | 0.10-0.18 |
| | | 1200-1400 | 355-415 | 170 | 140 | 110 | 160 | 120 | 80 | 0.04-0.065 | 0.05-0.9 | 0.07-0.10 | 0.08-0.12 | 0.09-0.13 |
| M | Duplex stainless steel | 778 | 230 | 260 | 200 | 140 | 180 | 135 | 90 | 0.04-0.07 | 0.065-0.11 | 0.08-0.14 | 0.08-0.11 | 0.09-0.13 |
| | Austenitic stainless steel | 675 | 200 | 220 | 170 | 120 | 120 | 65 | 60 | 0.04-0.065 | 0.065-0.10 | 0.08-0.12 | 0.08-0.10 | 0.08-0.11 |
| | Precipitation-hardening stainless steel | 1013 | 300 | 180 | 140 | 100 | 90 | 65 | 40 | - | - | - | - | - |
| K | Grey cast iron | 700 | 220 | - | - | - | - | - | - | - | - | - | - | - |
| | Nodular cast iron | 880 | 260 | - | - | - | - | - | - | - | - | - | - | - |
| | Malleable cast iron | 800 | 250 | - | - | - | - | - | - | - | - | - | - | - |
| N | Aluminum | 260 | 75 | - | - | - | - | - | - | - | - | - | - | - |
| | Aluminum alloy | 447 | 130 | - | - | - | - | - | - | - | - | - | - | - |
| S | Fe-based alloy | 943 | 280 | - | - | - | 40 | 30 | 20 | - | - | - | - | - |
| | Co-based alloy | 1076 | 320 | - | - | - | 35 | 25 | 15 | - | - | - | - | - |
| | Ni-based alloy | 1177 | 350 | - | - | - | 35 | 25 | 15 | - | - | - | - | - |
| | Titanium alloys | 1262 | 370 | - | - | - | 40 | 30 | 20 | 0.05-0.10 | 0.06-0.11 | 0.07-0.12 | 0.08-0.13 | 0.08-0.14 |
| H | Hardened steel | - | 50-60HRC | - | - | - | - | - | - | - | - | - | - | - |
| | Chilled cast iron | - | 55HRC | - | - | - | - | - | - | - | - | - | - | - |

* The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant.

## HY Series Drilling Holder

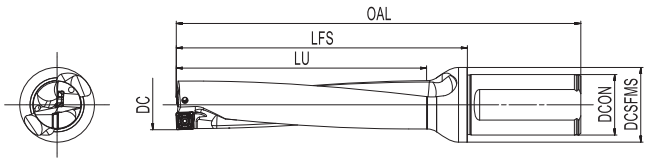
**LU/DC=2**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-2D140-S20-SP02** | 14.0 | 31 | 94 | 20 | 44 | 25 | 0.16 | XONT 020204E SPET 020204E | SP020045 | FT-TP06 |
| **HY-2D145-S20-SP02** | 14.5 | 33 | 96 | 20 | 46 | 25 | 0.16 | | | |
| **HY-2D150-S20-SP02** | 15.0 | 34 | 97 | 20 | 47 | 25 | 0.16 | | | |
| **HY-2D155-S20-SP02** | 15.5 | 36 | 99 | 20 | 49 | 25 | 0.17 | | | |
| **HY-2D160-S20-SP02** | 16.0 | 36 | 101 | 20 | 51 | 25 | 0.17 | | | |
| **HY-2D165-S20-SP03** | 16.5 | 37 | 102 | 20 | 52 | 25 | 0.17 | XONT 030305E SPET 030305E | SP022049 | FT-TP07 |
| **HY-2D170-S25-SP03** | 17.0 | 38 | 109 | 25 | 53 | 32 | 0.28 | | | |
| **HY-2D175-S25-SP03** | 17.5 | 40 | 111 | 25 | 55 | 32 | 0.29 | | | |
| **HY-2D180-S25-SP03** | 18.0 | 40 | 112 | 25 | 56 | 32 | 0.29 | | | |
| **HY-2D185-S25-SP03** | 18.5 | 40 | 112 | 25 | 56 | 32 | 0.29 | | | |
| **HY-2D188-S25-SP03** | 18.8 | 40 | 112 | 25 | 56 | 32 | 0.29 | | | |
| **HY-2D190-S25-SP03** | 19.0 | 42 | 114 | 25 | 58 | 32 | 0.30 | | | |
| **HY-2D195-S25-SP03** | 19.5 | 44 | 116 | 25 | 60 | 32 | 0.31 | | | |
| **HY-2D200-S25-SP04** | 20.0 | 44 | 117 | 25 | 61 | 32 | 0.32 | XONT 040305E SPET 040305E | SP025072 | FT-TP08 |
| **HY-2D205-S25-SP04** | 20.5 | 46 | 120 | 25 | 64 | 32 | 0.32 | | | |
| **HY-2D210-S25-SP04** | 21.0 | 46 | 120 | 25 | 64 | 32 | 0.32 | | | |
| **HY-2D215-S25-SP04** | 21.5 | 47 | 121 | 25 | 65 | 32 | 0.32 | | | |
| **HY-2D220-S25-SP04** | 22.0 | 48 | 122 | 25 | 66 | 32 | 0.34 | | | |
| **HY-2D230-S25-SP04** | 23.0 | 51 | 125 | 25 | 69 | 32 | 0.35 | | | |
| **HY-2D240-S25-SP05** | 24.0 | 53 | 127 | 25 | 71 | 32 | 0.35 | XONT 050305E SPET 050305E | SP030082 | FT-TP09 |
| **HY-2D250-S25-SP05** | 25.0 | 56 | 130 | 25 | 74 | 32 | 0.37 | | | |
| **HY-2D260-S32-SP05** | 26.0 | 56 | 137 | 32 | 77 | 40 | 0.58 | | | |
| **HY-2D270-S32-SP05** | 27.0 | 59 | 139 | 32 | 79 | 40 | 0.60 | | | |
| **HY-2D280-S32-SP05** | 28.0 | 60 | 142 | 32 | 82 | 40 | 0.63 | | | |
| **HY-2D290-S32-SP05** | 29.0 | 62 | 144 | 32 | 84 | 40 | 0.65 | | | |
| **HY-2D300-S32-SP06** | 30.0 | 65 | 147 | 32 | 87 | 40 | 0.65 | XONT 060406E SPET 060406E | SP035094 | FT-TP10 |
| **HY-2D310-S40-SP06** | 31.0 | 66 | 160 | 40 | 90 | 48 | 1.02 | | | |
| **HY-2D320-S40-SP06** | 32.0 | 68 | 162 | 40 | 92 | 48 | 1.04 | | | |
| **HY-2D330-S40-SP06** | 33.0 | 70 | 165 | 40 | 95 | 48 | 1.07 | | | |
| **HY-2D340-S40-SP06** | 34.0 | 73 | 168 | 40 | 98 | 48 | 1.10 | | | |
| **HY-2D350-S40-SP06** | 35.0 | 76 | 171 | 40 | 101 | 48 | 1.14 | | | |

## HY Series Drilling Holder

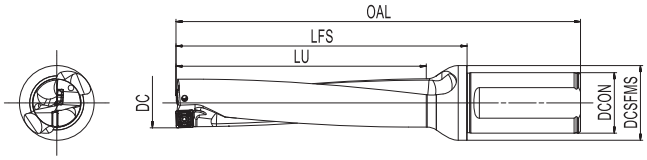
**LU/DC=2**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-2D360-S40-SP07** | 36.0 | 77 | 174 | 40 | 104 | 48 | 1.16 | XONT 070406E SPET 070406E | SP035094 | FT-TP10 |
| **HY-2D370-S40-SP07** | 37.0 | 79 | 175 | 40 | 105 | 48 | 1.19 | | | |
| **HY-2D380-S40-SP07** | 38.0 | 80 | 178 | 40 | 108 | 48 | 1.24 | | | |
| **HY-2D390-S40-SP07** | 39.0 | 82 | 180 | 40 | 110 | 48 | 1.29 | | | |
| **HY-2D400-S40-SP07** | 40.0 | 85 | 183 | 40 | 113 | 48 | 1.32 | | | |
| **HY-2D410-S40-SP07** | 41.0 | 90 | 187 | 40 | 117 | 48 | 1.38 | | | |
| **HY-2D420-S40-SP07** | 42.0 | 91 | 189 | 40 | 119 | 48 | 1.42 | | | |
| **HY-2D430-S40-SP07** | 43.0 | 91 | 192 | 40 | 122 | 50 | 1.47 | | | |
| **HY-2D440-S40-SP08** | 44.0 | 93 | 194 | 40 | 124 | 63 | 1.65 | XONT 080508E SPET 080508E | SP040110 | FT-TP15 |
| **HY-2D450-S40-SP08** | 45.0 | 95 | 197 | 40 | 127 | 63 | 1.71 | | | |
| **HY-2D460-S40-SP08** | 46.0 | 98 | 200 | 40 | 130 | 63 | 1.75 | | | |
| **HY-2D470-S40-SP08** | 47.0 | 101 | 202 | 40 | 132 | 63 | 1.80 | | | |
| **HY-2D480-S40-SP08** | 48.0 | 104 | 205 | 40 | 135 | 63 | 1.86 | | | |
| **HY-2D490-S40-SP08** | 49.0 | 105 | 207 | 40 | 137 | 63 | 1.92 | | | |
| **HY-2D500-S40-SP08** | 50.0 | 105 | 174 | 40 | 104 | 63 | 1.99 | | | |
| **HY-2D510-S40-SP08** | 51.0 | 108 | 214 | 40 | 144 | 63 | 2.11 | | | |
| **HY-2D520-S40-SP08** | 52.0 | 110 | 216 | 40 | 146 | 63 | 2.17 | | | |
| **HY-2D530-S40-SP09** | 53.0 | 113 | 219 | 40 | 149 | 63 | 2.15 | XONT 090608E SPET 090608E | SP040110 | FT-TP15 |
| **HY-2D540-S40-SP09** | 54.0 | 114 | 221 | 40 | 151 | 63 | 2.22 | | | |
| **HY-2D550-S40-SP09** | 55.0 | 116 | 224 | 40 | 154 | 63 | 2.31 | | | |
| **HY-2D560-S40-SP09** | 56.0 | 118 | 227 | 40 | 157 | 63 | 2.40 | | | |
| **HY-2D570-S40-SP09** | 57.0 | 120 | 229 | 40 | 159 | 63 | 2.48 | | | |
| **HY-2D580-S40-SP09** | 58.0 | 122 | 232 | 40 | 162 | 63 | 2.57 | | | |
| **HY-2D590-S40-SP09** | 59.0 | 124 | 234 | 40 | 164 | 63 | 2.61 | | | |
| **HY-2D600-S40-SP09** | 60.0 | 126 | 237 | 40 | 167 | 63 | 2.77 | | | |
| **HY-2D610-S40-SP09** | 61.0 | 129 | 241 | 40 | 171 | 63 | 2.89 | | | |
| **HY-2D620-S40-SP09** | 62.0 | 131 | 243 | 40 | 173 | 63 | 2.95 | | | |
| **HY-2D630-S40-SP09** | 63.0 | 133 | 246 | 40 | 176 | 63 | 3.06 | | | |

## HY Series Drilling Holder

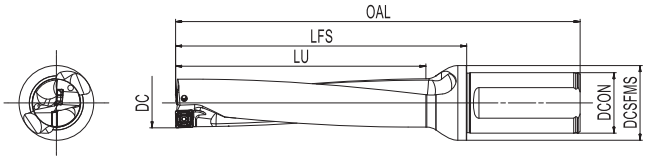
LU/DC=3




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-3D140-S20-SP02** | 14.0 | 44 | 108 | 20 | 58 | 25 | 0.16 | XONT 020204E SPET 020204E | SP020045 | FT-TP06 |
| **HY-3D145-S20-SP02** | 14.5 | 47 | 110 | 20 | 60 | 25 | 0.16 | | | |
| **HY-3D150-S20-SP02** | 15.0 | 49 | 112 | 20 | 62 | 25 | 0.17 | | | |
| **HY-3D155-S20-SP02** | 15.5 | 51 | 114 | 20 | 64 | 25 | 0.17 | | | |
| **HY-3D160-S20-SP02** | 16.0 | 51 | 116 | 20 | 66 | 25 | 0.18 | | | |
| **HY-3D165-S20-SP03** | 16.5 | 53 | 118 | 20 | 68 | 25 | 0.18 | XONT 030305E SPET 030305E | SP022049 | FT-TP07 |
| **HY-3D170-S25-SP03** | 17.0 | 54 | 119 | 25 | 69 | 32 | 0.29 | | | |
| **HY-3D175-S25-SP03** | 17.5 | 57 | 122 | 25 | 72 | 32 | 0.30 | | | |
| **HY-3D180-S25-SP03** | 18.0 | 57 | 123 | 25 | 73 | 32 | 0.31 | | | |
| **HY-3D185-S25-SP03** | 18.5 | 59 | 125 | 25 | 75 | 32 | 0.31 | | | |
| **HY-3D190-S25-SP03** | 19.0 | 60 | 132 | 25 | 76 | 32 | 0.32 | | | |
| **HY-3D193-S25-SP03** | 19.3 | 63 | 135 | 25 | 79 | 32 | 0.32 | | | |
| **HY-3D195-S25-SP03** | 19.5 | 63 | 135 | 25 | 79 | 32 | 0.32 | | | |
| **HY-3D200-S25-SP04** | 20.0 | 63 | 137 | 25 | 81 | 32 | 0.34 | XONT 040305E SPET 040305E | SP025072 | FT-TP08 |
| **HY-3D205-S25-SP04** | 20.5 | 64 | 138 | 25 | 82 | 32 | 0.34 | | | |
| **HY-3D210-S25-SP04** | 21.0 | 66 | 140 | 25 | 84 | 32 | 0.34 | | | |
| **HY-3D215-S25-SP04** | 21.5 | 68 | 142 | 25 | 86 | 32 | 0.35 | | | |
| **HY-3D220-S25-SP04** | 22.0 | 69 | 143 | 25 | 87 | 32 | 0.36 | | | |
| **HY-3D225-S25-SP04** | 22.5 | 72 | 146 | 25 | 90 | 32 | 0.37 | | | |
| **HY-3D230-S25-SP04** | 23.0 | 73 | 147 | 25 | 91 | 32 | 0.38 | | | |
| **HY-3D235-S25-SP04** | 23.5 | 75 | 149 | 25 | 93 | 32 | 0.39 | | | |

## HY Series Drilling Holder

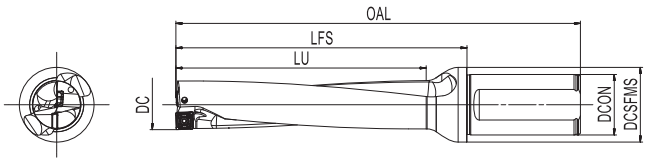
**LU/DC=3**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-3D240-S25-SP05** | 24.0 | 77 | 151 | 25 | 95 | 32 | 0.39 | XONT 050305E SPET 050305E | SP030082 | FT-TP09 |
| **HY-3D245-S25-SP05** | 24.5 | 79 | 153 | 25 | 97 | 32 | 0.39 | | | |
| **HY-3D250-S25-SP05** | 25.0 | 81 | 155 | 25 | 99 | 32 | 0.41 | | | |
| **HY-3D253-S25-SP05** | 25.3 | 81 | 155 | 25 | 99 | 32 | 0.41 | | | |
| **HY-3D255-S25-SP05** | 25.5 | 81 | 156 | 25 | 100 | 32 | 0.42 | | | |
| **HY-3D260-S32-SP05** | 26.0 | 81 | 162 | 32 | 102 | 40 | 0.63 | | | |
| **HY-3D265-S32-SP05** | 26.5 | 83 | 164 | 32 | 104 | 40 | 0.64 | | | |
| **HY-3D270-S32-SP05** | 27.0 | 85 | 165 | 32 | 105 | 40 | 0.65 | | | |
| **HY-3D275-S32-SP05** | 27.5 | 88 | 168 | 32 | 108 | 40 | 0.67 | | | |
| **HY-3D280-S32-SP05** | 28.0 | 88 | 169 | 32 | 109 | 40 | 0.68 | | | |
| **HY-3D285-S32-SP05** | 28.5 | 88 | 171 | 32 | 111 | 40 | 0.69 | | | |
| **HY-3D290-S32-SP05** | 29.0 | 90 | 172 | 32 | 112 | 40 | 0.71 | | | |
| **HY-3D295-S32-SP05** | 29.5 | 93 | 175 | 32 | 115 | 40 | 0.72 | | | |
| **HY-3D300-S32-SP06** | 30.0 | 95 | 177 | 32 | 117 | 40 | 0.72 | XONT 060406E SPET 060406E | SP035094 | FT-TP10 |
| **HY-3D305-S32-SP06** | 30.5 | 96 | 178 | 32 | 118 | 40 | 0.72 | | | |
| **HY-3D310-S40-SP06** | 31.0 | 97 | 191 | 40 | 121 | 48 | 1.09 | | | |
| **HY-3D315-S40-SP06** | 31.5 | 98 | 192 | 40 | 122 | 48 | 1.1 | | | |
| **HY-3D320-S40-SP06** | 32.0 | 100 | 194 | 40 | 124 | 48 | 1.12 | | | |
| **HY-3D325-S40-SP06** | 32.5 | 102 | 196 | 40 | 126 | 48 | 1.14 | | | |
| **HY-3D330-S40-SP06** | 33.0 | 103 | 198 | 40 | 128 | 48 | 1.15 | | | |
| **HY-3D335-S40-SP06** | 33.5 | 105 | 200 | 40 | 130 | 48 | 1.17 | | | |
| **HY-3D340-S40-SP06** | 34.0 | 106 | 201 | 40 | 131 | 48 | 1.19 | | | |
| **HY-3D345-S40-SP06** | 34.5 | 109 | 204 | 40 | 134 | 48 | 1.22 | | | |
| **HY-3D350-S40-SP06** | 35.0 | 110 | 205 | 40 | 135 | 48 | 1.24 | | | |
| **HY-3D355-S40-SP06** | 35.5 | 112 | 207 | 40 | 137 | 48 | 1.26 | | | |

## HY Series Drilling Holder

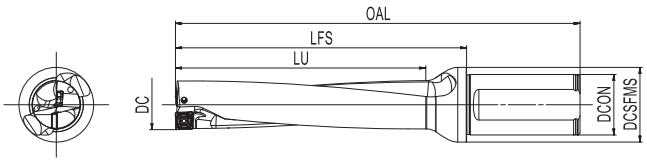
LU/DC=3




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-3D360-S40-SP07** | 36.0 | 112 | 209 | 40 | 139 | 48 | 1.28 | XONT 070406E SPET 070406E | SP035094 | FT-TP10 |
| **HY-3D370-S40-SP07** | 37.0 | 115 | 212 | 40 | 142 | 48 | 1.33 | | | |
| **HY-3D380-S40-SP07** | 38.0 | 118 | 216 | 40 | 146 | 48 | 1.39 | | | |
| **HY-3D383-S40-SP07** | 38.3 | 119 | 217 | 40 | 147 | 48 | 1.41 | | | |
| **HY-3D385-S40-SP07** | 38.5 | 119 | 217 | 40 | 147 | 48 | 1.42 | | | |
| **HY-3D390-S40-SP07** | 39.0 | 121 | 219 | 40 | 149 | 48 | 1.44 | | | |
| **HY-3D395-S40-SP07** | 39.5 | 123 | 221 | 40 | 151 | 48 | 1.44 | | | |
| **HY-3D400-S40-SP07** | 40.0 | 125 | 223 | 40 | 153 | 48 | 1.47 | | | |
| **HY-3D405-S40-SP07** | 40.5 | 127 | 223 | 40 | 153 | 48 | 1.57 | | | |
| **HY-3D410-S40-SP07** | 41.0 | 127 | 227 | 40 | 157 | 48 | 1.62 | | | |
| **HY-3D420-S40-SP07** | 42.0 | 130 | 230 | 40 | 160 | 48 | 1.68 | | | |
| **HY-3D430-S40-SP07** | 43.0 | 133 | 234 | 40 | 164 | 50 | 1.77 | | | |
| **HY-3D440-S40-SP08** | 44.0 | 136 | 237 | 40 | 167 | 50 | 1.81 | XONT 080508E SPET 080508E | SP040110 | FT-TP15 |
| **HY-3D450-S40-SP08** | 45.0 | 104 | 242 | 40 | 172 | 50 | 1.90 | | | |
| **HY-3D460-S40-SP08** | 46.0 | 144 | 246 | 40 | 176 | 50 | 1.98 | | | |
| **HY-3D470-S40-SP08** | 47.0 | 146 | 249 | 40 | 179 | 63 | 2.12 | | | |
| **HY-3D480-S40-SP08** | 48.0 | 149 | 253 | 40 | 183 | 63 | 2.30 | | | |
| **HY-3D490-S40-SP08** | 49.0 | 152 | 256 | 40 | 186 | 63 | 2.39 | | | |
| **HY-3D495-S40-SP08** | 49.5 | 153 | 258 | 40 | 188 | 63 | 2.31 | | | |
| **HY-3D500-S40-SP08** | 50.0 | 155 | 260 | 40 | 190 | 63 | 2.37 | | | |
| **HY-3D510-S40-SP08** | 51.0 | 158 | 264 | 40 | 194 | 63 | 2.58 | | | |
| **HY-3D520-S40-SP08** | 52.0 | 161 | 267 | 40 | 197 | 63 | 2.69 | | | |
| **HY-3D530-S40-SP09** | 53.0 | 164 | 271 | 40 | 201 | 63 | 2.71 | XONT 090608E SPET 090608E | SP040110 | FT-TP15 |
| **HY-3D540-S40-SP09** | 54.0 | 167 | 274 | 40 | 204 | 63 | 2.81 | | | |
| **HY-3D550-S40-SP09** | 55.0 | 171 | 279 | 40 | 209 | 63 | 2.94 | | | |
| **HY-3D560-S40-SP09** | 56.0 | 174 | 283 | 40 | 213 | 63 | 3.07 | | | |
| **HY-3D570-S40-SP09** | 57.0 | 177 | 286 | 40 | 216 | 63 | 3.19 | | | |
| **HY-3D580-S40-SP09** | 58.0 | 180 | 290 | 40 | 220 | 63 | 3.32 | | | |
| **HY-3D590-S40-SP09** | 59.0 | 183 | 293 | 40 | 223 | 63 | 3.41 | | | |
| **HY-3D600-S40-SP09** | 60.0 | 186 | 297 | 40 | 227 | 63 | 3.55 | | | |
| **HY-3D610-S40-SP09** | 61.0 | 190 | 302 | 40 | 232 | 63 | 3.71 | | | |
| **HY-3D620-S40-SP09** | 62.0 | 193 | 305 | 40 | 235 | 63 | 3.94 | | | |
| **HY-3D630-S40-SP09** | 63.0 | 196 | 309 | 40 | 239 | 63 | 4.10 | | | |

## HY Series Drilling Holder

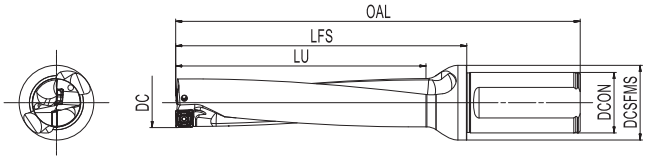
**LU/DC=4**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-4D140-S20-SP02** | 14.0 | 59 | 122 | 20 | 72 | 25 | 0.17 | XONT 020204E SPET 020204E | SP020045 | FT-TP06 |
| **HY-4D145-S20-SP02** | 14.5 | 62 | 125 | 20 | 75 | 25 | 0.17 | | | |
| **HY-4D150-S20-SP02** | 15.0 | 64 | 127 | 20 | 77 | 25 | 0.17 | | | |
| **HY-4D155-S20-SP02** | 15.5 | 66 | 129 | 20 | 79 | 25 | 0.18 | | | |
| **HY-4D160-S20-SP02** | 16.0 | 67 | 132 | 20 | 82 | 25 | 0.19 | | | |
| **HY-4D165-S20-SP03** | 16.5 | 69 | 134 | 20 | 84 | 25 | 0.19 | XONT 030305E SPET 030305E | SP022049 | FT-TP07 |
| **HY-4D170-S25-SP03** | 17.0 | 71 | 142 | 25 | 86 | 32 | 0.30 | | | |
| **HY-4D175-S25-SP03** | 17.5 | 73 | 145 | 25 | 89 | 32 | 0.31 | | | |
| **HY-4D180-S25-SP03** | 18.0 | 75 | 147 | 25 | 91 | 32 | 0.32 | | | |
| **HY-4D185-S25-SP03** | 18.5 | 77 | 149 | 25 | 93 | 32 | 0.33 | | | |
| **HY-4D190-S25-SP03** | 19.0 | 79 | 151 | 25 | 95 | 32 | 0.34 | | | |
| **HY-4D193-S25-SP03** | 19.3 | 83 | 155 | 25 | 99 | 32 | 0.34 | | | |
| **HY-4D195-S25-SP03** | 19.5 | 83 | 155 | 25 | 99 | 32 | 0.34 | | | |
| **HY-4D200-S25-SP04** | 20.0 | 83 | 157 | 25 | 101 | 32 | 0.36 | XONT 040305E SPET 040305E | SP025072 | FT-TP08 |
| **HY-4D205-S25-SP04** | 20.5 | 86 | 160 | 25 | 104 | 32 | 0.37 | | | |
| **HY-4D210-S25-SP04** | 21.0 | 89 | 161 | 25 | 105 | 32 | 0.37 | | | |
| **HY-4D215-S25-SP04** | 21.5 | 89 | 163 | 25 | 107 | 32 | 0.38 | | | |
| **HY-4D220-S25-SP04** | 22.0 | 91 | 165 | 25 | 109 | 32 | 0.39 | | | |
| **HY-4D225-S25-SP04** | 22.5 | 93 | 168 | 25 | 112 | 32 | 0.40 | | | |
| **HY-4D230-S25-SP04** | 23.0 | 95 | 170 | 25 | 114 | 32 | 0.41 | | | |
| **HY-4D240-S25-SP05** | 24.0 | 101 | 175 | 25 | 119 | 32 | 0.42 | XONT 050305E SPET 050305E | SP030082 | FT-TP09 |
| **HY-4D245-S25-SP05** | 24.5 | 102 | 177 | 25 | 121 | 32 | 0.44 | | | |
| **HY-4D250-S25-SP05** | 25.0 | 107 | 180 | 25 | 124 | 32 | 0.45 | | | |
| **HY-4D253-S25-SP05** | 25.3 | 107 | 180 | 25 | 124 | 32 | 0.46 | | | |
| **HY-4D260-S32-SP05** | 26.0 | 107 | 188 | 32 | 128 | 40 | 0.68 | | | |
| **HY-4D265-S32-SP05** | 26.5 | 109 | 190 | 32 | 130 | 40 | 0.70 | | | |
| **HY-4D270-S32-SP05** | 27.0 | 112 | 192 | 32 | 132 | 40 | 0.71 | | | |
| **HY-4D280-S32-SP05** | 28.0 | 115 | 197 | 32 | 137 | 40 | 0.74 | | | |
| **HY-4D290-S32-SP05** | 29.0 | 120 | 201 | 32 | 141 | 40 | 0.78 | | | |
| **HY-4D295-S32-SP05** | 29.5 | 123 | 204 | 32 | 144 | 40 | 0.80 | | | |
| **HY-4D300-S32-SP06** | 30.0 | 125 | 207 | 32 | 147 | 40 | 0.80 | XONT 060406E SPET 060406E | SP035094 | FT-TP10 |
| **HY-4D310-S40-SP06** | 31.0 | 128 | 222 | 40 | 152 | 48 | 1.18 | | | |
| **HY-4D320-S40-SP06** | 32.0 | 131 | 226 | 40 | 156 | 48 | 1.21 | | | |
| **HY-4D330-S40-SP06** | 33.0 | 136 | 231 | 40 | 161 | 48 | 1.26 | | | |
| **HY-4D340-S40-SP06** | 34.0 | 140 | 235 | 40 | 165 | 48 | 1.31 | | | |
| **HY-4D350-S40-SP06** | 35.0 | 145 | 240 | 40 | 170 | 48 | 1.36 | | | |

## HY Series Drilling Holder

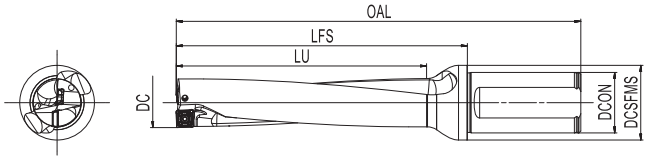
**LU/DC=4**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-4D360-S40-SP07** | 36.0 | 148 | 245 | 40 | 175 | 48 | 1.43 | XONT 070406E SPET 070406E | SP035094 | FT-TP10 |
| **HY-4D370-S40-SP07** | 37.0 | 151 | 249 | 40 | 179 | 48 | 1.48 | | | |
| **HY-4D380-S40-SP07** | 38.0 | 157 | 254 | 40 | 184 | 48 | 1.54 | | | |
| **HY-4D390-S40-SP07** | 39.0 | 161 | 258 | 40 | 188 | 48 | 1.62 | | | |
| **HY-4D400-S40-SP07** | 40.0 | 167 | 263 | 40 | 193 | 48 | 1.77 | | | |
| **HY-4D410-S40-SP07** | 41.0 | 168 | 268 | 40 | 198 | 48 | 1.86 | | | |
| **HY-4D420-S50-SP07** | 42.0 | 172 | 282 | 50 | 202 | 63 | 2.64 | | | |
| **HY-4D430-S50-SP07** | 43.0 | 176 | 287 | 50 | 207 | 63 | 2.74 | | | |
| **HY-4D440-S50-SP08** | 44.0 | 180 | 291 | 50 | 211 | 63 | 2.83 | XONT 080508E SPET 080508E | SP040110 | FT-TP15 |
| **HY-4D450-S50-SP08** | 45.0 | 185 | 297 | 50 | 217 | 63 | 2.95 | | | |
| **HY-4D460-S50-SP08** | 46.0 | 188 | 302 | 50 | 222 | 63 | 3.05 | | | |
| **HY-4D470-S50-SP08** | 47.0 | 193 | 306 | 50 | 226 | 63 | 3.12 | | | |
| **HY-4D480-S50-SP08** | 48.0 | 197 | 311 | 50 | 231 | 63 | 3.25 | | | |
| **HY-4D490-S50-SP08** | 49.0 | 201 | 315 | 50 | 235 | 63 | 3.36 | | | |
| **HY-4D500-S50-SP08** | 50.0 | 204 | 320 | 50 | 240 | 63 | 3.51 | | | |
| **HY-4D505-S50-SP08** | 50.5 | 208 | 322 | 50 | 242 | 63 | 3.56 | | | |
| **HY-4D510-S50-SP08** | 51.0 | 209 | 325 | 50 | 245 | 63 | 3.61 | | | |
| **HY-4D520-S50-SP08** | 52.0 | 213 | 329 | 50 | 249 | 63 | 3.75 | | | |
| **HY-4D530-S50-SP09** | 53.0 | 218 | 333 | 50 | 253 | 63 | 3.83 | XONT 090608E SPET 090608E | SP040110 | FT-TP15 |
| **HY-4D540-S50-SP09** | 54.0 | 221 | 338 | 50 | 258 | 63 | 3.92 | | | |
| **HY-4D550-S50-SP09** | 55.0 | 226 | 343 | 50 | 263 | 63 | 4.12 | | | |
| **HY-4D560-S50-SP09** | 56.0 | 230 | 349 | 50 | 269 | 63 | 4.32 | | | |
| **HY-4D570-S50-SP09** | 57.0 | 234 | 353 | 50 | 273 | 63 | 4.45 | | | |
| **HY-4D580-S50-SP09** | 58.0 | 238 | 357 | 50 | 277 | 63 | 4.63 | | | |
| **HY-4D590-S50-SP09** | 59.0 | 242 | 362 | 50 | 282 | 63 | 4.92 | | | |
| **HY-4D600-S50-SP09** | 60.0 | 246 | 367 | 50 | 287 | 63 | 5.23 | | | |
| **HY-4D610-S50-SP09** | 61.0 | 250 | 372 | 50 | 292 | 63 | 5.55 | | | |
| **HY-4D620-S50-SP09** | 62.0 | 254 | 376 | 50 | 296 | 63 | 5.87 | | | |
| **HY-4D630-S50-SP09** | 63.0 | 258 | 381 | 50 | 301 | 63 | 6.18 | | | |

## HY Series Drilling Holder

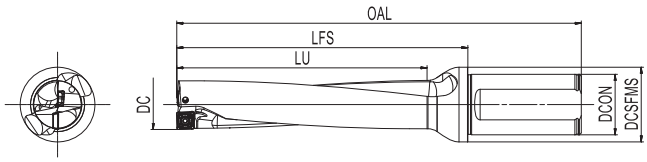
**LU/DC=5**




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-5D140-S20-SP02** | 14.0 | 73 | 136 | 20 | 86 | 25 | 0.18 | XONT 020204E SPET 020204E | SP020045 | FT-TP06 |
| **HY-5D145-S20-SP02** | 14.5 | 76 | 139 | 20 | 89 | 25 | 0.18 | | | |
| **HY-5D150-S20-SP02** | 15.0 | 79 | 142 | 20 | 92 | 25 | 0.18 | | | |
| **HY-5D155-S20-SP02** | 15.5 | 82 | 145 | 20 | 95 | 25 | 0.19 | | | |
| **HY-5D160-S20-SP02** | 16.0 | 83 | 148 | 20 | 98 | 25 | 0.20 | | | |
| **HY-5D165-S20-SP03** | 16.5 | 86 | 151 | 20 | 101 | 25 | 0.20 | XONT 030305E SPET 030305E | SP022049 | FT-TP07 |
| **HY-5D170-S25-SP03** | 17.0 | 88 | 159 | 25 | 103 | 32 | 0.31 | | | |
| **HY-5D175-S25-SP03** | 17.5 | 91 | 163 | 25 | 107 | 32 | 0.33 | | | |
| **HY-5D180-S25-SP03** | 18.0 | 93 | 165 | 25 | 109 | 32 | 0.33 | | | |
| **HY-5D185-S25-SP03** | 18.5 | 96 | 168 | 25 | 112 | 32 | 0.34 | | | |
| **HY-5D190-S25-SP03** | 19.0 | 98 | 170 | 25 | 114 | 32 | 0.35 | | | |
| **HY-5D193-S25-SP03** | 19.3 | 102 | 174 | 25 | 118 | 32 | 0.36 | | | |
| **HY-5D195-S25-SP03** | 19.5 | 102 | 174 | 25 | 118 | 32 | 0.36 | | | |
| **HY-5D200-S25-SP04** | 20.0 | 103 | 177 | 25 | 121 | 32 | 0.38 | XONT 040305E SPET 040305E | SP025072 | FT-TP08 |
| **HY-5D205-S25-SP04** | 20.5 | 105 | 179 | 25 | 123 | 32 | 0.39 | | | |
| **HY-5D210-S25-SP04** | 21.0 | 108 | 182 | 25 | 126 | 32 | 0.40 | | | |
| **HY-5D215-S25-SP04** | 21.5 | 111 | 184 | 25 | 128 | 32 | 0.41 | | | |
| **HY-5D220-S25-SP04** | 22.0 | 113 | 187 | 25 | 131 | 32 | 0.42 | | | |
| **HY-5D230-S25-SP04** | 23.0 | 119 | 194 | 25 | 138 | 32 | 0.45 | | | |
| **HY-5D240-S25-SP05** | 24.0 | 125 | 199 | 25 | 143 | 32 | 0.47 | XONT 050305E SPET 050305E | SP030082 | FT-TP09 |
| **HY-5D250-S25-SP05** | 25.0 | 132 | 205 | 25 | 149 | 32 | 0.50 | | | |
| **HY-5D253-S25-SP05** | 25.3 | 132 | 205 | 25 | 149 | 32 | 0.50 | | | |
| **HY-5D260-S32-SP05** | 26.0 | 133 | 214 | 32 | 154 | 40 | 0.73 | | | |
| **HY-5D265-S32-SP05** | 26.5 | 136 | 216 | 32 | 156 | 40 | 0.75 | | | |
| **HY-5D270-S32-SP05** | 27.0 | 139 | 219 | 32 | 159 | 40 | 0.77 | | | |
| **HY-5D280-S32-SP05** | 28.0 | 143 | 225 | 32 | 165 | 40 | 0.81 | | | |
| **HY-5D290-S32-SP05** | 29.0 | 149 | 231 | 32 | 171 | 40 | 0.85 | | | |

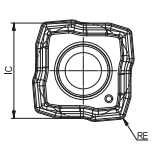
## HY Series Drilling Holder

LU/DC=5




| Product code | Dimension (mm) | | | | | | Weight (kg) | Insert | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC | LU | OAL | DCON | LFS | DCSFMS | | | | |
| **HY-5D300-S32-SP06** | 30.0 | 155 | 237 | 32 | 177 | 40 | 0.88 | XONT 060406E SPET 060406E | SP035094 | FT-TP10 |
| **HY-5D310-S40-SP06** | 31.0 | 159 | 253 | 40 | 183 | 48 | 1.26 | | | |
| **HY-5D320-S40-SP06** | 32.0 | 164 | 258 | 40 | 188 | 48 | 1.31 | | | |
| **HY-5D330-S40-SP06** | 33.0 | 169 | 264 | 40 | 194 | 48 | 1.36 | | | |
| **HY-5D340-S40-SP06** | 34.0 | 175 | 270 | 40 | 200 | 48 | 1.42 | | | |
| **HY-5D350-S40-SP06** | 35.0 | 181 | 276 | 40 | 206 | 48 | 1.49 | | | |
| **HY-5D360-S40-SP07** | 36.0 | 186 | 282 | 40 | 212 | 48 | 1.57 | XONT 070406E SPET 070406E | SP035094 | FT-TP10 |
| **HY-5D370-S40-SP07** | 37.0 | 189 | 286 | 40 | 216 | 48 | 1.64 | | | |
| **HY-5D380-S40-SP07** | 38.0 | 195 | 292 | 40 | 222 | 48 | 1.72 | | | |
| **HY-5D390-S40-SP07** | 39.0 | 201 | 298 | 40 | 228 | 48 | 1.79 | | | |
| **HY-5D400-S40-SP07** | 40.0 | 208 | 304 | 40 | 234 | 48 | 1.84 | | | |
| **HY-5D410-S40-SP07** | 41.0 | 215 | 310 | 40 | 240 | 48 | 2.11 | | | |
| **HY-5D420-S50-SP07** | 42.0 | 219 | 325 | 50 | 245 | 63 | 2.85 | | | |
| **HY-5D430-S50-SP07** | 43.0 | 223 | 331 | 50 | 251 | 63 | 2.96 | | | |
| **HY-5D440-S50-SP08** | 44.0 | 226 | 335 | 50 | 255 | 63 | 3.15 | XONT 080508E SPET 080508E | SP040110 | FT-TP15 |
| **HY-5D450-S50-SP08** | 45.0 | 230 | 342 | 50 | 262 | 63 | 3.28 | | | |
| **HY-5D460-S50-SP08** | 46.0 | 234 | 348 | 50 | 268 | 63 | 3.41 | | | |
| **HY-5D470-S50-SP08** | 47.0 | 240 | 353 | 50 | 273 | 63 | 3.52 | | | |
| **HY-5D480-S50-SP08** | 48.0 | 245 | 359 | 50 | 279 | 63 | 3.67 | | | |
| **HY-5D490-S50-SP08** | 49.0 | 250 | 364 | 50 | 284 | 63 | 3.82 | | | |
| **HY-5D500-S50-SP08** | 50.0 | 254 | 370 | 50 | 290 | 63 | 3.99 | | | |
| **HY-5D510-S50-SP08** | 51.0 | 259 | 376 | 50 | 296 | 63 | 4.13 | | | |
| **HY-5D520-S50-SP08** | 52.0 | 265 | 381 | 50 | 301 | 63 | 4.30 | | | |

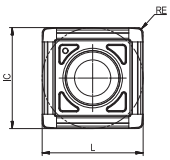
## XONT---Central inserts




| Center insert | Product code | Machining conditions: Dimension (mm) IC | S | RE | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions ● P AP301U | ● M AP273U | ● K AP301U |
|---|---|---|---|---|---|---|---|---|
| DM general geometry | **XONT 020204E-DM** | 4.9 | 2.4 | 0.4 | 2.2 | ● | | ● |
| | **XONT 030305E-DM** | 5.7 | 2.6 | 0.5 | 2.5 | ● | | ● |
| | **XONT 030305E-DL** | 5.7 | 2.6 | 0.5 | 2.5 | | ● | |
| | **XONT 040305E-DM** | 6.8 | 2.8 | 0.5 | 2.8 | ● | | ● |
| | **XONT 040305E-DL** | 6.8 | 2.8 | 0.5 | 2.8 | | ● | |
| | **XONT 050305E-DM** | 8.4 | 3.0 | 0.5 | 3.2 | ● | | ● |
| | **XONT 050305E-DL** | 8.4 | 3.0 | 0.5 | 3.2 | | ● | |
| DL sharp geometry | **XONT 060406E-DM** | 10.2 | 3.5 | 0.6 | 4.0 | ● | | ● |
| | **XONT 060406E-DL** | 10.2 | 3.5 | 0.6 | 4.0 | | ● | |
| | **XONT 070406E-DM** | 12.35 | 4.0 | 0.6 | 4.0 | ● | | ● |
| | **XONT 070406E-DL** | 12.35 | 4.0 | 0.6 | 4.0 | | ● | |
| | **XONT 080508E-DM** | 14.9 | 4.5 | 0.8 | 4.7 | ● | | ● |
| | **XONT 080508E-DL** | 14.9 | 4.5 | 0.8 | 4.7 | | ● | |
| | **XONT 090608E-DM** | 17.9 | 5.5 | 0.8 | 4.75 | ● | | ● |
| | **XONT 090608E-DL** | 17.9 | 5.5 | 0.8 | 4.75 | | | |

● : Standard stock ○ : Made-to-Order

## SPET--- Peripheral inserts




| Peripheral Inserts | Product code | Machining conditions: Dimension (mm) IC | S | RE | D1 | ● Good Conditions ◐ General Conditions ✱ Bad Conditions ● P AP273U | ◐ P AC371P | ● M AP371M | ● K AC271P | ● S AP471S |
|---|---|---|---|---|---|---|---|---|---|---|
| DM general geometry | **SPET 020204E-DM** | 5.1 | 2.4 | 0.4 | 2.2 | ● | | | | |
| | **SPET 020205E-DL** | 5.1 | 2.4 | 0.5 | 2.2 | ● | | ● | | ○ |
| | **SPET 030305E-DM** | 6.0 | 2.6 | 0.5 | 2.5 | ● | ● | | ● | |
| | **SPET 030306E-DL** | 6.0 | 2.6 | 0.6 | 2.5 | | ● | ● | | ○ |
| | **SPET 040305E-DM** | 7.4 | 2.8 | 0.5 | 2.8 | ● | ● | | ● | |
| | **SPET 040307E-DL** | 7.4 | 2.8 | 0.7 | 2.8 | | ● | ● | | ○ |
| | **SPET 050305E-DM** | 8.9 | 3.0 | 0.5 | 3.2 | ● | ● | | ● | |
| | **SPET 050308E-DL** | 8.9 | 3.0 | 0.8 | 3.2 | | ● | ● | | ○ |
| DL sharp geometry | **SPET 060406E-DM** | 10.65 | 3.5 | 0.6 | 4.2 | ● | ● | | ● | |
| | **SPET 060408E-DL** | 10.65 | 3.5 | 0.8 | 4.2 | | ● | ● | | ○ |
| | **SPET 070406E-DM** | 12.65 | 4.0 | 0.6 | 4.0 | ● | ● | | ● | |
| | **SPET 070410E-DL** | 12.65 | 4.0 | 1.0 | 4.0 | | | | | |
| | **SPET 080508E-DM** | 15.45 | 4.5 | 0.8 | 4.7 | ● | ● | | ● | |
| | **SPET 080510E-DL** | 15.45 | 4.5 | 1.0 | 4.7 | | | | | |
| | **SPET 090608E-DM** | 18.6 | 5.5 | 0.8 | 4.75 | ● | | | ● | |
| | **SPET 090610E-DL** | 18.6 | 5.5 | 1.0 | 4.75 | | | | | |

● : Standard stock ○ : Made-to-Order

## Cutting Data Recommendation for HY series

| Materials | | | | Brinell hardness (HB) | Tensile strength (N/mm²) | Recommendation for HY series | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | AP273U | | | AC371P | | | AP371M | | |
| ISO | Material classification | | | | | Vc (m/min) | | | Vc (m/min) | | | Vc (m/min) | | |
| | | | | | | ● | ◆ | ✱ | ● | ◆ | ✱ | ● | ◆ | ✱ |
| P | Non-alloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 200 | 150 | 130 | 240 | 180 | 160 | - | - | - |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 190 | 150 | 120 | 200 | 160 | 120 | - | - | - |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 180 | 140 | 100 | 190 | 150 | 120 | - | - | - |
| | | C > 0.55% | Annealed | 190 | 639 | 180 | 140 | 100 | 190 | 150 | 120 | - | - | - |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 150 | 110 | 75 | 160 | 120 | 90 | - | - | - |
| | | Free cutting steel (short chip) | Annealed | 220 | 745 | 180 | 140 | 100 | 190 | 150 | 120 | - | - | - |
| | Low-alloyed steel | Annealed | | 175 | 591 | 160 | 130 | 100 | 180 | 140 | 100 | - | - | - |
| | | Heat-treated | | 300 | 1013 | 150 | 110 | 75 | 160 | 120 | 90 | - | - | - |
| | | Heat-treated | | 380 | 1282 | - | - | - | - | - | - | - | - | - |
| | | Heat-treated | | 430 | 1477 | - | - | - | - | - | - | - | - | - |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 180 | 140 | 100 | 190 | 150 | 120 | - | - | - |
| | | Hardened and tempered | | 300 | 1013 | 150 | 110 | 75 | 160 | 120 | 90 | - | - | - |
| | | Hardened and tempered | | 400 | 1361 | - | - | - | - | - | - | - | - | - |
| | Stainless steel | Ferritic/Martensite, Annealed | | 200 | 675 | 180 | 140 | 100 | 190 | 150 | 120 | - | - | - |
| | | Martensite,Heat-treated | | 330 | 1114 | - | - | - | - | - | - | - | - | - |
| M | Stainless steel | Austenitic, hardened | | 200 | 675 | 150 | 120 | 90 | - | - | - | 140 | 120 | 90 |
| | | Austenitic,precipitation hardened stainless steel (PH stainless steel) | | 300 | 1013 | 130 | 100 | 80 | - | - | - | 130 | 100 | 80 |
| | | Austenitic, ferritic,duplex | | 230 | 778 | 130 | 100 | 80 | - | - | - | 130 | 100 | 80 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 150 | 120 | 85 | 200 | 150 | 110 | - | - | - |
| | | Pearlitic | | 260 | 700 | 110 | 90 | 65 | 150 | 120 | 80 | - | - | - |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 200 | 150 | 130 | 240 | 180 | 160 | - | - | - |
| | | High tensile strength/Austenitic | | 245 | 350 | 150 | 110 | 75 | 160 | 120 | 90 | - | - | - |
| | Nodular cast iron | Ferritic | | 155 | 400 | 140 | 110 | 80 | 180 | 140 | 100 | - | - | - |
| | | Pearlitic | | 265 | 700 | 130 | 100 | 70 | 160 | 120 | 90 | - | - | - |
| | GGV(CGI) | | | 230 | 400 | - | - | - | 130 | 100 | 70 | - | - | - |
| N | Wrought aluminium alloys | non-aging | | 30 | - | - | - | - | - | - | - | - | - | - |
| | | aged | | 100 | 340 | - | - | - | - | - | - | - | - | - |
| | Cast aluminium alloys | ≤ 12% Si, non-aging | | 75 | 260 | - | - | - | - | - | - | - | - | - |
| | | ≤ 12% Si, aged | | 90 | 310 | - | - | - | - | - | - | - | - | - |
| | | > 12% Si, non-aging | | 130 | 450 | - | - | - | - | - | - | - | - | - |
| | Magnesium alloy | | | 70 | 250 | - | - | - | - | - | - | - | - | - |
| | Copper and copper alloy (bronze/brass) | Non-alloyed steel, electrolytic copper | | 100 | 340 | - | - | - | - | - | - | - | - | - |
| | | Brass, bronze, red brass | | 90 | 310 | - | - | - | - | - | - | - | - | - |
| | | Cu alloy, short chip | | 110 | 380 | - | - | - | - | - | - | - | - | - |
| | | High tensile, Ampco alloy | | 300 | 1010 | - | - | - | - | - | - | - | - | - |
| S | Heat-resistant alloy | Fe-based | Annealed | 200 | 680 | - | - | - | - | - | - | 90 | 60 | 40 |
| | | | Aged | 280 | 940 | - | - | - | - | - | - | 70 | 50 | 30 |
| | | Ni or Co based | Annealed | 250 | 840 | - | - | - | - | - | - | 70 | 50 | 30 |
| | | | Aged | 350 | 1180 | - | - | - | - | - | - | 50 | 40 | 30 |
| | | | Cast | 320 | 1080 | - | - | - | - | - | - | 50 | 40 | 30 |
| | Titanium alloys | Pure Titanium | | 200 | 680 | - | - | - | - | - | - | 120 | 90 | 60 |
| | | α and β alloy, aged | | 375 | 1260 | - | - | - | - | - | - | 90 | 70 | 50 |
| | | β alloy | | 410 | 1400 | - | - | - | - | - | - | - | - | - |
| | Tungsten alloy | | | 300 | 1010 | - | - | - | - | - | - | - | - | - |
| | Molybdenum alloy | | | 300 | 1010 | - | - | - | - | - | - | - | - | - |
| H | Hardened steel | Hardened and tempered | | 50HRC | | - | - | - | - | - | - | - | - | - |
| | | Hardened and tempered | | 55HRC | | - | - | - | - | - | - | - | - | - |
| | | Hardened and tempered | | 60HRC | | - | - | - | - | - | - | - | - | - |
| | Chilled cast iron | Hardened and tempered | | 55HRC | | - | - | - | - | - | - | - | - | - |

*This table shows the general cutting conditions, and the actual selection should be adjusted according to factors such as equipment rigidity, drilling depth, workpiece clamping and cooling pressure.

| | f（mm/rev） | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ∅14mm-16mm | | ∅16.5mm-19.5mm | | ∅20mm-23.5mm | | ∅24mm-29.5mm | | ∅30mm-35mm | | ∅36mm-43mm | | ∅44mm-52mm | | ∅53mm-63mm | |
| | XONT 02/SPET 02 | | XONT 03/SPET 03 | | XONT 04/SPET 04 | | XONT 05/SPET 05 | | XONT 06/SPET 06 | | XONT 07/SPET 07 | | XONT 08/SPET 08 | | XONT 09/SPET 09 | |
| | -DM | -DL | -DM | -DL | -DM | -DL | -DM | -DL | -DM | -DL | -DM | -DL | -DM | -DL | -DM | -DL |
| | 0.04-0.06 | 0.04-0.08 | 0.04-0.06 | 0.04-0.09 | 0.04-0.10 | 0.04-0.12 | 0.04-0.10 | 0.04-0.12 | 0.06-0.12 | 0.06-0.14 | 0.06-0.12 | 0.06-0.14 | 0.08-0.12 | 0.08-0.14 | 0.08-0.12 | 0.08-0.14 |
| | 0.04-0.08 | 0.04-0.08 | 0.06-0.11 | 0.06-0.11 | 0.06-0.14 | 0.06-0.14 | 0.08-0.14 | 0.08-0.14 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 |
| | 0.04-0.08 | 0.04-0.08 | 0.06-0.11 | 0.06-0.11 | 0.06-0.14 | 0.06-0.14 | 0.08-0.14 | 0.08-0.14 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 |
| | 0.04-0.08 | 0.04-0.08 | 0.06-0.11 | 0.06-0.11 | 0.06-0.14 | 0.06-0.14 | 0.08-0.14 | 0.08-0.14 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 |
| | 0.04-0.06 | 0.04-0.06 | 0.06-0.09 | 0.06-0.08 | 0.06-0.11 | 0.06-0.08 | 0.08-0.11 | 0.06-0.08 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 |
| | 0.04-0.08 | 0.04-0.08 | 0.06-0.11 | 0.06-0.11 | 0.06-0.14 | 0.06-0.14 | 0.08-0.14 | 0.08-0.14 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 |
| | 0.04-0.08 | 0.04-0.08 | 0.06-0.11 | 0.06-0.11 | 0.06-0.14 | 0.06-0.14 | 0.08-0.14 | 0.08-0.14 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 |
| | 0.04-0.06 | 0.04-0.06 | 0.06-0.09 | 0.06-0.08 | 0.06-0.11 | 0.06-0.08 | 0.08-0.11 | 0.06-0.08 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.04-0.08 | 0.04-0.08 | 0.06-0.11 | 0.06-0.11 | 0.06-0.14 | 0.06-0.14 | 0.08-0.14 | 0.08-0.14 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 |
| | 0.04-0.06 | 0.04-0.06 | 0.06-0.09 | 0.06-0.08 | 0.06-0.11 | 0.06-0.08 | 0.08-0.11 | 0.06-0.08 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.04-0.08 | 0.04-0.08 | 0.06-0.11 | 0.06-0.11 | 0.06-0.14 | 0.06-0.14 | 0.08-0.14 | 0.08-0.14 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.08-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 | 0.10-0.20 |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.04-0.06 | 0.04-0.08 | 0.06-0.08 | 0.04-0.09 | 0.04-0.10 | 0.04-0.12 | 0.06-0.10 | 0.06-0.12 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 |
| | 0.04-0.06 | 0.04-0.06 | 0.04-0.06 | 0.06-0.08 | 0.06-0.11 | 0.06-0.08 | 0.08-0.11 | 0.06-0.08 | 0.06-0.14 | 0.06-0.12 | 0.06-0.14 | 0.06-0.12 | 0.08-0.14 | 0.08-0.12 | 0.08-0.14 | 0.08-0.12 |
| | 0.04-0.06 | 0.04-0.08 | 0.06-0.08 | 0.04-0.09 | 0.04-0.10 | 0.04-0.12 | 0.06-0.10 | 0.06-0.12 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 |
| | 0.06-0.12 | 0.06-0.10 | 0.08-0.12 | 0.08-0.10 | 0.10-0.16 | 0.10-0.12 | 0.10-0.16 | 0.10-0.12 | 0.10-0.20 | 0.10-0.15 | 0.10-0.20 | 0.10-0.15 | 0.12-0.20 | 0.12-0.15 | 0.12-0.20 | 0.12-0.15 |
| | 0.06-0.10 | 0.06-0.08 | 0.06-0.10 | 0.06-0.08 | 0.08-0.14 | 0.08-0.10 | 0.08-0.14 | 0.08-0.10 | 0.08-0.18 | 0.08-0.12 | 0.08-0.18 | 0.08-0.12 | 0.10-0.08 | 0.10-0.12 | 0.10-0.08 | 0.10-0.12 |
| | 0.06-0.12 | 0.06-0.10 | 0.08-0.12 | 0.08-0.10 | 0.10-0.16 | 0.10-0.12 | 0.10-0.16 | 0.10-0.12 | 0.10-0.20 | 0.10-0.15 | 0.10-0.20 | 0.10-0.15 | 0.12-0.20 | 0.12-0.15 | 0.12-0.20 | 0.12-0.15 |
| | 0.06-0.10 | - | 0.06-0.10 | - | 0.08-0.14 | - | 0.08-0.14 | - | 0.08-0.18 | - | 0.08-0.18 | - | 0.10-0.08 | - | 0.10-0.08 | - |
| | 0.06-0.12 | 0.06-0.10 | 0.08-0.12 | 0.08-0.10 | 0.10-0.16 | 0.10-0.12 | 0.10-0.16 | 0.10-0.12 | 0.10-0.20 | 0.10-0.15 | 0.10-0.20 | 0.10-0.15 | 0.12-0.20 | 0.12-0.15 | 0.12-0.20 | 0.12-0.15 |
| | 0.06-0.10 | 0.06-0.08 | 0.06-0.10 | 0.06-0.08 | 0.08-0.14 | 0.08-0.10 | 0.08-0.14 | 0.08-0.10 | 0.08-0.18 | 0.08-0.12 | 0.08-0.18 | 0.08-0.12 | 0.10-0.18 | 0.10-0.12 | 0.10-0.18 | 0.10-0.12 |
| | 0.06-0.10 | - | 0.06-0.10 | - | 0.08-0.14 | - | 0.08-0.14 | - | 0.08-0.18 | - | 0.08-0.18 | - | 0.10-0.08 | - | 0.10-0.08 | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.04-0.06 | 0.04-0.08 | 0.06-0.08 | 0.04-0.09 | 0.04-0.10 | 0.04-0.12 | 0.06-0.10 | 0.06-0.12 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 |
| | 0.04-0.06 | 0.04-0.08 | 0.06-0.08 | 0.04-0.09 | 0.04-0.10 | 0.04-0.12 | 0.06-0.10 | 0.06-0.12 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 |
| | 0.04-0.06 | 0.04-0.08 | 0.06-0.08 | 0.04-0.09 | 0.04-0.10 | 0.04-0.12 | 0.06-0.10 | 0.06-0.12 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 |
| | 0.04-0.06 | 0.04-0.06 | 0.04-0.06 | 0.06-0.08 | 0.06-0.11 | 0.06-0.08 | 0.08-0.11 | 0.06-0.08 | 0.06-0.14 | 0.06-0.12 | 0.06-0.14 | 0.06-0.12 | 0.08-0.14 | 0.08-0.12 | 0.08-0.14 | 0.08-0.12 |
| | 0.04-0.06 | 0.04-0.06 | 0.04-0.06 | 0.06-0.08 | 0.06-0.11 | 0.06-0.08 | 0.08-0.11 | 0.06-0.08 | 0.06-0.14 | 0.06-0.12 | 0.06-0.14 | 0.06-0.12 | 0.08-0.14 | 0.08-0.12 | 0.08-0.14 | 0.08-0.12 |
| | 0.04-0.06 | 0.04-0.08 | 0.06-0.08 | 0.04-0.09 | 0.04-0.10 | 0.04-0.12 | 0.06-0.10 | 0.06-0.12 | 0.08-0.13 | 0.08-0.16 | 0.08-0.13 | 0.08-0.16 | 0.08-0.16 | 0.10-0.16 | 0.08-0.16 | 0.10-0.16 |
| | 0.04-0.06 | 0.04-0.06 | 0.04-0.06 | 0.06-0.08 | 0.06-0.11 | 0.06-0.08 | 0.08-0.11 | 0.06-0.08 | 0.06-0.14 | 0.06-0.12 | 0.06-0.14 | 0.06-0.12 | 0.08-0.14 | 0.08-0.12 | 0.08-0.14 | 0.08-0.12 |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

## Ejector Drilling Product Introduction

Achteck has general-purpose deep-hole drilling inserts, which offer high productivity for many industries: energy, engineering machinery, injection molding, aircraft, shipbuilding, military, etc. It can achieve good hole straightness in deep hole drilling and good surface finish. Existing geometries and grades cover steel, stainless steel and heat resistant alloy drilling.

**Product application and features**

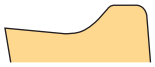
- The inserts can be mounted on the deep-hole drilling head.
- AP301U(N) is the first choice for drilling steel and stainless steel
- All geometries offer good chip-breaking result
- Increased efficiency due to high feed rate
- Reduces the cost per hole

| Grade | Coating | Workpiece material | | | | | |
|---|---|---|---|---|---|---|---|
| | | P | M | K | N | S | H |
| AP301U(N) | PVD | ● | ● | | | ○ | |

● Marked: 1st Choice ○ Marked: Supplemental application

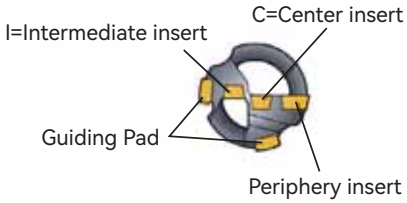
ISO P: (P15-P35) General-purpose PVD coating with excellent wear-resistance and toughness.
ISO M: (M15-M35) General-purpose grade for ISO-M applications, PVD coating with excellent toughness and resistance to built-up edges.

## Geometry Types and Features

| Geometry | Edge shape | Application |
|---|---|---|
| DH | | • For general purpose.<br>• Suitable for high cutting speed and feed.<br>• Good chip control in most of materials. |
| DL | | • Suitable for long chip materials (such as low carbon alloyed steel and duplex stainless steel).<br>• Obtain a reliable production process in drilling materials where chip jamming can be a problem. |
| LH |  | • With open geometry;<br>• Suitable for high cutting speed and feed. |

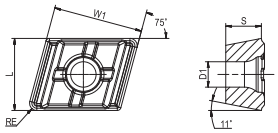
## Ejector Drill Matching Table

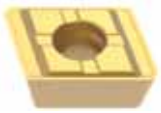
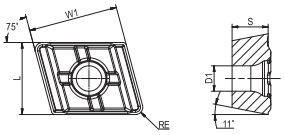
**Hole diameter range 26-65mm**

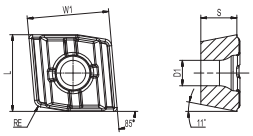



| Hole diameter range (mm) | Center insert | Hole diameter range (mm) | Intermediate insert | Hole diameter range (mm) | Peripheral insert | Hole diameter range (mm) | Guiding pad |
|---|---|---|---|---|---|---|---|
| 26.00-28.70 | EPMT 050308C | 26.00-31.00 | EPMT 050308I | 26.00-31.00 | APHT 060308P | 26.00-31.00 | GPAD-06A |
| 28.71-33.99 | EPMT 06T308C | 31.01-34.99 | EPMT 06T308I | 31.01-38.99 | APHT 08T308P | 31.01-39.60 | GPAD-07A |
| 34.00-43.00 | EPMT 08T308C | 35.00-54.99 | EPMT 08T308I | 39.00-49.99 | APHT 09T308P | 39.61-47.00 | GPAD-08A |
| 43.01-47.00 | EPMT 10T308C | 55.00-65.00 | EPMT 12T308I | 50.00-65.00 | APHT 11T308P | 47.01-54.99 | GPAD-10A |
| 47.01-49.99 | EPMT 12T308C | - | - | - | - | 55.00-65.00 | GPAD-12A |
| 50.00-57.99 | EPMT 10T308C | - | - | - | - | - | - |
| 58.00-65.00 | EPMT 12T308C | - | - | - | - | - | - |

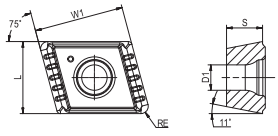
## Ejector Drilling Insert
DH geometry

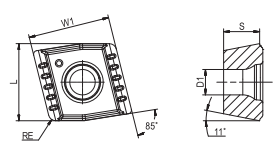
| Center Insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | W1 | S | RE | D1 |
| |  | **EPMT 050308C-DH AP301U(N)** | 5.56 | 8 | 3.18 | 0.8 | 2.5 |
| | | **EPMT 06T308C-DH AP301U(N)** | 6.35 | 9.87 | 3.97 | 0.8 | 2.8 |
| | | **EPMT 08T308C-DH AP301U(N)** | 7.94 | 9.87 | 3.97 | 0.8 | 2.8 |
| | | **EPMT 10T308C-DH AP301U(N)** | 9.53 | 9.87 | 3.97 | 0.8 | 2.8 |
| | | **EPMT 12T308C-DH AP301U(N)** | 12.7 | 9.87 | 3.97 | 0.8 | 2.8 |

| Intermediate insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | W1 | S | RE | D1 |
|  |  | **EPMT 050308I-DH AP301U(N)** | 5.56 | 8 | 3.18 | 0.8 | 2.5 |
| | | **EPMT 06T308I-DH AP301U(N)** | 6.35 | 9.87 | 3.97 | 0.8 | 2.8 |
| | | **EPMT 08T308I-DH AP301U(N)** | 7.94 | 9.87 | 3.97 | 0.8 | 2.8 |
| | | **EPMT 12T308I-DH AP301U(N)** | 12.7 | 9.87 | 3.97 | 0.8 | 2.8 |

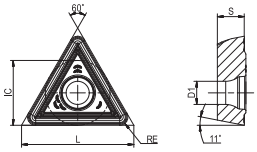
| Periphery Insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | W1 | S | RE | D1 |
| |  | **APHT 060308P-DH AP301U(N)** | 6.5 | 8 | 3.18 | 0.8 | 2.5 |
| | | **APHT 08T308P-DH AP301U(N)** | 8.5 | 9 | 3.97 | 0.8 | 2.8 |
| | | **APHT 09T308P-DH AP301U(N)** | 9.66 | 9 | 3.97 | 0.8 | 2.8 |
| | | **APHT 11T308P-DH AP301U(N)** | 12.75 | 9 | 3.97 | 0.8 | 2.8 |

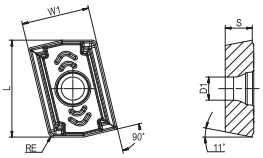
## Ejector Drilling Insert
DL geometry

| Intermediate Insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | W1 | S | RE | D1 |
| |  | **EPMT 050308I-DL AP301U(N)** | 5.56 | 8 | 3.18 | 0.8 | 2.5 |
| | | **EPMT 06T308I-DL AP301U(N)** | 6.35 | 9.87 | 3.97 | 0.8 | 2.8 |
| | | **EPMT 08T308I-DL AP301U(N)** | 7.94 | 9.87 | 3.97 | 0.8 | 2.8 |
| | | **EPMT 12T308I-DL AP301U(N)** | 12.7 | 9.87 | 3.97 | 0.8 | 2.8 |

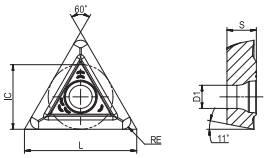
| Periphery Insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | W1 | S | RE | D1 |
| |  | **APHT 060308P-DL AP301U(N)** | 6.5 | 8 | 3.18 | 0.8 | 2.5 |
| | | **APHT 08T308P-DL AP301U(N)** | 8.5 | 9 | 3.97 | 0.8 | 2.8 |
| | | **APHT 09T308P-DL AP301U(N)** | 9.66 | 9 | 3.97 | 0.8 | 2.8 |
| | | **APHT 11T308P-DL AP301U(N)** | 12.75 | 9 | 3.97 | 0.8 | 2.8 |

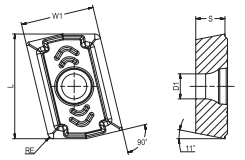
## Ejector Drilling Insert
DH geometry

| Center/Intermediate insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | IC | S | RE | D1 |
| |  | **TPMT 16T312R-DH AP301U(N)** | 16.5 | 9.53 | 3.97 | 1.2 | 3.4 |
| | | **TPMT 220612R-DH AP301U(N)** | 22 | 12.7 | 6.35 | 1.2 | 4.4 |

| Periphery insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | W1 | S | RE | D1 |
| |  | **APMT 13T308-DH AP301U(N)** | 14.6 | 10 | 3.97 | 0.8 | 3.4 |
| | | **APMT 180608-DH AP301U(N)** | 20.6 | 11.5 | 6.35 | 0.8 | 4.4 |

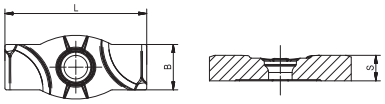
## Ejector Drilling Insert
LH geometry

| Center/Intermediate insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | IC | S | RE | D1 |
| |  | **TPMT 16T312R-LH AP301U(N)** | 16.5 | 9.525 | 3.97 | 1.2 | 3.4 |
| | | **TPMT 220612R-LH AP301U(N)** | 22 | 12.7 | 6.35 | 1.2 | 4.4 |

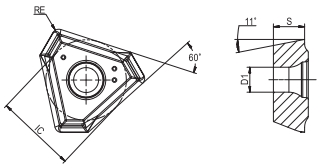
| Periphery insert | | Product code | Dimensions (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | W1 | S | RE | D1 |
| |  | **APMT 13T308-LH AP301U(N)** | 14.6 | 10 | 3.97 | 0.8 | 3.4 |
| | | **APMT 180608-LH AP301U(N)** | 20.6 | 11.5 | 6.35 | 0.8 | 4.4 |

## Ejector Drilling Insert

Guiding pad

| Guiding pad | | Product code | Dimensions (mm) | | | |
|---|---|---|---|---|---|---|
| | | | B | L | S | R |
| |  | **GPAD-06A AC301K** | 6.00 | 18.00 | 3.00 | 12.50 |
| | | **GPAD-07A AC301K** | 6.90 | 20.00 | 3.50 | 13.40 |
| | | **GPAD-08A AC301K** | 8.00 | 25.00 | 4.50 | 17.00 |
| | | **GPAD-10A AC301K** | 10.00 | 30.00 | 4.50 | 20.30 |
| | | **GPAD-12A AC301K** | 12.00 | 35.00 | 5.50 | 24.50 |

## TPMX Series

| Sharp | | Product code | Dimensions (mm) | | | |
|---|---|---|---|---|---|---|
| | | | S | IC | RE | D1 |
| |  | **TPMX 1403R-DH AP301U(N)** | 3.50 | 8.45 | 0.80 | 2.87 |
| | | **TPMX 1704R-DH AP301U(N)** | 4.00 | 10.30 | 0.80 | 3.90 |
| | | **TPMX 2405R-DH AP301U(N)** | 5.50 | 14.20 | 1.20 | 4.40 |
| | | **TPMX 2405L-DH AP301U(N)** | 5.50 | 14.20 | 1.20 | 4.40 |
| | | **TPMX 2807R-DH AP301U(N)** | 7.50 | 17.00 | 1.60 | 5.50 |

## Cutting Data Recommendation for BTA Ejector Drill (Dia 25.00-65.00mm)

| Workpiece material | | | Brinell hardness (HB) | Grade | | | Cutting speed Vc m/min | Feed fn mm/r | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Insert | | | | Drilling dia mm | |
| | | | | P | I | C | | 25.00-43.00 | 43.01-65.00 |
| P | Unalloyed steel | C=0.05-0.10% | 125 | AP301U(N) | | | 70-130 | 0.11-0.41 | 0.14-0.45 |
| | | C=0.10-0.25% | 125 | | | | 70-130 | 0.11-0.41 | 0.14-0.45 |
| | | C=0.25-0.55% | 150 | | | | 70-130 | 0.11-0.41 | 0.14-0.45 |
| | | C=0.55-0.80% | 170 | | | | 70-130 | 0.11-0.41 | 0.14-0.45 |
| | High carbon steel | Carbon tool steel | 210 | AP301U(N) | | | 70-120 | 0.11-0.41 | 0.20-0.45 |
| | Low-alloyed steel | Non-Hardened | 180 | AP301U(N) | | | 55-110 | 0.11-0.41 | 0.20-0.45 |
| | | Tempered | 275 | | | | 70-120 | 0.11-0.41 | 0.20-0.45 |
| | | Tempered | 350 | | | | 70-120 | 0.11-0.41 | 0.20-0.45 |
| | High-alloyed steel | Annealed | 200 | AP301U(N) | | | 55-110 | 0.11-0.38 | 0.20-0.40 |
| | | Hardened tool steel | 325 | | | | 55-110 | 0.20-0.38 | 0.20-0.40 |
| | Cast steel | Non-alloyed steel | 180 | AP301U(N) | | | 55-110 | 0.11-0.41 | 0.20-0.45 |
| | | Low-alloy (alloy<5%) | 200 | | | | 55-110 | 0.11-0.41 | 0.20-0.45 |
| M | Stainless steel | Non-Hardened/Ferritic/martensitic | 200 | AP301U(N) | | | 40-110 | 0.11-0.41 | 0.20-0.45 |
| | | Austenitic | 200 | | | | 40-110 | 0.11-0.41 | 0.20-0.45 |
| | | Austenitic, precipitation hardened (PH) | 300 | | | | 40-110 | 0.11-0.33 | 0.20-0.35 |
| | | Austenitic/ferritic, duplex | 230 | | | | 40-80 | 0.11-0.33 | 0.20-0.35 |
| K | Malleable cast iron | Ferritic | 200 | AP301U(N) | | | 80-120 | 0.11-0.38 | 0.24-0.41 |
| | | Pearlitic | 260 | | | | 80-120 | 0.11-0.38 | 0.24-0.41 |
| | Grey cast iron | Low tensile strength | 180 | AP301U(N) | | | 60-110 | 0.11-0.38 | 0.24-0.41 |
| | | High tensile strength | 245 | | | | 60-110 | 0.11-0.38 | 0.24-0.41 |
| | Nodular cast iron | Ferritic | 160 | AP301U(N) | | | 50-110 | 0.11-0.38 | 0.24-0.41 |
| | | Pearlitic | 250 | | | | 50-110 | 0.11-0.38 | 0.24-0.41 |
| | GGV (CGI) | | 230 | | | | | | |
| N | Wrought aluminium alloys | non-aging | 30 | AP301U(N) | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | | aged | 100 | | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | Cast aluminium alloys | ≤ 12% Si, non-aging | 75 | AP301U(N) | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | | ≤ 12% Si, aged | 90 | | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | | 12% Si, non-aging | 130 | | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | Magnesium alloy | | 70 | | | | | | |
| | Copper and copper alloys | Unalloyed, electrolytic copper | 100 | AP301U(N) | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | (bronze/brass) | Brass, bronze, red brass | 90 | AP301U(N) | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | | Cu alloys, short-chip | 110 | | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| | | High tensile, Ampco alloy | 300 | | | | 65-150 | 0.09-0.33 | 0.20-0.33 |
| S | Heat-resistant alloys | Fe-based annealed | 200 | AP301U(N) | | | 10-55 | 0.09-0.30 | 0.20-0.33 |
| | | Fe-based hardened | 280 | | | | 10-55 | 0.09-0.30 | 0.20-0.33 |
| | | Ni or Co-based annealed | 250 | | | | 10-55 | 0.09-0.30 | 0.20-0.33 |
| | | Ni or Co-based hardened | 350 | | | | 10-55 | 0.09-0.30 | 0.20-0.33 |
| | | Ni or Co-based cast | 320 | | | | 10-55 | 0.09-0.30 | 0.20-0.33 |
| | Titanium alloys | Pure titanium | 200 | AP301U(N) | | | 30-60 | 0.09-0.30 | 0.20-0.33 |
| | | α alloys | 375 | | | | 30-60 | 0.09-0.30 | 0.20-0.33 |
| | | α and β alloys | 375 | | | | 30-60 | 0.09-0.30 | 0.20-0.33 |
| | | β alloys | 410 | | | | 30-60 | 0.09-0.30 | 0.20-0.33 |
| H | Hardened steel | Hardened and tempered | 43-47 HRC | | | | | | |
| | Chilled cast iron | | 47-60 HRC | | | | | | |

*) Insert position-P , I , C
P=peripheral insert , I=intermediate insert, C=center insert

## Cutting Data Recommendation for BTA Ejector Drill (Dia ≥ 63.50mm)

| Workpiece material | | | Brinell hardness (HB) | Grade | | | Cutting speed Vc m/min | Feed fn mm/r |
|---|---|---|---|---|---|---|---|---|
| | | | | Insert | | | | Drilling dia mm |
| | | | | P | I | C | | ≥ 63.50 |
| P | Unalloyed steel | C=0.05-0.10% | 125 | AP301U(N) | | | 80-100 | 0.18-0.35 |
| | | C=0.10-0.25% | 125 | | | | 80-100 | 0.18-0.35 |
| | | C=0.25-0.55% | 150 | | | | 80-100 | 0.18-0.35 |
| | | C=0.55-0.80% | 170 | | | | 80-100 | 0.18-0.35 |
| | High carbon steel | Carbon tool steel | 210 | AP301U(N) | | | 70-100 | 0.18-0.35 |
| | Low-alloyed steel | Non-Hardened | 180 | AP301U(N) | | | 60-100 | 0.16-0.35 |
| | | Tempered | 275 | | | | 70-100 | 0.18-0.30 |
| | | Tempered | 350 | | | | 70-100 | 0.18-0.30 |
| | High-alloyed steel | Annealed | 200 | AP301U(N) | | | 60-100 | 0.16-0.30 |
| | | Hardened tool steel | 325 | | | | 60-100 | 0.16-0.30 |
| | Cast steel | Non-alloyed steel | 180 | AP301U(N) | | | 50-100 | 0.15-0.30 |
| | | Low-alloy (alloy<5%) | 200 | | | | 50-100 | 0.15-0.30 |
| M | Stainless steel | Non-Hardened/Ferritic/martensitic | 200 | AP301U(N) | | | 50-90 | 0.16-0.35 |
| | | Austenitic | 200 | | | | 50-90 | 0.16-0.35 |
| | | Austenitic, precipitation hardened (PH) | 300 | | | | | |
| | | Austenitic/ferritic, duplex | 230 | | | | | |
| K | Malleable cast iron | Ferritic | 200 | AP301U(N) | | | | |
| | | Pearlitic | 260 | | | | | |
| | Grey cast iron | Low tensile strength | 180 | AP301U(N) | | | | |
| | | High tensile strength | 245 | | | | | |
| | Nodular cast iron | Ferritic | 160 | AP301U(N) | | | | |
| | | Pearlitic | 250 | | | | | |
| | GGV (CGI) | | 230 | | | | | |
| N | Wrought aluminium alloys | non-aging | 30 | AP301U(N) | | | 65-130 | 0.10-0.30 |
| | | aged | 100 | | | | 65-130 | 0.10-0.30 |
| | Cast aluminium alloys | ≤ 12% Si, non-aging | 75 | AP301U(N) | | | 65-130 | 0.10-0.30 |
| | | ≤ 12% Si, aged | 90 | | | | 65-130 | 0.10-0.30 |
| | | 12% Si, non-aging | 130 | | | | 65-130 | 0.10-0.30 |
| | Magnesium alloy | | 70 | | | | | |
| | Copper and copper alloys | Unalloyed, electrolytic copper | 100 | AP301U(N) | | | 65-130 | 0.10-0.30 |
| | (bronze/brass) | Brass, bronze, red brass | 90 | AP301U(N) | | | 65-130 | 0.10-0.30 |
| | | Cu alloys, short-chip | 110 | | | | 65-130 | 0.10-0.30 |
| | | High tensile, Ampco alloy | 300 | | | | 65-130 | 0.10-0.30 |
| S | Heat-resistant alloys | Fe-based annealed | 200 | AP301U(N) | | | 20-65 | 0.15-0.30 |
| | | Fe-based hardened | 280 | | | | 20-65 | 0.15-0.30 |
| | | Ni or Co-based annealed | 250 | | | | 20-65 | 0.15-0.30 |
| | | Ni or Co-based hardened | 350 | | | | 20-65 | 0.15-0.30 |
| | | Ni or Co-based cast | 320 | | | | | |
| | Titanium alloys | Pure titanium | 200 | AP301U(N) | | | 30-100 | 0.15-0.30 |
| | | α alloys | 375 | | | | 30-100 | 0.15-0.30 |
| | | α and β alloys | 375 | | | | 30-100 | 0.15-0.30 |
| | | β alloys | 410 | | | | 30-100 | 0.15-0.30 |
| H | Hardened steel | Hardened and tempered | 43-47 HRC | | | | | |
| | Chilled cast iron | | 47-60 HRC | | | | | |

*) Insert position-P , I , C
P=peripheral insert , I=intermediate insert, C=center insert

# ACHTECK

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## Boring Tools

Boring

# CUTTING TOOL CATALOGUE


## Boring Tools 511

ARB Twin-Edge Rough Boring/Back-boring 516
ARS Step Rough Boring 517
MLR Rough boring tool for large diameter/Back-boring 518
AFB Single-Edge Fine Boring/Back-boring 520
Fine Boring Cartridges 521
MLF Fine boring tool for large diameter 522
DFB Integral Damping Fine Boring 523
Damping Boring Shank 524
Damping Boring Bars 525
DTB Damping Turning Bars 526
DTH Damping Turning Heads 527
Operator's Manual of DTB Series Damping Tools 529
SFB Small Dia. Fine Boring Heads/Bars 530
EFB External Boring 531
BT Boring Shank 532
HSK Boring Shank 533
Bridge Boring Shank 534
SK Boring Shank 535
Extended/Reducing Rods 536
ISO Cartridges 538
Fine Adjustment Cartridge 542
Rough/Fine Boring Operator's Manual 547

## Boring Inserts 546

Overview of Boring Inserts 546

## Overview of Boring Tools

### ARB Twin-edge rough boring tool
- Twin-Edge rough boring tools - for blind hole
- Twin-Edge rough boring tools - for through hole
- (Back-boring) Rough boring
- Step rough boring

### MLR Rough boring tool for large diameter
- Standard rough boring
- Lightweight rough boring
- (Back-boring) large diameter

### AFB fine boring tool
- Fine boring with cartridge A
- Fine boring with cartridge B
- Fine boring with cartridge C
- (Back-boring) Fine boring

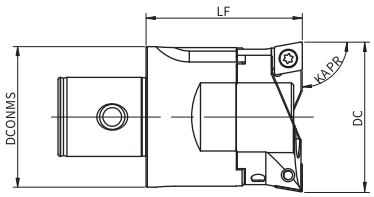
### MLF Fine boring tool for large diameter
- Standard fine boring
- Lightweight fine boring

### Damping Boring Tool
- DFB series fine boring tool
- Damping boring shank
- Damping boring bar
- DTB series damping Boring Bars

### EFB external fine boring tool
- Large diameter --external fine boring
- Small diameter --external fine boring

## Twin-Edge Rough Boring Tool

Diameter range ⌀20mm- ⌀153mm.
Cover wide applications.
High precision, high rigidity, flexible on tool combination.
Adjusting scale marked on tool body, easy to operate.




Boring tool denomination

ARB-_ _ _-_ _ _-AK_-W
1 2 3 4 5

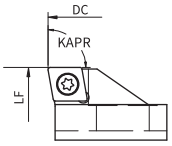
"1" Series name
"2" Minimum boring diameter
"3" Maximum boring diameter
"4" Coupling size:
AK1/AK2/AK3/AK4/AK5/AK6/AK7
"5" W means without cartridge,
L means larger diameter

| Dia range DC (mm) | Product code | Coupling | DCONMS (mm) | LF (mm) | Cartridge (●Standard ○Option) | Screw for cartridge | Weight (kg) |
|---|---|---|---|---|---|---|---|
| 20-26 | **ARB-020-026-AK1** | AK1 | 19 | 32.5 | RC-020-CC06 ● | SH040160 | 0.07 |
| | | | | | RC-020-SC06 ○ | | |
| 25-33 | **ARB-025-033-AK2** | AK2 | 24 | 35.5 | RC-025-CC06 ● | SH050200 | 0.12 |
| | | | | | RC-025-SC06 ○ | | |
| 32-42 | **ARB-032-042-AK3** | AK3 | 31 | 40 | RC-032-CC09 ● | SH060200 | 0.2 |
| | | | | | RC-032-SC09 ○ | | |
| 41-54 | **ARB-041-054-AK4** | AK4 | 39 | 47 | RC-041-CC09 ● | SH080250 | 0.38 |
| | | | | | RC-041-SC09 ○ | | |
| 53-70 | **ARB-053-070-AK5** | AK5 | 50 | 57 | RC-041-CC12 ● | SH100300 | 0.75 |
| | | | | | RC-041-SC12 ○ | | |
| 68-90 | **ARB-068-110-AK6** | AK6 | 64 | 71 | RC-068-CC12 ● | SH100350 | 1.6 |
| | | | | | RC-068-SC12 ○ | | |
| 88-110 | **ARB-068-110-AK6-L** | AK6 | 64 | 71 | RC-088-CC12 ● | | 1.8 |
| | | | | | RC-088-SC12 ○ | | |
| 98-126 | **ARB-098-153-AK6** | AK6 | 93 | 71 | RC-098-CC12 ● | SH120400 | 2.3 |
| | | | | | RC-098-SC12 ○ | | |
| 125-153 | **ARB-098-153-AK6-L** | AK6 | 93 | 71 | RC-125-CC12 ● | | 2.6 |
| | | | | | RC-125-SC12 ○ | | |
| 98-126 | **ARB-098-153-AK7** | AK7 | 93 | 87 | RC-098-CC12 ● | | 3.9 |
| | | | | | RC-098-SC12 ○ | | |
| 125-153 | **ARB-098-153-AK7-L** | AK7 | 93 | 87 | RC-125-CC12 ● | | 4.1 |
| | | | | | RC-125-SC12 ○ | | |

- Tool body is assembled with blind hole boring cartridges as standard package. For through hole, the tool body without cartridge need to be ordered separately. Example: ARB-148-203-AK6/W&RC-098-SC12.
- Tool body without cartridge also can be ordered. Example: ARB-020-026-AK1-W.
- Spare parts including: Screw set (with washers), L-type wrench. The inserts need to be ordered separately.
- The full series boring tool is provided with internal coolant.
- Ensure complete tightening, and use feeler gauges during installation to check the gap between mating surfaces.
- For the ideal axial runout, the inserts need to be indexed at the same time.

