



SINCE 1977

YIH TROUN

*Patent Product*

# INDEXABLE TOOL

2026.10-E



INDEXABLE UFO FAMILY ●

INDEXABLE SAW ●

INDEXABLE SIDE / DISC MILLING CUTTER ●

INDEXABLE CENTER DRILL / SPOT DRILL ●

INDEXABLE COUNTERBORE ●

INDEXABLE CHAMFER KING ●

INDEXABLE UFO MILL ●



SINCE 1977



# COMPANY INTRODUCTION



## Profile

Yih Troun set the first milestone in 1977 as a professional manufacturer of carbide Milling, Drilling, Turning cutters in Taiwan. Since Yih Troun's inception, over 48 years, we have always geared towards research and development of innovative insert type cutting tools, such as our trade mark products, Indexable Slitting Saw, UFO Mill, UFO Thread Mill and UFO T-Slot. Face the changing variety of workpiece materials and the ever-increasing production cost, we always bear in mind the motto of Mr. David Chen, our founder and President – "Increasing Production Efficiency"; that has motivated the company keeps on the leading edge of cutting tools industry. We believe the indexable carbide cutter provides the most effective solution of great tool life and impressive machining efficiency, meanwhile it precipitates machining cost saving.

  
**Indexable**



  
**Traditional**



## Milestone

- 1977** Yih Troun was established as a manufacturer of milling and turning holders.
- 1990** Started to import and distribute SECO(Sweden), Fraisa(Switzerland) and some other well-known global brands.
- 1996** Started to export our own products, e.g.: Carbide cutting tools, End Mills, we also represented other domestic outstanding brands products for export.
- 2000** Innovated the first ever “High Feed Cutter”, it obtained the patents of several countries and receive excellent reputation in worldwide relative business field in the world.
- 2005** Set up the insert production department, innovated a wide variety of indexable carbide inserts. The overall insert specification up to 1000 items.
- 2006** Took the lead in creating the “Locking Saw Blade”, and gained the technological cooperation with National Taiwan University of Science and Technology.
- 2007** Won the “Top 100 Taiwan Enterprise Award”.
- 2008** Yih Troun became the guided Factory of Ministry of Economic Affairs, R.O.C. obtained the right of priority over world patents from the United Nations.
- 2009** Yih Troun's “Locking Saw Blade”, received patent approval.
- 2010** Established the world's most complete locking type saw blade and T-slot milling cutter. Yih Troun's indexable saw won the Ringier Technology Innovation Award 2010.
- 2012** Announced the patented “Indexable Countersink”, comprehensive range from  $\varnothing 4.0 \sim \varnothing 110\text{mm}$ , it's approved by Taiwan, China and the UN patents.
- 2013** Announced the smallest indexable thread mill and taps, designed with 2 flutes from min  $\varnothing 8.0\text{mm}$ . Patent applications in progress.
- 2014** Special invitation in “Emerging Industry Incubation-Accelerating Program”, received “Top 1,000 Taiwan D&B SME Award” and “Ringier Technology Innovation Awards”.
- 2016**
- 2017** Set up German company "Yih Troun Cutting Tools GmbH".
- 2019** Announced UFO Mill officially with global patent.
- 2024** Set up Japan company "UFO Co., Ltd."

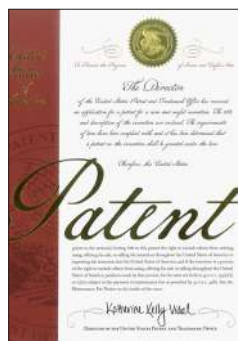




# Global Patent Certifications

2000 Indexable High Feed Cutter - Global Patent  
 2007 Taiwan Top 100 Enterprise Award  
 2009 Taiwan Government Special Advisory for Factories  
 2009 Indexable Saw Blade - Global Patent  
 2010 Ringier Metal Industry Innovation Award  
 2012 Indexable Countersink - Global Patent  
 2013 Honorary member of Taiwan Machinery Association

2014 Ringier Technology Innovation Awards, Indexable  
 Tap - Global Patent  
 2015 ~ 2016 Top 1000 D&B SME Award  
 2019-2023 Konisches, polygonales Design  
 Patentrengierung erhalten.  
 (Taiwan, European Union, United States, Canada, Russia,  
 China, Japan, South Korea )



# Customer Base

High technology, quality & performance guarantee.

Having established strong base in Taiwan, Y.T. involves operations in Aerospace, Automotive, Electrical & Electronic, Medical industries, as well as General machining and Machine building industries. During the years, we had announced and been successful in obtaining more than 40 patents granted in a number of different countries.

## COUNTRIES ISSUING FOR PATENT CERTIFICATION



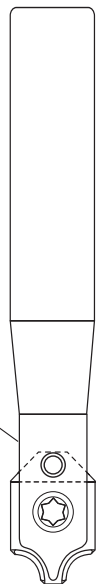
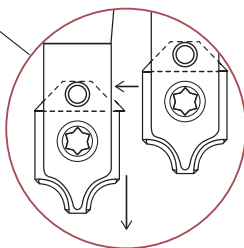
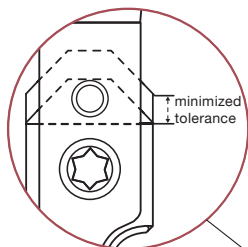
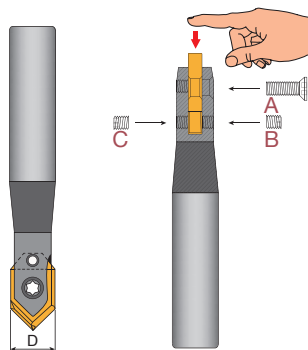
New  
System  
For Hole  
Making

# 390

## Insert Center Positioning Patent Design

### Optimal Center Positioning Design

The patented insert tapered profile was designed to minimize the tolerance  $\pm 0.008\text{mm}$  and optimizes the center positioning, it reaches the great accuracy and bear the best economic efficiency.



### 390 Clamping system

Hold the insert at front and back sides to ensure the clamping strength.

The insert is clamped exactly in the middle of the shank to achieve the best centering accuracy, especially in high speed machining.



## Applications

390 clamping system is applicable to below applications:

1. Center drill
2. Spot drill
3. Corner Rounding
4. 4 in 1 counterbore
5. Engraving



Spot  
Drill



Center  
Drill



Corner  
Rounding



4 in 1  
Counterbore



Engraving  
tool

Patent No.  
 M473882  
M474588  
M473881

Patent No.  
 201310453057.2  
201320772697.5

PCT Priority No.  
 PCT/ CN2013/086393



New  
Patent  
Design

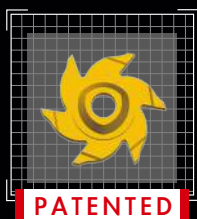
# UFO Family

## Optimal Tapered Polygon Design

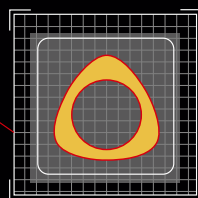
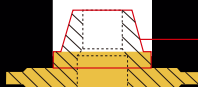
This unique UFO insert is designed with a tapered polygon profile to optimize the stability and precision. It's an optimal center positioning with varieties of different UFO inserts, easy to change the insert and keep the tolerance minimization.



Tapered



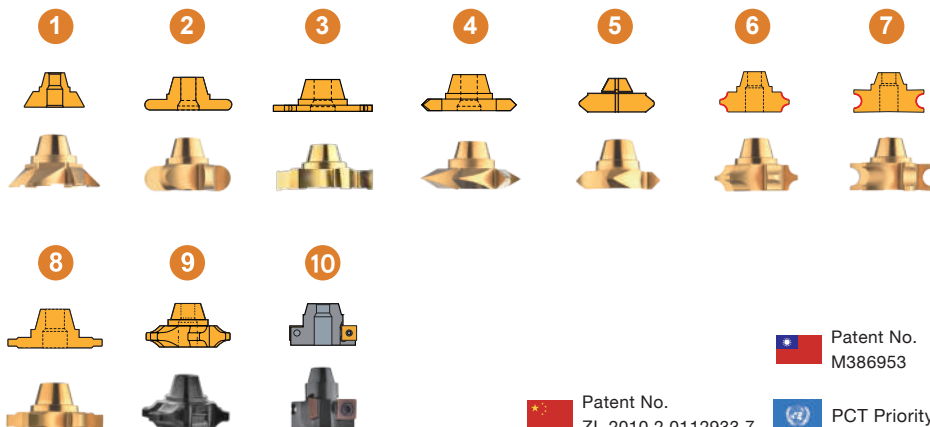
Polygon



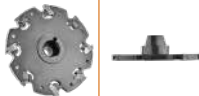


## Applications

10 different kinds of application are available with UFO family: T-slot, thread milling, radius, dovetail, chamfer, circlip, counterbore, dual corner rounding and concave, gear Milling.





| Code                   | Category                                           | Product Image                                                                       | Size Rang                                                                                                                                      | Page            |
|------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| CB3<br>CB3W            | HSS Shank<br>Carbide Shank                         |    | Dia. 6~32 mm<br>Length 50~200 mm                                                                                                               | 24<br> <br>29   |
| 3T                     | UFO T-SLOT<br>Insert                               |    | Dia. 10-37 mm<br>AE 0.5~8.0 mm                                                                                                                 | 34<br> <br>75   |
|                        | UFO T-SLOT<br>Cutter                               |    | Dia. 32/ 35/ 40/ 50/ 60/ 80/ 100 mm<br>AE 1.4 / 1.5/ 1.6/ 1.8/ 2.0/ 2.2/<br>2.5/ 2.7/ 3.0/ 3.2/ 3.5/ 4.0/4.2/<br>4.5/ 5.0/ 5.2/ 5.5/6.0/8.0 mm | 77<br> <br>82   |
|                        |                                                    |    | Dia. 50/ 60/ 80 mm<br>AE 4/ 5/ 6/ 7/ 8/ 10/ 12 mm                                                                                              | 83<br> <br>85   |
|                        | UFO T-SLOT<br>Cutter<br>(Fit round insert)         |    | Dia. 60/ 80 mm<br>4R/ 5R/ 6R                                                                                                                   | 86              |
|                        | UFO<br>Radius Insert                               |    | Dia. 20 mm<br>Radius 0.5/ 0.75/ 1.0/1.25/ 1.5/<br>2.0/ 2.5/ 3.0                                                                                | 89              |
|                        | UFO<br>Dual Corner<br>Rounding Insert              |    | Dia. 9.8/ 11.8/ 19.8 mm<br>Radius 0.5/ 0.75/ 1.0/ 1.25/ 1.5/ 2.0                                                                               | 90              |
|                        | UFO<br>Dual Chamfer<br>Insert                      |    | Dia. 9.8/ 11.8/ 14.8 mm<br>Chamfer Angle 45°                                                                                                   | 91              |
|                        | UFO<br>Dovetail Insert                             |   | Dia. 20 mm<br>Angle 45° /60°                                                                                                                   |                 |
|                        | UFO Concave<br>Radius Insert                       |  | Dia. 20 mm<br>Radius 1.0/ 1.25/ 1.5/ 2.0                                                                                                       | 92              |
| C3T                    | UFO Circlip<br>Insert                              |  | Dia. 20 mm<br>A: 1.21/ 1.41/ 1.71/ 1.96/ 2.26/<br>2.76/ 3.26/ 4.26 mm                                                                          | 93              |
| AT<br>BT/BTL<br>UT/UTL | Solid Carbide<br>Thread Milling<br>Cutter          |  | Dia. 1.95~10mm<br>Pitch 0.35~2.5mm<br>TPI 72~10                                                                                                | 99<br> <br>101  |
| 3T1                    | UFO Thread<br>Milling Insert<br>(Partial Profile ) |  | Dia. 12/ 15/ 20/ 25 mm<br>Pitch 1.0~5.0 mm /16-5 TPI                                                                                           | 102<br> <br>105 |

|     |                                             |  |                                                                                  |                                           |                 |
|-----|---------------------------------------------|--|----------------------------------------------------------------------------------|-------------------------------------------|-----------------|
| 3T  | UFO Thread Milling Insert<br>(Full Profile) |  | Pitch 1.0/ 1.25/ 1.5/ 2.0/ 2.5/ 3.0/<br>3.5mm<br>UNC 16~8 TPI      BSW 16~8 TPI  |                                           | 106<br> <br>115 |
| B3T | UFO Back Boring Cutter                      |  | Entrance<br>10.4/ 12.4<br>16.4/ 25.4                                             | Back Bore<br>18-22/ 23-30<br>31-40/ 41-60 | 131<br> <br>133 |
| 3T  | Gear Milling insert                         |  | Dia. 22 "DIN 3972"<br>Module 0.5/ 0.6/ 0.7/ 0.8/ 0.9/ 1.0/<br>1.25/ 1.5/ 1.75 mm |                                           | 138<br> <br>146 |

| Code        | Category                        | Product Image                                                                     | Size Rang                                            | Page            |
|-------------|---------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------|-----------------|
| BB3<br>BB3W | Common Holders                  |  | Dia. 10/ 12/ 14/ 16/ 18/ 20/ 25mm<br>Length 60~180mm | 161<br> <br>164 |
| 3B          | Milling Heads                   |  | Dia. 10/11/12/13/14/15/16/17/18/<br>20/21/25mm       | 166<br> <br>180 |
| 3BH         | High Feed Milling Heads         |  | Dia. 10/ 11/ 12/ 13/ 16/ 17/ 20/<br>21/ 25mm         | 185             |
| 3BC         | High Feed Chamfer Milling Heads |  | Dia. 10/ 13/ 16<br>Angle 30° /45° /60°               | 187             |

| Code | Category            | Product Image                                                                       | Size Rang                                                                                                                                                             | Page            |
|------|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| SB   | Saw Blade           |   | Dia. 50/ 63/ 80/ 100/ 125/ 160/<br>200/ 250/ 285/ 300 mm<br>AE 1.0/ 1.2/ 1.4/ 1.5/ 1.6/ 1.8/ 2.0/<br>2.2/ 2.5/ 2.7/ 3.0/ 3.2/ 3.5/ 4.0/<br>4.2/ 4.5/ 5.0/ 5.2/ 5.5 mm | 200<br> <br>213 |
| SBL  | Saw Milling Cutter  |  | Dia. 80/ 100/ 125/ 160 mm<br>AE 1.4/ 1.5/ 1.6/ 1.8/ 2.0/ 2.2/ 2.5/<br>2.7/ 3.0/ 3.2/ 3.5/ 4.0/ 4.2/ 4.5/<br>5.0/ 5.2/ 5.5 mm                                          | 216<br> <br>218 |
| STL  | Side Milling Cutter |  | Dia. 80/ 100/ 125/ 160 mm<br>AE 4/ 5 mm                                                                                                                               | 219             |
| BLL  | Adapter Holder      |  | Dia. 45/ 58 mm<br>I.D. 22/ 25.4/ 31.75/ 32 mm                                                                                                                         | 220             |
| SCL  | Side Milling Cutter |  | Dia. 160/ 200/ 250 mm<br>AE 6/ 8/ 10/ 12 mm                                                                                                                           | 223             |

| Code       | Category                | Product Image                                                                      | Size Rang                                                 | Page            |
|------------|-------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------|
| CEL        | Disc Milling Cutter     |   | Dia. 160/ 200/ 250 mm<br>AE 14/ 16/ 18/ 20/ 22/ 25/ 30 mm | 224<br> <br>225 |
| CWL        | Back Milling Cutter     |   | Dia. 160/ 200/ 250 mm<br>AE 12 mm                         | 226             |
| BCL        | Adapter Holder          |   | Dia. 65/ 90 mm<br>I.D. 32/ 31.75/ 40/ 38.1/ 60/ 50.8 mm   | 226<br> <br>227 |
| SC         | Side Milling Cutter     |   | Dia. 80/ 100/ 125/ 160 mm<br>AE 4/ 5/ 6/ 7/ 8/ 10/ 12 mm  | 229<br> <br>234 |
| ST         |                         |   | Dia. 80/ 100/ 125/ 160 mm<br>AE 6/ 7/ 8/ 10/ 12 mm        | 235<br> <br>236 |
| CE         | Disc Milling Cutter     |   | Dia. 80/ 100/ 125 mm<br>AE 14/ 16/ 18/ 20/ 22/ 25/ 30 mm  | 238<br> <br>240 |
| CW         |                         |   | Dia 80/ 100/ 125 mm<br>AE 14/ 16/ 18/ 20/ 22/ 25/ 30 mm   | 241<br> <br>243 |
| CB         | Back Milling Cutter     |   | Dia. 100/ 125 mm<br>AE 12 mm                              | 246             |
| CDL<br>CDR | Straddle Milling Cutter |  | Dia. 100/ 125/ 160 mm<br>AE 12 mm                         | 247             |

| Code      | Category       | Product Image                                                                       | Size Rang                                                                                                         | Page |
|-----------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------|
| 13        | Spot Drill     |  | Dia. 8/ 10/ 12/ 16 mm<br>Angle 90° / 90° +142° / 142°                                                             | 273  |
| GA        | Centralizer    |  | I.D. 8.2/ 10.2/ 12.2/ 16.2 mm                                                                                     | 285  |
| TU1<br>TU | Center Drill   |  | Pilot Dia. 1.6/ 2.0/ 2.5/ 3.0/ 4.0/ 5.0/ 6.0/ 8.0mm<br>Angle<br>1) A type 60°      3) D type 60°<br>2) C type 90° | 286  |
|           | Engraving Tool |  | E type 60°<br>Tip Width 0.15 mm                                                                                   | 290  |

| Code | Category                             | Product Image                                                                     | Size Rang                                                                   | Page |
|------|--------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------|
| 14   | 4 IN 1 Counter Bore                  |  | Dia. M3/ M3.5/ M4/ M5/ M5.5/ M6/ M6.5/ M7/ M7.5/ M8/ M9/ M10/ M11/ M12/ M14 | 301  |
| CBK  | Counter Bore for Traditional Machine |  | Dia. 14/ 15/ 18/ 20/ 22/ 24/ 25/ 26/ 27 mm                                  | 310  |
| HBM  | Counter Bore for Traditional Machine |  | Dia. 26/ 29/ 33/ 36/ 40/ 50/ 58 mm                                          | 311  |
| CBI  | Counter Bore for CNC Machine         |  | Dia. 15/ 18/ 20/ 24/ 26/ 29/ 33/ 36/ 40/ 50/ 58 mm<br>Chamfer Angle 45°     | 312  |

| Code      | Category                             | Product Image                                                                       | Size Rang                                              | Page |
|-----------|--------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|------|
| CI        | Countersink                          |    | Dia. 4~39 mm<br>Countersink Angle<br>60°/90°/100°/120° | 320  |
| HCI       |                                      |    | Dia. 4~39 mm<br>Countersink Angle<br>60°/90°/120°      | 321  |
|           |                                      |    | Dia. 20~110 mm<br>Countersink Angle 90°                | 322  |
| C         | Chamfer Cutter<br>for<br>CNC Machine |    | Dia. 10~70 mm<br>Angle 30°/45°                         | 328  |
| MC<br>HMC |                                      |  | Dia. 11~45 mm<br>Angle 45°                             | 330  |
| 15        | Corner<br>Rounding<br>Cutter         |  | Dia. 16/ 25 mm<br>Radius R1~R10                        | 334  |

| Code | Category                           | Product Image                                                                       | Size Rang                                           | Page |
|------|------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------|------|
| XD   | Dovetail Milling Cutter            |  | Dia. 40/ 60/ 80 mm<br>Angle 45°/50°/55°/60°         | 339  |
| XV   |                                    |  | Dia. 120 mm<br>Angle 45°/50°/55°/60°                | 340  |
| MO   | Face Milling Cutter for Alluminium |  | Dia. 80/ 100/ 125/ 160/ 200/ 250/ 300 mm<br>AP 3 mm | 347  |

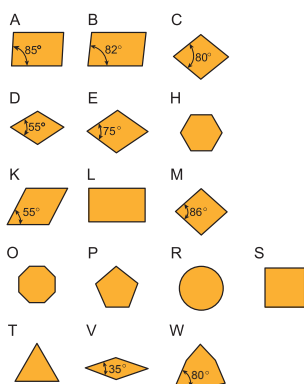
# TECHNICAL GUIDE

## Code Keys

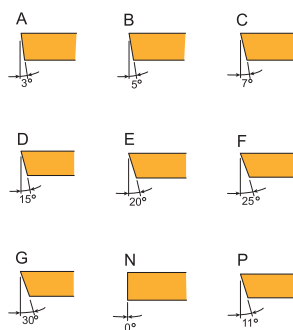
Insert-Metric series, extract from the international standard. Listed dimensions are the theory measurement for reference. The normal size and tolerance of type codes indicaced, on the following list are exactly different. To check the exact tolerance of each insert, please refer to the relative page of inserts.



### 1. Shape



### 2. Side Clearance Angle



0 = Special

# Code Keys

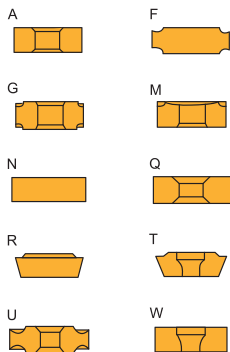
| 3.Tolerances   |                                                                                     |                                                                                      |                                                                                     |                      |      |      |       |      |        |       |      |       |      |
|----------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------|------|------|-------|------|--------|-------|------|-------|------|
| Tol.-<br>Class | Tolerance +/-mm                                                                     |                                                                                      |                                                                                     | For d, dimension(mm) |      |      |       |      |        |       |      |       |      |
|                |  m |  AE |  d | 3.175*               | 4.76 | 6.35 | 9.525 | 12.7 | 15.875 | 19.05 | 25.4 | 31.75 | 38.1 |
| A              | 0.005                                                                               | 0.025                                                                                | 0.025                                                                               | •                    | •    | •    | •     | •    | •      | •     | •    | •     | •    |
| E              | 0.025                                                                               | 0.025                                                                                | 0.025                                                                               | •                    | •    | •    | •     | •    | •      | •     | •    | •     | •    |
| F              | 0.005                                                                               | 0.025                                                                                | 0.013                                                                               | •                    | •    | •    | •     | •    | •      | •     | •    | •     | •    |
| G              | 0.025                                                                               | 0.13                                                                                 | 0.025                                                                               | •                    | •    | •    | •     | •    | •      | •     | •    | •     | •    |
| H              | 0.013                                                                               | 0.025                                                                                | 0.013                                                                               | •                    | •    | •    | •     | •    | •      | •     | •    | •     | •    |
| J              | 0.005                                                                               | 0.025                                                                                | 0.05                                                                                | •                    | •    | •    | •     |      |        |       |      |       |      |
|                | 0.005                                                                               | 0.025                                                                                | 0.08                                                                                |                      |      |      |       | •    |        |       |      |       |      |
|                | 0.005                                                                               | 0.025                                                                                | 0.10                                                                                |                      |      |      |       |      | •      | •     |      |       |      |
|                | 0.005                                                                               | 0.025                                                                                | 0.13                                                                                |                      |      |      |       |      |        |       | •    |       |      |
|                | 0.005                                                                               | 0.025                                                                                | 0.15                                                                                |                      |      |      |       |      |        |       |      | •     | •    |
| K              | 0.013                                                                               | 0.025                                                                                | 0.05                                                                                | •                    | •    | •    | •     |      |        |       |      |       |      |
|                | 0.013                                                                               | 0.025                                                                                | 0.08                                                                                |                      |      |      |       | •    |        |       |      |       |      |
|                | 0.013                                                                               | 0.025                                                                                | 0.10                                                                                |                      |      |      |       |      | •      | •     |      |       |      |
|                | 0.013                                                                               | 0.025                                                                                | 0.13                                                                                |                      |      |      |       |      |        |       | •    |       |      |
|                | 0.013                                                                               | 0.025                                                                                | 0.15                                                                                |                      |      |      |       |      |        |       |      | •     | •    |
| M              | 0.08                                                                                | 0.13                                                                                 | 0.05                                                                                | •                    | •    | •    | •     |      |        |       |      |       |      |
|                | 0.13                                                                                | 0.13                                                                                 | 0.08                                                                                |                      |      |      |       | •    |        |       |      |       |      |
|                | 0.15                                                                                | 0.13                                                                                 | 0.10                                                                                |                      |      |      |       |      | •      | •     |      |       |      |
|                | 0.18                                                                                | 0.13                                                                                 | 0.13                                                                                |                      |      |      |       |      |        |       | •    |       |      |
|                | 0.20                                                                                | 0.13                                                                                 | 0.15                                                                                |                      |      |      |       |      |        |       |      | •     | •    |
| U              | 0.13                                                                                | 0.13                                                                                 | 0.08                                                                                | •                    | •    | •    | •     |      |        |       |      |       |      |
|                | 0.20                                                                                | 0.13                                                                                 | 0.13                                                                                |                      |      |      |       | •    |        |       |      |       |      |
|                | 0.27                                                                                | 0.13                                                                                 | 0.18                                                                                |                      |      |      |       |      | •      | •     |      |       |      |
|                | 0.38                                                                                | 0.13                                                                                 | 0.25                                                                                |                      |      |      |       |      |        |       | •    | •     | •    |





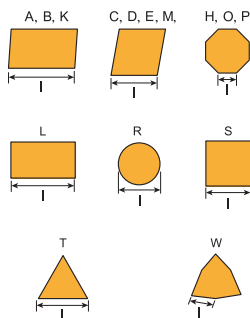
# Inserts Code Keys

## 4. Type

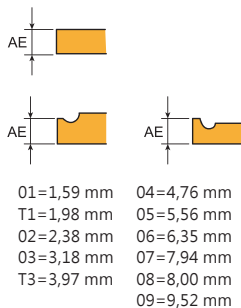


X=Special

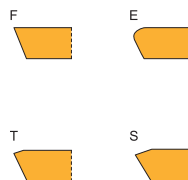
## 5. Cutting edge length



## 6. Thickness

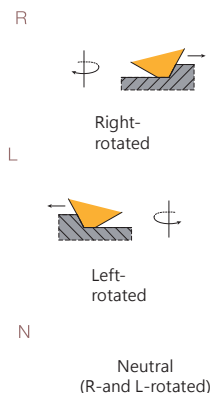


## 8. Cutting edge designation

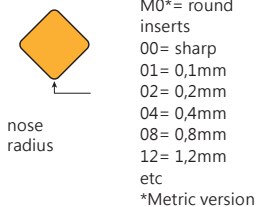
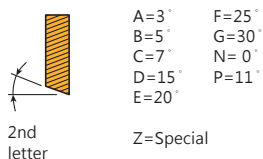
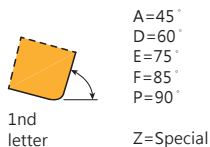


Not mandatory information

## 9. Direction of cutting



## 7. Insert with corner chamfers / nose radius



## 10. Internal designation

Machining conditions  
E = Easy  
M = Medium  
D = Difficult

## 11. For TAP only

Tolerance : 6H - 8H

# Insert Grades

## Grades

Cemented carbide is an alloy of tungsten carbide (WC) and cobalt (Co). Cubic carbides like tantalum carbide (TaC), titanium carbide (TiC) and niobium carbide (NbC) can also be added. Tungsten carbide is the main component and gives the hardness. Cobalt is the binder phase and gives the toughness. Cubic carbides are added in order to affect properties like hot hardness, deformation resistance and chemical wear resistance.

Most modern grades are coated with either CVD (Chemical Vapour Deposition) or PVD (physical Vapour Deposition) technique.

The coating improves the wear resistance of the grade.

With CVD-technique layers of titanium carbide (TiC), titanium nitride (TiN), titanium carbonitride (Ti(C,N)) and alumina (Al<sub>2</sub>O<sub>3</sub>) can be made. CVD-coated grades are suitable for wear resistance in demanding applications with high feed rates and intermediate to high cutting speed.

The common coating materials made by PVD-technique are titanium nitride (TiN), titanium carbonitride (Ti(C,N)) and titanium aluminide nitride ((Ti,Al)N). PVD-coated grades are recommended for applications with low feed rate where high edge toughness is required. PVD-coated grades are suitable for applications with low to intermediate cutting speed.

|     | Grades | P Steel |     |     |     |     | M Stainless Steel |     |     |     | K Cast iron |     |     |     | N Non Ferrous Metal |     |     |     | S Heat resistant super alloys |     |     |     | H Hardened steel |     |     |     |     |     |     |
|-----|--------|---------|-----|-----|-----|-----|-------------------|-----|-----|-----|-------------|-----|-----|-----|---------------------|-----|-----|-----|-------------------------------|-----|-----|-----|------------------|-----|-----|-----|-----|-----|-----|
|     |        | P01     | P10 | P20 | P30 | P40 | P50               | M01 | M10 | M20 | M30         | M40 | K01 | K10 | K20                 | K30 | K40 | N01 | N10                           | N20 | N30 | S01 | S10              | S20 | S30 | H01 | H10 | H20 | H30 |
| PVD | K10    |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |
|     | B100   |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |
|     | B350   |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |
|     | C250   |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |
|     | C350   |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |
|     | F20    |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |
|     | F30    |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |
|     | CE100  |         |     |     |     |     |                   |     |     |     |             |     |     |     |                     |     |     |     |                               |     |     |     |                  |     |     |     |     |     |     |

## Insert Grades

### PVD coated grades

|                                                                                     |      |                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | B100 | B100 is a unique rare metal grade with great heat and cracking resistance.<br><br>Tialn                                                                                                             |
|    | B350 | B350 has enhanced the toughness of the tungsten carbide to increase the durability. Specially used in the application of 390 design such as spot drill, center drill, 4-1 counterbore.<br><br>Tialn |
|    | C250 | C250 has a tough substrate in steel machining.<br><br>Helica                                                                                                                                        |
|    | C350 | C350 is the best recommend grade for steel machining. Especially in 390 system. ( Spot Drill, 4-1 Counterbore, Corner Rounding )<br><br>Helica                                                      |
|    | F20  | This substrate is in accordance to the ISO K, N classification. For application in Cast iron and non-ferrous metal such as Aluminum, copper or plastic ... etc.<br><br>Tin                          |
|  | F30  | F30 is the substrate with new and heat-resistance coating suitable for cast iron.<br><br>Helica                                                                                                     |

### Uncoated grades

|                                                                                     |     |                                                                           |
|-------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------|
|  | K10 | Hard, wear resistant grade for milling in Aluminum and Non-ferrous metal. |
|-------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------|

# Insert Geometries

## Designation system

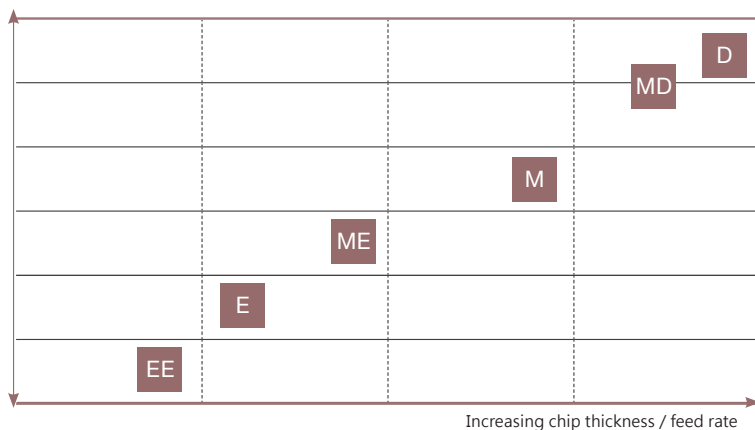
The Y.T. designation system for milling inserts has been developed to provide users with better guidance concerning the fields of application for various insert geometries.



Difficult machining conditions, strong insert cutting edge.



Easy machining conditions, sharp insert cutting edge.



Examples of different insert geometries for a specific insert type.



..AFTN-D Negative and very protected cutting edge



..AFTN-MD Negative and protected cutting edge



..AFTN-M Positive and protected cutting edge



..AFTN-ME Very positive and protected cutting edge



..AFN-E Very positive and very sharp cutting edge



..AFN-EE Very positive and very extremely cutting edge



# UFO FAMILY SERIES

## One Shank for Max. Over 400 types insert

"UFO" design is the Y.T.'s innovative-patented insert positioning with tapered polygonal design to achieve higher centering accuracy. It is named after UFO space ship because of its insert design. The holders of the entire series can fit in different types of inserts: T-slot, Thread Milling, Radius, Dual Corner Rounding, Concave Radius, Dual Chamfer, Dovetail, Circlip, Back Boring, Gear Machining. The holders are available in different diameters and lengths. Totally 6 shanks fit more than 1400 inserts.



Video



Patent No.  
M530197



Patent No.  
ZL 201620538204.5



PCT Priority



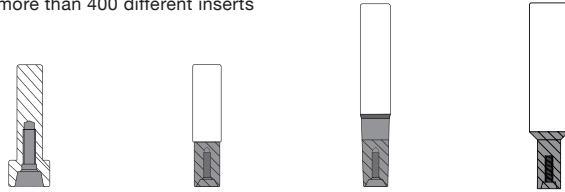


# Design Of UFO Family

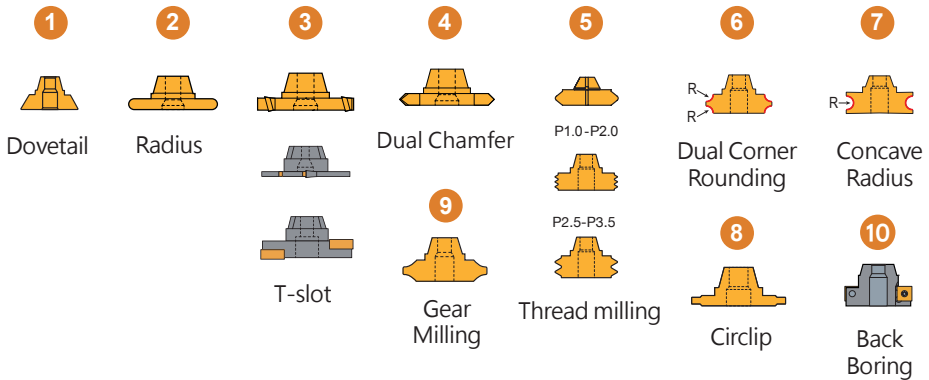
## Shank

1. High precision HSS shank (HRC60) with good stability and excellent strength.
2. Comprehensive toolholders with 4 different types of shank, available with overhangs from 40~240mm.
3. The same shank can fit more than 400 different inserts

## Shank



## Insert



## Tapered Polygon (Grinded)

### Capacity

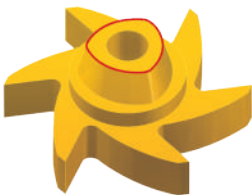
Polygon positioning design has a greater torque capacity than any other positioning designs, the load is generated over a generous area which assure the strength of the shaft.

### Multi Application

Tapered polygon design offers a simple connection with different inserts and applications.

### Center Positioning

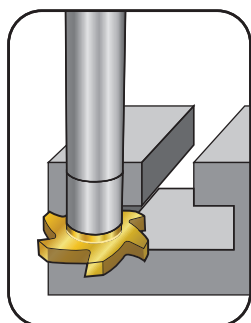
The interface is tapered design for keeping eccentricity  $\leq 0.01\text{mm}$ , which enhance the cutting speed and insert tool life.



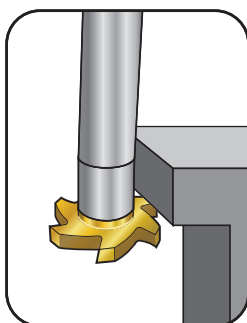
# UFO Series T-Slot Cutter Machining Applications



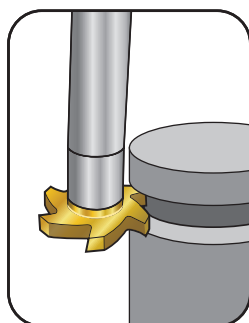
UFO Family



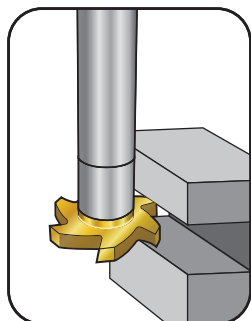
T-Slot Milling



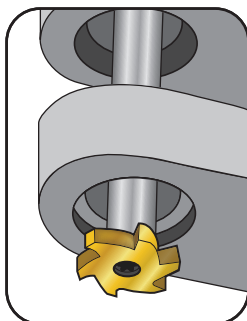
Backside Undercutting



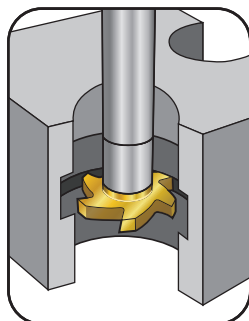
Circular Groove



Straight Groove



Bottom Circular Groove



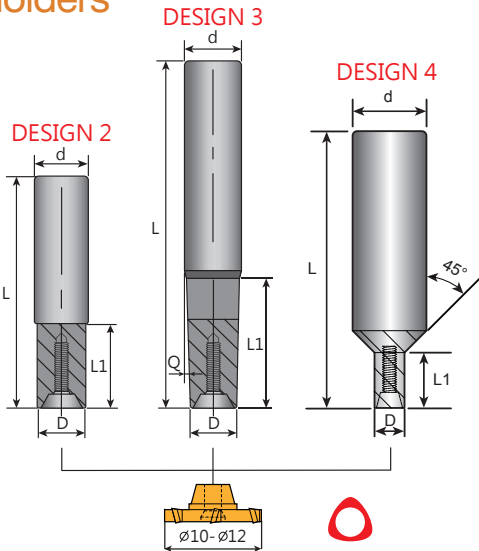
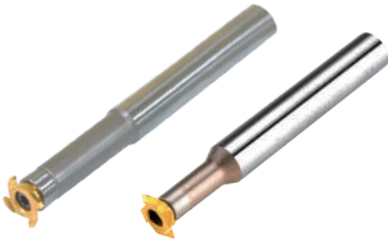
Internal Circular Groove





# PRODUCT SPECIFICATIONS

## UFO Family Common Toolholders



### CB3

• HSS Shanks

| Order code      | Dimensions (mm) |    |     |    |    | Design |  | Inserts           | Screw  | Key  |
|-----------------|-----------------|----|-----|----|----|--------|-----------------------------------------------------------------------------------|-------------------|--------|------|
|                 | D               | d  | L   | L1 | Q  |        |                                                                                   |                   |        |      |
| CB3-0606-55-12  | 6.5             | 6  | 55  | 10 | -  | 2      | 0.07                                                                              | Ø10<br>Ø11<br>Ø12 | C03012 | T09P |
| CB3-0808-80-12  | 7.9             | 8  | 80  |    |    |        | 0.09                                                                              |                   |        |      |
| CB3-1006-100-12 | 6.5             | 10 | 100 | 20 | 1° | 3      | 0.11                                                                              |                   |        |      |
| CB3-1008-100-12 | 7.9             |    |     | 30 |    |        | 0.11                                                                              |                   |        |      |
| CB3-1606-60-12  | 6.5             | 16 | 60  | 12 | -  | 4      | 0.24                                                                              |                   |        |      |
| CB3-1608-65-12  | 7.9             |    | 65  | 16 |    |        | 0.26                                                                              |                   |        |      |

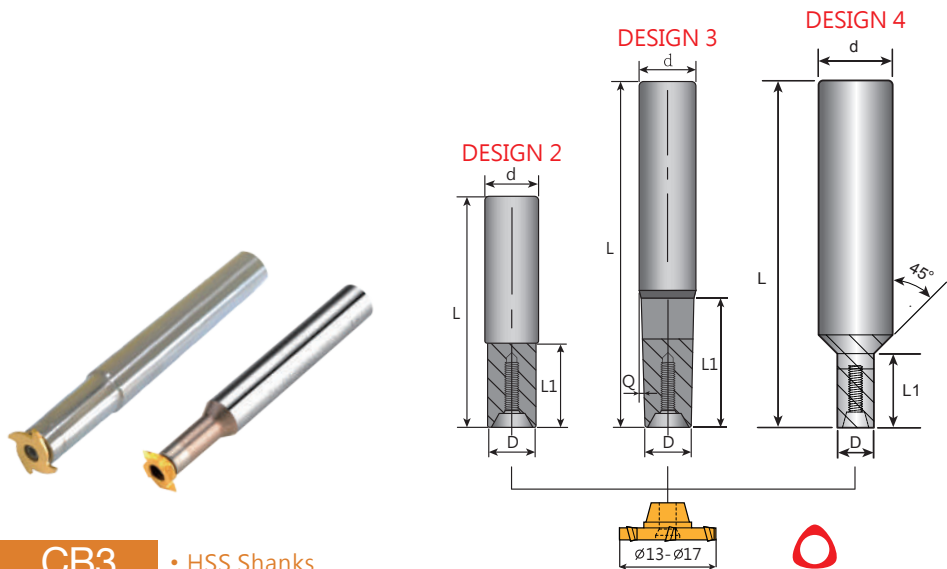
### CB3W

• Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |    | Design |  | Inserts           | Screw  | Key  |
|------------------|-----------------|----|-----|----|----|--------|-------------------------------------------------------------------------------------|-------------------|--------|------|
|                  | D               | d  | L   | L1 | Q  |        |                                                                                     |                   |        |      |
| CB3W-0808-80-12  | 7.9             | 8  | 80  | 20 | -  | 2      | 0.11                                                                                | Ø10<br>Ø11<br>Ø12 | C03012 | T09P |
| CB3W-1008-100-12 | 7.9             | 10 | 100 | 35 | 1° | 3      | 0.16                                                                                |                   |        |      |

• To check the max. AR, please refer to the page of relative inserts or cutters.

# UFO Family Common Toolholders



CB3

• HSS Shanks

| Order code      | Dimensions (mm) |    |     |    |    | Design |  KG | Inserts                                                                                 | Screw  | Key  |
|-----------------|-----------------|----|-----|----|----|--------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------|------|
|                 | D               | d  | L   | L1 | Q  |        |                                                                                      |                                                                                         |        |      |
| CB3-0808-55-15  | 7.9             | 8  | 55  | 10 | -  | 2      | 0.08                                                                                 | <div> <div>Ø13</div> <div>Ø14</div> <div>Ø15</div> <div>Ø16</div> <div>Ø17</div> </div> | C03012 | T09P |
| CB3-1010-90-15  | 9.9             | 10 | 90  |    |    |        | 0.11                                                                                 |                                                                                         |        |      |
| CB3-1208-110-15 | 7.9             | 12 | 110 | 30 | 1° | 3      | 0.14                                                                                 |                                                                                         |        |      |
| CB3-1210-120-15 | 9.9             |    | 120 |    |    |        | 0.15                                                                                 |                                                                                         |        |      |
| CB3-1608-75-15  | 7.9             | 16 | 75  | 16 | -  | 4      | 0.24                                                                                 |                                                                                         |        |      |
| CB3-1610-80-15  | 9.9             |    | 80  | 20 |    |        | 0.26                                                                                 |                                                                                         |        |      |

CB3W

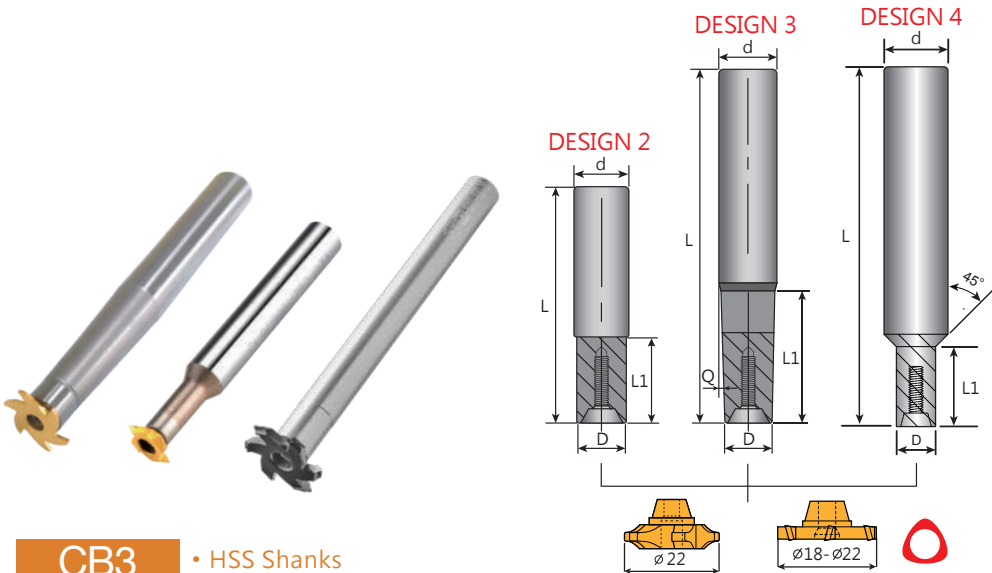
• Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |    | Design |  KG | Inserts                                                                                 | Screw  | Key  |
|------------------|-----------------|----|-----|----|----|--------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------|------|
|                  | D               | d  | L   | L1 | Q  |        |                                                                                        |                                                                                         |        |      |
| CB3W-1010-90-15  | 9.9             | 10 | 90  | 20 | -  | 2      | 0.15                                                                                   | <div> <div>Ø13</div> <div>Ø14</div> <div>Ø15</div> <div>Ø16</div> <div>Ø17</div> </div> | C03012 | T09P |
| CB3W-1208-110-15 | 7.9             | 12 | 110 | 35 | 1° | 3      | 0.21                                                                                   |                                                                                         |        |      |
| CB3W-1210-120-15 | 9.9             |    | 120 |    |    |        | 0.24                                                                                   |                                                                                         |        |      |

• To check the max. AR, please refer to the page of relative inserts or cutters.



# UFO Family Common Toolholders



## CB3 • HSS Shanks

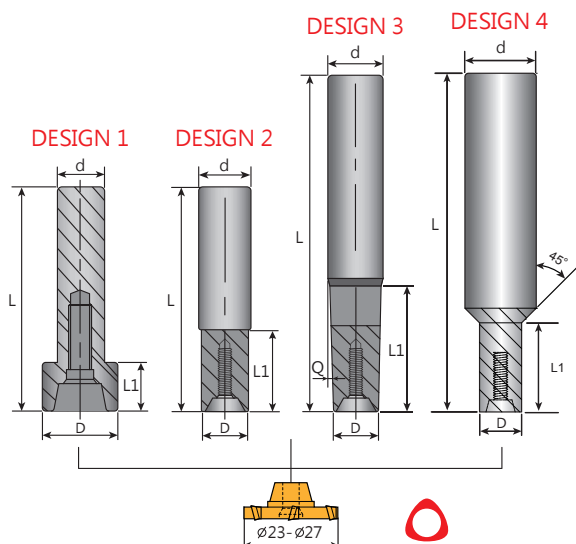
| Order code      | Dimensions (mm) |    |     |    |      | Design |  KG | Inserts                              | Screw  | Key  |
|-----------------|-----------------|----|-----|----|------|--------|--------------------------------------------------------------------------------------|--------------------------------------|--------|------|
|                 | D               | d  | L   | L1 | Q    |        |                                                                                      |                                      |        |      |
| CB3-1010-80-20  | 9.8             | 10 | 80  | 12 | -    | 2      | 0.12                                                                                 | ø 18<br>ø 19<br>ø 20<br>ø 21<br>ø 22 | C03513 | T10P |
| CB3-1010-100-20 |                 |    | 100 |    |      |        | 0.13                                                                                 |                                      |        |      |
| CB3-1210-90-20  |                 | 12 | 90  | 25 | 3.2° | 3      | 0.14                                                                                 |                                      |        |      |
| CB3-1210-130-20 |                 |    | 130 | 40 | 1.7° |        | 0.18                                                                                 |                                      |        |      |
| CB3-1610-90-20  | 11.8            | 16 | 90  | 20 | -    | 4      | 0.20                                                                                 |                                      |        |      |
| CB3-1612-95-20  |                 |    | 95  | 25 | -    | 4      | 0.23                                                                                 |                                      |        |      |
| CB3-1612-150-20 |                 |    | 150 | 55 | 2.4° | 3      | 0.29                                                                                 |                                      |        |      |
| CB3-1616-150-20 | 15.8            |    |     | 20 | -    | 2      | 0.31                                                                                 |                                      |        |      |

## CB3W • Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |   | Design |  KG | Inserts                              | Screw  | Key  |
|------------------|-----------------|----|-----|----|---|--------|----------------------------------------------------------------------------------------|--------------------------------------|--------|------|
|                  | D               | d  | L   | L1 | Q |        |                                                                                        |                                      |        |      |
| CB3W-1010-100-20 | 9.8             | 10 | 100 | 20 | - | 2      | 0.18                                                                                   | ø 18<br>ø 19<br>ø 20<br>ø 21<br>ø 22 | C03513 | T10P |
| CB3W-1212-150-20 | 11.8            | 12 | 150 | 20 | - | 2      | 0.32                                                                                   |                                      |        |      |

• To check the max. AR, please refer to the page of relative inserts or cutters.

# UFO Family Common Toolholders



## CB3

• HSS Shanks

| Order code      | Dimensions (mm) |    |     |    |      | Design |  KG | Inserts                              | Screw  | Key  |
|-----------------|-----------------|----|-----|----|------|--------|--------------------------------------------------------------------------------------|--------------------------------------|--------|------|
|                 | D               | d  | L   | L1 | Q    |        |                                                                                      |                                      |        |      |
| CB3-1012-50-25  | 11.8            | 10 | 50  | 10 | -    | 1      | 0.11                                                                                 | ø 23<br>ø 24<br>ø 25<br>ø 26<br>ø 27 | C04017 | T15P |
| CB3-1212-90-25  |                 | 12 | 90  | 12 | -    | 2      | 0.16                                                                                 |                                      |        |      |
| CB3-1212-110-25 |                 | 16 | 110 | 12 | -    | 3      | 0.18                                                                                 |                                      |        |      |
| CB3-1612-110-25 |                 |    | 150 | 35 | 4.2° |        | 0.24                                                                                 |                                      |        |      |
| CB3-1612-150-25 |                 |    |     | 55 | 2.4° |        | 0.31                                                                                 |                                      |        |      |
| CB3-2012-95-25  |                 | 20 | 95  | 25 | -    | 4      | 0.50                                                                                 |                                      |        |      |
| CB3-2016-95-25  | 15.8            |    |     | 30 | -    |        | 0.55                                                                                 |                                      |        |      |
| CB3-2020-150-25 | 19.8            |    | 150 | 20 | -    | 2      | 0.46                                                                                 |                                      |        |      |

## CB3W

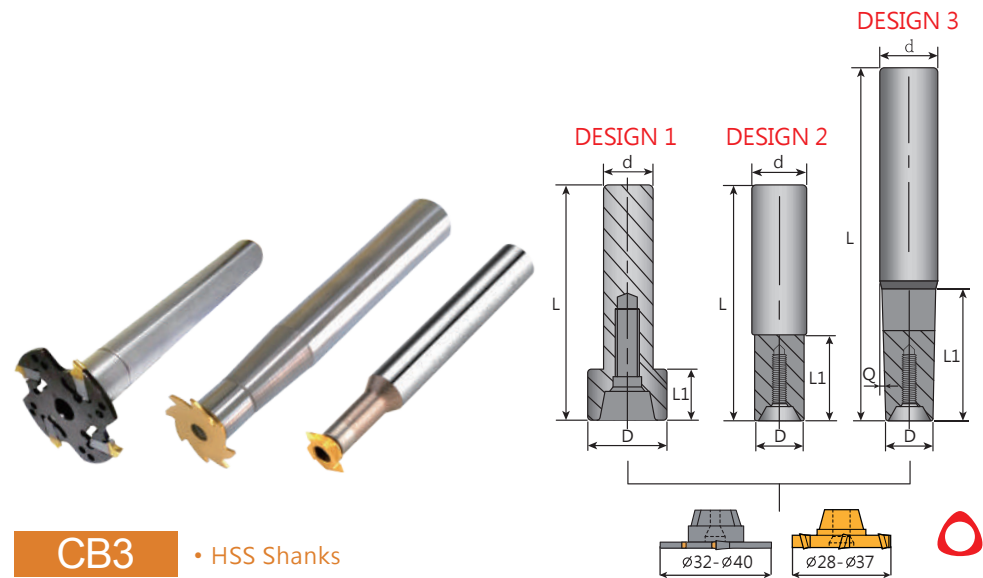
• Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |   | Design |  KG | Inserts                         | Screw  | Key  |
|------------------|-----------------|----|-----|----|---|--------|----------------------------------------------------------------------------------------|---------------------------------|--------|------|
|                  | D               | d  | L   | L1 | Q |        |                                                                                        |                                 |        |      |
| CB3W-1212-110-25 | 11.8            | 12 | 110 | 25 | - | 2      | 0.26                                                                                   | ø23<br>ø24<br>ø25<br>ø26<br>ø27 | C04017 | T15P |
| CB3W-1616-150-25 | 15.8            | 16 | 150 | 25 |   |        | 0.54                                                                                   |                                 |        |      |

• To check the max. AR, please refer to the page of relative inserts or cutters.



# UFO Family Common Toolholders



## CB3

• HSS Shanks

| Order code      | Dimensions (mm) |     |     |    |      | Design |  KG | Inserts                                              | Screw  | Key  |      |
|-----------------|-----------------|-----|-----|----|------|--------|--------------------------------------------------------------------------------------|------------------------------------------------------|--------|------|------|
|                 | D               | d   | L   | L1 | Q    |        |                                                                                      |                                                      |        |      |      |
| CB3-1016-50-30  | 15.8            | 10  | 50  | 10 | -    | 1      | 0.13                                                                                 | ø 28<br>ø 29<br>ø 30<br>ø 32<br>ø 35<br>ø 37<br>ø 40 | C05016 | T20P |      |
| CB3-1616-120-30 |                 | 16  | 120 | 15 |      | 2      | 0.28                                                                                 |                                                      |        |      |      |
| CB3-1616-150-30 |                 |     | 150 | 45 | 3.8° |        | 0.34                                                                                 |                                                      |        |      |      |
| CB3-2016-150-30 |                 | 20  | 180 | 70 | 2.0° | 3      | 0.45                                                                                 |                                                      |        |      |      |
| CB3-2016-180-30 |                 |     | 180 | 70 | 2.0° | 3      | 0.51                                                                                 |                                                      |        |      |      |
| CB3-2020-90-30  | 19.8            |     | 90  | 20 | -    | 2      | 0.54                                                                                 |                                                      |        |      |      |
| CB3-2020-150-30 |                 | 150 | 20  | -  |      |        | 2                                                                                    |                                                      |        |      | 0.56 |
| CB3-2020-180-30 |                 | 180 | 20  | -  |      |        | 2                                                                                    |                                                      |        |      | 0.58 |

## CB3W

• Carbide Shanks

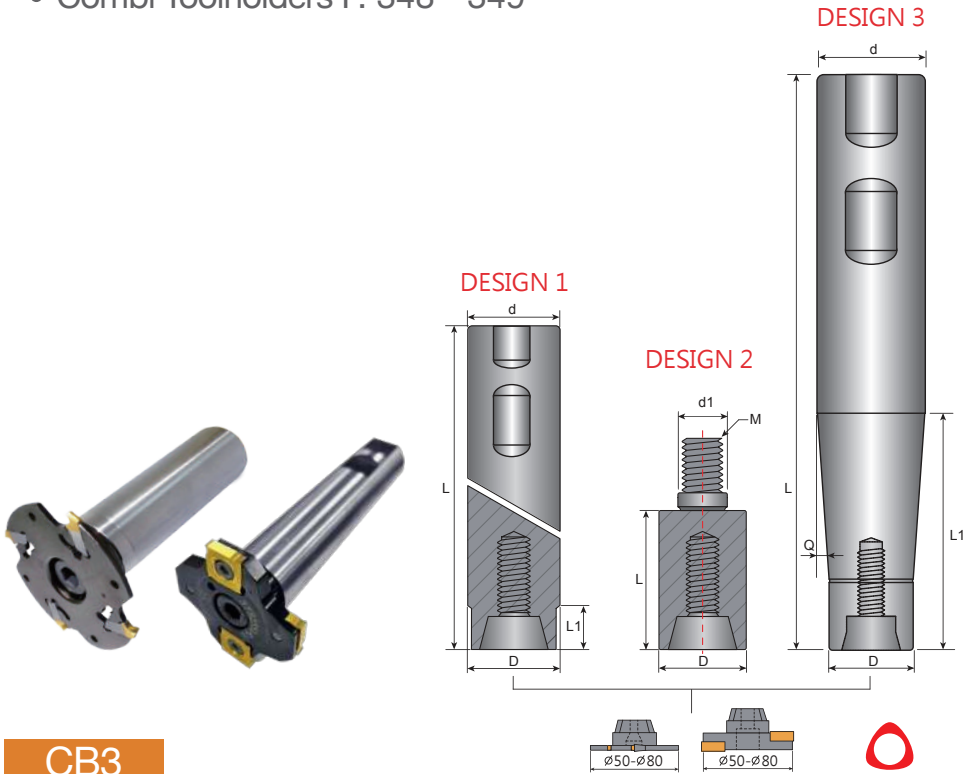
| Order code       | Dimensions (mm) |    |     |    |      | Design |  KG | Inserts                                     | Screw  | Key  |
|------------------|-----------------|----|-----|----|------|--------|----------------------------------------------------------------------------------------|---------------------------------------------|--------|------|
|                  | D               | d  | L   | L1 | Q    |        |                                                                                        |                                             |        |      |
| CB3W-1616-150-30 | 15.8            | 16 | 150 | 30 | -    | 2      | 0.55                                                                                   | ø 28 ø 29<br>ø 30 ø 32<br>ø 35 ø 37<br>ø 40 | C05016 | T20P |
| CB3W-2016-180-30 |                 | 20 | 180 | 80 | 2.0° | 3      | 0.87                                                                                   |                                             |        |      |

• To check the max. AR, please refer to the page of relative inserts or cutters.

# UFO Family Common Toolholders

- Combi Toolholders P. 348 - 349

UFO Family



CB3

| Order code   | Dimensions (mm) |    |      |     |    |    |      | Design |  | Inserts                        | Screw | Key |
|--------------|-----------------|----|------|-----|----|----|------|--------|-------------------------------------------------------------------------------------|--------------------------------|-------|-----|
|              | D               | d  | d1   | L   | L1 | M  | Q    |        |                                                                                     |                                |       |     |
| CB3-2525-110 | 24.8            | 25 | -    | 110 | 15 | -  | -    | 1      | 0.42                                                                                | <div>Ø 50<br/> <br/>Ø 80</div> | M0825 | -   |
| CB3-2525-170 |                 |    | 170  | -   |    | -  | 0.66 |        |                                                                                     |                                |       |     |
| CB3-25A      | 25.0            | -  | 12.5 | 40  | -  | 12 | -    | 2      | 0.17                                                                                |                                |       |     |
| CB3-25       |                 |    | 14   |     |    |    |      |        |                                                                                     |                                |       |     |
| CB3-3225-110 | 24.8            | 32 | -    | 110 | 40 | -  | 10°  | 3      | 0.62                                                                                |                                |       |     |
| CB3-3225-170 |                 |    | 170  | 70  | -  | 4° | 0.96 |        |                                                                                     |                                |       |     |

- To check the max. AR, please refer to the page of relative inserts or cutters.



YIH TROUN ENTERPRISE CO., LTD

# UFO T-SLOT CUTTER



Video

## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

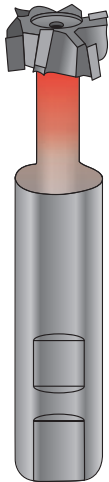
Efficiency  
**400%**  
UP

Durability  
**300%**  
UP

# Insert Design

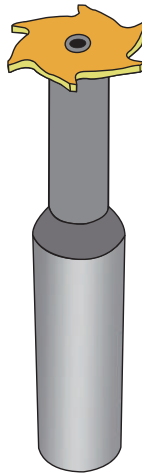
1. Minimum thickness starts from 0.5mm, and the insert thickness under 2mm is available in slight variation with every 0.1mm difference.
2. 9 different types of inserts are available for selection, the minimum diameter is 10mm.
3. The front-mounted insert is positioned into a tapered seat for center-positioning, giving secure and continuous performance.
4. High productivity with more teeth.( 4-8 teeth )

## Product Introduction



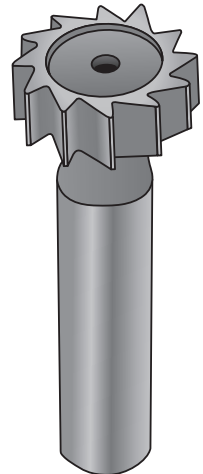
**Carbide brazed**

1. Welding carbides on the cutter under high temperature will degrade the tool-holder hardness.
2. Insufficient hardness.
3. Only available in thickness over 2mm.



**Toolholders grade: HSS  
Hardness up to HRC 58**

1. One tool-holder can fit in 400 different types of inserts.
2. Insert has patented geometry design.
3. Most suitable for high speed cutting.



**Toolholders grade: HSS**

1. Insufficient hardness.
2. Hard to regrind.
3. Not suitable for high speed cutting.

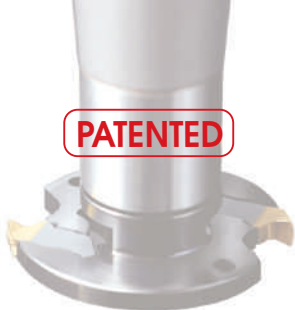




# UFO T-SLOT<sup>®</sup>

## FULL RANGE

**PATENTED**



• P. 34-75



Thickness:

0.5/0.6/0.7/0.8/0.9/1.0/1.1/1.2/1.3/  
1.4/1.5/1.6/1.7/1.8/1.9/2.0/2.2/2.5/  
3.0/3.5/4.0/4.2/4.5/5.0/6.0/8.0 mm

Dia.10/11/12/13/14/15/18/  
19/20/22/23/24/25/27/  
28/29/30/32/35/37 mm



• P. 77-82



Thickness:

1.4/1.5/1.6/1.8/2.0/2.2/2.5/2.7/3.0/3.2/  
3.5/4.0/4.2/4.5/5.0/5.2/5.5/6.0/8.0 mm

Dia. 32/35/40/50/60/80/100 mm



• P. 83-85



Thickness:

4/5/6/7/8/10/12 mm

Dia. 50/60/80 mm



• P. 86



Radius:

R4/R5/R6 mm

Dia. 60/80 mm



# 3T Insert Design

## Tapered Polygon Positioning + Coarse Pitch Design

UFO Family

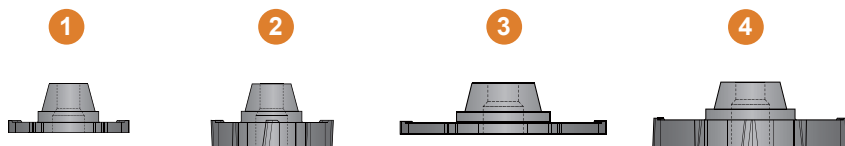
### Applications

For the following machining scenarios, T-slot cutters with coarse-pitch insert will generate less machining resistance compared to the close-pitch insert design, it leads to a better machining efficiency :

1. Machining exceptionally wide slots.
2. Machining in long overhang.
3. Larger cutting depths.
4. Machining difficult materials.



← C Series → ← CN Series → ← N Series →

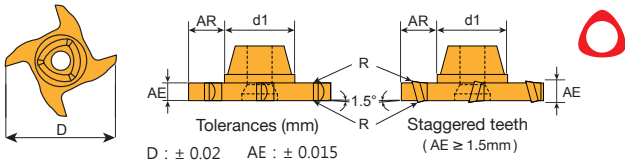


- $\varnothing 22 / \varnothing 27 / \varnothing 32 / \varnothing 35 / \varnothing 37$
- AE: 0.5 mm - 8.0 mm
- Max. AR10 mm



# UFO T-slot Inserts

- Toolholders P. 24
- Cutting Data P. 147 - 148



| Dimensions (mm) |     |         |         |                  |
|-----------------|-----|---------|---------|------------------|
| D               | d1  | AE      | Max. AR | R                |
| 10              | 6.5 | 0.5-0.6 | 1.5     | R0.05<br>± 0.025 |
|                 |     | 0.7-0.8 |         |                  |
|                 |     | 0.9-1.0 |         |                  |
|                 |     | 1.1-1.2 |         |                  |
|                 |     | 1.3-1.4 |         |                  |
|                 |     | 1.5-1.6 |         |                  |
|                 |     | 1.7-1.8 |         |                  |
|                 |     | 1.9-2.0 |         |                  |
|                 |     | 2.2-2.5 |         |                  |
|                 |     | 3.0     |         |                  |

★ Only "ME, B100 & ME, F20" insert are designed with corner radius.

| Inserts                                                                                         | Order Code    | Grades  |      |      |     |     |        |      |          |    |  |  E  |  |
|-------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|----|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                 |               | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                                                                                                                                                                        |  |
|                                                                                                 |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                                                                                                                                                                        |  |
| <br>4 flutes   | 3T0610-0.5-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.6-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.7-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.8-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.9-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.0-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.1-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.2-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.3-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.4-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.5-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.6-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.7-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.8-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.9-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-2.0-E                                                                                    |               |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-2.2-E                                                                                    |               |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-2.5-E                                                                                    |               |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-3.0-E                                                                                    |               |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| <br>4 flutes | 3T0610-0.5-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.6-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.7-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.8-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-0.9-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.0-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.1-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.2-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.3-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.4-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.5-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.6-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.7-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.8-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
|                                                                                                 | 3T0610-1.9-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-2.0-ME                                                                                   | ⊙             |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-2.2-ME                                                                                   | ⊙             |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-2.5-ME                                                                                   | ⊙             |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |
| 3T0610-3.0-ME                                                                                   | ⊙             |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |  |

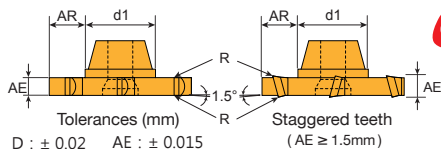
Inserts 2 PCS / Box

Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0610-0.5-E,K10

# UFO T-slot Inserts

- Toolholders P. 24
- Cutting Data P. 147 - 148



| Dimensions (mm) |     |         |         |                     |
|-----------------|-----|---------|---------|---------------------|
| D               | d1  | AE      | Max. AR | R                   |
| 11              | 6.5 | 0.5-0.6 | 2.0     | R0.05<br>±<br>0.025 |
|                 |     | 0.7-0.8 |         |                     |
|                 |     | 0.9-1.0 |         |                     |
|                 |     | 1.1-1.2 |         |                     |
|                 |     | 1.3-1.4 |         |                     |
|                 |     | 1.5-1.6 |         |                     |
|                 |     | 1.7-1.8 |         |                     |
|                 |     | 1.9-2.0 |         |                     |
|                 |     | 2.2-2.5 |         |                     |
|                 |     | 3.0     |         |                     |

\* Only "ME, B100 & ME, F20" insert are designed with corner radius.

| Inserts                                                                                         | Order Code    | Grades  |      |      |     |     |        |      |          |  E  ME |
|-------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                 |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                                                                                                          |
|                                                                                                 |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                                                                                                       |
| <br>4 flutes   | 3T0611-0.5-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.6-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.7-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.8-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.9-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.0-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.1-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.2-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.3-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.4-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.5-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.6-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.7-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.8-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.9-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-2.0-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-2.2-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-2.5-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-3.0-E  |         |      |      |     |     |        |      |          |                                                                                                                                                                          |
| <br>4 flutes | 3T0611-0.5-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.6-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.7-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.8-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-0.9-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.0-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.1-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.2-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.3-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.4-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.5-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.6-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.7-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.8-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-1.9-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-2.0-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-2.2-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-2.5-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |
|                                                                                                 | 3T0611-3.0-ME | ⊗       |      |      |     |     |        |      |          |                                                                                                                                                                          |

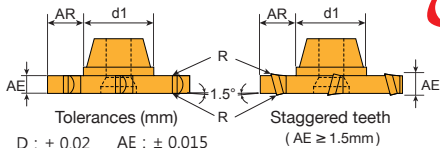
\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0611-0.5-E,K10



# UFO T-slot Inserts

- Toolholders P. 24
- Cutting Data P. 147 - 148



| Dimensions (mm) |     |         |         |                  |
|-----------------|-----|---------|---------|------------------|
| D               | d1  | AE      | Max. AR | R                |
| 12              | 6.5 | 0.5-0.6 | 2.5     | R0.05<br>± 0.025 |
|                 |     | 0.7-0.8 |         |                  |
|                 |     | 0.9-1.0 |         |                  |
|                 |     | 1.1-1.2 |         |                  |
|                 |     | 1.3-1.4 |         |                  |
|                 |     | 1.5-1.6 |         |                  |
|                 |     | 1.7-1.8 |         |                  |
|                 |     | 1.9-2.0 |         |                  |
|                 |     | 2.2-2.5 |         |                  |
|                 |     | 3.0     |         |                  |

\* Only "ME, B100 & ME, F20" insert are designed with corner radius.

| Inserts                                                                                         | Order Code    | Grades                                                                              |      |      |     |     |        |      |          |   |
|-------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                 |               | Carbide                                                                             |      |      |     |     | Cermet |      | Uncoated |                                                                                                                                                                      |
|                                                                                                 |               | B100                                                                                | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                                                                                                   |
| <br>4 flutes   | 3T0612-0.5-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.6-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.7-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.8-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.9-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.0-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.1-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.2-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.3-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.4-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.5-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.6-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.7-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.8-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.9-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
| <br>4 flutes | 3T0612-2.0-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-2.2-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-2.5-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-3.0-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.5-ME |   |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.6-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.7-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.8-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-0.9-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.0-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.1-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.2-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.3-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.4-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.5-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.6-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.7-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.8-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-1.9-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-2.0-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-2.2-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-2.5-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T0612-3.0-ME |  |      |      |     |     |        |      |          |                                                                                                                                                                      |

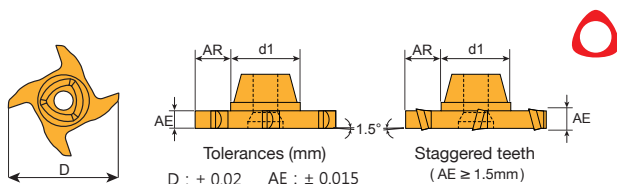


Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0612-0.5-E,K10

# UFO T-slot Inserts

- Toolholders P. 25
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 13              | 8  | 0.5-0.6 | 2.0     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0     |         |
|                 |    | 4.0     |         |

| Inserts                                                                                             | Order Code   | Grades  |      |      |     |     |        |      |          |  |
|-----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                     |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| <br><br>4 flutes | 3T0813-0.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-0.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-0.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                     | 3T0813-4.0-E |         |      |      |     |     |        |      |          |                                                                                   |

\* M.O.Q: 12PCS

\* Make-to-Order.

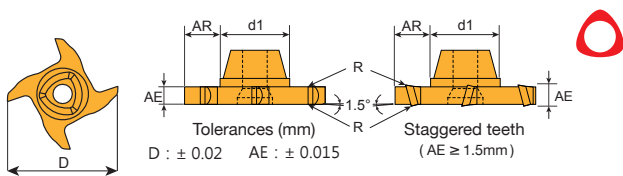
\* M.O.Q: 12PCS  
\* Make-to-Order.

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0813-0.5-E,K10



# UFO T-slot Inserts

- Toolholders P. 25
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 13              | 8  | 0.5-0.6 | 2.0     | R0.05<br>±<br>0.025 |
|                 |    | 0.7-0.8 |         |                     |
|                 |    | 0.9-1.0 |         |                     |
|                 |    | 1.1-1.2 |         |                     |
|                 |    | 1.3-1.4 |         |                     |
|                 |    | 1.5-1.6 |         |                     |
|                 |    | 1.7-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0     |         |                     |
|                 |    | 4.0     |         |                     |

| Inserts                                                                                         | Order Code    | Grades  |      |      |     |     |        |      |          |  |
|-------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                 |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                 |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| <br>4 flutes | 3T0813-0.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-0.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T0813-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |

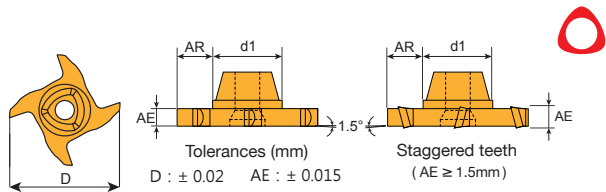
\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0813-0.5-ME,B100

# UFO T-slot Inserts

- Toolholders P. 25
- Cutting Data P. 147 - 148

UFO Family



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 14              | 8  | 0.5-0.6 | 2.5     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0     |         |
|                 |    | 4.0     |         |

| Inserts                                                                                             | Order Code   | Grades  |      |      |     |     |        |      |          |    |  |
|-----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|-----------------------------------------------------------------------------------|
|                                                                                                     |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |                                                                                   |
|                                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |                                                                                   |
| <br><br>4 flutes | 3T0814-0.5-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-0.6-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-0.7-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-0.8-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-0.9-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.0-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.1-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.2-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.3-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.4-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.5-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.6-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.7-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.8-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-1.9-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-2.0-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-2.2-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-2.5-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     | 3T0814-3.0-E |         |      |      |     |     |        |      |          |    |                                                                                   |
| 3T0814-4.0-E                                                                                        |              |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                     |              |         |      |      |     |     |        |      |          |    | * M.O.Q: 12PCS<br>* Make-to-Order.                                                |

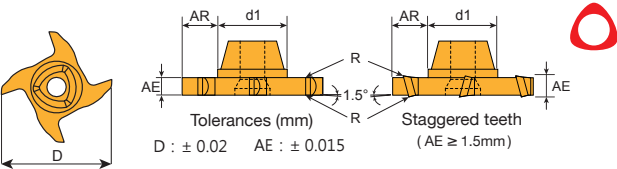
-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0814-0.5-E,K10





# UFO T-slot Inserts

- Toolholders P. 25
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 14              | 8  | 0.5-0.6 | 2.5     | R0.05<br>± 0.025 |
|                 |    | 0.7-0.8 |         |                  |
|                 |    | 0.9-1.0 |         |                  |
|                 |    | 1.1-1.2 |         |                  |
|                 |    | 1.3-1.4 |         |                  |
|                 |    | 1.5-1.6 |         |                  |
|                 |    | 1.7-1.8 |         |                  |
|                 |    | 1.9-2.0 |         |                  |
|                 |    | 2.2-2.5 |         |                  |
|                 |    | 3.0     |         |                  |
|                 |    | 4.0     |         |                  |

| Inserts                                                                                             | Order Code    | Grades  |      |      |     |     |         |      |          |  |
|-----------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|---------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                     |               | Carbide |      |      |     |     | Cermets |      | Uncoated |                                                                                   |
|                                                                                                     |               | B100    | C200 | C250 | F20 | F30 | CE100   | CE60 | K10      |                                                                                   |
| <br><br>4 flutes | 3T0814-0.5-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-0.6-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-0.7-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-0.8-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-0.9-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.0-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.1-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.2-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.3-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.4-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.5-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.6-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.7-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.8-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-1.9-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-2.0-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-2.2-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-2.5-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-3.0-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                                     | 3T0814-4.0-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |

\* M.O.Q: 12PCS

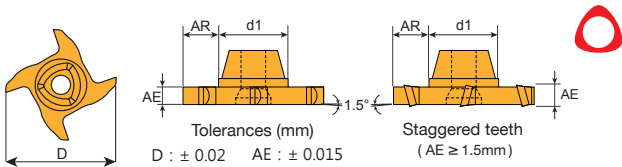
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0814-0.5-ME,B100

\* M.O.Q: 12PCS  
\* Make-to-Order.

# UFO T-slot Inserts

- Toolholders P. 25
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 15              | 8  | 0.5-0.6 | 3.0     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0     |         |
|                 |    | 4.0     |         |

| Inserts                                                                                            | Order Code   | Grades  |      |      |     |     |        |      |          |    |  |
|----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|-----------------------------------------------------------------------------------|
|                                                                                                    |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |                                                                                   |
|                                                                                                    |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |                                                                                   |
| <br><br>4 flutes | 3T0815-0.5-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-0.6-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-0.7-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-0.8-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-0.9-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.0-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.1-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.2-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.3-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.4-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.5-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.6-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.7-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.8-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-1.9-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-2.0-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-2.2-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-2.5-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-3.0-E |         |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                    | 3T0815-4.0-E |         |      |      |     |     |        |      |          |    |                                                                                   |

  
  
4 flutes



Inserts 2 PCS / Box



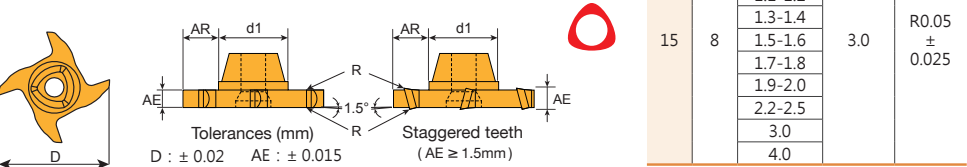
Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0815-0.5-E,K10



# UFO T-slot Inserts

- Toolholders P. 25
- Cutting Data P. 147 - 148



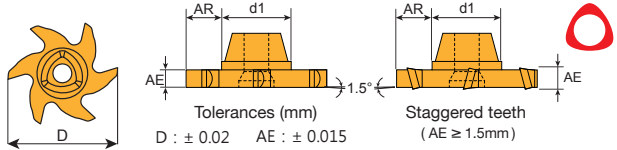
| Inserts                                                                                        | Order Code    | Grades                                                                              |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |               | Carbide                                                                             |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |               | B100                                                                                | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| <br>4 flutes | 3T0815-0.5-ME |    |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-0.6-ME |    |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-0.7-ME |    |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-0.8-ME |    |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-0.9-ME |    |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.0-ME |    |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.1-ME |    |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.2-ME |   |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.3-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.4-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.5-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.6-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.7-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.8-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-1.9-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-2.0-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-2.2-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-2.5-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-3.0-ME |  |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T0815-4.0-ME |  |      |      |     |     |        |      |          |                                                                                   |

  
Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0815-0.5-ME,B100

# UFO T-slot Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 18              | 10 | 0.5-0.6 | 3.5     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |

UFO Family

| Inserts                                                                                        | Order Code   | Grades  |      |      |     |     |        |      |          |    |
|------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|
|                                                                                                |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |
|                                                                                                |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |
| <br>6 flutes | 3T1018-0.5-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-0.6-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-0.7-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-0.8-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-0.9-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.0-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.1-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.2-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.3-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.4-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.5-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.6-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.7-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.8-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-1.9-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-2.0-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-2.2-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-2.5-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-3.0-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-3.5-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-4.0-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-4.2-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-4.5-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-5.0-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-6.0-E |         |      |      |     |     |        |      |          |    |
|                                                                                                | 3T1018-8.0-E |         |      |      |     |     |        |      |          |    |

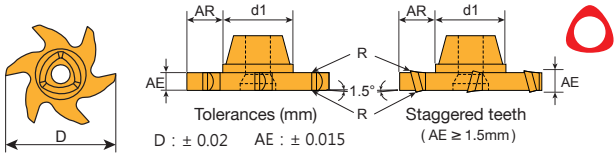
\* M.O.Q: 12PCS  
\* Make-to-Order.

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1018-0.5-E,K10



# UFO T-slot Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                         |
|-----------------|----|---------|---------|-------------------------|
| D               | d1 | AE      | Max. AR | R                       |
| 18              | 10 | 0.5-0.6 | 3.5     | R0.05<br>$\pm$<br>0.025 |
|                 |    | 0.7-0.8 |         |                         |
|                 |    | 0.9-1.0 |         |                         |
|                 |    | 1.1-1.2 |         |                         |
|                 |    | 1.3-1.4 |         |                         |
|                 |    | 1.5-1.6 |         |                         |
|                 |    | 1.7-1.8 |         |                         |
|                 |    | 1.9-2.0 |         |                         |
|                 |    | 2.2-2.5 |         |                         |
|                 |    | 3.0-4.0 |         |                         |
|                 |    | 4.2-5.0 |         |                         |
|                 |    | 6.0     |         |                         |
|                 |    | 8.0     |         |                         |

| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |  |    |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|----|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |    |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE |
| <br>6 flutes | 3T1018-0.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-0.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-5.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-6.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1018-8.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |

\* M.O.Q: 12PCS  
\* Make-to-Order.

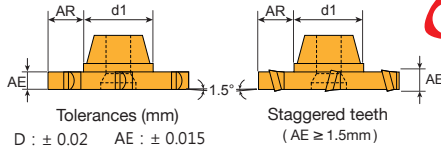
\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron

- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1018-0.5-ME,B100

# UFO T-slot Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 19              | 10 | 0.5-0.6 | 4.0     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |

UFO Family

| Inserts                                                                                            | Order Code   | Grades  |      |      |     |     |        |      |          |  |    |
|----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|----|
|                                                                                                    |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |    |
|                                                                                                    |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE |
| <br><br>6 flutes | 3T1019-0.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-0.6-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-0.7-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1019-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1019-4.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1019-4.2-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1019-4.5-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1019-5.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1019-6.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1019-8.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |

\* M.O.Q: 12PCS

\* Make-to-Order.

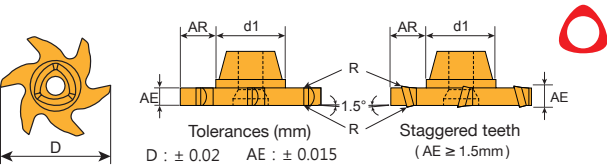
\* M.O.Q: 12PCS  
\* Make-to-Order.

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1019-0.5-E,K10



# UFO T-slot Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 19              | 10 | 0.5-0.6 | 4.0     | R0.05<br>±<br>0.025 |
|                 |    | 0.7-0.8 |         |                     |
|                 |    | 0.9-1.0 |         |                     |
|                 |    | 1.1-1.2 |         |                     |
|                 |    | 1.3-1.4 |         |                     |
|                 |    | 1.5-1.6 |         |                     |
|                 |    | 1.7-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0-4.0 |         |                     |
|                 |    | 4.2-5.0 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |  |    |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|----|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |    |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE |
| <br>6 flutes | 3T1019-0.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-0.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-5.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-6.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                | 3T1019-8.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |

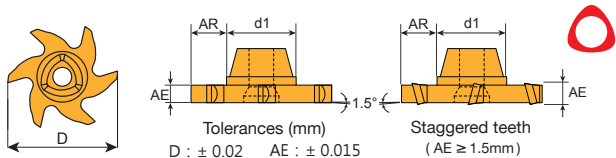
\* M.O.Q: 12PCS  
\* Make-to-Order.

\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1019-0.5-ME,B100

# UFO T-slot Inserts

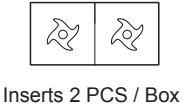
- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 20              | 10 | 0.5-0.6 | 4.5     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |

UFO Family

| Inserts                                                                                        | Order Code   | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| <br>6 flutes | 3T1020-0.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-0.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-0.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-4.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-4.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-4.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-5.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-6.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1020-8.0-E |         |      |      |     |     |        |      |          |                                                                                   |



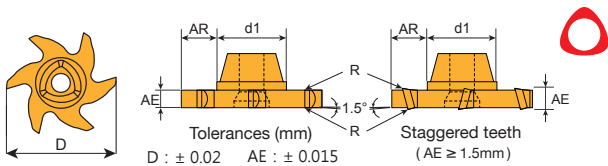
-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-0.5-E,K10





# UFO T-slot Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 20              | 10 | 0.5-0.6 | 4.5     | R0.05<br>±<br>0.025 |
|                 |    | 0.7-0.8 |         |                     |
|                 |    | 0.9-1.0 |         |                     |
|                 |    | 1.1-1.2 |         |                     |
|                 |    | 1.3-1.4 |         |                     |
|                 |    | 1.5-1.6 |         |                     |
|                 |    | 1.7-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0-4.0 |         |                     |
|                 |    | 4.2-5.0 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

| Inserts                                                                                            | Order Code    | Grades  |      |      |     |     |        |      |          |  |
|----------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                    |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                    |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| <br><br>6 flutes | 3T1020-0.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-0.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-5.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-6.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1020-8.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |



Inserts 2 PCS / Box

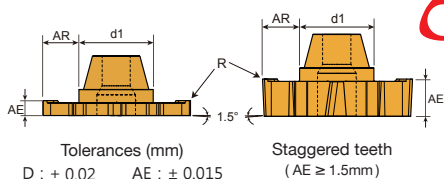
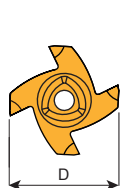


Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-0.5-ME,B100

# UFO T-slot Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 22              | 10 | 0.5-0.6 | 5.5     | R0.05<br>±<br>0.025 |
|                 |    | 0.7-0.8 |         |                     |
|                 |    | 0.9-1.0 |         |                     |
|                 |    | 1.1-1.2 |         |                     |
|                 |    | 1.3-1.4 |         |                     |
|                 |    | 1.5-1.6 |         |                     |
|                 |    | 1.7-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0-4.0 |         |                     |
|                 |    | 4.2-5.0 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

UFO Family

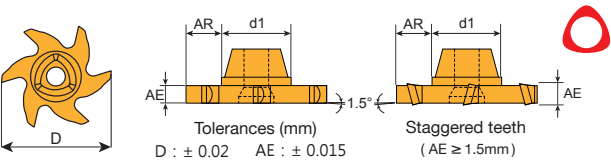
| Inserts                                                                                            | Order Code     | Grades  |      |      |     |     |        |      |          |    |                           |
|----------------------------------------------------------------------------------------------------|----------------|---------|------|------|-----|-----|--------|------|----------|----|------------------------------------------------------------------------------------------------------------|
|                                                                                                    |                | Carbide |      |      |     |     | Cermet |      | Uncoated |    |                                                                                                            |
|                                                                                                    |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |                                                                                                            |
| <br><br>4 flutes | 3T1022C-0.5-ME | ⊙       |      |      |     |     |        |      |          |    | <br>Inserts 2 PCS / Box |
|                                                                                                    | 3T1022C-0.6-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-0.7-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-0.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-0.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.1-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.3-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.4-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.6-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.7-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-1.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-2.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-2.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-2.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-3.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-3.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-4.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-4.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-4.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-5.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-6.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |
|                                                                                                    | 3T1022C-8.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                                            |

-  Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022C-0.5-ME, B100



# UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 23              | 12 | 0.5-0.6 | 5.0     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |

| Inserts                                                                                            | Order Code   | Grades  |      |      |     |     |        |      |          |  |    |
|----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|----|
|                                                                                                    |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |    |
|                                                                                                    |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE |
| <br><br>6 flutes | 3T1223-0.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-0.6-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-0.7-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1223-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1223-4.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1223-4.2-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1223-4.5-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1223-5.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1223-6.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1223-8.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |

\* M.O.Q: 12PCS

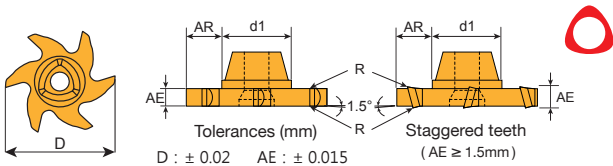
\* Make-to-Order.

\* M.O.Q: 12PCS  
\* Make-to-Order.

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1223-0.5-E,K10

# UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 23              | 12 | 0.5-0.6 | 5.0     | R0.05<br>±<br>0.025 |
|                 |    | 0.7-0.8 |         |                     |
|                 |    | 0.9-1.0 |         |                     |
|                 |    | 1.1-1.2 |         |                     |
|                 |    | 1.3-1.4 |         |                     |
|                 |    | 1.5-1.6 |         |                     |
|                 |    | 1.7-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0-4.0 |         |                     |
|                 |    | 4.2-5.0 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| <br>6 flutes | 3T1223-0.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-0.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-5.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-6.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1223-8.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |

\* M.O.Q: 12PCS

\* Make-to-Order.

\* M.O.Q: 12PCS  
\* Make-to-Order.

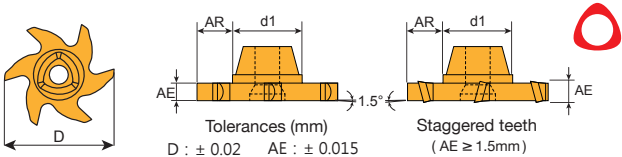
-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, i.e.: 3T1223-0.5-ME,B100



# UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 147 - 148

| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 24              | 12 | 0.5-0.6 | 5.5     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |



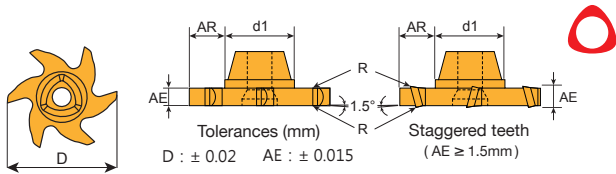
| Inserts                                                                                        | Order Code   | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| <br>6 flutes | 3T1224-0.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-4.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-4.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-4.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-5.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-6.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-8.0-E |         |      |      |     |     |        |      |          |                                                                                   |

\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1224-0.5-E,K10

# UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                      |
|-----------------|----|---------|---------|----------------------|
| D               | d1 | AE      | Max. AR | R                    |
| 24              | 12 | 0.5-0.6 | 5.5     | R0.05<br>$\pm$ 0.025 |
|                 |    | 0.7-0.8 |         |                      |
|                 |    | 0.9-1.0 |         |                      |
|                 |    | 1.1-1.2 |         |                      |
|                 |    | 1.3-1.4 |         |                      |
|                 |    | 1.5-1.6 |         |                      |
|                 |    | 1.7-1.8 |         |                      |
|                 |    | 1.9-2.0 |         |                      |
|                 |    | 2.2-2.5 |         |                      |
|                 |    | 3.0-4.0 |         |                      |
|                 |    | 4.2-5.0 |         |                      |
|                 |    | 6.0     |         |                      |
|                 |    | 8.0     |         |                      |

| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| <br>6 flutes | 3T1224-0.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-5.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-6.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1224-8.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |

\* M.O.Q: 12PCS

\* Make-to-Order.

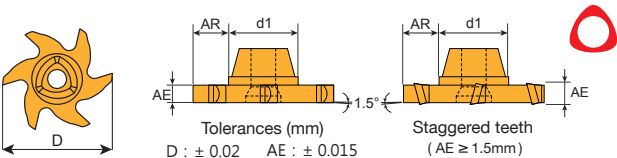
\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1224-0.5-ME,B100



# UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 25              | 12 | 0.5-0.6 | 6.0     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 1.3-1.4 |         |
|                 |    | 1.5-1.6 |         |
|                 |    | 1.7-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |

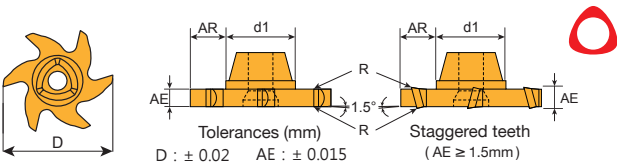
| Inserts                                                                                            | Order Code   | Grades  |      |      |     |     |        |      |          |  |
|----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                    |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                    |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| <br><br>6 flutes | 3T1225-0.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-0.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-0.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-4.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-4.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-4.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-5.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-6.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                    | 3T1225-8.0-E |         |      |      |     |     |        |      |          |                                                                                   |

  
Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1225-0.5-E,K10

# UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 25              | 12 | 0.5-0.6 | 6.0     | R0.05<br>± 0.025 |
|                 |    | 0.7-0.8 |         |                  |
|                 |    | 0.9-1.0 |         |                  |
|                 |    | 1.1-1.2 |         |                  |
|                 |    | 1.3-1.4 |         |                  |
|                 |    | 1.5-1.6 |         |                  |
|                 |    | 1.7-1.8 |         |                  |
|                 |    | 1.9-2.0 |         |                  |
|                 |    | 2.2-2.5 |         |                  |
|                 |    | 3.0-4.0 |         |                  |
|                 |    | 4.2-5.0 |         |                  |
|                 |    | 6.0     |         |                  |
|                 |    | 8.0     |         |                  |

| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |    |  |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|----|-----------------------------------------------------------------------------------|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |    |                                                                                   |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |                                                                                   |
| <br>6 flutes | 3T1225-0.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-0.6-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-0.7-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-0.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-0.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.1-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.3-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.4-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.6-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.7-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-1.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-2.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-2.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-2.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-3.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-3.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-4.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-4.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-4.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-5.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-6.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                | 3T1225-8.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |

  
6 flutes



Inserts 2 PCS / Box



Inserts 2 PCS / Box

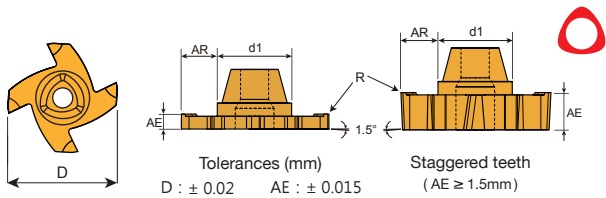
-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1225-0.5-ME,B100





# UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 147 - 148



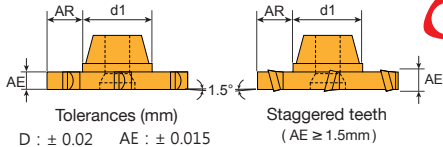
| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 27              | 12 | 0.8-0.9 | 7.0     | R0.05<br>±<br>0.025 |
|                 |    | 1.0-1.1 |         |                     |
|                 |    | 1.2-1.3 |         |                     |
|                 |    | 1.4-1.5 |         |                     |
|                 |    | 1.6-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0-4.0 |         |                     |
|                 |    | 4.2-5.0 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

| Inserts                                                                                                     | Order Code     | Grades  |      |      |     |     |        |      |          |  |
|-------------------------------------------------------------------------------------------------------------|----------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                             |                | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                             |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| <br>4 flutes             | 3T1227C-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                             | 3T1227C-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
| 3T1227C-5.0-ME                                                                                              | ⊙              |         |      |      |     |     |        |      |          |                                                                                   |
| 3T1227C-6.0-ME                                                                                              | ⊙              |         |      |      |     |     |        |      |          |                                                                                   |
| 3T1227C-8.0-ME                                                                                              | ⊙              |         |      |      |     |     |        |      |          |                                                                                   |
| <br>Inserts 2 PCS / Box |                |         |      |      |     |     |        |      |          |                                                                                   |

-  Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1227C-0.8-ME, B100

# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 28              | 16 | 0.8-0.9 | 5.5     |
|                 |    | 1.0-1.1 |         |
|                 |    | 1.2-1.3 |         |
|                 |    | 1.4-1.5 |         |
|                 |    | 1.6-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |

| Inserts                                                                                        | Order Code   | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| <br>8 flutes | 3T1628-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-4.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-4.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-4.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1628-5.0-E |         |      |      |     |     |        |      |          |                                                                                   |

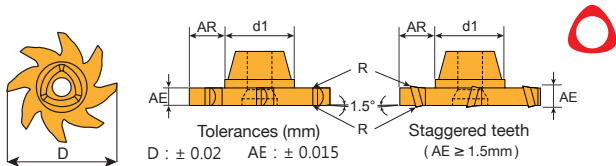
\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1628-0.8-E,K10



# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 28              | 16 | 0.8-0.9 | 5.5     | R0.05<br>± 0.025 |
|                 |    | 1.0-1.1 |         |                  |
|                 |    | 1.2-1.3 |         |                  |
|                 |    | 1.4-1.5 |         |                  |
|                 |    | 1.6-1.8 |         |                  |
|                 |    | 1.9-2.0 |         |                  |
|                 |    | 2.2-2.5 |         |                  |
|                 |    | 3.0-4.0 |         |                  |
|                 |    | 4.2-5.0 |         |                  |

| Inserts                                                                                       | Order Code    | Grades  |      |      |     |     |         |      |          |  |
|-----------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|---------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                               |               | Carbide |      |      |     |     | Cermets |      | Uncoated |                                                                                   |
|                                                                                               |               | B100    | C200 | C250 | F20 | F30 | CE100   | CE60 | K10      |                                                                                   |
| <br>8 flutes | 3T1628-0.8-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-0.9-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.0-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.1-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.2-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.3-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.4-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.5-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.6-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.7-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.8-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-1.9-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-2.0-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-2.2-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-2.5-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-3.0-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
|                                                                                               | 3T1628-3.5-ME | ⊙       |      |      |     |     |         |      |          |                                                                                   |
| 3T1628-4.0-ME                                                                                 | ⊙             |         |      |      |     |     |         |      |          |                                                                                   |
| 3T1628-4.2-ME                                                                                 | ⊙             |         |      |      |     |     |         |      |          |                                                                                   |
| 3T1628-4.5-ME                                                                                 | ⊙             |         |      |      |     |     |         |      |          |                                                                                   |
| 3T1628-5.0-ME                                                                                 | ⊙             |         |      |      |     |     |         |      |          |                                                                                   |

\* M.O.Q: 12PCS

\* Make-to-Order.

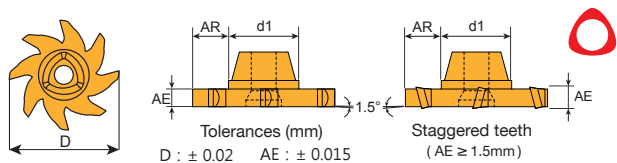
\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1628-0.8-ME,B100

# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148

UFO Family



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 29              | 16 | 0.8-0.9 | 6.0     |
|                 |    | 1.0-1.1 |         |
|                 |    | 1.2-1.3 |         |
|                 |    | 1.4-1.5 |         |
|                 |    | 1.6-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |

| Inserts                                                                                            | Order Code   | Grades  |      |      |     |     |        |      |          |    |  |  |
|----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|--|-----------------------------------------------------------------------------------|
|                                                                                                    |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                                                                                   |
|                                                                                                    |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                                                                                   |
| <br><br>8 flutes | 3T1629-0.8-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-0.9-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.1-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.2-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.3-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.4-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.5-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.6-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.7-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.8-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-1.9-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-2.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-2.2-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-2.5-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-3.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-3.5-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                    | 3T1629-4.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
| 3T1629-4.2-E                                                                                       |              |         |      |      |     |     |        |      |          |    |  |                                                                                   |
| 3T1629-4.5-E                                                                                       |              |         |      |      |     |     |        |      |          |    |  |                                                                                   |
| 3T1629-5.0-E                                                                                       |              |         |      |      |     |     |        |      |          |    |  |                                                                                   |

\* M.O.Q: 12PCS

\* Make-to-Order.

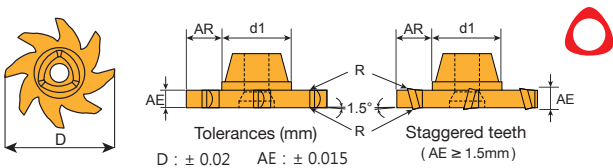
\* M.O.Q: 12PCS  
\* Make-to-Order.

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1629-0.8-E,K10



# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 29              | 16 | 0.8-0.9 | 6.0     | R0.05<br>± 0.025 |
|                 |    | 1.0-1.1 |         |                  |
|                 |    | 1.2-1.3 |         |                  |
|                 |    | 1.4-1.5 |         |                  |
|                 |    | 1.6-1.8 |         |                  |
|                 |    | 1.9-2.0 |         |                  |
|                 |    | 2.2-2.5 |         |                  |
|                 |    | 3.0-4.0 |         |                  |
|                 |    | 4.2-5.0 |         |                  |

| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| <br>8 flutes | 3T1629-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1629-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
| 3T1629-5.0-ME                                                                                  | ⊙             |         |      |      |     |     |        |      |          |                                                                                   |

\* M.O.Q: 12PCS

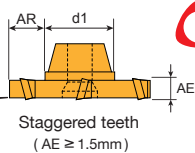
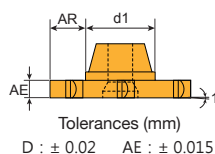
\* Make-to-Order.