## ARB Twin-Edge Rough Boring Tool Series

Rough boring cartridge for blind-hole




Boring tool denomination

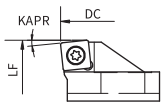
RC-_ _ _-CC_ _-B
1 2 3 4

"1" Series name
"2" Minimum boring diameter
"3" Insert
"4" B means back boring

| Product code | Tool body | Insert (Option) | Screw | Wrench |
|---|---|---|---|---|
| **RC-020-CC06** | ARB-020-026-AK1-W | CC_ 0602_ | ST025060 | FT-T8 |
| **RC-025-CC06** | ARB-025-033-AK2-W | | | |
| **RC-032-CC09** | ARB-032-042-AK3-W | CC_ 09T3_ | ST040100 | FT-T15 |
| **RC-041-CC09** | ARB-041-054-AK4-W | | | |
| **RC-053-CC12** | ARB-053-070-AK5-W | CC_ 1204_ | ST050120 | FT-T20 |
| **RC-068-CC12** | ARB-068-110-AK6-W | | | |
| **RC-088-CC12** | | | | |
| **RC-098-CC12** | ARB-098-153-AK6-W | | | |
| | ARB-098-153-AK7-W | | | |
| **RC-125-CC12** | ARB-098-153-AK6-W | | | |
| | ARB-098-153-AK7-W | | | |

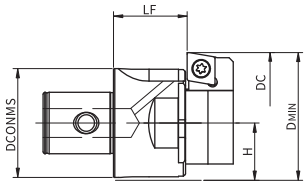
## ARB Twin-Edge Rough Boring Tool

Rough boring cartridge for through hole




| Product code | Tool body | Insert (Option) | Screw | Wrench |
|---|---|---|---|---|
| **RC-020-SC06** | ARB-020-026-AK1-W | SC_ 0602_ | ST025060 | FT-T8 |
| **RC-025-SC06** | ARB-025-033-AK2-W | | | |
| **RC-032-SC09** | ARB-032-042-AK3-W | SC_ 09T3_ | ST040100 | FT-T15 |
| **RC-041-SC09** | ARB-041-054-AK4-W | | | |
| **RC-053-SC12** | ARB-053-070-AK5-W | SC_ 1204_ | ST050120 | FT-T20 |
| **RC-068-SC12** | ARB-068-110-AK6-W | | | |
| **RC-088-SC12** | | | | |
| **RC-098-SC12** | ARB-098-153-AK6-W | | | |
| | ARB-098-153-AK7-W | | | |
| **RC-125-SC12** | ARB-098-153-AK6-W | | | |
| | ARB-098-153-AK7-W | | | |

## Back Boring

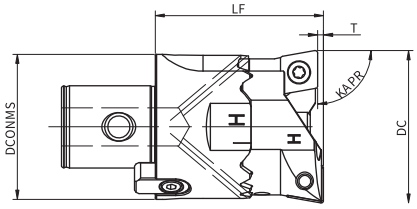



Min. through hole diameter DMIN =
H+(Back-boring diameter DC/2)

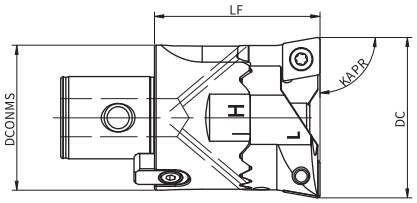
| Dia range DC (mm) | Tool body | Coupling | Back-boring Cartridge (Optional) | DC0NMS (mm) | LF (mm) | Screw for cartridge | H (mm) | Weight (kg) | Insert (Optional) | Screw/ Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| 25-31 | **ARB-020-026-AK1-W** | AK1 | RC-025-CC06-B | 19 | 21.5 | SH040160 | 10 | 0.06 | CC_ _ 0602 | ST025060 FT-T8 |
| 30-35 | | | RC-030-CC06-B | | | | | 0.06 | | |
| 32-40 | **ARB-025-033-AK2-W** | AK2 | RC-032-CC06-B | 24 | 23.5 | SH050200 | 12.5 | 0.11 | | |
| 39-47 | | | RC-039-CC06-B | | | | | 0.11 | | |
| 41-51 | **ARB-032-042-AK3-W** | AK3 | RC-041-CC09-B | 31 | 23.5 | SH060200 | 16 | 0.18 | CC_ _ 09T3 | ST040100 FT-T15 |
| 50-60 | | | RC-05060-CC09-B | | | | | 0.19 | | |
| 50-63 | **ARB-041-054-AK4-W** | AK4 | RC-05063-CC09-B | 39 | 28.5 | SH080250 | 20 | 0.36 | | |
| 61-74 | | | RC-061-CC09-B | | | | | 0.38 | | |
| 65-82 | **ARB-053-070-AK5-W** | AK5 | RC-065-CC12-B | 50 | 33.5 | SH100300 | 25.5 | 0.7 | CC_ _ 1204 | ST050120 FT-T20 |
| 78-95 | | | RC-078-CC12-B | | | | | 0.75 | | |
| 80-102 | **ARB-068-110-AK6-W** | AK6 | RC-080-CC12-B | 64 | 45.5 | SH100350 | 32.5 | 1.5 | | |
| 100-122 | | | RC-100-CC12-B | | | | | 1.6 | | |
| 98-126 | **ARB-098-153-AK6-W** | AK6 | RC-098-CC12-B | 93 | 45.5 | SH120400 | 47 | 2.25 | | |
| 125-153 | | | RC-125-CC12-B | | | | | 2.45 | | |

- Back-boring tool: please order tool body and choose a cartridge, e.g. ARB-020-026-AK1-W & RC-025-CC06-B.
- Example of tool selection: back-boring ∅26, find the corresponding tool body and boring cartridge ARB-020-026-AK1-W & RC-025-CC06-B; Min. through hole diameter is = 10+26/2 which is 23mm.

## ARS Step Rough Boring




Step boring (HHLL)




Twin-Edge Boring

Boring tool denomination

ARS-_ _ _-_ _ _-AK-L
1 2 3 4 5

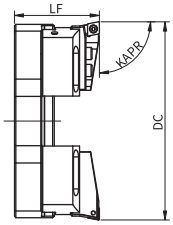
"1" Series name
"2" Minimum boring diameter
"3" Maximum boring diameter
"4" Coupling size, and its specifications are listed in below:
AK1/AK2/AK3/AK4/AK5/AK6
"5"L means larger diameter

| Dia range DC (mm) | Product code | Coupling | DCONMS (mm) | LF (mm) | Axial Step T (mm) | Cartridge (Standard) | Screw | Insert (Optional) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|
| 20-26 | **ARS-020-026-AK1** | AK1 | 19 | 32.5 | 0.2 | RC-020-CC06-HL | SH040160 | CC_ _ 0602 | 0.08 |
| 25-33 | **ARS-025-033-AK2** | AK2 | 24 | 35.5 | 0.2 | RC-025-CC06-HL | SH050200 | CC_ _ 0602 | 0.12 |
| 32-42 | **ARS-032-042-AK3** | AK3 | 31 | 40 | 0.2 | RC-032-CC09-HL | SH060200 | CC_ _ 09T3 | 0.22 |
| 41-54 | **ARS-041-054-AK4** | AK4 | 39 | 47 | 0.4 | RC-041-CC09-HL | SH080250 | CC_ _ 09T3 | 0.42 |
| 53-70 | **ARS-053-070-AK5** | AK5 | 50 | 57 | 0.4 | RC-053-CC12-HL | SH100300 | CC_ _ 1204 | 0.80 |
| 68-90 | **ARS-068-110-AK6** | AK6 | 64 | 71 | 0.4 | RC-068-CC12-HL | SH080300 | CC_ _ 1204 | 1.75 |
| 88-110 | **ARS-068-110-AK6-L** | AK6 | 64 | 71 | 0.4 | RC-088-CC12-HL | SH080300 | CC_ _ 1204 | 1.85 |
| 98-126 | **ARS-098-153-AK6** | AK6 | 93 | 71 | 0.4 | RC-098-CC12-HL | SH120400 | CC_ _ 1204 | 2.90 |
| 125-153 | **ARS-098-153-AK6-L** | AK6 | 93 | 71 | 0.4 | RC-125-CC12-HL | SH120400 | CC_ _ 1204 | 3.15 |

- Standard configuration includes 1 set (1 piece on each side) cartridge, through the special design of tool body and interchangeable cartridge positions (refer to the corresponding letters in the top-right diagram), enables quick switching between single-edge axial step boring and twin-edge boring operations.
- Each model is equipped with a set of tool holder lock screws and one L-shaped wrench; the insert need to be ordered separately.
- The ARS step boring series is equipped with internal coolant.
- Before use, ensure that the tool is securely clamped and there are no gaps between the mating surfaces. It is recommended to verify this using a feeler gauge or the light transmission method.
- When using the ARS step boring tools, radial adjustments can be made to effectively reduce issues such as bad chips and vibration during more material cutting.

## Rough Boring Tool For Large Diameter

Dia. range ⌀150mm- ⌀850mm。
Modular design and flexible assembly for faster operation.
Lightweight bridge can reduce the tool's weight.




Boring tool denomination

MLR-_ _ _-_ _ _-LD
1 2 3 4

"1" Series name
"2" Minimum boring diameter
"3" Maximum boring diameter
"4" LD means light weight, without LD means standard

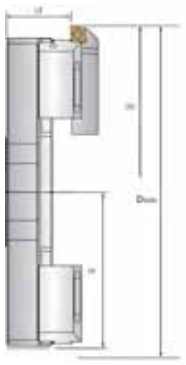
| Dia range DC (mm) | Product code | Weight (kg) | Coupling | LF (mm) | Steel Bridge | Slider | Cartridge | Insert (Optional) |
|---|---|---|---|---|---|---|---|---|
| 150-210 | **MLR-150-210** | 5.5 | / | 90 | BS-150-210 | RB-150 | RC-150 | CC_ _1204 |
| 210-290 | **MLR-210-290** | 6.7 | | | BS-210-290 | | | |
| 290-370 | **MLR-290-370** | 8.1 | | | BS-290-370 | | | |
| 370-450 | **MLR-370-450** | 9.8 | | | BS-370-450 | | | |
| 450-530 | **MLR-450-530** | 11.4 | | | BS-450-530 | | | |

## Lightweight Bridge Rough Boring Tools

| Dia range DC (mm) | Product code | Weight (kg) | Coupling | LF (mm) | Aluminium Bridge | Slider | Cartridge | Insert (Optional) |
|---|---|---|---|---|---|---|---|---|
| 150-210 | **MLR-150-210-LD** | 3.9 | / | 90 | BS-150-210-LD | RB-150 | RC-150 | CC_ _1204 |
| 210-290 | **MLR-210-290-LD** | 4.3 | | | BS-210-290-LD | | | |
| 290-370 | **MLR-290-370-LD** | 5.0 | | | BS-290-370-LD | | | |
| 370-450 | **MLR-370-450-LD** | 5.5 | | | BS-370-450-LD | | | |
| 450-530 | **MLR-450-530-LD** | 6.0 | | | BS-450-530-LD | | | |

- Rough boring tool assembled with cartridges as standard package, include bridge, slider, cartridge, some models (include coupling), the inserts not are included.
- For the ideal axial runout, the inserts need to be indexed at the same time.

## Back-Boring For Large Diameter



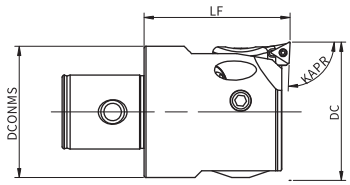
Min. through hole diameter DMIN = H+(Back-boring diameter/2)

| Dia range DC (mm) | Steel Bridge | Slider | Back-boring Cartridge | Insert | H (mm) | LF (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|
| 165-205 | **BS-150-210** | RB-150 | RC-150-B | CC_ 1204 | 75 | 59 | 5.00 |
| 225-265 | **BS-210-290** | | | | 105 | | 6.20 |
| 305-345 | **BS-290-450** | | | | 145 | | 7.55 |
| 385-425 | **BS-370-450** | | | | 185 | | 9.30 |
| 465-505 | **BS-450-530** | | | | 225 | | 10.90 |

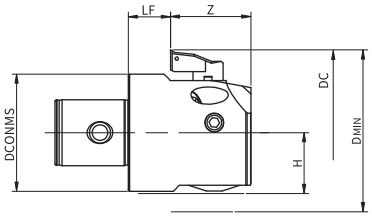
- Shared base components with MLR series. Simply replace the back-boring cartridge (optional) to enable back-boring operations.
- Calculate the minimum through-hole diameter, e.g. back-boring ∅320mm, minimum through-hole diameter = 145+320/2, i.e. 305mm.

## AFB Single-Edge Fine Boring Tool

Interchangeable cartridges enable multi-type fine boring operations.
Dia. range ∅20mm- ∅203mm。
The precision screw is located inside the tool body, avoiding the impact of chips, corrosion and rust, extend the tool's life.




Front boring




Min. through hole diameter DMIN = H+(Back-boring diameter/2)

Boring tool denomination

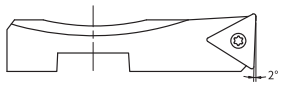
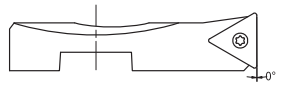
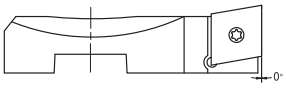
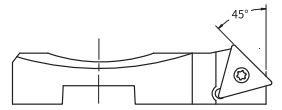
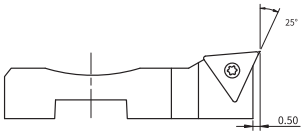
AFB-_ _ _-_ _ _-AK_-W
1 2 3 4 5

"1" Series name
"2" Minimum boring diameter
"3" Maximum boring diameter
"4" Coupling size
"5" "W" means without cartridge, which is optional

| Product code | Coupling | Cartridge (Standard ● Option ○ ) | Front boring | | | Back-boring | | | | Weight (kg) | Insert optional |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Dia. range DC (mm) | LF (mm) | DCONMS (mm) | Dia. range DC (mm) | LF (mm) | Z (mm) | H (mm) | | |
| **AFB-020-036-AK1** | AK1 | FCT-10A ● | 20-26 | 32.5 | 19 | - | 10.5 | 20 | 10 | 0.07 | TP0802 |
| | | FCT-10B ○ | 25-31 | | | 30-31 | | | | | |
| | | FCT-10C ○ | 30-36 | | | 30-36 | | | | | |
| **AFB-025-047-AK2** | AK2 | FCT-20A ● | 25-33 | 35.5 | 24 | - | 11.5 | 21.5 | 12.5 | 0.12 | |
| | | FCT-20B ○ | 32-40 | | | 36-40 | | | | | |
| | | FCT-20C ○ | 39-47 | | | 39-47 | | | | | |
| **AFB-032-060-AK3** | AK3 | FCT-30A ● | 32-42 | 40 | 31 | - | 10 | 27 | 16 | 0.22 | |
| | | FCT-30B ○ | 41-51 | | | 46-51 | | | | | |
| | | FCT-30C ○ | 50-60 | | | 50-60 | | | | | |
| **AFB-041-074-AK4** | AK4 | FCT-40A ● | 41-54 | 47 | 39 | - | 12 | 31 | 20 | 0.42 | TC1102 |
| | | FCT-40B ○ | 50-63 | | | 53-63 | | | | | |
| | | FCT-40C ○ | 61-74 | | | 61-74 | | | | | |
| **AFB-053-095-AK5** | AK5 | FCT-50A ● | 53-70 | 57 | 50 | 62-70 | 15 | 37 | 25.5 | 0.85 | TC1102 |
| | | FCT-50B ○ | 65-82 | | | 65-82 | | | | | |
| | | FCT-50C ○ | 78-95 | | | 78-95 | | | | | |
| **AFB-068-150-AK6** | AK6 | FCT-60A ● | 68-100 | 71 | 64 | 80-100 | 23 | 44 | 32.5 | 1.85 | |
| | | FCT-60B ○ | 94-126 | | | 94-126 | | | | | |
| | | FCT-60C ○ | 118-150 | | | 118-150 | | | | | |
| **AFB-100-203-AK7** | AK7 | FCT-60A ● | 100-153 | 87 | 90 | 112-153 | 39 | 44 | 46.5 | 4.05 | |
| | | FCT-60B ○ | 126-179 | | | 126-179 | | | | | |
| | | FCT-60C ○ | 150-203 | | | 150-203 | | | | | |

- When used with a scale, the minimum adjustment accuracy of the bore diameter can reach ∅0.002mm.
- Standard configuration includes the A-type base cartridge; when ordering an optional tool holder, please refer to the example: AFB-020-026-AK1-W, FCT-10B.
- The assembled fine boring tool does not include inserts; for front boring, left-hand inserts should be selected, while for back-boring, right-hand inserts and spindle reversal are required.
- All AFB boring tool is with internal coolant.
- It is recommended to regularly lubricate the internal parts of the tool with grease to extend the service life of the AFB single-edge fine boring tool.

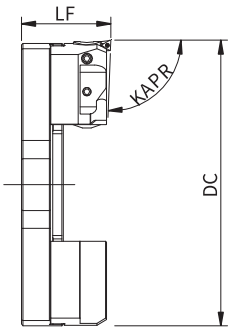
## AFB Single-Edge Fine Boring Tool

| Picture | Product code | Adaptive boring head | Dia. range DC (mm) | Insert (Optional) | Screw/Wrench |
|---|---|---|---|---|---|
|  | **FCT-10A** | AFB-020-036-AK1 | 20-26 | TP_ _ 0802 | ST020040 FT-T6 |
| | **FCT-10B** | | 25-31 | | |
| | **FCT-10C** | | 30-36 | | |
| | **FCT-20A** | AFB-025-047-AK2 | 25-33 | | |
| | **FCT-20B** | | 35-40 | | |
| | **FCT-20C** | | 39-47 | | |
| | **FCT-30A** | AFB-032-060-AK3 | 32-42 | | |
| | **FCT-30B** | | 41-51 | | |
| | **FCT-30C** | | 50-60 | | |
| | **FCT-40A** | AFB-041-074-AK4 | 41-54 | TC_ _ 1102 | ST025060 FT-T8 |
| | **FCT-40B** | | 50-63 | | |
| | **FCT-40C** | | 61-74 | | |
| | **FCT-50A** | AFB-053-095-AK5 | 53-70 | | |
| | **FCT-50B** | | 65-82 | | |
| | **FCT-50C** | | 78-95 | | |
| | **FCT-60A** | AFB-068-150-AK6 | 68-153 | | |
| | **FCT-60B** | AFB-100-203-AK6 | 94-179 | | |
| | **FCT-60C** | AFB-100-203-AK7 | 118-203 | | |
|  | **FCT-40A00** | AFB-041-074-AK4 | 41-54 | TC_ _ 1102 | ST025060 FT-T8 |
| | **FCT-50A00** | AFB-053-095-AK5 | 53-70 | | |
| | **FCT-60A00** | AFB-068-150-AK6 | 68-100 | | |
| | | AFB-100-203-AK6 | 100-153 | | |
| | | AFB-100-203-AK7 | 100-153 | | |
|  | **FCC-40A00** | AFB-041-074-AK4 | 41-54 | CC_ _ 0602 | |
| | **FCC-50A00** | AFB-053-095-AK5 | 53-70 | | |
| | **FCC-60A00** | AFB-068-150-AK6 | 68-100 | CC_ _ 09T3 | ST040100 FT-T15 |
| | | AFB-100-203-AK6 | 100-153 | | |
| | | AFB-100-203-AK7 | 100-153 | | |
|  | **FCT-40A45** | AFB-041-074-AK4 | 41-54 | TC_ _ 1102 | ST025060 FT-T8 |
| | **FCT-50A45** | AFB-053-095-AK5 | 53-70 | | |
| | **FCT-60A45** | AFB-068-150-AK6 | 68-100 | | |
| | | AFB-100-203-AK6 | 100-153 | | |
| | | AFB-100-203-AK7 | 100-153 | | |
|  | **FCT-30A25** | AFB-032-060-AK3 | 32-42 | TP_ _ 0802 | ST020040 FT-T6 |
| | **FCT-40A25** | AFB-041-074-AK4 | 41-54 | | |
| | **FCT-50A25** | AFB-053-095-AK5 | 53-70 | | |
| | **FCT-60A25** | AFB-068-150-AK6 | 68-100 | TC_ _ 1102 | ST025060 FT-T8 |
| | | AFB-100-203-AK6 | 100-153 | | |
| | | AFB-100-203-AK7 | 100-153 | | |

- Cartridge do not include inserts and the inserts need to be ordered separately.
- Non-standard cartridge can be custom-made (another insert for boring, flat-bottom).

## MLF Fine Boring Tool For Large Diameter

Dia. range ⌀150mm- ⌀530mm.
Modular design, for both tool body balancing and machining precision.
Flexible on tool combination. Easy to use.
Including steel and aluminium bridge.




Boring tool denomination

MLF-_ _ _-_ _ _-LD
1 2 3 4

"1" Series name
"2" Minimum boring diameter
"3" Maximum boring diameter
"4" "LD"means light weight, without "LD" means standard

## Steel Bridge

| Dia range DC (mm) | Product code | Weight (kg) | Coupling | LF (mm) | Steel Bridge | Fine Adjustment Slider | Balance Block | Cartridge (Option) | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| 150-210 | **MLF-150-210** | 6.2 | / | 90 | BS-150-210 | FB-150 | BB-150 | FCT-60A (Standard) FCT-60B FCT-60C | TC_ _ 1102 |
| 210-290 | **MLF-210-290** | 7.5 | | | BS-210-290 | | BB-200 | | |
| 290-370 | **MLF-290-370** | 8.5 | | | BS-290-370 | | | | |
| 370-450 | **MLF-370-450** | 10.2 | | | BS-370-450 | | | | |
| 450-530 | **MLF-450-530** | 11.6 | | | BS-450-530 | | | | |

## Aluminium Bridge

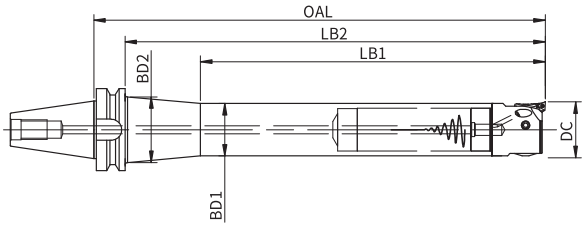
| Dia range DC (mm) | Product code | Weight (kg) | Coupling | LF (mm) | Aluminium Bridge | Fine Adjustment Slider | Balance Block | Cartridge (Option) | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| 150-210 | **MLF-150-210-LD** | 4.6 | / | 90 | BS-150-210-LD | FB-150 | BB-150 | FCT-60A (Standard) FCT-60B FCT-60C | TC_ _ 1102 |
| 210-290 | **MLF-210-290-LD** | 5.1 | | | BS-210-290-LD | | BB-200 | | |
| 290-370 | **MLF-290-370-LD** | 5.5 | | | BS-290-370-LD | | | | |
| 370-450 | **MLF-370-450-LD** | 5.9 | | | BS-370-450-LD | | | | |
| 450-530 | **MLF-450-530-LD** | 6.2 | | | BS-450-530-LD | | | | |

## More Diameter Combinations

| Cartridge | Tool body (without cartridge) | Dia. |
|---|---|---|
| FCT-60A | **MLF-150-210-W** | 150-210 |
| FCT-60B | | 176-236 |
| FCT-60C | | 200-260 |
| FCT-60A | **MLF-210-290-W** | 210-290 |
| FCT-60B | | 236-315 |
| FCT-60C | | 260-340 |
| FCT-60A | **MLF-290-370-W** | 290-370 |
| FCT-60B | | 316-396 |
| FCT-60C | | 340-420 |

| Cartridge | Tool body (without cartridge) | Dia. |
|---|---|---|
| FCT-60A | **MLF-370-450-W** | 370-450 |
| FCT-60B | | 396-476 |
| FCT-60C | | 420-500 |
| FCT-60A | **MLF-450-530-W** | 450-530 |
| FCT-60B | | 476-556 |
| FCT-60C | | 500-580 |

## DFB Integral Damping Fine Boring Tool




Boring tool denomination

DFB-_ _ _-_ _ _-BBT50-L_ _ _
1 2 3 4 5

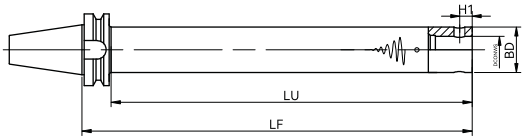
"1" Series name
"2" Minimum boring diameter
"3" Maximum boring diameter
"4" Type of machine spindle
"5" Effective boring depth

| Product code | Cartridge (Optional) | Dia range DC (mm) | Dimensions (mm) | | | | | Weight (kg) | Insert (Optional) |
|---|---|---|---|---|---|---|---|---|---|
| | | | LB1 | LB2 | OAL | BD1 | BD2 | | |
| **DFB-041-074-BBT50-L280** | FCT-40A | 41-54 | 280 | 320 | 358 | 40 | 55 | 7.4 | TC_ _ 1102 |
| | FCT-40B | 50-63 | | | | | | | |
| | FCT-40C | 61-71 | | | | | | | |
| **DFB-053-095-BBT50-L350** | FCT-50A | 53-70 | 350 | 400 | 438 | 50 | 56 | 11 | |
| | FCT-50B | 65-82 | | | | | | | |
| | FCT-50C | 78-95 | | | | | | | |
| **DFB-068-150-BBT50-L450** | FCT-60A | 68-100 | 450 | 512 | 550 | 64 | 80 | 18.9 | |
| | FCT-60B | 94-126 | | | | | | | |
| | FCT-60C | 118-150 | | | | | | | |
| **DFB-100-203-BBT50-L525** | FCT-60A | 100-153 | 525 | 525 | 563 | 70 | 85 | 23.5 | |
| | FCT-60B | 126-179 | | | | | | | |
| | FCT-60C | 150-203 | | | | | | | |

- Product code does not include cartridge, order example: DFB-041-074-BBT50-L280 & FCT-40A.
- Inserts need to be ordered separately.

Note: Limited stock, please contact our sales engineer for details on stock availability.

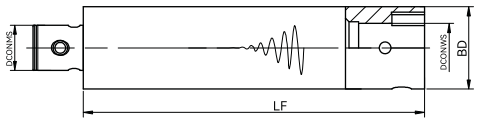
## Damping Boring Shank




| Product code | Dimensions (mm) | | | | | Weight (kg) |
|---|---|---|---|---|---|---|
| | BD | DCONWS | H1 | LU | LF | |
| **BT40-AKB2-145-D** | 24 | 14 | 6.45 | 110 | 145 | 1.44 |
| **BT40-AKB2-170-D** | 24 | 14 | 6.45 | 135 | 170 | 1.54 |
| **BT40-AKB2-195-D** | 24 | 14 | 6.45 | 160 | 195 | 1.64 |
| **BT40-AKB3-195-D** | 31 | 18 | 7.9 | 160 | 195 | 2.15 |
| **BT40-AKB3-225-D** | 31 | 18 | 7.9 | 190 | 225 | 2.37 |
| **BT40-AKB3-255-D** | 31 | 18 | 7.9 | 220 | 255 | 2.59 |
| **BT40-AKB4-240-D** | 39 | 22 | 10 | 205 | 240 | 3.07 |
| **BT40-AKB4-280-D** | 39 | 22 | 10 | 245 | 280 | 3.5 |
| **BT40-AKB4-320-D** | 39 | 22 | 10 | 285 | 320 | 3.93 |
| **BT40-AKB5-315-D** | 50 | 28 | 13 | 283 | 315 | 5.65 |
| **BT50-AKB2-165-D** | 24 | 14 | 6.45 | 117 | 165 | 4.12 |
| **BT50-AKB2-190-D** | 24 | 14 | 6.45 | 142 | 190 | 4.22 |
| **BT50-AKB2-215-D** | 24 | 14 | 6.45 | 167 | 215 | 4.32 |
| **BT50-AKB3-205-D** | 31 | 18 | 7.9 | 160 | 205 | 4.8 |
| **BT50-AKB3-235-D** | 31 | 18 | 7.9 | 190 | 235 | 5.02 |
| **BT50-AKB3-265-D** | 31 | 18 | 7.9 | 220 | 265 | 5.24 |
| **BT50-AKB4-255-D** | 39 | 22 | 10 | 210 | 255 | 5.89 |
| **BT50-AKB4-295-D** | 39 | 22 | 10 | 250 | 295 | 6.27 |
| **BT50-AKB4-335-D** | 39 | 22 | 10 | 290 | 335 | 6.65 |
| **BT50-AKB5-315-D** | 50 | 28 | 13 | 270 | 315 | 8.51 |
| **BT50-AKB5-360-D** | 50 | 28 | 13 | 315 | 360 | 9.3 |
| **BT50-AKB5-405-D** | 50 | 28 | 13 | 360 | 405 | 10.09 |
| **BT50-AKB6-380-D** | 64 | 36 | 16 | 335 | 380 | 12.56 |
| **BT50-AKB6-445-D** | 64 | 36 | 16 | 400 | 445 | 14.24 |
| **BT50-AKB6-510-D** | 64 | 36 | 16 | 465 | 510 | 15.93 |

The AKB coupling type has pin and 2 screws (180° distribution) with eccentric locking. AK coupling don't have pin.

## Damping Extension Bar

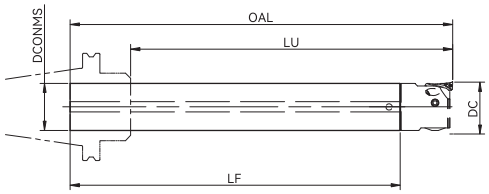



| Product code | Dimensions (mm) | | | | Weight (kg) |
|---|---|---|---|---|---|
| | BD | DCONMS | DCONWS | LF | |
| **AKB22-90-D** | 24 | 14 | 14 | 90 | 0.33 |
| **AKB33-115-D** | 31 | 18 | 18 | 115 | 0.75 |
| **AKB44-125-D** | 39 | 22 | 22 | 125 | 1.14 |
| **AKB55-155-D** | 50 | 28 | 28 | 155 | 2.39 |
| **AKB66-185-D** | 64 | 36 | 36 | 185 | 5.11 |

The AKB coupling type has pin and 2 screws (180° distribution) with eccentric locking. AK coupling don't have pin.

## Carbide Anti-Vibration Boring Bar

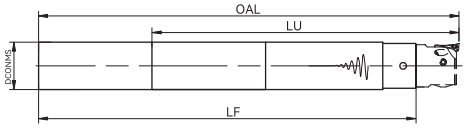
- Boring depth in the range of 5-7*Dc, carbide boring bars are recommended;
  If necessary, the damping boring bar can be selected to reduce vibration.
- The boring bars are made through high-temperature sintering of tungsten carbide with cobalt, nickel, and other bonding metals, tungsten carbide content ranging from 85%-88%, providing a high elastic modulus.
- To improve the clamping rigidity of the tool, it is recommended that the clamping length of the boring bar more than 4*DCONMS.
- For optimal tool rigidity, A-type cartridge is preferred; C-type cartridge is not recommended.




| Product code | Dimensions (mm) | | | | Weight (kg) | Tool body (Option) | Cartridge (Option) | Dia. range DC (mm) | Power collet | Compatible shank |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCONMS | OAL | LF | LU | | | | | | |
| **C19C-AK1-150** | 19 | 182.5 | 150 | 130 | 0.46 | AFB-020-036-AK1-W | FCT-10A | 20-26 | C32-19 C42-19 | power chuck |
| **C19C-AK1-200** | 19 | 232.5 | 200 | 170 | 0.68 | | FCT-10B | 25-31 | | |
| **C24C-AK2-200** | 24 | 235.5 | 200 | 170 | 1.07 | AFB-025-047-AK2-W | FCT-20A | 25-33 | C32-24 C42-24 | power chuck |
| **C24C-AK2-250** | 24 | 285.5 | 250 | 210 | 1.42 | | FCT-20B | 32-40 | | |
| **C32C-AK3-250** | 32 | 290 | 250 | 180 | 2.33 | AFB-032-060-AK3-W | FCT-30A | 32-42 | C42-32 | power chuck |
| **C32C-AK3-300** | 32 | 340 | 300 | 230 | 3.50 | | FCT-30B | 41-51 | | |

## Damping Boring Bar

- Boring depth in the range of 6-9*Dc, damping boring bars are preferred.
- These bars use a Inlaid structure with tungsten carbide rods and damping devices, reducing vibration.
- To improve the clamping rigidity of the tool, it is recommended that the clamping length of the boring bar more than 4*DCONMS.
- For optimal tool rigidity, A-type cartridge is preferred; C-type cartridge is not recommended.

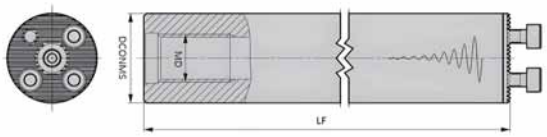



| Product code | Dimensions (mm) | | | | Weight (kg) | Boring head (Option) | Cartridge (Option) | Dia. range DC (mm) | Power collet | Compatible shank |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCONMS | LU | LF | OAL | | | | | | |
| **C19C-AKB1-190-D** | 19 | 133 | 190 | 222 | 0.43 | AFB-020-036-AKB1 | FCT1-1 | 20-26 | C32-19 C42-19 | power chuck |
| **C19C-AKB1-240-D** | 19 | 190 | 240 | 272 | 0.77 | | FCT1-2 | 25-31 | | |
| **C24C-AKB2-220-D** | 24 | 168 | 220 | 255 | 0.79 | AFB-025-047-AKB2 | FCT2-1 | 25-33 | C32-24 C42-24 | power chuck |
| **C24C-AKB2-280-D** | 24 | 240 | 280 | 315 | 1.43 | | FCT2-2 | 32-40 | | |
| **C32C-AKB3-280-D** | 32 | 224 | 280 | 320 | 1.78 | AFB-032-060-AKB3 | FCT3-1 | 32-42 | C42-32 | power chuck |
| **C32C-AKB3-350-D** | 32 | 320 | 350 | 390 | 3.24 | | FCT3-2 | 41-51 | | |

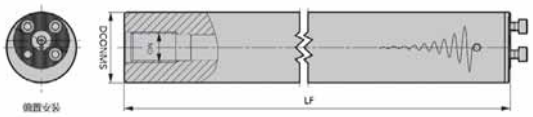
The AKB coupling type has pin and 2 screws (180° distribution) with eccentric locking. AK coupling don't have pin.

## DTB Damping Turning Bars

Style 1



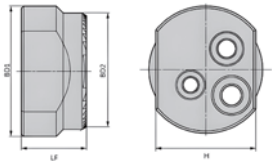

Style 2




| Product code | Dimensions (mm) | | | Interchangeable head (optional) | Weight (kg) | Style |
|---|---|---|---|---|---|---|
| | DCONMS | LF | MD | | | |
| **DTB16-C16-156** | 16 | 156 | G1/8″ | DTH16-… | 0.24 | 1 |
| **DTB16-C16-204** | 16 | 204 | / | DTH16-… | 0.32 | 1 |
| **DTB20-C20-200** | 20 | 200 | G1/4″ | DTH20-… | 0.46 | 1 |
| **DTB20-C20-260** | 20 | 260 | / | DTH20-… | 0.62 | 1 |
| **DTB25-C25-255** | 25 | 255 | G1/4″ | DTH25-… | 0.97 | 1 |
| **DTB25-C25-330** | 25 | 330 | G1/4″ | DTH25-… | 1.29 | 1 |
| **DTB32-C32-320** | 32 | 320 | G3/8″ | DTH32-… | 1.87 | 1 |
| **DTB32-C32-416** | 32 | 416 | G3/8″ | DTH32-… | 2.64 | 1 |
| **DTB40-C40-408** | 40 | 408 | G1/2″ | DTH40-… | 3.88 | 1 |
| **DTB40-C40-528** | 40 | 528 | G1/2″ | DTH40-… | 5.16 | 1 |
| **DTB40-C50-518** | 50 | 518 | G1/2″ | DTH40-… | 7.77 | 2 |
| **DTB40-C50-668** | 50 | 668 | G1/2″ | DTH40-… | 10.28 | 2 |
| **DTB40-C60-628** | 60 | 628 | G3/4″ | DTH40-… | 12.43 | 2 |
| **DTB40-C60-808** | 60 | 808 | G3/4″ | DTH40-… | 16.14 | 2 |

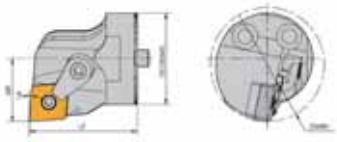
- It is recommended to use a C-type clamping sleeve for increased tool clamping rigidity, with a clamping length more than 4*DCONMS.
- When using longer and heavier damping boring bars on horizontal lathes, it is advised to use a center support to reduce vibration and improve machining precision and stability.
- The boring bars are equipped with internal cooling channels. It is recommended to use external or internal cooling methods to cool the damping area, which helps prevent the aging of internal sealing components and extends tool life.
- When using a boring bar for the first time, use a calibration tool to adjust the boring bar to a horizontal position (parallel to the X-axis of the machine tool) to ensure the correct center height; otherwise, the insert may break unexpectedly.
- For better performance in parts processing, please consult the regional sales consultant before purchasing to evaluate the working conditions and provide a suitable matching solution.

## Center Height Calibration Block

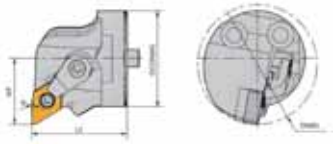



| Product code | Dimensions (mm) | | | | Compatible holders |
|---|---|---|---|---|---|
| | BD1 | BD2 | H | LF | |
| **DTB 16-25-M** | 28 | 25 | 22 | 14 | DTB16/DTB20/DTB25 |
| **DTB 32-60-M** | 62 | 60 | 52 | 25 | DTB32/DTB40 |

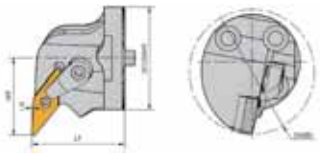
## DTH Damping Turning Heads



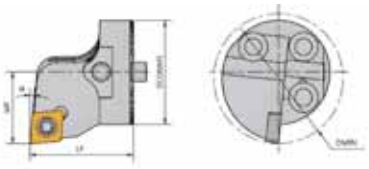
| Product code | Dimensions (mm) | | | | | Insert | Shim | Insert screw | Clamp | Clamp screw |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LF | α° | | | | | |
| **DTH32-MCLNR/L-12** | 32 | 40 | 22 | 38 | 5° | CN__120408 | S-MCN12032 | SS060170 | CL182114 | SD060250 |
| **DTH40-MCLNR/L-12** | 40 | 50 | 27 | 38 | 5° | CN__120408 | S-MCN12032 | SS060170 | CL182114 | SD060250 |



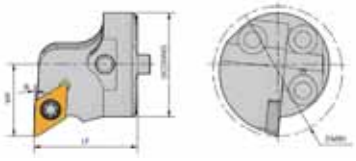
| Product code | Dimensions (mm) | | | | | Insert | Shim | Insert screw | Clamp | Clamp screw |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LF | α° | | | | | |
| **DTH32-MDUNR/L-11** | 32 | 40 | 22 | 32 | 3° | DN__110408 | S-MDN11032 | SS050130 | CL182114 | SD060250 |
| **DTH40-MDUNR/L-15** | 40 | 50 | 27 | 38 | 3° | DN__150608 | S-MDN15047 | SS060190 | CL215132 | SD060250 |



| Product code | Dimensions (mm) | | | | | Insert | Shim | Insert screw | Clamp | Clamp screw |
|---|---|---|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LF | α° | | | | | |
| **DTH40-MVUNR/L-16** | 40 | 52 | 30 | 36 | 3° | VN__160408 | S-MVN16032 | SS050130 | CL215132 | SD060250 |

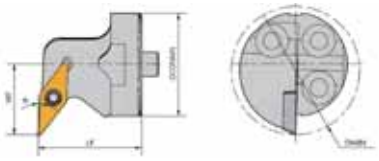


| Product code | Dimensions (mm) | | | | | Insert | Insert screw |
|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LF | α° | | |
| **DTH16-SCLCR/L-06** | 16 | 20 | 11 | 20 | 5° | CC__060204 | ST025060 |
| **DTH20-SCLCR/L-09** | 20 | 25 | 13 | 20 | 5° | CC__09T308 | ST040080 |
| **DTH25-SCLCR/L-09** | 25 | 32 | 17 | 22 | 5° | CC__09T308 | ST040080 |
| **DTH32-SCLCR/L-09** | 32 | 40 | 22 | 32 | 5° | CC__09T308 | ST040100 |
| **DTH40-SCLCR/L-12** | 40 | 50 | 27 | 38 | 5° | CC__120408 | ST050110 |

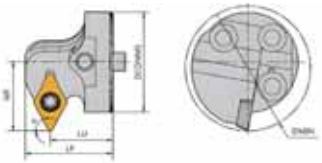


| Product code | Dimensions (mm) | | | | | Insert | Insert screw |
|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LF | α° | | |
| **DTH16-SDUCR/L-07** | 16 | 20 | 11 | 20 | 3° | DC__070204 | ST025050 |
| **DTH20-SDUCR/L-11** | 20 | 25 | 13 | 20 | 3° | DC__11T308 | ST040100 |
| **DTH25-SDUCR/L-11** | 25 | 32 | 17 | 22 | 3° | DC__11T308 | ST040100 |
| **DTH32-SDUCR/L-11** | 32 | 40 | 22 | 32 | 3° | DC__11T308 | ST040100 |
| **DTH40-SDUCR/L-11** | 40 | 50 | 27 | 38 | 3° | DC__11T308 | ST040100 |

## DTH Damping Turning Heads

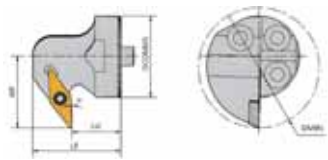


| Product code | Dimensions (mm) | | | | | Insert | Insert screw |
|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LF | α° | | |
| **DTH20-SVUCR/L-11** | 20 | 27 | 16 | 20 | 3° | VC__110304 | ST025070 |
| **DTH25-SVUCR/L-11** | 25 | 31 | 17 | 25 | 3° | VC__110304 | ST025070 |
| **DTH32-SVLCR/L-16** | 32 | 40 | 22 | 32 | 5° | VC__160408 | ST040100 |
| **DTH40-SVLCR/L-16** | 40 | 50 | 27 | 32 | 5° | VC__160408 | ST040100 |



| Product code | Dimensions (mm) | | | | | | Insert | Insert screw |
|---|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LU | LF | α° | | |
| **DTH16-SDPCR/L-07** | 16 | 22 | 13 | 15 | 19 | 62.5° | DC__070204 | ST025050 |
| **DTH20-SDPCR/L-07** | 20 | 27 | 15 | 15 | 19 | 62.5° | DC__070204 | ST025050 |
| **DTH25-SDPCR/L-07** | 25 | 33 | 18 | 15 | 19 | 62.5° | DC__070204 | ST025050 |
| **DTH32-SDPCR/L-11** | 32 | 40 | 22 | 20 | 28 | 62.5° | DC__11T308 | ST040100 |
| **DTH40-SDPCR/L-11** | 40 | 50 | 27 | 20 | 28 | 62.5° | DC__11T308 | ST040100 |

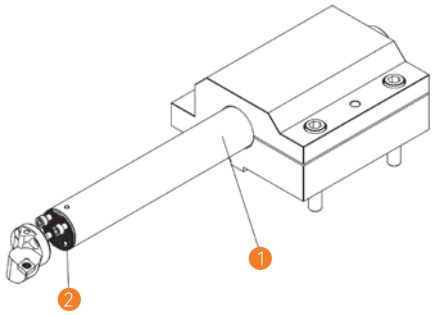
| Product code | Dimensions (mm) | | | | | | Insert | Insert screw |
|---|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LU | LF | α° | | |
| **DTH16-SDZCR/L-07** | 16 | 22 | 13 | 15 | 27 | 3° | DC__070204 | ST025050 |
| **DTH20-SDZCR/L-07** | 20 | 27 | 15 | 15 | 27 | 3° | DC__070204 | ST025050 |
| **DTH25-SDZCR/L-07** | 25 | 33 | 18 | 15 | 27 | 3° | DC__070204 | ST025050 |
| **DTH32-SDZCR/L-11** | 32 | 40 | 22 | 20 | 38 | 3° | DC__11T308 | ST040100 |
| **DTH40-SDZCR/L-11** | 40 | 50 | 27 | 20 | 38 | 3° | DC__11T308 | ST040100 |



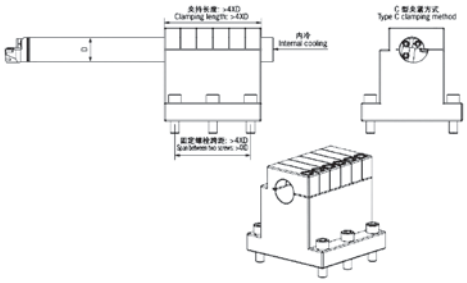
| Product code | Dimensions (mm) | | | | | | Insert | Insert screw |
|---|---|---|---|---|---|---|---|---|
| | DCONMS | DMIN | WF | LU | LF | α° | | |
| **DTH20-SVZCR/L-11** | 20 | 32 | 20 | 15 | 27 | 3° | VC__110304 | ST025070 |
| **DTH25-SVZCR/L-11** | 25 | 37 | 22 | 15 | 27 | 3° | VC__110304 | ST025070 |

## Operation Manual of DTB

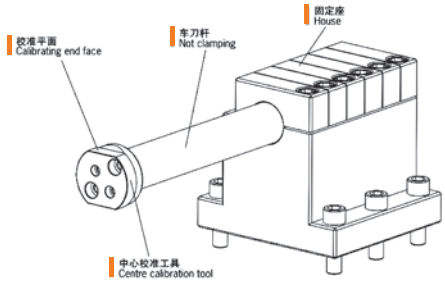
1.Wipe the assembly areas, such as the outer cylindrical part of the anti-vibration holder and the inner hole of the mounting seat, as well as the V-shaped positioning grooves of the damping bar and head.




2.The clamping length of the anti-vibration holder must be more than 4*D. Use clamping methods such as open clamping sleeves, and avoid using unstable locking methods like direct screw compression. When used for a long time, internal cooling must be applied to ensure that the damping device dissipates heat effectively, extending the tool's life and damping performance.

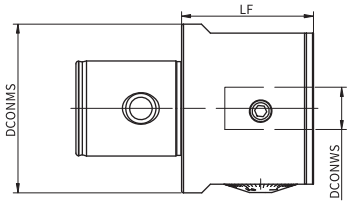


3.Adjust the center height — during the initial installation, use a center calibration block. Move the tool holder along the machine's X-axis on the calibration plane, to ensure that the height difference of the reference surface is controlled within 0.01mm.




4.Select the required tool head and compatible insert based on processing needs and complete the installation and calibration of the tool.

## SFB Small Dia. Fine Boring Tool



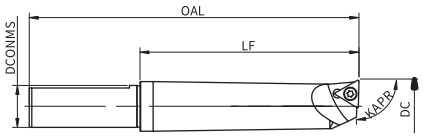

Boring tool denomination

SFB-016-AK6
1 2 3

"1" Series name
"2" means the maximum boring bar diameter is 16mm
"3" Coupling size. The coupling size is AK6

| Product code | Coupling | DCONMS | DCONWS | LF | Weight (kg) |
|---|---|---|---|---|---|
| **SFB-016-AK6** | AK6 | 64 | 16 | 50 | 1.25 |

## Steel Boring Bar for Small Dia. Fine Boring Head




Boring tool denomination

BAR-16 __-__
1 2 3 4

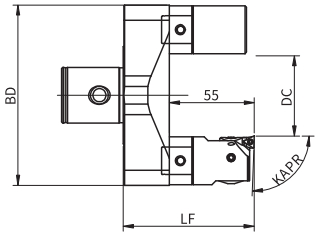
"1" Series name
"2" Boring bar shank diameter
"3" Minimum machining diameter
"4" Maximum permissible machining depth

| Product code | Dia. range DC (mm) | DCONMS | LF | OAL | Insert (Optional) | Screw/Wrench | Weight (kg) |
|---|---|---|---|---|---|---|---|
| **BAR1608-32** | 8-11 | 16 | 32 | 76 | TBET 0601 | ST020040 FT-T6 | 0.08 |
| **BAR1610-40** | 10-13 | 16 | 40 | 77 | | | 0.08 |
| **BAR1612-53** | 12-17 | 16 | 53 | 90 | TPEH 0902 | ST025060 FT-T8 | 0.11 |
| **BAR1616-68** | 16-21 | 16 | 68 | 102 | | | 0.14 |
| **BAR1620-83** | 20-26 | 16 | 83 | 120 | TPEH 1103 | ST030070 FT-T10 | 0.21 |

Note: When using TP_ _ 0902 carbide inserts, the screw hole diameter of the insert must be more than 2.8mm.

## EFB External Fine Boring Tool

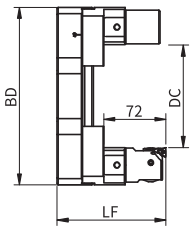
Modular interchangeable design; Rotating the boring head enables the switching between inner hole boring and external sleeve boring.
Dia. range: ∅25mm - ∅400mm。
For external sleeve boring, the spindle must rotate in reverse.




| Dia range DC (mm) | Components | | | Cartridge (Option) | Interference Range BD(mm) | Tool Body Length LF (mm) | Max. Sleeve Boring Depth | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|
| | Steel Bridge | Fine Boring Head | Balance Block | | | | | | |
| 25-34 | **EFB-025-052-AK6** | AFB-032-060-AK3 | EB-AK3 | FCT-30C | 118 | 85 | 55 | 1.94 | TP_ _ 0802 |
| 34-43 | | | | FCT-30B | | | | | |
| 43-52 | | | | FCT-30A | | | | | |
| 50-59 | **EFB-050-077-AK6** | | | FCT-30C | 143 | | | 2.24 | |
| 59-68 | | | | FCT-30B | | | | | |
| 68-77 | | | | FCT-30A | | | | | |
| 75-84 | **EFB-075-102-AK6** | | | FCT-30C | 168 | | | 2.34 | |
| 84-93 | | | | FCT-30B | | | | | |
| 93-102 | | | | FCT-30A | | | | | |

- Order Example:
  For bore diameters 25-34mm, order with tools: EFB-025-052-AK6 & AFB-032-060-AK3 & EB-AK3.
  For bore diameters 34-43mm, order with tools: EFB-025-052-AK6 & AFB-032-060-AK3-W & FCT-30B & EB-AK3.
- Complete sleeve boring tools do not come with internal coolant. The maximum sleeve boring depth can be adjusted by symmetrically adding extended bars.

## Large Diameter --External Fine Boring




| Dia range DC (mm) | Components | | | | Interference Range BD(mm) | Tool Body Length LF(mm) | Max. Sleeve Boring Depth | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|
| | Steel Bridge | Fine Boring Head | Balance Block | Slider | | | | | |
| 41-96 | **BS-150-210** | AFB-041-074-AK4 | EB-150-AK4 | EB-AK4 | 150 | 126 | 72 | 4.86 | TC_ _ 1102 |
| 80-160 | **BS-210-290** | | | | 210 | | | 6.06 | |
| 160-240 | **BS-290-370** | | | | 290 | | | 7.36 | |
| 240-320 | **BS-370-450** | | | | 370 | | | 9.16 | |
| 320-400 | **BS-450-530** | | | | 450 | | | 10.86 | |

- All components are freely configurable, and compared with smaller diameter sleeve boring tools, two additional sliders are required.
- For tools requiring weight reduction, the aluminum bridge option can be selected. For example, BS-150-210-LD.

## BT Basic Boring Shank

Fig.1

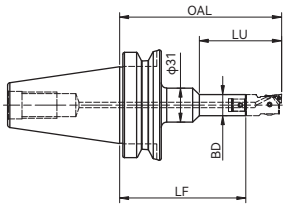
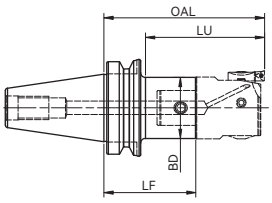
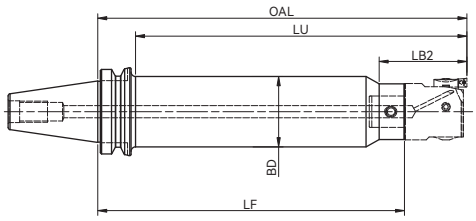



Fig.2




| Product code | Coupling | Dimensions (mm) | | | | Weight (kg) | Style |
|---|---|---|---|---|---|---|---|
| | | BD | LF | OAL | LU | | |
| **BT30-AK1-70** | AK1 | 19 | 70 | 102 | 80 | 0.5 | 2 |
| **BT30-AK2-80** | AK2 | 24 | 80 | 115 | 93 | 0.6 | 2 |
| **BT30-AK3-80** | AK3 | 31 | 80 | 120 | 98 | 0.7 | 2 |
| **BT30-AK4-70** | AK4 | 39 | 70 | 117 | 95 | 0.8 | 2 |
| **BT30-AK5-70** | AK5 | 50 | 70 | 127 | 105 | 0.8 | 2 |
| **BT30-AK6-70** | AK6 | 64 | 70 | 141 | 119 | 1.2 | 2 |
| **BT40-AK1-75** | AK1 | 19 | 75 | 107 | 80 | 1.0 | 2 |
| **BT40-AK1-105** | AK1 | 19 | 105 | 137 | 110 | 1.2 | 2 |
| **BT40-AK2-85** | AK2 | 24 | 85 | 120 | 93 | 1.1 | 2 |
| **BT40-AK2-115** | AK2 | 24 | 115 | 150 | 123 | 1.4 | 2 |
| **BT40-AK3-95** | AK3 | 31 | 95 | 135 | 108 | 1.2 | 2 |
| **BT40-AK3-125** | AK3 | 31 | 125 | 165 | 138 | 1.5 | 2 |
| **BT40-AK4-85** | AK4 | 39 | 85 | 132 | 105 | 1.3 | 2 |
| **BT40-AK4-130** | AK4 | 39 | 130 | 177 | 150 | 1.9 | 2 |
| **BT40-AK4-175** | AK4 | 39 | 175 | 222 | 195 | 2.2 | 2 |
| **BT40-AK5-50** | AK5 | 50 | 50 | 107 | 80 | 1.2 | 2 |
| **BT40-AK5-75** | AK5 | 50 | 75 | 132 | 105 | 1.3 | 2 |
| **BT40-AK5-125** | AK5 | 50 | 125 | 182 | 155 | 2.4 | 2 |
| **BT40-AK5-175** | AK5 | 50 | 175 | 232 | 205 | 3.0 | 2 |
| **BT40-AK6-65** | AK6 | 50 | 65 | 136 | 109 | 1.3 | 2 |
| **BT40-AK6-115** | AK6 | 64 | 115 | 186 | 159 | 2.7 | 2 |
| **BT40-AK6-165** | AK6 | 64 | 165 | 236 | 209 | 3.9 | 2 |
| **BT50-AK1-115** | AK1 | 19 | 115 | 147 | 75 | 4.0 | **1** |
| **BT50-AK2-85** | AK2 | 24 | 85 | 120 | 82 | 3.8 | 2 |
| **BT50-AK2-110** | AK2 | 24 | 110 | 145 | 107 | 3.9 | 2 |
| **BT50-AK3-90** | AK3 | 31 | 90 | 130 | 92 | 3.9 | 2 |
| **BT50-AK3-125** | AK3 | 31 | 125 | 165 | 127 | 4.1 | 2 |
| **BT50-AK4-115** | AK4 | 39 | 115 | 162 | 124 | 4.3 | 2 |
| **BT50-AK4-145** | AK4 | 39 | 145 | 192 | 154 | 4.5 | 2 |
| **BT50-AK4-175** | AK4 | 39 | 175 | 222 | 184 | 4.8 | 2 |
| **BT50-AK5-65** | AK5 | 50 | 65 | 122 | 84 | 3.9 | 2 |
| **BT50-AK5-105** | AK5 | 50 | 105 | 162 | 124 | 4.5 | 2 |
| **BT50-AK5-150** | AK5 | 50 | 150 | 207 | 169 | 5.1 | 2 |
| **BT50-AK5-180** | AK5 | 50 | 180 | 237 | 199 | 5.5 | 2 |
| **BT50-AK5-240** | AK5 | 50 | 240 | 297 | 259 | 6.2 | 2 |
| **BT50-AK6-95** | AK6 | 64 | 95 | 166 | 128 | 4.5 | 2 |
| **BT50-AK6-170** | AK6 | 64 | 170 | 241 | 203 | 6.3 | 2 |
| **BT50-AK6-230** | AK6 | 64 | 230 | 301 | 263 | 7.7 | 2 |
| **BT50-AK6-290** | AK6 | 64 | 290 | 361 | 323 | 9.0 | 2 |
| **BT50-AK7-170** | AK7 | 90 | 170 | 257 | 219 | 6.1 | 2 |
| **BT50-AK7-230** | AK7 | 90 | 230 | 317 | 279 | 11.8 | 2 |
| **BT50-AK7-290** | AK7 | 90 | 290 | 377 | 339 | 14.6 | 2 |
| **BT50-AK7-350** | AK7 | 90 | 350 | 437 | 399 | 17.4 | 2 |

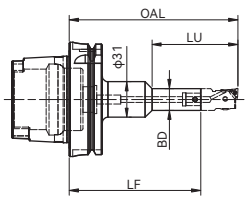
## BT Series Reinforced Boring Shank



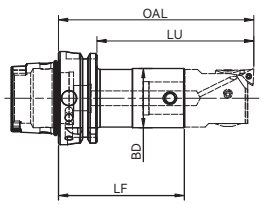

| Product code | Coupling | Dimensions (mm) | | | | | Weight (kg) |
|---|---|---|---|---|---|---|---|
| | | BD | LF | OAL | LU | LB2 | |
| **BT50-AK4-190-P46** | AK4 | 46 | 190 | 237 | 194 | 65 | 5.6 |
| **BT50-AK4-235-P46** | AK4 | 46 | 235 | 282 | 239 | 65 | 6.2 |
| **BT50-AK5-240-P61** | AK5 | 61 | 240 | 297 | 254 | 80 | 8.2 |
| **BT50-AK5-300-P61** | AK5 | 61 | 300 | 357 | 314 | 80 | 9.6 |
| **BT50-AK6-260-P72** | AK6 | 72 | 260 | 332 | 289 | 100 | 10.3 |
| **BT50-AK6-315-P72** | AK6 | 72 | 315 | 386 | 343 | 100 | 12.2 |
| **BT50-AK6-290-P80** | AK6 | 80 | 290 | 361 | 318 | 100 | 13.2 |
| **BT50-AK6-350-P80** | AK6 | 80 | 350 | 421 | 378 | 100 | 15.2 |

## HSK-A Boring Shank

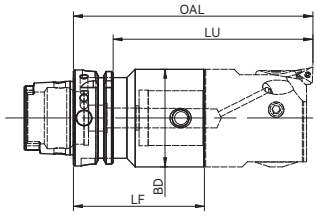
Style 1




Style 2

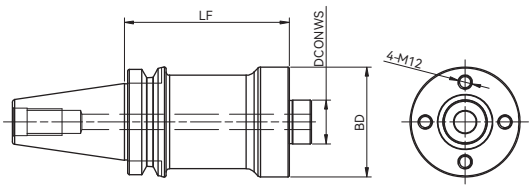



Style 3



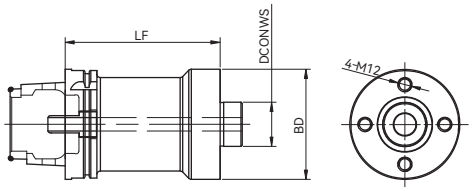

| Product code | Coupling | Dimensions (mm) | | | | Weight (kg) | Style |
|---|---|---|---|---|---|---|---|
| | | BD | LF | OAL | LU | | |
| **HSK-A63-AK1-75** | AK1 | 19 | 75 | 107 | 81 | 0.9 | 2 |
| **HSK-A63-AK1-100** | AK1 | 19 | 100 | 132 | 106 | 1.3 | 2 |
| **HSK-A63-AK2-85** | AK2 | 24 | 85 | 120 | 94 | 1.7 | 2 |
| **HSK-A63-AK2-100** | AK2 | 24 | 100 | 135 | 109 | 2.2 | 2 |
| **HSK-A63-AK3-95** | AK3 | 31 | 95 | 135 | 109 | 2.3 | 2 |
| **HSK-A63-AK3-125** | AK3 | 31 | 125 | 165 | 139 | 2.6 | 2 |
| **HSK-A63-AK4-85** | AK4 | 39 | 85 | 132 | 106 | 2.1 | 2 |
| **HSK-A63-AK4-130** | AK4 | 39 | 130 | 177 | 151 | 2.7 | 2 |
| **HSK-A63-AK5-75** | AK5 | 50 | 75 | 132 | 106 | 2.3 | 2 |
| **HSK-A63-AK5-135** | AK5 | 50 | 135 | 192 | 166 | 2.8 | 2 |
| **HSK-A63-AK6-75** | AK6 | 64 | 75 | 146 | 120 | 2.3 | 3 |
| **HSK-A63-AK6-115** | AK6 | 64 | 115 | 186 | 160 | 2.8 | 3 |
| **HSK-A63-AK6-165** | AK6 | 64 | 165 | 236 | 210 | 3.1 | 3 |
| **HSK-A100-AK1-105** | AK1 | 19 | 105 | 137 | 75 | 2.6 | 1 |
| **HSK-A100-AK2-115** | AK2 | 24 | 115 | 150 | 121 | 2.7 | 2 |
| **HSK-A100-AK3-125** | AK3 | 31 | 125 | 165 | 136 | 2.9 | 2 |
| **HSK-A100-AK4-120** | AK4 | 39 | 120 | 167 | 138 | 3.1 | 2 |
| **HSK-A100-AK4-180** | AK4 | 39 | 180 | 227 | 198 | 3.7 | 2 |
| **HSK-A100-AK5-110** | AK5 | 50 | 110 | 167 | 138 | 3.5 | 2 |
| **HSK-A100-AK5-185** | AK5 | 50 | 185 | 242 | 213 | 4.6 | 2 |
| **HSK-A100-AK6-95** | AK6 | 64 | 95 | 166 | 137 | 3.6 | 2 |
| **HSK-A100-AK6-170** | AK6 | 64 | 170 | 241 | 212 | 5.5 | 2 |
| **HSK-A100-AK6-230** | AK6 | 64 | 230 | 301 | 272 | 7.1 | 2 |

## Bridge Boring Shank




| Product code | Coupling | Dimensions (mm) | | | Fastening Screw | Weight (kg) |
|---|---|---|---|---|---|---|
| | | BD | DCONWS | LF | | |
| **BT40-BA40-70** | BA40 | 100 | 40 | 70 | SH120350 | 2.8 |
| **BT50-BA40-100** | BA40 | 100 | 40 | 100 | | 6.1 |
| **BT50-BA40-150** | BA40 | 100 | 40 | 150 | | 7.9 |
| **BT50-BA40-200** | BA40 | 100 | 40 | 200 | | 9.7 |
| **BT50-BA40-250** | BA40 | 100 | 40 | 250 | | 10.9 |
| **BT50-BA40-300** | BA40 | 100 | 40 | 300 | | 12.5 |
| **BT50-BA40-350** | BA40 | 100 | 40 | 350 | | 13.9 |

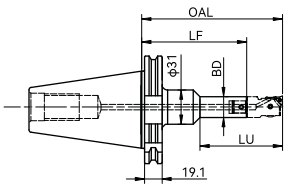
## HSK-A100 Bridge Boring Shank



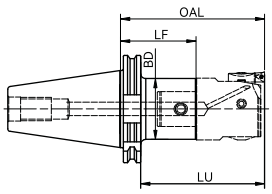

| Product code | Coupling | Dimensions (mm) | | | Fastening Screw | Weight (kg) |
|---|---|---|---|---|---|---|
| | | BD | DCONWS | LF | | |
| **HSK-A100-BA40-80** | BA40 | 100 | 40 | 80 | SH120350 | 5.1 |
| **HSK-A100-BA40-150** | BA40 | 100 | 40 | 150 | | 7.3 |

## SK Series Boring Shank (DIN69871)

Style 1

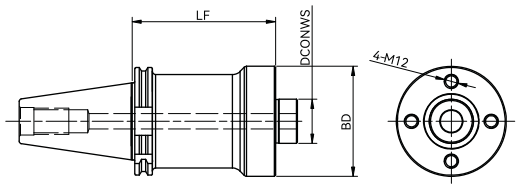



Style 2



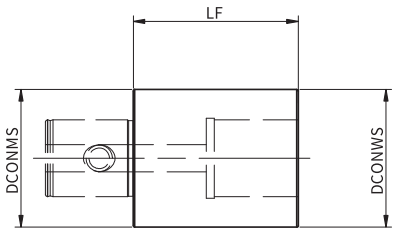

| Product code | Coupling | Dimensions (mm) | | | | Weight (kg) | Style |
|---|---|---|---|---|---|---|---|
| | | BD | LF | OAL | LU | | |
| **SK40-AK1-75** | AK1 | 19 | 75 | 107 | 88 | 0.8 | 2 |
| **SK40-AK2-85** | AK2 | 24 | 85 | 120 | 101 | 1.0 | 2 |
| **SK40-AK3-95** | AK3 | 31 | 95 | 135 | 115 | 1.0 | 2 |
| **SK40-AK3-125** | AK3 | 31 | 125 | 165 | 145 | 1.3 | 2 |
| **SK40-AK4-85** | AK4 | 39 | 85 | 132 | 112 | 1.2 | 2 |
| **SK40-AK4-130** | AK4 | 39 | 130 | 177 | 157 | 1.8 | 2 |
| **SK40-AK5-75** | AK5 | 50 | 75 | 132 | 112 | 1.2 | 2 |
| **SK40-AK5-125** | AK5 | 50 | 125 | 182 | 162 | 2.3 | 2 |
| **SK40-AK6-65** | AK6 | 64 | 65 | 136 | 116 | 1.2 | 2 |
| **SK40-AK6-115** | AK6 | 64 | 115 | 186 | 166 | 2.6 | 2 |
| **SK40-AK6-165** | AK6 | 64 | 165 | 236 | 216 | 3.8 | 2 |
| **SK50-AK1-115** | AK1 | 19 | 115 | 147 | 75 | 3.2 | 1 |
| **SK50-AK2-110** | AK2 | 24 | 110 | 145 | 125 | 3.1 | 2 |
| **SK50-AK3-90** | AK3 | 31 | 90 | 130 | 110 | 3.2 | 2 |
| **SK50-AK3-125** | AK3 | 31 | 125 | 165 | 145 | 3.4 | 2 |
| **SK50-AK4-115** | AK4 | 39 | 115 | 162 | 142 | 3.8 | 2 |
| **SK50-AK4-145** | AK4 | 39 | 145 | 192 | 172 | 4.0 | 2 |
| **SK50-AK5-105** | AK5 | 50 | 105 | 162 | 142 | 3.9 | 2 |
| **SK50-AK5-150** | AK5 | 50 | 150 | 207 | 187 | 4.5 | 2 |
| **SK50-AK6-95** | AK6 | 64 | 95 | 166 | 146 | 4.0 | 2 |
| **SK50-AK6-170** | AK6 | 64 | 170 | 241 | 221 | 5.8 | 2 |
| **SK50-AK6-230** | AK6 | 64 | 230 | 301 | 281 | 7.2 | 2 |

## SK Bridge Boring Shank



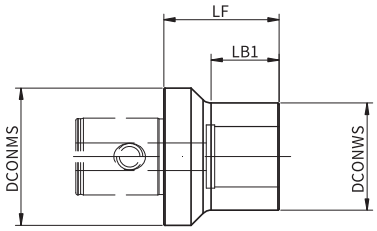

| Product code | Coupling | Dimensions (mm) | | | Fastening Screw | Weight (kg) |
|---|---|---|---|---|---|---|
| | | BD | DCONWS | LF | | |
| **SK40-BA40-70** | BA40 | 100 | 40 | 70 | SH120350 | 2.8 |
| **SK50-BA40-80** | BA40 | 100 | 40 | 80 | | 5.1 |
| **SK50-BA40-150** | BA40 | 100 | 40 | 150 | | 7.3 |
| **SK50-BA40-200** | BA40 | 100 | 40 | 200 | | 9.4 |
| **SK50-BA40-250** | BA40 | 100 | 40 | 250 | | 10.5 |

## Extended Bars




| Product code | Dimensions (mm) | | | Weight (kg) |
|---|---|---|---|---|
| | DCONMS | DCONWS | LF | |
| **AK11-30** | 19 | 19 | 30 | 0.07 |
| **AK22-30** | 24 | 24 | 30 | 0.1 |
| **AK33-30** | 31 | 31 | 30 | 0.15 |
| **AK44-45** | 39 | 39 | 45 | 0.4 |
| **AK44-60** | 39 | 39 | 60 | 0.53 |
| **AK55-60** | 50 | 50 | 60 | 0.8 |
| **AK55-90** | 50 | 50 | 90 | 1.25 |
| **AK66-60** | 64 | 64 | 60 | 1.4 |
| **AK66-100** | 64 | 64 | 100 | 2.33 |

## Reducing Bars




| Product code | Dimensions (mm) | | | | Weight (kg) |
|---|---|---|---|---|---|
| | DCONMS | DCONWS | LF | LB1 | |
| **AK21-36** | 24 | 19 | 36 | 30 | 0.1 |
| **AK31-41** | 31 | 19 | 41 | 30 | 0.15 |
| **AK32-37** | 31 | 24 | 37 | 25 | 0.15 |
| **AK41-58** | 39 | 19 | 58 | 40 | 0.3 |
| **AK42-50** | 39 | 24 | 50 | 36 | 0.3 |
| **AK43-50** | 39 | 31 | 50 | 37 | 0.35 |
| **AK51-60** | 50 | 19 | 60 | 40 | 0.45 |
| **AK52-54** | 50 | 24 | 54 | 35 | 0.45 |
| **AK52-75** | 50 | 24 | 75 | 55 | 0.47 |
| **AK53-47** | 50 | 31 | 47 | 29 | 0.5 |
| **AK53-75** | 50 | 31 | 75 | 55 | 0.57 |
| **AK54-42** | 50 | 39 | 42 | 25 | 0.5 |
| **AK54-75** | 50 | 39 | 75 | 55 | 0.66 |
| **AK61-70** | 64 | 19 | 70 | 40 | 0.9 |
| **AK62-63** | 64 | 24 | 63 | 45 | 0.7 |
| **AK62-90** | 64 | 24 | 90 | 72 | 0.72 |
| **AK63-56** | 64 | 31 | 56 | 39 | 0.75 |
| **AK63-90** | 64 | 31 | 90 | 73 | 0.88 |
| **AK64-51** | 64 | 39 | 51 | 35 | 0.85 |
| **AK64-90** | 64 | 39 | 90 | 75 | 1.08 |
| **AK65-41** | 64 | 50 | 41 | 25 | 0.85 |
| **AK65-90** | 64 | 50 | 90 | 74 | 1.45 |

## ISO Cartridges Denomination System

| S | C | L | P | R | 08 | CA | - | 06 |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | - | 8 |

### 1-Insert Clamping

S: Screw clamping
M: Top and pin hole clamping

### 2-Insert Shape

C:


### 3-Cartridge Type

L


F


G


U


J


R


T


S


### 4-Insert Clearance Angle

C:


P:


### 5-Cartridge Direction

R: Right-hand
L: Left-hand

### 6-Cartridge Height

10=10mm

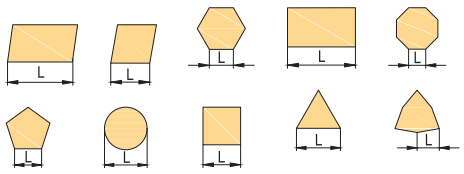
12=12mm

### 7-Cartridge Series Code

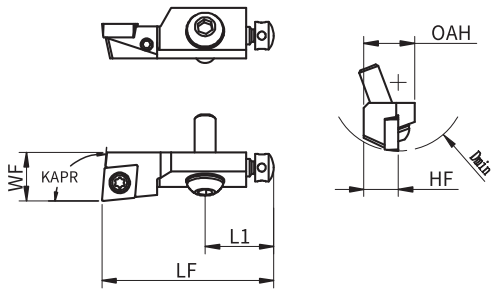
CA---Cartridge

### 8-Cutting Edge Length

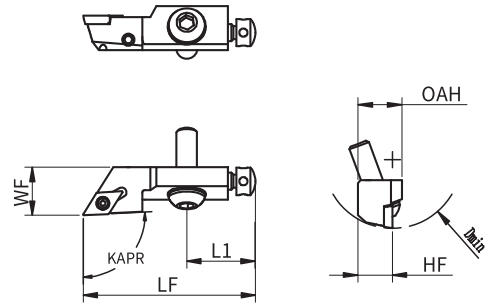
| Incircle Dia. (mm) | Insert Shape C | D | R | S | T | V | W | K |
|---|---|---|---|---|---|---|---|---|
| 3.97 | | | | | 06 | | 02 | |
| 5.0 | | | 05 | | | | | |
| 5.56 | | | | | 09 | | | |
| 6.0 | | 06 | | | | | | |
| 6.35 | 06 | 07 | | | 11 | 11 | 04 | |
| 8.0 | | | 08 | | | | | |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 | 06 | 16 |
| 10.0 | | | 10 | | | | | |
| 12.0 | | | 12 | | | | | |
| 12.7 | 12 | 15 | 12 | 12 | 22 | 22 | 08 | |
| 15.875 | 16 | | 15 | 15 | 27 | | | |
| 16.0 | | | 16 | | | | | |



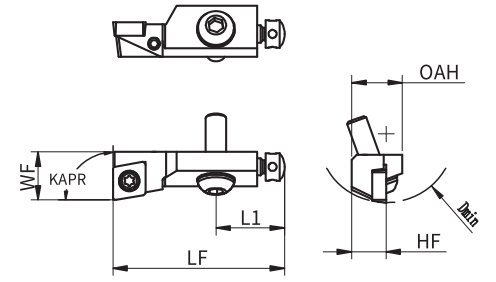
## ISO Screw Clamping Cartridge




| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **SCLCR08CA-06** | **SCLCL08CA-06** | 8 | 10 | 32 | 10 | 17 | 25 | 95° | CC__ 0602__ |
| **SCLCR10CA-09** | **SCLCL10CA-09** | 10 | 14 | 50 | 15 | 20 | 40 | | CC__ 09T3__ |
| **SCLCR12CA-12** | **SCLCL12CA-12** | 12 | 20 | 55 | 20 | 20 | 50 | | CC__ 1204__ |
| **SCLCR16CA-12** | **SCLCL16CA-12** | 16 | 25 | 63 | 21 | 25 | 60 | | CC__ 1204__ |

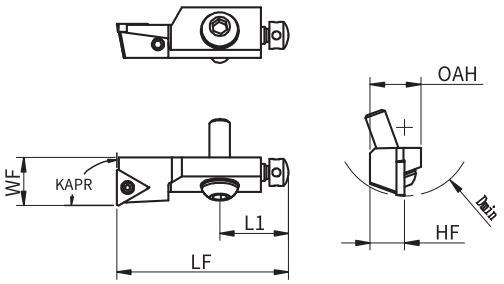



| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **SDJCR08CA-07** | **SDJCL08CA-07** | 8 | 14 | 50 | 15 | 20 | 25 | 93° | DC__ 0702__ |
| **SDJCR10CA-07** | **SDJCL10CA-07** | 10 | 14 | 50 | 15 | 20 | 40 | | DC__ 0702__ |
| **SDJCR10CA-11** | **SDJCL10CA-11** | 10 | 14 | 50 | 15 | 20 | 40 | | DC__ 11T3__ |
| **SDJCR12CA-11** | **SDJCL12CA-11** | 12 | 20 | 55 | 20 | 20 | 50 | | DC__ 11T3__ |

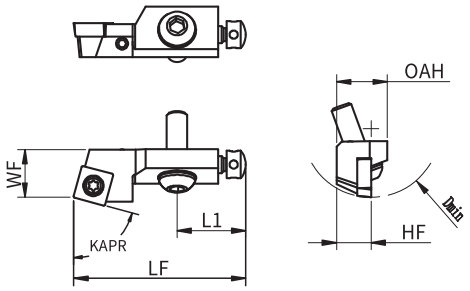



| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **SCFCR08CA-06** | **SCFCL08CA-06** | 8 | 10 | 32 | 10 | 17 | 25 | 90° | CC__ 0602__ |
| **SCFCR10CA-06** | **SCFCL10CA-06** | 10 | 14 | 50 | 15 | 20 | 40 | | CC__ 0602__ |
| **SCFCR10CA-09** | **SCFCL10CA-09** | 10 | 14 | 50 | 15 | 20 | 40 | | CC__ 09T3__ |
| **SCFCR12CA-09** | **SCFCL12CA-09** | 12 | 20 | 55 | 20 | 20 | 50 | | CC__ 09T3__ |
| **SCFCR12CA-12** | **SCFCL12CA-12** | 12 | 20 | 55 | 20 | 20 | 50 | | CC__ 1204__ |
| **SCFCR16CA-12** | **SCFCL16CA-12** | 16 | 25 | 63 | 20 | 25 | 60 | | CC__ 1204__ |

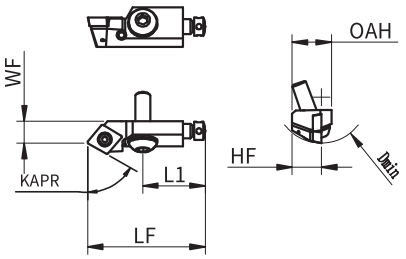
## ISO Screw Clamping Cartridge




| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **STFCR08CA-09** | **STFCL08CA-09** | 8 | 10 | 32 | 10 | 17 | 25 | 90° | TC__ 0902__ |
| **STFCR10CA-11** | **STFCL10CA-11** | 10 | 14 | 50 | 15 | 20 | 40 | | TC__ 1102__ |
| **STFCR12CA-16** | **STFCL12CA-16** | 12 | 20 | 55 | 20 | 20 | 50 | | TC__ 16T3__ |
| **STFCR16CA-16** | **STFCL16CA-16** | 16 | 25 | 63 | 21 | 25 | 60 | | TC__ 16T3__ |

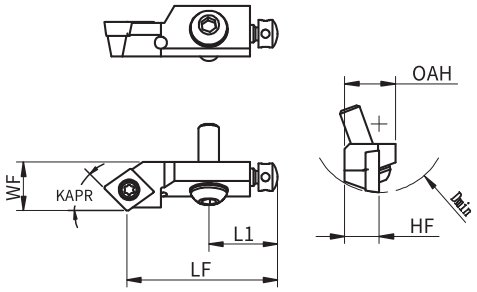



| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **SSRCR10CA-09** | **SSRCL10CA-09** | 10 | 14 | 50 | 15 | 20 | 40 | 75° | SC__ 09T3__ |
| **SSRCR12CA-09** | **SSRCL12CA-09** | 12 | 20 | 55 | 20 | 20 | 50 | | SC__ 09T3__ |
| **SSRCR12CA-12** | **SSRCL12CA-12** | 12 | 20 | 55 | 20 | 20 | 50 | | SC__ 1204__ |
| **SSRCR16CA-12** | **SSRCL16CA-12** | 16 | 25 | 63 | 21 | 25 | 55 | | SC__ 1204__ |

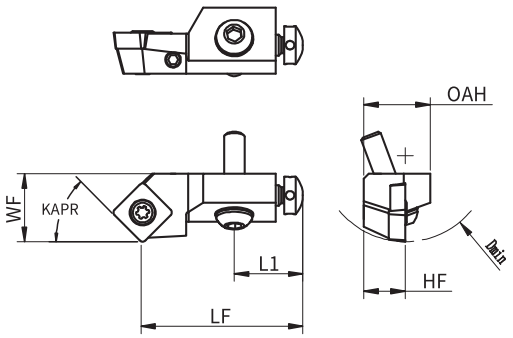



| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **SCTCR08CA-06** | **SCTCL08CA-06** | 8 | 6 | 32 | 10 | 17 | 25 | 60° | CC__ 0602__ |
| **SCTCR10CA-09** | **SCTCL10CA-09** | 10 | 9 | 50 | 15 | 20 | 40 | | CC__ 09T3__ |

## ISO Screw Clamping Cartridge




| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **SCSCR08CA-06** | **SCSCL08CA-06** | 8 | 10 | 28 | 10 | 17 | 25 | 45° | CC__ 0602__ |
| **SCSCR10CA-09** | **SCSCL10CA-09** | 10 | 14 | 44 | 44 | 20 | 40 | | CC__ 09T3__ |




| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | | Approach Angle KAPR | Insert (Option) |
|---|---|---|---|---|---|---|---|---|---|
| | | HF | WF | LF | OAH | L1 | Dmin | | |
| **SSSCR10CA-09** | **SSSCL10CA-09** | 10 | 14 | 44 | 15 | 20 | 40 | 45° | SC__ 09T3__ |
| **SSSCR12CA-09** | **SSSCL12CA-09** | 12 | 20 | 47 | 20 | 20 | 50 | | SC__ 09T3__ |
| **SSSCR12CA-12** | **SSSCL12CA-12** | 12 | 20 | 47 | 20 | 20 | 50 | | SC__ 1204__ |
| **SSSCR16CA-12** | **SSSCL16CA-12** | 16 | 25 | 53 | 21 | 25 | 60 | | SC__ 1204__ |

## Fine Adjustment Cartridge Denomination System

| AFB | - | C | 90 | 16 | - | C | C | 06 | R |
|---|---|---|---|---|---|---|---|---|---|
| 1 | - | 2 | 3 | 4 | - | 5 | 6 | 7 | 8 |

### 1-Fine Boring Code

AFB--Series name
Achteck Fine Boring

### 3-Approach Angle Kr

90---Approach angle 90°
95---Approach angle 95°
120--Approach angle 120°

### 5-Insert Shape

C:


### 6-Insert Clearance Angle

C:


P:


### 8-Cartridge Direction

R: Right-hand
L: Left-hand

### 2-Fine Adjustment Cartridge Type

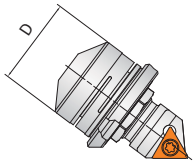
Type A:
With an angle installation

Type B:
perpendicular installation

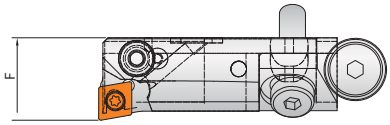
Type C:

### 4-Cartridge Dimension

D = 16mm

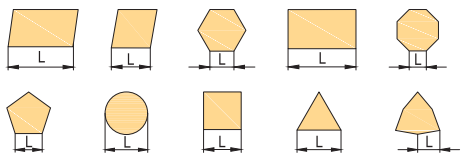



F= 16mm



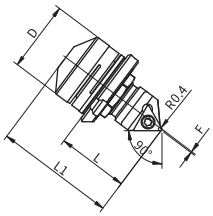

### 7-Length of Cutting Edge

| Incircle Dia. (mm) | Insert Shape C | D | R | S | T | V | W | K |
|---|---|---|---|---|---|---|---|---|
| 3.97 | | | | | 06 | | 02 | |
| 5.0 | | | 05 | | | | | |
| 5.56 | | | | | 09 | | | |
| 6.0 | | 06 | | | | | | |
| 6.35 | 06 | 07 | | | 11 | 11 | 04 | |
| 8.0 | | | 08 | | | | | |
| 9.525 | 09 | 11 | 09 | 09 | 16 | 16 | 06 | 16 |
| 10.0 | | | 10 | | | | | |
| 12.0 | | | 12 | | | | | |
| 12.7 | 12 | 15 | 12 | 12 | 22 | 22 | 08 | |
| 15.875 | 16 | | 15 | 15 | 27 | | | |
| 16.0 | | | 16 | | | | | |

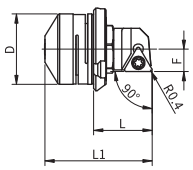


## A/B Type Fine Adjustment Cartridge

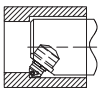
A-type Fine Adjustment Cartridge

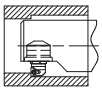



A-type Fine Adjustment Cartridge--installation with an angle




B-Type Fine Adjustment Cartridge---perpendicular installation

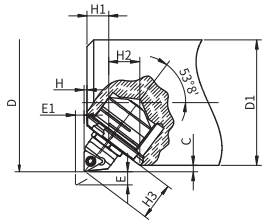
| Installation method | Right-hand | Left-hand | Approach Angle | Dmin | D | L1 | L | F | Insert | Screw & Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
|  Installation with an angle | **AFB-A9016-CC06R** | **AFB-A9016-CC06L** | 90° | 25.5 | 16 | 25.15 | 14.3 | 0.45 | CC__ 0602__ | ST025060 FT-T8 |
| | **AFB-A9016-TB06R** | **AFB-A9016-TB06L** | | 24.8 | 16 | 25.0 | 14.3 | 0.49 | TB__ 0601__ | ST020040 FT-T6 |
| | **AFB-A9020-TC09R** | **AFB-A9020-TC09L** | | 32.5 | 20 | 33.7 | 19.1 | 0.9 | TC__ 0902__ | ST022055 FT-T6 |
| | **AFB-A9020-TP09R** | **AFB-A9020-TP09L** | | | 20 | 33.7 | 19.1 | 0.9 | TP__ 0902__ | ST025060 FT-T8 |
| | **AFB-A9022-TC11R** | **AFB-A9022-TC11L** | | 42.0 | 22 | 45.3 | 23.0 | 1.1 | TC__ 1102__ | ST025060 FT-T8 |
| | **AFB-A9022-TP11R** | **AFB-A9022-TP11L** | | | 22 | 45.3 | 23.0 | 1.1 | TP__ 1103__ | ST030070 FT-T10 |
| | **AFB-A9032-TC16R** | **AFB-A9032-TC16L** | | 59.5 | 32 | 62.3 | 33.3 | 1.2 | TC__ 16T3__ | ST040100 FT-T15 |

| Installation method | Right-hand | Left-hand | Approach Angle | Dmin | D | L1 | L | F | Insert | Screw & Wrench |
|---|---|---|---|---|---|---|---|---|---|---|
|  Perpendicular installation | **AFB-B9016-CC06R** | **AFB-B9016-CC06L** | 90° | 27.0 | 16 | 24.2 | 13.3 | 5.1 | CC__ 0602__ | ST025060 FT-T8 |
| | **AFB-B9016-TB06R** | **AFB-B9016-TB06L** | | 27.0 | 16 | 24.2 | 13.3 | 5.1 | TB__ 0601__ | ST020040 FT-T6 |
| | **AFB-B9020-TC09R** | **AFB-B9020-TC09L** | | 36.5 | 20 | 32.9 | 18.3 | 6.3 | TC__ 0902__ | ST022055 FT-T6 |
| | **AFB-B9020-TP09R** | **AFB-B9020-TP09L** | | | 20 | 32.9 | 18.3 | 6.3 | TP__ 0902__ | ST025060 FT-T8 |
| | **AFB-B9022-TC11R** | **AFB-B9022-TC11L** | | 48.5 | 22 | 44.3 | 22.1 | 7.2 | TC__ 1102__ | ST025060 FT-T8 |
| | **AFB-B9022-TP11R** | **AFB-B9022-TP11L** | | | 22 | 44.3 | 22.1 | 7.2 | TP__ 1103__ | ST030070 FT-T10 |
| | **AFB-B9032-TC16R** | **AFB-B9032-TC16L** | | 68.4 | 32 | 62.7 | 32.0 | 10.3 | TC__ 16T3__ | ST040100 FT-T15 |

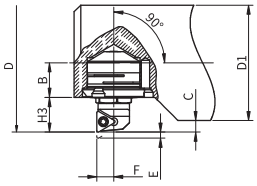
- For cartridge installed in an angle, axial movement = radial movement/tan53° 8′ .
- Never loosen the cartridge beyond the adjustment range indicated by the adjustment wrench, as exceeding the adjustment range may result in damage to the unit.
- Type A/B cartridge is self-locking, so there is no need to unlock it before size adjustment and no need to lock it after adjustment.
- The fine adjustment cartridge has a dial, and the radial adjustment size is ∅0.02mm per minute scale.

## Fine Adjustment Cartridge Instruction

Type A/B fine adjustment cartridge dimension




A-type Fine Adjustment Cartridge---
Installation with an angle



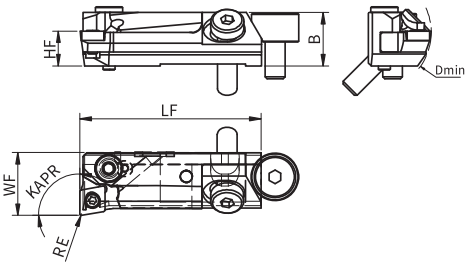

B-type Fine Adjustment Cartridge---
Perpendicular installation

| Installation Method | Insert | | D1 | D | C | E | E1 | H3 | H | H1 | H2 | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model | RE | min | min | min | max | max | min | | | | |
| Installation with an angle | CC__ 06 | 0.2 | 22.0 | 26.2 | 1.70 | 2.0 | 1.5 | 11.0 | 0.5 | 6.6 | 9.55 | 0.40 |
| | | 0.4 | | 25.9 | 1.65 | | | 10.7 | | | | 0.40 |
| | | 0.8 | | 25.3 | 1.60 | | | 10.1 | | | | 0.45 |
| | TB__ 06 | 0.2 | | 25.7 | 1.50 | | | 10.9 | | | | 0.40 |
| | | 0.4 | | 25.4 | 1.45 | | | 10.6 | | | | 0.40 |
| | | 0.8 | | 24.8 | 1.40 | | | 10.0 | | | | 0.45 |
| | T__ 09 | 0.2 | 28.5 | 33.4 | 2.45 | 2.8 | 2.1 | 14.9 | | 9.4 | 12.15 | 0.95 |
| | | 0.4 | | 33.1 | 2.30 | | | 14.5 | | | | 1.00 |
| | | 0.8 | | 32.5 | 2.00 | | | 13.7 | | | | 1.10 |
| | T__ 11 | 0.2 | 38.0 | 42.9 | 2.45 | 4.8 | 3.6 | 17.6 | | 11.2 | 14.85 | 1.15 |
| | | 0.4 | | 42.6 | 2.30 | | | 17.2 | | | | 1.20 |
| | | 0.8 | | 42.0 | 2.00 | | | 16.4 | | | | 1.30 |
| | TC__ 16 | 0.2 | 55.0 | 60.6 | 2.80 | 8.0 | 6.0 | 26.2 | | 16.65 | 12.70 | 1.30 |
| | | 0.4 | | 60.0 | 2.50 | | | 25.4 | | | | 1.40 |
| | | 0.8 | | 59.4 | 2.20 | | | 24.6 | | | | 1.50 |

| Installation Method | Insert | | D1 | D | C | E | B | H3 | F |
|---|---|---|---|---|---|---|---|---|---|
| | Model | RE | min | min | min | max | min | min | |
| Perpendicular installation | CC__ 06 | 0.2 | 26.0 | 27.9 | 0.60 | 2.5 | 3.6 | 9.80 | 5.1 |
| | | 0.4 | | 27.6 | 0.55 | | | 9.60 | |
| | | 0.8 | | 27.0 | 0.50 | | | 9.10 | |
| | TB__ 06 | 0.2 | 24.0 | 25.9 | 0.60 | | | 8.80 | |
| | | 0.4 | | 25.6 | 0.55 | | | 8.60 | |
| | | 0.8 | | 25.0 | 0.50 | | | 8.10 | |
| | T__ 09 | 0.2 | 34.5 | 37.4 | 1.45 | 3.5 | 4.55 | 13.95 | 6.3 |
| | | 0.4 | | 37.1 | 1.30 | | | 13.60 | |
| | | 0.8 | | 36.5 | 1.00 | | | 12.90 | |
| | T__ 11 | 0.2 | 46.5 | 49.7 | 1.45 | 6.0 | 7.75 | 16.75 | 7.2 |
| | | 0.4 | | 49.1 | 1.30 | | | 16.40 | |
| | | 0.8 | | 48.5 | 1.00 | | | 15.70 | |
| | TC__ 16 | 0.2 | 67.0 | 69.6 | 1.30 | 10.0 | 9.4 | 25.00 | 10.3 |
| | | 0.4 | | 69.0 | 1.00 | | | 24.30 | |
| | | 0.8 | | 68.4 | 0.70 | | | 23.60 | |

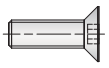
## C-Type Fine Adjustment Cartridge

Right hand cartridge



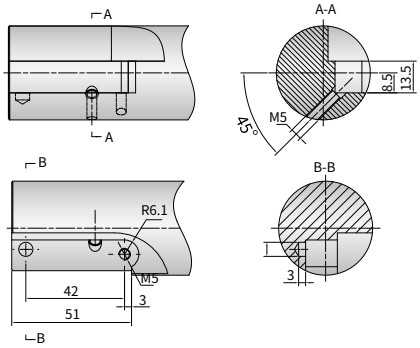

| Right-hand Cartridge | Left-hand Cartridge | Dimensions (mm) | | | | | Approach angle KAPR | Insert | Screw & Wrench |
|---|---|---|---|---|---|---|---|---|---|
| | | Dmin | LF | WF | B | HF | | | |
| **AFB-C9016-CC06R** | **AFB-C9016-CC06L** | 28 | 45.8 | 16 | 13.5 | 8.5 | 90° | CC__ 060204 | ST025060 FT-T8 |
| **AFB-C9516-CC06R** | **AFB-C9516-CC06L** | | | | | | 95° | CC__ 060204 | |
| **AFB-C9016-TP09R** | **AFB-C9016-TP09L** | | | | | | 90° | TP__ 090204 | |
| **AFB-C9516-TP09R** | **AFB-C9516-TP09L** | | | | | | 95° | TP__ 090204 | |
| **AFB-C12016-DC07R** | **AFB-C12016-DC07L** | 28 | 47.5 | 16 | | | 120° | DC__ 070204 | |
| **AFB-C9020-TC11R** | **AFB-C9020-TC11L** | 36 | 45.8 | 20 | | | 90° | TC__ 110204 | |
| **AFB-C9520-TC11R** | **AFB-C9520-TC11L** | | | | | | 95° | TC__ 110204 | |
| **AFB-C9020-TP11R** | **AFB-C9020-TP11L** | | | | | | 90° | TP__ 110304 | ST030070 FT-T10 |
| **AFB-C9520-TP11R** | **AFB-C9520-TP11L** | | | | | | 95° | TP__ 110304 | |

- Please read the Type C adjustment instruction before making adjustments to avoid damage to the parts.
- When TP_ _ 0902 carbide insert is selected, the hole diameter of the insert screw must be larger than 2.8.
- Fine adjustment accuracy is ⌀0.01mm in diameter.
- Axial adjustment movement is 0-1mm; radial adjustment movement is 0- ⌀0.6mm.

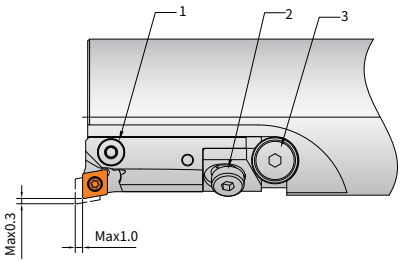
| Axial adjustment block | Axial adjustment screw | Lock screw | Cartridge locking wrench | Radial adjustment wrench | Axial adjustment wrench |
|---|---|---|---|---|---|
| |  | | | | |
| ASV-12H | AH050200 | SH050200 | LT-H4 | LT-H2.5 | LT-H3 |

## Fine Adjustment Cartridge Instruction

Detailed dimensions




The method of adjustment




1. Radial adjustmen
2. Cartridge set screw
3. Axial adjusting screw

Axial adjustment.

- Slightly loosen the cartridge locking screw (position 2 shown)
- Turn the axial adjustment screw clockwise (position 3 shown); move the cartridge forward to the requested size
- Lock the cartridge screw (position 2 shown)

Note: If the cartridge needs to be adjusted backward in axial, loosen the cartridge locking screw and move the cartridge to the last position, then adjust the position 3 shown to the requested size

Radial adjustment.

- Turn the radial adjustment screw clockwise (position 1 shown); the tool diameter becomes larger ( ∅0.01mm per scale)
- Turn the radial adjustment screw counterclockwise (position 1 shown); the tool diameter becomes smaller ( ∅0.01mm per scale)

## Boring Insert

| | S/N | Insert | Workpiece material | Insert grade | Description | Stock |
|---|---|---|---|---|---|---|
| CC_ _ 0602_ _ | 1 | **CCMT 060204E-PC2** | Steel | AC152P | Coated carbide insert (P05-P15) | ● |
| | 2 | **CCMT 060204E-PC2** | | AC252P | Coated carbide insert (P20-P35) | ● |
| | 3 | **CCMT 060204E-PC2** | Low alloyed steel/ stainless steel | AP301M | Coated carbide insert (M15-M35) | ● |
| | 4 | **CCMT 060204E-KC2** | Cast iron | AC102K | Coated carbide insert (K05-K15) | ● |
| | 5 | **CCMT 060204E-KC2** | | AC202K | Coated carbide insert (K10-K30) | ● |
| | 6 | **CCGW 060204-S01020-SL-2** | | PB90 | CBN Insert (K01-K20) | ○ |
| | 7 | **CCGT 060204F-NC2** | Aluminium | AW100K | Carbide insert | ● |
| | 8 | **CCGW 060204-1-NL-05** | | PD20 | Standard PCD insert | ○ |

| | S/N | Insert | Workpiece material | Insert grade | Description | Stock |
|---|---|---|---|---|---|---|
| CC_ _ 09T3_ _ | 1 | **CCMT 09T308-M2T** | Steel | AT202 | Cermet (P10-P20) | ● |
| | 2 | **CCMT 09T308E-PC2** | | AC152P | Coated carbide insert (P05-P15) | ● |
| | 3 | **CCMT 09T308E-PC2** | | AC252P | Coated carbide insert (P20-P35) | ● |
| | 4 | **CCMT 09T308E-PC2** | Low alloyed steel/ stainless steel | AP301M | Coated carbide insert (M15-M35) | ● |
| | 5 | **CCMT 09T308E-KC2** | Cast iron | AC102K | Coated carbide insert (K05-K15) | ● |
| | 6 | **CCMT 09T308E-KC2** | | AC202K | Coated carbide insert (K10-K30) | ● |
| | 7 | **CCGW 09T308-S01020-SL-2** | | PB90 | CBN (K01-K20) | ○ |
| | 8 | **CCGT 09T308F-NC2** | Aluminium | AW100K | Carbide insert | ● |
| | 9 | **CCGW 09T308-1-NL-05** | | PD20 | Standard PCD insert | ○ |
| | 10 | **CCGW 09T308-1-LL-05** | | PD20 | Straight-edge PCD insert | ○ |

| | S/N | Insert | Workpiece material | Insert grade | Description | Stock |
|---|---|---|---|---|---|---|
| CC_ _ 1204_ _ | 1 | **CCMT 120408E-PC2** | Steel | AT202 | Cermet (P10-P20) | ● |
| | 2 | **CCMT 120408E-PC2** | | AC152P | Coated carbide insert (P05-P15) | ● |
| | 3 | **CCMT 120408E-PC2** | | AC252P | Coated carbide insert (P20-P35) | ● |
| | 4 | **CCMT 120408E-PC2** | Low alloyed steel/ stainless steel | AP301M | Coated carbide insert (M15-M35) | ● |
| | 5 | **CCMT 120408E-KC2** | Cast iron | AC102K | Coated carbide insert (K05-K15) | ● |
| | 6 | **CCMT 120408E-KC2** | | AC202K | Coated carbide insert (K10-K30) | ● |
| | 7 | **CCGW 120408-S01020-SL-2** | | PB90 | CBN (K01-K20) | ○ |
| | 8 | **CCGT 120408F-NC2** | Aluminium | AW100K | Carbide insert | ● |
| | 9 | **CCGW 120408-1-NL-05** | | PD20 | Standard PCD insert | ○ |

| | S/N | Insert | Workpiece material | Insert grade | Description | Stock |
|---|---|---|---|---|---|---|
| TP_ _ 0802_ _ | 1 | **TPGT 080204FL-F** | Steel | AT200 | Cermet (P10-P20) | ● |
| | 2 | **TPEH 080204FL-F** | Low alloyed steel/ stainless steel | AP301M | Coated carbide insert (M15-M35) | ● |
| | 3 | **TPGW 080202-1-NL-05** | Aluminium | PD20 | Standard PCD insert | ○ |
| | 4 | **TPGW 080204-1-NL-05** | | PD20 | Standard PCD insert | ○ |

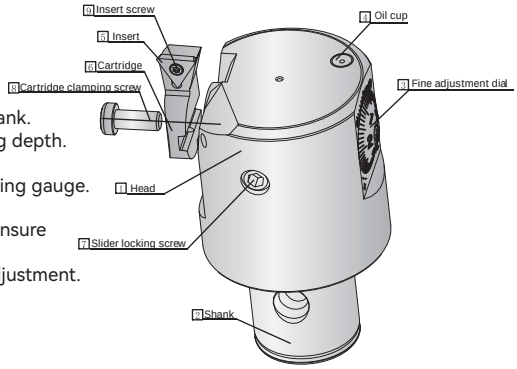
| | S/N | Insert | Workpiece material | Insert grade | Description | Stock |
|---|---|---|---|---|---|---|
| TC_ _ 1102_ _ | 1 | **TCMT 110204-M2T** | Steel | AT202 | Cermet (P10-P20) | ● |
| | 2 | **TCGT 110204FL-F** | | AT200 | Cermet (P10-P20) | ● |
| | 3 | **TCMT 110202E-PB1** | | AC250P | Coated carbide insert (P20-P35) | ● |
| | 4 | **TCMT 110204E-PB1** | | AC250P | Coated carbide insert (P20-P35) | ● |
| | 5 | **TCGT 110204F-UF** | Low alloyed steel/ stainless steel | AP301M | Coated carbide insert (M15-M35) | ● |
| | 6 | **TCGT 110204E-UF** | | AP301M | Coated carbide insert (M15-M35) | ● |
| | 7 | **TCMT 110204E-KC2** | Cast iron | AC202K | Coated carbide insert (K10-K30) | ● |
| | 8 | **TCGT 110204F-NC2** | Aluminium | AW100K | Carbide insert | ● |
| | 9 | **TCGW 110202-1-NL-05** | | PD20 | Standard PCD insert | ○ |
| | 10 | **TCGW 110204-1-NL-05** | | PD20 | Standard PCD insert | ○ |

● : Standard stock ○ : Made-to-Order

## AFB Series Fine Boring Head Operator's Manual

### Procedures of Use

Main Components of Fine Boring Head




Preparation:
1. Verify that the adjustment range of the fine boring head meets the requirement of the bore diameter to be machined.
2. Check (right figure) that all parts are in order; that the cartridge and insert locking screws are locked tight.
3. Clean and wipe the shank mounting hole and tighten the boring head mounting screw on the shank.
4. Confirm that the assembled boring tool meets the requirement of boring diameter and machining depth.

Step 1: Loosen the fine adjustment cartridge locking screw ⑦ on the tool change chuck or tool setting gauge.
Step 2: Rotate the fine adjustment dial ③ to preset to the size needed as indicated .
Step 3: When preset to the size needed, please make the fine adjustment in the same direction to ensure the fine adjustment accuracy.
Step 4: Tighten the fine adjustment cartridge locking screw ⑦ with proper force to complete the adjustment.

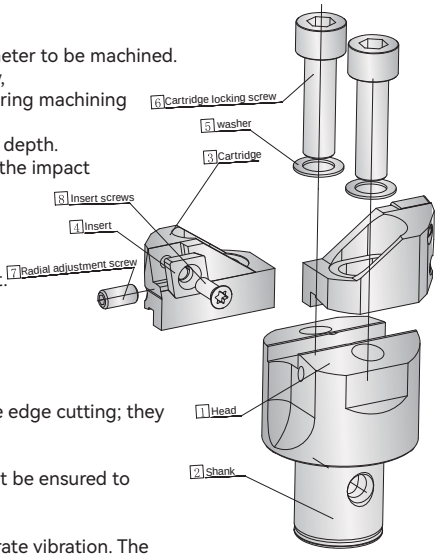
### Attention

1. Before machining, make sure all parts are locked properly to avoid damage to the boring head during machining.
2. The AFB series fine boring head rotated its internal precision screw to achieve radial movement of the cartridge. In case of excessive resistance or unable to turn the adjustment dial, stop the operation and check immediately (whether the adjustment cartridge screw is loose or it is out of the adjustment range of the boring head diameter).
3. For back-boring, use the right-hand insert and reverse rotate the machine spindle, paying attention to the interference range during the movement.
4. For long overhang (> 4 x coupling diameter), it is recommended to use anti-vibration boring tools.
5. Large insert nose radius will help to improve machining safety and surface quality, but may generate vibration. An insert nose radius bigger than 0.4 mm should not be used for finish boring.

## ARB Series Rough Boring Head Operator's Manual

### Procedures of Use

Main Components of Rough Boring Head



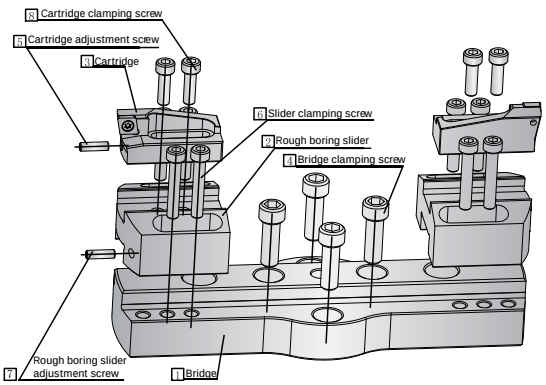

Preparation:
1.Verify that the adjustment range of the rough boring head meets the requirement of the bore diameter to be machined.
2.Check (as shown on the right) that all parts are in order; and the cartridge, radial adjustment screw, and insert locking screw are locked to prevent damage to the tool or to avoid cartridge flying out during machining and causing accidents.
3.Confirm that the assembled boring tool meets the requirement for boring diameter and machining depth.
Pay attention to the chip removal, cooling, cutting depth and other conditions, and pay attention to the impact of chips to the vibration control.

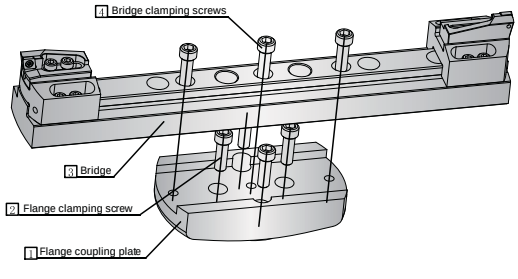
Step 1: On the tool change chuck or tool setting gauge, loosen the cartridge screw ⑥ .
Step 2: Turn the radial adjustment screw ⑦ to reach the required size of the tool.
Step 3: After adjusting to the size of the tool, lock the cartridge screw ⑥ to complete the adjustment.

### Attention

1. Before machining, ensure that all parts are properly locked to avoid damage to the boring head or prevent the cartridge flying out during machining, which may cause accidents.
2. ARB series rough boring heads are designed for equal radius and balanced machining with double edge cutting; they are used for rough boring with tolerances greater than or equal to IT9 when metal removal rate is a priority.
3. For rough boring with large depth of cut, adequate chip space and chip evacuation condition must be ensured to reduce tool vibration caused by chip jam.
4. For long overhang (> 4 x coupling diameter), it is recommended to use anti-vibration boring tools.
5. A large insert nose radius will help to improve machining safety and surface quality, but may generate vibration. The recommended starting tip nose radius is 0.8 mm.

### Bridge boring main parts name



# ACHTECK

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THE EXPERT OF DIFFICULT MACHINING

## Solid Carbide Drill

# CUTTING TOOL CATALOGUE


## Solid Carbide Drill 548

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## Solid Carbide Drill Denomination System

| D | 1 | 05 | - | 03 | - | 12700 | A | 1 |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | - | 4 | - | 5 | 6 | 7 |

| 1-Tool Group | |
|---|---|
| D | Drilling |

| 2-Generation |
|---|
| 1 |

| 3-Tool Type | |
|---|---|
| 00-09 | General-purpose drills |
| 10-19 | Micro-diameter drills |
| 20-29 | High-performance drills |
| 30-39 | Steel-specific drills |
| 40-49 | Aluminum-specific drills |
| 50-59 | S.S.-specific drills |
| 60-69 | Hard-to-cut material drills |
| 70-79 | Hard material drills |
| 80-99 | Others |

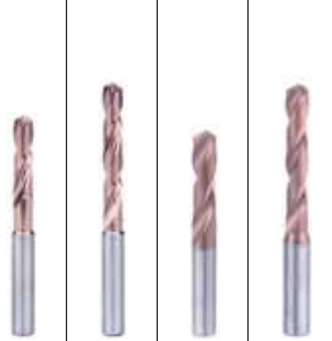
| 4-Drilling Depth | |
|---|---|
| 03 | ~3xDc in accordance with DIN 6537K |
| 05 | ~5xDc in accordance with DIN 6537L |
| 08 | ~8xDc in accordance with Achteck standard |

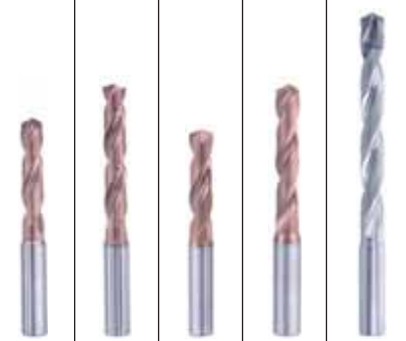
| 5-Cutting Diameter | |
|---|---|
| 03000 | 3.0mm |
| 12100 | 12.1mm |

| 6-Shank Type | |
|---|---|
| A | DIN 6535 HA cylindrical shank |

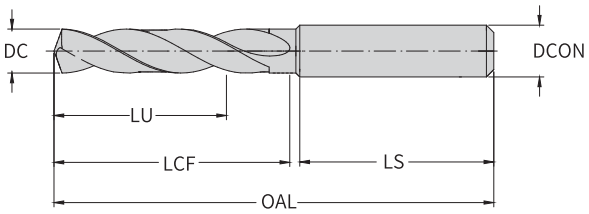
| 7-Coolant | |
|---|---|
| 0 | External coolant |
| 1 | Internal coolant |

## Product Overview

| External coolant | | | | |
|---|---|---|---|---|
| Machining application | ① Through hole | | ② Blind hole | |
| Drilling depth | 3xDc | 5xDc | 3xDc | 5xDc |
| Product line | ECO | ECO | PRO | PRO |
| Series | D105 | D105 | D106 | D106 |
| Illustration |  | | | |
| Standard | DIN 6537 K | DIN 6537 L | DIN 6537 K | DIN 6537 L |
| Dia. Range(mm) | 3~20 | 3~20 | 3~20 | 3~20 |
| Cutting edge | h7 | h7 | m7 | m7 |
| Page | P551 | P555 | P567 | P571 |
| P steel | ●● | ●● | ●● | ●● |
| M stainless steel | | | | |
| K cast iron | ●● | ●● | ●● | ●● |
| N non-ferrous | ● | ● | ●● | ●● |
| S Super Alloy | | | | |
| H hard materials | ● | ● | | |

| Internal coolant | | | | | | | |
|---|---|---|---|---|---|---|---|
| Machining application | ① Through hole | | ② Blind hole | | | | |
| Drilling depth | 3xDc | 5xDc | 3xDc | 5xDc | 8xDc | 3xDc | 5xDc |
| Product line | ECO | ECO | PRO | PRO | PRO | PRO | PRO |
| Series | D105 | D105 | D106 | D106 | D108 | D151 | D151 |
| Illustration |  | | | | | | |
| Standard | DIN 6537 K | DIN 6537 L | DIN 6537 K | DIN 6537 L | Achteck | DIN 6537 K | DIN 6537 L |
| Dia. Range(mm) | 3~20 | 3~20 | 3~16 | 3~16 | 3~16 | 3~16 | 3~16 |
| Cutting edge | h7 | h7 | m7 | m7 | m7 | m7 | m7 |
| Page | P559 | P563 | P575 | P579 | P583 | P586 | P589 |
| P steel | ●● | ●● | ●● | ●● | ●● | ● | ● |
| M stainless steel | ● | ● | ● | ● | ● | ●● | ●● |
| K cast iron | ●● | ●● | ●● | ●● | ●● | ● | ● |
| N non-ferrous | ●● | ●● | ●● | ●● | ●● | ●● | ●● |
| S Super Alloy | ● | ● | ● | ● | ● | ●● | ●● |
| H hard materials | ● | ● | ● | ● | ● | | |

## Solid Carbide External Coolant Drill D105 3xDc




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

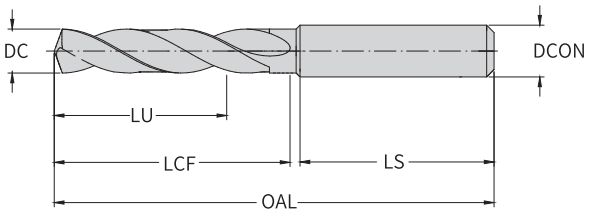
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-03-03000A0** | 3.0 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03100A0** | 3.1 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03200A0** | 3.2 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03300A0** | 3.3 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03400A0** | 3.4 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03500A0** | 3.5 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03600A0** | 3.6 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03700A0** | 3.7 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03800A0** | 3.8 | 17 | 66 | 24 | 36 | 4 | ● |
| **D105-03-03900A0** | 3.9 | 17 | 66 | 24 | 36 | 4 | ○ |
| **D105-03-04000A0** | 4.0 | 17 | 66 | 24 | 36 | 4 | ● |
| **D105-03-04100A0** | 4.1 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04200A0** | 4.2 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04300A0** | 4.3 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04400A0** | 4.4 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04500A0** | 4.5 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04600A0** | 4.6 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04700A0** | 4.7 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04800A0** | 4.8 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-04900A0** | 4.9 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-05000A0** | 5.0 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05100A0** | 5.1 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05200A0** | 5.2 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05300A0** | 5.3 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05400A0** | 5.4 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05500A0** | 5.5 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05600A0** | 5.6 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-05700A0** | 5.7 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-05800A0** | 5.8 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05900A0** | 5.9 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-06000A0** | 6.0 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-06100A0** | 6.1 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06200A0** | 6.2 | 24 | 79 | 34 | 36 | 8 | ○ |
| **D105-03-06300A0** | 6.3 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06400A0** | 6.4 | 24 | 79 | 34 | 36 | 8 | ○ |
| **D105-03-06500A0** | 6.5 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06600A0** | 6.6 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06700A0** | 6.7 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06800A0** | 6.8 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06900A0** | 6.9 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-07000A0** | 7.0 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-07100A0** | 7.1 | 29 | 79 | 41 | 36 | 8 | ● |
| **D105-03-07200A0** | 7.2 | 29 | 79 | 41 | 36 | 8 | ● |
| **D105-03-07300A0** | 7.3 | 29 | 79 | 41 | 36 | 8 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D105 3xDc




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

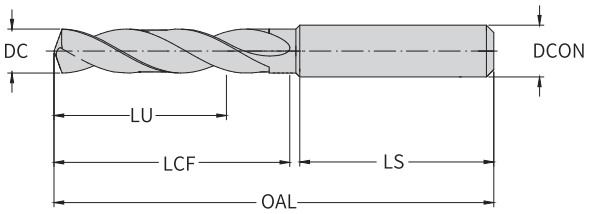
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| D105-03-07400A0 | 7.4 | 29 | 79 | 41 | 36 | 8 | ○ |
| D105-03-07500A0 | 7.5 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-07600A0 | 7.6 | 29 | 79 | 41 | 36 | 8 | ○ |
| D105-03-07700A0 | 7.7 | 29 | 79 | 41 | 36 | 8 | ○ |
| D105-03-07800A0 | 7.8 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-07900A0 | 7.9 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-08000A0 | 8.0 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-08100A0 | 8.1 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08200A0 | 8.2 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08300A0 | 8.3 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-08400A0 | 8.4 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-08500A0 | 8.5 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08600A0 | 8.6 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08700A0 | 8.7 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08800A0 | 8.8 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08900A0 | 8.9 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-09000A0 | 9.0 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09100A0 | 9.1 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09200A0 | 9.2 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09300A0 | 9.3 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09400A0 | 9.4 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09500A0 | 9.5 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09600A0 | 9.6 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09700A0 | 9.7 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09800A0 | 9.8 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09900A0 | 9.9 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-10000A0 | 10.0 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-10100A0 | 10.1 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-10200A0 | 10.2 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10300A0 | 10.3 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10400A0 | 10.4 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10500A0 | 10.5 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10600A0 | 10.6 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-10700A0 | 10.7 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-10800A0 | 10.8 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10900A0 | 10.9 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11000A0 | 11.0 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-11100A0 | 11.1 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11200A0 | 11.2 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11300A0 | 11.3 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11400A0 | 11.4 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11500A0 | 11.5 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-11600A0 | 11.6 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11700A0 | 11.7 | 40 | 102 | 55 | 45 | 12 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D105 3xDc




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

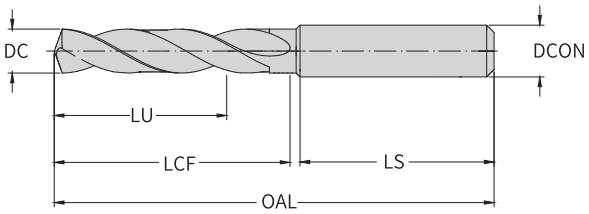
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-03-11800A0** | 11.8 | 40 | 102 | 55 | 45 | 12 | ○ |
| **D105-03-11900A0** | 11.9 | 40 | 102 | 55 | 45 | 12 | ○ |
| **D105-03-12000A0** | 12.0 | 40 | 102 | 55 | 45 | 12 | ● |
| **D105-03-12100A0** | 12.1 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12200A0** | 12.2 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12300A0** | 12.3 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12400A0** | 12.4 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12500A0** | 12.5 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12600A0** | 12.6 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-12700A0** | 12.7 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-12800A0** | 12.8 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-12900A0** | 12.9 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13000A0** | 13.0 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13100A0** | 13.1 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13200A0** | 13.2 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13300A0** | 13.3 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13400A0** | 13.4 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13500A0** | 13.5 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13600A0** | 13.6 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13700A0** | 13.7 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13800A0** | 13.8 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13900A0** | 13.9 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-14000A0** | 14.0 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-14100A0** | 14.1 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14200A0** | 14.2 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-14300A0** | 14.3 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14400A0** | 14.4 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14500A0** | 14.5 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-14600A0** | 14.6 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14700A0** | 14.7 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-14800A0** | 14.8 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14900A0** | 14.9 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15000A0** | 15.0 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-15100A0** | 15.1 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15200A0** | 15.2 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15300A0** | 15.3 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15400A0** | 15.4 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15500A0** | 15.5 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-15600A0** | 15.6 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15700A0** | 15.7 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15800A0** | 15.8 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15900A0** | 15.9 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-16000A0** | 16.0 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-16100A0** | 16.1 | 51 | 123 | 73 | 48 | 18 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D105 3xDc




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

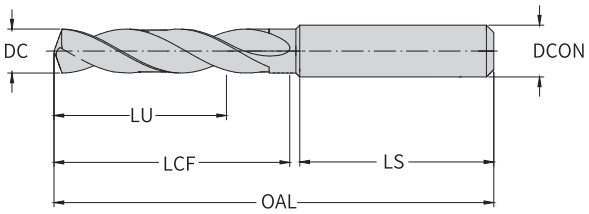
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-03-16200A0** | 16.2 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16300A0** | 16.3 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16400A0** | 16.4 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16500A0** | 16.5 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-16600A0** | 16.6 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16700A0** | 16.7 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16800A0** | 16.8 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16900A0** | 16.9 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17000A0** | 17.0 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-17100A0** | 17.1 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17200A0** | 17.2 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17300A0** | 17.3 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17400A0** | 17.4 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17500A0** | 17.5 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-17600A0** | 17.6 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17700A0** | 17.7 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17800A0** | 17.8 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17900A0** | 17.9 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-18000A0** | 18.0 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-18100A0** | 18.1 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18200A0** | 18.2 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18300A0** | 18.3 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18400A0** | 18.4 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18500A0** | 18.5 | 55 | 131 | 79 | 50 | 20 | ● |
| **D105-03-18600A0** | 18.6 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18700A0** | 18.7 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18800A0** | 18.8 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18900A0** | 18.9 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19000A0** | 19.0 | 55 | 131 | 79 | 50 | 20 | ● |
| **D105-03-19100A0** | 19.1 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19200A0** | 19.2 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19300A0** | 19.3 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19400A0** | 19.4 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19500A0** | 19.5 | 55 | 131 | 79 | 50 | 20 | ● |
| **D105-03-19600A0** | 19.6 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19700A0** | 19.7 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19800A0** | 19.8 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19900A0** | 19.9 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-20000A0** | 20.0 | 55 | 131 | 79 | 50 | 20 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D105 5xDc




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

•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-05-03000A0** | 3.0 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03100A0** | 3.1 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03200A0** | 3.2 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03300A0** | 3.3 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03400A0** | 3.4 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03500A0** | 3.5 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03600A0** | 3.6 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03700A0** | 3.7 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03800A0** | 3.8 | 29 | 74 | 36 | 36 | 4 | ● |
| **D105-05-03900A0** | 3.9 | 29 | 74 | 36 | 36 | 4 | ● |
| **D105-05-04000A0** | 4.0 | 29 | 74 | 36 | 36 | 4 | ● |
| **D105-05-04100A0** | 4.1 | 29 | 74 | 36 | 36 | 6 | ○ |
| **D105-05-04200A0** | 4.2 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04300A0** | 4.3 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04400A0** | 4.4 | 29 | 74 | 36 | 36 | 6 | ○ |
| **D105-05-04500A0** | 4.5 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04600A0** | 4.6 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04700A0** | 4.7 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04800A0** | 4.8 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-04900A0** | 4.9 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05000A0** | 5.0 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05100A0** | 5.1 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05200A0** | 5.2 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05300A0** | 5.3 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05400A0** | 5.4 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05500A0** | 5.5 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05600A0** | 5.6 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05700A0** | 5.7 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05800A0** | 5.8 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05900A0** | 5.9 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-06000A0** | 6.0 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-06100A0** | 6.1 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06200A0** | 6.2 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06300A0** | 6.3 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06400A0** | 6.4 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06500A0** | 6.5 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06600A0** | 6.6 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06700A0** | 6.7 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06800A0** | 6.8 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06900A0** | 6.9 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-07000A0** | 7.0 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-07100A0** | 7.1 | 43 | 91 | 53 | 36 | 8 | ○ |
| **D105-05-07200A0** | 7.2 | 43 | 91 | 53 | 36 | 8 | ○ |
| **D105-05-07300A0** | 7.3 | 43 | 91 | 53 | 36 | 8 | ○ |

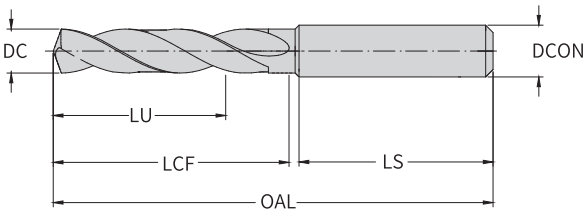
Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D105 5xDc

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

•• 1st choice • 2nd choice

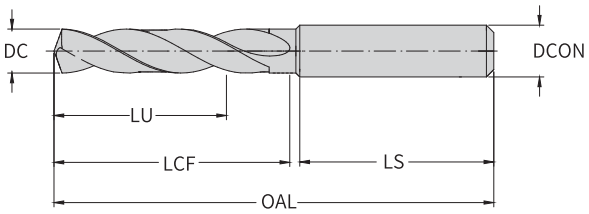


| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| D105-05-07400A0 | 7.4 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-07500A0 | 7.5 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-07600A0 | 7.6 | 43 | 91 | 53 | 36 | 8 | ○ |
| D105-05-07700A0 | 7.7 | 43 | 91 | 53 | 36 | 8 | ○ |
| D105-05-07800A0 | 7.8 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-07900A0 | 7.9 | 43 | 91 | 53 | 36 | 8 | ○ |
| D105-05-08000A0 | 8.0 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-08100A0 | 8.1 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08200A0 | 8.2 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08300A0 | 8.3 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08400A0 | 8.4 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08500A0 | 8.5 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08600A0 | 8.6 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08700A0 | 8.7 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08800A0 | 8.8 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08900A0 | 8.9 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09000A0 | 9.0 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09100A0 | 9.1 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09200A0 | 9.2 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09300A0 | 9.3 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-09400A0 | 9.4 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09500A0 | 9.5 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09600A0 | 9.6 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-09700A0 | 9.7 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-09800A0 | 9.8 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09900A0 | 9.9 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-10000A0 | 10.0 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-10100A0 | 10.1 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-10200A0 | 10.2 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10300A0 | 10.3 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10400A0 | 10.4 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10500A0 | 10.5 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10600A0 | 10.6 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-10700A0 | 10.7 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-10800A0 | 10.8 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10900A0 | 10.9 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11000A0 | 11.0 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-11100A0 | 11.1 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11200A0 | 11.2 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-11300A0 | 11.3 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11400A0 | 11.4 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11500A0 | 11.5 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-11600A0 | 11.6 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11700A0 | 11.7 | 56 | 118 | 71 | 45 | 12 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D105 5xDc




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

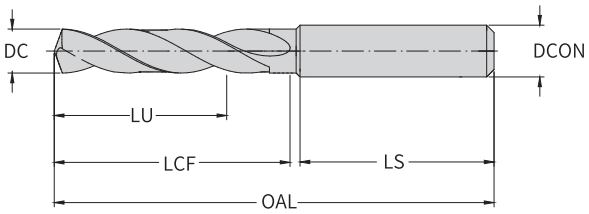
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-05-11800A0** | 11.8 | 56 | 118 | 71 | 45 | 12 | ● |
| **D105-05-11900A0** | 11.9 | 56 | 118 | 71 | 45 | 12 | ○ |
| **D105-05-12000A0** | 12.0 | 56 | 118 | 71 | 45 | 12 | ● |
| **D105-05-12100A0** | 12.1 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12200A0** | 12.2 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-12300A0** | 12.3 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12400A0** | 12.4 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12500A0** | 12.5 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-12600A0** | 12.6 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12700A0** | 12.7 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12800A0** | 12.8 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12900A0** | 12.9 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13000A0** | 13.0 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-13100A0** | 13.1 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13200A0** | 13.2 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13300A0** | 13.3 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13400A0** | 13.4 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13500A0** | 13.5 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-13600A0** | 13.6 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13700A0** | 13.7 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13800A0** | 13.8 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13900A0** | 13.9 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-14000A0** | 14.0 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-14100A0** | 14.1 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14200A0** | 14.2 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14300A0** | 14.3 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14400A0** | 14.4 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14500A0** | 14.5 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-14600A0** | 14.6 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14700A0** | 14.7 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14800A0** | 14.8 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14900A0** | 14.9 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15000A0** | 15.0 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-15100A0** | 15.1 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15200A0** | 15.2 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15300A0** | 15.3 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15400A0** | 15.4 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15500A0** | 15.5 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-15600A0** | 15.6 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15700A0** | 15.7 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15800A0** | 15.8 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15900A0** | 15.9 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-16000A0** | 16.0 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-16100A0** | 16.1 | 71 | 143 | 93 | 48 | 18 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D105 5xDc




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

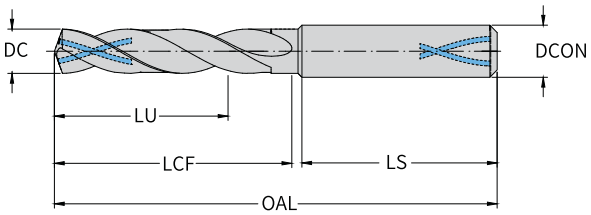
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-05-16200A0** | 16.2 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16300A0** | 16.3 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16400A0** | 16.4 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16500A0** | 16.5 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-16600A0** | 16.6 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16700A0** | 16.7 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16800A0** | 16.8 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16900A0** | 16.9 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17000A0** | 17.0 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-17100A0** | 17.1 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17200A0** | 17.2 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17300A0** | 17.3 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17400A0** | 17.4 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17500A0** | 17.5 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-17600A0** | 17.6 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17700A0** | 17.7 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17800A0** | 17.8 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17900A0** | 17.9 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-18000A0** | 18.0 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-18100A0** | 18.1 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18200A0** | 18.2 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18300A0** | 18.3 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18400A0** | 18.4 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18500A0** | 18.5 | 77 | 153 | 101 | 50 | 20 | ● |
| **D105-05-18600A0** | 18.6 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18700A0** | 18.7 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18800A0** | 18.8 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18900A0** | 18.9 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19000A0** | 19.0 | 77 | 153 | 101 | 50 | 20 | ● |
| **D105-05-19100A0** | 19.1 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19200A0** | 19.2 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19300A0** | 19.3 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19400A0** | 19.4 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19500A0** | 19.5 | 77 | 153 | 101 | 50 | 20 | ● |
| **D105-05-19600A0** | 19.6 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19700A0** | 19.7 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19800A0** | 19.8 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19900A0** | 19.9 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-20000A0** | 20.0 | 77 | 153 | 101 | 50 | 20 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 3xDc




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

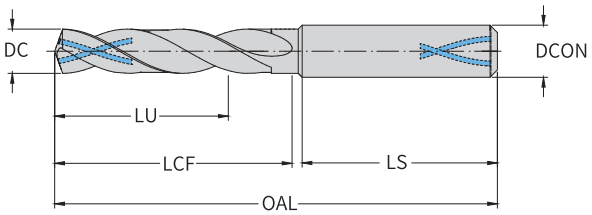
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-03-03000A1** | 3.0 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03100A1** | 3.1 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03200A1** | 3.2 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03300A1** | 3.3 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03400A1** | 3.4 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03500A1** | 3.5 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03600A1** | 3.6 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03700A1** | 3.7 | 14 | 62 | 20 | 36 | 4 | ● |
| **D105-03-03800A1** | 3.8 | 17 | 66 | 24 | 36 | 4 | ● |
| **D105-03-03900A1** | 3.9 | 17 | 66 | 24 | 36 | 4 | ○ |
| **D105-03-04000A1** | 4.0 | 17 | 66 | 24 | 36 | 4 | ● |
| **D105-03-04100A1** | 4.1 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04200A1** | 4.2 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04300A1** | 4.3 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04400A1** | 4.4 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04500A1** | 4.5 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04600A1** | 4.6 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04700A1** | 4.7 | 17 | 66 | 24 | 36 | 6 | ● |
| **D105-03-04800A1** | 4.8 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-04900A1** | 4.9 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-05000A1** | 5.0 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05100A1** | 5.1 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05200A1** | 5.2 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05300A1** | 5.3 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05400A1** | 5.4 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05500A1** | 5.5 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05600A1** | 5.6 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-05700A1** | 5.7 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-05800A1** | 5.8 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-05900A1** | 5.9 | 20 | 66 | 28 | 36 | 6 | ○ |
| **D105-03-06000A1** | 6.0 | 20 | 66 | 28 | 36 | 6 | ● |
| **D105-03-06100A1** | 6.1 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06200A1** | 6.2 | 24 | 79 | 34 | 36 | 8 | ○ |
| **D105-03-06300A1** | 6.3 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06400A1** | 6.4 | 24 | 79 | 34 | 36 | 8 | ○ |
| **D105-03-06500A1** | 6.5 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06600A1** | 6.6 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06700A1** | 6.7 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06800A1** | 6.8 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-06900A1** | 6.9 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-07000A1** | 7.0 | 24 | 79 | 34 | 36 | 8 | ● |
| **D105-03-07100A1** | 7.1 | 29 | 79 | 41 | 36 | 8 | ● |
| **D105-03-07200A1** | 7.2 | 29 | 79 | 41 | 36 | 8 | ● |
| **D105-03-07300A1** | 7.3 | 29 | 79 | 41 | 36 | 8 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 3xDc




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

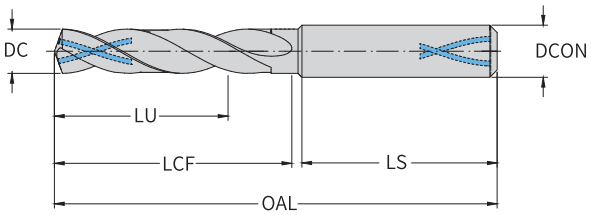
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| D105-03-07400A1 | 7.4 | 29 | 79 | 41 | 36 | 8 | ○ |
| D105-03-07500A1 | 7.5 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-07600A1 | 7.6 | 29 | 79 | 41 | 36 | 8 | ○ |
| D105-03-07700A1 | 7.7 | 29 | 79 | 41 | 36 | 8 | ○ |
| D105-03-07800A1 | 7.8 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-07900A1 | 7.9 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-08000A1 | 8.0 | 29 | 79 | 41 | 36 | 8 | ● |
| D105-03-08100A1 | 8.1 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08200A1 | 8.2 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08300A1 | 8.3 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-08400A1 | 8.4 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-08500A1 | 8.5 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08600A1 | 8.6 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08700A1 | 8.7 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08800A1 | 8.8 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-08900A1 | 8.9 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-09000A1 | 9.0 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09100A1 | 9.1 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09200A1 | 9.2 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09300A1 | 9.3 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09400A1 | 9.4 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09500A1 | 9.5 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09600A1 | 9.6 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09700A1 | 9.7 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09800A1 | 9.8 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-09900A1 | 9.9 | 35 | 89 | 47 | 40 | 10 | ○ |
| D105-03-10000A1 | 10.0 | 35 | 89 | 47 | 40 | 10 | ● |
| D105-03-10100A1 | 10.1 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-10200A1 | 10.2 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10300A1 | 10.3 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10400A1 | 10.4 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10500A1 | 10.5 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10600A1 | 10.6 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-10700A1 | 10.7 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-10800A1 | 10.8 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-10900A1 | 10.9 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11000A1 | 11.0 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-11100A1 | 11.1 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11200A1 | 11.2 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11300A1 | 11.3 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11400A1 | 11.4 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11500A1 | 11.5 | 40 | 102 | 55 | 45 | 12 | ● |
| D105-03-11600A1 | 11.6 | 40 | 102 | 55 | 45 | 12 | ○ |
| D105-03-11700A1 | 11.7 | 40 | 102 | 55 | 45 | 12 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 3xDc




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

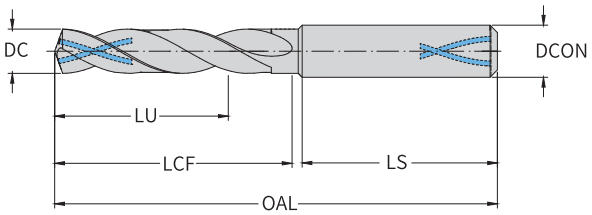
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-03-11800A1** | 11.8 | 40 | 102 | 55 | 45 | 12 | ○ |
| **D105-03-11900A1** | 11.9 | 40 | 102 | 55 | 45 | 12 | ○ |
| **D105-03-12000A1** | 12.0 | 40 | 102 | 55 | 45 | 12 | ● |
| **D105-03-12100A1** | 12.1 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12200A1** | 12.2 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12300A1** | 12.3 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12400A1** | 12.4 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12500A1** | 12.5 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-12600A1** | 12.6 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-12700A1** | 12.7 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-12800A1** | 12.8 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-12900A1** | 12.9 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13000A1** | 13.0 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13100A1** | 13.1 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13200A1** | 13.2 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13300A1** | 13.3 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13400A1** | 13.4 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13500A1** | 13.5 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-13600A1** | 13.6 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13700A1** | 13.7 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13800A1** | 13.8 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-13900A1** | 13.9 | 43 | 107 | 60 | 45 | 14 | ○ |
| **D105-03-14000A1** | 14.0 | 43 | 107 | 60 | 45 | 14 | ● |
| **D105-03-14100A1** | 14.1 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14200A1** | 14.2 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-14300A1** | 14.3 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14400A1** | 14.4 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14500A1** | 14.5 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-14600A1** | 14.6 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14700A1** | 14.7 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-14800A1** | 14.8 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-14900A1** | 14.9 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15000A1** | 15.0 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-15100A1** | 15.1 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15200A1** | 15.2 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15300A1** | 15.3 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15400A1** | 15.4 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15500A1** | 15.5 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-15600A1** | 15.6 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15700A1** | 15.7 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15800A1** | 15.8 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-15900A1** | 15.9 | 45 | 115 | 65 | 48 | 16 | ○ |
| **D105-03-16000A1** | 16.0 | 45 | 115 | 65 | 48 | 16 | ● |
| **D105-03-16100A1** | 16.1 | 51 | 123 | 73 | 48 | 18 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 3xDc




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

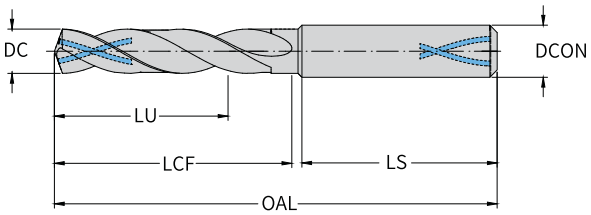
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-03-16200A1** | 16.2 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16300A1** | 16.3 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16400A1** | 16.4 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16500A1** | 16.5 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-16600A1** | 16.6 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16700A1** | 16.7 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16800A1** | 16.8 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-16900A1** | 16.9 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17000A1** | 17.0 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-17100A1** | 17.1 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17200A1** | 17.2 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17300A1** | 17.3 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17400A1** | 17.4 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17500A1** | 17.5 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-17600A1** | 17.6 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17700A1** | 17.7 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17800A1** | 17.8 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-17900A1** | 17.9 | 51 | 123 | 73 | 48 | 18 | ○ |
| **D105-03-18000A1** | 18.0 | 51 | 123 | 73 | 48 | 18 | ● |
| **D105-03-18100A1** | 18.1 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18200A1** | 18.2 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18300A1** | 18.3 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18400A1** | 18.4 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18500A1** | 18.5 | 55 | 131 | 79 | 50 | 20 | ● |
| **D105-03-18600A1** | 18.6 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18700A1** | 18.7 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18800A1** | 18.8 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-18900A1** | 18.9 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19000A1** | 19.0 | 55 | 131 | 79 | 50 | 20 | ● |
| **D105-03-19100A1** | 19.1 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19200A1** | 19.2 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19300A1** | 19.3 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19400A1** | 19.4 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19500A1** | 19.5 | 55 | 131 | 79 | 50 | 20 | ● |
| **D105-03-19600A1** | 19.6 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19700A1** | 19.7 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19800A1** | 19.8 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-19900A1** | 19.9 | 55 | 131 | 79 | 50 | 20 | ○ |
| **D105-03-20000A1** | 20.0 | 55 | 131 | 79 | 50 | 20 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 5xDc




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

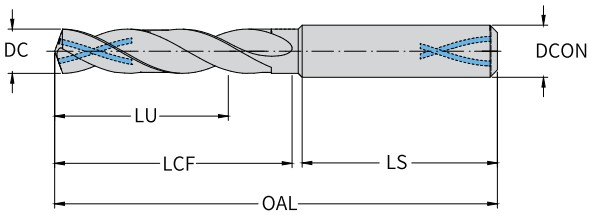
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-05-03000A1** | 3.0 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03100A1** | 3.1 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03200A1** | 3.2 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03300A1** | 3.3 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03400A1** | 3.4 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03500A1** | 3.5 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03600A1** | 3.6 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03700A1** | 3.7 | 23 | 66 | 28 | 36 | 4 | ● |
| **D105-05-03800A1** | 3.8 | 29 | 74 | 36 | 36 | 4 | ● |
| **D105-05-03900A1** | 3.9 | 29 | 74 | 36 | 36 | 4 | ● |
| **D105-05-04000A1** | 4.0 | 29 | 74 | 36 | 36 | 4 | ● |
| **D105-05-04100A1** | 4.1 | 29 | 74 | 36 | 36 | 6 | ○ |
| **D105-05-04200A1** | 4.2 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04300A1** | 4.3 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04400A1** | 4.4 | 29 | 74 | 36 | 36 | 6 | ○ |
| **D105-05-04500A1** | 4.5 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04600A1** | 4.6 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04700A1** | 4.7 | 29 | 74 | 36 | 36 | 6 | ● |
| **D105-05-04800A1** | 4.8 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-04900A1** | 4.9 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05000A1** | 5.0 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05100A1** | 5.1 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05200A1** | 5.2 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05300A1** | 5.3 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05400A1** | 5.4 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05500A1** | 5.5 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05600A1** | 5.6 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05700A1** | 5.7 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05800A1** | 5.8 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-05900A1** | 5.9 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-06000A1** | 6.0 | 35 | 82 | 44 | 36 | 6 | ● |
| **D105-05-06100A1** | 6.1 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06200A1** | 6.2 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06300A1** | 6.3 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06400A1** | 6.4 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06500A1** | 6.5 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06600A1** | 6.6 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06700A1** | 6.7 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06800A1** | 6.8 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-06900A1** | 6.9 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-07000A1** | 7.0 | 43 | 91 | 53 | 36 | 8 | ● |
| **D105-05-07100A1** | 7.1 | 43 | 91 | 53 | 36 | 8 | ○ |
| **D105-05-07200A1** | 7.2 | 43 | 91 | 53 | 36 | 8 | ○ |
| **D105-05-07300A1** | 7.3 | 43 | 91 | 53 | 36 | 8 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 5xDc




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

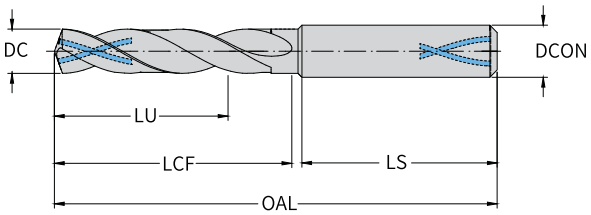
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| D105-05-07400A1 | 7.4 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-07500A1 | 7.5 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-07600A1 | 7.6 | 43 | 91 | 53 | 36 | 8 | ○ |
| D105-05-07700A1 | 7.7 | 43 | 91 | 53 | 36 | 8 | ○ |
| D105-05-07800A1 | 7.8 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-07900A1 | 7.9 | 43 | 91 | 53 | 36 | 8 | ○ |
| D105-05-08000A1 | 8.0 | 43 | 91 | 53 | 36 | 8 | ● |
| D105-05-08100A1 | 8.1 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08200A1 | 8.2 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08300A1 | 8.3 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08400A1 | 8.4 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08500A1 | 8.5 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08600A1 | 8.6 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08700A1 | 8.7 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08800A1 | 8.8 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-08900A1 | 8.9 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09000A1 | 9.0 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09100A1 | 9.1 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09200A1 | 9.2 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09300A1 | 9.3 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-09400A1 | 9.4 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09500A1 | 9.5 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09600A1 | 9.6 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-09700A1 | 9.7 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-09800A1 | 9.8 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-09900A1 | 9.9 | 49 | 103 | 61 | 40 | 10 | ○ |
| D105-05-10000A1 | 10.0 | 49 | 103 | 61 | 40 | 10 | ● |
| D105-05-10100A1 | 10.1 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-10200A1 | 10.2 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10300A1 | 10.3 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10400A1 | 10.4 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10500A1 | 10.5 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10600A1 | 10.6 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-10700A1 | 10.7 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-10800A1 | 10.8 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-10900A1 | 10.9 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11000A1 | 11.0 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-11100A1 | 11.1 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11200A1 | 11.2 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-11300A1 | 11.3 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11400A1 | 11.4 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11500A1 | 11.5 | 56 | 118 | 71 | 45 | 12 | ● |
| D105-05-11600A1 | 11.6 | 56 | 118 | 71 | 45 | 12 | ○ |
| D105-05-11700A1 | 11.7 | 56 | 118 | 71 | 45 | 12 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 5xDc




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

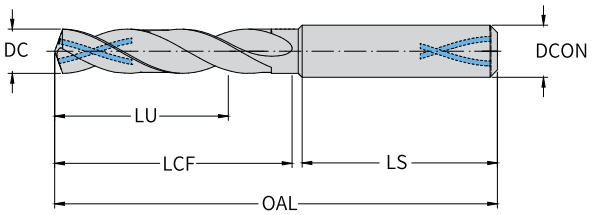
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-05-11800A1** | 11.8 | 56 | 118 | 71 | 45 | 12 | ● |
| **D105-05-11900A1** | 11.9 | 56 | 118 | 71 | 45 | 12 | ○ |
| **D105-05-12000A1** | 12.0 | 56 | 118 | 71 | 45 | 12 | ● |
| **D105-05-12100A1** | 12.1 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12200A1** | 12.2 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-12300A1** | 12.3 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12400A1** | 12.4 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12500A1** | 12.5 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-12600A1** | 12.6 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12700A1** | 12.7 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12800A1** | 12.8 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-12900A1** | 12.9 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13000A1** | 13.0 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-13100A1** | 13.1 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13200A1** | 13.2 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13300A1** | 13.3 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13400A1** | 13.4 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13500A1** | 13.5 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-13600A1** | 13.6 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13700A1** | 13.7 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13800A1** | 13.8 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-13900A1** | 13.9 | 60 | 124 | 77 | 45 | 14 | ○ |
| **D105-05-14000A1** | 14.0 | 60 | 124 | 77 | 45 | 14 | ● |
| **D105-05-14100A1** | 14.1 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14200A1** | 14.2 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14300A1** | 14.3 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14400A1** | 14.4 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14500A1** | 14.5 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-14600A1** | 14.6 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14700A1** | 14.7 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14800A1** | 14.8 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-14900A1** | 14.9 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15000A1** | 15.0 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-15100A1** | 15.1 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15200A1** | 15.2 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15300A1** | 15.3 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15400A1** | 15.4 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15500A1** | 15.5 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-15600A1** | 15.6 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15700A1** | 15.7 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15800A1** | 15.8 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-15900A1** | 15.9 | 63 | 133 | 83 | 48 | 16 | ○ |
| **D105-05-16000A1** | 16.0 | 63 | 133 | 83 | 48 | 16 | ● |
| **D105-05-16100A1** | 16.1 | 71 | 143 | 93 | 48 | 18 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D105 5xDc




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

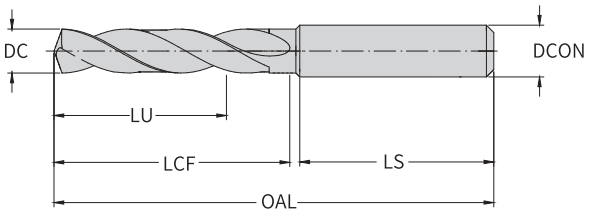
•• 1st choice • 2nd choice

| Product code | DC(h7) mm | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|
| **D105-05-16200A1** | 16.2 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16300A1** | 16.3 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16400A1** | 16.4 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16500A1** | 16.5 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-16600A1** | 16.6 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16700A1** | 16.7 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16800A1** | 16.8 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-16900A1** | 16.9 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17000A1** | 17.0 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-17100A1** | 17.1 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17200A1** | 17.2 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17300A1** | 17.3 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17400A1** | 17.4 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17500A1** | 17.5 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-17600A1** | 17.6 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17700A1** | 17.7 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17800A1** | 17.8 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-17900A1** | 17.9 | 71 | 143 | 93 | 48 | 18 | ○ |
| **D105-05-18000A1** | 18.0 | 71 | 143 | 93 | 48 | 18 | ● |
| **D105-05-18100A1** | 18.1 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18200A1** | 18.2 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18300A1** | 18.3 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18400A1** | 18.4 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18500A1** | 18.5 | 77 | 153 | 101 | 50 | 20 | ● |
| **D105-05-18600A1** | 18.6 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18700A1** | 18.7 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18800A1** | 18.8 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-18900A1** | 18.9 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19000A1** | 19.0 | 77 | 153 | 101 | 50 | 20 | ● |
| **D105-05-19100A1** | 19.1 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19200A1** | 19.2 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19300A1** | 19.3 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19400A1** | 19.4 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19500A1** | 19.5 | 77 | 153 | 101 | 50 | 20 | ● |
| **D105-05-19600A1** | 19.6 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19700A1** | 19.7 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19800A1** | 19.8 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-19900A1** | 19.9 | 77 | 153 | 101 | 50 | 20 | ○ |
| **D105-05-20000A1** | 20.0 | 77 | 153 | 101 | 50 | 20 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 3xDc




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

•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-03-03000A0 AP30P1U | 3.0 | | 14 | 62 | 20 | 36 | 4 | ● |
| D106-03-03100A0 AP30P1U | 3.1 | | 14 | 62 | 20 | 36 | 4 | ● |
| D106-03-03175A0 AP30P1U | 3.175 | 1/8" | 14 | 62 | 20 | 36 | 4 | ○ |
| D106-03-03200A0 AP30P1U | 3.2 | | 14 | 62 | 20 | 36 | 4 | ● |
| D106-03-03250A0 AP30P1U | 3.25 | | 14 | 62 | 20 | 36 | 4 | ○ |
| D106-03-03300A0 AP30P1U | 3.3 | | 14 | 62 | 20 | 36 | 4 | ● |
| D106-03-03400A0 AP30P1U | 3.4 | | 14 | 62 | 20 | 36 | 4 | ○ |
| D106-03-03500A0 AP30P1U | 3.5 | | 14 | 62 | 20 | 36 | 4 | ● |
| D106-03-03572A0 AP30P1U | 3.572 | 9/64" | 14 | 62 | 20 | 36 | 4 | ○ |
| D106-03-03600A0 AP30P1U | 3.6 | | 14 | 62 | 20 | 36 | 4 | ● |
| D106-03-03650A0 AP30P1U | 3.65 | | 14 | 62 | 20 | 36 | 4 | ○ |
| D106-03-03700A0 AP30P1U | 3.7 | | 14 | 62 | 20 | 36 | 4 | ● |
| D106-03-03800A0 AP30P1U | 3.8 | | 17 | 66 | 24 | 36 | 4 | ○ |
| D106-03-03900A0 AP30P1U | 3.9 | | 17 | 66 | 24 | 36 | 4 | ● |
| D106-03-03969A0 AP30P1U | 3.969 | 5/32" | 17 | 66 | 24 | 36 | 4 | ○ |
| D106-03-04000A0 AP30P1U | 4.0 | | 17 | 66 | 24 | 36 | 4 | ● |
| D106-03-04100A0 AP30P1U | 4.1 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D106-03-04200A0 AP30P1U | 4.2 | | 17 | 66 | 24 | 36 | 6 | ● |
| D106-03-04300A0 AP30P1U | 4.3 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D106-03-04366A0 AP30P1U | 4.366 | 11/64" | 17 | 66 | 24 | 36 | 6 | ○ |
| D106-03-04400A0 AP30P1U | 4.4 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D106-03-04500A0 AP30P1U | 4.5 | | 17 | 66 | 24 | 36 | 6 | ● |
| D106-03-04600A0 AP30P1U | 4.6 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D106-03-04650A0 AP30P1U | 4.65 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D106-03-04700A0 AP30P1U | 4.7 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D106-03-04763A0 AP30P1U | 4.763 | 3/16" | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-04800A0 AP30P1U | 4.8 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-04900A0 AP30P1U | 4.9 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05000A0 AP30P1U | 5.0 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05100A0 AP30P1U | 5.1 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05159A0 AP30P1U | 5.159 | 13/64" | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05200A0 AP30P1U | 5.2 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05300A0 AP30P1U | 5.3 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05400A0 AP30P1U | 5.4 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05500A0 AP30P1U | 5.5 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05550A0 AP30P1U | 5.55 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05556A0 AP30P1U | 5.556 | 7/32" | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05600A0 AP30P1U | 5.6 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05700A0 AP30P1U | 5.7 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05750A0 AP30P1U | 5.75 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05800A0 AP30P1U | 5.8 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05900A0 AP30P1U | 5.9 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05953A0 AP30P1U | 5.953 | 15/64" | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-06000A0 AP30P1U | 6.0 | | 20 | 66 | 28 | 36 | 6 | ● |

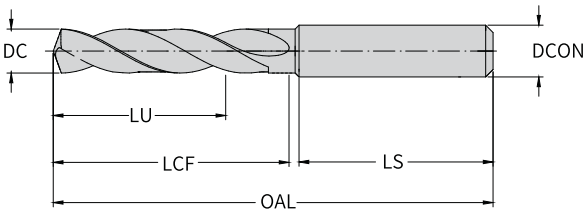
Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 3xDc

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

•• 1st choice • 2nd choice

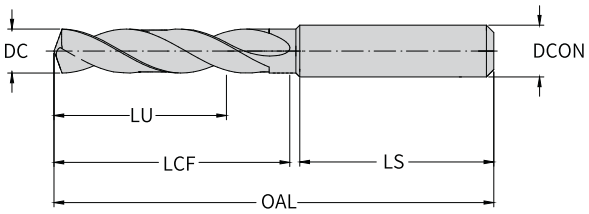


| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-03-06100A0 AP30P1U | 6.1 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06200A0 AP30P1U | 6.2 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06300A0 AP30P1U | 6.3 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06350A0 AP30P1U | 6.35 | 1/4" | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06400A0 AP30P1U | 6.4 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06500A0 AP30P1U | 6.5 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-06600A0 AP30P1U | 6.6 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06700A0 AP30P1U | 6.7 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06747A0 AP30P1U | 6.747 | 17/64" | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06800A0 AP30P1U | 6.8 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-06900A0 AP30P1U | 6.9 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-07000A0 AP30P1U | 7.0 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-07100A0 AP30P1U | 7.1 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07144A0 AP30P1U | 7.144 | 9/32" | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07200A0 AP30P1U | 7.2 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07250A0 AP30P1U | 7.25 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07300A0 AP30P1U | 7.3 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07400A0 AP30P1U | 7.4 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07450A0 AP30P1U | 7.45 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07500A0 AP30P1U | 7.5 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07541A0 AP30P1U | 7.541 | 19/64" | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07550A0 AP30P1U | 7.55 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07600A0 AP30P1U | 7.6 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07700A0 AP30P1U | 7.7 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07800A0 AP30P1U | 7.8 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07900A0 AP30P1U | 7.9 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07938A0 AP30P1U | 7.938 | 5/16" | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-08000A0 AP30P1U | 8.0 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-08100A0 AP30P1U | 8.1 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08200A0 AP30P1U | 8.2 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08300A0 AP30P1U | 8.3 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08334A0 AP30P1U | 8.334 | 21/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08400A0 AP30P1U | 8.4 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08500A0 AP30P1U | 8.5 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-08600A0 AP30P1U | 8.6 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-08700A0 AP30P1U | 8.7 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08731A0 AP30P1U | 8.731 | 11/32" | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08750A0 AP30P1U | 8.75 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08800A0 AP30P1U | 8.8 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-08900A0 AP30P1U | 8.9 | | 35 | 89 | 47 | 40 | 10 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 3xDc




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

•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D106-03-09000A0 AP30P1U** | 9.0 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D106-03-09100A0 AP30P1U** | 9.1 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09128A0 AP30P1U** | 9.128 | 23/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09200A0 AP30P1U** | 9.2 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09300A0 AP30P1U** | 9.3 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D106-03-09400A0 AP30P1U** | 9.4 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09500A0 AP30P1U** | 9.5 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09525A0 AP30P1U** | 9.525 | 3/8" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09550A0 AP30P1U** | 9.55 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09600A0 AP30P1U** | 9.6 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09700A0 AP30P1U** | 9.7 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-09800A0 AP30P1U** | 9.8 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D106-03-09900A0 AP30P1U** | 9.9 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D106-03-09922A0 AP30P1U** | 9.922 | 25/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D106-03-10000A0 AP30P1U** | 10.0 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D106-03-10100A0 AP30P1U** | 10.1 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-10200A0 AP30P1U** | 10.2 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-10300A0 AP30P1U** | 10.3 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-10319A0 AP30P1U** | 10.319 | 13/32" | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-10400A0 AP30P1U** | 10.4 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-10500A0 AP30P1U** | 10.5 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-10600A0 AP30P1U** | 10.6 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-10700A0 AP30P1U** | 10.7 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-10716A0 AP30P1U** | 10.716 | 27/64" | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-10800A0 AP30P1U** | 10.8 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-10900A0 AP30P1U** | 10.9 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11000A0 AP30P1U** | 11.0 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-11100A0 AP30P1U** | 11.1 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11113A0 AP30P1U** | 11.113 | 7/16" | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11200A0 AP30P1U** | 11.2 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11300A0 AP30P1U** | 11.3 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11400A0 AP30P1U** | 11.4 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11500A0 AP30P1U** | 11.5 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11509A0 AP30P1U** | 11.509 | 29/64" | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11550A0 AP30P1U** | 11.55 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11600A0 AP30P1U** | 11.6 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11700A0 AP30P1U** | 11.7 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11800A0 AP30P1U** | 11.8 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-11900A0 AP30P1U** | 11.9 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-11906A0 AP30P1U** | 11.906 | 15/32" | 40 | 102 | 55 | 45 | 12 | ○ |
| **D106-03-12000A0 AP30P1U** | 12.0 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D106-03-12100A0 AP30P1U** | 12.1 | | 43 | 107 | 60 | 45 | 14 | ○ |
| **D106-03-12200A0 AP30P1U** | 12.2 | | 43 | 107 | 60 | 45 | 14 | ○ |
| **D106-03-12250A0 AP30P1U** | 12.25 | | 43 | 107 | 60 | 45 | 14 | ○ |

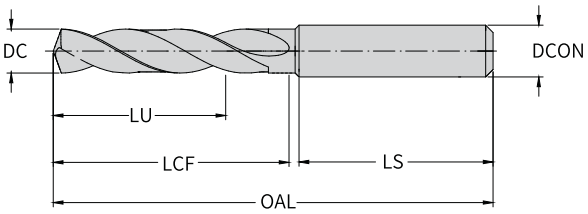
Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 3xDc

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

•• 1st choice • 2nd choice

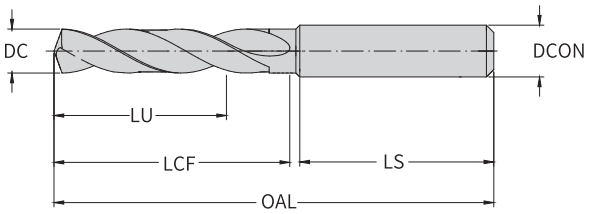


| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-03-12400A0 AP30P1U | 12.4 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12500A0 AP30P1U | 12.5 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-12600A0 AP30P1U | 12.6 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12700A0 AP30P1U | 12.7 | 1/2" | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12750A0 AP30P1U | 12.75 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12800A0 AP30P1U | 12.8 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12900A0 AP30P1U | 12.9 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13000A0 AP30P1U | 13.0 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-13100A0 AP30P1U | 13.1 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13200A0 AP30P1U | 13.2 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-13300A0 AP30P1U | 13.3 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13400A0 AP30P1U | 13.4 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13494A0 AP30P1U | 13.494 | 17/32" | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13500A0 AP30P1U | 13.5 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13600A0 AP30P1U | 13.6 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13700A0 AP30P1U | 13.7 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13800A0 AP30P1U | 13.8 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13900A0 AP30P1U | 13.9 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-14000A0 AP30P1U | 14.0 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-14100A0 AP30P1U | 14.1 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14200A0 AP30P1U | 14.2 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14288A0 AP30P1U | 14.288 | 9/16" | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14300A0 AP30P1U | 14.3 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14400A0 AP30P1U | 14.4 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14500A0 AP30P1U | 14.5 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14600A0 AP30P1U | 14.6 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14700A0 AP30P1U | 14.7 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14750A0 AP30P1U | 14.75 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14800A0 AP30P1U | 14.8 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15000A0 AP30P1U | 15.0 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15100A0 AP30P1U | 15.1 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15200A0 AP30P1U | 15.2 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15300A0 AP30P1U | 15.3 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15500A0 AP30P1U | 15.5 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15600A0 AP30P1U | 15.6 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15700A0 AP30P1U | 15.7 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15800A0 AP30P1U | 15.8 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15875A0 AP30P1U | 15.875 | 5/8" | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15900A0 AP30P1U | 15.9 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-16000A0 AP30P1U | 16.0 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-16500A0 AP30P1U | 16.5 | | 51 | 123 | 73 | 48 | 18 | ● |
| D106-03-17000A0 AP30P1U | 17.0 | | 51 | 123 | 73 | 48 | 18 | ● |
| D106-03-17500A0 AP30P1U | 17.5 | | 51 | 123 | 73 | 48 | 18 | ● |
| D106-03-18000A0 AP30P1U | 18.0 | | 51 | 123 | 73 | 48 | 18 | ● |
| D106-03-18500A0 AP30P1U | 18.5 | | 55 | 131 | 79 | 50 | 20 | ● |
| D106-03-19000A0 AP30P1U | 19.0 | | 55 | 131 | 79 | 50 | 20 | ● |
| D106-03-20000A0 AP30P1U | 20.0 | | 55 | 131 | 79 | 50 | 20 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 5xDc




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

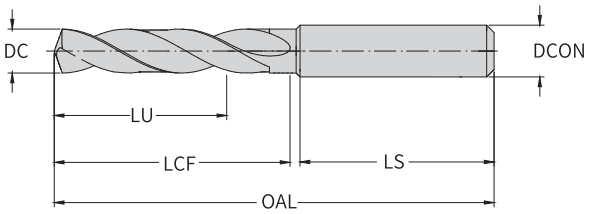
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-05-03000A0 AP30P1U | 3.0 | | 23 | 66 | 28 | 36 | 4 | ● |
| D106-05-03100A0 AP30P1U | 3.1 | | 23 | 66 | 28 | 36 | 4 | ● |
| D106-05-03175A0 AP30P1U | 3.175 | 1/8" | 23 | 66 | 28 | 36 | 4 | ○ |
| D106-05-03200A0 AP30P1U | 3.2 | | 23 | 66 | 28 | 36 | 4 | ● |
| D106-05-03250A0 AP30P1U | 3.25 | | 23 | 66 | 28 | 36 | 4 | ○ |
| D106-05-03300A0 AP30P1U | 3.3 | | 23 | 66 | 28 | 36 | 4 | ● |
| D106-05-03400A0 AP30P1U | 3.4 | | 23 | 66 | 28 | 36 | 4 | ○ |
| D106-05-03500A0 AP30P1U | 3.5 | | 23 | 66 | 28 | 36 | 4 | ● |
| D106-05-03572A0 AP30P1U | 3.572 | 9/64" | 23 | 66 | 28 | 36 | 4 | ○ |
| D106-05-03600A0 AP30P1U | 3.6 | | 23 | 66 | 28 | 36 | 4 | ● |
| D106-05-03650A0 AP30P1U | 3.65 | | 23 | 66 | 28 | 36 | 4 | ○ |
| D106-05-03700A0 AP30P1U | 3.7 | | 23 | 66 | 28 | 36 | 4 | ● |
| D106-05-03800A0 AP30P1U | 3.8 | | 29 | 74 | 36 | 36 | 4 | ○ |
| D106-05-03900A0 AP30P1U | 3.9 | | 29 | 74 | 36 | 36 | 4 | ● |
| D106-05-03969A0 AP30P1U | 3.969 | 5/32" | 29 | 74 | 36 | 36 | 4 | ○ |
| D106-05-04000A0 AP30P1U | 4.0 | | 29 | 74 | 36 | 36 | 4 | ● |
| D106-05-04100A0 AP30P1U | 4.1 | | 29 | 74 | 36 | 36 | 6 | ○ |
| D106-05-04200A0 AP30P1U | 4.2 | | 29 | 74 | 36 | 36 | 6 | ● |
| D106-05-04300A0 AP30P1U | 4.3 | | 29 | 74 | 36 | 36 | 6 | ○ |
| D106-05-04366A0 AP30P1U | 4.366 | 11/64" | 29 | 74 | 36 | 36 | 6 | ○ |
| D106-05-04400A0 AP30P1U | 4.4 | | 29 | 74 | 36 | 36 | 6 | ○ |
| D106-05-04500A0 AP30P1U | 4.5 | | 29 | 74 | 36 | 36 | 6 | ● |
| D106-05-04600A0 AP30P1U | 4.6 | | 29 | 74 | 36 | 36 | 6 | ○ |
| D106-05-04650A0 AP30P1U | 4.65 | | 29 | 74 | 36 | 36 | 6 | ○ |
| D106-05-04700A0 AP30P1U | 4.7 | | 29 | 74 | 36 | 36 | 6 | ○ |
| D106-05-04763A0 AP30P1U | 4.763 | 3/16" | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-04800A0 AP30P1U | 4.8 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-04900A0 AP30P1U | 4.9 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05000A0 AP30P1U | 5.0 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05100A0 AP30P1U | 5.1 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05159A0 AP30P1U | 5.159 | 13/64" | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05200A0 AP30P1U | 5.2 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05300A0 AP30P1U | 5.3 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05400A0 AP30P1U | 5.4 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05500A0 AP30P1U | 5.5 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05550A0 AP30P1U | 5.55 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05556A0 AP30P1U | 5.556 | 7/32" | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05600A0 AP30P1U | 5.6 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05700A0 AP30P1U | 5.7 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05800A0 AP30P1U | 5.8 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05900A0 AP30P1U | 5.9 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05953A0 AP30P1U | 5.953 | 15/64" | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-06000A0 AP30P1U | 6.0 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-06100A0 AP30P1U | 6.1 | | 43 | 91 | 53 | 36 | 8 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 5xDc




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

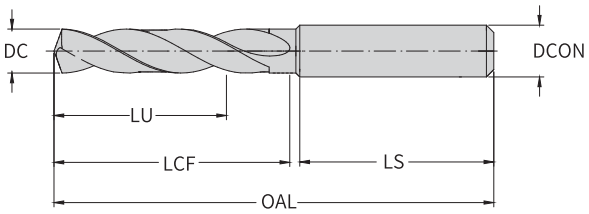
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-05-06200A0 AP30P1U | 6.2 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06300A0 AP30P1U | 6.3 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06350A0 AP30P1U | 6.35 | 1/4" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06400A0 AP30P1U | 6.4 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06500A0 AP30P1U | 6.5 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-06600A0 AP30P1U | 6.6 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06700A0 AP30P1U | 6.7 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06747A0 AP30P1U | 6.747 | 17/64" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06800A0 AP30P1U | 6.8 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-06900A0 AP30P1U | 6.9 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07000A0 AP30P1U | 7.0 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07100A0 AP30P1U | 7.1 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07144A0 AP30P1U | 7.144 | 9/32" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07200A0 AP30P1U | 7.2 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07300A0 AP30P1U | 7.3 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07400A0 AP30P1U | 7.4 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07500A0 AP30P1U | 7.5 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07541A0 AP30P1U | 7.541 | 19/64" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07550A0 AP30P1U | 7.55 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07600A0 AP30P1U | 7.6 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07700A0 AP30P1U | 7.7 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07800A0 AP30P1U | 7.8 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07900A0 AP30P1U | 7.9 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07938A0 AP30P1U | 7.938 | 5/16" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-08000A0 AP30P1U | 8.0 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-08100A0 AP30P1U | 8.1 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08200A0 AP30P1U | 8.2 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08300A0 AP30P1U | 8.3 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08334A0 AP30P1U | 8.334 | 21/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08400A0 AP30P1U | 8.4 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08500A0 AP30P1U | 8.5 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-08600A0 AP30P1U | 8.6 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-08700A0 AP30P1U | 8.7 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08731A0 AP30P1U | 8.731 | 11/32" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08800A0 AP30P1U | 8.8 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-08900A0 AP30P1U | 8.9 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-09000A0 AP30P1U | 9.0 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-09100A0 AP30P1U | 9.1 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09128A0 AP30P1U | 9.128 | 23/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09200A0 AP30P1U | 9.2 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09300A0 AP30P1U | 9.3 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-09400A0 AP30P1U | 9.4 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09500A0 AP30P1U | 9.5 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09525A0 AP30P1U | 9.525 | 3/8" | 49 | 103 | 61 | 40 | 10 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 5xDc




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

•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D106-05-09550A0 AP30P1U** | 9.55 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D106-05-09600A0 AP30P1U** | 9.6 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D106-05-09700A0 AP30P1U** | 9.7 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D106-05-09800A0 AP30P1U** | 9.8 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D106-05-09900A0 AP30P1U** | 9.9 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D106-05-09922A0 AP30P1U** | 9.922 | 25/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| **D106-05-10000A0 AP30P1U** | 10.0 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D106-05-10100A0 AP30P1U** | 10.1 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-10200A0 AP30P1U** | 10.2 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-10300A0 AP30P1U** | 10.3 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-10319A0 AP30P1U** | 10.319 | 13/32" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-10400A0 AP30P1U** | 10.4 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-10500A0 AP30P1U** | 10.5 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-10600A0 AP30P1U** | 10.6 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-10700A0 AP30P1U** | 10.7 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-10716A0 AP30P1U** | 10.716 | 27/64" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-10800A0 AP30P1U** | 10.8 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-10900A0 AP30P1U** | 10.9 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11000A0 AP30P1U** | 11.0 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-11100A0 AP30P1U** | 11.1 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11113A0 AP30P1U** | 11.113 | 7/16" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11200A0 AP30P1U** | 11.2 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11300A0 AP30P1U** | 11.3 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11400A0 AP30P1U** | 11.4 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11500A0 AP30P1U** | 11.5 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11509A0 AP30P1U** | 11.509 | 29/64" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11550A0 AP30P1U** | 11.55 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11600A0 AP30P1U** | 11.6 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11700A0 AP30P1U** | 11.7 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11800A0 AP30P1U** | 11.8 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-11900A0 AP30P1U** | 11.9 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-11906A0 AP30P1U** | 11.906 | 15/32" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D106-05-12000A0 AP30P1U** | 12.0 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D106-05-12100A0 AP30P1U** | 12.1 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12200A0 AP30P1U** | 12.2 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12250A0 AP30P1U** | 12.25 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12300A0 AP30P1U** | 12.3 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12303A0 AP30P1U** | 12.303 | 31/64" | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12400A0 AP30P1U** | 12.4 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12500A0 AP30P1U** | 12.5 | | 60 | 124 | 77 | 45 | 14 | ● |
| **D106-05-12600A0 AP30P1U** | 12.6 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12700A0 AP30P1U** | 12.7 | 1/2" | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12750A0 AP30P1U** | 12.75 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D106-05-12800A0 AP30P1U** | 12.8 | | 60 | 124 | 77 | 45 | 14 | ○ |

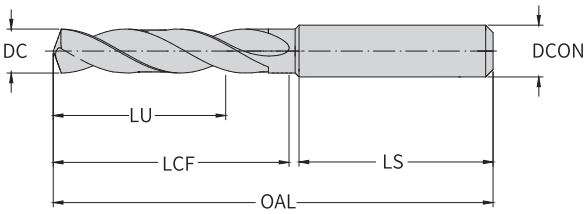
Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide External Coolant Drill D106 5xDc