\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1629-0.8-ME,B100

# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 30              | 16 | 0.8-0.9 | 6.5     |
|                 |    | 1.0-1.1 |         |
|                 |    | 1.2-1.3 |         |
|                 |    | 1.4-1.5 |         |
|                 |    | 1.6-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |

| Inserts                                                                                            | Order Code   | Grades  |      |      |     |     |        |      |          |  |    |
|----------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|----|
|                                                                                                    |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |    |
|                                                                                                    |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE |
| <br><br>8 flutes | 3T1630-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |    |
|                                                                                                    | 3T1630-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1630-4.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1630-4.2-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1630-4.5-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |
| 3T1630-5.0-E                                                                                       |              |         |      |      |     |     |        |      |          |                                                                                   |    |



Inserts 2 PCS / Box



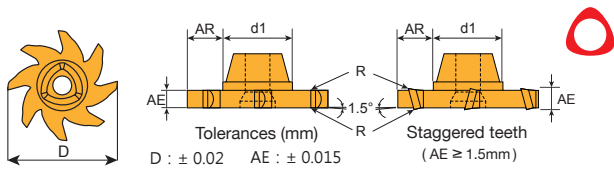
Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1630-0.8-E,K10



# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



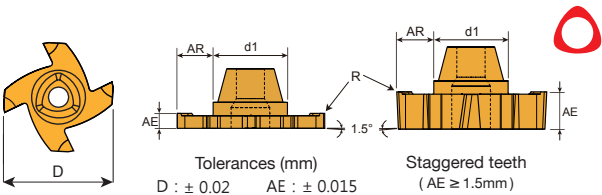
| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 30              | 16 | 0.8-0.9 | 6.5     | R0.05<br>± 0.025 |
|                 |    | 1.0-1.1 |         |                  |
|                 |    | 1.2-1.3 |         |                  |
|                 |    | 1.4-1.5 |         |                  |
|                 |    | 1.6-1.8 |         |                  |
|                 |    | 1.9-2.0 |         |                  |
|                 |    | 2.2-2.5 |         |                  |
|                 |    | 3.0-4.0 |         |                  |
|                 |    | 4.2-5.0 |         |                  |

| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |                            |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|-------------------------------------------------------------------------------------------------------------|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                                             |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                                             |
| <br>8 flutes | 3T1630-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                | 3T1630-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
| 3T1630-4.0-ME                                                                                  | ⊙             |         |      |      |     |     |        |      |          |                                                                                                             |
| 3T1630-4.2-ME                                                                                  | ⊙             |         |      |      |     |     |        |      |          |                                                                                                             |
| 3T1630-4.5-ME                                                                                  | ⊙             |         |      |      |     |     |        |      |          |                                                                                                             |
| 3T1630-5.0-ME                                                                                  | ⊙             |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                |               |         |      |      |     |     |        |      |          | <br>Inserts 2 PCS / Box |

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1630-0.8-ME,B100

# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 32              | 16 | 0.8-0.9 | 7.5     | R0.05<br>±<br>0.025 |
|                 |    | 1.0-1.1 |         |                     |
|                 |    | 1.2-1.3 |         |                     |
|                 |    | 1.4-1.5 |         |                     |
|                 |    | 1.6-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0-4.0 |         |                     |
|                 |    | 4.2-5.0 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

| Inserts                                                                                         | Order Code     | Grades  |      |      |     |     |        |      |          |    |  |
|-------------------------------------------------------------------------------------------------|----------------|---------|------|------|-----|-----|--------|------|----------|----|-----------------------------------------------------------------------------------|
|                                                                                                 |                | Carbide |      |      |     |     | Cermet |      | Uncoated |    |                                                                                   |
|                                                                                                 |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |                                                                                   |
| <br>4 flutes | 3T1632C-0.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-0.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.1-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.3-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.4-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.6-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.7-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-1.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-2.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-2.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-2.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-3.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-3.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-4.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-4.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                 | 3T1632C-4.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
| 3T1632C-5.0-ME                                                                                  | ⊙              |         |      |      |     |     |        |      |          |    |                                                                                   |
| 3T1632C-6.0-ME                                                                                  | ⊙              |         |      |      |     |     |        |      |          |    |                                                                                   |
| 3T1632C-8.0-ME                                                                                  | ⊙              |         |      |      |     |     |        |      |          |    |                                                                                   |

  
Inserts 2 PCS / Box

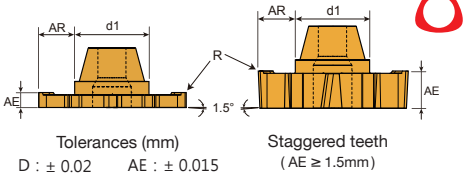
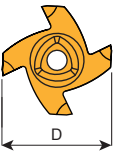
- ⊙ Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1632C-0.8-ME, B100





# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



Tolerances (mm)  
D : ± 0.02    AE : ± 0.015

Staggered teeth  
(AE ≥ 1.5mm)

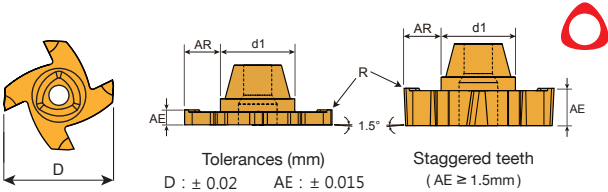
| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 35              | 16 | 0.8-0.9 | 9       | R0.05<br>±<br>0.025 |
|                 |    | 1.0-1.1 |         |                     |
|                 |    | 1.2-1.3 |         |                     |
|                 |    | 1.4-1.5 |         |                     |
|                 |    | 1.6-1.8 |         |                     |
|                 |    | 1.9-2.0 |         |                     |
|                 |    | 2.2-2.5 |         |                     |
|                 |    | 3.0-4.0 |         |                     |
|                 |    | 4.2-5.0 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

| Inserts                                                                                                     | Order Code     | Grades  |      |      |     |     |        |      |          |    |  |
|-------------------------------------------------------------------------------------------------------------|----------------|---------|------|------|-----|-----|--------|------|----------|----|-----------------------------------------------------------------------------------|
|                                                                                                             |                | Carbide |      |      |     |     | Cermet |      | Uncoated |    |                                                                                   |
|                                                                                                             |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |                                                                                   |
| <br>4 flutes             | 3T1635C-0.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-0.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.1-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.3-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.4-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.6-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.7-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.8-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-1.9-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-2.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-2.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-2.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-3.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-3.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-4.0-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-4.2-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
|                                                                                                             | 3T1635C-4.5-ME | ⊙       |      |      |     |     |        |      |          |    |                                                                                   |
| 3T1635C-5.0-ME                                                                                              | ⊙              |         |      |      |     |     |        |      |          |    |                                                                                   |
| 3T1635C-6.0-ME                                                                                              | ⊙              |         |      |      |     |     |        |      |          |    |                                                                                   |
| 3T1635C-8.0-ME                                                                                              | ⊙              |         |      |      |     |     |        |      |          |    |                                                                                   |
| <br>Inserts 2 PCS / Box |                |         |      |      |     |     |        |      |          |    |                                                                                   |

-  Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1635C-0.8-ME, B100

# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                        |
|-----------------|----|---------|---------|------------------------|
| D               | d1 | AE      | Max. AR | R                      |
| 37              | 16 | 0.8-0.9 | 10      | $R0.05$<br>$\pm 0.025$ |
|                 |    | 1.0-1.1 |         |                        |
|                 |    | 1.2-1.3 |         |                        |
|                 |    | 1.4-1.5 |         |                        |
|                 |    | 1.6-1.8 |         |                        |
|                 |    | 1.9-2.0 |         |                        |
|                 |    | 2.2-2.5 |         |                        |
|                 |    | 3.0-4.0 |         |                        |
|                 |    | 4.2-5.0 |         |                        |
|                 |    | 6.0     |         |                        |
|                 |    | 8.0     |         |                        |

| Inserts                                                                                        | Order Code     | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|----------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                |                | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| <br>4 flutes | 3T1637C-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-5.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-6.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                | 3T1637C-8.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |



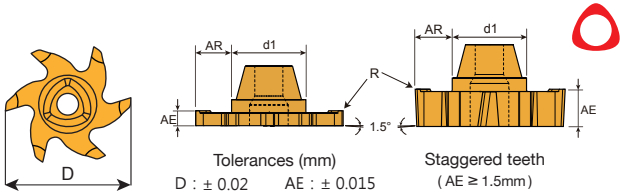
Inserts 2 PCS / Box

- ⊙ Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1637C-0.8-ME, B100



# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 35              | 16 | 0.8-0.9 | 9       |
|                 |    | 1.0-1.1 |         |
|                 |    | 1.2-1.3 |         |
|                 |    | 1.4-1.5 |         |
|                 |    | 1.6-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |

| Inserts                                                                                         | Order Code   | Grades  |      |      |     |     |        |      |          |  |
|-------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                                 |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                                                                                                 |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| <br>6 flutes | 3T1635-0.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-0.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.1-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.3-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.4-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.6-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.7-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.8-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-1.9-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-2.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-2.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-2.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-3.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-3.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-4.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-4.2-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-4.5-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-5.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-6.0-E |         |      |      |     |     |        |      |          |                                                                                   |
|                                                                                                 | 3T1635-8.0-E |         |      |      |     |     |        |      |          |                                                                                   |

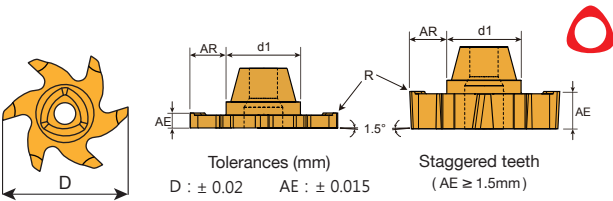


Inserts 2 PCS / Box

-  Aluminum
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1635-0.8-E, K10

# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 35              | 16 | 0.8-0.9 | 9       | R0.05<br>± 0.025 |
|                 |    | 1.0-1.1 |         |                  |
|                 |    | 1.2-1.3 |         |                  |
|                 |    | 1.4-1.5 |         |                  |
|                 |    | 1.6-1.8 |         |                  |
|                 |    | 1.9-2.0 |         |                  |
|                 |    | 2.2-2.5 |         |                  |
|                 |    | 3.0-4.0 |         |                  |
|                 |    | 4.2-5.0 |         |                  |
|                 |    | 6.0     |         |                  |
|                 |    | 8.0     |         |                  |

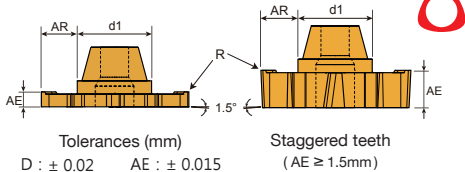
| Inserts                                                                                        | Order Code    | Grades  |      |      |     |     |        |      |          |     |
|------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|--------------------------------------------------------------------------------------|
|                                                                                                |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                      |
|                                                                                                |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                      |
| <br>6 flutes | 3T1635-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-0.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.1-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.3-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.7-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-1.9-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-2.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-2.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-3.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-3.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-4.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-4.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-4.5-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-5.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-6.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                | 3T1635-8.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                |               |         |      |      |     |     |        |      |          |  |
|                                                                                                |               |         |      |      |     |     |        |      |          | Inserts 2 PCS / Box                                                                  |

- ⊙ Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1635-0.8-ME, B100



# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



Tolerances (mm)  
D : ± 0.02    AE : ± 0.015

Staggered teeth  
(AE ≥ 1.5mm)

| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 37              | 16 | 0.8-0.9 | 10      |
|                 |    | 1.0-1.1 |         |
|                 |    | 1.2-1.3 |         |
|                 |    | 1.4-1.5 |         |
|                 |    | 1.6-1.8 |         |
|                 |    | 1.9-2.0 |         |
|                 |    | 2.2-2.5 |         |
|                 |    | 3.0-4.0 |         |
|                 |    | 4.2-5.0 |         |
|                 |    | 6.0     |         |
|                 |    | 8.0     |         |

| Inserts                                                                                        | Order Code   | Grades  |      |      |     |     |        |      |          |    |  |  |
|------------------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|--|-----------------------------------------------------------------------------------|
|                                                                                                |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                                                                                   |
|                                                                                                |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                                                                                   |
| <br>6 flutes | 3T1637-0.8-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-0.9-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.1-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.2-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.3-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.4-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.5-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.6-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.7-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.8-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-1.9-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-2.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-2.2-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-2.5-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-3.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-3.5-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-4.0-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-4.2-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
|                                                                                                | 3T1637-4.5-E |         |      |      |     |     |        |      |          |    |  |                                                                                   |
| 3T1637-5.0-E                                                                                   |              |         |      |      |     |     |        |      |          |    |  |                                                                                   |
| 3T1637-6.0-E                                                                                   |              |         |      |      |     |     |        |      |          |    |  |                                                                                   |
| 3T1637-8.0-E                                                                                   |              |         |      |      |     |     |        |      |          |    |  |                                                                                   |

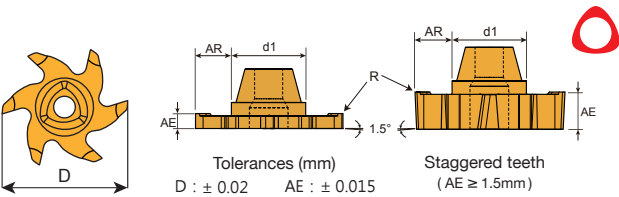


Inserts 2 PCS / Box

-  Aluminum
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1637-0.8-E, K10

# UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 37              | 16 | 0.8-0.9 | 10      | R0.05<br>± 0.025 |
|                 |    | 1.0-1.1 |         |                  |
|                 |    | 1.2-1.3 |         |                  |
|                 |    | 1.4-1.5 |         |                  |
|                 |    | 1.6-1.8 |         |                  |
|                 |    | 1.9-2.0 |         |                  |
|                 |    | 2.2-2.5 |         |                  |
|                 |    | 3.0-4.0 |         |                  |
|                 |    | 4.2-5.0 |         |                  |
|                 |    | 6.0     |         |                  |
|                 |    | 8.0     |         |                  |

| Inserts                                                                                         | Order Code    | Grades  |      |      |     |     |        |          |     |  |
|-------------------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|----------|-----|-----------------------------------------------------------------------------------|
|                                                                                                 |               | Carbide |      |      |     |     | Cermet | Uncoated |     |                                                                                   |
|                                                                                                 |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60     | K10 |                                                                                   |
| <br>6 flutes | 3T1637-0.8-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-0.9-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.0-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.1-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.2-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.3-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.4-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.5-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.6-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.7-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.8-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-1.9-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-2.0-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-2.2-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-2.5-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-3.0-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-3.5-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-4.0-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-4.2-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
|                                                                                                 | 3T1637-4.5-ME | ⊙       |      |      |     |     |        |          |     |                                                                                   |
| 3T1637-5.0-ME                                                                                   | ⊙             |         |      |      |     |     |        |          |     |                                                                                   |
| 3T1637-6.0-ME                                                                                   | ⊙             |         |      |      |     |     |        |          |     |                                                                                   |
| 3T1637-8.0-ME                                                                                   | ⊙             |         |      |      |     |     |        |          |     |                                                                                   |

  
Inserts 2 PCS / Box



Inserts 2 PCS / Box

- ⊙ Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1637-0.8-ME, B100



UFO T-SLOT - CN / N SERIES

# Exclusively for Collet Machining



# Exclusively for Collet Machining - CN / N

Y.T.'s groundbreaking collet machining advantages

**New** UFO-T-slot cutter  
CN / N series  
( 4 flutes · 6 flutes )

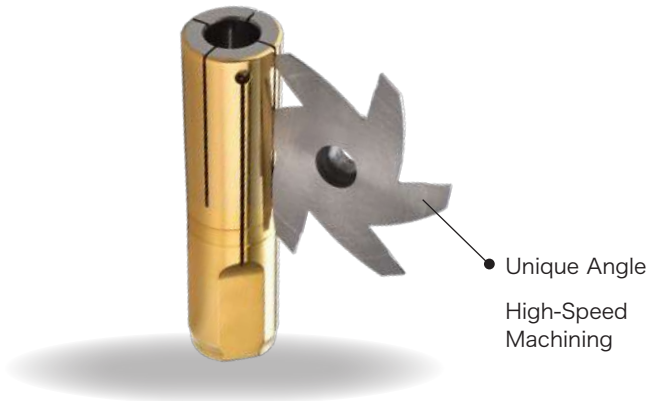
**Traditional / slitting saw**



UFO Family

The latest collet-exclusive UFO T-slot cutter features an unique cutting edge design, effectively reducing machining resistance and achieving cutting speeds up to 10 times faster than traditional slitting saw.

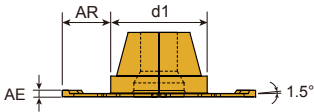
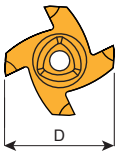
The UFO taper polygon positioning design ensures more precise locking mechanism, with no interference at the bottom of the tool.





# UFO T-slot Inserts- CN

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |     |         |                  |
|-----------------|----|-----|---------|------------------|
| D               | d1 | AE  | Max. AR | R                |
| 35              | 16 | 0.6 | 9       | R0.05<br>± 0.025 |
|                 |    | 0.8 |         |                  |
|                 |    | 1.0 |         |                  |
|                 |    | 1.2 |         |                  |
|                 |    | 1.4 |         |                  |
|                 |    | 1.6 |         |                  |
|                 |    | 1.8 |         |                  |
|                 |    | 2.0 |         |                  |

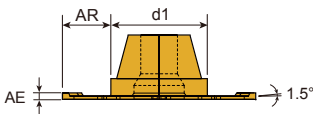
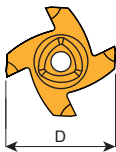
| Inserts                                                                                                                        | Order Code      | Grades                                                                              |      |      |     |     |        |      |          |  |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                                                                |                 | Carbide                                                                             |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                                                                |                 | B100                                                                                | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                    |
| <br><br>4 flutes                            | 3T1635CN-0.6-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                                                | 3T1635CN-0.8-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                                                | 3T1635CN-1.0-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                                                | 3T1635CN-1.2-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                                                | 3T1635CN-1.4-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                                                | 3T1635CN-1.6-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                                                | 3T1635CN-1.8-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                                                | 3T1635CN-2.0-ME |  |      |      |     |     |        |      |          |                                                                                    |
| <div></div> <div>Inserts 2 PCS / Box</div> |                 |                                                                                     |      |      |     |     |        |      |          |                                                                                    |

-  Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1635CN-0.6-ME, B100

# UFO T-slot Inserts- CN

- Toolholders P. 28
- Cutting Data P. 147 - 148

UFO Family



| Dimensions (mm) |    |     |         |                  |
|-----------------|----|-----|---------|------------------|
| D               | d1 | AE  | Max. AR | R                |
| 37              | 16 | 0.6 | 10      | R0.05<br>± 0.025 |
|                 |    | 0.8 |         |                  |
|                 |    | 1.0 |         |                  |
|                 |    | 1.2 |         |                  |
|                 |    | 1.4 |         |                  |
|                 |    | 1.6 |         |                  |
|                 |    | 1.8 |         |                  |
|                 |    | 2.0 |         |                  |

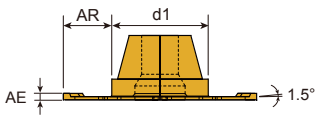
| Inserts                                                                                         | Order Code      | Grades  |      |      |     |     |        |      |          |                           |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|-------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                                             |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                                          |
| <br>4 flutes | 3T1637CN-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1637CN-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1637CN-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1637CN-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1637CN-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1637CN-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1637CN-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1637CN-2.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 |                 |         |      |      |     |     |        |      |          | <br>Inserts 2 PCS / Box |

-  Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1637CN-0.6-ME, B100



# UFO T-slot Inserts - N

- Toolholders P. 28
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |     |         |                     |
|-----------------|----|-----|---------|---------------------|
| D               | d1 | AE  | Max. AR | R                   |
| 35              | 16 | 0.6 | 9       | R0.05<br>±<br>0.025 |
|                 |    | 0.8 |         |                     |
|                 |    | 1.0 |         |                     |
|                 |    | 1.2 |         |                     |
|                 |    | 1.4 |         |                     |
|                 |    | 1.6 |         |                     |
|                 |    | 1.8 |         |                     |
|                 |    | 2.0 |         |                     |

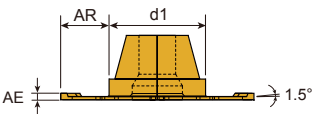
| Inserts                                                                                             | Order Code     | Grades  |      |      |     |     |        |      |          |  |                                                                                                             |
|-----------------------------------------------------------------------------------------------------|----------------|---------|------|------|-----|-----|--------|------|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                                                                                                     |                | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                     |                                                                                                             |
|                                                                                                     |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                     | CE                                                                                                          |
| <br><br>6 flutes | 3T1635N-0.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     | <br>Inserts 2 PCS / Box |
|                                                                                                     | 3T1635N-0.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |                                                                                                             |
|                                                                                                     | 3T1635N-1.0-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |                                                                                                             |
|                                                                                                     | 3T1635N-1.2-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |                                                                                                             |
|                                                                                                     | 3T1635N-1.4-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |                                                                                                             |
|                                                                                                     | 3T1635N-1.6-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |                                                                                                             |
|                                                                                                     | 3T1635N-1.8-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |                                                                                                             |
| 3T1635N-2.0-ME                                                                                      | ⊙              |         |      |      |     |     |        |      |          |                                                                                     |                                                                                                             |

-  Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1635N-0.6-ME, B100

# UFO T-slot Inserts - N

- Toolholders P. 28
- Cutting Data P. 147 - 148

UFO Family



| Dimensions (mm) |    |     |         |                  |
|-----------------|----|-----|---------|------------------|
| D               | d1 | AE  | Max. AR | R                |
| 37              | 16 | 0.6 | 10      | R0.05<br>± 0.025 |
|                 |    | 0.8 |         |                  |
|                 |    | 1.0 |         |                  |
|                 |    | 1.2 |         |                  |
|                 |    | 1.4 |         |                  |
|                 |    | 1.6 |         |                  |
|                 |    | 1.8 |         |                  |
|                 |    | 2.0 |         |                  |

| Inserts                                                                                             | Order Code     | Grades                                                                              |      |      |     |     |        |      |          |                          |
|-----------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|------|----------|-------------------------------------------------------------------------------------------------------------|
|                                                                                                     |                | Carbide                                                                             |      |      |     |     | Cermet |      | Uncoated |                                                                                                             |
|                                                                                                     |                | B100                                                                                | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                                             |
| <br><br>6 flutes | 3T1637N-0.6-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     | 3T1637N-0.8-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     | 3T1637N-1.0-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     | 3T1637N-1.2-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     | 3T1637N-1.4-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     | 3T1637N-1.6-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     | 3T1637N-1.8-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     | 3T1637N-2.0-ME |  |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                     |                |                                                                                     |      |      |     |     |        |      |          | <br>Inserts 2 PCS / Box |

-  Steel / Stainless Steel / Super alloy / Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1637N-0.6-ME, B100



# UFO T-SLOT CUTTER

**PATENTED**



Patent No. : M538848



Patent No. : ZL 2016 2 1300067.8



PCT Priority

## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

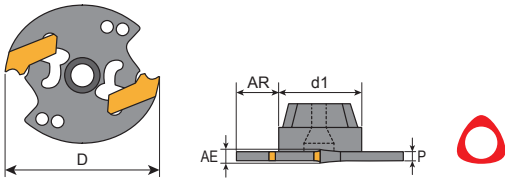
Efficiency  
**400%**  
UP

Durability  
**300%**  
UP

# UFO T-slot Cutters

- Toolholders P. 28
- Inserts P. 247 - 253
- Cutting Data P. 149 - 150

3T



| Order Code | Dimensions (mm) |    |     |                   |      | Z |  KG | MAX RPM | Inserts LN <sub>GT</sub> | Wrench    |  |
|------------|-----------------|----|-----|-------------------|------|---|--------------------------------------------------------------------------------------|---------|--------------------------|-----------|--|
|            | D               | d1 | AR  | AE                | P    |   |                                                                                      |         |                          |           |  |
| 3T1632-1.4 | 32              | 16 | 7.5 | 1.4<br>1.5        | 1.2  | 2 | 0.03                                                                                 | 8000    | 1414<br>1415             | 150.10-30 |  |
| 3T1632-1.6 |                 |    |     | 1.6               | 1.4  |   |                                                                                      |         | 1616                     |           |  |
| 3T1632-1.8 |                 |    |     | 1.8               | 1.6  |   |                                                                                      |         | 1818                     |           |  |
| 3T1632-2.0 |                 |    |     | 2.0<br>2.2<br>2.5 | 1.7  |   |                                                                                      |         | 2020<br>2022<br>2025     |           |  |
| 3T1632-2.5 |                 |    |     | 2.5<br>2.7<br>3.0 | 2.25 |   | 0.04                                                                                 |         | 2525<br>2527<br>2530     |           |  |
| 3T1632-3.0 |                 |    |     | 3.0<br>3.2<br>3.5 | 2.7  |   |                                                                                      |         | 3030<br>3032<br>3035     |           |  |
| 3T1632-4.0 |                 |    |     | 4.0<br>4.2<br>4.5 | 3.7  |   | 0.05                                                                                 |         | 4040<br>4042<br>4045     |           |  |
| 3T1632-5.0 |                 |    |     | 5.0<br>5.2<br>5.5 | 4.5  |   |                                                                                      |         | 5050<br>5052<br>5055     |           |  |

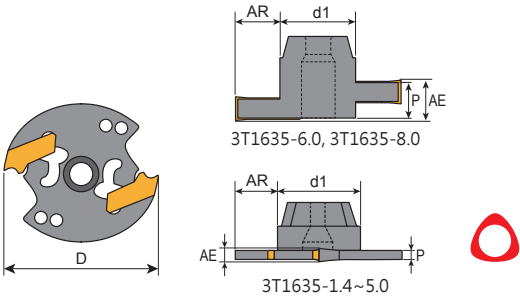
\* Wrench 150.10-30 for above cutter order seperately.



# UFO T-slot Cutters

- Toolholders P. 28
- Inserts P. 247 - 253
- Cutting Data P. 149 - 150

3T



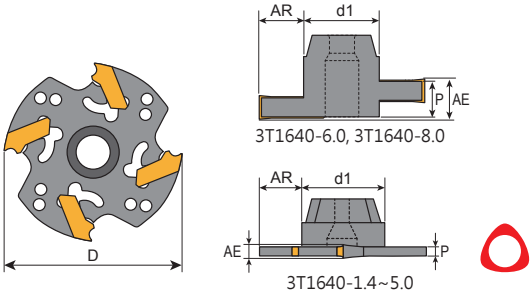
| Order Code | Dimensions (mm) |    |     |                   |      | Z | ZC |  KG | MAX RPM | Inserts LNGT         | Wrench    |
|------------|-----------------|----|-----|-------------------|------|---|----|--------------------------------------------------------------------------------------|---------|----------------------|-----------|
|            | D               | d1 | AR  | AE                | P    |   |    |                                                                                      |         |                      |           |
| 3T1635-1.4 | 35              | 16 | 9.0 | 1.4<br>1.5        | 1.2  | 2 | 2  | 0.03                                                                                 | 8000    | 1414<br>1415         | 150.10-30 |
| 3T1635-1.6 |                 |    |     | 1.6               | 1.4  |   |    |                                                                                      |         | 1616                 |           |
| 3T1635-1.8 |                 |    |     | 1.8               | 1.6  |   |    |                                                                                      |         | 1818                 |           |
| 3T1635-2.0 |                 |    |     | 2.0<br>2.2<br>2.5 | 1.7  |   |    |                                                                                      |         | 2020<br>2022<br>2025 |           |
| 3T1635-2.5 |                 |    |     | 2.5<br>2.7<br>3.0 | 2.25 |   |    | 2525<br>2527<br>2530                                                                 |         |                      |           |
| 3T1635-3.0 |                 |    |     | 3.0<br>3.2<br>3.5 | 2.7  |   |    | 3030<br>3032<br>3035                                                                 |         |                      |           |
| 3T1635-4.0 |                 |    |     | 4.0<br>4.2<br>4.5 | 3.7  |   |    | 4040<br>4042<br>4045                                                                 |         |                      |           |
| 3T1635-5.0 |                 |    |     | 5.0<br>5.2<br>5.5 | 4.5  |   |    | 5050<br>5052<br>5055                                                                 |         |                      |           |
| 3T1635-6.0 |                 |    |     | 6.0               | 5.5  |   | 1  | 0.05                                                                                 |         | 5050NS               |           |
| 3T1635-8.0 |                 |    |     | 8.0               | 7.5  |   |    |                                                                                      |         |                      |           |

\* Wrench 150.10-30 for above cutter order seperately.

# UFO T-slot Cutters

- Toolholders P. 28
- Inserts P. 247 - 253
- Cutting Data P. 149 - 150

3T



UFO Family

| Order Code | Dimensions (mm) |    |      |                   |      | Z | ZC |  | MAX RPM | Inserts LNGT         | Wrench    |        |
|------------|-----------------|----|------|-------------------|------|---|----|-----------------------------------------------------------------------------------|---------|----------------------|-----------|--------|
|            | D               | d1 | AR   | AE                | P    |   |    |                                                                                   |         |                      |           |        |
| 3T1640-1.4 | 40              | 16 | 11.5 | 1.4<br>1.5        | 1.2  | 4 | -  | 0.03                                                                              | 7500    | 1414<br>1415         | 150.10-30 |        |
| 3T1640-1.6 |                 |    |      | 1.6               | 1.4  |   |    |                                                                                   |         | 1616                 |           |        |
| 3T1640-1.8 |                 |    |      | 1.8               | 1.6  |   |    |                                                                                   |         | 1818                 |           |        |
| 3T1640-2.0 |                 |    |      | 2.0<br>2.2<br>2.5 | 1.7  |   |    |                                                                                   |         | 2020<br>2022<br>2025 |           |        |
| 3T1640-2.5 |                 |    |      | 2.5<br>2.7<br>3.0 | 2.25 |   |    | 0.05                                                                              |         | 2525<br>2527<br>2530 |           |        |
| 3T1640-3.0 |                 |    |      | 3.0<br>3.2<br>3.5 | 2.7  |   |    |                                                                                   |         | 3030<br>3032<br>3035 |           |        |
| 3T1640-4.0 |                 |    |      | 4.0<br>4.2<br>4.5 | 3.7  |   |    | 0.06                                                                              |         | 4040<br>4042<br>4045 |           |        |
| 3T1640-5.0 |                 |    |      | 5.0<br>5.2<br>5.5 | 4.5  |   |    |                                                                                   |         | 5050<br>5052<br>5055 |           |        |
| 3T1640-6.0 |                 |    |      | 6.0               | 5.5  |   |    |                                                                                   |         | 2                    |           | 5050NS |
| 3T1640-8.0 |                 |    |      | 8.0               | 7.5  |   |    |                                                                                   |         |                      |           |        |

\* Wrench 150.10-30 for above cutter order seperately.

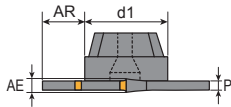
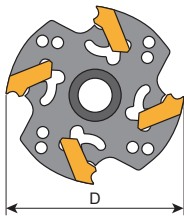




# UFO T-slot Cutters

- Toolholders P. 29
- Inserts P. 247 - 253
- Cutting Data P. 149 - 150

3T



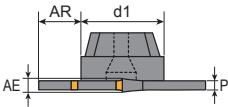
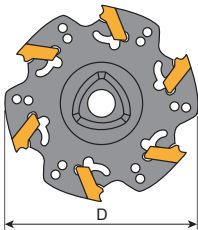
| Order Code | Dimensions (mm) |    |    |                   |      | Z |  KG | MAX RPM | Inserts LNGT         | Wrench    |
|------------|-----------------|----|----|-------------------|------|---|--------------------------------------------------------------------------------------|---------|----------------------|-----------|
|            | D               | d1 | AR | AE                | P    |   |                                                                                      |         |                      |           |
| 3T2550-1.4 | 50              | 25 | 12 | 1.4               | 1.2  | 4 | 0.07                                                                                 | 7000    | 1414<br>1415         | 150.10-30 |
| 3T2550-1.6 |                 |    |    | 1.6               | 1.4  |   | 0.08                                                                                 |         | 1616                 |           |
| 3T2550-1.8 |                 |    |    | 1.8               | 1.6  |   | 0.08                                                                                 |         | 1818                 |           |
| 3T2550-2.0 |                 |    |    | 2.0<br>2.2<br>2.5 | 1.7  |   | 0.08                                                                                 |         | 2020<br>2022<br>2025 |           |
| 3T2550-2.5 |                 |    |    | 2.5<br>2.7<br>3.0 | 2.25 |   | 0.09                                                                                 |         | 2525<br>2527<br>2530 |           |
| 3T2550-3.0 |                 |    |    | 3.0<br>3.2<br>3.5 | 2.7  |   | 0.09                                                                                 |         | 3030<br>3032<br>3035 |           |
| 3T2550-4.0 |                 |    |    | 4.0<br>4.2<br>4.5 | 3.7  |   | 0.10                                                                                 |         | 4040<br>4042<br>4045 |           |
| 3T2550-5.0 |                 |    |    | 5.0<br>5.2<br>5.5 | 4.5  |   | 0.10                                                                                 |         | 5050<br>5052<br>5055 |           |

\* Wrench 150.10-30 for above cutter order seperately.

# UFO T-slot Cutters

- Toolholders P. 29
- Inserts P. 247 - 253
- Cutting Data P. 149 - 150

3T



| Order Code | Dimensions (mm) |    |    |                   |      | Z |  KG | MAX RPM | Inserts LNGT         | Wrench    |
|------------|-----------------|----|----|-------------------|------|---|--------------------------------------------------------------------------------------|---------|----------------------|-----------|
|            | D               | d1 | AR | AE                | P    |   |                                                                                      |         |                      |           |
| 3T2560-1.4 | 60              | 25 | 17 | 1.4<br>1.5        | 1.2  | 6 | 0.09                                                                                 | 6500    | 1414<br>1415         | 150.10-30 |
| 3T2560-1.6 |                 |    |    | 1.6               | 1.4  |   |                                                                                      |         | 1616                 |           |
| 3T2560-1.8 |                 |    |    | 1.8               | 1.6  |   |                                                                                      |         | 1818                 |           |
| 3T2560-2.0 |                 |    |    | 2.0<br>2.2<br>2.5 | 1.7  |   |                                                                                      |         | 2020<br>2022<br>2025 |           |
| 3T2560-2.5 |                 |    |    | 2.5<br>2.7<br>3.0 | 2.25 |   | 2525<br>2527<br>2530                                                                 |         |                      |           |
| 3T2560-3.0 |                 |    |    | 3.0<br>3.2<br>3.5 | 2.7  |   | 3030<br>3032<br>3035                                                                 |         |                      |           |
| 3T2560-4.0 |                 |    |    | 4.0<br>4.2<br>4.5 | 3.7  |   | 4040<br>4042<br>4045                                                                 |         |                      |           |
| 3T2560-5.0 |                 |    |    | 5.0<br>5.2<br>5.5 | 4.5  |   | 5050<br>5052<br>5055                                                                 |         |                      |           |

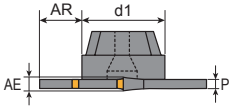
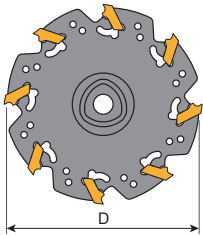
\* Wrench 150.10-30 for above cutter order seperately.



# UFO T-slot Cutters

- Toolholders P. 29
- Inserts P. 247 - 253
- Cutting Data P. 149 - 150

3T



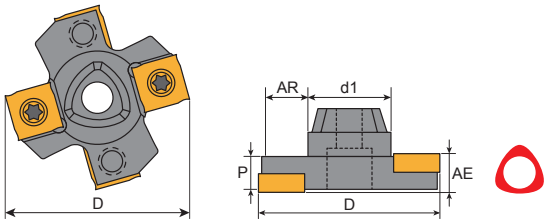
| Order Code  | Dimensions (mm) |    |    |                   |      | Z  |  | MAX RPM | Inserts LNGT         | Wrench    |
|-------------|-----------------|----|----|-------------------|------|----|-----------------------------------------------------------------------------------|---------|----------------------|-----------|
|             | D               | d1 | AR | AE                | P    |    |                                                                                   |         |                      |           |
| 3T2580-1.4  | 80              | 25 | 27 | 1.4<br>1.5        | 1.2  | 8  | 0.11                                                                              | 6500    | 1414<br>1415         | 150.10-30 |
| 3T2580-1.6  |                 |    |    | 1.6               | 1.4  |    |                                                                                   |         | 1616                 |           |
| 3T2580-1.8  |                 |    |    | 1.8               | 1.6  |    |                                                                                   |         | 1818                 |           |
| 3T2580-2.0  |                 |    |    | 2.0<br>2.2<br>2.5 | 1.7  |    |                                                                                   |         | 2020<br>2022<br>2025 |           |
| 3T2580-2.5  |                 |    |    | 2.5<br>2.7<br>3.0 | 2.25 |    | 2525<br>2527<br>2530                                                              |         |                      |           |
| 3T2580-3.0  |                 |    |    | 3.0<br>3.2<br>3.5 | 2.7  |    | 3030<br>3032<br>3035                                                              |         |                      |           |
| 3T2580-4.0  |                 |    |    | 4.0<br>4.2<br>4.5 | 3.7  |    | 4040<br>4042<br>4045                                                              |         |                      |           |
| 3T2580-5.0  |                 |    |    | 5.0<br>5.2<br>5.5 | 4.5  |    | 5050<br>5052<br>5055                                                              |         |                      |           |
| 3T25100-2.0 | 100             | 25 | 37 | 2.0<br>2.2<br>2.5 | 1.7  | 10 | 0.15                                                                              | 5200    | 2020<br>2022<br>2025 |           |
| 3T25100-2.5 |                 |    |    | 2.5<br>2.7<br>3.0 | 2.25 |    |                                                                                   |         | 2525<br>2527<br>2530 |           |
| 3T25100-3.0 |                 |    |    | 3.0<br>3.2<br>3.5 | 2.7  |    | 3030<br>3032<br>3035                                                              |         |                      |           |
| 3T25100-4.0 |                 |    |    | 4.0<br>4.2<br>4.5 | 3.7  |    | 4040<br>4042<br>4045                                                              |         |                      |           |
| 3T25100-5.0 |                 |    |    |                   |      |    | 5050<br>5052<br>5055                                                              |         |                      |           |

\* Wrench 150.10-30 for above cutter order seperately.

# UFO T-slot Cutters

- Toolholders P. 29
- Inserts P. 254 - 256
- Cutting Data P. 151 - 152

3TS



| Order Code  | Dimensions (mm) |    |    |    |     | Z | Zc |  KG | MAX RPM | Inserts SNGX SNGW | Screw | Key     |
|-------------|-----------------|----|----|----|-----|---|----|--------------------------------------------------------------------------------------|---------|-------------------|-------|---------|
|             | D               | d1 | AR | AE | P   |   |    |                                                                                      |         |                   |       |         |
| 3TS2550-4.0 | 50              | 25 | 12 | 4  | 3.4 | 4 | 2  | 0.09                                                                                 | 17000   | 1102              | T9354 | 908-T9  |
| 3TS2550-5.0 |                 |    |    | 5  | 4.2 |   |    |                                                                                      |         | 1103              | T9355 | 908-T8  |
| 3TS2550-6.0 |                 |    |    | 6  | 5   |   |    |                                                                                      |         | 1203              | T945  | 908-T15 |
| 3TS2550-7.0 |                 |    |    | 7  | 6   |   |    | 0.10                                                                                 |         | 1204              | T946  |         |
| 3TS2550-8.0 |                 |    |    | 8  | 7   |   |    |                                                                                      |         | 12045             | T947  |         |
| 3TS2550-10  |                 |    |    | 10 | 9   |   |    | 0.12                                                                                 |         | 1205              | T948  |         |
| 3TS2550-12  |                 |    |    | 12 | 11  |   |    |                                                                                      |         | 1207              | T9411 |         |

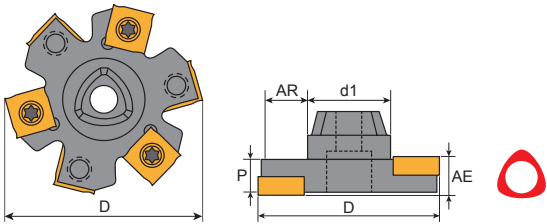
\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).



# UFO T-slot Cutters

- Toolholders P. 29
- Inserts P. 254 - 256
- Cutting Data P. 151 - 152

3TS



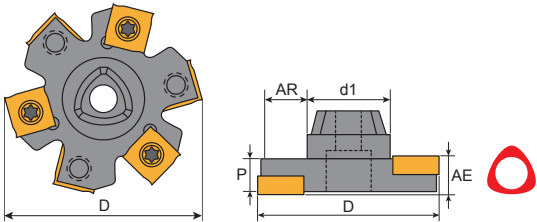
| Order Code  | Dimensions (mm) |    |    |    |     | Z | Zc |  | MAX RPM | Inserts SNGX SNGW | Screw | Key     |
|-------------|-----------------|----|----|----|-----|---|----|-----------------------------------------------------------------------------------|---------|-------------------|-------|---------|
|             | D               | d1 | AR | AE | P   |   |    |                                                                                   |         |                   |       |         |
| 3TS2560-4.0 | 60              | 25 | 17 | 4  | 3.4 | 6 | 3  | 0.10                                                                              | 15000   | 1102              | T9354 | 908-T9  |
| 3TS2560-5.0 |                 |    |    | 5  | 4.2 |   |    |                                                                                   |         | 1103              | T9355 | 908-T8  |
| 3TS2560-6.0 |                 |    |    | 6  | 5   |   |    | 0.12                                                                              |         | 1203              | T945  | 908-T15 |
| 3TS2560-7.0 |                 |    |    | 7  | 6   |   |    |                                                                                   |         | 1204              | T946  |         |
| 3TS2560-8.0 |                 |    |    | 8  | 7   |   |    |                                                                                   |         | 12045             | T947  |         |
| 3TS2560-10  |                 |    |    | 10 | 9   |   |    | 0.17                                                                              |         | 1205              | T948  |         |
| 3TS2560-12  |                 |    |    | 12 | 11  |   |    |                                                                                   |         | 0.18              | 1207  |         |

\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).

# UFO T-slot Cutters

- Toolholders P. 29
- Inserts P. 254 - 256
- Cutting Data P. 151 - 152

3TS



| Order Code  | Dimensions (mm) |    |    |    |      | Z     | Zc   |  | MAX RPM | Inserts SNGX SNGW | Screw | Key     |
|-------------|-----------------|----|----|----|------|-------|------|-----------------------------------------------------------------------------------|---------|-------------------|-------|---------|
|             | D               | d1 | AR | AE | P    |       |      |                                                                                   |         |                   |       |         |
| 3TS2580-4.0 | 80              | 25 | 27 | 4  | 3.4  | 8     | 4    | 0.13                                                                              | 14000   | 1102              | T9354 | 908-T9  |
| 3TS2580-5.0 |                 |    |    | 5  | 4.2  |       |      |                                                                                   |         | 1103              | T9355 | 908-T8  |
| 3TS2580-6.0 |                 |    |    | 6  | 5    |       |      |                                                                                   |         | 1203              | T945  | 908-T15 |
| 3TS2580-7.0 |                 |    | 7  | 6  | 0.21 | 1204  | T946 |                                                                                   |         |                   |       |         |
| 3TS2580-8.0 |                 |    | 8  | 7  |      | 12045 | T947 |                                                                                   |         |                   |       |         |
| 3TS2580-10  |                 |    | 10 | 9  | 6    | 3     | 0.31 | 1205                                                                              |         | T948              |       |         |
| 3TS2580-12  |                 |    | 12 | 11 |      |       |      | 1207                                                                              |         | T9411             |       |         |

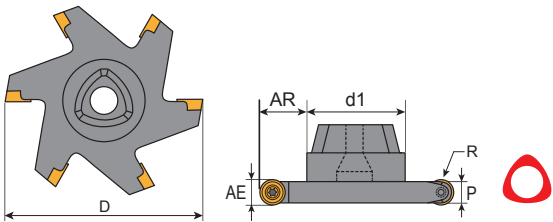
\* Fit Insert SNGW...R2.5 and R3.0,cutter have to modified (ask salesman).



# UFO T-slot Cutters

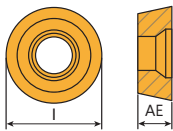
• Toolholders P. 29

3T

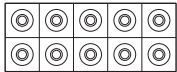


| Order Code | Dimensions (mm) |    |    |    |     |    | Z |  | MAX RPM | Inserts<br>RDKW<br>RDKT<br>RPKT | Screw          | Key  |  |
|------------|-----------------|----|----|----|-----|----|---|-----------------------------------------------------------------------------------|---------|---------------------------------|----------------|------|--|
|            | D               | d1 | AR | AE | P   | R  |   |                                                                                   |         |                                 |                |      |  |
| 3T2560-R4  | 60              | 25 | 17 | 8  | 6.2 | 4R | 6 | 0.20                                                                              | 13000   | 0803                            | C02506         | T08P |  |
| 3T2580-R4  | 80              |    | 27 |    |     |    |   | 0.20                                                                              | 12000   |                                 |                |      |  |
| 3T2560-R5  | 60              |    | 17 | 10 | 8.0 | 5R | 4 | 0.30                                                                              | 13000   | 10T3                            | C03007         | T09P |  |
| 3T2580-R5  | 80              |    | 27 |    |     |    |   | 0.30                                                                              | 12000   |                                 |                |      |  |
| 3T2560-R6  | 60              |    | 17 | 12 | 10  | 6R |   | 0.40                                                                              | 9500    | 1204                            | C03508<br>-T15 | T15P |  |
| 3T2580-R6  | 80              |    | 27 |    |     |    |   | 0.40                                                                              | 9000    |                                 |                |      |  |

## RDKT / RDKW / RPKT Inserts



Tolerances (mm)  
D=±0.04 AE=±0.05



Inserts 10 PCS / Box

| Dimensions (mm) |      |    |   |
|-----------------|------|----|---|
| Code            | AE   | I  | R |
| 0803            | 3.05 | 8  | 4 |
| 10T3            | 3.97 | 10 | 5 |
| 1204            | 4.7  | 12 | 6 |

| Inserts | Order Code      | Grades  |      |      |     |     |              |      |          |  |
|---------|-----------------|---------|------|------|-----|-----|--------------|------|----------|--|
|         |                 | Carbide |      |      |     |     | Metal cermet |      | Uncoated |  |
|         |                 | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 |          |  |
|         | RDKW 0803MOT-MD |         |      |      |     |     |              |      |          |  |
|         | RDKT 10T3MOT-M  |         |      |      |     |     |              |      |          |  |
|         | RPKT 1204MOT-M  |         |      |      |     |     |              |      |          |  |

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: RDKW 0803MOT-MD, B100

UFO  
RADIUS  
DUAL CORNER ROUNDING  
CONCAVE RADIUS  
DUAL CHAMFER  
DOVETAIL  
CIRCLIP



Video

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## Features

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materials



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Machines  
CNC Milling machine

Efficiency  
**400%**  
UP

Durability  
**300%**  
UP



YIH TROUN ENTERPRISE CO., LTD





# UFO



## UFO Radius Inserts

R0.5 to R3.0 cutters are readily available in stock. Performs impressive cutting speed in 6 flutes.

**Fig.1**

## UFO Dovetail Inserts

Available with 45°, 60° angles and designed with 6 flutes.

## UFO Dual Chamfer

Up and down chamfering are available in the same insert.

Support different angles and radii:

- 45° chamfer: Ø9.8-Ø11.8-Ø14.8 with 4 teeth.
- Radius: R0.5~R2.0, Ø9.8-Ø11.8-Ø19.8 with 4 teeth.

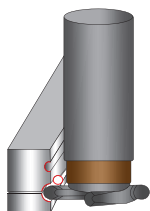
**Fig.2/3/4**

## UFO Circlip Inserts

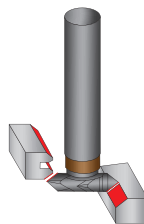
For circlip range: 1.1~4.15 mm

Same shank fits all different inserts. All items are available from stock.

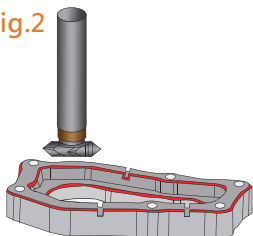
**Fig.1**



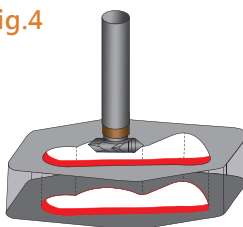
**Fig.3**



**Fig.2**

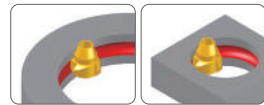


**Fig.4**

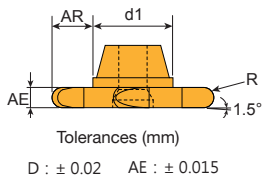


## UFO Radius Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



UFO Family



| Dimensions (mm) |    |     |      |         |
|-----------------|----|-----|------|---------|
| D               | d1 | AE  | R    | Max. AR |
| 20              | 10 | 1.0 | 0.5  | 4.5     |
|                 |    | 1.5 | 0.75 |         |
|                 |    | 2.0 | 1.0  |         |
|                 |    | 2.5 | 1.25 |         |
|                 |    | 3.0 | 1.5  |         |
|                 |    | 4.0 | 2.0  |         |
|                 |    | 5.0 | 2.5  |         |
|                 |    | 6.0 | 3.0  |         |

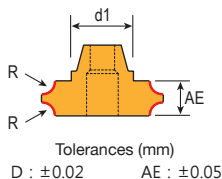
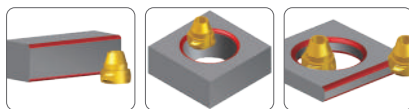
| Inserts                                                                                             | Order Code      | Grades  |      |      |     |     |              |      |          |    |  |                               |
|-----------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------------|------|----------|----|--|-----------------------------------------------------------------------------------------------------------------|
|                                                                                                     |                 | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |  |                                                                                                                 |
|                                                                                                     |                 | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |  |                                                                                                                 |
| <br><br>6 flutes | 3T1020-R0.5-E   |         |      |      |     |     |              |      |          |    |  | <br><br>Inserts 2 PCS / Box |
|                                                                                                     | 3T1020-R0.75-E  |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R1.0-E   |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R1.25-E  |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R1.5-E   |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R2.0-E   |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R2.5-E   |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R3.0-E   |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R0.5-ME  | ⊙       |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R0.75-ME | ⊙       |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R1.0-ME  | ⊙       |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R1.25-ME | ⊙       |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R1.5-ME  | ⊙       |      |      |     |     |              |      |          |    |  |                                                                                                                 |
|                                                                                                     | 3T1020-R2.0-ME  | ⊙       |      |      |     |     |              |      |          |    |  |                                                                                                                 |
| 3T1020-R2.5-ME                                                                                      | ⊙               |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |
| 3T1020-R3.0-ME                                                                                      | ⊙               |         |      |      |     |     |              |      |          |    |  |                                                                                                                 |

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-R0.5-E, F20



# UFO Dual Corner Rounding Inserts

- Toolholders P. 24 、 P. 26
- Cutting Data P. 147 - 148



Dimensions (mm)

| D    | d1  | AE  | R    | Max. AR |
|------|-----|-----|------|---------|
| 9.8  | 6.5 | 3.0 | 0.5  | 0.5     |
| 11.8 |     | 3.0 | 0.5  | 0.5     |
|      |     | 4.0 | 1.0  | 1.0     |
|      |     | 5.0 | 1.5  | 1.5     |
| 19.8 | 10  | 3.0 | 0.5  | 0.5     |
|      |     | 3.5 | 0.75 | 0.75    |
|      |     | 4.0 | 1.0  | 1.0     |
|      |     | 4.5 | 1.25 | 1.25    |
|      |     | 5.0 | 1.5  | 1.5     |
|      |     | 6.0 | 2.0  | 2.0     |

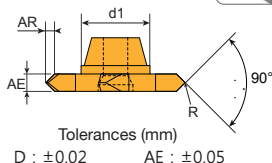
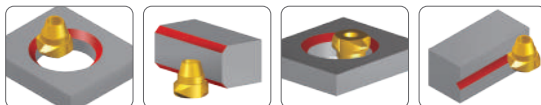
| Inserts                                                                                                    | Order Code        | Grades  |      |      |     |     |              |      |          |    |  |  |
|------------------------------------------------------------------------------------------------------------|-------------------|---------|------|------|-----|-----|--------------|------|----------|----|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                                                                                                            |                   | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |                                                                                   |                                                                                    |
|                                                                                                            |                   | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |                                                                                   |                                                                                    |
| <br>4 flutes<br>dia 10-12 | 3T0610-DCR0.5-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T0612-DCR0.5-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T0612-DCR1.0-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T0612-DCR1.5-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR0.5-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR0.75-E  |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR1.0-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR1.25-E  |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR1.5-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR2.0-E   |         |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
| <br>6 flutes<br>dia 20  | 3T0610-DCR0.5-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T0612-DCR0.5-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T0612-DCR1.0-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T0612-DCR1.5-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR0.5-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR0.75-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR1.0-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR1.25-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR1.5-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |
|                                                                                                            | 3T1020-DCR2.0-ME  | ⊙       |      |      |     |     |              |      |          |    |                                                                                   |                                                                                    |

Inserts 2 PCS / Box

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0610-DCR0.5-E,F20

# UFO Dual Chamfer Inserts

- Toolholders P. 24 - 25
- Cutting Data P. 147 - 148

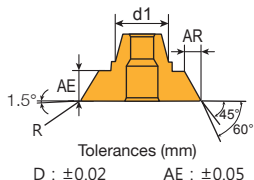
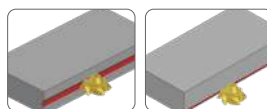


| Dimensions (mm) |     |    |         |     |
|-----------------|-----|----|---------|-----|
| D               | d1  | AE | Max. AR | R   |
| 9.8             | 6.5 | 3  | 0.5     | 0.2 |
| 11.8            |     |    | 1.0     |     |
| 14.8            | 8   |    |         |     |

| Inserts                                                                                       | Order Code     | Grades                                                                            |      |      |     |     |              |          |     |    |                          |  |
|-----------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|------|------|-----|-----|--------------|----------|-----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                               |                | Carbide                                                                           |      |      |     |     | Metal cermet | Uncoated |     |    |                                                                                                                                                                                             |  |
|                                                                                               |                | B100                                                                              | C200 | C250 | F20 | F30 | CE25         | CE60     | K10 | CE |                                                                                                                                                                                             |  |
| <br>4 flutes | 3T0610-3-45-E  |                                                                                   |      |      |     |     |              |          |     |    |  <br>Inserts 2 PCS / Box |  |
|                                                                                               | 3T0612-3-45-E  |                                                                                   |      |      |     |     |              |          |     |    |                                                                                                                                                                                             |  |
|                                                                                               | 3T0815-3-45-E  |                                                                                   |      |      |     |     |              |          |     |    |                                                                                                                                                                                             |  |
|                                                                                               | 3T0610-3-45-ME |  |      |      |     |     |              |          |     |    |                                                                                                                                                                                             |  |
|                                                                                               | 3T0612-3-45-ME |  |      |      |     |     |              |          |     |    |                                                                                                                                                                                             |  |
|                                                                                               | 3T0815-3-45-ME |  |      |      |     |     |              |          |     |    |                                                                                                                                                                                             |  |

# UFO Dovetail Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |     |       |         |     |
|-----------------|----|-----|-------|---------|-----|
| D               | d1 | AE  | Angle | Max. AR | R   |
| 20              | 10 | 5.0 | 45°   | 3.0     | 0.4 |
|                 |    |     | 60°   | 2.5     |     |

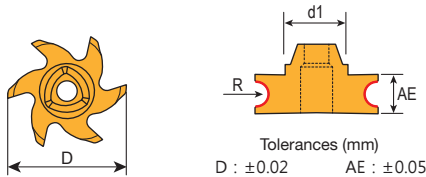
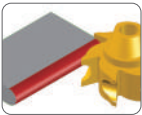
| Inserts                                                                                         | Order Code   | Grades                                                                              |      |      |     |     |              |      |          |    |  |                                                                                                             |
|-------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------------|------|----------|----|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                                                                                                 |              | Carbide                                                                             |      |      |     |     | Metal cermet |      | Uncoated |    |                                                                                      |                                                                                                             |
|                                                                                                 |              | B100                                                                                | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |                                                                                      |                                                                                                             |
| <br>6 flutes | 3T1020-45-E  |                                                                                     |      |      |     |     |              |      |          |    |                                                                                      | <br>Inserts 2 PCS / Box |
|                                                                                                 | 3T1020-60-E  |                                                                                     |      |      |     |     |              |      |          |    |                                                                                      |                                                                                                             |
|                                                                                                 | 3T1020-45-ME |  |      |      |     |     |              |      |          |    |                                                                                      |                                                                                                             |
|                                                                                                 | 3T1020-60-ME |  |      |      |     |     |              |      |          |    |                                                                                      |                                                                                                             |

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-45-E,F20



# UFO Concave Radius Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



| Dimensions (mm) |    |     |      |
|-----------------|----|-----|------|
| D               | d1 | AE  | R    |
| 20              | 10 | 4.5 | 1.0  |
|                 |    | 5.0 | 1.25 |
|                 |    | 5.5 | 1.5  |
|                 |    | 6.5 | 2.0  |



| Inserts                                                                                         | Order Code       | Grades  |      |      |     |     |              |      |          |   |
|-------------------------------------------------------------------------------------------------|------------------|---------|------|------|-----|-----|--------------|------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                  | Carbide |      |      |     |     | Metal cermet |      | Uncoated |                                                                                                                                                                      |
|                                                                                                 |                  | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE                                                                                                                                                                   |
| <br>6 flutes | 3T1020-CR1.0-E   |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T1020-CR1.25-E  |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T1020-CR1.5-E   |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T1020-CR2.0-E   |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 |                  |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 |                  |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 |                  |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 |                  |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T1020-CR1.0-ME  | ☉       |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T1020-CR1.25-ME | ☉       |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T1020-CR1.5-ME  | ☉       |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 | 3T1020-CR2.0-ME  | ☉       |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 |                  |         |      |      |     |     |              |      |          |                                                                                                                                                                      |
|                                                                                                 |                  |         |      |      |     |     |              |      |          |                                                                                                                                                                      |



Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-CR1.0-E, F20

# UFO Circlip Inserts

- Toolholders P. 26
- Cutting Data P. 147 - 148



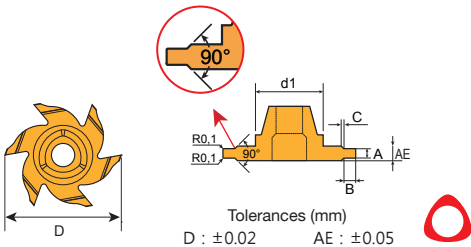
DIN471

DIN472



Offer customized items at standard prices by MOQ 12 pcs

UFO Family



| Dimensions (mm) |    |      |         |      |     |     |
|-----------------|----|------|---------|------|-----|-----|
| D               | d1 | A    | Circlip | B    | C   | AE  |
| 20              | 10 | 1.21 | 1.1     | 0.5  | 0.1 | 2.2 |
|                 |    | 1.41 | 1.3     | 0.85 |     |     |
|                 |    | 1.71 | 1.6     | 1.0  |     |     |
|                 |    | 1.96 | 1.85    | 1.25 | 0.2 | 3   |
|                 |    | 2.26 | 2.15    | 1.5  |     |     |
|                 |    | 2.76 | 2.65    | 1.75 |     | 3.5 |
|                 |    | 3.26 | 3.15    | 1.75 |     | 4   |
|                 |    | 4.26 | 4.15    | 2.0  |     | 5   |

| Inserts                                                                                         | Order Code      | Grades  |      |      |     |     |              |          |     |                           |  |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------------|----------|-----|-------------------------------------------------------------------------------------------------------------|--|
|                                                                                                 |                 | Carbide |      |      |     |     | Metal cermet | Uncoated |     |                                                                                                             |  |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE25         | CE60     | K10 | CE                                                                                                          |  |
| <br>6 flutes | C3T1020-1.1-E   |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-1.3-E   |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-1.6-E   |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-1.85-E  |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-2.15-E  |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-2.65-E  |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-3.15-E  |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-4.15-E  |         |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-1.1-ME  | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-1.3-ME  | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-1.6-ME  | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-1.85-ME | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-2.15-ME | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-2.65-ME | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-3.15-ME | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 | C3T1020-4.15-ME | ⊙       |      |      |     |     |              |          |     |                                                                                                             |  |
|                                                                                                 |                 |         |      |      |     |     |              |          |     | <br>Inserts 2 PCS / Box |  |

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: C3T1020-1.1-E,K10



# UFO THREAD MILLING



## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

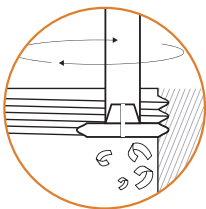
Efficiency  
**400%**  
UP

Durability  
**300%**  
UP

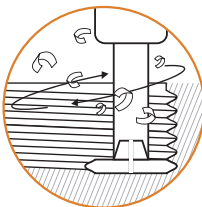




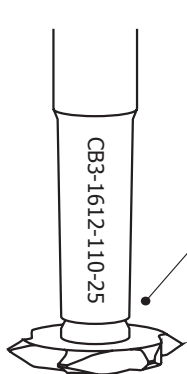
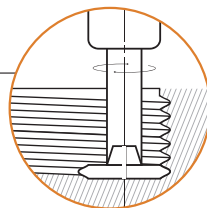
1 / Excellent chip evacuation



2 / High stability & Low cutting forces



3 / Same insert can make different pitches of thread.





## Product Advantages

Indexable UFO thread mill - Excellent in chip evacuation and small cutting force.

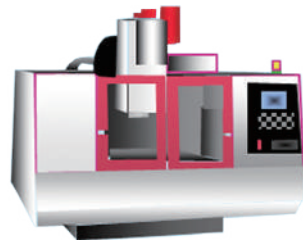
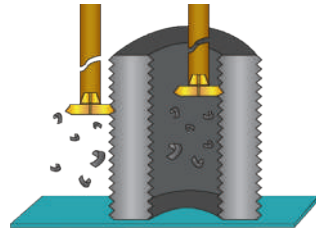
## Insert Design

1. Yih Troun provides UFO thread milling inserts applicable to metric, UN and withworth both in full profile and partial profile. Full profile inserts are available from  $\varnothing 10$ /pitch1.0; partial profile inserts are available from  $\varnothing 12$ /pitch1.0.
2. Unique tapered polygon design to get the excellent stability in high speed machining.
3. The front-mounted insert are positioned in a taper seat for center-positioning, giving secure and continuous performance.
4. High productivity with many teeth (4-6 teeth).

## New

UFO thread mill is the best choice for expensive components, it's excellent in chip evacuation, averts chip twining and tap breakage at the last stage of machining, exempts machines from unscheduled down time.

The UFO thread mill insert generates machining cutting force least from its single-point design. It's the first choice for medium to large threads milling in BT30 CNC machining centers, thin-walled components and unstable conditions such as milling thread with a long overhang.



---

## Old

Machining with conventional HSS/ carbide solid tap gets problems easily in chip evacuation, tap breakage on the parts and machining stoppage, It takes time and cost to remove the breakage tap.



# Advantages Of Partial Profile Ufo Thread Milling

## FIG.1

Same UFO thread milling insert is applicable to a wide range of hole sizes and thread pitches.

If use taps, it needs different taps for different hole sizes and different pitches.

## FIG.2

UFO thread milling achieves full-bottom threading in a blind hole with a least drill depth.

It's easy to fix thread tolerance by programme.

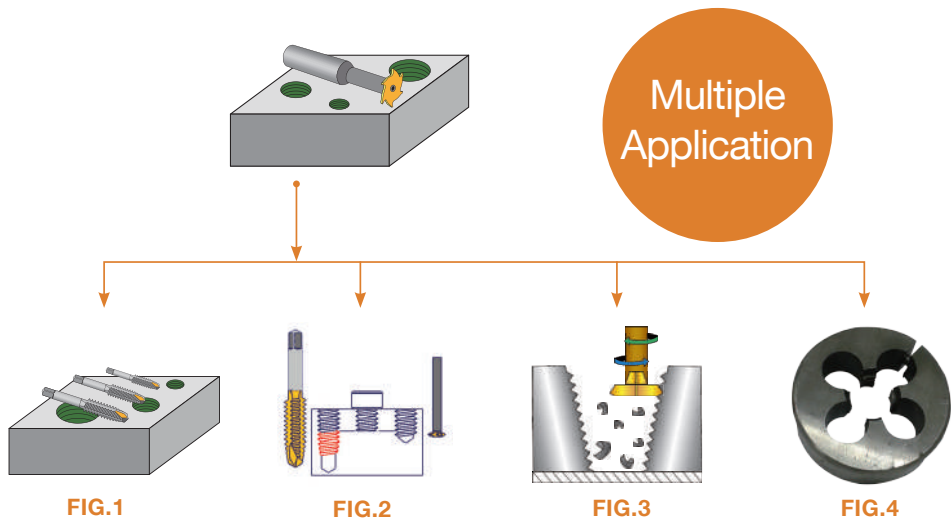
## FIG.3

Same UFO thread milling inserts can be used in PT(NPT) thread.

It provides better tool life and less cutting force than PT tap.

## FIG.4

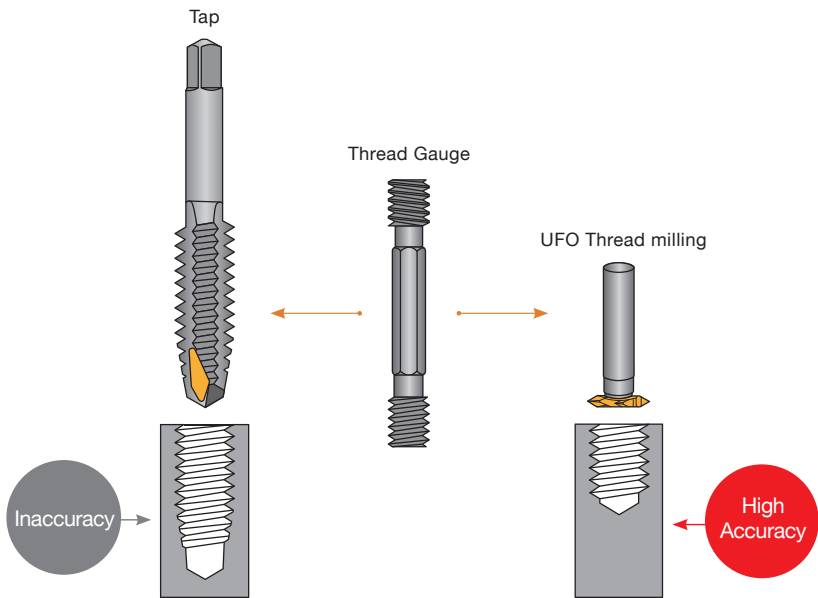
Same UFO thread milling insert is available for both external and internal threads.



# Tools Comparison

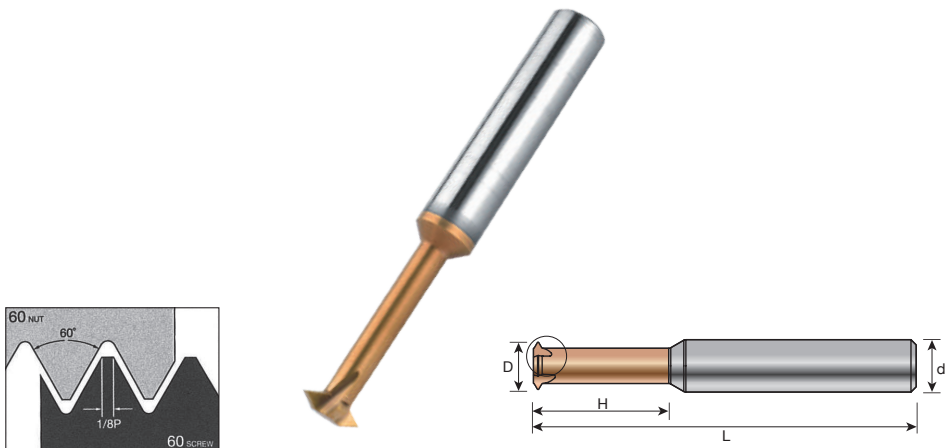
| UFO partial profile insert                                                                                     | Tap                                                                               | Solid carbide thread milling                                                                           | Thread milling insert                                                                                  |
|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|                               |  |                       |                       |
| One insert applicable to a wide pitch range                                                                    | Single pitch                                                                      | Single pitch                                                                                           | Single pitch                                                                                           |
|                                                                                                                |                                                                                   | Expensive                                                                                              |                                                                                                        |
| Min dia. 12mm , 4~6 teeth                                                                                      |                                                                                   |                                                                                                        | Large size and less no. of tooth                                                                       |
|                                                                                                                | Deeper pre-drilling hole is required                                              |                                                                                                        |                                                                                                        |
| Single cutting edge with multiple teeth results in less cutting force, available even in small horse power M/C | Bigger horse power M/C is required in big hole machining                          | Multiple pitches design results in higher cutting force and lower feed in machining difficult material | Multiple pitches design results in higher cutting force and lower feed in machining difficult material |
| Less cutting force in machining taper thread                                                                   | Additional taper tap is required                                                  | Not available in taper thread                                                                          | Not available in taper thread                                                                          |

## Precise Thread By UFO Thread Milling



# Solid Carbide Thread Milling - Partial Profile 60°

• Cutting Data P. 153

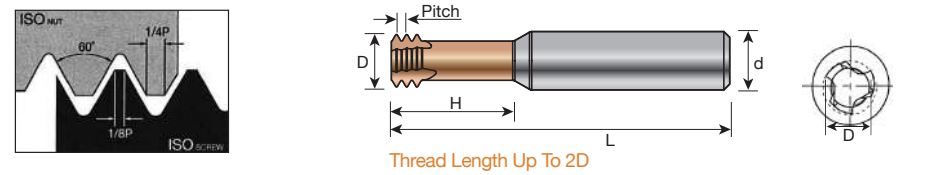


| Order code | Pitch Range |       | D    | H   | T | d  | L  |
|------------|-------------|-------|------|-----|---|----|----|
|            | MM          | TPI   |      |     |   |    |    |
| AT0195-50  | 0.35-0.6    | 72-40 | 1.95 | 6.0 | 3 | 3  | 50 |
| AT0245-50  | 0.5-0.8     | 48-32 | 2.45 | 7.7 | 3 | 3  | 50 |
| AT0315-50  | 0.5-0.8     | 48-32 | 3.15 | 10  | 3 | 4  | 50 |
| AT0400-50  | 0.5-1.0     | 48-24 | 4.0  | 12  | 3 | 4  | 50 |
| AT0470-60  | 0.5-1.25    | 48-20 | 4.7  | 15  | 3 | 6  | 60 |
| AT0600-60  | 0.5-1.25    | 48-20 | 6.0  | 18  | 3 | 6  | 60 |
| AT0800-60  | 0.75-1.5    | 32-16 | 8.0  | 24  | 3 | 8  | 60 |
| AT1000-80  | 1.0-2.5     | 24-10 | 10   | 30  | 4 | 10 | 80 |



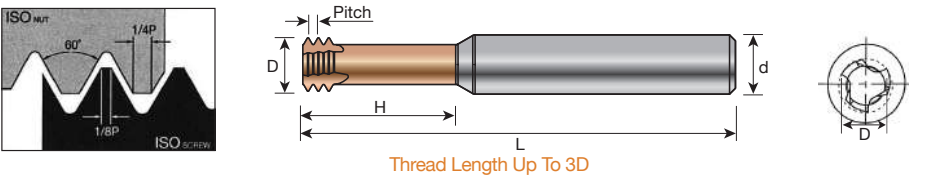
# Solid Carbide Thread Milling 2D (Full-Profile) 60°

• Cutting Data P. 153



| Order code | Thread Size | Pitch | D    | H    | T | d  | L  |
|------------|-------------|-------|------|------|---|----|----|
| BT0240-50  | M3.0 X 0.5  | 0.5   | 2.4  | 6.4  | 3 | 4  | 50 |
| BT0275-50  | M3.5 X 0.6  | 0.6   | 2.75 | 7.4  | 3 | 4  | 50 |
| BT0315-60  | M4 X 0.7    | 0.7   | 3.15 | 8.6  | 3 | 6  | 60 |
| BT0400-60  | M5 X 0.8    | 0.8   | 4.0  | 12.0 | 3 | 6  | 60 |
| BT0475-60  | M6 X 1.0    | 1.0   | 4.75 | 13.0 | 3 | 6  | 60 |
| BT0600-60  | M8 X 1.25   | 1.25  | 6.5  | 17.3 | 3 | 8  | 60 |
| BT0790-60  | M10 X 1.5   | 1.5   | 7.9  | 22.0 | 3 | 8  | 60 |
| BT0950-80  | M12 X 1.75  | 1.75  | 9.5  | 25.5 | 3 | 10 | 80 |

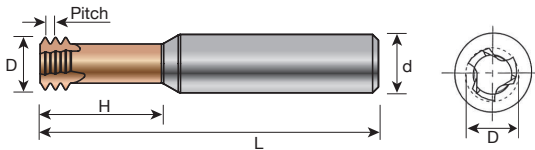
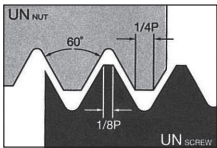
# Solid Carbide Thread Milling 3D (Full-Profile) 60°



| Order code | Thread Size | Pitch | D    | H    | T | d  | L  |
|------------|-------------|-------|------|------|---|----|----|
| BTL0240-50 | M3.0 X 0.5  | 0.5   | 2.4  | 9.3  | 3 | 4  | 50 |
| BTL0315-60 | M4.0 X 0.7  | 0.7   | 3.15 | 12.4 | 3 | 6  | 60 |
| BTL0400-60 | M5 X 0.8    | 0.8   | 4.0  | 15.6 | 3 | 6  | 60 |
| BTL0475-60 | M6 X 1.0    | 1.0   | 4.75 | 19.0 | 3 | 6  | 60 |
| BTL0650-60 | M8 X 1.25   | 1.25  | 6.5  | 24.3 | 3 | 8  | 60 |
| BTL0790-60 | M10 X 1.5   | 1.5   | 7.9  | 31.0 | 3 | 8  | 60 |
| BTL0950-80 | M12 X 1.75  | 1.75  | 9.5  | 36.5 | 3 | 10 | 80 |

# Solid Carbide Thread Milling 2D (Full-Profile) UN 60°

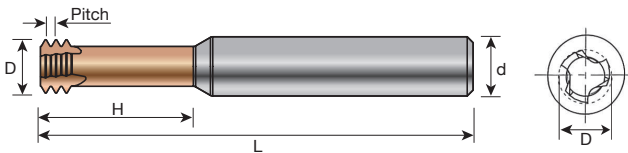
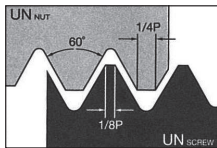
• Cutting Data P. 153



Thread Length Up To 2D

| Order code | UNC            | UNF            | T.P.I | D    | H    | T | d  | L  |
|------------|----------------|----------------|-------|------|------|---|----|----|
| UT404-50   | No.5 - 40 UNC  | No.6 - 40 UNF  | 40    | 2.46 | 7.1  | 3 | 4  | 50 |
| UT364-50   | -              | No.8 - 36 UNF  | 36    | 3.31 | 8.8  | 3 | 4  | 50 |
| UT324-50   | No.6 - 32 UNC  | -              | 32    | 2.57 | 7.3  | 3 | 4  | 50 |
| UT326-60   | No.8 - 32 UNC  | No.10 - 32 UNF | 32    | 3.22 | 10.1 | 3 | 6  | 60 |
| UT286-60   | -              | 1/4 - 28 UNF   | 28    | 5.2  | 14   | 3 | 6  | 60 |
| UT246-60   | No.10 - 24 UNC | -              | 24    | 3.55 | 10.4 | 3 | 6  | 60 |
| UT248-60   | -              | 5/16 - 24 UNF  | 24    | 6.65 | 16.7 | 3 | 8  | 60 |
| UT206-60   | 1/4 - 20 UNC   | 7/16 - 20 UNF  | 20    | 4.85 | 13.7 | 3 | 6  | 60 |
| UT208-60   | -              | 7/16 - 20 UNF  | 20    | 7.95 | 24   | 3 | 8  | 60 |
| UT186-60   | 5/16 - 18 UNC  | -              | 18    | 5.95 | 16.5 | 3 | 6  | 60 |
| UT168-60   | 3/8 - 16 UNC   | -              | 16    | 6.9  | 21   | 3 | 8  | 60 |
| UT148-60   | 7/16 - 14 UNC  | -              | 14    | 7.95 | 23.5 | 3 | 8  | 60 |
| UT1310-80  | 1/2 - 13 UNC   | -              | 13    | 9.3  | 27   | 3 | 10 | 80 |

# Solid Carbide Thread Milling 3D (Full-Profile) UN 60°



Thread Length Up To 3D

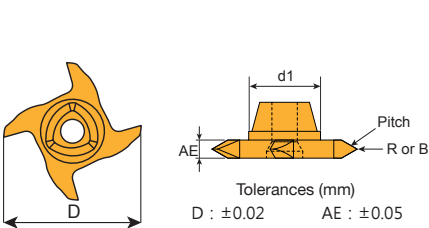
| Order code | UNC           | UNF            | T.P.I | D    | H    | T | d | L  |
|------------|---------------|----------------|-------|------|------|---|---|----|
| UTL404-50  | No.5 - 40 UNC | No.6 - 40 UNF  | 40    | 2.46 | 9.8  | 3 | 4 | 50 |
| UTL324-60  | No.6 - 32 UNC | -              | 32    | 2.57 | 10.7 | 3 | 4 | 50 |
| UTL326-60  | No.8 - 32 UNC | No.10 - 32 UNF | 32    | 3.22 | 12.7 | 3 | 6 | 60 |
| UTL286-60  | -             | 1/4 - 28 UNF   | 28    | 5.2  | 19.3 | 3 | 6 | 60 |
| UTL248-60  | -             | 5/16 - 24 UNF  | 24    | 6.65 | 24.2 | 3 | 8 | 60 |
| UTL206-60  | 1/4 - 20 UNC  | 7/16 - 20 UNF  | 20    | 4.85 | 19.4 | 3 | 6 | 60 |



# UFO Thread Milling Inserts (Partial Profile)

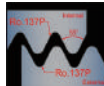
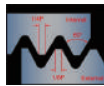
- Toolholders P. 24
- Cutting Data P. 154 - 155

External / Internal



Inserts 2 PCS / Box

| Dimensions (mm) |     |     |          |             |       |      |      |                       |
|-----------------|-----|-----|----------|-------------|-------|------|------|-----------------------|
| D               | d1  | AE  | Pitch mm | Pitch t.p.i | Angle | R    | B    | Minimum hole diameter |
|                 |     |     |          |             |       |      |      | MM INCH               |
| 12              | 6.5 | 3.2 | -        | 16~10       | 55°   | 0.22 | -    | 16.51 0.65"           |
|                 |     | 2.0 | 1.0~1.5  | -           | 60°   | -    | 0.10 | -                     |
|                 |     | 3.2 | 1.75~2.5 | -           |       | -    | 0.22 | 14.00 -               |

| Inserts                                                                                                        | Order Code              | Grades                                                                              |      |      |     |     |        |       |          |     |    |                                                                                   |  |
|----------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|-------|----------|-----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                                |                         | Carbide                                                                             |      |      |     |     | Cermet |       | Uncoated |     |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         | B100                                                                                | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60     | K10 | CE |                                                                                                                                                                                                                                                      |  |
| <br>55°<br>BSW/BSF           | 3T1-0612-55-16~10TPI-E  |                                                                                     |      |      |     |     |        |       |          |     |    | <br>BSW Defined by:<br>B.S.84:1956,<br>DIN 259, ISO228/1:1982<br>BSF Defined by:<br>B.S.2779:1956<br>Tolerance class: BSW-<br>Medium<br>class A, BSF-Medium class |  |
|                                                                                                                | 3T1-0612-55-16~10TPI-ME |    |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |
| <br>60°<br>ISO Metric(M,MF) | 3T1-0612-60-1.0~1.5-E   |                                                                                     |      |      |     |     |        |       |          |     |    | <br>Defined by: R262 (DIN 13)<br>Tolerance class: 6g/6H                                                                                                          |  |
|                                                                                                                | 3T1-0612-60-1.75~2.5-E  |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                | 3T1-0612-60-1.0~1.5-ME  |  |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                | 3T1-0612-60-1.75~2.5-ME |  |      |      |     |     |        |       |          |     |    |                                                                                                                                                                                                                                                      |  |

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1-0612-55-16~10TPI-E,F20

# UFO Thread Milling Inserts (Partial Profile)

- Toolholders P. 25
- Cutting Data P. 154 - 155

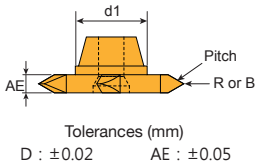
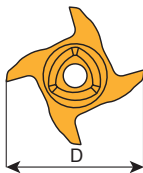
External / Internal



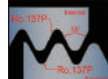
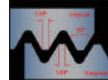
UFO Family



Inserts 2 PCS / Box



| Dimensions (mm) |    |     |          |             |       |      |      |                       |
|-----------------|----|-----|----------|-------------|-------|------|------|-----------------------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | R    | B    | Minimum hole diameter |
|                 |    |     |          |             |       |      |      | MM INCH               |
| 15              | 8  | 4.0 | -        | 11~8        | 55°   | 0.32 | -    | 17.78 0.7"            |
|                 |    | 2.0 | 1.0~1.5  | -           | 60°   | -    | 0.10 | 17.00 -               |
|                 |    | 4.0 | 1.75~3.0 |             |       | -    | 0.22 |                       |

| Inserts                                                                                                        | Order Code              | Grades                                                                              |      |      |     |     |        |       |      |          |    | <br>E                                                                                                                                                               | <br>ME |
|----------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|-------|------|----------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                                                                                                                |                         | Carbide                                                                             |      |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                                                                                                                                                                      |                                                                                          |
|                                                                                                                |                         | B100                                                                                | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                                                                                                                                                                      |                                                                                          |
| <br>55°<br>BSW/BSF           | 3T1-0815-55-11~8TPI-E   |                                                                                     |      |      |     |     |        |       |      |          |    | <br>BSW Defined by:<br>B.S.84:1956,<br>DIN 259, ISO228/1:1982<br>BSF Defined by:<br>B.S.2779:1956<br>Tolerance class: BSW-<br>Medium<br>class A, BSF-Medium class |                                                                                          |
|                                                                                                                | 3T1-0815-55-11~8TPI-ME  |    |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |
| <br>60°<br>ISO Metric(M,MF) | 3T1-0815-60-1.0~1.5-E   |                                                                                     |      |      |     |     |        |       |      |          |    | <br>Defined by: R262 (DIN 13)<br>Tolerance class: 6g/6H                                                                                                          |                                                                                          |
|                                                                                                                | 3T1-0815-60-1.75~3.0-E  |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |
|                                                                                                                | 3T1-0815-60-1.0~1.5-ME  |  |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |
|                                                                                                                | 3T1-0815-60-1.75~3.0-ME |  |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |                                                                                          |

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1-0815-55-11~8TPI-E,F20





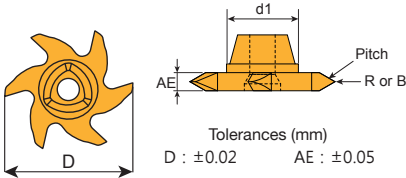
# UFO Thread Milling Inserts (Partial Profile)

- Toolholders P. 26
- Cutting Data P. 154 - 155

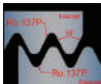
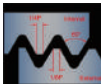
External / Internal



Inserts 2 PCS / Box



| Dimensions (mm) |    |     |          |             |       |      |      |                       |      |
|-----------------|----|-----|----------|-------------|-------|------|------|-----------------------|------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | R    | B    | Minimum hole diameter |      |
|                 |    |     |          |             |       |      |      | MM                    | INCH |
| 20              | 10 | 4.6 | -        | 11~6        | 55°   | 0.32 | -    | 22.86                 | 0.9" |
|                 |    | 2.0 | 1.0~1.5  | -           | 60°   | -    | 0.10 | 22.00                 | -    |
|                 |    | 4.6 | 1.75~3.5 | -           | -     | -    | 0.22 | -                     | -    |

| Inserts                                                                                                        | Order Code              | Grades                                                                              |      |      |     |     |        |       |      |          |    |  E  ME                                                                            |  |
|----------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|-------|------|----------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                                |                         | Carbide                                                                             |      |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         | B100                                                                                | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                                                                                                                                                                      |  |
| <br>55°<br>BSW/BSF           | 3T1-1020-55-11~6TPI-E   |                                                                                     |      |      |     |     |        |       |      |          |    | <br>BSW Defined by:<br>B.S.84:1956,<br>DIN 259, ISO228/1:1982<br>BSF Defined by:<br>B.S.2779:1956<br>Tolerance class: BSW-<br>Medium<br>class A, BSF-Medium class |  |
|                                                                                                                | 3T1-1020-55-11~6TPI-ME  |    |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
| <br>60°<br>ISO Metric(M,MF) | 3T1-1020-60-1.0~1.5-E   |                                                                                     |      |      |     |     |        |       |      |          |    | <br>Defined by: R262 (DIN 13)<br>Tolerance class: 6g/6H                                                                                                          |  |
|                                                                                                                | 3T1-1020-60-1.75~3.5-E  |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                | 3T1-1020-60-1.0~1.5-ME  |  |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |
|                                                                                                                | 3T1-1020-60-1.75~3.5-ME |  |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                      |  |

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1-1020-55-11~6TPI-E,F20

# UFO Thread Milling Inserts (Partial Profile)

- Toolholders P. 27
- Cutting Data P. 154 - 155

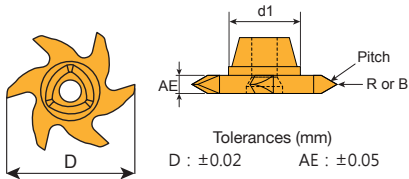
External / Internal



UFO Family



Inserts 2 PCS / Box



| Dimensions (mm) |    |     |          |             |       |      |      |                       |        |
|-----------------|----|-----|----------|-------------|-------|------|------|-----------------------|--------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | R    | B    | Minimum hole diameter |        |
|                 |    |     |          |             |       |      |      | MM                    | INCH   |
| 25              | 12 | 4.6 | -        | 11~5        | 55°   | 0.32 | -    | 28.58                 | 1.125" |
|                 |    | 2.0 | 1.0~1.5  | -           | 60°   | -    | 0.10 | 27.00                 | -      |
|                 |    | 4.6 | 1.75~5.0 | -           |       | -    | 0.22 |                       |        |

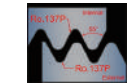
| Inserts                                                                                                        | Order Code              | Grades                                                                              |      |      |     |     |        |       |          |     |    |  |
|----------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|-------|----------|-----|----|------------------------------------------------------------------------------------|
|                                                                                                                |                         | Carbide                                                                             |      |      |     |     | Cermet |       | Uncoated |     |    |                                                                                    |
|                                                                                                                |                         | B100                                                                                | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60     | K10 | CE |                                                                                    |
| <br>55°<br>BSW/BSF           | 3T1-1225-55-11~5TPI-E   |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                | 3T1-1225-55-11~5TPI-ME  |    |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                    |
| <br>60°<br>ISO Metric(M,MF) | 3T1-1225-60-1.0~1.5-E   |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                | 3T1-1225-60-1.75~5.0-E  |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                |                         |                                                                                     |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                | 3T1-1225-60-1.0~1.5-ME  |  |      |      |     |     |        |       |          |     |    |                                                                                    |
|                                                                                                                | 3T1-1225-60-1.75~5.0-ME |  |      |      |     |     |        |       |          |     |    |                                                                                    |



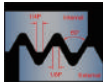
BSW Defined by: B.S.84:1956,  
DIN 259, ISO228/1:1982  
BSF Defined by: B.S.2779:1956  
Tolerance class: BSW-Medium  
class A, BSF-Medium class



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H



BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982  
BSF Defined by: B.S.2779:1956  
Tolerance class: BSW-Medium class A, BSF-Medium class



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H

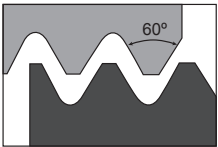
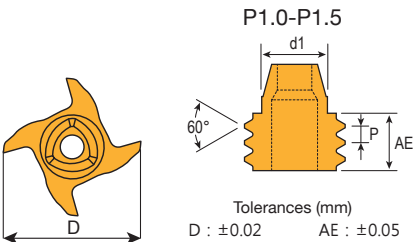
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1-1225-55-11~5TPI-E, F20



# UFO Thread Milling Inserts (Full Profile) - Internal threads

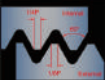
- Toolholders P. 24
- Cutting Data P. 154 - 155

ISO



| Dimensions (mm) |     |     |          |             |       |                       |
|-----------------|-----|-----|----------|-------------|-------|-----------------------|
| D               | d1  | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |
|                 |     |     |          |             |       | MM INCH               |
| 10              | 6.5 | 3.5 | 1.0      | -           | 60°   | 13 -                  |
|                 |     | 4.5 | 1.25     | -           |       |                       |
|                 |     | 5.0 | 1.5      | -           |       |                       |

| Inserts                                                                                                 | Order Code        | Grades  |      |      |     |     |        |      |          |  |
|---------------------------------------------------------------------------------------------------------|-------------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                                         |                   | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                                         |                   | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
| <br>ISO Metric(M,MF) | 3T0610-ISO1.0-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         | 3T0610-ISO1.25-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         | 3T0610-ISO1.5-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         | 3T0610-ISO1.0-ME  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         | 3T0610-ISO1.25-ME |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         | 3T0610-ISO1.5-ME  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |                                                                                    |



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H



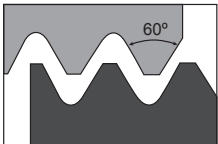
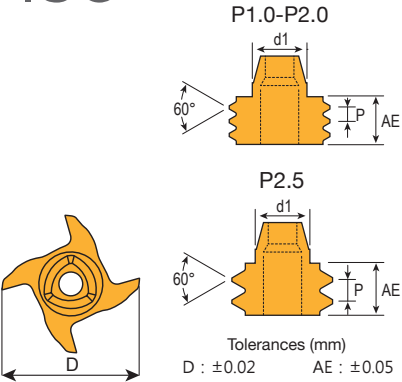
Inserts 2 PCS / Box

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0610-ISO1.0-E, F20

# UFO Thread Milling Inserts (Full Profile) - Internal threads

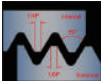
- Toolholders P. 24
- Cutting Data P. 154 - 155

## ISO



| Dimensions (mm) |     |     |          |             |       |                       |      |
|-----------------|-----|-----|----------|-------------|-------|-----------------------|------|
| D               | d1  | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |      |
|                 |     |     |          |             |       | MM                    | INCH |
| 12              | 6.5 | 3.5 | 1.0      | -           | 60°   | 14                    | -    |
|                 |     | 4.5 | 1.25     | -           |       |                       |      |
|                 |     | 5.0 | 1.5      | -           |       |                       |      |
|                 |     | 6.5 | 2.0      | -           |       | 16                    |      |
|                 |     | 5.5 | 2.5      | -           |       |                       |      |

| Inserts                                                                                                 | Order Code        | Grades  |      |      |     |     |        |      |          |    |  |
|---------------------------------------------------------------------------------------------------------|-------------------|---------|------|------|-----|-----|--------|------|----------|----|--|
|                                                                                                         |                   | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |
|                                                                                                         |                   | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |
| <br>ISO Metric(M,MF) | 3T0612-ISO1.0-E   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO1.25-E  |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO1.5-E   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO2.0-E   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO2.5-E   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO1.0-ME  | ⊙       |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO1.25-ME | ⊙       |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO1.5-ME  | ⊙       |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO2.0-ME  | ⊙       |      |      |     |     |        |      |          |    |  |
|                                                                                                         | 3T0612-ISO2.5-ME  | ⊙       |      |      |     |     |        |      |          |    |  |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |    |  |
|                                                                                                         |                   |         |      |      |     |     |        |      |          |    |  |



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H



Inserts 2 PCS / Box

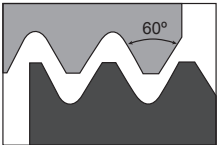
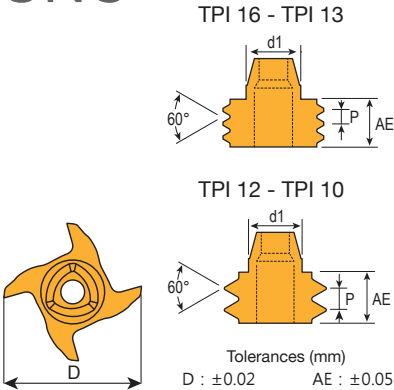
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0612-ISO1.0-E, F20



# UFO Thread Milling Inserts (Full Profile) - Internal threads

- Toolholders P. 24
- Cutting Data P. 154 - 155

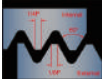
## UNC



| Dimensions (mm) |     |     |          |             |       |                       |
|-----------------|-----|-----|----------|-------------|-------|-----------------------|
| D               | d1  | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |
|                 |     |     |          |             |       | MM    INCH            |
| 12              | 6.5 | 5.0 | -        | 16          | 60°   | 14    0.55"           |
|                 |     | 6.0 | -        | 14          |       |                       |
|                 |     | 6.5 | -        | 13          |       |                       |
|                 |     | 4.5 | -        | 12          |       |                       |
|                 |     | 5.0 | -        | 11          |       |                       |
|                 |     | 5.5 | -        | 10          |       |                       |



| Inserts                                                                                        | Order Code      | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                                |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                                |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
| <br>UNC/UNF | 3T0612-UNC16-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC14-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC13-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC12-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC11-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC10-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC16-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC14-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC13-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC12-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC11-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0612-UNC10-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H

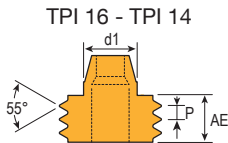
\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0612-UNC16-E,F20

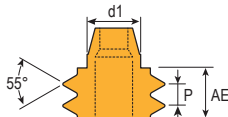
# UFO Thread Milling Inserts (Full Profile) - Internal threads

- Toolholders P. 24
- Cutting Data P. 154 - 155

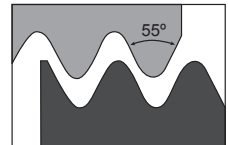
## BSW



TPI 12 - TPI 10

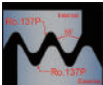


Tolerances (mm)  
D :  $\pm 0.02$  AE :  $\pm 0.05$



Dimensions (mm)

| D  | d1  | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |       |
|----|-----|-----|----------|-------------|-------|-----------------------|-------|
|    |     |     |          |             |       | MM                    | INCH  |
| 12 | 6.5 | 5.0 | -        | 16          | 55°   | 16.51                 | 0.65" |
|    |     | 5.5 | -        | 14          |       |                       |       |
|    |     | 4.5 | -        | 12          |       |                       |       |
|    |     | 5.0 | -        | 11          |       |                       |       |
|    |     | 5.5 | -        | 10          |       |                       |       |

| Inserts                                                                                        | Order Code      | Grades  |      |      |     |     |        |      |          |    |  |                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|----|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                                                                                                                                                                                                                                                      |
| <br>BSW/BSF | 3T0612-BSW16-E  |         |      |      |     |     |        |      |          |    |  | <br>BSW Defined by:<br>B.S.84:1956,<br>DIN 259, ISO228/1:1982<br>BSF Defined by:<br>B.S.2779:1956<br>Tolerance class: BSW-<br>Medium<br>class A, BSF-Medium class |
|                                                                                                | 3T0612-BSW14-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW12-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW11-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW10-E  |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                |                 |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                |                 |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                |                 |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW16-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW14-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW12-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW11-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                | 3T0612-BSW10-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                |                 |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |
|                                                                                                |                 |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                                                      |

\* M.O.Q: 12PCS

\* Make-to-Order

\* M.O.Q: 12PCS  
\* Make-to-Order.

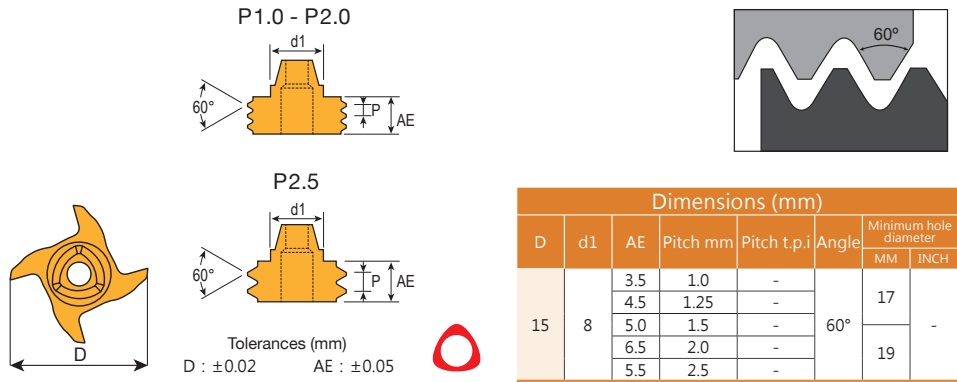
-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0612-BSW16-E,F20



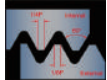
# UFO Thread Milling Inserts (Full Profile) - Internal threads

- Toolholders P. 25
- Cutting Data P. 154 - 155

## ISO



| Inserts                                                                                                  | Order Code        | Grades                                                                              |      |      |     |     |        |      |          |  |
|----------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                                          |                   | Carbide                                                                             |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                                          |                   | B100                                                                                | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
| <br>ISO Metric (M,MF) | 3T0815-ISO1.0-E   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO1.25-E  |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO1.5-E   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO2.0-E   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO2.5-E   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          |                   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          |                   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          |                   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO1.0-ME  |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO1.25-ME |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO1.5-ME  |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO2.0-ME  |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T0815-ISO2.5-ME  |  |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          |                   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          |                   |                                                                                     |      |      |     |     |        |      |          |                                                                                    |



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H



Inserts 2 PCS / Box

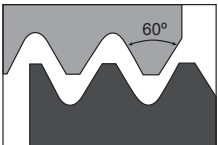
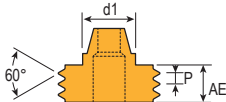
-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0815-ISO1.0-E,F20

# UFO Thread Milling Inserts (Full Profile) - Internal threads

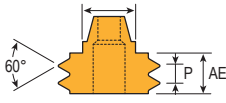
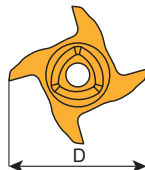
- Toolholders P. 25
- Cutting Data P. 154 - 155

## UNC

TPI 16 - TPI 13



TPI 12 - TPI 10

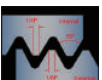


Tolerances (mm)  
D : ±0.02      AE : ±0.05



| Dimensions (mm) |    |     |          |             |       |                       |
|-----------------|----|-----|----------|-------------|-------|-----------------------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |
|                 |    |     |          |             |       | MM    INCH            |
| 15              | 8  | 5.0 | -        | 16          | 60°   | 17.78    0.7"         |
|                 |    | 6.0 | -        | 14          |       |                       |
|                 |    | 6.5 | -        | 13          |       |                       |
|                 |    | 4.5 | -        | 12          |       |                       |
|                 |    | 5.0 | -        | 11          |       |                       |
|                 |    | 5.5 | -        | 10          |       |                       |

| Inserts                                                                                        | Order Code      | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                                |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                                |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
| <br>UNC/UNF | 3T0815-UNC16-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC14-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC13-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC12-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC11-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC10-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC16-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC14-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC13-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC12-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC11-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T0815-UNC10-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H

\* M.O.Q: 12PCS  
\* Make-to-Order.

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0815-UNC16-E,F20

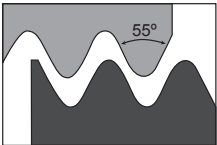
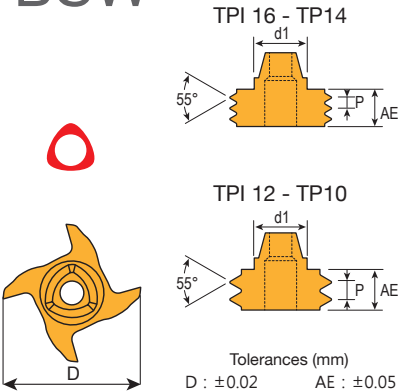




# UFO Thread Milling Inserts (Full Profile) - Internal threads

- Toolholders P. 25
- Cutting Data P. 154 - 155

BSW



| Dimensions (mm) |    |     |          |             |       |                       |
|-----------------|----|-----|----------|-------------|-------|-----------------------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |
| 15              | 8  | 5.0 | -        | 16          | 55°   | 18.03                 |
|                 |    | 5.5 | -        | 14          |       |                       |
|                 |    | 4.5 | -        | 12          |       |                       |
|                 |    | 5.0 | -        | 11          |       |                       |
|                 |    | 5.5 | -        | 10          |       |                       |
|                 |    |     |          |             |       | MM INCH               |

| Inserts     | Order Code      | Grades  |      |      |     |     |        |      |          |    |
|-------------|-----------------|---------|------|------|-----|-----|--------|------|----------|----|
|             |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |    |
|             |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |
| <br>BSW/BSF | 3T0815-BSW16-E  |         |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW14-E  |         |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW12-E  |         |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW11-E  |         |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW10-E  |         |      |      |     |     |        |      |          |    |
|             |                 |         |      |      |     |     |        |      |          |    |
|             |                 |         |      |      |     |     |        |      |          |    |
|             |                 |         |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW16-ME | ⊙       |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW14-ME | ⊙       |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW12-ME | ⊙       |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW11-ME | ⊙       |      |      |     |     |        |      |          |    |
|             | 3T0815-BSW10-ME | ⊙       |      |      |     |     |        |      |          |    |
|             |                 |         |      |      |     |     |        |      |          |    |
|             |                 |         |      |      |     |     |        |      |          |    |

BSW Defined by:  
B.S.84:1956,  
DIN 259, ISO228/1:1982  
BSF Defined by:  
B.S.2779:1956  
Tolerance class: BSW-  
Medium  
class A, BSF-Medium class

\* M.O.Q: 12PCS  
\* Make-to-Order.

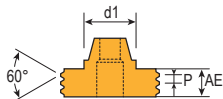
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-BSW16-E,F20

# UFO Thread Milling Inserts (Full Profile) - Internal threads

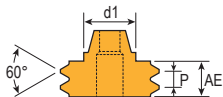
- Toolholders P. 26
- Cutting Data P. 154 - 155

## ISO

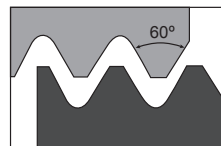
P1.0 - P2.0



P2.5 - P3.5



Tolerances (mm)  
D :  $\pm 0.02$  AE :  $\pm 0.05$

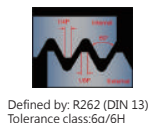


Dimensions (mm)

| Dimensions (mm) |    |     |          |             |       |                       |      |
|-----------------|----|-----|----------|-------------|-------|-----------------------|------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |      |
|                 |    |     |          |             |       | MM                    | INCH |
| 20              | 10 | 3.5 | 1.0      | -           | 60°   | 22                    | -    |
|                 |    | 4.5 | 1.25     | -           |       | 24                    |      |
|                 |    | 5.0 | 1.5      | -           |       |                       |      |
|                 |    | 6.5 | 2.0      | -           |       |                       |      |
|                 |    | 5.5 | 2.5      | -           |       | 26                    |      |
|                 |    | 6.5 | 3.0      | -           |       |                       |      |
|                 |    | 7.5 | 3.5      | -           |       |                       |      |

UFO Family

| Inserts                                                                                                  | Order Code        | Grades  |      |      |     |     |        |      |          |  |
|----------------------------------------------------------------------------------------------------------|-------------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                                          |                   | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                                          |                   | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
| <br>ISO Metric (M,MF) | 3T1020-ISO1.0-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO1.25-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO1.5-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO2.0-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO2.5-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO3.0-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO3.5-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          |                   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO1.0-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO1.25-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO1.5-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO2.0-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO2.5-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO3.0-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                          | 3T1020-ISO3.5-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |



Defined by: R262 (DIN 13)  
Tolerance class 6g/6H



Inserts 2 PCS / Box

- ■ Steel ■ Stainless Steel ⊙ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ⊙ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-ISO1.0-E,F20



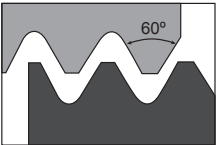
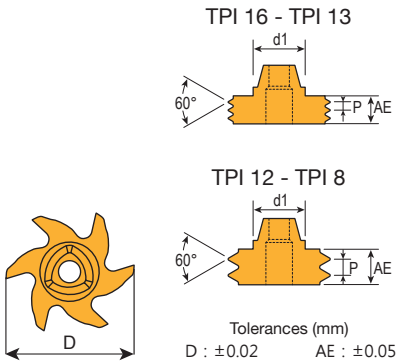
YIH TROUN ENTERPRISE CO., LTD

113

# UFO Thread Milling Inserts (Full Profile) - Internal threads

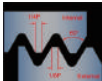
- Toolholders P. 26
- Cutting Data P. 154 - 155

## UNC



| Dimensions (mm) |    |     |          |             |       |                       |      |
|-----------------|----|-----|----------|-------------|-------|-----------------------|------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |      |
|                 |    |     |          |             |       | MM                    | INCH |
| 20              | 10 | 5.0 | -        | 16          | 60°   | 22.86                 | 0.9" |
|                 |    | 6.0 | -        | 14          |       |                       |      |
|                 |    | 6.5 | -        | 13          |       |                       |      |
|                 |    | 4.5 | -        | 12          |       |                       |      |
|                 |    | 5.0 | -        | 11          |       |                       |      |
|                 |    | 5.5 | -        | 10          |       |                       |      |
|                 |    | 6.0 | -        | 9           |       |                       |      |
|                 |    | 7.0 | -        | 8           |       |                       |      |

| Inserts                                                                                        | Order Code      | Grades  |      |      |     |     |        |      |          |    |  |  |  |
|------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|----|--|------------------------------------------------------------------------------------|--|
|                                                                                                |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                                                                                    |  |
|                                                                                                |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                                                                                    |  |
| <br>UNC/UNF | 3T1020-UNC16-E  |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC14-E  |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC13-E  |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC12-E  |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC11-E  |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC10-E  |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC9-E   |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC8-E   |         |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC16-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC14-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC13-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC12-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC11-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC10-ME | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC9-ME  | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |
|                                                                                                | 3T1020-UNC8-ME  | ⊙       |      |      |     |     |        |      |          |    |  |                                                                                    |  |



Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H

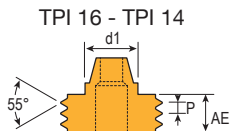
\* M.O.Q: 12PCS  
\* Make-to-Order.

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-UNC16-E,F20

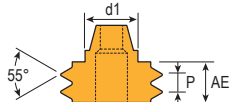
# UFO Thread Milling Inserts (Full Profile) - Internal threads

- Toolholders P. 26
- Cutting Data P. 154 - 155

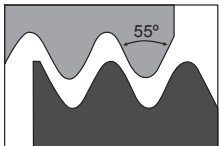
## BSW



TPI 12 - TPI 8



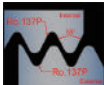
Tolerances (mm)  
D :  $\pm 0.02$       AE :  $\pm 0.05$



UFO Family

| Dimensions (mm) |    |     |          |             |       |  | Minimum hole diameter |      |
|-----------------|----|-----|----------|-------------|-------|--|-----------------------|------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle |  | MM                    | INCH |
| 20              | 10 | 5.0 | -        | 16          | 55°   |  | 22.86                 | 0.9" |
|                 |    | 5.5 | -        | 14          |       |  |                       |      |
|                 |    | 4.5 | -        | 12          |       |  |                       |      |
|                 |    | 5.0 | -        | 11          |       |  |                       |      |
|                 |    | 5.5 | -        | 10          |       |  |                       |      |
|                 |    | 6.0 | -        | 9           |       |  |                       |      |
|                 |    | 7.0 | -        | 8           |       |  |                       |      |

| Inserts                                                                                        | Order Code      | Grades  |      |      |     |     |        |      |          |  |
|------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                                |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                                |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
| <br>BSW/BSF | 3T1020-BSW16-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW14-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW12-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW11-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW10-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW9-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW8-E   |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW16-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW14-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW12-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW11-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW10-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW9-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                | 3T1020-BSW8-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                                |                 |         |      |      |     |     |        |      |          |                                                                                    |



BSW Defined by:  
B.S.84:1956,  
DIN 259, ISO228/1:1982  
BSF Defined by:  
B.S.2779:1956  
Tolerance class: BSW-  
Medium  
class A, BSF-Medium class

\* M.O.Q: 12PCS  
\* Make-to-Order.