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

•• 1st choice • 2nd choice

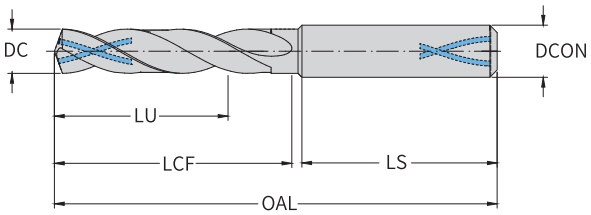


| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-05-12900A0 AP30P1U | 12.9 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13000A0 AP30P1U | 13.0 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-13100A0 AP30P1U | 13.1 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13200A0 AP30P1U | 13.2 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-13300A0 AP30P1U | 13.3 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13400A0 AP30P1U | 13.4 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13494A0 AP30P1U | 13.494 | 17/32" | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13500A0 AP30P1U | 13.5 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13600A0 AP30P1U | 13.6 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13700A0 AP30P1U | 13.7 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-13800A0 AP30P1U | 13.8 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13900A0 AP30P1U | 13.9 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-14000A0 AP30P1U | 14.0 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-14100A0 AP30P1U | 14.1 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14200A0 AP30P1U | 14.2 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14288A0 AP30P1U | 14.288 | 9/16" | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14300A0 AP30P1U | 14.3 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14400A0 AP30P1U | 14.4 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14500A0 AP30P1U | 14.5 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14600A0 AP30P1U | 14.6 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14700A0 AP30P1U | 14.7 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14750A0 AP30P1U | 14.75 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14800A0 AP30P1U | 14.8 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15000A0 AP30P1U | 15.0 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15100A0 AP30P1U | 15.1 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15200A0 AP30P1U | 15.2 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15300A0 AP30P1U | 15.3 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15500A0 AP30P1U | 15.5 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15600A0 AP30P1U | 15.6 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15700A0 AP30P1U | 15.7 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15800A0 AP30P1U | 15.8 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15875A0 AP30P1U | 15.875 | 5/8" | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15900A0 AP30P1U | 15.9 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-16000A0 AP30P1U | 16.0 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-16500A0 AP30P1U | 16.5 | | 71 | 143 | 93 | 48 | 18 | ● |
| D106-05-17000A0 AP30P1U | 17.0 | | 71 | 143 | 93 | 48 | 18 | ● |
| D106-05-17500A0 AP30P1U | 17.5 | | 71 | 143 | 93 | 48 | 18 | ● |
| D106-05-18000A0 AP30P1U | 18.0 | | 71 | 143 | 93 | 48 | 18 | ● |
| D106-05-18500A0 AP30P1U | 18.5 | | 77 | 153 | 101 | 50 | 20 | ● |
| D106-05-19000A0 AP30P1U | 19.0 | | 77 | 153 | 101 | 50 | 20 | ● |
| D106-05-20000A0 AP30P1U | 20.0 | | 77 | 153 | 101 | 50 | 20 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 3xDc




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

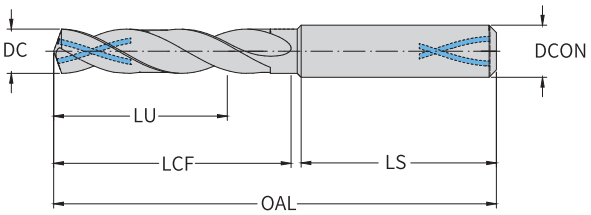
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D106-03-03000A1 AP30P1U** | 3.0 | | 14 | 62 | 20 | 36 | 4 | ● |
| **D106-03-03100A1 AP30P1U** | 3.1 | | 14 | 62 | 20 | 36 | 4 | ● |
| **D106-03-03175A1 AP30P1U** | 3.175 | 1/8" | 14 | 62 | 20 | 36 | 4 | ○ |
| **D106-03-03200A1 AP30P1U** | 3.2 | | 14 | 62 | 20 | 36 | 4 | ● |
| **D106-03-03250A1 AP30P1U** | 3.25 | | 14 | 62 | 20 | 36 | 4 | ○ |
| **D106-03-03300A1 AP30P1U** | 3.3 | | 14 | 62 | 20 | 36 | 4 | ● |
| **D106-03-03400A1 AP30P1U** | 3.4 | | 14 | 62 | 20 | 36 | 4 | ○ |
| **D106-03-03500A1 AP30P1U** | 3.5 | | 14 | 62 | 20 | 36 | 4 | ● |
| **D106-03-03572A1 AP30P1U** | 3.572 | 9/64" | 14 | 62 | 20 | 36 | 4 | ○ |
| **D106-03-03600A1 AP30P1U** | 3.6 | | 14 | 62 | 20 | 36 | 4 | ● |
| **D106-03-03650A1 AP30P1U** | 3.65 | | 14 | 62 | 20 | 36 | 4 | ○ |
| **D106-03-03700A1 AP30P1U** | 3.7 | | 14 | 62 | 20 | 36 | 4 | ● |
| **D106-03-03800A1 AP30P1U** | 3.8 | | 17 | 66 | 24 | 36 | 4 | ○ |
| **D106-03-03900A1 AP30P1U** | 3.9 | | 17 | 66 | 24 | 36 | 4 | ● |
| **D106-03-03969A1 AP30P1U** | 3.969 | 5/32" | 17 | 66 | 24 | 36 | 4 | ○ |
| **D106-03-04000A1 AP30P1U** | 4.0 | | 17 | 66 | 24 | 36 | 4 | ● |
| **D106-03-04100A1 AP30P1U** | 4.1 | | 17 | 66 | 24 | 36 | 6 | ○ |
| **D106-03-04200A1 AP30P1U** | 4.2 | | 17 | 66 | 24 | 36 | 6 | ● |
| **D106-03-04300A1 AP30P1U** | 4.3 | | 17 | 66 | 24 | 36 | 6 | ○ |
| **D106-03-04366A1 AP30P1U** | 4.366 | 11/64" | 17 | 66 | 24 | 36 | 6 | ○ |
| **D106-03-04400A1 AP30P1U** | 4.4 | | 17 | 66 | 24 | 36 | 6 | ○ |
| **D106-03-04500A1 AP30P1U** | 4.5 | | 17 | 66 | 24 | 36 | 6 | ● |
| **D106-03-04600A1 AP30P1U** | 4.6 | | 17 | 66 | 24 | 36 | 6 | ○ |
| **D106-03-04650A1 AP30P1U** | 4.65 | | 17 | 66 | 24 | 36 | 6 | ○ |
| **D106-03-04700A1 AP30P1U** | 4.7 | | 17 | 66 | 24 | 36 | 6 | ○ |
| **D106-03-04763A1 AP30P1U** | 4.763 | 3/16" | 20 | 66 | 28 | 36 | 6 | ○ |
| **D106-03-04800A1 AP30P1U** | 4.8 | | 20 | 66 | 28 | 36 | 6 | ● |
| **D106-03-04900A1 AP30P1U** | 4.9 | | 20 | 66 | 28 | 36 | 6 | ● |
| **D106-03-05000A1 AP30P1U** | 5.0 | | 20 | 66 | 28 | 36 | 6 | ● |
| **D106-03-05100A1 AP30P1U** | 5.1 | | 20 | 66 | 28 | 36 | 6 | ● |
| **D106-03-05159A1 AP30P1U** | 5.159 | 13/64" | 20 | 66 | 28 | 36 | 6 | ○ |
| **D106-03-05200A1 AP30P1U** | 5.2 | | 20 | 66 | 28 | 36 | 6 | ● |
| **D106-03-05300A1 AP30P1U** | 5.3 | | 20 | 66 | 28 | 36 | 6 | ○ |
| **D106-03-05400A1 AP30P1U** | 5.4 | | 20 | 66 | 28 | 36 | 6 | ○ |
| **D106-03-05500A1 AP30P1U** | 5.5 | | 20 | 66 | 28 | 36 | 6 | ● |
| **D106-03-05550A1 AP30P1U** | 5.55 | | 20 | 66 | 28 | 36 | 6 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 3xDc




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

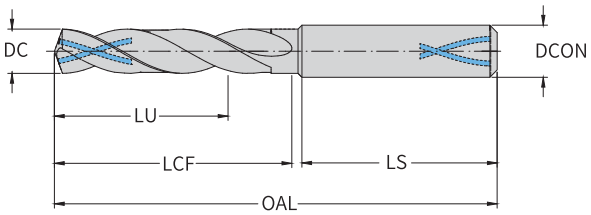
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-03-05556A1 AP30P1U | 5.556 | 7/32" | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05600A1 AP30P1U | 5.6 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05700A1 AP30P1U | 5.7 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05750A1 AP30P1U | 5.75 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-05800A1 AP30P1U | 5.8 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05900A1 AP30P1U | 5.9 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-05953A1 AP30P1U | 5.953 | 15/64" | 20 | 66 | 28 | 36 | 6 | ○ |
| D106-03-06000A1 AP30P1U | 6.0 | | 20 | 66 | 28 | 36 | 6 | ● |
| D106-03-06100A1 AP30P1U | 6.1 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06200A1 AP30P1U | 6.2 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06300A1 AP30P1U | 6.3 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06350A1 AP30P1U | 6.35 | 1/4" | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06400A1 AP30P1U | 6.4 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06500A1 AP30P1U | 6.5 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-06600A1 AP30P1U | 6.6 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06700A1 AP30P1U | 6.7 | | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06747A1 AP30P1U | 6.747 | 17/64" | 24 | 79 | 41 | 36 | 8 | ○ |
| D106-03-06800A1 AP30P1U | 6.8 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-06900A1 AP30P1U | 6.9 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-07000A1 AP30P1U | 7.0 | | 24 | 79 | 41 | 36 | 8 | ● |
| D106-03-07100A1 AP30P1U | 7.1 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07144A1 AP30P1U | 7.144 | 9/32" | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07200A1 AP30P1U | 7.2 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07250A1 AP30P1U | 7.25 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07300A1 AP30P1U | 7.3 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07400A1 AP30P1U | 7.4 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07450A1 AP30P1U | 7.45 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07500A1 AP30P1U | 7.5 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07541A1 AP30P1U | 7.541 | 19/64" | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07550A1 AP30P1U | 7.55 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07600A1 AP30P1U | 7.6 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07700A1 AP30P1U | 7.7 | | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-07800A1 AP30P1U | 7.8 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07900A1 AP30P1U | 7.9 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-07938A1 AP30P1U | 7.938 | 5/16" | 29 | 79 | 41 | 36 | 8 | ○ |
| D106-03-08000A1 AP30P1U | 8.0 | | 29 | 79 | 41 | 36 | 8 | ● |
| D106-03-08100A1 AP30P1U | 8.1 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08200A1 AP30P1U | 8.2 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08300A1 AP30P1U | 8.3 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08334A1 AP30P1U | 8.334 | 21/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08400A1 AP30P1U | 8.4 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08500A1 AP30P1U | 8.5 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-08600A1 AP30P1U | 8.6 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-08700A1 AP30P1U | 8.7 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08731A1 AP30P1U | 8.731 | 11/32" | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08750A1 AP30P1U | 8.75 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-08800A1 AP30P1U | 8.8 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-08900A1 AP30P1U | 8.9 | | 35 | 89 | 47 | 40 | 10 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 3xDc




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

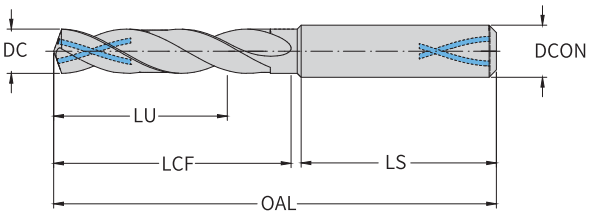
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-03-09000A1 AP30P1U | 9.0 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-09100A1 AP30P1U | 9.1 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09128A1 AP30P1U | 9.128 | 23/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09200A1 AP30P1U | 9.2 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09300A1 AP30P1U | 9.3 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-09400A1 AP30P1U | 9.4 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09500A1 AP30P1U | 9.5 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09525A1 AP30P1U | 9.525 | 3/8" | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09550A1 AP30P1U | 9.55 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09600A1 AP30P1U | 9.6 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09700A1 AP30P1U | 9.7 | | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-09800A1 AP30P1U | 9.8 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-09900A1 AP30P1U | 9.9 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-09922A1 AP30P1U | 9.922 | 25/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| D106-03-10000A1 AP30P1U | 10.0 | | 35 | 89 | 47 | 40 | 10 | ● |
| D106-03-10100A1 AP30P1U | 10.1 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-10200A1 AP30P1U | 10.2 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-10300A1 AP30P1U | 10.3 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-10319A1 AP30P1U | 10.319 | 13/32" | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-10400A1 AP30P1U | 10.4 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-10500A1 AP30P1U | 10.5 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-10600A1 AP30P1U | 10.6 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-10700A1 AP30P1U | 10.7 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-10716A1 AP30P1U | 10.716 | 27/64" | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-10800A1 AP30P1U | 10.8 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-10900A1 AP30P1U | 10.9 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11000A1 AP30P1U | 11.0 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-11100A1 AP30P1U | 11.1 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11113A1 AP30P1U | 11.113 | 7/16" | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11200A1 AP30P1U | 11.2 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11300A1 AP30P1U | 11.3 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11400A1 AP30P1U | 11.4 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11500A1 AP30P1U | 11.5 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11509A1 AP30P1U | 11.509 | 29/64" | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11550A1 AP30P1U | 11.55 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11600A1 AP30P1U | 11.6 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11700A1 AP30P1U | 11.7 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11800A1 AP30P1U | 11.8 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-11900A1 AP30P1U | 11.9 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-11906A1 AP30P1U | 11.906 | 15/32" | 40 | 102 | 55 | 45 | 12 | ○ |
| D106-03-12000A1 AP30P1U | 12.0 | | 40 | 102 | 55 | 45 | 12 | ● |
| D106-03-12100A1 AP30P1U | 12.1 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12200A1 AP30P1U | 12.2 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12250A1 AP30P1U | 12.25 | | 43 | 107 | 60 | 45 | 14 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 3xDc




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

•• 1st choice • 2nd choice

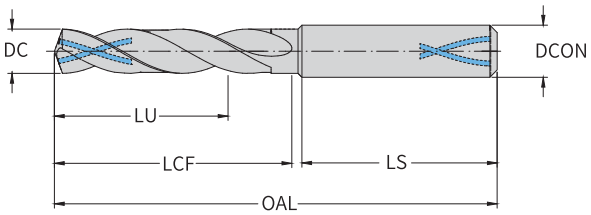
3×DC | DIN 6537 K | m7 | 140°

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-03-12300A1 AP30P1U | 12.3 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12303A1 AP30P1U | 12.303 | 31/64" | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12400A1 AP30P1U | 12.4 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12500A1 AP30P1U | 12.5 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-12600A1 AP30P1U | 12.6 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12700A1 AP30P1U | 12.7 | 1/2" | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12750A1 AP30P1U | 12.75 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12800A1 AP30P1U | 12.8 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-12900A1 AP30P1U | 12.9 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13000A1 AP30P1U | 13.0 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-13100A1 AP30P1U | 13.1 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13200A1 AP30P1U | 13.2 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-13300A1 AP30P1U | 13.3 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13400A1 AP30P1U | 13.4 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13494A1 AP30P1U | 13.494 | 17/32" | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13500A1 AP30P1U | 13.5 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13600A1 AP30P1U | 13.6 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13700A1 AP30P1U | 13.7 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13800A1 AP30P1U | 13.8 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-13900A1 AP30P1U | 13.9 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D106-03-14000A1 AP30P1U | 14.0 | | 43 | 107 | 60 | 45 | 14 | ● |
| D106-03-14100A1 AP30P1U | 14.1 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14200A1 AP30P1U | 14.2 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14288A1 AP30P1U | 14.288 | 9/16" | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14300A1 AP30P1U | 14.3 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14400A1 AP30P1U | 14.4 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14500A1 AP30P1U | 14.5 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14600A1 AP30P1U | 14.6 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14700A1 AP30P1U | 14.7 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-14750A1 AP30P1U | 14.75 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-14800A1 AP30P1U | 14.8 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15000A1 AP30P1U | 15.0 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15100A1 AP30P1U | 15.1 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15200A1 AP30P1U | 15.2 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15300A1 AP30P1U | 15.3 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15500A1 AP30P1U | 15.5 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15600A1 AP30P1U | 15.6 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15700A1 AP30P1U | 15.7 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15800A1 AP30P1U | 15.8 | | 45 | 115 | 65 | 48 | 16 | ● |
| D106-03-15875A1 AP30P1U | 15.875 | 5/8" | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-15900A1 AP30P1U | 15.9 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D106-03-16000A1 AP30P1U | 16.0 | | 45 | 115 | 65 | 48 | 16 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 5xDc




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

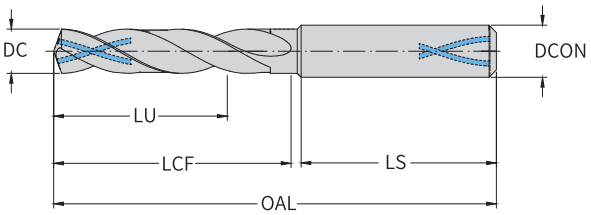
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D106-05-03000A1 AP30P1U** | 3.0 | | 23 | 66 | 28 | 36 | 4 | ● |
| **D106-05-03100A1 AP30P1U** | 3.1 | | 23 | 66 | 28 | 36 | 4 | ● |
| **D106-05-03175A1 AP30P1U** | 3.175 | 1/8" | 23 | 66 | 28 | 36 | 4 | ○ |
| **D106-05-03200A1 AP30P1U** | 3.2 | | 23 | 66 | 28 | 36 | 4 | ● |
| **D106-05-03250A1 AP30P1U** | 3.25 | | 23 | 66 | 28 | 36 | 4 | ○ |
| **D106-05-03300A1 AP30P1U** | 3.3 | | 23 | 66 | 28 | 36 | 4 | ● |
| **D106-05-03400A1 AP30P1U** | 3.4 | | 23 | 66 | 28 | 36 | 4 | ○ |
| **D106-05-03500A1 AP30P1U** | 3.5 | | 23 | 66 | 28 | 36 | 4 | ● |
| **D106-05-03572A1 AP30P1U** | 3.572 | 9/64" | 23 | 66 | 28 | 36 | 4 | ○ |
| **D106-05-03600A1 AP30P1U** | 3.6 | | 23 | 66 | 28 | 36 | 4 | ● |
| **D106-05-03650A1 AP30P1U** | 3.65 | | 23 | 66 | 28 | 36 | 4 | ○ |
| **D106-05-03700A1 AP30P1U** | 3.7 | | 23 | 66 | 28 | 36 | 4 | ● |
| **D106-05-03800A1 AP30P1U** | 3.8 | | 29 | 74 | 36 | 36 | 4 | ○ |
| **D106-05-03900A1 AP30P1U** | 3.9 | | 29 | 74 | 36 | 36 | 4 | ● |
| **D106-05-03969A1 AP30P1U** | 3.969 | 5/32" | 29 | 74 | 36 | 36 | 4 | ○ |
| **D106-05-04000A1 AP30P1U** | 4.0 | | 29 | 74 | 36 | 36 | 4 | ● |
| **D106-05-04100A1 AP30P1U** | 4.1 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D106-05-04200A1 AP30P1U** | 4.2 | | 29 | 74 | 36 | 36 | 6 | ● |
| **D106-05-04300A1 AP30P1U** | 4.3 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D106-05-04366A1 AP30P1U** | 4.366 | 11/64" | 29 | 74 | 36 | 36 | 6 | ○ |
| **D106-05-04400A1 AP30P1U** | 4.4 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D106-05-04500A1 AP30P1U** | 4.5 | | 29 | 74 | 36 | 36 | 6 | ● |
| **D106-05-04600A1 AP30P1U** | 4.6 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D106-05-04650A1 AP30P1U** | 4.65 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D106-05-04700A1 AP30P1U** | 4.7 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D106-05-04763A1 AP30P1U** | 4.763 | 3/16" | 35 | 82 | 44 | 36 | 6 | ○ |
| **D106-05-04800A1 AP30P1U** | 4.8 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D106-05-04900A1 AP30P1U** | 4.9 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D106-05-05000A1 AP30P1U** | 5.0 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D106-05-05100A1 AP30P1U** | 5.1 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D106-05-05159A1 AP30P1U** | 5.159 | 13/64" | 35 | 82 | 44 | 36 | 6 | ○ |
| **D106-05-05200A1 AP30P1U** | 5.2 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D106-05-05300A1 AP30P1U** | 5.3 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D106-05-05400A1 AP30P1U** | 5.4 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D106-05-05500A1 AP30P1U** | 5.5 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D106-05-05550A1 AP30P1U** | 5.55 | | 35 | 82 | 44 | 36 | 6 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 5xDc




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

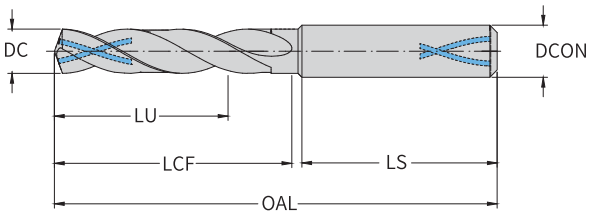
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-05-05556A1 AP30P1U | 5.556 | 7/32" | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05600A1 AP30P1U | 5.6 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05700A1 AP30P1U | 5.7 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05750A1 AP30P1U | 5.75 | | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-05800A1 AP30P1U | 5.8 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05900A1 AP30P1U | 5.9 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-05953A1 AP30P1U | 5.953 | 15/64" | 35 | 82 | 44 | 36 | 6 | ○ |
| D106-05-06000A1 AP30P1U | 6.0 | | 35 | 82 | 44 | 36 | 6 | ● |
| D106-05-06100A1 AP30P1U | 6.1 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06200A1 AP30P1U | 6.2 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06300A1 AP30P1U | 6.3 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06350A1 AP30P1U | 6.35 | 1/4" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06400A1 AP30P1U | 6.4 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06500A1 AP30P1U | 6.5 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-06600A1 AP30P1U | 6.6 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06700A1 AP30P1U | 6.7 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06747A1 AP30P1U | 6.747 | 17/64" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-06800A1 AP30P1U | 6.8 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-06900A1 AP30P1U | 6.9 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07000A1 AP30P1U | 7.0 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07100A1 AP30P1U | 7.1 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07144A1 AP30P1U | 7.144 | 9/32" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07200A1 AP30P1U | 7.2 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07250A1 AP30P1U | 7.25 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07300A1 AP30P1U | 7.3 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07400A1 AP30P1U | 7.4 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07450A1 AP30P1U | 7.45 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07500A1 AP30P1U | 7.5 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07541A1 AP30P1U | 7.541 | 19/64" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07550A1 AP30P1U | 7.55 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07600A1 AP30P1U | 7.6 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07700A1 AP30P1U | 7.7 | | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-07800A1 AP30P1U | 7.8 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07900A1 AP30P1U | 7.9 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-07938A1 AP30P1U | 7.938 | 5/16" | 43 | 91 | 53 | 36 | 8 | ○ |
| D106-05-08000A1 AP30P1U | 8.0 | | 43 | 91 | 53 | 36 | 8 | ● |
| D106-05-08100A1 AP30P1U | 8.1 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08200A1 AP30P1U | 8.2 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08300A1 AP30P1U | 8.3 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08334A1 AP30P1U | 8.334 | 21/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08400A1 AP30P1U | 8.4 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08500A1 AP30P1U | 8.5 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-08600A1 AP30P1U | 8.6 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-08700A1 AP30P1U | 8.7 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08731A1 AP30P1U | 8.731 | 11/32" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08750A1 AP30P1U | 8.75 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-08800A1 AP30P1U | 8.8 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-08900A1 AP30P1U | 8.9 | | 49 | 103 | 61 | 40 | 10 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 5xDc




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

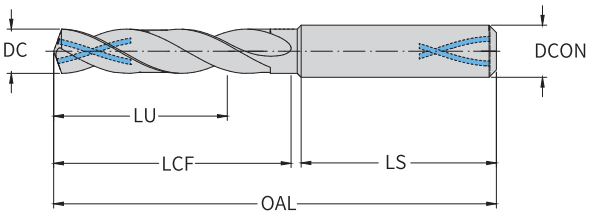
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-05-09000A1 AP30P1U | 9.0 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-09100A1 AP30P1U | 9.1 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09128A1 AP30P1U | 9.128 | 23/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09200A1 AP30P1U | 9.2 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09300A1 AP30P1U | 9.3 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-09400A1 AP30P1U | 9.4 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09500A1 AP30P1U | 9.5 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09525A1 AP30P1U | 9.525 | 3/8" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09550A1 AP30P1U | 9.55 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09600A1 AP30P1U | 9.6 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09700A1 AP30P1U | 9.7 | | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-09800A1 AP30P1U | 9.8 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-09900A1 AP30P1U | 9.9 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-09922A1 AP30P1U | 9.922 | 25/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| D106-05-10000A1 AP30P1U | 10.0 | | 49 | 103 | 61 | 40 | 10 | ● |
| D106-05-10100A1 AP30P1U | 10.1 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-10200A1 AP30P1U | 10.2 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-10300A1 AP30P1U | 10.3 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-10319A1 AP30P1U | 10.319 | 13/32" | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-10400A1 AP30P1U | 10.4 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-10500A1 AP30P1U | 10.5 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-10600A1 AP30P1U | 10.6 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-10700A1 AP30P1U | 10.7 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-10716A1 AP30P1U | 10.716 | 27/64" | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-10800A1 AP30P1U | 10.8 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-10900A1 AP30P1U | 10.9 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11000A1 AP30P1U | 11.0 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-11100A1 AP30P1U | 11.1 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11113A1 AP30P1U | 11.113 | 7/16" | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11200A1 AP30P1U | 11.2 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11300A1 AP30P1U | 11.3 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11400A1 AP30P1U | 11.4 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11500A1 AP30P1U | 11.5 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11509A1 AP30P1U | 11.509 | 29/64" | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11550A1 AP30P1U | 11.55 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11600A1 AP30P1U | 11.6 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11700A1 AP30P1U | 11.7 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11800A1 AP30P1U | 11.8 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-11900A1 AP30P1U | 11.9 | | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-11906A1 AP30P1U | 11.906 | 15/32" | 56 | 118 | 71 | 45 | 12 | ○ |
| D106-05-12000A1 AP30P1U | 12.0 | | 56 | 118 | 71 | 45 | 12 | ● |
| D106-05-12100A1 AP30P1U | 12.1 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12200A1 AP30P1U | 12.2 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12250A1 AP30P1U | 12.25 | | 60 | 124 | 77 | 45 | 14 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D106 5xDc




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

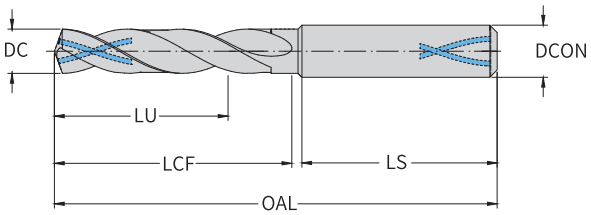
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D106-05-12300A1 AP30P1U | 12.3 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12303A1 AP30P1U | 12.303 | 31/64" | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12400A1 AP30P1U | 12.4 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12500A1 AP30P1U | 12.5 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-12600A1 AP30P1U | 12.6 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12700A1 AP30P1U | 12.7 | 1/2" | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12750A1 AP30P1U | 12.75 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12800A1 AP30P1U | 12.8 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-12900A1 AP30P1U | 12.9 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13000A1 AP30P1U | 13.0 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-13100A1 AP30P1U | 13.1 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13200A1 AP30P1U | 13.2 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-13300A1 AP30P1U | 13.3 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13400A1 AP30P1U | 13.4 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13494A1 AP30P1U | 13.494 | 17/32" | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13500A1 AP30P1U | 13.5 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13600A1 AP30P1U | 13.6 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13700A1 AP30P1U | 13.7 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-13800A1 AP30P1U | 13.8 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-13900A1 AP30P1U | 13.9 | | 60 | 124 | 77 | 45 | 14 | ○ |
| D106-05-14000A1 AP30P1U | 14.0 | | 60 | 124 | 77 | 45 | 14 | ● |
| D106-05-14100A1 AP30P1U | 14.1 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14200A1 AP30P1U | 14.2 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14288A1 AP30P1U | 14.288 | 9/16" | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14300A1 AP30P1U | 14.3 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14400A1 AP30P1U | 14.4 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14500A1 AP30P1U | 14.5 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14600A1 AP30P1U | 14.6 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14700A1 AP30P1U | 14.7 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-14750A1 AP30P1U | 14.75 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-14800A1 AP30P1U | 14.8 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15000A1 AP30P1U | 15.0 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15100A1 AP30P1U | 15.1 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15200A1 AP30P1U | 15.2 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15300A1 AP30P1U | 15.3 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15500A1 AP30P1U | 15.5 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15600A1 AP30P1U | 15.6 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15700A1 AP30P1U | 15.7 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15800A1 AP30P1U | 15.8 | | 63 | 133 | 83 | 48 | 16 | ● |
| D106-05-15875A1 AP30P1U | 15.875 | 5/8" | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-15900A1 AP30P1U | 15.9 | | 63 | 133 | 83 | 48 | 16 | ○ |
| D106-05-16000A1 AP30P1U | 16.0 | | 63 | 133 | 83 | 48 | 16 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D108 8xDc




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

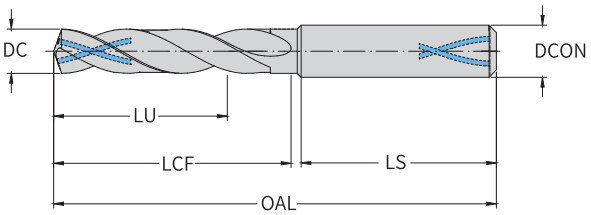
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D108-08-03000A1** | 3.0 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03100A1** | 3.1 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03175A1** | 3.175 | 1/8" | 28 | 74 | 34 | 36 | 4 | ○ |
| **D108-08-03200A1** | 3.2 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03300A1** | 3.3 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03400A1** | 3.4 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03500A1** | 3.5 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03572A1** | 3.572 | 9/64" | 28 | 74 | 34 | 36 | 4 | ○ |
| **D108-08-03600A1** | 3.6 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03700A1** | 3.7 | | 28 | 74 | 34 | 36 | 4 | ● |
| **D108-08-03800A1** | 3.8 | | 35 | 81 | 42 | 36 | 4 | ● |
| **D108-08-03900A1** | 3.9 | | 35 | 81 | 42 | 36 | 4 | ● |
| **D108-08-03969A1** | 3.969 | 5/32" | 35 | 81 | 42 | 36 | 4 | ○ |
| **D108-08-04000A1** | 4.0 | | 35 | 81 | 42 | 36 | 4 | ● |
| **D108-08-04100A1** | 4.1 | | 35 | 81 | 42 | 36 | 6 | ● |
| **D108-08-04200A1** | 4.2 | | 35 | 81 | 42 | 36 | 6 | ● |
| **D108-08-04300A1** | 4.3 | | 37 | 81 | 44 | 36 | 6 | ● |
| **D108-08-04366A1** | 4.366 | 11/64" | 37 | 81 | 44 | 36 | 6 | ○ |
| **D108-08-04400A1** | 4.4 | | 37 | 81 | 44 | 36 | 6 | ● |
| **D108-08-04500A1** | 4.5 | | 37 | 81 | 44 | 36 | 6 | ● |
| **D108-08-04600A1** | 4.6 | | 37 | 81 | 44 | 36 | 6 | ● |
| **D108-08-04700A1** | 4.7 | | 37 | 81 | 44 | 36 | 6 | ● |
| **D108-08-04763A1** | 4.763 | 3/16" | 43 | 97 | 52 | 36 | 6 | ○ |
| **D108-08-04800A1** | 4.8 | | 43 | 97 | 52 | 36 | 6 | ● |
| **D108-08-04900A1** | 4.9 | | 43 | 97 | 52 | 36 | 6 | ● |
| **D108-08-05000A1** | 5.0 | | 45 | 97 | 55 | 36 | 6 | ● |
| **D108-08-05100A1** | 5.1 | | 45 | 97 | 55 | 36 | 6 | ● |
| **D108-08-05159A1** | 5.159 | 13/64" | 45 | 97 | 55 | 36 | 6 | ○ |
| **D108-08-05200A1** | 5.2 | | 45 | 97 | 55 | 36 | 6 | ● |
| **D108-08-05300A1** | 5.3 | | 45 | 97 | 55 | 36 | 6 | ● |
| **D108-08-05400A1** | 5.4 | | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-05500A1** | 5.5 | | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-05556A1** | 5.556 | 7/32" | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-05600A1** | 5.6 | | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-05700A1** | 5.7 | | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-05800A1** | 5.8 | | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-05900A1** | 5.9 | | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-05953A1** | 5.953 | 15/64" | 48 | 97 | 57 | 36 | 6 | ○ |
| **D108-08-06000A1** | 6.0 | | 48 | 97 | 57 | 36 | 6 | ● |
| **D108-08-06100A1** | 6.1 | | 53 | 106 | 64 | 36 | 8 | ● |
| **D108-08-06200A1** | 6.2 | | 53 | 106 | 64 | 36 | 8 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D108 8xDc




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

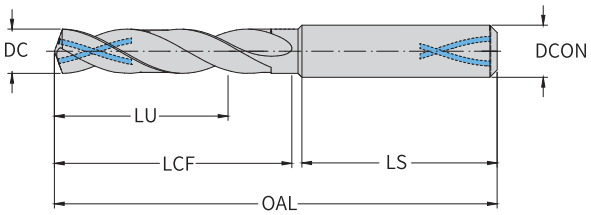
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D108-08-06300A1** | 6.3 | | 53 | 106 | 64 | 36 | 8 | ● |
| **D108-08-06350A1** | 6.35 | 1/4" | 54 | 106 | 66 | 36 | 8 | ● |
| **D108-08-06400A1** | 6.4 | | 54 | 106 | 66 | 36 | 8 | ● |
| **D108-08-06500A1** | 6.5 | | 55 | 106 | 66 | 36 | 8 | ● |
| **D108-08-06600A1** | 6.6 | | 55 | 106 | 66 | 36 | 8 | ● |
| **D108-08-06700A1** | 6.7 | | 55 | 106 | 66 | 36 | 8 | ● |
| **D108-08-06747A1** | 6.747 | 17/64" | 55 | 106 | 66 | 36 | 8 | ○ |
| **D108-08-06800A1** | 6.8 | | 55 | 106 | 66 | 36 | 8 | ● |
| **D108-08-06900A1** | 6.9 | | 55 | 106 | 66 | 36 | 8 | ● |
| **D108-08-07000A1** | 7.0 | | 55 | 106 | 66 | 36 | 8 | ● |
| **D108-08-07100A1** | 7.1 | | 60 | 116 | 74 | 36 | 8 | ● |
| **D108-08-07144A1** | 7.144 | 9/32" | 60 | 116 | 74 | 36 | 8 | ○ |
| **D108-08-07200A1** | 7.2 | | 62 | 116 | 74 | 36 | 8 | ● |
| **D108-08-07300A1** | 7.3 | | 62 | 116 | 74 | 36 | 8 | ● |
| **D108-08-07400A1** | 7.4 | | 62 | 116 | 74 | 36 | 8 | ● |
| **D108-08-07500A1** | 7.5 | | 64 | 116 | 76 | 36 | 8 | ● |
| **D108-08-07541A1** | 7.541 | 19/64" | 64 | 116 | 76 | 36 | 8 | ○ |
| **D108-08-07600A1** | 7.6 | | 64 | 116 | 76 | 36 | 8 | ● |
| **D108-08-07700A1** | 7.7 | | 64 | 116 | 76 | 36 | 8 | ● |
| **D108-08-07800A1** | 7.8 | | 64 | 116 | 76 | 36 | 8 | ● |
| **D108-08-07900A1** | 7.9 | | 64 | 116 | 76 | 36 | 8 | ● |
| **D108-08-07938A1** | 7.938 | 5/16" | 64 | 116 | 76 | 36 | 8 | ○ |
| **D108-08-08000A1** | 8.0 | | 64 | 116 | 76 | 36 | 8 | ● |
| **D108-08-08100A1** | 8.1 | | 70 | 139 | 88 | 40 | 10 | ● |
| **D108-08-08200A1** | 8.2 | | 70 | 139 | 88 | 40 | 10 | ● |
| **D108-08-08300A1** | 8.3 | | 72 | 139 | 88 | 40 | 10 | ● |
| **D108-08-08334A1** | 8.334 | 21/64” | 72 | 139 | 88 | 40 | 10 | ○ |
| **D108-08-08400A1** | 8.4 | | 72 | 139 | 88 | 40 | 10 | ● |
| **D108-08-08500A1** | 8.5 | | 72 | 139 | 88 | 40 | 10 | ● |
| **D108-08-08600A1** | 8.6 | | 72 | 139 | 88 | 40 | 10 | ● |
| **D108-08-08700A1** | 8.7 | | 74 | 139 | 90 | 40 | 10 | ● |
| **D108-08-08731A1** | 8.731 | 11/32" | 74 | 139 | 90 | 40 | 10 | ○ |
| **D108-08-08800A1** | 8.8 | | 74 | 139 | 90 | 40 | 10 | ● |
| **D108-08-08900A1** | 8.9 | | 76 | 139 | 92 | 40 | 10 | ● |
| **D108-08-09000A1** | 9.0 | | 76 | 139 | 92 | 40 | 10 | ● |
| **D108-08-09100A1** | 9.1 | | 78 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09128A1** | 9.128 | 23/64" | 78 | 139 | 95 | 40 | 10 | ○ |
| **D108-08-09200A1** | 9.2 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09300A1** | 9.3 | | 80 | 139 | 95 | 40 | 10 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D108 8xDc




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

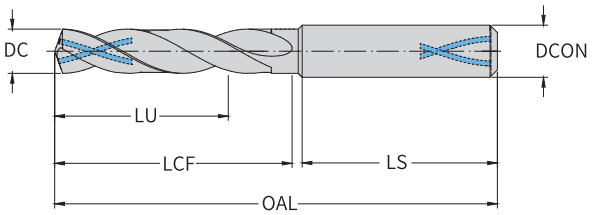
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D108-08-09400A1** | 9.4 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09500A1** | 9.5 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09525A1** | 9.525 | 3/8" | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09600A1** | 9.6 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09700A1** | 9.7 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09800A1** | 9.8 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09900A1** | 9.9 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-09922A1** | 9.922 | 25/64" | 80 | 139 | 95 | 40 | 10 | ○ |
| **D108-08-10000A1** | 10.0 | | 80 | 139 | 95 | 40 | 10 | ● |
| **D108-08-10100A1** | 10.1 | | 88 | 163 | 108 | 45 | 12 | ● |
| **D108-08-10200A1** | 10.2 | | 88 | 163 | 108 | 45 | 12 | ● |
| **D108-08-10300A1** | 10.3 | | 88 | 163 | 108 | 45 | 12 | ● |
| **D108-08-10319A1** | 10.319 | 13/32" | 88 | 163 | 108 | 45 | 12 | ○ |
| **D108-08-10400A1** | 10.4 | | 90 | 163 | 110 | 45 | 12 | ● |
| **D108-08-10500A1** | 10.5 | | 90 | 163 | 110 | 45 | 12 | ● |
| **D108-08-10700A1** | 10.7 | | 90 | 163 | 110 | 45 | 12 | ● |
| **D108-08-10716A1** | 10.716 | 27/64" | 92 | 163 | 110 | 45 | 12 | ○ |
| **D108-08-10800A1** | 10.8 | | 92 | 163 | 110 | 45 | 12 | ● |
| **D108-08-10900A1** | 10.9 | | 94 | 163 | 112 | 45 | 12 | ● |
| **D108-08-11000A1** | 11.0 | | 94 | 163 | 112 | 45 | 12 | ● |
| **D108-08-11100A1** | 11.1 | | 94 | 163 | 112 | 45 | 12 | ● |
| **D108-08-11113A1** | 11.113 | 7/16" | 94 | 163 | 112 | 45 | 12 | ○ |
| **D108-08-11200A1** | 11.2 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-11300A1** | 11.3 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-11500A1** | 11.5 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-11600A1** | 11.6 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-11700A1** | 11.7 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-11800A1** | 11.8 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-11900A1** | 11.9 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-11906A1** | 11.906 | 15/32” | 96 | 163 | 114 | 45 | 12 | ○ |
| **D108-08-12000A1** | 12.0 | | 96 | 163 | 114 | 45 | 12 | ● |
| **D108-08-12303A1** | 12.303 | 31/64" | 106 | 182 | 125 | 45 | 14 | ○ |
| **D108-08-12500A1** | 12.5 | | 106 | 182 | 125 | 45 | 14 | ● |
| **D108-08-12700A1** | 12.7 | 1/2” | 106 | 182 | 125 | 45 | 14 | ○ |
| **D108-08-13000A1** | 13.0 | | 110 | 182 | 130 | 45 | 14 | ● |
| **D108-08-13494A1** | 13.494 | 17/32" | 115 | 182 | 133 | 45 | 14 | ○ |
| **D108-08-13500A1** | 13.5 | | 115 | 182 | 133 | 45 | 14 | ● |
| **D108-08-14000A1** | 14.0 | | 119 | 182 | 133 | 45 | 14 | ● |
| **D108-08-14288A1** | 14.288 | 9/16” | 122 | 204 | 140 | 48 | 16 | ○ |
| **D108-08-14500A1** | 14.5 | | 124 | 204 | 140 | 48 | 16 | ● |
| **D108-08-15000A1** | 15.0 | | 128 | 204 | 143 | 48 | 16 | ● |
| **D108-08-15500A1** | 15.5 | | 132 | 204 | 150 | 48 | 16 | ● |
| **D108-08-15875A1** | 15.875 | 5/8" | 134 | 204 | 150 | 48 | 16 | ○ |
| **D108-08-16000A1** | 16.0 | | 136 | 204 | 152 | 48 | 16 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D151 3xDc




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

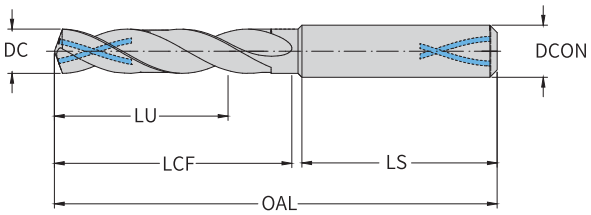
●● 1st choice ● 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D151-03-03000A1 | 3.0 | | 14 | 62 | 20 | 36 | 4 | ● |
| D151-03-03100A1 | 3.1 | | 14 | 62 | 20 | 36 | 4 | ○ |
| D151-03-03175A1 | 3.175 | 1/8" | 14 | 62 | 20 | 36 | 4 | ○ |
| D151-03-03200A1 | 3.2 | | 14 | 62 | 20 | 36 | 4 | ● |
| D151-03-03250A1 | 3.25 | | 14 | 62 | 20 | 36 | 4 | ○ |
| D151-03-03300A1 | 3.3 | | 14 | 62 | 20 | 36 | 4 | ● |
| D151-03-03400A1 | 3.4 | | 14 | 62 | 20 | 36 | 4 | ○ |
| D151-03-03500A1 | 3.5 | | 14 | 62 | 20 | 36 | 4 | ● |
| D151-03-03572A1 | 3.572 | 9/64" | 14 | 62 | 20 | 36 | 4 | ○ |
| D151-03-03600A1 | 3.6 | | 14 | 62 | 20 | 36 | 4 | ○ |
| D151-03-03700A1 | 3.7 | | 14 | 62 | 20 | 36 | 4 | ● |
| D151-03-03800A1 | 3.8 | | 17 | 66 | 24 | 36 | 4 | ○ |
| D151-03-03900A1 | 3.9 | | 17 | 66 | 24 | 36 | 4 | ○ |
| D151-03-03969A1 | 3.969 | 5/32" | 17 | 66 | 24 | 36 | 4 | ○ |
| D151-03-04000A1 | 4.0 | | 17 | 66 | 24 | 36 | 4 | ● |
| D151-03-04100A1 | 4.1 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D151-03-04200A1 | 4.2 | | 17 | 66 | 24 | 36 | 6 | ● |
| D151-03-04300A1 | 4.3 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D151-03-04366A1 | 4.366 | 11/64" | 17 | 66 | 24 | 36 | 6 | ○ |
| D151-03-04400A1 | 4.4 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D151-03-04500A1 | 4.5 | | 17 | 66 | 24 | 36 | 6 | ● |
| D151-03-04600A1 | 4.6 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D151-03-04650A1 | 4.65 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D151-03-04700A1 | 4.7 | | 17 | 66 | 24 | 36 | 6 | ○ |
| D151-03-04763A1 | 4.763 | 3/16" | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-04800A1 | 4.8 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-04900A1 | 4.9 | | 20 | 66 | 28 | 36 | 6 | ● |
| D151-03-05000A1 | 5.0 | | 20 | 66 | 28 | 36 | 6 | ● |
| D151-03-05100A1 | 5.1 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05159A1 | 5.159 | 13/64" | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05200A1 | 5.2 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05300A1 | 5.3 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05400A1 | 5.4 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05500A1 | 5.5 | | 20 | 66 | 28 | 36 | 6 | ● |
| D151-03-05550A1 | 5.55 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05556A1 | 5.556 | 7/32" | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05600A1 | 5.6 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05700A1 | 5.7 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05800A1 | 5.8 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05900A1 | 5.9 | | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-05953A1 | 5.953 | 15/64" | 20 | 66 | 28 | 36 | 6 | ○ |
| D151-03-06000A1 | 6.0 | | 20 | 66 | 28 | 36 | 6 | ● |
| D151-03-06100A1 | 6.1 | | 24 | 79 | 34 | 36 | 8 | ○ |
| D151-03-06200A1 | 6.2 | | 24 | 79 | 34 | 36 | 8 | ○ |
| D151-03-06300A1 | 6.3 | | 24 | 79 | 34 | 36 | 8 | ○ |
| D151-03-06350A1 | 6.35 | 1/4" | 24 | 79 | 34 | 36 | 8 | ○ |
| D151-03-06400A1 | 6.4 | | 24 | 79 | 34 | 36 | 8 | ○ |
| D151-03-06500A1 | 6.5 | | 24 | 79 | 34 | 36 | 8 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D151 3xDc




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

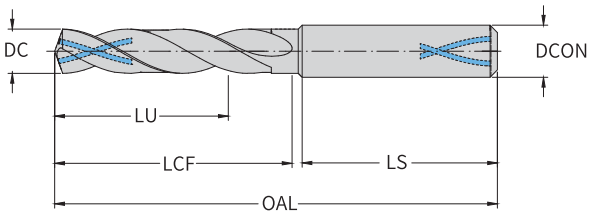
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D151-03-06600A1** | 6.6 | | 24 | 79 | 34 | 36 | 8 | ○ |
| **D151-03-06700A1** | 6.7 | | 24 | 79 | 34 | 36 | 8 | ○ |
| **D151-03-06747A1** | 6.747 | 17/64" | 24 | 79 | 34 | 36 | 8 | ○ |
| **D151-03-06800A1** | 6.8 | | 24 | 79 | 34 | 36 | 8 | ● |
| **D151-03-06900A1** | 6.9 | | 24 | 79 | 34 | 36 | 8 | ○ |
| **D151-03-07000A1** | 7.0 | | 24 | 79 | 34 | 36 | 8 | ● |
| **D151-03-07100A1** | 7.1 | | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07144A1** | 7.144 | 9/32" | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07200A1** | 7.2 | | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07300A1** | 7.3 | | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07400A1** | 7.4 | | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07500A1** | 7.5 | | 29 | 79 | 41 | 36 | 8 | ● |
| **D151-03-07541A1** | 7.541 | 19/64" | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07600A1** | 7.6 | | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07700A1** | 7.7 | | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07800A1** | 7.8 | | 29 | 79 | 41 | 36 | 8 | ● |
| **D151-03-07900A1** | 7.9 | | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-07938A1** | 7.938 | 5/16" | 29 | 79 | 41 | 36 | 8 | ○ |
| **D151-03-08000A1** | 8.0 | | 29 | 79 | 41 | 36 | 8 | ● |
| **D151-03-08100A1** | 8.1 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08200A1** | 8.2 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08300A1** | 8.3 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08334A1** | 8.334 | 21/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08400A1** | 8.4 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08500A1** | 8.5 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D151-03-08600A1** | 8.6 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08700A1** | 8.7 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08731A1** | 8.731 | 11/32" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08800A1** | 8.8 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-08900A1** | 8.9 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09000A1** | 9.0 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D151-03-09100A1** | 9.1 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09128A1** | 9.128 | 23/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09200A1** | 9.2 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09300A1** | 9.3 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09400A1** | 9.4 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09500A1** | 9.5 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D151-03-09525A1** | 9.525 | 3/8" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09600A1** | 9.6 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09700A1** | 9.7 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09800A1** | 9.8 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09900A1** | 9.9 | | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-09922A1** | 9.922 | 25/64" | 35 | 89 | 47 | 40 | 10 | ○ |
| **D151-03-10000A1** | 10.0 | | 35 | 89 | 47 | 40 | 10 | ● |
| **D151-03-10100A1** | 10.1 | | 40 | 102 | 55 | 45 | 12 | ○ |
| **D151-03-10200A1** | 10.2 | | 40 | 102 | 55 | 45 | 12 | ● |
| **D151-03-10300A1** | 10.3 | | 40 | 102 | 55 | 45 | 12 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D151 3xDc




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

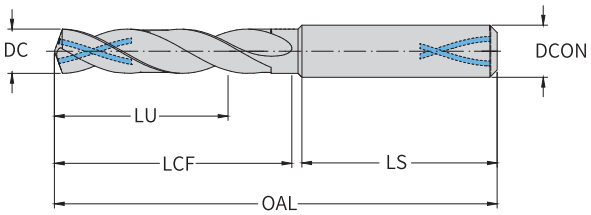
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| D151-03-10319A1 | 10.319 | 13/32" | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-10400A1 | 10.4 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-10500A1 | 10.5 | | 40 | 102 | 55 | 45 | 12 | ● |
| D151-03-10600A1 | 10.6 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-10700A1 | 10.7 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-10716A1 | 10.716 | 27/64" | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-10800A1 | 10.8 | | 40 | 102 | 55 | 45 | 12 | ● |
| D151-03-10900A1 | 10.9 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11000A1 | 11.0 | | 40 | 102 | 55 | 45 | 12 | ● |
| D151-03-11100A1 | 11.1 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11113A1 | 11.113 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11200A1 | 11.2 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11300A1 | 11.3 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11400A1 | 11.4 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11500A1 | 11.5 | | 40 | 102 | 55 | 45 | 12 | ● |
| D151-03-11509A1 | 11.509 | 29/64" | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11600A1 | 11.6 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11700A1 | 11.7 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11800A1 | 11.8 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-11900A1 | 11.9 | | 40 | 102 | 55 | 45 | 12 | ○ |
| D151-03-12000A1 | 12.0 | | 40 | 102 | 55 | 45 | 12 | ● |
| D151-03-12100A1 | 12.1 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-12200A1 | 12.2 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-12300A1 | 12.3 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-12303A1 | 12.303 | 31/64" | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-12500A1 | 12.5 | | 43 | 107 | 60 | 45 | 14 | ● |
| D151-03-12600A1 | 12.6 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-12700A1 | 12.7 | 1/2" | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-12900A1 | 12.9 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-13000A1 | 13.0 | | 43 | 107 | 60 | 45 | 14 | ● |
| D151-03-13100A1 | 13.1 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-13300A1 | 13.3 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-13494A1 | 13.494 | 17/32" | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-13500A1 | 13.5 | | 43 | 107 | 60 | 45 | 14 | ● |
| D151-03-13800A1 | 13.8 | | 43 | 107 | 60 | 45 | 14 | ○ |
| D151-03-14000A1 | 14.0 | | 43 | 107 | 60 | 45 | 14 | ● |
| D151-03-14200A1 | 14.2 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-14288A1 | 14.288 | 9/16" | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-14500A1 | 14.5 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-14750A1 | 14.75 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-15000A1 | 15.0 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-15100A1 | 15.1 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-15200A1 | 15.2 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-15300A1 | 15.3 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-15500A1 | 15.5 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-15800A1 | 15.8 | | 45 | 115 | 65 | 48 | 16 | ○ |
| D151-03-16000A1 | 16.0 | | 45 | 115 | 65 | 48 | 16 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D151 5xDc




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

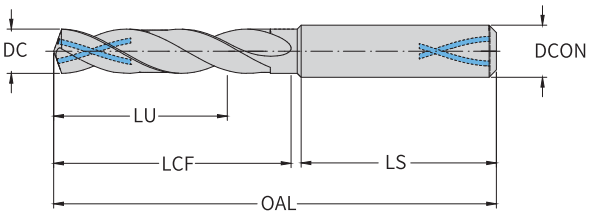
•• 1st choice • 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D151-05-03000A1** | 3.0 | | 19 | 66 | 24 | 36 | 4 | ● |
| **D151-05-03100A1** | 3.1 | | 19 | 66 | 24 | 36 | 4 | ○ |
| **D151-05-03175A1** | 3.175 | 1/8" | 19 | 66 | 24 | 36 | 4 | ○ |
| **D151-05-03200A1** | 3.2 | | 19 | 66 | 24 | 36 | 4 | ○ |
| **D151-05-03250A1** | 3.25 | | 19 | 66 | 24 | 36 | 4 | ○ |
| **D151-05-03300A1** | 3.3 | | 19 | 66 | 24 | 36 | 4 | ● |
| **D151-05-03400A1** | 3.4 | | 19 | 66 | 24 | 36 | 4 | ○ |
| **D151-05-03500A1** | 3.5 | | 19 | 66 | 24 | 36 | 4 | ● |
| **D151-05-03572A1** | 3.572 | 9/64" | 19 | 66 | 24 | 36 | 4 | ○ |
| **D151-05-03600A1** | 3.6 | | 19 | 66 | 24 | 36 | 4 | ○ |
| **D151-05-03700A1** | 3.7 | | 19 | 66 | 24 | 36 | 4 | ● |
| **D151-05-03800A1** | 3.8 | | 29 | 74 | 36 | 36 | 4 | ○ |
| **D151-05-03900A1** | 3.9 | | 29 | 74 | 36 | 36 | 4 | ○ |
| **D151-05-03969A1** | 3.969 | 5/32" | 29 | 74 | 36 | 36 | 4 | ○ |
| **D151-05-04000A1** | 4.0 | | 29 | 74 | 36 | 36 | 4 | ● |
| **D151-05-04100A1** | 4.1 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D151-05-04200A1** | 4.2 | | 29 | 74 | 36 | 36 | 6 | ● |
| **D151-05-04300A1** | 4.3 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D151-05-04366A1** | 4.366 | 11/64" | 29 | 74 | 36 | 36 | 6 | ○ |
| **D151-05-04400A1** | 4.4 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D151-05-04500A1** | 4.5 | | 29 | 74 | 36 | 36 | 6 | ● |
| **D151-05-04600A1** | 4.6 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D151-05-04650A1** | 4.65 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D151-05-04700A1** | 4.7 | | 29 | 74 | 36 | 36 | 6 | ○ |
| **D151-05-04763A1** | 4.763 | 3/16" | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-04800A1** | 4.8 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-04900A1** | 4.9 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D151-05-05000A1** | 5.0 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D151-05-05100A1** | 5.1 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05159A1** | 5.159 | 13/64" | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05200A1** | 5.2 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05300A1** | 5.3 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05400A1** | 5.4 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05500A1** | 5.5 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D151-05-05550A1** | 5.55 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05556A1** | 5.556 | 7/32" | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05600A1** | 5.6 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05700A1** | 5.7 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05800A1** | 5.8 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05900A1** | 5.9 | | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-05953A1** | 5.953 | 15/64" | 35 | 82 | 44 | 36 | 6 | ○ |
| **D151-05-06000A1** | 6.0 | | 35 | 82 | 44 | 36 | 6 | ● |
| **D151-05-06100A1** | 6.1 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-06200A1** | 6.2 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-06300A1** | 6.3 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-06350A1** | 6.35 | 1/4" | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-06400A1** | 6.4 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-06500A1** | 6.5 | | 43 | 91 | 53 | 36 | 8 | ● |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D151 5xDc




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

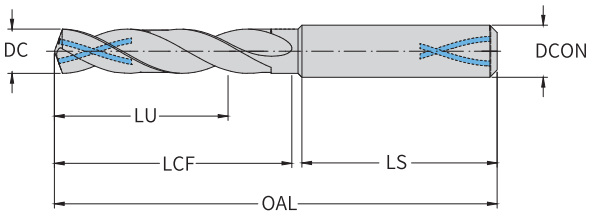
●● 1st choice ● 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D151-05-06600A1** | 6.6 | | 43 | 91 | 53 | 36 | 8 | ● |
| **D151-05-06700A1** | 6.7 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-06747A1** | 6.747 | 17/64" | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-06800A1** | 6.8 | | 43 | 91 | 53 | 36 | 8 | ● |
| **D151-05-06900A1** | 6.9 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07000A1** | 7.0 | | 43 | 91 | 53 | 36 | 8 | ● |
| **D151-05-07100A1** | 7.1 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07144A1** | 7.144 | 9/32" | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07200A1** | 7.2 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07300A1** | 7.3 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07400A1** | 7.4 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07500A1** | 7.5 | | 43 | 91 | 53 | 36 | 8 | ● |
| **D151-05-07541A1** | 7.541 | 19/64" | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07600A1** | 7.6 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07700A1** | 7.7 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07800A1** | 7.8 | | 43 | 91 | 53 | 36 | 8 | ● |
| **D151-05-07900A1** | 7.9 | | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-07938A1** | 7.938 | 5/16" | 43 | 91 | 53 | 36 | 8 | ○ |
| **D151-05-08000A1** | 8.0 | | 43 | 91 | 53 | 36 | 8 | ● |
| **D151-05-08100A1** | 8.1 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08200A1** | 8.2 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08300A1** | 8.3 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08334A1** | 8.334 | 21/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08400A1** | 8.4 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08500A1** | 8.5 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D151-05-08600A1** | 8.6 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08700A1** | 8.7 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08731A1** | 8.731 | 11/32" | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08800A1** | 8.8 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-08900A1** | 8.9 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09000A1** | 9.0 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D151-05-09100A1** | 9.1 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09128A1** | 9.128 | 23/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09200A1** | 9.2 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09300A1** | 9.3 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D151-05-09400A1** | 9.4 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09500A1** | 9.5 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D151-05-09525A1** | 9.525 | 3/8" | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09600A1** | 9.6 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09700A1** | 9.7 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09800A1** | 9.8 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09900A1** | 9.9 | | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-09922A1** | 9.922 | 25/64" | 49 | 103 | 61 | 40 | 10 | ○ |
| **D151-05-10000A1** | 10.0 | | 49 | 103 | 61 | 40 | 10 | ● |
| **D151-05-10100A1** | 10.1 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-10200A1** | 10.2 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D151-05-10300A1** | 10.3 | | 56 | 118 | 71 | 45 | 12 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Solid Carbide Internal Coolant Drill D151 5xDc




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

●● 1st choice ● 2nd choice

| Product code | DC(m7) mm | DC inch/No. | LU mm | OAL mm | LCF mm | LS mm | DCON(h6) mm | Stock |
|---|---|---|---|---|---|---|---|---|
| **D151-05-10319A1** | 10.319 | 13/32" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-10400A1** | 10.4 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-10500A1** | 10.5 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D151-05-10600A1** | 10.6 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D151-05-10700A1** | 10.7 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-10716A1** | 10.716 | 27/64" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-10800A1** | 10.8 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-10900A1** | 10.9 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11000A1** | 11.0 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D151-05-11100A1** | 11.1 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11113A1** | 11.113 | 7/16" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11200A1** | 11.2 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11300A1** | 11.3 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11400A1** | 11.4 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11500A1** | 11.5 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D151-05-11509A1** | 11.509 | 29/64" | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11600A1** | 11.6 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11700A1** | 11.7 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11800A1** | 11.8 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-11900A1** | 11.9 | | 56 | 118 | 71 | 45 | 12 | ○ |
| **D151-05-12000A1** | 12.0 | | 56 | 118 | 71 | 45 | 12 | ● |
| **D151-05-12100A1** | 12.1 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-12200A1** | 12.2 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-12300A1** | 12.3 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-12303A1** | 12.303 | 31/64" | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-12500A1** | 12.5 | | 60 | 124 | 77 | 45 | 14 | ● |
| **D151-05-12600A1** | 12.6 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-12700A1** | 12.7 | 1/2" | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-12800A1** | 12.8 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-13000A1** | 13.0 | | 60 | 124 | 77 | 45 | 14 | ● |
| **D151-05-13100A1** | 13.1 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-13300A1** | 13.3 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-13494A1** | 13.494 | 17/32" | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-13500A1** | 13.5 | | 60 | 124 | 77 | 45 | 14 | ● |
| **D151-05-13800A1** | 13.8 | | 60 | 124 | 77 | 45 | 14 | ○ |
| **D151-05-14000A1** | 14.0 | | 60 | 124 | 77 | 45 | 14 | ● |
| **D151-05-14200A1** | 14.2 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-14288A1** | 14.288 | 9/16" | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-14400A1** | 14.4 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-14500A1** | 14.5 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-14800A1** | 14.8 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-15000A1** | 15.0 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-15100A1** | 15.1 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-15300A1** | 15.3 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-15500A1** | 15.5 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-15800A1** | 15.8 | | 62 | 133 | 83 | 48 | 16 | ○ |
| **D151-05-16000A1** | 16.0 | | 62 | 133 | 83 | 48 | 16 | ○ |

Special product can be ordered

● : Standard stock ○ : Made-to-Order

## Cutting Data for Solid Carbide Drill Family

| Vc=Cutting speed (m/min)<br>Feed code = feed reference table see page 594 | | | | Drilling depth | | 3xDc | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| | | | | Product family | | D105 | | D105 | | D106 | | D106 | | D151 | |
| | | | | Dia. Range (mm) | | 3.00-20.00 | | 3.00-20.00 | | 3.00-20.00 | | 3.00-16.00 | | 3.00-16.00 | |
| | | | | Coolant | | External coolant | | Internal coolant | | External coolant | | Internal coolant | | Internal coolant | |
| Workpiece material | | | | Brinell hardness (HB) | Tensile strength (N/mm²) | Vc | Feed code | Vc | Feed code | Vc | Feed code | Vc | Feed code | Vc | Feed code |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 430 | 100-110 | F | 110-120 | F | 100-110 | F | 110-120 | F | 110-120 | F |
| | | C>0.25... ≤ 0.55% | Annealed | 190 | 640 | 80-100 | E | 100-110 | E | 80-100 | E | 100-110 | E | 100-120 | E |
| | | C>0.25... ≤ 0.55% | Heat-treated | 210 | 710 | 80-100 | E | 100-110 | E | 80-100 | E | 100-110 | E | 100-110 | E |
| | | C>0.55% | Annealed | 190 | 640 | 90-100 | E | 100-110 | E | 90-100 | E | 100-110 | E | 100-120 | E |
| | | C>0.55% | Heat-treated | 300 | 1010 | 70-80 | D | 80-90 | D | 70-80 | D | 80-90 | D | 80-90 | D |
| | | Free cutting steel (short-chipping) | Annealed | 220 | 750 | 100-120 | F | 110-120 | F | 100-120 | F | 110-120 | F | 110-120 | F |
| | Low-alloyed steel | Annealed | | 175 | 590 | 80-100 | E | 80-110 | E | 80-100 | E | 80-110 | E | 70-100 | E |
| | | Heat-treated | | 285 | 960 | 70-90 | D | 70-90 | D | 70-90 | D | 70-90 | D | 70-90 | D |
| | | Heat-treated | | 380 | 1280 | 40-50 | C | 40-50 | C | 40-50 | C | 40-50 | C | | |
| | | Heat-treated | | 430 | 1480 | 35-45 | B | 35-45 | B | 35-45 | B | 35-45 | B | | |
| | High-alloyed steel and high-alloyed tool steel | Annealed | | 200 | 680 | 75-85 | D | 75-85 | D | 75-85 | D | 75-85 | D | 75-85 | D |
| | | Hardened and tempered | | 300 | 1010 | 60-70 | C | 60-70 | C | 60-70 | C | 60-70 | C | 60-70 | C |
| | | Hardened and tempered | | 380 | 1280 | 50-60 | C | 50-60 | C | 50-60 | C | 50-60 | C | | |
| | Stainless steel | Ferritic/martensitic, annealed | | 200 | 680 | 70-80 | D | 80-90 | D | 70-80 | D | 80-90 | D | 70-100 | D |
| | | Martensitic, heat-treated | | 330 | 1110 | | | 45-60 | C | 40-50 | C | 45-60 | C | 50-60 | C |
| M | Stainless steel | Austenitic, quench hardened | | 200 | 680 | | | 40-50 | C | 35-45 | C | 40-50 | C | 50-60 | C |
| | | Austenitic, precipitation hardened (PH) | | 300 | 1010 | | | 40-50 | C | 35-45 | C | 40-50 | C | 50-60 | C |
| | | Austenitic/ferritic, duplex | | 230 | 780 | | | 30-40 | B | | | 30-40 | B | 30-40 | B |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 110-130 | G | 120-130 | G | 110-130 | G | 120-130 | G | 120-130 | G |
| | | Pearlitic | | 260 | 700 | 85-100 | G | 90-110 | G | 85-100 | G | 90-110 | G | 90-110 | G |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 110-120 | H | 120-130 | H | 110-120 | H | 120-130 | H | 120-130 | H |
| | | High tensile strength/austenitic | | 245 | 350 | 80-100 | G | 90-110 | G | 80-100 | G | 90-110 | G | 90-110 | G |
| | Cast iron with spheroidal graphite | Ferritic | | 155 | 400 | 110-120 | G | 120-130 | H | 110-120 | G | 120-130 | H | 120-130 | H |
| | | Pearlitic | | 245 | 700 | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F |
| | GGV(CGI) | | | 230 | 400 | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F |
| N | Wrought aluminium alloys | non-aging | | 30 | - | 200-300 | G | 300-400 | G | 200-300 | G | 300-400 | G | 300-400 | G |
| | | aged | | 100 | 340 | 200-300 | G | 300-400 | G | 200-300 | G | 300-400 | G | 300-400 | G |
| | Cast aluminium alloys | ≤ 12% Si, non-aging | | 75 | 260 | 160-220 | H | 180-240 | H | 160-220 | H | 180-240 | H | 180-240 | H |
| | | ≤ 12% Si, aged | | 90 | 310 | 160-200 | H | 180-200 | H | 160-200 | H | 180-200 | H | 180-200 | H |
| | | 12% Si, non-aging | | 130 | 450 | 130-160 | G | 140-180 | G | 130-160 | G | 140-180 | G | 140-180 | G |
| | Magnesium alloys | | | 70 | 250 | | | | | | | | | | |
| | Copper and copper alloys (bronze/brass) | Unalloyed, electrolytic copper | | 100 | 340 | 120-160 | C | 140-170 | D | 120-160 | C | 140-170 | D | 140-170 | D |
| | | Brass, bronze, red brass | | 90 | 310 | 110-140 | E | 120-140 | E | 110-140 | E | 120-140 | E | | |
| | | Cu alloys, short-chip | | 110 | 380 | 120-150 | F | 140-180 | F | 120-150 | F | 140-180 | F | 140-180 | F |
| | | High tensile, Ampco alloy | | 300 | 1010 | 45-60 | B | 45-60 | B | 45-60 | B | 45-60 | B | 35-50 | B |
| S | Heat-resistant alloys | Fe-based | Annealed | 200 | 680 | | | 30-40 | B | | | 30-40 | B | 30-40 | B |
| | | | Hardened | 280 | 940 | | | 20-25 | A | | | 20-25 | A | 20-30 | A |
| | | Ni or Co based | Annealed | 250 | 840 | | | 20-30 | B | | | 20-30 | B | 20-30 | B |
| | | | Hardened | 350 | 1180 | | | 10-15 | A | | | 10-15 | A | 10-20 | A |
| | | | Cast | 320 | 1080 | | | 15-25 | A | | | 15-25 | A | 20-30 | A |
| | Titanium alloys | Pure titanium | | 200 | 680 | 30-40 | B | 40-50 | C | 30-40 | B | 40-50 | C | 40-50 | C |
| | | α and β alloys, hardened | | 375 | 1260 | 20-30 | A | 25-35 | B | 20-30 | A | 25-35 | B | 20-40 | B |
| | | β alloys | | 410 | 1400 | | | 10-15 | A | | | 10-15 | A | 15-25 | A |
| | Tungsten alloys | | | 300 | 1010 | | | | | | | | | 15-25 | A |
| | Molybdenum alloys | | | 300 | 1010 | | | | | | | | | 15-25 | A |
| H | Hardened steel | Hardened and tempered | | 50HRC | - | 20-35 | A | 20-35 | A | 20-35 | A | 20-35 | A | | |
| | | Hardened and tempered | | 55HRC | - | | | | | | | | | | |
| | | Hardened and tempered | | 60HRC | - | | | | | | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | - | | | | | | | | | | |

The cutting data are average recommended values. For special applications, adjustment is needed.

| | 5xDc | | | | | | | | | | 8xDc | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
| | D105 | | D105 | | D106 | | D106 | | D151 | | D108 | |
| | 3.00-20.00 | | 3.00-20.00 | | 3.00-20.00 | | 3.00-16.00 | | 3.00-16.00 | | 3.00-16.00 | |
| | External coolant | | Internal coolant | | External coolant | | Internal coolant | | Internal coolant | | Internal coolant | |
| | Vc | Feed code | Vc | Feed code | Vc | Feed code | Vc | Feed code | Vc | Feed code | Vc | Feed code |
| | 100-110 | F | 110-120 | F | 110-120 | F | 90-115 | F | 110-120 | F | 110-120 | F |
| | 80-100 | E | 100-110 | E | 100-110 | E | 80-100 | E | 100-120 | E | 80-100 | E |
| | 80-100 | E | 100-110 | E | 100-110 | E | 80-100 | E | 100-110 | E | 80-100 | E |
| | 90-100 | E | 100-110 | E | 100-110 | E | 80-100 | E | 100-120 | E | 80-100 | E |
| | 70-80 | D | 80-90 | D | 80-90 | D | 50-70 | D | 80-90 | D | 70-80 | D |
| | 100-120 | F | 110-120 | F | 110-120 | F | 90-115 | F | 110-120 | F | 100-115 | F |
| | 80-100 | E | 80-110 | E | 80-110 | E | 80-110 | E | 70-100 | E | 80-110 | E |
| | 70-90 | D | 70-90 | D | 70-90 | D | 60-70 | D | 70-90 | D | 70-90 | D |
| | 40-50 | C | 40-50 | C | 40-50 | C | 40-50 | C | | | 40-50 | C |
| | 35-45 | B | 35-45 | B | 35-45 | B | 30-40 | B | | | 35-45 | B |
| | 75-85 | D | 75-85 | D | 75-85 | D | 60-80 | D | 75-85 | D | 75-85 | D |
| | 60-70 | C | 60-70 | C | 60-70 | C | 40-60 | C | 60-70 | C | 60-70 | C |
| | 50-60 | C | 50-60 | C | 50-60 | C | 45-50 | C | | | 50-60 | C |
| | 70-80 | D | 80-90 | D | 80-90 | D | 60-80 | D | 70-100 | D | 70-80 | D |
| | | | 45-60 | C | 45-60 | C | 40-50 | C | 50-60 | C | 40-50 | C |
| | | | 40-50 | | 40-50 | | 40-50 | C | 50-60 | C | 40-50 | C |
| | | | 40-50 | C | 40-50 | C | 40-50 | C | 50-60 | C | 40-50 | C |
| | | | 30-40 | | 30-40 | | 25-35 | B | 30-40 | B | 30-40 | B |
| | 110-130 | G | 120-130 | G | 120-130 | G | 70-90 | G | 120-130 | G | 100-120 | G |
| | 85-100 | G | 90-110 | G | 90-110 | G | 60-80 | G | 90-110 | G | 90-110 | G |
| | 110-120 | H | 120-130 | H | 120-130 | H | 80-110 | H | 120-130 | H | 110-120 | H |
| | 80-100 | G | 90-110 | G | 90-110 | G | 70-90 | G | 90-110 | G | 80-100 | G |
| | 110-120 | G | 120-130 | G | 120-130 | G | 80-110 | H | 120-130 | H | 110-120 | H |
| | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F |
| | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F | 60-80 | F |
| | 200-300 | G | 300-400 | G | 300-400 | G | 300-400 | G | 300-400 | G | 300-400 | G |
| | 200-300 | G | 300-400 | G | 300-400 | G | 300-400 | G | 300-400 | G | 300-400 | G |
| | 160-220 | H | 180-240 | H | 180-240 | H | 180-240 | H | 180-240 | H | 180-240 | H |
| | 160-200 | H | 180-200 | H | 180-200 | H | 180-200 | H | 180-200 | H | 180-200 | H |
| | 130-160 | G | 140-180 | G | 140-180 | G | 140-180 | G | 140-180 | G | 140-180 | G |
| | | | | | | | | | | | | |
| | 120-160 | C | 120-160 | C | 120-160 | C | 140-170 | D | 120-150 | D | 140-170 | D |
| | 110-140 | E | 110-140 | E | 110-140 | E | 120-140 | E | | | 120-140 | E |
| | 120-150 | F | 120-150 | F | 120-150 | F | 140-180 | F | 140-180 | F | 140-180 | F |
| | 45-60 | B | 45-60 | B | 45-60 | B | 45-60 | B | 35-50 | B | 45-60 | B |
| | | | | | | | 30-40 | B | 30-40 | B | 30-40 | B |
| | | | | | | | 20-25 | A | 20-25 | A | 20-25 | A |
| | | | | | | | 20-30 | B | 20-30 | B | 20-30 | B |
| | | | | | | | 10-15 | A | 10-20 | A | 10-15 | A |
| | | | | | | | 15-25 | A | 15-25 | A | 15-25 | A |
| | 30-40 | B | 30-40 | B | 30-40 | B | 40-50 | C | 40-50 | C | 40-50 | C |
| | 20-30 | A | 20-30 | A | 20-30 | A | 25-35 | B | 25-35 | B | 25-35 | B |
| | | | | | | | 10-15 | A | 15-25 | A | 10-15 | A |
| | | | | | | | | | 15-25 | A | | |
| | | | | | | | | | 15-25 | A | | |
| | 20-35 | A | 20-35 | A | 20-35 | A | 20-35 | A | | | 20-35 | A |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

## Feed Reference Table

| Feed rate f (mm/rev) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Dia. mm | | A | B | C | D | E | F | G | H |
| | 3.0 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.10 | 0.12 | 0.14 |
| | 4.0 | 0.04 | 0.05 | 0.06 | 0.08 | 0.10 | 0.12 | 0.14 | 0.16 |
| | 5.0 | 0.05 | 0.06 | 0.07 | 0.09 | 0.10 | 0.12 | 0.16 | 0.18 |
| | 6.0 | 0.05 | 0.07 | 0.08 | 0.10 | 0.12 | 0.15 | 0.18 | 0.20 |
| | 8.0 | 0.06 | 0.08 | 0.10 | 0.12 | 0.15 | 0.18 | 0.20 | 0.23 |
| | 10.0 | 0.08 | 0.10 | 0.12 | 0.14 | 0.18 | 0.20 | 0.24 | 0.28 |
| | 12.0 | 0.10 | 0.12 | 0.14 | 0.18 | 0.20 | 0.24 | 0.28 | 0.32 |
| | 14.0 | 0.10 | 0.14 | 0.18 | 0.20 | 0.24 | 0.28 | 0.32 | 0.34 |
| | 16.0 | 0.12 | 0.15 | 0.18 | 0.20 | 0.25 | 0.30 | 0.34 | 0.36 |
| | 20.0 | 0.15 | 0.16 | 0.20 | 0.25 | 0.30 | 0.34 | 0.37 | 0.40 |

## Thread Pilot Hole Diameters Before Tapping

| **M** | Metric ISO coarse pitch thread<br>DIN 13 and DIN ISO 965-1 | | |
|---|---|---|---|
| D | D1 | | |
| Diameter | Min (mm) | Max (mm)<br>5H/6H | Diameter |
| M4 | 3.242 | 3.422 | 3.30 |
| M4.5 | 3.688 | 3.878 | 3.70 |
| M5 | 4.134 | 4.334 | 4.20 |
| M6 | 4.917 | 5.153 | 5.00 |
| M7 | 5.917 | 6.153 | 6.00 |
| M8 | 6.647 | 6.912 | 6.80 |
| M9 | 7.647 | 7.912 | 7.80 |
| M10 | 8.376 | 8.676 | 8.50 |
| M11 | 9.376 | 9.676 | 9.50 |
| M12 | 10.106 | 10.441 | 10.20 |
| M14 | 11.835 | 12.210 | 12.00 |
| M16 | 13.835 | 14.210 | 14.00 |
| M18 | 15.294 | 15.744 | 15.50 |
| M20 | 17.294 | 17.744 | 17.50 |
| M22 | 19.294 | 19.744 | 19.50 |

| **UNC** | Coarse thread<br>ASME B1.1 standard | | |
|---|---|---|---|
| D | D1 | | |
| Diameter<br>P Gg/1" | Min (mm)<br>2B/3B | Max (mm)<br>2B | Diameter |
| 8-32 UNC | 3.302 | 3.531 | 3.50 |
| 10-24 UNC | 3.683 | 3.962 | 3.90 |
| 12-24 UNC | 4.343 | 4.597 | 4.50 |
| 1/4-20 UNC | 4.976 | 5.268 | 5.10 |
| 5/16-18 UNC | 6.411 | 6.734 | 6.60 |
| 3/8-16 UNC | 7.805 | 8.164 | 8.00 |
| 7/16-14 UNC | 9.149 | 9.550 | 9.40 |
| 1/2-13 UNC | 10.584 | 11.013 | 10.28 |
| 9/16-12 UNC | 11.996 | 12.456 | 12.20 |
| 5/8-11 UNC | 13.376 | 13.868 | 13.50 |
| 3/4-10 UNC | 16.299 | 16.833 | 16.50 |
| 7/8-9 UNC | 19.169 | 19.748 | 19.50 |

| **UNF** | Fine thread<br>ASME B1.1 standard | | |
|---|---|---|---|
| D | D1 | | |
| Diameter<br>P Gg/1" | Min (mm)<br>2B/3B | Max (mm)<br>2B | Diameter |
| 8-36 UNF | 3.404 | 3.607 | 3.50 |
| 10-32 UNF | 3.962 | 4.166 | 4.10 |
| 12-28 UNF | 4.496 | 4.724 | 4.60 |
| 1/4-28 UNF | 5.367 | 5.580 | 5.50 |
| 5/16-24 UNF | 6.792 | 7.038 | 6.90 |
| 3/8-24 UNF | 8.379 | 8.626 | 8.50 |
| 7/16-20 UNF | 9.738 | 10.030 | 9.90 |
| 1/2-20 UNF | 11.326 | 11.618 | 11.50 |
| 9/16-18 UNF | 12.761 | 13.084 | 12.90 |
| 5/8-18 UNF | 14.348 | 14.671 | 14.50 |
| 3/4-16 UNF | 17.330 | 17.689 | 17.50 |

| **MF** | Metric ISO fine pitch thread<br>DIN 13 and DIN ISO 965-1 | |
|---|---|---|
| D | D1 | |
| Diameter x P | Max (mm)<br>5H/6H | Diameter |
| M3.5x0.35 | 3.221 | 3.15 |
| M4x0.35 | 3.721 | 3.65 |
| M4x0.5 | 3.599 | 3.50 |
| M4.5x0.5 | 4.099 | 4.00 |
| M5x0.35 | 4.721 | 4.65 |
| M5x0.5 | 4.599 | 4.50 |
| M5x0.75 | 4.378 | 4.20 |
| M5x0.5 | 5.599 | 5.50 |
| M6x0.75 | 5.378 | 5.25 |
| M7x0.5 | 6.599 | 6.50 |
| M7x0.75 | 6.378 | 6.25 |
| M8x0.5 | 7.599 | 7.50 |
| M8x0.75 | 7.378 | 7.25 |
| M8x1 | 7.153 | 7.00 |
| M9x0.75 | 8.378 | 8.25 |
| M9x1 | 8.153 | 8.00 |
| M10x0.5 | 9.599 | 9.50 |
| M10x0.75 | 9.378 | 9.25 |
| M10x1 | 9.153 | 9.00 |
| M10x1.25 | 8.912 | 8.75 |
| M11x1 | 10.153 | 10.00 |
| M12x0.5 | 11.599 | 11.50 |
| M12x1 | 11.153 | 11.00 |
| M12x1.25 | 10.912 | 10.75 |
| M12x1.5 | 10.676 | 10.50 |
| M13x1 | 12.153 | 12.00 |
| M14x0.75 | 13.378 | 13.20 |
| M14x1 | 13.153 | 13.00 |
| M14x1.25 | 12.912 | 12.75 |
| M14x1.5 | 12.676 | 12.50 |
| M15x1 | 14.153 | 14.00 |
| M15x1.5 | 13.676 | 13.50 |
| M16x0.75 | 15.378 | 15.20 |
| M16x1 | 15.153 | 15.00 |
| M16x1.25 | 14.912 | 14.80 |
| M16x1.5 | 14.676 | 14.50 |
| M17x1 | 16.153 | 16.00 |
| M18x1 | 17.153 | 17.00 |
| M18x1.5 | 16.676 | 16.50 |
| M18x2 | 16.21 | 16.00 |
| M20x1 | 19.153 | 19.00 |
| M20x1.5 | 18.676 | 18.50 |
| M20x2 | 18.21 | 18.00 |

## Thread Pilot Hole Diameters Before Forming

| M | Metric ISO coarse pitch thread DIN 13 and DIN ISO 965-1 |
|---|---|
| D | |
| Diameter | Diameter |
| M3.5 | 3.25 |
| M4 | 3.70 |
| M5 | 4.65 |
| M6 | 5.55 |
| M8 | 7.40 |
| M10 | 9.30 |
| M12 | 11.20 |
| M14 | 13.10 |
| M16 | 15.10 |
| M18 | 16.90 |
| M20 | 18.90 |

| MF | Metric ISO fine pitch thread DIN 13 and DIN ISO 965-1 |
|---|---|
| D | |
| Diameter x P | Diameter |
| M4x0.5 | 3.80 |
| M5x0.5 | 4.80 |
| M6x0.5 | 5.80 |
| M6x0.75 | 5.65 |
| M7x0.75 | 6.65 |
| M8x0.75 | 7.65 |
| M8x1 | 7.55 |
| M10x0.75 | 9.65 |
| M10x1 | 9.55 |
| M10x1.25 | 9.40 |
| M12x1 | 11.55 |
| M12x1.25 | 11.40 |
| M12x1.5 | 11.30 |
| M14x1 | 13.55 |
| M14x1.5 | 13.30 |
| M16x1 | 15.55 |
| M16x1.5 | 15.30 |
| M18x1 | 17.55 |
| M18x1.5 | 17.30 |
| M20x1.5 | 19.30 |
| M20x2 | 19.10 |
| M22x1.5 | 21.30 |

| UNC | Coarse thread ASME B1.1 standard |
|---|---|
| D | |
| Diameter | Diameter |
| 6-32 UNC | 3.15 |
| 8-32 UNC | 3.80 |
| 10-24 UNC | 4.30 |
| 12-24 UNC | 5.00 |
| 1/4-20 UNC | 5.75 |
| 5/16-18 UNC | 7.25 |
| 3/8-16 UNC | 8.75 |
| 7/16-14 UNC | 10.30 |
| 1/2-13 UNC | 11.80 |
| 9/16-12 UNC | 13.30 |
| 5/8-11 UNC | 14.80 |
| 3/4-10 UNC | 17.90 |

| UNF | Fine thread ASME B1.1 standard |
|---|---|
| D | |
| Diameter | Diameter |
| 6-40 UNF | 3.20 |
| 8-36 UNF | 3.85 |
| 10-32 UNF | 4.45 |
| 12-28 UNF | 5.05 |
| 1/4-28 UNF | 5.90 |
| 5/16-24 UNF | 7.45 |
| 3/8-24 UNF | 9.00 |
| 7/16-20 UNF | 10.50 |
| 1/2-20 UNF | 12.10 |
| 9/16-18 UNF | 13.70 |
| 5/8-18 UNF | 15.25 |
| 3/4-16 UNF | 18.40 |

# CUTTING TOOL CATALOGUE


## Threading Turning 597

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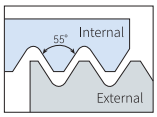
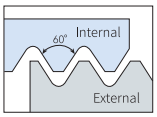
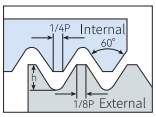
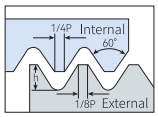
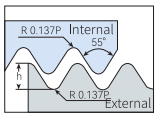
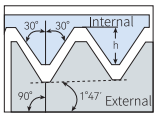
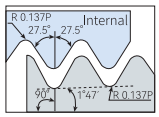
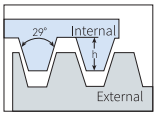
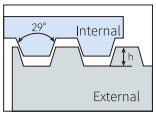
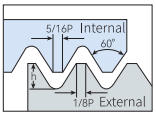
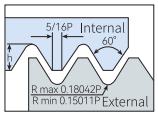
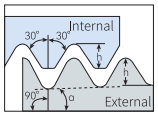
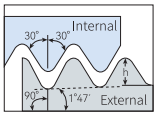
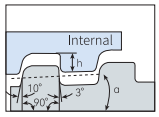
## Thread Profile Overview

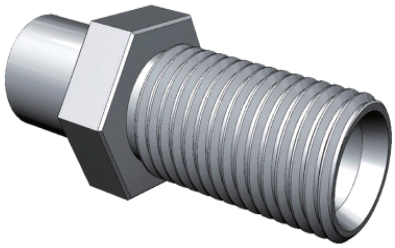
| Industry | General Machinery | | | | | | |
|---|---|---|---|---|---|---|---|
| Thread Profile | Partial Profile 55° | Partial Profile 60° | ISO Metric | American UN | Whitworth | NPT Taper Pipe Thread | British BSPT |
| |  |  |  |  |  |  |  |
| Pitch TPI | Pitch: mm / TPI (Threads Per Inch) | | | | | | |
| | 0.50–1.5<br>0.50–3.0<br>1.75–3.0<br>3.50–5.0 | 0.50–1.5<br>0.50–3.0<br>1.75–3.0<br>3.50–5.0 | 0.50 2.0<br>0.75 2.5<br>1.00 3.0<br>1.25<br>1.50 | 48 16<br>44 14<br>40 13<br>36 12<br>32 11.5<br>28 11<br>24 10<br>20 9<br>18 8 | 36 14<br>32 12<br>28 11<br>26 10<br>10 9<br>19 8 | 27<br>18<br>14<br>11.5<br>8 | 28<br>19<br>14<br>11 |

| Industry | General Machinery | | Aerospace | | Petroleum | | |
|---|---|---|---|---|---|---|---|
| Thread Profile | ACME | Stub ACME | MJ ISO 5855 | UNJ | API | API Round | BUT Buttress casing thread |
| |  |  |  |  |  |  |  |
| Pitch TPI | Pitch: mm / TPI (Threads Per Inch) | | | | | | |
| | 16 8<br>14 6<br>12 5<br>10 | 16 8<br>14 6<br>12 5<br>10 4 | 0.75 2.0<br>1.00 2.5<br>1.25 3.0<br>1.50 | 48 16<br>44 14<br>40 13<br>36 12<br>32 11<br>28 10<br>24 9<br>20 8<br>18 | 4 (V-0.038R)<br>4 (V-0.050)<br>5 (V-0.040)<br>6 (V-0.055) | 10<br>8 | 5 |

* A wide range of thread types, including thread turning for general machinery, aerospace and petroleum industries
* All ground inserts, better control of thread profile dimensional accuracy and consistency after insert indexing
* Uniform edge honing and sharp cutting edges, more suitable for thread turning characteristics, resulting in superior thread surface quality

## Test Cases

| | |
|---|---|
| **Material** | 4140 |
| **Insert** | 16ER 150ISO AP220E |
| **Machining type** | External Thread Turning |
| **Cutting Data** | Vc=140m/min fn=1.5mm/rev; ap=0.22/0.2/0.17/0.16/0.12/0.08 |
| | Wet cutting, Radial infeed |

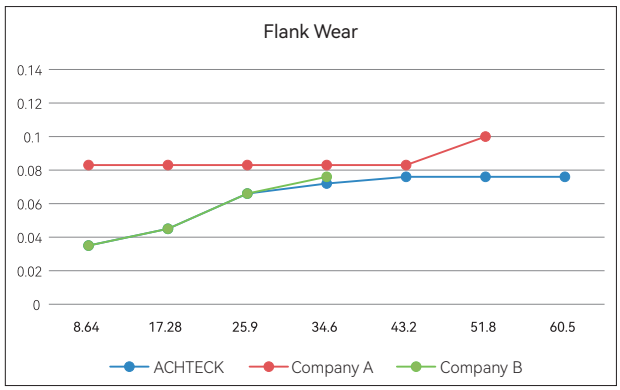


* When workpiece materials with high elastic modulus (e.g., stainless steel, heat-resistant stainless steel, high-temperature alloys), it is necessary to increase the number of passes appropriately, with each depth of cut more than 0.08mm, to achieve better thread accuracy and insert life.
* To prevent tip chipping during the first cut, a pre-chamfering of C0.3-C0.5 can be applied to the workpiece.
* To ensure correct tool alignment and precise thread dimensions during thread machining, perform a preliminary transverse cut with a depth of approximately 0.1mm to confirm tool alignment before starting thread turning.