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-BSW16-E,F20



# TECHNICAL GUIDE

## Thread Infeed Depth and Number of Passes Recommendation

Below recommended data are applicable to steel

• External ISO - metric threads

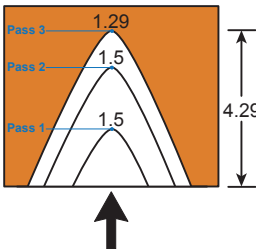
| Pitch(mm)             | 6.0  | 5.5  | 5.0  | 4.5  | 4.0  | 3.5  | 3.0  | 2.5  | 2.0  | 1.75 | 1.5  | 1.25 | 1.0  | 0.80 | 0.75 | 0.50 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Tot.infeed.depth (mm) | 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 | 0,48 |
| Pass 1 (mm)           | 1,50 | 1,50 | 1,30 | 1,60 | 1,53 | 1,23 | 1,0  | 1,60 | 1,25 | 1,13 | 0,93 | 0,81 | 0,65 | 0,52 | 0,48 | 0,48 |
| Pass 2 (mm)           | 1,30 | 1,20 | 1,10 | 1,37 | 1,0  | 1,0  | 0,92 | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Pass 3 (mm)           | 1,02 | 0,82 | 0,79 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

• Internal ISO-metric threads

| Pitch(mm)             | 6.0  | 5.5  | 5.0  | 4.5  | 4.0  | 3.5  | 3.0  | 2.5  | 2.0  | 1.75 | 1.5  | 1.25 | 1.0  | 0.80 | 0.75 | 0.50 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Tot.infeed.depth (mm) | 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 |
| Pass 1 (mm)           | 1,50 | 1,30 | 1,60 | 1,50 | 1,33 | 1,10 | 1,0  | 1,48 | 1,17 | 1,05 | 0,85 | 0,75 | 0,60 | 0,49 | 0,46 | 0,31 |
| Pass 2 (mm)           | 1,20 | 1,10 | 1,39 | 1,15 | 1,0  | 0,95 | 0,78 | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Pass 3 (mm)           | 0,84 | 0,85 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

• Internal-Inch threads

| Pitch TPI             | 4.0  | 4.5  | 5.0  | 6.0  | 7.0  | 8.0  | 9.0  | 10   | 11   | 12   | 14   | 16   | 18   | 19   | 20   | 26   | 28   |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Tot.infeed.depth (mm) | 4,29 | 3,82 | 3,44 | 2,96 | 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 |
| Pass 1 (mm)           | 1,50 | 1,50 | 1,50 | 1,60 | 1,40 | 1,20 | 1,10 | 1,76 | 1,58 | 1,45 | 1,20 | 1,13 | 1,01 | 0,96 | 0,92 | 0,72 | 0,69 |
| Pass 2 (mm)           | 1,50 | 1,30 | 1,20 | 1,36 | 1,10 | 0,97 | 0,83 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Pass 3 (mm)           | 1,29 | 1,02 | 0,74 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |



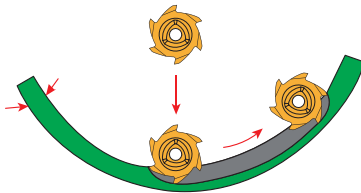
Example of thread infeed method

- To stainless steel, the infeed depth per pass should be decreased.
- The threading insert nose radius is relatively small and can be easily damaged if it is overloaded.

# Technical Guide

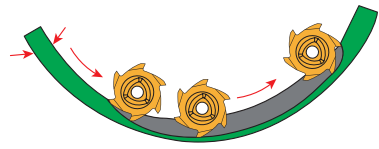
## Internal Thread

①



Plunging is not recommended

②



Ramping is the best choice

Highly  
Recommended

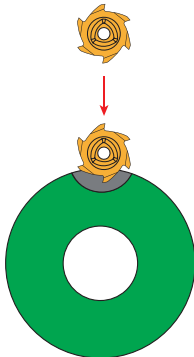
UFO Family

① Plunging to mill : Fz reduce to 50%

② Ramping to mill : Fz remain 100%

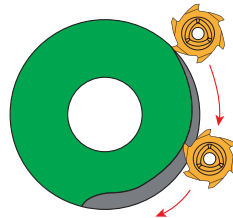
## External Thread

①



Plunging is not recommended

②



Ramping is the best choice

Highly  
Recommended



## About Thread Milling

In order to perform a thread milling operation, a milling machine with three-axis control capable of helical interpolation is required. Helical interpolation is a CNC function, producing movement along helical paths. This helical motion combines circular movements in the X and Y planes and perpendicular linear motions in the Z plane simultaneously. For example, the path from point A to point B (Fig.A) on the surface of the cylinder making a circular movement in the xy plane with a linear displacement in the Z direction.

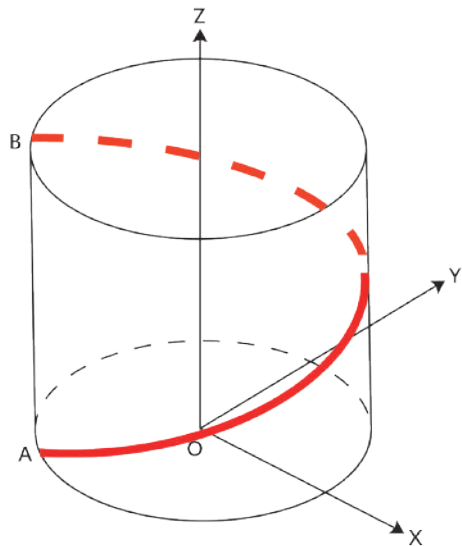
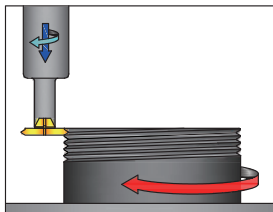


Fig. A

# Thread Milling Methods

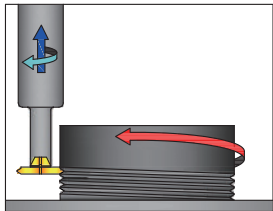
## External

FIG.1



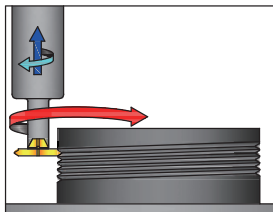
Right Hand Thread-Climb Milling

FIG.2



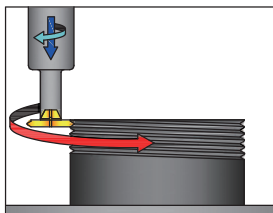
Left Hand Thread- Climb Milling

FIG.3



Right Hand Thread-  
Conventional Milling

FIG.4

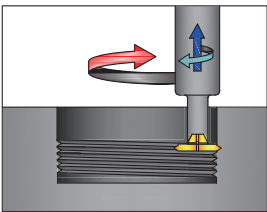


Left Hand Thread-  
Conventional Milling

Highly  
Recommended

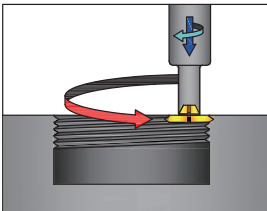
## Internal

FIG.1



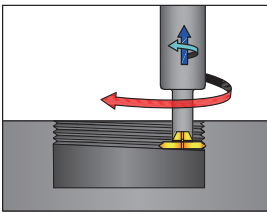
Right Hand Thread-Climb Milling

FIG.2



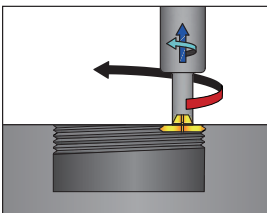
Left Hand Thread-Climb Milling

FIG.3



Right Hand Thread-  
Conventional Milling

FIG.4



Left Hand Thread-  
Conventional Milling

Highly  
Recommended

Highly  
Recommended

UFO Family





# Internal Thread Milling Example CNC Code - Partial Profile Programm

Method 1/Tool offset-cutter compensation

- Insert code / 3T1-0612-60-1.0~2.5
- Milling / Climb milling / Internal thread
- Thread / M16×2.0P
- CNC programme / Fancu / Mitsubishi

FIG. 1

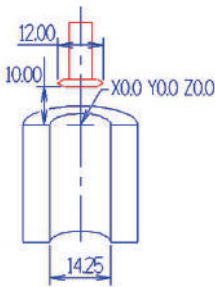
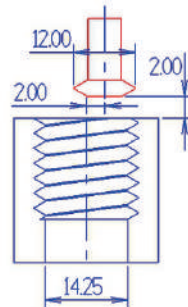


FIG. 2



## Fanuc

```
G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 Z1.0 (Move to the starting point Fig 2)
G01 Z-6.0 F200
G41 D? (cutter compensation)
G91 G03 X2.0 Y0.0 R2.0 F150
G03I-2.0 Z2.0 F630 (Thread milling)
G03I-2.0 Z2.0
G03I-2.0 Z2.0
G03I-2.0 Z2.0
G90 G01 X0.0 Y0.0 (Move out from workpiece,ready to retract)
G90 G00 Z50.0 M9 (Retract the tool)
G40 (Offset finish)
M30 (Programme finish, check the quality of thread, modify G41 D? figure)
```

Exact cutting data  
see page 141-143

# Internal Thread Milling Example CNC Code - Partial Profile Programm

Method 2: Reset the starting point(X) and (I)figure

- Insert code / 3T1-0612-60-1.0~2.5
- Milling / Climb milling / Internal thread
- Thread / M16x2.0P
- CNC programme / Fanuc / Mitsubishi

UFO Family

FIG. 1

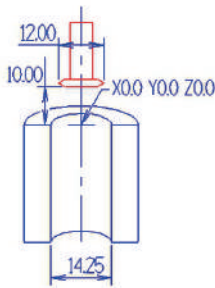
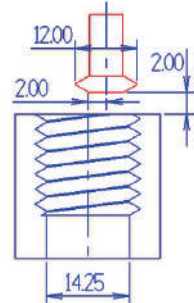


FIG. 2



## Fanuc

```
G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 Z1.0 (Move to the starting point Fig 2)
G01 Z-6.0 F200
G91 G03 X2.0 Y0.0 R2.0 F150
G03 I-2.0 Z2.0 F630 (Thread milling)
G03 I-2.0 Z2.0
G03 I-2.0 Z2.0
G03 I-2.0 Z2.0
G90 G01 X0.0 Y0.0 (Move out from workpiece,ready to retract)
G90 G00 Z50.0 M9 (Retract the tool)
M30 (Programme finish, check the quality of thread, modify X.I figure)
```

Exact cutting data  
see page 141-143



# External Thread Milling Example CNC Code - Partial Profile Programm

Method 1/Tool offset-cutter compensation

- Insert code / 3T1-0612-60-1.0-2.5
- Milling / Climb milling / External thread
- Thread / M16×2.0P
- CNC programme / Fanuc/Mitsubishi

FIG. 1

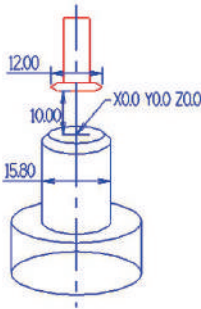
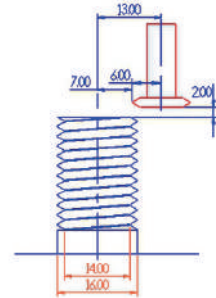


FIG. 2



## Fanuc

```
G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 X13.0 Y0.0 (Move to the starting point Fig 2)
G41 D ? (Cutter compensation)
G01 Z2.0 F200
G91 G02I-13.0 Z-2.0 F630 (Thread milling)
G02I-13.0 Z-2.0
G02I-13.0 Z-2.0
G02I-13.0 Z-2.0
G90 G01 X16.0 (Move out from workpiece,ready to retract)
G90 G00 Z50.0 M9 (Retract the tool)
G40 (Offset finish)
M30 (Programme finish, check the quality of thread, modify G41 D figure)
```

Exact cutting data  
see page 141-143

# External Thread Milling Example CNC Code - Partial Profile Programm

Method 2: Reset the starting point(X) and (I)figure

- Insert code / 3T1-0612-60-1.0~2.5
- Milling / Climb milling / External thread
- Thread / M16x2.0P
- CNC programme / Fanuc / Mitsubishi

FIG. 1

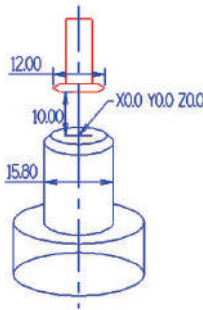
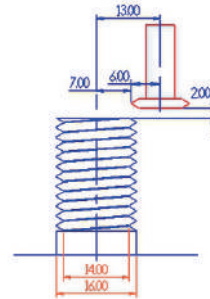


FIG. 2



## Fanuc

```
G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 X13.0 Y0.0 (Move to the contour starting point Fig 2)
G01 Z2.0 F200
G91 G02 I-13.0 Z-2.0 F630 (Thread milling)
G02 I-13.0 Z-2.0
G02 I-13.0 Z-2.0
G02 I-13.0 Z-2.0
G90 G01 X16.0 (Move out from workpiece, ready to retract)
G90 G00 Z50.0 M9 (Retract the tool)
M30 (Programme finish, check the quality of thread, modify X.I figure)
```

Exact cutting data  
see page 141-143



# Recommended Preparatory Drill Diameter And Available Inserts

Insert diameter : ● Ø12 ● Ø15 ● Ø20 ● Ø25

| Size        |  | Maximum drill diameter |      |      |
|-------------|--|------------------------|------|------|
|             |  | 4H                     | 5H   | 6H   |
| M1 x 0.25   |  | 0.77                   | 0.78 | 0.80 |
| M1 x 0.20   |  | 0.82                   | 0.83 | 0.84 |
| M1.1 x 0.25 |  | 0.87                   | 0.88 | 0.90 |
| M1.1 x 0.20 |  | 0.92                   | 0.93 | 0.94 |
| M1.2 x 0.25 |  | 0.97                   | 0.98 | 1.00 |
| M1.2 x 0.20 |  | 1.02                   | 1.03 | 1.04 |
| M1.4 x 0.30 |  | 1.12                   | 1.14 | 1.16 |
| M1.4 x 0.20 |  | 1.22                   | 1.23 | 1.24 |
| M1.6 x 0.35 |  | 1.28                   | 1.30 | 1.32 |
| M1.6 x 0.20 |  | 1.42                   | 1.43 | 1.44 |
| M1.7 x 0.35 |  | 1.38                   | 1.40 | 1.42 |
| M1.7 x 0.30 |  | 1.42                   | 1.44 | 1.46 |
| M1.7 x 0.25 |  | 1.47                   | 1.48 | 1.50 |
| M1.7 x 0.20 |  | 1.52                   | 1.53 | 1.54 |
| M1.8 x 0.35 |  | 1.48                   | 1.50 | 1.52 |
| M1.8 x 0.20 |  | 1.62                   | 1.63 | 1.64 |
| M2 x 0.40   |  | 1.63                   | 1.65 | 1.67 |
| M2 x 0.25   |  | 1.77                   | 1.78 | 1.80 |
| M2.2 x 0.45 |  | 1.79                   | 1.81 | 1.83 |
| M2.2 x 0.25 |  | 1.97                   | 1.98 | 2.00 |
| M2.3 x 0.40 |  | 1.93                   | 1.95 | 1.97 |
| M2.3 x 0.35 |  | 1.98                   | 2.00 | 2.02 |
| M2.3 x 0.25 |  | 2.07                   | 2.08 | 2.10 |
| M2.5 x 0.45 |  | 2.09                   | 2.11 | 2.13 |
| M2.5 x 0.35 |  | 2.18                   | 2.20 | 2.22 |
| M2.6 x 0.45 |  | 2.19                   | 2.22 | 2.23 |
| M2.6 x 0.35 |  | 2.28                   | 2.30 | 2.32 |
| M3 x 0.50   |  | 2.54                   | 2.57 | 2.59 |
| M3 x 0.35   |  | 2.68                   | 2.70 | 2.72 |
| M3.5 x 0.60 |  | 2.95                   | 2.97 | 3.01 |
| M3.5 x 0.35 |  | 3.18                   | 3.20 | 3.22 |
| M4 x 0.70   |  | 3.35                   | 3.38 | 3.42 |
| M4 x 0.50   |  | 3.54                   | 3.57 | 3.59 |
| M4.5 x 0.75 |  | 3.80                   | 3.83 | 3.87 |
| M4.5 x 0.50 |  | 4.04                   | 4.07 | 4.09 |
| M5 x 0.90   |  | 4.15                   | 4.19 | 4.23 |
| M5 x 0.80   |  | 4.25                   | 4.29 | 4.33 |
| M5 x 0.50   |  | 4.54                   | 4.57 | 4.59 |
| M5.5 x 0.90 |  | 4.65                   | 4.69 | 4.73 |
| M5.5 x 0.75 |  | 4.80                   | 4.83 | 4.87 |
| M5.5 x 0.50 |  | 5.04                   | 5.07 | 5.09 |
| M6 x 1.00   |  | 5.06                   | 5.10 | 5.15 |
| M6 x 0.75   |  | 5.30                   | 5.33 | 5.37 |
| M6 x 0.50   |  | 5.54                   | 5.57 | 5.59 |
| M7 x 1.00   |  | 6.06                   | 6.10 | 6.15 |
| M7 x 0.75   |  | 6.30                   | 6.33 | 6.37 |
| M7 x 0.50   |  | 6.54                   | 6.57 | 6.59 |
| M8 x 1.25   |  | 6.81                   | 6.85 | 6.91 |

| Size         |  | Maximum drill diameter |       |       |
|--------------|--|------------------------|-------|-------|
|              |  | 4H                     | 5H    | 6H    |
| M8 x 1.00    |  | 7.06                   | 7.10  | 7.15  |
| M8 x 0.75    |  | 7.30                   | 7.33  | 7.37  |
| M8 x 0.50    |  | 7.54                   | 7.57  | 7.59  |
| M9 x 1.25    |  | 7.81                   | 7.85  | 7.91  |
| M9 x 1.00    |  | 8.06                   | 8.10  | 8.15  |
| M9 x 0.75    |  | 8.30                   | 8.33  | 8.37  |
| M9 x 0.50    |  | 8.54                   | 8.57  | 8.59  |
| M10 x 1.50   |  | 8.52                   | 8.61  | 8.67  |
| M10 x 1.25   |  | 8.81                   | 8.85  | 8.91  |
| M10 x 1.00   |  | 9.06                   | 9.10  | 9.15  |
| M10 x 0.75   |  | 9.30                   | 9.33  | 9.37  |
| M10 x 0.50   |  | 9.54                   | 9.57  | 9.59  |
| M11 x 1.50   |  | 9.52                   | 9.61  | 9.67  |
| M11 x 1.00   |  | 10.06                  | 10.10 | 10.15 |
| M11 x 0.75   |  | 10.30                  | 10.33 | 10.37 |
| M11 x 0.50   |  | 10.54                  | 10.57 | 10.59 |
| M12 x 1.75   |  | 10.31                  | 10.37 | 10.44 |
| M12 x 1.50   |  | 10.56                  | 10.61 | 10.67 |
| M12 x 1.25   |  | 10.81                  | 10.85 | 10.91 |
| M12 x 1.00   |  | 11.06                  | 11.10 | 11.15 |
| M12 x 0.75   |  | 11.30                  | 11.33 | 11.37 |
| M12 x 0.50   |  | 11.54                  | 11.57 | 11.59 |
| M13 x 1.75   |  | 11.31                  | 11.37 | 11.44 |
| M13 x 1.50   |  | 11.56                  | 11.61 | 11.67 |
| M13 x 1.25   |  | 11.81                  | 11.85 | 11.91 |
| M13 x 1.00   |  | 12.06                  | 12.10 | 12.15 |
| M13 x 0.75   |  | 12.03                  | 12.33 | 12.37 |
| M13 x 0.50   |  | 12.54                  | 12.57 | 12.59 |
| M14 x 2.00   |  | 12.07                  | 12.13 | 12.21 |
| M14 x 1.50   |  | 12.56                  | 12.61 | 12.67 |
| M14 x 1.25   |  | -                      | -     | 12.91 |
| M14 x 1.00   |  | 13.06                  | 13.10 | 13.15 |
| M14 x 0.75   |  | 13.30                  | 13.33 | 13.37 |
| M14 x 0.50   |  | 13.54                  | 13.57 | 13.59 |
| M15 x 2.00   |  | 13.07                  | 13.13 | 13.21 |
| M15 x 1.50   |  | 13.56                  | 13.61 | 13.67 |
| M15 x 1.25   |  | 13.81                  | 13.85 | 13.91 |
| M15 x 1.00 ● |  | 14.06                  | 14.10 | 14.15 |
| M15 x 0.75   |  | 14.30                  | 14.33 | 14.37 |
| M15 x 0.50   |  | 14.54                  | 14.57 | 14.59 |
| M16 x 2.00 ● |  | 14.07                  | 14.13 | 14.21 |
| M16 x 1.50 ● |  | 14.56                  | 14.61 | 14.67 |
| M16 x 1.00 ● |  | 15.06                  | 15.10 | 15.15 |
| M17 x 2.00 ● |  | 15.07                  | 15.13 | 15.21 |
| M17 x 1.50 ● |  | 15.56                  | 15.61 | 15.67 |
| M17 x 1.25 ● |  | 15.81                  | 15.85 | 15.91 |
| M17 x 1.00 ● |  | 16.06                  | 16.10 | 16.15 |

# Recommended Preparatory Drill Diameter And Available Inserts

Insert diameter : ● Ø12 ● Ø15 ● Ø20 ● Ø25

| Size       |       | Maximum drill diameter |       |       |
|------------|-------|------------------------|-------|-------|
|            |       | 4H                     | 5H    | 6H    |
| M17 x 0.75 |       | 16.30                  | 16.33 | 16.37 |
| M17 x 0.50 |       | 16.54                  | 16.57 | 16.59 |
| M18 x 2.50 | ●     | 15.57                  | 15.64 | 15.74 |
| M18 x 2.00 | ●     | 16.07                  | 16.13 | 16.21 |
| M18 x 1.50 | ●     | 16.56                  | 16.61 | 16.67 |
| M18 x 1.00 | ● ●   | 17.06                  | 17.10 | 17.15 |
| M19 x 2.50 | ●     | 16.57                  | 16.64 | 16.74 |
| M19 x 2.00 | ● ●   | 17.07                  | 17.13 | 17.21 |
| M19 x 1.50 | ● ●   | 17.56                  | 17.61 | 17.67 |
| M19 x 1.25 | ● ●   | 17.81                  | 17.85 | 17.91 |
| M19 x 1.00 | ● ●   | 18.06                  | 18.10 | 18.15 |
| M19 x 0.75 |       | 18.30                  | 18.33 | 18.37 |
| M19 x 0.50 |       | 18.54                  | 18.57 | 18.59 |
| M20 x 2.50 | ● ●   | 17.57                  | 17.64 | 17.74 |
| M20 x 2.00 | ● ●   | 18.07                  | 18.13 | 18.21 |
| M20 x 1.50 | ● ●   | 18.56                  | 18.61 | 18.67 |
| M20 x 1.00 | ● ●   | 19.06                  | 19.10 | 19.15 |
| M21 x 2.50 | ● ●   | 18.57                  | 18.64 | 18.74 |
| M21 x 1.50 | ● ●   | 19.56                  | 19.61 | 19.67 |
| M21 x 1.00 | ● ●   | 20.06                  | 20.10 | 20.15 |
| M22 x 2.50 | ● ●   | 19.57                  | 19.64 | 19.74 |
| M22 x 2.00 | ● ●   | 20.07                  | 20.13 | 20.21 |
| M22 x 1.50 | ● ●   | 20.56                  | 20.61 | 20.67 |
| M22 x 1.00 | ● ●   | 21.06                  | 21.10 | 21.15 |
| M23 x 2.50 | ● ●   | 20.57                  | 20.64 | 20.74 |
| M23 x 2.00 | ● ●   | 21.07                  | 21.13 | 21.21 |
| M23 x 1.50 | ● ●   | 21.56                  | 21.61 | 21.67 |
| M23 x 1.00 | ● ● ● | 22.06                  | 22.10 | 22.15 |
| M24 x 3.00 | ●     | 21.06                  | 21.15 | 21.25 |
| M24 x 2.00 | ● ● ● | 22.07                  | 22.13 | 22.21 |
| M24 x 1.50 | ● ● ● | 22.56                  | 22.61 | 22.67 |
| M24 x 1.00 | ● ● ● | 23.06                  | 23.10 | 23.15 |
| M25 x 3.00 | ● ●   | 22.06                  | 22.15 | 22.25 |
| M25 x 2.00 | ● ● ● | 23.07                  | 23.13 | 23.21 |
| M25 x 1.50 | ● ● ● | 23.56                  | 23.61 | 23.67 |
| M25 x 1.00 | ● ● ● | 24.06                  | 24.10 | 24.15 |
| M26 x 3.00 | ● ●   | 23.06                  | 23.15 | 23.25 |
| M26 x 2.00 | ● ● ● | 24.07                  | 24.13 | 24.21 |
| M26 x 1.50 | ● ● ● | 24.56                  | 24.61 | 24.67 |
| M27 x 3.00 | ● ●   | 24.06                  | 24.15 | 24.25 |
| M27 x 2.50 | ● ● ● | 24.57                  | 24.64 | 24.74 |
| M27 x 2.00 | ● ● ● | 25.07                  | 25.13 | 25.21 |
| M27 x 1.50 | ● ● ● | 25.56                  | 25.61 | 25.67 |
| M27 x 1.00 | ● ● ● | 26.06                  | 26.10 | 26.15 |
| M28 x 3.00 | ● ●   | 25.06                  | 25.15 | 25.25 |
| M28 x 2.00 | ● ● ● | 26.07                  | 26.13 | 26.21 |
| M28 x 1.50 | ● ● ● | 26.56                  | 26.61 | 26.67 |
| M28 x 1.00 | ● ● ● | 27.06                  | 27.10 | 27.15 |
| M30 x 3.50 | ●     | 26.56                  | 26.66 | 26.77 |
| M30 x 3.00 | ● ● ● | 27.06                  | 27.15 | 27.25 |
| M30 x 2.00 | ● ● ● | 28.07                  | 28.13 | 28.21 |
| M30 x 1.50 | ● ● ● | 28.56                  | 28.61 | 28.67 |
| M30 x 1.00 | ● ● ● | 29.06                  | 29.10 | 29.15 |
| M32 x 3.00 | ● ● ● | 29.06                  | 29.15 | 29.25 |
| M32 x 2.00 | ● ● ● | 30.07                  | 30.13 | 30.21 |
| M32 x 1.50 | ● ● ● | 30.56                  | 30.61 | 30.67 |
| M33 x 3.00 | ● ●   | 29.56                  | 29.66 | 29.77 |
| M33 x 3.00 | ● ● ● | 30.06                  | 30.15 | 30.25 |
| M33 x 2.00 | ● ● ● | 31.07                  | 31.13 | 31.21 |
| M33 x 1.50 | ● ● ● | 31.56                  | 31.61 | 31.67 |
| M33 x 1.00 | ● ● ● | 32.06                  | 32.10 | 32.15 |
| M34 x 3.00 | ● ● ● | 31.06                  | 31.15 | 31.25 |
| M34 x 2.00 | ● ● ● | 32.07                  | 32.13 | 32.21 |
| M34 x 1.50 | ● ● ● | 32.56                  | 32.61 | 32.67 |
| M34 x 1.00 | ● ● ● | 33.06                  | 33.10 | 33.15 |
| M35 x 3.00 | ● ● ● | 32.06                  | 32.15 | 32.25 |
| M35 x 1.50 | ● ● ● | 33.56                  | 33.61 | 33.67 |
| M35 x 1.00 | ● ● ● | 34.06                  | 34.10 | 34.15 |
| M36 x 4.00 | ●     | 32.04                  | 32.14 | 32.27 |
| M36 x 3.00 | ● ● ● | 33.06                  | 33.15 | 33.25 |
| M36 x 2.00 | ● ● ● | 34.07                  | 34.13 | 34.21 |
| M36 x 1.50 | ● ● ● | 34.56                  | 34.61 | 34.67 |
| M36 x 1.00 | ● ● ● | 35.06                  | 35.10 | 35.15 |
| M37 x 1.50 | ● ● ● | 35.56                  | 35.61 | 35.67 |
| M37 x 1.00 | ● ● ● | 36.06                  | 36.10 | 36.15 |
| M38 x 4.00 | ●     | 34.04                  | 34.14 | 34.27 |
| M38 x 3.00 | ● ● ● | 35.06                  | 35.15 | 35.25 |
| M38 x 2.00 | ● ● ● | 36.07                  | 36.13 | 36.21 |
| M38 x 1.50 | ● ● ● | 36.56                  | 36.61 | 36.67 |
| M39 x 4.00 | ●     | 35.04                  | 35.14 | 35.27 |
| M39 x 3.00 | ● ● ● | 36.06                  | 36.15 | 36.25 |
| M39 x 2.00 | ● ● ● | 37.07                  | 37.13 | 37.21 |
| M39 x 1.50 | ● ● ● | 37.56                  | 37.61 | 37.67 |
| M39 x 1.00 | ● ● ● | 38.06                  | 38.10 | 38.15 |
| M40 x 4.00 | ●     | 36.04                  | 36.14 | 36.27 |
| M40 x 3.00 | ● ● ● | 37.06                  | 37.15 | 37.25 |
| M40 x 2.00 | ● ● ● | 38.07                  | 38.13 | 38.21 |
| M40 x 1.50 | ● ● ● | 38.56                  | 38.61 | 38.67 |
| M40 x 1.00 | ● ● ● | 39.06                  | 39.10 | 39.15 |
| M42 x 4.50 | ●     | 37.55                  | 37.65 | 37.79 |
| M42 x 4.00 | ●     | 38.04                  | 38.14 | 38.27 |
| M42 x 3.00 | ● ● ● | 39.06                  | 39.15 | 39.25 |
| M42 x 2.00 | ● ● ● | 40.70                  | 40.13 | 40.21 |
| M42 x 1.50 | ● ● ● | 40.56                  | 40.61 | 40.67 |



# Recommended Preparatory Drill Diameter And Available Inserts

Insert diameter :  Ø12  Ø15  Ø20  Ø25

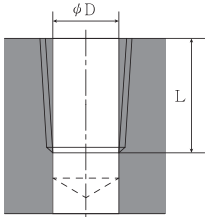
| Size       |                                                                                                                                                                                                                                                                                                                                                 | Maximum drill diameter |       |       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------|-------|
|            |                                                                                                                                                                                                                                                                                                                                                 | 4H                     | 5H    | 6H    |
| M45 x 4.50 |                                                                                                                                                                                                                                                                | 40.55                  | 40.65 | 40.79 |
| M45 x 4.00 |                                                                                                                                                                                                                                                                | 41.04                  | 41.14 | 41.27 |
| M45 x 3.00 |                                                                                              | 42.06                  | 42.15 | 42.25 |
| M45 x 2.00 |             | 43.07                  | 43.13 | 43.21 |
| M45 x 1.50 |             | 43.56                  | 43.61 | 43.67 |
| M45 x 1.00 |             | 44.06                  | 44.10 | 44.15 |
| M46 x 1.50 |             | 44.56                  | 44.61 | 44.67 |
| M48 x 5.00 |                                                                                                                                                                                                                                                                | 43.03                  | 43.14 | 43.29 |
| M48 x 4.00 |                                                                                                                                                                                                                                                                | 44.04                  | 44.14 | 44.27 |
| M48 x 3.00 |                                                                                              | 45.06                  | 45.15 | 45.25 |
| M48 x 2.00 |             | 46.07                  | 46.13 | 46.21 |
| M48 x 1.50 |             | 46.56                  | 46.61 | 46.67 |
| M48 x 1.00 |             | 47.06                  | 47.10 | 47.15 |
| M50 x 5.00 |                                                                                                                                                                                                                                                                | 45.03                  | 45.14 | 45.29 |
| M50 x 3.00 |                                                                                              | 47.06                  | 47.15 | 47.25 |
| M50 x 2.00 |             | 48.07                  | 48.13 | 48.21 |
| M50 x 1.50 |             | 48.56                  | 48.61 | 48.67 |
| M50 x 1.00 |             | 49.10                  | 49.10 | 49.15 |
| M52 x 5.00 |                                                                                                                                                                                                                                                                | 47.00                  | 47.10 | 47.20 |
| M52 x 4.00 |                                                                                                                                                                                                                                                                | 48.00                  | 48.10 | 48.20 |
| M52 x 3.00 |                                                                                              | 49.00                  | 49.10 | 49.20 |
| M52 x 2.00 |             | 50.00                  | 50.10 | 50.20 |
| M52 x 1.50 |             | 50.50                  | 50.60 | 50.60 |
| M55 x 4.00 |                                                                                                                                                                                                                                                                | 51.00                  | 51.10 | 51.20 |
| M55 x 3.00 |                                                                                              | 52.00                  | 52.10 | 52.20 |
| M55 x 2.00 |             | 53.00                  | 53.10 | 53.20 |
| M55 x 1.50 |             | 53.50                  | 53.60 | 53.60 |
| M56 x 5.50 |                                                                                                                                                                                                                                                                                                                                                 | 50.50                  | 50.60 | 50.70 |
| M56 x 4.00 |                                                                                                                                                                                                                                                              | 52.00                  | 52.10 | 52.20 |
| M56 x 3.00 |                                                                                        | 53.00                  | 53.10 | 53.20 |
| M56 x 2.00 |     | 54.00                  | 54.10 | 54.20 |
| M56 x 1.50 |     | 54.50                  | 54.60 | 54.60 |
| M58 x 4.00 |                                                                                                                                                                                                                                                              | 54.00                  | 54.10 | 54.20 |
| M58 x 3.00 |                                                                                        | 55.00                  | 55.10 | 55.20 |
| M58 x 2.00 |     | 56.00                  | 56.10 | 56.20 |
| M58 x 1.50 |     | 56.50                  | 56.60 | 56.60 |
| M60 x 5.50 |                                                                                                                                                                                                                                                                                                                                                 | 54.50                  | 54.60 | 54.70 |
| M60 x 4.00 |                                                                                                                                                                                                                                                              | 56.00                  | 56.10 | 56.20 |
| M60 x 3.00 |                                                                                        | 57.00                  | 57.10 | 57.20 |
| M60 x 2.00 |     | 58.00                  | 58.10 | 58.20 |
| M60 x 1.50 |     | 58.50                  | 58.60 | 58.60 |
| M62 x 4.00 |                                                                                                                                                                                                                                                              | 58.00                  | 58.10 | 58.20 |
| M62 x 3.00 |                                                                                        | 59.00                  | 59.10 | 59.20 |
| M62 x 2.00 |     | 60.00                  | 60.10 | 60.2  |

| Size       |                                                                                                                                                                                                                                                                                                                                                 | Maximum drill diameter |      |      |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------|------|
|            |                                                                                                                                                                                                                                                                                                                                                 | 4H                     | 5H   | 6H   |
| M62 x 1.50 |             | 60.5                   | 60.6 | 60.6 |
| M64 x 6.00 |                                                                                                                                                                                                                                                                                                                                                 | 58                     | 58.1 | 58.2 |
| M64 x 4.00 |                                                                                                                                                                                                                                                                | 60                     | 60.1 | 60.2 |
| M64 x 3.00 |                                                                                              | 61                     | 61.1 | 61.2 |
| M64 x 2.00 |             | 62                     | 62.1 | 62.2 |
| M64 x 1.50 |             | 62.5                   | 62.6 | 62.6 |
| M65 x 4.00 |                                                                                                                                                                                                                                                                | 61                     | 61.1 | 61.2 |
| M65 x 3.00 |                                                                                              | 62                     | 62.1 | 62.2 |
| M65 x 2.00 |             | 63                     | 63.1 | 63.2 |
| M65 x 1.50 |             | 63.5                   | 63.6 | 63.6 |
| M68 x 3.00 |                                                                                                                                                                                                                                                                                                                                                 | 62                     | 62.1 | 62.2 |
| M68 x 4.00 |                                                                                                                                                                                                                                                                | 64                     | 64.1 | 64.2 |
| M68 x 3.00 |                                                                                              | 65                     | 65.1 | 65.2 |
| M68 x 2.00 |             | 66                     | 66.1 | 66.2 |
| M68 x 1.50 |             | 66.5                   | 66.6 | 66.6 |
| M70 x 6.00 |                                                                                                                                                                                                                                                                                                                                                 | 64                     | 64.1 | 64.3 |
| M70 x 4.00 |                                                                                                                                                                                                                                                                | 66                     | 66.1 | 66.2 |
| M70 x 3.00 |                                                                                              | 67                     | 67.1 | 67.2 |
| M70 x 2.00 |             | 68                     | 68.1 | 68.2 |
| M72 x 6.00 |                                                                                                                                                                                                                                                                                                                                                 | 66                     | 66.1 | 66.3 |
| M72 x 4.00 |                                                                                                                                                                                                                                                                | 68                     | 68.1 | 68.2 |
| M72 x 3.00 |                                                                                              | 69                     | 69.1 | 69.2 |
| M72 x 2.00 |             | 70                     | 70.1 | 70.2 |
| M75 x 4.00 |                                                                                                                                                                                                                                                                | 71                     | 71.1 | 71.2 |
| M75 x 3.00 |                                                                                              | 72                     | 72.1 | 72.2 |
| M75 x 2.00 |             | 73                     | 73.1 | 73.2 |
| M76 x 2.00 |             | 74                     | 74.1 | 74.2 |
| M80 x 6.00 |         | 74                     | 74.1 | 74.3 |
| M80 x 4.00 |                                                                                                                                                                                                                                                              | 76                     | 76.1 | 76.2 |
| M80 x 3.00 |                                                                                        | 77                     | 77.1 | 77.2 |
| M80 x 2.00 |     | 78                     | 78.1 | 78.2 |
| M85 x 6.00 |                                                                                                                                                                                                                                                                                                                                                 | 79                     | 79.1 | 79.3 |
| M85 x 4.00 |                                                                                                                                                                                                                                                              | 81                     | 81.1 | 81.2 |
| M85 x 3.00 |                                                                                        | 82                     | 82.1 | 82.2 |
| M85 x 2.00 |     | 83                     | 83.1 | 83.2 |
| M90 x 6.00 |                                                                                                                                                                                                                                                                                                                                                 | 84                     | 84.1 | 84.3 |
| M90 x 4.00 |                                                                                                                                                                                                                                                              | 86                     | 86.1 | 86.2 |
| M90 x 2.00 |     | 88                     | 88.1 | 88.2 |
| M95 x 6.00 |                                                                                                                                                                                                                                                                                                                                                 | 89                     | 89.1 | 89.3 |
| M95 x 4.00 |                                                                                                                                                                                                                                                              | 91                     | 91.1 | 91.2 |
| M95 x 2.00 |     | 93                     | 93.1 | 93.2 |
| M100x 6.00 |                                                                                                                                                                                                                                                                                                                                                 | 94                     | 94.1 | 94.3 |
| M100x 4.00 |                                                                                                                                                                                                                                                              | 96                     | 96.1 | 96.2 |
| M100x 2.00 |     | 98                     | 98.1 | 98.2 |

# RC ( BSPT )

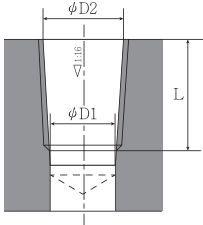
## Recommended Thread Dia / T.P.I / Minimum Bore Dia

1. Cylindrical drilling without reamer



| Nom. size D | P Gg/1" (tpi) | ϕ D   | L     |
|-------------|---------------|-------|-------|
| Rc 1/16"    | 28            | 6,15  | 7,85  |
| 1/8"        | 28            | 8,15  | 7,85  |
| 1/4"        | 19            | 10,85 | 11,65 |
| 3/8"        | 19            | 14,3  | 12,05 |
| 1/2"        | 14            | 17,8  | 15,9  |
| 3/4"        | 14            | 23,2  | 16,75 |
| 1"          | 11            | 29,2  | 19,65 |
| 1 1/4"      | 11            | 37,8  | 21,95 |
| 1 1/2"      | 11            | 43,7  | 21,95 |
| 2"          | 11            | 55,2  | 26,25 |

2. Cylindrical drilling with reamer to form taper thread

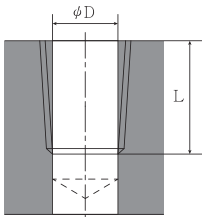


| Nom. size D | P Gg/1" (tpi) | ϕ D1  | ϕ D2  | L     |
|-------------|---------------|-------|-------|-------|
| Rc 1/16"    | 28            | 6,1   | 6,56  | 7,85  |
| 1/8"        | 28            | 8,1   | 8,57  | 7,85  |
| 1/4"        | 19            | 10,75 | 11,45 | 11,65 |
| 3/8"        | 19            | 14,25 | 14,95 | 12,05 |
| 1/2"        | 14            | 17,7  | 18,63 | 15,9  |
| 3/4"        | 14            | 23,1  | 24,12 | 16,75 |
| 1"          | 11            | 29,1  | 30,29 | 19,65 |
| 1 1/4"      | 11            | 37,6  | 38,95 | 21,95 |
| 1 1/2"      | 11            | 43,5  | 44,85 | 21,95 |
| 2"          | 11            | 55    | 56,66 | 26,25 |

# NPT

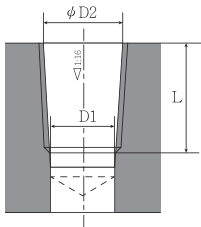
## Recommended Thread Dia / T.P.I / Minimum Bore Dia

1. Cylindrical drilling without reamer



| Nom. size D | P Gg/1" (tpi) | ϕ D   | L     |
|-------------|---------------|-------|-------|
| NPT 1/16"   | 27            | 6,15  | 8,3   |
| 1/8"        | 27            | 8,5   | 8,3   |
| 1/4"        | 18            | 11    | 12,15 |
| 3/8"        | 18            | 14,4  | 12,45 |
| 1/2"        | 14            | 17,8  | 16,3  |
| 3/4"        | 14            | 23,15 | 16,3  |
| 1"          | 11 1/2"       | 29,05 | 19,55 |
| 1 1/4"      | 11 1/2"       | 37,8  | 20,05 |
| 1 1/2"      | 11 1/2"       | 43,85 | 20,05 |
| 2"          | 11 1/2"       | 55,85 | 20,45 |

2. Cylindrical drilling with reamer to form taper thread



| Nom. size D | P Gg/1" (tpi) | ϕ D1  | ϕ D2  | L     |
|-------------|---------------|-------|-------|-------|
| NPT 1/16"   | 27            | 5,95  | 6,39  | 8,3   |
| 1/8"        | 27            | 8,3   | 8,74  | 8,3   |
| 1/4"        | 18            | 10,75 | 11,36 | 12,15 |
| 3/8"        | 18            | 14,15 | 14,80 | 12,45 |
| 1/2"        | 14            | 17,45 | 18,32 | 16,3  |
| 3/4"        | 14            | 22,8  | 23,67 | 16,3  |
| 1"          | 11 1/2"       | 28,65 | 29,69 | 19,55 |
| 1 1/4"      | 11 1/2"       | 37,35 | 38,45 | 20,05 |
| 1 1/2"      | 11 1/2"       | 43,45 | 44,52 | 20,05 |
| 2"          | 11 1/2"       | 55,45 | 56,56 | 20,45 |





# UFO BACK BORING



## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine  
Drilling M/C

Efficiency  
**400%**  
UP

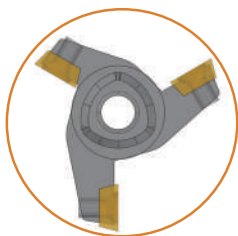
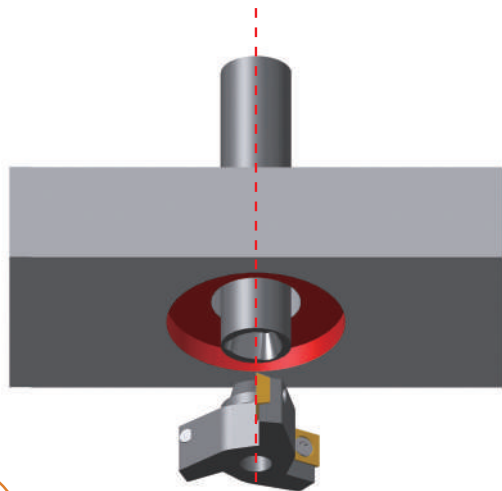
Durability  
**300%**  
UP

UFO  
A Type  
Back Boring  
Cutter

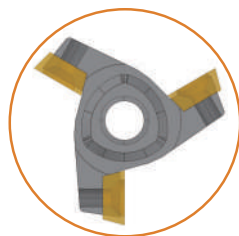
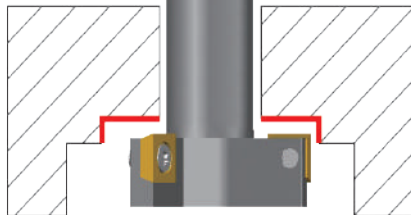
# UFO



UFO Family

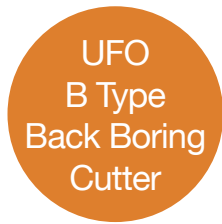


Inserts set at unequal  
distance from the  
center. Applicable with  
cutter  $\varnothing 23$ - $\varnothing 60$  mm.



Inserts set at equal  
distance from the  
center. Applicable with  
cutter  $\varnothing 18$ - $\varnothing 22$  mm

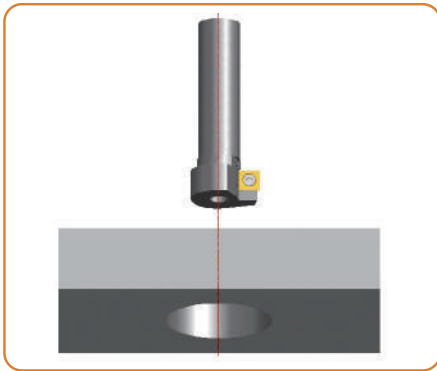




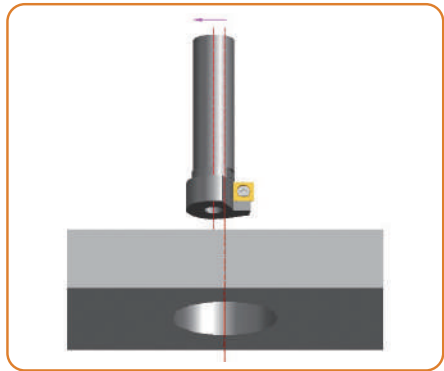
# *UFO*



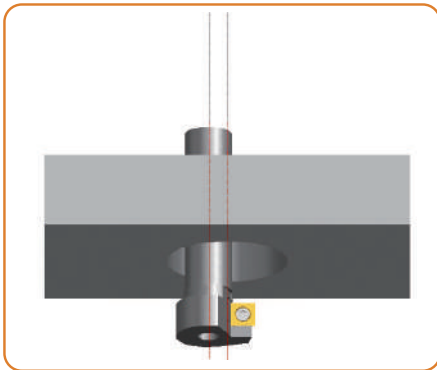
## 1. Centerline



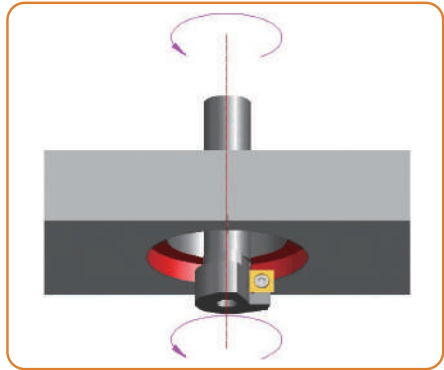
## 2. Tool displacement



## 3. Machining



## 4. Back to center line

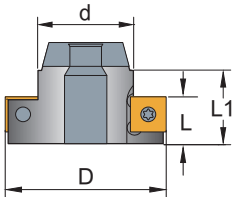


\* The price and lead time are based on present conditions.

# PRODUCT SPECIFICATIONS

## UFO Back Boring Cutter - A Type

- Toolholders P. 26
- Insert P. 134
- Cutting Data P. 134



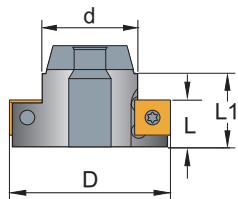
B3T

| Order Code                        |            |      |      |   |    | Z | ZC |  | MAX RPM | Inserts SDET | Screw   | Key  |
|-----------------------------------|------------|------|------|---|----|---|----|-----------------------------------------------------------------------------------|---------|--------------|---------|------|
| Shank                             | Cutter     | D    | d    | L | L1 |   |    |                                                                                   |         |              |         |      |
| CB3-1010-80-20<br>CB3-1010-100-20 | B3T-1018   | 18   | 10.4 | 9 | 14 | 2 | 1  | 0.04                                                                              | 14000   | 0602         | C025045 | T08P |
|                                   | B3T-1018.5 | 18.5 |      |   |    |   |    |                                                                                   |         |              |         |      |
|                                   | B3T-1019   | 19   |      |   |    |   |    |                                                                                   |         |              |         |      |
|                                   | B3T-1019.5 | 19.5 |      |   |    |   |    |                                                                                   |         |              |         |      |
|                                   | B3T-1020   | 20   |      |   |    | 3 |    |                                                                                   |         |              |         |      |
|                                   | B3T-1020.5 | 20.5 |      |   |    |   |    |                                                                                   |         |              |         |      |
|                                   | B3T-1021   | 21   |      |   |    |   |    |                                                                                   |         |              |         |      |
|                                   | B3T-1021.5 | 21.5 |      |   |    |   |    |                                                                                   |         |              |         |      |
|                                   | B3T-1022   | 22   |      |   |    |   |    |                                                                                   |         |              |         |      |



# UFO Back Boring Cutter - A Type

- Toolholders P. 27 - 28
- Insert P. 134
- Cutting Data P. 134

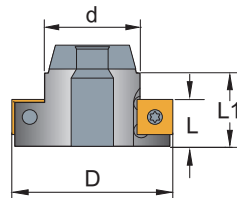


B3T

| Order Code                         |          |    |      |    |    | Z | ZC |  | MAX RPM | Inserts SDET | Screw   | Key  |  |  |  |
|------------------------------------|----------|----|------|----|----|---|----|-----------------------------------------------------------------------------------|---------|--------------|---------|------|--|--|--|
| Shank                              | Cutter   | D  | d    | L  | L1 |   |    |                                                                                   |         |              |         |      |  |  |  |
| CB3-1212-90-25<br>CB3-1212-110-25  | B3T-1223 | 23 | 12.4 | 9  | 14 | 3 | 1  | 0.04                                                                              | 13000   | 0602         | C025045 | T08P |  |  |  |
|                                    | B3T-1224 | 24 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1225 | 25 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1226 | 26 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1227 | 27 |      |    |    |   |    | 0.05                                                                              |         |              |         |      |  |  |  |
|                                    | B3T-1228 | 28 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1229 | 29 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1230 | 30 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
| CB3-1616-120-30<br>CB3-1616-150-30 | B3T-1631 | 31 | 16.4 | 12 | 17 | 3 | 1  | 0.06                                                                              | 12500   | 09T3         | C04008  | T15P |  |  |  |
|                                    | B3T-1632 | 32 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1633 | 33 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1634 | 34 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1635 | 35 |      |    |    |   |    | 0.07                                                                              |         |              |         |      |  |  |  |
|                                    | B3T-1636 | 36 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1637 | 37 |      |    |    |   |    | 0.10                                                                              |         |              |         |      |  |  |  |
|                                    | B3T-1638 | 38 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |
|                                    | B3T-1639 | 39 |      |    |    |   |    | 0.11                                                                              | 12000   |              |         |      |  |  |  |
|                                    | B3T-1640 | 40 |      |    |    |   |    |                                                                                   |         |              |         |      |  |  |  |

# UFO Back Boring Cutter - A Type

- Toolholders P. 29
- Insert P. 134
- Cutting Data P. 134



UFO Family

B3T



| Order Code                   |          |    |      |    |    | Z | ZC |  | MAX RPM | Inserts SDET | Screw  | Key  |  |  |  |  |
|------------------------------|----------|----|------|----|----|---|----|-----------------------------------------------------------------------------------|---------|--------------|--------|------|--|--|--|--|
| Shank                        | Cutter   | D  | d    | L  | L1 |   |    |                                                                                   |         |              |        |      |  |  |  |  |
| CB3-2525-110<br>CB3-2525-170 | B3T-2541 | 41 | 25.4 | 12 | 17 | 3 | 1  | 0.14                                                                              | 10000   | 09T3         | C04008 | T15P |  |  |  |  |
|                              | B3T-2542 | 42 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2543 | 43 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2544 | 44 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2545 | 45 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2546 | 46 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2547 | 47 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2548 | 48 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2549 | 49 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2550 | 50 |      |    |    |   |    | 0.17                                                                              |         |              |        |      |  |  |  |  |
|                              | B3T-2551 | 51 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2552 | 52 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2553 | 53 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2554 | 54 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2555 | 55 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2556 | 56 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2557 | 57 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2558 | 58 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2559 | 59 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |
|                              | B3T-2560 | 60 |      |    |    |   |    |                                                                                   |         |              |        |      |  |  |  |  |



# Recommended Insert Grades

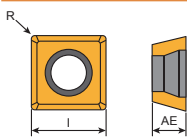
## • UFO Back Boring Cutter Insert Grade Selection

| Material group | Recom. fz (mm/tooth) | Inserts     |            |   |   |
|----------------|----------------------|-------------|------------|---|---|
|                |                      | SDET.....ME | SDET.....E |   |   |
| 1              | 0.04-0.08            | B100        | -          | - | - |
| 2              |                      | B100        | -          | - | - |
| 3              |                      | B100        | -          | - | - |
| 4              | 0.04-0.07            | B100        | -          | - | - |
| 5              |                      | B100        | -          | - | - |
| 6              |                      | B100        | -          | - | - |
| 7              | 0.04-0.06            | B100        | -          | - | - |
| 8              |                      | B100        | -          | - | - |
| 9              |                      | B100        | -          | - | - |
| 10             | 0.04-0.06            | B100        | -          | - | - |
| 11             |                      | B100        | -          | - | - |
| 12             |                      | F30         | -          | - | - |
| 13             | 0.07-0.1             | F30         | -          | - | - |
| 14             |                      | F30         | -          | - | - |
| 15             |                      | F30         | -          | - | - |
| 16             | 0.1-0.2              | -           | -          | - | - |
| 17             |                      | -           | -          | - | - |
| 18             |                      | -           | -          | - | - |
| 19             | 0.04-0.06            | B100        | -          | - | - |
| 20             |                      | B100        | -          | - | - |
| 21             |                      | B100        | -          | - | - |
| 22             | 0.04-0.05            | B100        | -          | - | - |

# Recommended Cutting Data - UFO Back Boring Cutter

## • Recommended Cutting Speed, Vc(m/min)

| Material group                        | Grades         |      |     |      |    |                |                |
|---------------------------------------|----------------|------|-----|------|----|----------------|----------------|
|                                       | B100           | C250 | F20 | CE60 | CE | K10            | F30            |
|                                       | fz (mm/tooth)  |      |     |      |    |                |                |
|                                       | 0.04 0.06 0.08 |      |     |      |    | 0.08 0.10 0.12 | 0.08 0.10 0.12 |
| Cutting speed, v <sub>c</sub> (m/min) |                |      |     |      |    |                |                |
| 1                                     | 16 18 20       | -    | -   | -    | -  | -              | -              |
| 2                                     | 16 18 20       | -    | -   | -    | -  | -              | -              |
| 3                                     | 14 12 10       | -    | -   | -    | -  | -              | -              |
| 4                                     | 14 12 10       | -    | -   | -    | -  | -              | -              |
| 5                                     | 12 10 8        | -    | -   | -    | -  | -              | -              |
| 6                                     | 12 10 8        | -    | -   | -    | -  | -              | -              |
| 7                                     | 8              | -    | -   | -    | -  | -              | -              |
| 8                                     | 14 12 10       | -    | -   | -    | -  | -              | -              |
| 9                                     | 14 12 10       | -    | -   | -    | -  | -              | -              |
| 10                                    | 12 10 8        | -    | -   | -    | -  | -              | -              |
| 11                                    | 12 10 8        | -    | -   | -    | -  | -              | -              |
| 12                                    | -              | -    | -   | -    | -  | -              | 40 35 30       |
| 13                                    | -              | -    | -   | -    | -  | -              | 40 35 30       |
| 14                                    | -              | -    | -   | -    | -  | -              | 30 25 20       |
| 15                                    | -              | -    | -   | -    | -  | -              | 30 25 20       |
| 16                                    | -              | -    | -   | -    | -  | -              | 30 25 20       |
| 17                                    | -              | -    | -   | -    | -  | -              | -              |
| 20                                    | 8 10 -         | -    | -   | -    | -  | -              | -              |
| 21                                    | 8 10 -         | -    | -   | -    | -  | -              | -              |
| 22                                    | 8 10 -         | -    | -   | -    | -  | -              | -              |



### SDET Insert

Tolerances (mm)  
I AE  
±0.03 ±0.025

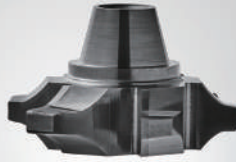


Inserts 10 PCS / Box

| Code   | Dimensions (mm) |      |     |
|--------|-----------------|------|-----|
|        | I               | AE   | R   |
| 060208 | 6.0             | 2.3  | 0.3 |
| 09T308 | 9.0             | 3.97 | 0.5 |

| Inserts | Order Code      | Grades  |      |      |     |              |      |          |
|---------|-----------------|---------|------|------|-----|--------------|------|----------|
|         |                 | Carbide |      |      |     | Metal cermet |      | Uncoated |
|         |                 | B100    | C200 | C250 | F20 | F30          | CE25 | CE       |
|         | SDET060208N-ME  | ⊙       |      |      |     |              |      |          |
|         | SDET09T308TN-M  | ⊙       |      |      |     |              |      |          |
|         | SDET09T308TN-ME | ⊙       |      |      |     |              |      |          |

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: SDET060208N-ME, B100



# Gear Milling insert

— 3T Gear Milling series —





# Special Gear Cutter Design

## About Gears

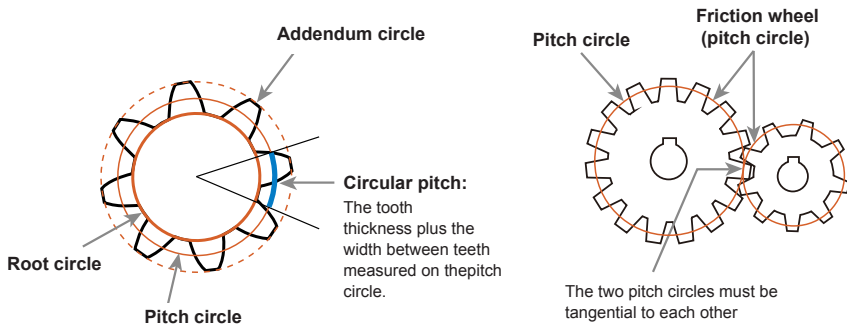
Gears rely on the engagement of teeth to transmit torque. The transmission of movement, and method of such between gears to other toothed components is called meshing transmission. Gears are comprised of gear teeth, tooth slots, end faces, normal planes, addendum circles, dedendum circles, base circles and reference circles.

Dividing the circumference by the number of teeth gives a length commonly known as the “Circular pitch,” which is the tooth thickness plus the width between teeth measured on the pitch circle. (Fig. 1)

The pitch circle refers to the tangent outer edges of the two friction wheels (imaginary circles) (Fig. 2). For two gears to mesh with each other, their pitch circles must be tangential at one point.

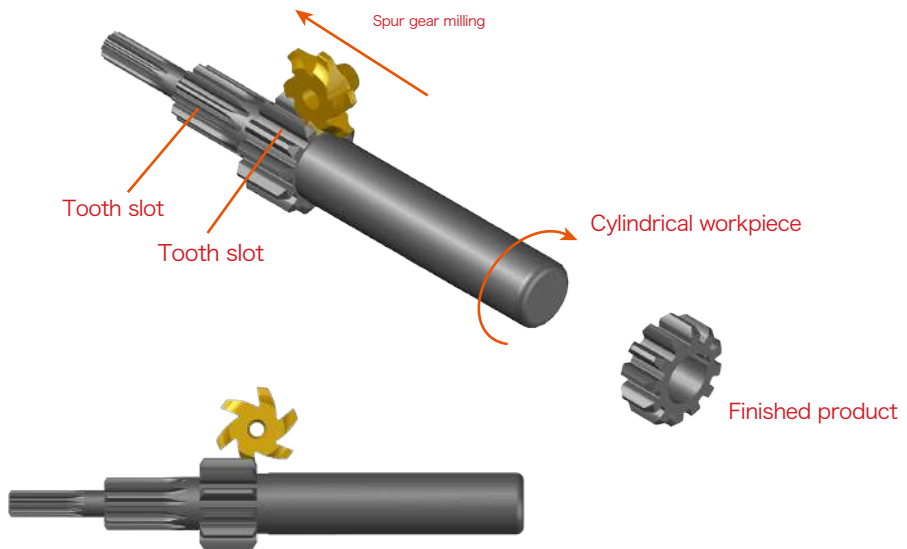
The pitch circle and the number of teeth will inevitably affect the number of teeth cut and the pressure angle. The relative number of teeth will affect the module cut on the workpiece.

Interlocked gears drive another part (such as a gear, gear rack, or worm gear) to rotate to transmit power and thus change the speed, torque, as well as motion direction and form of movement of a product. Thanks to high transmission efficiency, accurate transmission ratio, and a wide range of applications of gears, their machining has been widely used in products across different industries.



# How the Y.T. Gear Milling Insert Works

The Y.T. gear milling insert works through a **side-clamped spur gear cutting method** where the same module is used for linear machining. Thanks to the interaction between the motion of the tool and the rotation of the workpiece, metal is removed from the slot and a cylindrical gear is formed gradually. There is no friction problem between the workpiece and the tooth surface when the tool is retracted.



## Thickness and Module of Gear Milling Insert

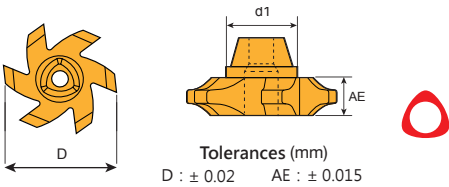


- $\varnothing 22$
- Thickness 2.5, 2.8, 3.5, 3.7, 4, 4.8, 5.5, 5.8 mm
- Module 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.25, 1.5, 1.75 mm



# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148



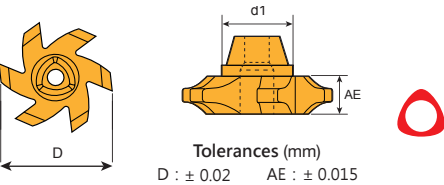
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-050-1 | 22              | 9.9 | 2.5 | 0.5    | 12               | 13               |
| 3T1022-050-2 |                 |     |     |        | 14               | 16               |
| 3T1022-050-3 |                 |     |     |        | 17               | 20               |
| 3T1022-050-4 |                 |     |     |        | 21               | 25               |
| 3T1022-050-5 |                 |     |     |        | 26               | 34               |
| 3T1022-050-6 |                 |     |     |        | 35               | 55               |
| 3T1022-050-7 |                 |     |     |        | 55               | 134              |
| 3T1022-050-8 |                 |     |     |        | 135              | 250              |

| Inserts                                                                                         | Crder Code      | Grades  |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <br>6 flutes | 3T1022-050-1-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | 3T1022-050-2-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | 3T1022-050-3-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | 3T1022-050-4-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | 3T1022-050-5-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | 3T1022-050-6-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | 3T1022-050-7-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 | 3T1022-050-8-ME |         |      |      |     |     |        |      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                 |                 |         |      |      |     |     |        |      |          |  <br> <br>  |
|                                                                                                 |                 |         |      |      |     |     |        |      |          | Inserts 6 PCS / Box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

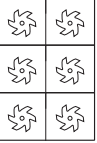
-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022-050-1-ME, B100

# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148



| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-060-1 | 22              | 9.9 | 2.8 | 0.6    | 12               | 13               |
| 3T1022-060-2 |                 |     |     |        | 14               | 16               |
| 3T1022-060-3 |                 |     |     |        | 17               | 20               |
| 3T1022-060-4 |                 |     |     |        | 21               | 25               |
| 3T1022-060-5 |                 |     |     |        | 26               | 34               |
| 3T1022-060-6 |                 |     |     |        | 35               | 55               |
| 3T1022-060-7 |                 |     |     |        | 55               | 134              |
| 3T1022-060-8 |                 |     |     |        | 135              | 250              |

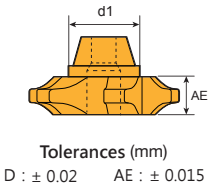
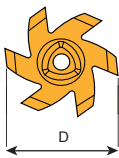
| Inserts                                                                                         | Crder Code      | Grades  |      |      |     |     |        |      |          |   |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|--------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                      |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                   |
| <br>6 flutes | 3T1022-060-1-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-060-2-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-060-3-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-060-4-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-060-5-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-060-6-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-060-7-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-060-8-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 |                 |         |      |      |     |     |        |      |          |  |
|                                                                                                 |                 |         |      |      |     |     |        |      |          | Inserts 6 PCS / Box                                                                  |

-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022-060-1-ME, B100

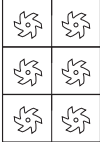


# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148



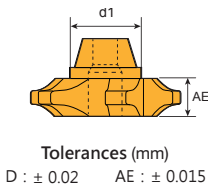
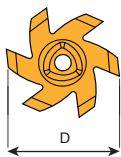
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-070-1 | 22              | 9.9 | 3.2 | 0.7    | 12               | 13               |
| 3T1022-070-2 |                 |     |     |        | 14               | 16               |
| 3T1022-070-3 |                 |     |     |        | 17               | 20               |
| 3T1022-070-4 |                 |     |     |        | 21               | 25               |
| 3T1022-070-5 |                 |     |     |        | 26               | 34               |
| 3T1022-070-6 |                 |     |     |        | 35               | 55               |
| 3T1022-070-7 |                 |     |     |        | 55               | 134              |
| 3T1022-070-8 |                 |     |     |        | 135              | 250              |

| Inserts                                                                                         | Crder Code      | Grades  |      |      |     |     |        |      |          |   |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|--------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                      |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                   |
| <br>6 flutes | 3T1022-070-1-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-070-2-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-070-3-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-070-4-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-070-5-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-070-6-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-070-7-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 | 3T1022-070-8-ME |         |      |      |     |     |        |      |          |                                                                                      |
|                                                                                                 |                 |         |      |      |     |     |        |      |          |  |
|                                                                                                 |                 |         |      |      |     |     |        |      |          | Inserts 6 PCS / Box                                                                  |

-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022-070-1-ME, B100

# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148



| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-080-1 | 22              | 9.9 | 3.5 | 0.8    | 12               | 13               |
| 3T1022-080-2 |                 |     |     |        | 14               | 16               |
| 3T1022-080-3 |                 |     |     |        | 17               | 20               |
| 3T1022-080-4 |                 |     |     |        | 21               | 25               |
| 3T1022-080-5 |                 |     |     |        | 26               | 34               |
| 3T1022-080-6 |                 |     |     |        | 35               | 55               |
| 3T1022-080-7 |                 |     |     |        | 55               | 134              |
| 3T1022-080-8 |                 |     |     |        | 135              | 250              |

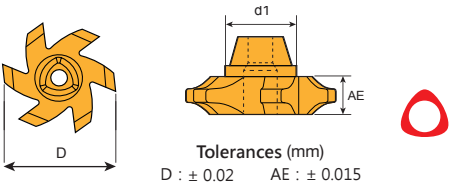
| Inserts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Crder Code      | Grades  |      |      |     |     |        |      |          |  |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|-------------------------------------------------------------------------------------|----|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                     | CE |
| <br><br>6 flutes                                                                                                                                                                                                                                                                                                                                                                                                                              | 3T1022-080-1-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3T1022-080-2-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3T1022-080-3-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3T1022-080-4-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3T1022-080-5-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3T1022-080-6-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3T1022-080-7-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3T1022-080-8-ME |         |      |      |     |     |        |      |          |                                                                                     |    |
|  <br> <br>  |                 |         |      |      |     |     |        |      |          |                                                                                     |    |
| Inserts 6 PCS / Box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |         |      |      |     |     |        |      |          |                                                                                     |    |

-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.:3T1022-080-1-ME, B100

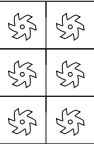


# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148



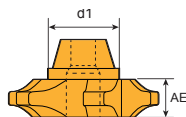
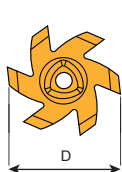
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-090-1 | 22              | 9.9 | 3.7 | 0.9    | 12               | 13               |
| 3T1022-090-2 |                 |     |     |        | 14               | 16               |
| 3T1022-090-3 |                 |     |     |        | 17               | 20               |
| 3T1022-090-4 |                 |     |     |        | 21               | 25               |
| 3T1022-090-5 |                 |     |     |        | 26               | 34               |
| 3T1022-090-6 |                 |     |     |        | 35               | 55               |
| 3T1022-090-7 |                 |     |     |        | 55               | 134              |
| 3T1022-090-8 |                 |     |     |        | 135              | 250              |

| Inserts                                                                                         | Crder Code      | Grades  |      |      |     |     |        |      |          |                         |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                                            |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                                         |
| <br>6 flutes | 3T1022-090-1-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 | 3T1022-090-2-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 | 3T1022-090-3-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 | 3T1022-090-4-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 | 3T1022-090-5-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 | 3T1022-090-6-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 | 3T1022-090-7-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 | 3T1022-090-8-ME |         |      |      |     |     |        |      |          |                                                                                                            |
|                                                                                                 |                 |         |      |      |     |     |        |      |          | <br>Inserts 6 PCS / Box |

-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.:3T1022-090-1-ME, B100

# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148

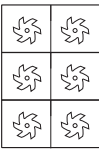


Tolerances (mm)  
D :  $\pm 0.02$     AE :  $\pm 0.015$



| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-100-1 | 22              | 9.9 | 4.0 | 1.0    | 12               | 13               |
| 3T1022-100-2 |                 |     |     |        | 14               | 16               |
| 3T1022-100-3 |                 |     |     |        | 17               | 20               |
| 3T1022-100-4 |                 |     |     |        | 21               | 25               |
| 3T1022-100-5 |                 |     |     |        | 26               | 34               |
| 3T1022-100-6 |                 |     |     |        | 35               | 55               |
| 3T1022-100-7 |                 |     |     |        | 55               | 134              |
| 3T1022-100-8 |                 |     |     |        | 135              | 250              |

| Inserts                                                                                         | Order Code      | Grades  |      |      |     |     |        |          |     |  |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|----------|-----|-------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet | Uncoated |     |                                                                                     |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60     | K10 |                                                                                     |
| <br>6 flutes | 3T1022-100-1-ME |         |      |      |     |     |        |          |     |                                                                                     |
|                                                                                                 | 3T1022-100-2-ME |         |      |      |     |     |        |          |     |                                                                                     |
|                                                                                                 | 3T1022-100-3-ME |         |      |      |     |     |        |          |     |                                                                                     |
|                                                                                                 | 3T1022-100-4-ME |         |      |      |     |     |        |          |     |                                                                                     |
|                                                                                                 | 3T1022-100-5-ME |         |      |      |     |     |        |          |     |                                                                                     |
|                                                                                                 | 3T1022-100-6-ME |         |      |      |     |     |        |          |     |                                                                                     |
|                                                                                                 | 3T1022-100-7-ME |         |      |      |     |     |        |          |     |                                                                                     |
|                                                                                                 | 3T1022-100-8-ME |         |      |      |     |     |        |          |     |                                                                                     |

  
Inserts 6 PCS / Box

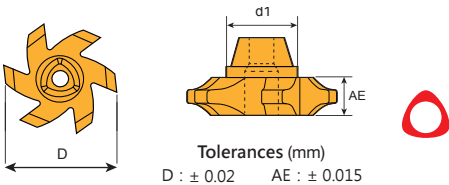
-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022-100-1-ME, B100



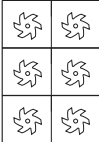


# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148



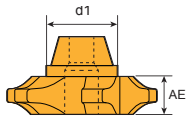
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-125-1 | 22              | 9.9 | 4.8 | 1.25   | 12               | 13               |
| 3T1022-125-2 |                 |     |     |        | 14               | 16               |
| 3T1022-125-3 |                 |     |     |        | 17               | 20               |
| 3T1022-125-4 |                 |     |     |        | 21               | 25               |
| 3T1022-125-5 |                 |     |     |        | 26               | 34               |
| 3T1022-125-6 |                 |     |     |        | 35               | 55               |
| 3T1022-125-7 |                 |     |     |        | 55               | 134              |
| 3T1022-125-8 |                 |     |     |        | 135              | 250              |

| Inserts                                                                                         | Order Code      | Grades  |      |      |     |     |        |      |          |    |                          |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|----|-------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |    |                                                                                                             |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |                                                                                                             |
| <br>6 flutes | 3T1022-125-1-ME |         |      |      |     |     |        |      |          |    | <br>Inserts 6 PCS / Box |
|                                                                                                 | 3T1022-125-2-ME |         |      |      |     |     |        |      |          |    |                                                                                                             |
|                                                                                                 | 3T1022-125-3-ME |         |      |      |     |     |        |      |          |    |                                                                                                             |
|                                                                                                 | 3T1022-125-4-ME |         |      |      |     |     |        |      |          |    |                                                                                                             |
|                                                                                                 | 3T1022-125-5-ME |         |      |      |     |     |        |      |          |    |                                                                                                             |
|                                                                                                 | 3T1022-125-6-ME |         |      |      |     |     |        |      |          |    |                                                                                                             |
|                                                                                                 | 3T1022-125-7-ME |         |      |      |     |     |        |      |          |    |                                                                                                             |
|                                                                                                 | 3T1022-125-8-ME |         |      |      |     |     |        |      |          |    |                                                                                                             |

-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022-125-1-ME, B100

# UFO Gear Cutter Inserts ( DIN3972 )

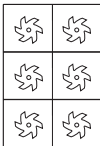
- Toolholders P. 26
- Cutting Data P. 147-148



Tolerances (mm)  
D :  $\pm 0.02$     AE :  $\pm 0.015$



| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-150-1 | 22              | 9.9 | 5.5 | 1.5    | 12               | 13               |
| 3T1022-150-2 |                 |     |     |        | 14               | 16               |
| 3T1022-150-3 |                 |     |     |        | 17               | 20               |
| 3T1022-150-4 |                 |     |     |        | 21               | 25               |
| 3T1022-150-5 |                 |     |     |        | 26               | 34               |
| 3T1022-150-6 |                 |     |     |        | 35               | 55               |
| 3T1022-150-7 |                 |     |     |        | 55               | 134              |
| 3T1022-150-8 |                 |     |     |        | 135              | 250              |

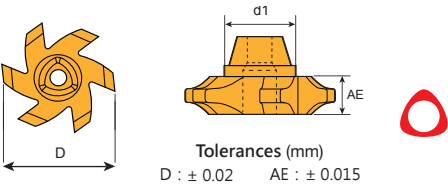
| Inserts                                                                                         | Order Code      | Grades  |      |      |     |     |        |          |     |    |                         |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|----------|-----|----|------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet | Uncoated |     |    |                                                                                                            |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60     | K10 | CE |                                                                                                            |
| <br>6 flutes | 3T1022-150-1-ME |         |      |      |     |     |        |          |     |    | <br>Inserts 6 PCS / Box |
|                                                                                                 | 3T1022-150-2-ME |         |      |      |     |     |        |          |     |    |                                                                                                            |
|                                                                                                 | 3T1022-150-3-ME |         |      |      |     |     |        |          |     |    |                                                                                                            |
|                                                                                                 | 3T1022-150-4-ME |         |      |      |     |     |        |          |     |    |                                                                                                            |
|                                                                                                 | 3T1022-150-5-ME |         |      |      |     |     |        |          |     |    |                                                                                                            |
|                                                                                                 | 3T1022-150-6-ME |         |      |      |     |     |        |          |     |    |                                                                                                            |
|                                                                                                 | 3T1022-150-7-ME |         |      |      |     |     |        |          |     |    |                                                                                                            |
|                                                                                                 | 3T1022-150-8-ME |         |      |      |     |     |        |          |     |    |                                                                                                            |

-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022-150-1-ME, B100



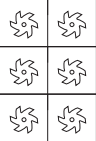
# UFO Gear Cutter Inserts ( DIN3972 )

- Toolholders P. 26
- Cutting Data P. 147-148



Tolerances (mm)  
D : ± 0.02    AE : ± 0.015

| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-175-1 | 22              | 9.9 | 5.8 | 1.75   | 12               | 13               |
| 3T1022-175-2 |                 |     |     |        | 14               | 16               |
| 3T1022-175-3 |                 |     |     |        | 17               | 20               |
| 3T1022-175-4 |                 |     |     |        | 21               | 25               |
| 3T1022-175-5 |                 |     |     |        | 26               | 34               |
| 3T1022-175-6 |                 |     |     |        | 35               | 55               |
| 3T1022-175-7 |                 |     |     |        | 55               | 134              |
| 3T1022-175-8 |                 |     |     |        | 135              | 250              |

| Inserts                                                                                         | Order Code      | Grades  |      |      |     |     |        |      |          |                          |
|-------------------------------------------------------------------------------------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|-------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                                             |
|                                                                                                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                                          |
| <br>6 flutes | 3T1022-175-1-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1022-175-2-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1022-175-3-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1022-175-4-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1022-175-5-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1022-175-6-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1022-175-7-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 | 3T1022-175-8-ME |         |      |      |     |     |        |      |          |                                                                                                             |
|                                                                                                 |                 |         |      |      |     |     |        |      |          | <br>Inserts 6 PCS / Box |

-  Steel/ Cast Iron
- Pressure angle 20°
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1022-175-1-ME, B100

# Recommended Insert Grades - UFO T-slot Cutter / Radius / Dual Chamfer / Dovetail / Circlip / Dual Corner Rounding / Gear Milling



## • Insert Grade Selection

| Material group | Recom. fz (mm/tooth)<br>AR/Dc = 10% | Grades |         |   |   |
|----------------|-------------------------------------|--------|---------|---|---|
|                |                                     | ME     | E       |   |   |
| 1              | -                                   | B100   | -       | - | - |
| 2              | -                                   | B100   | -       | - | - |
| 3              | -                                   | B100   | -       | - | - |
| 4              | -                                   | B100   | -       | - | - |
| 5              | -                                   | B100   | -       | - | - |
| 6              | -                                   | B100   | -       | - | - |
| 7              | -                                   | B100   | -       | - | - |
| 8              | -                                   | B100   | -       | - | - |
| 9              | -                                   | B100   | -       | - | - |
| 10             | -                                   | B100   | -       | - | - |
| 11             | -                                   | B100   | -       | - | - |
| 12             | -                                   | F20    | -       | - | - |
| 13             | -                                   | F20    | -       | - | - |
| 14             | -                                   | F20    | -       | - | - |
| 15             | -                                   | F20    | -       | - | - |
| 16             | -                                   | -      | K10,F20 | - | - |
| 17             | -                                   | -      | K10,F20 | - | - |
| 18             | -                                   | -      | -       | - | - |
| 19             | -                                   | -      | -       | - | - |
| 20             | -                                   | B100   | -       | - | - |
| 21             | -                                   | B100   | -       | - | - |
| 22             | -                                   | B100   | -       | - | - |

## • Cutting Data

| Operations                  | AR / Dc | Recom. fz (mm/tooth) |      |      |
|-----------------------------|---------|----------------------|------|------|
| Full engagement             | -       | 0.04                 | 0.08 | 0.11 |
| Side Milling                | 2%      | 0.17                 | 0.44 | 0.65 |
|                             | 5%      | 0.11                 | 0.28 | 0.41 |
|                             | 10%     | 0.08                 | 0.20 | 0.30 |
|                             | 20%     | 0.07                 | 0.14 | 0.21 |
|                             | 30%     | 0.05                 | 0.12 | 0.18 |
| Average Chip Thickness (hm) | -       | 0.03                 | 0.06 | 0.09 |



- Recommended Cutting Speed,  $V_c$  (m/min)



| Material group | Grades                       |      |              |      |    |              |     |
|----------------|------------------------------|------|--------------|------|----|--------------|-----|
|                | B100                         | C350 | F20          | CE60 | CE | K10          | F30 |
|                | Cutting speed, $v_c$ (m/min) |      |              |      |    |              |     |
| 1              | 179 161 140                  | -    | -            | -    | -  | -            | -   |
| 2              | 140 126 113                  | -    | -            | -    | -  | -            | -   |
| 3              | 126 113 102                  | -    | -            | -    | -  | -            | -   |
| 4              | 112 102 91                   | -    | -            | -    | -  | -            | -   |
| 5              | 101 91 81                    | -    | -            | -    | -  | -            | -   |
| 6              | 91 - -                       | -    | -            | -    | -  | -            | -   |
| 7              | 40 - -                       | -    | -            | -    | -  | -            | -   |
| 8              | 160 - 70                     | -    | -            | -    | -  | -            | -   |
| 9              | 160 - 70                     | -    | -            | -    | -  | -            | -   |
| 10             | 80 - 50                      | -    | -            | -    | -  | -            | -   |
| 11             | 80 - 50                      | -    | -            | -    | -  | -            | -   |
| 12             | -                            | -    | 130 120 110  | -    | -  | -            | -   |
| 13             | -                            | -    | 120 110 100  | -    | -  | -            | -   |
| 14             | -                            | -    | 90 80 70     | -    | -  | -            | -   |
| 15             | -                            | -    | 60 50 -      | -    | -  | -            | -   |
| 16             | -                            | -    | 1150 950 850 | -    | -  | 1150 950 850 | -   |
| 17             | -                            | -    | 950 780 700  | -    | -  | 950 780 700  | -   |
| 18             | -                            | -    | -            | -    | -  | -            | -   |
| 19             | -                            | -    | -            | -    | -  | -            | -   |
| 20             | 50 45 -                      | -    | -            | -    | -  | -            | -   |
| 21             | 35 40 -                      | -    | -            | -    | -  | -            | -   |
| 22             | 50 45 -                      | -    | -            | -    | -  | -            | -   |

\* Coolant is always required

- $F_z$  (mm/tooth)

|  | fz (mm/tooth)  |            |            |             |           |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------------------------------------------------------|----------------|------------|------------|-------------|-----------|-------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                                                                                    | Material group |            |            |             |           |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                    | 1 2 3 4        | 5 6        | 8 9 10 11  | 12 13 14 15 | 16 17     | 20 21 22    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.5-0.7 mm                                                                         | 0.02-0.03      | 0.02-0.03  | 0.02-0.03  | 0.02-0.04   | 0.02-0.05 | 0.01-0.015  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.8-1.0 mm                                                                         | 0.02-0.03      | 0.02-0.03  | 0.02-0.03  | 0.02-0.04   | 0.02-0.05 | 0.01-0.02   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.1-1.3 mm                                                                         | 0.025-0.04     | 0.015-0.04 | 0.015-0.04 | 0.02-0.05   | 0.02-0.06 | 0.015-0.025 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.4-1.6 mm                                                                         | 0.025-0.04     | 0.02-0.03  | 0.02-0.04  | 0.025-0.06  | 0.03-0.07 | 0.02-0.03   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.7-2.2 mm                                                                         | 0.03-0.05      | 0.02-0.04  | 0.02-0.05  | 0.03-0.07   | 0.03-0.08 | 0.02-0.035  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.5-3.0 mm                                                                         | 0.03-0.05      | 0.03-0.045 | 0.03-0.05  | 0.03-0.08   | 0.04-0.10 | 0.025-0.04  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.5-4.0 mm                                                                         | 0.03-0.05      | 0.03-0.045 | 0.03-0.05  | 0.03-0.08   | 0.04-0.10 | 0.025-0.04  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.2-8.0 mm                                                                         | 0.04-0.07      | 0.03-0.06  | 0.04-0.07  | 0.05-0.10   | 0.05-0.10 | 0.025-0.05  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6.0-8.0 mm                                                                         | 0.04-0.07      | 0.03-0.06  | 0.04-0.07  | 0.05-0.10   | 0.05-0.10 | 0.025-0.05  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

# Recommended Insert Grades - UFO T-slot Cutter



UFO Family

## • UFO T-slot Cutter Insert Grade Selection

| Material group | Recom. fz (mm/tooth)<br>AR/Dc = 10% | Grades  |        |         |   |
|----------------|-------------------------------------|---------|--------|---------|---|
|                |                                     | LNGT EE | LNGT M | LNGT ME |   |
| 1              | 0.04-0.12                           | -       | B100   | B100    | - |
| 2              | 0.04-0.10                           | -       | B100   | B100    | - |
| 3              | 0.04-0.10                           | -       | B100   | B100    | - |
| 4              | 0.04-0.10                           | -       | B100   | B100    | - |
| 5              | 0.04-0.08                           | -       | B100   | B100    | - |
| 6              | 0.04-0.07                           | -       | B100   | B100    | - |
| 7              | 0.03-0.06                           | -       | -      | B100    | - |
| 8              | 0.04-0.12                           | -       | -      | B100    | - |
| 9              | 0.04-0.10                           | -       | -      | B100    | - |
| 10             | 0.04-0.09                           | -       | -      | B100    | - |
| 11             | 0.04-0.08                           | -       | -      | B100    | - |
| 12             | 0.04-0.12                           | -       | -      | F20     | - |
| 13             | 0.04-0.12                           | -       | -      | F20     | - |
| 14             | 0.04-0.11                           | -       | -      | F20     | - |
| 15             | 0.04-0.10                           | -       | -      | F20     | - |
| 16             | 0.06-0.13                           | F20     | -      | -       | - |
| 17             | 0.06-0.12                           | F20     | -      | -       | - |
| 20             | 0.06-0.08                           | -       | -      | B100    | - |
| 21             | 0.04-0.06                           | -       | -      | B100    | - |
| 22             | 0.04-0.07                           | -       | -      | B100    | - |

## • Cutting Data

| Operations                  | AR / Dc | Recom. fz (mm/tooth) |      |      |
|-----------------------------|---------|----------------------|------|------|
| Full engagement             | -       | 0.04                 | 0.08 | 0.11 |
| Side Milling                | 2%      | 0.17                 | 0.44 | 0.65 |
|                             | 5%      | 0.11                 | 0.28 | 0.41 |
|                             | 10%     | 0.08                 | 0.20 | 0.30 |
|                             | 20%     | 0.07                 | 0.14 | 0.21 |
|                             | 30%     | 0.05                 | 0.12 | 0.18 |
| Average Chip Thickness (hm) | -       | 0.03                 | 0.06 | 0.09 |



# Recommended Cutting Data - UFO T-slot Cutter



• Recommended Cutting Speed, Vc (m/min)

| Material group | Grades                                |      |              |      |    |     |     |
|----------------|---------------------------------------|------|--------------|------|----|-----|-----|
|                | B100                                  | C350 | F20          | CE60 | CE | K10 | F30 |
|                | Cutting speed, v <sub>c</sub> (m/min) |      |              |      |    |     |     |
| 1              | 255 230 200                           | -    | -            | -    | -  | -   | -   |
| 2              | 200 180 162                           | -    | -            | -    | -  | -   | -   |
| 3              | 180 162 145                           | -    | -            | -    | -  | -   | -   |
| 4              | 160 145 130                           | -    | -            | -    | -  | -   | -   |
| 5              | 144 130 116                           | -    | -            | -    | -  | -   | -   |
| 6              | 130 117 105                           | -    | -            | -    | -  | -   | -   |
| 7              | -                                     | -    | -            | -    | -  | -   | -   |
| 8              | 160 - 80                              | -    | -            | -    | -  | -   | -   |
| 9              | 160 - 80                              | -    | -            | -    | -  | -   | -   |
| 10             | 80 - 50                               | -    | -            | -    | -  | -   | -   |
| 11             | 80 - 50                               | -    | -            | -    | -  | -   | -   |
| 12             | -                                     | -    | 140 119 105  | -    | -  | -   | -   |
| 13             | -                                     | -    | 126 105 98   | -    | -  | -   | -   |
| 14             | -                                     | -    | 112 98 91    | -    | -  | -   | -   |
| 15             | -                                     | -    | 88 81 -      | -    | -  | -   | -   |
| 16             | -                                     | -    | 1150 950 850 | -    | -  | -   | -   |
| 17             | -                                     | -    | 950 780 700  | -    | -  | -   | -   |
| 20             | 50 45 -                               | -    | -            | -    | -  | -   | -   |
| 21             | 35 40 -                               | -    | -            | -    | -  | -   | -   |
| 22             | 50 45 -                               | -    | -            | -    | -  | -   | -   |

• Fz (mm/tooth)

|  | fz (mm/tooth)  |      |   |   |       |       |      |      |    |    |      |      |    |    |      |      |       |       |    |  |  |
|-------------------------------------------------------------------------------------|----------------|------|---|---|-------|-------|------|------|----|----|------|------|----|----|------|------|-------|-------|----|--|--|
|                                                                                     | Material group |      |   |   |       |       |      |      |    |    |      |      |    |    |      |      |       |       |    |  |  |
|                                                                                     | 1              | 2    | 3 | 4 | 5     | 6     | 8    | 9    | 10 | 11 | 12   | 13   | 14 | 15 | 16   | 17   | 20    | 21    | 22 |  |  |
| 1.4-1.7 mm                                                                          | 0.02           | 0.03 |   |   | 0.015 | 0.025 | 0.02 | 0.03 |    |    | 0.02 | 0.04 |    |    | 0.02 | 0.04 | 0.015 | 0.025 |    |  |  |
| 1.8-2.2 mm                                                                          | 0.03           | 0.05 |   |   | 0.03  | 0.04  | 0.02 | 0.03 |    |    | 0.03 | 0.06 |    |    | 0.03 | 0.08 | 0.02  | 0.03  |    |  |  |
| 2.5-3.0 mm                                                                          | 0.03           | 0.06 |   |   | 0.03  | 0.05  | 0.03 | 0.05 |    |    | 0.03 | 0.08 |    |    | 0.03 | 0.10 | 0.03  | 0.04  |    |  |  |
| 3.0-3.5 mm                                                                          | 0.04           | 0.08 |   |   | 0.03  | 0.06  | 0.03 | 0.06 |    |    | 0.04 | 0.10 |    |    | 0.04 | 0.10 | 0.03  | 0.05  |    |  |  |
| 4.0-4.5 mm                                                                          | 0.04           | 0.08 |   |   | 0.03  | 0.06  | 0.03 | 0.06 |    |    | 0.04 | 0.10 |    |    | 0.04 | 0.10 | 0.03  | 0.05  |    |  |  |
| 5.0-5.5 mm                                                                          | 0.05           | 0.10 |   |   | 0.04  | 0.08  | 0.04 | 0.07 |    |    | 0.05 | 0.12 |    |    | 0.05 | 0.17 | 0.04  | 0.06  |    |  |  |

# Recommended Insert Grades - UFO T-slot Cutter



UFO Family

## • UFO T-slot Cutter Insert Grade Selection

| Material group | Recom. fz (mm/tooth)<br>AR/DC=10% | Inserts    |           |           |   |
|----------------|-----------------------------------|------------|-----------|-----------|---|
|                |                                   | SNGX ... M | SNGX...ME | SNGX...EE |   |
| 1              | 0.14-0.30                         | -          | B100      | -         | - |
| 2              | 0.14-0.25                         | -          | B100      | -         | - |
| 3              | 0.14-0.22                         | -          | B100      | -         | - |
| 4              | 0.14-0.22                         | -          | B100      | -         | - |
| 5              | 0.14-0.20                         | -          | B100      | -         | - |
| 6              | 0.10-0.15                         | -          | B100      | -         | - |
| 7              | 0.10-0.13                         | -          | B100      | -         | - |
| 8              | 0.14-0.25                         | -          | B100      | -         | - |
| 9              | 0.14-0.22                         | -          | B100      | -         | - |
| 10             | 0.14-0.20                         | -          | B100      | -         | - |
| 11             | 0.10-0.15                         | -          | B100      | -         | - |
| 12             | 0.14-0.30                         | -          | F30       | -         | - |
| 13             | 0.14-0.22                         | -          | F30       | -         | - |
| 14             | 0.14-0.20                         | -          | F30       | -         | - |
| 15             | 0.10-0.15                         | -          | F30       | -         | - |
| 16             | 0.16-0.30                         | -          | -         | F20       | - |
| 17             | 0.16-0.25                         | -          | -         | F20       | - |
| 18             | 0.16-0.20                         | -          | -         | F20       | - |
| 19             | 0.14-0.20                         | -          | B100      | -         | - |
| 20             | 0.14-0.18                         | -          | B100      | -         | - |
| 21             | 0.10-0.13                         | -          | B100      | -         | - |
| 22             | 0.14-0.20                         | -          | B100      | -         | - |

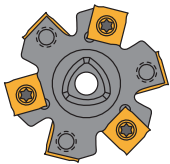
## • Cutting Data

| Operations                  | AR / Dc | Recom. fz (mm/tooth) |      |      |
|-----------------------------|---------|----------------------|------|------|
| Full engagement             | -       | 0.05                 | 0.10 | 0.14 |
| Side Milling                | 2%      | 0.21                 | 0.44 | 0.65 |
|                             | 5%      | 0.14                 | 0.28 | 0.41 |
|                             | 10%     | 0.10                 | 0.20 | 0.30 |
|                             | 20%     | 0.07                 | 0.14 | 0.21 |
|                             | 30%     | 0.06                 | 0.12 | 0.18 |
| Average Chip Thickness (hm) | -       | 0.03                 | 0.06 | 0.09 |





# Recommended Cutting Data - UFO T-slot Cutter



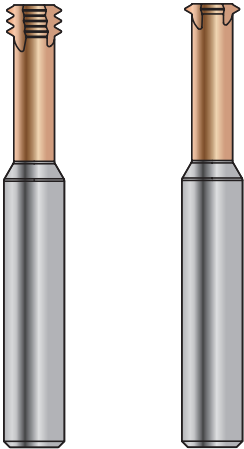
• Recommended Cutting Speed, Vc (m/min)

| Material group | Grades                    |     |     |      |     |     |              |     |     |      |    |     |             |     |     |
|----------------|---------------------------|-----|-----|------|-----|-----|--------------|-----|-----|------|----|-----|-------------|-----|-----|
|                | B100                      |     |     | C250 |     |     | F20          |     |     | CE60 | CE | K10 | F30         |     |     |
|                | fz (mm/tooth)             |     |     |      |     |     |              |     |     |      |    |     |             |     |     |
|                | 0.1                       | 0.2 | 0.3 | 0.1  | 0.2 | 0.3 | 0.1          | 0.2 | 0.3 |      |    |     | 0.1         | 0.2 | 0.3 |
|                | Cutting Speed, Vc (m/min) |     |     |      |     |     |              |     |     |      |    |     |             |     |     |
| 1              | 186                       | 166 | 150 | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 2              | 168                       | 150 | 135 | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 3              | 151                       | 136 | 122 | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 4              | 136                       | 122 | 110 | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 5              | 120                       | 110 | 99  | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 6              | 92                        | 78  | -   | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 7              | -                         |     |     | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 8              | 160                       | -   | 80  | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 9              | 160                       | -   | 80  | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 10             | 80                        | -   | 50  | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 11             | 80                        | -   | 50  | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 12             | -                         |     |     | -    |     |     | -            |     |     | -    | -  | -   | 140 119 105 |     |     |
| 13             | -                         |     |     | -    |     |     | -            |     |     | -    | -  | -   | 126 105 98  |     |     |
| 14             | -                         |     |     | -    |     |     | -            |     |     | -    | -  | -   | 119 98 91   |     |     |
| 15             | -                         |     |     | -    |     |     | -            |     |     | -    | -  | -   | 91 88 -     |     |     |
| 16             | -                         |     |     | -    |     |     | 1150 950 850 |     |     | -    | -  | -   | -           |     |     |
| 17             | -                         |     |     | -    |     |     | 950 780 700  |     |     | -    | -  | -   | -           |     |     |
| 18             | -                         |     |     | -    |     |     | 950 780 700  |     |     | -    | -  | -   | -           |     |     |
| 19             | 55                        | 45  | -   | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 20             | 55                        | 45  | -   | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 21             | 46                        | 38  | -   | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |
| 22             | 55                        | 45  | -   | -    |     |     | -            |     |     | -    | -  | -   | -           |     |     |

# Recommended Cutting Data - Solid Carbide Thread Milling

• Recommended Cutting Speed, Vc (m/min)

| Material group | Cutting Speed, Vc (m/min) |     |     |
|----------------|---------------------------|-----|-----|
| 1              | 255                       | 230 | 200 |
| 2              | 200                       | 180 | 162 |
| 3              | 180                       | 162 | 145 |
| 4              | 160                       | 145 | 130 |
| 5              | 144                       | 130 | 116 |
| 6              | 130                       | 117 | 105 |
| 7              | 40                        | -   | -   |
| 8              | 160                       | -   | 80  |
| 9              | 160                       | -   | 80  |
| 10             | 80                        | -   | 50  |
| 11             | 80                        | -   | 50  |
| 12             | 136                       | 116 | 102 |
| 13             | 122                       | 102 | 95  |
| 14             | 109                       | 95  | 88  |
| 15             | 85                        | 78  | -   |
| 16             | 1150                      | 950 | 850 |
| 17             | 950                       | 780 | 700 |
| 18             | 950                       | 780 | 700 |
| 19             | -                         | -   | -   |
| 20             | 50                        | 45  | -   |
| 21             | 35                        | 40  | -   |
| 22             | 50                        | 45  | -   |



• Fz (mm/tooth)

| <br>Pitch (mm) | fz (mm/tooth)  |           |           |             |           |           |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------|----------------|-----------|-----------|-------------|-----------|-----------|--|--|--|--|--|--|--|--|--|--|--|--|
|                                                                                                   | Material group |           |           |             |           |           |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 1 2 3 4        | 5 6       | 8 9 10 11 | 12 13 14 15 | 16 17     | 20 21 22  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.0-1.5                                                                                           | 0.04-0.06      | 0.03-0.05 | 0.04-0.06 | 0.04-0.07   | 0.05-0.08 | 0.03-0.04 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.75-2.5                                                                                          | 0.05-0.07      | 0.04-0.06 | 0.05-0.07 | 0.05-0.08   | 0.06-0.09 | 0.04-0.05 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.0-4.0                                                                                           | 0.06-0.08      | 0.05-0.07 | 0.06-0.08 | 0.06-0.09   | 0.07-0.1  | 0.05-0.06 |  |  |  |  |  |  |  |  |  |  |  |  |
| 5.0-6.0                                                                                           | 0.06-0.08      | 0.05-0.07 | 0.06-0.08 | 0.06-0.09   | 0.07-0.1  | 0.05-0.06 |  |  |  |  |  |  |  |  |  |  |  |  |



# Recommended Insert Grades - UFO Thread Milling Inserts



## • UFO Thread Milling Cutter Insert Grade Selection

| Material group | Recom.<br>fz (mm/tooth)<br>AR/Dc = 10% | Grades |     |   |   |
|----------------|----------------------------------------|--------|-----|---|---|
|                |                                        | ME     | E   |   |   |
| 1              | -                                      | B100   | -   | - | - |
| 2              | -                                      | B100   | -   | - | - |
| 3              | -                                      | B100   | -   | - | - |
| 4              | -                                      | B100   | -   | - | - |
| 5              | -                                      | B100   | -   | - | - |
| 6              | -                                      | B100   | -   | - | - |
| 7              | -                                      | B100   | -   | - | - |
| 8              | -                                      | B100   | -   | - | - |
| 9              | -                                      | B100   | -   | - | - |
| 10             | -                                      | B100   | -   | - | - |
| 11             | -                                      | B100   | -   | - | - |
| 12             | -                                      | F20    | -   | - | - |
| 13             | -                                      | F20    | -   | - | - |
| 14             | -                                      | F20    | -   | - | - |
| 15             | -                                      | F20    | -   | - | - |
| 16             | -                                      | -      | F20 | - | - |
| 17             | -                                      | -      | F20 | - | - |
| 18             | -                                      | -      | F20 | - | - |
| 19             | -                                      | B100   | -   | - | - |
| 20             | -                                      | B100   | -   | - | - |
| 21             | -                                      | B100   | -   | - | - |
| 22             | -                                      | B100   | -   | - | - |

## • Fz (mm/tooth)

| <br>Pitch (mm) | fz (mm/tooth)  |           |           |             |           |           |
|---------------------------------------------------------------------------------------------------|----------------|-----------|-----------|-------------|-----------|-----------|
|                                                                                                   | Material group |           |           |             |           |           |
|                                                                                                   | 1 2 3 4        | 5 6       | 8 9 10 11 | 12 13 14 15 | 16 17     | 20 21 22  |
| 1.0-1.5                                                                                           | 0.04-0.06      | 0.03-0.05 | 0.04-0.06 | 0.04-0.07   | 0.05-0.08 | 0.03-0.04 |
| 1.75-2.5                                                                                          | 0.05-0.07      | 0.04-0.06 | 0.05-0.07 | 0.05-0.08   | 0.06-0.09 | 0.04-0.05 |
| 3.0-4.0                                                                                           | 0.06-0.08      | 0.05-0.07 | 0.06-0.08 | 0.06-0.09   | 0.07-0.1  | 0.05-0.06 |
| 5.0-6.0                                                                                           | 0.06-0.08      | 0.05-0.07 | 0.06-0.08 | 0.06-0.09   | 0.07-0.1  | 0.05-0.06 |

# Recommended Cutting Data - UFO Thread Milling Inserts

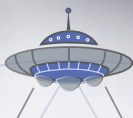
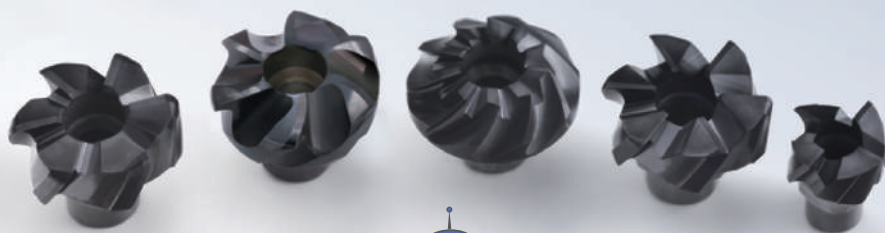
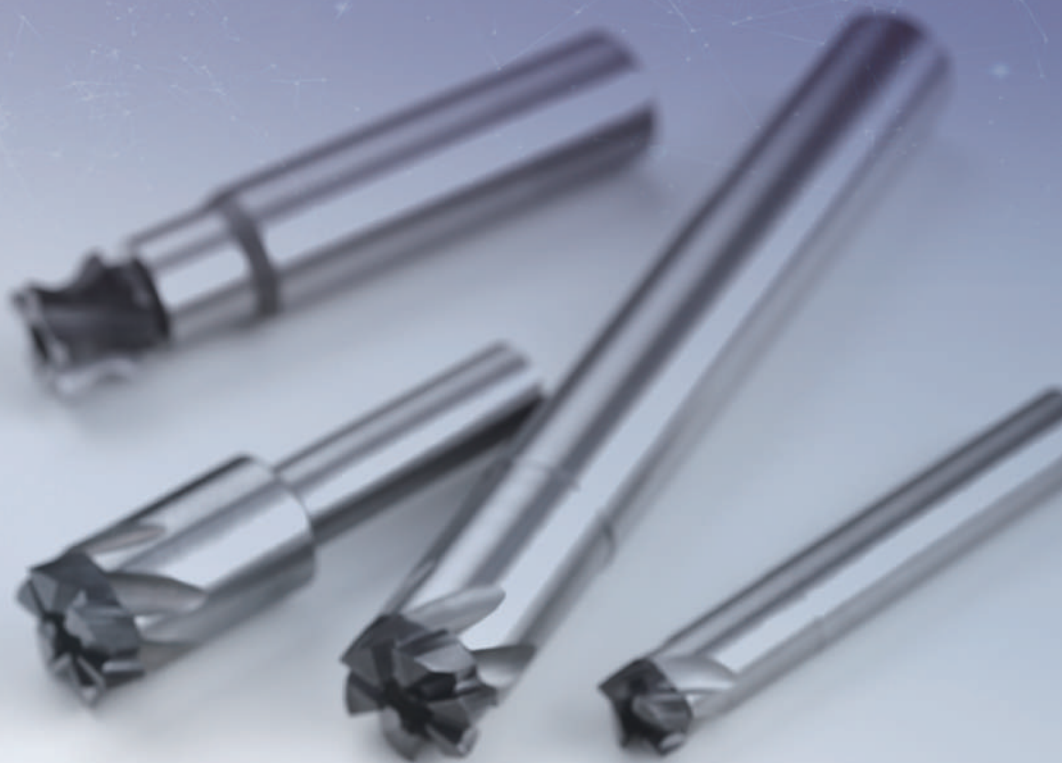


• Recommended Cutting Speed, Vc (m/min)

| Material group | Grades                                |      |              |      |    |     |     |
|----------------|---------------------------------------|------|--------------|------|----|-----|-----|
|                | B100                                  | C350 | F20          | CE60 | CE | K10 | F30 |
|                | Cutting speed, v <sub>c</sub> (m/min) |      |              |      |    |     |     |
| 1              | 179 161 140                           | -    | -            | -    | -  | -   | -   |
| 2              | 140 126 113                           | -    | -            | -    | -  | -   | -   |
| 3              | 126 113 102                           | -    | -            | -    | -  | -   | -   |
| 4              | 112 102 91                            | -    | -            | -    | -  | -   | -   |
| 5              | 101 91 81                             | -    | -            | -    | -  | -   | -   |
| 6              | 91 - -                                | -    | -            | -    | -  | -   | -   |
| 7              | 40 - -                                | -    | -            | -    | -  | -   | -   |
| 8              | 160 - 80                              | -    | -            | -    | -  | -   | -   |
| 9              | 160 - 80                              | -    | -            | -    | -  | -   | -   |
| 10             | 80 - 50                               | -    | -            | -    | -  | -   | -   |
| 11             | 80 - 50                               | -    | -            | -    | -  | -   | -   |
| 12             | -                                     | -    | 130 120 110  | -    | -  | -   | -   |
| 13             | -                                     | -    | 120 110 100  | -    | -  | -   | -   |
| 14             | -                                     | -    | 90 80 70     | -    | -  | -   | -   |
| 15             | -                                     | -    | 60 50 -      | -    | -  | -   | -   |
| 16             | -                                     | -    | 1150 950 850 | -    | -  | -   | -   |
| 17             | -                                     | -    | 950 780 700  | -    | -  | -   | -   |
| 18             | -                                     | -    | 950 780 700  | -    | -  | -   | -   |
| 19             | -                                     | -    | -            | -    | -  | -   | -   |
| 20             | 50 45 -                               | -    | -            | -    | -  | -   | -   |
| 21             | 35 40 -                               | -    | -            | -    | -  | -   | -   |
| 22             | 50 45 -                               | -    | - - -        | -    | -  | -   | -   |

## UFO Gear Milling Insert - Make - to - Order





**UFO MILL®**

Simple \_ Speed \_ Smart

# Design of UFO Mill

Taper polygon + Centralizing cylinder



Taper Polygon



UFO MILL

► Taper polygon



● All grinded milling head



*The UFO MILL patented taper polygon design enhances the tight fit of insert joint.*

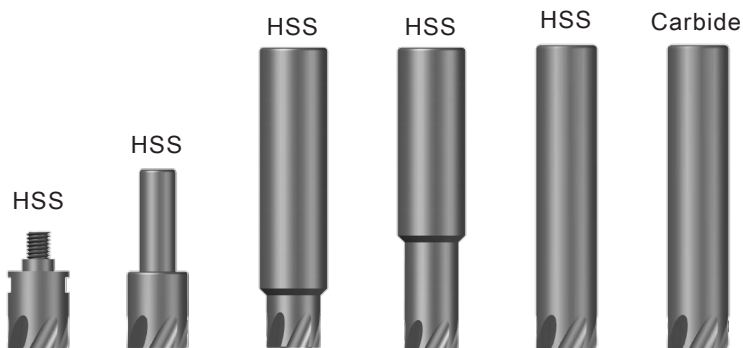
*It gives a better resistance to the impacts from prolonged machining and solves the cutter slippery issue.*

*The robust tri-face contact design makes the machining stable and durable.*

**Tri-face contact design**



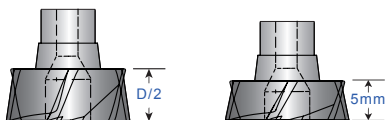
# Design of UFO Mill



**288** different carbide heads  
**48** different patented shanks  
**1938** different combinations

## Square Milling Heads

**3B (M/ME/E)**



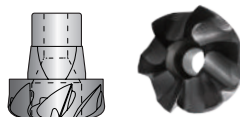
**Ø10 - 25**



R0 / R0.5 / R1.0 / R1.5 / R2.0

## High Feed Milling Heads

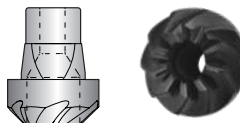
**3BH** **Ø10 - 25**



R0.6 / R0.8

## High Feed Chamfer Milling Heads

**3BC** **Ø10,13,16**



30° / 45° / 60°

# Product competitive advantages

- The best cost - saving solution
- High feed design

Optional length



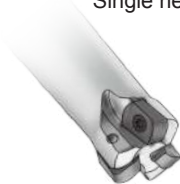
Step Diameter



Customized Size



( Y.T. Design ) Ø20 - 6 flutes  
Single head with multi - flutes



( Other brand ) Ø16 - 3 flutes

UFO MILL

|                               |                                                                                                     |                                                                                                                 |                                                                                               |                                                                                                                 |
|-------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Tools comparison              | <br>\$<br>\$<br>\$ | <br>\$<br>\$<br>\$<br>\$<br>\$ | <br>\$<br>\$ | <br>\$<br>\$<br>\$<br>\$<br>\$ |
| Productivity ( Ø16 )          | 6 teeth+patented geometry achieves high metal removal 😊                                             | 2-6 teeth                                                                                                       | 2-3 teeth 😞                                                                                   | 2-6 teeth                                                                                                       |
| Accuracy                      |                                                                                                     |                                                                                                                 | 😞                                                                                             |                                                                                                                 |
| Accuracy on the corner radius | 😊                                                                                                   |                                                                                                                 | 😞                                                                                             |                                                                                                                 |
| Regrinding                    | Not necessary, less tool inventory and management cost                                              | could be regrind but quality might not be equal                                                                 | not necessary                                                                                 | not necessary                                                                                                   |
| Tool length resetting         | not necessary, can be changed directly from M/C                                                     | necessary, shrink fit arbor takes longer time to reset                                                          | re-setup is necessary in finishing process                                                    | not necessary                                                                                                   |
| Price                         | 😊                                                                                                   | high quality end mill is very expensive                                                                         | 😊                                                                                             | 😞                                                                                                               |
| Flexibility                   | 😊                                                                                                   | 😞                                                                                                               |                                                                                               |                                                                                                                 |
| Disadvantage                  | not economical for the user who only make side milling                                              | 1.long shank and big dia. end mill is expensive<br>2.poor flexibility, one size-one tool                        | less no. of teeth                                                                             | 1. expensive<br>2. thread breaks sometimes inside the shank                                                     |





# Applications of UFO Mill

## Applicable industries

### 1 Difficult material : hardened steel / stainless steel / inconel/titanium



Aerospace parts



Mould & Die

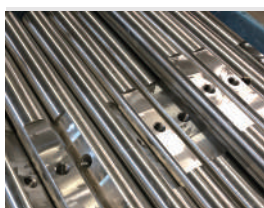


Medical parts

### 2 General machining



Milling



Flat surface

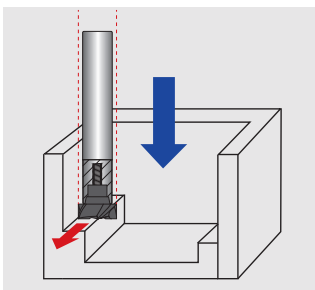


Screw hole plane

### 3 Casting / forging parts by mass production



### 4 Deep Cavity Milling



Step diameter avoids body interference

Smooth finish texture by high feed machining  
( Toolholders BB3 / Insert 3B 16 )



Steel workpiece

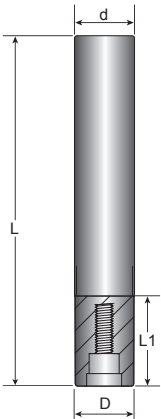
# Common Holders



**BB3** • HSS



Tolerances (mm)  
D : +0.0  
-0.01~-0.02      d : h6



UFO MILL

| Part No.     | Dimensions (mm) |    |     |    | KG   | Carbide Head | Screw  | Key  |
|--------------|-----------------|----|-----|----|------|--------------|--------|------|
|              | D               | d  | L   | L1 |      |              |        |      |
| BB3-1010-60  | 9.7             | 10 | 60  | 18 | 0.11 | ø10          | C03016 | T09P |
| BB3-1010-90  |                 |    | 90  |    | 0.13 | ø11          |        |      |
| BB3-1212-70  | 11.5            | 12 | 70  | 18 | 0.13 | ø12 ø13      | C03517 | T10P |
| BB3-1212-100 |                 |    | 100 |    | 0.15 | ø14 ø15      |        |      |
| BB3-1414-80  | 13.5            | 14 | 80  | 25 | 0.14 | ø14          | C03517 | T10P |
| BB3-1414-110 |                 |    | 110 |    | 0.16 | ø15          |        |      |
| BB3-1616-80  | 15.5            | 16 | 80  | 24 | 0.15 | ø16          | C04020 | T15P |
| BB3-1616-110 |                 |    | 110 |    | 0.18 | ø17          |        |      |
| BB3-1616-160 |                 |    | 160 |    | 0.2  | ø18          |        |      |
| BB3-1818-80  | 17.5            | 18 | 80  | 32 | 0.16 | ø18          | C04020 | T15P |
| BB3-1818-120 |                 |    | 120 |    | 0.18 |              |        |      |
| BB3-2020-90  | 19.5            | 20 | 90  | 30 | 0.17 | ø20          | C05021 | T20P |
| BB3-2020-120 |                 |    | 120 |    | 0.2  | ø21          |        |      |
| BB3-2020-180 |                 |    | 180 |    | 0.23 | ø25          |        |      |
| BB3-2525-100 | 24.5            | 25 | 100 | 38 | 0.4  | ø25          | C05021 | T20P |
| BB3-2525-130 |                 |    | 130 |    | 0.5  |              |        |      |
| BB3-2525-180 |                 |    | 180 |    | 0.7  |              |        |      |

• Not available in shrink fit arbor



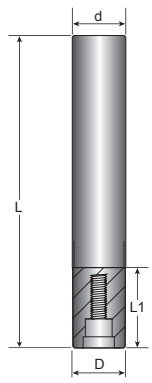
# Common Holders



**BB3W** • Carbide



Tolerances (mm)  
D :  $\begin{matrix} +0.0 \\ -0.01 \sim -0.02 \end{matrix}$   
d : h6



| Part No.      | Dimensions (mm) |    |     |    |  KG | Carbide Head             | Screw  | Key  |
|---------------|-----------------|----|-----|----|----------------------------------------------------------------------------------------|--------------------------|--------|------|
|               | D               | d  | L   | L1 |                                                                                        |                          |        |      |
| BB3W-1010-60  | 9.7             | 10 | 60  | 20 | 0.20                                                                                   | Ø10<br>Ø11               | C03016 | T09P |
| BB3W-1010-90  |                 |    | 90  |    | 0.25                                                                                   |                          |        |      |
| BB3W-1010-120 |                 |    | 120 |    | 0.35                                                                                   |                          |        |      |
| BB3W-1212-70  | 11.5            | 12 | 70  | 22 | 0.26                                                                                   | Ø12<br>Ø13<br>Ø14<br>Ø15 | C03517 | T10P |
| BB3W-1212-100 |                 |    | 100 |    | 0.30                                                                                   |                          |        |      |
| BB3W-1212-140 |                 |    | 140 |    | 0.40                                                                                   |                          |        |      |
| BB3W-1414-80  | 13.5            | 14 | 80  |    | 0.30                                                                                   | Ø14<br>Ø15               |        |      |
| BB3W-1414-110 |                 |    | 110 |    | 0.40                                                                                   |                          |        |      |
| BB3W-1616-80  | 15.5            | 16 | 80  | 26 | 0.40                                                                                   | Ø16<br>Ø17<br>Ø18        | C04020 | T15P |
| BB3W-1616-110 |                 |    | 110 |    | 0.50                                                                                   |                          |        |      |
| BB3W-1616-170 |                 |    | 170 |    | 0.70                                                                                   |                          |        |      |

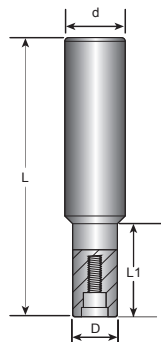

  
 D:10~15    D:16~25

Taper Polygon

**BB3** • HSS



Tolerances (mm)  
 $D: +0.0$   
 $-0.01 \sim -0.02$      $d: h6$



| Part No.    | Dimensions (mm) |    |    |    |  | Carbide Head                 | Screw  | Key  |
|-------------|-----------------|----|----|----|-----------------------------------------------------------------------------------|------------------------------|--------|------|
|             | D               | d  | L  | L1 |                                                                                   |                              |        |      |
| BB3-1610-70 | 9.7             | 16 | 70 | 20 | 0.20                                                                              | $\phi 10-11$                 | C03016 | T09P |
| BB3-1612-80 | 11.5            |    | 80 | 25 | 0.25                                                                              | $\phi 12-13$<br>$\phi 14-15$ | C03517 | T10P |
| BB3-2014-90 | 13.5            | 20 | 90 | 28 | 0.50                                                                              | $\phi 14-15$                 |        |      |
| BB3-2016-90 | 15.5            |    |    | 32 | 0.70                                                                              | $\phi 16-17$<br>$\phi 18$    | C04020 | T15P |

- Not available in shrink fit arbor

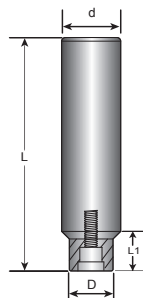

  
 D:10~15    D:16~25

Taper Polygon

**BB3** • HSS



Tolerances (mm)  
 $D: +0.0$   
 $-0.01 \sim -0.02$      $d: h6$



| Part No.      | Dimensions (mm) |    |     |    |  | Carbide Head     | Screw  | Key  |
|---------------|-----------------|----|-----|----|-------------------------------------------------------------------------------------|------------------|--------|------|
|               | D               | d  | L   | L1 |                                                                                     |                  |        |      |
| BB3-1610-70S  | 9.7             | 16 | 70  | 12 | 0.09                                                                                | ø10-11           | C03016 | T09P |
| BB3-1612-80S  | 11.5            |    | 80  |    | 0.12                                                                                | ø12-13<br>ø14-15 | C03517 | T10P |
| BB3-2014-90S  | 13.5            | 20 | 90  |    | 0.21                                                                                | ø14-15           |        |      |
| BB3-2016-90S  | 15.5            |    |     |    |                                                                                     | ø16-17<br>ø18    | C04020 | T15P |
| BB3-2518-90S  | 17.5            | 25 |     |    | 0.32                                                                                | ø18              |        |      |
| BB3-2520-90S  | 19.5            |    |     |    |                                                                                     | ø20-21<br>ø25    | C05021 | T20P |
| BB3-3225-100S | 24.5            | 32 | 100 |    | 0.59                                                                                | ø25              |        |      |

- Not available in shrink fit arbor



# Common Holders



D:10~15



D:16~25

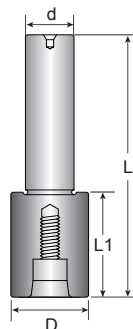
Taper Polygon

**BB3**

• HSS



Tolerances (mm)  
D :  $\begin{matrix} +0.0 \\ -0.01 \sim -0.02 \end{matrix}$       d : h6



| Part No. | Dimensions (mm) |    |    |    |  | Carbide Head     | Screw  | Key  |
|----------|-----------------|----|----|----|-----------------------------------------------------------------------------------|------------------|--------|------|
|          | D               | d  | L  | L1 |                                                                                   |                  |        |      |
| BB3-1012 | 11.5            | 10 | 50 | 10 | 0.09                                                                              | Ø12-13<br>Ø14-15 | C03517 | T10P |
| BB3-1016 | 15.5            |    |    | 12 | 0.10                                                                              | Ø16-17<br>Ø18    | C04020 | T15P |
| BB3-1220 | 19.5            | 12 |    | 13 | 0.11                                                                              | Ø20-21<br>Ø25    | C05021 | T20P |
| BB3-1225 | 24.5            |    |    |    | 0.12                                                                              | Ø25              |        |      |

- Not available in shrink fit arbor



D:10~15



D:16~25

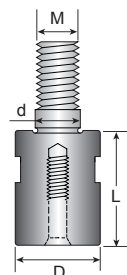
Taper Polygon

**BB3**

• HSS

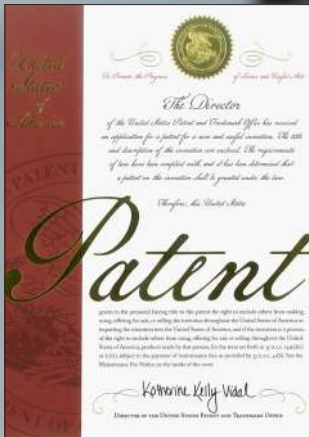


Tolerances (mm)  
D :  $\begin{matrix} +0.0 \\ -0.01 \sim -0.02 \end{matrix}$



| Part No. | Dimensions (mm) |      |    |    | KG   | Carbide Head     | Screw  | Key  |
|----------|-----------------|------|----|----|------|------------------|--------|------|
|          | D               | d    | L  | M  |      |                  |        |      |
| BB3-10   | 9.7             | 6.5  | 22 | 6  | 0.05 | Ø10<br>Ø11       | C03016 | T09P |
| BB3-12   | 11.5            |      | 24 |    | 0.06 | Ø12-13<br>Ø14-15 | C03517 | T10P |
| BB3-16   | 15.5            | 8.5  | 26 | 8  | 0.08 | Ø16-17<br>Ø18    | C04020 | T15P |
| BB3-20   | 19.5            | 10.5 |    | 10 | 0.09 | Ø20-21<br>Ø25    | C05021 | T20P |
| BB3-25   | 24.5            | 12.5 |    | 12 | 0.10 | Ø25              |        |      |

- Not available in shrink fit arbor



## Patent pending

Taiwan invention patent ( Authorized )

No. I647036

Chinese invention patent ( Authorized )

No. ZL 2018 1 0214725.9

EPC EU invention patent ( Authorized )

No. EPC EP18174847.6

PCT International Patent Priority ( Authorized )

International patent priority PCT/CN2019/076867

Canadian patent ( Authorized )

No. 3,095,794

U.S. Patent ( Authorized )

No.11,453,067 B2

Japanese patent ( Authorized )

No.77224364

Korean Patent ( Authorized )

No.10-2332216

Indian patent

No.478339

Russian patent ( Authorized )

No.2749504

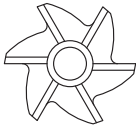
# Milling Heads - M

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183



4 flutes  
D:10~15mm



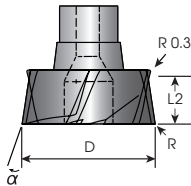
6 flutes  
D:16~25mm



D:10~15 D:16~25

Taper Polygon

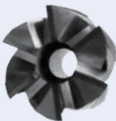
3B

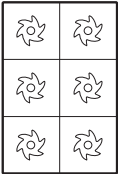


Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Dimensions (mm) |     |     |          |
|-----------------|-----|-----|----------|
| D               | L2  | R   | $\alpha$ |
| 10              | 5   | 0   | 48°      |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 11              | 5.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 12              | 6   | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 13              | 6.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |

| Milling Heads                                                                       | Part No.     | Grades  |      |      |     |     |              |      |          |  |
|-------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                     |              | Carbide |      |      |     |     | Metal cermet |      | Uncoated |                                                                                   |
|                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE                                                                                |
|  | 3B1005-M     | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R0.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R1.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R1.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R2.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105-M     | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R0.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R1.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R1.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R2.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206-M     | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R0.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R1.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R1.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R2.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306-M     | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R0.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R1.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R1.5-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R2.0-M | ⊗       |      |      |     |     |              |      |          |                                                                                   |



Inserts 6 PCS / Box

-  Steel /  Hardened steel /  Cast iron   
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1407R0.5-M, B100

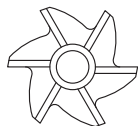
# Milling Heads - M

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183



4 flutes  
D:10-15mm



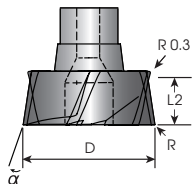
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

3B



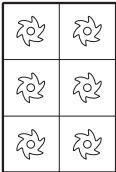
Tolerances (mm)

D :  $\begin{matrix} +0.0 \\ -0.01 \sim -0.02 \end{matrix}$  L2 :  $\pm 0.03$

| Dimensions (mm) |     |     |          |
|-----------------|-----|-----|----------|
| D               | L2  | R   | $\alpha$ |
| 14              | 7   | 0   | 48°      |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 15              | 7.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 16              | 8   | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 17              | 8.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |

UFO MILL

| Milling Heads                                                                       | Part No.                                                                            | Grades                                                                              |      |      |     |     |              |      |          |    |  |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------------|------|----------|----|--|-----------------------------------------------------------------------------------|
|                                                                                     |                                                                                     | Carbide                                                                             |      |      |     |     | Metal cermet |      | Uncoated |    |  |                                                                                   |
|                                                                                     |                                                                                     | B100                                                                                | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |  |                                                                                   |
|  | 3B1407-M                                                                            |    |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1407R0.5-M                                                                        |    |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1407R1.0-M                                                                        |    |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1407R1.5-M                                                                        |   |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1407R2.0-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1507-M                                                                            |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1507R0.5-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1507R1.0-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1507R1.5-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1507R2.0-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1608-M                                                                            |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1608R0.5-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1608R1.0-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1608R1.5-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1608R2.0-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1708-M                                                                            |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1708R0.5-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1708R1.0-M                                                                        |  |      |      |     |     |              |      |          |    |  |                                                                                   |
| 3B1708R1.5-M                                                                        |  |                                                                                     |      |      |     |     |              |      |          |    |  |                                                                                   |
| 3B1708R2.0-M                                                                        |  |                                                                                     |      |      |     |     |              |      |          |    |  |                                                                                   |



Inserts 6 PCS / Box

- Steel / Hardened steel / Cast iron
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1407R0.5-M, B100





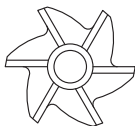
# Milling Heads - M

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183



4 flutes  
D:10-15mm

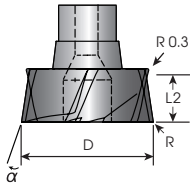


6 flutes  
D:16-25mm



Taper Polygon

3B

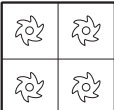


Tolerances (mm)

D : +0.0  
-0.01~-0.02    L2 : ± 0.03

| Dimensions (mm) |      |     |     |
|-----------------|------|-----|-----|
| D               | L2   | R   | α   |
| 18              | 9    | 0   | 48° |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |
| 20              | 10   | 0   |     |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |
| 21              | 10.5 | 0   |     |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |
| 25              | 12.5 | 0   |     |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |

| Milling Heads                                                                       | Part No.                                                                            | Grades                                                                              |                                                                                     |                                                                                     |     |     |              |      |          |    |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|-----|--------------|------|----------|----|-----------------------------------------------------------------------------------|
|                                                                                     |                                                                                     | Carbide                                                                             |                                                                                     |                                                                                     |     |     | Metal cermet |      | Uncoated |    |                                                                                   |
|                                                                                     |                                                                                     | B100                                                                                | C200                                                                                | C250                                                                                | F20 | F30 | CE25         | CE60 | K10      | CE |                                                                                   |
|  | 3B1809-M                                                                            |    |    |    |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1809R0.5-M                                                                        |    |    |   |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1809R1.0-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1809R1.5-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1809R2.0-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2010-M                                                                            |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2010R0.5-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2010R1.0-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2010R1.5-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2010R2.0-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2110-M                                                                            |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2110R0.5-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2110R1.0-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2110R1.5-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2110R2.0-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2512-M                                                                            |  |  |  |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2512R0.5-M                                                                        |  |  |  |     |     |              |      |          |    |                                                                                   |
| 3B2512R1.0-M                                                                        |  |  |  |                                                                                     |     |     |              |      |          |    |                                                                                   |
| 3B2512R1.5-M                                                                        |  |  |  |                                                                                     |     |     |              |      |          |    |                                                                                   |
| 3B2512R2.0-M                                                                        |  |  |  |                                                                                     |     |     |              |      |          |    |                                                                                   |



Inserts 4 PCS / Box

- Steel / Hardened steel / Cast iron
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1809R0.5-M, B100

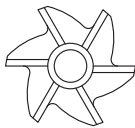
# Milling Heads - M E

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183



4 flutes  
D:10-15mm



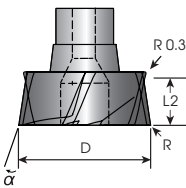
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

3B

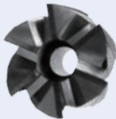


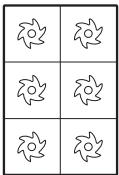
Tolerances (mm)

D : +0.0  
-0.01~-0.02    L2 : ± 0.03

| Dimensions (mm) |     |     |          |  |
|-----------------|-----|-----|----------|--|
| D               | L2  | R   | $\alpha$ |  |
| 10              | 5   | 0   | 48°      |  |
|                 |     | 0.5 |          |  |
|                 |     | 1   |          |  |
|                 |     | 1.5 |          |  |
|                 |     | 2   |          |  |
| 11              | 5.5 | 0   |          |  |
|                 |     | 0.5 |          |  |
|                 |     | 1   |          |  |
|                 |     | 1.5 |          |  |
|                 |     | 2   |          |  |
| 12              | 6   | 0   |          |  |
|                 |     | 0.5 |          |  |
|                 |     | 1   |          |  |
|                 |     | 1.5 |          |  |
|                 |     | 2   |          |  |
| 13              | 6.5 | 0   |          |  |
|                 |     | 0.5 |          |  |
|                 |     | 1   |          |  |
|                 |     | 1.5 |          |  |
|                 |     | 2   |          |  |

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| Milling Heads                                                                       | Part No.      | Grades  |      |      |     |     |              |      |          |  |
|-------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------------|------|----------|-----------------------------------------------------------------------------------|
|                                                                                     |               | Carbide |      |      |     |     | Metal cermet |      | Uncoated |                                                                                   |
|                                                                                     |               | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE                                                                                |
|  | 3B1005-ME     | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R0.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R1.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R1.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1005R2.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105-ME     | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R0.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R1.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R1.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1105R2.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206-ME     | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R0.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R1.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R1.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1206R2.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306-ME     | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R0.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R1.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R1.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |
|                                                                                     | 3B1306R2.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                   |



Inserts 6 PCS / Box

-  Stainless steel / Titanium alloy / Cast iron   
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1005R0.5-ME, B100



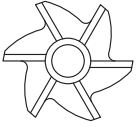
# Milling Heads - M E

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183



4 flutes  
D:10-15mm



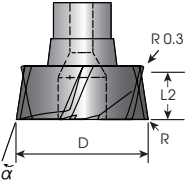
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

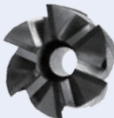
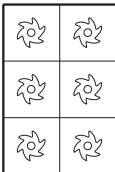
3B



Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Dimensions (mm) |     |     |          |
|-----------------|-----|-----|----------|
| D               | L2  | R   | $\alpha$ |
| 14              | 7   | 0   | 48°      |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 15              | 7.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 16              | 8   | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 17              | 8.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |

| Milling Heads                                                                       | Part No.      | Grades  |      |      |     |     |              |      |          |    |                           |
|-------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------------|------|----------|----|------------------------------------------------------------------------------------------------------------|
|                                                                                     |               | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |                                                                                                            |
|                                                                                     |               | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |                                                                                                            |
|  | 3B1407-ME     | ⊙       |      |      |     |     |              |      |          |    | <br>Inserts 6 PCS / Box |
|                                                                                     | 3B1407R0.5-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1407R1.0-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1407R1.5-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1407R2.0-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1507-ME     | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1507R0.5-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1507R1.0-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1507R1.5-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1507R2.0-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1608-ME     | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1608R0.5-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1608R1.0-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1608R1.5-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1608R2.0-ME | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
|                                                                                     | 3B1708-ME     | ⊙       |      |      |     |     |              |      |          |    |                                                                                                            |
| 3B1708R0.5-ME                                                                       | ⊙             |         |      |      |     |     |              |      |          |    |                                                                                                            |
| 3B1708R1.0-ME                                                                       | ⊙             |         |      |      |     |     |              |      |          |    |                                                                                                            |
| 3B1708R1.5-ME                                                                       | ⊙             |         |      |      |     |     |              |      |          |    |                                                                                                            |
| 3B1708R2.0-ME                                                                       | ⊙             |         |      |      |     |     |              |      |          |    |                                                                                                            |

Inserts 6 PCS / Box

- Stainless steel / Titanium alloy / Cast iron
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1407R0.5-ME, B100

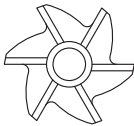
# Milling Heads - M E

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183



4 flutes  
D:10-15mm



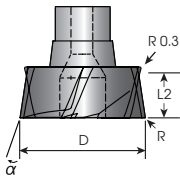
6 flutes  
D:16-25mm

| Dimensions (mm) |      |     |     |
|-----------------|------|-----|-----|
| D               | L2   | R   | α   |
| 18              | 9    | 0   | 48° |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |
| 20              | 10   | 0   |     |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |
| 21              | 10.5 | 0   |     |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |
| 25              | 12.5 | 0   |     |
|                 |      | 0.5 |     |
|                 |      | 1   |     |
|                 |      | 1.5 |     |
|                 |      | 2   |     |



Taper Polygon

3B



Tolerances (mm)

D : +0.0  
- 0.01~-0.02    L2 : ± 0.03

| Milling Heads | Part No.      | Grades  |      |      |     |     |              |      |          |                     |
|---------------|---------------|---------|------|------|-----|-----|--------------|------|----------|---------------------|
|               |               | Carbide |      |      |     |     | Metal cermet |      | Uncoated |                     |
|               |               | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE                  |
|               | 3B1809-ME     | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B1809R0.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B1809R1.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B1809R1.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B1809R2.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2010-ME     | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2010R0.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2010R1.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2010R1.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2010R2.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2110-ME     | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2110R0.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2110R1.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2110R1.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2110R2.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2512-ME     | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2512R0.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2512R1.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2512R1.5-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               | 3B2512R2.0-ME | ⊙       |      |      |     |     |              |      |          |                     |
|               |               |         |      |      |     |     |              |      |          |                     |
|               |               |         |      |      |     |     |              |      |          | Inserts 4 PCS / Box |

- ⊙ Stainless steel / Titanium alloy / Cast iron    M S K
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1809R0.5-ME, B100



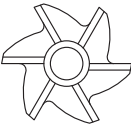
# Milling Heads - E

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183



4 flutes  
D:10-15mm



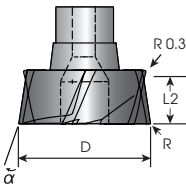
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

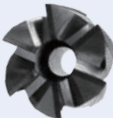
3B

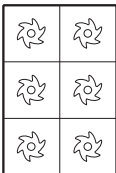


Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Dimensions (mm) |     |     |          |
|-----------------|-----|-----|----------|
| D               | L2  | R   | $\alpha$ |
| 10              | 5   | 0   | 48°      |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 11              | 5.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 12              | 6   | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 13              | 6.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |

| Milling Heads                                                                       | Part No.     | Grades  |      |      |     |     |              |      |          |    |  |  |
|-------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------------|------|----------|----|--|-----------------------------------------------------------------------------------|
|                                                                                     |              | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |  |                                                                                   |
|                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |  |                                                                                   |
|  | 3B1005-E     |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1005R0.5-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1005R1.0-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1005R1.5-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1005R2.0-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1105-E     |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1105R0.5-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1105R1.0-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1105R1.5-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1105R2.0-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1206-E     |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1206R0.5-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1206R1.0-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1206R1.5-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1206R2.0-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1306-E     |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1306R0.5-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
|                                                                                     | 3B1306R1.0-E |         |      |      |     |     |              |      |          |    |  |                                                                                   |
| 3B1306R1.5-E                                                                        |              |         |      |      |     |     |              |      |          |    |  |                                                                                   |
| 3B1306R2.0-E                                                                        |              |         |      |      |     |     |              |      |          |    |  |                                                                                   |



Inserts 6 PCS / Box

-  Aluminum / Copper 
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1005R0.5-E, K10

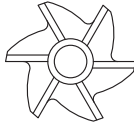
# Milling Heads - E

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

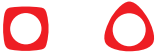


4 flutes  
D:10-15mm



6 flutes  
D:16-25mm

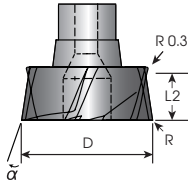
| Dimensions (mm) |     |     |          |
|-----------------|-----|-----|----------|
| D               | L2  | R   | $\alpha$ |
| 14              | 7   | 0   | 48°      |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 15              | 7.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 16              | 8   | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |
| 17              | 8.5 | 0   |          |
|                 |     | 0.5 |          |
|                 |     | 1   |          |
|                 |     | 1.5 |          |
|                 |     | 2   |          |



D:10~15 D:16~25

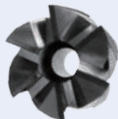
Taper Polygon

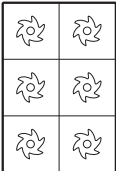
3B



Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Milling Heads                                                                       | Part No.     | Grades  |      |      |     |     |                 |          |     |    |  |  |
|-------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|-----------------|----------|-----|----|--|-----------------------------------------------------------------------------------|
|                                                                                     |              | Carbide |      |      |     |     | Metal<br>cermet | Uncoated |     |    |  |                                                                                   |
|                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE2.5           | CE60     | K10 | CE |  |                                                                                   |
|  | 3B1407-E     |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1407R0.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1407R1.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1407R1.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1407R2.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1507-E     |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1507R0.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1507R1.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1507R1.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1507R2.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1608-E     |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1608R0.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1608R1.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1608R1.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1608R2.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1708-E     |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1708R0.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1708R1.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1708R1.5-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |
|                                                                                     | 3B1708R2.0-E |         |      |      |     |     |                 |          |     |    |  |                                                                                   |



Inserts 6 PCS / Box

Inserts 6 PCS / Box

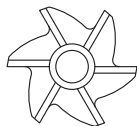
-  Aluminum / Copper 
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1407R0.5-E, K10



# Milling Heads - E

Flute length : D/2

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

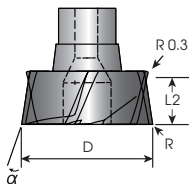


6 flutes  
D:16-25mm



Taper Polygon

3B

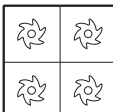


Tolerances (mm)

D : +0.0  
-0.01~-0.02    L2 : ± 0.03

| Dimensions (mm) |      |     |          |
|-----------------|------|-----|----------|
| D               | L2   | R   | $\alpha$ |
| 18              | 9    | 0   | 48°      |
|                 |      | 0.5 |          |
|                 |      | 1   |          |
|                 |      | 1.5 |          |
|                 |      | 2   |          |
| 20              | 10   | 0   |          |
|                 |      | 0.5 |          |
|                 |      | 1   |          |
|                 |      | 1.5 |          |
|                 |      | 2   |          |
| 21              | 10.5 | 0   |          |
|                 |      | 0.5 |          |
|                 |      | 1   |          |
|                 |      | 1.5 |          |
|                 |      | 2   |          |
| 25              | 12.5 | 0   |          |
|                 |      | 0.5 |          |
|                 |      | 1   |          |
|                 |      | 1.5 |          |
|                 |      | 2   |          |

| Milling Heads                                                                       | Part No.     | Grades  |      |      |     |     |                 |      |          |    |  |  |
|-------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|-----------------|------|----------|----|--|-----------------------------------------------------------------------------------|
|                                                                                     |              | Carbide |      |      |     |     | Metal<br>cermet |      | Uncoated |    |  |                                                                                   |
|                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE25            | CE60 | K10      | CE |  |                                                                                   |
|  | 3B1809-E     |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B1809R0.5-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B1809R1.0-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B1809R1.5-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B1809R2.0-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2010-E     |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2010R0.5-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2010R1.0-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2010R1.5-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2010R2.0-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2110-E     |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2110R0.5-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2110R1.0-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2110R1.5-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2110R2.0-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2512-E     |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2512R0.5-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
|                                                                                     | 3B2512R1.0-E |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
| 3B2512R1.5-E                                                                        |              |         |      |      |     |     |                 |      |          |    |  |                                                                                   |
| 3B2512R2.0-E                                                                        |              |         |      |      |     |     |                 |      |          |    |  |                                                                                   |



Inserts 4 PCS / Box

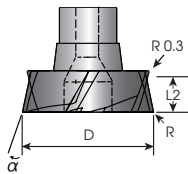
-  Aluminum / Copper 
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1809R0.5-E, K10

# Milling Heads - M

Flute length : 5mm

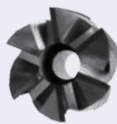
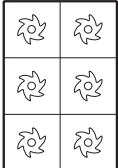
- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

| Dimensions (mm) |    |     |          |
|-----------------|----|-----|----------|
| D               | L2 | R   | $\alpha$ |
| 16              | 5  | 0   | 48°      |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 17              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |



Tolerances (mm)

D : +0.0  
- 0.01~-0.02    L2 : ± 0.03

| Milling Heads                                                                       | Part No.     | Grades                                                                              |      |      |     |     |                 |          |     |    |  |
|-------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|------|------|-----|-----|-----------------|----------|-----|----|-------------------------------------------------------------------------------------|
|                                                                                     |              | Carbide                                                                             |      |      |     |     | Metal<br>cermet | Uncoated |     |    |                                                                                     |
|                                                                                     |              | B100                                                                                | C200 | C250 | F20 | F30 | CE25            | CE60     | K10 | OE |                                                                                     |
|  | 3B1605-M     |  |      |      |     |     |                 |          |     |    |  |
|                                                                                     | 3B1605R0.5-M |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1605R1.0-M |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1605R1.5-M |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1605R2.0-M |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705-M     |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R0.5-M |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R1.0-M |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R1.5-M |  |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R2.0-M |  |      |      |     |     |                 |          |     |    |                                                                                     |

Inserts 6 PCS / Box

Inserts 6 PCS / Box

-  Steel / Hardened steel / Cast iron   
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1605R0.5-M,B100

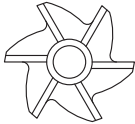




# Milling Heads - M

Flute length : 5mm

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

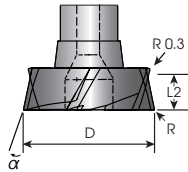


6 flutes  
D:16-25mm



Taper Polygon

3B

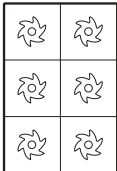


Tolerances (mm)

$$D : \begin{matrix} +0.0 \\ -0.01 \sim -0.02 \end{matrix} \quad L2 : \pm 0.03$$

| Dimensions (mm) |    |     |          |
|-----------------|----|-----|----------|
| D               | L2 | R   | $\alpha$ |
| 18              | 5  | 0   | 48°      |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 20              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 21              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 25              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |

| Milling Heads                                                                       | Part No.     | Grades                                                                            |      |      |     |     |              |      |          |    |  |
|-------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------|------|------|-----|-----|--------------|------|----------|----|-----------------------------------------------------------------------------------|
|                                                                                     |              | Carbide                                                                           |      |      |     |     | Metal cermet |      | Uncoated |    |                                                                                   |
|                                                                                     |              | B100                                                                              | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |                                                                                   |
|  | 3B1805-M     |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1805R0.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1805R1.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1805R1.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B1805R2.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2005-M     |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2005R0.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2005R1.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2005R1.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2005R2.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2105-M     |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2105R0.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2105R1.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2105R1.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2105R2.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2505-M     |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2505R0.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2505R1.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2505R1.5-M |  |      |      |     |     |              |      |          |    |                                                                                   |
|                                                                                     | 3B2505R2.0-M |  |      |      |     |     |              |      |          |    |                                                                                   |



Inserts 6 PCS / Box

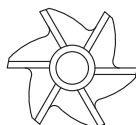
-  Steel / Hardened steel / Cast iron  
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1805R0.5-M,B100

# Milling Heads - M E

Flute length : 5mm

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

| Dimensions (mm) |    |     |          |
|-----------------|----|-----|----------|
| D               | L2 | R   | $\alpha$ |
| 16              | 5  | 0   | 48°      |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 17              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |

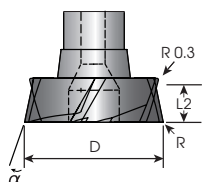


6 flutes  
D:16-25mm



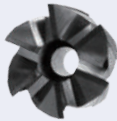
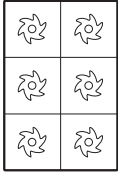
Taper Polygon

3B



Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Milling Heads                                                                       | Part No.      | Grades  |      |      |     |     |              |      |          |                         |
|-------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------------|------|----------|------------------------------------------------------------------------------------------------------------|
|                                                                                     |               | Carbide |      |      |     |     | Metal cermet |      | Uncoated |                                                                                                            |
|                                                                                     |               | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE                                                                                                         |
|  | 3B1605-ME     | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1605R0.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1605R1.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1605R1.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1605R2.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1705-ME     | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1705R0.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1705R1.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1705R1.5-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     | 3B1705R2.0-ME | ⊙       |      |      |     |     |              |      |          |                                                                                                            |
|                                                                                     |               |         |      |      |     |     |              |      |          | <br>Inserts 6 PCS / Box |

-  Stainless steel / Titanium alloy / Cast iron
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1605R0.5-ME, B100



# Milling Heads - M E

Flute length : 5mm

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

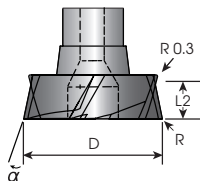


6 flutes  
D:16-25mm



Taper Polygon

3B

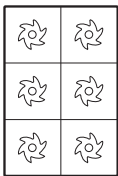


Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Dimensions (mm) |    |     |          |
|-----------------|----|-----|----------|
| D               | L2 | R   | $\alpha$ |
| 18              | 5  | 0   | 48°      |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 20              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 21              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 25              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |

| Milling Heads                                                                       | Part No.      | Grades  |      |      |     |     |                 |          |     |    |  |
|-------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|-----------------|----------|-----|----|-----------------------------------------------------------------------------------|
|                                                                                     |               | Carbide |      |      |     |     | Metal<br>cermet | Uncoated |     |    |                                                                                   |
|                                                                                     |               | B100    | C200 | C250 | F20 | F30 | CE25            | CE60     | K10 | CE |                                                                                   |
|  | 3B1805-ME     | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R0.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R1.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R1.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R2.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005-ME     | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R0.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R1.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R1.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R2.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105-ME     | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R0.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R1.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R1.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R2.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505-ME     | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R0.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R1.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R1.5-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R2.0-ME | ⊙       |      |      |     |     |                 |          |     |    |                                                                                   |



Inserts 6 PCS / Box

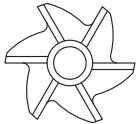
- ⊙ Stainless steel / Titanium alloy / Cast iron (M S K)
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1805R0.5-ME, B100

# Milling Heads - E

Flute length : 5mm

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

| Dimensions (mm) |    |     |          |
|-----------------|----|-----|----------|
| D               | L2 | R   | $\alpha$ |
| 16              | 5  | 0   | 48°      |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 17              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |

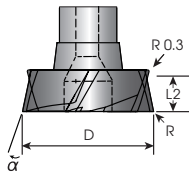


6 flutes  
D:16-25mm



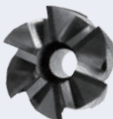
Taper Polygon

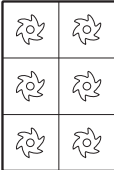
3B



Tolerances (mm)

D : +0.0  
-0.01~-0.02    L2 : ± 0.03

| Milling Heads                                                                       | Part No.     | Grades  |      |      |     |     |                 |          |     |    |  |
|-------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|-----------------|----------|-----|----|-------------------------------------------------------------------------------------|
|                                                                                     |              | Carbide |      |      |     |     | Metal<br>cermet | Uncoated |     |    |                                                                                     |
|                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE25            | CE60     | K10 | CE |                                                                                     |
|  | 3B1605-E     |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1605R0.5-E |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1605R1.0-E |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1605R1.5-E |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1605R2.0-E |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705-E     |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R0.5-E |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R1.0-E |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R1.5-E |         |      |      |     |     |                 |          |     |    |                                                                                     |
|                                                                                     | 3B1705R2.0-E |         |      |      |     |     |                 |          |     |    |                                                                                     |



Inserts 6 PCS / Box

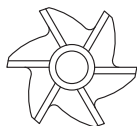
-  Aluminum / Copper 
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1605R0.5-E, K10



# Milling Heads - E

Flute length : 5mm

- Toolholders P. 161 -164
- Cutting Data P. 181 - 183

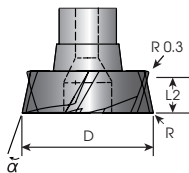


6 flutes  
D:16-25mm



Taper Polygon

3B

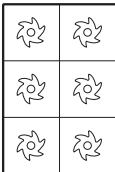


Tolerances (mm)

D : +0.0  
-0.01~-0.02    L2 : ± 0.03

| Dimensions (mm) |    |     |          |
|-----------------|----|-----|----------|
| D               | L2 | R   | $\alpha$ |
| 18              | 5  | 0   | 48°      |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 20              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 21              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |
| 25              | 5  | 0   |          |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|                 |    | 2   |          |

| Milling Heads                                                                       | Part No.     | Grades  |      |      |     |     |                 |          |     |    |  |
|-------------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|-----------------|----------|-----|----|-----------------------------------------------------------------------------------|
|                                                                                     |              | Carbide |      |      |     |     | Metal<br>cermet | Uncoated |     |    |                                                                                   |
|                                                                                     |              | B100    | C200 | C250 | F20 | F30 | CE25            | CE60     | K10 | CE |                                                                                   |
|  | 3B1805-E     |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R0.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R1.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R1.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B1805R2.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005-E     |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R0.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R1.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R1.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2005R2.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105-E     |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R0.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R1.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R1.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2105R2.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505-E     |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R0.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R1.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R1.5-E |         |      |      |     |     |                 |          |     |    |                                                                                   |
|                                                                                     | 3B2505R2.0-E |         |      |      |     |     |                 |          |     |    |                                                                                   |



Inserts 6 PCS / Box

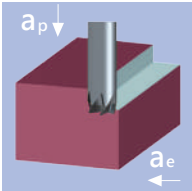
Inserts 6 PCS / Box

-  Aluminum / Copper 
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1805R0.5-E, K10

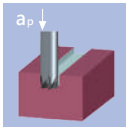
# Cutting Parameter 3B-M

Applicable to Steel / Hardened steel / Cast iron

- Keep  $Fz \geq 0.03\text{mm}$

| 3B-M                                                                             | Materials                                                                                                        | D<br>(mm) | Z | Vc<br>(m/min) | fz<br>(mm/tooth) | a <sub>p</sub><br>(mm) | a <sub>e</sub><br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------|---|---------------|------------------|------------------------|------------------------|----------------|---------------|
|  | Steel<br>24-32 HRC<br>          | 10        | 4 | 140           | 0.035            | 2                      | 7                      | 4500           | 630           |
|                                                                                  |                                                                                                                  | 12        | 4 | 180           | 0.06             | 2                      | 8                      | 4850           | 1160          |
|                                                                                  |                                                                                                                  | 16        | 6 | 180           | 0.06             | 2                      | 11                     | 3600           | 1300          |
|                                                                                  |                                                                                                                  | 20        | 6 | 180           | 0.07             | 2                      | 14                     | 2900           | 1200          |
|                                                                                  |                                                                                                                  | 25        | 6 | 180           | 0.07             | 2                      | 17                     | 2300           | 960           |
|                                                                                  | Steel<br>32-42 HRC<br>          | 10        | 4 | 100           | 0.035            | 2                      | 7                      | 3200           | 450           |
|                                                                                  |                                                                                                                  | 12        | 4 | 150           | 0.05             | 2                      | 8                      | 4000           | 800           |
|                                                                                  |                                                                                                                  | 16        | 6 | 150           | 0.06             | 2                      | 11                     | 3000           | 1080          |
|                                                                                  |                                                                                                                  | 20        | 6 | 150           | 0.06             | 2                      | 14                     | 2400           | 840           |
|                                                                                  |                                                                                                                  | 25        | 6 | 150           | 0.06             | 2                      | 17                     | 1900           | 680           |
|                                                                                  | Hardened steel<br>50-58 HRC<br> | 10        | 4 | 70            | 0.06             | 0.1                    | 7                      | 2250           | 540           |
|                                                                                  |                                                                                                                  | 12        | 4 | 70            | 0.06             | 0.1                    | 8                      | 1840           | 440           |
|                                                                                  |                                                                                                                  | 16        | 6 | 70            | 0.06             | 0.1                    | 11                     | 1370           | 490           |
|                                                                                  |                                                                                                                  | 20        | 6 | 70            | 0.06             | 0.1                    | 14                     | 1130           | 400           |
|                                                                                  |                                                                                                                  | 25        | 6 | 70            | 0.06             | 0.1                    | 17                     | 890            | 320           |
|                                                                                  | Cast Iron<br>                  | 10        | 4 | 75            | 0.08             | 4                      | 7                      | 2400           | 770           |
|                                                                                  |                                                                                                                  | 12        | 4 | 75            | 0.1              | 4                      | 8                      | 2000           | 800           |
|                                                                                  |                                                                                                                  | 16        | 6 | 75            | 0.1              | 4                      | 11                     | 1550           | 930           |
|                                                                                  |                                                                                                                  | 20        | 6 | 75            | 0.1              | 4                      | 14                     | 1200           | 720           |
|                                                                                  |                                                                                                                  | 25        | 6 | 75            | 0.1              | 4                      | 17                     | 950            | 570           |

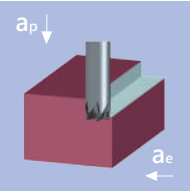
- Set RPM 30% lower for slot milling, except for cast iron materials.



# Cutting Parameter 3B-ME

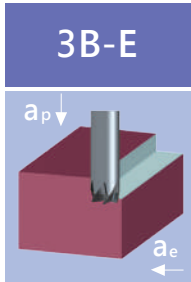
Applicable to Stainless steel / Titanium alloy / Cast iron

• Keep  $Fz \geq 0.025\text{mm}$

| 3B-ME                                                                            | Materials                                                                                            | D<br>(mm) | Z | Vc<br>(m/min) | fz<br>(mm/tooth) | ap<br>(mm) | ae<br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------|---|---------------|------------------|------------|------------|----------------|---------------|
|  | Stainless steel<br> | 10        | 4 | 55            | 0.04             | 2          | 7          | 1770           | 283           |
|                                                                                  |                                                                                                      | 12        | 4 | 75            | 0.06             | 2          | 8          | 1950           | 468           |
|                                                                                  |                                                                                                      | 16        | 6 | 75            | 0.07             | 2          | 11         | 1500           | 630           |
|                                                                                  |                                                                                                      | 20        | 6 | 75            | 0.07             | 2          | 14         | 1200           | 500           |
|                                                                                  |                                                                                                      | 25        | 6 | 75            | 0.07             | 2          | 17         | 960            | 400           |
|                                                                                  | Titanium alloy<br>  | 10        | 4 | 45            | 0.06             | 1.5        | 7          | 1450           | 350           |
|                                                                                  |                                                                                                      | 12        | 4 | 45            | 0.06             | 1.5        | 8          | 1180           | 280           |
|                                                                                  |                                                                                                      | 16        | 6 | 45            | 0.07             | 1.5        | 11         | 900            | 380           |
|                                                                                  |                                                                                                      | 20        | 6 | 45            | 0.07             | 1.5        | 14         | 720            | 300           |
|                                                                                  |                                                                                                      | 25        | 6 | 45            | 0.07             | 1.5        | 17         | 570            | 235           |
|                                                                                  | Cast iron<br>       | 10        | 4 | 75            | 0.08             | 4          | 7          | 2400           | 770           |
|                                                                                  |                                                                                                      | 12        | 4 | 75            | 0.1              | 4          | 8          | 2000           | 800           |
|                                                                                  |                                                                                                      | 16        | 6 | 75            | 0.1              | 4          | 11         | 1550           | 930           |
|                                                                                  |                                                                                                      | 20        | 6 | 75            | 0.1              | 4          | 14         | 1200           | 720           |
|                                                                                  |                                                                                                      | 25        | 6 | 75            | 0.1              | 4          | 17         | 950            | 570           |

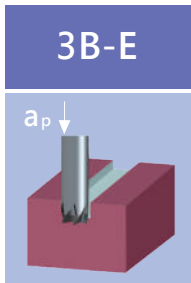
# Cutting Parameter 3B-E

Applicable to Aluminum / Copper

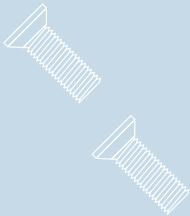


| Materials | D<br>(mm) | Z | Vc<br>(m/min) | f <sub>z</sub><br>(mm/tooth) | a <sub>p</sub><br>(mm) | a <sub>e</sub><br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|-----------|-----------|---|---------------|------------------------------|------------------------|------------------------|----------------|---------------|
| Aluminum  | 10        | 4 | 800           | 0.13                         | 4                      | 7                      | 25800          | 13400         |
|           | 12        | 4 | 800           | 0.13                         | 4                      | 8                      | 21000          | 10900         |
|           | 16        | 6 | 800           | 0.16                         | 4                      | 11                     | 16000          | 15300         |
|           | 20        | 6 | 800           | 0.16                         | 4                      | 14                     | 13000          | 12500         |
|           | 25        | 6 | 800           | 0.16                         | 4                      | 17                     | 10000          | 9600          |
| Copper    | 10        | 4 | 280           | 0.10                         | 4                      | 7                      | 9000           | 3600          |
|           | 12        | 4 | 280           | 0.10                         | 4                      | 8                      | 7500           | 3000          |
|           | 16        | 6 | 280           | 0.10                         | 4                      | 11                     | 5700           | 3400          |
|           | 20        | 6 | 280           | 0.10                         | 4                      | 14                     | 4500           | 2700          |
|           | 25        | 6 | 280           | 0.10                         | 4                      | 17                     | 3600           | 2160          |

UFO MILL

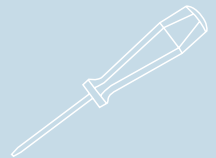


| Materials | D<br>(mm) | Z | Vc<br>(m/min) | f <sub>z</sub><br>(mm/tooth) | a <sub>p</sub><br>(mm) | a <sub>e</sub><br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|-----------|-----------|---|---------------|------------------------------|------------------------|------------------------|----------------|---------------|
| Aluminum  | 10        | 4 | 700           | 0.12                         | 4                      | 10                     | 22500          | 10800         |
|           | 12        | 4 | 700           | 0.12                         | 4                      | 12                     | 18500          | 8880          |
|           | 16        | 6 | 700           | 0.15                         | 4                      | 16                     | 14000          | 12600         |
|           | 20        | 6 | 700           | 0.15                         | 4                      | 20                     | 11000          | 9900          |
|           | 25        | 6 | 700           | 0.15                         | 4                      | 25                     | 9000           | 8100          |
| Copper    | 10        | 4 | 250           | 0.08                         | 2.5                    | 10                     | 8000           | 2500          |
|           | 12        | 4 | 250           | 0.08                         | 2.5                    | 12                     | 6700           | 2150          |
|           | 16        | 6 | 250           | 0.08                         | 2.5                    | 16                     | 5100           | 2400          |
|           | 20        | 6 | 250           | 0.08                         | 2.5                    | 20                     | 4000           | 1900          |
|           | 25        | 6 | 250           | 0.08                         | 2.5                    | 25                     | 3160           | 1500          |



## Screw & Key & Torque Values

| Screw Code | Key Code | Torque Value(Nm) |
|------------|----------|------------------|
| C03016     | T9P      | 2.0              |
| C03517     | T10P     | 3.0              |
| C04020     | T15P     | 4.0              |
| C05021     | T20P     | 6.0              |







# UFO High-Feed Cutter

## Cutting force vs. Tool life

The direction of cutting force influences directly and significantly on the machining life and efficiency. The following are three different types of cutting force commonly seen in milling cutters:

### ( Cutter 1 ) Radial force = Axial force

There are limitations inherent in milling cutters designed with round insert; to apply it on deep  $A_p$  milling or a cavity corner milling, the radial force is nearly same as the axial force, it produces great vibrations and performs in low feed. The next, round inserts take up big space and cause the cutter carries lesser flutes.

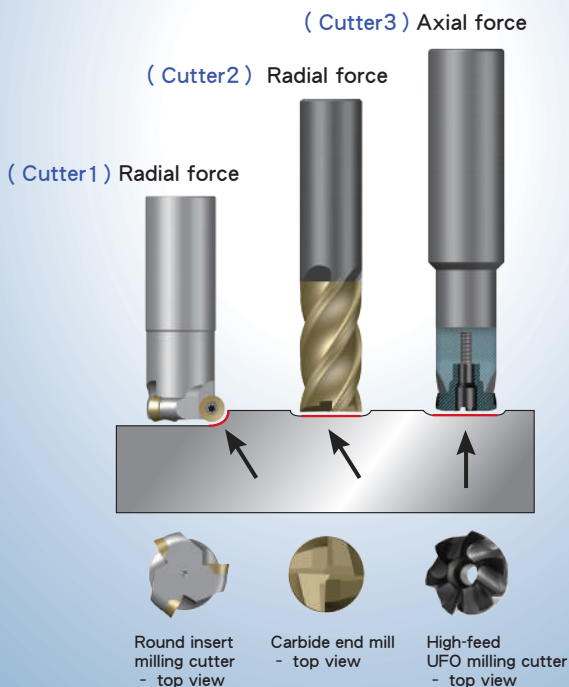
### ( Cutter 2 ) Radial force > Axial force

The carbide end mill cutter which is mostly used for finishing and semi-finishing machining. The large helix angle satisfies small cutting area and surface roughness. However, it is not cost-effective to have it removing a large amount of materials.

### ( Cutter 3 ) Radial force < Axial force

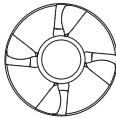
Y.T. high-feed UFO milling cutter has unique design of curvature and point contact, it is effective in keeping the radial force lesser than axial force.

The cutting force is transferred to the spindle, it brings machining process in stable conditions and carries out a high removal rate.

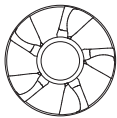


# High Feed Milling Heads - 3BH

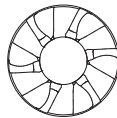
- Toolholders P. 161 -164
- Cutting Data P. 186



4 flutes  
D:10-11mm



5 flutes  
D:12-13mm

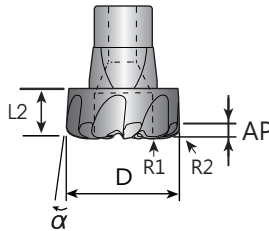


6 flutes  
D:16-25mm



D:10~15 D:16~25  
Taper Polygon

**3BH**

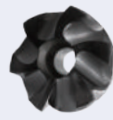


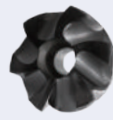
| Dimensions (mm) |    |    |     |     |          |
|-----------------|----|----|-----|-----|----------|
| D               | L2 | R1 | R2  | AP  | $\alpha$ |
| 10              | 5  | 4  | 0.6 | 0.8 | 3°       |
| 11              |    |    |     |     |          |
| 12              |    | 5  |     | 0.9 |          |
| 13              |    |    |     |     |          |
| 16              |    | 6  | 0.8 |     |          |
| 17              |    |    |     |     |          |
| 20              |    | 8  |     | 1.2 |          |
| 21              |    |    |     |     |          |
| 25              |    | 12 |     |     |          |

- Ø 10-11 Maximum AP 0.8mm
- Ø 12-13 Maximum AP 0.9mm
- Ø 16-25 Maximum AP 1.2mm

Tolerances (mm)

D :  $\begin{matrix} +0.0 \\ -0.01 \sim -0.02 \end{matrix}$  L2 :  $\pm 0.03$

| Milling Heads                                                                       | Part No.  | Grades                                                                              |      |      |     |     |              |      |          |    |  |
|-------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------------|------|----------|----|-------------------------------------------------------------------------------------|
|                                                                                     |           | Carbide                                                                             |      |      |     |     | Metal cermet |      | Uncoated |    |                                                                                     |
|                                                                                     |           | B100                                                                                | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |                                                                                     |
|  | 3BH1005-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH1105-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH1205-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH1305-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH1605-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH1705-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH2005-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH2105-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     | 3BH2505-M |  |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     |           |                                                                                     |      |      |     |     |              |      |          |    |                                                                                     |
|                                                                                     |           |                                                                                     |      |      |     |     |              |      |          |    |                                                                                     |



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

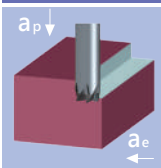
Inserts 6 PCS / Box

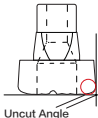
-  Steel / Stainless steel / Titanium alloy   
- Correct price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3BH1005-M, B100



# Cutting Parameter - 3BH

- Keep  $Fz \geq 0.02\text{mm}$

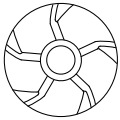
| 3BH                                                                               | Materials                                                                                               | D<br>(mm) | Z | Vc<br>(m/min) | $f_z$<br>(mm/tooth) | $a_p$<br>(mm) | $a_e$<br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------|---|---------------|---------------------|---------------|---------------|----------------|---------------|
|  | Steel<br>24-32 HRC                                                                                      | 10        | 4 | 200           | 0.25                | 0.3           | 6             | 6450           | 6400          |
|                                                                                   |                                                                                                         | 12        | 5 | 300           | 0.25                | 0.3           | 7             | 7900           | 9800          |
|                                                                                   |                                                                                                         | 16        | 6 | 300           | 0.25                | 0.3           | 10            | 6000           | 9000          |
|                                                                                   |                                                                                                         | 20        | 6 | 300           | 0.25                | 0.3           | 13            | 4800           | 8400          |
|                                                                                   |                                                                                                         | 25        | 6 | 300           | 0.25                | 0.3           | 16            | 3850           | 6700          |
|                                                                                   | Steel<br>32-42 HRC<br> | 10        | 4 | 100           | 0.25                | 0.3           | 6             | 3200           | 3200          |
|                                                                                   |                                                                                                         | 12        | 5 | 130           | 0.25                | 0.3           | 7             | 3400           | 4200          |
|                                                                                   |                                                                                                         | 16        | 6 | 130           | 0.25                | 0.3           | 10            | 2600           | 3900          |
|                                                                                   |                                                                                                         | 20        | 6 | 130           | 0.25                | 0.3           | 13            | 2100           | 3700          |
|                                                                                   |                                                                                                         | 25        | 6 | 130           | 0.25                | 0.3           | 16            | 1650           | 1900          |
|                                                                                   | Stainless steel                                                                                         | 10        | 4 | 160           | 0.25                | 0.3           | 6             | 5160           | 5160          |
|                                                                                   |                                                                                                         | 12        | 5 | 180           | 0.25                | 0.3           | 7             | 4700           | 5800          |
|                                                                                   |                                                                                                         | 16        | 6 | 180           | 0.25                | 0.3           | 10            | 3600           | 5400          |
|                                                                                   |                                                                                                         | 20        | 6 | 180           | 0.25                | 0.3           | 13            | 2900           | 5000          |
|                                                                                   |                                                                                                         | 25        | 6 | 180           | 0.25                | 0.3           | 16            | 2300           | 4000          |
|                                                                                   | Titanium alloy<br>    | 10        | 4 | 60            | 0.3                 | 0.3           | 6             | 1900           | 2280          |
|                                                                                   |                                                                                                         | 12        | 5 | 60            | 0.3                 | 0.3           | 7             | 1600           | 2400          |
|                                                                                   |                                                                                                         | 16        | 6 | 60            | 0.3                 | 0.3           | 10            | 1200           | 2160          |
|                                                                                   |                                                                                                         | 20        | 6 | 60            | 0.3                 | 0.3           | 13            | 950            | 2000          |
|                                                                                   |                                                                                                         | 25        | 6 | 60            | 0.3                 | 0.3           | 16            | 770            | 1600          |

| 3BH                                                                                 | Part No.  | Max<br>(mm) | $r_D$<br>(mm) | Uncut Angle<br>(mm) |
|-------------------------------------------------------------------------------------|-----------|-------------|---------------|---------------------|
|  | 3BH1005-M | 0.8         | 0.9           | 0.21                |
|                                                                                     | 3BH1105-M | 0.8         | 0.9           | 0.21                |
|                                                                                     | 3BH1205-M | 0.9         | 1.15          | 0.29                |
|                                                                                     | 3BH1305-M | 0.9         | 1.15          | 0.29                |
|                                                                                     | 3BH1605-M | 1.2         | 1.30          | 0.37                |
|                                                                                     | 3BH1705-M | 1.2         | 1.30          | 0.37                |
|                                                                                     | 3BH2005-M | 1.2         | 1.35          | 0.41                |
|                                                                                     | 3BH2105-M | 1.2         | 1.35          | 0.41                |
|                                                                                     | 3BH2505-M | 1.2         | 1.45          | 0.51                |

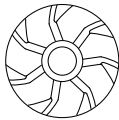
# High Feed Chamfer Milling Heads - 3BC

- Toolholders P. 161 -164
- Cutting Data P. 188

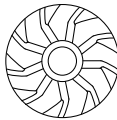
| Dimensions (mm) |    |    |      |     |               |
|-----------------|----|----|------|-----|---------------|
| D               | L2 | d  | AP   | C   | Angle Chamfer |
| 10              | 5  | 6  | 3.4  | 4.0 | 30°           |
|                 |    |    | 2.0  | 2.7 | 45°           |
|                 |    |    | 1.15 | 2.3 | 60°           |
| 13              |    | 9  | 3.4  | 4.0 | 30°           |
|                 |    |    | 2.0  | 2.7 | 45°           |
|                 |    |    | 1.15 | 2.3 | 60°           |
| 16              |    | 11 | 4.3  | 5.0 | 30°           |
|                 |    |    | 2.5  | 3.5 | 45°           |
|                 |    |    | 1.4  | 2.8 | 60°           |



5 flutes  
D: 10mm



7 flutes  
D: 13mm



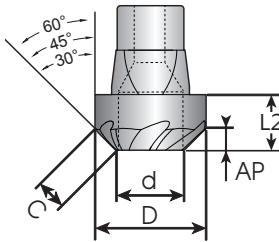
9 flutes  
D: 16mm



D:10~15 D:16~25

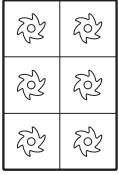
Taper Polygon

**3BC**



Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Milling Heads                                                                       | Part No.       | Grades  |      |      |     |     |              |      |          |  |
|-------------------------------------------------------------------------------------|----------------|---------|------|------|-----|-----|--------------|------|----------|-------------------------------------------------------------------------------------|
|                                                                                     |                | Carbide |      |      |     |     | Metal cermet |      | Uncoated |                                                                                     |
|                                                                                     |                | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE                                                                                  |
|  | 3BC1005-30°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1005-45°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1005-60°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1305-30°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1305-45°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1305-60°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1605-30°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1605-45°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     | 3BC1605-60°-ME | ★       |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     |                |         |      |      |     |     |              |      |          |                                                                                     |
|                                                                                     |                |         |      |      |     |     |              |      |          |  |

Inserts 6 PCS / Box

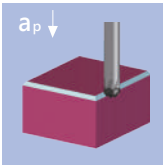
★ Applicable to all Materials

- Correct price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3BC1005-30° -ME,B100



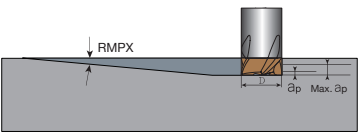
YIH TROUN ENTERPRISE CO., LTD

# Cutting Parameter 3BC

| 3BC                                                                               | Materials                                                                                               | D<br>(mm) | Z | Vc<br>(m/min) | fz<br>(mm/tooth) | a <sub>p</sub><br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------|---|---------------|------------------|------------------------|----------------|---------------|
|  | Steel<br>24-32 HRC<br> | 10        | 5 | 230           | 0.07             | 1C                     | 7400           | 2600          |
|                                                                                   |                                                                                                         | 13        | 7 | 230           | 0.07             | 1C                     | 5700           | 2800          |
|                                                                                   |                                                                                                         | 16        | 9 | 230           | 0.07             | 1C                     | 4600           | 2900          |
|                                                                                   | Steel<br>32-42 HRC<br> | 10        | 5 | 130           | 0.06             | 1C                     | 4200           | 1260          |
|                                                                                   |                                                                                                         | 13        | 7 | 130           | 0.06             | 1C                     | 3250           | 1360          |
|                                                                                   |                                                                                                         | 16        | 9 | 130           | 0.06             | 1C                     | 2650           | 1460          |
|                                                                                   | Stainless steel<br>    | 10        | 5 | 180           | 0.06             | 1C                     | 5800           | 1740          |
|                                                                                   |                                                                                                         | 13        | 7 | 180           | 0.06             | 1C                     | 4500           | 1800          |
|                                                                                   |                                                                                                         | 16        | 9 | 180           | 0.06             | 1C                     | 3600           | 1950          |
|                                                                                   | Titanium alloy<br>     | 10        | 5 | 70            | 0.06             | 1C                     | 2250           | 670           |
|                                                                                   |                                                                                                         | 13        | 7 | 70            | 0.06             | 1C                     | 1750           | 730           |
|                                                                                   |                                                                                                         | 16        | 9 | 70            | 0.06             | 1C                     | 1400           | 750           |
|                                                                                   | Aluminum<br>          | 10        | 5 | 500           | 0.07             | 1C                     | 16000          | 5600          |
|                                                                                   |                                                                                                         | 13        | 7 | 500           | 0.07             | 1C                     | 12500          | 6100          |
|                                                                                   |                                                                                                         | 16        | 9 | 500           | 0.07             | 1C                     | 10200          | 6400          |
|                                                                                   | Cast iron<br>        | 10        | 5 | 75            | 0.07             | 1C                     | 2400           | 840           |
|                                                                                   |                                                                                                         | 13        | 7 | 75            | 0.07             | 1C                     | 1900           | 920           |
|                                                                                   |                                                                                                         | 16        | 9 | 75            | 0.07             | 1C                     | 1500           | 950           |

# Technical Data

- Ramping

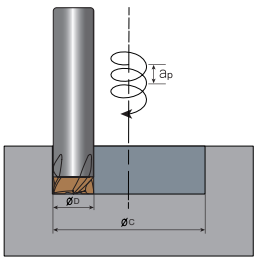


Unit : mm

| $\varnothing D$ | RMPX | Max. $a_p$ |
|-----------------|------|------------|
| 10              | 1.5° | 1          |
| 12              | 1.5° | 1          |
| 16              | 1.5° | 1          |
| 20              | 1.5° | 1          |
| 25              | 1.5° | 1          |

• It's calculated with exchangeable milling head R0.

- Helical milling



Unit : mm

| $\varnothing D$ | Min. $\varnothing C$ / Max. $a_p$ |                  |                      |                  |
|-----------------|-----------------------------------|------------------|----------------------|------------------|
|                 | Min. $\varnothing C$              | Max. $a_p$<br>mm | Max. $\varnothing C$ | Max. $a_p$<br>mm |
| 10              | 15                                | 0.4              | 19                   | 0.7              |
| 12              | 17                                | 0.4              | 23                   | 0.7              |
| 16              | 25                                | 0.7              | 31                   | 1.2              |
| 20              | 33                                | 1.0              | 39                   | 1.5              |
| 25              | 43                                | 1.4              | 49                   | 1.9              |

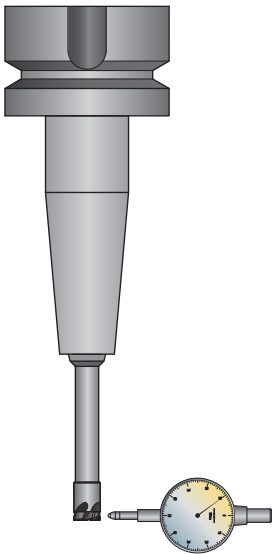
• It's calculated with exchangeable milling head R0.

## Arbor and chuck

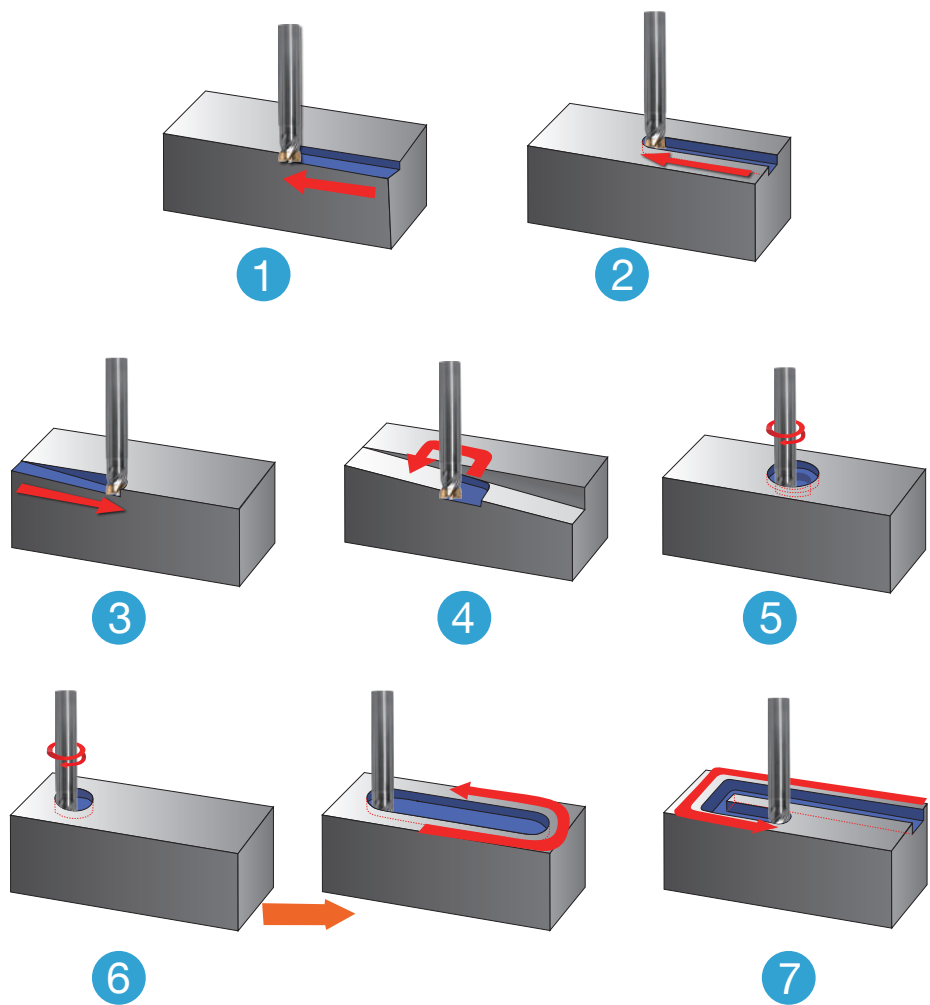
Precise arbor and chuck will improve the toollife in high speed machining.

Arbor recommendation:

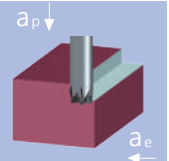
Hydraulic chuck, shrink fit chuck or highly precision chuck.



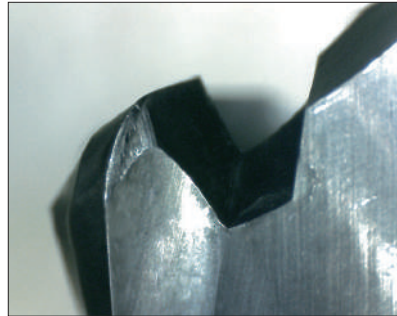
# Different Applications

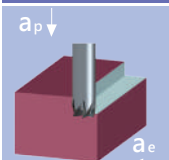


# Test Report

| 3B                                                                                | Material                                                                                             | D<br>(mm) | Z | Vc<br>(m/min) | f <sub>z</sub><br>(mm/tooth) | a <sub>p</sub><br>(mm) | a <sub>e</sub><br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------|---|---------------|------------------------------|------------------------|------------------------|----------------|---------------|
|  | Stainless steel<br> | 12        | 4 | 60            | 0.06                         | 4.5                    | 4.5                    | 1600           | 400           |

- Life time: 240 minutes
- 200 x magnification
- Tested tool:  
Milling head ( 3B1206R0.5-ME, B100 )  
HSS shank ( BB3-1212-70 )



| 3B                                                                                 | Material                                                                                                 | D<br>(mm) | Z | Vc<br>(m/min) | f <sub>z</sub><br>(mm/tooth) | a <sub>p</sub><br>(mm) | a <sub>e</sub><br>(mm) | S<br>(rev/min) | F<br>(mm/min) |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------|---|---------------|------------------------------|------------------------|------------------------|----------------|---------------|
|  | Steel<br>24-32 HRC<br> | 12        | 4 | 120           | 0.06                         | 4.5                    | 4.5                    | 3200           | 770           |

- Life time: 80 minutes
- 200 x magnification
- Tested tool:  
Milling head ( 3B1206R0.5-M, B100 )  
HSS shank ( BB3-1212-70 )





# SLITTING/ SLOTTING/ CUT-OFF SERIES

**PATENTED**

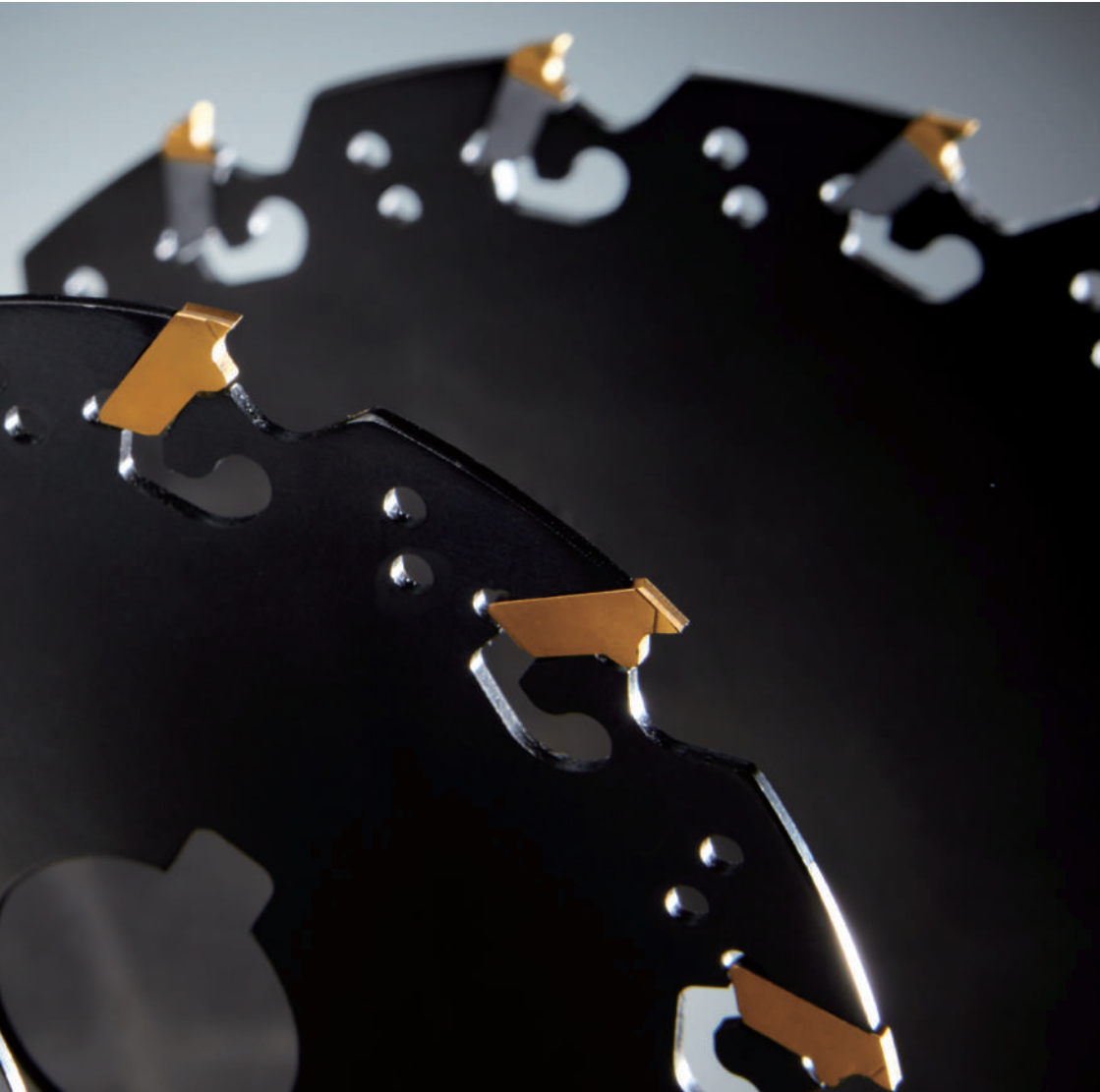


Video



# The Safest Saw

Patented embedding system assures the rigidity of inserts clamping which enhances the tool life and cutting speed, meanwhile realize impressive productivities.



# SAW BLADE

**PATENTED**



Video

## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

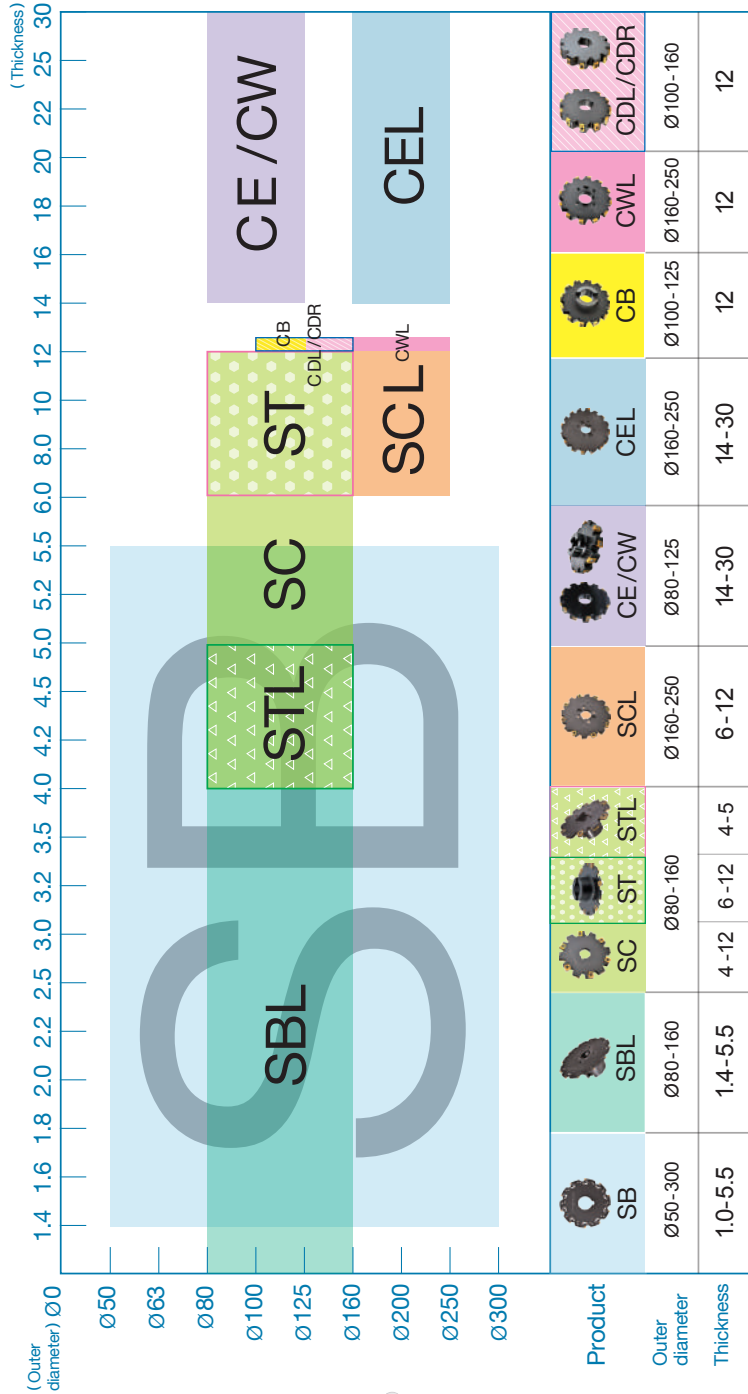
Applicable  
Machines  
Milling machine

Efficiency  
**300~500%**  
UP

Durability  
**300%**  
UP

# SLITTING/SLOTTING/CUT-OFF SERIES

## Classification table



\* The actual size shall be subject to the catalog specifications.



# Traditional vs. New Patent

"Yih Troun" is the first ever in the world which developed this precise locking type saw blade.



1. The screwless indexable insert was TIALN coated and designed with exclusive geometric angle on the cutting edge for producing impressive performance.
2. It increasing the machining (cutting) speed 300% - 500%
3. Cut down the cost of cutting tools



Patent No. : M538848



Patent No. : ZL 2016 2 1300067.8



PCT Priority

## Traditional

Solid type saw blade:

1. HSS Saw is only available with low cutting speed, if speed up, the blade will be damaged soon.
2. The carbide brazed saw is welded by high temperature and without coating, it will degrade the body hardness and machining performance.



# Multi Functional Saw Blade

## 1 Same cutter applicable to inserts of :

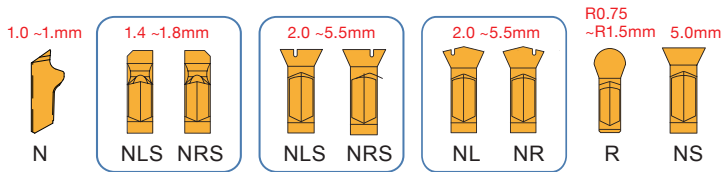
A.Different materials



B.Different thickness

ex.: 1.75 mm cutter can fit inserts 2.0/2.2/2.5mm

C.Different insert forms



## 2 Patented embedding system

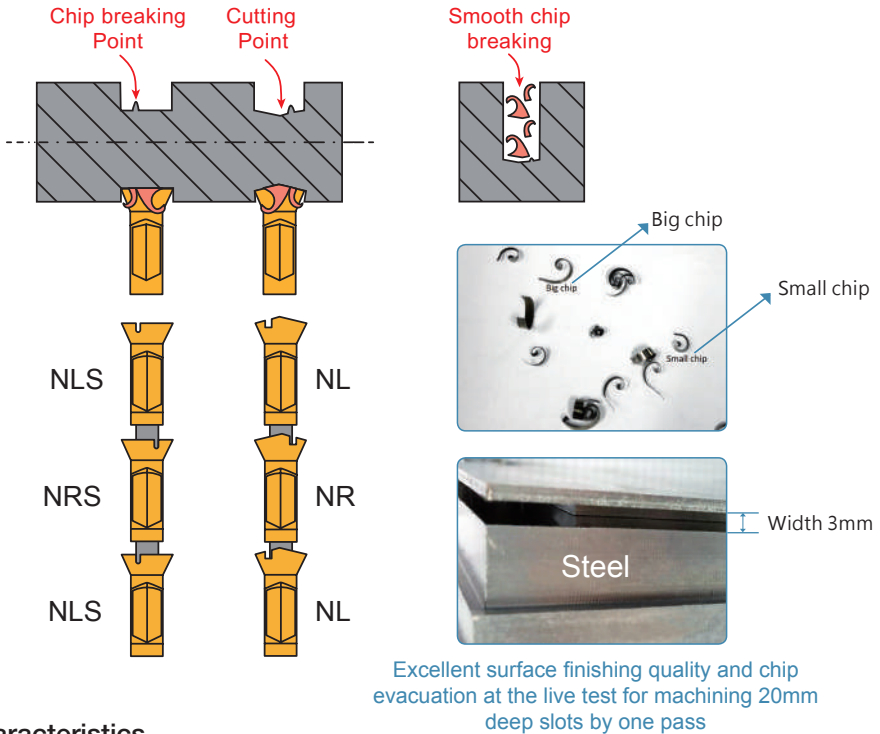
Strong clamping even in high feed machining



Circular embedding system achieves optimum performance in high speed machining,  
Max. RPM 17200 rev/min, approved in sweden.



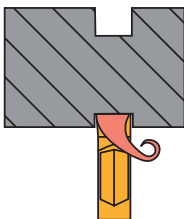
# Y.T. Patented Chip Breaking System



## Characteristics

- The Insert has unique chip breaker design to break chips into two parts and chips are easily discharged while machining deep grooves and slots.
- It has accurate center positioning design which enables stronger and steady cutter conditions while machining, and lessens vibrations.
- Compare with the saw blades in the market, this design helps in reducing lots of cutting resistances and lower the machining power. It's the best choice for long depth and difficult materials machining.

## Defect of other branded self-grip inserts



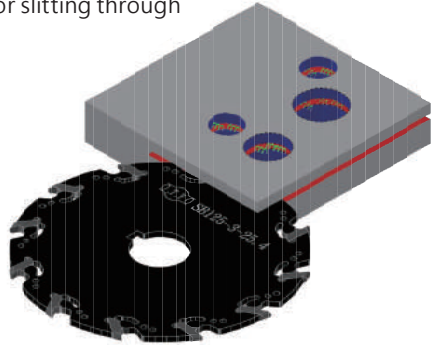
### Characteristics

- While in deep grooving, chips often get stuck in the workpiece slot.
- Requires heavy power and generates large resistance in machining.
- As a result, it gives a be poor efficiency and heavy vibrations while large contact machining.

# The Solution To Interrupted Cutting:

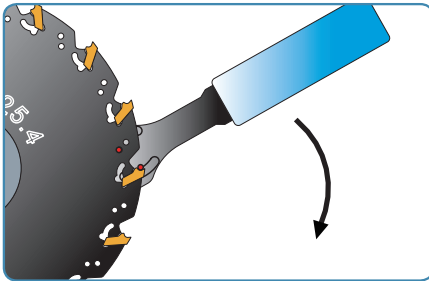
## LNGT Radius Inserts

The radius insert with smooth entering cut provides excellent solution to the interrupted cutting, especially for slitting through the workpiece with holes inside.

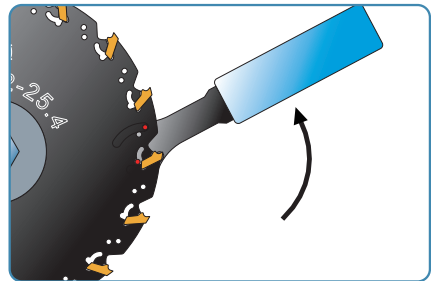


Slitting

## Change The Inserts



Mount inserts



Remove inserts



Video



marker pen ( oil-based )

Before mounting inserts, use marker pen ( oil-based ) to wipe across the concave surface of the insert for helping fit the insert into the blade smoothly.

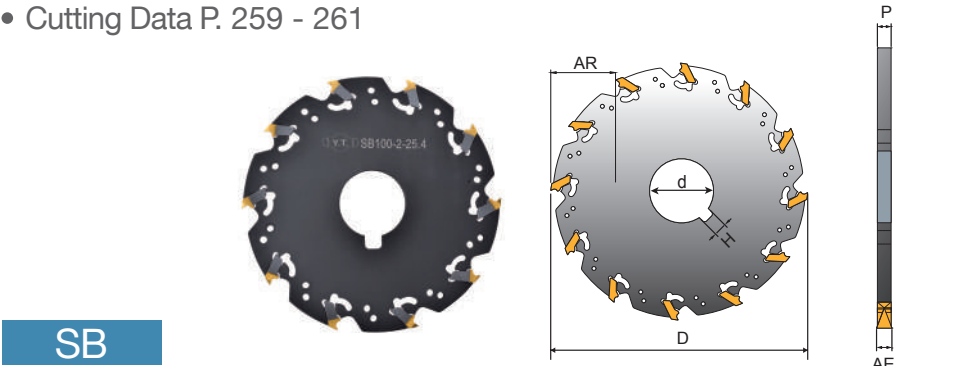




# PRODUCT SPECIFICATIONS

## Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



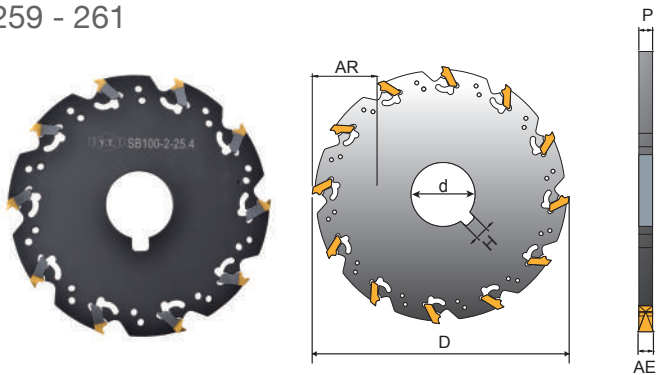
SB

| Order Code     | Dimensions (mm) |            |      |      |        |   |   | Z    | H    |  | MAX.<br>RPM | Insert<br>LN <sub>GT</sub> | Wrench    |   |  |  |
|----------------|-----------------|------------|------|------|--------|---|---|------|------|-----------------------------------------------------------------------------------|-------------|----------------------------|-----------|---|--|--|
|                | D               | AE         | AR   | P    | d      | C | B |      |      |                                                                                   |             |                            |           |   |  |  |
| SB050-1-13     | 50              | 1.0<br>1.1 | 14.5 | 0.85 | 13     | - | - | 4    | -    | 0.07                                                                              | 9600        | 1010<br>1011               | 150.10-30 |   |  |  |
| SB050-1-12.7   |                 |            |      |      | 12.7   |   |   | 6    |      |                                                                                   | 8800        |                            |           |   |  |  |
| SB063-1-16     | 63              |            | 18   |      | 16     |   |   | 0.09 | 6400 | 5000                                                                              |             |                            |           |   |  |  |
| SB063-1-15.875 |                 |            |      |      | 15.875 |   |   |      |      |                                                                                   |             |                            |           | 8 |  |  |
| SB080-1-22     | 80              |            | 22.5 |      | 22     |   |   | 10   | 6    | 0.13                                                                              | 5000        |                            |           |   |  |  |
| SB080-1-25.4   |                 |            | 19.5 |      | 25.4   |   |   |      | 6.35 |                                                                                   |             |                            |           |   |  |  |
| SB100-1-22     | 100             |            | 32   |      | 22     |   |   | 7    | 6    |                                                                                   |             |                            |           |   |  |  |
| SB100-1-25.4   |                 |            | 29   |      | 25.4   |   |   |      | 6.35 |                                                                                   |             |                            |           |   |  |  |
| SB100-1-27     |                 |            |      |      | 27     |   |   |      | 7    |                                                                                   |             |                            |           |   |  |  |

\* Wrench 150.10-30 for above cutter order seperately.

# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



SB

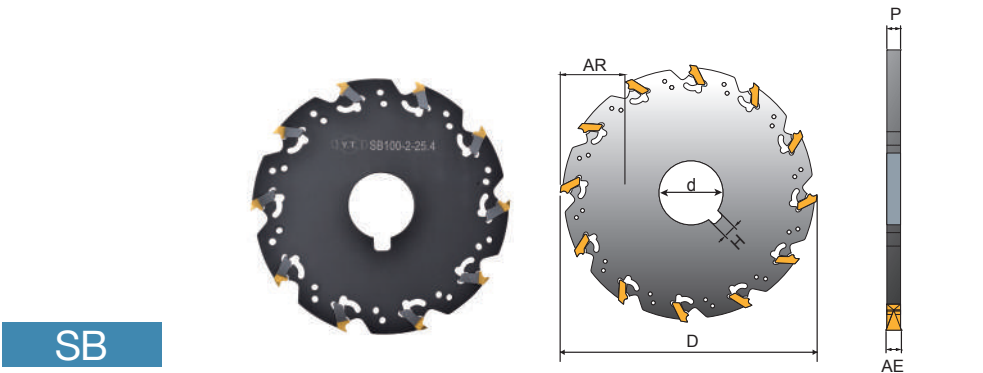
| Order Code       | Dimensions (mm) |     |      |     |        |   |   | Z  | H    |  KG | MAX.<br>RPM | Insert<br>LNGT | Wrench    |  |  |  |  |
|------------------|-----------------|-----|------|-----|--------|---|---|----|------|--------------------------------------------------------------------------------------|-------------|----------------|-----------|--|--|--|--|
|                  | D               | AE  | AR   | P   | d      | C | B |    |      |                                                                                      |             |                |           |  |  |  |  |
| SB050-1.2-13     | 50              | 1.2 | 14.5 | 1.0 | 13     | - | - | 4  | -    | 0.07                                                                                 | 10800       | 1212           | 150.10-30 |  |  |  |  |
| SB050-1.2-12.7   |                 |     |      |     | 12.7   |   |   |    |      |                                                                                      |             |                |           |  |  |  |  |
| SB063-1.2-16     | 63              |     | 18   |     | 16     |   |   | 6  |      |                                                                                      | 9900        |                |           |  |  |  |  |
| SB063-1.2-15.875 |                 |     |      |     | 15.875 |   |   |    |      |                                                                                      |             |                |           |  |  |  |  |
| SB080-1.2-22     | 80              |     | 22.5 |     | 22     |   |   | 8  | 6    | 0.09                                                                                 | 7200        |                |           |  |  |  |  |
| SB080-1.2-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    | 6.35 |                                                                                      |             |                |           |  |  |  |  |
| SB100-1.2-22     | 100             |     | 32   |     | 22     |   |   | 10 | 6    | 0.13                                                                                 | 5600        |                |           |  |  |  |  |
| SB100-1.2-25.4   |                 |     | 29   |     | 25.4   |   |   |    | 6.35 |                                                                                      |             |                |           |  |  |  |  |
| SB100-1.2-27     |                 |     |      |     | 27     |   |   |    | 7    |                                                                                      |             |                |           |  |  |  |  |

\* Wrench 150.10-30 for above cutter order seperately.



# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



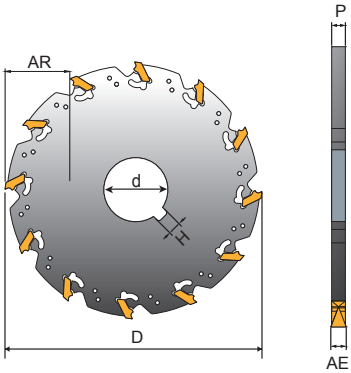
| Order Code       | Dimensions (mm) |     |      |     |        |   |   | Z  | H    |  KG | MAX.<br>RPM | Insert<br>LNGT | Wrench    |      |  |  |  |  |  |  |
|------------------|-----------------|-----|------|-----|--------|---|---|----|------|--------------------------------------------------------------------------------------|-------------|----------------|-----------|------|--|--|--|--|--|--|
|                  | D               | AE  | AR   | P   | d      | C | B |    |      |                                                                                      |             |                |           |      |  |  |  |  |  |  |
| SB050-1.4-13     | 50              | 1.4 | 14.5 | 1.2 | 13     | - | - | 4  | -    | 0.07                                                                                 | 12000       | 1414           | 150.10-30 |      |  |  |  |  |  |  |
| SB050-1.4-12.7   |                 |     |      |     | 12.7   |   |   | 6  |      |                                                                                      | 11000       |                |           |      |  |  |  |  |  |  |
| SB063-1.4-16     | 63              |     | 18   |     | 16     |   |   | 6  | -    | 0.07                                                                                 |             |                |           |      |  |  |  |  |  |  |
| SB063-1.4-15.875 |                 |     |      |     | 15.875 |   |   |    |      |                                                                                      |             |                |           |      |  |  |  |  |  |  |
| SB080-1.4-22     | 80              |     | 22.5 |     | 22     |   |   | 8  | 6    | 0.09                                                                                 | 8000        |                |           |      |  |  |  |  |  |  |
| SB080-1.4-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    | 6.35 |                                                                                      |             |                |           |      |  |  |  |  |  |  |
| SB100-1.4-22     | 100             |     | 32.5 |     | 22     |   |   | 10 | 6    | 0.13                                                                                 | 6300        |                |           | 1415 |  |  |  |  |  |  |
| SB100-1.4-25.4   |                 |     | 29.5 |     | 25.4   |   |   |    | 6.35 |                                                                                      |             |                |           |      |  |  |  |  |  |  |
| SB100-1.4-27     |                 |     |      |     | 27     |   |   |    | 7    |                                                                                      |             |                |           |      |  |  |  |  |  |  |
| SB125-1.4-22     | 125             |     | 45   |     | 22     |   |   | 12 | 6    | 0.20                                                                                 | 5000        |                |           |      |  |  |  |  |  |  |
| SB125-1.4-25.4   |                 |     |      |     | 25.4   |   |   |    | 6.35 |                                                                                      |             |                |           |      |  |  |  |  |  |  |
| SB125-1.4-32     |                 |     | 39   |     | 32     |   |   |    | 8    |                                                                                      |             |                |           |      |  |  |  |  |  |  |

\* Wrench 150.10-30 for above cutter order seperately.

# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

SB



| Order Code       | Dimensions (mm) |      |      |     |        |      |      | Z  | H    |  KG | MAX.<br>RPM | Inserts<br>LNGT | Wrench    |      |      |
|------------------|-----------------|------|------|-----|--------|------|------|----|------|--------------------------------------------------------------------------------------|-------------|-----------------|-----------|------|------|
|                  | D               | AE   | AR   | P   | d      | C    | B    |    |      |                                                                                      |             |                 |           |      |      |
| SB050-1.6-13     | 50              | 1.6  | 14.5 | 1.4 | 13     | -    | -    | 4  | -    | 0.08                                                                                 | 12000       | 1616            | 150.10-30 |      |      |
| SB050-1.6-12.7   |                 |      |      |     | 12.7   |      |      |    |      |                                                                                      |             |                 |           | 6    |      |
| SB063-1.6-16     | 63              |      | 18   |     | 16     |      |      | 8  |      |                                                                                      | 6           |                 |           |      | 0.09 |
| SB063-1.6-15.875 |                 |      |      |     | 15.875 |      |      |    |      |                                                                                      | 6.35        |                 |           |      |      |
| SB080-1.6-22     | 80              |      | 22.5 |     | 22     |      |      | 10 | 6    | 0.14                                                                                 | 6300        |                 |           |      |      |
| SB080-1.6-25.4   |                 |      | 19.5 |     | 25.4   |      |      |    | 6.35 |                                                                                      |             |                 |           |      |      |
| SB100-1.6-22     | 100             |      | 32.5 |     | 22     |      |      | 12 | 6    | 0.21                                                                                 |             |                 |           | 5000 |      |
| SB100-1.6-25.4   |                 |      | 29.5 |     | 25.4   |      |      |    | 6.35 |                                                                                      |             |                 |           |      |      |
| SB100-1.6-27     | 27              |      |      |     | 7      |      |      |    |      |                                                                                      |             |                 |           |      |      |
| SB125-1.6-22     | 125             |      | 45   |     | 22     |      |      | 16 | 6    | 0.35                                                                                 | 4000        |                 |           |      |      |
| SB125-1.6-25.4   |                 |      | 42   |     | 25.4   |      |      |    | 6.35 |                                                                                      |             |                 |           |      |      |
| SB125-1.6-32     |                 |      | 39   |     | 32     |      |      |    | 8    |                                                                                      |             |                 |           |      |      |
| SB160-1.6-25.4   | 160             | 59.5 | 25.4 | 10  | 6.35   | 0.35 | 4000 |    |      |                                                                                      |             |                 |           |      |      |
| SB160-1.6-32     |                 | 56.5 | 32   |     | 8      |      |      |    |      |                                                                                      |             |                 |           |      |      |
| SB160-1.6-40     |                 | 52   | 40   |     | 10     |      |      |    |      |                                                                                      |             |                 |           |      |      |

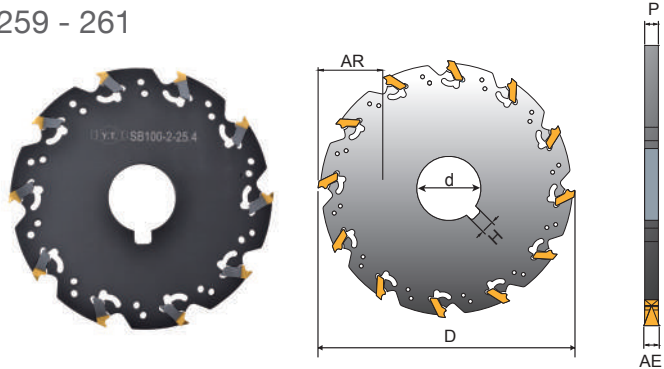
\* Wrench 150.10-30 for above cutter order separately.



# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

SB



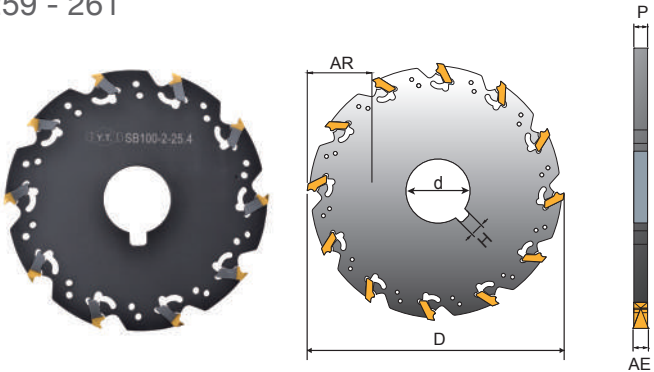
| Order Code       | Dimensions (mm) |     |      |     |        |   |   | Z  | H    |  | MAX.<br>RPM | Inserts<br>LNGT | Wrench    |
|------------------|-----------------|-----|------|-----|--------|---|---|----|------|-----------------------------------------------------------------------------------|-------------|-----------------|-----------|
|                  | D               | AE  | AR   | P   | d      | C | B |    |      |                                                                                   |             |                 |           |
| SB050-1.8-13     | 50              | 1.8 | 14.5 | 1.6 | 13     | - | - | 4  | -    | 0.09                                                                              | 12000       | 1818            | 150.10-30 |
| SB050-1.8-12.7   |                 |     |      |     | 12.7   |   |   |    |      |                                                                                   |             |                 |           |
| SB063-1.8-16     | 63              |     | 18   |     | 16     |   |   | 6  |      |                                                                                   | 11000       |                 |           |
| SB063-1.8-15.875 |                 |     |      |     | 15.875 |   |   |    |      |                                                                                   |             |                 |           |
| SB080-1.8-22     | 80              |     | 22.5 |     | 22     |   |   | 8  | 6    | 0.10                                                                              | 8000        |                 |           |
| SB080-1.8-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    | 6.35 |                                                                                   |             |                 |           |
| SB100-1.8-22     | 100             |     | 32.5 |     | 22     |   |   | 10 | 6    | 0.15                                                                              | 6300        |                 |           |
| SB100-1.8-25.4   |                 |     | 29.5 |     | 25.4   |   |   |    | 6.35 |                                                                                   |             |                 |           |
| SB100-1.8-27     |                 |     |      |     | 27     |   |   |    | 7    |                                                                                   |             |                 |           |
| SB125-1.8-22     | 125             |     | 45   |     | 22     |   |   | 12 | 6    | 0.22                                                                              | 5000        |                 |           |
| SB125-1.8-25.4   |                 |     | 42   |     | 25.4   |   |   |    | 6.35 |                                                                                   |             |                 |           |
| SB125-1.8-32     |                 |     | 39   |     | 32     |   |   |    | 8    |                                                                                   |             |                 |           |
| SB160-1.8-25.4   | 160             |     | 59.5 |     | 25.4   |   |   | 16 | 6.35 | 0.38                                                                              | 4000        |                 |           |
| SB160-1.8-32     |                 |     | 56.5 |     | 32     |   |   |    | 8    |                                                                                   |             |                 |           |
| SB160-1.8-40     |                 |     | 52   |     | 40     |   |   |    | 10   |                                                                                   |             |                 |           |

\* Wrench 150.10-30 for above cutter order seperately.

# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

SB



Slitting

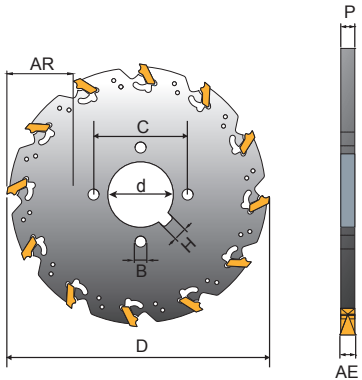
| Order Code     | Dimensions (mm) |     |      |     |        |   |   | Z  | H    |  KG | MAX. RPM | Inserts LNGT         | Wrench    |      |   |
|----------------|-----------------|-----|------|-----|--------|---|---|----|------|--------------------------------------------------------------------------------------|----------|----------------------|-----------|------|---|
|                | D               | AE  | AR   | P   | d      | C | B |    |      |                                                                                      |          |                      |           |      |   |
| SB050-2-13     | 50              | 2.0 | 14.5 | 1.7 | 13     | - | - | 4  | -    | 0.08                                                                                 | 12000    | 2020<br>2022<br>2025 | 150.10-30 |      |   |
| SB050-2-12.7   |                 |     |      |     | 12.7   |   |   | 6  |      |                                                                                      | 11000    |                      |           |      |   |
| SB063-2-16     | 63              |     | 18   |     | 16     |   |   |    |      |                                                                                      |          |                      |           | 8    | 6 |
| SB063-2-15.875 |                 |     |      |     | 15.875 |   |   |    |      |                                                                                      |          |                      |           |      |   |
| SB080-2-22     | 80              |     | 22.5 |     | 22     |   |   | 10 | 6    | 0.16                                                                                 | 6300     |                      |           |      |   |
| SB080-2-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    | 6.35 |                                                                                      |          |                      |           |      |   |
| SB100-2-22     | 100             |     | 32.5 |     | 22     |   |   | 12 | 6    | 0.24                                                                                 | 5000     |                      |           |      |   |
| SB100-2-25.4   |                 |     | 2.2  |     | 29.5   |   |   |    | 25.4 |                                                                                      |          |                      |           | 6.35 |   |
| SB100-2-27     |                 |     | 2.5  |     |        |   |   |    | 27   |                                                                                      |          |                      |           | 7    |   |
| SB125-2-22     | 125             |     | 45   |     | 22     |   |   | 16 | 6    | 0.39                                                                                 | 4000     |                      |           |      |   |
| SB125-2-25.4   |                 |     | 42   |     | 25.4   |   |   |    | 6.35 |                                                                                      |          |                      |           |      |   |
| SB125-2-32     |                 |     | 39   |     | 32     |   |   |    | 8    |                                                                                      |          |                      |           |      |   |
| SB160-2-25.4   | 160             |     | 59.5 |     | 25.4   |   |   | 16 | 6.35 | 0.39                                                                                 | 4000     |                      |           |      |   |
| SB160-2-32     |                 |     | 56.5 |     | 32     |   |   |    | 8    |                                                                                      |          |                      |           |      |   |
| SB160-2-40     |                 |     | 52   |     | 40     |   |   |    | 10   |                                                                                      |          |                      |           |      |   |

\* Wrench 150.10-30 for above cutter order seperately.



# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



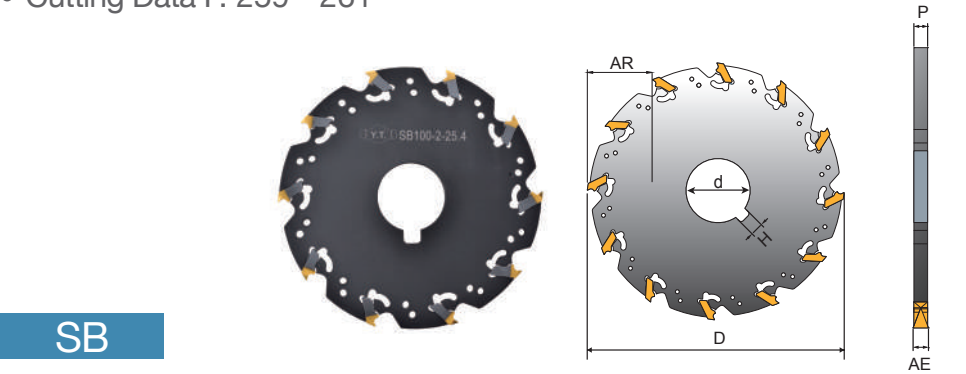
SB

| Order Code    | Dimensions (mm) |       |       |      |      |    |    | Z    | H    |  KG | MAX.<br>RPM | Inserts<br>LNGT      | Wrench    |
|---------------|-----------------|-------|-------|------|------|----|----|------|------|--------------------------------------------------------------------------------------|-------------|----------------------|-----------|
|               | D               | AE    | AR    | P    | d    | C  | B  |      |      |                                                                                      |             |                      |           |
| SB200-2-25.4  | 200             | 2.0   | 79.5  | 1.7  | 25.4 | -  | -  | 20   | 6.35 | 0.64                                                                                 | 3200        | 2020<br>2022<br>2025 | 150.10-30 |
| SB200M-2-25.4 |                 |       |       |      |      |    |    | 26   |      |                                                                                      |             |                      |           |
| SB200-2-32    |                 |       | 76.5  |      | 32   | 63 | 11 | 20   | 8    |                                                                                      |             |                      |           |
| SB200M-2-32   |                 |       |       |      |      |    |    | 26   |      |                                                                                      |             |                      |           |
| SB200-2-40    |                 |       | 72    |      | 40   | 90 |    | 20   | 10   |                                                                                      |             |                      |           |
| SB200M-2-40   |                 |       |       |      |      |    |    | 26   |      |                                                                                      |             |                      |           |
| SB250-2-25.4  | 250             | 2.2   | 104.5 | 25.4 | -    | -  | 26 | 6.35 | 0.96 | 2600                                                                                 |             |                      |           |
| SB250M-2-25.4 |                 | 2.5   |       |      |      |    | 32 |      |      |                                                                                      |             |                      |           |
| SB250-2-32    |                 | 101.5 | 32    | 63   | 11   | 26 | 8  |      |      |                                                                                      |             |                      |           |
| SB250M-2-32   |                 |       |       |      |      | 32 |    |      |      |                                                                                      |             |                      |           |
| SB250-2-40    |                 |       | 97    | 40   |      | 90 | 26 | 10   |      |                                                                                      |             |                      |           |
| SB250M-2-40   |                 |       |       |      |      |    | 32 |      |      |                                                                                      |             |                      |           |
| SB285-2-32    | 285             | 119   | 32    | 63   |      | 28 | 8  | 1.12 | 2300 |                                                                                      |             |                      |           |
| SB285M-2-32   |                 |       |       |      |      | 40 |    |      |      |                                                                                      |             |                      |           |

\* Wrench 150.10-30 for above cutter order seperately.

# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



SB

Slitting

| Order Code       | Dimensions (mm) |     |      |      |        |   |   | Z  | H    |  | MAX. RPM | Inserts LNGT | Wrench    |
|------------------|-----------------|-----|------|------|--------|---|---|----|------|-----------------------------------------------------------------------------------|----------|--------------|-----------|
|                  | D               | AE  | AR   | P    | d      | C | B |    |      |                                                                                   |          |              |           |
| SB050-2.5-13     | 50              |     | 14.5 |      | 13     |   |   | 4  | -    | 0.1                                                                               | 12000    |              |           |
| SB050-2.5-12.7   |                 |     |      |      | 12.7   |   |   |    |      |                                                                                   |          |              |           |
| SB063-2.5-16     | 63              |     | 18   |      | 16     |   |   | 6  | -    | 0.11                                                                              | 11000    |              |           |
| SB063-2.5-15.875 |                 |     |      |      | 15.875 |   |   |    |      |                                                                                   |          |              |           |
| SB080-2.5-22     | 80              |     | 22.5 |      | 22     |   |   | 8  | 6    | 0.12                                                                              | 8000     |              |           |
| SB080-2.5-25.4   |                 |     |      |      | 25.4   |   |   |    | 6.35 |                                                                                   |          |              |           |
| SB100-2.5-22     | 100             | 2.5 | 32.5 | 2.25 | 22     | - | - | 10 | 6    | 0.18                                                                              | 6300     | 2525         | 150.10-30 |
| SB100-2.5-25.4   |                 |     |      |      | 25.4   |   |   |    | 6.35 |                                                                                   |          |              |           |
| SB100-2.5-27     |                 | 2.7 | 29.5 |      | 27     |   |   |    | 7    |                                                                                   |          | 2527         |           |
| SB125-2.5-22     | 125             | 3.0 | 45   |      | 22     |   |   | 12 | 6    | 0.27                                                                              | 5000     | 2530         |           |
| SB125-2.5-25.4   |                 |     |      |      | 25.4   |   |   |    | 6.35 |                                                                                   |          |              |           |
| SB125-2.5-32     |                 |     | 39   |      | 32     |   |   |    | 8    |                                                                                   |          |              |           |
| SB160-2.5-25.4   | 160             |     | 59.5 |      | 25.4   |   |   | 16 | 6.35 | 0.47                                                                              | 4000     |              |           |
| SB160-2.5-32     |                 |     | 56.5 |      | 32     |   |   |    | 8    |                                                                                   |          |              |           |
| SB160-2.5-40     |                 |     | 52   |      | 40     |   |   |    | 10   |                                                                                   |          |              |           |
| SB200-2.5-25.4   | 200             |     | 79.5 |      | 25.4   |   |   | 20 | 6.35 | 0.73                                                                              | 3200     |              |           |
| SB200M-2.5-25.4  |                 |     |      |      |        |   |   | 26 |      |                                                                                   |          |              |           |

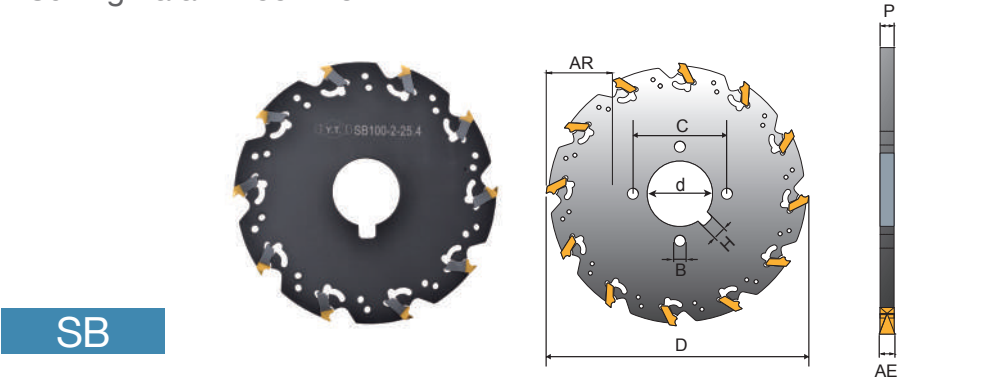
\* Wrench 150.10-30 for above cutter order separately.





# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



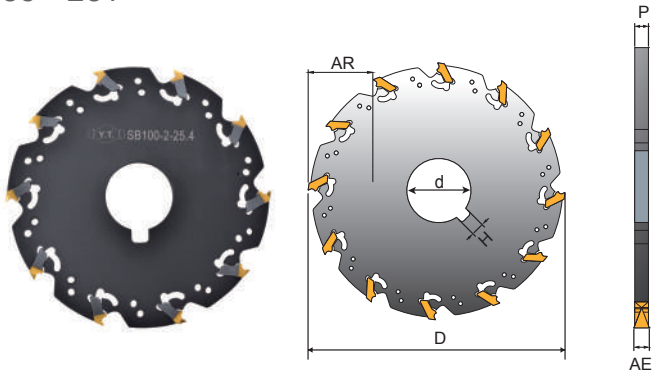
SB

| Order Code      | Dimensions (mm) |       |       |      |      |    |    | Z    | H    |  | MAX.<br>RPM | Inserts<br>LNGT      | Wrench    |      |
|-----------------|-----------------|-------|-------|------|------|----|----|------|------|-----------------------------------------------------------------------------------|-------------|----------------------|-----------|------|
|                 | D               | AE    | AR    | P    | d    | C  | B  |      |      |                                                                                   |             |                      |           |      |
| SB200-2.5-32    | 200             | 2.5   | 76.5  | 2.25 | 32   | 63 | 11 | 20   | 8    | 0.73                                                                              | 3200        | 2525<br>2527<br>2530 | 150.10-30 |      |
| SB200M-2.5-32   |                 |       |       |      |      |    |    | 26   |      |                                                                                   |             |                      |           |      |
| SB200-2.5-40    |                 |       | 72    |      | 40   | 90 |    | 20   | 10   |                                                                                   |             |                      |           |      |
| SB200M-2.5-40   |                 |       |       |      |      |    |    | 26   |      |                                                                                   |             |                      |           |      |
| SB250-2.5-25.4  | 250             |       | 104.5 |      | 25.4 | -  | -  | 26   | 6.35 | 1.12                                                                              | 2600        |                      |           |      |
| SB250M-2.5-25.4 |                 |       |       |      |      |    |    | 32   |      |                                                                                   |             |                      |           |      |
| SB250-2.5-32    |                 | 101.5 | 32    |      | 63   | 11 | 26 | 8    |      |                                                                                   |             |                      |           |      |
| SB250M-2.5-32   |                 |       |       |      |      |    | 32 |      |      |                                                                                   |             |                      |           |      |
| SB250-2.5-40    |                 | 97    | 40    |      | 90   |    | 26 | 10   |      |                                                                                   |             |                      |           |      |
| SB250M-2.5-40   |                 |       |       |      |      |    | 32 |      |      |                                                                                   |             |                      |           |      |
| SB300-2.5-25.4  |                 | 300   | 129.5 | 25.4 | -    | -  | 30 | 6.35 | 1.61 |                                                                                   |             |                      |           | 2200 |
| SB300M-2.5-25.4 |                 |       |       |      |      |    | 40 |      |      |                                                                                   |             |                      |           |      |
| SB300-2.5-32    | 126.5           |       | 32    | 63   | 11   | 30 | 8  | 2200 |      |                                                                                   |             |                      |           |      |
| SB300M-2.5-32   |                 |       |       |      |      | 40 |    |      |      |                                                                                   |             |                      |           |      |
| SB300-2.5-40    | 122             |       | 40    | 90   |      | 30 | 10 |      |      |                                                                                   |             |                      |           |      |
| SB300M-2.5-40   |                 |       |       |      |      | 40 |    |      |      |                                                                                   |             |                      |           |      |

\* Wrench 150.10-30 for above cutter order seperately.

# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



SB

| Order Code     | Dimensions (mm) |     |      |     |        |   |   | Z  | H    |  KG | MAX. RPM | Inserts<br>LNGT | Wrench    |
|----------------|-----------------|-----|------|-----|--------|---|---|----|------|--------------------------------------------------------------------------------------|----------|-----------------|-----------|
|                | D               | AE  | AR   | P   | d      | C | B |    |      |                                                                                      |          |                 |           |
| SB050-3-13     | 50              | 3.0 | 14.5 | 2.7 | 13     | - | - | 4  | -    | 0.10                                                                                 | 12000    | 3030            | 150.10-30 |
| SB050-3-12.7   |                 |     |      |     | 12.7   |   |   |    |      |                                                                                      |          |                 |           |
| SB063-3-16     | 63              |     | 18   |     | 16     |   |   | 6  | -    | 0.11                                                                                 | 11000    |                 |           |
| SB063-3-15.875 |                 |     |      |     | 15.875 |   |   |    |      |                                                                                      |          |                 |           |
| SB080-3-22     | 80              |     | 22.5 |     | 22     |   |   | 8  | 6    | 0.13                                                                                 | 8000     |                 |           |
| SB080-3-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    | 6.35 |                                                                                      |          |                 |           |
| SB100-3-22     | 100             |     | 32.5 |     | 22     |   |   | 10 | 6    | 0.20                                                                                 | 6300     |                 |           |
| SB100-3-25.4   |                 | 3.2 | 29.5 |     | 25.4   |   |   |    | 6.35 |                                                                                      |          |                 |           |
| SB100-3-27     |                 |     | 27   |     | 7      |   |   |    |      |                                                                                      |          |                 |           |
| SB125-3-22     | 125             | 3.5 | 45   |     | 22     |   |   | 12 | 6    | 0.31                                                                                 | 5000     | 3035            |           |
| SB125-3-25.4   |                 |     | 42   |     | 25.4   |   |   |    | 6.35 |                                                                                      |          |                 |           |
| SB125-3-32     |                 |     | 39   |     | 32     |   |   |    | 8    |                                                                                      |          |                 |           |
| SB160-3-25.4   | 160             |     | 59.5 |     | 25.4   |   |   | 16 | 6.35 | 0.53                                                                                 | 4000     |                 |           |
| SB160-3-32     |                 |     | 56.5 |     | 32     |   |   |    | 8    |                                                                                      |          |                 |           |
| SB160-3-40     |                 |     | 52   |     | 40     |   |   |    | 10   |                                                                                      |          |                 |           |
| SB200-3-25.4   | 200             |     | 79.5 |     | 25.4   |   |   | 20 | 6.35 | 0.85                                                                                 | 3200     |                 |           |
| SB200M-3-25.4  |                 |     |      |     |        |   |   | 26 |      |                                                                                      |          |                 |           |

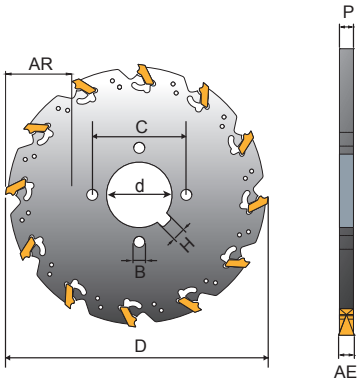
\* Wrench 150.10-30 for above cutter order seperately.



# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

SB



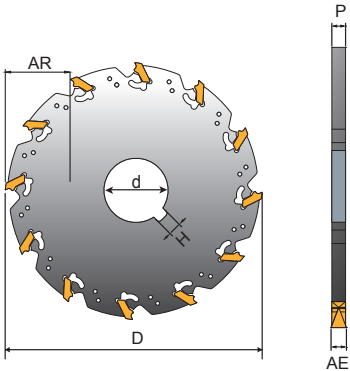
| Order Code    | Dimensions (mm) |                   |       |     |      |    |    | Z  | H     |  KG | MAX.<br>RPM | Inserts<br>LNGT      | Wrench    |      |    |    |   |
|---------------|-----------------|-------------------|-------|-----|------|----|----|----|-------|--------------------------------------------------------------------------------------|-------------|----------------------|-----------|------|----|----|---|
|               | D               | AE                | AR    | P   | d    | C  | B  |    |       |                                                                                      |             |                      |           |      |    |    |   |
| SB200-3-32    | 200             | 3.0<br>3.2<br>3.5 | 76.5  | 2.7 | 32   | 63 | 11 | 20 | 8     | 0.85                                                                                 | 3200        | 3030<br>3032<br>3035 | 150.10-30 |      |    |    |   |
| SB200M-3-32   |                 |                   |       |     |      |    |    | 26 |       |                                                                                      |             |                      |           |      |    |    |   |
| SB200-3-40    |                 |                   |       |     |      |    |    | 72 | 40    |                                                                                      |             |                      |           | 90   | 20 | 10 |   |
| SB200M-3-40   |                 |                   |       |     |      |    |    |    |       |                                                                                      |             |                      |           |      | 26 |    |   |
| SB250-3-25.4  | 250             |                   | 104.5 |     | 25.4 | -  | -  | 11 | 26    | 6.35                                                                                 | 1.38        |                      |           | 2600 |    |    |   |
| SB250M-3-25.4 |                 |                   |       |     |      |    |    |    | 32    |                                                                                      |             |                      |           |      |    |    |   |
| SB250-3-32    |                 |                   |       |     |      |    |    |    | 101.5 | 32                                                                                   |             |                      |           |      | 63 | 26 | 8 |
| SB250M-3-32   |                 |                   |       |     |      |    |    |    |       |                                                                                      |             |                      |           |      |    | 32 |   |
| SB250-3-40    |                 |                   | 97    |     | 40   | 90 | 26 | 10 |       |                                                                                      |             |                      |           |      |    |    |   |
| SB250M-3-40   |                 |                   |       |     |      |    | 32 |    |       |                                                                                      |             |                      |           |      |    |    |   |
| SB300-3-25.4  | 300             |                   | 129.5 |     | 25.4 | -  | -  | 11 | 30    | 6.35                                                                                 | 1.86        |                      |           | 2200 |    |    |   |
| SB300M-3-25.4 |                 |                   |       |     |      |    |    |    | 40    |                                                                                      |             |                      |           |      |    |    |   |
| SB300-3-32    |                 | 126.5             |       | 32  |      |    |    |    | 63    | 30                                                                                   |             | 8                    |           |      |    |    |   |
| SB300M-3-32   |                 |                   |       |     |      |    |    |    |       | 40                                                                                   |             |                      |           |      |    |    |   |
| SB300-3-40    |                 | 122               | 40    | 90  | 30   | 10 |    |    |       |                                                                                      |             |                      |           |      |    |    |   |
| SB300M-3-40   |                 |                   |       |     | 40   |    |    |    |       |                                                                                      |             |                      |           |      |    |    |   |

\* Wrench 150.10-30 for above cutter order seperately.

# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

SB



Slitting

| Order Code     | Dimensions (mm) |      |      |      |        |      |      | Z    | H    |  KG | MAX. RPM | Inserts<br>LNGT | Wrench    |      |
|----------------|-----------------|------|------|------|--------|------|------|------|------|--------------------------------------------------------------------------------------|----------|-----------------|-----------|------|
|                | D               | AE   | AR   | P    | d      | C    | B    |      |      |                                                                                      |          |                 |           |      |
| SB050-4-13     | 50              | 4.0  | 14.5 | 3.7  | 13     | -    | -    | 4    | -    | 0.09                                                                                 | 12000    | 4040            | 150.10-30 |      |
| SB050-4-12.7   |                 |      |      |      | 12.7   |      |      |      |      |                                                                                      |          |                 |           |      |
| SB063-4-16     | 63              |      | 18   |      | 16     |      |      | 6    | -    | 0.12                                                                                 | 11000    |                 |           |      |
| SB063-4-15.875 |                 |      |      |      | 15.875 |      |      |      |      |                                                                                      |          |                 |           |      |
| SB080-4-22     | 80              |      | 22.5 |      | 22     |      |      | 8    | 6    | 0.15                                                                                 | 8000     |                 |           |      |
| SB080-4-25.4   |                 |      | 19.5 |      | 25.4   |      |      |      | 6.35 |                                                                                      |          |                 |           |      |
| SB100-4-22     | 100             |      | 32.5 |      | 22     |      |      | 10   | 6    | 0.25                                                                                 | 6300     |                 |           |      |
| SB100-4-25.4   |                 |      | 4.2  |      | 29.5   |      |      |      | 25.4 |                                                                                      |          |                 |           | 6.35 |
| SB100-4-27     |                 |      |      |      | 27     |      |      |      | 7    |                                                                                      |          |                 |           |      |
| SB125-4-22     | 125             |      | 4.5  |      | 45     |      |      | 22   | 12   | 6                                                                                    | 0.40     |                 |           | 5000 |
| SB125-4-25.4   |                 |      |      |      | 42     |      |      | 25.4 |      | 6.35                                                                                 |          |                 |           |      |
| SB125-4-32     |                 |      | 39   |      | 32     |      |      | 8    |      |                                                                                      |          |                 |           |      |
| SB160-4-25.4   | 160             | 59.5 | 25.4 | 16   | 6.35   | 0.66 | 4000 |      |      |                                                                                      |          |                 |           |      |
| SB160-4-32     |                 | 56.5 | 32   |      | 8      |      |      |      |      |                                                                                      |          |                 |           |      |
| SB160-4-40     |                 | 52   | 40   |      | 10     |      |      |      |      |                                                                                      |          |                 |           |      |
| SB200-4-25.4   | 200             | 79.5 |      | 25.4 |        |      | 20   | 6.35 | 1.02 | 3200                                                                                 |          |                 |           |      |
| SB200M-4-25.4  |                 |      |      |      |        |      | 26   |      |      |                                                                                      |          |                 |           |      |

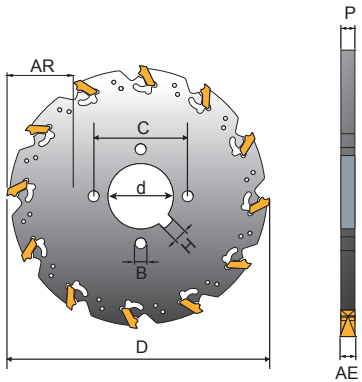
\* Wrench 150.10-30 for above cutter order separately.



# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

SB

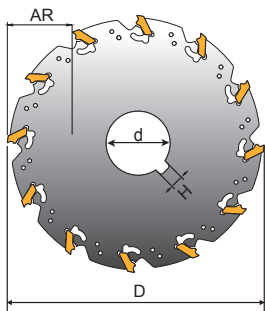


| Order Code    | Dimensions (mm) |       |       |     |      |    |      | Z    | H    |  KG | MAX.<br>RPM | Inserts<br>LNGT      | Wrench    |
|---------------|-----------------|-------|-------|-----|------|----|------|------|------|--------------------------------------------------------------------------------------|-------------|----------------------|-----------|
|               | D               | AE    | AR    | P   | d    | C  | B    |      |      |                                                                                      |             |                      |           |
| SB200-4-32    | 200             | 4.0   | 76.5  | 3.7 | 32   | 63 | 11   | 20   | 8    | 1.02                                                                                 | 3200        | 4040<br>4042<br>4045 | 150.10-30 |
| SB200M-4-32   |                 |       |       |     |      |    |      | 26   |      |                                                                                      |             |                      |           |
| SB200-4-40    |                 |       | 72    |     | 40   | 90 |      | 20   | 10   |                                                                                      |             |                      |           |
| SB200M-4-40   |                 |       |       |     |      |    |      | 26   |      |                                                                                      |             |                      |           |
| SB250-4-25.4  | 250             |       | 104.5 |     | 25.4 | -  | -    | 26   | 6.35 | 1.69                                                                                 | 2600        |                      |           |
| SB250M-4-25.4 |                 |       |       |     |      |    |      | 32   |      |                                                                                      |             |                      |           |
| SB250-4-32    |                 |       | 101.5 |     | 32   | 63 | 11   | 26   | 8    |                                                                                      |             |                      |           |
| SB250M-4-32   |                 |       |       |     |      |    |      | 32   |      |                                                                                      |             |                      |           |
| SB250-4-40    |                 | 97    | 40    | 90  | 26   | 10 |      |      |      |                                                                                      |             |                      |           |
| SB250M-4-40   |                 |       |       |     | 32   |    |      |      |      |                                                                                      |             |                      |           |
| SB300-4-25.4  | 300             | 129.5 | 25.4  | -   | -    | 30 | 6.35 | 2.18 | 2200 |                                                                                      |             |                      |           |
| SB300M-4-25.4 |                 |       |       |     |      | 40 |      |      |      |                                                                                      |             |                      |           |
| SB300-4-32    |                 | 126.5 | 32    | 63  | 11   | 30 | 8    |      |      |                                                                                      |             |                      |           |
| SB300M-4-32   |                 |       |       |     |      | 40 |      |      |      |                                                                                      |             |                      |           |
| SB300-4-40    |                 | 122   | 40    | 90  |      | 30 | 10   |      |      |                                                                                      |             |                      |           |
| SB300M-4-40   |                 |       |       |     |      | 40 |      |      |      |                                                                                      |             |                      |           |

\* Wrench 150.10-30 for above cutter order separately.

# Saw Blades

- Inserts P. 249 - 255
- Cutting Data P. 259 - 261



SB

| Order Code     | Dimensions (mm) |      |      |     |        |   |   | Z    | H    |  KG | MAX. RPM | Inserts LNGT | Wrench    |
|----------------|-----------------|------|------|-----|--------|---|---|------|------|--------------------------------------------------------------------------------------|----------|--------------|-----------|
|                | D               | AE   | AR   | P   | d      | C | B |      |      |                                                                                      |          |              |           |
| SB050-5-13     | 50              | 5.0  | 14.5 | 4.5 | 13     | - | - | 4    | -    | 0.13                                                                                 | 12000    | 5050         | 150.10-30 |
| SB050-5-12.7   |                 |      |      |     | 12.7   |   |   |      |      |                                                                                      |          |              |           |
| SB063-5-16     | 63              |      | 18   |     | 16     |   |   | 6    | 0.18 | 11000                                                                                |          |              |           |
| SB063-5-15.875 |                 |      |      |     | 15.875 |   |   |      |      |                                                                                      |          |              |           |
| SB080-5-22     | 80              |      | 22.5 |     | 22     |   |   | 8    | 6    | 0.18                                                                                 | 8000     |              |           |
| SB080-5-25.4   |                 |      | 19.5 |     | 25.4   |   |   |      | 6.35 |                                                                                      |          |              |           |
| SB100-5-22     | 100             |      | 32.5 |     | 22     |   |   | 10   | 6    | 0.28                                                                                 | 6300     |              |           |
| SB100-5-25.4   |                 | 5.2  | 25.4 |     | 6.35   |   |   |      |      |                                                                                      |          |              |           |
| SB100-5-27     |                 | 5.5  | 27   |     | 7      |   |   |      |      |                                                                                      |          |              |           |
| SB125-5-22     | 125             | 45   | 22   |     | 12     |   |   | 6    | 0.45 | 5000                                                                                 |          |              |           |
| SB125-5-25.4   |                 | 42   | 25.4 |     |        |   |   | 6.35 |      |                                                                                      |          |              |           |
| SB125-5-32     |                 | 39   | 32   |     |        |   |   | 8    |      |                                                                                      |          |              |           |
| SB160-5-25.4   | 160             | 59.5 | 25.4 |     | 16     |   |   | 6.35 | 0.75 | 4000                                                                                 |          |              |           |
| SB160-5-32     |                 | 56.5 | 32   |     |        |   |   | 8    |      |                                                                                      |          |              |           |
| SB160-5-40     |                 | 52   | 40   |     |        |   |   | 10   |      |                                                                                      |          |              |           |

\* Wrench 150.10-30 for above cutter order separately.



# ADAPTER HOLDER SERIES



Video

## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
Milling machine

Efficiency  
**300~500%**  
UP

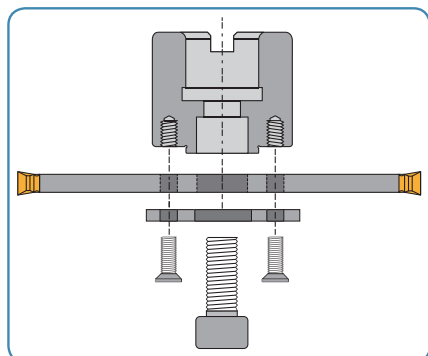
Durability  
**300%**  
UP

New  
System  
For T-Slot  
Milling

# ADAPTER HOLDER

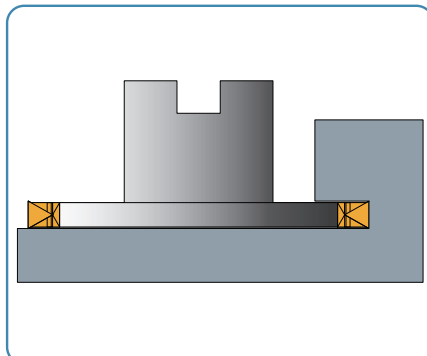
## Slitting / Slotting / Cut-off

Modular System Assembly

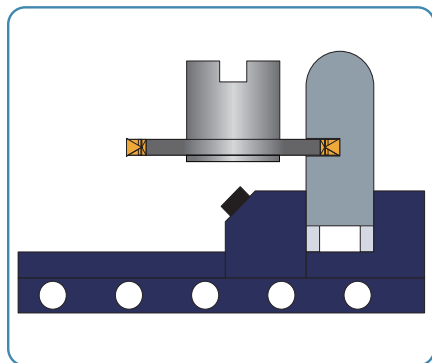


\* WAS washers are restricted to cutter thickness of 1.7mm or less.

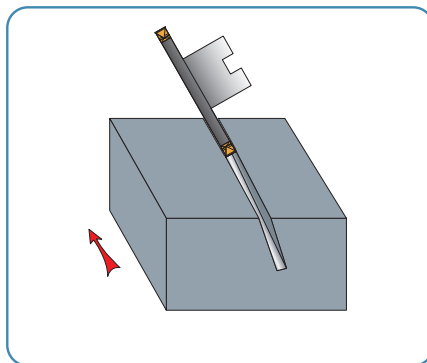
Bottom Side Machining



\* Cutter thickness of 2.25mm or above are applicable for bottom side machining.



Side Milling Applications



Up-Milling Applications

Slotting



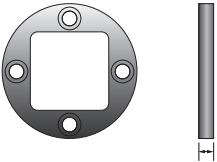


# PRODUCT SPECIFICATIONS

## Saw Milling Cutters

- Adapter Holders P. 220
- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

WAS

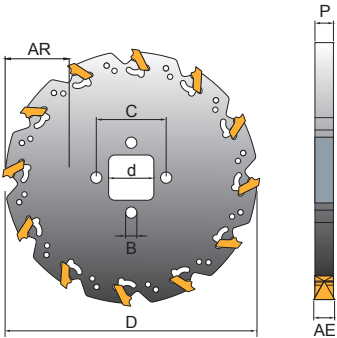


P2.5mm

\* WAS washers are restricted to thickness (P) between 1.2mm and 1.7mm.



SBL



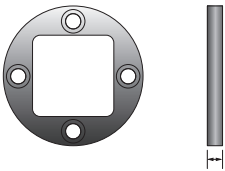
| Order Code    | Dimensions (mm) |     |      |     |    |    |   | Z  | H |  KG | MAX. RPM | Inserts LNGT | Wrench    |
|---------------|-----------------|-----|------|-----|----|----|---|----|---|----------------------------------------------------------------------------------------|----------|--------------|-----------|
|               | D               | AE  | AR   | P   | d  | C  | B |    |   |                                                                                        |          |              |           |
| SBL080-1.4-22 | 80              | 1.4 | 17   | 1.2 | 22 | 34 | 5 | 8  | - | 0.08                                                                                   | 8000     | 1414<br>1415 | 150.10-30 |
| SBL100-1.4-22 | 100             |     | 27   |     |    |    |   | 10 |   | 0.13                                                                                   | 6300     |              |           |
| SBL125-1.4-32 | 125             | 1.5 | 33   |     | 32 | 46 | 6 | 12 |   | 0.18                                                                                   | 5000     |              |           |
| SBL160-1.4-32 | 160             |     | 50.5 |     |    |    |   | 16 |   | 0.33                                                                                   | 4000     |              |           |
| SBL080-1.6-22 | 80              | 1.6 | 17   | 1.4 | 22 | 34 | 5 | 8  | - | 0.09                                                                                   | 8000     | 1616         | 150.10-30 |
| SBL100-1.6-22 | 100             |     | 27   |     |    |    |   | 10 |   | 0.14                                                                                   | 6300     |              |           |
| SBL125-1.6-32 | 125             |     | 33   |     |    |    |   | 12 |   | 0.19                                                                                   | 5000     |              |           |
| SBL160-1.6-32 | 160             |     | 50.5 |     |    |    |   | 16 |   | 0.35                                                                                   | 4000     |              |           |

\* Wrench 150.10-30 for above cutter order seperately.

# Saw Milling Cutters

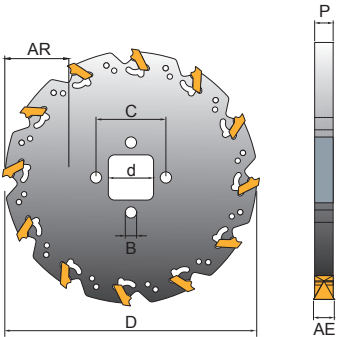
- Adapter Holders P. 220
- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

WAS



P2.5mm

\* WAS washers are restricted to thickness (P) between 1.2mm and 1.7mm.



SBL

| Order Code    | Dimensions (mm) |     |      |     |    |    |   | Z  | H |  KG | MAX. RPM | Inserts LNGT         | Wrench    |
|---------------|-----------------|-----|------|-----|----|----|---|----|---|---------------------------------------------------------------------------------------|----------|----------------------|-----------|
|               | D               | AE  | AR   | P   | d  | C  | B |    |   |                                                                                       |          |                      |           |
| SBL080-1.8-22 | 80              | 1.8 | 17   | 1.6 | 22 | 34 | 5 | 8  | - | 0.10                                                                                  | 8000     | 1818                 | 150.10-30 |
| SBL100-1.8-22 | 100             |     | 27   |     |    |    |   | 10 |   | 0.15                                                                                  | 6300     |                      |           |
| SBL125-1.8-32 | 125             |     | 33   |     | 32 | 46 | 6 | 12 |   | 0.21                                                                                  | 5000     |                      |           |
| SBL160-1.8-32 | 160             |     | 50.5 |     |    |    |   | 16 |   | 0.37                                                                                  | 4000     |                      |           |
| SBL080-2-22   | 80              | 2.0 | 17   | 1.7 | 22 | 34 | 5 | 8  | - | 0.10                                                                                  | 8000     | 2020<br>2022<br>2025 | 150.10-30 |
| SBL100-2-22   | 100             |     | 27   |     |    |    |   | 10 |   | 0.15                                                                                  | 6300     |                      |           |
| SBL125-2-32   | 125             |     | 33   |     | 32 | 46 | 6 | 12 |   | 0.22                                                                                  | 5000     |                      |           |
| SBL160-2-32   | 160             |     | 50.5 |     |    |    |   | 16 |   | 0.39                                                                                  | 4000     |                      |           |

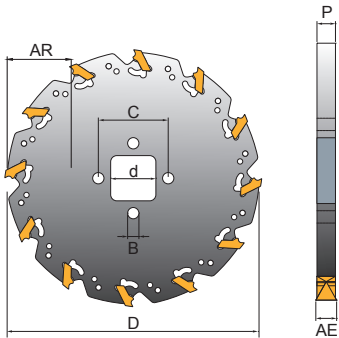
\* Wrench 150.10-30 for above cutter order separately.



# Saw Milling Cutters

- Adapter Holders P. 220
- Inserts P. 249 - 255
- Cutting Data P. 259 - 261

SBL



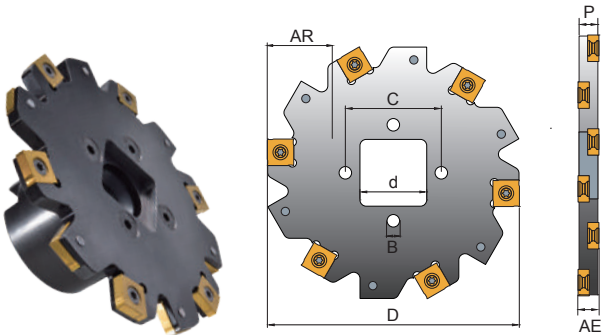
| Order Code    | Dimensions (mm) |                   |      |      |    |    |   | Z  | H |  KG | MAX. RPM | Inserts LNGT         | Wrench    |
|---------------|-----------------|-------------------|------|------|----|----|---|----|---|--------------------------------------------------------------------------------------|----------|----------------------|-----------|
|               | D               | AE                | AR   | P    | d  | C  | B |    |   |                                                                                      |          |                      |           |
| SBL080-2.5-22 | 80              | 2.5<br>2.7<br>3.0 | 17   | 2.25 | 22 | 34 | 5 | 8  | - | 0.11                                                                                 | 8000     | 2525<br>2527<br>2530 | 150.10-30 |
| SBL100-2.5-22 | 100             |                   | 27   |      |    |    |   | 10 |   | 0.17                                                                                 | 6300     |                      |           |
| SBL125-2.5-32 | 125             |                   | 33   |      |    |    |   | 12 |   | 0.26                                                                                 | 5000     |                      |           |
| SBL160-2.5-32 | 160             |                   | 50.5 |      |    |    |   | 16 |   | 0.45                                                                                 | 4000     |                      |           |
| SBL080-3-22   | 80              | 3.0<br>3.2<br>3.5 | 17   | 2.7  | 22 | 34 | 5 | 8  | - | 0.12                                                                                 | 8000     | 3030<br>3032<br>3035 | 150.10-30 |
| SBL100-3-22   | 100             |                   | 27   |      |    |    |   | 10 |   | 0.20                                                                                 | 6300     |                      |           |
| SBL125-3-32   | 125             |                   | 33   |      |    |    |   | 12 |   | 0.29                                                                                 | 5000     |                      |           |
| SBL160-3-32   | 160             |                   | 50.5 |      |    |    |   | 16 |   | 0.51                                                                                 | 4000     |                      |           |
| SBL080-4-22   | 80              | 4.0<br>4.2<br>4.5 | 17   | 3.7  | 22 | 34 | 5 | 8  | - | 0.15                                                                                 | 8000     | 4040<br>4042<br>4045 | 150.10-30 |
| SBL100-4-22   | 100             |                   | 27   |      |    |    |   | 10 |   | 0.24                                                                                 | 6300     |                      |           |
| SBL125-4-32   | 125             |                   | 33   |      |    |    |   | 12 |   | 0.36                                                                                 | 5000     |                      |           |
| SBL160-4-32   | 160             |                   | 50.5 |      |    |    |   | 16 |   | 0.64                                                                                 | 4000     |                      |           |
| SBL080-5-22   | 80              | 5.0<br>5.2<br>5.5 | 17   | 4.5  | 22 | 34 | 5 | 8  | - | 0.17                                                                                 | 8000     | 5050<br>5052<br>5055 | 150.10-30 |
| SBL100-5-22   | 100             |                   | 27   |      |    |    |   | 10 |   | 0.27                                                                                 | 6300     |                      |           |
| SBL125-5-32   | 125             |                   | 33   |      |    |    |   | 12 |   | 0.42                                                                                 | 5000     |                      |           |
| SBL160-5-32   | 160             |                   | 50.5 |      |    |    |   | 16 |   | 0.74                                                                                 | 4000     |                      |           |

\* Wrench 150.10-30 for above cutter order seperately.

# Side Milling Cutters

- Adapter Holders P. 220
- Inserts P. 257 - 259
- Cutting Data P. 263 - 264

STL



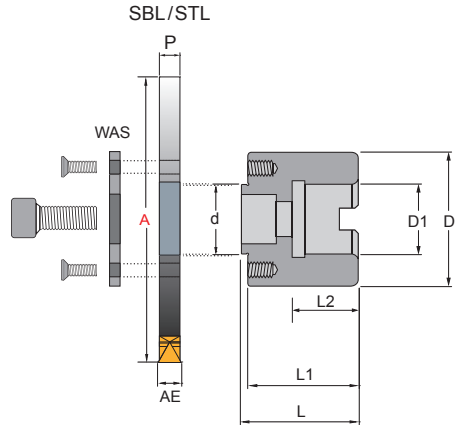
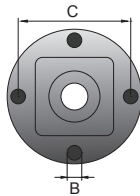
| Order Code  | Dimensions (mm) |    |      |     |    |    |   | Z  | Zc |  | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|-------------|-----------------|----|------|-----|----|----|---|----|----|-----------------------------------------------------------------------------------|----------|-------------------|-------|------|
|             | D               | AE | AR   | P   | d  | C  | B |    |    |                                                                                   |          |                   |       |      |
| STL080-4-22 | 80              | 4  | 17   | 3.4 | 22 | 34 | 5 | 8  | 4  | 0.16                                                                              | 13700    | 1102              | T9354 | T09P |
| STL080-5-22 |                 | 5  |      | 4.2 |    |    |   |    |    |                                                                                   |          | 1103              | T9355 | T08P |
| STL100-4-22 | 100             | 4  | 27   | 3.4 | 32 | 46 | 6 | 10 | 5  | 0.26                                                                              | 12000    | 1102              | T9354 | T09P |
| STL100-5-22 |                 | 5  |      | 4.2 |    |    |   |    |    |                                                                                   |          | 1103              | T9355 | T08P |
| STL125-4-32 | 125             | 4  | 33   | 3.4 | 32 | 46 | 6 | 12 | 6  | 0.37                                                                              | 10900    | 1102              | T9354 | T09P |
| STL125-5-32 |                 | 5  |      | 4.2 |    |    |   |    |    |                                                                                   |          | 1103              | T9355 | T08P |
| STL160-4-32 | 160             | 4  | 50.5 | 3.4 | 32 | 46 | 6 | 16 | 8  | 0.68                                                                              | 8300     | 1102              | T9354 | T09P |
| STL160-5-32 |                 | 5  |      | 4.2 |    |    |   |    |    |                                                                                   |          | 1103              | T9355 | T08P |

\* Use Zc (effective no. of teeth) to calculate the feed.  
 \* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).

Slotting



## Adapter Holders



BLL

| Order Code  | Dimensions (mm) |       |    |    |   |    |      |    |            | <br>KG | Available<br>P                                                                    |
|-------------|-----------------|-------|----|----|---|----|------|----|------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|             | D               | D1    | d  | C  | B | L  | L1   | L2 | A          |                                                                                         |                                                                                   |
| BLL45-22    | 45              | 22    | 22 | 34 | 5 | 43 | 40.5 | 27 | 80<br>100  | 0.47                                                                                    |  |
| BLL45-25.4  |                 | 25.4  |    |    |   | 45 | 42.5 |    | 100        |                                                                                         |                                                                                   |
| BLL58-31.75 | 58              | 31.75 | 32 | 46 | 6 | 55 | 52.5 | 28 | 125<br>160 | 0.95                                                                                    |                                                                                   |
| BLL58-32    |                 | 32    |    |    |   |    |      |    | 160        |                                                                                         |                                                                                   |

\* Please follow the step 1、2、3 to choose the cutter and holder to match: 1. Available P 2. "d" size 3. "D1" size.

## Standard Spare Parts

[illegible]

\* WAS washers are restricted to thickness (P) between 1.2mm and 1.7mm.

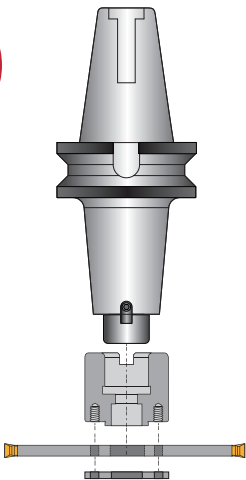
# Tool Holding Methods

## SOLUTION-1

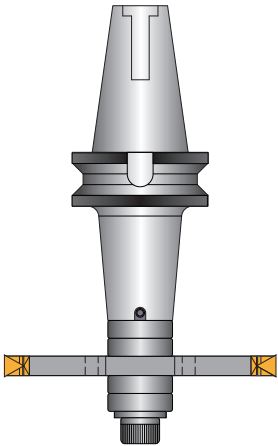
**Face Milling Arbor:**  
Better strength with shorter length and bigger diameter



Highly  
Recommended



**Side Milling Arbor:**  
Poor strength with longer length and smaller diameter



It might cause mechanism interferences.



# ADAPTER HOLDER SERIES



## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
Milling machine

Efficiency  
**300~500%**  
UP

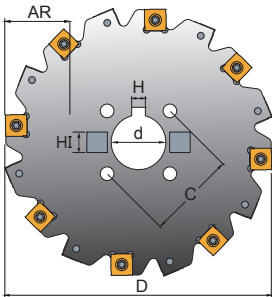
Durability  
**300%**  
UP

# PRODUCT SPECIFICATIONS

## Side Milling Cutters

- Adapter Holders P. 226
- Inserts P. 256 - 258
- Cutting Data P. 262 - 263

SCL



Slotting

| Order Code    | Dimensions (mm) |    |      |    |    |    |    |       | Z  | Zc |  KG | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|---------------|-----------------|----|------|----|----|----|----|-------|----|----|--------------------------------------------------------------------------------------|----------|-------------------|-------|------|
|               | D               | AE | AR   | P  | H  | C  | d  | HI    |    |    |                                                                                      |          |                   |       |      |
| SCL-160-6-32  | 160             | 6  | 46.5 | 5  | 8  | 52 | 32 |       | 16 | 8  | 0.87                                                                                 | 8300     | 1203              | T945  | T15P |
| SCL-160-8-32  |                 | 8  |      | 7  |    |    |    |       |    |    | 1.11                                                                                 |          | 12045             | T947  |      |
| SCL-160-10-32 |                 | 10 |      | 9  |    |    |    |       |    |    | 1.35                                                                                 |          | 1205              | T948  |      |
| SCL-160-12-32 |                 | 12 |      | 11 |    |    |    |       |    |    | 1.56                                                                                 |          | 1207              | T9411 |      |
| SCL-200-6-40  | 200             | 6  | 54   | 5  | 10 | 70 | 40 | 12X12 | 18 | 9  | 1.34                                                                                 | 4200     | 1203              | T945  |      |
| SCL-200-8-40  |                 | 8  |      | 7  |    |    |    |       |    |    | 1.72                                                                                 |          | 12045             | T947  |      |
| SCL-200-10-40 |                 | 10 |      | 9  |    |    |    |       |    |    | 2.11                                                                                 |          | 1205              | T948  |      |
| SCL-200-12-40 |                 | 12 |      | 11 |    |    |    |       |    |    | 2.49                                                                                 |          | 1207              | T9411 |      |
| SCL-250-6-40  | 250             | 6  | 79   | 5  | 10 | 70 | 40 |       | 24 | 12 | 2.05                                                                                 | 3800     | 1203              | T945  |      |
| SCL-250-8-40  |                 | 8  |      | 7  |    |    |    |       |    |    | 2.57                                                                                 |          | 12045             | T947  |      |
| SCL-250-10-40 |                 | 10 |      | 9  |    |    |    |       |    |    | 3.09                                                                                 |          | 1205              | T948  |      |
| SCL-250-12-40 |                 | 12 |      | 11 |    |    |    |       |    |    | 3.61                                                                                 |          | 1207              | T9411 |      |

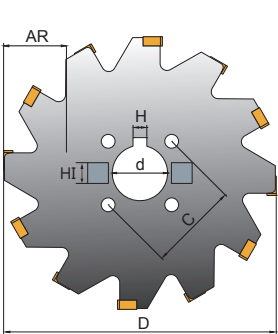
\* Use Zc (effective no. of teeth) to calculate the feed.  
\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).





# Disc Milling Cutters

- Adapter Holders P. 226
- Inserts P. 259
- Cutting Data P. 264 - 265



CEL

| Order Code    | Dimensions (mm) |    |      |      |    |    |       |       | Z  | Zc   |  KG | MAX. RPM | Inserts CNGX | Screw  | Key  |
|---------------|-----------------|----|------|------|----|----|-------|-------|----|------|--------------------------------------------------------------------------------------|----------|--------------|--------|------|
|               | D               | AE | AR   | P    | H  | C  | d     | HI    |    |      |                                                                                      |          |              |        |      |
| CEL-160-14-32 | 160             | 14 | 46.5 | 12.5 | 8  | 52 | 32    | 12X12 | 12 | 6    | 1.72                                                                                 | 6900     | 1005         | C04011 | T15P |
| CEL-160-16-32 |                 | 16 |      | 14.5 |    |    |       |       |    |      | 1.95                                                                                 |          |              |        |      |
| CEL-160-18-32 |                 | 18 |      | 16.5 |    |    |       |       |    |      | 2.19                                                                                 |          |              |        |      |
| CEL-160-20-32 |                 | 20 |      | 18.5 |    |    |       |       |    |      | 2.44                                                                                 |          | 1305         |        |      |
| CEL-160-22-32 |                 | 22 |      | 20.5 |    |    |       |       |    |      | 2.68                                                                                 |          |              |        |      |
| CEL-160-25-32 |                 | 25 |      | 23.5 |    |    |       |       |    |      | 3.04                                                                                 |          |              |        |      |
| CEL-160-30-32 |                 | 30 |      | 28.5 |    |    |       |       |    |      | 3.64                                                                                 |          | 1605         |        |      |
| CEL-200-14-40 | 200             | 14 | 12.5 | 10   | 70 | 40 | 12X12 | 16    | 8  | 2.68 | 6100                                                                                 | 1005     |              |        |      |
| CEL-200-16-40 |                 | 16 | 14.5 |      |    |    |       |       |    | 3.06 |                                                                                      |          |              |        |      |
| CEL-200-18-40 |                 | 18 | 16.5 |      |    |    |       |       |    | 3.44 |                                                                                      |          |              |        |      |
| CEL-200-20-40 |                 | 20 | 18.5 |      |    |    |       |       |    | 3.82 |                                                                                      | 1305     |              |        |      |
| CEL-200-22-40 |                 | 22 | 20.5 |      |    |    |       | 12    | 6  | 4.20 |                                                                                      |          |              |        |      |
| CEL-200-25-40 |                 | 25 | 23.5 |      |    |    |       |       |    | 4.77 |                                                                                      |          |              |        |      |
| CEL-200-30-40 |                 | 30 | 28.5 |      |    |    |       |       |    | 5.72 |                                                                                      | 1605     |              |        |      |

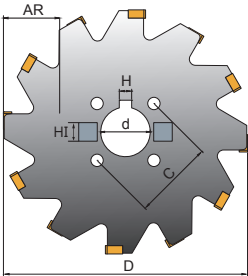
\* Use Zc (effective no. of teeth) to calculate the feed.

# Disc Milling Cutters

- Adapter Holders P. 226
- Inserts P. 259
- Cutting Data P. 264 - 265

Slotting

CEL



| Order Code    | Dimensions (mm) |    |    |      |    |    |    |       | Z    | Zc |  | MAX. RPM | Inserts CNGX | Screw  | Key  |
|---------------|-----------------|----|----|------|----|----|----|-------|------|----|-------------------------------------------------------------------------------------|----------|--------------|--------|------|
|               | D               | AE | AR | P    | H  | C  | d  | HI    |      |    |                                                                                     |          |              |        |      |
| CEL-250-14-40 | 250             | 14 | 79 | 12.5 | 10 | 70 | 40 | 12X12 | 20   | 10 | 3.20                                                                                | 5500     | 1005         | C04011 | T15P |
| CEL-250-16-40 |                 | 16 |    | 14.5 |    |    |    |       |      |    | 3.72                                                                                |          |              |        |      |
| CEL-250-18-40 |                 | 18 |    | 16.5 |    |    |    |       |      |    | 4.24                                                                                |          |              |        |      |
| CEL-250-20-40 |                 | 20 |    | 18.5 |    |    |    |       |      |    | 4.76                                                                                |          |              |        |      |
| CEL-250-22-40 |                 | 22 |    | 20.5 |    |    |    |       | 5.28 |    |                                                                                     |          |              |        |      |
| CEL-250-25-40 |                 | 25 |    | 23.5 |    |    |    |       | 6.06 |    |                                                                                     |          |              |        |      |
| CEL-250-30-40 |                 | 30 |    | 28.5 |    |    |    |       | 7.36 |    |                                                                                     |          |              |        |      |

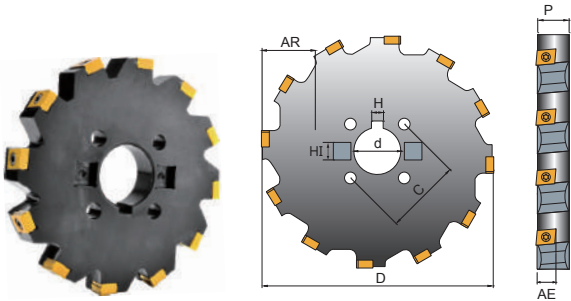
\* Use Zc (effective no. of teeth) to calculate the feed.



# Back Milling Cutters

- Adapter Holders P. 226
- Inserts P. 259
- Cutting Data P. 264 - 265

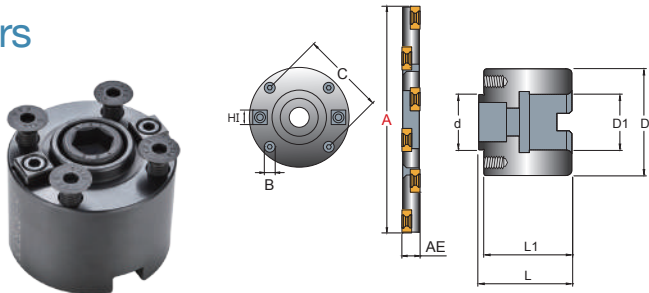
## CWL



| Order Code | Dimensions(mm) |    |      |      |    |    |    |       | Z  |  | MAX. RPM | Inserts CNGX | Screw  | Key  |
|------------|----------------|----|------|------|----|----|----|-------|----|-----------------------------------------------------------------------------------|----------|--------------|--------|------|
|            | D              | AE | AR   | P    | H  | C  | d  | HI    |    |                                                                                   |          |              |        |      |
| CWL-160-32 | 160            | 12 | 46.5 | 16.5 | 8  | 52 | 32 | 12X12 | 16 | 1.90                                                                              | 6900     | 1305         | C04011 | T15P |
| CWL-200-40 | 200            |    | 54   |      | 10 | 70 | 40 |       | 20 | 2.30                                                                              | 6100     |              |        |      |
| CWL-250-40 | 250            |    | 79   |      |    |    |    |       | 24 | 3.20                                                                              | 5500     |              |        |      |

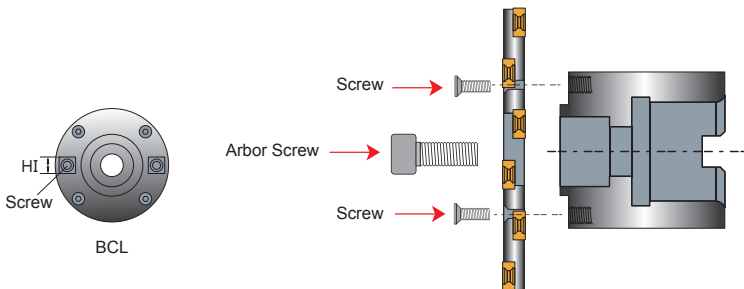
# Adapter Holders

## BCL



| Order Code  | Dimensions (mm) |       |    |    |   |      |      |            |       |  |            |       |      |  |  |  |  |  |  |  |  |
|-------------|-----------------|-------|----|----|---|------|------|------------|-------|--------------------------------------------------------------------------------------|------------|-------|------|--|--|--|--|--|--|--|--|
|             | D               | D1    | d  | C  | B | L    | L1   | A          | HI    |                                                                                      |            |       |      |  |  |  |  |  |  |  |  |
| BCL65-31.75 | 65              | 31.75 | 32 | 52 | 8 | 50   | 44.5 | 160        | 12X12 | 0.84                                                                                 |            |       |      |  |  |  |  |  |  |  |  |
| BCL65-32    |                 | 32    |    |    |   |      |      |            |       |                                                                                      |            |       |      |  |  |  |  |  |  |  |  |
| BCL65-38.1  |                 | 38.1  |    |    |   |      |      |            |       | 0.74                                                                                 |            |       |      |  |  |  |  |  |  |  |  |
| BCL65-40    |                 | 40    |    |    |   |      |      |            |       |                                                                                      |            |       |      |  |  |  |  |  |  |  |  |
| BCL90-38.1  | 90              | 38.1  | 40 | 70 | 8 | 60   | 54.5 | 200<br>250 | 12X12 | 1.70                                                                                 |            |       |      |  |  |  |  |  |  |  |  |
| BCL90-40    |                 | 40    |    |    |   | 1.78 |      |            |       |                                                                                      |            |       |      |  |  |  |  |  |  |  |  |
| BCL90-50    |                 | 50    |    |    |   | 65   |      |            |       | 54.5                                                                                 | 200<br>250 | 12X12 | 1.80 |  |  |  |  |  |  |  |  |
| BCL90-50.8  |                 | 50.8  |    |    |   |      |      |            |       |                                                                                      |            |       | 1.85 |  |  |  |  |  |  |  |  |
| BCL90-60    |                 | 60    |    |    |   |      |      |            |       |                                                                                      |            |       | 1.90 |  |  |  |  |  |  |  |  |
|             |                 |       |    |    |   |      |      |            |       |                                                                                      |            |       |      |  |  |  |  |  |  |  |  |

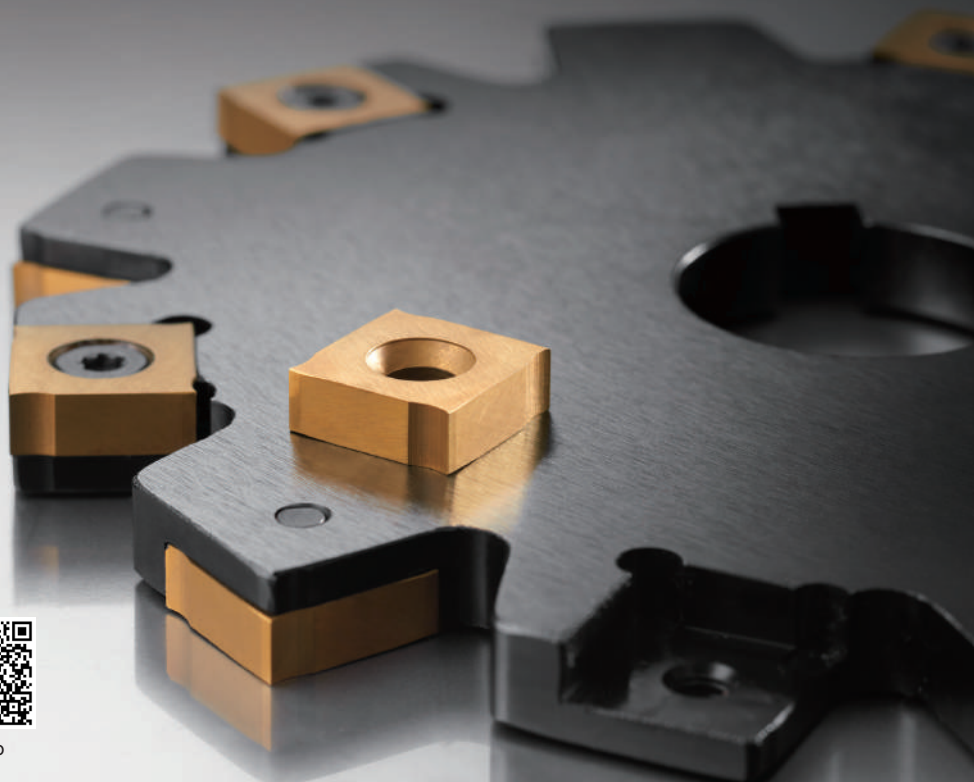
# Standard Spare Parts



| Holders       | Screw                                                                             | Arbor Screw                                                                       | HI+Screw                                                                          | Holders       | Screw                                                                             | Arbor Screw                                                                       | HI+Screw                                                                           |  |  |  |
|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--|--|--|
|               |  |  |  |               |  |  |  |  |  |  |
| SCL-160-6-32  | C90815                                                                            | M1650                                                                             | W12.12.8<br>+<br>M0510                                                            | CEL-160-14-32 | C90820                                                                            | M1650                                                                             | W12.12.8<br>+<br>M0510                                                             |  |  |  |
| SCL-160-8-32  |                                                                                   |                                                                                   |                                                                                   | CEL-160-16-32 | C90825                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-160-10-32 |                                                                                   |                                                                                   |                                                                                   | CEL-160-18-32 | C90825                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-160-12-32 | C90820                                                                            |                                                                                   |                                                                                   | CEL-160-20-32 | C90830                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-200-6-40  | C90815                                                                            | M1650                                                                             |                                                                                   | CEL-160-22-32 | C90830                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-200-8-40  |                                                                                   |                                                                                   |                                                                                   | CEL-160-25-32 | C90835                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-200-10-40 | C90820                                                                            |                                                                                   |                                                                                   | CEL-160-30-32 | C90835                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-200-12-40 |                                                                                   |                                                                                   |                                                                                   | CEL-200-14-40 | C90820                                                                            | M1650<br>M2050                                                                    |                                                                                    |  |  |  |
| SCL-250-6-40  | C90815                                                                            |                                                                                   |                                                                                   | CEL-200-16-40 | C90825                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-250-8-40  | M2050                                                                             | CEL-200-18-40                                                                     |                                                                                   | C90825        |                                                                                   |                                                                                   |                                                                                    |  |  |  |
| SCL-250-10-40 | C90820                                                                            |                                                                                   |                                                                                   | CEL-200-20-40 | C90830                                                                            |                                                                                   |                                                                                    |  |  |  |
| SCL-250-12-40 | W3003                                                                             | CEL-200-22-40                                                                     |                                                                                   | C90830        |                                                                                   |                                                                                   |                                                                                    |  |  |  |
| CWL-160-32    | C90825                                                                            |                                                                                   |                                                                                   | CEL-200-25-40 | C90835                                                                            |                                                                                   |                                                                                    |  |  |  |
| CWL-200-40    |                                                                                   |                                                                                   |                                                                                   | CEL-200-30-40 | C90835                                                                            |                                                                                   |                                                                                    |  |  |  |
| CWL-250-40    |                                                                                   |                                                                                   |                                                                                   | CEL-250-14-40 | C90820                                                                            |                                                                                   |                                                                                    |  |  |  |
|               |                                                                                   |                                                                                   |                                                                                   | CEL-250-16-40 | C90825                                                                            |                                                                                   |                                                                                    |  |  |  |
|               |                                                                                   |                                                                                   |                                                                                   | CEL-250-18-40 |                                                                                   |                                                                                   |                                                                                    |  |  |  |
|               |                                                                                   |                                                                                   |                                                                                   | CEL-250-20-40 | C90830                                                                            |                                                                                   |                                                                                    |  |  |  |
|               |                                                                                   |                                                                                   |                                                                                   | CEL-250-22-40 |                                                                                   |                                                                                   |                                                                                    |  |  |  |
|               |                                                                                   |                                                                                   |                                                                                   | CEL-250-25-40 |                                                                                   |                                                                                   |                                                                                    |  |  |  |
|               |                                                                                   |                                                                                   |                                                                                   | CEL-250-30-40 | C90835                                                                            |                                                                                   |                                                                                    |  |  |  |



# SIDE MILLING CUTTER



Video

## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
Milling machine

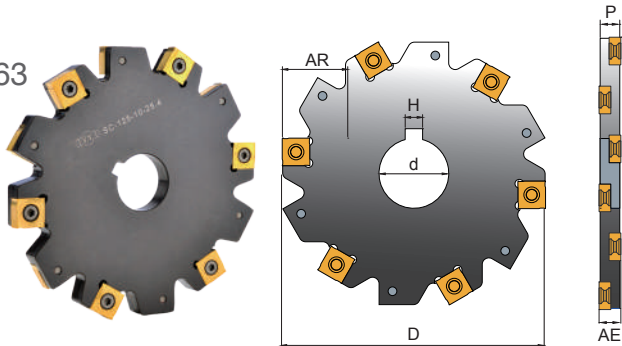
Efficiency  
**300~500%**  
UP

Durability  
**300%**  
UP

# PRODUCT SPECIFICATIONS

## Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263



Slotting

SC

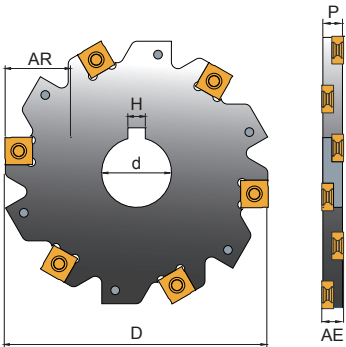
| Order Code    | Dimensions (mm) |    |      |       |      |      | Z | Zc |  | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|---------------|-----------------|----|------|-------|------|------|---|----|-----------------------------------------------------------------------------------|----------|-------------------|-------|------|
|               | D               | AE | AR   | P     | H    | d    |   |    |                                                                                   |          |                   |       |      |
| SC-80-4-22    | 80              | 4  | 22.5 | 3.4   | 6    | 22   | 8 | 4  |  | 13700    | 1102              | T9354 | T09P |
| SC-80-5-22    |                 | 5  |      | 4.2   |      |      |   |    |                                                                                   |          | 1103              | T9355 | T08P |
| SC-80-6-22    |                 | 6  |      | 5     |      |      |   |    |                                                                                   |          | 1203              | T945  | T15P |
| SC-80-7-22    |                 | 7  | 6    | 1204  |      |      |   |    |                                                                                   |          | T946              |       |      |
| SC-80-8-22    |                 | 8  | 7    | 12045 |      |      |   |    |                                                                                   |          | T947              |       |      |
| SC-80-10-22   |                 | 10 | 9    | 1205  |      |      |   |    |                                                                                   |          | T948              |       |      |
| SC-80-12-22   |                 | 12 | 11   | 1207  |      |      |   |    |                                                                                   |          | T9411             |       |      |
| SC-80-4-25.4  |                 | 4  | 3.4  | 19.5  | 6.35 | 25.4 |   |    |                                                                                   |          | 1102              | T9354 | T09P |
| SC-80-5-25.4  |                 | 5  | 4.2  |       |      |      |   |    |                                                                                   |          | 1103              | T9355 | T08P |
| SC-80-6-25.4  |                 | 6  | 5    |       |      |      |   |    |                                                                                   |          | 1203              | T945  | T15P |
| SC-80-7-25.4  |                 | 7  | 6    |       |      |      |   |    |                                                                                   |          | 1204              | T946  |      |
| SC-80-8-25.4  |                 | 8  | 7    |       |      |      |   |    |                                                                                   |          | 12045             | T947  |      |
| SC-80-10-25.4 |                 | 10 | 9    |       |      |      |   |    |                                                                                   |          | 1205              | T948  |      |
| SC-80-12-25.4 |                 | 12 | 11   |       |      |      |   |    |                                                                                   |          | 1207              | T9411 |      |

\* Use Zc (effective no. of teeth) to calculate the feed.  
\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).



# Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263



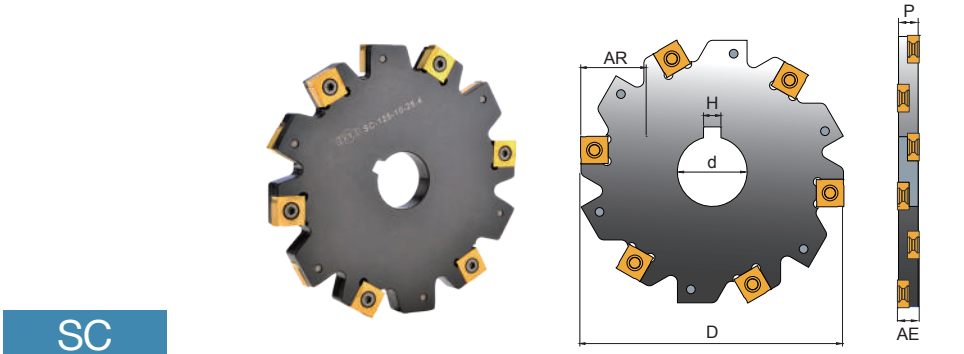
SC

| Order Code     | Dimensions (mm) |    |      |     |      |       | Z  | Zc |  | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|----------------|-----------------|----|------|-----|------|-------|----|----|-----------------------------------------------------------------------------------|----------|-------------------|-------|------|
|                | D               | AE | AR   | P   | H    | d     |    |    |                                                                                   |          |                   |       |      |
| SC-100-4-25.4  | 100             | 4  | 29.5 | 3.4 | 6.35 | 25.4  | 10 | 5  |  | 12000    | 1102              | T9354 | T09P |
| SC-100-5-25.4  |                 | 5  |      | 4.2 |      |       |    |    |                                                                                   |          | 1103              | T9355 | T08P |
| SC-100-6-25.4  |                 | 6  |      | 5   |      |       |    |    |                                                                                   |          | 1203              | T945  | T15P |
| SC-100-7-25.4  |                 | 7  |      | 6   |      |       |    |    |                                                                                   |          | 1204              | T946  |      |
| SC-100-8-25.4  |                 | 8  |      | 7   |      |       |    |    |                                                                                   |          | 12045             | T947  |      |
| SC-100-10-25.4 |                 | 10 |      | 9   |      |       |    |    |                                                                                   |          | 1205              | T948  |      |
| SC-100-12-25.4 |                 | 12 |      | 11  |      |       |    |    |                                                                                   |          | 1207              | T9411 |      |
| SC-100-4-27    |                 | 4  | 3.4  | 7   | 27   | 1102  |    |    |                                                                                   |          | T9354             | T09P  |      |
| SC-100-5-27    |                 | 5  | 4.2  |     |      | 1103  |    |    |                                                                                   |          | T9355             | T08P  |      |
| SC-100-6-27    |                 | 6  | 5    |     |      | 1203  |    |    |                                                                                   |          | T945              | T15P  |      |
| SC-100-7-27    |                 | 7  | 6    |     |      | 1204  |    |    |                                                                                   |          | T946              |       |      |
| SC-100-8-27    |                 | 8  | 7    |     |      | 12045 |    |    |                                                                                   |          | T947              |       |      |
| SC-100-10-27   |                 | 10 | 9    |     |      | 1205  |    |    |                                                                                   |          | T948              |       |      |
| SC-100-12-27   |                 | 12 | 11   |     |      | 1207  |    |    |                                                                                   |          | T9411             |       |      |

\* Use Zc (effective no. of teeth) to calculate the feed.  
\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).

# Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263



SC

Slotting

| Order Code   | Dimensions (mm) |    |      |     |    |    | Z  | Zc |  | MAX. RPM | Inserts<br>SNGX<br>SNGW | Screw | Key  |
|--------------|-----------------|----|------|-----|----|----|----|----|-----------------------------------------------------------------------------------|----------|-------------------------|-------|------|
|              | D               | AE | AR   | P   | H  | d  |    |    |                                                                                   |          |                         |       |      |
| SC-125-4-32  | 125             | 4  | 39   | 3.4 | 8  | 32 | 12 | 6  |  | 10900    | 1102                    | T9354 | T09P |
| SC-125-5-32  |                 | 5  |      | 4.2 |    |    |    |    |                                                                                   |          | 1103                    | T9355 | T08P |
| SC-125-6-32  |                 | 6  |      | 5   |    |    |    |    |                                                                                   |          | 1203                    | T945  | T15P |
| SC-125-7-32  |                 | 7  |      | 6   |    |    |    |    |                                                                                   |          | 1204                    | T946  |      |
| SC-125-8-32  |                 | 8  |      | 7   |    |    |    |    |                                                                                   |          | 12045                   | T947  |      |
| SC-125-10-32 |                 | 10 |      | 9   |    |    |    |    |                                                                                   |          | 1205                    | T948  |      |
| SC-125-12-32 |                 | 12 |      | 11  |    |    |    |    |                                                                                   |          | 1207                    | T9411 |      |
| SC-125-4-40  |                 | 4  | 34.5 | 3.4 | 10 | 40 |    |    |                                                                                   |          | 1102                    | T9354 | T09P |
| SC-125-5-40  |                 | 5  |      | 4.2 |    |    |    |    |                                                                                   |          | 1103                    | T9355 | T08P |
| SC-125-6-40  |                 | 6  |      | 5   |    |    |    |    |                                                                                   |          | 1203                    | T945  | T15P |
| SC-125-7-40  |                 | 7  |      | 6   |    |    |    |    |                                                                                   |          | 1204                    | T946  |      |
| SC-125-8-40  |                 | 8  |      | 7   |    |    |    |    |                                                                                   |          | 12045                   | T947  |      |
| SC-125-10-40 |                 | 10 |      | 9   |    |    |    |    |                                                                                   |          | 1205                    | T948  |      |
| SC-125-12-40 |                 | 12 |      | 11  |    |    |    |    |                                                                                   |          | 1207                    | T9411 |      |

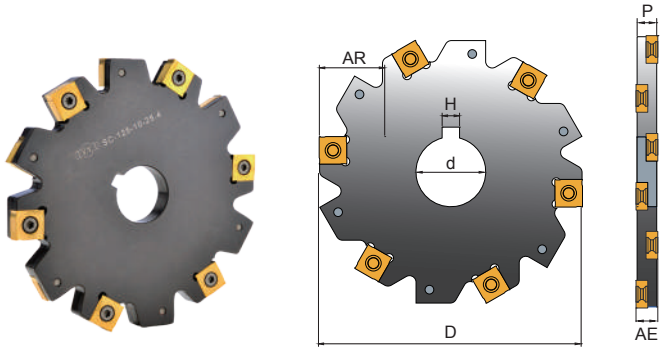
\* Use Zc (effective no. of teeth) to calculate the feed.  
\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).





# Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263



SC

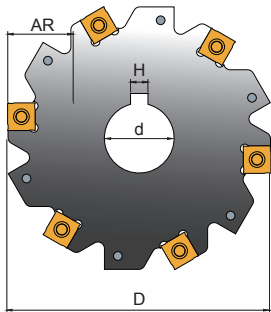
| Order Code      | Dimensions (mm) |    |     |      |       |      | Z  | Zc |  KG | MAX. RPM | Inserts<br>SNGX<br>SNGW | Screw | Key  |      |
|-----------------|-----------------|----|-----|------|-------|------|----|----|--------------------------------------------------------------------------------------|----------|-------------------------|-------|------|------|
|                 | D               | AE | AR  | P    | H     | d    |    |    |                                                                                      |          |                         |       |      |      |
| SC-125-4-25.4   | 125             | 4  | 42  | 3.4  | 6.35  | 25.4 | 12 | 6  | 0.36                                                                                 | 10900    | 1102                    | T9354 | T09P |      |
| SC-125-5-25.4   |                 | 5  |     | 4.2  |       |      |    |    | 1103                                                                                 |          | T9355                   | T08P  |      |      |
| SC-125-6-25.4   |                 | 6  |     | 5    |       |      |    |    | 1203                                                                                 |          | T945                    | T15P  |      |      |
| SC-125-7-25.4   |                 | 7  |     | 6    |       |      |    |    | 1204                                                                                 |          | T946                    |       |      |      |
| SC-125-8-25.4   |                 | 8  |     | 7    |       |      |    |    | 12045                                                                                |          | T947                    |       |      |      |
| SC-125-10-25.4  |                 | 10 |     | 9    |       |      |    |    | 1205                                                                                 |          | T948                    |       |      |      |
| SC-125-12-25.4  |                 | 12 | 11  | 1207 | T9411 | T15P |    |    |                                                                                      |          |                         |       |      |      |
| SC-125-4-31.75  |                 | 4  | 3.4 | 0.36 | 1102  |      |    |    | T9354                                                                                |          | T09P                    |       |      |      |
| SC-125-5-31.75  |                 | 5  | 4.2 | 0.41 | 1103  |      |    |    | T9355                                                                                |          | T08P                    |       |      |      |
| SC-125-6-31.75  |                 | 6  | 5   | 0.48 | 1203  |      |    |    | T945                                                                                 |          | T15P                    |       |      |      |
| SC-125-7-31.75  |                 | 7  | 39  | 6    | 8     |      |    |    | 31.75                                                                                |          |                         | 0.55  | 1204 | T946 |
| SC-125-8-31.75  |                 | 8  | 7   | 0.61 | 12045 |      |    |    | T947                                                                                 |          |                         |       |      |      |
| SC-125-10-31.75 |                 | 10 | 9   | 0.74 | 1205  |      |    |    | T948                                                                                 |          |                         |       |      |      |
| SC-125-12-31.75 |                 | 12 | 11  | 0.88 | 1207  |      |    |    | T9411                                                                                |          |                         |       |      |      |

\* Use Zc (effective no. of teeth) to calculate the feed.  
 \* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).

# Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263

SC



Slotting

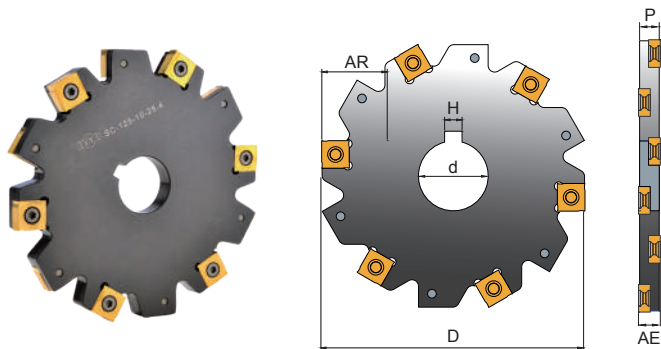
| Order Code   | Dimensions (mm) |    |      |     |    |    | Z  | Zc |  KG | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|--------------|-----------------|----|------|-----|----|----|----|----|--------------------------------------------------------------------------------------|----------|-------------------|-------|------|
|              | D               | AE | AR   | P   | H  | d  |    |    |                                                                                      |          |                   |       |      |
| SC-160-4-32  | 160             | 4  | 56.5 | 3.4 | 8  | 32 | 16 | 8  | 0.56                                                                                 | 8300     | 1102              | T9354 | T09P |
| SC-160-5-32  |                 | 5  |      | 4.2 |    |    |    |    | 1103                                                                                 |          | T9355             | T08P  |      |
| SC-160-6-32  |                 | 6  |      | 5   |    |    |    |    | 1203                                                                                 |          | T945              | T15P  |      |
| SC-160-7-32  |                 | 7  |      | 6   |    |    |    |    | 1204                                                                                 |          | T946              |       |      |
| SC-160-8-32  |                 | 8  |      | 7   |    |    |    |    | 12045                                                                                |          | T947              |       |      |
| SC-160-10-32 |                 | 10 |      | 9   |    |    |    |    | 1205                                                                                 |          | T948              |       |      |
| SC-160-12-32 |                 | 12 |      | 11  |    |    |    |    | 1207                                                                                 |          | T9411             |       |      |
| SC-160-4-40  |                 | 4  | 3.4  | 52  | 10 | 40 |    |    | 0.56                                                                                 | 1102     | T9354             | T09P  |      |
| SC-160-5-40  |                 | 5  | 4.2  |     |    |    |    |    | 1103                                                                                 | T9355    | T08P              |       |      |
| SC-160-6-40  |                 | 6  | 5    |     |    |    |    |    | 1203                                                                                 | T945     | T15P              |       |      |
| SC-160-7-40  |                 | 7  | 6    |     |    |    |    |    | 1204                                                                                 | T946     |                   |       |      |
| SC-160-8-40  |                 | 8  | 7    |     |    |    |    |    | 12045                                                                                | T947     |                   |       |      |
| SC-160-10-40 |                 | 10 | 9    |     |    |    |    |    | 1205                                                                                 | T948     |                   |       |      |
| SC-160-12-40 |                 | 12 | 11   |     |    |    |    |    | 1207                                                                                 | T9411    |                   |       |      |

\* Use Zc (effective no. of teeth) to calculate the feed.  
\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).



# Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263



SC

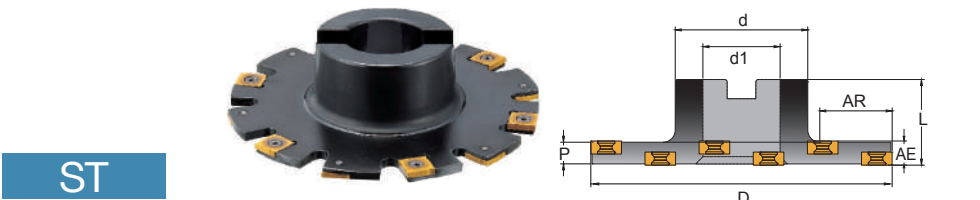
| Order Code      | Dimensions (mm) |    |      |      |       |       | Z    | Zc   |  | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|-----------------|-----------------|----|------|------|-------|-------|------|------|-----------------------------------------------------------------------------------|----------|-------------------|-------|------|
|                 | D               | AE | AR   | P    | H     | d     |      |      |                                                                                   |          |                   |       |      |
| SC-160-4-25.4   | 160             | 4  | 59.5 | 3.4  | 6.35  | 25.4  | 16   | 8    | 8300                                                                              | 0.56     | 1102              | T9354 | T09P |
| SC-160-5-25.4   |                 | 5  |      | 4.2  |       |       |      |      |                                                                                   | 0.71     | 1103              | T9355 | T08P |
| SC-160-6-25.4   |                 | 6  |      | 5    |       |       |      |      |                                                                                   | 0.84     | 1203              | T945  | T15P |
| SC-160-7-25.4   |                 | 7  |      | 6    |       |       |      |      |                                                                                   | 0.95     | 1204              | T946  |      |
| SC-160-8-25.4   |                 | 8  |      | 7    |       |       |      |      |                                                                                   | 1.06     | 12045             | T947  |      |
| SC-160-10-25.4  |                 | 10 |      | 9    |       |       |      |      |                                                                                   | 1.31     | 1205              | T948  |      |
| SC-160-12-25.4  |                 | 12 | 11   | 1.55 | 1207  | T9411 |      |      |                                                                                   |          |                   |       |      |
| SC-160-4-31.75  |                 | 4  | 56.5 | 3.4  | 8     | 31.75 |      |      |                                                                                   | 0.56     | 1102              | T9354 | T09P |
| SC-160-5-31.75  |                 | 5  |      | 4.2  |       |       |      |      |                                                                                   | 0.71     | 1103              | T9355 | T08P |
| SC-160-6-31.75  |                 | 6  |      | 5    |       |       |      |      |                                                                                   | 0.84     | 1203              | T945  | T15P |
| SC-160-7-31.75  |                 | 7  |      | 6    |       |       |      |      |                                                                                   | 0.95     | 1204              | T946  |      |
| SC-160-8-31.75  |                 | 8  |      | 7    |       |       |      |      |                                                                                   | 1.06     | 12045             | T947  |      |
| SC-160-10-31.75 | 10              | 9  |      | 1.31 |       |       | 1205 | T948 |                                                                                   |          |                   |       |      |
| SC-160-12-31.75 | 12              | 11 | 1.55 | 1207 | T9411 |       |      |      |                                                                                   |          |                   |       |      |

\* Use Zc (effective no. of teeth) to calculate the feed.

\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).

# Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263



| Order Code   | Dimensions (mm) |    |      |    |    |    |   | Z  | Zc |  | MAX. RPM | Inserts<br>SNGX<br>SNGW | Screw | Key  |
|--------------|-----------------|----|------|----|----|----|---|----|----|-----------------------------------------------------------------------------------|----------|-------------------------|-------|------|
|              | D               | AE | AR   | P  | d  | d1 | L |    |    |                                                                                   |          |                         |       |      |
| ST-80-6-22   | 80              | 6  | 17   | 5  | 40 | 22 |   | 8  | 4  | 0.47                                                                              | 13700    | 1203                    | T945  | T15P |
| ST-80-7-22   |                 | 7  |      | 6  |    |    |   |    |    | 0.48                                                                              |          | 1204                    | T946  |      |
| ST-80-8-22   |                 | 8  |      | 7  |    |    |   |    |    | 0.49                                                                              |          | 12045                   | T947  |      |
| ST-80-10-22  |                 | 10 |      | 9  |    |    |   |    |    | 0.52                                                                              |          | 1205                    | T948  |      |
| ST-80-12-22  |                 | 12 |      | 11 |    |    |   |    |    | 0.55                                                                              |          | 1207                    | T9411 |      |
| ST-100-6-27  | 100             | 6  | 27   | 5  | 35 | 27 |   | 10 | 5  | 0.56                                                                              | 12000    | 1203                    | T945  |      |
| ST-100-7-27  |                 | 7  |      | 6  |    |    |   |    |    | 0.57                                                                              |          | 1204                    | T946  |      |
| ST-100-8-27  |                 | 8  |      | 7  |    |    |   |    |    | 0.59                                                                              |          | 12045                   | T947  |      |
| ST-100-10-27 |                 | 10 |      | 9  |    |    |   |    |    | 0.66                                                                              |          | 1205                    | T948  |      |
| ST-100-12-27 |                 | 12 |      | 11 |    |    |   |    |    | 0.72                                                                              |          | 1207                    | T9411 |      |
| ST-125-6-32  | 125             | 6  | 31   | 5  | 55 | 32 |   | 12 | 6  | 0.96                                                                              | 10900    | 1203                    | T945  |      |
| ST-125-7-32  |                 | 7  |      | 6  |    |    |   |    |    | 1.02                                                                              |          | 1204                    | T946  |      |
| ST-125-8-32  |                 | 8  |      | 7  |    |    |   |    |    | 1.05                                                                              |          | 12045                   | T947  |      |
| ST-125-10-32 |                 | 10 |      | 9  |    |    |   |    |    | 1.16                                                                              |          | 1205                    | T948  |      |
| ST-125-12-32 |                 | 12 |      | 11 |    |    |   |    |    | 1.26                                                                              |          | 1207                    | T9411 |      |
| ST-160-6-32  | 160             | 6  | 48.5 | 5  |    |    |   | 16 | 8  | 1.42                                                                              | 8300     | 1203                    | T945  |      |
| ST-160-7-32  |                 | 7  |      | 6  |    |    |   |    |    | 1.48                                                                              |          | 1204                    | T946  |      |
| ST-160-8-32  |                 | 8  |      | 7  |    |    |   |    |    | 1.60                                                                              |          | 12045                   | T947  |      |
| ST-160-10-32 |                 | 10 |      | 9  |    |    |   |    |    | 1.82                                                                              |          | 1205                    | T948  |      |
| ST-160-12-32 |                 | 12 |      | 11 |    |    |   |    |    | 2.01                                                                              |          | 1207                    | T9411 |      |

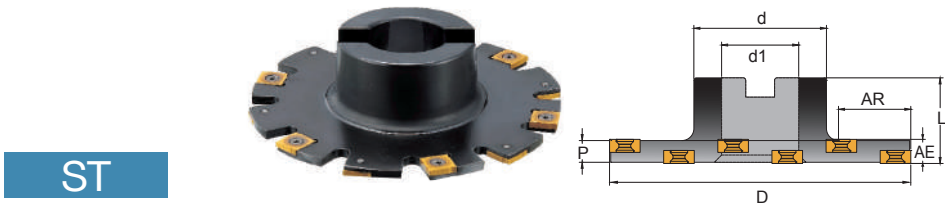
\* Use Zc (effective no. of teeth) to calculate the feed.

\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).



# Side Milling Cutters

- Inserts P. 256 - 258
- Cutting Data P. 262 - 263



| Order Code      | Dimensions (mm) |    |      |    |    |       |   | Z  | Zc |  KG | MAX. RPM | Inserts<br>SNGX<br>SNGW | Screw | Key  |
|-----------------|-----------------|----|------|----|----|-------|---|----|----|--------------------------------------------------------------------------------------|----------|-------------------------|-------|------|
|                 | D               | AE | AR   | P  | d  | d1    | L |    |    |                                                                                      |          |                         |       |      |
| ST-80-6-25.4    | 80              | 6  | 17   | 5  | 40 | 25.4  |   | 8  | 4  | 0.47                                                                                 | 13700    | 1203                    | T945  | T15P |
| ST-80-7-25.4    |                 | 7  |      | 6  |    |       |   |    |    | 0.48                                                                                 |          | 1204                    | T946  |      |
| ST-80-8-25.4    |                 | 8  |      | 7  |    |       |   |    |    | 0.49                                                                                 |          | 12045                   | T947  |      |
| ST-80-10-25.4   |                 | 10 |      | 9  |    |       |   |    |    | 0.52                                                                                 |          | 1205                    | T948  |      |
| ST-80-12-25.4   |                 | 12 |      | 11 |    |       |   |    |    | 0.55                                                                                 |          | 1207                    | T9411 |      |
| ST-100-6-25.4   |                 | 6  |      | 5  |    |       |   |    |    | 0.56                                                                                 |          | 1203                    | T945  |      |
| ST-100-7-25.4   | 100             | 7  | 27   | 6  |    |       |   | 10 | 5  | 0.57                                                                                 | 12000    | 1204                    | T946  |      |
| ST-100-8-25.4   |                 | 8  |      | 7  |    |       |   |    |    | 0.59                                                                                 |          | 12045                   | T947  |      |
| ST-100-10-25.4  |                 | 10 |      | 9  |    |       |   |    |    | 0.66                                                                                 |          | 1205                    | T948  |      |
| ST-100-12-25.4  |                 | 12 |      | 11 |    |       |   |    |    | 0.72                                                                                 |          | 1207                    | T9411 |      |
| ST-125-6-31.75  | 125             | 6  | 31   | 5  | 55 | 31.75 |   | 12 | 6  | 0.96                                                                                 | 10900    | 1203                    | T945  |      |
| ST-125-7-31.75  |                 | 7  |      | 6  |    |       |   |    |    | 1.02                                                                                 |          | 1204                    | T946  |      |
| ST-125-8-31.75  |                 | 8  |      | 7  |    |       |   |    |    | 1.05                                                                                 |          | 12045                   | T947  |      |
| ST-125-10-31.75 |                 | 10 |      | 9  |    |       |   |    |    | 1.16                                                                                 |          | 1205                    | T948  |      |
| ST-125-12-31.75 |                 | 12 |      | 11 |    |       |   |    |    | 1.26                                                                                 |          | 1207                    | T9411 |      |
| ST-160-6-31.75  | 160             | 6  | 48.5 | 5  |    |       |   | 16 | 8  | 1.42                                                                                 | 8300     | 1203                    | T945  |      |
| ST-160-7-31.75  |                 | 7  |      | 6  |    |       |   |    |    | 1.48                                                                                 |          | 1204                    | T946  |      |
| ST-160-8-31.75  |                 | 8  |      | 7  |    |       |   |    |    | 1.60                                                                                 |          | 12045                   | T947  |      |
| ST-160-10-31.75 |                 | 10 |      | 9  |    |       |   |    |    | 1.82                                                                                 |          | 1205                    | T948  |      |
| ST-160-12-31.75 |                 | 12 |      | 11 |    |       |   |    |    | 2.01                                                                                 |          | 1207                    | T9411 |      |

\* Use Zc (effective no. of teeth) to calculate the feed.  
 \* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).

# DISC MILLING CUTTER



## Features

Available in materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
Milling machine

Efficiency  
**300~500%**  
UP

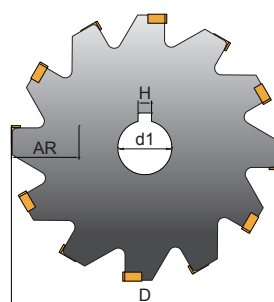
Durability  
**300%**  
UP



# PRODUCT SPECIFICATIONS

## Disc Milling Cutters

- Inserts P. 259
- Cutting Data P. 264 - 265



CE

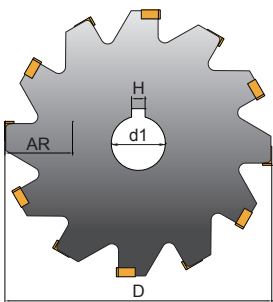
| Order Code  | Dimensions (mm) |    |      |      |   |    | Z  | Zc |  | MAX. RPM | Inserts CNGX | Screw  | Key  |
|-------------|-----------------|----|------|------|---|----|----|----|-----------------------------------------------------------------------------------|----------|--------------|--------|------|
|             | D               | AE | AR   | P    | H | d1 |    |    |                                                                                   |          |              |        |      |
| CE080-14-22 | 80              | 14 | 22.5 | 12.5 | 6 | 22 | 8  | 4  | 0.45                                                                              | 13700    | 1005         | C04011 | T15P |
| CE080-16-22 |                 | 16 |      | 14.5 |   |    |    |    | 0.51                                                                              |          | 1305         |        |      |
| CE080-18-22 |                 | 18 |      | 16.5 |   |    |    |    | 0.54                                                                              |          |              |        |      |
| CE080-20-22 |                 | 20 |      | 18.5 |   |    |    |    | 0.59                                                                              |          | 1305         |        |      |
| CE080-22-22 |                 | 22 |      | 20.5 |   |    |    |    | 0.69                                                                              |          |              |        |      |
| CE080-25-22 |                 | 25 |      | 23.5 |   |    |    |    | 0.75                                                                              |          | 1605         |        |      |
| CE080-30-22 |                 | 30 |      | 28.5 |   |    |    |    | 0.88                                                                              |          |              |        |      |
| CE100-14-27 | 100             | 14 | 29.5 | 12.5 | 7 | 27 | 10 | 5  | 0.67                                                                              | 12000    | 1005         |        |      |
| CE100-16-27 |                 | 16 |      | 14.5 |   |    |    |    | 0.76                                                                              |          | 1305         |        |      |
| CE100-18-27 |                 | 18 |      | 16.5 |   |    |    |    | 0.84                                                                              |          |              |        |      |

\* Use Zc (effective no. of teeth) to calculate the feed.

# Disc Milling Cutters

- Inserts P. 259
- Cutting Data P. 264 - 265

CE



Slotting

| Order Code    | Dimensions (mm) |    |      |      |      |      | Z  | Zc |  | MAX.<br>RPM | Inserts<br>CNGX | Screw  | Key  |
|---------------|-----------------|----|------|------|------|------|----|----|-----------------------------------------------------------------------------------|-------------|-----------------|--------|------|
|               | D               | AE | AR   | P    | H    | d1   |    |    |                                                                                   |             |                 |        |      |
| CE100-20-27   | 100             | 20 | 29.5 | 18.5 | 7    | 27   | 10 | 5  | 0.91                                                                              | 12000       | 1305            | C04011 | T15P |
| CE100-22-27   |                 | 22 |      | 20.5 |      |      |    |    | 1.01                                                                              |             | 1605            |        |      |
| CE100-25-27   |                 | 25 |      | 23.5 |      |      |    |    | 1.16                                                                              |             |                 |        |      |
| CE100-30-27   |                 | 30 |      | 28.5 |      |      |    |    | 1.40                                                                              |             |                 |        |      |
| CE125-14-32   | 125             | 14 | 39   | 12.5 | 8    | 32   | 12 | 6  | 1.02                                                                              | 10900       | 1005            |        |      |
| CE125-16-32   |                 | 16 |      | 14.5 |      |      |    |    | 1.17                                                                              |             | 1305            |        |      |
| CE125-18-32   |                 | 18 |      | 16.5 |      |      |    |    | 1.36                                                                              |             |                 |        |      |
| CE125-20-32   |                 | 20 |      | 18.5 |      |      |    |    | 1.52                                                                              |             |                 |        |      |
| CE125-22-32   |                 | 22 |      | 20.5 |      |      |    |    | 1.57                                                                              |             |                 |        |      |
| CE125-25-32   |                 | 25 |      | 23.5 |      |      |    |    | 1.85                                                                              |             |                 |        |      |
| CE125-30-32   |                 | 30 |      | 28.5 |      |      |    |    | 1.92                                                                              |             |                 |        |      |
| CE080-14-25.4 | 80              | 14 | 19.5 | 12.5 | 6.35 | 25.4 | 8  | 4  | 0.45                                                                              | 13700       | 1005            | C04011 | T15P |
| CE080-16-25.4 |                 | 16 |      | 14.5 |      |      |    |    | 0.51                                                                              |             | 1305            |        |      |
| CE080-18-25.4 |                 | 18 |      | 16.5 |      |      |    |    | 0.54                                                                              |             |                 |        |      |
| CE080-20-25.4 |                 | 20 |      | 18.5 |      |      |    |    | 0.59                                                                              |             |                 |        |      |
| CE080-22-25.4 |                 | 22 |      | 20.5 |      |      |    |    | 0.69                                                                              |             |                 |        |      |

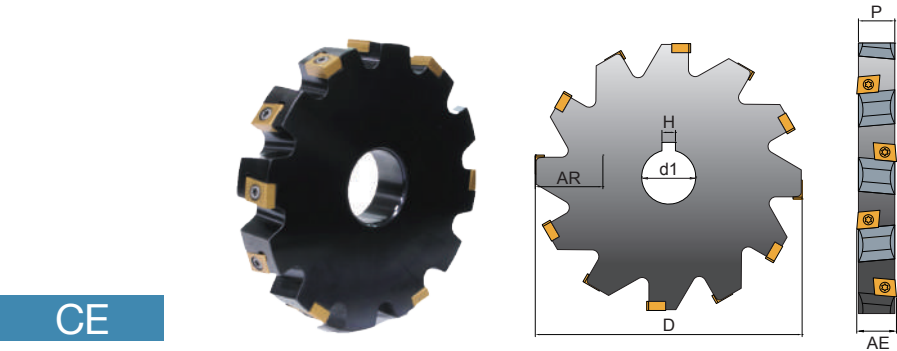
\* Use Zc (effective no. of teeth) to calculate the feed.





# Disc Milling Cutters

- Inserts P. 259
- Cutting Data P. 264 - 265

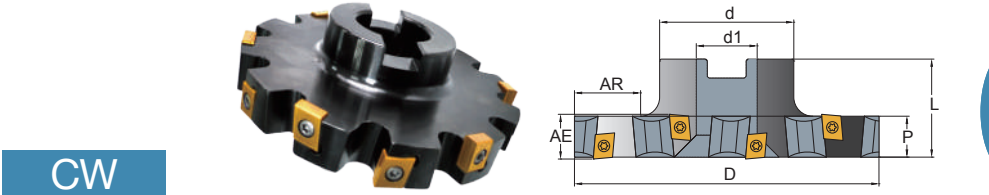


| Order Code    | Dimensions (mm) |     |      |      |      |      | Z    | Zc   |  | MAX.<br>RPM | Inserts<br>CNGX | Screw  | Key  |      |
|---------------|-----------------|-----|------|------|------|------|------|------|-----------------------------------------------------------------------------------|-------------|-----------------|--------|------|------|
|               | D               | AE  | AR   | P    | H    | d1   |      |      |                                                                                   |             |                 |        |      |      |
| CE080-25-25.4 | 80              | 25  | 19.5 | 23.5 | 6.35 | 25.4 | 8    | 4    | 0.75                                                                              | 13700       | 1605            | C04011 | T15P |      |
| CE080-30-25.4 |                 | 30  |      | 28.5 |      |      |      |      | 0.88                                                                              |             |                 |        |      |      |
| CE100-14-25.4 | 100             | 14  | 29.5 | 12.5 |      |      | 10   | 5    | 0.67                                                                              | 12000       | 1005            |        |      |      |
| CE100-16-25.4 |                 | 16  |      | 14.5 |      |      |      |      | 0.76                                                                              |             | 1305            |        |      |      |
| CE100-18-25.4 |                 | 18  |      | 16.5 |      |      |      |      | 0.84                                                                              |             |                 |        |      |      |
| CE100-20-25.4 |                 | 20  |      | 18.5 |      |      |      |      | 0.91                                                                              |             |                 |        |      | 1605 |
| CE100-22-25.4 |                 | 22  |      | 20.5 |      |      |      |      | 1.01                                                                              |             |                 |        |      |      |
| CE100-25-25.4 |                 | 25  |      | 23.5 |      |      |      |      | 1.16                                                                              |             |                 |        |      |      |
| CE100-30-25.4 |                 | 30  |      | 28.5 |      |      |      |      | 1.40                                                                              |             |                 |        |      |      |
| CE125-14-25.4 |                 | 125 |      | 14   |      |      |      |      | 42                                                                                |             | 12.5            |        |      | 12   |
| CE125-16-25.4 | 16              |     | 14.5 | 1.17 |      |      | 1305 |      |                                                                                   |             |                 |        |      |      |
| CE125-18-25.4 | 18              |     | 16.5 | 1.36 |      |      |      |      |                                                                                   |             |                 |        |      |      |
| CE125-20-25.4 | 20              |     | 18.5 | 1.52 |      |      |      | 1605 |                                                                                   |             |                 |        |      |      |
| CE125-22-25.4 | 22              |     | 20.5 | 1.57 |      |      |      |      |                                                                                   |             |                 |        |      |      |
| CE125-25-25.4 | 25              |     | 23.5 | 1.85 |      |      |      |      |                                                                                   |             |                 |        |      |      |
| CE125-30-25.4 | 30              |     | 28.5 | 1.92 |      |      |      |      |                                                                                   |             |                 |        |      |      |

\* Use Zc (effective no. of teeth) to calculate the feed.