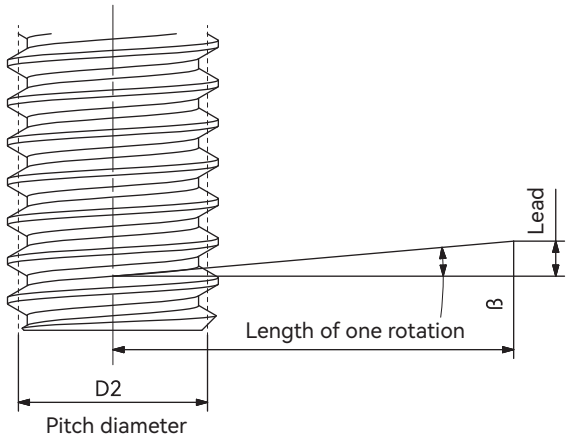
## Thread Machining Life Test

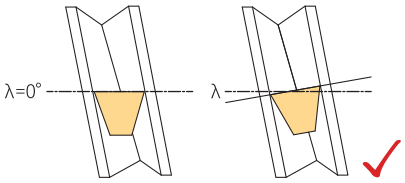
| | |
|---|---|
| **Material** | SUS316L |
| **Insert** | 16ER 150ISO AP220E |
| **Machining type** | External Thread Turning |
| **Cutting Data** | Vc=120m/min fn=1.5mm/rev; ap=0.16/0.15/0.14/0.12/0.1/0.1/0.1/0.08 |
| | Wet cutting, Radial infeed |

| | |
|---|---|
| **ACHTECK** | |
| **Company A** | |
| **Company B** | |



## Calculation Method for Helix Angle




$$ß=\arctan\frac{PxN}{\Pi xD2}$$

ß ··· Helix angle
P ··· Pitch
D2 ··· Pitch diameter
N ··· Number of threading starts

* When λ approaches β, it can effectively improve the precision of threading and prevent cutting edge breakage. Through calculation, it is very important to choose the appropriate Angle of the shim.

## Recommended Cutting Parameters

| Materials | | Brinell Hardness (HB) | Cutting speed (m/min) | | | |
|---|---|---|---|---|---|---|
| | | | AP220E | AP220U | AP020H | AP120S |
| P | Unalloyed steel | 120-170 | 60-200 | 60-200 | | |
| | Low-alloyed steel | 180-350 | 60-160 | 60-160 | | |
| | High-alloyed steel | 200-325 | 50-120 | 50-120 | | |
| M | Ferritic, Stainless steel | 200-325 | 60-130 | 60-130 | | |
| | Austenitic, Stainless steel | 180-200 | 40-140 | 40-140 | | |
| K | Malleable cast iron | 130-230 | 60-150 | 60-150 | | |
| | Grey cast iron | 180-260 | 70-130 | 70-130 | | |
| | Nodular cast iron | 160-250 | 90-160 | 90-160 | | |
| S | Titanium alloy | 200-375 | | | | 50-70 |
| | Heat resistant alloys | 200-350 | | | | 15-50 |
| H | Hardened steels | 45-55HRC | | | 40-50 | |

## Infeed & Depth of Cutting

### ISO- Metric External Threads

| Ph | 6 | 5.5 | 5 | 4.5 | 4 | 3.5 | 3 | 2.5 | 2 | 1.75 | 1.5 | 1.25 | 1 | 0.8 | 0.75 | 0.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a p | 3,82 | 3,52 | 3,19 | 2,87 | 2,53 | 2,23 | 1,92 | 1,60 | 1,25 | 1,13 | 0,93 | 0,81 | 0,65 | 0,52 | 0,48 | 0,33 |
| 1 | 0,46 | 0,43 | 0,41 | 0,37 | 0,34 | 0,34 | 0,28 | 0,27 | 0,24 | 0,22 | 0,22 | 0,21 | 0,18 | 0,17 | 0,16 | 0,11 |
| 2 | 0,43 | 0,40 | 0,39 | 0,34 | 0,32 | 0,31 | 0,26 | 0,24 | 0,22 | 0,20 | 0,20 | 0,17 | 0,16 | 0,15 | 0,14 | 0,09 |
| 3 | 0,35 | 0,32 | 0,32 | 0,28 | 0,25 | 0,25 | 0,21 | 0,20 | 0,18 | 0,17 | 0,17 | 0,14 | 0,12 | 0,12 | 0,11 | 0,07 |
| 4 | 0,30 | 0,28 | 0,27 | 0,24 | 0,22 | 0,21 | 0,18 | 0,17 | 0,16 | 0,14 | 0,14 | 0,11 | 0,11 | 0,08 | 0,07 | 0,06 |
| 5 | 0,29 | 0,26 | 0,24 | 0,22 | 0,20 | 0,18 | 0,16 | 0,15 | 0,14 | 0,12 | 0,12 | 0,10 | 0,08 | – | – | – |
| 6 | 0,26 | 0,24 | 0,24 | 0,22 | 0,18 | 0,18 | 0,15 | 0,15 | 0,12 | 0,10 | 0,08 | 0,08 | – | – | – | – |
| 7 | 0,24 | 0,21 | 0,22 | 0,20 | 0,17 | 0,16 | 0,14 | 0,12 | 0,11 | 0,10 | – | – | – | – | – | – |
| 8 | 0,23 | 0,20 | 0,20 | 0,18 | 0,15 | 0,15 | 0,13 | 0,11 | 0,08 | 0,08 | – | – | – | – | – | – |
| 9 | 0,22 | 0,19 | 0,19 | 0,17 | 0,14 | 0,14 | 0,12 | 0,11 | – | – | – | – | – | – | – | – |
| 10 | 0,19 | 0,18 | 0,18 | 0,16 | 0,13 | 0,12 | 0,11 | 0,08 | – | – | – | – | – | – | – | – |
| 11 | 0,18 | 0,17 | 0,16 | 0,14 | 0,12 | 0,11 | 0,10 | – | – | – | – | – | – | – | – | – |
| 12 | 0,16 | 0,15 | 0,15 | 0,13 | 0,12 | 0,08 | 0,08 | – | – | – | – | – | – | – | – | – |
| 13 | 0,15 | 0,14 | 0,12 | 0,12 | 0,11 | – | – | – | – | – | – | – | – | – | – | – |
| 14 | 0,13 | 0,13 | 0,10 | 0,10 | 0,08 | – | – | – | – | – | – | – | – | – | – | – |
| 15 | 0,13 | 0,12 | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 16 | 0,10 | 0,10 | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

### ISO- Metric Internal Threads

| Ph | 6 | 5.5 | 5 | 4.5 | 4 | 3.5 | 3 | 2.5 | 2 | 1.75 | 1.5 | 1.25 | 1 | 0.8 | 0.75 | 0.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a p | 3,54 | 3,25 | 2,96 | 2,65 | 2,33 | 2,05 | 1,78 | 1,48 | 1,17 | 1,05 | 0,85 | 0,75 | 0,60 | 0,49 | 0,46 | 0,31 |
| 1 | 0,46 | 0,43 | 0,42 | 0,37 | 0,34 | 0,32 | 0,28 | 0,26 | 0,23 | 0,22 | 0,20 | 0,17 | 0,17 | 0,17 | 0,16 | 0,10 |
| 2 | 0,43 | 0,40 | 0,40 | 0,34 | 0,31 | 0,30 | 0,26 | 0,25 | 0,21 | 0,20 | 0,18 | 0,17 | 0,15 | 0,14 | 0,13 | 0,08 |
| 3 | 0,35 | 0,33 | 0,32 | 0,28 | 0,24 | 0,24 | 0,21 | 0,18 | 0,17 | 0,15 | 0,15 | 0,14 | 0,11 | 0,11 | 0,10 | 0,07 |
| 4 | 0,30 | 0,26 | 0,26 | 0,23 | 0,21 | 0,19 | 0,16 | 0,15 | 0,15 | 0,13 | 0,13 | 0,10 | 0,09 | 0,07 | 0,07 | 0,06 |
| 5 | 0,26 | 0,22 | 0,22 | 0,21 | 0,18 | 0,17 | 0,14 | 0,13 | 0,12 | 0,10 | 0,11 | 0,09 | 0,08 | - | - | - |
| 6 | 0,22 | 0,20 | 0,20 | 0,19 | 0,15 | 0,15 | 0,13 | 0,12 | 0,11 | 0,09 | 0,08 | 0,08 | - | - | - | - |
| 7 | 0,20 | 0,18 | 0,17 | 0,16 | 0,14 | 0,14 | 0,12 | 0,11 | 0,10 | 0,08 | - | - | - | - | - | - |
| 8 | 0,19 | 0,17 | 0,16 | 0,15 | 0,13 | 0,13 | 0,11 | 0,10 | 0,08 | 0,08 | - | - | - | - | - | - |
| 9 | 0,18 | 0,16 | 0,16 | 0,14 | 0,12 | 0,12 | 0,10 | 0,10 | - | - | - | - | - | - | - | - |
| 10 | 0,16 | 0,15 | 0,15 | 0,13 | 0,12 | 0,11 | 0,10 | 0,08 | - | - | - | - | - | - | - | - |
| 11 | 0,15 | 0,14 | 0,14 | 0,12 | 0,11 | 0,10 | 0,09 | - | - | - | - | - | - | - | - | - |
| 12 | 0,15 | 0,14 | 0,14 | 0,12 | 0,10 | 0,08 | 0,08 | - | - | - | - | - | - | - | - | - |
| 13 | 0,14 | 0,13 | 0,12 | 0,11 | 0,10 | - | - | - | - | - | - | - | - | - | - | - |
| 14 | 0,13 | 0,12 | 0,10 | 0,10 | 0,08 | - | - | - | - | - | - | - | - | - | - | |
| 15 | 0,12 | 0,12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | 0,10 | 0,10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

### Whitworth External/Internal Threads

| TPI | 4 | 4.5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 | 16 | 18 | 19 | 20 | 26 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a p | 4,29 | 3,82 | 3,44 | 2,90 | 2,50 | 2,17 | 1,93 | 1,76 | 1,58 | 1,45 | 1,20 | 1,13 | 1,01 | 0,96 | 0,92 | 0,72 | 0,69 |
| 1 | 0,49 | 0,46 | 0,45 | 0,38 | 0,37 | 0,32 | 0,30 | 0,29 | 0,28 | 0,28 | 0,24 | 0,24 | 0,23 | 0,22 | 0,21 | 0,19 | 0,18 |
| 2 | 0,46 | 0,43 | 0,43 | 0,36 | 0,35 | 0,30 | 0,28 | 0,27 | 0,26 | 0,26 | 0,22 | 0,22 | 0,22 | 0,22 | 0,21 | 0,18 | 0,17 |
| 3 | 0,38 | 0,38 | 0,38 | 0,30 | 0,29 | 0,24 | 0,23 | 0,22 | 0,22 | 0,22 | 0,18 | 0,19 | 0,19 | 0,18 | 0,17 | 0,15 | 0,14 |
| 4 | 0,36 | 0,33 | 0,32 | 0,26 | 0,25 | 0,21 | 0,20 | 0,19 | 0,19 | 0,18 | 0,15 | 0,16 | 0,16 | 0,14 | 0,14 | 0,12 | 0,12 |
| 5 | 0,34 | 0,29 | 0,28 | 0,22 | 0,22 | 0,19 | 0,18 | 0,17 | 0,16 | 0,16 | 0,13 | 0,13 | 0,13 | 0,12 | 0,11 | 0,08 | 0,08 |
| 6 | 0,31 | 0,25 | 0,25 | 0,21 | 0,19 | 0,17 | 0,15 | 0,15 | 0,14 | 0,14 | 0,11 | 0,11 | 0,08 | 0,08 | 0,08 | - | - |
| 7 | 0,29 | 0,24 | 0,22 | 0,19 | 0,18 | 0,15 | 0,14 | 0,14 | 0,13 | 0,13 | 0,09 | 0,08 | - | - | - | - | - |
| 8 | 0,27 | 0,22 | 0,20 | 0,17 | 0,16 | 0,14 | 0,13 | 0,13 | 0,12 | 0,08 | 0,08 | - | - | - | - | - | - |
| 9 | 0,24 | 0,20 | 0,19 | 0,16 | 0,15 | 0,13 | 0,12 | 0,12 | 0,08 | - | - | - | - | - | - | - | - |
| 10 | 0,22 | 0,18 | 0,18 | 0,15 | 0,14 | 0,12 | 0,12 | 0,08 | - | - | - | - | - | - | - | - | - |
| 11 | 0,20 | 0,17 | 0,17 | 0,14 | 0,12 | 0,12 | 0,08 | - | - | - | - | - | - | - | - | - | - |
| 12 | 0,19 | 0,16 | 0,15 | 0,14 | 0,08 | 0,08 | - | - | - | - | - | - | - | - | - | - | - |
| 13 | 0,17 | 0,15 | 0,12 | 0,12 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | 0,15 | 0,14 | 0,10 | 0,10 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 | 0,12 | 0,12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | 0,10 | 0,10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

* Ph = Lead (mm)
* ap = Total depth of cutting (mm)
* TPI = Threads Per Inch
* The above recommended values are used for steel with hardness < 300 HB, if the insert breakage, it is recommended to increase the number of infeed.

## Infeed & Depth of Cutting

### UN External Threads

| TPI | 4 | 4.5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 18 | 20 | 24 | 28 | 32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a p | 4,07 | 3,62 | 3,29 | 2,71 | 2,33 | 2,08 | 1,84 | 1,66 | 1,52 | 1,39 | 1,29 | 1,19 | 1,05 | 0,94 | 0,84 | 0,70 | 0,60 | 0,53 |
| 1 | 0,47 | 0,45 | 0,43 | 0,36 | 0,35 | 0,30 | 0,28 | 0,27 | 0,27 | 0,27 | 0,25 | 0,23 | 0,22 | 0,23 | 0,20 | 0,19 | 0,17 | 0,17 |
| 2 | 0,44 | 0,41 | 0,40 | 0,34 | 0,33 | 0,28 | 0,26 | 0,26 | 0,25 | 0,26 | 0,24 | 0,22 | 0,21 | 0,21 | 0,19 | 0,17 | 0,15 | 0,15 |
| 3 | 0,40 | 0,39 | 0,36 | 0,27 | 0,26 | 0,25 | 0,21 | 0,20 | 0,20 | 0,20 | 0,18 | 0,17 | 0,16 | 0,16 | 0,15 | 0,14 | 0,11 | 0,13 |
| 4 | 0,36 | 0,31 | 0,31 | 0,23 | 0,22 | 0,21 | 0,20 | 0,17 | 0,19 | 0,18 | 0,17 | 0,15 | 0,14 | 0,14 | 0,12 | 0,12 | 0,09 | 0,08 |
| 5 | 0,32 | 0,26 | 0,26 | 0,22 | 0,21 | 0,18 | 0,17 | 0,16 | 0,16 | 0,15 | 0,14 | 0,13 | 0,13 | 0,12 | 0,10 | 0,08 | 0,08 | - |
| 6 | 0,27 | 0,23 | 0,23 | 0,20 | 0,19 | 0,16 | 0,15 | 0,15 | 0,14 | 0,13 | 0,12 | 0,11 | 0,11 | 0,08 | 0,08 | - | - | - |
| 7 | 0,25 | 0,21 | 0,20 | 0,18 | 0,17 | 0,14 | 0,14 | 0,14 | 0,12 | 0,12 | 0,11 | 0,10 | 0,08 | - | - | - | - | - |
| 8 | 0,23 | 0,20 | 0,19 | 0,16 | 0,15 | 0,13 | 0,12 | 0,12 | 0,11 | 0,08 | 0,08 | 0,08 | - | - | - | - | - | - |
| 9 | 0,22 | 0,18 | 0,19 | 0,15 | 0,14 | 0,12 | 0,12 | 0,11 | 0,08 | - | - | - | - | - | - | - | - | - |
| 10 | 0,21 | 0,17 | 0,18 | 0,14 | 0,12 | 0,12 | 0,11 | 0,08 | - | - | - | - | - | - | - | - | - | - |
| 11 | 0,19 | 0,16 | 0,17 | 0,13 | 0,11 | 0,11 | 0,08 | - | - | - | - | - | - | - | - | - | - | - |
| 12 | 0,18 | 0,15 | 0,15 | 0,12 | 0,08 | 0,08 | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | 0,16 | 0,14 | 0,12 | 0,11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | 0,15 | 0,14 | 0,10 | 0,10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 | 0,12 | 0,12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | 0,10 | 0,10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

### UN Internal Threads

| TPI | 4 | 4.5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 18 | 20 | 24 | 28 | 32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a p | 3,74 | 3,32 | 2,99 | 2,46 | 2,13 | 1,88 | 1,66 | 1,49 | 1,36 | 1,25 | 1,14 | 1,06 | 0,93 | 0,84 | 0,76 | 0,64 | 0,56 | 0,49 |
| 1 | 0,44 | 0,41 | 0,42 | 0,35 | 0,34 | 0,30 | 0,28 | 0,27 | 0,27 | 0,27 | 0,25 | 0,23 | 0,22 | 0,23 | 0,20 | 0,18 | 0,17 | 0,17 |
| 2 | 0,41 | 0,38 | 0,38 | 0,33 | 0,32 | 0,28 | 0,26 | 0,25 | 0,23 | 0,23 | 0,20 | 0,18 | 0,18 | 0,17 | 0,16 | 0,15 | 0,14 | 0,14 |
| 3 | 0,39 | 0,34 | 0,33 | 0,25 | 0,24 | 0,22 | 0,19 | 0,18 | 0,18 | 0,18 | 0,15 | 0,14 | 0,14 | 0,14 | 0,13 | 0,13 | 0,09 | 0,10 |
| 4 | 0,33 | 0,28 | 0,27 | 0,21 | 0,21 | 0,18 | 0,16 | 0,15 | 0,15 | 0,15 | 0,13 | 0,13 | 0,12 | 0,12 | 0,10 | 0,10 | 0,08 | 0,08 |
| 5 | 0,28 | 0,23 | 0,23 | 0,18 | 0,17 | 0,15 | 0,14 | 0,13 | 0,13 | 0,13 | 0,12 | 0,11 | 0,10 | 0,10 | 0,09 | 0,08 | 0,08 | - |
| 6 | 0,24 | 0,20 | 0,20 | 0,16 | 0,15 | 0,13 | 0,13 | 0,12 | 0,11 | 0,11 | 0,11 | 0,10 | 0,09 | 0,08 | 0,08 | - | - | - |
| 7 | 0,22 | 0,19 | 0,18 | 0,15 | 0,14 | 0,12 | 0,12 | 0,11 | 0,11 | 0,10 | 0,10 | 0,09 | 0,08 | - | - | - | - | - |
| 8 | 0,21 | 0,18 | 0,17 | 0,14 | 0,13 | 0,11 | 0,11 | 0,10 | 0,10 | 0,08 | 0,08 | 0,08 | - | - | - | - | - | - |
| 9 | 0,20 | 0,17 | 0,16 | 0,13 | 0,12 | 0,11 | 0,10 | 0,10 | 0,08 | - | - | - | - | - | - | - | - | - |
| 10 | 0,18 | 0,16 | 0,15 | 0,12 | 0,12 | 0,10 | 0,09 | 0,08 | - | - | - | - | - | - | - | - | - | - |
| 11 | 0,17 | 0,15 | 0,14 | 0,12 | 0,11 | 0,10 | 0,08 | - | - | - | - | - | - | - | - | - | - | - |
| 12 | 0,16 | 0,14 | 0,14 | 0,11 | 0,08 | 0,08 | - | - | - | - | - | - | - | - | - | - | - | - |
| 13 | 0,15 | 0,14 | 0,12 | 0,11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 14 | 0,14 | 0,13 | 0,10 | 0,10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 | 0,12 | 0,12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | 0,10 | 0,10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

### NPT Internal/ External Threads

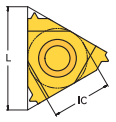
| TPI | 8 | 11,5 | 14 | 18 | 27 |
|---|---|---|---|---|---|
| a p | 2,54 | 1,76 | 1,45 | 1,12 | 0,75 |
| 1 | 0,28 | 0,25 | 0,24 | 0,22 | 0,19 |
| 2 | 0,25 | 0,22 | 0,22 | 0,18 | 0,15 |
| 3 | 0,22 | 0,18 | 0,17 | 0,15 | 0,13 |
| 4 | 0,19 | 0,16 | 0,15 | 0,14 | 0,11 |
| 5 | 0,18 | 0,16 | 0,14 | 0,13 | 0,09 |
| 6 | 0,18 | 0,14 | 0,13 | 0,12 | 0,08 |
| 7 | 0,17 | 0,14 | 0,12 | 0,10 | - |
| 8 | 0,17 | 0,12 | 0,10 | 0,08 | - |
| 9 | 0,16 | 0,12 | 0,10 | - | - |
| 10 | 0,16 | 0,10 | 0,08 | - | - |
| 11 | 0,14 | 0,09 | - | - | - |
| 12 | 0,13 | 0,08 | - | - | - |
| 13 | 0,12 | - | - | - | - |
| 14 | 0,11 | - | - | - | - |
| 15 | 0,08 | - | - | - | - |

* Ph = Lead (mm)
* ap = Total depth of cutting (mm)
* TPI = Threads Per Inch
* The above recommended values are used for steel with hardness < 300 HB, if the insert breakage, it is recommended to increase the number of infeed.

## Threading Insert Denomination System

| 16 | E | R | 200 | ISO | - | | AP220U |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | | 6 | 7 |

### 1- Insert Size




| L (mm) | IC (mm) |
|---|---|
| 08 | 4.76 |
| 11 | 6.35 |
| 16 | 9.525 |
| 22 | 12.7 |
| 27 | 15.875 |

### 2- Insert Type

| |
|---|
| E: Laydown External Thread |
| I: Laydown Internal Thread |
| VE: Vertical External Thread |
| VI: Vertical Internal Thread |
| UE: U-Type External Thread |
| UI: U-Type Internal Thread |

### 3-Hand of Insert

R: Right hand
L: Left hand

### 4- Pitch & TPI

| Pitch | |
|---|---|
| 100 | 1mm |
| 150 | 1.5mm |
| TPI | |
| 24 | 24 threads per inch |
| 20 | 20 threads per inch |

### 5- Thread Type

| | |
|---|---|
| 55 | Partial profile 55° |
| 60 | Partial profile 60° |
| ISO | ISO Metric (Full Profile) |
| UN | American UN (Full Profile) |
| W | Whitworth (Full Profile) |
| NPT | NPT(National Pipe Thread) |
| BSPT | British Standard Pipe thread |
| ACME | American ACME |
| ST ACME | Stub ACME |
| MJ | MJ ISO5855 |
| UNJ | UNJ |
| API | API |

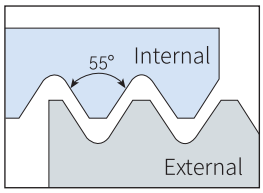
### 6- Number of Teeth & Chip Breaker

"None"---- Standard
TQ---- With TQ chip breaker
2M---- Two teeth per corner

### 7- Insert Grades

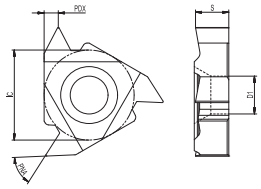
| | | |
|---|---|---|
| AP220E | Economical, Combining pressing and grinding | P/M |
| AP220U | All Ground, High-Precision General grade | P/M/S |
| AP120S | All Ground, High-Temperature Alloy grade | M/S |
| AP020H | All Ground, Hardened Steel grade | H |

## Partial profile 55° --External



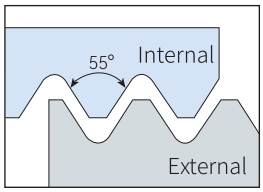

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 55° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Pitch & TPI | | Dimension (mm) | Insert Grades | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | mm | TPI | PDX | AP220E | AP220U | AP020H |
|  | **11ER A55** | **11EL A55** | 0.5-1.5 | 48-16 | 0.9 | | ● | ○ |
| | **16ER A55** | **16EL A55** | 0.5-1.5 | 48-16 | 0.9 | ● | ● | ○ |
| | **16ER AG55** | **16EL AG55** | 0.5-3.0 | 48-8 | 1.7 | ● | ● | ○ |
| | **16ER G55** | **16EL G55** | 1.75-3.0 | 14-8 | 1.7 | ● | ● | ○ |
| | **22ER N55** | **22EL N55** | 3.5-5.0 | 7-5 | 2.5 | | ● | ○ |

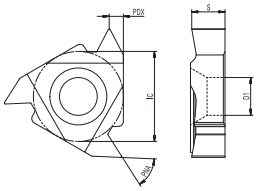
● : Standard stock ○ : Made-to-Order

## Partial profile 55° --Internal



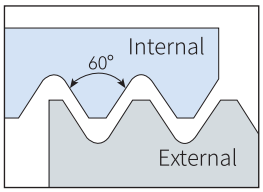

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 08.. | 4.76 | 2.25 | 2.6 | 55° |
| 11.. | 6.35 | 3.0 | 3.2 | |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Pitch & TPI | | Dimension (mm) | Insert Grades | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | mm | TPI | PDX | AP220E | AP220U | AP020H |
|  | **08IR A55** | **08IL A55** | 0.5-1.5 | 48-16 | 0.7 | | ○ | ○ |
| | **11IR A55** | **11IL A55** | 0.5-1.5 | 48-16 | 0.9 | | ● | ○ |
| | **16IR A55** | **16IL A55** | 0.5-1.5 | 48-16 | 0.9 | ● | ● | ○ |
| | **16IR AG55** | **16IL AG55** | 0.5-3.0 | 48-8 | 1.7 | ● | ● | ○ |
| | **16IR G55** | **16IL G55** | 1.75-3.0 | 14-8 | 1.7 | ● | ● | ○ |
| | **22IR N55** | **22IL N55** | 3.5-5.0 | 7-5 | 2.5 | | ● | ○ |

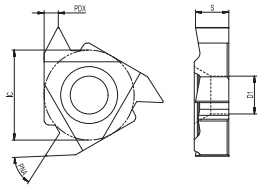
● : Standard stock ○ : Made-to-Order

## Partial profile 60° --External



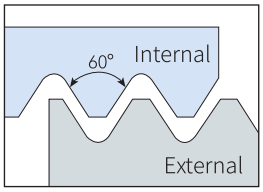

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 60° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Pitch & TPI | | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | mm | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER A60** | **11EL A60** | 0.5-1.5 | 48-16 | 0.9 | | ● | ○ | ○ |
| | **16ER A60** | **16EL A60** | 0.5-1.5 | 48-16 | 0.9 | ● | ● | ○ | ○ |
| | **16ER AG60** | **16EL AG60** | 0.5-3.0 | 48-8 | 1.7 | ● | ● | ○ | ○ |
| | **16ER G60** | **16EL G60** | 1.75-3.0 | 14-8 | 1.7 | ● | ● | ○ | ○ |
| | **22ER N60** | **22EL N60** | 3.5-5.0 | 7-5 | 2.5 | | ● | ○ | ○ |

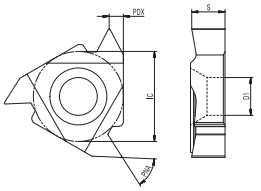
● : Standard stock ○ : Made-to-Order

## Partial profile 60° --Internal



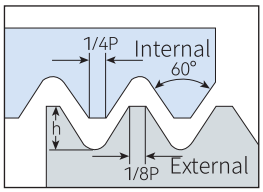

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 08.. | 4.76 | 2.25 | 2.6 | 60° |
| 11.. | 6.35 | 3.0 | 3.2 | |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Pitch & TPI | | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | mm | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **08IR A60** | **08IL A60** | 0.5-1.5 | 48-16 | 0.6 | | ○ | ○ | ○ |
| | **11IR A60** | **11IL A60** | 0.5-1.5 | 48-16 | 0.9 | | ● | ○ | ○ |
| | **16IR A60** | **16IL A60** | 0.5-1.5 | 48-16 | 0.9 | ● | ● | ○ | ○ |
| | **16IR AG60** | **16IL AG60** | 0.5-3.0 | 48-8 | 1.7 | ● | ● | ○ | ○ |
| | **16IR G60** | **16IL G60** | 1.75-3.0 | 14-8 | 1.7 | ● | ● | ○ | ○ |
| | **22IR N60** | **22IL N60** | 3.5-5.0 | 7-5 | 2.4 | | ● | ○ | ○ |

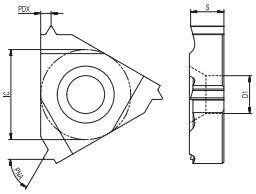
● : Standard stock ○ : Made-to-Order

## ISO Metric (Full Profile)--External



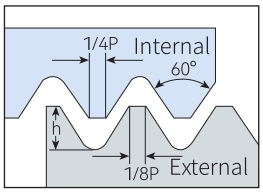

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 60° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert Below shows is right hand | Product code | | Pitch (mm) | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 050ISO** | **11EL 050ISO** | 0.50 | 0.4 | | ● | ○ | ○ |
| | **11ER 075ISO** | **11EL 075ISO** | 0.75 | 0.6 | | ● | ○ | ○ |
| | **11ER 080ISO** | **11EL 080ISO** | 0.80 | 0.6 | | ● | ○ | ○ |
| | **11ER 100ISO** | **11EL 100ISO** | 1.00 | 0.7 | | ● | ○ | ○ |
| | **11ER 125ISO** | **11EL 125ISO** | 1.25 | 0.9 | | ● | ○ | ○ |
| | **11ER 150ISO** | **11EL 150ISO** | 1.50 | 1.0 | | ● | ○ | ○ |
| | **16ER 050ISO** | **16EL 050ISO** | 0.50 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 075ISO** | **16EL 075ISO** | 0.75 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 100ISO** | **16EL 100ISO** | 1.00 | 0.7 | ● | ● | ○ | ○ |
| | **16ER 125ISO** | **16EL 125ISO** | 1.25 | 0.9 | ● | ● | ○ | ○ |
| | **16ER 150ISO** | **16EL 150ISO** | 1.50 | 1.0 | ● | ● | ○ | ○ |
| | **16ER 175ISO** | **16EL 175ISO** | 1.75 | 1.2 | ● | ● | ○ | ○ |
| | **16ER 200ISO** | **16EL 200ISO** | 2.00 | 1.3 | ● | ● | ○ | ○ |
| | **16ER 250ISO** | **16EL 250ISO** | 2.50 | 1.5 | ● | ● | ○ | ○ |
| | **16ER 300ISO** | **16EL 300ISO** | 3.00 | 1.6 | ● | ● | ○ | ○ |
| | **22ER 350ISO** | **22EL 350ISO** | 3.50 | 2.3 | | ● | ○ | ○ |
| | **22ER 400ISO** | **22EL 400ISO** | 4.00 | 2.3 | | ● | ○ | ○ |
| | **22ER 450ISO** | **22EL 450ISO** | 4.50 | 2.4 | | ● | ○ | ○ |
| | **22ER 500ISO** | **22EL 500ISO** | 5.00 | 2.5 | | ● | ○ | ○ |

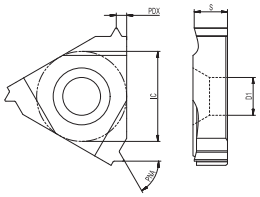
● : Standard stock ○ : Made-to-Order

## ISO Metric (Full Profile)--Internal



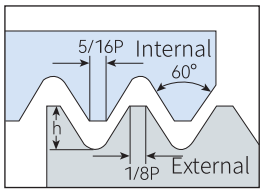

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 60° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Pitch (mm) | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11IR 050ISO** | **11IL 050ISO** | 0.50 | 0.6 | | ● | ○ | ○ |
| | **11IR 075ISO** | **11IL 075ISO** | 0.75 | 0.6 | | ● | ○ | ○ |
| | **11IR 100ISO** | **11IL 100ISO** | 1.00 | 0.6 | | ● | ○ | ○ |
| | **11IR 125ISO** | **11IL 125ISO** | 1.25 | 0.7 | | ● | ○ | ○ |
| | **11IR 150ISO** | **11IL 150ISO** | 1.50 | 0.9 | | ● | ○ | ○ |
| | **11IR 175ISO** | **11IL 175ISO** | 1.75 | 1.0 | | ● | ○ | ○ |
| | **11IR 200ISO** | **11IL 200ISO** | 2.00 | 1.2 | | ● | ○ | ○ |
| | **16IR 050ISO** | **16IL 050ISO** | 0.50 | 1.3 | ● | ● | ○ | ○ |
| | **16IR 075ISO** | **16IL 075ISO** | 0.75 | 0.6 | ● | ● | ○ | ○ |
| | **16IR 100ISO** | **16IL 100ISO** | 1.00 | 0.7 | ● | ● | ○ | ○ |
| | **16IR 125ISO** | **16IL 125ISO** | 1.25 | 0.9 | ● | ● | ○ | ○ |
| | **16IR 150ISO** | **16IL 150ISO** | 1.50 | 1.0 | ● | ● | ○ | ○ |
| | **16IR 175ISO** | **16IL 175ISO** | 1.75 | 1.2 | ● | ● | ○ | ○ |
| | **16IR 200ISO** | **16IL 200ISO** | 2.00 | 1.3 | ● | ● | ○ | ○ |
| | **16IR 250ISO** | **16IL 250ISO** | 2.50 | 1.5 | ● | ● | ○ | ○ |
| | **16IR 300ISO** | **16IL 300ISO** | 3.00 | 1.5 | ● | ● | ○ | ○ |
| | **22IR 350ISO** | **22IL 350ISO** | 3.50 | 2.3 | | ● | ○ | ○ |
| | **22IR 400ISO** | **22IL 400ISO** | 4.00 | 2.3 | | ● | ○ | ○ |
| | **22IR 450ISO** | **22IL 450ISO** | 4.50 | 2.4 | | ● | ○ | ○ |
| | **22IR 500ISO** | **22IL 500ISO** | 5.00 | 2.5 | | ● | ○ | ○ |

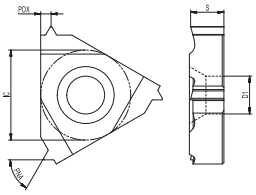
● : Standard stock ○ : Made-to-Order

## MJ ISO 5855--External



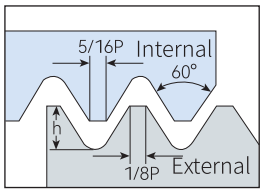

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 9.525 | 3.52 | 4.0 | 60° |
| 16.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Pitch (mm) | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 100MJ** | **11EL 100MJ** | 1.00 | 0.7 | | ● | | ● |
| | **11ER 125MJ** | **11EL 125MJ** | 1.25 | 0.9 | | ● | | ● |
| | **11ER 150MJ** | **11EL 150MJ** | 1.50 | 1.0 | | ● | | ● |
| | **11ER 200MJ** | **11EL 200MJ** | 2.00 | 1.0 | | ● | | ● |
| | **16ER 075MJ** | **16EL 075MJ** | 0.75 | 0.6 | | ● | | ● |
| | **16ER 100MJ** | **16EL 100MJ** | 1.00 | 0.7 | | ● | | ● |
| | **16ER 125MJ** | **16EL 125MJ** | 1.25 | 0.9 | | ● | | ● |
| | **16ER 150MJ** | **16EL 150MJ** | 1.50 | 1.0 | | ● | | ● |
| | **16ER 200MJ** | **16EL 200MJ** | 2.00 | 1.3 | | ● | | ● |
| | **16ER 250MJ** | **16EL 250MJ** | 2.50 | 1.5 | | ● | | ● |
| | **16ER 300MJ** | **16EL 300MJ** | 3.00 | 1.6 | | ● | | ● |

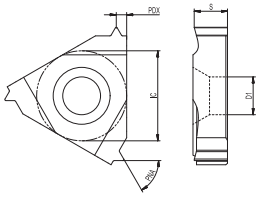
● : Standard stock ○ : Made-to-Order

## MJ ISO 5855--Internal



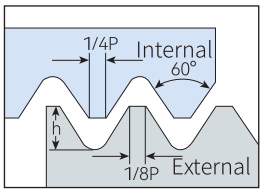

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 9.525 | 3.52 | 4.0 | 60° |
| 16.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Pitch (mm) | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11IR 100MJ** | **11IL 100MJ** | 1.00 | 0.7 | | ● | | ● |
| | **11IR 125MJ** | **11IL 125MJ** | 1.25 | 0.9 | | ● | | ● |
| | **11IR 150MJ** | **11IL 150MJ** | 1.50 | 1.0 | | ● | | ● |
| | **11IR 200MJ** | **11IL 200MJ** | 2.00 | 1.0 | | ● | | ● |
| | **16IR 075MJ** | **16IL 075MJ** | 0.75 | 0.6 | | ● | | ● |
| | **16IR 100MJ** | **16IL 100MJ** | 1.00 | 0.7 | | ● | | ● |
| | **16IR 125MJ** | **16IL 125MJ** | 1.25 | 0.9 | | ● | | ● |
| | **16IR 150MJ** | **16IL 150MJ** | 1.50 | 1.0 | | ● | | ● |
| | **16IR 200MJ** | **16IL 200MJ** | 2.00 | 1.3 | | ● | | ● |
| | **16IR 250MJ** | **16IL 250MJ** | 2.50 | 1.5 | | ● | | ● |
| | **16IR 300MJ** | **16IL 300MJ** | 3.00 | 1.6 | | ● | | ● |

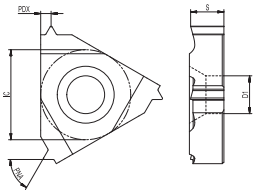
● : Standard stock ○ : Made-to-Order

## American UN (Full Profile)--External



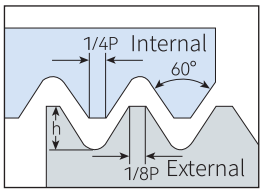

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 60° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 48UN** | **11EL 48UN** | 48 | 0.6 | | ● | ○ | ○ |
| | **11ER 44UN** | **11EL 44UN** | 44 | 0.6 | | ● | ○ | ○ |
| | **11ER 40UN** | **11EL 40UN** | 40 | 0.6 | | ● | ○ | ○ |
| | **11ER 36UN** | **11EL 36UN** | 36 | 0.6 | | ● | ○ | ○ |
| | **11ER 32UN** | **11EL 32UN** | 32 | 0.6 | | ● | ○ | ○ |
| | **11ER 28UN** | **11EL 28UN** | 28 | 0.7 | | ● | ○ | ○ |
| | **11ER 24UN** | **11EL 24UN** | 24 | 0.8 | | ● | ○ | ○ |
| | **11ER 20UN** | **11EL 20UN** | 20 | 0.9 | | ● | ○ | ○ |
| | **11ER 18UN** | **11EL 18UN** | 18 | 1.0 | | ● | ○ | ○ |
| | **11ER 16UN** | **11EL 16UN** | 16 | 1.1 | | ● | ○ | ○ |
| | **16ER 48UN** | **16EL 48UN** | 48 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 44UN** | **16EL 44UN** | 44 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 40UN** | **16EL 40UN** | 40 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 36UN** | **16EL 36UN** | 36 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 32UN** | **16EL 32UN** | 32 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 28UN** | **16EL 28UN** | 28 | 0.7 | ● | ● | ○ | ○ |
| | **16ER 24UN** | **16EL 24UN** | 24 | 0.8 | ● | ● | ○ | ○ |
| | **16ER 20UN** | **16EL 20UN** | 20 | 0.9 | ● | ● | ○ | ○ |
| | **16ER 18UN** | **16EL 18UN** | 18 | 1.0 | ● | ● | ○ | ○ |
| | **16ER 16UN** | **16EL 16UN** | 16 | 1.1 | ● | ● | ○ | ○ |
| | **16ER 14UN** | **16EL 14UN** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16ER 13UN** | **16EL 13UN** | 13 | 1.3 | ● | ● | ○ | ○ |
| | **16ER 12UN** | **16EL 12UN** | 12 | 1.4 | ● | ● | ○ | ○ |
| | **16ER 11.5UN** | **16EL 11.5UN** | 11.5 | 1.4 | ● | ● | ○ | ○ |
| | **16ER 11UN** | **16EL 11UN** | 11 | 1.5 | ● | ● | ○ | ○ |
| | **16ER 10UN** | **16EL 10UN** | 10 | 1.5 | ● | ● | ○ | ○ |
| | **16ER 9UN** | **16EL 9UN** | 9 | 1.7 | ● | ● | ○ | ○ |
| | **16ER 8UN** | **16EL 8UN** | 8 | 2.0 | ● | ● | ○ | ○ |
| | **22ER 7UN** | **22EL 7UN** | 7 | 2.3 | | ● | ○ | ○ |
| | **22ER 6UN** | **22EL 6UN** | 6 | 2.3 | | ● | ○ | ○ |
| | **22ER 5UN** | **22EL 5UN** | 5 | 2.5 | | ● | ○ | ○ |

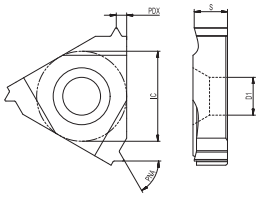
● : Standard stock ○ : Made-to-Order

## American UN (Full Profile)--Internal



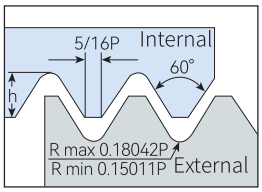

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 08.. | 4.76 | 2.25 | 2.6 | 60° |
| 11.. | 6.35 | 3.0 | 3.2 | |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **08IR 48UN** | **08IL 48UN** | 48 | 0.6 | | ○ | ○ | ○ |
| | **08IR 44UN** | **08IL 44UN** | 44 | 0.6 | | ○ | ○ | ○ |
| | **08IR 40UN** | **08IL 40UN** | 40 | 0.6 | | ○ | ○ | ○ |
| | **08IR 36UN** | **08IL 36UN** | 36 | 0.6 | | ○ | ○ | ○ |
| | **08IR 32UN** | **08IL 32UN** | 32 | 0.5 | | ○ | ○ | ○ |
| | **08IR 28UN** | **08IL 28UN** | 28 | 0.6 | | ○ | ○ | ○ |
| | **08IR 24UN** | **08IL 24UN** | 24 | 0.6 | | ○ | ○ | ○ |
| | **08IR 20UN** | **08IL 20UN** | 20 | 0.7 | | ○ | ○ | ○ |
| | **08IR 18UN** | **08IL 18UN** | 18 | 0.7 | | ○ | ○ | ○ |
| | **08IR 16UN** | **08IL 16UN** | 16 | 0.7 | | ○ | ○ | ○ |
| | **11IR 48UN** | **11IL 48UN** | 48 | 0.6 | | ● | ○ | ○ |
| | **11IR 44UN** | **11IL 44UN** | 44 | 0.6 | | ● | ○ | ○ |
| | **11IR 40UN** | **11IL 40UN** | 40 | 0.6 | | ● | ○ | ○ |
| | **11IR 36UN** | **11IL 36UN** | 36 | 0.6 | | ● | ○ | ○ |
| | **11IR 32UN** | **11IL 32UN** | 32 | 0.6 | | ● | ○ | ○ |
| | **11IR 28UN** | **11IL 28UN** | 28 | 0.7 | | ● | ○ | ○ |
| | **11IR 24UN** | **11IL 24UN** | 24 | 0.8 | | ● | ○ | ○ |
| | **11IR 20UN** | **11IL 20UN** | 20 | 0.9 | | ● | ○ | ○ |
| | **11IR 18UN** | **11IL 18UN** | 18 | 1.0 | | ● | ○ | ○ |
| | **11IR 16UN** | **11IL 16UN** | 16 | 1.1 | | ● | ○ | ○ |
| | **16IR 48UN** | **16IL 48UN** | 48 | 0.6 | | ● | ○ | ○ |
| | **16IR 44UN** | **16IL 44UN** | 44 | 0.6 | | ● | ○ | ○ |
| | **16IR 40UN** | **16IL 40UN** | 40 | 0.6 | | ● | ○ | ○ |
| | **16IR 36UN** | **16IL 36UN** | 36 | 0.6 | | ● | ○ | ○ |
| | **16IR 32UN** | **16IL 32UN** | 32 | 0.6 | ● | ● | ○ | ○ |
| | **16IR 28UN** | **16IL 28UN** | 28 | 0.7 | ● | ● | ○ | ○ |
| | **16IR 24UN** | **16IL 24UN** | 24 | 0.8 | ● | ● | ○ | ○ |
| | **16IR 20UN** | **16IL 20UN** | 20 | 0.9 | ● | ● | ○ | ○ |
| | **16IR 18UN** | **16IL 18UN** | 18 | 1.0 | ● | ● | ○ | ○ |
| | **16IR 16UN** | **16IL 16UN** | 16 | 1.1 | ● | ● | ○ | ○ |
| | **16IR 14UN** | **16IL 14UN** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16IR 12UN** | **16IL 12UN** | 12 | 1.4 | ● | ● | ○ | ○ |
| | **16IR 11UN** | **16IL 11UN** | 11 | 1.5 | ● | ● | ○ | ○ |
| | **16IR 10UN** | **16IL 10UN** | 10 | 1.5 | ● | ● | ○ | ○ |
| | **16IR 9UN** | **16IL 9UN** | 9 | 1.7 | ● | ● | ○ | ○ |
| | **16IR 8UN** | **16IL 8UN** | 8 | 1.5 | ● | ● | ○ | ○ |
| | **22IR 7UN** | **22IL 7UN** | 7 | 2.3 | | ● | ○ | ○ |
| | **22IR 6UN** | **22IL 6UN** | 6 | 2.3 | | ● | ○ | ○ |
| | **22IR 5UN** | **22IL 5UN** | 5 | 2.3 | | ● | ○ | ○ |

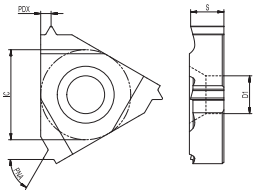
● : Standard stock ○ : Made-to-Order

## UNJ--External



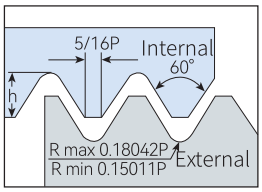

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 60° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 48UNJ** | **11EL 48UNJ** | 48 | 0.5 | | ● | | ● |
| | **11ER 44UNJ** | **11EL 44UNJ** | 44 | 0.6 | | ● | | ● |
| | **11ER 40UNJ** | **11EL 40UNJ** | 40 | 0.6 | | ● | | ● |
| | **11ER 36UNJ** | **11EL 36UNJ** | 36 | 0.6 | | ● | | ● |
| | **11ER 32UNJ** | **11EL 32UNJ** | 32 | 0.7 | | ● | | ● |
| | **11ER 28UNJ** | **11EL 28UNJ** | 28 | 0.7 | | ● | | ● |
| | **11ER 24UNJ** | **11EL 24UNJ** | 24 | 0.8 | | ● | | ● |
| | **11ER 20UNJ** | **11EL 20UNJ** | 20 | 0.9 | | ● | | ● |
| | **11ER 18UNJ** | **11EL 18UNJ** | 18 | 1.0 | | ● | | ● |
| | **11ER 16UNJ** | **11EL 16UNJ** | 16 | 1.0 | | ● | | ● |
| | **11ER 14UNJ** | **11EL 14UNJ** | 14 | 1.2 | | ● | | ● |
| | **16ER 48UNJ** | **16EL 48UNJ** | 48 | 0.5 | | ● | | ● |
| | **16ER 44UNJ** | **16EL 44UNJ** | 44 | 0.6 | | ● | | ● |
| | **16ER 40UNJ** | **16EL 40UNJ** | 40 | 0.6 | | ● | | ● |
| | **16ER 36UNJ** | **16EL 36UNJ** | 36 | 0.6 | | ● | | ● |
| | **16ER 32UNJ** | **16EL 32UNJ** | 32 | 0.7 | | ● | | ● |
| | **16ER 28UNJ** | **16EL 28UNJ** | 28 | 0.7 | | ● | | ● |
| | **16ER 24UNJ** | **16EL 24UNJ** | 24 | 0.8 | | ● | | ● |
| | **16ER 20UNJ** | **16EL 20UNJ** | 20 | 0.9 | | ● | | ● |
| | **16ER 18UNJ** | **16EL 18UNJ** | 18 | 1.0 | | ● | | ● |
| | **16ER 16UNJ** | **16EL 16UNJ** | 16 | 1.0 | | ● | | ● |
| | **16ER 14UNJ** | **16EL 14UNJ** | 14 | 1.2 | | ● | | ● |
| | **16ER 13UNJ** | **16EL 13UNJ** | 13 | 1.3 | | ● | | ● |
| | **16ER 12UNJ** | **16EL 12UNJ** | 12 | 1.3 | | ● | | ● |
| | **16ER 11UNJ** | **16EL 11UNJ** | 11 | 1.5 | | ● | | ● |
| | **16ER 10UNJ** | **16EL 10UNJ** | 10 | 1.5 | | ● | | ● |
| | **16ER 9UNJ** | **16EL 9UNJ** | 9 | 1.7 | | ● | | ● |
| | **16ER 8UNJ** | **16EL 8UNJ** | 8 | 1.6 | | ● | | ● |
| | **22ER 7UNJ** | **22EL 7UNJ** | 7 | 2.3 | | ● | | ● |
| | **22ER 6UNJ** | **22EL 6UNJ** | 6 | 2.3 | | ● | | ● |
| | **22ER 5UNJ** | **22EL 5UNJ** | 5 | 2.5 | | ● | | ● |

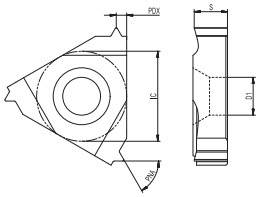
● : Standard stock ○ : Made-to-Order

## UNJ--Internal



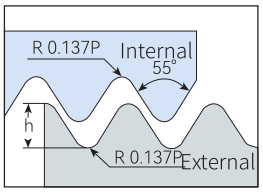

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 60° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11IR 48UNJ** | **11IL 48UNJ** | 48 | 0.5 | | ● | | ● |
| | **11IR 44UNJ** | **11IL 44UNJ** | 44 | 0.6 | | ● | | ● |
| | **11IR 40UNJ** | **11IL 40UNJ** | 40 | 0.6 | | ● | | ● |
| | **11IR 36UNJ** | **11IL 36UNJ** | 36 | 0.6 | | ● | | ● |
| | **11IR 32UNJ** | **11IL 32UNJ** | 32 | 0.7 | | ● | | ● |
| | **11IR 28UNJ** | **11IL 28UNJ** | 28 | 0.7 | | ● | | ● |
| | **11IR 24UNJ** | **11IL 24UNJ** | 24 | 0.8 | | ● | | ● |
| | **11IR 20UNJ** | **11IL 20UNJ** | 20 | 0.9 | | ● | | ● |
| | **11IR 18UNJ** | **11IL 18UNJ** | 18 | 1.0 | | ● | | ● |
| | **11IR 16UNJ** | **11IL 16UNJ** | 16 | 1.0 | | ● | | ● |
| | **11IR 14UNJ** | **11IL 14UNJ** | 14 | 1.2 | | ● | | ● |
| | **16IR 48UNJ** | **16IL 48UNJ** | 48 | 0.5 | | ● | | ● |
| | **16IR 44UNJ** | **16IL 44UNJ** | 44 | 0.6 | | ● | | ● |
| | **16IR 40UNJ** | **16IL 40UNJ** | 40 | 0.6 | | ● | | ● |
| | **16IR 36UNJ** | **16IL 36UNJ** | 36 | 0.6 | | ● | | ● |
| | **16IR 32UNJ** | **16IL 32UNJ** | 32 | 0.7 | | ● | | ● |
| | **16IR 28UNJ** | **16IL 28UNJ** | 28 | 0.7 | | ● | | ● |
| | **16IR 24UNJ** | **16IL 24UNJ** | 24 | 0.8 | | ● | | ● |
| | **16IR 20UNJ** | **16IL 20UNJ** | 20 | 0.9 | | ● | | ● |
| | **16IR 18UNJ** | **16IL 18UNJ** | 18 | 1.0 | | ● | | ● |
| | **16IR 16UNJ** | **16IL 16UNJ** | 16 | 1.0 | | ● | | ● |
| | **16IR 14UNJ** | **16IL 14UNJ** | 14 | 1.2 | | ● | | ● |
| | **16IR 13UNJ** | **16IL 13UNJ** | 13 | 1.3 | | ● | | ● |
| | **16IR 12UNJ** | **16IL 12UNJ** | 12 | 1.3 | | ● | | ● |
| | **16IR 11UNJ** | **16IL 11UNJ** | 11 | 1.5 | | ● | | ● |
| | **16IR 10UNJ** | **16IL 10UNJ** | 10 | 1.5 | | ● | | ● |
| | **16IR 9UNJ** | **16IL 9UNJ** | 9 | 1.7 | | ● | | ● |
| | **16IR 8UNJ** | **16IL 8UNJ** | 8 | 1.6 | | ● | | ● |
| | **22IR 7UNJ** | **22IL 7UNJ** | 7 | 2.3 | | ● | | ● |
| | **22IR 6UNJ** | **22IL 6UNJ** | 6 | 2.3 | | ● | | ● |
| | **22IR 5UNJ** | **22IL 5UNJ** | 5 | 2.5 | | ● | | ● |

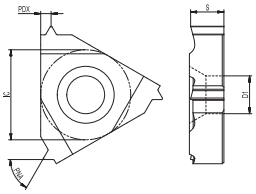
● : Standard stock ○ : Made-to-Order

## Whitworth (Full Profile)--External



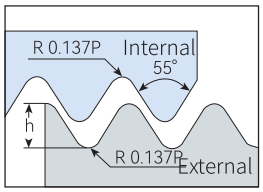

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 55° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 36W** | **11EL 36W** | 36 | 0.6 | | ● | ○ | ○ |
| | **11ER 32W** | **11EL 32W** | 32 | 0.6 | | ● | ○ | ○ |
| | **11ER 28W** | **11EL 28W** | 28 | 0.6 | | ● | ○ | ○ |
| | **11ER 26W** | **11EL 26W** | 26 | 0.7 | | ● | ○ | ○ |
| | **11ER 20W** | **11EL 20W** | 20 | 0.8 | | ● | ○ | ○ |
| | **11ER 19W** | **11EL 19W** | 19 | 0.9 | | ● | ○ | ○ |
| | **11ER 16W** | **11EL 16W** | 16 | 1.1 | | ● | ○ | ○ |
| | **11ER 14W** | **11EL 14W** | 14 | 0.6 | | ● | ○ | ○ |
| | **16ER 36W** | **16EL 36W** | 36 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 32W** | **16EL 32W** | 32 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 28W** | **16EL 28W** | 28 | 0.7 | ● | ● | ○ | ○ |
| | **16ER 26W** | **16EL 26W** | 26 | 0.8 | ● | ● | ○ | ○ |
| | **16ER 20W** | **16EL 20W** | 20 | 0.9 | ● | ● | ○ | ○ |
| | **16ER 19W** | **16EL 19W** | 19 | 1.0 | ● | ● | ○ | ○ |
| | **16ER 14W** | **16EL 14W** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16ER 12W** | **16EL 12W** | 12 | 1.4 | ● | ● | ○ | ○ |
| | **16ER 11W** | **16EL 11W** | 11 | 1.5 | ● | ● | ○ | ○ |
| | **16ER 10W** | **16EL 10W** | 10 | 1.5 | ● | ● | ○ | ○ |
| | **16ER 9W** | **16EL 9W** | 9 | 1.7 | ● | ● | ○ | ○ |
| | **16ER 8W** | **16EL 8W** | 8 | 2.0 | ● | ● | ○ | ○ |
| | **22ER 7W** | **22EL 7W** | 7 | 2.3 | | ● | ○ | ○ |
| | **22ER 6W** | **22EL 6W** | 6 | 2.3 | | ● | ○ | ○ |
| | **22ER 5W** | **22EL 5W** | 5 | 2.5 | | ● | ○ | ○ |

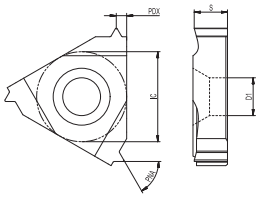
● : Standard stock ○ : Made-to-Order

## Whitworth (Full Profile)--Internal



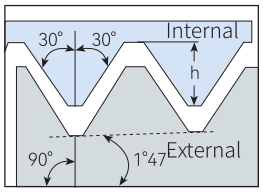

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 08.. | 4.76 | 2.25 | 2.6 | 55° |
| 11.. | 6.35 | 3.0 | 3.2 | |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **08IR 36W** | **08IL 36W** | 36 | 0.6 | | ○ | ○ | ○ |
| | **08IR 32W** | **08IL 32W** | 32 | 0.6 | | ○ | ○ | ○ |
| | **08IR 28W** | **08IL 28W** | 28 | 0.6 | | ○ | ○ | ○ |
| | **08IR 26W** | **08IL 26W** | 26 | 0.6 | | ○ | ○ | ○ |
| | **08IR 24W** | **08IL 24W** | 24 | 0.7 | | ○ | ○ | ○ |
| | **08IR 20W** | **08IL 20W** | 20 | 0.7 | | ○ | ○ | ○ |
| | **08IR 19W** | **08IL 19W** | 19 | 0.7 | | ○ | ○ | ○ |
| | **08IR 16W** | **08IL 16W** | 16 | 0.7 | | ○ | ○ | ○ |
| | **11IR 36W** | **11IL 36W** | 36 | 0.6 | | ● | ○ | ○ |
| | **11IR 32W** | **11IL 32W** | 32 | 0.6 | | ● | ○ | ○ |
| | **11IR 28W** | **11IL 28W** | 28 | 0.6 | | ● | ○ | ○ |
| | **11IR 26W** | **11IL 26W** | 26 | 0.7 | | ● | ○ | ○ |
| | **11IR 20W** | **11IL 20W** | 20 | 0.8 | | ● | ○ | ○ |
| | **11IR 19W** | **11IL 19W** | 19 | 0.9 | | ● | ○ | ○ |
| | **11IR 16W** | **11IL 16W** | 16 | 1.1 | | ● | ○ | ○ |
| | **11IR 14W** | **11IL 14W** | 14 | 0.6 | | ● | ○ | ○ |
| | **16IR 36W** | **16IL 36W** | 36 | 0.6 | ● | ● | ○ | ○ |
| | **16IR 32W** | **16IL 32W** | 32 | 0.6 | ● | ● | ○ | ○ |
| | **16IR 28W** | **16IL 28W** | 28 | 0.7 | ● | ● | ○ | ○ |
| | **16IR 26W** | **16IL 26W** | 26 | 0.8 | ● | ● | ○ | ○ |
| | **16IR 20W** | **16IL 20W** | 20 | 0.9 | ● | ● | ○ | ○ |
| | **16IR 19W** | **16IL 19W** | 19 | 1.0 | ● | ● | ○ | ○ |
| | **16IR 14W** | **16IL 14W** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16IR 12W** | **16IL 12W** | 12 | 1.4 | ● | ● | ○ | ○ |
| | **16IR 11W** | **16IL 11W** | 11 | 1.5 | ● | ● | ○ | ○ |
| | **16IR 10W** | **16IL 10W** | 10 | 1.5 | ● | ● | ○ | ○ |
| | **16IR 9W** | **16IL 9W** | 9 | 1.7 | ● | ● | ○ | ○ |
| | **16IR 8W** | **16IL 8W** | 8 | 2.0 | ● | ● | ○ | ○ |
| | **22IR 7W** | **22IL 7W** | 7 | 2.3 | | ● | ○ | ○ |
| | **22IR 6W** | **22IL 6W** | 6 | 2.3 | | ● | ○ | ○ |
| | **22IR 5W** | **22IL 5W** | 5 | 2.5 | | ● | ○ | ○ |

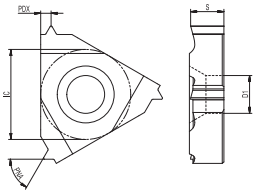
● : Standard stock ○ : Made-to-Order

## NPT (National Pipe Thread)--External



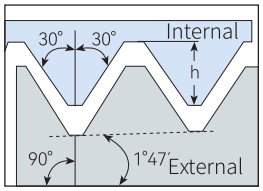

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 60° |
| 16.. | 9.525 | 3.52 | 4.0 | |

| Insert Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 27NPT** | **11EL 27NPT** | 27 | 0.8 | | ● | ○ | ○ |
| | **11ER 18NPT** | **11EL 18NPT** | 18 | 1.0 | | ● | ○ | ○ |
| | **11ER 14NPT** | **11EL 14NPT** | 14 | 1.0 | | ● | ○ | ○ |
| | **16ER 27NPT** | **16EL 27NPT** | 27 | 0.8 | ● | ● | ○ | ○ |
| | **16ER 18NPT** | **16EL 18NPT** | 18 | 1.0 | ● | ● | ○ | ○ |
| | **16ER 14NPT** | **16EL 14NPT** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16ER 11.5NPT** | **16EL 11.5NPT** | 11.5 | 1.5 | ● | ● | ○ | ○ |
| | **16ER 8NPT** | **16EL 8NPT** | 8 | 1.8 | ● | ● | ○ | ○ |

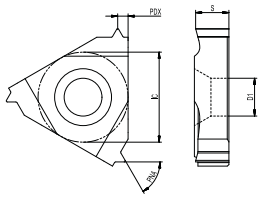
● : Standard stock ○ : Made-to-Order

## NPT (National Pipe Thread)--Internal



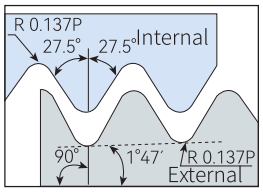

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 08.. | 4.76 | 2.25 | 2.6 | 60° |
| 11.. | 6.35 | 3.0 | 3.2 | |
| 16.. | 9.525 | 3.52 | 4.0 | |

| Insert Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **08IR 27NPT** | **08IL 27NPT** | 27 | 0.6 | | ○ | ○ | ○ |
| | **08IR 18NPT** | **08IL 18NPT** | 18 | 0.6 | | ○ | ○ | ○ |
| | **11IR 27NPT** | **11IL 27NPT** | 27 | 0.8 | | ● | ○ | ○ |
| | **11IR 18NPT** | **11IL 18NPT** | 18 | 1.0 | | ● | ○ | ○ |
| | **11IR 14NPT** | **11IL 14NPT** | 14 | 1.0 | | ● | ○ | ○ |
| | **16IR 27NPT** | **16IL 27NPT** | 27 | 0.8 | ● | ● | ○ | ○ |
| | **16IR 18NPT** | **16IL 18NPT** | 18 | 1.0 | ● | ● | ○ | ○ |
| | **16IR 14NPT** | **16IL 14NPT** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16IR 11.5NPT** | **16IL 11.5NPT** | 11.5 | 1.5 | ● | ● | ○ | ○ |
| | **16IR 8NPT** | **16IL 8NPT** | 8 | 1.8 | ● | ● | ○ | ○ |

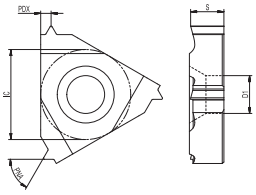
● : Standard stock ○ : Made-to-Order

## British Standard Pipe Thread--External



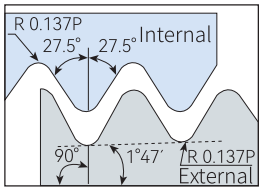

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 55° |
| 16.. | 9.525 | 3.52 | 4.0 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 28BSPT** | **11EL 28BSPT** | 28 | 0.6 | | ● | ○ | ○ |
| | **11ER 19BSPT** | **11EL 19BSPT** | 19 | 0.9 | | ● | ○ | ○ |
| | **11ER 14BSPT** | **11EL 14BSPT** | 14 | 1.0 | | ● | ○ | ○ |
| | **16ER 28BSPT** | **16EL 28BSPT** | 28 | 0.6 | ● | ● | ○ | ○ |
| | **16ER 19BSPT** | **16EL 19BSPT** | 19 | 0.9 | ● | ● | ○ | ○ |
| | **16ER 14BSPT** | **16EL 14BSPT** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16ER 11BSPT** | **16EL 11BSPT** | 11 | 1.5 | ● | ● | ○ | ○ |

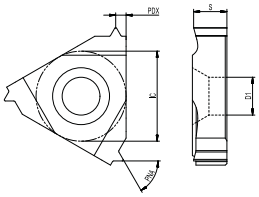
● : Standard stock ○ : Made-to-Order

## British Standard Pipe Thread--Internal



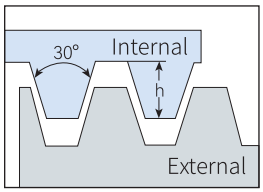

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 08.. | 4.76 | 2.25 | 2.6 | 55° |
| 11.. | 6.35 | 3.0 | 3.2 | |
| 16.. | 9.525 | 3.52 | 4.0 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **08IR 28BSPT** | **08IL 28BSPT** | 28 | 0.6 | | ○ | ○ | ○ |
| | **08IR 19BSPT** | **08IL 19BSPT** | 19 | 0.6 | | ○ | ○ | ○ |
| | **11IR 28BSPT** | **11IL 28BSPT** | 28 | 0.6 | | ● | ○ | ○ |
| | **11IR 19BSPT** | **11IL 19BSPT** | 19 | 0.9 | | ● | ○ | ○ |
| | **11IR 14BSPT** | **11IL 14BSPT** | 14 | 1.0 | | ● | ○ | ○ |
| | **16IR 28BSPT** | **16IL 28BSPT** | 28 | 0.6 | ● | ● | ○ | ○ |
| | **16IR 19BSPT** | **16IL 19BSPT** | 19 | 0.9 | ● | ● | ○ | ○ |
| | **16IR 14BSPT** | **16IL 14BSPT** | 14 | 1.2 | ● | ● | ○ | ○ |
| | **16IR 11BSPT** | **16IL 11BSPT** | 11 | 1.5 | ● | ● | ○ | ○ |

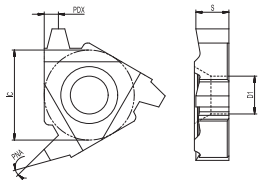
● : Standard stock ○ : Made-to-Order

## Trapez DIN 103--External



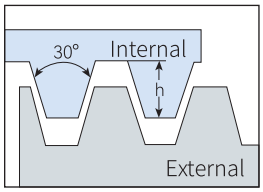

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 30° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert Below shows is right hand | Product code | | Pitch (mm) | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 150TR** | **11EL 150TR** | 1.50 | 0.9 | | ● | ● | ○ |
| | **16ER 150TR** | **16EL 150TR** | 1.50 | 1.1 | ● | ○ | ● | ○ |
| | **16ER 200TR** | **16EL 200TR** | 2.00 | 1.3 | ● | ○ | ● | ○ |
| | **16ER 250TR** | **16EL 250TR** | 2.50 | 1.4 | ● | ○ | ● | ○ |
| | **16ER 300TR** | **16EL 300TR** | 3.00 | 1.5 | ● | ○ | ● | ○ |
| | **22ER 400TR** | **22EL 400TR** | 4.00 | 1.9 | | ● | ● | ○ |
| | **22ER 500TR** | **22EL 500TR** | 5.00 | 2.5 | | ● | ● | ○ |
| | **22ER 600TR** | **22EL 600TR** | 6.00 | 2.7 | | ● | ● | ○ |

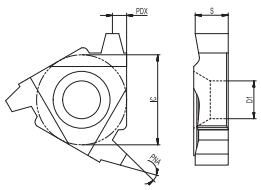
● : Standard stock ○ : Made-to-Order

## Trapez DIN 103--Internal



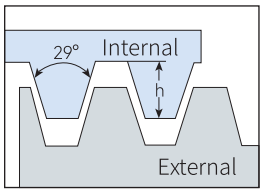

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 30° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert Below shows is right hand | Product code | | Pitch (mm) | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11IR 150TR** | **11IL 150TR** | 1.50 | 0.9 | | ● | ● | ○ |
| | **16IR 150TR** | **16IL 150TR** | 1.50 | 1.1 | ● | ○ | ● | ○ |
| | **16IR 200TR** | **16IL 200TR** | 2.00 | 1.3 | ● | ○ | ● | ○ |
| | **16IR 250TR** | **16IL 250TR** | 2.50 | 1.4 | ● | ○ | ● | ○ |
| | **16IR 300TR** | **16IL 300TR** | 3.00 | 1.5 | ● | ○ | ● | ○ |
| | **22IR 400TR** | **22IL 400TR** | 4.00 | 1.9 | | ● | ● | ○ |
| | **22IR 500TR** | **22IL 500TR** | 5.00 | 2.5 | | ● | ● | ○ |
| | **22IR 600TR** | **22IL 600TR** | 6.00 | 2.7 | | ● | ● | ○ |

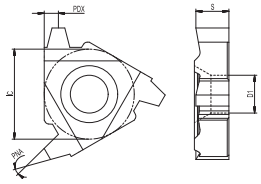
● : Standard stock ○ : Made-to-Order

## American ACME--External



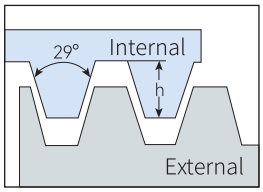

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 16.. | 9.525 | 3.52 | 4.0 | 29° |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **16ER 16ACME** | **16EL 16ACME** | 16 | 1.1 | | ● | ● | |
| | **16ER 14ACME** | **16EL 14ACME** | 14 | 1.2 | | ● | ● | |
| | **16ER 12ACME** | **16EL 12ACME** | 12 | 1.2 | | ● | ● | |
| | **16ER 10ACME** | **16EL 10ACME** | 10 | 1.4 | | ● | ● | |
| | **16ER 8ACME** | **16EL 8ACME** | 8 | 1.5 | | ● | ● | |
| | **22ER 6ACME** | **22EL 6ACME** | 6 | 1.9 | | ● | ● | |
| | **22ER 5ACME** | **22EL 5ACME** | 5 | 2.1 | | ● | ● | |

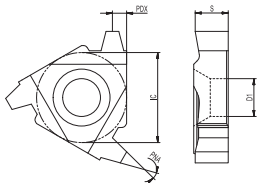
● : Standard stock ○ : Made-to-Order

## American ACME--Internal



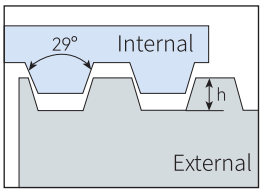

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 16.. | 9.525 | 3.52 | 4.0 | 29° |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert<br>Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **16IR 16ACME** | **16IL 16ACME** | 16 | 1.1 | | ● | ● | |
| | **16IR 14ACME** | **16IL 14ACME** | 14 | 1.2 | | ● | ● | |
| | **16IR 12ACME** | **16IL 12ACME** | 12 | 1.2 | | ● | ● | |
| | **16IR 10ACME** | **16IL 10ACME** | 10 | 1.4 | | ● | ● | |
| | **16IR 8ACME** | **16IL 8ACME** | 8 | 1.5 | | ● | ● | |
| | **22IR 6ACME** | **22IL 6ACME** | 6 | 1.9 | | ● | ● | |
| | **22IR 5ACME** | **22IL 5ACME** | 5 | 2.1 | | ● | ● | |

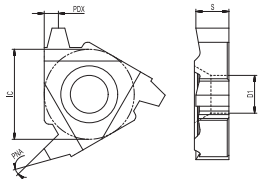
● : Standard stock ○ : Made-to-Order

## Stub ACME--External



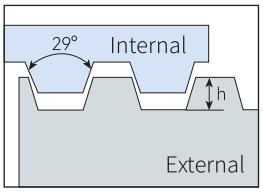

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 29° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11ER 16STACME** | **11EL 16STACME** | 16 | 1.0 | | ● | ● | ● |
| | **16ER 16STACME** | **16EL 16STACME** | 16 | 1.0 | | ● | ● | ● |
| | **16ER 14STACME** | **16EL 14STACME** | 14 | 1.1 | | ● | ● | ● |
| | **16ER 12STACME** | **16EL 12STACME** | 12 | 1.2 | | ● | ● | ● |
| | **16ER 10STACME** | **16EL 10STACME** | 10 | 1.3 | | ● | ● | ● |
| | **16ER 8STACME** | **16EL 8STACME** | 8 | 1.5 | | ● | ● | ● |
| | **16ER 6STACME** | **16EL 6STACME** | 6 | 1.8 | | ● | ● | ● |
| | **22ER 6STACME** | **22EL 6STACME** | 6 | 1.8 | | ● | ● | ● |
| | **22ER 5STACME** | **22EL 5STACME** | 5 | 2.3 | | ● | ● | ● |
| | **22ER 4STACME** | **22EL 4STACME** | 4 | 2.3 | | ● | ● | ● |

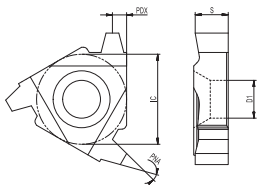
● : Standard stock ○ : Made-to-Order

## Stub ACME--Internal



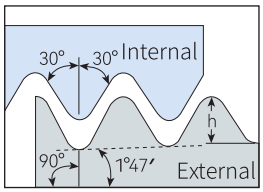

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 11.. | 6.35 | 3.0 | 3.2 | 29° |
| 16.. | 9.525 | 3.52 | 4.0 | |
| 22.. | 12.7 | 4.72 | 5.1 | |

| Insert Below shows is right hand | Product code | | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|
| | Right hand | Left hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **11IR 16STACME** | **11IL 16STACME** | 16 | 1.0 | | ● | ● | ● |
| | **16IR 16STACME** | **16IL 16STACME** | 16 | 1.0 | | ● | ● | ● |
| | **16IR 14STACME** | **16IL 14STACME** | 14 | 1.1 | | ● | ● | ● |
| | **16IR 12STACME** | **16IL 12STACME** | 12 | 1.2 | | ● | ● | ● |
| | **16IR 10STACME** | **16IL 10STACME** | 10 | 1.3 | | ● | ● | ● |
| | **16IR 8STACME** | **16IL 8STACME** | 8 | 1.5 | | ● | ● | ● |
| | **16IR 6STACME** | **16IL 6STACME** | 6 | 1.8 | | ● | ● | ● |
| | **22IR 6STACME** | **22IL 6STACME** | 6 | 1.8 | | ● | ● | ● |
| | **22IR 5STACME** | **22IL 5STACME** | 5 | 2.3 | | ● | ● | ● |
| | **22IR 4STACME** | **22IL 4STACME** | 4 | 2.3 | | ● | ● | ● |

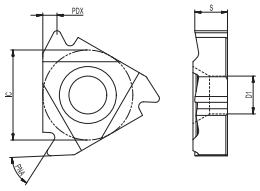
● : Standard stock ○ : Made-to-Order

## APIRD Round Casing & Tubing--External



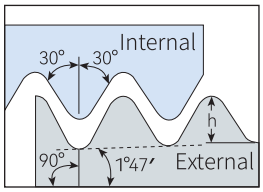

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 16.. | 9.525 | 3.52 | 4.0 | 60° |

| Insert<br>Below shows is right hand | Product code | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|
| | Right hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **16ER 10API RD** | **10** | 1.4 | ○ | ● | ○ | |
| | **16ER 8API RD** | **8** | 1.5 | ○ | ● | ○ | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

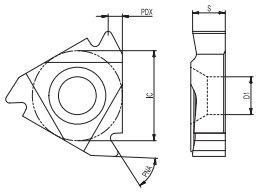
● : Standard stock ○ : Made-to-Order

## APIRD Round Casing & Tubing--Internal



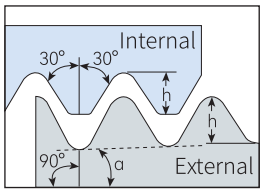

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 16.. | 9.525 | 3.52 | 4.0 | 60° |

| Insert<br>Below shows is right hand | Product code | Threads Per Inch | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|
| | Right hand | TPI | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **16IR 10API RD** | **10** | 1.4 | ○ | ● | ○ | |
| | **16IR 8API RD** | **8** | 1.5 | ○ | ● | ○ | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

● : Standard stock ○ : Made-to-Order

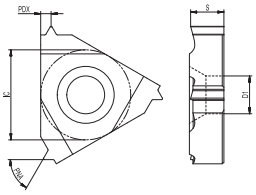
## API--External




α=arctan(IPF/24)

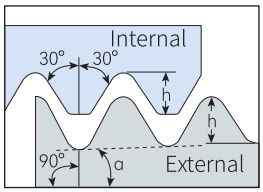
(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 22.. | 12.7 | 4.72 | 5.1 | 60° |

| Insert<br>Below shows is right hand | Product code | Threads Per Inch | Taper | API Code | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Right hand | TPI | IPF | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **22ER 4API384** | **4** | **3** | V-0.038R | 2.8 | | ○ | ● | ● |
| | **22ER 4API384-1/8** | **4** | **1.5** | V-0.038R | 2.8 | | ○ | ○ | ○ |
| | **22ER 4API386** | **4** | **2** | V-0.038R | 2.8 | | ○ | ● | ● |
| | **22ER 4API386-1/12** | **4** | **1** | V-0.038R | 2.8 | | ○ | ○ | ○ |
| | **22ER 4API504** | **4** | **3** | V-0.050 | 2.9 | | ○ | ● | ● |
| | **22ER 4API504-1/8** | **4** | **1.5** | V-0.050 | 2.9 | | ○ | ○ | ○ |
| | **22ER 4API506** | **4** | **2** | V-0.050 | 2.9 | | ○ | ● | ● |
| | **22ER 4API506-1/12** | **4** | **1** | V-0.050 | 2.9 | | ○ | ○ | ○ |
| | **22ER 5API404** | **5** | **3** | V-0.040 | 2.6 | | ○ | ○ | ○ |
| | **22ER 5API404-1/8** | **5** | **1.5** | V-0.040 | 2.6 | | ○ | ○ | ○ |
| | **22ER 6API558** | **6** | **1.5** | V-0.055 | 2.0 | | ○ | ○ | ○ |
| | **22ER 6API558-1/16** | **6** | **0.75** | V-0.055 | 2.0 | | ○ | ○ | ○ |

● : Standard stock ○ : Made-to-Order

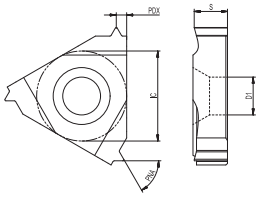
## API--Internal




α=arctan(IPF/24)

(mm)

| Product code | IC | S | D1 | PNA |
|---|---|---|---|---|
| 22.. | 12.7 | 4.72 | 5.1 | 60° |

| Insert<br>Below shows is right hand | Product code | Threads Per Inch | Taper | API Code | Dimension (mm) | Insert Grades | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Right hand | TPI | IPF | | PDX | AP220E | AP220U | AP020H | AP120S |
|  | **22IR 4API384** | **4** | **3** | V-0.038R | 2.8 | | ○ | ● | ● |
| | **22IR 4API384-1/8** | **4** | **1.5** | V-0.038R | 2.8 | | ○ | ○ | ○ |
| | **22IR 4API386** | **4** | **2** | V-0.038R | 2.8 | | ○ | ● | ● |
| | **22IR 4API386-1/12** | **4** | **1** | V-0.038R | 2.8 | | ○ | ○ | ○ |
| | **22IR 4API504** | **4** | **3** | V-0.050 | 2.9 | | ○ | ● | ● |
| | **22IR 4API504-1/8** | **4** | **1.5** | V-0.050 | 2.9 | | ○ | ○ | ○ |
| | **22IR 4API506** | **4** | **2** | V-0.050 | 2.9 | | ○ | ● | ● |
| | **22IR 4API506-1/12** | **4** | **1** | V-0.050 | 2.9 | | ○ | ○ | ○ |
| | **22IR 5API404** | **5** | **3** | V-0.040 | 2.6 | | ○ | ○ | ○ |
| | **22IR 5API404-1/8** | **5** | **1.5** | V-0.040 | 2.6 | | ○ | ○ | ○ |
| | **22IR 6API558** | **6** | **1.5** | V-0.055 | 2.0 | | ○ | ○ | ○ |
| | **22IR 6API558-1/16** | **6** | **0.75** | V-0.055 | 2.0 | | ○ | ○ | ○ |

● : Standard stock ○ : Made-to-Order

## Threading Holder Denomination System

| ATT | E | R | 25 | 25 | M | - | 16 | C |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | | 7 | 8 |

### 1- Serial Code

Thread Turning holder

### 2- Holder Type

E-- For External

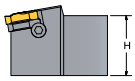
N-- For Internal

### 3- Holder

R-- Right hand

L-- Left hand

### 4- Height of Holder




25=25mm
00-- Roundrod

### 5- Breadth of Holder Or Dcon

25=25mm

### 6- Length of Holder (mm)

H=100mm

K=125mm

L=140mm

M=150mm

P=170mm

Q=180mm

R=200mm

S=250mm

T=300mm

U=350mm

V=400mm

### 7- Insert Size

16-- L=16mm / IC=9.525mm

### 8-Clmaping System

None -- Steel with screw lock

E -- Carbide with screw lock

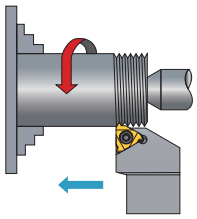
C -- Steel with Clamp

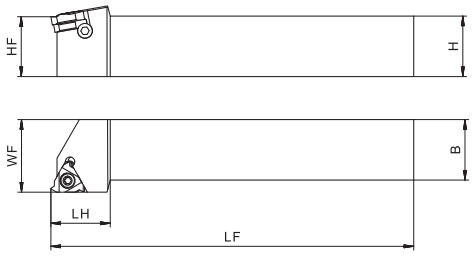
J -- Cooling channel & Steel with screw lock

JE -- Cooling channel & Carbide with screw lock

CS -- Steel with Clamp & Deflection 90°

## External Thread Holders



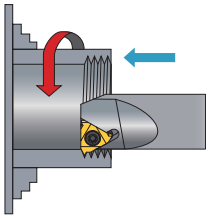


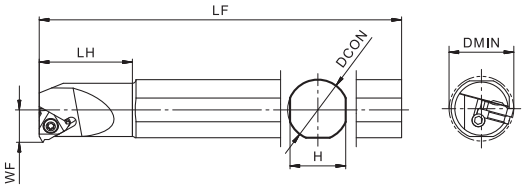

| Product code | Right hand | Left hand | Dimension (mm) | | | | | Insert | Screw | Shim | Screw of shim | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | H*B | HF | WF | LF | LH | | | | | |
| **ATTER/L-1212H-11** | ● | ● | 12*12 | 12 | 16 | 100 | 15 | 11ER/L .. | ST025080 | - | - | FT-T08 |
| **ATTER/L-1212F-16** | ● | - | 12*12 | 12 | 16 | 80 | 22 | 16ER/L .. | ST035090 | | | FT-T15 |
| **ATTER/L-1616H-16** | ○ | ○ | 16*16 | 16 | 20 | 100 | 22 | | ST035120 | S-MTN16 | SH030080 | |
| **ATTER/L-2020K-16** | ● | ● | 20*20 | 20 | 25 | 125 | 27 | | | | | |
| **ATTER/L-2525M-16** | ● | ● | 25*25 | 25 | 32 | 150 | 30 | | | | | |
| **ATTER/L-3225P-16** | ● | - | 32*25 | 32 | 32 | 170 | 32 | | | | | |
| **ATTER/L-3232P-16** | ● | ● | 32*32 | 32 | 40 | 170 | 32 | | | | | |
| **ATTER/L-2525M-22** | ○ | ○ | 25*25 | 25 | 32 | 150 | 31 | 22ER/L .. | ST040160 | S-MTN22 | SH040080 | FT-T20 |
| **ATTER/L-3225P-22** | ○ | - | 32*25 | 32 | 32 | 170 | 31 | | | | | |
| **ATTER/L-3232P-22** | ○ | ○ | 32*32 | 32 | 40 | 170 | 31 | | | | | |
| **ATTER/L-4040R-22** | ○ | - | 40*40 | 40 | 50 | 200 | 31 | | | | | |
| **ATTER/L-3232P-27** | ○ | ○ | 32*32 | 32 | 40 | 170 | 34 | 27ER/L .. | ST050200 | S-MTN27 | | |
| **ATTER/L-4040S-27** | ○ | - | 40*40 | 40 | 50 | 250 | 34 | | | | | |

● : Standard stock ○ : Made-to-Order

*Threading holders equipped with 0° shim, screw and wrench ; Insert need to be ordered.

## Internal Thread Holders






| Product code | Right hand | Left hand | Dimension (mm) | | | | | | Insert | Screw | Shim | Screw of shim | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DMIN | DCON | H | WF | LF | LH | | | | | |
| **ATTIR/L-0008K-08** | ○ | - | 9.9 | 8 | 7 | 5.5 | 125 | 20 | 08IR/L .. | ST022050 | - | - | FT-T06 |
| **ATTIR/L-0010K-11** | ○ | ○ | 13 | 10 | 9 | 7.3 | 125 | 25 | 11IR/L .. | ST025060 | | | FT-T08 |
| **ATTIR/L-0012K-11** | ○ | ○ | 15 | 12 | 11 | 8.2 | 125 | 28 | | | | | |
| **ATTIR/L-0013M-16** | ○ | ○ | 17 | 16 | 15 | 9.4 | 150 | 32 | 16IR/L .. | ST035090 | | | FT-T15 |
| **ATTIR/L-0016Q-16** | ● | ● | 20 | 16 | 15 | 11.7 | 180 | 40 | | | | | |
| **ATTIR/L-0020Q-16** | ● | ● | 24 | 20 | 18 | 13.7 | 180 | 40 | | ST035120 | S-STN16 | SH030080 | |
| **ATTIR/L-0025R-16** | ● | ● | 29 | 25 | 23 | 16.2 | 200 | 45 | | | | | |
| **ATTIR/L-0032S-16** | ● | ● | 36 | 32 | 30 | 19.7 | 250 | 50 | | | | | |
| **ATTIR/L-0040T-16** | ○ | ○ | 44 | 40 | 38 | 23.1 | 300 | 55 | | | | | |
| **ATTIR/L-0050U-16** | ○ | ○ | 56 | 50 | 48 | 28.7 | 350 | 60 | | | | | |
| **ATTIR/L-0025R-22** | ○ | ○ | 32 | 25 | 23 | 18.1 | 200 | 45 | 22IR/L .. | ST040160 | S-STN22 | SH040080 | FT-T20 |
| **ATTIR/L-0032S-22** | ○ | ○ | 39 | 32 | 30 | 21.5 | 250 | 50 | | | | | |
| **ATTIR/L-0040T-22** | ○ | ○ | 47 | 40 | 38 | 25.6 | 300 | 55 | | | | | |
| **ATTIR/L-0050U-22** | ○ | ○ | 57 | 50 | 48 | 30.6 | 350 | 70 | | | | | |
| **ATTIR/L-0032S-27** | ○ | ○ | 40 | 32 | 30 | 22.4 | 250 | 60 | 27IR/L .. | | S-STN27 | | |
| **ATTIR/L-0040T-27** | ○ | ○ | 48 | 40 | 38 | 26.4 | 300 | 60 | | | | | |
| **ATTIR/L-0050U-27** | ○ | - | 58 | 50 | 48 | 32.2 | 350 | 70 | | | | | |

● : Standard stock ○ : Made-to-Order

*Threading holders equipped with 0° shim, screw and wrench ; Insert need to be ordered.

Note

# ACHTECK

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# CUTTING TOOL CATALOGUE


## Thread Milling 628

Thread Milling Product Range Overview 630
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Selection of Multi-Row Tooth Metric Thread Tools 636
Selection of Single-Row Tooth UN Thread Tools 637
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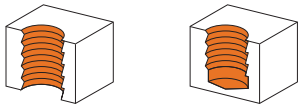
Indexable Theard Milling Cutting Parameter Recommendation 639

## Thread Milling Product Range Overview

| Tools | Series | ATM60 |
|---|---|---|
| | Thread depth | 2.5XDN |
| | Designation | Single/multi-row tooth thread milling cutters with indexable inserts |
| | Insert grade | AP320U |
| | Insert code | TM60、TM55 |
| | Coolant supply | External/Internal |
| | Milling thread type | M ; MF ; MJ ; UNC ; UNF ; UNEF; UN ; UNJ ; G; |
| | Hole with thread |  |

## Indexable Thread Milling Cutter Denomination System - Tool Holder

| A | TM | 60 | - | 024 | - | Z01 | - | 068 | - | W | 25 | R | - | 09 | - | 007 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | - | 4 | - | 5 | - | 6 | - | 7 | 8 | 9 | - | 10 | - | 11 |

| 1-Company Name |
|---|
| ACHTECK |

| 2-Product Group |
|---|
| Thread milling |

| 3-Insert Shape |
|---|
| T-Type |

| 4-Cutter Diameter |
|---|
| 16 |
| 19 |
| 24 |
| 30 |
| 35 |
| ..... |

| 5-Number of Teeth |
|---|
| 01 |
| 03 |
| 04 |

| 6-Effective Length of Holder |
|---|
| 52 |
| 55 |
| 80 |
| 90 |
| ..... |

| 7:8-Shank Type and Size |
|---|
| W16 Weldon 16 |
| W20 Weldon 20 |
| W25 Weldon 25 |
| W32 Weldon 32 |
| W40 Weldon 40 |

| 9-Tool Rotation Direction |
|---|
| R: Right |

| 10-Insert Size |
|---|
| 06 |
| 09 |
| 11 |
| 14 |

| 11-Axial Distance Between Rows |
|---|
| 006 |
| 007 |
| 012 |
| ..... |
| Without mark means single row |

## Indexable Thread Milling Cutter Denomination System - Inserts

| TM | 60 | G | - | 09 | 02 | 02 | E | - | MU1 | AP320U |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | - | 4 | 5 | 6 | 7 | - | 8 | 9 |

| 1-Category |
|---|
| Thread milling inserts |

| 2-Insert Code |
|---|
| 60<br>Positive triangle insert<br>60° thread angle |
| 55<br>Positive triangle insert<br>55° thread angle |
| ..... |

| 3-Process |
|---|
| G Ground insert |
| M Pressed insert |

| 4-Dimensions |
|---|
| 06 |
| 09 |
| 11 |
| 14 |

| 5-Thickness |
|---|
| T1=1.98 |
| 02=2.38 |
| 03=3.18 |

| 6-Corner Radius |
|---|
| 01 |
| 02 |
| 04 |

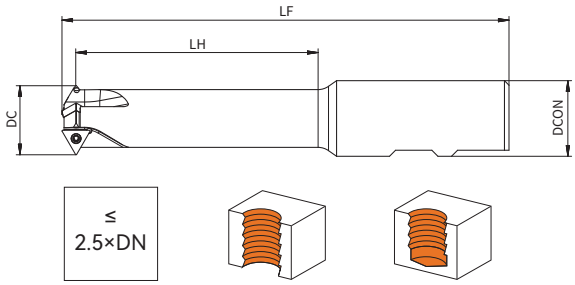
| 7-Edge Type |
|---|
| E-type |

| 8-Chip Breaker |
|---|
| MU1 Universal |

| 9-Grade |
|---|
| AP320U |

## Indexable Thread Milling Holder ATM60

Single-Row Tooth Holder




| Product code | Dimension (mm) | | | | | | Z | Coolant | No. of inserts | Insert code |
|---|---|---|---|---|---|---|---|---|---|---|
| | DN | Pmax mm | DC mm | LH mm | LF mm | DCON mm | | | | |
| **ATM60-016-Z03-052-W16R-06** | M20 | 2.5 | 16 | 52 | 108 | 16 | 3 | | 3 | TM-06 |
| **ATM60-019-Z03-055-W20R-06** | M24 | 3 | 19 | 55 | 115 | 20 | 3 | | 3 | TM-06 |
| **ATM60-024-Z03-080-W25R-09** | M30 | 3.5 | 24 | 80 | 148 | 25 | 3 | | 3 | TM-09 |
| **ATM60-030-Z03-090-W32R-09** | M36 | 4 | 30 | 90 | 162 | 32 | 3 | | 3 | TM-09 |
| **ATM60-035-Z03-110-W32R-11** | M42 | 4.5 | 35 | 110 | 180 | 32 | 3 | | 3 | TM-11 |
| **ATM60-040-Z03-125-W40R-14** | M48 | 5 | 40 | 125 | 208 | 40 | 3 | | 3 | TM-14 |
| **ATM60-044-Z03-150-W40R-14** | M56 | 5.5 | 44 | 150 | 232 | 40 | 3 | | 3 | TM-14 |
| **ATM60-052-Z04-165-W40R-14** | M64 | 6 | 52 | 165 | 248 | 40 | 4 | | 4 | TM-14 |

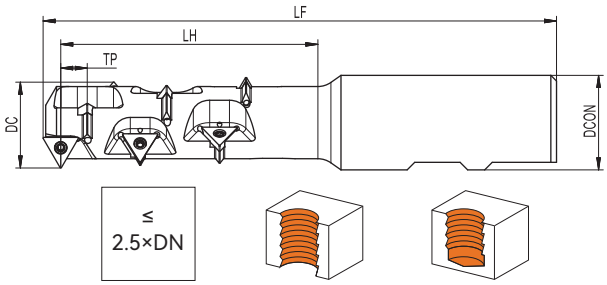
Note: With internal coolant

Without internal coolant

| Dimension (mm) | Spare parts | | |
|---|---|---|---|
| D mm | Screw | Wrench | Locking torque |
| 16-19 | SP020043 | DT-TP06 | 0.6Nm |
| 24-30 | SP022049H | DT-TP07 | 0.9Nm |
| 35 | SP025066 | DT-TP07 | 0.9Nm |
| 40-52 | SP030077 | DT-TP09 | 2.0Nm |

## Indexable Thread Milling Holder ATM60

Multi-Row Tooth Holder

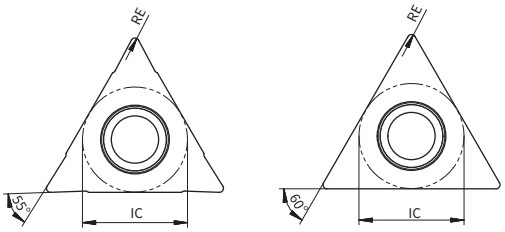



| Product code | Dimension (mm) | | | | | | | Z | Coolant | No. of inserts | Insert code |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DN | Pitch P mm | DC mm | LH mm | TP mm | LF mm | DCON mm | | | | |
| **ATM60-013-Z01-035-W12R-06-010** | M16/M18 | 2.5/2 | 13 | 35 | 10 | 86 | 12 | 1 | | 3 | TM-06 |
| **ATM60-013-Z01-038-W12R-06-009** | M16/M18 | 1.5 | 13 | 38 | 9 | 88 | 12 | 1 | | 4 | TM-06 |
| **ATM60-017-Z01-047-W16R-06-007.5** | M20/M22 | 2.5/1.5 | 16.5 | 47 | 7.5 | 103 | 16 | 1 | | 6 | TM-06 |
| **ATM60-017-Z01-053-W16R-06-010** | M20/M22 | 2.5/2 | 16.5 | 53 | 10 | 109 | 16 | 1 | | 5 | TM-06 |
| **ATM60-019-Z01-054-W20R-06-009** | M24/M27 | 3/1.5 | 19 | 54 | 9 | 114 | 20 | 1 | | 6 | TM-06 |
| **ATM60-019-Z01-063-W20R-06-012** | M24/M27 | 3/2 | 19 | 63 | 12 | 123 | 20 | 1 | | 5 | TM-06 |
| **ATM60-024-Z01-064-W25R-09-010.5** | M30/M33 | 3.5/1.5 | 24 | 64 | 10.5 | 131 | 25 | 1 | | 6 | TM-06 |
| **ATM60-024-Z01-079-W25R-09-014** | M30/M33 | 3.5/2 | 24 | 79 | 14 | 146 | 25 | 1 | | 6 | TM-09 |
| **ATM60-030-Z01-076-W32R-09-008** | M36/M39 | 4/2 | 30 | 76 | 8 | 147 | 32 | 1 | | 9 | TM-09 |
| **ATM60-030-Z01-095-W32R-09-012** | M36/M39 | 4/3/2/1.5 | 30 | 95 | 12 | 166 | 32 | 1 | | 8 | TM-09 |
| **ATM60-035-Z01-089-W32R-11-009** | M42/M45 | 4.5/3/1.5 | 35 | 89 | 9 | 159 | 32 | 1 | | 9 | TM-11 |
| **ATM60-035-Z01-110-W32R-11-009** | M42/M45 | 4.5/3/1.5 | 35 | 110 | 9 | 180 | 32 | 1 | | 10 | TM-11 |
| **ATM60-040-Z01-102-W40R-14-010** | M48/M52 | 5/2 | 40 | 102 | 10 | 186 | 40 | 1 | | 10 | TM-14 |
| **ATM60-040-Z01-122-W40R-14-015** | M48/M52 | 5/3/1.5 | 40 | 122 | 15 | 206 | 40 | 1 | | 8 | TM-14 |
| **ATM60-044-Z01-119-W40R-14-011** | M56/M60 | 5.5 | 44 | 119 | 11 | 201 | 40 | 1 | | 10 | TM-14 |
| **ATM60-044-Z01-146-W40R-14-011** | M56/M60 | 5.5 | 44 | 146 | 11 | 228 | 40 | 1 | | 10 | TM-14 |
| **ATM60-052-Z01-135-W40R-14-012** | M64/M68 | 6/3/2 | 52 | 135 | 12 | 218 | 40 | 1 | | 11 | TM-14 |

Note: With internal coolant
Without internal coolant

| Dimension (mm) | Spare parts | | |
|---|---|---|---|
| D mm | Screw | Wrench | Locking torque |
| 13-19 | SP020043 | DT-TP06 | 0.6Nm |
| 24-30 | SP022049H | DT-TP07 | 0.9Nm |
| 35 | SP025066 | DT-TP07 | 0.9Nm |
| 40-52 | SP030077 | DT-TP09 | 2.0Nm |

## Thread Milling Insert TM60G、TM55G




| Inserts | Product code | RE mm | Pitch P mm | Pitch P inch | Grade AP320U |
|---|---|---|---|---|---|
| | **TM60G-06T101E-MU1** | 0.1 | 1.5-2.9 | 18-9 | ● |
| | **TM60G-06T102E-MU1** | 0.2 | 3 | 8 | ● |
| | **TM60G-090201E-MU1** | 0.1 | 1.5-2.9 | 18-9 | ● |
| | **TM60G-090202E-MU1** | 0.2 | 3.0-4.0 | 8-6 | ● |
| | **TM60G-110201E-MU1** | 0.1 | 1.5-2.9 | 18-9 | ● |
| | **TM60G-110202E-MU1** | 0.2 | 3.0-4.5 | 8-6 | ● |
| | **TM60G-140301E-MU1** | 0.1 | 1.5-2.9 | 18-9 | ● |
| | **TM60G-140302E-MU1** | 0.2 | 3.0-5.0 | 8-5 | ● |
| | **TM60G-140304E-MU1** | 0.4 | 5.0-6.0 | 5-4 | ● |
| | **TM55G-090202E-MU1** | 0.2 | | 11 | ● |
| | **TM55G-140302E-MU1** | 0.2 | | 11 | ● |

● : Standard stock ○ : Made-to-Order

## Tool Selection - Single-Row Teeth

Metric thread

| Tool holder code | D mm | Inserts | Coarse pitch | Fine pitch |
|---|---|---|---|---|
| **ATM60-016-Z03-052-W16R-06** | 16 | TM60G-06T101 | M20;M22; | M20x1.5;M20x2; |
| **ATM60-019-Z03-055-W20R-06** | 19 | TM60G-06T101 | | M22x1.5;M22x2;M24x1.5;M24x2;M25x1.5; M26x1.5; |
| | | TM60G-06T102 | M24;M27; | |
| **ATM60-024-Z03-080-W25R-09** | 24 | TM60G-090201 | | M27x1.5;M27x2;M28x1.5;M28x2;M30x1.5; M30x2;M32Xx1.5;M32x2;M33x1.5;M33x2; |
| | | TM60G-090202 | M30;M33; | |
| **ATM60-030-Z03-090-W32R-09** | 30 | TM60G-090201 | | M34x1.5;M35x1.5;M36x1.5;M36x2;M38x1.5; M39x1.5;M39x2; |
| | | TM60G-090202 | M36;M39; | M36x3;M39x3; |
| **ATM60-035-Z03-110-W32R-11** | 35 | TM60G-110201 | | M39x1.5;M39x2;M40x1.5;M40x2;M42x1.5; M42x2; |
| | | TM60G-110202 | M42;M45; | M40x3;M42x3; |
| **ATM60-040-Z03-125-W40R-14** | 40 | TM60G-140301 | | M45x1.5;M45x2;M48x2; |
| | | TM60G-140302 | M48;M52; | M45x3;M48x3; |
| **ATM60-044-Z03-150-W40R-14** | 44 | TM60G-140301 | | M50x1.5;M50x2;M52x1.5;M52x2;M56x1.5; M56x2;M58x1.5;M60x1.5;M60x2; |
| | | TM60G-140302 | | M50x3;M52x3;M56x3;M60x3;M64x3;M68x3; |
| | | TM60G-140304 | M56;M60;M64;M68; | |
| **ATM60-052-Z04-165-W40R-14** | 52 | TM60G-140301 | | M62x1.5;M62x2;M64x2;M68x1.5;M68x2; |
| | | TM60G-140302 | | M62x3;M62x4;M64x3;M64x4;M68x3;M68x4; |
| | | TM60G-140304 | M64;M68; | M70x6;M72x6; |

## Tool Selection - Multi-Row Teeth

Metric thread

| Tool holder code | Pitch P | D mm | Insert | Coarse pitch | Fine pitch |
|---|---|---|---|---|---|
| **ATM60-013-Z01-035-W12R-06-010** | 2.5/2 | 13 | TM60G-06T101 | M16;M17;M18; | M18x2;M17x2; |
| **ATM60-013-Z01-038-W12R-06-009** | 1.5 | 13 | TM60G-06T101 | | M16x1.5;M17x1.5;M18x1.5; |
| **ATM60-017-Z01-047-W16R-06-007.5** | 2.5/1.5 | 16.5 | TM60G-06T101 | M20;M22; | M20x1.5;M22x1.5; |
| **ATM60-017-Z01-053-W16R-06-010** | 2.5/2 | 16.5 | TM60G-06T101 | M20;M22; | M20x2;M22x2; |
| **ATM60-019-Z01-054-W20R-06-009** | 3/1.5 | 19 | TM60G-06T101 | | M22x1.5;M24x1.5;M25x1.5;M26x1.5;M27x1.5; |
| | | | TM60G-06T102 | M24;M27; | |
| **ATM60-019-Z01-063-W20R-06-012** | 3/2 | 19 | TM60G-06T101 | | M24x2;M25x2;M27x2; |
| | | | TM60G-06T102 | M24;M27; | |
| **ATM60-024-Z01-064-W25R-09-010.5** | 3.5/1.5 | 24 | TM60G-090201 | | M27x1.5;M28x1.5;M30x1.5;M32x1.5;M33x1.5; |
| | | | TM60G-090202 | M30;M33; | |
| **ATM60-024-Z01-079-W25-09-014** | 3.5/2 | 24 | TM60G-090201 | | M28x2;M30x2;M32x2;M33x2; |
| | | | TM60G-090202 | M30;M33; | |
| **ATM60-030-Z01-076-W32R-09-008** | 4/2 | 30 | TM60G-090201 | | M36x2;M39x2;M40x2;M42x2; |
| | | | TM60G-090202 | M36;M39; | |
| **ATM60-030-Z01-095-W32R-09-012** | 4/3/2/1.5 | 30 | TM60G-090201 | | M35x1.5;M36x1.5;M38x1.5;M39x1.5; M36x2;M39x2;M40x2;M42x2; |
| | | | TM60G-090202 | M36;M39; | M36x3;M39x3;M40x3; |
| **ATM60-035-Z01-089-W32R-11-009** | 4.5/3/1.5 | 35 | TM60G-110201 | | M39x1.5;M40x1.5;M42x1.5;M45x1.5; |
| | | | TM60G-110202 | M42;M45; | M42x3;M45x3; |
| **ATM60-035-Z01-110-W32R-11-009** | 4.5/3/1.5 | 35 | TM60G-110201 | | M39x1.5;M40x1.5;M42x1.5;M45x1.5; |
| | | | TM60G-110202 | M42;M45; | M42x3;M45x3; |
| **ATM60-040-Z01-102-W40R-14-010** | 5/2 | 40 | TM60G-140301 | | M45x2;M48x2;M50x2;M52x2;M55x2;M56x2; |
| | | | TM60G-140302 | M48;M52; | |
| **ATM60-040-Z01-122-W40R-14-015** | 5/3/1.5 | 40 | TM60G-140301 | | M45x1.5;M48x1.5;M50x1.5;M52x1.5;M55x1.5; M56x1.5;M58x1.5;M60x1.5;M62x1.5;M64x1.5; |
| | | | TM60G-140302 | M48;M52; | M48x3;M50x3;M52x3;M55x3;M56x3; |
| **ATM60-044-Z01-119-W40R-14-011** | 5.5 | 44 | TM60G-140304 | M56;M60; | |
| **ATM60-044-Z01-146-W40R-14-011** | 5.5 | 44 | TM60G-140304 | M56;M60; | |
| **ATM60-052-Z01-135-W40R-14-012** | 6/3/2 | 52 | TM60G-140301 | | M58x2;M60x2;M62x2;M64x2;M65x2;M68x2; M70x2;M72x2; |
| | | | TM60G-140302 | | M58x3;M60x3;M62x3;M64x3;M65x3;M68x3; M70x3;M72x3; |
| | | | TM60G-140304 | M64;M68; | M70x6;M72x6; |

## Tool Selection - Single-Row Teeth

ANSI UN thread

| Tool holder code | D mm | Insert | UNC | UNF | UNEF | UN |
|---|---|---|---|---|---|---|
| **ATM60-016-Z03-052-W16R-06** | 16 | TM60G-06T101 | 7/8-9; | 3/4-16;7/8-14; 1-12; | | 7/8-12;7/8-16; |
| | | TM60G-06T102 | | | | |
| **ATM60-019-Z03-055-W20R-06** | 19 | TM60G-06T101 | | 1-12;1 1/8-12; 1 1/4-12; | 1 1/16-18; | 1-16; |
| | | TM60G-06T102 | 1-8; | | | 1 1/16-8; |
| **ATM60-024-Z03-080-W25R-09** | 24 | TM60G-090201 | | 1 1/8-12; 1 1/4-12; | 1 1/8-18; 1 1/4-18; | 1 1/8-16;1 1/4-16; |
| | | TM60G-090202 | 1 1/8-7;1 1/4-7; 1 3/8-6; | | | 1 1/8-8;1 1/4-8; |
| **ATM60-030-Z03-090-W32R-09** | 30 | TM60G-090201 | | 1 3/8-12; 1 1/2-12; | 1 3/8-18; 1 1/2-18; | 1 3/8-16;1 1/2-16; |
| | | TM60G-090202 | 1 1/2-6; | | | 1 3/8-8;1 1/2-8; |
| **ATM60-035-Z03-110-W32R-11** | 35 | TM60G-110201 | | | 1 5/8-18; | 1 5/8-12;1 5/8-16; |
| | | TM60G-110202 | | | | 1 5/8-6;1 5/8-8;1 3/4-6;1 3/4-8; |
| **ATM60-040-Z03-125-W40R-14** | 40 | TM60G-140301 | | | | 1 3/4-12;1 3/4-16;1 7/8-12; 1 7/8-16; |
| | | TM60G-140302 | | | | 1 7/8-6;1 7/8-8; |
| **ATM60-044-Z03-150-W40R-14** | 44 | TM60G-140301 | | | | 2-12;2-16;2 1/8-12;2 1/8-16; 2 1/4-12;2 1/4-16;2 1/2-12; 2 1/2-16; |
| | | TM60G-140302 | | | | 2-6;2-8;2 1/8-6;2 1/8-8;2 1/4-6; 2 1/4-8;2 1/2-6;2 1/2-8; |
| | | TM60G-140304 | 2-4.5;2 1/4-4.5; 2 1/2-4; | | | |
| **ATM60-052-Z04-165-W40R-14** | 52 | TM60G-140301 | | | | 2 1/2-12;2 1/2-16;2 3/4-12; 2 3/4-16;3-12;3-16;3 1/4-12; 3 1/4-16;3 1/2-12;3 1/2-16; |
| | | TM60G-140302 | | | | 2 1/2-6;2 1/2-8;2 3/4-6;2 3/4-8; 3-6;3-8;3 1/4-6;3 1/4-8;3 1/2-6; 3 1/2-8; |
| | | TM60G-140304 | 2 3/4-4;3-4; 3 1/4-4;3 1/2-4; | | | |

## Tool Selection - Single-Row Teeth

G-Thread (BSP)

| Tool holder code | D mm | Insert | G |
|---|---|---|---|
| **ATM60-024-Z03-080-W25R-09** | 24 | TM55G-090202 | G1-11;G1 1/8-11;G1 1/4-11; |
| **ATM60-030-Z03-090-W32R-09** | 30 | TM55G-090202 | G1 1/8-11;G1 1/4-11;G1 3/8-11;G1 1/2-11; |
| **ATM60-040-Z03-125-W40R-14** | 40 | TM55G-140302 | G1 1/2-11;G1 3/4-11;G2-11; |
| **ATM60-044-Z03-150-W40R-14** | 44 | TM55G-140302 | G1 3/4-11;G2-11;G2 1/4-11;G2 1/2-11;G3-11; |

## Indexable Thread Milling Cutting Data Recommendation

| Materials | | | | | | ATM60 | | | |
|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece Materials | | | Brinell Hardness (HB/HRC) | Tensile strength Rm (N/mm²) | Cutting speed Vc (m/min) | fz(mm) Insert dimension | | |
| | | | | | | | 06 | 09 | 11/14 |
| P | Unalloyed steel | C ≤ 0.25% | Annealed | 125 | 428 | 180 | 0.3 | 0.35 | 0.4 |
| | | 0.25 < C ≤ 0.55% | Annealed | 190 | 639 | 180 | 0.3 | 0.35 | 0.4 |
| | | 0.25 < C ≤ 0.55% | Heat-treated | 210 | 708 | 180 | 0.3 | 0.35 | 0.4 |
| | | C > 0.55% | Annealed | 190 | 639 | 180 | 0.3 | 0.35 | 0.4 |
| | | C > 0.55% | Heat-treated | 300 | 1013 | 180 | 0.25 | 0.3 | 0.35 |
| | | Free cutting steel (short chip) | Annealed | 220 | 745 | 180 | 0.3 | 0.35 | 0.4 |
| | Low-alloyed steel | Annealed | | 175 | 591 | 180 | 0.3 | 0.35 | 0.4 |
| | | Heat-treated | | 300 | 1013 | 180 | 0.3 | 0.35 | 0.4 |
| | | Heat-treated | | 380 | 1282 | 130 | 0.2 | 0.3 | 0.35 |
| | | Heat-treated | | 430 | 1477 | 80 | 0.15 | 0.2 | 0.3 |
| | High-alloyed steel and highalloyed tool steel | Annealed | | 200 | 675 | 180 | 0.25 | 0.35 | 0.4 |
| | | Hardened and tempered | | 300 | 1013 | 180 | 0.25 | 0.35 | 0.4 |
| | | Hardened and tempered | | 400 | 1361 | 130 | 0.25 | 0.3 | 0.35 |
| | Stainless steel | Ferritic/Martensite, Annealed | | 200 | 675 | 180 | 0.25 | 0.3 | 0.35 |
| | | Martensite,Heat-treated | | 330 | 1114 | 130 | 0.25 | 0.3 | 0.35 |
| M | Stainless steel | Austenitic,hardened | | 200 | 675 | 180 | 0.2 | 0.3 | 0.35 |
| | | Austenitic,precipitation hardened stainless steel (PH stainless steel) | | 300 | 1013 | 130 | 0.2 | 0.3 | 0.35 |
| | | Austenitic, ferritic, duplex | | 230 | 778 | 80 | 0.2 | 0.3 | 0.35 |
| K | Malleable cast iron | Ferritic | | 200 | 400 | 180 | 0.3 | 0.35 | 0.4 |
| | | Pearlitic | | 260 | 700 | 180 | 0.3 | 0.35 | 0.4 |
| | Grey cast iron | Low tensile strength | | 180 | 200 | 250 | 0.3 | 0.35 | 0.4 |
| | | High tensile strength/Austenitic | | 245 | 350 | 180 | 0.3 | 0.35 | 0.4 |
| | Nodular cast iron | Ferritic | | 155 | 400 | 180 | 0.3 | 0.35 | 0.4 |
| | | Pearlitic | | 265 | 700 | 180 | 0.3 | 0.35 | 0.4 |
| | GGV(CGI) | | | 230 | 400 | 180 | 0.3 | 0.35 | 0.4 |
| N | Wrought aluminum alloy | Non-aging alloy | | 30 | - | | | | |
| | | Aged alloy | | 100 | 340 | | | | |
| | Cast aluminum alloy | ≤ 12% Si, non-aging alloy | | 75 | 260 | | | | |
| | | ≤ 12% Si, aged alloy | | 90 | 310 | 200 | 0.3 | 0.35 | 0.4 |
| | | > 12% Si, non-aging alloy | | 130 | 450 | 240 | 0.3 | 0.35 | 0.4 |
| | Magnesium alloy | | | 70 | 250 | | | | |
| | Copper and copper alloy (bronze/brass) | Unalloyed, electrolytic copper | | 100 | 340 | | | | |
| | | Brass, bronze, red brass | | 90 | 310 | | | | |
| | | Cu alloy, short chip | | 110 | 380 | | | | |
| | | High tensile, Ampco alloy | | 300 | 1010 | | | | |
| S | Heat-resistant alloy | Fe-based | Annealed | 200 | 680 | 35 | 0.2 | 0.2 | 0.2 |
| | | | Aged | 280 | 940 | 20 | 0.1 | 0.1 | 0.1 |
| | | Ni or Co based | Annealed | 250 | 840 | 35 | 0.2 | 0.2 | 0.2 |
| | | | Aged | 350 | 1180 | 20 | 0.1 | 0.1 | 0.1 |
| | | | Cast | 320 | 1080 | 30 | 0.2 | 0.2 | 0.2 |
| | Titanium alloy | Pure Titanium | | 200 | 680 | 35 | 0.2 | 0.2 | 0.2 |
| | | α and β alloy,aged | | 375 | 1260 | 35 | 0.2 | 0.2 | 0.2 |
| | | β alloy | | 410 | 1400 | 25 | 0.2 | 0.2 | 0.2 |
| | Tungsten alloy | | | 300 | 1010 | 35 | 0.2 | 0.2 | 0.2 |
| | Molybdenum alloy | | | 300 | 1010 | 35 | 0.2 | 0.2 | 0.2 |
| H | Hardened steel | Hardened and tempered | | 50HRC | | 40 | 0.15 | 0.2 | 0.2 |
| | | Hardened and tempered | | 55HRC | | | | | |
| | | Hardened and tempered | | 60HRC | | | | | |
| | Chilled cast iron | Hardened and tempered | | 55HRC | | 40 | 0.15 | 0.2 | 0.2 |

The cutting data are average recommended values. For special applications, adjustment is needed.

# ACHTECK

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THE EXPERT OF DIFFICULT MACHINING

# CUTTING TOOL CATALOGUE


## Chuck 640

Overview of Rotary Chucks 643
BT Power Chuck 644
BT Collet Chuck 645
BT Milling Cutter Chuck 647
BT Anti-vibration Milling Cutter Chuck 650
BT Side Lock Chuck 650
BT Hydraulic Chuck 651
BT Shrink Fit Chuck 652
HSK Power Chuck 654
HSK Collet Chuck 654
HSK Milling Cutter Chuck 655
HSK Side Lock Chuck 656
HSK Hydraulic Chuck 657
HSK  Shrink Fit Chuck 658

## Accessories 660

Hydraulic Collet 660
Power Collet 662
ER Collet 663
ER Collet--Internal Cooling 665
Tapping Collet 667
Nut 668
Chuck Locking Wrench 669
HSK Internal Coolant Tube/Wrench 670
Pull Stud 671
Extension Rods Denomination System 672
Steel--Threaded Locking Extension Rods 673
Carbide--Threaded Locking Extension Rods 674
M-type ER Collet Extension Rods 676

## Tooling System Denomination System

| HSK-A63 | - | FM | - | A | - | 22 | - | 60 | - | C |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | | 3 | | 4 | | 5 | | 6 |

### 1-Spindle

HSK-A63
HSK-A100
BT40
BT50

### 2-Type of Chuck

| Code | Description |
|---|---|
| HC | Hydraulic Chuck |
| SF | Shrink Fit Chuck |
| ER | ER Collet Chuck |
| SL | Side Lock Chuck |
| PC | Power Milling Chuck |
| FM | Face Milling Arbor |

### 3-Distinguishing Code

| | |
|---|---|
| Shrink Fit Chuck/ Hydraulic Chuck/Power Chuck | A---------- Standard<br>S---------- Mini<br>P---------- Power<br>X---------- Adjustable |
| Side Lock Chuck | B---------- Side lock<br>E---------- 2° angled side lock |
| Face Milling Arbor | A---------- Common clampling screw<br>B---------- Clamping with shim screw<br>C---------- Periphery clampling screw<br>D---------- Anti-vibration type |
| ER Collet Chuck | None---------- Standard<br>V---------- For Tapping<br>G---------- High speed type |

### 4- Clamping Diameter

DCONWS=22mm

### 5-Length (LF)

LF=60mm

### 6- Other Information

| | |
|---|---|
| C | Coolant through end face |

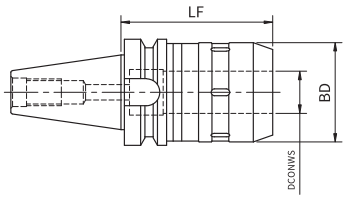
## Product Overview

| Series | Power chuck | Collet chuck holder | Face milling cutter arbor | Side lock chuck | Hydraulic chuck | Shrink Fit Chuck |
|---|---|---|---|---|---|---|
| | | | | | | |
| Enforce standards | JIS B6339 | JIS B6339 | JIS B6339 | JIS B6339 | JIS B6339 | JIS B6339 |
| Finishing | ◐ | ● | ● | | ● | ● |
| High-speed cutting | | ◐ | | | ● | ● |
| Roughing | ● | ● | ● | ● | | |
| Holding range | 6-32 | 4-25 | 22-60 | 20-40 | 6-32 | 3-32 |
| Attention | Collet chuck check/cleaning | Collet chuck check/cleaning | Screw tightened | Screw tightened | Clamping end cavity check/cleaning | Clamping end cavity check/cleaning |
| Spindle | BT40、BT50 | BT40、BT50 | BT40、BT50 | BT40、BT50 | BT40、BT50 | BT40、BT50 |
| Tool clamping | PC 20/25/32 | ER 16/20/25/32/40 | FM_ 22/27/32/40/60 | SLB 20/25/32/40 | HCA 6/8/10/12/14/ 16/20/25/32 | SF 3/4/5/6/8/10/12/ 14/16/18/20/25/32 |

| Series | Power chuck | Collet chuck holder | Face milling cutter arbor | Side lock chuck | Hydraulic chuck | Shrink Fit Chuck |
|---|---|---|---|---|---|---|
| | | | | | | |
| Enforce standards | DIN69893 | DIN69893 | DIN69893 | DIN69893 | DIN69893 | DIN69893 |
| Finishing | ◐ | ● | | ● | ● | ● |
| High-speed cutting | | ◐ | | | ● | ● |
| Roughing | ● | ● | ● | ● | | |
| Holding range | 6-42 | 4-25 | 22-60 | 16-40 | 6-32 | 3-32 |
| Attention | Collet chuck check/cleaning | Collet chuck check/cleaning | Screw tightened | Screw tightened | Clamping end cavity check/cleaning | Clamping end cavity check/cleaning |
| Spindle | HSK-A63 HSK-A100 | HSK-A63 HSK-A100 | HSK-A63 HSK-A100 | HSK-A63 HSK-A100 | HSK-A63 HSK-A100 | HSK-A63 HSK-A100 |
| Tool clamping | PC 20/25/32/42 | ER 16/20/25/32/40 | FM_ 22/27/32/40/60 | SLB 16/20/25/32/40 | HCA 6/8/10/12/14/ 16/20/25/32 | SF 3/4/5/6/8/10/12/ 14/16/18/20/25/32 |

## Power Chuck

JIS B6339



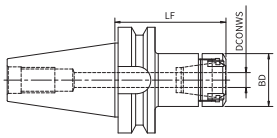

| Product Code | Spindle | Dimensions (mm) | | | Wrench (optional) |
|---|---|---|---|---|---|
| | | DCONWS | BD | LF | |
| **BT40-PC20-80** | BT40 | 20 | 53 | 80 | W-C20 |
| **BT40-PC25-90** | BT40 | 25 | 58 | 90 | W-C25 |
| **BT40-PC32-105** | BT40 | 32 | 68 | 105 | W-C32 |
| **BT50-PC25-90** | BT50 | 25 | 58 | 90 | W-C25 |
| **BT50-PC32-105** | BT50 | 32 | 68 | 105 | W-C32 |

Note: Wrench and the power collet needs to be ordered separately.

### Tooling assembly

## ER Collet Chuck

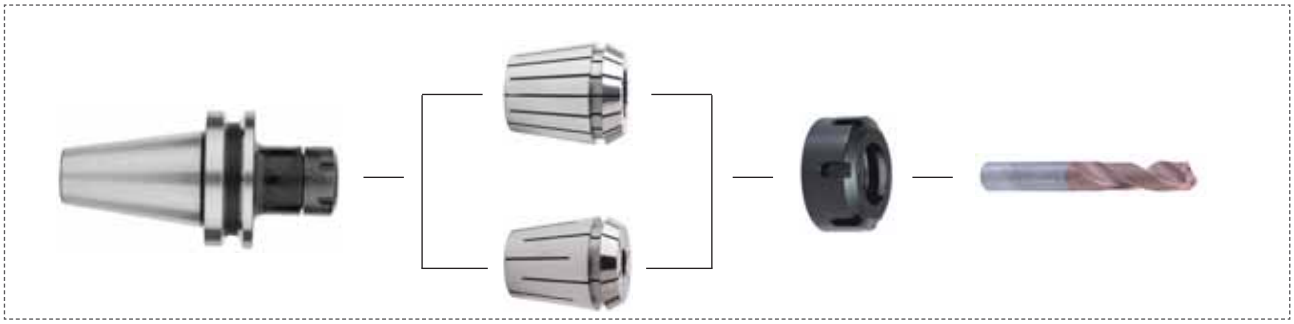
JIS B6339




| Product Code | Spindle | Dimensions (mm) | | | Nut | Collet (optional) |
|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | | |
| **BT40-ER16-70** | BT40 | 4-10 | 28 | 70 | ER16-A | ER16 |
| **BT40-ER16-100** | BT40 | 4-10 | 28 | 100 | ER16-A | ER16 |
| **BT40-ER16-150** | BT40 | 4-10 | 28 | 150 | ER16-A | ER16 |
| **BT40-ER20-70** | BT40 | 4-12 | 34 | 70 | ER20-A | ER20 |
| **BT40-ER20-100** | BT40 | 4-12 | 34 | 100 | ER20-A | ER20 |
| **BT40-ER20-150** | BT40 | 4-12 | 34 | 150 | ER20-A | ER20 |
| **BT40-ER25-70** | BT40 | 4-16 | 42 | 70 | ER25-UM | ER25 |
| **BT40-ER25-100** | BT40 | 4-16 | 42 | 100 | ER25-UM | ER25 |
| **BT40-ER25-150** | BT40 | 4-16 | 42 | 150 | ER25-UM | ER25 |
| **BT40-ER32-70** | BT40 | 4-20 | 50 | 70 | ER32-UM | ER32 |
| **BT40-ER32-100** | BT40 | 4-20 | 50 | 100 | ER32-UM | ER32 |
| **BT40-ER32-150** | BT40 | 4-20 | 50 | 150 | ER32-UM | ER32 |

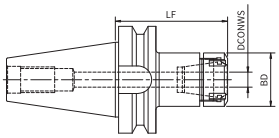
Note: Wrench, axial limit screw and collet needs to be ordered separately.

### Tooling assembly



## ER Collet Chuck

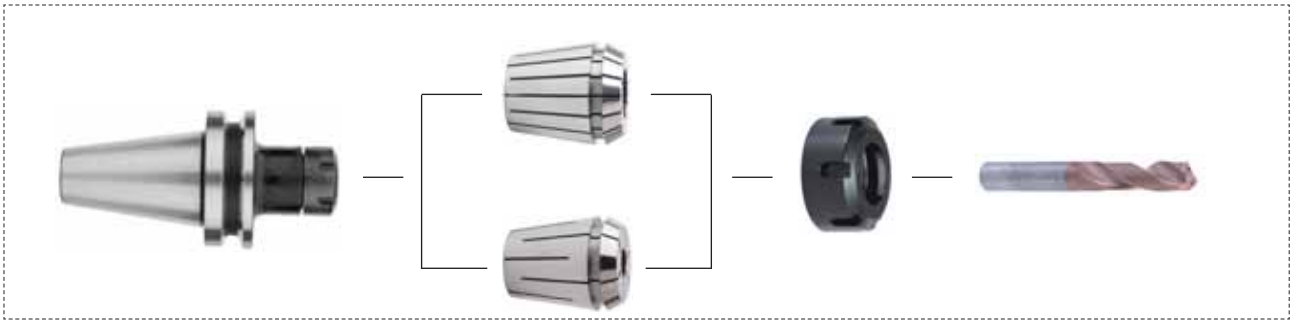
JIS B6339




| Product Code | Spindle | Dimensions (mm) | | | Nut | Collet (optional) |
|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | | |
| **BT50-ER16-70** | BT50 | 4-10 | 28 | 70 | ER16-A | ER16 |
| **BT50-ER16-100** | BT50 | 4-10 | 28 | 100 | ER16-A | ER16 |
| **BT50-ER16-150** | BT50 | 4-10 | 28 | 150 | ER16-A | ER16 |
| **BT50-ER20-70** | BT50 | 4-12 | 34 | 70 | ER20-A | ER20 |
| **BT50-ER20-100** | BT50 | 4-12 | 34 | 100 | ER20-A | ER20 |
| **BT50-ER20-150** | BT50 | 4-12 | 34 | 150 | ER20-A | ER20 |
| **BT50-ER25-100** | BT50 | 4-16 | 42 | 100 | ER25-UM | ER25 |
| **BT50-ER25-150** | BT50 | 4-16 | 42 | 150 | ER25-UM | ER25 |
| **BT50-ER32-100** | BT50 | 4-20 | 50 | 100 | ER32-UM | ER32 |
| **BT50-ER32-150** | BT50 | 4-20 | 50 | 150 | ER32-UM | ER32 |
| **BT50-ER40-100** | BT50 | 4-26 | 63 | 100 | ER40-UM | ER40 |
| **BT50-ER40-150** | BT50 | 4-26 | 63 | 150 | ER40-UM | ER40 |
| **BT50-ER40-200** | BT50 | 4-26 | 63 | 200 | ER40-UM | ER40 |

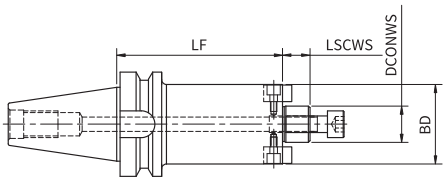
Note: Wrench, axial limit screw and collet needs to be ordered separately.

### Tooling assembly



## Face Milling Arbor

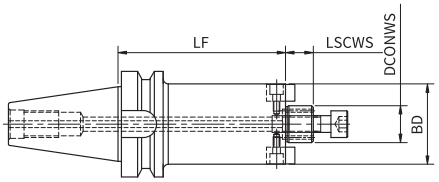
JIS B6339




| Product Code | Spindle | Dimensions (mm) | | | | Clamping screw |
|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | LSCWS | |
| **BT40-FMA22-45** | BT40 | 22 | 48 | 45 | 16.5 | M10*30 |
| **BT40-FMA22-60** | BT40 | 22 | 48 | 60 | 16.5 | |
| **BT40-FMA22-100** | BT40 | 22 | 48 | 100 | 16.5 | |
| **BT40-FMA22-150** | BT40 | 22 | 48 | 150 | 16.5 | |
| **BT40-FMA27-45** | BT40 | 27 | 60 | 45 | 18.5 | M12*30 |
| **BT40-FMA27-60** | BT40 | 27 | 60 | 60 | 18.5 | |
| **BT40-FMA27-100** | BT40 | 27 | 60 | 100 | 18.5 | |
| **BT40-FMA27-150** | BT40 | 27 | 60 | 150 | 18.5 | |
| **BT40-FMA27-200** | BT40 | 27 | 60 | 200 | 18.5 | |
| **BT40-FMB32-60** | BT40 | 32 | 62 | 60 | 22 | M16*35 |
| **BT40-FMB32-100** | BT40 | 32 | 62 | 100 | 22 | |
| **BT40-FMB32-150** | BT40 | 32 | 62 | 150 | 22 | |
| **BT40-FMB32-200** | BT40 | 32 | 62 | 200 | 22 | |
| **BT40-FMB40-60** | BT40 | 40 | 80 | 60 | 23 | M20*35 |
| **BT40-FMB40-100** | BT40 | 40 | 80 | 100 | 23 | |
| **BT40-FMB40-150** | BT40 | 40 | 80 | 150 | 23 | |
| **BT40-FMB40-200** | BT40 | 40 | 80 | 200 | 23 | |

## Face Milling Arbor With Internal Coolant

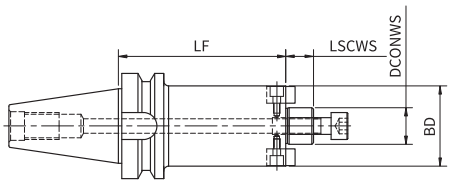
JIS B6339




| Product Code | Spindle | Dimensions (mm) | | | | Internal coolant | Clamping screw |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | LSCWS | | |
| **BT40-FMA22-60-C** | BT40 | 22 | 48 | 60 | 16.5 | | M10*30 |
| **BT40-FMA22-100-C** | BT40 | 22 | 48 | 100 | 16.5 | | |
| **BT40-FMA27-60-C** | BT40 | 27 | 60 | 60 | 18.5 | | M12*30 |
| **BT40-FMA27-100-C** | BT40 | 27 | 60 | 100 | 18.5 | | |
| **BT40-FMB32-60-C** | BT40 | 32 | 62 | 60 | 22 | | M16*35 |
| **BT40-FMB32-100-C** | BT40 | 32 | 62 | 100 | 22 | | |
| **BT40-FMB40-60-C** | BT40 | 40 | 80 | 60 | 23 | | M20*35 |

## Face Milling Arbor

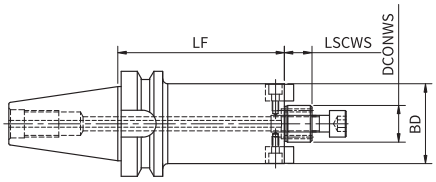
JIS B6339




| Product Code | Spindle | Dimensions (mm) | | | | Clamping screw |
|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | LSCWS | |
| **BT50-FMA22-60** | BT50 | 22 | 48 | 60 | 16.5 | M10*30 |
| **BT50-FMA22-100** | BT50 | 22 | 48 | 100 | 16.5 | |
| **BT50-FMA22-150** | BT50 | 22 | 48 | 150 | 16.5 | |
| **BT50-FMA22-200** | BT50 | 22 | 48 | 200 | 16.5 | |
| **BT50-FMA27-60** | BT50 | 27 | 60 | 60 | 18.5 | M12*30 |
| **BT50-FMA27-100** | BT50 | 27 | 60 | 100 | 18.5 | |
| **BT50-FMA27-150** | BT50 | 27 | 60 | 150 | 18.5 | |
| **BT50-FMA27-200** | BT50 | 27 | 60 | 200 | 18.5 | |
| **BT50-FMB32-60** | BT50 | 32 | 73 | 60 | 22 | M16*35 |
| **BT50-FMB32-100** | BT50 | 32 | 73 | 100 | 22 | |
| **BT50-FMB32-150** | BT50 | 32 | 73 | 150 | 22 | |
| **BT50-FMB32-200** | BT50 | 32 | 73 | 200 | 22 | |
| **BT50-FMB40-60** | BT50 | 40 | 80 | 60 | 23 | M20*35 |
| **BT50-FMB40-100** | BT50 | 40 | 80 | 100 | 23 | |
| **BT50-FMB40-150** | BT50 | 40 | 80 | 150 | 23 | |
| **BT50-FMB40-200** | BT50 | 40 | 80 | 200 | 23 | |

## Face Milling Arbor With Internal Coolant

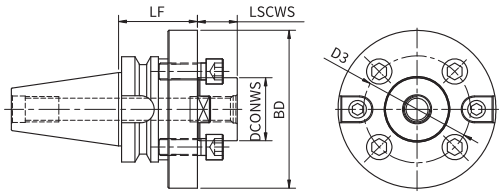
JIS B6339




| Product Code | Spindle | Dimensions (mm) | | | | Internal coolant | Clamping screw |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | LSCWS | | |
| **BT50-FMA22-60-C** | BT50 | 22 | 48 | 60 | 16.5 | | M10*30 |
| **BT50-FMA22-100-C** | BT50 | 22 | 48 | 100 | 16.5 | | |
| **BT50-FMA27-60-C** | BT50 | 27 | 60 | 60 | 18.5 | | M12*30 |
| **BT50-FMA27-100-C** | BT50 | 27 | 60 | 90 | 18.5 | | |
| **BT50-FMB32-60-C** | BT50 | 32 | 73 | 60 | 22 | | M16*35 |
| **BT50-FMB32-100-C** | BT50 | 32 | 73 | 100 | 22 | | |
| **BT50-FMB40-60-C** | BT50 | 40 | 80 | 60 | 23 | | M20*35 |
| **BT50-FMB40-100-C** | BT50 | 40 | 80 | 100 | 23 | | |

## Face Milling Arbor for Large Diameter Cutting Tools

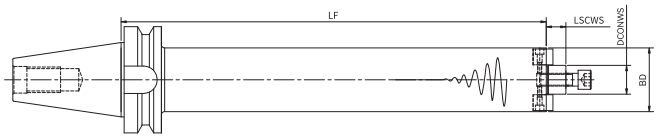
JIS B6339




| Product Code | Spindle | Dimensions (mm) | | | | | Clamping screw |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | D3 | LF | LSCWS | |
| **BT50-FMC40-60** | BT50 | 40 | 98 | 66.7 | 60 | 23 | M12*45 |
| **BT50-FMC40-100** | BT50 | 40 | 98 | 66.7 | 100 | 23 | |
| **BT50-FMC40-150** | BT50 | 40 | 98 | 66.7 | 150 | 23 | |
| **BT50-FMC60-75** | BT50 | 60 | 140 | 101.6 | 75 | 25 | M16*50 |

## Anti-Vibration Face Milling Arbor

JIS B6339



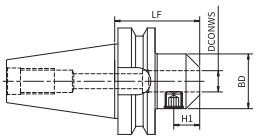

| Product Code | Spindle | Dimensions (mm) | | | | Weight (Kg) |
|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | LSCWS | |
| **BT50-FMD22-300-D48** | BT50 | 22 | 48 | 300 | 18 | 7.9 |
| **BT50-FMD22-400-D48** | BT50 | 22 | 48 | 400 | 18 | 9.3 |
| **BT50-FMD22-400-D58** | BT50 | 22 | 58 | 400 | 18 | 12.5 |
| **BT50-FMD22-500-D58** | BT50 | 22 | 58 | 500 | 18 | 14.9 |
| **BT50-FMD27-400-D58** | BT50 | 27 | 58 | 400 | 20 | 13.7 |
| **BT50-FMD27-500-D58** | BT50 | 27 | 58 | 500 | 20 | 15.1 |
| **BT50-FMD27-500-D74** | BT50 | 27 | 74 | 500 | 20 | 21.2 |
| **BT50-FMD32-500-D74** | BT50 | 32 | 74 | 500 | 21 | 21.4 |

Note: Made-to-order.

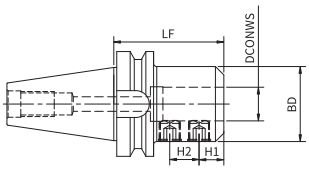
## Side Lock Chuck

JIS B6339

Style1




Style2

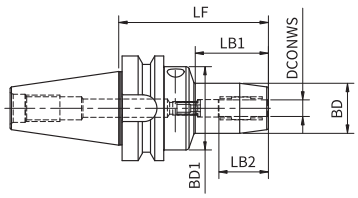



| Product Code | Spindle | Dimensions (mm) | | | | | Style |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | H1 | H2 | LF | |
| **BT40-SLB20-63** | BT40 | 20 | 52 | 25 | - | 63 | 1 |
| **BT40-SLB25-100** | BT40 | 25 | 65 | 24 | 25 | 100 | 2 |
| **BT40-SLB32-100** | BT40 | 32 | 72 | 24 | 28 | 100 | 2 |
| **BT50-SLB20-80** | BT50 | 20 | 52 | 25 | - | 80 | 1 |
| **BT50-SLB25-100** | BT50 | 25 | 65 | 24 | 25 | 100 | 2 |
| **BT50-SLB32-105** | BT50 | 32 | 72 | 24 | 28 | 105 | 2 |
| **BT50-SLB40-115** | BT50 | 40 | 80 | 30 | 32 | 115 | 2 |

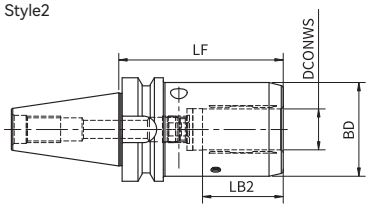
## Hydraulic Chuck

JIS B6339

Style1




Style2



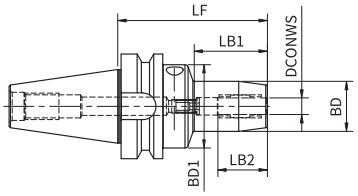

| Product Code | Spindle | Dimensions (mm) | | | | | | HC Collet | Style |
|---|---|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | BD1 | LF | Step Length LB1 | Min. Clamping Depth LB2 | | |
| **BT40-HCA06-90** | BT40 | 6 | 28 | 50 | 90 | 44 | 27.5 | - | 1 |
| **BT40-HCA08-90** | BT40 | 8 | 30 | 50 | 90 | 39 | 27.5 | - | 1 |
| **BT40-HCA10-90** | BT40 | 10 | 32 | 50 | 90 | 44 | 32.5 | - | 1 |
| **BT40-HCA12-90** | BT40 | 12 | 34 | 50 | 90 | 44 | 37.5 | HC12-.. | 1 |
| **BT40-HCA14-90** | BT40 | 14 | 36 | 50 | 90 | 44 | 37.5 | - | 1 |
| **BT40-HCA16-90** | BT40 | 16 | 38 | 50 | 90 | 48 | 42.5 | - | 1 |
| **BT40-HCA18-90** | BT40 | 18 | 41 | 50 | 90 | 48 | 42.5 | - | 1 |
| **BT40-HCA20-90** | BT40 | 20 | 43 | 50 | 90 | 48 | 42.5 | HC20-.. | 1 |
| **BT40-HCA25-100** | BT40 | 25 | 57 | / | 100 | / | 51 | - | 2 |
| **BT40-HCA32-105** | BT40 | 32 | 63 | / | 105 | / | 55 | HC32-.. | 2 |

Note: Collet excluded; preset dynamic balance G2.5 20000rpm, runout ≤ 0.003mm at 3xD.

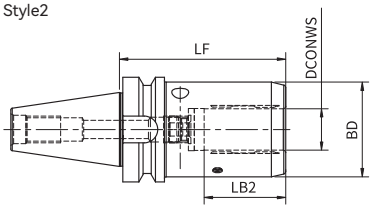
## Hydraulic Chuck

JIS B6339

Style1




Style2

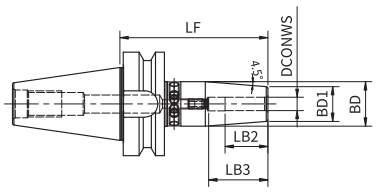



| Product Code | Spindle | Dimensions (mm) | | | | | | HC Collet | Style |
|---|---|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | BD1 | LF | Step Length LB1 | Min. Clamping Depth LB2 | | |
| **BT50-HCA06-90** | BT50 | 6 | 28 | 50 | 90 | 32 | 27.5 | - | 1 |
| **BT50-HCA08-90** | BT50 | 8 | 30 | 50 | 90 | 32 | 27.5 | - | 1 |
| **BT50-HCA10-90** | BT50 | 10 | 32 | 50 | 90 | 32 | 32.5 | - | 1 |
| **BT50-HCA12-90** | BT50 | 12 | 34 | 50 | 90 | 32 | 37.5 | HC12-.. | 1 |
| **BT50-HCA14-90** | BT50 | 14 | 36 | 50 | 90 | 32 | 37.5 | - | 1 |
| **BT50-HCA16-90** | BT50 | 16 | 38 | 50 | 90 | 32 | 42.5 | - | 1 |
| **BT50-HCA18-90** | BT50 | 18 | 41 | 50 | 90 | 32 | 42.5 | - | 1 |
| **BT50-HCA20-90** | BT50 | 20 | 43 | 50 | 90 | 32 | 42.5 | HC20-.. | 1 |
| **BT50-HCA25-105** | BT50 | 25 | 57 | / | 105 | / | 51 | - | 2 |
| **BT50-HCA32-115** | BT50 | 32 | 63 | / | 115 | / | 55 | HC32-.. | 2 |

Note: Collet excluded; preset dynamic balance G2.5 20000rpm, runout ≤ 0.003mm at 3xD.

## Shrink Fit Chuck

JIS B6339

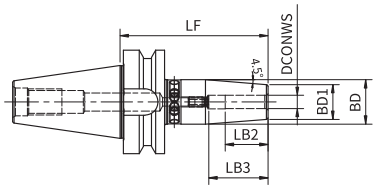



| Product Code | Spindle | Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD1 | BD | LF | Max. Clamping Depth LB3 | Min. Clamping Depth LB2 |
| **BT40-SF03-90** | BT40 | 3 | 10 | 16 | 90 | - | 9 |
| **BT40-SF04-90** | BT40 | 4 | 10 | 16 | 90 | - | 12 |
| **BT40-SF05-90** | BT40 | 5 | 10 | 16 | 90 | - | 15 |
| **BT40-SF06-90** | BT40 | 6 | 21 | 27 | 90 | 36 | 26 |
| **BT40-SF06-130** | BT40 | 6 | 21 | 27 | 130 | 36 | 26 |
| **BT40-SF06-160** | BT40 | 6 | 21 | 27 | 160 | 36 | 26 |
| **BT40-SF08-90** | BT40 | 8 | 21 | 27 | 90 | 36 | 26 |
| **BT40-SF08-130** | BT40 | 8 | 21 | 27 | 130 | 36 | 26 |
| **BT40-SF08-160** | BT40 | 8 | 21 | 27 | 160 | 36 | 26 |
| **BT40-SF10-90** | BT40 | 10 | 24 | 32 | 90 | 42 | 32 |
| **BT40-SF10-130** | BT40 | 10 | 24 | 32 | 130 | 42 | 32 |
| **BT40-SF10-160** | BT40 | 10 | 24 | 32 | 160 | 42 | 32 |
| **BT40-SF12-90** | BT40 | 12 | 80 | 32 | 90 | 47 | 37 |
| **BT40-SF12-130** | BT40 | 12 | 80 | 32 | 130 | 47 | 37 |
| **BT40-SF12-160** | BT40 | 12 | 80 | 32 | 160 | 47 | 37 |
| **BT40-SF14-90** | BT40 | 14 | 80 | 34 | 90 | 47 | 37 |
| **BT40-SF14-130** | BT40 | 14 | 27 | 34 | 130 | 47 | 37 |
| **BT40-SF14-160** | BT40 | 14 | 27 | 34 | 160 | 47 | 37 |
| **BT40-SF16-90** | BT40 | 16 | 27 | 34 | 90 | 50 | 40 |
| **BT40-SF16-130** | BT40 | 16 | 27 | 34 | 130 | 50 | 40 |
| **BT40-SF16-160** | BT40 | 16 | 27 | 34 | 160 | 50 | 40 |
| **BT40-SF18-90** | BT40 | 18 | 33 | 42 | 90 | 50 | 40 |
| **BT40-SF18-130** | BT40 | 18 | 33 | 42 | 130 | 50 | 40 |
| **BT40-SF18-160** | BT40 | 18 | 33 | 42 | 160 | 50 | 40 |
| **BT40-SF20-90** | BT40 | 20 | 33 | 42 | 90 | 52 | 42 |
| **BT40-SF20-130** | BT40 | 20 | 33 | 42 | 130 | 52 | 42 |
| **BT40-SF20-160** | BT40 | 20 | 33 | 42 | 160 | 52 | 42 |
| **BT40-SF25-100** | BT40 | 25 | 44 | 53 | 100 | 58 | 48 |
| **BT40-SF25-130** | BT40 | 25 | 44 | 53 | 130 | 58 | 48 |
| **BT40-SF25-160** | BT40 | 25 | 44 | 53 | 160 | 58 | 48 |
| **BT40-SF32-100** | BT40 | 32 | 44 | 53 | 100 | 58 | 48 |
| **BT40-SF32-130** | BT40 | 32 | 44 | 53 | 130 | 58 | 48 |
| **BT40-SF32-160** | BT40 | 32 | 44 | 53 | 160 | 58 | 48 |

Note: Chuck comes standard with an axial adjusting screw, including a hole for a balancing screw, preset dynamic balance G2.5 20000rpm, and runout ≤ 0.003mm at 3xD.

## Shrink Fit Chuck

JIS B6339

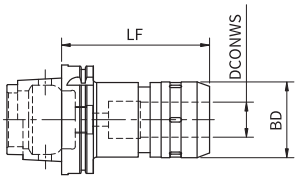



| Product Code | Spindle | Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD1 | BD | LF | Max. Clamping Depth LB3 | Min. Clamping Depth LB2 |
| **BT50-SF06-100** | BT50 | 6 | 21 | 27 | 100 | 36 | 26 |
| **BT50-SF06-130** | BT50 | 6 | 21 | 27 | 130 | 36 | 26 |
| **BT50-SF06-160** | BT50 | 6 | 21 | 27 | 160 | 36 | 26 |
| **BT50-SF08-100** | BT50 | 8 | 21 | 27 | 100 | 36 | 26 |
| **BT50-SF08-130** | BT50 | 8 | 21 | 27 | 130 | 36 | 26 |
| **BT50-SF08-160** | BT50 | 8 | 21 | 32 | 160 | 36 | 26 |
| **BT50-SF10-100** | BT50 | 10 | 24 | 32 | 100 | 42 | 32 |
| **BT50-SF10-130** | BT50 | 10 | 24 | 32 | 130 | 42 | 32 |
| **BT50-SF10-160** | BT50 | 10 | 24 | 32 | 160 | 42 | 32 |
| **BT50-SF12-100** | BT50 | 12 | 24 | 32 | 100 | 47 | 37 |
| **BT50-SF12-130** | BT50 | 12 | 24 | 32 | 130 | 47 | 37 |
| **BT50-SF12-160** | BT50 | 12 | 24 | 32 | 160 | 47 | 37 |
| **BT50-SF14-100** | BT50 | 14 | 80 | 34 | 100 | 47 | 37 |
| **BT50-SF14-130** | BT50 | 14 | 80 | 34 | 130 | 47 | 37 |
| **BT50-SF14-160** | BT50 | 14 | 80 | 34 | 160 | 47 | 37 |
| **BT50-SF16-100** | BT50 | 16 | 80 | 34 | 100 | 50 | 40 |
| **BT50-SF16-130** | BT50 | 16 | 27 | 34 | 130 | 50 | 40 |
| **BT50-SF16-160** | BT50 | 16 | 27 | 34 | 160 | 50 | 40 |
| **BT50-SF18-100** | BT50 | 18 | 33 | 42 | 100 | 50 | 40 |
| **BT50-SF18-130** | BT50 | 18 | 33 | 42 | 130 | 50 | 40 |
| **BT50-SF18-160** | BT50 | 18 | 33 | 42 | 160 | 50 | 40 |
| **BT50-SF20-100** | BT50 | 20 | 33 | 42 | 100 | 52 | 42 |
| **BT50-SF20-130** | BT50 | 20 | 33 | 42 | 130 | 52 | 42 |
| **BT50-SF20-160** | BT50 | 20 | 33 | 42 | 160 | 52 | 42 |
| **BT50-SF25-100** | BT50 | 25 | 44 | 53 | 100 | 58 | 48 |
| **BT50-SF25-130** | BT50 | 25 | 44 | 53 | 130 | 58 | 48 |
| **BT50-SF25-160** | BT50 | 25 | 44 | 53 | 160 | 58 | 48 |
| **BT50-SF32-100** | BT50 | 32 | 44 | 53 | 100 | 58 | 48 |
| **BT50-SF32-130** | BT50 | 32 | 44 | 53 | 130 | 58 | 48 |
| **BT50-SF32-160** | BT50 | 32 | 44 | 53 | 160 | 58 | 48 |

Note: Chuck comes standard with an axial adjusting screw, including a hole for a balancing screw, preset dynamic balance G2.5 20000rpm, and runout ≤ 0.003mm at 3xD.

## High-Speed Power Chuck

DIN 69893

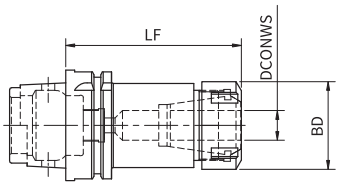



| Product Code | Spindle | Dimensions (mm) | | | Wrench |
|---|---|---|---|---|---|
| | | DCONWS | BD | LF | |
| **HSK-A63-PC20-110** | HSK-A63 | 20 | 52 | 110 | W-C20 |
| **HSK-A63-PC25-110** | HSK-A63 | 25 | 61 | 110 | W-C25 |
| **HSK-A63-PC32-110** | HSK-A63 | 32 | 71 | 110 | W-C32 |
| **HSK-A100-PC20-105** | HSK-A100 | 20 | 52 | 105 | W-C20 |
| **HSK-A100-PC25-115** | HSK-A100 | 25 | 61 | 115 | W-C25 |
| **HSK-A100-PC32-135** | HSK-A100 | 32 | 71 | 135 | W-C32 |
| **HSK-A100-PC42-115** | HSK-A100 | 42 | 86 | 115 | W-C42 |

Note: Provided with wrench as standard; excluding collet and internal coolant tube, Preset to dynamic balance G6.3 15000rpm. runout ≤ 0.003mm at 3xD.

## ER Collet Chuck

DIN 69893

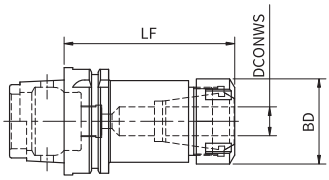



| Product Code | Spindle | Dimensions (mm) | | | Nut | Collet (optional) |
|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | | |
| **HSK-A63-ER16-75** | HSK-A63 | 4-10 | 28 | 75 | ER16-A | ER16 |
| **HSK-A63-ER16-100** | HSK-A63 | 4-10 | 28 | 100 | ER16-A | ER16 |
| **HSK-A63-ER16-160** | HSK-A63 | 4-10 | 28 | 160 | ER16-A | ER16 |
| **HSK-A63-ER20-80** | HSK-A63 | 4-12 | 34 | 80 | ER20-A | ER20 |
| **HSK-A63-ER20-100** | HSK-A63 | 4-12 | 34 | 100 | ER20-A | ER20 |
| **HSK-A63-ER20-160** | HSK-A63 | 4-12 | 34 | 160 | ER20-A | ER20 |
| **HSK-A63-ER25-80** | HSK-A63 | 4-16 | 42 | 80 | ER25-UM | ER25 |
| **HSK-A63-ER25-100** | HSK-A63 | 4-16 | 42 | 100 | ER25-UM | ER25 |
| **HSK-A63-ER25-150** | HSK-A63 | 4-16 | 42 | 150 | ER25-UM | ER25 |
| **HSK-A63-ER32-100** | HSK-A63 | 4-20 | 50 | 100 | ER32-UM | ER32 |
| **HSK-A63-ER32-160** | HSK-A63 | 4-20 | 50 | 160 | ER32-UM | ER32 |

Note: Wrench, axis limit screw, and collet needs to be ordered separately. Preset to dynamic balance G6.3 15000rpm.

## ER Collet Chuck

DIN 69893

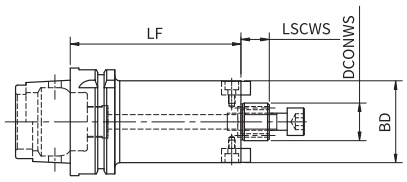



| Product Code | Spindle | Dimensions (mm) | | | Nut | Collet (optional) |
|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | | |
| **HSK-A100-ER16-100** | HSK-A100 | 4-10 | 28 | 100 | ER16-A | ER16 |
| **HSK-A100-ER16-160** | HSK-A100 | 4-10 | 28 | 160 | ER16-A | ER16 |
| **HSK-A100-ER20-100** | HSK-A100 | 4-12 | 34 | 100 | ER20-A | ER20 |
| **HSK-A100-ER20-160** | HSK-A100 | 4-12 | 34 | 160 | ER20-A | ER20 |
| **HSK-A100-ER25-100** | HSK-A100 | 4-16 | 42 | 100 | ER25-UM | ER25 |
| **HSK-A100-ER25-160** | HSK-A100 | 4-16 | 42 | 160 | ER25-UM | ER25 |
| **HSK-A100-ER32-100** | HSK-A100 | 4-20 | 50 | 100 | ER32-UM | ER32 |
| **HSK-A100-ER32-160** | HSK-A100 | 4-20 | 50 | 160 | ER32-UM | ER32 |
| **HSK-A100-ER40-100** | HSK-A100 | 4-25 | 63 | 100 | ER40-UM | ER40 |
| **HSK-A100-ER40-160** | HSK-A100 | 4-25 | 63 | 160 | ER40-UM | ER40 |

Note: Wrench, axis limit screw, and collet needs to be ordered separately. Preset to dynamic balance G6.3 15000rpm.

## Face Milling Arbor

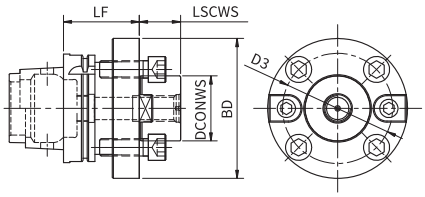
DIN 69893




| Product Code | Spindle | Dimensions (mm) | | | | Internal coolant | Clamping screw |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | LF | LSCWS | | |
| **HSK-A63-FMA16-100-C** | HSK-A63 | 16 | 38 | 100 | 16 | | M8*30 |
| **HSK-A63-FMA22-50-C** | HSK-A63 | 22 | 48 | 50 | 18 | | M10*30 |
| **HSK-A63-FMA22-100-C** | HSK-A63 | 22 | 48 | 100 | 18 | | |
| **HSK-A63-FMA27-60-C** | HSK-A63 | 27 | 60 | 60 | 20 | | M12*30 |
| **HSK-A63-FMA27-100-C** | HSK-A63 | 27 | 60 | 100 | 20 | | |
| **HSK-A63-FMB32-60-C** | HSK-A63 | 32 | 78 | 60 | 22 | | M16*35 |
| **HSK-A100-FMA22-50-C** | HSK-A100 | 22 | 48 | 50 | 18 | | M10*30 |
| **HSK-A100-FMA22-100-C** | HSK-A100 | 22 | 48 | 100 | 18 | | |
| **HSK-A100-FMA27-50-C** | HSK-A100 | 27 | 60 | 50 | 20 | | M12*30 |
| **HSK-A100-FMA27-100-C** | HSK-A100 | 27 | 60 | 100 | 20 | | |
| **HSK-A100-FMB32-50-C** | HSK-A100 | 32 | 78 | 50 | 22 | | M16*35 |
| **HSK-A100-FMB32-100-C** | HSK-A100 | 32 | 78 | 100 | 22 | | |
| **HSK-A100-FMB40-60-C** | HSK-A100 | 40 | 85 | 60 | 25 | | M20*35 |

## Face Milling Arbor

DIN 69893

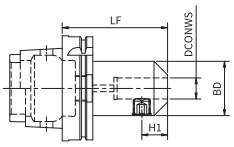



| Product Code | Spindle | Dimensions (mm) | | | | | Clamping screw |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | LSCWS | LF | D3 | |
| **HSK-A100-FMC40-75** | HSK-A100 | 40 | 89 | 25 | 75 | 66.7 | M12*45 |
| **HSK-A100-FMC60-70** | HSK-A100 | 60 | 129 | 32 | 70 | 101.6 | M16*50 |

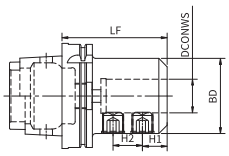
## Side Lock Chuck

DIN 69893

Style1




Style2

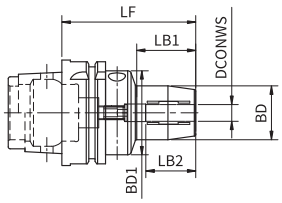



| Product Code | Spindle | Dimensions (mm) | | | | | Style |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | H1 | H2 | LF | |
| **HSK-A63-SLB16-80** | HSK-A63 | 16 | 48 | 24 | - | 80 | 1 |
| **HSK-A63-SLB20-80** | HSK-A63 | 20 | 52 | 25 | - | 80 | 1 |
| **HSK-A63-SLB25-110** | HSK-A63 | 25 | 65 | 24 | 25 | 110 | 2 |
| **HSK-A63-SLB32-110** | HSK-A63 | 32 | 72 | 24 | 28 | 110 | 2 |
| **HSK-A100-SLB16-100** | HSK-A100 | 16 | 48 | 24 | - | 100 | 1 |
| **HSK-A100-SLB20-100** | HSK-A100 | 20 | 52 | 25 | - | 100 | 1 |
| **HSK-A100-SLB25-100** | HSK-A100 | 25 | 65 | 24 | 25 | 100 | 2 |
| **HSK-A100-SLB32-100** | HSK-A100 | 32 | 72 | 24 | 28 | 100 | 2 |
| **HSK-A100-SLB40-120** | HSK-A100 | 40 | 80 | 30 | 32 | 120 | 2 |

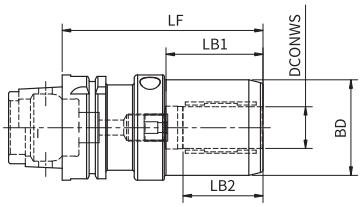
## Hydraulic Chuck

DIN 69893

Style1




Style2



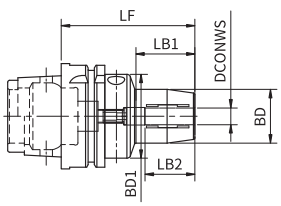

| Product Code | Spindle | Dimensions (mm) | | | | | | HC Collet | Style |
|---|---|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | BD1 | LF | Step Length LB1 | Min. Clamping Depth LB2 | | |
| **HSK-A63-HCA06-70** | HSK-A63 | 6 | 28 | 50 | 70 | 24 | 27.5 | - | 1 |
| **HSK-A63-HCA08-70** | HSK-A63 | 8 | 30 | 50 | 70 | 24 | 27.5 | - | 1 |
| **HSK-A63-HCA10-80** | HSK-A63 | 10 | 32 | 50 | 80 | 35 | 32.5 | - | 1 |
| **HSK-A63-HCA12-85** | HSK-A63 | 12 | 34 | 50 | 85 | 40 | 37.5 | HC12-.. | 1 |
| **HSK-A63-HCA14-85** | HSK-A63 | 14 | 36 | 50 | 85 | 40 | 37.5 | - | 1 |
| **HSK-A63-HCA16-90** | HSK-A63 | 16 | 38 | 50 | 90 | 46 | 42.5 | - | 1 |
| **HSK-A63-HCA18-90** | HSK-A63 | 18 | 41 | 50 | 90 | 47 | 42.5 | - | 1 |
| **HSK-A63-HCA20-90** | HSK-A63 | 20 | 43 | 50 | 90 | 48 | 42.5 | HC20-.. | 1 |
| **HSK-A63-HCA25-120** | HSK-A63 | 25 | 57 | 63 | 120 | 59 | 51 | - | 2 |
| **HSK-A63-HCA32-125** | HSK-A63 | 32 | 63 | 75 | 125 | / | 55 | HC32-.. | 2 |

Note: Collet need to be ordered separately, pre-set to dynamic balance G2.5 20000rpm, runout ≤ 0.003mm at 3xD.

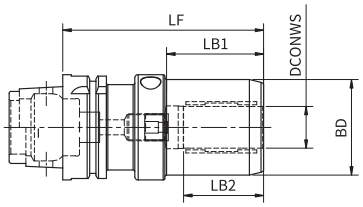
## Hydraulic Chuck

DIN 69893

Style1




Style2

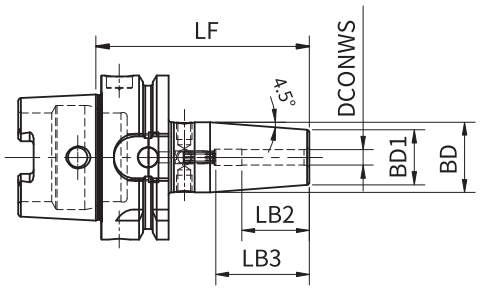



| Product Code | Spindle | Dimensions (mm) | | | | | | HC Collet | Style |
|---|---|---|---|---|---|---|---|---|---|
| | | DCONWS | BD | BD1 | LF | Step Length LB1 | Min. Clamping Depth LB2 | | |
| **HSK-A100-HCA06-75** | HSK-A100 | 6 | 28 | 50 | 75 | 26 | 27.5 | - | 1 |
| **HSK-A100-HCA08-75** | HSK-A100 | 8 | 30 | 50 | 75 | 26 | 27.5 | - | 1 |
| **HSK-A100-HCA10-90** | HSK-A100 | 10 | 32 | 50 | 90 | 42 | 32.5 | - | 1 |
| **HSK-A100-HCA12-95** | HSK-A100 | 12 | 34 | 50 | 95 | 47 | 37.5 | HC12-.. | 1 |
| **HSK-A100-HCA14-95** | HSK-A100 | 14 | 36 | 50 | 95 | 47 | 37.5 | - | 1 |
| **HSK-A100-HCA16-100** | HSK-A100 | 16 | 38 | 50 | 100 | 53 | 42.5 | - | 1 |
| **HSK-A100-HCA18-100** | HSK-A100 | 18 | 41 | 50 | 100 | 53 | 42.5 | - | 1 |
| **HSK-A100-HCA20-105** | HSK-A100 | 20 | 43 | 50 | 105 | 59 | 42.5 | HC20-.. | 1 |
| **HSK-A100-HCA25-110** | HSK-A100 | 25 | 57 | 63 | 110 | 62 | 51 | - | 1 |
| **HSK-A100-HCA32-110** | HSK-A100 | 32 | 63 | 75 | 110 | 62 | 55 | HC32-.. | 1 |

Note: Collet need to be ordered separately, pre-set to dynamic balance G2.5 20000rpm, runout ≤ 0.003mm at 3xD.

## Shrink Fit Chuck

DIN 69893

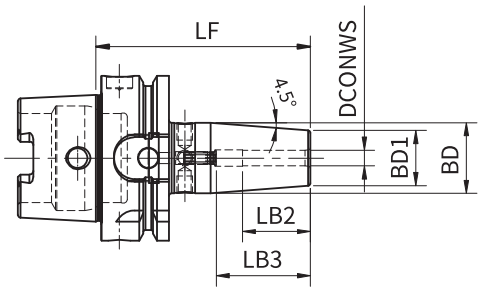



| Product Code | Spindle | Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD1 | BD | LF | Max. Clamping Depth LB3 | Min. Clamping Depth LB2 |
| **HSK-A63-SF03-80** | HSK-A63 | 3 | 10 | 16 | 80 | - | 9 |
| **HSK-A63-SF04-80** | HSK-A63 | 4 | 10 | 16 | 80 | - | 12 |
| **HSK-A63-SF05-80** | HSK-A63 | 5 | 10 | 16 | 80 | - | 15 |
| **HSK-A63-SF06-80** | HSK-A63 | 6 | 21 | 27 | 80 | 36 | 26 |
| **HSK-A63-SF06-130** | HSK-A63 | 6 | 21 | 27 | 130 | 36 | 26 |
| **HSK-A63-SF06-160** | HSK-A63 | 6 | 21 | 27 | 160 | 36 | 26 |
| **HSK-A63-SF08-80** | HSK-A63 | 8 | 21 | 27 | 80 | 36 | 26 |
| **HSK-A63-SF08-130** | HSK-A63 | 8 | 21 | 27 | 130 | 36 | 26 |
| **HSK-A63-SF08-160** | HSK-A63 | 8 | 21 | 27 | 160 | 36 | 26 |
| **HSK-A63-SF10-85** | HSK-A63 | 10 | 24 | 32 | 85 | 42 | 32 |
| **HSK-A63-SF10-130** | HSK-A63 | 10 | 24 | 32 | 130 | 42 | 32 |
| **HSK-A63-SF10-160** | HSK-A63 | 10 | 24 | 32 | 160 | 42 | 32 |
| **HSK-A63-SF12-90** | HSK-A63 | 12 | 80 | 32 | 90 | 47 | 37 |
| **HSK-A63-SF12-130** | HSK-A63 | 12 | 80 | 32 | 130 | 47 | 37 |
| **HSK-A63-SF12-160** | HSK-A63 | 12 | 80 | 32 | 160 | 47 | 37 |
| **HSK-A63-SF14-90** | HSK-A63 | 14 | 80 | 34 | 90 | 47 | 37 |
| **HSK-A63-SF14-130** | HSK-A63 | 14 | 27 | 34 | 130 | 47 | 37 |
| **HSK-A63-SF14-160** | HSK-A63 | 14 | 27 | 34 | 160 | 47 | 37 |
| **HSK-A63-SF16-95** | HSK-A63 | 16 | 27 | 34 | 95 | 50 | 40 |
| **HSK-A63-SF16-130** | HSK-A63 | 16 | 27 | 34 | 130 | 50 | 40 |
| **HSK-A63-SF16-160** | HSK-A63 | 16 | 27 | 34 | 160 | 50 | 40 |
| **HSK-A63-SF18-95** | HSK-A63 | 18 | 33 | 42 | 95 | 50 | 40 |
| **HSK-A63-SF18-130** | HSK-A63 | 18 | 33 | 42 | 130 | 50 | 40 |
| **HSK-A63-SF18-160** | HSK-A63 | 18 | 33 | 42 | 160 | 50 | 40 |
| **HSK-A63-SF20-100** | HSK-A63 | 20 | 33 | 42 | 100 | 52 | 42 |
| **HSK-A63-SF20-130** | HSK-A63 | 20 | 33 | 42 | 130 | 52 | 42 |
| **HSK-A63-SF20-160** | HSK-A63 | 20 | 33 | 42 | 160 | 52 | 42 |
| **HSK-A63-SF25-115** | HSK-A63 | 25 | 44 | 53 | 115 | 58 | 48 |
| **HSK-A63-SF25-130** | HSK-A63 | 25 | 44 | 53 | 130 | 58 | 48 |
| **HSK-A63-SF25-160** | HSK-A63 | 25 | 44 | 53 | 160 | 58 | 48 |
| **HSK-A63-SF32-120** | HSK-A63 | 32 | 44 | 53 | 120 | 58 | 48 |
| **HSK-A63-SF32-160** | HSK-A63 | 32 | 44 | 53 | 160 | 58 | 48 |

Note: Chuck comes standard with an axial adjusting screw, including a hole for a balancing screw, preset dynamic balance G2.5 20000rpm, runout ≤ 0.003mm at 3xD.