# Disc Milling Cutters

- Inserts P. 259
- Cutting Data P. 264 - 265



| Order Code  | Dimensions (mm) |    |      |      |    |    |      | Z  | Zc |  | MAX. RPM | Inserts CNGX | Screw  | Key  |
|-------------|-----------------|----|------|------|----|----|------|----|----|-----------------------------------------------------------------------------------|----------|--------------|--------|------|
|             | D               | AE | AR   | P    | d  | d1 | L    |    |    |                                                                                   |          |              |        |      |
| CW080-14-22 | 80              | 14 | 17   | 12.5 | 40 | 22 | 35   | 8  | 4  | 0.67                                                                              | 13700    | 1005         | C04011 | T15P |
| CW080-16-22 |                 | 16 |      | 14.5 |    |    |      |    |    | 0.72                                                                              |          |              |        |      |
| CW080-18-22 |                 | 18 |      | 16.5 |    |    |      |    |    | 0.76                                                                              |          |              |        |      |
| CW080-20-22 |                 | 20 |      | 18.5 |    |    |      |    |    | 0.78                                                                              |          |              |        |      |
| CW080-22-22 |                 | 22 |      | 20.5 |    |    |      |    |    | 0.79                                                                              |          |              |        |      |
| CW080-25-22 |                 | 25 |      | 23.5 |    |    | 0.85 |    |    |                                                                                   |          |              |        |      |
| CW080-30-22 |                 | 30 |      | 28.5 |    |    | 40   |    |    | 0.92                                                                              |          |              |        |      |
| CW100-14-27 | 100             | 14 | 24.5 | 12.5 | 45 | 27 | 35   | 10 | 5  | 0.84                                                                              | 10900    | 1005         |        |      |
| CW100-16-27 |                 | 16 |      | 14.5 |    |    |      |    |    | 0.94                                                                              |          |              |        |      |
| CW100-18-27 |                 | 18 |      | 16.5 |    |    |      |    |    | 1.02                                                                              |          |              |        |      |
| CW100-20-27 |                 | 20 |      | 18.5 |    |    |      |    |    | 1.09                                                                              |          |              |        |      |
| CW100-22-27 |                 | 22 |      | 20.5 |    |    |      |    |    | 1.17                                                                              |          |              |        |      |
| CW100-25-27 |                 | 25 |      | 23.5 |    |    | 1.25 |    |    |                                                                                   |          |              |        |      |
| CW100-30-27 |                 | 30 |      | 28.5 |    |    | 40   |    |    | 1.32                                                                              |          |              |        |      |
| CW125-14-32 | 125             | 14 | 32   | 12.5 | 55 | 32 | 35   | 12 | 6  | 1.42                                                                              | 10900    | 1005         |        |      |
| CW125-16-32 |                 | 16 |      | 14.5 |    |    |      |    |    | 1.53                                                                              |          |              |        |      |

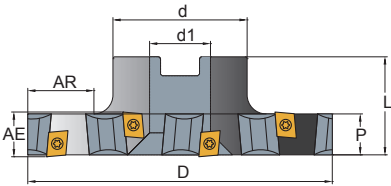
\* Use Zc (effective no. of teeth) to calculate the feed.



# Disc Milling Cutters

- Inserts P. 259
- Cutting Data P. 264 - 265

CW

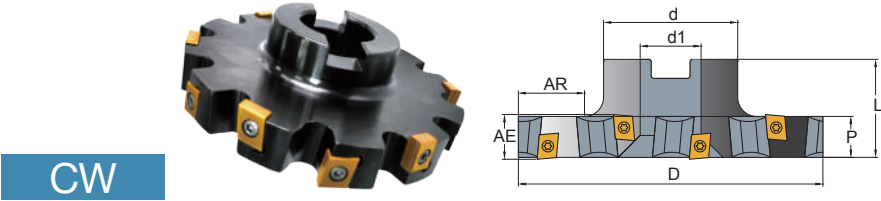


| Order Code    | Dimensions (mm) |    |      |      |    |      |    | Z  | Zc   |  | MAX. RPM | Inserts CNGX | Screw  | Key  |
|---------------|-----------------|----|------|------|----|------|----|----|------|-----------------------------------------------------------------------------------|----------|--------------|--------|------|
|               | D               | AE | AR   | P    | d  | d1   | L  |    |      |                                                                                   |          |              |        |      |
| CW125-18-32   | 125             | 18 | 32   | 16.5 | 55 | 32   | 35 | 12 | 6    | 1.68                                                                              | 10900    | 1305         | C04011 | T15P |
| CW125-20-32   |                 | 20 |      | 18.5 |    |      |    |    |      | 1.92                                                                              |          |              |        |      |
| CW125-22-32   |                 | 22 |      | 20.5 |    |      |    |    |      | 1.94                                                                              |          |              |        |      |
| CW125-25-32   |                 | 25 |      | 23.5 |    |      |    |    |      | 1.96                                                                              |          |              |        |      |
| CW125-30-32   |                 | 30 |      | 28.5 |    |      | 40 |    |      | 2.29                                                                              |          | 1605         |        |      |
| CW080-14-25.4 | 80              | 14 | 17   | 12.5 | 40 | 25.4 | 35 | 8  | 4    | 0.67                                                                              | 13700    | 1005         | C04011 | T15P |
| CW080-16-25.4 |                 | 16 |      | 14.5 |    |      |    |    |      | 0.72                                                                              |          |              |        |      |
| CW080-18-25.4 |                 | 18 |      | 16.5 |    |      |    |    |      | 0.76                                                                              |          |              |        |      |
| CW080-20-25.4 |                 | 20 |      | 18.5 |    |      |    |    |      | 0.78                                                                              |          | 1305         |        |      |
| CW080-22-25.4 |                 | 22 |      | 20.5 |    |      |    |    |      | 0.79                                                                              |          |              |        |      |
| CW080-25-25.4 |                 | 25 |      | 23.5 |    |      |    |    |      | 0.85                                                                              |          | 1605         |        |      |
| CW080-30-25.4 |                 | 30 |      | 28.5 |    |      | 40 |    |      | 0.92                                                                              |          |              |        |      |
| CW100-14-25.4 | 100             | 14 | 24.5 | 12.5 | 45 | 35   | 10 | 5  | 0.86 | 12000                                                                             | 1005     |              |        |      |
| CW100-16-25.4 |                 | 16 |      | 14.5 |    |      |    |    | 0.94 |                                                                                   |          |              |        |      |
| CW100-18-25.4 |                 | 18 |      | 16.5 |    |      |    |    | 1.02 |                                                                                   | 1305     |              |        |      |
| CW100-20-25.4 |                 | 20 |      | 18.5 |    |      |    |    | 1.09 |                                                                                   |          |              |        |      |

\* Use Zc (effective no. of teeth) to calculate the feed.

# Disc Milling Cutters

- Inserts P. 259
- Cutting Data P. 264 - 265

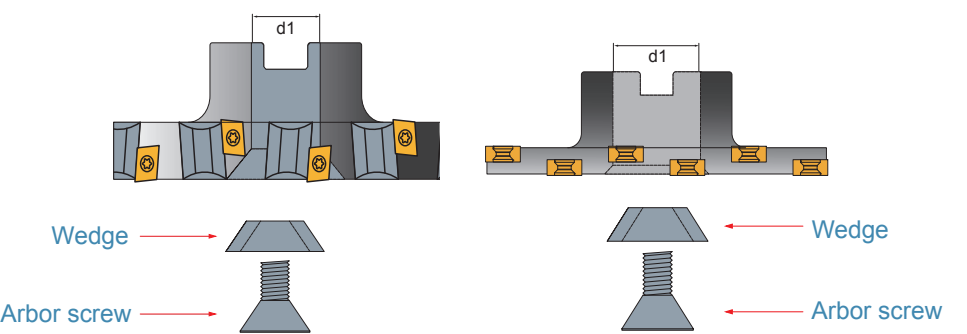


| Order Code     | Dimensions (mm) |    |      |      |    |       |    | Z  | Zc |  | MAX.<br>RPM | Inserts<br>CNGX | Screw  | Key  |
|----------------|-----------------|----|------|------|----|-------|----|----|----|-----------------------------------------------------------------------------------|-------------|-----------------|--------|------|
|                | D               | AE | AR   | P    | d  | d1    | L  |    |    |                                                                                   |             |                 |        |      |
| CW100-22-25.4  | 100             | 22 | 24.5 | 20.5 | 45 | 25.4  | 35 | 10 | 5  | 1.17                                                                              | 12000       | 1305            | C04011 | T15P |
| CW100-25-25.4  |                 | 25 |      | 23.5 |    |       |    |    |    | 1.25                                                                              |             | 1605            |        |      |
| CW100-30-25.4  |                 | 30 |      | 28.5 |    |       |    |    |    |                                                                                   |             |                 |        |      |
| CW125-14-31.75 | 125             | 14 | 32   | 12.5 | 55 | 31.75 | 35 | 12 | 6  | 1.42                                                                              | 10900       | 1005            |        |      |
| CW125-16-31.75 |                 | 16 |      | 14.5 |    |       |    |    |    | 1.53                                                                              |             |                 |        |      |
| CW125-18-31.75 |                 | 18 |      | 16.5 |    |       |    |    |    | 1.68                                                                              |             |                 |        |      |
| CW125-20-31.75 |                 | 20 | 18.5 | 1.92 |    |       |    |    |    | 1305                                                                              |             |                 |        |      |
| CW125-22-31.75 |                 | 22 | 20.5 | 1.94 |    |       |    |    |    | 1605                                                                              |             |                 |        |      |
| CW125-25-31.75 |                 | 25 | 23.5 | 1.96 |    |       |    |    |    |                                                                                   |             |                 |        |      |
| CW125-30-31.75 |                 | 30 | 28.5 | 40   |    |       |    |    |    |                                                                                   |             | 2.29            |        |      |
|                |                 |    |      |      |    |       |    |    |    |                                                                                   |             |                 |        |      |

\* Use Zc (effective no. of teeth) to calculate the feed.



# Mounting Dimensions



| Dimension (mm)           |             |               |
|--------------------------|-------------|---------------|
| Cutter dimension<br>$d1$ | Arbor screw | Tapered Wedge |
| ST $\varnothing 22$      | C901035     | WE30          |
| ST $\varnothing 27$      | C901235     |               |
| ST $\varnothing 32$      | C901635     | WE45          |
| ST $\varnothing 25.4$    | C901235     | WE30          |
| ST $\varnothing 31.75$   | C901635     | WE45          |
| CW $\varnothing 22$      | C901035     | WE30          |
| CW $\varnothing 27$      | C901235     |               |
| CW $\varnothing 32$      | C901635     | WE45          |
| CW $\varnothing 40$      | C901640     | WE63          |
| CW $\varnothing 25.4$    | C901235     | WE30          |
| CW $\varnothing 31.75$   | C901635     | WE45          |
| CW $\varnothing 38.1$    | C901640     | WE63          |
| CW $\varnothing 50.8$    |             |               |

\* Cutter price includes the wedge.

# BACK AND STRADDLE



## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
Milling machine

Efficiency  
**300~500%**  
UP

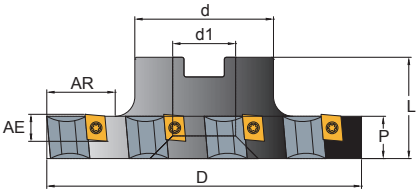
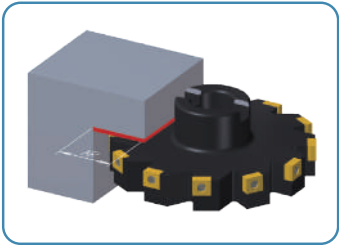
Durability  
**300%**  
UP



# PRODUCT SPECIFICATIONS

## Back milling Cutters

- Inserts P. 259
- Cutting Data P. 264 - 265

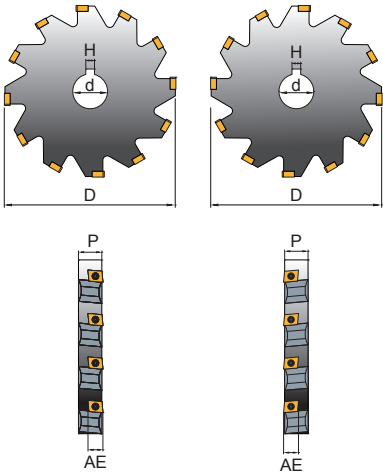
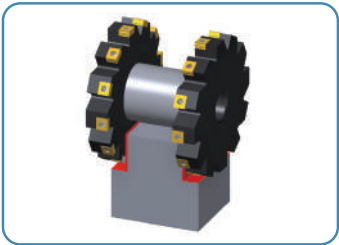


CB

| Order Code | Dimensions (mm) |    |      |    |    |    |      | Z  |  KG | MAX. RPM | Insert CNGX | Screw  | Key  |
|------------|-----------------|----|------|----|----|----|------|----|----------------------------------------------------------------------------------------|----------|-------------|--------|------|
|            | D               | AE | P    | d  | d1 | L  | AR   |    |                                                                                        |          |             |        |      |
| CB-100-27  | 100             | 12 | 16.5 | 45 | 27 | 35 | 24.5 | 10 | 0.97                                                                                   | 12000    | 1305        | C04011 | T15P |
| CB-125-32  | 125             |    |      | 55 | 32 |    | 32   | 12 | 1.76                                                                                   | 10900    |             |        |      |

# Straddle milling cutters

- Inserts P. 259
- Cutting Data P. 264 - 265



## CDL / CDR

| Order Code | Dimensions (mm) |    |      |    |    |     | Z  |  | MAX. RPM | Insert CNGX | Screw  | Key  |
|------------|-----------------|----|------|----|----|-----|----|-------------------------------------------------------------------------------------|----------|-------------|--------|------|
|            | D               | AE | P    | d  | H  | L/R |    |                                                                                     |          |             |        |      |
| CDL-100-27 | 100             | 12 | 16.5 | 27 | 7  | L   | 10 | 0.87                                                                                | 12000    | 1305        | C04011 | T15P |
| CDR-100-27 |                 |    |      |    |    | R   |    |                                                                                     |          |             |        |      |
| CDL-125-32 | 125             |    |      | 32 | 8  | L   | 12 | 1.42                                                                                | 10900    |             |        |      |
| CDR-125-32 |                 |    |      |    |    | R   |    |                                                                                     |          |             |        |      |
| CDL-160-40 | 160             |    |      | 40 | 10 | L   | 16 | 2.52                                                                                | 6900     |             |        |      |
| CDR-160-40 |                 |    |      |    |    | R   |    |                                                                                     |          |             |        |      |





# SLITTING/ SLOTTING/ CUT-OFF SERIES Inserts



N



NRS/NLS

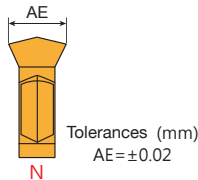


NR/NL



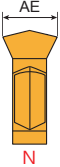
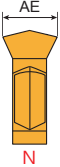
R

# LNGT Inserts

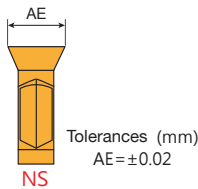


Inserts 10 PCS / Box

| Dimensions (mm)      |     |
|----------------------|-----|
| Cutter thickness (P) | AE  |
| 0.85                 | 1.0 |
| 0.85                 | 1.1 |
| 1.0                  | 1.2 |
| 1.0                  | 1.3 |

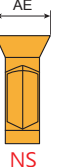
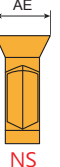
| Inserts | Order Code    | Grades  |      |      |     |     |        |      |          |  |
|---------|---------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|         |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|         |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| N       | LNGT 1010N-EE |         |      |      |     |     |        |      |          |  |
|         | LNGT 1011N-EE |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 1212N-EE |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 1213N-EE |         |      |      |     |     |        |      |          |                                                                                   |
| N       | LNGT 1010N-ME | ⊙       |      |      |     |     |        |      |          |  |
|         | LNGT 1011N-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 1212N-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 1213N-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 1010N-ME,B100



Inserts 10 PCS / Box

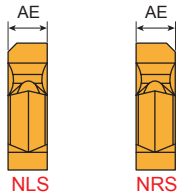
| Dimensions (mm)      |     |
|----------------------|-----|
| Cutter thickness (P) | AE  |
| 0.85                 | 1.0 |
| 0.85                 | 1.1 |
| 1.0                  | 1.2 |
| 1.0                  | 1.3 |

| Inserts | Order Code     | Grades  |      |      |     |     |        |      |          |  |
|---------|----------------|---------|------|------|-----|-----|--------|------|----------|-------------------------------------------------------------------------------------|
|         |                | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                     |
|         |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                  |
| NS      | LNGT 1010NS-EE |         |      |      |     |     |        |      |          |  |
|         | LNGT 1011NS-EE |         |      |      |     |     |        |      |          |                                                                                     |
|         | LNGT 1212NS-EE |         |      |      |     |     |        |      |          |                                                                                     |
|         | LNGT 1213NS-EE |         |      |      |     |     |        |      |          |                                                                                     |
| NS      | LNGT 1010NS-ME | ⊙       |      |      |     |     |        |      |          |  |
|         | LNGT 1011NS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |
|         | LNGT 1212NS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |
|         | LNGT 1213NS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                     |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 1010NS-ME,B100



LNGT Inserts



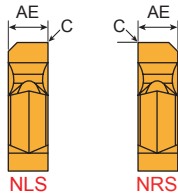
Tolerances (mm)  
AE=±0.02

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

Inserts 10 PCS / Box

| Dimensions (mm)      |     |
|----------------------|-----|
| Cutter thickness (P) | AE  |
| 1.2                  | 1.4 |
| 1.2                  | 1.5 |
| 1.4                  | 1.6 |

| Inserts | Order Code      | Grades  |      |      |     |     |        |      |          |    |  |                                                                                                                                             |
|---------|-----------------|---------|------|------|-----|-----|--------|------|----------|----|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                                                                                                                                                                                                                              |
|         |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                                                                                                                                                                                                                              |
| NLS     | LNGT 1414NLS-EE |         |      |      |     |     |        |      |          |    |  | <div>Inserts Sequencing Position</div> <div></div> <div>NLS</div> <div>NRS</div> <div>(Interleaving one after another different one.)</div> |
|         | LNGT 1415NLS-EE |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                              |
|         | LNGT 1616NLS-EE |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                              |
| NRS     | LNGT 1414NRS-EE |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                              |
|         | LNGT 1415NRS-EE |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                              |
|         | LNGT 1616NRS-EE |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                                                                              |



Tolerances (mm)  
AE=±0.02

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

Inserts 10 PCS / Box

| Dimensions (mm)      |     |      |
|----------------------|-----|------|
| Cutter thickness (P) | AE  | C    |
| 1.2                  | 1.4 | 0.03 |
| 1.2                  | 1.5 |      |
| 1.4                  | 1.6 |      |

| Inserts | Order Code      | Grades  |      |      |     |     |        |      |          |   |
|---------|-----------------|---------|------|------|-----|-----|--------|------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                                                                                                      |
|         |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                                                                                                      |
| NLS     | LNGT 1414NLS-M  |         |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1415NLS-M  |         |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1616NLS-M  |         |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1414NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1415NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1616NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                                                                                      |
| NRS     | LNGT 1414NRS-M  |         |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1415NRS-M  |         |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1616NRS-M  |         |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1414NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1415NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                                                                                      |
|         | LNGT 1616NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                                                                                                      |

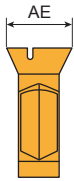
Inserts Sequencing Position



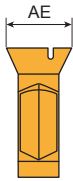
(Interleaving one after another different one.)

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 1414NLS-M,B100

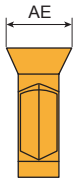
# LNGT Inserts



NLS



NRS

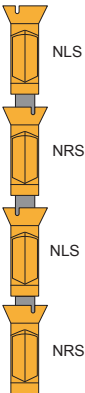
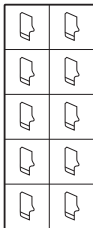


NS

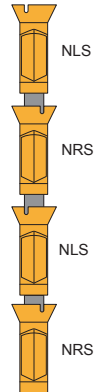
← Only applicable  
in cutter width  
6,8mm

Tolerances (mm)  
AE=±0.02

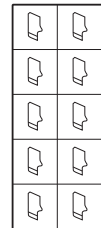
| Dimensions (mm)      |               |
|----------------------|---------------|
| Cutter thickness (P) | AE            |
| 1.6                  | 1.8           |
| 1.75                 | 2.0, 2.2, 2.5 |
| 2.25                 | 2.5, 2.7, 3.0 |
| 2.7                  | 3.0, 3.2, 3.5 |
| 3.7                  | 4.0, 4.2, 4.5 |
| 4.5                  | 5.0, 5.2, 5.5 |

| Inserts         | Order Code      | Grades  |      |      |     |     |        |      |          |  |                                                                                                                                                                                                                                                                                                           |
|-----------------|-----------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE                                                                                                                                                                                                                                                                                                        |
| NLS             | LNGT 1818NLS-EE |         |      |      |     |     |        |      |          |                                                                                   | <div>Inserts Sequencing Position</div>  <div>(Interleaving one after another different one.)</div>  <div>Inserts 10 PCS / Box</div> |
|                 | LNGT 2020NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2022NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2025NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2525NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2527NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2530NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 3030NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 3032NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 3035NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 4040NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 4042NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 4045NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 5050NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 5052NLS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
| LNGT 5055NLS-EE |                 |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
| NRS             | LNGT 1818NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2020NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2022NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2025NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2525NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2527NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 2530NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 3030NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 3032NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 3035NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 4040NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 4042NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 4045NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 5050NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
|                 | LNGT 5052NRS-EE |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
| LNGT 5055NRS-EE |                 |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |
| NS              | LNGT 5050NS-EE  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                           |

Inserts Sequencing  
Position



(Interleaving one after another different one.)

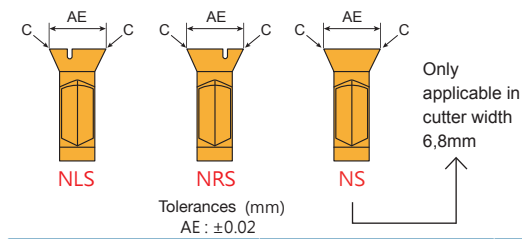


Inserts 10 PCS / Box

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 2020NLS-EE, F20



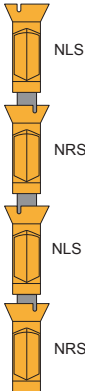
LNGT Inserts



| Dimensions (mm)      |               |      |
|----------------------|---------------|------|
| Cutter thickness (P) | AE            | C    |
| 1.6                  | 1.8           | 0.05 |
| 1.75                 | 2.0, 2.2, 2.5 |      |
| 2.25                 | 2.5, 2.7, 3.0 |      |
| 2.7                  | 3.0, 3.2, 3.5 |      |
| 3.7                  | 4.0, 4.2, 4.5 |      |
| 4.5                  | 5.0, 5.2, 5.5 |      |

| Inserts | Order Code     | Grades  |      |      |     |     |        |      |          |  |
|---------|----------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|         |                | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|         |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                |
| NLS     | LNGT 1818NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2020NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2022NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2025NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2525NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2527NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2530NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 3030NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 3032NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 3035NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 4040NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 4042NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 4045NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 5050NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 5052NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 5055NLS-M |         |      |      |     |     |        |      |          |                                                                                   |
| NRS     | LNGT 1818NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2020NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2022NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2025NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2525NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2527NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 2530NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 3030NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 3032NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 3035NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 4040NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 4042NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 4045NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 5050NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 5052NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
|         | LNGT 5055NRS-M |         |      |      |     |     |        |      |          |                                                                                   |
| NS      | LNGT 5050NS-M  |         |      |      |     |     |        |      |          |                                                                                   |

Inserts Sequencing Position



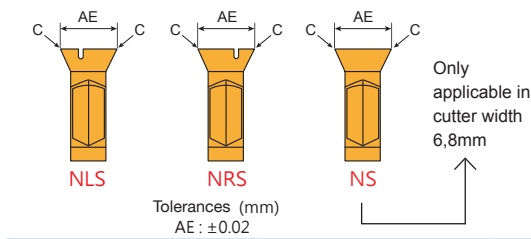
(Interleaving one after another different one.)



Inserts 10 PCS / Box

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 2020NLS-M,B100

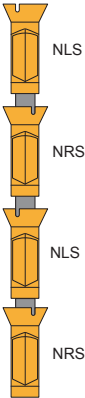
LNGT Inserts



| Dimensions (mm)      |              |      |
|----------------------|--------------|------|
| Cutter thickness (P) | AE           | C    |
| 1.6                  | 1.8          | 0.05 |
| 1.75                 | 2,0,2,2, 2,5 |      |
| 2.25                 | 2,5,2,7, 3,0 |      |
| 2.7                  | 3,0,3,2, 3,5 |      |
| 3.7                  | 4,0,4,2, 4,5 |      |
| 4.5                  | 5,0,5,2, 5,5 |      |

| Inserts         | Order Code      | Grades  |      |      |     |     |        |      |          |  |
|-----------------|-----------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|
|                 |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |
|                 |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   |
| NLS             | LNGT 1818NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2020NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2022NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2025NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2525NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2527NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2530NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 3030NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 3032NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 3035NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 4040NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 4042NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 4045NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 5050NLS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
| LNGT 5052NLS-ME | ⊙               |         |      |      |     |     |        |      |          |                                                                                   |
| LNGT 5055NLS-ME | ⊙               |         |      |      |     |     |        |      |          |                                                                                   |
| NRS             | LNGT 1818NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2020NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2022NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2025NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2525NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2527NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 2530NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 3030NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 3032NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 3035NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 4040NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 4042NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 4045NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 5050NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
|                 | LNGT 5052NRS-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |
| LNGT 5055NRS-ME | ⊙               |         |      |      |     |     |        |      |          |                                                                                   |
| NS              | LNGT 5050NS-ME  | ⊙       |      |      |     |     |        |      |          |                                                                                   |

Inserts Sequencing Position

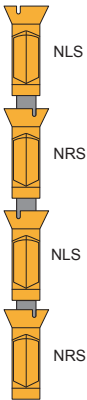


(Interleaving one after another different one.)

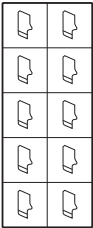


Inserts 10 PCS / Box

Inserts Sequencing Position



(Interleaving one after another different one.)

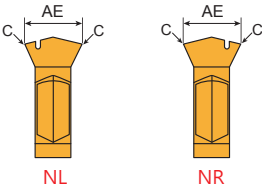


Inserts 10 PCS / Box

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 2020NLS-ME,B100



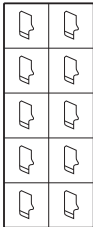
# LNGT Inserts



V shape insert designed for superior stability and durability

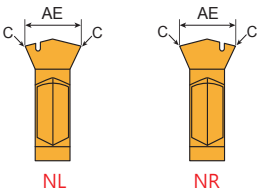
Tolerances (mm)  
AE : ±0.02

| Dimensions (mm)      |     |      |
|----------------------|-----|------|
| Cutter thickness (P) | AE  | C    |
| 1.75                 | 2.0 | 0.05 |
|                      | 2.2 |      |
|                      | 2.5 |      |
| 2.25                 | 2.5 |      |
|                      | 2.7 |      |
|                      | 3.0 |      |
| 2.7                  | 3.0 |      |
|                      | 3.2 |      |
|                      | 3.5 |      |
| 3.7                  | 4.0 |      |
|                      | 4.2 |      |
|                      | 4.5 |      |
| 4.5                  | 5.0 |      |
|                      | 5.2 |      |
|                      | 5.5 |      |

| Inserts       | Order Code    | Grades  |      |      |     |     |        |      |          |    |  |                                                                                       |
|---------------|---------------|---------|------|------|-----|-----|--------|------|----------|----|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |               | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                                                                                                                                                                        |
|               |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                                                                                                                                                                        |
| NL            | LNGT 2020NL-M |         |      |      |     |     |        |      |          |    |  |  <p>Inserts Sequencing Position</p> <p>NR</p> <p>NL</p> <p>NR</p> <p>NL</p>          |
|               | LNGT 2022NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2025NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2525NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2527NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2530NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 3030NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 3032NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 3035NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 4040NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 4042NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 4045NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 5050NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 5052NL-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
| LNGT 5055NL-M |               |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
| NR            | LNGT 2020NR-M |         |      |      |     |     |        |      |          |    |  |  <p>(Interleaving one after another different one.)</p> <p>Inserts 10 PCS / Box</p> |
|               | LNGT 2022NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2025NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2525NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2527NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 2530NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 3030NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 3032NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 3035NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 4040NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 4042NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 4045NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 5050NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
|               | LNGT 5052NR-M |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |
| LNGT 5055NR-M |               |         |      |      |     |     |        |      |          |    |  |                                                                                                                                                                        |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 2020NL-M, B100

# LNGT Inserts



Tolerances (mm)  
AE : ±0.02

| Dimensions (mm)     |     |      |
|---------------------|-----|------|
| Cutter thickness(P) | AE  | C    |
| 1.75                | 2.0 | 0.05 |
|                     | 2.2 |      |
|                     | 2.5 |      |
| 2.25                | 2.5 |      |
|                     | 2.7 |      |
|                     | 3.0 |      |
| 2.7                 | 3.0 |      |
|                     | 3.2 |      |
|                     | 3.5 |      |
| 3.7                 | 4.0 |      |
|                     | 4.2 |      |
|                     | 4.5 |      |
| 4.5                 | 5.0 |      |
|                     | 5.2 |      |
|                     | 5.5 |      |

| Inserts | Order Code     | Grades  |      |      |     |     |        |      |          |  |    |
|---------|----------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|----|
|         |                | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |    |
|         |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE |
| NL      | LNGT 2020NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2022NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2025NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2525NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2527NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2530NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 3030NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 3032NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 3035NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 4040NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 4042NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 4045NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 5050NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 5052NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 5055NL-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
| NR      | LNGT 2020NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2022NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2025NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2525NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2527NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 2530NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 3030NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 3032NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 3035NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 4040NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 4042NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 4045NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 5050NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 5052NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |
|         | LNGT 5055NR-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |    |

Inserts Sequencing Position



NR

NL

NR

NR

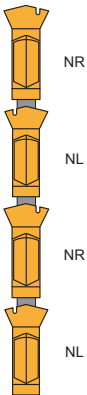
NL

(Interleaving one after another different one.)

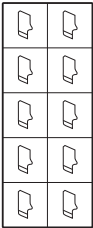


Inserts 10 PCS / Box

Inserts Sequencing  
Position



(Interleaving one after another different one.)



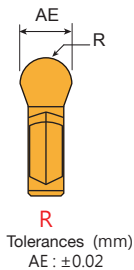
Inserts 10 PCS / Box

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 2020NL-ME,B100

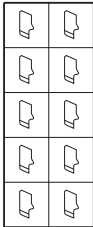




LNGT Inserts



| Dimensions (mm)      |     |      |
|----------------------|-----|------|
| Cutter thickness (P) | AE  | R    |
| 1.2                  | 1.5 | 0.75 |
| 1.75                 | 2.0 | 1.0  |
| 2.25                 | 2.5 | 1.25 |
| 2.7                  | 3.0 | 1.5  |

| Inserts | Order Code       | Grades  |      |      |     |     |        |      |          |  |                                                                                                                                                                                                                                                                                                                   |
|---------|------------------|---------|------|------|-----|-----|--------|------|----------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |                  | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |                                                                                   | CE                                                                                                                                                                                                                                                                                                                |
| R       | LNGT 1415R075-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   | <div>Inserts Sequencing Position</div> <div><div>R</div><div>R</div><div>R</div><div>R</div><div></div><div>Inserts 10 PCS / Box</div></div> |
|         | LNGT 2020R100-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         | LNGT 2525R125-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         | LNGT 3030R150-ME | ⊙       |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |
|         |                  |         |      |      |     |     |        |      |          |                                                                                   |                                                                                                                                                                                                                                                                                                                   |

- Steel

Stainless Steel

Steel/Stainless Steel /Super alloy

Cast Iron

Aluminum

Steel/Cast Iron

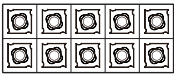
Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions

• Please specify model numbers and the grade of inserts, ie.: LNGT 1415R075-ME,B100

# SNGX Inserts



Tolerances (mm)  
I=±0.025 AE=±0.025



Inserts 10 PCS / Box

| Dimensions (mm) |     |
|-----------------|-----|
| Insert Code     | AE  |
| 1102            | 2.3 |
| 1103            | 2.7 |
| 1203            | 3.2 |
| 1204            | 4.0 |
| 12045           | 4.5 |
| 1205            | 5.4 |
| 1207            | 7.0 |

| Inserts                                                                                         | Order Code    | Cutting Rake | Grades  |      |     |     |        |      |          |
|-------------------------------------------------------------------------------------------------|---------------|--------------|---------|------|-----|-----|--------|------|----------|
|                                                                                                 |               |              | Carbide |      |     |     | Cermet |      | Uncoated |
|                                                                                                 |               |              | B100    | C200 | F20 | F30 | CE100  | CE60 | K10      |
| <br>E / ME / M | SNGX 1102-E   | 25 °         |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1103-E   |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1203-E   |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1204-E   |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 12045-E  |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1205-E   |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1207-E   |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1102-ME  | 15 °         | ⊙       |      |     |     |        |      |          |
|                                                                                                 | SNGX 1103-ME  |              | ⊙       |      |     |     |        |      |          |
|                                                                                                 | SNGX 1203-ME  |              | ⊙       |      |     |     |        |      |          |
|                                                                                                 | SNGX 1204-ME  |              | ⊙       |      |     |     |        |      |          |
|                                                                                                 | SNGX 12045-ME |              | ⊙       |      |     |     |        |      |          |
|                                                                                                 | SNGX 1205-ME  |              | ⊙       |      |     |     |        |      |          |
|                                                                                                 | SNGX 1207-ME  |              | ⊙       |      |     |     |        |      |          |
|                                                                                                 | SNGX 1102T-M  | 15 °         |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1103T-M  |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1203T-M  |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1204T-M  |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 12045T-M |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1205T-M  |              |         |      |     |     |        |      |          |
|                                                                                                 | SNGX 1207T-M  |              |         |      |     |     |        |      |          |

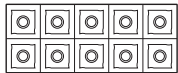
- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: SNGX 1102-E,F20



# SNGW Inserts



Tolerances (mm)  
I=±0.025 AE=±0.025



Inserts 10 PCS / Box

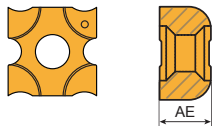
| Dimensions (mm) |     |
|-----------------|-----|
| Insert Code     | AE  |
| 1102            | 2.3 |
| 1103            | 2.7 |
| 1203            | 3.2 |
| 1204            | 4.0 |
| 12045           | 4.5 |
| 1205            | 5.4 |
| 1207            | 7.0 |

| Inserts                                                                                         | Order Code    | Cutting Rake | Grades  |      |     |     |        |      |          |    |
|-------------------------------------------------------------------------------------------------|---------------|--------------|---------|------|-----|-----|--------|------|----------|----|
|                                                                                                 |               |              | Carbide |      |     |     | Cermet |      | Uncoated |    |
|                                                                                                 |               |              | B100    | C200 | F20 | F30 | CE100  | CE60 | K10      | CE |
| <br>E / ME / M | SNGW 1102-E   | 25 °         |         |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1103-E   |              |         |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1203-E   |              |         |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1204-E   |              |         |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 12045-E  |              |         |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1205-E   |              |         |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1207-E   |              |         |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1102-ME  | 15 °         | ⊗       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1103-ME  |              | ⊗       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1203-ME  |              | ⊗       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1204-ME  |              | ⊗       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 12045-ME |              | ⊗       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1205-ME  |              | ⊗       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1207-ME  |              | ⊗       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1102T-M  | 15 °         | ■       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1103T-M  |              | ■       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1203T-M  |              | ■       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1204T-M  |              | ■       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 12045T-M |              | ■       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1205T-M  |              | ■       |      |     |     |        |      |          |    |
|                                                                                                 | SNGW 1207T-M  |              | ■       |      |     |     |        |      |          |    |

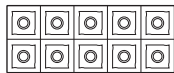
- Steel ■ Stainless Steel ⊗ Steel/Stainless Steel /Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ⊗ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: SNGW 1102-E,F20

# SNGW Inserts - R0.4~R3.0

\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).



Tolerances (mm)  
I=±0.025 AE=±0.025



Inserts 10 PCS / Box

| Dimensions (mm) |     |     |
|-----------------|-----|-----|
| Insert Code     | AE  | R   |
| 1102            | 2.3 | 0.4 |
| 1102            |     | 0.8 |
| 1103            | 2.7 | 0.4 |
| 1103            |     | 0.8 |
| 1203            | 3.2 | 0.4 |
| 1203            |     | 0.8 |
| 1203            | 4.0 | 1.2 |
| 1204            |     | 0.4 |
| 1204            |     | 0.8 |
| 1204            |     | 1.2 |
| 1204            |     | 1.6 |
| 12045           | 4.5 | 0.4 |
| 12045           |     | 0.8 |
| 12045           |     | 1.2 |

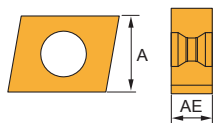
| Dimensions (mm) |     |     |
|-----------------|-----|-----|
| Inserts Code    | AE  | R   |
| 12045           | 4.5 | 1.6 |
| 12045           |     | 2.0 |
| 1205            | 5.4 | 0.4 |
| 1205            |     | 0.8 |
| 1205            |     | 1.2 |
| 1205            |     | 1.6 |
| 1205            |     | 2.0 |
| 1205            | 7.0 | 2.5 |
| 1207            |     | 0.4 |
| 1207            |     | 0.8 |
| 1207            |     | 1.2 |
| 1207            |     | 1.6 |
| 1207            |     | 2.0 |
| 1207            |     | 2.5 |
| 1207            |     | 3.0 |

| Inserts                                                                                  | Order Code       | Cutting Rake | Grades  |      |      |     |     |        |      |          |    |
|------------------------------------------------------------------------------------------|------------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|
|                                                                                          |                  |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |
|                                                                                          |                  |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |
| <br>ME | SNGW 1102R04-ME  | 15 °         |         |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1102R08-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1103R04-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1103R08-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1203R04-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1203R08-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1203R12-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1204R04-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1204R08-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1204R12-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1204R16-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 12045R04-ME |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 12045R08-ME |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 12045R12-ME |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 12045R16-ME |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 12045R20-ME |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1205R04-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1205R08-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1205R12-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1205R16-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1205R20-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1205R25-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1207R04-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1207R08-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1207R12-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1207R16-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1207R20-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1207R25-ME  |              | ⊙       |      |      |     |     |        |      |          |    |
|                                                                                          | SNGW 1207R30-ME  |              | ⊙       |      |      |     |     |        |      |          |    |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: SNGW 1102R04-ME,F20

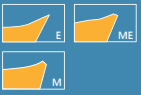
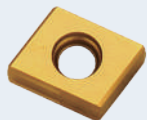


# CNGX Inserts



Tolerances (mm)  
I=±0.025 AE=±0.025 A=±0.025

| Dimensions (mm) |     |    |
|-----------------|-----|----|
| Insert Code     | AE  | A  |
| 1005            | 5.4 | 10 |
| 1305            |     |    |
| 1605            |     |    |

| Inserts                                                                           | Order Code   | Grades  |      |      |     |     |        |      |          |  |
|-----------------------------------------------------------------------------------|--------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                   |              | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                   |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
|  | CNGX 1005-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1305-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1605-E  |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1005-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1305-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1605-ME | ⊙       |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1005T-M |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1305T-M |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   | CNGX 1605T-M |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   |              |         |      |      |     |     |        |      |          |  |
|                                                                                   |              |         |      |      |     |     |        |      |          | Inserts 10 PCS / Box                                                               |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: CNGX 1005-E,F20

## Recommendation-LNGT Inserts

### LNGT Insert Grade Selection

| Material group | Recom. fz (mm/tooth) | Inserts    |           |           |   |
|----------------|----------------------|------------|-----------|-----------|---|
|                |                      | LNGT ... M | LNGT...ME | LNGT...EE |   |
| 1              | 0.04-0.12            | B100       | B100      | -         | - |
| 2              | 0.04-0.10            | B100       | B100      | -         | - |
| 3              | 0.04-0.10            | B100       | B100      | -         | - |
| 4              | 0.04-0.10            | B100       | B100      | -         | - |
| 5              | 0.04-0.08            | B100       | B100      | -         | - |
| 6              | 0.04-0.07            | B100       | B100      | -         | - |
| 7              | 0.03-0.06            | -          | B100      | -         | - |
| 8              | 0.04-0.12            | -          | B100      | -         | - |
| 9              | 0.04-0.10            | -          | B100      | -         | - |
| 10             | 0.04-0.09            | -          | B100      | -         | - |
| 11             | 0.04-0.08            | -          | B100      | -         | - |
| 12             | 0.04-0.12            | -          | F20       | -         | - |
| 13             | 0.04-0.12            | -          | F20       | -         | - |
| 14             | 0.04-0.11            | -          | F20       | -         | - |
| 15             | 0.04-0.10            | -          | F20       | -         | - |
| 16             | 0.06-0.13            | -          | -         | F20       | - |
| 17             | 0.06-0.12            | -          | -         | F20       | - |
| 18             | 0.06-0.11            | -          | -         | F20       | - |
| 19             | 0.06-0.09            | -          | B100      | -         | - |
| 20             | 0.06-0.08            | -          | B100      | -         | - |
| 21             | 0.04-0.06            | -          | B100      | -         | - |
| 22             | 0.04-0.07            | -          | B100      | -         | - |

# Recommendation-LNGT Inserts

## • LNGT Insert Recommended Cutting speed, Vc(m/min)

| Material group | Grades                    |      |                |      |    |     |     |
|----------------|---------------------------|------|----------------|------|----|-----|-----|
|                | B100                      | C250 | F20            | CE60 | CE | K10 | F30 |
|                | fz (mm/tooth)             |      |                |      |    |     |     |
|                | 0.03 0.05 0.08            |      | 0.05 0.09 0.13 |      |    |     |     |
|                | Cutting speed, Vc (m/min) |      |                |      |    |     |     |
| 1              | 215 195 168               | -    | -              | -    | -  | -   | -   |
| 2              | 168 151 135               | -    | -              | -    | -  | -   | -   |
| 3              | 151 135 122               | -    | -              | -    | -  | -   | -   |
| 4              | 134 122 109               | -    | -              | -    | -  | -   | -   |
| 5              | 121 109 97                | -    | -              | -    | -  | -   | -   |
| 6              | 109 - -                   | -    | -              | -    | -  | -   | -   |
| 7              | -                         | -    | -              | -    | -  | -   | -   |
| 8              | 160 - 80                  | -    | -              | -    | -  | -   | -   |
| 9              | 160 - 80                  | -    | -              | -    | -  | -   | -   |
| 10             | 80 - 50                   | -    | -              | -    | -  | -   | -   |
| 11             | 80 - 50                   | -    | -              | -    | -  | -   | -   |
| 12             | -                         | -    | 168 142 126    | -    | -  | -   | -   |
| 13             | -                         | -    | 151 126 117    | -    | -  | -   | -   |
| 14             | -                         | -    | 134 117 109    | -    | -  | -   | -   |
| 15             | -                         | -    | 105 97 -       | -    | -  | -   | -   |
| 16             | -                         | -    | 1150 950 850   | -    | -  | -   | -   |
| 17             | -                         | -    | 950 780 700    | -    | -  | -   | -   |
| 18             | -                         | -    | 950 780 700    | -    | -  | -   | -   |
| 19             | 50 45 -                   | -    | -              | -    | -  | -   | -   |
| 20             | 50 45 -                   | -    | -              | -    | -  | -   | -   |
| 21             | 35 40 -                   | -    | -              | -    | -  | -   | -   |
| 22             | 50 45 -                   | -    | -              | -    | -  | -   | -   |

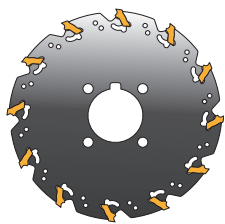
## • Type Of Inserts

|  | Insert Code | Width of slot (mm) |
|------------------------------------------------------------------------------------|-------------|--------------------|
|                                                                                    | 1414        | 1.4                |
|                                                                                    | 2020        | 2.0                |
|                                                                                    | 2525        | 2.5                |
|                                                                                    | 3030        | 3.0                |
|                                                                                    | 4040        | 4.0                |
|                                                                                    | 5050        | 5.0                |



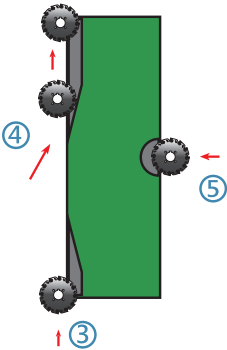
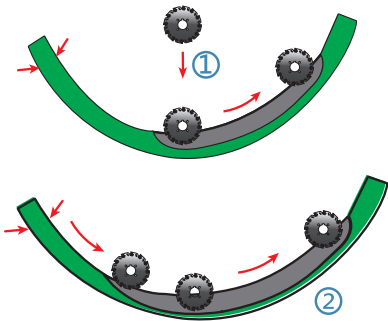
# Recommendation-LNGT Inserts

**f<sub>z</sub> (mm / thoooh)**



• fz (mm/tooth)

|            | fz (mm/tooth)  |             |           |             |           |             |
|------------|----------------|-------------|-----------|-------------|-----------|-------------|
|            | Material group |             |           |             |           |             |
|            | 1 2 3 4        | 5 6         | 8 9 10 11 | 12 13 14 15 | 16 17 18  | 19 20 21 22 |
| 1.4-1.7 mm | 0.02-0.03      | 0.015-0.025 | 0.03-0.04 | 0.02-0.04   | 0.02-0.04 | 0.015-0.025 |
| 1.8-2.2 mm | 0.03-0.05      | 0.03-0.04   | 0.03-0.04 | 0.03-0.06   | 0.03-0.08 | 0.02-0.03   |
| 2.5-3.0 mm | 0.03-0.06      | 0.03-0.05   | 0.02-0.03 | 0.03-0.08   | 0.03-0.1  | 0.03-0.04   |
| 3.0-3.5 mm | 0.04-0.08      | 0.03-0.06   | 0.03-0.06 | 0.04-0.1    | 0.04-0.1  | 0.03-0.05   |
| 4.0-4.5 mm |                |             |           |             |           |             |
| 5.0-5.5 mm | 0.05-0.1       | 0.04-0.08   | 0.04-0.07 | 0.05-0.12   | 0.05-0.17 | 0.04-0.06   |



- ① Plunging to mill : Fz reduce to 50%
- ② Ramping to mill : Fz remain 100%
- ③ Mill : Fz remain 100%
- ④ Ramping : Fz remain 100%
- ⑤ Plunging to mill : Fz reduce to 50%

# Recommendation-SNGX / SNGW Inserts

• SNGX / SNGW Insert Grade Selection

| Material group | Recom. fz (mm/tooth) | Inserts                 |                            |                            |   |
|----------------|----------------------|-------------------------|----------------------------|----------------------------|---|
|                |                      | SNGX ... M<br>SNGW ...M | SNGX ... ME<br>SNGW ... ME | SNGX ... EE<br>SNGW ... EE |   |
| 1              | 0.14-0.30            | C250/B100               | B100                       | -                          | - |
| 2              | 0.14-0.25            | C250/B100               | B100                       | -                          | - |
| 3              | 0.14-0.22            | C250/B100               | B100                       | -                          | - |
| 4              | 0.14-0.22            | C250/B100               | B100                       | -                          | - |
| 5              | 0.14-0.20            | C250/B100               | B100                       | -                          | - |
| 6              | 0.10-0.15            | C250/B100               | B100                       | -                          | - |
| 7              | 0.10-0.13            | C250/B100               | B100                       | -                          | - |
| 8              | 0.14-0.25            | -                       | B100                       | -                          | - |
| 9              | 0.14-0.22            | -                       | B100                       | -                          | - |
| 10             | 0.14-0.20            | -                       | B100                       | -                          | - |
| 11             | 0.10-0.15            | -                       | B100                       | -                          | - |
| 12             | 0.14-0.30            | -                       | F30                        | -                          | - |
| 13             | 0.14-0.22            | -                       | F30                        | -                          | - |
| 14             | 0.14-0.20            | -                       | F30                        | -                          | - |
| 15             | 0.10-0.15            | -                       | F30                        | -                          | - |
| 16             | 0.16-0.30            | -                       | -                          | F20                        | - |
| 17             | 0.16-0.25            | -                       | -                          | F20                        | - |
| 18             | 0.16-0.20            | -                       | -                          | F20                        | - |
| 19             | 0.14-0.20            | -                       | B100                       | -                          | - |
| 20             | 0.14-0.18            | -                       | B100                       | -                          | - |
| 21             | 0.10-0.13            | -                       | B100                       | -                          | - |
| 22             | 0.14-0.20            | -                       | B100                       | -                          | - |

Insert





# Recommendation-SNGX / SNGW Inserts

- Recommended Cutting Speed, Vc(m/min)

| Material group | Grades                    |     |     |      |     |     |      |     |     |      |    |     |     |     |         |
|----------------|---------------------------|-----|-----|------|-----|-----|------|-----|-----|------|----|-----|-----|-----|---------|
|                | B100                      |     |     | C250 |     |     | F20  |     |     | CE60 | CE | K10 | F30 |     |         |
|                | fz (mm/tooth)             |     |     |      |     |     |      |     |     |      |    |     |     |     |         |
|                | 0.1                       | 0.2 | 0.3 | 0.1  | 0.2 | 0.3 | 0.1  | 0.2 | 0.3 |      |    |     | 0.1 | 0.2 | 0.3     |
|                | Cutting Speed, Vc (m/min) |     |     |      |     |     |      |     |     |      |    |     |     |     |         |
| 1              | 186                       | 166 | 150 | 166  | 146 | 130 | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 2              | 168                       | 150 | 135 | 148  | 130 | 115 | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 3              | 151                       | 136 | 122 | 131  | 116 | 102 | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 4              | 136                       | 122 | 110 | 116  | 102 | 90  | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 5              | 120                       | 110 | 99  | 100  | 90  | 79  | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 6              | 92                        | 78  | -   | 72   | 58  | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 7              | -                         | -   | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 8              | 160                       | -   | 80  | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 9              | 160                       | -   | 80  | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 10             | 80                        | -   | 50  | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 11             | 80                        | -   | 50  | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 12             | -                         | -   | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | 140 | 119 105 |
| 13             | -                         | -   | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | 126 | 105 98  |
| 14             | -                         | -   | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | 119 | 98 91   |
| 15             | -                         | -   | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | 91  | 88 -    |
| 16             | -                         | -   | -   | -    | -   | -   | 1150 | 950 | 850 | -    | -  | -   | -   | -   | -       |
| 17             | -                         | -   | -   | -    | -   | -   | 950  | 780 | 700 | -    | -  | -   | -   | -   | -       |
| 18             | -                         | -   | -   | -    | -   | -   | 950  | 780 | 700 | -    | -  | -   | -   | -   | -       |
| 19             | 55                        | 45  | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 20             | 55                        | 45  | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 21             | 46                        | 38  | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |
| 22             | 55                        | 45  | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   | -       |

- Type Of Inserts

|  | Insert Code | Width of slot (mm) |
|-------------------------------------------------------------------------------------|-------------|--------------------|
|                                                                                     | 1203        | 6                  |
|                                                                                     | 1204        | 7                  |
|                                                                                     | 12045       | 8                  |
|                                                                                     | 1205        | 10                 |
|                                                                                     | 1207        | 12                 |

# Recommendation - CNGX Inserts

## • CNGX Insert Grade Selection

| Material group | Recom. fz (mm/tooth) | Inserts    |           |          |   |
|----------------|----------------------|------------|-----------|----------|---|
|                |                      | CNGX ... M | CNGX...ME | CNGX...E |   |
| 1              | 0.2-0.4              | C250/B100  | B100      | -        | - |
| 2              |                      | C250/B100  | B100      | -        | - |
| 3              | 0.2-0.35             | C250/B100  | B100      | -        | - |
| 4              |                      | C250/B100  | B100      | -        | - |
| 5              | 0.2-0.32             | C250/B100  | B100      | -        | - |
| 6              |                      | C250/B100  | B100      | -        | - |
| 7              | 0.15-0.3             | C250/B100  | B100      | -        | - |
| 8              | 0.2-0.4              | -          | B100      | -        | - |
| 9              |                      | -          | B100      | -        | - |
| 10             | 0.2-0.33             | -          | B100      | -        | - |
| 11             |                      | -          | B100      | -        | - |
| 12             | 0.22-0.4             | -          | F30       | -        | - |
| 13             |                      | -          | F30       | -        | - |
| 14             | 0.2-0.35             | -          | F30       | -        | - |
| 15             |                      | -          | F30       | -        | - |
| 16             | 0.22-0.42            | -          | -         | F20      | - |
| 17             |                      | -          | -         | F20      | - |
| 18             |                      | -          | -         | F20      | - |
| 19             | 0.2-0.3              | -          | B100      | -        | - |
| 20             |                      | -          | B100      | -        | - |
| 21             | 0.15-0.25            | -          | B100      | -        | - |
| 22             | 0.2-0.25             | -          | B100      | -        | - |

Insert



• Recommended Cutting Speed, Vc(m/min)

| Material group | Grades                    |     |     |      |     |     |             |     |     |      |    |             |     |
|----------------|---------------------------|-----|-----|------|-----|-----|-------------|-----|-----|------|----|-------------|-----|
|                | B100                      |     |     | C250 |     |     | F20         |     |     | CE60 | CE | K10         | F30 |
|                | fz (mm/tooth)             |     |     |      |     |     |             |     |     |      |    |             |     |
|                | 0.1                       | 0.2 | 0.3 | 0.1  | 0.2 | 0.3 | 0.1         | 0.2 | 0.3 |      |    |             |     |
|                | Cutting Speed, Vc (m/min) |     |     |      |     |     |             |     |     |      |    |             |     |
| 1              | 162                       | 140 | 123 | 162  | 140 | 123 | -           | -   | -   | -    | -  | -           |     |
| 2              | 146                       | 123 | 105 | 146  | 123 | 105 | -           | -   | -   | -    | -  | -           |     |
| 3              | 120                       | 101 | 92  | 120  | 101 | 92  | -           | -   | -   | -    | -  | -           |     |
| 4              | 109                       | 92  | 84  | 109  | 92  | 84  | -           | -   | -   | -    | -  | -           |     |
| 5              | 90                        | 78  | 70  | 90   | 78  | 70  | -           | -   | -   | -    | -  | -           |     |
| 6              | 63                        | 56  | -   | 64   | 56  | -   | -           | -   | -   | -    | -  | -           |     |
| 7              | -                         | -   | -   | 28   | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 8              | 160                       | -   | 70  | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 9              | 160                       | -   | 70  | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 10             | 80                        | -   | 50  | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 11             | 80                        | -   | 50  | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 12             | -                         | -   | -   | -    | -   | -   | -           | -   | -   | -    | -  | 140 119 105 |     |
| 13             | -                         | -   | -   | -    | -   | -   | -           | -   | -   | -    | -  | 126 105 98  |     |
| 14             | -                         | -   | -   | -    | -   | -   | -           | -   | -   | -    | -  | 119 98 91   |     |
| 15             | -                         | -   | -   | -    | -   | -   | -           | -   | -   | -    | -  | 91 84 -     |     |
| 16             | -                         | -   | -   | -    | -   | -   | 805 665 595 | -   | -   | -    | -  | -           |     |
| 17             | -                         | -   | -   | -    | -   | -   | 665 549 490 | -   | -   | -    | -  | -           |     |
| 18             | -                         | -   | -   | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 19             | 40                        | 37  | -   | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 20             | 40                        | 37  | -   | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 21             | 35                        | 30  | -   | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |
| 22             | 40                        | 37  | -   | -    | -   | -   | -           | -   | -   | -    | -  | -           |     |

• Type Of Inserts

|  | Insert Code | Width of slot (mm) |
|------------------------------------------------------------------------------------|-------------|--------------------|
|                                                                                    | 1005        | 14-16              |
|                                                                                    | 1305        | 18-24              |
|                                                                                    | 1605        | 25-30              |



# CENTER SERIES

- CENTER/SPOT DRILL IN MILLING AND TURNING



**PATENTED**



# Features Description

The precise eccentricity only  $\pm 0.008\text{mm}$  enhances the tool life of taps and drills, Special carbide inserts with unique geometry improve the strength of insert tip.

Center Drill:  $\varnothing 1.6 - \varnothing 8 \text{ mm}$

Spot Drill:  $\varnothing 8 - \varnothing 16 \text{ mm}$



# SPOT DRILL - 390 SYSTEM

**PATENTED**



Video

## Features

Available in  
materials



Cost  
**300~500%**  
SAVING

Applicable  
Machines  
Milling / Turning /  
Drilling

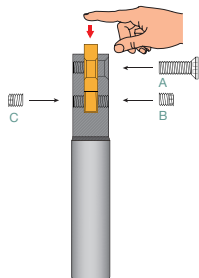
Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

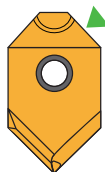
# Design

Center point eccentricity  $\pm 0.008\text{mm}$

## 1. Plug-and-clamp self-centering design



## 2. Back taper



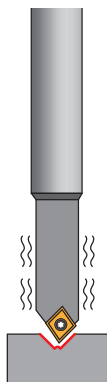
Gives awesome stabilities that conduces to excellent verticality precision.

# Product Introduction

YIH TROUN

Spot Drill

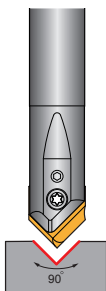
Other brands



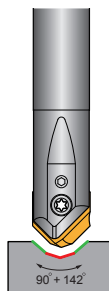
Big eccentricity  
tolerance minimum  $\pm 0.3\text{ mm}$

1. To use this kind of chamfer tool for centering processes is likely break drills and taps often.
2. This chamfer tool works with single flute only, it performs low speed.

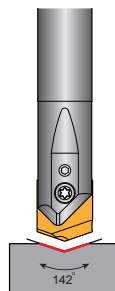
### 23 Inserts



### A23 Inserts



### B23 Inserts



Subtle eccentricity  
tolerance maximum is  $\pm 0.008\text{ mm}$

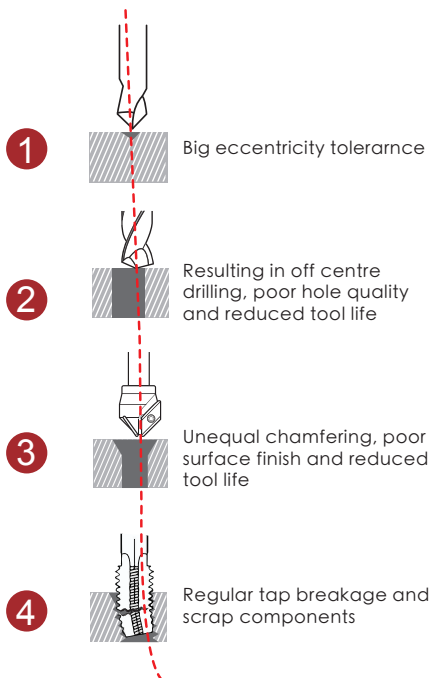
1. Designed with chip breaking teeth both on the front and back side of indexable inserts.
  2. The most popular spot drill which has 45° chamfer angle and suitable in various applications: such as spot positioning, V-shape grooving and engraving.
  3. Can also be used in round-hole and side corner chamfering with 2 effective flutes.
1. Designed with two point angles 90° + 142°.
  2. It performs 45° chamfering and 142° spot positioning in one step.
- 142° point angle is perfect for all different size of drills.



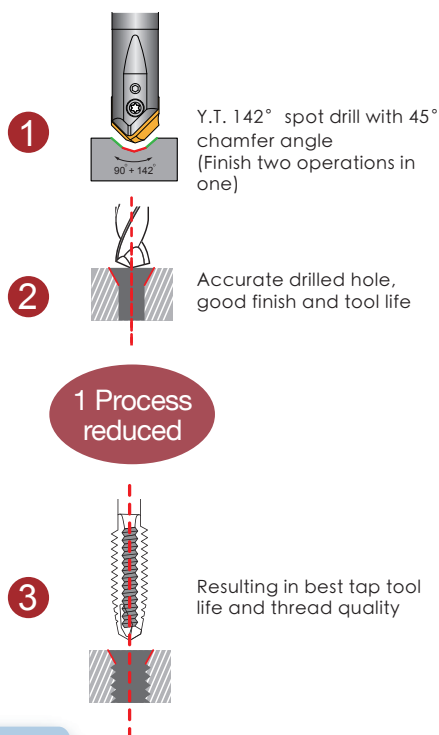


# Operations prior to small / long depth drills and Tapping

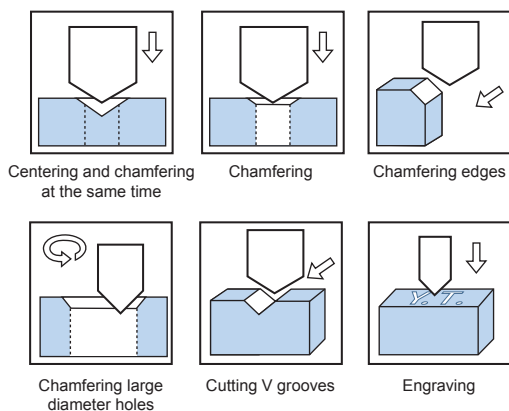
## Imprecise spot drills



## Y.T. accurate spot drills



## Y.T. 90° Spot Drill With Multipurpose Function



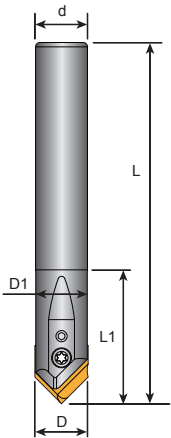
Can be used in M/C and drilling machine



# PRODUCT SPECIFICATIONS

## Spot Drill Toolholders

- Inserts P. 274 - 275
- Cutting Data P. 276 - 280



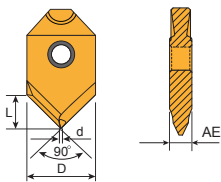
Spot Drill

13

| Order Code  | Dimensions (mm) |      |      |     |      |     |  KG | Inserts<br>23<br>A23<br>B23 | Screw             | Key          |
|-------------|-----------------|------|------|-----|------|-----|---------------------------------------------------------------------------------------|-----------------------------|-------------------|--------------|
|             | D               | D1   | d    | L   | L1   | L2  |                                                                                       |                             |                   |              |
| 13-0808-60  | 8               | 7.9  | 8    | 60  | 20   |     | 0.06                                                                                  | 0802                        | C02506<br>S025025 | T08P<br>L013 |
| 13-0808-85  |                 |      |      | 85  |      |     | 0.07                                                                                  |                             |                   |              |
| 13-1008-60  |                 | 10   | 9.9  | 10  |      |     | 60                                                                                    |                             |                   |              |
| 13-1010-65  | 65              |      |      |     | 0.09 |     |                                                                                       |                             |                   |              |
| 13-1010-100 | 100             |      |      |     | 0.12 |     |                                                                                       |                             |                   |              |
| 13-1010-150 | 150             |      |      |     | 0.12 |     |                                                                                       |                             |                   |              |
| 13-1210-65  | 12              |      |      |     | 11.9 | 65  | 0.12                                                                                  |                             |                   |              |
| 13-1212-80  |                 | 80   | 0.12 |     |      |     |                                                                                       |                             |                   |              |
| 13-1212-110 |                 | 110  | 0.15 |     |      |     |                                                                                       |                             |                   |              |
| 13-1212-160 | 12              | 11.9 | 12   | 160 | 0.18 |     |                                                                                       |                             |                   |              |
| 13-1612-80  |                 |      |      | 16  | 15.8 | 80  | 0.21                                                                                  |                             |                   |              |
| 13-1616-100 |                 |      |      |     |      | 100 | 0.21                                                                                  |                             |                   |              |
| 13-1616-130 | 130             | 0.26 |      |     |      |     |                                                                                       |                             |                   |              |
| 13-1616-180 | 180             | 0.36 |      |     |      |     |                                                                                       |                             |                   |              |

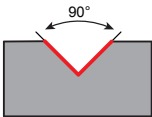


23 Inserts



Tolerances (mm)

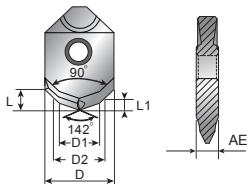
AE : + 0.01  
- 0.02



| Dimensions (mm) |     |   |     |       |
|-----------------|-----|---|-----|-------|
| D               | d   | L | AE  | angle |
| 8               | 0.7 | 4 | 2.0 | 90°   |
| 10              | 0.8 | 5 | 2.5 |       |
| 12              | 0.9 | 6 | 3.0 |       |
| 16              | 1.0 | 8 | 3.0 |       |

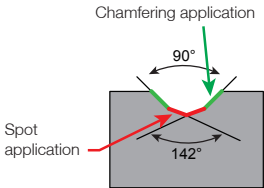
| Inserts                                                                            | Order Code    | Grades  |      |     |     |        |       |      |          |    |  |
|------------------------------------------------------------------------------------|---------------|---------|------|-----|-----|--------|-------|------|----------|----|------------------------------------------------------------------------------------|
|                                                                                    |               | Carbide |      |     |     | Cermet |       |      | Uncoated |    |                                                                                    |
|                                                                                    |               | Cl25    | B350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                    |
|   | 23-0802-90-E  |         |      |     |     |        |       |      |          |    |                                                                                    |
|                                                                                    | 23-1002-90-E  |         |      |     |     |        |       |      |          |    |                                                                                    |
|                                                                                    | 23-1203-90-E  |         |      |     |     |        |       |      |          |    |                                                                                    |
|                                                                                    | 23-1603-90-E  |         |      |     |     |        |       |      |          |    |                                                                                    |
|                                                                                    | 23-0802-90-ME |         | ⊙    |     |     |        |       |      |          |    |                                                                                    |
|                                                                                    | 23-1002-90-ME |         | ⊙    |     |     |        |       |      |          |    |                                                                                    |
|                                                                                    | 23-1203-90-ME |         | ⊙    |     |     |        |       |      |          |    |                                                                                    |
|                                                                                    | 23-1603-90-ME |         | ⊙    |     |     |        |       |      |          |    |                                                                                    |
|  |               |         |      |     |     |        |       |      |          |    |                                                                                    |
| Inserts 10 PCS / Box                                                               |               |         |      |     |     |        |       |      |          |    |                                                                                    |

A23 Inserts



Tolerances (mm)

AE : + 0.01  
- 0.02

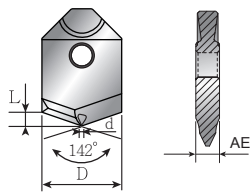


| Dimensions (mm) |     |     |      |      |     |           |             |
|-----------------|-----|-----|------|------|-----|-----------|-------------|
| D               | L   | D1  | D2   | L1   | AE  | M         | angle       |
| 8               | 2.8 | 3.3 | 4.2  | 1.02 | 2.0 | M4 x 0.7  | 90°<br>142° |
| 10              | 3.5 | 4.2 | 5.25 | 1.25 | 2.5 | M5 x 0.8  |             |
| 12              | 4.2 | 5.0 | 6.3  | 1.55 | 3.0 | M6 x 1.0  |             |
| 16              | 5.6 | 6.8 | 8.4  | 1.97 | 3.0 | M8 x 1.25 |             |
| 16              | 5.1 | 8.5 | 10.5 | 2.46 | 3.0 | M10 x 1.5 |             |

| Inserts                                                                              | Order Code      | Grades  |      |     |     |        |       |          |     |  |
|--------------------------------------------------------------------------------------|-----------------|---------|------|-----|-----|--------|-------|----------|-----|-------------------------------------------------------------------------------------|
|                                                                                      |                 | Carbide |      |     |     | Cermet |       | Uncoated |     |                                                                                     |
|                                                                                      |                 | C125    | B350 | F20 | F30 | CE25   | CE100 | CE60     | K10 |                                                                                     |
|   | A23-0802-M4-ME  |         | ⊙    |     |     |        |       |          |     |                                                                                     |
|                                                                                      | A23-1002-M5-ME  |         | ⊙    |     |     |        |       |          |     |                                                                                     |
|                                                                                      | A23-1203-M6-ME  |         | ⊙    |     |     |        |       |          |     |                                                                                     |
|                                                                                      | A23-1603-M8-ME  |         | ⊙    |     |     |        |       |          |     |                                                                                     |
|                                                                                      | A23-1603-M10-ME |         | ⊙    |     |     |        |       |          |     |                                                                                     |
|  |                 |         |      |     |     |        |       |          |     |                                                                                     |
| Inserts 10 PCS / Box                                                                 |                 |         |      |     |     |        |       |          |     |                                                                                     |

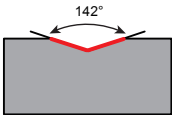
- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: A23-0802-M4-ME,B350

# B23 Inserts



Tolerances (mm)

AE : + 0.01  
- 0.02



| Dimensions (mm) |     |      |     |       |
|-----------------|-----|------|-----|-------|
| D               | d   | L    | AE  | angle |
| 8               | 0.7 | 1.28 | 2.0 | 142°  |
| 10              | 0.8 | 1.55 | 2.5 |       |
| 12              | 0.9 | 1.86 | 3.0 |       |
| 16              | 1.0 | 2.56 |     |       |

| Inserts                                                                           | Order Code      | Grades  |      |     |     |        |       |      |          |    |                           |
|-----------------------------------------------------------------------------------|-----------------|---------|------|-----|-----|--------|-------|------|----------|----|------------------------------------------------------------------------------------------------------------|
|                                                                                   |                 | Carbide |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                            |
|                                                                                   |                 | C125    | B350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                            |
|  | B23-0802-142-ME |         | ⊙    |     |     |        |       |      |          |    | <br>Inserts 10 PCS / Box |
|                                                                                   | B23-1002-142-ME |         | ⊙    |     |     |        |       |      |          |    |                                                                                                            |
|                                                                                   | B23-1203-142-ME |         | ⊙    |     |     |        |       |      |          |    |                                                                                                            |
|                                                                                   | B23-1603-142-ME |         | ⊙    |     |     |        |       |      |          |    |                                                                                                            |

-  Steel  Stainless Steel  Steel/Stainless Steel /Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: B23-0802-142-ME,B350



# Recommended Cutting Data And Insert Grades

- Recommended spot cutting speed in Vc (m/min), fn (mm/rev).
- For spotting  the effective no. of teeth is calculated with 1 flute.

| Material group |  Cutting Speed Vc(m/min) | fn (mm/rev)  |              | Grades    |     |
|----------------|-----------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|-----|
|                |                                                                                                           | D: 8~10mm    | D: 12~16mm   | ME        | E   |
|                | Spotting                                                                                                  |              |              |           |     |
| 1-2            | 50-70                                                                                                     | 0.10<br>0.13 | 0.11<br>0.14 | B350/C350 | -   |
| 3              | 50-70                                                                                                     | 0.10<br>0.13 | 0.11<br>0.14 | B350/C350 | -   |
| 4-5-6          | 45-60                                                                                                     | 0.08<br>0.10 | 0.10<br>0.12 | B350/C350 | -   |
| 7              | 25-30                                                                                                     | 0.06<br>0.08 | 0.06<br>0.08 | B350      | -   |
| 8-9            | 35-45                                                                                                     | 0.08<br>0.10 | 0.10<br>0.12 | B350      | -   |
| 10-11          | 35-40                                                                                                     | 0.07<br>0.09 | 0.09<br>0.12 | B350      | -   |
| 12-13          | 70-90                                                                                                     | 0.12<br>0.15 | 0.13<br>0.16 | C350      | -   |
| 14-15          | 60-80                                                                                                     | 0.10<br>0.14 | 0.10<br>0.15 | C350      | -   |
| 16-18          | 200-300                                                                                                   | 0.12<br>0.15 | 0.13<br>0.16 | -         | F20 |

## How to Fit Inserts - Screw A.B.C.

### Screwing the Insert

- Step 1: • Put the insert into the slot of shank and press it with the finger
- Fully tighten the screw A first

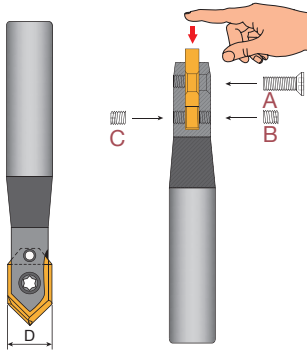
Step 2: Half tighten the screw B on one side

Step 3: Half tighten the screw C on another side

Step 4: Fully tighten the screw B again (Important)

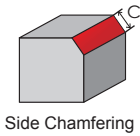
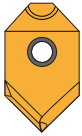
Step 5: Fully tighten the screw C again (Important)

### Standard spare parts



| Insert dimension D (mm)                                                             | Screw A                                                                             | Screw B/C                                                                           | Key                                                                                 | Key                                                                                 |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| 8                                                                                   | C02506                                                                              | S025025                                                                             | T08P                                                                                | L013                                                                                |
| 10                                                                                  | C03008                                                                              | S02503                                                                              | T09P                                                                                | L013                                                                                |
| 12                                                                                  | C03010                                                                              | S0304                                                                               | T09P                                                                                | L015                                                                                |
| 16                                                                                  | C03512                                                                              | S0405                                                                               | T10P                                                                                | L02                                                                                 |

# Recommended Cutting Data



Side Chamfering

- For side chamfering the effective no. of teeth are 2 flutes.

| Chamfering Application |     |                |               |                |               |                 |               |                |               |                |               |                |               |
|------------------------|-----|----------------|---------------|----------------|---------------|-----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| Materials              |     | Steel          |               | Heat Treatment |               | Stainless Steel |               | Inconel        |               | Cast Iron      |               | Aluminium      |               |
| Using Inserts          |     | C350           |               | C350           |               | B350            |               | B350           |               | C350           |               | F20            |               |
| Inserts                | C   | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min)  | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) |
| ø8                     | 1mm | 4800           | 720           | 2000           | 240           | 2400            | 280           | 1600           | 190           | 3200           | 640           | 8000           | 2000          |
| ø10                    | 1mm | 3800           | 570           | 1600           | 190           | 1900            | 220           | 1300           | 160           | 2550           | 510           | 6300           | 1500          |
|                        | 2mm | 3800           | 450           | 1600           | 160           | 1900            | 190           | 1300           | 130           | 2550           | 400           | 6300           | 1260          |
| ø12                    | 1mm | 3200           | 480           | 1300           | 150           | 1600            | 190           | 1050           | 125           | 2100           | 420           | 5300           | 1250          |
|                        | 2mm | 3200           | 380           | 1300           | 130           | 1600            | 160           | 1050           | 105           | 2100           | 340           | 5300           | 1050          |
|                        | 3mm | 3200           | 320           | 1300           | 100           | 1600            | 130           | 1050           | 85            | 2100           | 250           | 5300           | 850           |
| ø16                    | 1mm | 2400           | 360           | 1000           | 120           | 1200            | 145           | 800            | 95            | 1600           | 320           | 4000           | 960           |
|                        | 2mm | 2400           | 290           | 1000           | 100           | 1200            | 120           | 800            | 80            | 1600           | 255           | 4000           | 800           |
|                        | 3mm | 2400           | 240           | 1000           | 80            | 1200            | 100           | 800            | 65            | 1600           | 190           | 4000           | 480           |
|                        | 4mm | 2000           | 160           | 800            | 65            | 1000            | 80            | 600            | 50            | 1400           | 140           | 3500           | 420           |



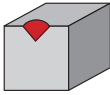
# Recommended Cutting Data



Grooving

| V Groove Application |           |                |               |                |               |                 |               |                |               |                |               |                |               |
|----------------------|-----------|----------------|---------------|----------------|---------------|-----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| Materials            |           | Steel          |               | Heat Treatment |               | Stainless Steel |               | Inconel        |               | Cast Iron      |               | Aluminium      |               |
| Using Inserts        |           | C350           |               | C350           |               | B350            |               | B350           |               | C350           |               | F20            |               |
| Inserts              | Cut Depth | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min)  | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) |
| ø8                   | 2mm       | 4800           | 380           | 1200           | 95            | 2400            | 140           | 1400           | 85            | 4000           | 640           | 8000           | 2400          |
| ø10                  | 2mm       | 3800           | 300           | 950            | 75            | 1900            | 115           | 1100           | 65            | 3200           | 500           | 6400           | 1920          |
|                      | 3mm       | 3800           | 230           | 950            | 55            | 1900            | 750           | 1100           | 45            | 3200           | 380           | 6400           | 1500          |
| ø12                  | 2mm       | 3200           | 260           | 800            | 65            | 1600            | 95            | 900            | 55            | 2650           | 420           | 5300           | 1600          |
|                      | 3mm       | 3200           | 190           | 800            | 50            | 1600            | 65            | 900            | 35            | 2650           | 320           | 5300           | 1300          |
| ø16                  | 2mm       | 2400           | 190           | 600            | 50            | 1200            | 70            | 700            | 40            | 2000           | 320           | 4000           | 1200          |
|                      | 3mm       | 2400           | 145           | 600            | 35            | 1200            | 50            | 700            | 30            | 2000           | 240           | 4000           | 960           |
|                      | 4mm       | 2400           | 100           | 600            | 25            | 1200            | 25            | 700            | 20            | 2000           | 200           | 4000           | 800           |

# Recommended Cutting Data



Spotting and Chamfering  
in one step

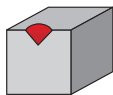
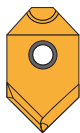
| Spot Application |           |                |               |                |               |                 |               |                |               |                |               |                |               |
|------------------|-----------|----------------|---------------|----------------|---------------|-----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| Materials        |           | Steel          |               | Heat Treatment |               | Stainless Steel |               | Inconel        |               | Cast Iron      |               | Aluminium      |               |
| Using Insert     |           | C350           |               | C350           |               | B350            |               | B350           |               | C350           |               | F20            |               |
| Inserts          | Cut Depth | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min)  | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) |
| ø8               | 1mm       | 2000           | 300           | 800            | 95            | 1600            | 160           | 1000           | 100           | 2800           | 560           | 6000           | 1200          |
|                  | 2mm       | 2000           | 250           | 800            | 80            | 1600            | 120           | 1000           | 75            | 2800           | 490           | 6000           | 1050          |
|                  | 3mm       | 2000           | 250           | 800            | 80            | 1600            | 120           | 1000           | 75            | 2800           | 490           | 6000           | 1050          |
|                  | 4mm       | 2000           | 200           | 800            | 65            | 1600            | 80            | 1000           | 50            | 2800           | 420           | 6000           | 900           |
| ø10              | 1mm       | 1600           | 240           | 650            | 80            | 1300            | 130           | 800            | 80            | 2200           | 440           | 4800           | 960           |
|                  | 2mm       | 1600           | 200           | 650            | 65            | 1300            | 100           | 800            | 60            | 2200           | 385           | 4800           | 840           |
|                  | 3mm       | 1600           | 200           | 650            | 65            | 1300            | 100           | 800            | 60            | 2200           | 385           | 4800           | 840           |
|                  | 4mm       | 1600           | 160           | 650            | 50            | 1300            | 65            | 800            | 40            | 2200           | 330           | 4800           | 720           |
|                  | 5mm       | 1300           | 130           | 500            | 40            | 1000            | 50            | 650            | 30            | 1900           | 285           | 4200           | 630           |
| ø12              | 1mm       | 1300           | 200           | 550            | 65            | 1050            | 105           | 650            | 65            | 1850           | 370           | 4000           | 800           |
|                  | 2mm       | 1300           | 160           | 550            | 55            | 1050            | 80            | 650            | 50            | 1850           | 315           | 4000           | 700           |
|                  | 3mm       | 1300           | 160           | 550            | 55            | 1050            | 80            | 650            | 50            | 1850           | 315           | 4000           | 700           |

Spot Drill





# Recommended Cutting Data

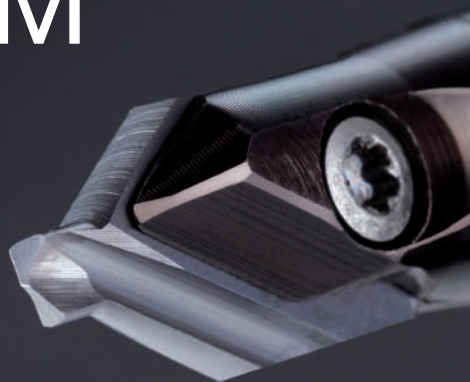


Spotting and Chamfering  
in one step

| Spot Application |           |                |               |                |               |                 |               |                |               |                |               |                |               |
|------------------|-----------|----------------|---------------|----------------|---------------|-----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| Materials        |           | Steel          |               | Heat Treatment |               | Stainless Steel |               | Inconel        |               | Cast Iron      |               | Aluminium      |               |
| Using Inserts    |           | C350           |               | C350           |               | B350            |               | B350           |               | C350           |               | F20            |               |
| Inserts          | Cut Depth | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min)  | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) | S<br>(rev/min) | F<br>(mm/min) |
| ø12              | 4mm       | 1300           | 130           | 550            | 45            | 1050            | 50            | 650            | 35            | 1850           | 280           | 4000           | 600           |
|                  | 5mm       | 1050           | 105           | 400            | 45            | 800             | 40            | 530            | 30            | 1600           | 240           | 3500           | 525           |
|                  | 6mm       | 1050           | 85            | 400            | 30            | 800             | 30            | 530            | 20            | 1600           | 200           | 3500           | 430           |
| ø16              | 1mm       | 1000           | 150           | 400            | 45            | 800             | 80            | 500            | 50            | 1400           | 280           | 3000           | 600           |
|                  | 2mm       | 1000           | 125           | 400            | 40            | 800             | 60            | 500            | 40            | 1400           | 245           | 3000           | 525           |
|                  | 3mm       | 1000           | 125           | 400            | 40            | 800             | 60            | 500            | 40            | 1400           | 245           | 3000           | 525           |
|                  | 4mm       | 1000           | 100           | 400            | 30            | 800             | 40            | 500            | 25            | 1400           | 210           | 3000           | 450           |
|                  | 5mm       | 800            | 80            | 300            | 25            | 600             | 30            | 400            | 20            | 1200           | 180           | 2600           | 390           |
|                  | 6mm       | 800            | 65            | 300            | 20            | 600             | 25            | 400            | 16            | 1200           | 150           | 2600           | 325           |
|                  | 7mm       | 800            | 65            | 300            | 20            | 600             | 25            | 400            | 16            | 1200           | 150           | 2600           | 325           |
|                  | 8mm       | 800            | 50            | 300            | 15            | 600             | 18            | 400            | 12            | 1200           | 120           | 2600           | 260           |

# CENTER DRILL - 390 SYSTEM

Surface Finish Ra < 0.5  $\mu\text{m}$



**PATENTED**



Video

## Features

Available in  
materials



Cost  
**300~500%**  
SAVING

Applicable  
Machines  
Milling / Turning

Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

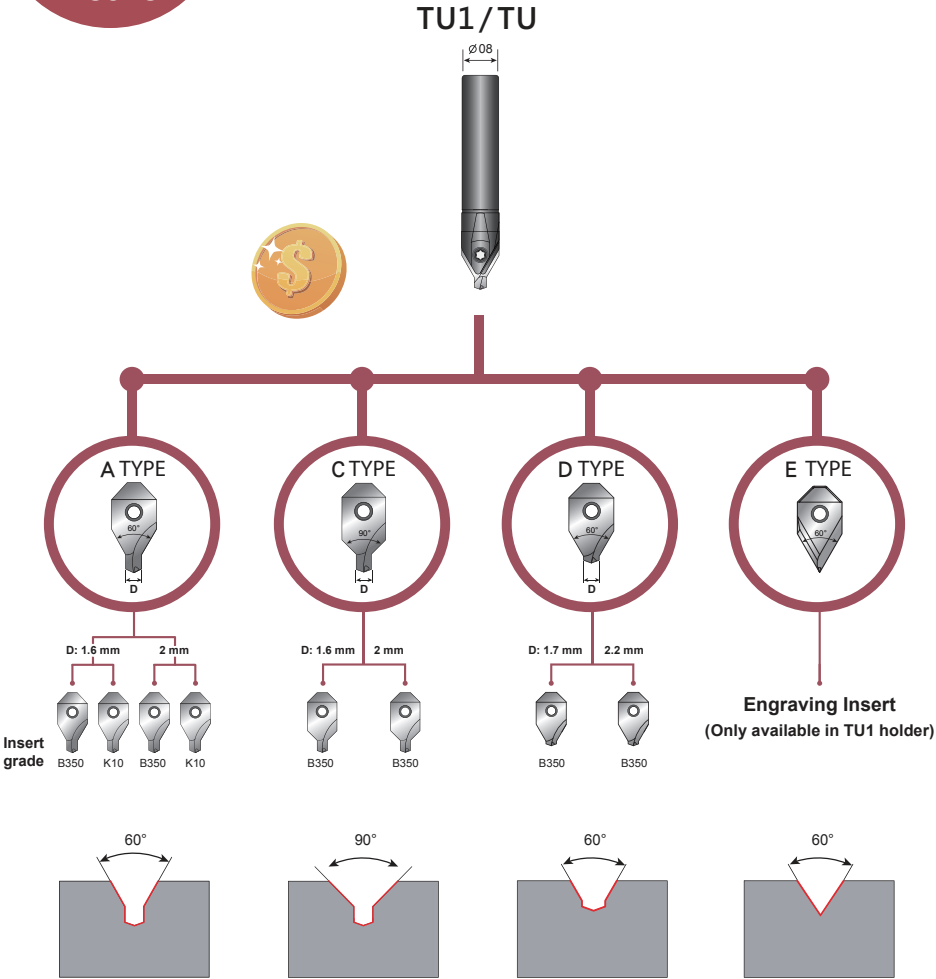


YIH TROUN ENTERPRISE CO., LTD

**281**

# Product Design

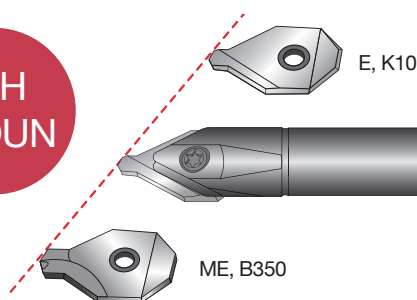
One Shank  
fits 9  
different  
inserts



# TECHNICAL GUIDE

## Indexable center drill

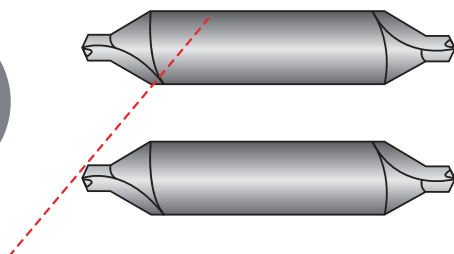
- Extremely accuracy in center positioning, minimized eccentricity  $\pm 0.008\text{mm}$ .
- Perfect surface finish with  $Ra\ 0.36\ \mu\text{m}$ , which leads to excellent accuracy.
- Re-centering and length calibrating are not required while changing the new insert.
- Y.T. indexable carbide inserts perform 5 times tool life longer than HSS center drills.
- The same shank fit max. 11 different inserts.



Center Drill

## Solid center drill

- Imprecise center accuracy
- Poor tool life
- Require re-calibrating every time
- Poor surface finish

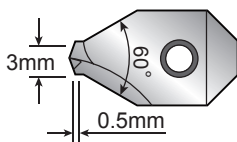


# New Design vs. Traditional Type



## D-type Center Drill:

Designed with a shorter drill bit, suitable for center spotting with 60° chamfer simultaneously prior to hole drilling. It performs a greater machining durability itself and conduce to improve the tool life of drills and taps from its high accuracy.



Efficiency  
400~600% up



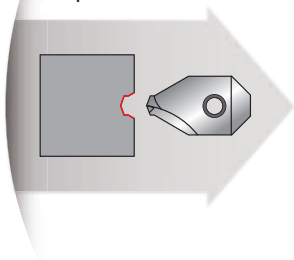
Durability  
400~600% up



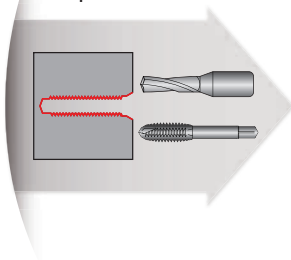
No broken



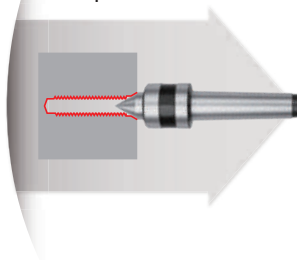
Step 1



Step 2

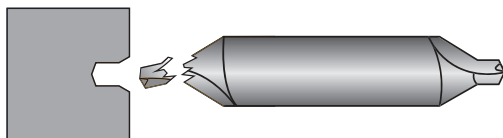
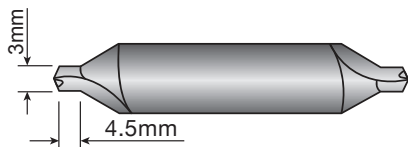


Step 3



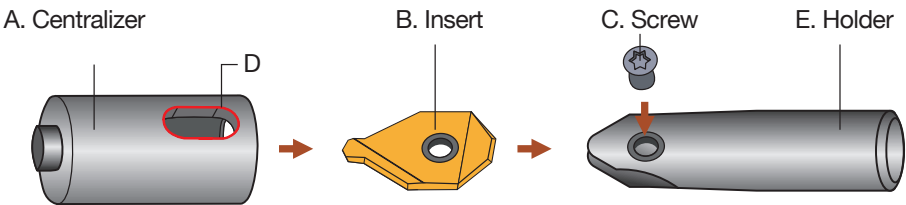
## Traditional

**Standard center drill:** The long pilot length causes pilot broken often and poor tool life in high feed machining.



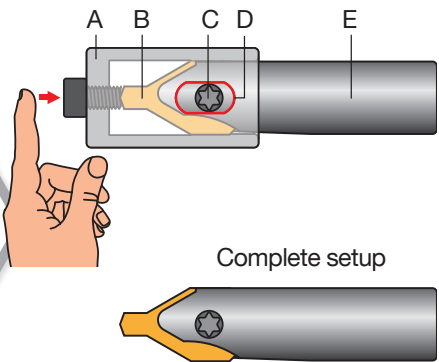
# CENTRALIZER-Quick Operation Guide

Apply the centralizer while replacing inserts at the machine



## Mounting Steps

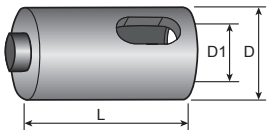
- Step 1.** Dismount the worn inserts and put a new one instead into the cavity.
- Step 2.** Put on the centralizer.
- Step 3.** Turn the shank holder, align the screw hole with the opening.
- Step 4.** Slide up the centralizer to push the insert against on the bottom.
- Step 5.** Tighten up the screw.
- Step 6.** Remove the centralizer, carry tool changing and calibrating off in a minute.



## Devices to centralizer the inserts



Video



| Order Code | D  | D1   | L  |
|------------|----|------|----|
| GA-0814    | 14 | 8.2  | 25 |
| GA-1016    | 16 | 10.2 | 30 |
| GA-1218    | 18 | 12.2 | 33 |
| GA-1622    | 22 | 16.2 | 38 |

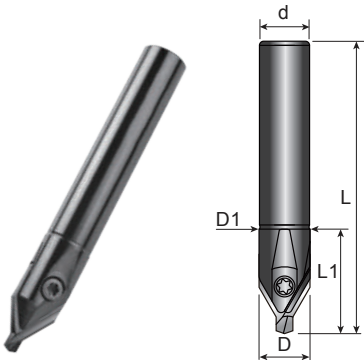


# Center Drill Toolholders ( Milling And Turning )

- Inserts P. 287 - 290
- Cutting Data P. 291
- Centralizer P. 285

## TU 1

| Order Code  | Dimensions (mm) |      |    |    |    |  KG | Inserts<br>A/C/D/<br>E24 | Screw  | Key  |
|-------------|-----------------|------|----|----|----|--------------------------------------------------------------------------------------|--------------------------|--------|------|
|             | D               | D1   | d  | L  | L1 |                                                                                      |                          |        |      |
| TU1-0808-60 | 8.2             | 8.2  | 8  | 60 | 20 | 0.08                                                                                 | 0802                     | C02506 | T08P |
| TU1-0808-80 |                 |      |    | 80 |    | 0.09                                                                                 |                          |        |      |
| TU1-1010-65 | 10.2            | 10.2 | 10 | 65 | 25 | 0.09                                                                                 | 1002                     | C03009 | T09P |
| TU1-1212-65 | 12.2            | 12.2 | 12 | 65 | 30 | 0.11                                                                                 | 1203                     | C03010 |      |
| TU1-1616-70 | 16.2            | 16.2 | 16 | 70 | 35 | 0.17                                                                                 | 1603                     | C03512 | T10P |

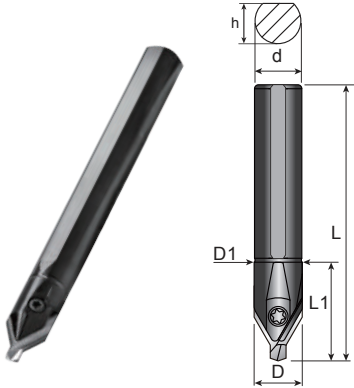


# Center Drill Toolholders ( Turning )

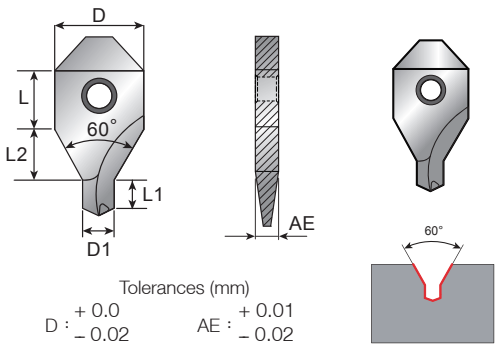
- Inserts P. 287 - 290
- Cutting Data P. 291
- Centralizer P. 285

## TU

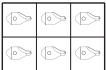
| Order Code  | Dimensions (mm) |      |    |     |    |      |  KG | Inserts<br>A/C/<br>D24 | Screw  | Key  |
|-------------|-----------------|------|----|-----|----|------|----------------------------------------------------------------------------------------|------------------------|--------|------|
|             | D               | D1   | d  | L   | L1 | h    |                                                                                        |                        |        |      |
| TU-0808-85  | 8.2             | 8.2  | 8  | 85  | 20 | 7.5  | 0.08                                                                                   | 0802                   | C02506 | T08P |
| TU-1010-100 | 10.2            | 10.2 | 10 | 100 | 25 | 9.3  | 0.11                                                                                   | 1002                   | C03009 | T09P |
| TU-1212-110 | 12.2            | 12.2 | 12 | 110 | 30 | 11.5 | 0.15                                                                                   | 1203                   | C03010 |      |
| TU-1616-130 | 16.2            | 16.2 | 16 | 130 | 35 | 15.5 | 0.26                                                                                   | 1603                   | C03512 | T10P |



# A24 Inserts



| Dimensions (mm) |   |     |     |     |     |       |
|-----------------|---|-----|-----|-----|-----|-------|
| D               | L | AE  | D1  | L1  | L2  | Angle |
| 8.2             | 6 | 2.0 | 1.6 | 1.6 | 5.0 | 60°   |
|                 |   |     | 2.0 | 2.0 | 5.0 |       |
| 10.2            | 7 | 2.5 | 2.5 | 2.2 | 6.0 |       |
|                 |   |     | 3.0 | 2.6 | 6.0 |       |
| 12.2            |   | 3.0 | 4.0 | 3.3 | 7.0 |       |
|                 |   |     | 5.0 | 4.0 | 6.0 |       |
| 16.2            | 8 |     | 5.0 | 4.0 | 9.0 |       |
|                 |   |     | 6.0 | 4.7 | 8.0 |       |
|                 |   | 8.0 | 6.5 | 6.5 |     |       |

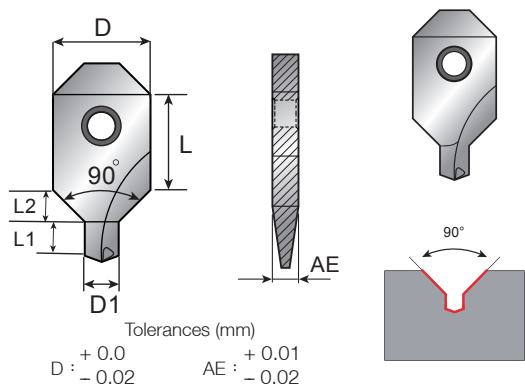
| Inserts                                                                             | Order Code       | Grades  |      |      |     |     |        |       |      |          |    |                                                       |
|-------------------------------------------------------------------------------------|------------------|---------|------|------|-----|-----|--------|-------|------|----------|----|-----------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     |                  | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                                                         |
|                                                                                     |                  | C125    | B350 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                                                         |
|  | A24-080216-60-E  |         |      |      |     |     |        |       |      |          |    | <br>Inserts 6 PCS / Box<br>Only for insert: A24-16*** |
|                                                                                     | A24-080220-60-E  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-100225-60-E  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-100230-60-E  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-120340-60-E  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-120350-60-E  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-160350-60-E  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-160360-60-E  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-080216-60-ME |         | ⊗    |      |     |     |        |       |      |          |    | <br>Inserts 10 PCS / Box                            |
|                                                                                     | A24-080220-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-100225-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-100230-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-120340-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-120350-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-160350-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-160360-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | A24-160380-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     |                  |         |      |      |     |     |        |       |      |          |    |                                                                                                                                         |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: A24-080216-60-E,K10





# C24 Inserts

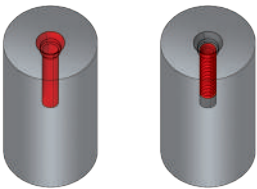


| Dimensions (mm) |    |     |      |     |     |       |
|-----------------|----|-----|------|-----|-----|-------|
| D               | L  | AE  | D1   | L1  | L2  | Angle |
| 8.2             | 8  | 2.0 | 1.6  | 1.6 | 3.0 | 90°   |
|                 |    |     | 2.0  | 2.0 | 3.0 |       |
| 10.2            | 10 | 2.5 | 2.5  | 2.2 | 3.5 |       |
|                 |    |     | 3.0  | 2.6 | 3.5 |       |
| 12.2            | 10 | 3.0 | 4.0  | 3.3 | 4.0 |       |
|                 |    |     | -5.0 | 4.0 | 3.5 |       |
| 16.2            | 12 | 3.0 | 5.0  | 4.0 | 5.5 |       |
|                 |    |     | 6.0  | 4.7 | 5.0 |       |

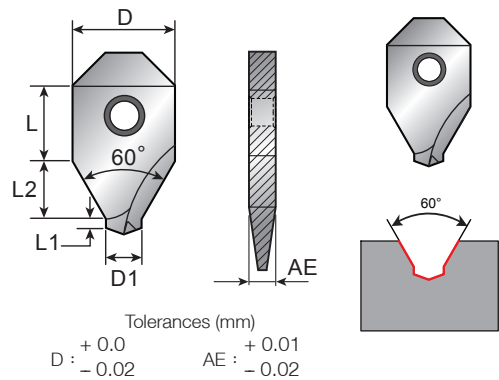
| Inserts                                                                             | Order Code       | Grades  |      |      |     |     |        |       |      |          |    |                                                      |
|-------------------------------------------------------------------------------------|------------------|---------|------|------|-----|-----|--------|-------|------|----------|----|----------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     |                  | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                                                        |
|                                                                                     |                  | C125    | B350 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                                                        |
|  | C24-080216-90-ME |         | ⊙    |      |     |     |        |       |      |          |    | <br>Inserts 6 PCS / Box<br>Only for insert: C24-16* |
|                                                                                     | C24-080220-90-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                        |
|                                                                                     | C24-100225-90-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                        |
|                                                                                     | C24-100230-90-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                        |
|                                                                                     | C24-120340-90-ME |         | ⊙    |      |     |     |        |       |      |          |    | <br>Inserts 10 PCS / Box                           |
|                                                                                     | C24-120350-90-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                        |
|                                                                                     | C24-160350-90-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                        |
|                                                                                     | C24-160360-90-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                        |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: C24-080216-90-ME,B350

# D24 Inserts

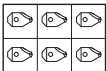


Center drill specially for pre-drilling and pre-tapping



| Dimensions (mm) |   |     |     |     |     |       |
|-----------------|---|-----|-----|-----|-----|-------|
| D               | L | AE  | D1  | L1  | L2  | Angle |
| 8.2             | 6 | 2.0 | 1.7 | 0.6 | 5.5 | 60°   |
|                 |   |     | 2.2 | 0.6 | 5.0 |       |
| 10.2            | 7 | 2.5 | 2.7 | 0.6 | 6.0 |       |
|                 |   |     | 3.2 | 0.7 | 6.0 |       |
|                 |   |     | 3.7 | 0.7 | 5.5 |       |
| 12.2            | 7 | 3.0 | 4.3 | 0.8 | 6.5 |       |
|                 |   |     | 5.3 | 1.0 | 5.5 |       |
| 16.2            | 8 | 3.0 | 5.3 | 1.0 | 9.0 |       |
|                 |   |     | 6.3 | 1.1 | 8.0 |       |

Center Drill

| Inserts                                                                             | Order Code       | Grades  |      |      |     |     |        |       |      |          |    |                                                        |
|-------------------------------------------------------------------------------------|------------------|---------|------|------|-----|-----|--------|-------|------|----------|----|-----------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     |                  | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                                                         |
|                                                                                     |                  | C125    | B350 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                                                         |
|  | D24-080217-60-ME |         | ⊙    |      |     |     |        |       |      |          |    | <br>Inserts 6 PCS / Box<br>Only for insert:D24-16*** |
|                                                                                     | D24-080222-60-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | D24-100227-60-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | D24-100232-60-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | D24-100237-60-ME |         | ⊙    |      |     |     |        |       |      |          |    | <br>Inserts 10 PCS / Box                            |
|                                                                                     | D24-120343-60-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | D24-120353-60-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | D24-160353-60-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                         |
|                                                                                     | D24-160363-60-ME |         | ⊙    |      |     |     |        |       |      |          |    |                                                                                                                                         |

-  Steel  Stainless Steel  Steel/Stainless Steel /Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: D24-080217-60-ME,B350



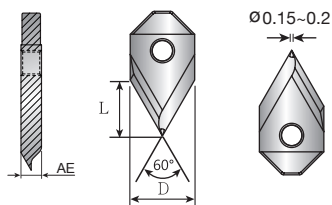
# High Efficiency Metal Engraving Tool



Video

## E24 Inserts

- Toolholder P. 286
- Centralizer P. 285  
(Centralizer is necessary)



Tolerances (mm)  
D :  $\begin{matrix} +0.0 \\ -0.02 \end{matrix}$  AE :  $\begin{matrix} +0.01 \\ -0.02 \end{matrix}$

| Dimensions (mm) |   |     |       |
|-----------------|---|-----|-------|
| D               | L | AE  | Angle |
| 8.2             | 4 | 2.0 | 60°   |

| Inserts                                                                             | Order Code    | Grades  |      |      |     |     |        |      |          | Toolholder | Centralizer |         |
|-------------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|------------|-------------|---------|
|                                                                                     |               | Carbide |      |      |     |     | Cermet |      | Uncoated |            |             |         |
|                                                                                     |               | C125    | B100 | C350 | F20 | F30 | CE100  | CE60 | K10      |            |             | CE      |
|  | E24-0802-60-E |         | ★    |      |     |     |        |      |          |            | TU1-0808    | GA-0814 |

★ All Materials

- Recommend cutting data : Vc:100m/min ( Aluminum Vc:500m/min), Fn(0.01-0.03mm/rev)

# Recommended Cutting Data And Insert Grade

- Center Drill recommended cutting speed, Vc(m/min), fz( mm/ tooth).  
The effective no. of teeth is calculated with 1 flute.

| Material group |  Cutting Speed<br>Vc(m/min) | CNC lathe M/C<br>Vc(m/min) | fn(mm/rev)   |              | Grades |     |
|----------------|--------------------------------------------------------------------------------------------------------------|----------------------------|--------------|--------------|--------|-----|
|                |                                                                                                              |                            | D1:1.5~2.5mm | D1:3~10mm    | ME     | E   |
| 1-2            | 15-20                                                                                                        | 50-120                     | 0.03<br>0.06 | 0.05<br>0.10 | B350   | -   |
| 3              | 12-18                                                                                                        |                            | 0.03<br>0.06 | 0.05<br>0.10 | B350   | -   |
| 4-5-6          | 10-15                                                                                                        |                            | 0.03<br>0.06 | 0.05<br>0.10 | B350   | -   |
| 7              | 5-10                                                                                                         | 22-30                      | 0.03<br>0.06 | 0.05<br>0.08 | B350   | -   |
| 8-9            | 8-12                                                                                                         |                            | 0.03<br>0.06 | 0.05<br>0.09 | B350   | -   |
| 10-11          | 5-10                                                                                                         |                            | 0.03<br>0.06 | 0.03<br>0.08 | B350   | -   |
| 12-13          | 20-25                                                                                                        | 60-80                      | 0.05<br>0.08 | 0.06<br>0.13 | B350   | -   |
| 14-15          | 15-20                                                                                                        |                            | 0.05<br>0.08 | 0.06<br>0.13 | B350   | -   |
| 16-18          | 30-50                                                                                                        | 300-800                    | 0.05<br>0.08 | 0.06<br>0.13 | -      | K10 |

Center Drill

## Surface Finishing Test Result

|          |                        |                                                                                                         |
|----------|------------------------|---------------------------------------------------------------------------------------------------------|
| Holder   | TU-1010-100            | <b>Mitutoyo</b><br>日期 2017/07/05<br>時間 09:20:32<br>Ra 0.360 μm<br>Rmax 2.056 μm                         |
| Insert   | 24-100225-60-ME, B100  |                                                                                                         |
| S        | 1600 min <sup>-1</sup> |                                                                                                         |
| f        | 0.05 mm/rev            | <b>Mitutoyo</b><br>SURFTEST<br>BJ-410<br>日期 2017/07/05<br>時間 09:20:32<br>Ra 14.16 μin<br>Rmax 80.94 μin |
| Material | ScM440                 |                                                                                                         |



# TRY ME BOX



**1 shank + 2 inserts +  
1 Centralizer gauge**

Available sizes in A24 inserts :  
1.6/2.0/2.5/3.0/4.0/5.0/6.0mm

| Order Code   | Description           | Type                                                                                         | Quantity |
|--------------|-----------------------|----------------------------------------------------------------------------------------------|----------|
| CD081620B350 | TU1-0808-60           | Shank: 8mm-60L                                                                               | 1        |
|              | A24-080216-60-ME,B350 | Insert: 1,6mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | A24-080220-60-ME,B350 | Insert: 2,0mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | GA-0814               | Centralizer                                                                                  | 1        |
| CD102530B350 | TU1-1010-65           | Shank: 10mm-65L                                                                              | 1        |
|              | A24-100225-60-ME,B350 | Insert: 2,5mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | A24-100230-60-ME,B350 | Insert: 3,0mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | GA-1016               | Centralizer                                                                                  | 1        |
| CD124050B350 | TU1-1212-65           | Shank: 12mm-65L                                                                              | 1        |
|              | A24-120340-60-ME,B350 | Insert: 4,0mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | A24-120350-60-ME,B350 | Insert: 5,0mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | GA-1218               | Centralizer                                                                                  | 1        |
| CD165060B350 | TU1-1616-70           | Shank: 16mm-70L                                                                              | 1        |
|              | A24-160350-60-ME,B350 | Insert: 5,0mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | A24-160360-60-ME,B350 | Insert: 6,0mm for <span>P</span> <span>M</span> <span>K</span> <span>S</span> <span>H</span> | 1        |
|              | GA-1622               | Centralizer                                                                                  | 1        |



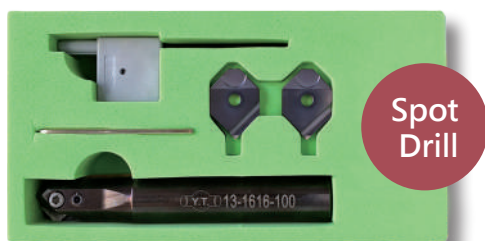
# Convenient Durable Efficiency

## 1 shank + 2 inserts

Available sizes in inserts 23 and A23 :

08/10/12/16mm

90° / 90° + 142°

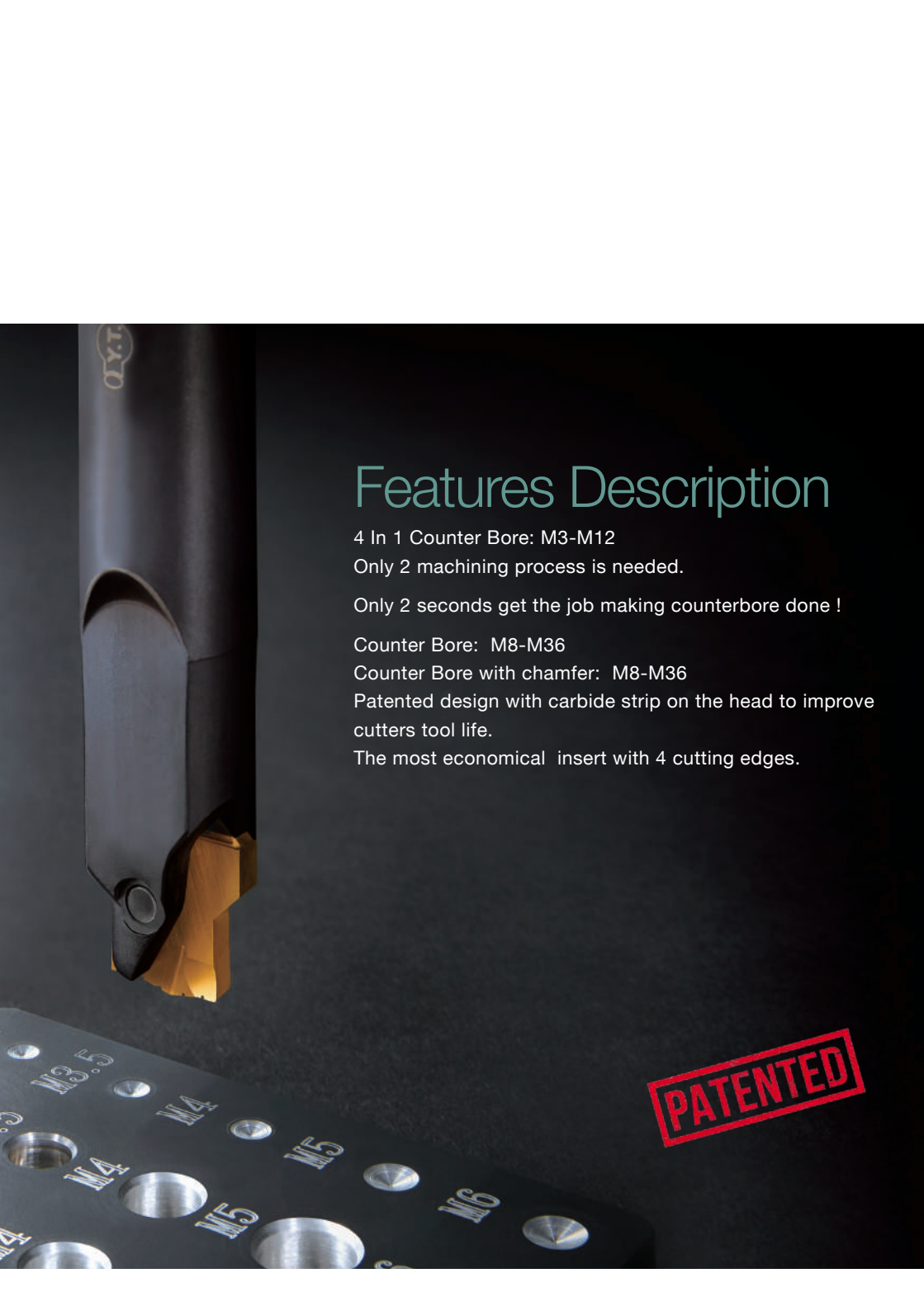


| Order Code    | Description         | Type                           | Quantity |
|---------------|---------------------|--------------------------------|----------|
| SD0823A23B350 | 13-0808-60          | Shank: 8mm-60L                 | 1        |
|               | 23-0802-90-ME,B350  | Insert: 90° for P M S H        | 1        |
|               | A23-0802-M4-ME,B350 | Insert: 90° + 142° for P M S H | 1        |
| SD1023A23B350 | 13-1010-65          | Shank: 10mm-65L                | 1        |
|               | 23-1002-90-ME,B350  | Insert: 90° for P M S H        | 1        |
|               | A23-1002-M5-ME,B350 | Insert: 90° + 142° for P M S H | 1        |
| SD1223A23B350 | 13-1212-80          | Shank: 12mm-80L                | 1        |
|               | 23-1203-90-ME,B350  | Insert: 90° for P M S H        | 1        |
|               | A23-1203-M6-ME,B350 | Insert: 90° + 142° for P M S H | 1        |
| SD1623A23B350 | 13-1616-100         | Shank: 16mm-100L               | 1        |
|               | 23-1603-90-ME,B350  | Insert: 90° for P M S H        | 1        |
|               | A23-1603-M8-ME,B350 | Insert: 90° + 142° for P M S H | 1        |



# COUNTER BORE SERIES





# Features Description

4 In 1 Counter Bore: M3-M12

Only 2 machining process is needed.