## Shrink Fit Chuck

DIN 69893

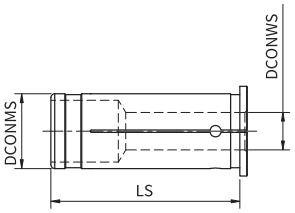



| Product Code | Spindle | Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | DCONWS | BD1 | BD | LF | Max. Clamping Depth LB3 | Min. Clamping Depth LB2 |
| **HSK-A100-SF06-85** | HSK-A100 | 6 | 21 | 27 | 85 | 36 | 26 |
| **HSK-A100-SF06-130** | HSK-A100 | 6 | 21 | 27 | 130 | 36 | 26 |
| **HSK-A100-SF06-160** | HSK-A100 | 6 | 21 | 27 | 160 | 36 | 26 |
| **HSK-A100-SF08-85** | HSK-A100 | 8 | 21 | 27 | 85 | 36 | 26 |
| **HSK-A100-SF08-130** | HSK-A100 | 8 | 21 | 27 | 130 | 36 | 26 |
| **HSK-A100-SF08-160** | HSK-A100 | 8 | 21 | 27 | 160 | 36 | 26 |
| **HSK-A100-SF10-90** | HSK-A100 | 10 | 24 | 32 | 90 | 42 | 32 |
| **HSK-A100-SF10-130** | HSK-A100 | 10 | 24 | 32 | 130 | 42 | 32 |
| **HSK-A100-SF10-160** | HSK-A100 | 10 | 24 | 32 | 160 | 42 | 32 |
| **HSK-A100-SF12-95** | HSK-A100 | 12 | 24 | 32 | 95 | 47 | 37 |
| **HSK-A100-SF12-130** | HSK-A100 | 12 | 24 | 32 | 130 | 47 | 37 |
| **HSK-A100-SF12-160** | HSK-A100 | 12 | 24 | 32 | 160 | 47 | 37 |
| **HSK-A100-SF14-95** | HSK-A100 | 14 | 80 | 34 | 95 | 47 | 37 |
| **HSK-A100-SF14-130** | HSK-A100 | 14 | 80 | 34 | 130 | 47 | 37 |
| **HSK-A100-SF14-160** | HSK-A100 | 14 | 80 | 34 | 160 | 47 | 37 |
| **HSK-A100-SF16-100** | HSK-A100 | 16 | 80 | 34 | 100 | 50 | 40 |
| **HSK-A100-SF16-130** | HSK-A100 | 16 | 27 | 34 | 130 | 50 | 40 |
| **HSK-A100-SF16-160** | HSK-A100 | 16 | 27 | 34 | 160 | 50 | 40 |
| **HSK-A100-SF18-100** | HSK-A100 | 18 | 33 | 42 | 100 | 50 | 40 |
| **HSK-A100-SF18-130** | HSK-A100 | 18 | 33 | 42 | 130 | 50 | 40 |
| **HSK-A100-SF18-160** | HSK-A100 | 18 | 33 | 42 | 160 | 50 | 40 |
| **HSK-A100-SF20-105** | HSK-A100 | 20 | 33 | 42 | 105 | 52 | 42 |
| **HSK-A100-SF20-130** | HSK-A100 | 20 | 33 | 42 | 130 | 52 | 42 |
| **HSK-A100-SF20-160** | HSK-A100 | 20 | 33 | 42 | 160 | 52 | 42 |
| **HSK-A100-SF25-115** | HSK-A100 | 25 | 44 | 53 | 115 | 58 | 48 |
| **HSK-A100-SF25-130** | HSK-A100 | 25 | 44 | 53 | 130 | 58 | 48 |
| **HSK-A100-SF25-160** | HSK-A100 | 25 | 44 | 53 | 160 | 58 | 48 |
| **HSK-A100-SF32-120** | HSK-A100 | 32 | 44 | 53 | 120 | 58 | 48 |
| **HSK-A100-SF32-160** | HSK-A100 | 32 | 44 | 53 | 160 | 58 | 48 |

Note: Chuck comes standard with an axial adjusting screw, including a hole for a balancing screw, preset dynamic balance G2.5 20000rpm, runout ≤ 0.003mm at 3xD.

## Hydraulic Collet -- Flange Cooling

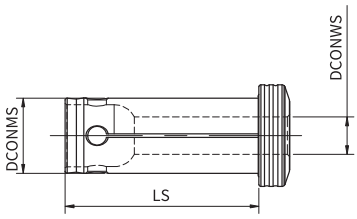
Clamping accuracy within 0.003mm




| Product Code | Dimensions (mm) | | |
|---|---|---|---|
| | DCONWS | DCONMS | LS |
| **HC12-6A** | 6 | 12 | 45 |
| **HC12-8A** | 8 | | |
| **HC20-6A** | 6 | 20 | 50.5 |
| **HC20-8A** | 8 | | |
| **HC20-10A** | 10 | | |
| **HC20-12A** | 12 | | |
| **HC20-14A** | 14 | | |
| **HC20-16A** | 16 | | |
| **HC32-6A** | 6 | 32 | 60.5 |
| **HC32-8A** | 8 | | |
| **HC32-10A** | 10 | | |
| **HC32-12A** | 12 | | |
| **HC32-14A** | 14 | | |
| **HC32-16A** | 16 | | |
| **HC32-18A** | 18 | | |
| **HC32-20A** | 20 | | |
| **HC32-25A** | 25 | | |

## Hydraulic Collet -- Internal Cooling

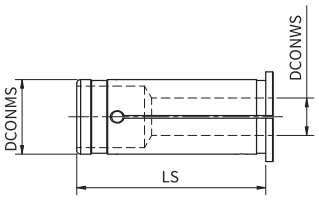
Clamping accuracy within 0.003mm




| Product Code | Dimensions (mm) | | |
|---|---|---|---|
| | DONWS | DONWS | LS |
| **HC12-6CA** | 6 | 12 | 45 |
| **HC12-8CA** | 8 | | |
| **HC20-6CA** | 6 | 20 | 51 |
| **HC20-8CA** | 8 | | |
| **HC20-10CA** | 10 | | |
| **HC20-12CA** | 12 | | |
| **HC20-14CA** | 14 | | |
| **HC20-16CA** | 16 | | |
| **HC32-6CA** | 6 | 32 | 54 |
| **HC32-8CA** | 8 | | |
| **HC32-10CA** | 10 | | |
| **HC32-12CA** | 12 | | |
| **HC32-14CA** | 14 | | |
| **HC32-16CA** | 16 | | |
| **HC32-18CA** | 18 | | |
| **HC32-20CA** | 20 | | |
| **HC32-25CA** | 25 | | |

## Power Collet

Clamping accuracy within 0.01mm

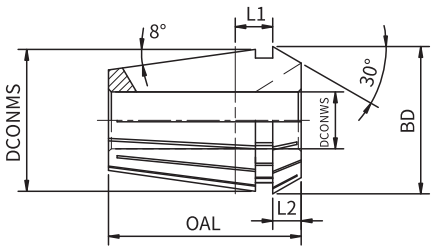



| Product Code | Dimensions (mm) | | |
|---|---|---|---|
| | DCONWS | DCONMS | LS |
| **C25-6** | 6 | 25 | 63 |
| **C25-8** | 8 | 25 | 63 |
| **C25-10** | 10 | 25 | 63 |
| **C25-12** | 12 | 25 | 63 |
| **C25-16** | 16 | 25 | 63 |
| **C25-20** | 20 | 25 | 63 |
| **C32-6** | 6 | 32 | 70 |
| **C32-8** | 8 | 32 | 70 |
| **C32-10** | 10 | 32 | 70 |
| **C32-12** | 12 | 32 | 70 |
| **C32-14** | 14 | 32 | 70 |
| **C32-16** | 16 | 32 | 70 |
| **C32-18** | 18 | 32 | 70 |
| **C32-20** | 20 | 32 | 70 |
| **C32-25** | 25 | 32 | 70 |

## ER Collet

### ER collet chuck features: High precision

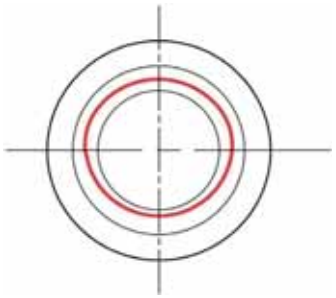
- Material: JIS-SUJ2
- Hardness: HRC46-50
- The inner hole of the ER collet adopts a fine grinding process to achieve better clamping accuracy
- Ground internal dia., external dia. and end face to achieve high assembly accuracy



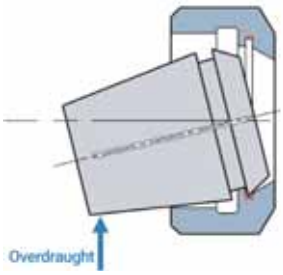

| Type | Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|
| | DCONWS | DCONMS | BD | OAL | L1 | L2 |
| **ER16** | 4-10 | 16 | 17 | 27.5 | 6.26 | 4.0 |
| **ER20** | 4-13 | 20 | 21 | 31.5 | 6.36 | 4.8 |
| **ER25** | 4-16 | 25 | 26 | 34.0 | 6.66 | 5.0 |
| **ER32** | 4-20 | 32 | 33 | 40.0 | 7.16 | 5.5 |
| **ER40** | 4-26 | 40 | 41 | 46.0 | 7.66 | 7.0 |

### Assembly of ER collet

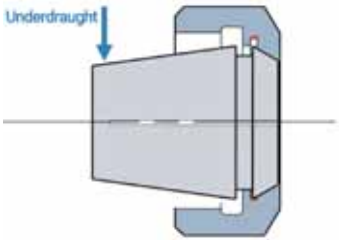
ER nut



Assembling Instruction

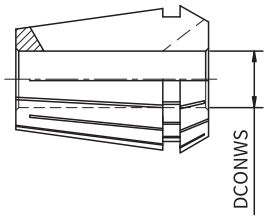



Disassembling Instruction



## Regular ER Collet

Clamping accuracy within 0.008mm

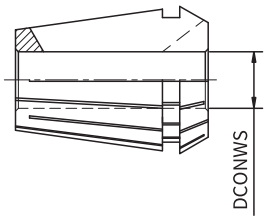



| ER16 | | ER20 | | ER25 | | ER32 | | ER40 | |
|---|---|---|---|---|---|---|---|---|---|
| Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS |
| **ER16-4** | 4-3 | **ER20-4** | 4-3 | **ER25-4** | 4-3 | **ER32-4** | 4-3 | **ER40-4** | 4-3 |
| **ER16-6** | 6-5 | **ER20-6** | 6-5 | **ER25-6** | 6-5 | **ER32-6** | 6-5 | **ER40-6** | 6-5 |
| **ER16-8** | 8-7 | **ER20-8** | 8-7 | **ER25-8** | 8-7 | **ER32-8** | 8-7 | **ER40-8** | 8-7 |
| **ER16-10** | 10-9 | **ER20-10** | 10-9 | **ER25-10** | 10-9 | **ER32-10** | 10-9 | **ER40-10** | 10-9 |
| | | **ER20-12** | 12-11 | **ER25-12** | 12-11 | **ER32-12** | 12-11 | **ER40-12** | 12-11 |
| | | | | **ER25-14** | 14-13 | **ER32-14** | 14-13 | **ER40-14** | 14-13 |
| | | | | **ER25-16** | 16-15 | **ER32-16** | 16-15 | **ER40-16** | 16-15 |
| | | | | | | **ER32-18** | 18-17 | **ER40-18** | 18-17 |
| | | | | | | **ER32-20** | 20-19 | **ER40-20** | 20-19 |
| | | | | | | | | **ER40-25** | 25-24 |

Note: Used in ER collet chuck.

## High Precision ER Collet

Clamping accuracy within 0.005mm

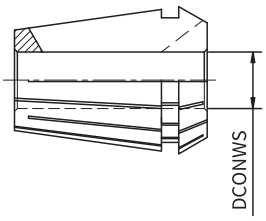



| ER16 | | ER20 | | ER25 | | ER32 | |
|---|---|---|---|---|---|---|---|
| Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS |
| **ER16-4A** | 4-3 | **ER20-4A** | 4-3 | **ER25-4A** | 4-3 | **ER32-4A** | 4-3 |
| **ER16-6A** | 6-5 | **ER20-6A** | 6-5 | **ER25-6A** | 6-5 | **ER32-6A** | 6-5 |
| **ER16-8A** | 8-7 | **ER20-8A** | 8-7 | **ER25-8A** | 8-7 | **ER32-8A** | 8-7 |
| **ER16-10A** | 10-9 | **ER20-10A** | 10-9 | **ER25-10A** | 10-9 | **ER32-10A** | 10-9 |
| | | **ER20-12A** | 12-11 | **ER25-12A** | 12-11 | **ER32-12A** | 12-11 |
| | | | | **ER25-14A** | 14-13 | **ER32-14A** | 14-13 |
| | | | | **ER25-16A** | 16-15 | **ER32-16A** | 16-15 |
| | | | | | | **ER32-18A** | 18-17 |
| | | | | | | **ER32-20A** | 20-19 |

Note: Used in ER collet chuck.

## ER Sealing Collet

Clamping accuracy within 0.008mm

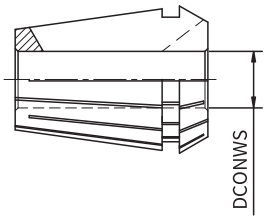



| ER16 | | ER20 | | ER25 | | ER32 | |
|---|---|---|---|---|---|---|---|
| Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS |
| **ER16-4C** | 4-3.9 | **ER20-4C** | 4-3.9 | **ER25-4C** | 4-3.9 | **ER32-4C** | 4-3.9 |
| **ER16-6C** | 6-5.5 | **ER20-6C** | 6-5.5 | **ER25-6C** | 6-5.5 | **ER32-6C** | 6-5.5 |
| **ER16-8C** | 8-7.5 | **ER20-8C** | 8-7.5 | **ER25-8C** | 8-7.5 | **ER32-8C** | 8-7.5 |
| **ER16-10C** | 10-9.5 | **ER20-10C** | 10-9.5 | **ER25-10C** | 10-9.5 | **ER32-10C** | 10-9.5 |
| | | **ER20-12C** | 12-11.5 | **ER25-12C** | 12-11.5 | **ER32-12C** | 12-11.5 |
| | | | | **ER25-14C** | 14-13.5 | **ER32-14C** | 14-13.5 |
| | | | | **ER25-16C** | 16-15.5 | **ER32-16C** | 16-15.5 |
| | | | | | | **ER32-18C** | 18-17.5 |
| | | | | | | **ER32-20C** | 20-19.5 |

Note: Used in ER collet chuck.

## High Precision ER Sealing Collet

Clamping accuracy within 0.005mm




| ER16 | | ER20 | | ER25 | | ER32 | |
|---|---|---|---|---|---|---|---|
| Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS | Product Code | DCONWS |
| **ER16-4CA** | 4-3.9 | **ER20-4CA** | 4-3.9 | **ER25-4CA** | 4-3.9 | **ER32-4CA** | 4-3.9 |
| **ER16-6CA** | 6-5.5 | **ER20-6CA** | 6-5.5 | **ER25-6CA** | 6-5.5 | **ER32-6CA** | 6-5.5 |
| **ER16-8CA** | 8-7.5 | **ER20-8CA** | 8-7.5 | **ER25-8CA** | 8-7.5 | **ER32-8CA** | 8-7.5 |
| **ER16-10CA** | 10-9.5 | **ER20-10CA** | 10-9.5 | **ER25-10CA** | 10-9.5 | **ER32-10CA** | 10-9.5 |
| | | **ER20-12CA** | 12-11.5 | **ER25-12CA** | 12-11.5 | **ER32-12CA** | 12-11.5 |
| | | | | **ER25-14CA** | 14-13.5 | **ER32-14CA** | 14-13.5 |
| | | | | **ER25-16CA** | 16-15.5 | **ER32-16CA** | 16-15.5 |
| | | | | | | **ER32-18CA** | 18-17.5 |
| | | | | | | **ER32-20CA** | 20-19.5 |

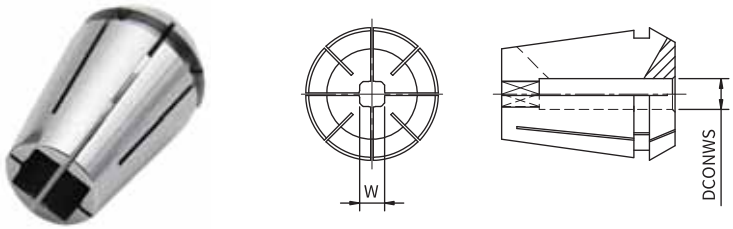
Note: Used in ER collet chuck.

## ER Collets Set

| Picture | Product code | Collet type | PCS/SET | Collet Accuracy (3D) |
|---|---|---|---|---|
| Regular collets set | ER16-8PCS | 3,4,5,6,7,8,9,10 | 8PCS/SET | ≤ 0.008mm |
| | ER20-11PCS | 3,4,5,6,7,8,9,10,11,12,13 | 11PCS/SET | |
| | ER25-14PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 14PCS/SET | |
| | ER32-18PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20 | 18PCS/SET | |
| | ER40-8PCS | 4,6,8,10,12,16,20,25 | 8PCS/SET | |
| High precision collet set | ER16A-8PCS | 3,4,5,6,7,8,9,10 | 8PCS/SET | ≤ 0.005mm |
| | ER20A-11PCS | 3,4,5,6,7,8,9,10,11,12,13 | 11PCS/SET | |
| | ER25A-14PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 14PCS/SET | |
| | ER32A-18PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20 | 18PCS/SET | |
| Regular sealing collets set | ER16C-8PCS | 3,4,5,6,7,8,9,10 | 8PCS/SET | ≤ 0.008mm |
| | ER20C-11PCS | 3,4,5,6,7,8,9,10,11,12,13 | 11PCS/SET | |
| | ER25C-14PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 14PCS/SET | |
| | ER32C-18PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20 | 18PCS/SET | |
| High precision sealing collet set | ER16CA-8PCS | 3,4,5,6,7,8,9,10 | 8PCS/SET | ≤ 0.005mm |
| | ER20CA-11PCS | 3,4,5,6,7,8,9,10,11,12,13 | 11PCS/SET | |
| | ER25CA-14PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 14PCS/SET | |
| | ER32CA-18PCS | 3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20 | 18PCS/SET | |

## Tapping Collet

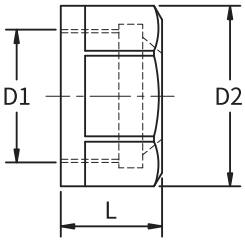
Eight grooves, clamping precision within 0.02mm




| Product Code | | | DCONWS | W □ | Thread specification | Enforce standard |
|---|---|---|---|---|---|---|
| ER20 | ER25 | ER32 | | | | |
| ER20G-4.5W34 | ER25G-4.5W34 | | 4.5 | 3.4 | M4 | DIN371 |
| | | | | | M6 | DIN376 |
| ER20G-6W49 | ER25G-6W49 | ER32G-6W49 | 6 | 4.9 | M5/M6 | DIN371 |
| | | | | | M8 | DIN376 |
| ER20G-7W55 | ER25G-7W55 | ER25G-7W55 | 7 | 5.5 | M10 | DIN376 |
| ER20G-8W62 | ER25G-8W62 | ER32G-8W62 | 8 | 6.2 | M8 | DIN371 |
| ER20G-9W70 | ER25G-9W70 | ER32G-9W70 | 9 | 7 | M12 | DIN376 |
| ER20G-10W80 | ER25G-10W80 | ER32G-10W80 | 10 | 8 | M10 | DIN371 |
| | ER25G-11W90 | ER32G-11W90 | 11 | 9 | M14 | DIN376 |
| | ER25G-12W90 | ER32G-12W90 | 12 | 9 | M16 | DIN376 |
| | | ER32G-14W110 | 14 | 11 | M18 | DIN376 |
| | | ER32G-16W120 | 16 | 12 | M20 | DIN376 |
| | | ER32G-18W145 | 18 | 14.5 | M22 | DIN376 |
| | | | | | M24 | DIN376 |

Note: Used in ER collet chuck.

## ER Nut




| Product Code | Dimensions (mm) | | | Style | Compatible Collet | Compatible Wrench | Compatible Chuck |
|---|---|---|---|---|---|---|---|
| | D1 | D2 | L | | | | |
| **ER16-A** | M22*1.5P | 28 | 18 | 1 | ER16 | W-ER16A | ER Collet Chuck |
| **ER20-A** | M25*1.5P | 34 | 19 | 1 | ER20 | W-ER20A | |
| **ER25-UM** | M32*1.5P | 42 | 20 | 2 | ER25 | W-ER25UM | |
| **ER32-UM** | M40*1.5P | 50 | 23 | 2 | ER32 | W-ER32UM | |
| **ER40-UM** | M50X1.5P | 63 | 26 | 2 | ER40 | W-ER40UM | |
| **ER11-M** | M13*0.75P | 16 | 12 | 3 | ER11 | W-ER11M | ER Straight Chuck Extension |
| **ER16-M** | M19*1.0P | 22 | 18 | 3 | ER16 | W-ER16M | |
| **ER20-M** | M24*1.0P | 28 | 19 | 3 | ER20 | W-ER20M | |
| **ER25-M** | M30*1.0P | 35 | 20 | 3 | ER25 | W-ER25M | |
| **GSK10** | M21.5*1.0P | 27 | 24 | 4 | SK10 | W-GSK10 | GSK High-Speed Collet Chuck |
| **GSK16** | M32*1.5P | 40 | 31 | 4 | SK16 | W-GSK16 | |
| **GSK20** | M40*1.0P | 48.5 | 33 | 4 | SK20 | W-GSK20 | |
| **GSK25** | M45*1.5P | 55 | 37 | 4 | SK25 | W-GSK25 | |

Note: The Nut thread specification varies depending on the nut external dimensions and the adapted collet, and is not interchangeable with the same model.

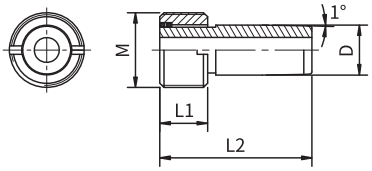
## Chuck Wrench

Style1 Style2 Style3 Style4 Style5

| Product Code | Compatible ER Nut | Style | Compatible Chuck& Accessories |
|---|---|---|---|
| **W-ER16A** | ER16-A | 1 | ER Collet Chuck |
| **W-ER20A** | ER20-A | 1 | |
| **W-ER25UM** | ER25-UM | 3 | |
| **W-ER32UM** | ER32-UM | 3 | |
| **W-ER40UM** | ER40-UM | 3 | |
| **W-ER11M** | ER11-M | 2 | ER Straight Chuck Extension |
| **W-ER16M** | ER16-M | 2 | |
| **W-ER20M** | ER20-M | 2 | |
| **W-ER25M** | ER25-M | 2 | |
| **W-GSK10** | GSK10 | 4 | GSK High-Speed Collet Chuck |
| **W-GSK16** | GSK16 | 4 | |
| **W-GSK20** | GSK20 | 4 | |
| **W-GSK25** | GSK25 | 4 | |
| **W-C20** | - | 5 | Power Chuck |
| **W-C25** | - | 5 | |
| **W-C32** | - | 5 | |

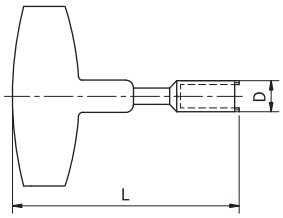
Note: Special chuck wrenches need to be ordered for mechanical clamping chucks.

## HSK Cooling Tube




| Product Code | Compatible Spindle | Dimensions (mm) | | | |
|---|---|---|---|---|---|
| | | M | D | L1 | L2 |
| **CT-HSK63** | HSK-A63 | M18×1 | 12 | 11.5 | 36.6 |
| **CT-HSK100** | HSK-A100 | M24×1.5 | 16 | 15.5 | 44.2 |

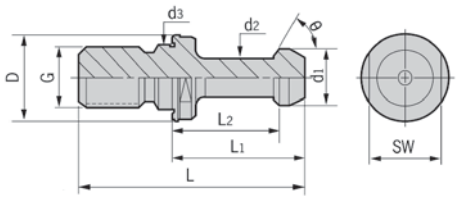
## Wrench For HSK Cooling Tube




| Product Code | Cooling Tube | L (mm) | D (mm) |
|---|---|---|---|
| **W-HSK63** | CT-HSK63 | 100 | 16.5 |
| **W-HSK100** | CT-HSK100 | 125 | 22 |

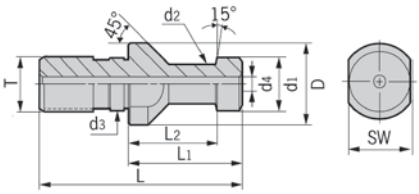
## Pull Stud

BT Series



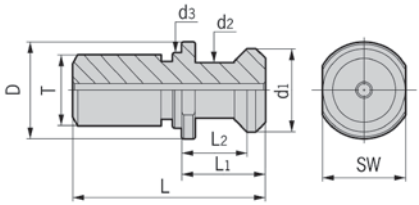

| Product Code | Dimensions (mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | D | d1 | d2 | d3 | L1 | L2 | L | G | SW | θ | Internal coolant dia. |
| **P30T-45** | 16.5 | 11 | 7 | 12.5 | 23 | 18 | 43 | M12 | 13 | 45° | - |
| **P30T-60** | | | | | | | | | | 60° | - |
| **P40T-45** | 23 | 15 | 10 | 17 | 35 | 28 | 60 | M16 | 19 | 45° | - |
| **P40T-60** | | | | | | | | | | 60° | - |
| **P40T-90** | | | | | | | | | | 90° | - |
| **P40T-45C** | | | | | | | | | | 45° | 4 |
| **P40T-60C** | | | | | | | | | | 60° | 4 |
| **P40T-90C** | | | | | | | | | | 90° | 4 |
| **P50T-45** | 38 | 23 | 17 | 25 | 45 | 35 | 85 | M24 | 30 | 45° | - |
| **P50T-60** | | | | | | | | | | 60° | - |
| **P50T-90** | | | | | | | | | | 90° | - |
| **P50T-45C** | | | | | | | | | | 45° | 8.5 |
| **P50T-60C** | | | | | | | | | | 60° | 8.5 |
| **P50T-90C** | | | | | | | | | | 90° | 8.5 |

SK Series(DIN69871)




| Product Code | Dimensions (mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | D | d1 | d2 | d3 | L1 | L2 | L | T | SW | θ | Internal coolant dia. |
| **PSK30-75** | 17 | 13 | 9 | 13 | 24 | 19 | 44 | M12 | 14 | 75° | - |
| **PSK40-75C** | 23 | 19 | 14 | 17 | 26 | 20 | 54 | M16 | 19 | 75° | 7 |
| **PSK50-75C** | 36 | 28 | 21 | 25 | 34 | 25 | 74 | M24 | 30 | 75° | 11.5 |

MAZAK Series




| Model | Dimensions (mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | D | d1 | d2 | d3 | L1 | L2 | L | T | SW | θ | Internal coolant dia. |
| **BT40-MAZAK** | 22 | 18.8 | 12.45 | 17 | 19.1 | 14.02 | 44.1 | M16 | 19 | 45° | - |
| **BT40C-MAZAK** | | | | | | | | | | 45° | 7 |
| **BT50-MAZAK** | 37 | 29 | 20.83 | 25 | 25.2 | 17.58 | 65.2 | M24 | 30 | 45° | - |
| **BT50C-MAZAK** | | | | | | | | | | 45° | 10 |

## Entension Rods Denomination System

| C20 | C | - | M10 | - | 200 | - | T |
|---|---|---|---|---|---|---|---|
| 1 | 2 | | 3 | | 4 | | 5 |

| 1-Shank diameter |
|---|
| C20--- ⌀20mm cylindrical shank |

| 2-Material |
|---|
| S--- Special alloy steel |
| C--- Carbide |
| None--- Ordinary alloyed steel |

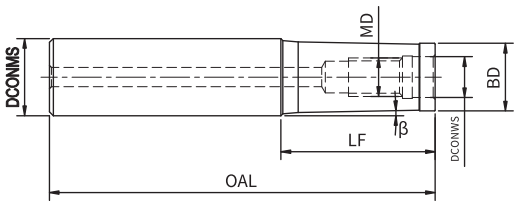
| 3-Clamping type |
|---|
| M10--- Threaded connection for M10 |
| AK2--- Eccentric screw locking, suitable for boring tool AK2 |
| ER16M--- M-type ER collet connection, suitable for ER16 collets |
| SF6--- Shrink fit clamping, suitable for ⌀6h6 shank |

| 4-Length |
|---|
| 200--- Total length 200mm |

| 5-Extension rods type |
|---|
| T---Taper rod |
| R---Step rod |
| None---Straight rod |

## Steel--Threaded Locking Extension Rods

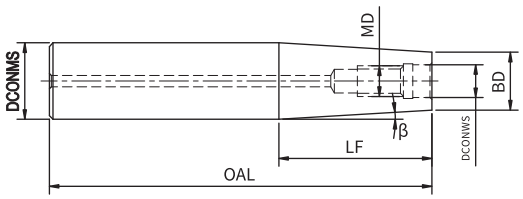
Taper Rod



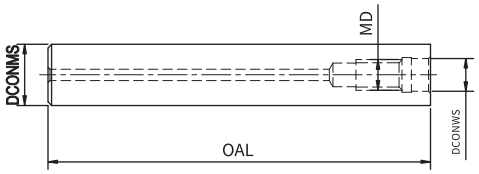

| Product Code | Shank diameter | Dimensions (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | DCONMS | BD | MD | DCONWS | OAL | LF | β |
| **C16S-M08-80-T** | ∅16 cylindrical shank | 16 | 14.5 | M08*1.25 | 8.5 | 80 | 20 | 3° 12' |
| **C16S-M08-100-T** | ∅16 cylindrical shank | 16 | 14.5 | M08*1.25 | 8.5 | 100 | 40 | 1° 4' |
| **C20S-M10-100-T** | ∅20 cylindrical shank | 20 | 18 | M10*1.5 | 10.5 | 100 | 30 | 1° 53' |
| **C20S-M10-120-T** | ∅20 cylindrical shank | 20 | 18 | M10*1.5 | 10.5 | 120 | 50 | 1° |
| **C25S-M12-110-T** | ∅25 cylindrical shank | 25 | 22.5 | M12*1.75 | 12.5 | 110 | 30 | 2° 36' |
| **C25S-M12-130-T** | ∅25 cylindrical shank | 25 | 22.5 | M12*1.75 | 12.5 | 130 | 50 | 1° 18' |
| **C32S-M16-125-T** | ∅32 cylindrical shank | 32 | 28.5 | M16*2.0 | 17.0 | 125 | 35 | 3° 15' |
| **C32S-M16-145-T** | ∅32 cylindrical shank | 32 | 28.5 | M16*2.0 | 17.0 | 145 | 55 | 1° 48' |

## Carbide--Threaded Locking Extension Rods

Taper & Straight Rod




StyleA



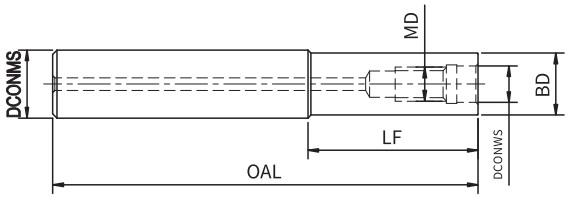

Style B

| Product Code | Shank diameter | Dimensions (mm) | | | | | | | Style |
|---|---|---|---|---|---|---|---|---|---|
| | | DCONMS | BD | MD | DCONWS | OAL | LF | β | |
| **C16C-M08-200-T** | ∅16 cylindrical shank | 16 | 15.5 | M08*1.25 | 8.5 | 200 | 150 | 43' | A |
| **C20C-M08-100-T** | ∅20 cylindrical shank | 20 | 14.5 | M08*1.25 | 8.5 | 100 | 40 | 3° 30' | A |
| **C20C-M08-150-T** | ∅20 cylindrical shank | 20 | 14.5 | M08*1.25 | 8.5 | 150 | 77 | 1° 45' | A |
| **C20C-M10-100-T** | ∅20 cylindrical shank | 20 | 18.5 | M10*1.5 | 10.5 | 100 | 40 | 43' | A |
| **C25C-M10-150-T** | ∅25 cylindrical shank | 25 | 18.5 | M10*1.5 | 10.5 | 150 | 70 | 1° 43' | A |
| **C20C-M10-150-T** | ∅20 cylindrical shank | 20 | 18.5 | M10*1.5 | 10.5 | 150 | 90 | 19' | A |
| **C20C-M10-200-T** | ∅20 cylindrical shank | 20 | 18.5 | M10*1.5 | 10.5 | 200 | 140 | 12' | A |
| **C32C-M12-200-T** | ∅32 cylindrical shank | 32 | 23.5 | M12*1.75 | 12.5 | 200 | 120 | 1° 45' | A |
| **C32C-M16-200-T** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 200 | 120 | 30' | A |
| **C32C-M16-250-T** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 250 | 170 | 28' | A |
| **C32C-M16-300-T** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 300 | 200 | 28' | A |
| **C16C-M08-100** | ∅16 cylindrical shank | 16 | - | M08*1.25 | 8.5 | 100 | - | - | B |
| **C16C-M08-150** | ∅16 cylindrical shank | 16 | - | M08*1.25 | 8.5 | 150 | - | - | B |
| **C16C-M08-200** | ∅16 cylindrical shank | 16 | - | M08*1.25 | 8.5 | 200 | - | - | B |
| **C20C-M10-100** | ∅20 cylindrical shank | 20 | - | M10*1.5 | 10.5 | 100 | - | - | B |
| **C20C-M10-150** | ∅20 cylindrical shank | 20 | - | M10*1.5 | 10.5 | 150 | - | - | B |
| **C20C-M10-200** | ∅20 cylindrical shank | 20 | - | M10*1.5 | 10.5 | 200 | - | - | B |
| **C20C-M10-250** | ∅20 cylindrical shank | 20 | - | M10*1.5 | 10.5 | 250 | - | - | B |
| **C25C-M12-100** | ∅25 cylindrical shank | 25 | - | M12*1.75 | 12.5 | 100 | - | - | B |
| **C25C-M12-150** | ∅25 cylindrical shank | 25 | - | M12*1.75 | 12.5 | 150 | - | - | B |
| **C25C-M12-200** | ∅25 cylindrical shank | 25 | - | M12*1.75 | 12.5 | 200 | - | - | B |
| **C25C-M12-250** | ∅25 cylindrical shank | 25 | - | M12*1.75 | 12.5 | 250 | - | - | B |
| **C25C-M12-300** | ∅25 cylindrical shank | 25 | - | M12*1.75 | 12.5 | 300 | - | - | B |
| **C32C-M16-150** | ∅32 cylindrical shank | 32 | - | M16*2.0 | 17.0 | 150 | - | - | B |
| **C32C-M16-200** | ∅32 cylindrical shank | 32 | - | M16*2.0 | 17.0 | 200 | - | - | B |
| **C32C-M16-250** | ∅32 cylindrical shank | 32 | - | M16*2.0 | 17.0 | 250 | - | - | B |
| **C32C-M16-300** | ∅32 cylindrical shank | 32 | - | M16*2.0 | 17.0 | 300 | - | - | B |

Priority recommendation for vertical machine。In order to achieve good application effects, please make a comprehensive valuation and selection based on the rigidity of machine , tool overhang, cutting data, etc.

## Carbide--Threaded Locking Extension Rods

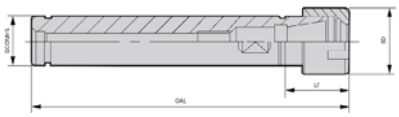
Step Rod




| Product Code | Shank diameter | Dimensions (mm) | | | | | | | Style |
|---|---|---|---|---|---|---|---|---|---|
| | | DCONMS | BD | MD | DCONWS | OAL | LF | β | |
| **C16C-M08-100-R** | ∅16 cylindrical shank | 16 | 15.5 | M08*1.25 | 8.5 | 100 | 40 | - | C |
| **C16C-M08-150-R** | ∅16 cylindrical shank | 16 | 15.5 | M08*1.25 | 8.5 | 150 | 90 | - | C |
| **C16C-M08-200-R** | ∅16 cylindrical shank | 16 | 15.5 | M08*1.25 | 8.5 | 200 | 120 | - | C |
| **C20C-M10-100-R** | ∅20 cylindrical shank | 20 | 19.5 | M10*1.5 | 10.5 | 100 | 40 | - | C |
| **C20C-M10-150-R** | ∅20 cylindrical shank | 20 | 19.5 | M10*1.5 | 10.5 | 150 | 90 | - | C |
| **C20C-M10-200-R** | ∅20 cylindrical shank | 20 | 19.5 | M10*1.5 | 10.5 | 200 | 140 | - | C |
| **C20C-M10-250-R** | ∅20 cylindrical shank | 20 | 19.5 | M10*1.5 | 10.5 | 250 | 180 | - | C |
| **C25C-M12-100-R** | ∅25 cylindrical shank | 25 | 24 | M12*1.75 | 12.5 | 100 | 25 | - | C |
| **C25C-M12-150-R** | ∅25 cylindrical shank | 25 | 24 | M12*1.75 | 12.5 | 150 | 70 | - | C |
| **C25C-M12-200-R** | ∅25 cylindrical shank | 25 | 24 | M12*1.75 | 12.5 | 200 | 120 | - | C |
| **C25C-M12-250-R** | ∅25 cylindrical shank | 25 | 24 | M12*1.75 | 12.5 | 250 | 180 | - | C |
| **C25C-M12-300-R** | ∅25 cylindrical shank | 25 | 24 | M12*1.75 | 12.5 | 300 | 220 | - | C |
| **C32C-M16-100-R** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 100 | 30 | - | C |
| **C32C-M16-150-R** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 150 | 70 | - | C |
| **C32C-M16-200-R** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 200 | 120 | - | C |
| **C32C-M16-250-R** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 250 | 170 | - | C |
| **C32C-M16-300-R** | ∅32 cylindrical shank | 32 | 29 | M16*2.0 | 17.0 | 300 | 220 | - | C |

Priority recommendation for vertical machine。In order to achieve good application effects，please make a comprehensive valuation and selection based on the rigidity of machine , tool overhang, cutting data, etc.

## M-Type ER Collet Extension Rods



| Product Code | Dimensions (mm) | | | | ER Nut | Collet (optional) | Wrench (optional) |
|---|---|---|---|---|---|---|---|
| | DCONMS | BD | OAL | LF | | | |
| **C12-ER11M-80** | 12 | 16 | 114 | 34 | ER11-M | ER11 | W-ER11M |
| **C12-ER11M-100** | 12 | 16 | 134 | 34 | | | |
| **C12-ER11M-150** | 12 | 16 | 184 | 34 | | | |
| **C16-ER11M-50** | 16 | 16 | 84 | 34 | | | |
| **C16-ER11M-100** | 16 | 16 | 134 | 34 | | | |
| **C16-ER11M-140** | 16 | 16 | 174 | 34 | | | |
| **C16-ER16M-50** | 16 | 22 | 90 | 40 | ER16-M | ER16 | W-ER16M |
| **C16-ER16M-60** | 16 | 22 | 100 | 40 | | | |
| **C16-ER16M-80** | 16 | 22 | 120 | 40 | | | |
| **C16-ER16M-150** | 16 | 22 | 190 | 40 | | | |
| **C20-ER16M-50** | 20 | 22 | 87 | 37 | | | |
| **C20-ER16M-100** | 20 | 22 | 137 | 37 | | | |
| **C20-ER16M-120** | 20 | 22 | 157 | 37 | | | |
| **C20-ER16M-140** | 20 | 22 | 177 | 37 | | | |
| **C20-ER16M-150** | 20 | 22 | 187 | 37 | | | |
| **C20-ER16M-160** | 20 | 22 | 197 | 37 | | | |
| **C20-ER16M-180** | 20 | 22 | 217 | 37 | | | |
| **C20-ER16M-200** | 20 | 22 | 237 | 37 | | | |
| **C20-ER20M-60** | 20 | 28 | 110 | 50 | ER20-M | ER20 | W-ER20M |
| **C20-ER20M-100** | 20 | 28 | 150 | 50 | | | |
| **C20-ER20M-150** | 20 | 28 | 200 | 50 | | | |
| **C20-ER20M-180** | 20 | 28 | 230 | 50 | | | |
| **C20-ER20M-200** | 20 | 28 | 250 | 50 | | | |
| **C20-ER20M-250** | 20 | 28 | 300 | 50 | | | |
| **C25-ER20M-140** | 25 | 28 | 180 | 40 | | | |

Note

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Intelligent Storage

# CUTTING TOOL CATALOGUE


Intelligent Storage 678

Intelligent Tool Cabinets 680

D-400 Series Products 681

D-730 Series Products 682

Vertical Lift Storage 683

Vertical Rotator Storage 686

## D-400 Series Products

### D-400A Main Cabinet

**Compatible with: D-400E, L-100E, D-600E**

| Hardware Configuration | | System Functions | |
|---|---|---|---|
| Dimensions (L*W*H) | 1310*670*1850 mm | Trade-in program | ★ |
| Weight (KG) | 600KG | Production planning | ★ |
| Power supply | AC 220V/10A50HZ | Machine drawing association | ★ |
| Operating voltage | 12V/24V | Tool life management | ★ |
| Storage channels | Customizable options | ERP interface provided | ★ |
| Channel spacing parameters: | | Return & repair tracking | ★ |
| Spacing mm | 30/65/100/135/205/420 | Remote ad management | ★ |
| Divider count | 12/6/4/3/2/1 | Inventory alerts | ★ |
| Operating system | Windows/Android | Material recycling | ★ |
| Data protection | UPS | Material replenishment | ★ |
| Recognition system | Card reader/facial recognition | Electronic sample positioning | ★ |
| Data transmission | Wi-Fi/USB/MG Interface | Cloud module | ★ |
| | | Usage query | ★ |
| | | Data analytics | ★ |
| | | Usage statistics | ★ |
| | | WeChat report push | ★ |

★ The function is provided

**Product Features:**
The D-400 series consists of independent channel-segregated drawer cabinets, part of the high-end multifunctional D-series product line. It enables fine material management, supporting material distribution and recycling, with customizable channel usage and permission allocation. Suitable for material classification and recycling scenarios like tool sharpening, or for different supplier permission management scenarios.

### D-400E Expansion Cabinet

**Compatible with: D-400 Main Cabinet**

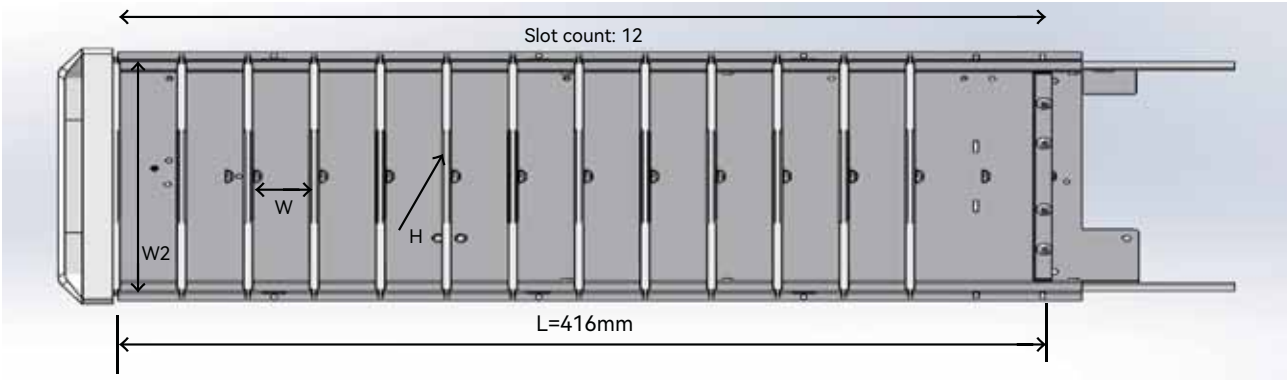
| Hardware Configuration | | System Functions | |
|---|---|---|---|
| Dimensions (L*W*H) | 1310*670*1850 mm | Trade-in program | / |
| Weight (KG) | 600KG | Production planning | / |
| Power supply | AC 220V/10A50HZ | Machine drawing association | / |
| Operating voltage | 12V/24V | Tool life management | / |
| Storage channels | Customizable options | ERP interface provided | / |
| Channel spacing parameters: | | Return & repair tracking | / |
| Spacing mm | 30/65/100/135/205/420 | Remote ad management | / |
| Divider count | 12/6/4/3/2/1 | Inventory alerts | / |
| Operating system | / | Material recycling | / |
| Data protection | / | Material replenishment | / |
| Recognition system | / | Electronic sample positioning | / |
| Data transmission | / | Cloud module | / |
| | | Usage query | / |
| | | Data analytics | / |
| | | Usage statistics | / |
| | | WeChat report push | / |

/The function is not provided

**Product Features:**
The D-400E Expansion Cabinet is connected to the main cabinet for expanding storage positions. Its hardware characteristics are consistent with the D-400 main cabinet, and the system functions follow the connected main cabinet. It can store over 80 types of tools and can be infinitely expanded with adders.

## D-400 Series Channel Specifications

| Slot type | | | | |
|---|---|---|---|---|
| Slot model | CT-120F-1# | CT-120F-2# | CT-120F-3# | CT-120F-4# |
| Slot dimensions | 99*30*48mm | 158*30*48mm | 256*30*48mm | 512*30*48mm |
| Main Cabinet | 84pcs | 63pcs | 42pcs | 21pcs |
| Expansion Cabinet | 120pcs | 90pcs | 60pcs | 30pcs |




| S/N | Model | W1 | W2 | H | L | Slot Count |
|---|---|---|---|---|---|---|
| 1 | CT-120F-1# | 30 | 99 | 48 | 416 | 12 |
| 2 | CT-120F-2# | 30 | 158 | 48 | 416 | 12 |
| 3 | CT-120F-3# | 30 | 256 | 48 | 416 | 12 |
| 4 | CT-120F-4# | 30 | 512 | 48 | 416 | 12 |

## D-730 Series Products

### D-730A Main Cabinet

| Hardware Configuration | |
|---|---|
| Dimensions (L*W*H) | 656*1000*1870mm |
| Weight (KG) | 350KG±20 |
| Power supply | AC 220V/10A50HZ |
| Operating voltage | 12V/24V |
| Storage channels | Customizable |
| Operating system | Android |
| Data protection | UPS |
| Recognition system | Card reader |
| Data transmission | WLAN |

### D-730F Expansion Cabinet

| Hardware Configuration | |
|---|---|
| Dimensions (L*W*H) | 656*1000*1870mm |
| Weight (KG) | 350KG±20 |
| Power supply | AC 220V/10A50HZ |
| Operating voltage | 12V/24V |
| Storage channels | BT30 flange lock, 84 pcs |
| Operating system | Inherits main cabinet |
| Data protection | Inherits main cabinet |
| Recognition system | Inherits main cabinet |
| Data transmission | Inherits main cabinet |

## Vertical Lift

The Vertical Lift Storage system is a new generation of automated warehouse equipment, using pallets as storage units. The lifting and grabbing motion of the extractor swiftly brings the stored pallets to the operator or places them in the appropriate slot. Height sensors on both sides of the access ports detect the height of incoming materials, and the system automatically selects the best storage position for each pallet. It can accommodate materials of various heights.
Users can utilize warehouse space effectively, flexibly, and efficiently. The system requires minimal ground area while fully leveraging the vertical height of the warehouse, offering easy, labor-saving, and fast access.
Vertical Lift Storage supports multiple operational modes, including single-unit control and networked control. The management and monitoring system adopts a networked structure and can connect with ERP to enable digital material management.

**Product Features**

1. Space saving
Vertical lift storage can reach heights up to 18m, which fully utilizes vertical space and significantly reduces floor space requirements. Up to 85% of storage area can be saved.

Traditional shelves, w/ large floor space

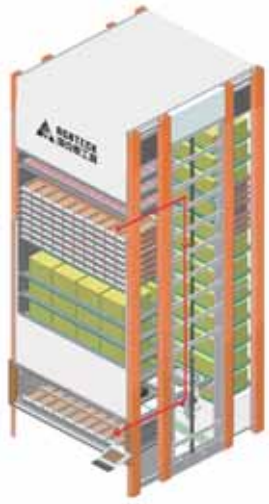
VS

Vertical lift storage, height up to 18m

2. Automated storage and retrieval
Materials are automatically delivered to the operator, to greatly reduce non-productive operating and searching time.

Traditional shelves, requiring access by climbing

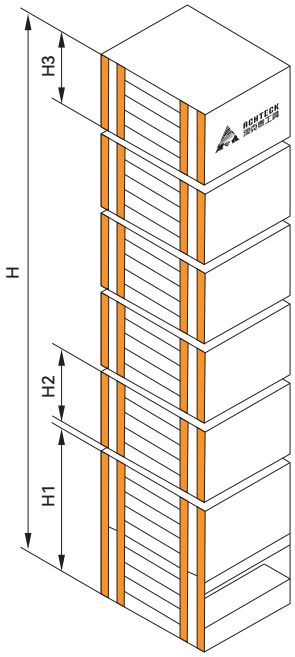
VS



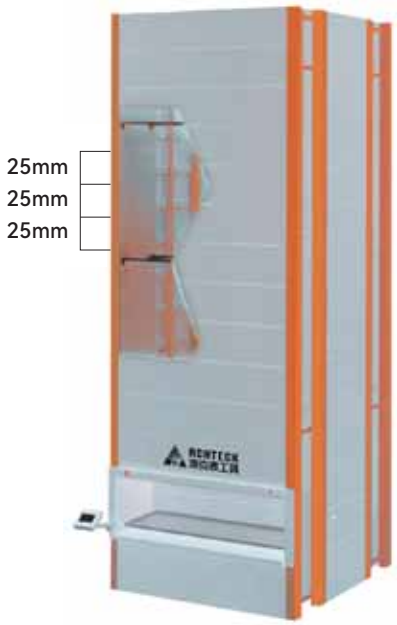
Auto delivery to access port

## Vertical Lift

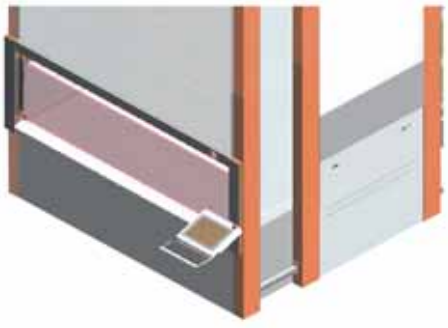
**Product Features**




3. Modular structure design
The elevation module can be easily increased or decreased to maximize the utilization of the factory space according to the changes in the building height.




4. Tray adjusting distance
Unit height increment: 25mm
Tray width: 1,460-4,000mm
Tray depth: 618/810/1000/1190
Max. storage material height: 680mm
Net tray load: 100-1000kg



5. Safety
The access port is equipped with a safety light curtain and a built-in automatic safety door located between the access port and the lifting channel. The automatic door remains closed during the operation of the extractor lifting mechanism;

6.Auto pallet weight detection to prevent overloading

7.Integration with enterprise ERP software for enhanced inventory management
Lightweight storage system applications: Suitable for electronic components, pharmaceuticals, small tools, etc.
Heavyweight storage system applications: Suitable for tool storage, medium-to-heavy components, accessories, molds, etc.

## Vertical Lift

| Parameters of Vertical Lift Storage System | | | | | | | |
|---|---|---|---|---|---|---|---|
| Spec./Model | Pallet Clearance Dimensions (mm) | | | External Dimensions of Storage Unit (mm) | | | Pallet Rated Load (kg) |
| | Length (L) | Depth (D) | Height (H) | Length (L) | Depth (D) | Height (H) | |
| J □ - □ x □ - □ (J Pallet Rated Load - Pallet Net Length × Pallet Net Depth - Storage Unit Height) | 2460 | 618 | 50 | 2790 | 2470 | 6000 | 300 |
| | | 810 | | | 3040 | | |
| | | 1000 | | | 3612 | | |
| | | 1190 | | | 4184 | | |
| Optional Range | 1460-4000 | | 50/70/100/120 | 1790-4330 | | 3500-18000 | 100-1000 |

**Selection Examples of Common Specifications**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| J2-1860×618-8000 | 1860 | 618 | 50 | 2190 | 2470 | 8000 | 200 |
| J3-2460×810-8000 | 2460 | 810 | 50 | 2790 | 3040 | 8000 | 300 |
| J5-2060×810-8000 | 2060 | 810 | 50 | 2390 | 3040 | 8000 | 500 |
| J5-2860×618-8000 | 2860 | 618 | 50 | 3190 | 2470 | 8000 | 500 |

1.The height of a standalone storage unit is not recommended to exceed 10,000mm.
2.The maximum load capacity of complete system is 60t.

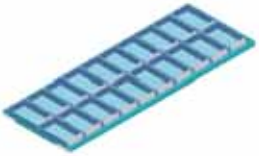
| Pallet Configuration Table | | | | | | |
|---|---|---|---|---|---|---|
| Parts Box / Tool Holder | Tray Specification / Tray Capacity | | | | | |
| | 2060×618 | 2460×618 | 2860×618 | 2060×810 | 2460×810 | 2860×810 |
| Parts box 134W×380D×90H | | | | 30pcs | 36pcs | 42pcs |
| Parts box 200Wx380D×90H | | | | 20pcs | 24pcs | 28pcs |
| Parts box 117W×300D×90H | 34pcs | 42pcs | 48pcs | | | |
| Parts box 234W×300D×90H | 16pcs | 20pcs | 24pcs | | | |
| Parts box 117W×400D×90H | | | | 34pcs | 42pcs | 48pcs |
| Parts box 234W×400D×90H | | | | 16pcs | 20pcs | 24pcs |
| HHKS63 tool holder | 75pcs | 90pcs | | | | |
| HKS100 tool holder | 45pcs | 54pcs | | | | |
| BT40 tool holder | 75pcs | 90pcs | | | | |
| BT50 tool holder | 60pcs | 72pcs | | | | |

**Note: The above are common configurations.**

T1 Standard Pallet is used for storing large items such as packaging boxes, tooling molds, parts, etc.

T3 Tote Box Pallet is equipped with tote boxes for storing parts, spare parts, gauges, tools, etc.

T2 Parts Box Pallet is equipped with parts boxes and dividers for storing standard parts, aerospace components, electronic components, inserts, cutting tools, etc.



T4 Shank Pallet is equipped with Shank racks and boxes for vertical storage of BT30/ BT40 /BT50/HSK63/HSK100/ Morse tool holders, etc.

## Vertical Rotator

**A3C3 Series, A3C4 Series**
**A6C4 Series, A6C5 Series**

**Optimized space utilization:**
1.Shortens access time.
2.The storage height of items is ergonomically designed.
3.Flexible and customizable with multiple access points on different levels as needed.
4.Optional configurations include temperature and humidity control, and anti-static features.

**Parameters of A3C3 Series Vertical Rotator Storage**

| Model | Number of Bins | Bin Clearance Dimensions (mm) | | | Storage Unit Dimensions (mm) | | | Rated Load Capacity of Bin (kg) |
|---|---|---|---|---|---|---|---|---|
| | | Length (L) | Depth (D) | Height (H) | Length (L) | Depth (D)/ Including Workbench | Height (H) | |
| A3C3-12 | 12 | 2460 | 367 | 275 | 3120 | 1350/1620 | 2537 | 100-200 |
| A3C3-14 | 14 | 2460 | 367 | 275 | 3120 | 1350/1620 | 2842 | 100-200 |
| A3C3-16 | 16 | 2460 | 367 | 275 | 3120 | 1350/1620 | 3147 | 100-200 |
| A3C3-18 | 18 | 2460 | 367 | 275 | 3120 | 1350/1620 | 3452 | 100-200 |
| A3C3-20 | 20 | 2460 | 367 | 275 | 3120 | 1350/1620 | 3756 | 100-200 |
| A3C3-22 | 22 | 2460 | 367 | 275 | 3120 | 1350/1620 | 4061 | 100-200 |
| A3C3-24 | 24 | 2460 | 367 | 275 | 3120 | 1350/1620 | 4366 | 100-200 |
| A3C3-26 | 26 | 2460 | 367 | 275 | 3120 | 1350/1620 | 4671 | 100-200 |
| A3C3-28 | 28 | 2460 | 367 | 275 | 3120 | 1350/1620 | 4976 | 100-200 |
| A3C3-30 | 30 | 2460 | 367 | 275 | 3120 | 1350/1620 | 5280 | 100-200 |
| A3CB-32 | 32 | 2460 | 3.67 | 275 | 3120 | 1350/1620 | 5585 | 100 200 |
| A3C3-34 | 34 | 2460 | 367 | 275 | 3120 | 1350/1620 | 5890 | 100 200 |
| A3C3-36 | 36 | 2460 | 367 | 275 | 3120 | 1350/1620 | 6195 | 100 200 |
| A3C3 38 | 38 | 2460 | 367 | 275 | 3120 | 1350/1620 | 6500 | 100-200 |
| A3C3-40 | 40 | 2460 | 367 | 275 | 3120 | 1350/1620 | 6804 | 100-200 |
| Optional range | | 1460-2860 | | | 2120-3520 | | | |
| Selection example | A3C3-20-2060(200kg)–Select this series of Rotator storage system with 20 box hoppers, each with a net length of 2060mm. The maximum load per box hopper is ≤ 200kg. | | | | | | | |

| Parameters of A3C4 Series Vertical Rotator Storage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | Number of Bins | Bin Clearance Dimensions (mm) | | | Storage Unit Dimensions (mm) | | | Rated Load Capacity of Bin (kg) |
| | | Length (L) | Depth (D) | Height (H) | Length (L) | Depth (D)/Including Workbench | Height (H) | |
| A3C4-8 | 8 | 2460 | 505 | 365 | 3200 | 1710/1980 | 2445 | 100-200 |
| A3C4-10 | 10 | 2460 | 505 | 365 | 3200 | 1710/1980 | 2864 | 100 200 |
| A3C4-12 | 12 | 2460 | 505 | 365 | 3200 | 1710/1980 | 3283 | 100 200 |
| A3C4-14 | 14 | 2460 | 505 | 365 | 3200 | 1710/1980 | 3702 | 100 200 |
| A3C4-16 | 16 | 2460 | 505 | 365 | 3200 | 1710/1980 | 4121 | 100 200 |
| A3C4-18 | 18 | 2460 | 505 | 365 | 3200 | 1710/1980 | 4540 | 100-200 |
| A3C4-20 | 20 | 2460 | 505 | 365 | 3200 | 1710/1980 | 4959 | 100 -200 |
| A3C4-22 | 22 | 24G0 | 505 | 365 | 3200 | 1710/1980 | 5379 | 100-200 |
| A3C4-24 | 24 | 2460 | 505 | 365 | 3200 | 1710/1980 | 5798 | 100-200 |
| A3C4-26 | 26 | 2460 | 505 | 365 | 3200 | 1710/1980 | 6217 | 100-200 |
| A3C4-28 | 28 | 2460 | 505 | 365 | 3200 | 1710/1980 | 6636 | 100-200 |
| A3C4-30 | 30 | 2460 | 505 | 365 | 3200 | 1710/1980 | 7055 | 100 -200 |
| A3C4-32 | 32 | 2460 | 505 | 365 | 3200 | 1710/1980 | 7474 | 100-200 |
| A3C4-34 | 34 | 2460 | 505 | 365 | 3200 | 1710/1980 | 7893 | 100-200 |
| A3C4-36 | 36 | 2460 | 505 | 365 | 3200 | 1710/1980 | 8312 | 100-200 |
| Optional range | | 1460-2860 | | | 2200-3600 | | | |
| Selection example | A3C4-20-2260(100kg)-- Select this series of Rotator storage system with 20 box hoppers, each with a net length of 2,260mm. The maximum load per box hopper is ≤ 100kg. | | | | | | | |

| Parameters of A6C4 Series Vertical Rotator Storage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | Number of Bins | Bin Clearance Dimensions (mm) | | | Storage Unit Dimensions (mm) | | | Rated Load Capacity of Bin (kg) |
| | | Length (L) | Depth (D) | Height (H) | Length (L) | Depth (D)/Including Workbench | Height (H) | |
| A6C4-8 | 8 | 2460 | 505 | 365 | 3200 | 1710/1980 | 2503 | 300-500 |
| A6C4-10 | 10 | 2460 | 505 | 365 | 3200 | 1710/1980 | 2909 | 300-500 |
| A6C4-12 | 12 | 2460 | 505 | 365 | 3200 | 1710/1980 | 3315 | 300-500 |
| A6C4-14 | 14 | 2460 | 505 | 365 | 3200 | 1710/1980 | 3722 | 300-500 |
| A6C4-16 | 16 | 2460 | 505 | 365 | 3200 | 1710/1980 | 4128 | 300-500 |
| A6C4-18 | 18 | 2460 | 505 | 365 | 3200 | 1710/1980 | 4535 | 300-500 |
| A6C4-20 | 20 | 2460 | 505 | 365 | 3200 | 1710/1980 | 4941 | 300-500 |
| A6C4-22 | 22 | 2460 | 505 | 365 | 3200 | 1710/1980 | 5347 | 300-500 |
| A6C4-24 | 24 | 2460 | 505 | 365 | 3200 | 1710/1980 | 5754 | 300-500 |
| A6C4-26 | 26 | 2460 | 505 | 365 | 3200 | 1710/1980 | 6160 | 300-500 |
| A6C4-28 | 28 | 2460 | 505 | 365 | 3200 | 1710/1980 | 6567 | 300-500 |
| A6C4-30 | 30 | 2460 | 505 | 365 | 3200 | 1710/1980 | 6973 | 300-500 |
| A6C4-32 | 32 | 2460 | 505 | 365 | 3200 | 1710/1980 | 7379 | 300-500 |
| A6C4-34 | 34 | 2460 | 505 | 365 | 3200 | 1710/1980 | 7786 | 300-500 |
| Optional range | | 1460-2860 | | | 2200-3600 | | | |
| Selection example | A6C4-30-2460(500kg)--Select this series of Rotator storage system with 30 box hoppers, each with a net length of 2460mm. The maximum load per box hopper is ≤ 500kg. | | | | | | | |

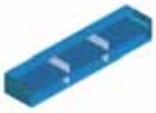
# Intelligent Storage Vertical Rotator

| Parameters of A6C5 Series Vertical Rotator Storage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | Number of Bins | Bin Clearance Dimensions (mm) | | | Storage Unit Dimensions (mm) | | | Rated Load Capacity of Bin (kg) |
| | | Length (L) | Depth (D) | Height (H) | Length (L) | Depth (D)/Including Workbench | Height (H) | |
| A6C5 -8 | 8 | 2460 | 505 | 450 | 3420 | 1890/2160 | 2965 | 300-500 |
| A6C5 -10 | 10 | 2460 | 505 | 450 | 3420 | 1890/2160 | 3473 | 300-500 |
| A6C5 -12 | 12 | 2460 | 505 | 450 | 3420 | 1890/2160 | 3981 | 300-500 |
| A6C5 -14 | 14 | 2460 | 505 | 450 | 3420 | 1890/2160 | 4489 | 300-500 |
| A6C5 -16 | 16 | 2460 | 505 | 450 | 3420 | 1890/2160 | 4997 | 300-500 |
| A6C5 -18 | 18 | 2460 | 505 | 450 | 3420 | 1890/2160 | 5505 | 300-500 |
| A6C5 -20 | 20 | 2460 | 505 | 450 | 3420 | 1890/2160 | 6013 | 300-500 |
| A6C5 -22 | 22 | 2460 | 505 | 450 | 3420 | 1890/2160 | 6521 | 300-500 |
| A6C5 -24 | 24 | 2460 | 505 | 450 | 3420 | 1890/2160 | 7029 | 300-500 |
| A6C5 -26 | 26 | 2460 | 505 | 450 | 3420 | 1890/2160 | 7537 | 300-500 |
| A6C5 -28 | 28 | 2460 | 505 | 450 | 3420 | 1890/2160 | 8045 | 300-500 |
| A6C5 -30 | 30 | 2460 | 505 | 450 | 3420 | 1890/2160 | 8553 | 300-500 |
| Optional range | | 1460-2860 | | | 2420-3820 | | | |
| Selection example | A6C5 -16-1860(400kg) -- Select this series of Rotator storage system with 16 Hoppers, each with a net length of 1,860mm. The maximum load per Hopper is ≤ 400kg. | | | | | | | |

| Hopper Configuration | | | | | |
|---|---|---|---|---|---|
| Parts Box / Shank | Hopper Capacity | | | | |
| | B3 2060×367×275 | C3 2460×367×275 | B4 2060×505×365 | C4 2460×505×365 | D4 2630×505×365 |
| Parts box 134Wx380D×90H | 30pcs | 36pcs | | | |
| Parts box 200Wx380D×90H | 20pcs | 24pcs | | | |
| Parts box 117W×500D×90H | | | 51pcs | 60pcs | 66pcs |
| Parts box 234W×500D×90H | | | 24pcs | 30pcs | 33pcs |
| Parts box 234W×500D×140H | | | 16pcs | 20pcs | 22pcs |
| HKS63 shank | | | 45pcs | 75pcs | 80pcs |
| HKS100 shank | | | 39pcs | 45pcs | 48pcs |
| BT40 shank | | | 45pcs | 75pcs | 80pcs |
| BT50 shank | | | 52pcs | 60pcs | 64pcs |

**Note: The above are common configurations.**

X1 Standard Hopper can be divided into layers, allowing flexible storage of materials of different sizes.



X3 Layered Hopper is equipped with shelves to divide the hopper into 2-3 layers, suitable for storing low-height or elongated materials.

X5 Tool Holder Hopper is equipped with tool holder carts for vertical storage of BT30/BT40/ BT50/HSK63/HSK100/ Morse tool holders, etc.

X2 Vertical Partition Hopper is equipped with vertical dividers to partition the bin along its length.

X4 Parts Box Hopper is equipped with parts boxes for storing standard parts, inserts, cutting tools, electronic components, etc.

Note

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Technical Information

# CUTTING TOOL CATALOGUE


## Technical Information 690

Troubleshooting

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Conversion Tables

Hardness Conversion Table 703

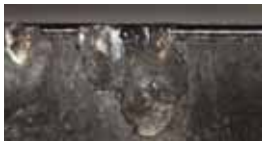
Metal Material Symbol Conversion Table 705

Tool Material Conversion Table 711

Turning Chip Breaking Geometry Conversion Table 716

List of Auto Lathe Manufacturers by Machine Tool 718

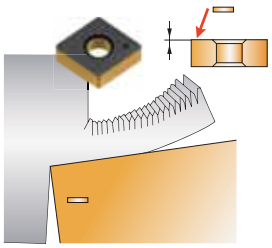
## Turning Insert Common Failure Mode & Solutions

| Failtures | Picture | Analysis | Solution |
|---|---|---|---|
| Flank wear | | • Tool material is too soft<br>• Excessive cutting speed<br>• Too small clearance angle<br>• Too low feed rate<br>• Insufficient cooling | • Choose high wear-resistant insert grade<br>• Reduce cutting speed<br>• Enlarge clearance angle<br>• Increase feed rate |
| Crater wear | | • Tool material is too soft<br>• Excessive cutting speed<br>• Excessive feed rate | • Choose high wear-resistant insert grade<br>• Reduce cutting speed<br>• Reduce feed rate<br>• Increase the flow of coolant |
| Chipping | | • Tool material is too hard<br>• Too low cutting edge strength | • Choose tougher grade<br>• Enhance cutting edge strength |
| Plastic deformation | | • Tool material is too soft<br>• Too fast cutting speed<br>• Excessive cutting depth & feed rate<br>• Insufficient cooling | • Choose high wear-resistant insert grade<br>• Reduce cutting speed<br>• Reduce cutting depth & feed rate<br>• Choose good thermal conductivity grade<br>• Increase the flow of coolant |
| Built-up edge | | • Too low cutting speed<br>• Cutting edge not sharp<br>• Unsuitable grade<br>• Insufficient cooling | • Increase cutting speed<br>• Choose sharp geometry<br>• Choose less adhesion grade<br>• Increase the flow of coolant |
| Mechanical wear | | • Excessive feed rate and cutting depth<br>• Vibration | • Choose tougher grade<br>• Choose a smaller approach angle<br>• Choose bigger corner radius<br>• Change to high rigidity holder |
| Thermal cracking | | • Excessive cutting heat change on edge | • Choose dry cutting or adequate cooling<br>• Choose tougher grade |
| Notch wear | | • Excessive feed rate & cutting speed<br>• Tool material is too soft | • Choose high wear-resistane grade<br>• Select a small entering angle<br>• Reduce cutting speed |
| Coating peeling |  | • Sticky chip on the cutting edge<br>• Chip evacuation failure | • Enlarge rake angle for a sharp edge<br>• Use chip breaker with bigger chip space |

## Negative and Positive Insert Comparison

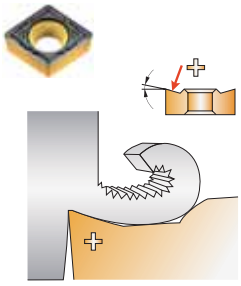
**Negative insert**

- Double/single sided
- High strength edge
- Zero clearance angle
- First choice for external turning
- For heavy cutting conditions



**Positive insert**

- Single sided
- Low cutting forces
- With clearance angle
- 1st choice for boring and turning on slender parts

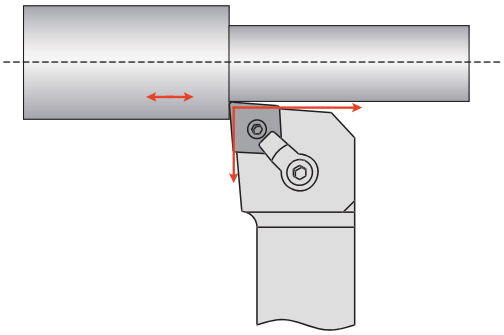


## Effects of Approach Angle

Approach angle Kr is the angle between cutting edge and feed direction. It's an important angle in turning that will affect:

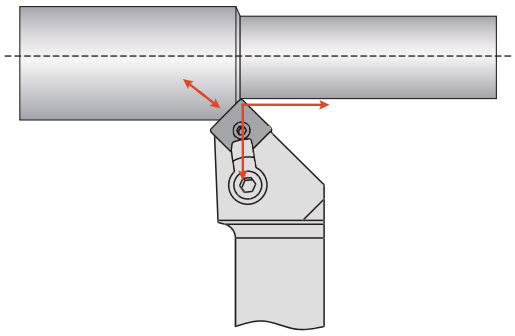
- Chip formation
- Cutting force direction
- Cutting edge length

### Large Approach Angle



- Cutting forces along with axis, less tendency for vibration.
- Can turn against the shoulder
- Higher cutting forces at the entrance and exit of cut
- It is easy to get notching wear in heat resistant alloy and hard materials

### Small Approach Angle



- Reduced the load on the cutting edge.
- Produced a thinner chip, higher feed rate can be used
- Reduced notch wear
- Cannot turn against a shoulder.
- Forces are directed to both axial and radial-vibration tendencies.

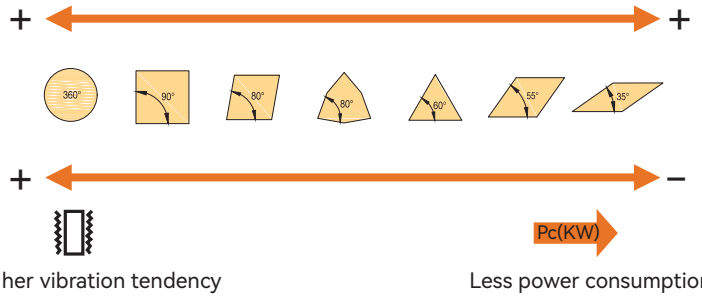
# Technical Information

## Insert Shape

Insert shape should be selected according to the approach angle accessibility of the tool. The largest point angle should be applied to get insert strength and reliability.

Larger point angle and higher cutting edge strength to the left.

Higher edge accessibility and operational versatility to the right.




### Factors affecting insert shape selection

| Insert shape | R | S 90° | C 80° | W 80° | T 60° | D 55° | V 35° |
|---|---|---|---|---|---|---|---|
| Roughing (strength) | ● | ● | ● | ▲ | ▲ | | |
| Light roughing/semi finishing (number of cutting edges) | | ▲ | ● | ● | ● | ● | |
| Finishing (number of cutting edges) | | | ▲ | ▲ | ● | ● | ● |
| Vibration tendency | | | | ▲ | ● | ● | ● |
| Longitudinal turning (feed direction) | | | ● | ▲ | ▲ | ● | ● |
| Profiling (accessibility) | | | ▲ | ▲ | ▲ | ● | ● |
| Facing (feed direction) | ▲ | ● | ● | ● | ▲ | ▲ | |
| Operational versatility | ▲ | | ● | ▲ | ▲ | ● | ▲ |
| Limited machine power | | | ▲ | ▲ | ● | ● | ● |
| Hard material | ● | ● | | | | | |
| Interrupted machining | ● | ● | ▲ | ▲ | ▲ | | |
| Large approach angle | | | ● | ● | ● | ● | |
| Small approach angle | ● | ● | | ● | ● | | |

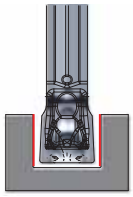
Marked: ● Most suitable ▲ Suitable

C-style 80° inserts are frequently used as it's suitable for the most applications.

## Application Tips for Parting off and Grooving

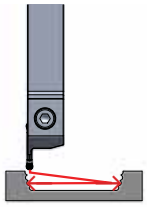
### Single grooving

- Single grooving is the most economical and productive method for machining grooves.
- GS chip breaker has width tolerance of +/- 0.02mm, and works well at low feed.



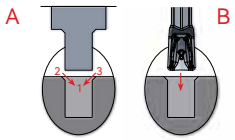
### Ramping style grooving

- Ramping style grooving avoids vibration and minimizes radial force. This method can achieve best chip control and reduce notch wear during machining heat resistant alloys
- Higher feed rate can be applied to profiling RM or RA geometry to achieve higher stability and productivity.
- Note: Ramping style grooving doubled the number of passes



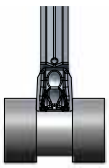
### Chamfered corners

- In case of producing high quality grooves, usually the corners on the insert can be used for chamfering. For example, a finish grooving insert is used to chamfer; as per illustration A
- A better way to make grooves with chamfer in mass production is to order a Tailor Made insert with the exact chamfer form as per illustration B.



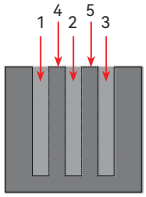

### flatness of the groove bottom

- In case of machining radial grooves, sometimes the flatness of the groove bottom is required.
- Generally, GS, TM, G chip breakers are used to machine completely flat bottom grooves.



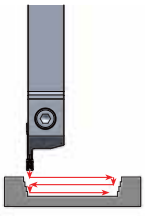
### Multiple grooving

- It's the best method for rough grooving when groove depth is bigger than groove width.
- Multiple grooving will improve chip flow and increase tool life.
- Ring's width is generally 0.6-0.8 times insert's width.

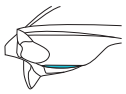
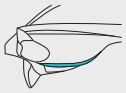
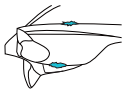
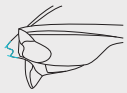
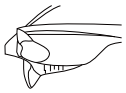
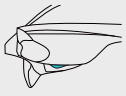



### Plunge turning

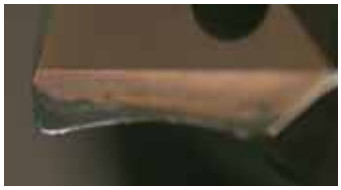
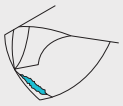
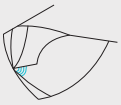
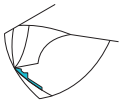
- TS and TM chip breaker can be used for plunge turning and ramping, as the insert design is suitable for axial and radial feed.
- n case of turning axially, depth should not exceed 0.75 x insert width.



## Solid Carbide Endmill Failure Mode and Solutions

| Failure | Picture | Analysis | Solution |
|---|---|---|---|
| Flank wear  | | • Abrasion between the work piece and the flank surface leads to flank wear. | • Reduce cutting speed<br>• Use a more wear-resistant cutting tool material<br>• Increase feed<br>• Raise coolant flow (e.g. raise coolant pressure) |
| Built-up edge  Material bonding on the front face along the cutting edge | | • The work piece material stick on the cutting edge leads to built-up edge. | • Raise cutting speed<br>• Use more positive geometry, use a tool with a sharper cutting edge/use a sharper indexable insert<br>• Reduce the feed rate<br>• Increase the amount of grease in the coolant (e.g. 8% oil content in coolant)<br>• Use uncoated grade with polished geometry (e.g. for non-ferrous metals) |
| Fractures  Chipping along the cutting edge | | • Perpendicular cracks along the edge lead to fractures.<br>• Vibration causes fractures. | • Use a tougher cutting tool material<br>• Reduce cutting speed<br>• Change to dry machining<br>• Adjust feed rate |
| Plastic deformation  Edge deformation (notably at the nose radius) | | • High heat and mechanical stress cause plastic deformation. | • Reduce cutting speed<br>• Reduce feed rate<br>• Use a more wear-resistant cutting tool material<br>• Use a less sharp tool<br>• Optimize the coolant towards to the cutting edge |
| Thermal cracks  Perpendicular cracks to the cutting edge | | • Fluctuating temperature (thermal shock) causes thermal cracks. | • Reduce cutting speed<br>• Reduce feed rate<br>• Dry machining or use adequate coolant<br>• Use a PVD-coated (tougher) indexable insert grade |
| Notch wear  Notching at maximum depth of cut | | • Notch wear often occurs during machining work pieces with a hard surface (forged, casted or cold work hardened). | • Change depth of cut<br>• Use a tougher cutting tool material<br>• Use a smaller approach angle<br>• Use a stronger geometry (with chamfer) |

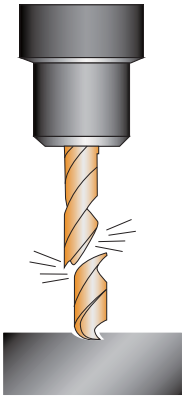
## Solid Carbide Drill Failure Mode and Solutions

| Failures | Picture | Analysis | Solution |
|---|---|---|---|
| Flank wear |  | • Abrasion between the work piece and the flank surface leads to flank wear. | • Reduce cutting speed<br>• Raise feed rate<br>• Raise coolant flow (e.g. raise coolant pressure) |
| Built-up edge  Material bonding on the front face along the cutting edge | | • The work piece material stick on the cutting edge leads to built-up edge. | • Raise cutting speed<br>• Raise coolant flow (e.g. raise coolant pressure) |
| Fracture Chipping along the cutting edge | | • Perpendicular cracks along the edges, chip eroding, vibration and extremely high wear resistance lead to fractures. | • Replace and recondition the tool sooner<br>• Improve stability (work piece/tool) |
| Plastic deformation  Deformation of the cutting edge (especially on the cross edge and the radius of the nose) | | • High heat and mechanical stress cause plastic deformation. | • Reduce cutting speed<br>• Raise coolant flow (e.g. raise coolant pressure) |
| Crater wear  | | • Tool Material is too soft.<br>• Too high cutting speed.<br>• Too high feed rate. | • Choose more wear resistant grade<br>• Reduce cutting speed<br>• Reduce feed<br>• Raise coolant pressure |

# Technical Information

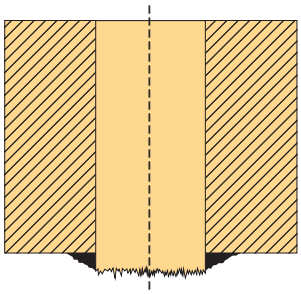
## Drill Breakage Analysis

1. Check the tip  geometry
2. Check the flute lengths is at least longer than drilling depth +1.5XD
3. Recondition promptly
4. Add pilot hole drilling
5. Improve system rigidity (Work piece / tool)



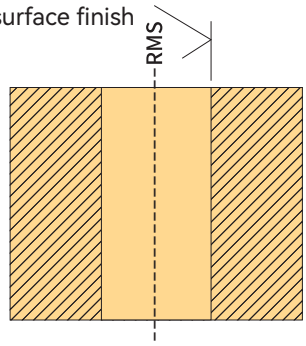
## Drilling Wear and Trouble Shooting

Burr on the hole exit



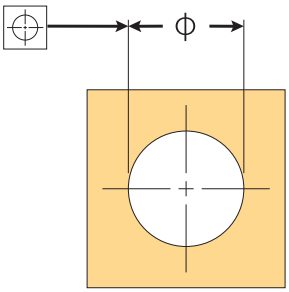
- Blunt cutting edge
- Drill tip outer corner chipped or worn

Bad surface finish



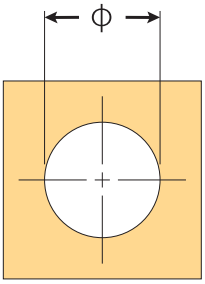

- Check edge wear
- Overcoated

Entry position out of tolerance




- Check edge geometry
- Check tool's cutting edge & chisel edge

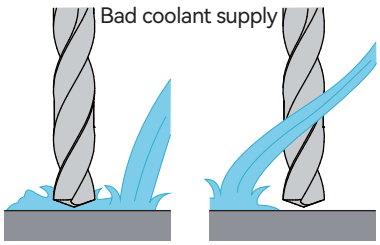
Oversized holes



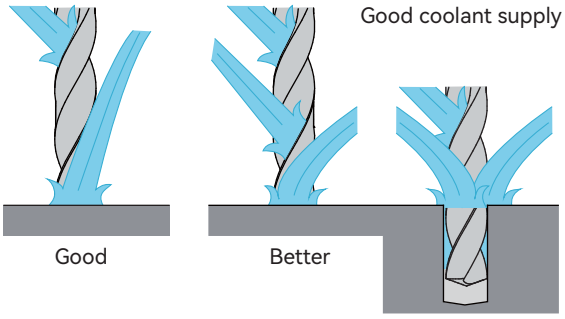

- Check edge geometry
- Overcoated
- Check tool's chisel edge

## Check Coolant Supply

For solid carbide drills, internal coolant is always recommended. When the drill length is over 5xDc, internal coolant is essential. Ensure the coolant is with sufficient pressure and aiming to the correct position.

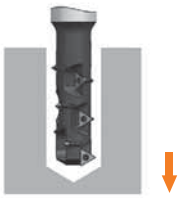



Three coolant pipes should be directly towards the drill tip when it's possible.

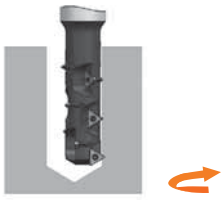


## Guideline for ATM 60 Series Thread Milling Holder

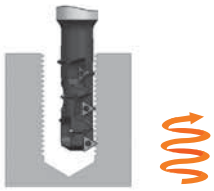
1. Positioning the milling cutter above core hole, check and adjust the length.



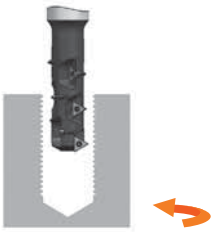
2. Get down to the request depth and check the radius.



3. Circular interpolate cutting.



4.Milling the thread by using circular interpolation until the pitch is fully machined.



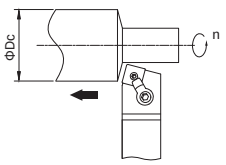
5. Circular interpolate cutting and retracting.