Only 2 seconds get the job making counterbore done !

Counter Bore: M8-M36

Counter Bore with chamfer: M8-M36

Patented design with carbide strip on the head to improve cutters tool life.

The most economical insert with 4 cutting edges.

**PATENTED**



# 4 IN 1 COUNTER BORE

**PATENTED**



Video

Patent No.  
M473882  
M474588  
M473881



Patent No.  
201310453057.2  
201320772697.5



PCT Priority

## Features

Available in  
materials



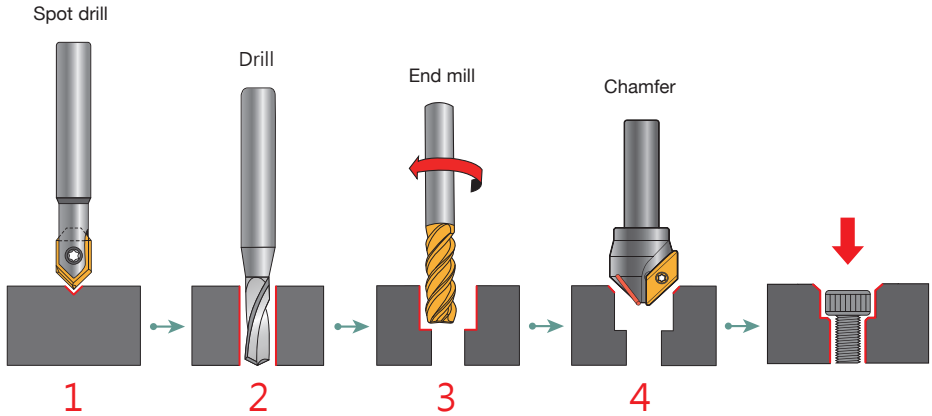
Cost  
**300~500%**  
SAVING

Applicable  
Machines  
Milling / Drilling  
/ Radial drilling

Efficiency  
**300%**  
UP

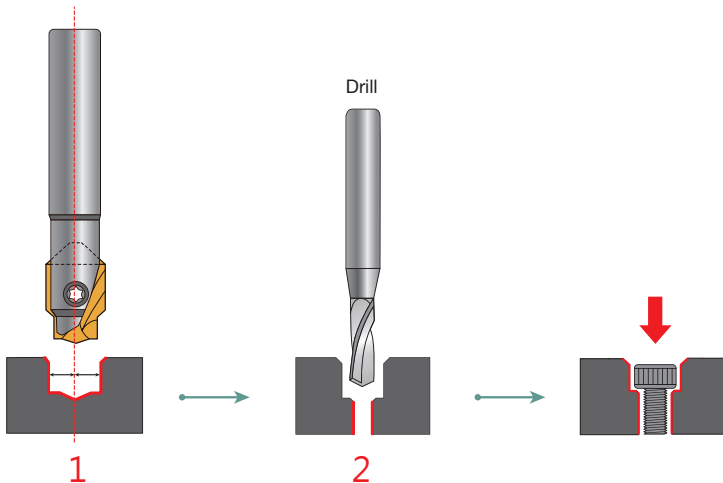
Durability  
**300%**  
UP

## Traditional Procedure: 5 Steps



## Innovative solution: 2 Steps

Get the job making counterbore within 2 seconds.



Counterbore

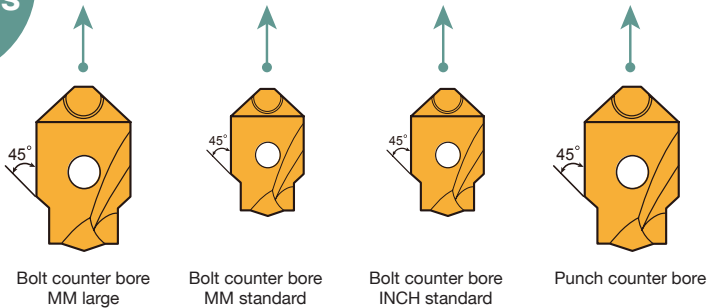
- Finish 4 operations in one.
- The center point is very accurate and does not deviate.



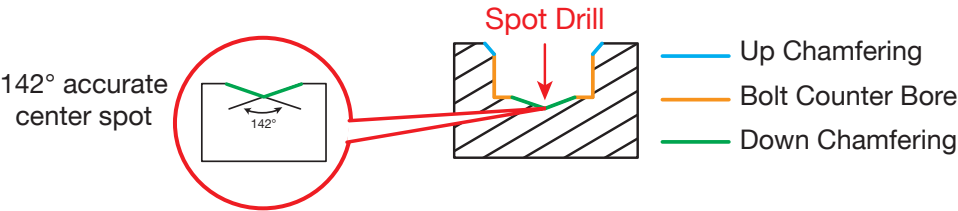
# Product Design

- The same shank fits max. 16 different inserts.

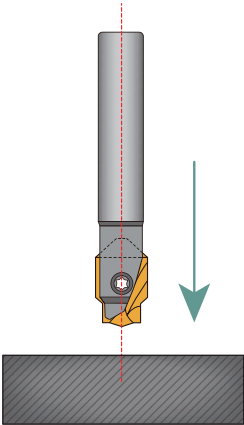
4 main functions



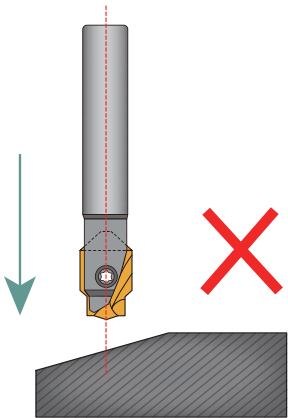
\* Screws M3~M12



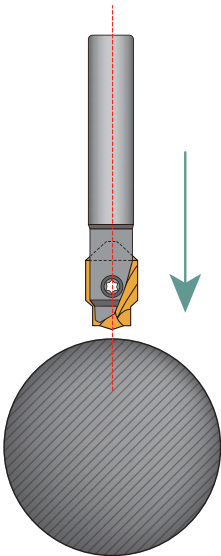
# Recommendations and constraints :



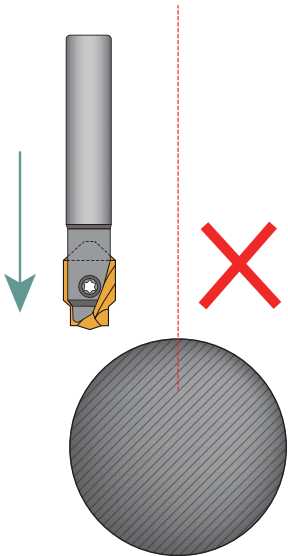
Suitable for vertical machining on flat surface.



It's not recommended to use 4 in 1 tool on inclined surface.

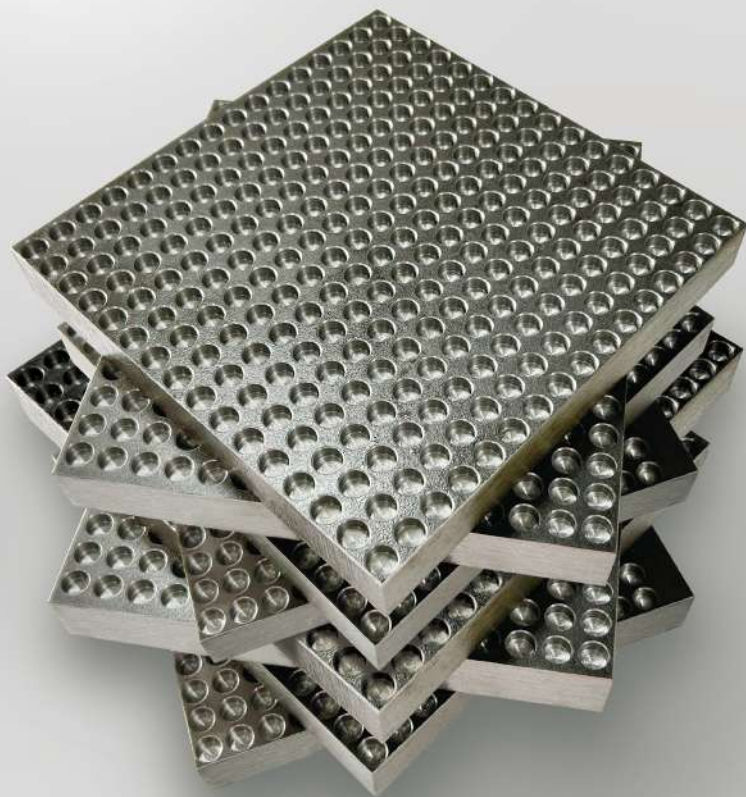


It can be used for round workpiece as long as it's center vertical alignment.



4 in 1 tool is not recommended to be used for curved surface or round workpiece when it's central misalignment.





Machining in M4 screw holes

**Testing information:**

Material: Steel S45C/ Vc: 50m/min/ Fz: 0.07 mm/ tooth

Toolholder: 14 -1004-80/ Insert: 26 -1004ST-M, B100

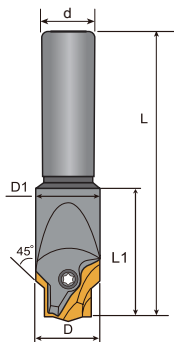
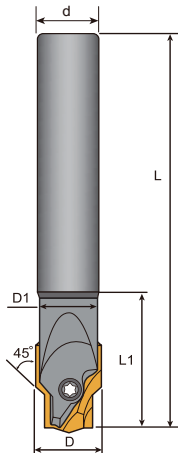
Toollife of one insert can machine 2100 holes

# PRODUCT SPECIFICATIONS

## 4 in 1 Counter Bore Shank

- Inserts P. 302 - 304
- Cutting Data P. 307

14



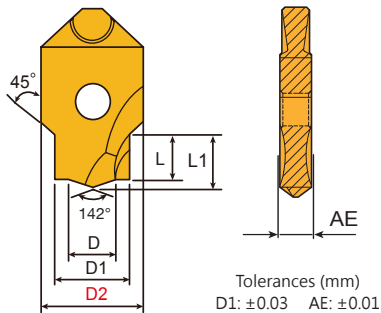
| Order Code  | Counterbore<br>Screw size | Ejector<br>Pin | Dimensions (mm) |      |    |     |    |  KG | Screw  | Key  |
|-------------|---------------------------|----------------|-----------------|------|----|-----|----|--------------------------------------------------------------------------------------|--------|------|
|             | MM                        | MM             | D               | D1   | d  | L   | L1 |                                                                                      |        |      |
| 14-0803-70  | 3.0                       | -              | 8               | 7.8  | 8  | 70  | 20 | 0.08                                                                                 | C02506 | T08P |
| 14-0803-90  |                           |                |                 |      |    | 90  |    | 0.09                                                                                 |        |      |
| 14-1004-80  | 4.0                       | 5.0            | 10              | 9.8  | 10 | 80  | 25 | 0.11                                                                                 | C03007 | T09P |
| 14-1004-100 |                           |                |                 |      |    | 100 |    | 0.12                                                                                 |        |      |
| 14-1206-80  | 5.0<br>6.0                | 6.0            | 12              | 11.5 | 12 | 80  |    | 0.12                                                                                 | C03008 | T09P |
| 14-1206-110 |                           |                |                 |      |    | 110 |    | 0.15                                                                                 |        |      |
| 14-1208-70  |                           |                |                 |      |    | 12  | 70 | 0.19                                                                                 | C03509 | T10P |
| 14-1608-100 | 8.0                       | 8.0<br>10.0    | 16              | 15.8 | 16 | 100 | 30 | 0.22                                                                                 |        |      |
| 14-1608-130 |                           |                |                 |      |    | 130 |    | 0.27                                                                                 |        |      |
| 14-1210-70  | 10                        | 13.0           | 20              | 19.7 | 20 | 70  | 35 | 0.19                                                                                 | C04011 | T15P |
| 14-2010-100 |                           |                |                 |      |    | 100 |    | 0.30                                                                                 |        |      |
| 14-2010-140 |                           |                |                 |      | 20 | 140 |    | 0.42                                                                                 |        |      |

Counterbore



# 4 in 1 Counter Bore Inserts

## MM / tandard size dimensions - DIN974



Inserts 6 PCS / Box  
Only for insert : D26 - 2010

Inserts 10 PCS / Box

| Dimensions (mm) |     |    |    |      |     | Counterbore<br>Screw size |
|-----------------|-----|----|----|------|-----|---------------------------|
| D               | D1  | D2 | L  | L1   | AE  | MM                        |
| 4               | 6.5 | 8  | 3  | 3.6  | 2   | M3.0                      |
| 5               | 8   | 10 | 4  | 4.8  | 2.5 | M4.0                      |
| 6               | 10  | 12 | 5  | 5.95 | 3   | M5.0                      |
| 7               | 11  |    | 6  | 7.1  |     | M6.0                      |
| 9.5             | 15  | 16 | 8  | 9.55 |     | M8.0                      |
| 11.5            | 18  | 20 | 10 | 11.9 | 3.5 | M10                       |

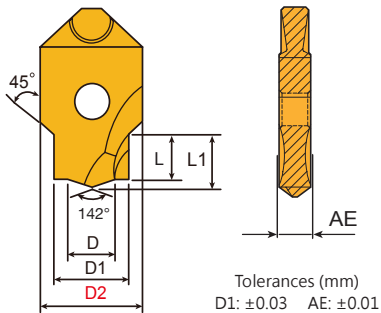
\* For other sizes, customization is acceptable.

| Inserts                                                                             | Order Code  | Grades  |      |      |     |     |        |       |          |     |    | Corresponding<br>shank                   |
|-------------------------------------------------------------------------------------|-------------|---------|------|------|-----|-----|--------|-------|----------|-----|----|------------------------------------------|
|                                                                                     |             | Carbide |      |      |     |     | Cermet |       | Uncoated |     |    |                                          |
|                                                                                     |             | B100    | C125 | C350 | F20 | F30 | CE25   | CE100 | CE60     | K10 | CE |                                          |
|  | D26-0803-E  |         |      |      |     |     |        |       |          |     |    | 14-0803-70<br>14-0803-90                 |
|                                                                                     | D26-0803-ME | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-0803T-M | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1004-E  |         |      |      |     |     |        |       |          |     |    | 14-1004-80<br>14-1004-100                |
|                                                                                     | D26-1004-ME | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1004T-M | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1205-E  |         |      |      |     |     |        |       |          |     |    | 14-1206-80<br>14-1206-110                |
|                                                                                     | D26-1205-ME | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1205T-M | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1206-E  |         |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1206-ME | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1206T-M | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1608-E  |         |      |      |     |     |        |       |          |     |    | 14-1208-70<br>14-1608-100<br>14-1608-130 |
|                                                                                     | D26-1608-ME | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-1608T-M | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-2010-E  |         |      |      |     |     |        |       |          |     |    | 14-1210-70<br>14-2010-100<br>14-2010-140 |
|                                                                                     | D26-2010-ME | ⊙       |      |      |     |     |        |       |          |     |    |                                          |
|                                                                                     | D26-2010T-M | ⊙       |      |      |     |     |        |       |          |     |    |                                          |

- ⊙ Cast Iron/ Stainless Steel / Super alloy    Aluminum    Steel/ Cast Iron/ Hardness steel
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: D26-0803-E, F20

# 4 in 1 Counter Bore Inserts

## MM / tandard size dimensions - JIS



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Inserts 6 PCS / Box  
 Only for insert : J 26 - 2010

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Inserts 10 PCS / Box

| Dimensions (mm) |      |    |    |      |     | Counterbore<br>Screw size |  |
|-----------------|------|----|----|------|-----|---------------------------|--|
| D               | D1   | D2 | L  | L1   | AE  | MM                        |  |
| 4               | 6.5  | 8  | 3  | 3.6  | 2   | M3.0                      |  |
| 5               | 8    | 10 | 4  | 4.8  | 2.5 | M4.0                      |  |
| 6               | 9.5  | 12 | 5  | 5.95 | 3   | M5.0                      |  |
| 7               | 11   |    | 6  | 7.1  |     | M6.0                      |  |
| 9.5             | 14   | 16 | 8  | 9.55 |     | M8.0                      |  |
| 11.5            | 17.5 | 20 | 10 | 11.9 | 3.5 | M10                       |  |

\* For other sizes, customization is acceptable.

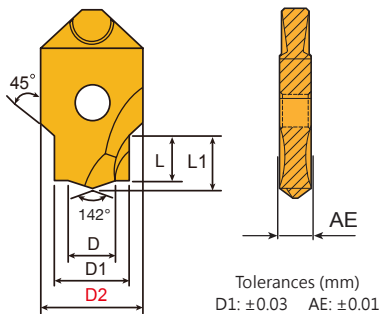
| Inserts                                                                             | Order Code  | Grades  |      |      |     |     |        |       |      |          |    | Corresponding shank                      |
|-------------------------------------------------------------------------------------|-------------|---------|------|------|-----|-----|--------|-------|------|----------|----|------------------------------------------|
|                                                                                     |             | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |                                          |
|                                                                                     |             | B100    | C125 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                          |
|  | J26-0803-E  |         |      |      |     |     |        |       |      |          |    | 14-0803-70<br>14-0803-90                 |
|                                                                                     | J26-0803-ME | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-0803T-M | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1004-E  |         |      |      |     |     |        |       |      |          |    | 14-1004-80<br>14-1004-100                |
|                                                                                     | J26-1004-ME | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1004T-M | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1205-E  |         |      |      |     |     |        |       |      |          |    | 14-1206-80<br>14-1206-110                |
|                                                                                     | J26-1205-ME | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1205T-M | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1206-E  |         |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1206-ME | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1206T-M | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1608-E  |         |      |      |     |     |        |       |      |          |    | 14-1208-70<br>14-1608-100<br>14-1608-130 |
|                                                                                     | J26-1608-ME | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-1608T-M | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-2010-E  |         |      |      |     |     |        |       |      |          |    | 14-1210-70<br>14-2010-100<br>14-2010-140 |
|                                                                                     | J26-2010-ME | ⊙       |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | J26-2010T-M | ⊙       |      |      |     |     |        |       |      |          |    |                                          |

- ⊙ Cast Iron/ Stainless Steel / Super alloy    Aluminum    Steel/ Cast Iron/ Hardness steel
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: J26-0803-E, F20





# 4 in 1 Ejector Pin Counter Bore Inserts



Inserts 6 PCS / Box  
Only for insert : 27-2013T

Inserts 10 PCS / Box

| Dimensions (mm) |    |    |   |      |     | Ejector Pin Screw Size |
|-----------------|----|----|---|------|-----|------------------------|
| D               | D1 | D2 | L | L1   | AE  | MM                     |
| 5.5             | 9  | 10 | 5 | 5.85 | 2.5 | 5.0                    |
| 6.5             | 10 | 12 |   | 6.05 | 3.0 | 6.0                    |
| 8.5             | 12 | 16 |   | 6.40 |     | 8.0                    |
| 10.5            | 14 |    |   | 6.75 |     | 10                     |
| 13.5            | 17 | 20 |   | 7.25 | 3.5 | 13                     |

\* For other sizes, customization is acceptable.

| Inserts                                                                             | Order Code | Grades  |      |      |     |     |        |       |      |          |    | Corresponding shank                      |
|-------------------------------------------------------------------------------------|------------|---------|------|------|-----|-----|--------|-------|------|----------|----|------------------------------------------|
|                                                                                     |            | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |                                          |
|                                                                                     |            | B100    | C125 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                          |
|  | 27-1005T-M |         |      |      |     |     |        |       |      |          |    | 14-1004-80<br>14-1004-100                |
|                                                                                     | 27-1206T-M |         |      |      |     |     |        |       |      |          |    | 14-1206-80<br>14-1206-110                |
|                                                                                     | 27-1608T-M |         |      |      |     |     |        |       |      |          |    | 14-1208-70<br>14-1608-100<br>14-1608-130 |
|                                                                                     | 27-1610T-M |         |      |      |     |     |        |       |      |          |    |                                          |
|                                                                                     | 27-2013T-M |         |      |      |     |     |        |       |      |          |    | 14-1210-70<br>14-2010-100<br>14-2010-140 |

- Steel/ Cast Iron/ Hardness steel
- Prices and stocks are based on present conditions
- Please specify model numbers the and grade of inserts, ie.: 27-1005T-M, B100

# Applicable Machine And Tools

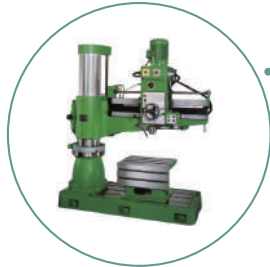
Suitable for various kinds of machines



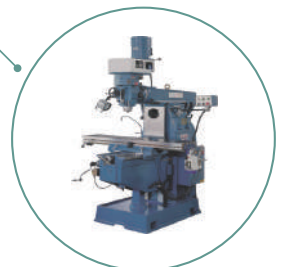
A. Drilling Machine



B. CNC Milling Machine



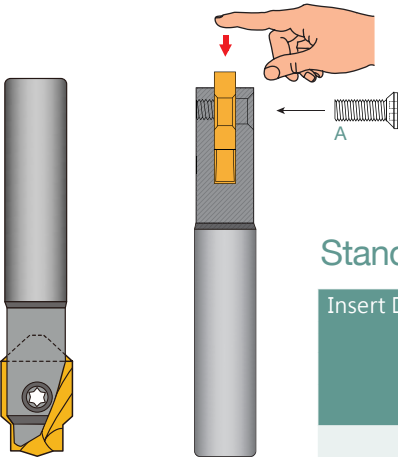
C. Radial Drilling Machine



D. Traditional Milling Machine



# How to Fit Insert - Screw A



## Screwing the Inserts

- Step 1:
- Slot the insert into the shank and push it against the bottom
  - Fully tighten the screw A

## Standard spare parts

| Insert Dimension D2 (mm)<br> | Screw A<br> | Key<br> |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 8                                                                                                             | C02506                                                                                       | T08P                                                                                     |
| 10                                                                                                            | C03007                                                                                       | T09P                                                                                     |
| 12                                                                                                            | C03008                                                                                       |                                                                                          |
| 16                                                                                                            | C03509                                                                                       | T10P                                                                                     |
| 20                                                                                                            | C04011                                                                                       | T15P                                                                                     |

# Solving chips entanglement issue:

1. Can using peck drilling (Setting the Program on "Q" at 1mm-3mm below).
  2. Reversing the spindle after hole machining (See below for Program settings).
- These 2 ways can be resolve the chips entanglement issue, help the tool keep a good toolife.

## Spindle Reversal Operation Instructions :

G83 X\_Y\_Z\_Q\_R\_F\_;

M04



Spindle ON  
Counterclockwise

G04



Pause time

X2.0 ;



Pause time

M03 ;



Spindle ON Clockwise

Video for reference



# Cutting Data And Screw Size

| Screw size | Steel ( P )                   |               |                     | Stainless steel ( M )         |               |                     | Non-ferrous metals ( N )      |               |                     |
|------------|-------------------------------|---------------|---------------------|-------------------------------|---------------|---------------------|-------------------------------|---------------|---------------------|
| Unit       | Cutting Speed Vc 50 / Fn 0.07 |               |                     | Cutting Speed Vc 15 / Fn 0.05 |               |                     | Cutting Speed Vc 100/ Fn 0.20 |               |                     |
|            | S<br>(rev/min)                | F<br>(mm/min) | One pocket<br>(sec) | S<br>(rev/min)                | F<br>(mm/min) | One pocket<br>(sec) | S<br>(rev/min)                | F<br>(mm/min) | One pocket<br>(sec) |
| M3 (D6.5)  | 2450                          | 172           | 1.1                 | 735                           | 37            | 4.9                 | 4900                          | 980           | 0.2                 |
| M4 (D8.0)  | 1990                          | 140           | 1.8                 | 600                           | 30            | 8                   | 4000                          | 800           | 0.3                 |
| M5 (D10)   | 1600                          | 112           | 2.7                 | 480                           | 24            | 10                  | 3200                          | 640           | 0.5                 |
| M6 (D11)   | 1450                          | 102           | 3.6                 | 435                           | 22            | 16.5                | 2900                          | 580           | 0.7                 |
| M8 (D15)   | 1065                          | 75            | 6.4                 | 320                           | 16            | 30                  | 2150                          | 430           | 1.2                 |
| M10 (D18)  | 890                           | 63            | 9.7                 | 265                           | 13            | 46.5                | 1770                          | 354           | 1.7                 |

## Recommended Cutting Data And Insert Grade

The effective no. of teeth is calculated with 1 flute.

| Material group |  Cutting Speed Vc (m/min) | fn (mm/rev)  |              |              |               | Grades |      |      |
|----------------|------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|---------------|--------|------|------|
|                |                                                                                                            | 142°         |              |              |               | E      | ME   | M    |
|                |                                                                                                            | (D2)<br>8    | (D2)<br>10   | (D2)<br>12   | (D2)<br>16-20 |        |      |      |
| 1-2            | 50-70                                                                                                      | 0.06<br>0.08 | 0.06<br>0.08 | 0.07<br>0.09 | 0.07<br>0.09  | -      | -    | B100 |
| 3              | 50-70                                                                                                      | 0.06<br>0.08 | 0.06<br>0.08 | 0.07<br>0.09 | 0.07<br>0.09  | -      | -    | B100 |
| 4-5-6          | 45-60                                                                                                      | 0.05<br>0.07 | 0.05<br>0.07 | 0.06<br>0.08 | 0.06<br>0.08  | -      | -    | B100 |
| 7              | 25-30                                                                                                      | 0.04<br>0.06 | 0.04<br>0.06 | 0.05<br>0.07 | 0.05<br>0.07  | -      | -    | B100 |
| 8-9            | 35-45                                                                                                      | 0.06<br>0.08 | 0.06<br>0.08 | 0.07<br>0.09 | 0.07<br>0.09  | -      | B100 | -    |
| 10-11          | 35-40                                                                                                      | 0.05<br>0.07 | 0.05<br>0.07 | 0.06<br>0.08 | 0.06<br>0.08  | -      | B100 | -    |
| 12-13          | 70-90                                                                                                      | 0.12<br>0.15 | 0.12<br>0.15 | 0.13<br>0.16 | 0.13<br>0.16  | -      | B100 | -    |
| 14-15          | 60-80                                                                                                      | 0.11<br>0.14 | 0.11<br>0.14 | 0.12<br>0.15 | 0.12<br>0.15  | -      | B100 | -    |
| 16-18          | 100                                                                                                        | 0.14<br>0.19 | 0.14<br>0.19 | 0.15<br>0.20 | 0.15<br>0.20  | F20    | -    | -    |

• While applying it as a spot drill the RPM and FEED can be increased 50%.



# INDEXABLE COUNTER BORE

**PATENTED**



Video

## Features

Available in  
materials



Cost  
**300~500%**  
SAVING

Applicable  
type is  
available  
max. 300mm

Applicable  
Machines  
Milling / Drilling  
/ Radial drilling

Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

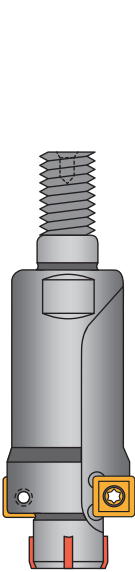
# Product Design



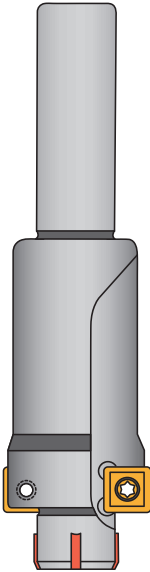
Counter bore tools application for bolts, nuts & screws

 Patent No. ZL 01 2 23413.3

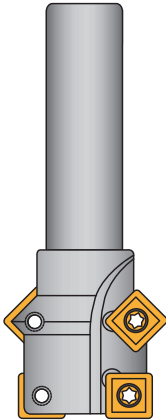
 PCT Priority



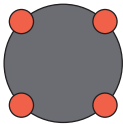
HBM



CBK



CBI

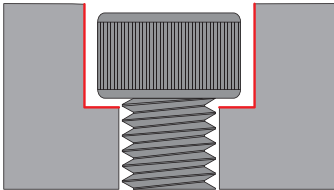


CBK

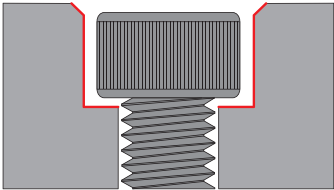
better cutter tool life  
with patented carbide strip

Counterbore

## Screw ranges M8~M36



counterbore



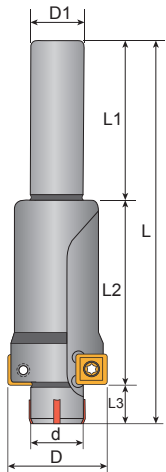
counterbore + chamfer



# PRODUCT SPECIFICATIONS

## Counterbore Toolholders

- Inserts P. 313
- Cutting Data P. 313



CBK

DIN 373

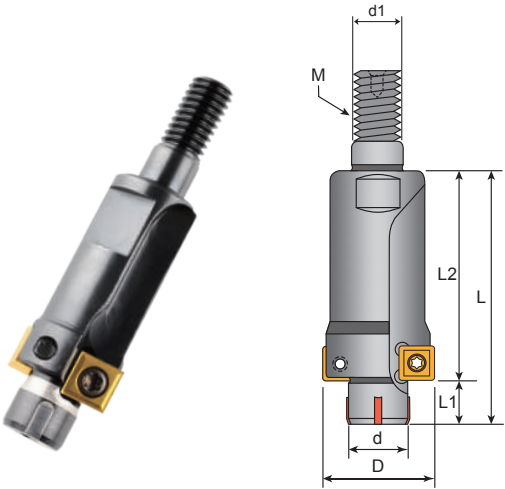
| Order code | Dimensions (mm) |      |      |    |    |    |    | Z |  KG | MAX RPM | Inserts SDET | Screw   | Key  |
|------------|-----------------|------|------|----|----|----|----|---|----------------------------------------------------------------------------------------|---------|--------------|---------|------|
|            | D               | d    | D1   | L  | L1 | L2 | L3 |   |                                                                                        |         |              |         |      |
| CBK-08     | 14              | 8.4  | 10   | 70 | 30 | 32 | 8  | 2 | 0.09                                                                                   | 25000   | 060208       | C025045 | T08P |
| CBK-08S    | 15              | 8.9  |      |    |    |    |    |   | 0.12                                                                                   |         |              |         |      |
| CBK-10     | 18              | 10.9 |      |    |    |    |    |   | 0.16                                                                                   |         |              |         |      |
| CBK-10S    | 20              | 13.4 |      |    |    |    |    |   | 0.20                                                                                   | 22000   | 09T308       | C04007  | T15P |
| CBK-12     | 22              |      |      |    |    |    |    |   |                                                                                        |         |              |         |      |
| CBK-12S    | 24              |      | 14.9 |    |    |    |    |   |                                                                                        |         |              |         |      |
| CBK-14     | 25              |      | 15.4 |    |    |    |    |   |                                                                                        |         |              |         |      |
| CBK-14S    | 26              | 17.4 | 12   | 80 | 35 | 37 |    |   | 0.24                                                                                   |         |              |         |      |
| CBK-16     | 27              |      |      |    |    |    |    |   | 17000                                                                                  | C04008  |              |         |      |
| CBK-16S    | 27              |      |      | 90 | 38 | 44 |    |   |                                                                                        |         |              |         |      |

\* Use on drilling machine.

# Counterbore Combi Cutters

- Inserts P. 313
- Cutting Data P. 313
- Combi Toolholders P. 350

HBM



DIN 373

| Order code | Dimensions (mm) |      |    |    |    |    |    | Z |  KG | MAX RPM | Inserts SDET | Screw  | Key  |
|------------|-----------------|------|----|----|----|----|----|---|----------------------------------------------------------------------------------------|---------|--------------|--------|------|
|            | D               | d    | L  | L1 | L2 | M  | d1 |   |                                                                                        |         |              |        |      |
| HBM-16     | 26              | 17.4 | 48 | 8  | 40 | 16 | 22 | 2 | 0.23                                                                                   | 17000   | 09T308       | C04008 | T15P |
| HBM-18     | 29              | 19.4 | 53 |    | 45 |    |    | 3 | 0.28                                                                                   |         |              |        |      |
| HBM-20     | 33              | 21.9 | 56 |    | 48 |    |    |   | 0.33                                                                                   |         |              |        |      |
| HBM-22     | 36              | 23.4 | 60 | 10 | 50 |    |    |   | 0.40                                                                                   | 15000   |              |        |      |
| HBM-24     | 40              | 25.9 | 62 |    | 52 |    |    |   | 0.47                                                                                   |         |              |        |      |
| HBM-30     | 50              | 32.9 |    |    |    |    |    |   | 0.56                                                                                   |         |              |        |      |
| HBM-36     | 58              | 38.8 |    |    |    |    |    |   | 0.65                                                                                   | 10000   |              |        |      |

\* Use on drilling machine.

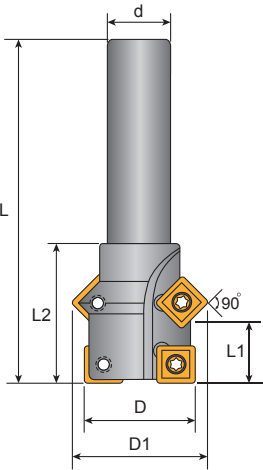
Counterbore





# Counterbore + Chamfer Toolholders

- Inserts P. 313
- Cutting Data P. 313



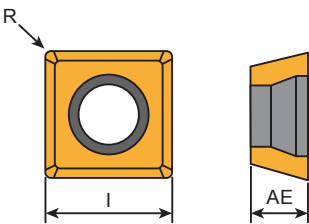
CBI

DIN 373

| Order Code | Dimensions (mm) |    |      |     |      |    | Z | Zc |  | MAX RPM | Inserts SDET | Screw   | Key  |       |        |
|------------|-----------------|----|------|-----|------|----|---|----|-------------------------------------------------------------------------------------|---------|--------------|---------|------|-------|--------|
|            | D               | d  | D1   | L   | L1   | L2 |   |    |                                                                                     |         |              |         |      |       |        |
| CBI-08     | 15              | 10 | 20.0 | 65  | 9    | 23 | 4 | 2  | 0.09                                                                                | 25000   | 060208       | C025045 | T08P |       |        |
| CBI-10     | 18              |    | 22.0 |     | 11   |    |   |    | 0.09                                                                                |         |              |         |      |       |        |
| CBI-12     | 20              |    | 23.8 |     | 13   |    |   |    | 0.12                                                                                |         |              |         |      |       |        |
| CBI-14     | 24              | 12 | 31.4 | 70  | 15   | 30 |   |    | 0.17                                                                                | 22000   | 09T308       | C04007  | T15P |       |        |
| CBI-16     | 26              |    | 33.4 |     | 16.5 | 33 |   |    | 0.20                                                                                |         |              |         |      | 17000 | C04008 |
| CBI-18     | 29              | 16 | 35.4 | 80  | 19.5 | 36 |   |    | 0.25                                                                                | 16000   |              | C04011  |      |       |        |
| CBI-20     | 33              |    | 37.4 |     | 21   |    |   |    | 0.27                                                                                |         |              |         |      |       |        |
| CBI-22     | 36              | 20 | 40.4 | 90  | 23.5 | 40 |   |    | 0.41                                                                                | 15000   |              |         |      |       |        |
| CBI-24     | 40              |    | 44.4 |     | 25   | 43 |   |    | 0.45                                                                                |         |              |         |      |       |        |
| CBI-30     | 50              | 25 | 53.4 | 100 | 34   | 50 | 6 | 3  | 0.71                                                                                | 14000   |              |         |      |       |        |
| CBI-36     | 58              |    | 61.4 | 110 | 38   | 60 |   |    | 0.94                                                                                |         |              |         |      |       |        |

\* Use on CNC machine.

# SDET Inserts



Tolerances (mm)  
 I AE  
 ±0,03 ±0,025



Inserts 10 PCS / Box

| Code   | Dimensions (mm) |      |     |
|--------|-----------------|------|-----|
|        | I               | AE   | R   |
| 060208 | 6.0             | 2.3  | 0.3 |
| 09T308 | 9.0             | 3.97 | 0.5 |

| Inserts | Order Code      | Grades  |      |      |     |     |              |      |  |          |    |
|---------|-----------------|---------|------|------|-----|-----|--------------|------|--|----------|----|
|         |                 | Carbide |      |      |     |     | Metal cermet |      |  | Uncoated |    |
|         |                 | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 |  | K10      | CE |
|         | SDET060208N-ME  |         |      |      |     |     |              |      |  |          |    |
|         | SDET09T308TN-M  |         |      |      |     |     |              |      |  |          |    |
|         | SDET09T308TN-ME |         |      |      |     |     |              |      |  |          |    |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on presen conditions
- Please specify model numbers the and grade of inserts, ie.: SDET060208N-ME,B100

## Recommended Cutting Data and Grade

- Recommended Cutting Speed, Vc(m/min), fz(mm/ tooth)

| Material group | Cutting Speed Vc (m/min) | fz (mm/tooth) |              | Insert Grade Selection |      |
|----------------|--------------------------|---------------|--------------|------------------------|------|
|                |                          | M8 - M12      | M14 - M36    | M                      | ME   |
| 1-2            | 40-70                    | 0.05<br>0.08  | 0.06<br>0.10 | B100                   | B100 |
| 3              | 35-60                    | 0.05<br>0.08  | 0.06<br>0.10 | B100                   | B100 |
| 4-5-6          | 30-55                    | 0.04<br>0.06  | 0.05<br>0.08 | B100                   | B100 |
| 7              | 20-30                    | 0.03<br>0.05  | 0.04<br>0.06 | B100                   | B100 |
| 12-13          | 40-70                    | 0.06<br>0.08  | 0.08<br>0.10 | F30                    | F30  |
| 14-15          | 35-65                    | 0.06<br>0.08  | 0.08<br>0.10 | F30                    | F30  |



# CHAMFER KING SERIES



Video

# Features Description

The indexable countersink with carbide insert can be used in all kinds of machines, include drilling machine, electric hand tool...etc. The patented unique design "carbide strip" enhance the cutter tool life. Available from  $\varnothing 4$  -  $\varnothing 110$  mm.



# INDEXABLE CHAMFER KING

**PATENTED**



Video

## Features

Available in  
materials



Cost  
**300~500%**  
SAVING

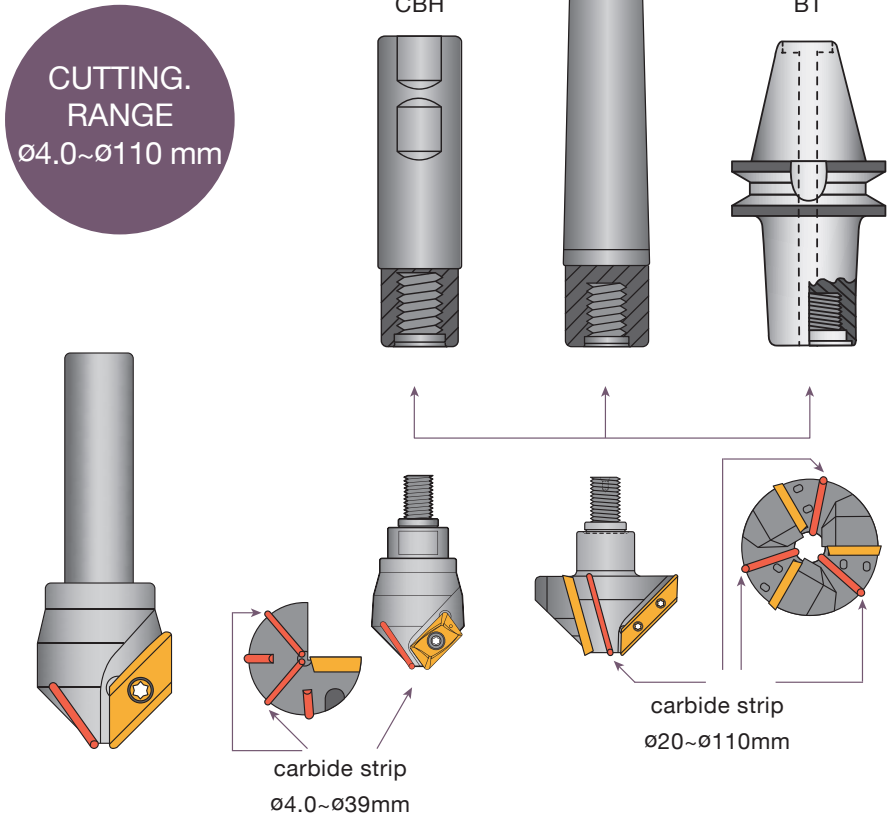
Adapter  
type is  
available  
max. 300mm

Applicable  
Machines  
Milling / drilling  
/ lathe / electric  
hand tool

Efficiency  
**300%**  
UP

Durability  
**500~1000%**  
UP

## Product Design



### Carbide Strip Cutter With Carbide Inserts:

- Special design for unstable drilling machines and electric drills. It's working well even in lower RPM.
- Carbide strips support better tool life.
- The carbide insert performs a better tool life. It was designed with 2 cutting edges, one insert grade suitable for all materials, tend to be more economical.
- Patented carbide strip cutter design provides an excellent chamfering surface.



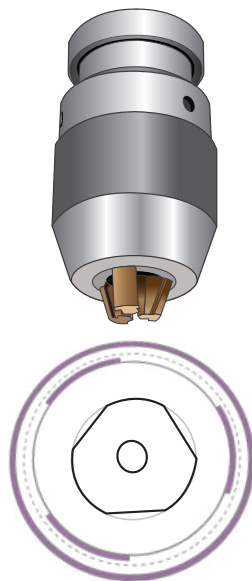


## New coming shank

The shank with three flat designs is more suitable for drilling machine (three-jaw chuck) which achieves stable clamping and longer tool life.

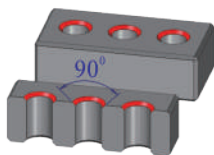


▲ Optimal surface finishing



▲ Top view of the shank

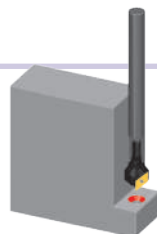
## Geometries Application



Standard chamfer with 90°



- Excellent Design
- No burrs.



Chamfer cutter with longer shank

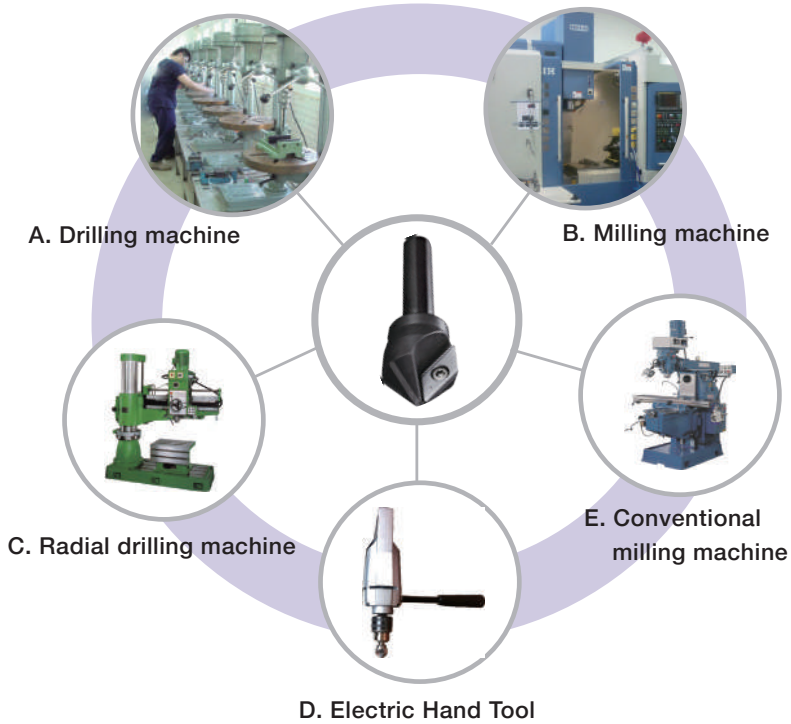


Chamfer with 120° used for tap holes, which reduce the loss of threads.



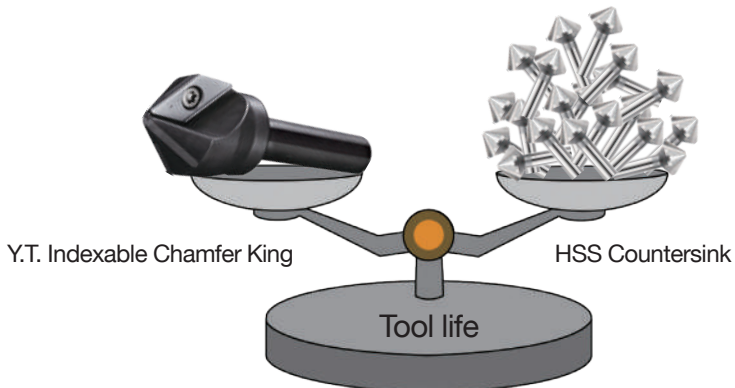
Chamfer with 60° used for deburring before "pin". 60° chamfer is easier than 90° or 120° to locate the pin.

# Applicable Machine And Tools



## Cost Effective Solution

Coated carbide insert provides excellent tool life. Insert with 2 cutting edges maximizes tool cost-saving.





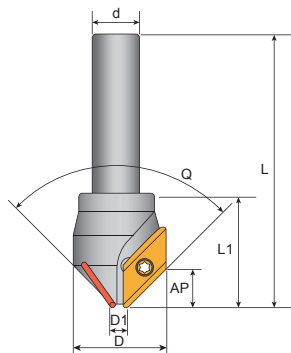
# PRODUCT SPECIFICATIONS

## Chamfer King Toolholders

- Inserts P. 324
- Cutting Data P. 325 - 326

CI

- 60°



| Order Code | Dimensions (mm) |    |    |    |     |    | Q   | Z |  KG | MAX RPM | Inserts XDGT | Screw  | Key  |
|------------|-----------------|----|----|----|-----|----|-----|---|--------------------------------------------------------------------------------------|---------|--------------|--------|------|
|            | D1              | D  | d  | L  | AP  | L1 |     |   |                                                                                      |         |              |        |      |
| CI-17-60°  | 7               | 17 | 10 | 65 | 8.5 | 27 | 60° | 1 | 0.12                                                                                 | 35000   | 120308       | C03506 | T10P |
| CI-31-60°  | 15.5            | 31 | 12 | 78 | 13  | 35 |     |   | 0.24                                                                                 | 25000   | 190408       | C04008 | T15P |

- 90°

| Order Code   | Dimensions (mm) |    |    |    |    |    | Q   | Z |  KG | MAX RPM | Inserts<br>ADGT/XDGT | Screw   | Key  |
|--------------|-----------------|----|----|----|----|----|-----|---|--------------------------------------------------------------------------------------|---------|----------------------|---------|------|
|              | D1              | D  | d  | L  | AP | L1 |     |   |                                                                                      |         |                      |         |      |
| CI-12-90°    | 4               | 10 | 10 | 60 | 3  | 14 | 90° | 1 | 0.08                                                                                 | 45000   | 060204               | C018035 | T06P |
| CI-12-90° L  |                 |    |    | 90 |    |    |     |   | 0.10                                                                                 |         |                      |         |      |
| CI-22-90°    | 5.5             | 22 |    | 65 | 8  | 27 |     |   | 0.14                                                                                 | 35000   | 120308               | C03506  | T10P |
| CI-36-90°    | 15              | 36 | 12 | 78 | 10 | 38 |     | 2 | 0.32                                                                                 | 25000   | 190408               | C04008  | T15P |
| CI-36-90° -2 |                 |    |    |    |    |    |     |   | 0.33                                                                                 |         |                      |         |      |

- 100°

| Order Code    | Dimensions(mm) |    |    |    |     |    | Q    | Z |  KG | MAX RPM | Inserts ADGT/XDGT | Screw   | Key  |
|---------------|----------------|----|----|----|-----|----|------|---|----------------------------------------------------------------------------------------|---------|-------------------|---------|------|
|               | D1             | D  | d  | L  | AP  | L1 |      |   |                                                                                        |         |                   |         |      |
| CI-12-100°    | 4              | 10 | 10 | 60 | 3   | 14 | 100° | 1 | 0.05                                                                                   | 45000   | 060204            | C018035 | T06P |
| CI-24-100°    | 5              | 24 |    | 65 | 7.5 | 27 |      |   | 0.15                                                                                   | 35000   | 120308            | C03506  | T10P |
| CI-38-100°    | 15             | 38 | 12 | 78 | 10  | 38 |      |   | 0.40                                                                                   | 25000   | 190408            | C04008  | T15P |
| CI-38-100° -2 |                |    |    |    |     |    |      | 2 | 0.41                                                                                   |         |                   |         |      |

- 120°

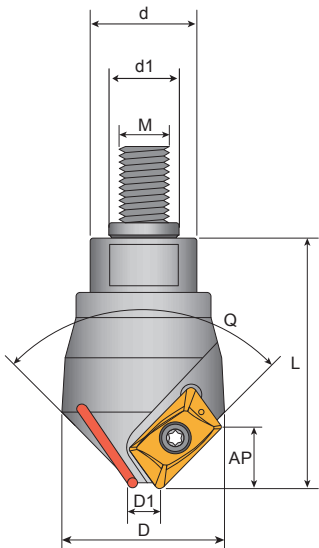
| Order Code | Dimensions (mm) |    |    |    |    |    | Q    | Z |  KG | MAX RPM | Inserts XDGT | Screw  | Key  |
|------------|-----------------|----|----|----|----|----|------|---|----------------------------------------------------------------------------------------|---------|--------------|--------|------|
|            | D1              | D  | d  | L  | AP | L1 |      |   |                                                                                        |         |              |        |      |
| CI-26-120° | 7               | 26 | 10 | 65 | 5  | 27 | 120° | 1 | 0.18                                                                                   | 35000   | 120308       | C03506 | T10P |
| CI-39-120° | 11              | 39 | 12 | 78 | 8  | 35 |      |   | 0.36                                                                                   | 25000   | 190408       | C04008 | T15P |

- Insert is included with purchase of a chamfer king.

# Chamfer King Toolholders

- Combi holders P. 323
- Inserts P. 324
- Cutting Data P. 325 - 326

## HCI



• 60°

| Order Code | Dimensions (mm) |    |    |     |    |     |   | Q   | Z |  KG | MAX RPM | Inserts XDGT | Screw  | Key  |
|------------|-----------------|----|----|-----|----|-----|---|-----|---|--------------------------------------------------------------------------------------|---------|--------------|--------|------|
|            | D1              | D  | d  | d1  | L  | AP  | M |     |   |                                                                                      |         |              |        |      |
| HCI-17-60° | 7               | 17 | 12 | 6.5 | 37 | 8.5 | 6 | 60° | 1 | 0.12                                                                                 | 35000   | 120308       | C03506 | T10P |
| HCI-31-60° | 15.5            | 31 | 16 | 8.5 | 45 | 13  | 8 |     |   | 0.24                                                                                 | 25000   | 190408       | C04008 | T15P |

• 90°

| Order Code | Dimensions(mm) |    |    |     |    |    |   | Q   | Z |  KG | MAX RPM | Inserts ADGT/XDGT | Screw   | Key  |
|------------|----------------|----|----|-----|----|----|---|-----|---|----------------------------------------------------------------------------------------|---------|-------------------|---------|------|
|            | D1             | D  | d  | d1  | L  | AP | M |     |   |                                                                                        |         |                   |         |      |
| HCI-12-90° | 4              | 10 | 10 | 6.5 | 24 | 3  | 6 | 90° | 1 | 0.08                                                                                   | 45000   | 060204            | C018035 | T06P |
| HCI-22-90° | 5.5            | 22 | 12 |     | 37 | 8  |   |     |   | 0.14                                                                                   | 35000   | 120308            | C03506  | T10P |
| HCI-36-90° | 15             | 36 | 16 | 8.5 | 48 | 10 |   |     |   | 0.32                                                                                   | 25000   | 190408            | C04008  | T15P |

• 120°

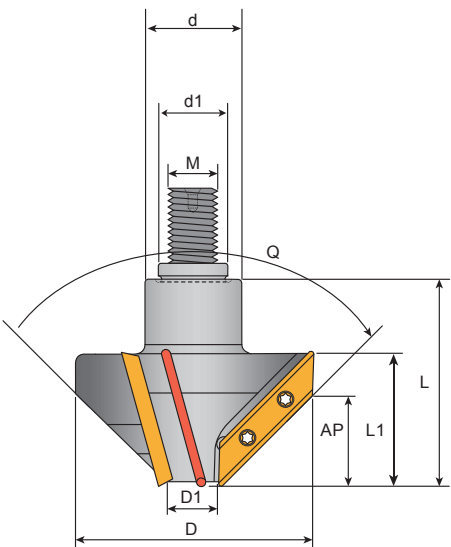
| Order Code  | Dimensions(mm) |    |    |     |    |    |   | Q    | Z |  KG | MAX RPM | Inserts XDGT | Screw  | Key  |
|-------------|----------------|----|----|-----|----|----|---|------|---|----------------------------------------------------------------------------------------|---------|--------------|--------|------|
|             | D1             | D  | d  | d1  | L  | AP | M |      |   |                                                                                        |         |              |        |      |
| HCI-26-120° | 7              | 26 | 12 | 6.5 | 37 | 5  | 8 | 120° | 1 | 0.18                                                                                   | 35000   | 120308       | C03506 | T10P |
| HCI-39-120° | 11             | 39 | 16 | 8.5 | 45 | 8  |   |      |   | 0.36                                                                                   | 25000   | 190408       | C04008 | T15P |

• Insert is included with purchase of a chamfer king.



# Chamfer King Toolholders

- Combi holders P. 323
- Inserts P. 324
- Cutting Data P. 325 - 326



HCI

- 90°

| Order Code  | Dimensions (mm) |     |    |    |    |    |    |    |     | Z |  KG | MAX RPM | Inserts XDGT | Screw  | Key  |
|-------------|-----------------|-----|----|----|----|----|----|----|-----|---|--------------------------------------------------------------------------------------|---------|--------------|--------|------|
|             | D1              | D   | d  | d1 | L  | AP | L1 | M  | Q   |   |                                                                                      |         |              |        |      |
| HCI-76-90°  | 20              | 76  | 30 | 22 | 65 | 28 | 41 | 16 | 90° | 3 | 0.85                                                                                 | 13700   | 400408       | C04008 | T15P |
| HCI-110-90° | 55              | 110 |    |    |    |    |    |    |     |   | 1.55                                                                                 | 10900   |              |        |      |

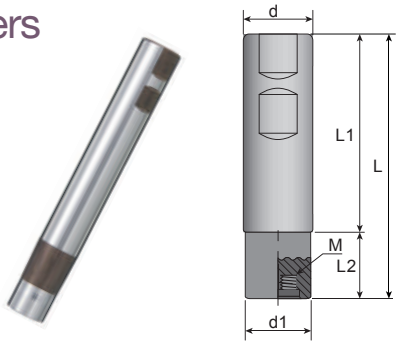
## Note:

- For clunker radial drilling machine which is too stiff to position at the hole center of workpiece it might cause vibration and poor surface finishing during machining.
- For workpieces which are heavy and difficult to align the toolcenter, it might cause vibration and results in chatter marks on the chamfering surface.



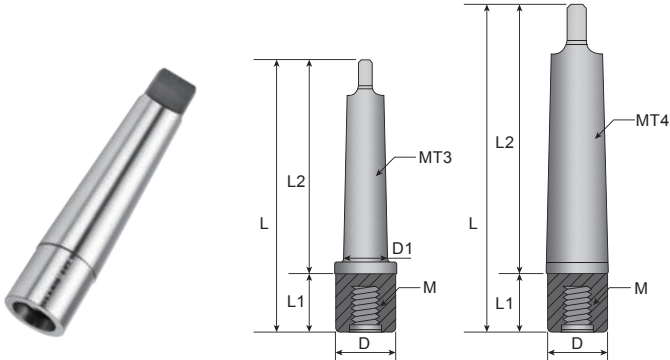
# Chamfer King Combi Toolholders

## CBH



| Order Code   | Dimensions (mm) |    |     |    |     |     |      |
|--------------|-----------------|----|-----|----|-----|-----|------|
|              | d               | d1 | L1  | L2 | L   | M   | KG   |
| CBH-1009-100 | 10              | 9  | 60  | 20 | 80  | M6  | 0.05 |
| CBH-1211-120 | 12              | 11 | 80  |    | 100 |     | 0.09 |
| CBH-1211-140 |                 |    | 100 |    | 120 |     | 0.11 |
| CBH-1616-100 | 16              | 16 | -   | -  | 70  | M8  | 0.11 |
| CBH-1615-120 |                 | 15 | 70  | 20 | 90  |     | 0.14 |
| CBH-1615-150 |                 |    | 95  | 25 | 120 |     | 0.18 |
| CBH-3232-120 | 32              | 32 | -   | -  | 80  | M16 | 0.48 |
| CBH-3230-140 |                 | 30 | 80  | 20 | 100 |     | 0.56 |
| CBH-3230-200 |                 |    | 130 | 30 | 160 |     | 0.92 |
| CBH-3230-240 |                 |    | 170 |    | 200 |     | 1.16 |
| CBH-3230-300 |                 |    | 210 | 50 | 260 |     | 1.53 |

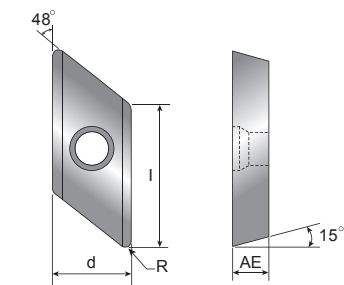
## MTH



| Order Code | Dimensions (mm) |       |     |    |     |     |    |      |
|------------|-----------------|-------|-----|----|-----|-----|----|------|
|            | D               | D1    | L   | L1 | L2  | M   | MT | KG   |
| MTH-3      | 30              | 23.83 | 140 | 40 | 100 | M16 | 3  | 0.50 |
| MTH-4      | 31.6            | -     | 165 |    | 125 | M16 | 4  | 0.60 |



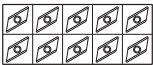
# XDGT Chamfer King Insert



## Tolerances (mm)

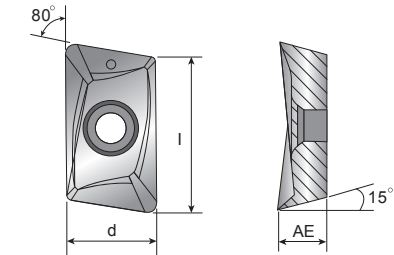
d            AE  
±0.015    ±0.015

| Code   | Dimensions (mm) |       |      |     |       |
|--------|-----------------|-------|------|-----|-------|
|        | l               | d     | AE   | R   | Angle |
| 120308 | 13              | 8.3   | 3.10 | 0.8 | 48°   |
| 190408 | 16              | 10.45 | 4.45 |     |       |
| 400408 | 40              |       | 4.70 |     |       |

| Inserts                                                                           | Order Code        | Grades |      |      |     |     |        |       |      |          |    |                           |
|-----------------------------------------------------------------------------------|-------------------|--------|------|------|-----|-----|--------|-------|------|----------|----|------------------------------------------------------------------------------------------------------------|
|                                                                                   |                   | Coated |      |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                            |
|                                                                                   |                   | B100   | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                            |
|  | XDGT120308TR-ME-C | ★      |      |      |     |     |        |       |      |          |    | <br>Inserts 10 PCS / Box |
|  | XDGT190408TR-ME   | ★      |      |      |     |     |        |       |      |          |    |                                                                                                            |
|   | XDGT400408TR-ME   | ★      |      |      |     |     |        |       |      |          |    |                                                                                                            |

★ All Materials

# ADGT Chamfer King Insert



## Tolerances (mm)

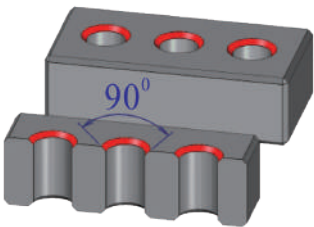
d            AE  
±0.015    ±0.015

| Code   | Dimensions (mm) |     |     |
|--------|-----------------|-----|-----|
|        | d               | l   | AE  |
| 060204 | 4.15            | 6.5 | 2.6 |

| Inserts                                                                             | Order Code        | Grades |      |      |     |     |        |       |      |          |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|-------------------|--------|------|------|-----|-----|--------|-------|------|----------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     |                   | Coated |      |      |     |     | Cermet |       |      | Uncoated |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                     |                   | B100   | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  | ADGT060204TR-ME-C | ★      |      |      |     |     |        |       |      |          |    | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>Inserts 10 PCS / Box</div> |

★ All Materials

# TECHNICAL GUIDE



- Cutting data for hole countersinking.
- This data is for drilling machine application.

| Material group        |                         |              |                    |                          |    |                  |                          |     |                  |                                                               |    |                  |
|-----------------------|-------------------------|--------------|--------------------|--------------------------|----|------------------|--------------------------|-----|------------------|---------------------------------------------------------------|----|------------------|
| Dia. of Hole<br>(φmm) | Steel                   | Harden steel | Stainless steel    | Cast iron                |    |                  | Aluminum                 |     |                  | Titanium alloy<br>Ni based superalloy<br>Co-based superalloys |    |                  |
|                       | 123456                  | 7            | 891011             | 12131415                 |    |                  | 161718                   |     |                  | 19202122                                                      |    |                  |
|                       | Vc:20m/min Fn:0.1mm/rev |              |                    | Vc:15m/min Fn:0.12mm/rev |    |                  | Vc:50m/min Fn:0.15mm/rev |     |                  | Vc:20m/min Fn:0.1mm/rev                                       |    |                  |
|                       | RPM<br>rev/min          |              | Feed mm/min        | RPM<br>rev/min           |    | Feed mm/min      | RPM<br>rev/min           |     | Feed mm/min      | RPM<br>rev/min                                                |    | Feed mm/min      |
|                       |                         |              | 1 Tooth<br>3 Teeth |                          |    | 1Tooth<br>3Teeth |                          |     | 1Tooth<br>3Teeth |                                                               |    | 1Tooth<br>3Teeth |
| 5~7                   | 1062                    | 106          | -                  | 796                      | 96 | -                | 2654                     | 398 | -                | 796                                                           | 80 | -                |
| 8~10                  | 708                     | 71           | -                  | 531                      | 64 | -                | 1769                     | 265 | -                | 531                                                           | 53 | -                |
| 11~13                 | 531                     | 53           | -                  | 398                      | 48 | -                | 1327                     | 199 | -                | 398                                                           | 40 | -                |
| 14~16                 | 425                     | 42           | -                  | 318                      | 38 | -                | 1062                     | 159 | -                | 318                                                           | 32 | -                |
| 17~19                 | 354                     | 35           | -                  | 265                      | 32 | -                | 885                      | 133 | -                | 265                                                           | 27 | -                |
| 20~22                 | 303                     | 30           | 91                 | 227                      | 27 | 82               | 758                      | 114 | 341              | 227                                                           | 23 | 68               |
| 23~25                 | 265                     | 27           | 80                 | 199                      | 24 | 72               | 663                      | 100 | 299              | 199                                                           | 20 | 60               |
| 26~28                 | 236                     | 24           | 71                 | 177                      | 21 | 64               | 590                      | 88  | 265              | 177                                                           | 18 | 53               |
| 29~31                 | 212                     | 21           | 64                 | 159                      | 19 | 57               | 531                      | 80  | 239              | 159                                                           | 16 | 48               |
| 32~34                 | 193                     | 19           | 58                 | 145                      | 17 | 52               | 483                      | 72  | 217              | 145                                                           | 14 | 43               |
| 35~37                 | 177                     | 18           | 53                 | 133                      | 16 | 48               | 442                      | 66  | 199              | 133                                                           | 13 | 40               |
| 38~40                 | 163                     | 16           | 49                 | 122                      | 15 | 44               | 408                      | 61  | 184              | 122                                                           | 12 | 37               |
| 41~43                 | 152                     | -            | 45                 | 114                      | -  | 41               | 379                      | -   | 171              | 114                                                           | -  | 34               |
| 44~46                 | 142                     | -            | 42                 | 106                      | -  | 38               | 354                      | -   | 159              | 106                                                           | -  | 32               |
| 47~49                 | 133                     | -            | 40                 | 100                      | -  | 36               | 332                      | -   | 149              | 100                                                           | -  | 30               |
| 50~52                 | 125                     | -            | 37                 | 94                       | -  | 34               | 312                      | -   | 141              | 94                                                            | -  | 28               |
| 53~55                 | 118                     | -            | 35                 | 88                       | -  | 32               | 295                      | -   | 133              | 88                                                            | -  | 27               |
| 56~58                 | 112                     | -            | 34                 | 84                       | -  | 30               | 279                      | -   | 126              | 84                                                            | -  | 25               |

Chamfer



# Technical Guide

- Cutting data for hole countersinking.
- This data is for drilling machine application.

| Material group               |                           |              |                 |                          |             |        |                           |             |        |                                                               |             |        |
|------------------------------|---------------------------|--------------|-----------------|--------------------------|-------------|--------|---------------------------|-------------|--------|---------------------------------------------------------------|-------------|--------|
| Dia. of Hole<br>( $\phi$ mm) | Steel                     | Harden steel | Stainless steel | Cast iron                |             |        | Aluminum                  |             |        | Titanium alloy<br>Ni based superalloy<br>Co-based superalloys |             |        |
|                              | 123456                    | 7            | 891011          | 12131415                 |             |        | 161718                    |             |        | 19202122                                                      |             |        |
|                              | Vc:20 m/min Fn:0.1 mm/rev |              |                 | Vc:15m/min Fn:0.12mm/rev |             |        | Vc: 50m/min Fn:0.15mm/rev |             |        | Vc: 20m/min Fn: 0.1mm/rev                                     |             |        |
|                              | RPM<br>rev/min            | Feed mm/min  |                 | RPM<br>rev/min           | Feed mm/min |        | RPM<br>rev/min            | Feed mm/min |        | RPM<br>rev/min                                                | Feed mm/min |        |
|                              |                           | 1 Tooth      | 3 Teeth         |                          | 1Tooth      | 3Teeth |                           | 1Tooth      | 3Teeth |                                                               | 1Tooth      | 3Teeth |
| 59~61                        | 106                       | -            | 32              | 80                       | -           | 29     | 265                       | -           | 119    | 80                                                            | -           | 24     |
| 62~64                        | 101                       | -            | 30              | 76                       | -           | 27     | 253                       | -           | 114    | 76                                                            | -           | 23     |
| 65~67                        | 97                        | -            | 29              | 72                       | -           | 26     | 241                       | -           | 109    | 72                                                            | -           | 22     |
| 68~70                        | 92                        | -            | 28              | 69                       | -           | 25     | 231                       | -           | 104    | 69                                                            | -           | 21     |
| 71~73                        | 88                        | -            | 27              | 66                       | -           | 24     | 221                       | -           | 100    | 66                                                            | -           | 20     |
| 74~76                        | 85                        | -            | 25              | 64                       | -           | 23     | 212                       | -           | 96     | 64                                                            | -           | 19     |
| 77~79                        | 82                        | -            | 24              | 61                       | -           | -      | 204                       | -           | 92     | 61                                                            | -           | 18     |
| 80~82                        | 79                        | -            | 24              | 59                       | -           | -      | 197                       | -           | 88     | 59                                                            | -           | 18     |
| 83~85                        | 76                        | -            | 23              | 57                       | -           | -      | 190                       | -           | 85     | 57                                                            | -           | 17     |
| 86~88                        | 73                        | -            | 22              | 55                       | -           | -      | 183                       | -           | 82     | 55                                                            | -           | 16     |
| 89~91                        | 71                        | -            | 21              | 53                       | -           | -      | 177                       | -           | 80     | 53                                                            | -           | 16     |
| 92~94                        | 68                        | -            | 21              | 51                       | -           | -      | 171                       | -           | 77     | 51                                                            | -           | 15     |
| 95~97                        | 66                        | -            | 20              | 50                       | -           | -      | 166                       | -           | 75     | 50                                                            | -           | 15     |
| 98~100                       | 64                        | -            | 19              | 48                       | -           | -      | 161                       | -           | 72     | 48                                                            | -           | 14     |
| 101~103                      | 62                        | -            | 19              | 47                       | -           | -      | 156                       | -           | 70     | 47                                                            | -           | 14     |
| 104~106                      | 61                        | -            | 18              | 45                       | -           | -      | 152                       | -           | 68     | 45                                                            | -           | 14     |
| 107~109                      | 59                        | -            | 18              | 44                       | -           | -      | 147                       | -           | 66     | 44                                                            | -           | 13     |
| 110                          | 58                        | -            | 17              | 43                       | -           | -      | 145                       | -           | 65     | 43                                                            | -           | 13     |

# CHAMFER MILLING CUTTERS SERIES



**PATENTED**

## Features

Available in  
materials



Cost  
**100~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

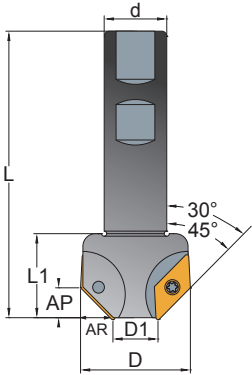




# PRODUCT SPECIFICATIONS

## Chamfer Milling Cutters

- Inserts P. 324
- Cutting Data P. 325 - 326

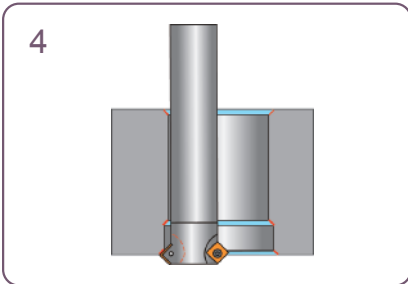
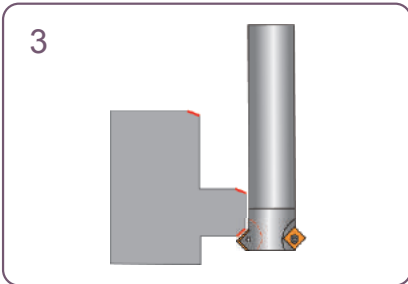
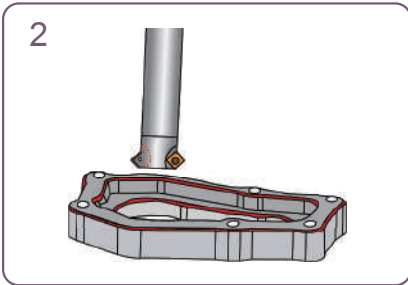
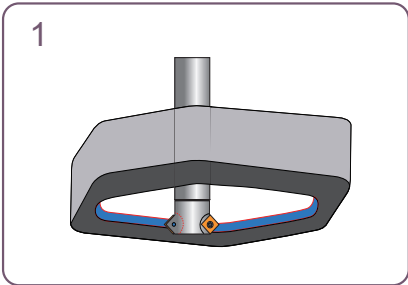
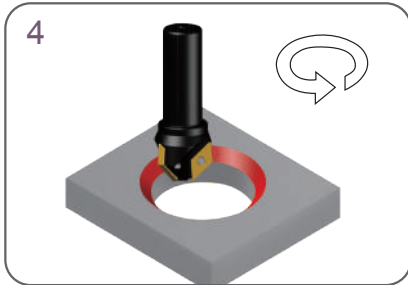
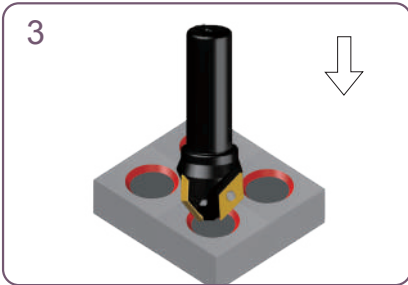
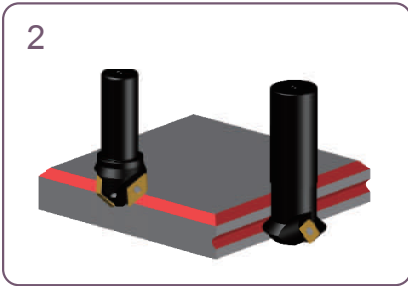
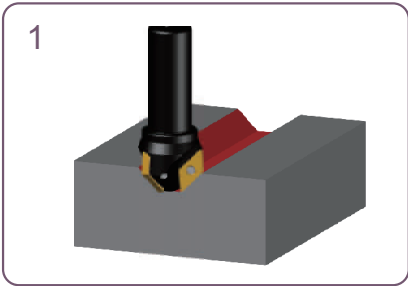


C

| Order Code | Dimensions (mm) |    |    |     |    |    |      | Z |  | MAX RPM | Inserts XDGT | Screw  | Key  |
|------------|-----------------|----|----|-----|----|----|------|---|-------------------------------------------------------------------------------------|---------|--------------|--------|------|
|            | D               | D1 | d  | L   | L1 | AP | AR   |   |                                                                                     |         |              |        |      |
| C-1124-30° | 24              | 10 | 20 | 80  | 30 | 10 | 5    | 2 | 0.23                                                                                | 35000   | 120308       | C03506 | T10P |
| C-1633-30° | 33              | 16 | 25 | 95  | 35 | 14 | 7.5  |   | 0.42                                                                                | 25000   | 190408       | C04008 | T15P |
| C-2260-30° | 60              | 22 | 32 | 120 | 55 | 33 | 18.5 | 3 | 0.88                                                                                | 8500    | 400408       |        |      |
| C-1128-45° | 28              | 10 | 20 | 80  | 30 | 8  | 8    | 2 | 0.28                                                                                | 35000   | 120308       | C03506 | T10P |
| C-1740-45° | 40              | 17 | 25 | 95  | 35 | 11 | 11   | 3 | 0.48                                                                                | 25000   | 190408       | C04008 | T15P |
| C-1770-45° | 70              | 17 | 32 | 110 | 50 | 28 | 28   |   | 0.96                                                                                | 8500    | 400408       |        |      |

# Product Applications

## Type of operation



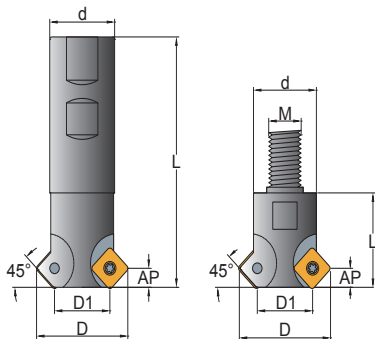
Chamfer



# Dual Chamfer Milling Cutters

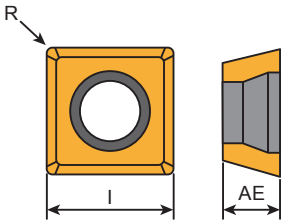
- Inserts P. 331
- Cutting Data P. 331
- Combi Toolholders P. 350 - 353

MC/HMC

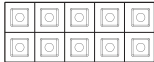


| Order Code | Dimensions (mm) |    |    |     |    |    | Z |  KG | MAX RPM | Inserts SDET | Screw   | Key  |
|------------|-----------------|----|----|-----|----|----|---|----------------------------------------------------------------------------------------|---------|--------------|---------|------|
|            | D               | D1 | d  | L   | AP | M  |   |                                                                                        |         |              |         |      |
| MC-1218    | 18              | 11 | 12 | 90  | 3  | -  | 2 | 0.12                                                                                   | 35000   | 060208       | C025045 | T08P |
| MC-1625    | 25              | 19 | 16 | 100 |    | -  | 3 | 0.21                                                                                   | 25000   |              |         |      |
| MC-2032    | 32              | 22 | 20 |     | 6  | -  | 2 | 0.31                                                                                   | 17000   | 09T308       | C04008  | T15P |
| HMC-18     | 18              | 11 | 11 | 20  | 3  | 6  | 2 | 0.06                                                                                   | 35000   | 060208       | C025045 | T08P |
| HMC-25     | 25              | 19 | 15 | 30  |    | 8  | 3 | 0.09                                                                                   | 25000   |              |         |      |
| HMC-32     | 32              | 22 | 19 |     | 6  | 10 | 2 | 0.17                                                                                   | 17000   | 09T308       | C04008  | T15P |

# SDET Inserts



Tolerances (mm)  
I AE  
±0.03 ±0.025



Inserts 10 PCS / Box

| Code   | Dimensions (mm) |      |     |
|--------|-----------------|------|-----|
|        | I               | AE   | R   |
| 060208 | 6.0             | 2.3  | 0.3 |
| 09T308 | 9.0             | 3.97 | 0.5 |

| Inserts                                                                           | Order Code      | Grades                                                                            |      |      |     |                                                                                   |              |      |           |
|-----------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------|------|------|-----|-----------------------------------------------------------------------------------|--------------|------|-----------|
|                                                                                   |                 | Carbide                                                                           |      |      |     |                                                                                   | Metal cermet |      | Uncoated  |
|                                                                                   |                 | B100                                                                              | C200 | C250 | F20 | F30                                                                               | CE25         | CE60 | K10<br>CE |
|  | SDET060208N-ME  |  |      |      |     |  |              |      |           |
|                                                                                   | SDET09T308TN-M  |  |      |      |     |                                                                                   |              |      |           |
|                                                                                   | SDET09T308TN-ME |  |      |      |     |  |              |      |           |

-  Steel  Stainless Steel  Steel/Stainless Steel/Super alloy  Cast Iron  Aluminum  Steel/Cast Iron
-  Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on presen conditions
- Please specify model numbers the and grade of inserts, ie.: SDET060208N-ME,B100

## Recommended Cutting Data Insert Grades

| Material Group | Recom. fz (mm/tooth) | Cutting Speed Vc (m/min) | Grades    |           |   |
|----------------|----------------------|--------------------------|-----------|-----------|---|
|                |                      |                          | SDET... M | SDET...ME |   |
| 1              | 0.08-0.20            | 130 160 185              | -         | B100      | - |
| 2              | 0.08-0.18            |                          | -         | B100      | - |
| 3              | 0.08-0.18            |                          | -         | B100      | - |
| 4              | 0.08-0.15            | 120 140 160              | -         | B100      | - |
| 5              | 0.06-0.13            |                          | -         | B100      | - |
| 6              | 0.06-0.12            | 100 120 140              | -         | B100      | - |
| 7              | 0.08-0.18            |                          | B100      | B100      | - |
| 8              | 0.08-0.15            | 65 80 90                 | -         | B100      | - |
| 9              | 0.07-0.13            |                          | -         | B100      | - |
| 10             | 0.06-0.12            | 60 70 80                 | -         | B100      | - |
| 11             | 0.10-0.22            |                          | -         | B100      | - |
| 12             | 0.10-0.22            | 100 120 140              | -         | F30       | - |
| 13             | 0.10-0.15            |                          | -         | F30       | - |
| 14             | 0.10-0.15            |                          | -         | F30       | - |
| 15             | 0.05-0.20            |                          | -         | F30       | - |
| 16             | 0.05-0.20            | 400 500 600              | -         | -         | - |
| 17             | 0.06-0.10            |                          | -         | -         | - |
| 18             | 0.06-0.15            |                          | -         | -         | - |
| 19             | 0.05-0.08            | 30 40 50                 | -         | B100      | - |
| 20             | 0.05-0.08            |                          | -         | B100      | - |
| 21             | 0.06-0.10            |                          | -         | B100      | - |
| 22             | 0.05-0.06            |                          | -         | B100      | - |



# CORNER ROUNDING CUTTER-390 SYSTEM



**PATENTED**



Patent No.  
M473882  
M474588  
M473881



Patent No.  
201310453057.2  
201320772697.5



PCT Priority



Video

## Features

Available in  
materials



Cost  
**300~500%**  
SAVING

Applicable  
Machines  
Milling

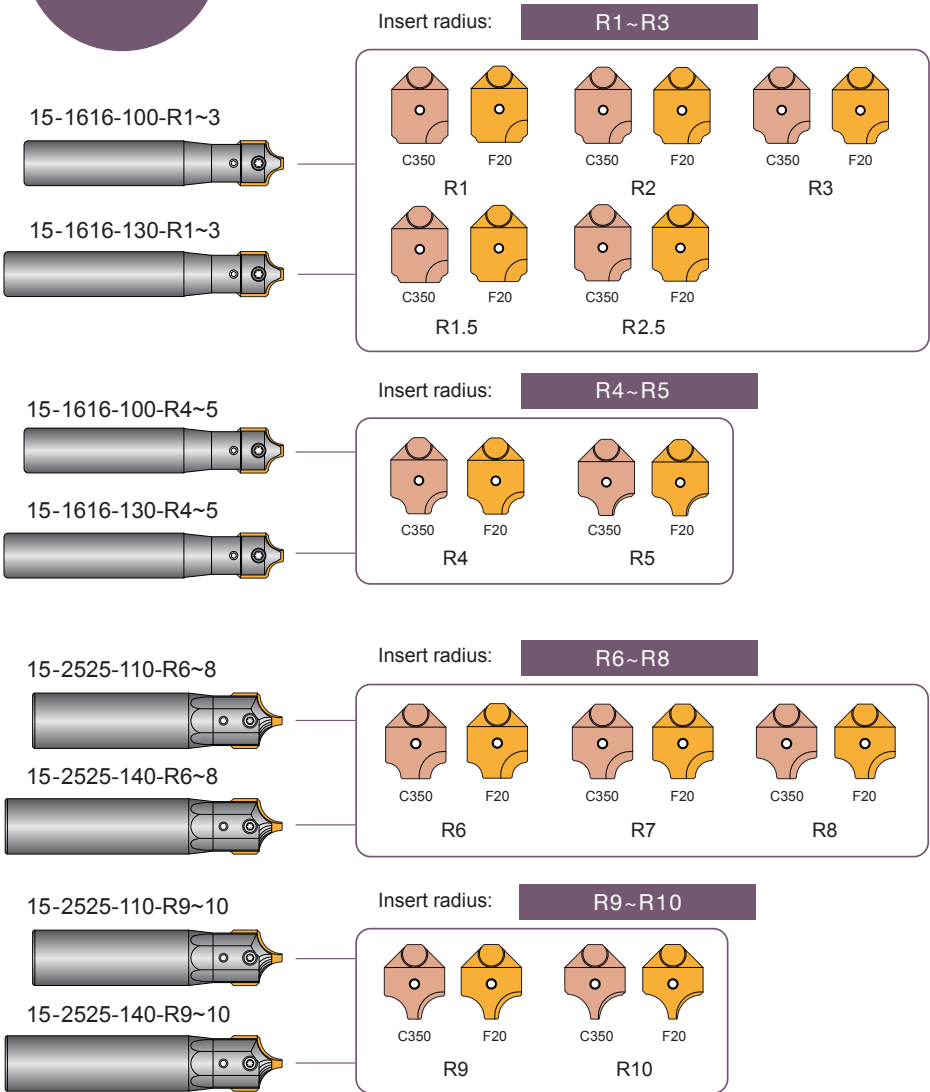
Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

# Product Design

## 390 SYSTEM

- Max.eccentricity:  $\pm 0.008\text{mm}$   
Accurate center positioning achieves excellent radius surface.
- 2 effective teeth.
- One shank fits max. 10 different inserts.
- The shank in  $\varnothing 25\text{mm}$  are applicable with big radius inserts R6. R7. R8. R9. R10. that achieves marvellous productivity.



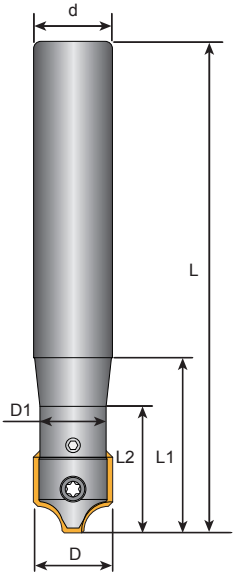
Chamfer



# Indexable Corner Rounding Toolholders

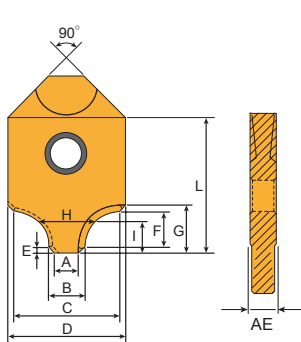
- Inserts P. 335
- Cutting Data P. 337

15



| Order Code        | Dimensions (mm) |    |    |     |    |    |  KG | Inserts | Screw           | Key          |
|-------------------|-----------------|----|----|-----|----|----|----------------------------------------------------------------------------------------|---------|-----------------|--------------|
|                   | D               | D1 | d  | L   | L1 | L2 |                                                                                        |         |                 |              |
| 15-1616-100-R1-3  | 16              | 14 | 16 | 100 | 35 | 25 | 0.21                                                                                   | R1-3    | C03511<br>S0404 | T10P<br>L02  |
| 15-1616-130-R1-3  |                 |    |    | 130 |    |    | 0.27                                                                                   |         |                 |              |
| 15-1616-100-R4-5  |                 |    |    | 100 |    |    | 0.21                                                                                   | R4-5    |                 |              |
| 15-1616-130-R4-5  |                 |    |    | 130 |    |    | 0.27                                                                                   |         |                 |              |
| 15-2525-110-R6-8  | 25              | 22 | 25 | 110 | 40 | 30 | 0.44                                                                                   | R6-8    | C04017<br>S0508 | T15P<br>L025 |
| 15-2525-140-R6-8  |                 |    |    | 140 |    |    | 0.58                                                                                   |         |                 |              |
| 15-2525-110-R9-10 |                 |    |    | 110 |    |    | 0.44                                                                                   | R9-10   |                 |              |
| 15-2525-140-R9-10 |                 |    |    | 140 |    |    | 0.58                                                                                   |         |                 |              |

# 25 Carbide Inserts



Tolerances (mm)  
D : ± 0.05    AE :  $\begin{smallmatrix} +0.01 \\ -0.02 \end{smallmatrix}$



Inserts 6 PCS / Box  
Only for insert :25-25\*\*\*



Inserts 10 PCS / Box

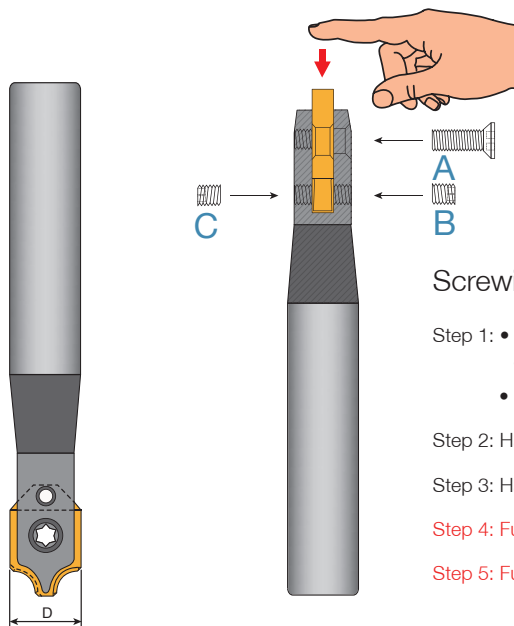
| Dimensions (mm) |      |       |       |       |      |       |       |       |      |      |     |
|-----------------|------|-------|-------|-------|------|-------|-------|-------|------|------|-----|
| R               | A    | B     | C     | D     | E    | F     | G     | H     | I    | L    | AE  |
| 1.0             | 12.0 | 13.29 | 15.17 | 16.30 | 0.64 | 0.96  | 2.33  | 13.86 | 1.30 | 21.5 | 3.0 |
| 1.5             | 11.0 | 12.29 | 15.16 |       | 0.67 | 1.47  | 2.85  | 13.15 | 1.69 |      |     |
| 2.0             | 10.0 | 11.30 | 15.15 |       | 0.68 | 1.97  | 3.36  | 12.27 | 2.09 |      |     |
| 2.5             | 9.00 | 10.31 |       |       | 0.67 | 2.47  | 3.85  | 11.74 | 2.39 |      |     |
| 3.0             | 7.94 | 9.28  | 15.14 |       | 0.64 | 3.01  | 4.39  | 10.98 | 2.74 |      |     |
| 4.0             | 6.00 | 7.29  | 15.09 |       | 0.67 | 3.97  | 5.37  | 9.58  | 3.45 |      |     |
| 5.0             | 4.92 | 5.14  | 15.04 | 25.15 | 0.66 | 4.99  | 6.36  | 8.04  | 4.17 | 30.0 | 3.5 |
| 6.0             | 11.2 | 12.38 | 24.15 |       | 0.58 | 5.96  | 7.16  | 15.84 | 4.76 |      |     |
| 7.0             | 9.20 | 10.30 | 24.08 |       | 0.55 | 6.96  | 8.14  | 14.35 | 5.44 |      |     |
| 8.0             | 7.06 | 8.20  | 24.32 |       | 0.54 | 7.97  | 9.13  | 12.95 | 6.20 |      |     |
| 9.0             | 4.80 | 5.93  | 23.98 |       | 0.56 | 9.00  | 10.18 | 11.22 | 6.93 |      |     |
| 10.0            | 3.00 | 3.78  | 23.96 |       | 0.59 | 10.00 | 11.23 | 9.70  | 7.69 |      |     |

| Inserts | Order Code      | Grades  |      |      |     |     |        |       |      |          |    |
|---------|-----------------|---------|------|------|-----|-----|--------|-------|------|----------|----|
|         |                 | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |
|         |                 | C125    | C200 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |
|         | 25-1603-R1.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-1603-R1.5-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-1603-R2.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-1603-R2.5-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-1603-R3.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-1603-R4.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-1603-R5.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-2503-R6.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-2503-R7.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-2503-R8.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-2503-R9.0-E  |         |      |      |     |     |        |       |      |          |    |
|         | 25-2503-R10-E   |         |      |      |     |     |        |       |      |          |    |
|         | 25-1603-R1.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-1603-R1.5-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-1603-R2.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-1603-R2.5-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-1603-R3.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-1603-R4.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-1603-R5.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-2503-R6.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-2503-R7.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-2503-R8.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-2503-R9.0-ME |         |      | ⊙    |     |     |        |       |      |          |    |
|         | 25-2503-R10-ME  |         |      | ⊙    |     |     |        |       |      |          |    |

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers the and grade of inserts, ie.: 25-1603-R1.0-E,F20



# How to Fit Insert - Screw A.B.C.



## Screwing the Inserts

- Step 1: • Slot the insert into the shank and push against on the bottom.
- Fully tighten the screw A first
- Step 2: Half tighten the screw B on one side
- Step 3: Half tighten the screw C on other side
- Step 4: Fully tighten the screw B again (Important)
- Step 5: Fully tighten the screw C again (Important)

## Standard spare parts

| Insert dimension D (mm)                                                             | Screw A                                                                             | Screw B/C                                                                           | Key                                                                                 | Key                                                                                 |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| 16                                                                                  | C03510                                                                              | S0404                                                                               | T10P                                                                                | L02                                                                                 |
| 25                                                                                  | C04017                                                                              | S0508                                                                               | T15P                                                                                | L025                                                                                |

# Recommended Cutting Data And Insert Grades

| Material group | Recom.<br>fz (mm/tooth)<br>AR/Dc = 10% | Grades |     |
|----------------|----------------------------------------|--------|-----|
|                |                                        | ME     | E   |
| 1              | 0.10-0.12                              | C350   | -   |
| 2              | 0.10-0.12                              | C350   | -   |
| 3              | 0.08-0.12                              | C350   | -   |
| 4              | 0.07-0.10                              | C350   | -   |
| 5              | 0.07-0.10                              | C350   | -   |
| 6              | 0.06-0.08                              | C350   | -   |
| 7              | 0.05-0.06                              | C350   | -   |
| 8              | 0.10-0.12                              | C350   | -   |
| 9              | 0.10-0.12                              | C350   | -   |
| 10             | 0.08-0.10                              | C350   | -   |
| 11             | 0.08-0.10                              | C350   | -   |
| 12             | 0.12-0.15                              | C350   | -   |
| 13             | 0.12-0.15                              | C350   | -   |
| 14             | 0.10-0.12                              | C350   | -   |
| 15             | 0.10-0.12                              | C350   | -   |
| 16             | 0.08-0.10                              | -      | F20 |
| 17             | 0.08-0.10                              | -      | F20 |
| 18             | 0.08-0.10                              | -      | F20 |

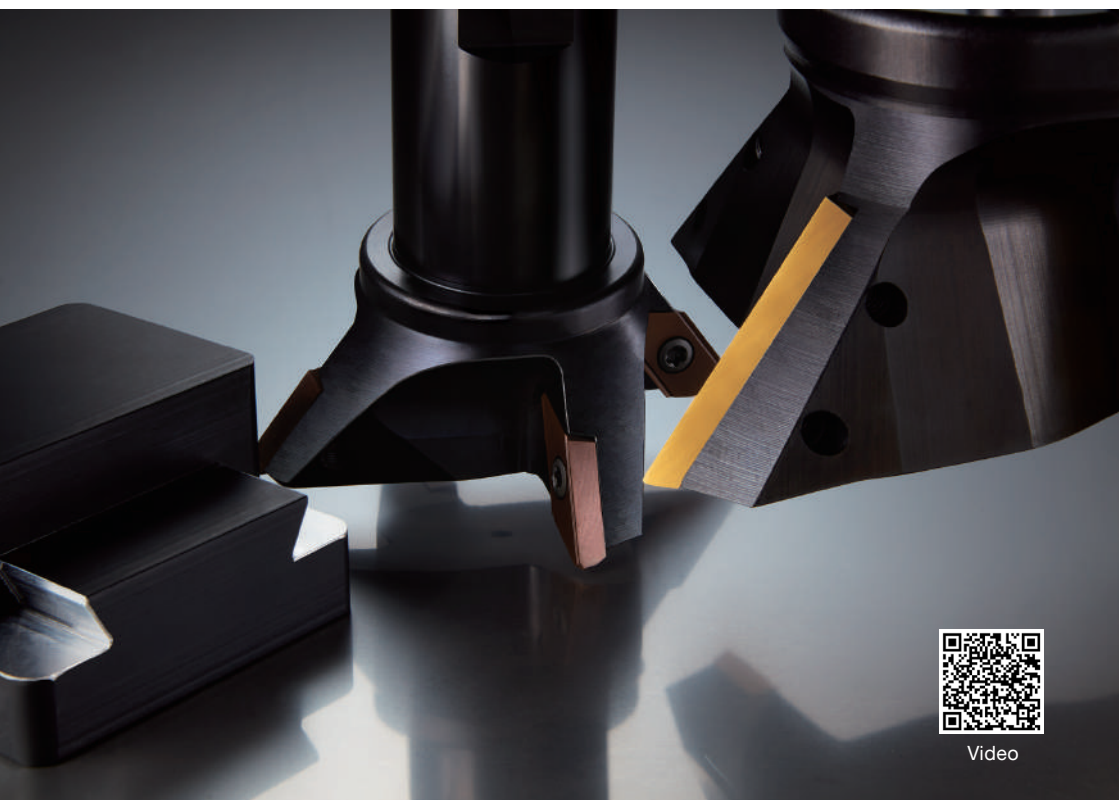
• Recommended cutting speed, Vc(m/min), Fz( mm/ tooth) in CHAMFERING process.  
The effective no. of teeth is calculated with 2 flutes.

| Material group | Grades |      |      |      |      |      |         |
|----------------|--------|------|------|------|------|------|---------|
|                | C250   | C350 |      |      | CE60 | F20  |         |
|                |        | 0.07 | 0.10 | 0.14 |      |      |         |
| 1              | -      | 207  | 186  | 167  | -    | -    |         |
| 2              | -      | 186  | 167  | 150  | -    | -    |         |
| 3              | -      | 167  | 150  | 135  | -    | -    |         |
| 4              | -      | 150  | 135  | 120  | -    | -    |         |
| 5              | -      | 135  | 120  | 109  | -    | -    |         |
| 6              | -      | 120  | 108  | 97   | -    | -    |         |
| 7              | -      | 48   | 43   | -    | -    | -    |         |
| 8              | -      | 160  | -    | 80   | -    | -    |         |
| 9              | -      | 160  | -    | 80   | -    | -    |         |
| 10             | -      | 80   | -    | 50   | -    | -    |         |
| 11             | -      | 80   | -    | 50   | -    | -    |         |
| 12             | -      | 170  | 145  | 125  | -    | -    |         |
| 13             | -      | 155  | 125  | 115  | -    | -    |         |
| 14             | -      | 110  | 90   | 82   | -    | -    |         |
| 15             | -      | 110  | 90   | -    | -    | -    |         |
| 16             | -      | -    | -    | -    | -    | 1080 | 900 780 |
| 17             | -      | -    | -    | -    | -    | 950  | 900 770 |
| 18             | -      | -    | -    | -    | -    | 950  | 900 770 |

Chamfer



# DOVETAIL MILLING CUTTERS SERIES



Video

## Features

Available in  
materials



Cost  
**100~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

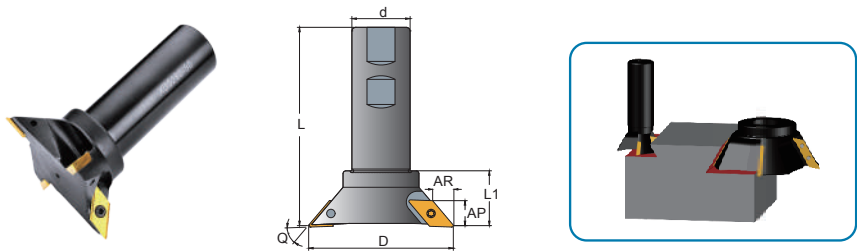
Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

# PRODUCT SPECIFICATIONS

## Dovetail Toolholders

- Inserts P. 341
- Cutting Data P. 342 - 343



XD

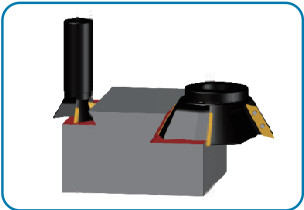
| Order Code | Dimensions (mm) |    |    |     |      |    |    | Z |  | MAX. RPM | Inserts XDGT | Screw  | Key  |
|------------|-----------------|----|----|-----|------|----|----|---|-----------------------------------------------------------------------------------|----------|--------------|--------|------|
|            | D               | d  | Q  | L   | AP   | AR | L1 |   |                                                                                   |          |              |        |      |
| XD2040-50  | 40              | 20 | 50 | 100 | 10   | 8  |    | 2 | 0.31                                                                              | 17000    | 120308       | C03506 | T10P |
| XD2040-55  |                 |    | 55 |     | 10.5 | 7  |    |   |                                                                                   |          |              |        |      |
| XD2040-60  |                 |    | 60 |     | 11   | 6  |    |   |                                                                                   |          |              |        |      |
| XD3260-45  | 60              |    | 45 | 110 | 13   | 10 | 30 | 3 | 0.76                                                                              | 7500     | 190408       | C04008 | T15P |
| XD3260-50  |                 |    | 50 |     | 14   | 11 |    |   |                                                                                   |          |              |        |      |
| XD3260-55  |                 |    | 55 |     | 15   | 10 |    |   |                                                                                   |          |              |        |      |
| XD3260-60  |                 |    | 60 |     | 16   | 9  |    |   |                                                                                   |          |              |        |      |
| XD3280-45  | 80              | 32 | 45 | 110 | 13   | 10 |    | 4 | 0.97                                                                              | 6500     |              |        |      |
| XD3280-50  |                 |    | 50 |     | 14   | 11 |    |   |                                                                                   |          |              |        |      |
| XD3280-55  |                 |    | 55 |     | 15   | 10 |    |   |                                                                                   |          |              |        |      |
| XD3280-60  |                 |    | 60 |     | 16   | 9  |    |   |                                                                                   |          |              |        |      |

Dovetail

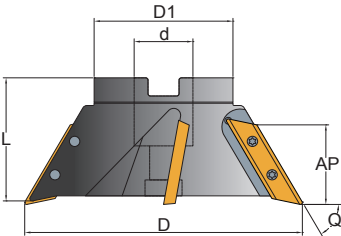


# Dovetail Milling Cutters

- Inserts P. 341
- Cutting Data P. 342 - 343



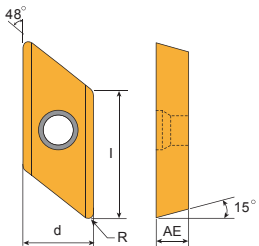
Big "AP" is available with insert XDGT40. Achieve better surface finishing.