6. Back to start position.

# Technical Information

## Turning Machining Formula

- Cutting speed




$$Vc = \frac{\pi * Dc * n}{1000} \text{ (m/min)}$$

Vc:Cutting speed(m/min) π: ≈ 3.14
Dc:Workpiece diameter(mm) n:Spindle speed(rev/min)

- Feed speed

$$Vf = f * n \text{ (mm/min)}$$

Vf:Cutting speed(mm/min) f:Feed rate(mm/rev)
n:Spindle speed(rev/min)

- Chip thickness

$$h = f * sinkr \text{ (mm)}$$

h:Chip thickness(mm) f:Feed rate(mm/rev)

- Chip width

$$b = \frac{ap}{sinkr} \text{ (m/min)}$$

b:Chip width(mm) ap:Axial depth of cut (mm)

- Chip area

$$A = h * b = ap * f \text{ (mm}^2\text{)}$$

A:Chip area($mm^2$) ap:Axial depth of cut (mm)
f:Feed rate(mm/rev)

- Cutting force

$$Fc = Kc * ap * f \text{ (N)}$$

Fc:Cutting force(N) Kc:Unit cutting force($N/mm^2$)
ap:Axial depth of cut (mm) f:Feed rate(mm/rev)

- Cutting power

$$Pmot = \frac{Kc * Vc * ap * f}{60000 * \eta} \text{ (KW)}$$

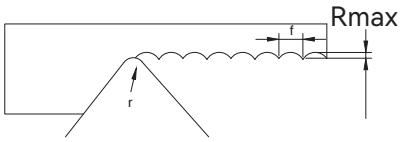
Pmot:Cutting power(KW) Kc:Unit cutting force($N/mm^2$)
Vc:Cutting speed(m/min) ap:Axial depth of cut (mm)
f:Feed rate(mm/rev) η:Mechanical efficiency

- Chip removal rate

$$Q = ap * f * Vc \text{ (cm}^3\text{/min)}$$

Q:Chip removal($cm^3$/min) ap:Axial depth of cut (mm)
f:Feed rate(mm/rev) Vc:Cutting speed(m/min)

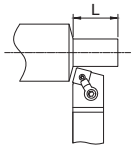
- Theoretic surface roughness




$$Rmax = \frac{f^2}{8 * r} * 1000 \text{ (um)}$$

Rmax:Theoretic surface roughness (um)
f:Feed rate(mm/rev) r:Corner radius (mm)

- Machining time




$$Tc = \frac{L}{f * n} \text{ (min)}$$

Tc:Work time f:Feed rate(mm/rev)
n:Spindle speed(rev/min) L: Working length(mm)

## Milling General Formula

- Cutting speed

$$Vc = \frac{\pi * Dc * n}{1000} \quad (m/min)$$

Vc:Cutting speed(m/min) π: ≈ 3.14
Dc:Cutter diameter(mm) n:Spindle speed(rev/min)

- Spindle speed

$$n = \frac{1000 * Vc}{\pi * Dc} \quad (rev/min)$$

Vc:Cutting speed(m/min) π: ≈ 3.14
Dc:Cutter diameter(mm) n:Spindle speed(rev/min)

- Feed speed

$$Vf = fz * n * Z \ (mm/min)$$

Vf:Feed speed(mm/min) fz:Feed per tooth(mm/z)
n:Spindle speed(rev/min) Z:Number of teeth

- Feed rate per tooth

$$fz = \frac{Vf}{n * Z} \quad (mm/z)$$

fz:Feed rate per rev.(mm/z) Vf:Feed speed(mm/min)
n:Spindle speed(rev/min) Z:Number of teeth

- Feed rate per rev.

$$f = \frac{Vf}{n} \quad (mm/rev)$$

f:Feed rate per rev.(mm/rev) Vf:Feed speed(mm/min)
n:Spindle speed(rev/min)

- Machining time

$$Tc = \frac{L}{Vf} \quad (min)$$

Tc:Time of cut(min) L:Length of feed(mm)
Vf:Feed speed(mm/min)

- Horse power

$$Hp = \frac{Pmot}{0.75}$$

Hp:Horse power Pmot:Cutting power(KW)

- Power demand

$$Pmot = \frac{ap * ae * Vf * Kc}{6 * 10^7 * \eta} \quad (KW)$$

Pmot:Cutting power(KW) ap:Cutting depth ae:Cutting width
Kc:Unit cutting force(N/mm²) η:Machine efficiency coefficient(0.7-0.95)

- Average chip thickness

$$hm = \frac{114.7 * fz * \sin k * (ae/Dc)}{\psi s} \quad (mm)$$

hm:Average chip thickness fz:Feed per tooth(mm/z)
ae:Cutting width Dc:Cutter diameter(mm) ψs:Pressure angle

- Feed force

Cutter in the center site

$$\psi s = 2 * \arcsin\left(\frac{ae}{Dc}\right) \ [^\circ]$$

Cutter in excentric site

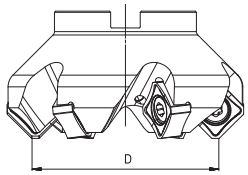
$$\psi s = 90^\circ + \arcsin\frac{ae-(Dc/2)}{(Dc/2)} \ [^\circ]$$

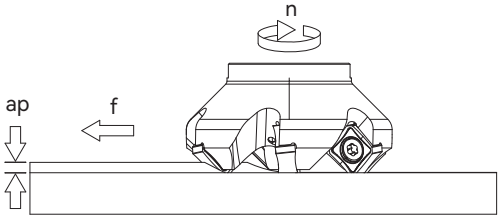
ψs:Pressure angle ae:Cutting width
Dc:Cutter diameter(mm)

- Chip removal rate

$$Q = \frac{ap * ae * Vf}{1000} \quad (cm^3/min)$$

Q:Chip removal($cm^3$/min) ap:Cutting depth
ae:Cutting width Vf:Feed speed(mm/min)



# Technical Information

## Drilling General Recommendation

- Cutting speed

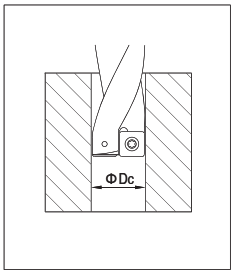
$$Vc = \frac{\pi * Dc * n}{1000} \quad (m/min)$$

Vc:Cutting speed(m/min) π: ≈ 3.14
Dc:Drill diameter(mm) n:Spindle speed(rev/min)

- Spindle speed

$$n = \frac{1000 * Vc}{\pi * Dc} \quad (rev/min)$$

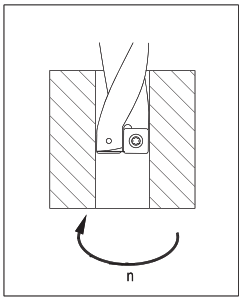
Vc:Cutting speed(m/min) π: ≈ 3.14
Dc:Drill diameter(mm) n:Spindle speed(rev/min)




- Feed speed

$$Vf = fz * n * Z \ (mm/min)$$

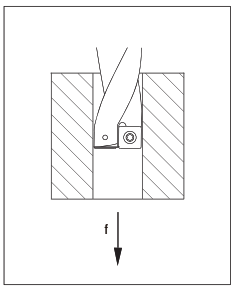
Vf:Feed speed(mm/min) fz:Feed per tooth(mm/z)
n:Spindle speed(rev/min) Z:Number of teeth




- Feed rate per tooth

$$fz = \frac{Vf}{n * Z} \quad (mm/z)$$

fz:Feed per tooth(mm/z) Vf:Feed speed(mm/min)
n:Spindle speed(rev/min) Z:Number of teeth




- Feed rate per rev.

$$f = \frac{Vf}{n} \quad (mm/rev)$$

f:Feed rate per rev.(mm/rev) Vf:Feed speed(mm/min)n:Spindle speed(rev/min)

- Chip removal rate

$$Q = \frac{Vf * \pi * Dc^2}{4 * 1000} \quad (cm^3/min)$$

Q:Chip removal($cm^3$/min) Vf:Feed speed(mm/min)
π: ≈ 3.14 Dc:Drill diameter(mm)

- Horse power

$$Hp = \frac{Pmot}{0.75}$$

Hp:Horsepowe Pmot:Cutting power(KW)

- Power demand

$$Pmot = \frac{Q * Kc}{60000 * \eta} \quad (KW)$$

Pmot:Cutting power(KW) Q:Chip removal($cm^3$/min)
Kc:Unit cutting force($N/mm^2$)
η:Machine efficiency coefficient (0.7-0.95)

- Torque

$$Mc = \frac{Dc^2 * Kc * f}{8000} \quad (N*m)$$

Mc:Torque Dc:Drill diameter(mm)
Kc:Unit cutting force($N/mm^2$) f:Feed rate per rev.(mm/rev)

- Feed force

$$Ff = 0.63 * \frac{f * Dc * Kc}{2} \quad (N)$$

Ff:Feed force f:Feed rate per rev.(mm/rev)
Dc:Drill diameter(mm) Kc:Unit cutting force($N/mm^2$)

- Chip thickness

$$h = fz * sink \ (mm)$$

h:Cutting thickness(mm) fz:Feed rate(mm/rev)

## Hardness Conversion Table

| Brinell Hardness 10 ball load 3000Kg | | Micro Vickers Hardness HV | Rockwell Hardness | | | | Shore's Hardness | Tensile Strength (approximate) kgf/mm |
|---|---|---|---|---|---|---|---|---|
| Master ball | WC ball HB | | A scale 60kgf diamond brale HRA | B scale 100kgf 1/16in ball HRB | C scale 150kgf diamond brale HRC | D scale 100kgf diamond brale HRD | | |
| – | – | 1865 | 92.0 | – | 80 | – | – | – |
| – | – | 1787 | 91.5 | – | 79 | – | – | – |
| – | – | 1710 | 91.0 | – | 78 | – | – | – |
| – | – | 1633 | 90.5 | – | 77 | – | – | – |
| – | – | 1556 | 90.0 | – | 76 | – | – | – |
| – | – | 1478 | 89.5 | – | 75 | – | – | – |
| – | – | 1400 | 89.0 | – | 74 | – | – | – |
| – | – | 1323 | 88.5 | – | 73 | – | – | – |
| – | – | 1245 | 88.0 | – | 72 | – | – | – |
| – | – | 1160 | 87.0 | – | 71 | – | – | – |
| – | – | 1076 | 86.5 | – | 70 | – | – | – |
| – | – | 1004 | 86.0 | – | 69 | – | – | – |
| – | – | 940 | 85.6 | – | 68.0 | 76.9 | 97 | – |
| – | – | 920 | 85.3 | – | 67.5 | 76.5 | 96 | – |
| – | – | 900 | 85.0 | – | 67.0 | 76.1 | 95 | – |
| – | 767 | 880 | 84.7 | – | 66.4 | 75.7 | 93 | – |
| – | 757 | 860 | 84.4 | – | 65.9 | 75.3 | 92 | – |
| – | 745 | 840 | 84.1 | – | 65.3 | 74.8 | 91 | – |
| – | 733 | 820 | 83.8 | – | 64.7 | 74.3 | 90 | – |
| – | 722 | 800 | 93.4 | – | 64.0 | 73.8 | 88 | – |
| – | 712 | – | – | – | – | – | – | – |
| – | 710 | 780 | 83.0 | – | 63.3 | 73.3 | 87 | – |
| – | 698 | 760 | 82.6 | – | 62.5 | 72.6 | 86 | – |
| – | 684 | 740 | 82.2 | – | 61.8 | 72.1 | – | – |
| – | 682 | 737 | 82.2 | – | 61.7 | 72.0 | 84 | – |
| – | 670 | 720 | 81.8 | – | 61.0 | 71.5 | 83 | – |
| – | 656 | 700 | 81.3 | – | 60.1 | 70.8 | – | – |
| – | 653 | 697 | 81.2 | – | 60.0 | 70.7 | 81 | – |
| – | 647 | 690 | 81.1 | – | 59.7 | 70.5 | – | – |
| – | 638 | 680 | 80.8 | – | 59.2 | 70.1 | 80 | – |
| – | 630 | 670 | 80.6 | – | 58.8 | 69.8 | – | – |
| – | 627 | 667 | 80.5 | – | 58.7 | 69.7 | 79 | – |
| – | 601 | 640 | 79.8 | – | 57.3 | 68.7 | 77 | – |
| – | 578 | 615 | 79.1 | – | 56.0 | 67.7 | 75 | – |
| – | 555 | 591 | 78.4 | – | 54.7 | 66.7 | 73 | 210 |
| – | 534 | 569 | 77.8 | – | 53.5 | 65.8 | 71 | 202 |
| – | 514 | 547 | 76.9 | – | 52.1 | 64.7 | 70 | 193 |
| | 495 | 528 | 76.3 | | 51.0 | 63.8 | 68 | 186 |
| – | 477 | 508 | 75.6 | – | 49.6 | 62.7 | 66 | 177 |
| – | 461 | 491 | 74.9 | – | 48.5 | 61.7 | 65 | 170 |
| – | 444 | 472 | 74.2 | – | 47.1 | 60.8 | 63 | 162 |
| 429 | 429 | 455 | 73.4 | – | 45.7 | 59.7 | 61 | 154 |
| 415 | 415 | 440 | 72.8 | – | 44.5 | 58.8 | 59 | 149 |
| 401 | 401 | 425 | 72.0 | – | 43.1 | 57.8 | 58 | 142 |
| 388 | 388 | 410 | 71.4 | – | 41.8 | 56.8 | 56 | 136 |
| 375 | 375 | 396 | 70.6 | – | 40.4 | 55.7 | 54 | 129 |
| 363 | 363 | 383 | 70.0 | – | 39.1 | 54.6 | 52 | 124 |
| 352 | 352 | 372 | 69.3 | (110.0) | 37.9 | 53.8 | 51 | 120 |
| 341 | 341 | 360 | 68.7 | (109.0) | 36.6 | 52.8 | 50 | 115 |
| 331 | 331 | 350 | 68.1 | (108.5) | 36.6 | 51.9 | 48 | 112 |
| 321 | 321 | 339 | 67.5 | (108.0) | 34.3 | 51.0 | 47 | 108 |
| 311 | 311 | 328 | 66.9 | (107.5) | 33.1 | 50.0 | 46 | 105 |
| 302 | 302 | 319 | 66.3 | (107.0) | 32.1 | 49.3 | 45 | 103 |
| 293 | 293 | 309 | 65.7 | (106.0) | 30.9 | 48.3 | 43 | 99 |
| 285 | 285 | 301 | 65.3 | (105.5) | 29.9 | 47.6 | – | 97 |
| 277 | 277 | 292 | 64.6 | (104.5) | 28.8 | 46.7 | 41 | 94 |

# Technical Information

## Hardness Conversion Table

| Brinell Hardness 10 ball load 3000Kg | | Micro Vickers Hardness HV | Rockwell Hardness | | | | Shore's Hardness | Tensile Strength (approximate) kgf/mm |
|---|---|---|---|---|---|---|---|---|
| Master ball | WC ball HB | | A scale 60kgf diamond brale HRA | B scale 100kgf 1/16in ball HRB | C scale 150kgf diamond brale HRC | D scale 100kgf diamond brale HRD | | |
| 269 | 269 | 284 | 64.1 | (104.0) | 28 | 45.9 | 40 | 91 |
| 262 | 262 | 276 | 63.6 | (103.0) | 27 | 45.0 | 39 | 89 |
| 255 | 255 | 269 | 63.0 | (102.0) | 25 | 44.2 | 38 | 86 |
| 248 | 248 | 261 | 62.5 | (101.0) | 24 | 43.2 | 37 | 84 |
| 241 | 241 | 253 | 61.8 | 100 | 23 | 42.0 | 36 | 82 |
| | | | | | | | | |
| 235 | 235 | 247 | 61.4 | 99 | 22 | 41.4 | 35 | 80 |
| 229 | 229 | 241 | 60.8 | 98.2 | 21 | 40.5 | 34 | 78 |
| 223 | 223 | 234 | - | 97.3 | (18.8) | - | - | |
| 217 | 217 | 228 | - | 96.4 | (17.5) | - | 33 | 74 |
| 212 | 212 | 222 | - | 95.5 | (16.0) | - | - | 72 |
| | | | | | | | | |
| 207 | 207 | 218 | - | 94.6 | (15.2) | - | 32 | 70 |
| 201 | 201 | 212 | - | 93.8 | (13.8) | - | 31 | 69 |
| 197 | 197 | 207 | - | 92.8 | (12.7) | - | 30 | 67 |
| 192 | 192 | 202 | - | 91.9 | (11.5) | - | 29 | 65 |
| 187 | 187 | 196 | - | 90.7 | (10.0) | - | - | 63 |
| | | | | | | | | |
| 183 | 183 | 192 | - | 90 | (9.0) | - | 28 | 63 |
| 179 | 179 | 188 | - | 89 | (8.0) | - | 27 | 61 |
| 174 | 174 | 182 | - | 87.8 | (6.4) | - | - | 60 |
| 170 | 170 | 178 | - | 86.8 | (5.4) | - | 26 | 58 |
| 167 | 167 | 175 | - | 86 | (4.4) | - | | 57 |
| | | | | | | | | |
| 163 | 163 | 171 | - | 85 | (3.3) | - | 25 | 56 |
| 156 | 156 | 163 | - | 82.9 | (0.9) | | - | 53 |
| 149 | 149 | 156 | - | 80.8 | | - | 23 | 51 |
| 143 | 143 | 150 | - | 78.7 | | - | 22 | 50 |
| 137 | 137 | 143 | - | 76.4 | | - | 21 | 47 |
| | | | | | | | | |
| 131 | 131 | 137 | - | 74 | | - | - | 46 |
| 126 | 126 | 132 | - | 72 | | - | 20 | 44 |
| 121 | 121 | 127 | - | 69.8 | | - | 19 | 42 |
| 116 | 116 | 122 | - | 67.6 | | - | 18 | 41 |
| 111 | 111 | 117 | - | 65.7 | | - | 17 | 39 |

## Material Conversion Table

| ISO | Country and standard | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | China | International | Germany | U.S.A. | U.K. | | France | Sweden | Italy | Spain | Japan |
| | GB | DIN | W.-nr | AISI/SAE | BS | EN | AFNOR | SS | UNI | UNE | JIS |
| P | Structural steel | | | | | | | | | | |
| | 15 | C15 | 1.0401 | 1015 | 080M15 | - | CC12 | 1350 | C15C16 | F.111 | - |
| | 20 | C22 | 1.0402 | 1020 | 050A20 | 2C | CC20 | 1450 | C20C21 | F.112 | - |
| | 35 | C35 | 1.0501 | 1035 | 060A35 | - | CC35 | 1550 | C35 | F.113 | - |
| | 45 | C45 | 1.0503 | 1045 | 080M40 | - | CC45 | 1650 | C45 | F.114 | - |
| | 55 | C55 | 1.0535 | 1055 | 070M55 | - | - | 1655 | C55 | - | - |
| | 60 | C60 | 1.0601 | 1060 | 080A62 | 43D | CC55 | - | C60 | - | - |
| | Y15 | 9SMn28 | 1.0715 | 1213 | 230M07 | - | S250 | 1912 | CF9SMn28 | 11SMn28 | SUM22 |
| | - | 9SMnPb28 | 1.0718 | 12L13 | - | - | S250Pb | 1914 | CF9MnPb28 | 11SMnPb28 | SUM22L |
| | - | 10SPb20 | 1.0722 | - | - | - | 10PbF2 | - | CF10Pb20 | 10SPb20 | - |
| | - | 35S20 | 1.0726 | 1140 | 212M36 | 8M | 35MF4 | 1957 | - | F210G | - |
| | Y13 | 9SMn36 | 1.0736 | 1215 | 240M07 | 1B | S300 | - | CF9SMn36 | 12SMn35 | - |
| | - | 9SMnPb36 | 1.0737 | 12L14 | - | - | S300Pb | 1926 | CF9SMnPb36 | 12SMnP35 | - |
| | 55Si2Mn | 55Si9 | 1.0904 | 9255 | 250A53 | 45 | 55S7 | 2085 | 55Si8 | 56Si7 | - |
| | - | 60SiCr7 | 1.0961 | 9262 | - | - | 60SC7 | - | 60SiCr8 | 60SiCr8 | - |
| | 15 | Ck15 | 1.1141 | 1015 | 080M15 | 32C | XC12 | 1370 | C16 | C15K | S15C |
| | 40Mn | 40Mn4 | 1.1157 | 1039 | 150M36 | 15 | 35M5 | - | - | - | - |
| | 25 | Ck25 | 1.1158 | 1025 | - | - | - | - | - | - | S25C |
| | 35Mn2 | 36Mn5 | 1.1167 | 1335 | - | - | 40Mn5 | 2120 | - | 36Mn5 | SMn438(H) |
| | 30Mn | 28Mn6 | 1.117 | 1330 | 150M28 | 14A | 20M5 | - | C28Mn | - | SCMn1 |
| | 35Mn | Cf35 | 1.1183 | 1035 | 060A35 | - | XS38TS | 1572 | C36 | - | S35C |
| | Ck45 | 45 | 1.1191 | 1045 | 080M46 | - | XC42 | 1672 | C45 | C45K | S45C |
| | 55 | Ck55 | 1.1203 | 1055 | 070M55 | - | XC45 | - | C50 | C55K | S55C |
| | 50 | Cf53 | 1.1213 | 1050 | 060A52 | - | XC48TS | 1674 | C53 | - | S50C |
| | 60Mn | Ck60 | 1.1221 | 1060 | 080A62 | 43D | XC60 | 1678 | C60 | - | S58C |
| | - | Ck101 | 1.1274 | 1095 | 060A96 | - | - | 1870 | - | - | SUP4 |
| | - | X120Mn12 | 1.3401 | - | Z120M12 | - | X120M12 | - | XG120Mn12 | X120Mn12 | SCMnH/1 |
| | GCr15 | 100Cr6 | 1.3505 | 52100 | 534A99 | 31 | 100C6 | 2258 | 100Cr6 | F.131 | SUJ2 |
| | - | 15Mo3 | 1.5415 | ASTM A204Gr.A | 1501-240 | - | 15D3 | 2912 | 16Mo3KW | 16Mo3 | - |
| | - | 16Mo5 | 1.5426 | 4520 | 1503-245-420 | - | - | - | 16Mo5 | 16Mo5 | - |
| | - | 14Ni6 | 1.5622 | ASTM A350LF5 | - | - | 16N6 | - | 14Ni6 | 15Ni6 | - |
| | - | X8Ni9 | 1.5662 | ASTM A353 | 1501-509; 510 | - | - | - | X10Ni9 | XBNi09 | - |

# Technical Information

## Material Conversion Table

| ISO | Country and standard | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | China | International | Germany | U.S.A. | U.K. | | France | Sweden | Italy | Spain | Japan |
| | GB | DIN | W.-nr | AISI/SAE | BS | EN | AFNOR | SS | UNI | UNE | JIS |
| P | Structural steel | | | | | | | | | | |
| | - | 12Ni19 | 1.5680 | 2515 | - | - | Z18N5 | - | - | - | - |
| | - | 36NiCr6 | 1.5710 | 3135 | 640A35 | 111A | 35NC6 | - | - | - | SNC236 |
| | - | 14NiCr10 | 1.5732 | 3415 | - | - | 14NC11 | - | 16NiCr11 | 15NiCr11 | SNC415 (H) |
| | - | 14NiCr14 | 1.5752 | 34153310 | 655M13655A12 | 36A | 12NC15 | - | - | - | SNC815 (H) |
| | - | 36CrNiMo4 | 1.6511 | 9840 | 816M40 | 110 | 40NCD3 | - | 38CrNiMo4 (KB) | 35CrNiMo4 | - |
| | - | 21NiCrMo2 | 1.6523 | 8620 | 850M20 | 362 | 20NCD2 | 2503 | 20NiCrMo2 | 20NiCrMo2 | SNCCM220 (H) |
| | - | 40NiCrMo2 | 1.6546 | 8740 | 311-Type7 | - | - | - | 40NiCrMo2 (KB) | 40NiCrMo2 | SNC240 |
| | 40CrNiMoA | 34CrNiMo6 | 1.6582 | 4340 | 817M40 | 24 | 35NCD6 | 2541 | 35CrNiMo6 (KB) | - | - |
| | - | 17CrNiMo6 | 1.6587 | - | 820A16 | - | 18NCD6 | - | - | 14CrNiMo1 | - |
| | 15Cr | 15Cr3 | 1.7015 | 5015 | 523M15 | - | 12C3 | - | - | - | SCr415(H) |
| | 35Cr | 34Cr4 | 1.7033 | 5132 | 530A32 | 18B | 32C4 | - | 34Cr4(KB) | 35Cr4 | SCr430(H) |
| | 40Cr | 41Cr4 | 1.7035 | 5140 | 530M40 | 18 | 42C4 | - | 41Cr4 | 42Cr4 | SCr440(H) |
| | 40Cr | 42Cr4 | 1.7045 | 5140 | - | - | - | 2245 | - | 42Cr4 | SCr440 |
| | 18CrMn | 16MnCr15 | 1.7131 | 5115 | (527M20) | - | 16MC5 | 2511 | 16MnCr15 | 16MnCr15 | - |
| | 20CrMn | 55Cr3 | 1.7176 | 5155 | 527A60 | 48 | 55C3 | - | - | - | SUP9(A) |
| | 30CrMo | 25CrMo4 | 1.7218 | 4130 | 1717CDS110 | - | 25CD4 | 2225 | 25CrMo4 (KB) | 55Cr3 | SCM420 SCM430 |
| | 35CrMo | 34CrMo4 | 1.7220 | 4137;4135 | 708A37 | 19B | 35CD4 | 2234 | 35CrMo4 | 34CrMo4 | SCM432 SCRRM3 |
| | 40CrMoA | 41CrMo4 | 1.7223 | 4140;4142 | 708M40 | 19A | 42CD4TS | 2244 | 41CrMo4 | 41CrMo4 | SCM440 |
| | 42CrMo 42CrMnMo | 42CrMo4 | 1.7225 | 4140 | 708M40 | 19A | 42CD4 | 2244 | 42CrMo4 | 42CrMo4 | SCM440(H) |
| | - | 15CrMo5 | 1.7262 | - | - | - | 12CD4 | 2216 | - | 12CrMo4 | SCM415(H) |
| | - | 13CrMo44 | 1.7335 | ASTMA182F11 F12 | 1501-620Gr.27 | - | 15CD3.5 15CD4.5 | - | 14CrMo44 | 14CrMo45 | - |
| | - | 32CrMo12 | 1.7361 | - | 722M24 | 40B | 30CD12 | 2240 | 32CrMo12 | F.124.A | - |
| | - | 10CrMo910 | 1.7380 | ASTMA182F.22 | 1501-622Gr.31;45 | - | 12CD9;10 | 2218 | 12CrMo9,10 | TU.H | - |
| | - | 14MoV63 | 1.7715 | - | 1503-660-440 | - | - | - | - | 13MoCrV6 | - |
| | 50CrVA | 50CrV4 | 1.8159 | 6150 | 735A50 | 47 | 50CV4 | 2230 | 50CrV4 | 51CrV4 | SUP10 |
| | - | 41CrAlMo7 | 1.8509 | - | 905M39 | 41B | 40CAD6,12 | 2940 | 41CrAlMo7 | 41CrAlMo7 | - |
| | - | 39CrMoV139 | 1.8523 | - | 897M39 | 40C | - | - | 36CrMoV12 | - | - |

## Material Conversion Table

| ISO | Country and standard | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | China | International | Germany | U.S.A. | U.K. | | France | Sweden | Italy | Spain | Japan |
| | GB | DIN | W.-nr | AISI/SAE | BS | EN | AFNOR | SS | UNI | UNE | JIS |
| P | Tool steel | | | | | | | | | | |
| | T10 | C105W1 | 1.1545 | W.110 | - | - | Y1105 | 1880 | C98KU<br>C100KU | F.515<br>F.516 | - |
| | T12A | C125W | 1.1663 | W.112 | - | - | Y2120 | - | C120KU | (C120) | SK20 |
| | GCr15 | 100Cr6 | 1.2067 | L3 | BL3 | - | Y100C6 | - | - | 100Cr6 | - |
| | Cr12 | X210Cr12 | 1.2080 | D3 | BD3 | - | Z200Cr12 | - | X210Cr13KU<br>X250Cr12KU | X210Cr12 | SKD1 |
| | 4Cr5MoVSi | X40CrMoV5 1 | 1.2344 | H13 | BH13 | - | Z40CDV5 | 2242 | X35CrMoV05KU<br>X40CrMoV51KU | X40CrMoV5 | SKD61 |
| | Cr6WV | X100CrMoV5 1 | 1.2363 | A2 | BA2 | - | Z100CDV5 | 2260 | X100CrMoV51KU | X100CrMoV5 | SKD12 |
| | CrWMo | 105WCr6 | 1.2419 | - | - | - | 105WC13 | 2140 | 10WCr6<br>107WCr5KU | 105WCr5 | SKS31<br>SKS2<br>SKS3 |
| | Cr12W | X210CrW12 | 1.2436 | - | - | - | - | 2312 | X215CrW12 1KU | X210CrW12 | SKD2 |
| | 5CrNiMo | 45WCrV7 | 1.2542 | S1 | BS1 | - | - | 2710 | 45WCrV8KU | 45WCrSi8 | - |
| | 3Cr2W8V | X30WCrV93<br>X30WCrV93KU | 1.2581 | H21 | BH21 | - | Z30WCV9 | - | X28W09KU<br>X30WCrV9 3KU | X30WCrV9 | SKD5 |
| | Cr12MoV | X165CrMoV 12 | 1.2601 | - | - | - | - | 2310 | X165CrMoW12KU | X160CrMoV12 | SKD11 |
| | 5CrNiMo | 55NiCrMoV6 | 1.2713 | L6 | - | - | 55NCDV7 | - | - | F.250.S | SKT4 |
| | V | 100V1 | 1.2833 | W210 | BW2 | - | Y1105V | - | - | - | SKS43 |
| | W6Mo5Cr4V2Co5 | S6-5-2-5 | 1.3243 | - | - | - | Z85WDKCV | 2723 | HS6-5-2-5 | HS6-5-2-5 | SKH55 |
| | W18Cr4VCo5 | S18-1-2-5 | 1.3255 | T4 | BT4 | - | Z80WKCV<br>10-05-04-01 | - | X78WCo1805KU | HS18-1-1-5 | SKH3 |
| | W6Mo5Cr4V2 | S6-5-2 | 1.3343 | M2 | BM2 | - | Z85WDCV<br>06-05-04-02 | 2722 | X82WMo0605KU | HS6-5-2 | SKH9 |
| | - | S2-9-2 | 1.3348 | M7 | - | - Z - | Z100WCWV<br>09-02-04-02 | 2782 | HS2-9-2 | HS2-9-2 | - |
| | W18Cr4V | S18-0-1 | 1.3355 | T1 | BT1 | - | Z80WCV<br>18-04-01 | - | X75W18KU | HS18-0-1 | SKH2 |
| | W6Mo5Cr4V3 | S6-5-3 | - | M3 | - | - | - | - | - | - | SKH52 |
| | - | - | - | M42 | BM42 | - | - | - | - | - | SKH59 |

# Technical Information

## Material Conversion Table

| ISO | Country and standard | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | China | International | Germany | U.S.A. | U.K. | | France | Sweden | Italy | Spain | Japan |
| | GB | DIN | W.-nr | AISI/SAE | BS | EN | AFNOR | SS | UNI | UNE | JIS |
| M | Stainless steel | | | | | | | | | | |
| | 0Cr13; 1Cr12 | 403 | 1.4000 | 403 | 403S17 | - | Z6C13 | 2301 | X6Cr13 | F.3110 | SUS403 |
| | - | - | 1.4001 | - | - | - | - | - | - | F.8401 | - |
| | 1Cr13 | 410 | 1.4006 | 410 | 410S21 | 56A | X12Cr13 | 2302 | X12Cr13 | F.3401 | SUS410 |
| | 1Cr17 | 430 | 1.4016 | 430 | 430S15 | 60 | X8Cr17 | 220 | X8Cr17 | F.3113 | SUS430 |
| | 2Cr13 | 410 | 1.4021 | 40 | S62 | 56B;56C | X20C13 | - | X20C13 | F.3401 | SUS410 |
| | - | - | 1.4027 | - | 420C29 | 56B | - | - | - | - | SCS2 |
| | 4Cr13 | - | 1.4034 | - | 420S45 | 56D | X40Cr14 | 2304 | X40Cr14 | F.3405 | SUS420J2 |
| | 1Cr17Ni2 | 431 | 1.4057 | 431 | 431S29 | 57 | X16CNi16 | 2321 | X16CNi16 | F.3427 | SUS431 |
| | Y1Cr17 | 430F | 1.4104 | 430F | - | - | X10CrS17 | 2383 | X10CrS17 | F.3117 | SUS430F |
| | 1Cr17Mo | 434 | 1.4113 | 434 | 434S17 | - | X8CrMo17 | 2325 | X8CrMo17 | - | SUS434 |
| | - | - | 1.4313 | - | 425C11 | - | - | - | - | - | SCS5 |
| | - | - | 1.4408 | - | 316C16 | - | - | - | - | F.8414 | SCS14 |
| | 4Cr9Si2 | HW3 | 1.4718 | HW3 | 401S45 | 52 | X45CrSi8 | - | X45CrSi8 | F.322 | SUH1 |
| | 0Cr13Al | 405 | 1.4724 | 405 | 403S17 | - | X10CrAl12 | - | X10CrAl12 | F.311 | SUS405 |
| | Cr17 | 430 | 1.4742 | 430 | 430S15 | 60 | X8Cr17 | - | X8Cr17 | F.3113 | SUS430 |
| | 8Cr20Si2Ni | HNV6 | 1.4757 | HNV6 | 443S65 | 59 | X80CrSiNi20 | - | X80CrSiNi20 | F.320V | SUH4 |
| | 2Cr25N | 446 | 1.4762 | 446 | - | - | X16Cr26 | 2322 | X16Cr26 | - | SUH446 |
| | Austenitic stainless steel | | | | | | | | | | |
| | 0Cr18Ni9 | X5CrNi1810 | 1.4301 | 304 | 304S15 | 58E | Z6CN18.09 | 2332 | X5CrNi1810 | F.3551 F.3541 F.3504 | SUS304 |
| | 1Cr18Ni9MoZr | X10CrNiS189 | 1.4305 | 303 | 303S21 | 58M | Z10CNF18.09 | 2346 | X10CrNiS18.09 | F.3508 | SUS303 |
| | 0Cr19Ni10 | X2CrNi1911 | 1.4306 | 304L | 304S12 | - | Z2CN18.10 | 2352 | X2CrNi18.11 | F.3503 | SCS19 |
| | - | G-X6CrNi189 | 1.4308 | - | 304C15 | - | Z6CN18.10M | - | - | - | SCS13 |
| | Cr17Ni17 | X12CrNi177 | 1.4310 | 301 | - | - | Z12CN17.07 | 2331 | X12CrNi1707 | F.3517 | SUS301 |
| | - | X2CrNiN1810 | 1.4311 | 304LN | 304S62 | - | Z2CN18.10 | 2371 | - | - | SUS304LN |
| | 0Cr19Ni9 | X5CrNi189 | 1.4350 | 304 | 304S31 | 58E | Z6CN18.09 | - | X5CrNi1810 | - | SUS304 |
| | 0Cr17Ni11Mo2 | X5CrNi Mo1712 | 1.4401 | 316 | 316S16 | Z6CND 17.11 | 1.4401 | 2347 | X5CrNiMo1712 | F.3543 | SUS316 |
| | 00Cr17Ni13Mo2 | X2CrNi MoN17133 | 1.4429 | 316LN | - | - | Z2CND17.13 | 2375 | - | - | SUS316LN |
| | 0Cr27Ni12Mo3 | X2CrNi Mo18143 | 1.4435 | 316L | 316S12 | - | Z2CDN17.13 | 2353 | X2CrNiMo1713 | - | SCS16 |
| | 00Cr19Ni13Mo3 | X2CrNi Mo17133 | 1.4438 | 317L | 317S12 | - | Z2CND19.15 | 2367 | X2CrNiMo18.16 | - | SUS317L |
| | - | X8CrNiMo275 | 1.4460 | 329L | - | - | - | 2324 | - | - | SUS329L SCH11 SCS11 |

## Material Conversion Table

| ISO | Country and standard | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | China | International | Germany | U.S.A. | U.K. | | France | Sweden | Italy | Spain | Japan |
| | GB | DIN | W.-nr | AISI/SAE | BS | EN | AFNOR | SS | UNI | UNE | JIS |
| M | Austenitic stainless steel | | | | | | | | | | |
| | 1Cr18Ni9Ti | X6CrNi Ti1810 | 1.4541 | 321 | 2337 | 321S12 | Z6CNT18.10 | 58B | X6CrNiTi1811 | F.3553 | SUS321 |
| | 1Cr18Ni11Nb | X6CrNi Nb1810 | 1.4550 | 347 | 347S17 | 58F | Z6CNNb18.1 | 2338 | X6CrNiTi1811 | F.3552 | SUS347 |
| | Cr18Ni12Mo2Ti | X6CrNi MoTi17122 | 1.4571 | 316Ti | 320S17 | 58J | Z6NDT17.12 | 2350 | X6CrNiMoTi17 | F.3535 | - |
| | - | G-X5CrNi MoNb1810 | 1.4581 | - | 318C7 | - | Z4CNDNb1812M | - | XG8CrNiMo18 | - | SCS22 |
| | Cr17Ni12Mo3Nb | X10CrNi MoNb1812 | 1.4583 | 318 | - | - | Z6CNDNb1713B | - | X6CrNiMoTiNb17 | - | - |
| | 1Cr23Ni13 | X15CrNi Si2012 | 1.4828 | 309 | 309S24 | - | Z15CNS20.1 | - | - | - | SUH309 |
| | 0Cr25Ni20 | X12CrNi2521 | 1.4845 | 310S | 310S24 | - | Z12CN2520 | 2361 | X6CrNi2520 | F.331 | SUH310 |
| | Cr15Ni36W3Ti | X12NiCr Si3616 | 1.4864 | 330 | - | - | Z12CNS35.1 | - | - | - | SUH330 |
| | - | G-X40NiCr Si3818 | 1.4865 | - | 330C11 | - | - | - | XG50NiCr3919 | - | SCH15 |
| | 5Cr2Mn9Ni4N | X53CrMn NiN219 | 1.4871 | EV8 | 349S54 321S12 | - 58B | Z52CMN21.0 | - | X53CrMnNiN219 | - | SUH35 |
| | 1Cr18Ni9Ti | X12CrNi Ti189 | 1.4878 | 321 | 321S320 | 58C | Z6CNT18.12 | - | X6CrNiTi1811 | F.3523 | SU321 |

| ISO | Country and standard | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | China | Germany | U.S.A. | U.K. | France | Sweden | Italy | Spain | Japan |
| | GB | W.-nr | AISI/SAE | EN | AFNOR | SS | UNI | UNE | JIS |
| K | Nodular cast iron | | | | | | | | |
| | QT400-18 | GGG40 | 60-40-18 | 400/17 | FGS370-17 | 0717-02 | GS370-17 | FGE38-17 | FCD400 |
| | QT450-10 | - | 65-45-12 | 420/12 | FGS400-12 | - | GS400-12 | FGE42-12 | FCD450 |
| | QT500-7 | GGG50 | 70-50-05 | 500/7 | FGS500-7 | 0727-02 | GS500-7 | FGE50-7 | FCD500 |
| | QT600-3 | GGG60 | 80-60-03 | 600/7 | FGS600-2 | 0732-03 | GS600-2 | FGE60-2 | FCD600 |
| | QT700-2 | GGG70 | 100-70-03 | 700/2 | FGS700-2 | 0737-01 | GS700-2 | FGE70-2 | FCD700 |
| | QT800-2 | GGG80 | 120-90-02 | 800/2 | FGS800-2 | 0864-03 | GS800-2 | FGE80-2 | FCD800 |
| | QT900-2 | - | - | 900/2 | - | - | - | - | - |
| | Grey cast iron | | | | | | | | |
| | - | GG40 | NO.60 | - | FGL400 | 0140 | - | - | - |
| | HT350 | GG35 | NO.50 | 350 | FGL350 | 0135 | G35 | FG35 | FC350 |
| | HT300 | GG30 | NO.45 | 300 | FGL300 | 0130 | G30 | FG30 | FC300 |
| | HT250 | GG25 | NO.35 | 250 | FGL250 | 0125 | G25 | FG25 | FC250 |
| | HT200 | GG20 | NO.30 | 200 | FGL200 | 0120 | G20 | FG20 | FC200 |
| | HT150 | GG15 | NO.20 | 150 | FGL150 | 0115 | G15 | FG15 | FC150 |
| | HT100 | - | - | 100 | - | 0110 | G10 | - | FC100 |

# Technical Information

## Material Conversion Table

| ISO | Country and standard | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | China | International | Germany | U.S.A. | U.K. | France | Sweden | Italy | Spain | Japan |
| | GB | DIN | W.-nr | AISI/SAE | BS | AFNOR | SS | UNI | UNE | JIS |
| N | Al-based alloy | | | | | | | | | |
| | ZAlSi7Mg | Al-Si7Mg(Fe) | ~AlSi7Mg | 356 | LM25 | A-S7G | 4244 | 3599 | - | AC4C |
| | ZAlSi7MgA | Al-Si7Mg | AlSi7Mg | A356.0 | 2L99 | A-S7G03 | - | 8024 | - | AC4C |
| | ZAlSi12 | Al-Si12 | AlSi12 | 413;B413.0 | LM6 | A-S13 | 4261 | 4514 | - | AC3A |
| | ZAlSi9Mg | ~Al-Si10Mg | AlSi9Mg | 360 | LM9 | A-S9G;A-S10G | 4253 | 3051 | - | AC4A |
| | - | Al-Si5 | AlSi5Mg | A 443.0 | - | - | - | 5077 | - | - |
| | - | Al-Si5Fe | - | B443.0 | - | - | - | GD-AlSi5Fe | - | - |
| | - | (AlSi7Fe) | - | A444.0 | - | - | - | - | - | - |
| | - | Al-Si12Fe | - | 413 | LM20 | ~A-S12 | 4260 | 5079 | - | ADC1 |

| ISO | Country and standard | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | China | International | Germany | U.S.A. | U.K. | France | Sweden | Italy | Spain | Japan |
| | GB | DIN | W.-nr | AISI/SAE | BS | AFNOR | SS | UNI | UNE | JIS |
| S | Ni-based alloy | | | | | | | | | |
| | - | S-NiCr13A16MoNb | LW2 4670 | 5391 | mar - 46 | NC12AD | - | - | - | - |
| | - | NiCo15Cr10MoAlTi | LW2 4674 | AMS 5397 | - | - | - | - | - | - |
| | - | NiFe35Cr14MoTi | LW2.4662 | 5660 | - | ZSNCDT42 | - | - | - | - |
| | - | NiCr19Fe19NbMo | LW2.4668 | 5383 | HR8 | NC19eNB | - | - | - | - |
| | - | NiCr20TiAk | 2.4631 | - | Hr401.601 | NC20TA | - | - | - | - |
| | - | NiCr19Co11MoTi | 2.4973 | AMS 5399 | - | NC19KDT | - | - | - | - |
| | - | NiCr19Fe19NbMo | LW2.4668 | AMS 5544 | - | NC20K14 | - | - | - | - |
| | - | - | 2.4603 | 5390A | - | NC22FeD | - | - | - | - |
| | - | NiCr22Mo9Nb | 2.4856 | 5666 | - | NC22FeDNB | - | - | - | - |
| | - | NiCr20Ti | 2.4630 | - | HR5.203-4 | NC20T | - | - | - | - |
| | - | NiCu30AL3Ti | 2.4375 | 4676 | 3072-76 | - | - | - | - | - |
| | Co-based alloy | | | | | | | | | |
| | - | CoCr20W15Ni | - | 5537C,AMS | - | KC20WN | - | - | - | - |
| | - | CoCr22W14Ni | LW2.4964 | 5772 | - | KC22WN | - | - | - | - |
| | Ti-alloy | | | | | | | | | |
| | - | TiAl5Sn2.5 | 3.7115.1 | UNS R54520 | TA14/17 | T-A5E | - | - | - | - |
| | - | - | - | - | - | UNS R56400 | - | - | - | - |
| | - | TiAl6V4 | 3.7165.1 | - | TA10-13/ TA28 | UNS R56401 | - | T-A6V | - | - |
| | - | TiAl5V5Mo5Cr3 | - | - | - | - | - | - | - | - |
| | - | TiAl4Mo4Sn4Si0.5 | 3.7185 | - | - | - | - | - | - | - |

## Grade Comparison Table for Turning

CVD coating grade

| Classification | | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT | PRAMET | GESAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | P01 | AC052P | GC4305<br>GC4205 | KCP05B<br>KCP05<br>KC9105 | TP0501<br>TP0500 | WPP05S<br>WPP05 | IC8005<br>IC428 | TT8105 | UE6005<br>UE6105 | T9005<br>T9105 | AC810P | CA510<br>CA5505 | NC3010 | | T9310 | GP1105 |
| | P10 | AC152P | GC4415<br>GC4315 | KCP10B<br>KCP10<br>KC9110 | TP1501<br>TP1500 | WPP10S<br>WPP10 | IC9150<br>IC9015<br>IC8150 | TT8115 | UE6110<br>MC6015<br>MY5015 | T9115<br>T9215 | AC810P<br>AC700G | CA515<br>CA5515 | NC3215 | YBC152<br>YBC151 | T9315 | GP1115 |
| | P20 | AC252P | GC4425<br>GC4325 | KCP25B<br>KC9125 | TP2501<br>TP2500 | WPP20S<br>WPP20 | IC8250<br>IC9025<br>IC9250 | TT8125<br>TT5100 | UE6020<br>MC6025 | T9225<br>T9125 | AC8025P<br>AC820P<br>AC2000 | CA025P<br>CA525<br>CA5525 | NC3220<br>NC3225<br>NC3120 | YBC251<br>YBC252 | T9325 | GP1125 |
| | P30 | AC350P | GC4335 | KCP40B<br>KCP40<br>KC9240 | TP300<br>TP3500 | WPP30S<br>WPP30 | IC8350<br>IC9350 | TT8135<br>TT7100 | MC6035<br>UE6035<br>UH6400 | T9135<br>T9035 | AC830P<br>AC630M | CA530<br>CA5535 | NC3030<br>NC500H<br>NC5330 | YBC351<br>YBC352 | T9335 | GP1135 |
| M | M10 | AC100M | GC2015<br>GC1515 | KCM15<br>KCM15M | | | IC6015 | TT9215 | MC7015<br>US7020 | T6120<br>T6020 | AC610M<br>AC6020M | CA6515 | NC9020 | YBM151<br>YBM153 | | GM1115 |
| | M20 | AC200M | GC2025 | KCM25 | TM2000 | WMP20S | IC6025 | TT9225 | MC7025 | T6130 | AC630M<br>AC6020M | CA6525 | NC9025 | YBM251<br>YBM253 | T7325 | GM1125 |
| | M30 | | | KCM35<br>KC9045<br>KC9245 | TM4000 | | | TT9235 | MC7035<br>US735 | | | | | YBM253 | | |
| K | K05 | AC100K<br>AC102K | GC3205<br>GC3210 | KCK05<br>KCK05B | TK0501<br>TK1001<br>TK1000 | WKK10S<br>WAK10 | IC5005<br>IC9007 | TT7005 | MC5005<br>UC5105 | T505<br>T5105 | AC405K<br>AC410K | CA4505<br>CA4010<br>CA310 | NC6205 | YBD052<br>YBD102 | T5305 | GK1115 |
| | K20 | AC202K<br>ACK15A | GC3215 | KCK15<br>KCK20<br>KC9315<br>KC9320 | TK2001<br>TK2000 | WKK20S<br>WAK20 | IC5010 | TT7310<br>TT7015 | MC5015<br>UC5115 | T515<br>T5115<br>T5125 | AC415K<br>AC420K<br>AC700G | CA315<br>CA4515<br>CA4115<br>CA4120 | NC6210<br>NC6215 | YBD152C<br>YBD152 | T5315 | GK1120<br>GK1125 |

## Grade Comparison Table for Turning

PVD coating grade

| Classification | | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT | PRAMET | GESAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | P05 | AP010S | | KC5510 | | | | | | | ACZ150 | PR1705 | | | | |
| | P10 | AP100U<br>AP100S | GC1025 | KC5010<br>KC5510<br>KU10T | CP200 | WSM10S<br>WSM10 | IC507<br>IC807<br>IC907 | | MS6015<br>VP10MF | AH710 | ACZ150<br>ACZ310 | PR930<br>PR1115<br>PR1215 | PC8110<br>PC230 | YBG102 | T6130<br>T8310<br>T8315 | |
| | P20 | AP200U<br>AP301U<br>AP301M | GC1020<br>GC1025<br>GC1125<br>GC4125 | KC5025<br>KC5525<br>KC7215<br>KC7315<br>KU25T | CP250 | WSM20S<br>WSM20 | IC507<br>IC807<br>IC907 | TT5030 | VP15TF<br>VP20MF<br>VP20RT<br>UP20M | AH7025<br>AH725<br>SH725 | ACZ330<br>AC520U | PR1225<br>PR1625<br>PR1725 | PC8115<br>PC5300 | YBG202 | 6630 | GA4230 |
| | P30 | | GC1145<br>GC2145 | KC7235<br>KC7140<br>KC7040 | CP500 | WSM30S<br>WSM30 | IC328<br>IC928<br>IC3028 | | VP15TF<br>VP20MF<br>UP20M | GH330<br>AH740<br>AH9030 | AC530U<br>ACZ350 | PR1535 | PC3545 | | 6640<br>T8330<br>T8030 | |
| M | M10 | AP010S<br>AP100S | GC1105<br>GC1115<br>GC15 | KC5510<br>KC5010 | TS2000<br>TH1000<br>CP200 | WSM10<br>WSM10S | IC520<br>IC907<br>IC808 | TT5080 | VP10RT<br>VP10MF | AH710 | AC510U<br>ACZ150 | PR1215<br>PR1225 | PC8110 | | T6310<br>T8310<br>T8315 | GS3115 |
| | M20 | AP200U<br>AP200M<br>AP301M | GC1125<br>GC4125<br>GC1025<br>GC30 | KC5025<br>KC5525<br>KCU25 | CP500 | WSM20<br>WSM20S | IC308<br>IC908<br>IC3028<br>IC830 | TT9080 | VP15TF<br>VP20RT<br>VP20MF | AH725<br>AH630<br>GH330<br>GH730<br>SH725<br>SH730 | AC520U<br>ACZ310<br>AC1030U | PR930<br>PR1215<br>RP1225<br>PR1725<br>PR1525 | PC8115<br>PC5300 | YBG202<br>YBG205 | T8330 | GS3125 |
| | M30 | | GC2035<br>GC2030 | KC7030<br>KC7225 | CP600 | WSM30<br>WSM30S | IC228<br>IC328<br>IC928 | TT9020<br>TT8020 | MP7035 | AH130*<br>AH645* | AC6040<br>AC530U<br>ACZ330<br>ACZ350 | PR1535 | PC9030<br>PC5400 | | T8345 | GM3225 |
| K | K10 | | GC1010 | KC5010<br>KC7210 | TS2000<br>CP200 | | IC807<br>IC910<br>IC507<br>IC908 | | VP05RT | GH110<br>AH110 | EH10Z<br>EH510Z<br>AC510U | PR905<br>PR1215 | | | T8310 | |
| | K20 | | GC1020<br>GC1120 | KC5025<br>KC5525<br>KC7215<br>KC7315 | TS2500<br>CP200<br>CP250 | | IC508<br>IC908 | TT5030 | VP10RT<br>VP15TF<br>VP20RT | AH120<br>AH725 | ACZ310<br>AC520U<br>AC530U<br>AC1030U | PR905<br>PR1215 | PC5300 | | T8315 | GA4230 |
| | K30 | | GC1030 | KC7225 | CP500 | | IC508<br>IC908 | | VP15TF<br>VP20RT | | ACZ310 | | | | T8330 | |
| S | S10 | AP010S<br>AP100S | GC1105<br>GC1115 | KC5510<br>KC5010 | CP200<br>TH1000<br>TS2000 | WSM01<br>WSM10S | IC808<br>IC807<br>IC907 | TT5080 | VP05RT<br>VP10RT<br>MP9005 | AH110<br>AH905<br>AH8005 | AC510U<br>AC5015S | PR005S<br>PR1305<br>PR1310 | PC8105 | YBG102 | T6310 | GS3115 |
| | S20 | AP200U<br>AP301M<br>AP200M | GC1025<br>GC1125 | KC5525<br>KC5025 | CP500<br>TS2500 | WSM20<br>WSM20S | IC808<br>IC908 | TT9080 | VP15TF<br>VP20RT<br>MP9015 | AH120<br>AH8015<br>AH725 | AC520U<br>AC5025S | PR015S<br>PR1325<br>PR1535 | PC8115 | YBG105<br>YBG202 | 6630 | GS3125 |
| | S30 | | GC1125 | | | WSM30<br>WSM30S | IC328 | TT9080<br>TT8020 | MP9025 | AH725 | AC520U | PR1535 | PC5400 | YBG212 | 6640 | |

## Grade Comparison Table for Turning

Uncoated grade

| Classification | | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT | PRAMET | GESAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | N10 | AW100K | H10 | K313 | H15 | WK1 | IC20 | K10 | HTI10 | TH10 | EH10 | KW10<br>GW05 | H01 | YD101 | | GN9115 |

Cermet

| Classification | | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT | PRAMET | GESAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | P10 | AT202<br>AT210A | CT5015<br>CT525<br>GC1525*<br>CT530 | KT175<br>HT2<br>KT5020<br>PS5 | TP1020<br>CM<br>CMP | WTA43*<br>WTA41* | IC20N<br>IC520N<br>IC530N<br>IC75T<br>IC30N | CT3000<br>PV3010* | NX2525<br>NX3025<br>AP25N<br>VP25N<br>MP3025 | NS9530<br>NS520<br>GT9530*<br>GT530*<br>GT530/730<br>AT9530 | T1200A<br>T1500Z* | TN60<br>TN620<br>TN6020<br>PV720* | CN2000<br>CN30<br>CC1500<br>CN1500* | YNG151<br>YNG151C* | | GP91TM<br>GT31TM* |
| K | K10 | AT202 | CT5015 | HTX<br>KT315*<br>KTP10* | | | | CT3000 | NX2525<br>AP25N*<br>VP25N* | NS530<br>GT530* | T1200A<br>T2000Z* | TN610<br>PV710*<br>PV7005* | CN1500* | YNG151<br>YNG151C* | | GP91TM<br>GT31TM* |

Remarks: * for PVD coated cermet material

# Technical Information

## Grade Comparison Table for Turning

CBN

| Classification | | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT | PRAMET | GESAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K | K20 | PB90 | | | CBN20<br>CBN600 | | | | MB4120<br>MBS140 | BX950<br>BX90S | BN7000<br>BNS800 | | DBN350 | | | |
| H | H10 | PB30 | CB7105<br>CB7050 | KBH10<br>KB1615<br>KB5610 | CBN150<br>CBN060K<br>CBN200 | WCB30 | IB50 | TB610 | MB8025<br>MB825 | BXA40<br>BC330<br>BX360 | | | | | | |
| | H20 | PB60 | CB7025<br>CB7525 | KBH20<br>KB1340 | CBN350<br>CBN500 | WCB50 | IB55 | TB650 | MB8025 | BX380 | | | | | | |
| | H30 | PB90 | CB7525 | KB5630 | | | IB55 | TB670 | MB835 | BX380 | | | | | | |

PCD

| Classification | | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT | PRAMET | GESAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | N20 | PD20 | | KD1425 | PCD30<br>PCD30M | WDN10 | | | MD230 | DX110<br>DX120 | DA1000<br>DA2200 | KPD001<br>KPD010<br>KPD230<br>KPD250 | | | | DNN130P |

## Grade Comparison for Milling Grade

| Classification | | Achteck | Kyocera | Djtol | ZCC.CT | Mitsubishi | Sandvik | Seco Tools | Sumitomo | Tungaloy | Kennametal | Iscar | Walter AG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | P10 | | PR1825<br>PR1835<br>PR1225 | JC5003<br>JC5030<br>JC8003<br>DH103 | YBG252 | F7010 | GC1025<br>GC1010 | MP1500 | ACP100 | | KC715M | IC1500 | WKP25 |
| | P20 | AP301U<br>AP251U | PR1825<br>PR1835<br>PR1525<br>PR1225<br>PR1230<br>CA520D | DH108<br>DH111<br>DH110<br>DH115<br>JC8015<br>JC8118 | YBC301<br>YBM251<br>YBG205<br>YBG202<br>YBG9320<br>YBG252 | MC7020<br>MP6120<br>F7030<br>UP20M<br>MV1020 | GC1130<br>GC1030<br>GC4220<br>GC4020<br>GC4030<br>GC4334 | MP1500<br>T250M<br>T25M<br>T20M | ACP2000<br>ACP200<br>ACP2000<br>ACU2500 | AH3225<br>T313W<br>AH725 | KC522M<br>KC525M<br>KCPM20 | IC330<br>IC250<br>IC520M<br>IC950<br>IC5400<br>IC1008<br>IC5500 | WKP25S |
| | P30 | AP351U<br>AP351M<br>AC251P<br>AC301P | PR1825<br>PR1835<br>PR1230<br>PR1535 | JC6235<br>JC5015<br>JC5040<br>JC5240<br>JC8050<br>JC7550 | YBM351<br>YBG302 | MP6130<br>F7030<br>VP15TF<br>VP30RT | GC1130<br>GC4040<br>GC4230<br>GC4330 | MP2500<br>T250M<br>T25M<br>F25M<br>F30M | AC230<br>ACP300<br>ACP3000 | T3130<br>GH330<br>AH120<br>AH330<br>AH730<br>AH3135<br>AH9130 | KC994M<br>KC725M<br>KC792M<br>KC530M<br>KCPK30<br>KCPM40 | IC330<br>IC328<br>IC635<br>IC830<br>IC908<br>IC928 | WSM35S<br>WSM36<br>WKP35S<br>WKP35G |
| | P40 | AP403M | | JC7550<br>JC5040<br>JC7560 | YBC302<br>YBG302 | VP30RT | GC4040<br>GC4240<br>GC4340 | MP3000<br>T350M<br>T60M<br>T25M | AC230<br>ACZ330<br>ACZ350 | AH140 | KC735M | IC635<br>IC928<br>IC4050 | WSP45S<br>WSP46 |
| M | M10 | | PR1835<br>PR1225 | DH111<br>DH108 | YBG252 | F7010 | GC1025<br>GC1030 | | ACM100<br>ACM200<br>EH10Z | | KC522M | | |
| | M20 | AP251U | PR1835<br>PR1525<br>PR1225 | JC730U<br>JC835S<br>JC8118<br>JC5015<br>JC5030<br>JC5040 | YBM251<br>YBM253<br>YBG205<br>YBG202<br>YBG9320<br>YBG252 | MC7020<br>MV1020<br>MH515<br>F7030<br>VP15TF<br>VP20RT<br>MP7030<br>MP7130 | GC2030<br>S30T<br>GC2334<br>GC2044 | MS2050<br>MP2500<br>T250M<br>T25M<br>F20M<br>F25M<br>F30M | XCU2500<br>ACM200<br>ACP200<br>EH20Z<br>ACU2500 | GH330<br>AH330<br>AH120<br>AH130<br>AH725<br>AH3135 | KC730M<br>KC525M | IC882<br>IC380<br>IC908<br>IC928 | WXM15 |
| | M30 | AP351U<br>AP351M | PR1835<br>CA6535<br>PR1535 | JC835S<br>JC8015<br>JC5015<br>JC5118<br>JC8050 | YBC302<br>YBG302 | F7030<br>VP30RT<br>MP7140 | GC1040<br>GC2040<br>S40T | T350M<br>T250M<br>F40M | ACM300<br>ACP300<br>ACZ350 | AH9130<br>T3130<br>AH130 | KC994M<br>KC725M<br>KCPK30 | IC380<br>IC328<br>IC330 | WSM35S<br>WSM36 |
| | M40 | AP403M | | JC7560 | YBM351<br>YBG302 | VP30RT | | MM4500 | ACZ350 | AH140 | | IC830 | WSP45S<br>WSP46 |
| K | K01 | | | DH202<br>DH102 | | | | MH1000 | ACK100 | AH110 | | IC5100<br>IC4100 | |
| | K10 | | PR1810<br>PR1510<br>PR905<br>PR1210 | DH103<br>JC8015<br>JC610<br>JC605W<br>JC8118 | YBD152<br>YBG102<br>YBG252 | MP8010<br>MC5020<br>VP10RT<br>MV1020 | GC1010<br>GC3220<br>K15W | MK1500<br>T150M<br>F15M | XCK2000<br>ACK2000<br>ACK200<br>AC211<br>ACU2500 | T1015<br>T1115<br>AH110<br>T1215 | KCK15<br>KC915M<br>KCKP10 | IC5100<br>IC4010<br>IC910<br>DT7150<br>IC810 | WXM15<br>WAK15<br>WSN10 |
| | K20 | AP251K<br>AC301K<br>AC151K | PR1810<br>CA420M<br>PR905<br>PR1210<br>CA415D | JC605X<br>JC610<br>JC5015<br>JC8015<br>JC8118 | YBD203<br>YBD252<br>YBG152 | VP15TF<br>VP20RT | GC1020<br>GC3020<br>K20W/<br>K20D<br>GC3330<br>GC3334 | MP1500<br>T150M<br>T250M<br>MK2000<br>MK2050 | EH20Z<br>ACZ310<br>ACK300<br>ACK3000 | AH120<br>AH725<br>T1215 | KCK20B<br>KC520M<br>KC920M<br>KC925M<br>KC992M | IC810<br>IC910<br>IC928 | WKP25S<br>WKK25S |
| | K30 | | | JC5080<br>JC6235 | YBD252 | | GC3040<br>GC4040 | MK3000<br>T250M | | GH130<br>AH9130 | KC930M | IC928 | WKP35S |
| S | S10 | | CA6535<br>PR1535<br>PR1210 | DH202<br>DH102<br>DH103<br>JC7518 | YBG202 | MP9120<br>VP15TF | GC1030<br>GC1025<br>GC1010 | MS2050 | ACM100<br>ACM200<br>ACK300 | AH8015 | KC510M | IC903<br>IC807<br>IC808<br>IC908 | |
| | S20 | | CA6535<br>PR1535<br>PR1210 | JC8118<br>DH111<br>IC5015<br>JC8050<br>JC7560<br>JC7550 | YBG212<br>YBS303 | MP9120<br>VP15TF<br>MP9130<br>MP9030 | GC1030<br>GC2030<br>S30T<br>GC1130<br>GC4344 | MP2050 | ACU2500<br>ACM200 | | KC525M<br>KC522M<br>KCSM30 | IC903<br>IC807<br>IC808<br>IC908<br>IC830<br>IC928 | WSM35S<br>WSM36 |
| | S30 | AP403S | PR1535 | JC8050<br>JC7560 | | MP9140 | GC2040<br>S40T | F40M | ACM300 | | KC725M<br>KCSM40 | IC328<br>IC330 | WSP45S<br>WSP46<br>WSM45X<br>WMP45G |

# Technical Information

## Chip Breaker Comparison Table for Negative Turning Insert

| ISO Classification | Application | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Finishing | PB1<br>BS<br>PA1 | QF<br>XF | FF,FS<br>UF,LF | FF1<br>MF2<br>FF2 | NF3<br>NF4<br>FP5 | SF<br>PF<br>F3P | SF,FA<br>FLP,FG<br>FC | FP,FH,F<br>FY,FS,PK | TF,01<br>AS,TSF | FA,FB<br>SP,FL<br>SU,FP,LU | GP,PP<br>XP,XF<br>VF | VB,VL<br>VF | SF<br>DF |
| | Semi finishing | PB3<br>PC3 | PF<br>LC | FN | MF5 | NS6 | NF | MLP | C,SA<br>SH | TSF | LU,SX<br>NSE | CQ,XQ<br>HQ,PQ<br>CJ,VC | VC,HC | NM |
| | Medium | PL5 | K | | UX | | | VF<br>FS | ES<br>2G | S | GX<br>HM | LD<br>ST | SH | |
| | | PD3<br>UC4 | PM,PMC<br>QM,SM<br>SMC,XM | MN<br>CT | M3<br>MF3 | NM4<br>MP5 | M3P,TF<br>PP | MT,MC<br>MP,MGP | MA,MP<br>MV,MH | TM,ZM<br>AM,NM | GU,UX<br>UG,UP,GE | GS,PS,<br>PMG,PG<br>PT,GT,XS | VM,LP<br>MP | PM<br>DM |
| | | PC4 | | | M4 | | | MG- | Standard | Standard | UZ | Standard | B25 | |
| | Roughing | PD5 | PR | RN<br>RP,RW | M5,M6<br>MR7 | NM6,NM9<br>RP5,RP7 | NR, R3P | RT<br>RGP | RP<br>GH | TH | MU, MX | PH | HR, GR | DR<br>ER |
| | Heavy roughing | PD8<br>PC8 | PR<br>QR | RM | R4<br>R5 | NR6<br>NRF | MH | RX<br>RH | HZ<br>HL | TRS | HG<br>MP | PX | GH | DR |
| | | PC9 | HR | RP | R7<br>R8 | NR8 | | HT<br>HD | HX<br>HR | TU<br>TUS | HF | | VT | HDR |
| | | PD9 | | RH | RR9 | NRR | HR | HY<br>HZ | HV | | HU<br>HW | | VH | HPR |
| M | Finishing | SC1<br>MB2 | MF | FF,LF<br>FP | MF2 | NF,NF4<br>FM5 | NF,F3M | FG,EA<br>SF | LS,FS<br>SA | SS,TF<br>SF,HRF | SU<br>EF | MQ | VP1 | EF |
| | Semi finishing | SL3 | | MS | MF1 | MS3 | PP | ML | MJ | 28 | UP | TK | HA | |
| | | MC3<br>UC4 | MM<br>MMC | MP<br>UP | MF4<br>MF3 | NM<br>NM4 | M3M | EM<br>MP | MS,GM<br>MM,MA | HRM<br>SM,SA | EX<br>GU | MS,MU<br>SU | HS | EM |
| | Roughing | MC4 | MR<br>MMR | RP | M5<br>MR7 | NR4<br>RM5 | R3M<br>MR | ET | RM,GH | TU,SH | MU | HU | VM | ER |
| K | Medium | PC4 | KM | UN<br>CT | M4 | MK5,NM5<br>NM6 | NR | MG- | MK,GK<br>Standard | CM<br>Standard | UZ<br>MU | KG<br>Standard | B25 | Standard |
| | Roughing | KC4<br>KD5 | KR | RP<br>-NMA | MR7<br>-NMA | RK5,RK7<br>-NMA | -NMA | KT,RT<br>-NMA | GH, RK<br>-NMA | CH<br>-NMA | GZ | ZS, GC<br>KH,PH<br>-NMA | GR,VR<br>VK,-NMA | DR |
| N | Semi finishing | | QM, 23 | MS, MP | | | PP | ML | MJ | P | UP, GX,<br>AG | A3, AH | HA | |
| S | Finishing | SC1<br>MB2 | MF<br>SF | FS | MF2 | NF4 | NF | EA<br>SF | FS<br>LS | TF | SU | MQ<br>SQ | VP1 | EF |
| | Medium | SL3 | | MS | MF1 | MS3 | PP | ML | MJ | 28 | UP | TK | HA | |
| | | SC3 | SM<br>SMC | UP | MR3 | NMS,NMT | TF | MP, SU,<br>MK | MS | HMM,<br>SA<br>HRM | EG,EX | MS, MU | VP3 | NM |
| | Roughing | MC4 | SR<br>SMR | RP | MR4 | NRS,NRT | NR | | GJ,RS | | MU | SG | VM | SNR |

## Chip Breaker Comparison Table for Positive Turning Insert

| ISO Classification | Application | Achteck | SANDVIK | KENNAMETAL | SECO | WALTER | ISCAR | TAEGUTEC | MITSUBISHI | TUNGALOY | SUMITOMO | KYOCERA | KORLOY | ZCC.CT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Finishing | LF | | | | | | | | | | CK | | |
| | | UF,PB1<br>BS | UF<br>PF | 11<br>UF | FF1<br>MF2 | PF4<br>FP4 | PF | FA,FG<br>FX | FV<br>FP | PF | FP<br>LU | GP<br>VF | VL | HF |
| | Semi finishing | PC2 | PM<br>UM | LF<br>MF | F2<br>M5 | FP6,PS5<br>MP4 | SM,14 | PC | MP,MV | PM,23<br>24 | SU<br>SC | HQ,XQ<br>GK | HMP | HM |
| | Roughing | KC2 | PR | | | PM5<br>RP4 | 17,19 | MT | no code | | MU | | C25 | |
| M | Finishing | PB1 | MF<br>UF | 11<br>UF | FF1<br>MF2 | PF4<br>FM4 | PF | FA<br>FG | FM<br>FV<br>LM | PF | LU | MQ | VL | EF |
| | Semi finishing | PC2 | MM<br>UM | LF<br>MF | F2<br>M5 | PS5<br>MM4 | SM<br>14 | FM | MV<br>MM | PS<br>PM | SC<br>SU | MS | MP | EM |
| | Roughing | KC2 | MR<br>UR | | | PM5<br>RM4 | 17 | MT | | | MU | MU | C25 | HR |
| K | Semi finishing | KC2 | KM | MF | F2<br>M3 | MK4 | 14 | MT<br>PMR | MK | CM | MU | | C25 | HM |
| | Roughing | KD5 | KR | | M5 | RK4<br>RK6<br>-CMW | | CMX | | -CMW | | | | HR |
| N | Semi finishing | NC2 | AL | HP | AL | PM2 | AF, AS | FL | AZ | AL | AW, AG | AH | AK, AR | LH |
| S | Finishing | UF<br>PB1 | MF | HP | F1 | PF5<br>PF4 | PF | FA | FJ | | LU | MQ | VP1<br>VL | NF<br>NGF |
| | Medium | PC2 | MM<br>UM | LF | F2 | PS5<br>PM5 | SM | FG | MS | PS | SU | HQ | MP | |
| | Roughing | | | | | | | | | | | | | SNR |

# Technical Information

## CITIZEN

Cincom product series

| product | Tool size (Gang-Type) | No | Tool size (Turret-Type) | No | Guide-bushing (D) | Max.Machining Dia.(D) |
|---|---|---|---|---|---|---|
| **A12** | 10×10×100 | 5 | | | ⌀19.05/⌀20 | ⌀12 |
| **A16** | 10×10×100 | 5 | | | ⌀19.05/⌀20 | ⌀16 |
| **A20** | 12×12×120 | 5-7 | | | ⌀25.4 | ⌀20 |
| **A25** | 12×12×120 | 5-6 | | | ⌀25.4 | ⌀25 |
| **A32** | 16×16×150 | | | | ⌀25.4 | ⌀32 |
| **B12/B12E** | 10×10×100 | 5 | | | ⌀19.05/⌀20 | ⌀12 |
| **B16E** | 10×10×100 | 5 | | | ⌀19.05/⌀20 | ⌀16 |
| **B20** | 12×12×120 | 6 | | | ⌀19.05/⌀20 | ⌀20 |
| **BL12** | 10×10×60-120 | 5 | | | ⌀20 | ⌀12 |
| **BL20** | 12×12×120 | 7 | | | ⌀20 | ⌀20 |
| **BL25** | 12×12×120 | 7 | | | ⌀20 | ⌀25 |
| **C12** | 10×10×120 | 6 | | | ⌀19.05 | ⌀12 |
| **C16** | 10×10×120 | 6 | | | ⌀19.05 | ⌀16 |
| **C32** | 16×16×130 | 5 | | | ⌀25.4 | ⌀32 |
| **E32** | | | 16×16×90 | 20 | ⌀25.4 | ⌀32 |
| **F10** | | | 10×10×60 | 10 | ⌀19.05 | ⌀10 |
| **F12** | | | 10×10×60 | 10 | ⌀19.05 | ⌀12 |
| **F16** | | | 10×10×60 | 10 | ⌀19.05 | ⌀16 |
| **F20** | | | 16×16×90 | 10 | ⌀25.4 | ⌀20 |
| **F25** | | | 16×16×90 | 10 | ⌀25.4 | ⌀25 |
| **FL25** | | | 16×16×90 | 12 | ⌀16 | ⌀25 |
| **FL42** | | | 16×16×90 | 12 | ⌀16 | ⌀42 |
| **G10** | | | 10×10×60 | 8 | | ⌀10 |
| **G16** | | | 10×10×60 | 8 | | ⌀16 |
| **G32** | | | 16×16×90 | 10 | | ⌀32 |
| **K12/K12E** | 10×10×100 | 7 | | | ⌀20 | ⌀12 |
| **L16/K16E** | 12×12×120 | 6 | | | ⌀20 | ⌀16 |
| **L10** | 8×8×100-130 | 5 | | | ⌀15.875 | ⌀10 |
| **L16/L16E** | 12×12×130 | 7 | | | ⌀19.05 | ⌀16 |
| **L20/L20E** | 12×12×130 | 7 | | | ⌀19.05 | ⌀20 |
| **L25** | 16×16×130 | 5 | | | ⌀25.4 | ⌀25 |
| **L32** | 16×16×130 | 5 | | | ⌀25.4 | ⌀32 |
| **M12** | 10×10×120 | 5 | 10×10×60 | 10 | ⌀19.05 | ⌀12 |
| **M16** | 10×10×120 | 5 | 10×10×60 | 10 | ⌀19.05 | ⌀16 |
| **M20** | 12×12×130 | 5 | 16×16×90 | 10 | ⌀25.4 | ⌀20 |
| **M32** | 16×16×130 | 5 | 16×16×90 | 10 | ⌀25.4 | ⌀32 |
| **MSL12** | 10×10×120 | | 10×10×60 | 10 | | ⌀12 |
| **R04** | 8×8×120 | 7 | | | ⌀15.875 | ⌀4 |
| **R07** | 8×8×120 | 5 | | | ⌀15.875 | ⌀7 |
| **RL02** | 16×16×60-150 | 6 | | | ⌀16/⌀20 | ⌀25 |
| **RL21** | 10×10×90 | | | | ⌀19.05 | ⌀35 |

## CITIZEN

Miyano product series

| product | Tool size (Gang-Type) | No | Guide-bushing (D) | Max.Machining Dia.(D) |
|---|---|---|---|---|
| **ABX-51TH3** | 20×20×100 | 12+12/12 | ∅25 | ∅51 |
| **ABX-64TH3** | 20×20×100 | 12+12/12 | ∅25 | ∅64 |
| **ABX-51THY** | 20×20×100 | 12+12/12 | ∅20/∅25/∅40 | ∅51 |
| **ABX-64THY** | 20×20×100 | 12+12/12 | ∅20/∅25/∅40 | ∅64 |
| **ABX-51SYY** | 20×20×100 | 12/12 | ∅20/∅25/∅40 | ∅51 |
| **ABX-64SYY** | 20×20×100 | 12/12 | ∅20/∅25/∅40 | ∅64 |
| **ABX-51SYY** | 20×20×100 | 12/12 | ∅25 | ∅51 |
| **ABX-64SYY** | 20×20×100 | 12/12 | ∅25 | ∅64 |
| **BNA-34C** | 20×20×100 | 8(16)/- | ∅25 | ∅34 |
| **BNA-42C** | 20×20×100 | 8(16)/- | ∅25 | ∅42 |
| **BNA-34S** | 20×20×100 | 8(16)/- | ∅25 | ∅34 |
| **BNA-42S** | 20×20×100 | 8(16)/- | ∅25 | ∅42 |
| **BNA-34DHY** | 20×20×100 | 8(16)/6 | ∅25 | ∅34 |
| **BNA-42DHY** | 20×20×100 | 8(16)/6 | ∅25 | ∅42 |
| **BNA-34MSY** | 20×20×100 | 8(16)/- | ∅25 | ∅34 |
| **BNA-42MSY** | 20×20×100 | 8(16)/- | ∅25 | ∅42 |
| **BNC-34C5** | 20×20×100 | 8/- | ∅25 | ∅34 |
| **BNC-34S6** | 20×20×100 | 8/- | ∅25 | ∅34 |
| **BNC-42C5** | 20×20×100 | 8/- | ∅25 | ∅42 |
| **BNC-42S6** | 20×20×100 | 8/- | ∅25 | ∅42 |
| **BND-51C/S2/SY2** | 20×20×100 | 12/- | ∅25 | ∅51 |
| **BNE-34S5/SY5** | 20×20×100 | 12/12 | ∅25 | ∅34 |
| **BNE-42S6/SY6** | 20×20×100 | 12/12 | ∅25 | ∅42 |
| **BNE-51S5/SY5** | 20×20×100 | 12/12 | ∅25 | ∅51 |
| **BNE-51S6/SY6** | 20×20×100 | 12/12 | ∅25 | ∅51 |
| **BNJ-34S3/SY3** | 20×20×100 | 12/6 | ∅25 | ∅34 |
| **BNJ-42S3/SY3** | 20×20×100 | 12/6 | ∅25 | ∅42 |
| **BNJ-51SY3** | 20×20×100 | 12/6 | ∅25 | ∅51 |
| **BNX-42SY** | 20×20×100 | 12/- | ∅25 | ∅42 |
| **BX-20S** | 16×16×100 | 8/- | ∅20 | ∅20 |
| **BX-26S** | 16×16×100 | 10/- | ∅20 | ∅26 |
| **BX-26T** | 16×16×100 | 8/- | ∅20 | ∅26 |

# Technical Information

## STAR

| product | Tool size (Gang-Type) | No | Tool size (Turret-Type) | No | Guide-bushing (D) | Max.Machining Dia.(D) |
|---|---|---|---|---|---|---|
| **ECAS-12** | 10×10×95-150 | 6 | | | ∅22 | ∅13 |
| **ECAS-20** | 12×12×80-144 | 6 | | | ∅22 | ∅20 |
| **ECAS-20T** | | | 12×12×80 | 8 St.×3 | ∅22 | ∅20 |
| **ECAS-32T** | 16×16×80-120 | 4 | 16×16×60-78 | 10 St.×2 | ∅22/∅32 | ∅32 |
| **JNC-10** | | | 8×8×65 | 6 | - | ∅10 |
| **JNC-16** | | | 10×10×80 | 6 | - | ∅16 |
| **JNC-25/32** | | | 16×16×78-120 | 10 St. | ∅22 | ∅25/∅32 |
| **KJR-16B/25B** | | | 16×16×78 | 12 St./6 St. | ∅22 | ∅16/∅25 |
| **KNC-16/20** | | | 16×16×68 | 16 St. | ∅22 | ∅16/∅20 |
| **KNC-25II/32II** | | | 16×16×78 | 20 St. | ∅22/∅32 | ∅25/∅32 |
| **RNC-10/16** | 10×10×80-120 | 5 | | | ∅22 | ∅10/∅16 |
| **RNC-16II/16BII** | 10×10×80-120 | 5 | | | ∅22 | ∅16 |
| **SA-16R** | 10×10×95-120 | 6 | | | ∅22 | ∅16 |
| **SB-12II/16II** | 12×12×95-130 | 6 | | | ∅22 | ∅12/∅16 |
| **SB-16** | 12×12×95-130 | 6 | | | ∅22 | ∅16 |
| **SB-20** | 12×12×95-130 | 6 | | | ∅22 | ∅20 |
| **SR-20J** | 12×12×100-135 | 6 | | | ∅22 | ∅20 |
| **SC-20** | 12×12×95-130 | 6 | | | ∅22 | ∅20 |
| **SE-12/16** | 10×10×95-120 | 5 | | | ∅22 | ∅13/∅16 |
| **SF-25** | | | 16×16×73-98 | 10 St.×2 | ∅22/∅32 | ∅25 |
| **SG-42** | | | 16×16×84-88 | 10 St.×2 | ∅22/∅32 | ∅42 |
| **SH-7** | 8×8×95-120 | 5 | | | ∅22 | ∅7 |
| **SH-12/16** | 10×10×95-120 | 5 | | | ∅22 | ∅13/∅16 |
| **SI-12/12C** | 10×10×80-130 | 6 | | | ∅22 | ∅13 |
| **SR-16/20** | 12×12×95-120 | 5 | | | ∅22 | ∅16/∅20 |
| **SR-32** | 16×16×100-135 | 6 | | | ∅22 | ∅32 |
| **SR-20R** | 12×12×100-135 | 6 | | | ∅22 | ∅20 |
| **SR-10J** | 8×8×67-110 | 6 | | | ∅22 | ∅10 |
| **SR-25J/32J** | 16×16×95-155 | 6 | | | ∅22/∅32 | ∅25/∅32 |
| **SST-16** | 12×12×95-115 | 5 | | | ∅22 | ∅16 |
| **ST-38** | | | 16×16×85 | 8 St.×3 | ∅22/∅32 | ∅38 |
| **SV-12** | 12×12×95-135 | 4 | 12×12×70-78 | 8 St.×3 | ∅22 | ∅13 |
| **SV-20** | 16×16×95-135 | 5 | 16×16×65-70 | 8 St. | ∅22 | ∅20 |
| **SV-32** | 16×16×95-135 | 4 | 16×16×80-88 | 10 St.×2 | ∅22/∅32 | ∅32 |
| **SV-32J/32JII** | 16×16×95-135 | 4 | 16×16×65-70 | 8 St. | ∅22/Φ32 | ∅32 |
| **SW-7** | 8×8×80-120 | 6 | | | | ∅7 |
| **SW-20** | 12×12×80-144 | 6 | | | ∅22 | ∅20 |
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## TSUGAMI

| product | Tool size (Gang-Type) | No | Tool size (Turret-Type) | No | Guide-bushing (D) | Max.Machining Dia.(D) |
|---|---|---|---|---|---|---|
| **P013H/P014H** | 8×8×100-120 | 6 | | | ⌀16 | ⌀1 |
| **P033H/P04H** | 8×8×100-120 | 6 | | | ⌀16 | ⌀3 |
| **B007-III** | 7×7×85 | 8 | | | ⌀25 | ⌀7 |
| **B074/B07-V** | 8×8×85 | 9 | | | ⌀20 | ⌀7 |
| **B0123/B0124/B0125** | 12×12×85 | 9 | | | ⌀20 | ⌀12 |
| **B012F/B012-V/BE12-V** | 12×12×85 | 9 | | | ⌀20 | ⌀12 |
| **B016MF** | 12×12×85 | 9 | | | ⌀20 | ⌀16 |
| **B018-III** | 12×12×85 | 9 | | | ⌀20 | ⌀18 |
| **B0203/B0204/B0205** | 12×12×85 | 9 | | | ⌀20 | ⌀20 |
| **B020F/B020-V/BE20-V** | 12×12×85 | 9 | | | ⌀20 | ⌀20 |
| **B026-V** | 12×12×85 | 6 | | | ⌀25 | ⌀26 |
| **B0385/B0385L** | 16×16×125 | 8 | | | ⌀32 | ⌀38 |
| **BA20-III** | 12×12×85 | 6 | | | ⌀25 | ⌀20 |
| **BA26-III** | 12×12×85 | 6 | | | ⌀25 | ⌀26 |
| **BC18** | 12×12×85 | 10 | | | ⌀25 | ⌀18 |
| **BC25** | 12×12×85 | 10 | | | ⌀10/⌀25 | ⌀25 |
| **BE18** | 12×12×85 | 9 | | | ⌀20 | ⌀18 |
| **BH20/BH20Z** | 12×12×85 | 4 | 12×12×85 | 12 St. | ⌀25/⌀32 | ⌀20 |
| **BH38** | 16×16×125 | 7 | 20×20×125 | 12 St. | ⌀25/⌀32 | ⌀38 |
| **BM07** | 8×8×85 | 9 | | | ⌀20 | ⌀7 |
| **BM163/BM164/BM165** | 12×12×85 | 9 | | | ⌀20 | ⌀16 |
| **BM20-V** | 12×12×85 | 9 | | | ⌀20 | ⌀20 |
| **BN12-III** | 12×12×85 | 7 | | | ⌀20 | ⌀12 |
| **BN20-III** | 12×12×85 | 7 | | | ⌀20 | ⌀20 |
| **BS12-V** | 12×12×85 | 8/12 | | | ⌀20/⌀25 | ⌀12 |
| **BS18-III** | 12×12×85 | 7/10 | | | ⌀14/⌀25 | ⌀18 |
| **BS20-V** | 12×12×85 | 8/12 | | | ⌀20/⌀25 | ⌀20 |
| **BS26(ABC)-V** | 16×16×100 | 7/10 | | | ⌀16/⌀25 | ⌀26 |
| **BS32C-V** | 16×16×100 | 6 | | | ⌀16/⌀25 | ⌀32 |
| **BU12** | 12×12×85 | 4 | 12×12×80 | 8 St. | ⌀20 | ⌀51 |
| **BU20** | 12×12×85 | 4 | 12×12×80 | 8 St. | ⌀20 | ⌀20 |
| **BU26** | 16×16×100 | 7 | 20×20×80 | 8 St. | ⌀20/⌀32 | ⌀26 |
| **BU38** | 16×16×100 | 7 | 20×20×80 | 8 St. | ⌀20/⌀32 | ⌀38 |
| **BW07-III** | 12×12×85 | 7 | | | ⌀20 | ⌀7 |
| **BW12-III** | 12×12×85 | 7 | | | ⌀20 | ⌀12 |
| **BW20-III** | 12×12×85 | 7 | | | ⌀20 | ⌀20 |
| **C004-III** | 13×13×60-100 | 6-8 | | | ⌀10 | ⌀120 |
| **C150** | 10×10×60-100 | 4-6 | | | ⌀8 | ⌀80 |
| **C180** | 12×12×60-100 | 4-6 | | | ⌀10 | ⌀120 |
| **C220** | 13×13×60-100 | 6-8 | | | ⌀10 | ⌀120 |
| **C300-III** | 16×16×100-130 | 6-10 | | | ⌀14 | ⌀170 |

# Technical Information

## TSUGAMI

| product | Tool size (Gang-Type) | No | Tool size (Turret-Type) | No | Guide-bushing (D) | Max.Machining Dia.(D) |
|---|---|---|---|---|---|---|
| **CH154** | 12×12×60-100 | 16 | | | ∅10 | ∅15 |
| **M34J** | | | 20×20×125 | 12 St. | ∅20/∅32 | ∅34 |
| **M42J/M42D/M42SD** | | | 20×20×125 | 12 St. | ∅25/∅32 | ∅42 |
| **M50SY-III** | | | 20×20×100 | 12 St. | ∅32 | ∅51 |
| **M50J** | | | 20×20×100 | 12 St. | ∅20/∅32 | ∅51 |
| **MB25** | | | 20×20×80 | 8 St.×2 | ∅20/∅32 | ∅25 |
| **MB35-III** | | | 20×20×80 | 8 St.×2 | ∅20/∅32 | ∅35 |
| **MB38-III** | | | 20×20×80 | 8 St.×2 | ∅20/∅32 | ∅38 |
| **MB50-III** | | | 20×20×80 | 8 St.×2 | ∅20/∅32 | ∅50 |
| **MU26** | | | 20×20×80 | 8 St.×2 | ∅20/∅32 | ∅26 |
| **MU38** | | | 20×20×80 | 8 St.×2 | ∅20/∅32 | ∅38 |
| **NU50-III** | | | 20×20×100 | 12 St. | ∅20/∅32 | ∅51 |
| **S205/S206** | 12×12×100 | 8 | | | ∅20/∅22 | ∅20 |
| **SS20** | 16×16×100 | 8 | | | ∅20/∅22 | ∅20 |
| **SS207** | 12×12×100 | 8 | | | ∅20/∅22 | ∅20 |
| **SS26** | 16×16×100 | 7 | | | ∅20/∅22 | ∅26 |
| **SS32/SS32L** | 16×16×100 | 7 | | | ∅20/∅22 | ∅32 |
| **TMB2** | | | 20×20×125 | 16 St. | ∅32 | ∅51 |
| **TMU1** | | | 20×20×125 | 16 St. | ∅32 | ∅38 |

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