XV

| Order Code    | Dimensions (mm) |    |      |    |    |    | Z |  | MAX. RPM | Inserts XDGT | Screw  | Key  |
|---------------|-----------------|----|------|----|----|----|---|-------------------------------------------------------------------------------------|----------|--------------|--------|------|
|               | D               | D1 | d    | L  | AP | Q  |   |                                                                                     |          |              |        |      |
| XV120-45-25.4 | 120             | 60 | 25.4 | 55 | 30 | 45 | 4 | 1.28                                                                                | 6000     | 400408       | C04011 | T15P |
| XV120-50-25.4 |                 |    |      |    | 31 | 50 |   |                                                                                     |          |              |        |      |
| XV120-55-25.4 |                 |    |      |    | 33 | 55 |   |                                                                                     |          |              |        |      |
| XV120-60-25.4 |                 |    |      |    | 35 | 60 |   |                                                                                     |          |              |        |      |
| XV120-45-27   |                 |    | 27   |    | 30 | 45 |   |                                                                                     |          |              |        |      |
| XV120-50-27   |                 |    |      |    | 31 | 50 |   |                                                                                     |          |              |        |      |
| XV120-55-27   |                 |    |      |    | 33 | 55 |   |                                                                                     |          |              |        |      |
| XV120-60-27   |                 |    |      |    | 35 | 60 |   |                                                                                     |          |              |        |      |

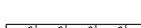
XDGT Inserts

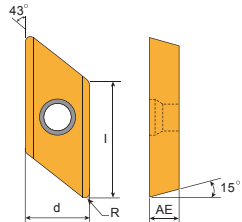


Tolerances (mm)

d            AE  
±0.015    ±0.015

| Code   | Dimensions (mm) |       |      |     |       |
|--------|-----------------|-------|------|-----|-------|
|        | l               | d     | AE   | R   | Angle |
| 120308 | 13              | 8.3   | 3.10 | 0.8 | 48°   |
| 190408 | 16              | 10.45 | 4.45 |     |       |
| 400408 | 40              |       | 4.70 |     |       |

| Inserts                                                                           | Order Code     | Grades |      |      |     |     |        |       |          |     |    |   |  |
|-----------------------------------------------------------------------------------|----------------|--------|------|------|-----|-----|--------|-------|----------|-----|----|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                                                                                   |                | Coated |      |      |     |     | Cermet |       | Uncoated |     |    |   |                                                                                    |
|                                                                                   |                | B100   | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60     | K10 | CE |                                                                                    |                                                                                    |
|  | XDGT120308R-E  |        |      |      |     |     |        |       |          |     |    |  | Inserts 10 PCS / Box                                                               |
|                                                                                   | XDGT120308R-ME | ⊙      |      |      |     |     |        |       |          |     |    |                                                                                    |                                                                                    |
|                                                                                   | XDGT120308TR-M | ⊙      |      |      |     |     |        |       |          |     |    |                                                                                    |                                                                                    |
|  | XDGT190408R-E  |        |      |      |     |     |        |       |          |     |    |  | Inserts 10 PCS / Box                                                               |
|                                                                                   | XDGT190408R-ME | ⊙      |      |      |     |     |        |       |          |     |    |                                                                                    |                                                                                    |
|                                                                                   | XDGT190408TR-M | ⊙      |      |      |     |     |        |       |          |     |    |                                                                                    |                                                                                    |
|   | XDGT400408R-E  |        |      |      |     |     |        |       |          |     |    |   | Inserts 2 PCS / Box                                                                |
|                                                                                   | XDGT400408R-ME | ⊙      |      |      |     |     |        |       |          |     |    |                                                                                    |                                                                                    |
|                                                                                   | XDGT400408TR-M | ⊙      |      |      |     |     |        |       |          |     |    |                                                                                    |                                                                                    |

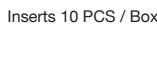


Tolerances (mm)

d            AE  
±0.015    ±0.015

\* Only for 45° Dovetail Holder

| Code    | Dimensions (mm) |       |      |     |       |
|---------|-----------------|-------|------|-----|-------|
|         | l               | d     | AE   | R   | Angle |
| 120308N | 11              | 8.3   | 3.10 | 0.8 | 43°   |
| 190408N | 15              | 10.45 | 4.45 |     |       |
| 400408N | 40              |       | 4.70 |     |       |

| Inserts                                                                             | Order Code      | Grades                                                                              |      |      |     |     |        |       |      |          |    |  |                      |
|-------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|------|------|-----|-----|--------|-------|------|----------|----|--------------------------------------------------------------------------------------|----------------------|
|                                                                                     |                 | Coated                                                                              |      |      |     |     | Cermet |       |      | Uncoated |    |  |                      |
|                                                                                     |                 | B100                                                                                | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |                                                                                      |                      |
|  | XDGT120308NR-E  |                                                                                     |      |      |     |     |        |       |      |          |    |  |                      |
|                                                                                     | XDGT120308NR-ME |  |      |      |     |     |        |       |      |          |    |                                                                                      | Inserts 10 PCS / Box |
|                                                                                     | XDGT120308NTR-M |  |      |      |     |     |        |       |      |          |    |                                                                                      |                      |
|  | XDGT190408NR-E  |                                                                                     |      |      |     |     |        |       |      |          |    |  |                      |
|                                                                                     | XDGT190408NR-ME |  |      |      |     |     |        |       |      |          |    |                                                                                      | Inserts 10 PCS / Box |
|                                                                                     | XDGT190408NTR-M |  |      |      |     |     |        |       |      |          |    |                                                                                      |                      |
|   | XDGT400408NR-E  |                                                                                     |      |      |     |     |        |       |      |          |    |  |                      |
|                                                                                     | XDGT400408NR-ME |  |      |      |     |     |        |       |      |          |    |                                                                                      | Inserts 2 PCS / Box  |
|                                                                                     | XDGT400408NTR-M |  |      |      |     |     |        |       |      |          |    |                                                                                      |                      |

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers the and grade of inserts, ie.: XDGT120308R-E, F20



Dovetail

# XDGT Insert Grade Selection

| Material group | Recom. fz (mm/tooth) | Grades     |             |            |   |
|----------------|----------------------|------------|-------------|------------|---|
|                |                      | XDGT ... M | XDGT ... ME | XDGT ... E |   |
| 1              | 0.08-0.25            | -          | B100        | -          | - |
| 2              | 0.08-0.25            | -          | B100        | -          | - |
| 3              | 0.08-0.25            | -          | B100        | -          | - |
| 4              | 0.08-0.25            | -          | B100        | -          | - |
| 5              | 0.06-0.20            | -          | B100        | -          | - |
| 6              | 0.06-0.20            | -          | B100        | -          | - |
| 7              | 0.08-0.15            | -          | B100        | -          | - |
| 8              | 0.08-0.15            | -          | B100        | -          | - |
| 9              | 0.07-0.15            | -          | B100        | -          | - |
| 10             | 0.06-0.15            | -          | B100        | -          | - |
| 11             | 0.10-0.15            | -          | B100        | -          | - |
| 12             | 0.10-0.25            | -          | F30         | -          | - |
| 13             | 0.10-0.25            | -          | F30         | -          | - |
| 14             | 0.10-0.20            | -          | F30         | -          | - |
| 15             | 0.05-0.20            | -          | F30         | -          | - |
| 16             | 0.05-0.25            | -          | -           | F20        | - |
| 17             | 0.06-0.25            | -          | -           | F20        | - |
| 18             | 0.06-0.25            | -          | -           | F20        | - |
| 19             | 0.05-0.08            | -          | B100        | -          | - |
| 20             | 0.05-0.08            | -          | B100        | -          | - |
| 21             | 0.06-0.08            | -          | B100        | -          | - |
| 22             | 0.05-0.08            | -          | B100        | -          | - |

# Recommended Cutting Data

- Recommended Cutting speed, Vc(m/min)

| Material group                        | Grades        |      |      |      |      |      |              |      |      |      |  |  |    |  |     |  |      |      |      |
|---------------------------------------|---------------|------|------|------|------|------|--------------|------|------|------|--|--|----|--|-----|--|------|------|------|
|                                       | B100          |      |      | C250 |      |      | F20          |      |      | CE60 |  |  | CE |  | K10 |  | F30  |      |      |
|                                       | fz (mm/tooth) |      |      |      |      |      |              |      |      |      |  |  |    |  |     |  |      |      |      |
|                                       | 0.08          | 0.15 | 0.20 | 0.08 | 0.15 | 0.20 | 0.08         | 0.15 | 0.25 |      |  |  |    |  |     |  | 0.08 | 0.15 | 0.25 |
| Cutting Speed, V <sub>c</sub> (m/min) |               |      |      |      |      |      |              |      |      |      |  |  |    |  |     |  |      |      |      |
| 1                                     | 192           | 152  | 136  | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 2                                     | 168           | 132  | 116  | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 3                                     | 136           | 118  | 100  | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 4                                     | 124           | 104  | 84   | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 5                                     | 108           | 92   | -    | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 6                                     | 92            | 72   | -    | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 7                                     | 32            | 28   | -    | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 8                                     | 108           | 89   | 79   | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 9                                     | 92            | 76   | 66   | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 10                                    | 76            | 60   | 54   | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 11                                    | 54            | 45   | -    | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 12                                    | -             |      |      | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | 170  | 145  | 125  |
| 13                                    | -             |      |      | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | 155  | 125  | 115  |
| 14                                    | -             |      |      | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | 110  | 90   | -    |
| 15                                    | -             |      |      | -    |      |      | -            |      |      | -    |  |  | -  |  | -   |  | 90   | 70   | -    |
| 16                                    | -             |      |      | -    |      |      | 1080 900 780 |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 17                                    | -             |      |      | -    |      |      | 950 900 770  |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 18                                    | -             |      |      | -    |      |      | 1080 900 780 |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 19                                    | 50            | 40   | -    | 40   | 32   | -    | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 20                                    | 35            | 30   | -    | 28   | 24   | -    | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 21                                    | 50            | 40   | -    | 40   | 32   | -    | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |
| 22                                    | 50            | 40   | -    | 40   | 32   | -    | -            |      |      | -    |  |  | -  |  | -   |  | -    |      |      |

- Type Of Inserts

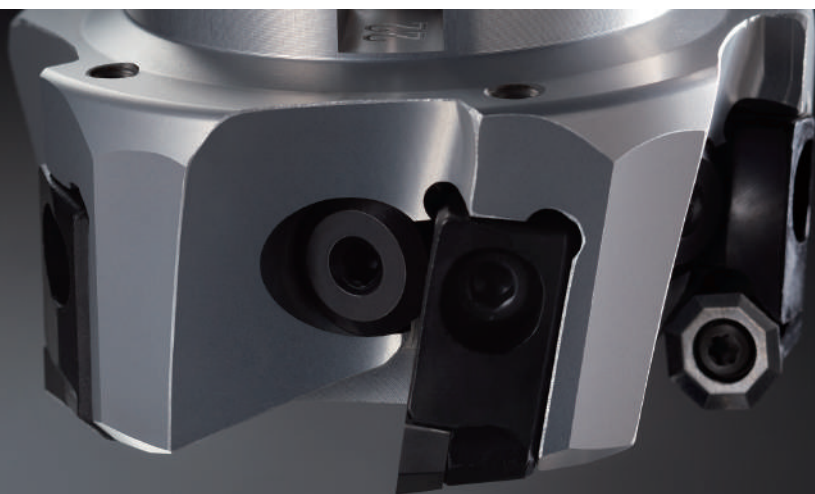
|  | Code   | Length of insert edge (mm) |
|-------------------------------------------------------------------------------------|--------|----------------------------|
|                                                                                     | 120308 | 11                         |
|                                                                                     | 190408 | 18                         |
|                                                                                     | -      | -                          |
|                                                                                     | -      | -                          |
|                                                                                     | -      | -                          |

|  | Code   | Length of insert edge (mm) |
|-------------------------------------------------------------------------------------|--------|----------------------------|
|                                                                                     | 400408 | 39                         |
|                                                                                     | -      | -                          |
|                                                                                     | -      | -                          |
|                                                                                     | -      | -                          |
|                                                                                     | -      | -                          |

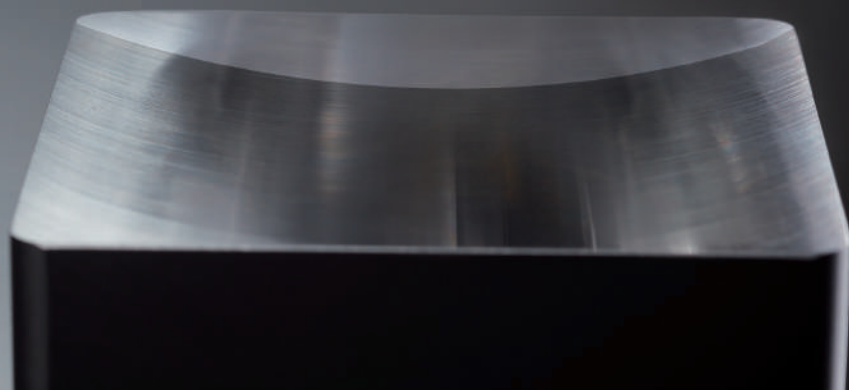
Dovetail







# ALUMINIUM ALLOY FACE MILLING CUTTER



## Features

Available in  
materials



Cost  
**150%**  
SAVING

Applicable  
Machines  
CNC Milling machine

Efficiency  
**150%**  
UP

Durability  
**150%**  
UP

# Product Design

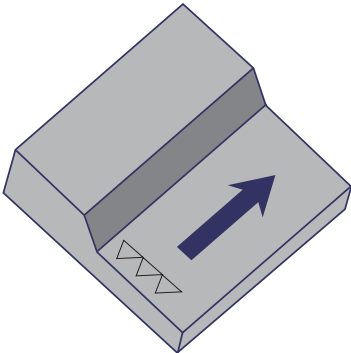
## Clamping By A Catridge Centre-Lock Clamping

Designed with adjustable catridges by which inserts held in position and fine-tunable.

Octagon insert with 8 cutting edges, the best choice for economical cost



Surface Finish Ra < 1.5 μm

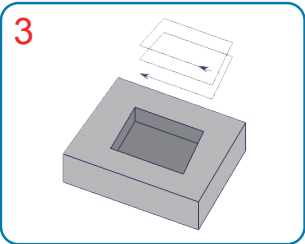
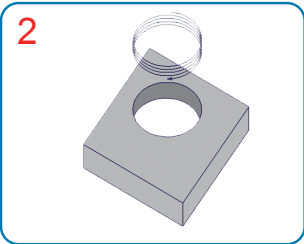
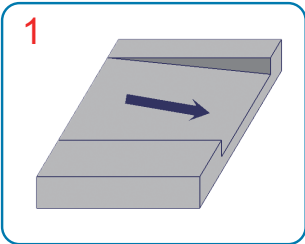
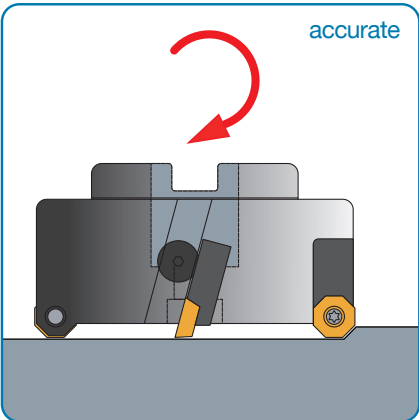
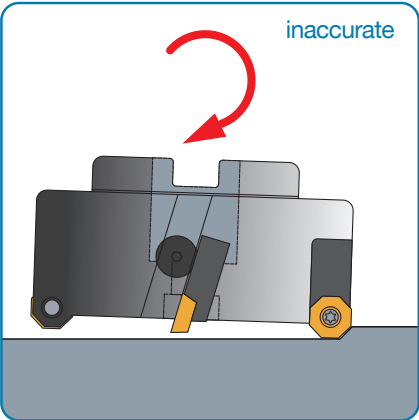


Alu-  
Face Milling



# Features Description

The importance of spindle accuracy in face milling.

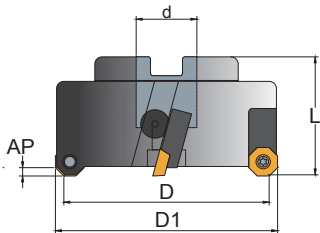


# PRODUCT SPECIFICATIONS

## Aluminium Alloy Face Milling Cutters

- Inserts P. 348
- Cutting Data P. 348-349

MO

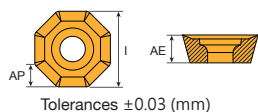


| Order Code      | Dimensions (mm) |     |    |    |    | Z  |  KG | MAX RPM | Inserts ODGT | Screw  | Key  |
|-----------------|-----------------|-----|----|----|----|----|---------------------------------------------------------------------------------------|---------|--------------|--------|------|
|                 | D               | D1  | d  | L  | AP |    |                                                                                       |         |              |        |      |
| MO-080R-AL-C-22 | 80              | 92  | 22 | 50 | 3  | 5  | 0.68                                                                                  | 4600    | 050408       | C04011 | T15P |
| MO-100R-AL-C-27 | 100             | 112 | 27 |    |    | 6  | 1.01                                                                                  | 4100    |              |        |      |
| MO-125R-AL-C-27 | 125             | 137 |    |    |    | 7  | 1.60                                                                                  | 3600    |              |        |      |
| MO-160R-AL-C-32 | 160             | 172 | 32 | 60 |    | 8  | 2.85                                                                                  | 3100    |              |        |      |
| MO-200R-AL-C-40 | 200             | 212 | 40 |    |    | 10 | 4.35                                                                                  | 2800    |              |        |      |
| MO-250R-AL-C-40 | 250             | 262 |    |    |    | 12 | 5.45                                                                                  | 2500    |              |        |      |
| MO-300R-AL-C-40 | 300             | 312 |    |    |    | 14 | 7.95                                                                                  | 2200    |              |        |      |

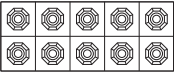
Alu-  
Face Milling



# ODGT Insert



| Dimensions (mm) |     |      |     |
|-----------------|-----|------|-----|
| Code            | AE  | I    | AP  |
| 050408          | 4.7 | 12.7 | 3.5 |

| Inserts                                                                           | Order Code    | Grades  |      |      |     |     |        |      |          |   |
|-----------------------------------------------------------------------------------|---------------|---------|------|------|-----|-----|--------|------|----------|------------------------------------------------------------------------------------|
|                                                                                   |               | Carbide |      |      |     |     | Cermet |      | Uncoated |                                                                                    |
|                                                                                   |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE                                                                                 |
|  | ODGT050408N-E |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   |               |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   |               |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   |               |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   |               |         |      |      |     |     |        |      |          |                                                                                    |
|                                                                                   |               |         |      |      |     |     |        |      |          |  |
|                                                                                   |               |         |      |      |     |     |        |      |          | Inserts 10 PCS / Box                                                               |

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers the and grade of inserts, ie.: ODGT050408N-E,K10

## Standard Spare Parts

| For Cutter |  |  |  |  |  |
|------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| MO-080~300 | OD05AR                                                                            | C04011                                                                            | SL16                                                                              | M0515                                                                             | S0610                                                                             |

## Recommended Insert Grades

| Material group | Recom. fz (mm/tooth) | Grades       |             |            |   |
|----------------|----------------------|--------------|-------------|------------|---|
|                |                      | ODGT05 ... M | ODGT05...ME | ODGT05...E |   |
| 1              | -                    | -            | -           | -          | - |
| 2              | -                    | -            | -           | -          | - |
| 3              | -                    | -            | -           | -          | - |
| 4              | -                    | -            | -           | -          | - |
| 5              | -                    | -            | -           | -          | - |
| 6              | -                    | -            | -           | -          | - |
| 7              | -                    | -            | -           | -          | - |
| 8              | -                    | -            | -           | -          | - |
| 9              | -                    | -            | -           | -          | - |
| 10             | -                    | -            | -           | -          | - |
| 11             | -                    | -            | -           | -          | - |
| 12             | -                    | -            | -           | -          | - |
| 13             | -                    | -            | -           | -          | - |
| 14             | -                    | -            | -           | -          | - |
| 15             | -                    | -            | -           | -          | - |
| 16             | 0.06-0.13            | -            | -           | K10        | - |
| 17             | 0.06-0.12            | -            | -           | K10        | - |
| 18             | 0.06-0.11            | -            | -           | K10        | - |
| 19             | -                    | -            | -           | -          | - |
| 20             | -                    | -            | -           | -          | - |

# Recommended Cutting Data

• Recommended Cutting speed, Vc(m/min)

| Material group | Grades                                |      |     |      |    |                |     |
|----------------|---------------------------------------|------|-----|------|----|----------------|-----|
|                | B100                                  | C250 | F20 | CE60 | CE | K10            | F30 |
|                | fz (mm/tooth)                         |      |     |      |    |                |     |
|                |                                       |      |     |      |    | 0.13 0.25 0.40 |     |
|                | Cutting Speed, V <sub>c</sub> (m/min) |      |     |      |    |                |     |
| 1              | -                                     | -    | -   | -    | -  | -              | -   |
| 2              | -                                     | -    | -   | -    | -  | -              | -   |
| 3              | -                                     | -    | -   | -    | -  | -              | -   |
| 4              | -                                     | -    | -   | -    | -  | -              | -   |
| 5              | -                                     | -    | -   | -    | -  | -              | -   |
| 6              | -                                     | -    | -   | -    | -  | -              | -   |
| 7              | -                                     | -    | -   | -    | -  | -              | -   |
| 8              | -                                     | -    | -   | -    | -  | -              | -   |
| 9              | -                                     | -    | -   | -    | -  | -              | -   |
| 10             | -                                     | -    | -   | -    | -  | -              | -   |
| 11             | -                                     | -    | -   | -    | -  | -              | -   |
| 12             | -                                     | -    | -   | -    | -  | -              | -   |
| 13             | -                                     | -    | -   | -    | -  | -              | -   |
| 14             | -                                     | -    | -   | -    | -  | -              | -   |
| 15             | -                                     | -    | -   | -    | -  | -              | -   |
| 16             | -                                     | -    | -   | -    | -  | 1200 1000 850  | -   |
| 17             | -                                     | -    | -   | -    | -  | 1050 850 750   | -   |
| 18             | -                                     | -    | -   | -    | -  | 1200 1000 850  | -   |
| 19             | -                                     | -    | -   | -    | -  | -              | -   |
| 20             | -                                     | -    | -   | -    | -  | -              | -   |
| 21             | -                                     | -    | -   | -    | -  | -              | -   |
| 22             | -                                     | -    | -   | -    | -  | -              | -   |

• Surface Finishing

| Order Code | Feed mm / Rev <= | Ra um |
|------------|------------------|-------|
| ODGT050408 | 1.5              | <1.5  |



# COMBIMASTER TOOLHOLDERS



## Features

Maximum  
Run Out At  
3XD Is 5 $\mu$ m

Cost  
**150%**  
SAVING

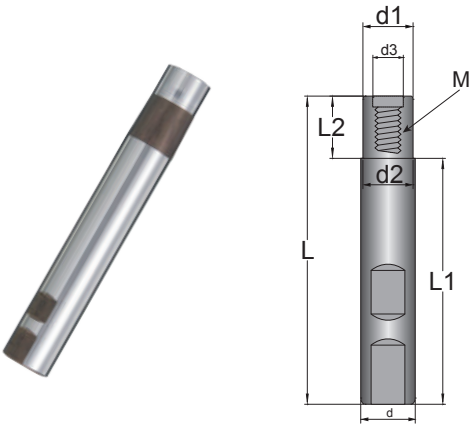
Applicable  
Machines  
CNC Milling machine

Efficiency  
**150%**  
UP

Durability  
**150%**  
UP

# PRODUCT SPECIFICATIONS

## Combimaster Toolholders



### CBH

| Order Code   | Dimensions (mm) |    |    |     |     |    |     |    |                                                                                       |      |
|--------------|-----------------|----|----|-----|-----|----|-----|----|---------------------------------------------------------------------------------------|------|
|              | d               | d1 | d2 | d3  | L1  | L2 | L   | M  |  KG |      |
| CBH-1010-80  | 10              | 10 | 10 | 6.5 | -   | -  | 60  | M6 | 0.04                                                                                  |      |
| CBH-1009-100 |                 | 9  | 9  |     | 60  | 20 | 80  |    | 0.05                                                                                  |      |
| CBH-1212-80  | 12              | 12 | 12 |     | -   | -  | 60  |    |                                                                                       | 0.07 |
| CBH-1211-100 |                 | 11 | 11 |     | 60  | 20 | 80  |    | 0.09                                                                                  |      |
| CBH-1211-120 |                 |    |    |     | 80  |    | 100 |    |                                                                                       |      |
| CBH-1211-140 |                 |    |    |     | 100 |    | 120 |    |                                                                                       |      |
| CBH-1616-100 | 16              | 16 | 16 | 8.5 | -   | -  | 70  | M8 | 0.14                                                                                  |      |
| CBH-1615-120 |                 | 15 | 15 |     | 70  | 20 | 90  |    |                                                                                       |      |
| CBH-1615-150 |                 |    |    |     | 95  | 25 | 120 |    |                                                                                       | 0.18 |

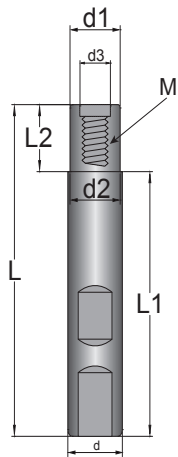
Accessories





# Combimaster Toolholders

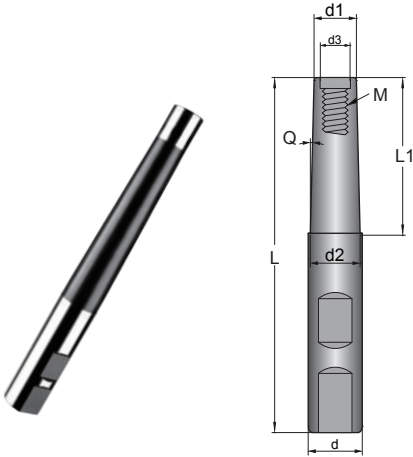
CBH



| Order Code     | Dimensions (mm) |     |    |      |     |    |     |     |                                                                                    |
|----------------|-----------------|-----|----|------|-----|----|-----|-----|------------------------------------------------------------------------------------|
|                | d               | d1  | d2 | d3   | L1  | L2 | L   | M   |  |
| CBH-2020-100   | 20              | 20  | 20 | 10.5 | -   | -  | 70  | M10 | 0.16                                                                               |
| CBH-2019-120   |                 | 19  | 19 |      | 70  | 20 | 90  |     | 0.21                                                                               |
| CBH-2019-160   |                 |     |    |      | 95  | 25 | 120 |     | 0.28                                                                               |
| CBH-2523-130   | 25              | 23  | 23 | 14   | 70  | 20 | 90  | M12 | 0.31                                                                               |
| CBH-2523-170   |                 |     |    |      | 100 | 30 | 130 |     | 0.46                                                                               |
| CBH-2523-210   |                 |     |    |      | 140 |    | 170 |     | 0.60                                                                               |
| CBH-2523-240   |                 |     |    |      | 170 |    | 200 |     | 0.72                                                                               |
| CBH-2525-110   |                 | 25  | 25 |      | -   | -  | 70  |     | 0.25                                                                               |
| CBH-3232-120   | 32              | 32  | 32 | 22   | -   | -  | 80  | M16 | 0.48                                                                               |
| CBH-3230-140   |                 | 30  | 30 |      | 80  | 20 | 100 |     | 0.56                                                                               |
| CBH-3230-200   |                 |     |    |      | 130 | 30 | 160 |     | 0.92                                                                               |
| CBH-3230-240   |                 |     |    |      | 170 |    | 200 |     | 1.16                                                                               |
| CBH-3230-280   |                 |     | 32 |      | 190 | 50 | 240 |     | 1.42                                                                               |
| CBH-3230-300   |                 | 210 |    |      |     |    | 260 |     | 1.53                                                                               |
| CBH-4240-220   | 42              | 40  | 40 | 28   | 130 | 20 | 150 | M18 |                                                                                    |
| CBH-50.849-215 | 50.8            | 49  | 49 | 36   |     |    |     | 170 | 30                                                                                 |
| CBH-50.849-265 |                 |     |    |      |     |    |     |     |                                                                                    |

# Combimaster Toolholders

CBH



| Order Code   | Dimensions (mm) |    |      |      |     |     |      |       |                                                                                    |
|--------------|-----------------|----|------|------|-----|-----|------|-------|------------------------------------------------------------------------------------|
|              | d               | d1 | d2   | d3   | L1  | L   | M    | Q     |  |
| CBH-1209-120 | 12              | 9  | 11.9 | 6.5  | 40  | 100 | M6   | 2 °   | 0.10                                                                               |
| CBH-1611-120 | 16              | 11 | 15.5 |      | 60  | 130 |      | 2.5 ° | 0.13                                                                               |
| CBH-1611-150 |                 |    |      |      |     |     |      |       |                                                                                    |
| CBH-2015-160 | 20              | 15 | 19.5 | 8.5  | 70  | 150 | M8   | 2 °   | 0.25                                                                               |
| CBH-2015-180 |                 |    |      |      | 80  | 200 |      |       | 0.30                                                                               |
| CBH-2015-230 |                 |    |      |      | 70  | 150 |      |       | 0.43                                                                               |
| CBH-2519-180 | 25              | 19 | 24   | 10.5 | 90  | 190 | M10  |       | 0.47                                                                               |
| CBH-2519-220 |                 |    |      |      | 75  | 160 |      |       | M12                                                                                |
| CBH-3223-200 | 32              | 23 | 28   | 14   | 80  | 200 | 2.10 |       |                                                                                    |
| CBH-3223-240 |                 |    | 31.5 |      | 120 | 300 |      |       | 1.10                                                                               |
| CBH-4232-280 | 42              | 32 | 41.5 | 22   | 110 | 240 | M16  |       | 2.63                                                                               |
| CBH-4232-340 |                 |    |      |      | 150 | 370 |      |       | 3.00                                                                               |
| CBH-4232-410 |                 |    |      |      |     |     |      |       |                                                                                    |

Accessories



# APPENDIX

- RELEVANT INFORMATION



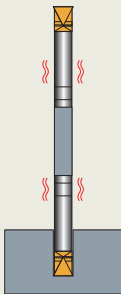
# Features Description

In the following appendix you can find the trouble shooting solutions, material classification groups and choose the proper inserts grade, and cutting calculation data.



# Troubleshooting

|                                                                                     | Problem                                | Possible cause                                                                                                                                                                                                              | Solution                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | Flank wear                             | <ol style="list-style-type: none"> <li>1. Cutting speed too high</li> <li>2. Feed,fz too low,</li> <li>3. chip is too thin</li> <li>4. Insufficient coolant</li> </ol>                                                      | <ol style="list-style-type: none"> <li>1. Reduce the cutting speed</li> <li>2. Increase feed rate</li> <li>3. Increase coolant flow rate</li> <li>4.Climb milling</li> <li>5.use coated insert</li> </ol>                                                                                                                               |
|     | Chipping of cutting edge               | <ol style="list-style-type: none"> <li>1. Chip is too thick</li> <li>2. Vibration</li> </ol>                                                                                                                                | <ol style="list-style-type: none"> <li>1. Reduce feed rate or increase RPM</li> <li>2. Use the tangential arc method</li> <li>3.Improve stability, minimize tool overhang</li> <li>4. Increase number of infeed passes</li> <li>5. Check toolholder run-out or insert mounting tolerance</li> <li>6.Use conventional milling</li> </ol> |
|    | Material build up on the cutting edge  | <ol style="list-style-type: none"> <li>1. Unsuitable carbide grade</li> <li>2. Cutting zone temperature is too low</li> <li>3. Very sticky material, such as low-carbon steel, scainless steels, and aluminum</li> </ol>    | <ol style="list-style-type: none"> <li>1. Use a coated carbide grade</li> <li>2. Increase the cutting speed</li> <li>3.Increase feed rate</li> <li>4. Increase coolant flow rate</li> </ol>                                                                                                                                             |
|  | Excessive wear causing short tool life | <ol style="list-style-type: none"> <li>1. Vibration</li> <li>2. Chips re-cutting</li> <li>3. Burr formation on component</li> <li>4. Poor surface finish</li> <li>5. Heat generation</li> <li>6. Excessive noise</li> </ol> | <ol style="list-style-type: none"> <li>1. Increase feed rate</li> <li>2. Reduce the cutting speed</li> <li>3. Down milling</li> <li>4. Effectively evacuate chips with compressed air or cutting fluid</li> <li>6. Check recommended cutting data</li> </ol>                                                                            |

|                                                                                   | Problem                      | Possible cause                                                             | Solution                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Vibration/runout             | 1. Weak fixturing<br>2. Tool overhang too long<br>3. Feed rate is too high | 1. Use correct cutting data<br>2. Check clamping of the workpiece and tool<br>3. Minimize overhang<br>4. Check tool holder run out<br>5. Choose a tool with fewer teeth<br>6. Increase number of infeed passes<br>7. Use up-milling in finishing |
|  | Insufficient thread accuracy | Tool deflection                                                            | Reduce feed rate<br>Execute a "zero" cut, and make sure the tool in correct center line                                                                                                                                                          |
|                                                                                   |                              |                                                                            |                                                                                                                                                                                                                                                  |
|                                                                                   |                              |                                                                            |                                                                                                                                                                                                                                                  |



# Material Classification Groups

• Steel

| mat.<br>group | The material group of workpieces |             |        |              |                 |                   |                     |
|---------------|----------------------------------|-------------|--------|--------------|-----------------|-------------------|---------------------|
|               | W.- Nr                           | EN          | EN-Nr  | DIN          | BS              | AFNOR             | JIS                 |
| 1             | 1.1133                           | G 28 Mn6    | 1.1165 | 20 Mn5       | 120 M 19        | 20 M 5            | SMnC 420            |
|               | 1.1165                           | C10         | 1.0301 | 30 Mn5       | 120 M 36        |                   | SMn 1 H; SCMn 2     |
|               | 1.0301                           |             |        | C 10         | 045 M 10        | AF 34 C 10; XC 10 | S 10 C              |
|               | 1.0401                           | C22+N       | 1.0402 | C 15         | 080 M 15        | AF3 7 C 12; XC 18 |                     |
|               | 1.0402                           | C25+N       | 1.0406 | C 22         | 050 A 20        | C 20              |                     |
|               | 1.0406                           | C 10E       | 1.1121 | C 25         | 070 M 26        | AF 50 C 30        | S 25 C              |
|               | 1.1121                           | C 15R       | 1.1141 | Ck 10        | 040 A 10        | XC 10             | S 10 C; S 9 CK      |
|               | 1.1141                           | C 22E       | 1.1151 | Ck 15        | 080 M 15        | XC 15; XC 18      | S 15 C; S 15 CK     |
|               | 1.1151                           |             |        | Ck 22        | 040 A 22        | XC25; XC 18       | S 22 C; S 20 CK     |
|               | 1.1158                           | S235JR      | 1.0037 | Ck 25        | 060 A 25        | XC 25             | S 25 C              |
|               | 1.0037                           | S235JRG2    | 1.0038 | St 37-2      |                 | E24-2             | STKM 12 C           |
|               | 1.0116                           | S275JOH     | 1.0149 | St 37-3      | 4360-40 C       | E 24-3; E 24-4    |                     |
|               | 1.0044                           | S275J2G3    | 1.0144 | St 44-2      | 4360-43 B       | E 28-2            | SM 41 B             |
|               | 1.0144                           |             |        | St 44-3 N    | 4360-43 C       | E 28-3; E 28-4    | SM 41 C             |
| 2             | 1.0721                           | 10 S 20     | 1.0721 | 10 S 20      | 210 M 15        | 10 F 1            |                     |
|               | 1.0722                           |             |        | 10 SPb 20    |                 | 10 PbF 2          |                     |
|               | 1.0723                           | 15 SMn13    | 1.0725 | 15 S 20      | 210 A 15        |                   | SUM 32              |
|               | 1.0726                           | 35 S20      | 1.0726 | 35 S 20      | 212 M 36        | 35 MF 4           |                     |
|               | 1.0727                           | 46 S20      | 1.0727 | 46 S 20      | 212 M 44        | 45 MF 4           |                     |
|               | 1.0728                           | 60 S20      | 1.0728 | 60 S 20      |                 | 60 MF 4           |                     |
|               | 1.0711                           |             |        | 9 S 20       | 220 M 07        |                   | SUM 21              |
|               | 1.0715                           | 11 SMn30    | 1.0715 | 9 SMn 28     | 230 M 07        | S 250             | SUM 22              |
|               | 1.0736                           | 11 Smn37    | 1.0736 | 9 SMn 36     | 240 M 07        | S 300             |                     |
|               | 1.0718                           | 11 SMnPb30  | 1.0718 | 9 SMnPb 28   |                 | S 250 Pb          | SUM 22 L            |
|               | 1.0737                           | 11 SMnPb37  | 1.0737 | 9 SMnPb 36   |                 | S 300 Pb          |                     |
|               |                                  |             |        |              |                 |                   |                     |
| 3             | 1.5622                           |             |        | 14 Ni 6      |                 | 16 N 6            |                     |
|               | 1.5423                           |             |        | 16 Mo 5      | 1503-245-420    |                   | SB 450 M            |
|               | 1.1167                           | G 28 Mn6+QT | 1.1165 | 36 Mn 5      | 150 M 36        | 40 M 5            | SMn 438 (H); SCMn 3 |
|               | 1.1157                           |             |        | 40 Mn 4      | 150 M 36        | 35 M 5            |                     |
|               | 1.0528                           |             |        | C 30         | 080 A 30        | C 30              | S 30 C              |
|               | 1.0501                           | C35+N       |        | C 35         | 060 A 35        | AF 55 C 35        |                     |
|               | 1.0511                           | C40+N       |        | C 40         | 080 M 40        | AF 60 C 40        | S 40 C              |
|               | 1.0503                           | E 335       | 1.0503 | C 45         | 080 M 46        | AF 65 C 45        | S 45 C              |
|               | 1.0540                           | C50+N       |        | C 50         | 080 M 50        | C 50              | S 50 C              |
|               | 1.1178                           | C 30E       | 1.1178 | Ck 30        | 060 A 30        |                   | S 30 C              |
|               | 1.1181                           | C 35E       | 1.1181 | Ck 35        | 080 M 36        | XC 38 H1;XC 32    | S 35 C              |
|               | 1.1186                           | C 40E       | 1.1186 | Ck 40        | 080 M 40        | XC 42 H1          | S 40 C              |
|               | 1.1206                           | C 50E       | 1.1206 | Ck 50        | 080 M 50        | XC 48 H1          |                     |
|               | 1.1203                           | C 55E       | 1.1203 | Ck 55        | 070 M 55        | XC 55             | S 55 C              |
|               | 1.0570                           | S355JR      | 1.0570 | St 52-3      | 4360-50 C       | E 36-3; E 36-4    | SM 50 YA            |
|               | 1.0535                           | E 360       | 1.0070 | St 70-2      |                 | A 70-2            |                     |
| 4             | 1.5680                           |             |        | 12 Ni 19     |                 | Z 18 N 5          | SNC 415 (H)         |
|               | 1.7012                           |             |        | 13 Cr 2      |                 |                   | SNC 815 (H)         |
|               | 1.7335                           | 13 CrMo 4 5 | 1.7335 | 13 CrMo 4 4  | 1501-620 Gr. 27 | 15 CD 3.5         | SCR 415 (H)         |
|               | 1.7715                           |             |        | 14 MoV 6 3   | 1503-660-440    |                   | SCM 415 (H)         |
|               | 1.5732                           |             |        | 14 NiCr 10   |                 | 14 NC 11          |                     |
|               | 1.5752                           | 14 NiCr 14  | 1.5752 | 14 NiCr 14   | 655 M 13        | 12 NC 15          |                     |
|               | 1.7015                           |             |        | 15 Cr 3      | 523 M 15        | 12 C 3            |                     |
|               | 1.7262                           |             |        | 15 CrMo 5    |                 | 12 CD 4           | SNC 22              |
|               | 1.8521                           |             |        | 15 CrMoV 5 9 |                 |                   |                     |
|               | 1.5919                           |             |        | 15 CrNi 6    | S 107           | 16 NC 6           | SCR 415             |
|               | 1.5415                           | 16 Mo 3     | 1.5415 | 15 Mo 3      | 1501-240        | 15 D 3            |                     |
|               | 1.2735                           |             |        | 15 NiCr 14   |                 | 10 NC 12          |                     |
|               | 1.7337                           |             |        | 16 CrMo 44   | 1501-620 Gr. 27 | 15 CD 4.5         |                     |
|               | 1.7131                           | 16 MnCr 5   | 1.5715 | 16 MnCr 5    | 527 M 17        | 16 MC 5           |                     |
|               | 1.7139                           | 16 MnCrS 5  | 1.7139 | 16 MnCrS 5   |                 |                   | SCM 421             |
|               | 1.5920                           |             |        | 18 CrNi 8    |                 | 20 NC 6           | SMnC 420 (H)        |
|               | 1.6587                           | 17 CrNiMo 6 | 1.6587 | 18 CrNiMo 6  | 820 A 16        | 18 NCD 6          | SMnC 21H            |
|               | 1.7311                           |             |        | 20 CrMo 2    |                 |                   |                     |
|               | 1.7264                           | 20 CrMo 5   | 1.7264 | 20 CrMo 5    |                 | 18 CD 4           |                     |
|               | 1.7147                           | 20 MnCr 5   | 1.7147 | 20 MnCr 5    |                 | 20 MC 5           | SCR 420H            |
|               | 1.7149                           | 20 MnCrS 5  | 1.7149 | 20 MnCrS 5   |                 | 20 MnCrS 5        |                     |
|               | 1.7321                           |             |        | 20 MoCr 4    |                 |                   |                     |
|               | 1.7323                           |             |        | 20 MoCrS 4   |                 |                   |                     |
|               | 1.2162                           |             |        | 21 MnCr 5    |                 | 20 NC 5           |                     |

• Steel

| The material group of workpieces |            |                  |         |           |              |           |      |
|----------------------------------|------------|------------------|---------|-----------|--------------|-----------|------|
| UNI                              | SS         | AISI/ASTM        | UNS     | Condition | Misc. Brands | Structure | Form |
| G 22 Mn 3                        |            | 1022; 1518       | G10220  |           |              |           |      |
| C 10                             |            | 1330             | G13300  |           |              |           |      |
| C 15; C 16                       | 1350       | 1010             | G10100  |           |              |           |      |
| C 20; C 21                       | 1450       | 1015             | G10170  |           |              |           |      |
| C 25                             |            | 1023             | G10200  |           |              |           |      |
| C 10                             | 1265       | 1025             |         |           |              |           |      |
| 15; C 16                         | 1370       | 1010             | G10100  |           |              |           |      |
| C 20                             |            | 1015             | G10170  |           |              |           |      |
| C 25                             |            | 1022             |         |           |              |           |      |
| Fe 360 B                         | 1311       | 1025             | G10250  |           |              |           |      |
| Fe 360 D FF                      | 1312; 1313 |                  |         |           |              |           |      |
| Fe 430 B FN                      | 1412       | A 573 Gr. 58     |         |           |              |           |      |
| Fe 430 D FF                      | 1412; 1414 | A 570 Gr. 40     |         |           |              |           |      |
|                                  |            | A 573 Gr. 70     |         |           |              |           |      |
| CF 10 S 20                       |            | 1108             |         |           |              |           |      |
| CF 10 SPb 20                     |            | 11 L 08          |         |           |              |           |      |
|                                  | 1922       |                  |         |           |              |           |      |
|                                  | 1957       | 1140             | G11400  |           |              |           |      |
|                                  | 1973       | 1146             | G11460  |           |              |           |      |
| CF 9 S 22                        |            | 1212             | G12120  |           |              |           |      |
| CF 9 SMn 28                      | 1912       | 1213             | G12130  |           |              |           |      |
| CF 9 SMn 36                      |            | 1215             | G12150  |           |              |           |      |
| CF 9 SMnPb 28                    | 1914       | 12 L 13          | G12134  |           |              |           |      |
| CF 9 SMnPb 36                    | 1926       | 12 L 14          | G12144  |           |              |           |      |
| 14 Ni 6                          |            | A 350-LF 5       |         |           |              |           |      |
| 16 Mo 5                          | 2120       | 4520             | G45200  |           |              |           |      |
|                                  |            | 1335             | G13350  |           |              |           |      |
|                                  |            | 1039             | G10390  |           |              |           |      |
| C 35                             | 1550       | 1035             | G10350  |           |              |           |      |
| C 40                             |            | 1040             |         |           |              |           |      |
| C 45                             | 1650       | 1045             | G10430  |           |              |           |      |
|                                  |            | 1049             |         |           |              |           |      |
|                                  |            | 1030             |         |           |              |           |      |
| C 35                             | 1572       | 1035             | G10340  |           |              |           |      |
| C 40                             |            | 1040             |         |           |              |           |      |
|                                  |            | 1050             |         |           |              |           |      |
| C 50                             |            | 1055             |         |           |              |           |      |
| Fe 510 B; C; D                   | 2172; 2132 |                  |         |           |              |           |      |
| Fe 690                           | 1655       | 1055             |         |           |              |           |      |
|                                  |            | 2515             |         |           |              |           |      |
| 14 CrMo 4 5                      | 2216       | A 182-F11; F12   |         |           |              |           |      |
| 16 NiCr 11                       |            | 3415             |         |           |              |           |      |
|                                  |            | 3310; 9314       | G 33106 |           |              |           |      |
|                                  |            | 5015             | G 50150 |           |              |           |      |
| 12 CrMo 4                        |            |                  |         |           |              |           |      |
| 16 CrNi 4                        |            | 4320             |         |           |              |           |      |
| 16 Mo 3                          | 2912       | A 204 Gr. A      |         |           |              |           |      |
|                                  |            | P6               | T 51605 |           |              |           |      |
| 14 CrMo 4 5                      | 2216       | A 387 Gr.12 Cl.2 |         |           |              |           |      |
| 16 MnCr 5                        | 2511       | 5115             | G51170  |           |              |           |      |
| 18 NiCrMo 7                      |            |                  |         |           |              |           |      |
| 20 MnCr 5                        |            |                  |         |           |              |           |      |
|                                  |            | 5120             | G51200  |           |              |           |      |
|                                  |            | 5120 H           |         |           |              |           |      |



• Steel

| mat.<br>group | The material group of workpieces |                |             |                                              |                                              |                                                                       |                                                  |
|---------------|----------------------------------|----------------|-------------|----------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------|
|               | W.- Nr                           | EN             | EN-Nr       | DIN                                          | BS                                           | AFNOR                                                                 | JIS                                              |
| 4             | 1.6523                           | 20 NiCrMoS 2 2 | 1.6526      | 21 NiCrMo 2                                  | 805 M 20                                     | 20 NCD 2                                                              | SNCM 220 (H)                                     |
|               | 1.7271                           |                |             | 23 CrMoB 3 3                                 |                                              |                                                                       |                                                  |
|               | 1.7218                           |                |             | 25 CrMo 4                                    |                                              |                                                                       |                                                  |
|               | 1.7325                           | 25 CrMo 4      | 1.7218      | 25 MoCr 4                                    | 1717 CDS 110                                 | 25 CD 4 S                                                             | SCM420;SCM430                                    |
|               | 1.7326                           |                |             | 25 MoCrS 4                                   |                                              |                                                                       |                                                  |
|               | 1.7030                           |                |             | 28 Cr 4                                      |                                              |                                                                       |                                                  |
|               | 1.6513                           | 28 Cr4         | 1.7030      | 28 NiCrMo4                                   | 530 A 30                                     |                                                                       | SNCM 431                                         |
|               | 1.7707                           |                |             | 30 CrMoV 9                                   |                                              |                                                                       |                                                  |
|               | 1.6580                           |                |             | 30 CrNiMo 8                                  |                                              |                                                                       |                                                  |
|               | 1.8519                           | 31 CrMoV 9     | 1.8519      | 31 CrMov 9                                   | 823 M 30                                     | 30 CND 8<br>32 CDV 12<br>30 NC 11                                     | SNC 836                                          |
|               | 1.5755                           |                |             | 31 NiCr 14                                   |                                              |                                                                       |                                                  |
|               | 1.7020                           |                |             | 32 Cr 2                                      |                                              |                                                                       |                                                  |
|               | 1.7361                           | 34 Cr 4        | 1.7033      | 32 CrMo 12                                   | 722 M 24                                     | 30 CD 12<br>32 C 4                                                    | SCr 430 (H)<br>SCM 432;<br>SCCrM3                |
|               | 1.7033                           |                |             | 34 Cr 4                                      |                                              |                                                                       |                                                  |
|               | 1.7220                           |                |             | 34 CrMo 4                                    |                                              |                                                                       |                                                  |
|               | 1.2330                           | 34 CrMo 4      | 1.7220      | 35 CrMo 4                                    | 708 A 37<br>708 A 37                         | 35 CD 4<br>34 CD 4                                                    |                                                  |
|               | 1.5864                           |                |             | 35 NiCr 18                                   |                                              |                                                                       |                                                  |
|               | 1.6511                           |                |             | 36 CrNiMo 4                                  |                                              |                                                                       |                                                  |
|               | 1.5736                           | 36CrNiMo4+TA   |             | 36 NiCr 10                                   | 816 M 40                                     | 40 NCD 3<br>35 NC 11<br>35 NC 6<br>38 C 4                             |                                                  |
|               | 1.5710                           |                |             | 36 NiCr 6                                    |                                              |                                                                       |                                                  |
|               | 1.7034                           |                |             | 37 Cr 4                                      |                                              |                                                                       |                                                  |
|               | 1.5122                           | 38 Cr2         | 1.7003      | 37 MnSi 4                                    | 640 A 35<br>530 A 36                         | 38 C 4                                                                |                                                  |
|               | 1.7003                           |                |             | 38 Cr 2                                      |                                              |                                                                       |                                                  |
|               | 1.5120                           |                |             | 38 MnSi 4                                    |                                              |                                                                       |                                                  |
|               | 1.8523                           |                |             | 39 CrMoV 13 9                                | 897 M 39                                     |                                                                       |                                                  |
|               | 1.2311                           |                |             | 40 CrMnMo 7                                  |                                              |                                                                       |                                                  |
|               | 1.2312                           |                |             | 40 CrMnMoS 8 6                               |                                              |                                                                       |                                                  |
|               | 1.2738                           | 41 Cr 4        | 1.7035      | 40 CrMnNiMo 8                                | 530 M 40<br>708 M 40<br>530 A 40<br>708 M 40 | 40 CMD 8S<br>40 CND 8<br>42 C 4<br>42 CD 4 TS<br>42 C 4 TS<br>42 CD 4 | SCr 440 (H)<br>SCM 440<br>SCr 440<br>SCM 440 (H) |
|               | 1.7035                           |                |             | 41 Cr4                                       |                                              |                                                                       |                                                  |
|               | 1.7223                           |                |             | 41 CrMo 4                                    |                                              |                                                                       |                                                  |
|               | 1.7045                           | 42 CrMo 4      | 1.7225      | 42 Cr 4                                      |                                              |                                                                       |                                                  |
|               | 1.7225                           |                |             | 42 CrMo 4                                    |                                              |                                                                       |                                                  |
|               | 1.7561                           |                |             | 42 CrV 6                                     |                                              |                                                                       |                                                  |
|               | 1.5223                           |                |             | 42 MnV 7                                     |                                              |                                                                       |                                                  |
|               | 1.3563                           |                |             | 43 CrMo 4                                    |                                              |                                                                       |                                                  |
|               | 1.3561                           |                |             | 44 Cr 2                                      |                                              |                                                                       |                                                  |
|               | 1.7006                           |                |             | 46 Cr 2                                      |                                              | 42 C 2                                                                |                                                  |
|               | 1.5121                           |                |             | 46 MnSi 4                                    |                                              |                                                                       |                                                  |
|               | 1.3565                           |                |             | 48 CrMo 4                                    |                                              |                                                                       |                                                  |
|               | 1.7228                           | 50 CrV 4       | 1.8159      | 50 CrMo 4                                    | 708 A 47<br>735 A 50                         |                                                                       | SCM 445 (H)<br>SUP 10                            |
|               | 1.8159                           |                |             | 50 CrV 4                                     |                                              |                                                                       |                                                  |
|               | 1.5131                           |                |             | 50 MnSi 4                                    |                                              |                                                                       |                                                  |
|               | 1.5141                           | 50 MnSi4       | 1.5131      | 53 MnSi 4                                    |                                              | 50 CV 4                                                               | SUP 9(A)                                         |
|               | 1.7176                           |                |             | 55 Cr3                                       |                                              |                                                                       |                                                  |
|               | 1.0904                           |                |             | 55 SiCr7                                     |                                              |                                                                       |                                                  |
|               | 1.2103                           |                | 1.7100      | 55 Si 7                                      | 527 A 60<br>250 A 53                         | 55 C 3<br>55 S 7                                                      | SUP 7                                            |
| 1.0961        | 58 SiCr 8                        |                |             |                                              |                                              |                                                                       |                                                  |
| 1.2101        | 60 SiCr 7                        |                |             |                                              |                                              |                                                                       |                                                  |
| 1.1730        |                                  |                | 62 SiMnCr4  |                                              | 60 SC 7                                      |                                                                       |                                                  |
| 1.1820        |                                  |                | C 45W       |                                              |                                              |                                                                       |                                                  |
| 1.0601        |                                  |                | C 55W       |                                              |                                              |                                                                       |                                                  |
| 1.1740        | C60+N                            | 1.0601         | C 60        | 080 A 62                                     | CC 55<br>Y3 55                               | SK7                                                                   |                                                  |
| 1.1744        |                                  |                | C 60W       |                                              |                                              |                                                                       |                                                  |
| 1.1520        |                                  |                | C 67W       |                                              |                                              |                                                                       |                                                  |
| 1.1620        |                                  |                | C 70W1      |                                              |                                              |                                                                       |                                                  |
| 1.1750        |                                  |                | C 70W2      |                                              |                                              |                                                                       |                                                  |
| 1.1525        |                                  |                | C 75W       |                                              |                                              |                                                                       |                                                  |
| 1.1625        | C 75 W                           | 1.1750         | C 80W1      | BW 1A                                        | Y1 90; Y1 80                                 | SKC 3; SK 5;<br>SK 6<br>SK 5<br>S 45 C<br>S 58 C                      |                                                  |
| 1.1830        |                                  |                | C 80W2      |                                              |                                              |                                                                       |                                                  |
| 1.1191        |                                  |                | C 85W       |                                              |                                              |                                                                       |                                                  |
| 1.1221        | C 45E                            | 1.1191         | Ck 45       | BW 1 B                                       | Y1 80<br>Y3 90                               |                                                                       |                                                  |
| 1.1221        |                                  |                | Ck 60       |                                              |                                              |                                                                       |                                                  |
| 1.1231        |                                  |                | Ck 67       |                                              |                                              |                                                                       |                                                  |
| 1.1248        | C 60E                            | 1.1231         | Ck 75       | 080 M 46<br>080 A 62<br>060 A 67<br>060 A 78 | XC 42<br>XC 60<br>XC 68<br>XC 75             |                                                                       |                                                  |
| 1.8159        |                                  |                | GS-50 CrV 4 |                                              |                                              |                                                                       |                                                  |
| 1.0060        |                                  |                | St 60-2     |                                              |                                              |                                                                       |                                                  |
|               | E 335                            | 1.0060         |             | 4360-SSE; SSC                                | A 60-2                                       | SM 58                                                                 |                                                  |
|               |                                  |                |             |                                              |                                              |                                                                       |                                                  |

• Steel

| The material group of workpieces |            |            |         |           |              |           |      |
|----------------------------------|------------|------------|---------|-----------|--------------|-----------|------|
| UNI                              | SS         | AISI/ASTM  | UNS     | Condition | Misc. Brands | Structure | Form |
| 20 NiCrMo 2                      | 2506       | 8620       | G86170  |           |              |           |      |
| 25 CrMo 4 (KB)                   | 2225       | 4130       | G41300  |           |              |           |      |
|                                  |            | 5130       |         |           |              |           |      |
| 30 NiCrMo 8                      |            |            |         |           |              |           |      |
| 32 CrMo 12                       | 2240       |            |         |           |              |           |      |
| 34 Cr 4 (KB)                     |            | 5132       | G51320  |           |              |           |      |
| 35 CrMo 4                        | 2234       | 4135; 4137 | G41350  |           |              |           |      |
| 35 CrMo 4                        | 2234       | 4135       | T 51620 |           |              |           |      |
| 38 NiCrMo 4 (KB)                 |            | 9840       | G98400  |           |              |           |      |
| 35 NiCr 9                        |            | 3435       |         |           |              |           |      |
| 38 Cr 4                          |            | 3135       |         |           |              |           |      |
| 38 Cr 2                          |            | 5135       |         |           |              |           |      |
| 36 CrMoV 13 9                    |            |            |         |           |              |           |      |
|                                  |            | P 20       |         |           |              |           |      |
|                                  |            | P 20+S     |         |           |              |           |      |
|                                  |            | P 20+Ni    |         |           |              |           |      |
| 41 Cr 4                          |            | 5140       | G51400  |           |              |           |      |
| 41 CrMo 4                        | 2244       | 4142; 4140 | G41420  |           |              |           |      |
| 42 Cr 4                          | 2244       | 5140       |         |           |              |           |      |
| 42 CrMo 4                        | 2244       | 4142; 4140 | G41400  |           |              |           |      |
|                                  |            |            |         |           |              |           |      |
| 45 Cr 2                          |            | 5045       |         |           |              |           |      |
|                                  |            | 5045       |         |           |              |           |      |
| 51 CrV 4                         | 2230       | 4150       | G41470  |           |              |           |      |
|                                  |            | 6150       | H61500  |           |              |           |      |
| 55 Cr 3                          | 2253       | 5155       | G51550  |           |              |           |      |
| 55 Si 8                          | 2085; 2090 | 9255       |         |           |              |           |      |
| 60 SiCr 8                        |            | 9262       |         |           |              |           |      |
|                                  |            |            |         |           |              |           |      |
| C60                              |            | 1060       | G10600  |           |              |           |      |
|                                  |            |            |         |           |              |           |      |
| C 80 KU                          |            | W1         | T72301  |           |              |           |      |
| C 80 KU                          |            | W 108      |         |           |              |           |      |
|                                  |            |            |         |           |              |           |      |
| C 45                             | 1672       |            | G10420  |           |              |           |      |
| C 60                             | 1665; 1678 | 1064       | G10640  |           |              |           |      |
| C 70                             | 1770       | 1070       | G10700  |           |              |           |      |
| C 75                             | 1774; 1778 | 1078; 1080 | G10780  |           |              |           |      |
|                                  |            | 6150H      |         |           |              |           |      |
| Fe 590; Fe 60-2                  |            |            |         |           |              |           |      |



• Steel

| mat.<br>group | The material group of workpieces |                  |        |                     |                     |                  |             |
|---------------|----------------------------------|------------------|--------|---------------------|---------------------|------------------|-------------|
|               | W-<br>Nr                         | EN               | EN-Nr  | DIN                 | BS                  | AFNOR            | JIS         |
| 4             | 1.4006                           | X 12 Cr 13       | 1.4006 | X 10 Cr 13          | 410 S 21            | Z 12 C 13        | SUS 410     |
|               | 1.4724                           | X 10 CrAl 13     | 1.4724 | X 10 CrAl 13        | BH 12               | Z 10 C 13        | SUS 405     |
|               | 1.4762                           | X 10 CrAl 24     | 1.4762 | X 10 CrAl 24        |                     | Z 10 CAS 24      | SUH 442     |
|               | 1.4006                           | X 12 Cr 13       | 1.4006 | X 12 Cr 13          | 410 S 21            |                  | SUS 410     |
|               | 1.4104                           | X 14 CrMoS 17    | 1.4104 | X 12 CrMoS 17       | 411 S 29            | Z 10 CF 17       | SUS 430 F   |
|               | 1.4005                           | X 12 CrS 13      | 1.4005 | X 12 CrS 13         | 416 S 21            | Z 12 CF 13       | SUS 416     |
|               | 1.4024                           | X 12 Cr 13       | 1.4024 | X 15 Cr 13          | 420 S 29            | Z 12 C 13        | SUS 410 J 1 |
|               | 1.4521                           | X 2 CrMoTi18 2   | 1.4521 | X 2 CrMoTi18 2      |                     |                  |             |
|               | 1.4521                           | X 2 CrMoTi18 2   | 1.4521 | X 2 CrMoTi18 2      |                     |                  |             |
|               | 1.4003                           | X 2 CrNi 13      | 1.4003 | X 2 CrNi 12         |                     |                  |             |
|               | 1.4313                           | X 3 CrNiMo 13 3  | 1.4313 | X 5 CrNi 13 4       | 425 C 11            | Z 5 CN 13.4      | SCS 5       |
|               | 1.4512                           | X 5 CrTi 12      | 1.4512 | X 5 CrTi 12         | 409 S 19            | Z 6 CT 12        | SUH 409     |
|               | 1.4000                           | X 6 Cr 13        | 1.4000 | X 6 Cr 13           | 403 S 17            | Z 6 C 12         | SUS 403     |
|               | 1.4016                           | X 6 Cr 17        | 1.4016 | X 6 Cr 17           | 430 S 15            | Z 8 C 17         | SUS 430     |
|               | 1.4002                           | X 6 CrAl 13      | 1.4002 | X 6 CrAl 13         | 405 S 17            | Z 6 CA 13        | SUS 405     |
|               | 1.2341                           | X 6 CrMo 4       | 1.2341 | X 6 CrMo 4          |                     |                  |             |
|               | 1.4510                           | X 6 CrTi 17      | 1.4510 | X 6 CrTi 17         |                     | Z 8 CT 17        | SUS 430 LX  |
|               | 1.4511                           | X 3 CrNb 17      | 1.4511 | X 8 CrNb 17         |                     | Z 8 CNb 17       | SUS 430 LX  |
| 5             | 1.7380                           | 10 CrMo 9 10     | 1.7380 | 10 CrMo 9 10        | 1501-622 Gr. 31; 45 | 10 CD 9. 10      |             |
|               | 1.3505                           | 100 Cr 6         | 1.3505 | 100 Cr 6            | 534 A 99            | 100 C 6          | SUJ 2       |
|               | 1.2510                           |                  |        | 100 MnCrW 4         | BO 1                | 90 MWCv 5        | SKS 3       |
|               | 1.2833                           |                  |        | 100 V 1             | BW 2                | Y1 105 V         | SKS 43      |
|               | 1.2419                           | 105 WCr 6        | 1.2419 | 105 WCr 6           |                     | 105 WC 13        | SKS 31      |
|               | 1.2210                           | 107 CrV 3        | 1.2210 | 115 CrV 3           |                     | 100 C 3          |             |
|               | 1.2516                           |                  |        | 120 WV 4            | BF 1                | 110 WC 20        |             |
|               | 1.7735                           | 14 CrMoV 6 9     | 1.7735 | 14 CrMoV 6 9        |                     | 20 CDV 5.07      |             |
|               | 1.5860                           |                  |        | 14 NiCr 18          |                     |                  |             |
|               | 1.7709                           |                  |        | 21 CrMoV 5 7        |                     |                  |             |
|               | 1.6746                           |                  |        | 32 NiCrMo 14 5      | 830 M 31            | 35 NCD 14        |             |
|               | 1.8504                           | 34 CrAl 6        | 1.8504 | 34 CrAl 6           |                     |                  |             |
|               | 1.8507                           |                  |        | 34 CrAlMo 5         | 905 M 31            | 30 CAD 6.12      |             |
|               | 1.8550                           | 34 CrAlNi 7      | 1.8550 | 34 CrAlNi 7         |                     | 34 CAND 7        |             |
|               | 1.8506                           |                  |        | 34 CrAlS 5          |                     |                  |             |
|               | 1.6582                           | 34 CrNiMo 6      | 1.6582 | 34 CrNiMo 6         | 817 M 40            | 35 NCD 6         | SNCM 447    |
|               | 1.6546                           |                  |        | 40 NiCrMo 2 2       | 311-Type 7          | 40 NCD 2         | SNCM 240    |
|               | 1.6565                           |                  |        | 40 NiCrMo 6         | 311-Type 6          |                  | SNCM 439    |
|               | 1.8509                           | 41 CrAlMo 7 10   | 1.8509 | 41 CrAlMo 7         | 905 M 39            | 40 CAD 6.12      | SACM 645    |
|               | 1.2542                           |                  |        | 45 WCrV 7           | BS 1                |                  |             |
|               | 1.2721                           |                  |        | 50 NiCr 13          |                     |                  |             |
|               | 1.8161                           |                  |        | 58 CrV 4            |                     |                  |             |
|               | 1.2826                           |                  |        | 60 MnSiCr 4         |                     |                  |             |
|               | 1.2550                           |                  |        | 60 WCrV 7           |                     | 55 WC 20         |             |
|               | 1.7103                           |                  |        | 67 SiCr 5           |                     |                  |             |
|               | 1.2108                           |                  |        | 90 CrSi 5           |                     |                  |             |
|               | 1.1273                           |                  |        | 90 Mn 4             |                     |                  |             |
|               | 1.2842                           | 90 MnCrV 8       | 1.2842 | 90 MnCrV 8          | BO 2                | 90 MV 8          |             |
|               | 1.1545                           | C 105U           | 1.1545 | C 105 W1            |                     | Y1 105           | SK 3        |
|               | 1.1645                           |                  |        | C 105 W2            |                     | Y1 105           |             |
|               | 1.1654                           |                  |        | C 110 W             |                     |                  |             |
|               | 1.1663                           |                  |        | C 125 W             |                     | Y2 120           | SK 2        |
|               | 1.1673                           |                  |        | C 135 W             |                     | Y2 140           | SK 1        |
|               | 1.1274                           | C 100S           | 1.1274 | Ck 101              | 060 A 96            |                  | SUP 4       |
|               | 1.2887                           |                  |        | GS-34 CoCrMoV 19 12 |                     |                  |             |
|               | 1.2392                           |                  |        | G-X 28 CrMoV 5 1    |                     |                  |             |
|               | 1.2606                           |                  |        | G-X 37 CrMoW 5 1    |                     |                  |             |
|               | 1.4749                           | X 18 CrN 28      | 1.4749 | X 18 CrN 28         |                     | Z 18 C 25        |             |
|               | 1.2764                           |                  |        | X 19 NiCrMo 4       |                     |                  |             |
|               | 1.4021                           | X 20 Cr 13       | 1.4021 | X 20 Cr 13          | 420 S 37            | Z 20 C 13        | SUS 420 J1  |
|               | 1.4935                           | X 20 CrMoWV 12 1 | 1.4935 | X 20 CrMoWV 12 1    |                     |                  |             |
|               | 1.4057                           | 1                | 1.4057 | X 20 CrNi 17 2      | 431 S 29            | Z 15 CN 16.02    | SUS 431     |
|               | 1.4923                           | X 20 CrNi 17 2   | 1.4923 | X 22 CrMoV 12 1     | 762                 | Z 21 CDV 12      |             |
|               | 1.4028                           | X 22 CrMoV 12 1  | 1.4028 | X 30 Cr 13          | 420 S 45            | Z 30 C 13        | SUS 420 J 2 |
|               | 1.2316                           | X 30 Cr 13       | 1.2316 | X 36 CrMo 17        |                     | Z 35CD17         |             |
|               | 1.4418                           | X 38 CrMo 16     | 1.4418 | X 4 CrNiMo 16 5     |                     | Z 6 CND 16.05.01 |             |
|               | 1.4031                           | X 4 CrNiMo 16 5  | 1.4031 | X 40 Cr 13          | (420 S 45)          | Z 40 C 14        | SUS 420     |
|               |                                  | X 39 Cr 13       |        |                     |                     |                  |             |

• Steel

| The material group of workpieces                                                                      |                          |                                   |                                                          |           |             |                                                        |      |
|-------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------|----------------------------------------------------------|-----------|-------------|--------------------------------------------------------|------|
| UNI                                                                                                   | SS                       | AISI/ASTM                         | UNS                                                      | Condition | Misc.Brands | Structure                                              | Form |
| X 12 Cr 13<br>X 10 CrAl 12<br>X 16 Cr 26                                                              | 2302                     | 410; CA-15<br>405<br>446          | S41000<br>S40500<br>S44600                               |           |             | Martensite<br>Ferrite<br>Ferrite                       |      |
| X 10 CrS 17<br>X 12 CrS 13                                                                            | 2302<br>2383<br>2380     | 410 S<br>430 F<br>416             | S41000<br>S43020<br>S41600                               |           |             | Martensite<br>Ferrite<br>Martensite                    |      |
|                                                                                                       | 2326<br>2326             | 444<br>444                        | J91201                                                   |           |             | Martensite<br>Ferrite<br>Ferrite                       |      |
| X 6 CrNi 13 04<br>X 6 CrTi 12<br>X 6 Cr 13<br>X 8 Cr 17<br>X 6 CrAl 13                                | 2385<br><br>2301<br>2320 | 309<br>409 L<br>403<br>430<br>405 | S40977<br>S41500<br>S40900<br>S41008<br>S43000<br>S40500 |           | F6NM        | Ferrite<br>Martensite<br>Ferrite<br>Ferrite<br>Ferrite |      |
| X 6 CrTi 17<br>X 6 CrNb 17                                                                            |                          | 430 Ti<br>430 Nb                  | S43036                                                   |           |             | Ferrite<br>Ferrite                                     |      |
| 12 CrMo 9 10<br>100 Cr 6<br>95 MnWCr 5 KU<br>102 V 2 KU<br>107 WCr 5 KU<br>107 CrV 3 KU<br>110 W 4 KU | 2218<br>2258<br>2140     | A 182-F22<br>52100<br>O1<br>W 210 | J 21890<br>G51986<br>T31501<br>T 72302                   |           |             |                                                        |      |
| 34 CrAlMo 7                                                                                           |                          | A 355 Cl. D                       | K 23545<br>K 52440<br>K 23745                            |           |             |                                                        |      |
| 35 NiCrMo 6 (KW)<br>40 NiCrMo 2 (KB)                                                                  | 2541                     | 4340<br>8740<br>4340              | G87400                                                   |           |             |                                                        |      |
| 41 CrAlMo 7<br>45 WCrV 8 KU                                                                           | 2940<br>2710             | A 355 Cl. A<br>S1                 | K 24065<br>T41901                                        |           |             |                                                        |      |
| 55 WCrV 8 KU                                                                                          |                          |                                   |                                                          |           |             |                                                        |      |
| 90 MnVCr 8 KU<br>C 100 KU<br>C 100 KU                                                                 | 1880                     | O2<br>W 110                       | T31502                                                   |           |             |                                                        |      |
| C 120 KU<br>C 140 KU                                                                                  | 1870                     | W 112<br>1095                     | G10950                                                   |           |             |                                                        |      |
|                                                                                                       | 2322                     | 446                               | S44600                                                   |           |             | Ferrite                                                |      |
| X 20 Cr 13                                                                                            | 2303                     | 420                               | S42000<br>S42200<br>S43100                               |           |             | Martensite<br>Martensite<br>Martensite                 |      |
| X 16 CrNi 16<br>X 22 CrMoV 12 1<br>X 30 Cr 13<br>X 38 CrMo 16 1 KU                                    | 2321-03<br>2317<br>2304  | 431<br>420<br>422                 | J91153                                                   |           |             | Martensite<br>Martensite<br>Martensite                 |      |
| X 40 Cr 14                                                                                            | 2387<br>2304,2314        | -<br>420                          | -<br>S40280                                              |           |             | Martensite<br>Martensite                               |      |



• Steel

| mat.<br>group   | The material group of workpieces |                      |           |                     |            |                           |                    |
|-----------------|----------------------------------|----------------------|-----------|---------------------|------------|---------------------------|--------------------|
|                 | W.-<br>Nr                        | EN                   | EN-<br>Nr | DIN                 | BS         | AFNOR                     | JIS                |
| 5               | 1.4034                           | X 45 Cr 13           | 1.4034    | X 45 Cr 13          | (420 S 45) | Z 40 C 14                 |                    |
|                 | 1.4873                           | X 45 CrNiW 18 9      | 1.4873    | X 45 CrNiW 18 9     | 331 S 40   | Z 35 CNWS 18.09           | SUH 31             |
|                 | 1.2767                           | X 45 NiCrMo 4        | 1.2767    | X 45 NiCrMo 4       | EN 20B     | 45 NCD 17                 |                    |
|                 | 1.4109                           | X 70 CrMo 15         | 1.4109    | X 65 CrMo 14        |            | Z 70 D 14                 | SUS 440A           |
|                 | 1.4747                           | X 80 CrNiSi 20       | 1.4747    | X 80 CrNiSi 20      | 443 S 65   | Z 80 CSN 20.02            | SUH 4              |
|                 | 1.4112                           | X 90 CrMoV 18        | 1.4112    | X 90 CrMoV 18       | 409 S 19   | Z 2 CND 18 05             | SUS 440 B          |
| 6               | 1.2711                           | 54 NiCrMoV 6         | 1.2711    | 54 NiCrMoV 6        | BH 224     | 55 NCDV 6                 |                    |
|                 | 1.2713                           |                      |           | 55 NiCrMoV 6        |            | 55 NCDV 7                 | SKT 4              |
|                 | 1.2744                           |                      |           | 57 NiCrMoV 7 7      |            |                           |                    |
|                 | 1.2762                           |                      |           | 75 CrMoNiW 6 7      |            |                           |                    |
|                 | 1.2369                           |                      |           | 81 CrMov 42 16      |            |                           |                    |
|                 | 1.2880                           |                      |           | G-X 165 CrCoMo 12   |            |                           |                    |
|                 | 1.2601                           |                      |           | G-X 165 CrMoV 12    |            |                           |                    |
|                 | 1.2201                           |                      |           | G-X 165 CrV 12      |            |                           |                    |
|                 | 1.3207                           | HS 10-4-3-10         | 1.3207    | S 10-4-3-10         | BT 42      | Z 130 WKCDV 10-4-3-10     | SKH 57             |
|                 | 1.3318                           | HS 12-1-2            | 1.3318    | S 12-1-2            |            |                           |                    |
|                 | 1.3302                           | HS 12-1-4            | 1.3302    | S 12-1-4            |            |                           |                    |
|                 | 1.3202                           | HS 12-1-4-5          | 1.3202    | S 12-1-4-5          |            |                           |                    |
|                 | 1.3355                           | HS 18-0-1            | 1.3355    | S 18-0-1            | BT 1       |                           | SKH 2              |
|                 | 1.3265                           | HS 18-1-2-10         | 1.3265    | S 18-1-2-10         | BT 5       | Z 80 WCV 18-04-01         | SKH 4 A            |
|                 | 1.3257                           | HS 18-1-2-15         | 1.3257    | S 18-1-2-15         |            |                           |                    |
|                 | 1.3255                           | HS 18-1-2-5          | 1.3255    | S 18-1-2-5          | BT 4       |                           | SKH 3              |
|                 | 1.3247                           | HS 2-10-1-8          | 1.3247    | S 2-10-1-8          | BM 42      | Z 80 WKCV 18-05-04-0      | SKH 51             |
|                 | 1.3346                           | HS 2-9-1             | 1.3346    | S 2-9-1             | BM 1       | Z 110 DKCWV 09-08-04      |                    |
|                 | 1.3348                           | HS 2-9-2             | 1.3348    | S 2-9-2             |            | Z 85 DCWV 08-04-02-0      |                    |
|                 | 1.3249                           |                      |           | S 2-9-2-8           | BM 34      | Z 100 DCWV 09-04-02-      |                    |
|                 | 1.3333                           | HS 3-3-2             | 1.3333    | S 3-3-2             |            |                           |                    |
|                 | 1.3343                           | HS 6-5-2             | 1.3343    | S 6-5-2             | BM 2       |                           | SKH 9; SKH 51      |
|                 | 1.3243                           | HS 6-5-2-5           | 1.3243    | S 6-5-2-5           |            | Z 85 WDCV 06-05-04-0      | SKH 53             |
|                 | 1.3344                           | HS 6-5-3             | 1.3344    | S 6-5-3             | BM 4       | Z 85 WDKCV 06-05-05-04-02 | SKH 52; SKH 53     |
|                 | 1.3345                           | S 6-5-3C             | 1.3345    | S 6-5-3C            |            | Z 120 WDCV 06-05-04-      | SKH 55             |
|                 | 1.3246                           | HS 7-4-2-5           | 1.3246    | S 7-4-2-5           |            |                           |                    |
|                 | 1.2363                           | X 100 CrMoV 5        | 1.2363    | X 100 CrMoV 5 1     | BA 2       |                           | SKD 12             |
|                 | 1.4125                           | X 105 CrMo 17        | 1.4125    | X 105 CrMo 17       |            | Z 110 WKCDV 07-05-04      | SUS 440 C          |
|                 | 1.2379                           | X 155 CrVMo 12 1     |           | X 155 CrVMo 12 1    | BD 2       | Z 100 CDV 5               | SKD 11             |
|                 | 1.2601                           |                      |           | X 165 CrMoV 12      |            | Z 100 CD 17               |                    |
|                 | 1.2709                           |                      |           | X 2 NiCoMoTi 18 9 5 |            | Z 160 CDV 12              |                    |
|                 | 1.2080                           | X 210 Cr 12          | 1.2080    | X 210 Cr 12         | BD 3       |                           | SKD 1              |
|                 | 1.2436                           |                      |           | X 210 CrW 12        |            | Z 2 NKD 19-09             | SKD 2              |
|                 | 1.2706                           |                      |           | X 3 NiCrMo 18 8 5   |            | Z 200 C 12                |                    |
|                 | 1.2567                           |                      |           | X 30 WCrV 5 3       |            |                           | SKD 4              |
|                 | 1.2581                           |                      |           | X 30 WCrV 9 3       | BH 21      | E-Z 2 NKD 18              | SKD 5              |
|                 | 1.2885                           |                      |           | X 32 CrMoCoV 3 3 3  |            | Z 32 WCV 5                |                    |
|                 | 1.2365                           |                      |           | X 32 CrMoV 3 3      | BH 10      | Z 30 WCV 9                | SKD 7              |
|                 | 1.2343                           |                      |           | X 38 CrMoV 5 1      | BH 11      |                           | SKD 6              |
|                 | 1.2367                           |                      |           | X 38 CrMoV 5 3      |            | 32 DCV 28                 |                    |
|                 | 1.2344                           | X 40 CrMoV 5 1       | 1.2344    | X 40 CrMoV 5 1      | BH 13      | Z 38 CDV 5                | SKD61              |
|                 |                                  |                      |           |                     |            | Z 40 CDV 5                |                    |
| Hardened steel  |                                  |                      |           |                     |            |                           |                    |
| 7               | 1.3401                           | X 120 Mn 12          | 1.3401    | X 120 Mn 12         | BW 10      | Z 120 M 12                | SC MnH 1           |
| Stainless steel |                                  |                      |           |                     |            |                           |                    |
| 8               | 1.4305                           | X 8 CrNiS 18 9       | 1.4305    | X 10 CrNiS 18 9     | 303 S 31   | Z 10 CNF 18.09            | SUS 303            |
|                 | 1.4310                           | X 9 CrNi 18 8        | 1.4310    | X 12 CrNi 17 7      | 301 S 21   | Z 12 CN 17.07             | SUS 301            |
|                 | 1.4300                           | X 12 CrNi 18 8       | 1.4300    | X 12 CrNi 18 8      | 302 S 25   | Z 12 CN 18                | SUS 302            |
|                 | 1.4546                           | X 5 CrNiNb 18 10     | 1.4546    | X 5 CrNiNb 18 10    | 347 S 31   |                           |                    |
|                 | 1.4301                           | X 5 CrNi 18 9        | 1.4301    | X 6 CrNi 18 10      | 304 S 31   | Z 6 CN 18.09              | SUS 304            |
|                 | 1.4948                           | X 6 CrNi 18 11       | 1.4948    | X 6 CrNi 18 11      | 304 S 51   | Z 6 CN 18.09              | SUS 304 H          |
|                 | 1.4303                           | X 4 CrNi 18 11       | 1.4303    | X 6 CrNi 18 12      | 305 S 19   | Z 8 CN 18.11 FF           | SUS 305            |
|                 | 1.4550                           | X 6 CrNiNb 18 10     | 1.4550    | X 6 CrNiNb 18 10    | 347 S 31   | Z 6 CnNb 18.10            | SUS 347            |
| 9               | 1.4583                           | X 5 CrNiMoNb 19 11 2 | 1.4583    | X 10 CrNiMoNb 18 12 | 318 C 17   | Z 6 CNDNb 17.13           | SCS 22             |
|                 | 1.4335                           |                      | 1.4335    | X 12 CrNi 17 7      | 310 S 24   | Z 12 CN 25.20             | SUH 310; SUS 310 S |
|                 | 1.4541                           | X 12 CrNi 25 21      | 1.4878    | X 12 CrNi 25 21     | 321 S 51   | Z 6 CNT 18.12             | SUS 321            |
|                 | 1.4962                           | X 6 CrNiTi 18 10     | 1.4962    | X 12 CrNiTi 18 9    |            | Z 6 CnNb 18.10            |                    |
|                 | 1.4828                           | X 12 CrNiWTi 16 3    | 1.4828    | X 12 CrNiWTi 16 3   | 309 S 24   | Z 17 CNS 20.12            | SUH 309            |
|                 | 1.4306                           | X 15 CrNiSi 20 12    | 1.4306    | X 15 CrNiSi 20 12   | 304 S 12   | Z 2 CN 18.10              | SUS 304 L          |
|                 | 1.4404                           | X 2 CrNi 19 11       | 1.4404    | X 2 CrNi 19 11      | 316 S 11   | Z 2 CND 17.12.02          | SUS 316 L          |
|                 | 1.4435                           | X 2 CrNiMo 17 12 2   | 1.4435    | X 2 CrNiMo 17 13 2  | 316 S 12   | Z 2 CND 17.13             | SCS 16; SUS 316 L  |
|                 | 1.4438                           | X 3 CrNiMo 18 14 3   | 1.4438    | X 2 CrNiMo 18 14 3  | 317 S 12   | Z 2 CND 19.15.4           | SUS 317L           |
|                 |                                  | X 2 CrNiMo 18 15 4   |           | X 2 CrNiMo 18 16 4  |            |                           |                    |

• Steel

| The material group of workpieces                                                              |                                      |                                               |                                                |              |              |                                                               |      |
|-----------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------|------------------------------------------------|--------------|--------------|---------------------------------------------------------------|------|
| UNI                                                                                           | SS                                   | AISI/ASTM                                     | UNS                                            | Condition    | Misc. Brands | Structure                                                     | Form |
| X 45 CrNiW 18 9<br>42 NiCrMo 15 7                                                             | [2304]                               | -<br>SAE HNV 3<br>6F7                         |                                                |              |              | Martensite<br>Martensite                                      |      |
| X 80 CrSiNi 20<br>X CrTi 12                                                                   | 2327                                 | 440 A<br>SAE HNV 6<br>440 B                   | S44002<br>S65006<br>S44003                     | sol. treated |              | Martensite<br>PH<br>Martensite                                |      |
| HS 10-4-3-10                                                                                  |                                      | 6F2<br>L6                                     | T61206                                         |              |              |                                                               |      |
| HS 18-0-1<br>HS 18-1-2-10                                                                     |                                      | T15<br>T1<br>T5                               | T12015<br>T12001<br>T12005                     |              |              |                                                               |      |
| HS 18-1-1-5<br>HS 2-9-1-8<br>HS 1-8-1<br>HS 2-9-2                                             | 2782                                 | T4<br>M42<br>H41; M1<br>M7<br>M33;M34         | T12004<br>T11342<br>T11301<br>T11307<br>T11333 |              |              |                                                               |      |
| HS 3-3-2<br>HS 6-5-2<br>HS 6-5-2-5<br>HS 6-5-3                                                | 2722<br>2723                         | M2<br>M35<br>M3 Cl.2<br>M3                    | T11302<br>T11323<br>T11323<br>T11341           |              |              |                                                               |      |
| HS 7-4-2-5<br>X 100 CrMoV 5 1 KU<br>X 105 CrMo 17<br>X 155 CrVMo 12 1 KU<br>X 166 CrMoW 12 KU | 2260<br>2310                         | M41<br>A2<br>440 C<br>D2                      | T30102<br>S44004<br>T30402                     |              |              | Martensite                                                    |      |
| X 210 Cr 13 KU<br>X 215 CrW 12 1 KU                                                           | 2312                                 | 18 MAR 300<br>D3                              | T30403<br>K 93120                              |              |              |                                                               |      |
| X30 WCrV 5 3 KU<br>X30 WCrV 9 3 KU                                                            |                                      | H21                                           | T20821                                         |              |              |                                                               |      |
| 30 CrMoV 12 12 KU<br>X37 CrMoV 5 1 KU                                                         |                                      | H10<br>H11                                    | T20810<br>T20811                               |              |              |                                                               |      |
| X 40 CrMo 5 1 1 KU                                                                            | 2242                                 | H13                                           | T20813                                         |              |              |                                                               |      |
| Hardened steel                                                                                |                                      |                                               |                                                |              |              |                                                               |      |
|                                                                                               | 2183                                 | A128 Grade A                                  |                                                |              |              |                                                               |      |
| Stainless steel                                                                               |                                      |                                               |                                                |              |              |                                                               |      |
| X 10 CrNi 18 09<br>X 12 CrNi 17 07                                                            | 2346<br>(2331)<br>2331               | 303<br>301<br>302                             | S30300<br>S30100<br>S30200                     |              |              | Austenite<br>Austenite<br>Austenite                           |      |
| X 6 CrNiNb 18 11<br>X 5 CrNi 18 11<br>X 5 CrNi 18 10 KW<br>X 7 CrNi 18 10<br>X 6 CrNiNb 18 11 | 2333<br>2333<br>2333<br>2333<br>2338 | 348<br>304; 304 H<br>304 H<br>308; 305<br>347 | S34800<br>S30400<br>S30480<br>S30500<br>S34700 |              |              | Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite |      |
| X 6 CrNiMoNb 17 13<br>X 6 CrNi 26 20<br>X 6 CrNiTi 18 11                                      | 2361<br>2337                         | 318<br>310 S<br>321; 321H<br>347 H            | S31008<br>S32100<br>S34700<br>S30900           |              |              | Austenite<br>Austenite<br>Austenite<br>Austenite              |      |
| X 3 Cr Ni 18 11<br>X 2 CrNiMo 17 12 2<br>X 2 CrNiMo 17 13 2<br>X 2 CrNiMo 18 16               | 2352<br>2348<br>2353<br>2367         | 309<br>304 L<br>316 L<br>316 L<br>317 L       | S30403<br>S31603<br>S31603<br>S31703           |              |              | Austenite<br>Austenite<br>Austenite<br>Austenite              |      |



• Stainless steel

| mat.<br>group | The material group of workpieces |                       |                   |                       |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|---------------|----------------------------------|-----------------------|-------------------|-----------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------|-------------------------------|
|               | W-<br>Nr                         | EN                    | EN-<br>Nr         | DIN                   | BS                                                         | AFNOR                                                                                                                  | JIS                                                             |                                                     |                               |
| 9             | 1.4311                           | X 2 CrNiN 18 10       | 1.4311            | X 2 CrNiN 19 11       | 304 S 62                                                   | Z 2 CN 18. 10 Az                                                                                                       | SUS 304 LN                                                      |                                                     |                               |
|               | 1.4436                           | X 5 CrNiMo 17 13 3    | 1.4436            | X 5 CrNiMo 17 13 3    | 316 S 33                                                   | Z 6 CND 18.12.03                                                                                                       | SUS 316                                                         |                                                     |                               |
|               | 1.4308                           | X 5 CrNi 19 10        | 1.4308            | X 6 CrNi 18 9         | 304 C 15                                                   | Z 6 CN 18.10M                                                                                                          | SUS 13                                                          |                                                     |                               |
|               | 1.4580                           | X 6 CrNiMoNb 17 12 2  | 1.4580            | X 6 CrNiMoNb 17 12 2  | 318 S 17                                                   | Z 6 CNDNb 17.12                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4571                           | X 6 CrNiMoTi 17 12 2  | 1.4571            | X 6 CrNiMoTi 17 12 2  | 320 S 31                                                   | Z 6 CNDT 17.12                                                                                                         | SUS 316 Ti                                                      |                                                     |                               |
| 10            | 1.4841                           | X 15 CrNiSi 25 20     | 1.4841            | X 15 CrNiSi 25 20     | 314 S 25                                                   | Z 15 CNS 25.20                                                                                                         | SUH 310                                                         |                                                     |                               |
|               | 1.4401                           | X 5 CrNiMo 17 12 2    | 1.4401            | X 5 CrNiMo 18 10      | 316 S 31                                                   | Z 3 CND 17.11.1                                                                                                        | SUS 316                                                         |                                                     |                               |
| 11            | 1.4547                           | X 1 CrNiMoN 20 18 7   | 1.4547            | X 1 CrNiMoN 20 18 7   | X1 CrNiMoN 2018 7                                          | Incoloy 800<br>Z 20 NCS 33.16<br>Z 3 CHD 25.07 Az                                                                      | NCF 800<br>SUH 330                                              |                                                     |                               |
|               | 1.4563                           | X 1 NiCrMoCuN 31 27 4 | 1.4563            | X 1 NiCrMoCuN 31 27 4 |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4876                           | X 10 NiCrAlTi 32 20   | 1.4876            | X 10 NiCrAlTi 32 20   |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4864                           | X 12 NiCrSi 35 16     | 1.4864            | X 12 NiCrSi 36 16     |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4410                           | X 2 CrNiMoN 25 7 4    | 1.4410            | X 2 CrNiMoN 25 7 4    |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4507                           | X 2 CrMoNiCuN 25 6 3  | 1.4507            | X 2 CrMoNiCuN 25 6 3  | Z 10 NC 32 21<br>NA 17                                     | Z 3 CND 25.06 Az<br>Z 3 CND 17.12 Az<br>Z 3 CND 17.13 Az<br>Z 3 CHD 18.14.05Az<br>Z 2 CHD 22.05 Az<br>Z 2 CHD 22.05 Az | SUS 316 LN<br>SUS 316 LN<br>(SUS 316LN)<br><br><br>SUS 329 J 3L |                                                     |                               |
|               | 1.4501                           | X 2 CrNiMoCuWN 25 7 4 | 1.4501            | X 2 CrNiMoCuWN 25 7 4 |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4406                           | X 2 CrNiMoN 17 11 2   | 1.4406            | X 2 CrNiMoN 17 12 2   |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4429                           | X 2 CrNiMoN 17 13 3   | 1.4429            | X 2 CrNiMoN 17 13 3   |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4439                           | X 2 CrNiMoN 17 13 5   | 1.4439            | X 2 CrNiMoN 17 13 3   |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4462                           | X 2 CrNiMoN 22 5 3    | 1.4462            | X 2 CrNiMoN 17 13 3   | 316 S 61<br>316 S 62<br>(316 S 63)<br>332 S 15<br>318 S 13 |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4462                           | X 2 CrNiMoN 22 5      | 1.4462            | X 2 CrNiMoN 22 5      |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4652                           | X 1 CrNiMoN 25 22 8   | 1.4652            | X 2 CrNiMoN 22 5      |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4362                           | X 2 CrNiN 23 4        | 1.4362            | X 2 CrNiMoN 25 22 7   |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4539                           | X 2 NiCrMoCu 25 20 5  | 1.4539            | X 2 CrNiN 23 4        | 904 S 13                                                   | Z 2 NCDU 25 20                                                                                                         |                                                                 |                                                     |                               |
|               | 1.4539                           | X 1 NiCrMoCu 25 20 5  | 1.4539            | X 2 NiCrMoCu 25 20 5  |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4540                           | X 4 CrNiCuNb 16 4     | 1.4540            | X 2 NiCrMoCu 25 20 5  |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4460                           | X 3 CrNiMo 27 5 2     | 1.4460            | X 4 CrNiCuNb 16 4     |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               | 1.4542                           | X 5 CrNiCnNb 16 4     | 1.4548            | X 4 CrNiMo 27 5 2     |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               |                                  |                       | X 5 CrNiCuNb 17 4 |                       |                                                            |                                                                                                                        |                                                                 |                                                     |                               |
|               |                                  |                       |                   |                       |                                                            |                                                                                                                        |                                                                 | X 4 CUNbN 16.4 M<br>Z 3 CND 25.7 Az<br>Z 6 CNU 17.4 | SUS 329 J 1<br>SUS 24;SUS 630 |

| Cast iron |        |                       |        |                   |              |                  |             |
|-----------|--------|-----------------------|--------|-------------------|--------------|------------------|-------------|
| 12        | 0.6100 | EN-GJL-100            | 0.6100 | GG-10             | Grade 100    | Ft 10 D          | FC 100      |
|           | 0.6150 | EN-GJL-150            | 0.6150 | GG-15             | Grade 150    | Ft 15 D          | FC 150      |
|           | 0.7033 | EN-GJS-350-22         | 0.7033 | GGG-35.3          | Grade 350/22 | FGS 370-17       | FCD 350-22L |
|           | 0.7040 | EN-GJS-400-15         | 0.7040 | GGG-40            | Grade 420/12 | FGS 400-12       | FCD 400-18L |
|           | 0.7043 | EN-GJS-400-18         | 0.7043 | GGG-40.3          | Grade 370/17 | FGS -370-17      |             |
|           |        | EN-GJMB-350-10        | 0.8135 | GTS-35-10         | B 340/12     | B 340/12         | FCMB35-10   |
| 13        |        | EN-GJMB-450-6         | 0.8145 | GTS-45-06         | P 440/7      | P 440/7          | PCMP45-06   |
|           |        | EN-GJMB-550-4         | 0.8155 | GTS-55-04         | P 540/5      | P 540/5          | PCMP55-04   |
|           | 0.6200 | EN-GJL-200            | 0.6200 | GG-20             | Grade 220    | Ft 20 D          | FC 200      |
|           | 0.6250 | EN-GJL-250            | 0.6250 | GG-25             | Grade 260    | Ft 25 D          | FC 250      |
|           | 0.7050 | EN-GJS-500-7          | 0.7050 | GGG-50            | Grade 500/7  | FGS 500-7        | FCD 500-7   |
|           | 0.7060 | EN-GJS-600-3          | 0.7060 | GGG-60            | Grade 600/3  | FGS 600-3        | FCD 600-3   |
|           | 0.7660 | EN-GJSA-XNiCr20-2     | 0.7660 | GGG-NiCr 20 2     | Grade S2     | FGS Ni20 Cr2     |             |
|           | 0.7661 | EN-GJSA-XNiCr20-3     | 0.7661 | GGG-NiCr 20 3     | Grade S2B    | FGS Ni20 Cr3     |             |
|           | 0.7652 | EN-GJLA-XNiMn13-7     | 0.7652 | GGG-NiMn 13 7     | Grade S6     | FGS Ni13 Mn7     |             |
|           | 0.6660 | EN-GJLA-XNiCr 20-2    | 0.6660 | GGL-NiCr 20 2     | Grade F2     | FGL Ni20 Cr2     |             |
| 14        | 0.6661 | EN-GJLA-XNiCr 20-3    | 0.6661 | GGL-NiCr 20 3     |              | FGL Ni20 Cr3     |             |
|           |        | EN-GJMB-600-3         | 0.8165 | GTS-65-02         | P 570/3      | P 570/3          | PCMP60-03   |
|           | 0.6300 | EN-GJL-300            | 0.6300 | GG-30             | Grade 300    | Ft 30 D          | FC 300      |
|           | 0.7070 | EN-GJS-700-2          | 0.7070 | GGG-70            | Grade 700/2  | FGS 700-2        | FCD 700-2   |
|           | 0.6655 | EN-GJLA-XNiCuCr15-6-2 | 0.6655 | GGL-NiCuCr15 6 2  | Grade F1     | FGL Ni15 Cu6 Cr2 |             |
|           | 0.6655 | EN-GJLA-XNiCuCr15-6-3 | 0.6656 | GGL-NiCuCr15 6 3  |              | FGL Ni15 Cu6 Cr3 |             |
| 15        | 0.6657 | EN-GJLA-XNiCuCr15-6-3 | 0.8170 | GTS-70-02         | P 690/2      | P 690/2          | PCMP70-02   |
|           |        | EN-GJMB-700-2         |        |                   |              |                  |             |
|           | 0.6350 | EN-GJL-350            | 0.6350 | GG-35             | Grade 350    | Ft 35 D          | FC 350      |
|           | 0.6040 | -                     | 0.6040 | GG-40             | Grade 400    | Fgl 400          |             |
|           | 0.7080 | EN-GJS-800-2          | 0.7080 | GGG-80            |              | FGS 800-2        | FCD 800-2   |
|           | 0.7670 | EN-GJSA-XNi22         | 0.7670 | GGG-Ni 22         |              | FGS Ni22         |             |
|           | 0.7683 | EN-GJSA-XNi35         | 0.7683 | GGG-Ni 35         |              | FGS Ni35         |             |
|           | 0.7677 | -                     | 0.7677 | GGG-NiCr 30 1     |              | FGS Ni30 Cr1     |             |
|           | 0.7676 | EN-GJSA-XNiCr30-3     | 0.7676 | GGG-NiCr 30 3     | Grade S3     | FGS Ni30 Cr3     |             |
|           | 0.7683 | EN-GJSA-XNiCr35-3     | 0.7683 | GGG-NiCr 35 3     |              | FGS Ni35 Cr3     |             |
|           | 0.7673 | EN-GJSA-XNiMn23-4     | 0.7673 | GGG-NiMn 23 4     | Grade S2M    | FGS Ni23 Mn4     |             |
|           | 0.7665 | EN-GJSA-XNiSiCr20-5-2 | 0.7665 | GGG-NiSiCr 20 5 2 |              | FGS Ni20 Si5 Cr2 |             |
|           | 0.7680 | EN-GJSA-XNiSiCr30-5-5 | 0.7680 | GGG-NiSiCr 30 5 5 |              | FGS Ni30 Si5 Cr5 |             |
|           | 0.6676 | EN-GJSA-XNiCr30-3     | 0.6676 | GGL-NiCr 30 3     | Grade F3     | FGL Ni30 Cr3     |             |
|           | 0.6667 | EN-GJSA-XNiSiCr20-5-3 | 0.6667 | GGL-NiSiCr 20 5 3 |              | FGL Ni20 Si5 Cr3 | A1200       |
|           | 0.6680 | -                     | 0.6680 | GGL-NiSiCr 30 5 5 |              | FGL Ni30 Si5 Cr5 | (A1050)     |

• Stainless steel

| The material group of workpieces         |                      |                              |                                      |                                  |                                                                                        |                                                           |      |
|------------------------------------------|----------------------|------------------------------|--------------------------------------|----------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------|------|
| UNI                                      | SS                   | AISI/ASTM                    | UNS                                  | Condition                        | Misc.Brands                                                                            | Structure                                                 | Form |
| X 2 CrNiN 18 11<br>X 5 CrNiMo 17 13 2    | 2371<br>2343<br>2333 | 304 LN<br>316<br>CF8         | S30453<br>S31600                     |                                  |                                                                                        | Austenite<br>Austenite<br>Austenite                       |      |
| X 6 CrNiMoNb 17 12<br>X 6 CrNiMoTi 17 12 | 2350                 | 316 Cb<br>316 Ti             | S31640                               |                                  |                                                                                        | Austenite<br>Austenite                                    |      |
| X 16 CrNiSi 25 20<br>X 5 CrNiMo 17 12    | 2347                 | 314; 310<br>316              | S31000<br>S31600                     | 314 S 25<br>316 S 31             |                                                                                        | Austenite<br>Austenite                                    |      |
| X 1 CrNiMoN 20 18 7                      | 2778                 |                              | S31254<br>N08028<br>N08800<br>N08330 | Sol. treated                     | 254 SMO<br>Sanicro 28<br>Alloy 800<br>Incoloy DS<br>SAF 2507<br>Ferralium<br>Zeron 100 | Super austenite<br>Super austenite<br>PH                  |      |
| X 2 CrNiMoN 25 7 4                       | 2328                 | 330<br>F 53<br>255<br>F 55   | S32750<br>S32550<br>S32760           |                                  |                                                                                        | Austenite<br>Super duplex<br>Super duplex<br>Super duplex |      |
| X 2 CrNiMoN 17 12<br>X 2 CrNiMoN 17 13 3 | 2375                 | 316 LN<br>316 LN<br>(316 LN) | S 31653<br>S31653<br>(S31653)        |                                  |                                                                                        | Austenite<br>Austenite<br>Austenite                       |      |
| X 2 CrNiMoN 22 5<br>X 2 CrNiMoN 22 5     | 2377<br>2377         | 329 LN<br>318                | S31803<br>S32205<br>S32654           |                                  |                                                                                        | Duplex<br>Duplex<br>Super austenite                       |      |
|                                          | 2327<br>2562<br>2564 | -<br>904L<br>CN7M            | S32304<br>N08904                     |                                  | SAF 2205<br>SAF 2205<br>654 SMO<br>SAF 2304                                            | Duplex<br>Super austenite<br>Duplex                       |      |
| X 3 CrNiMo 27 5 2                        | 2324                 | XM-12<br>329<br>630          | S15500<br>S32900<br>S17400           | Sol. treated<br><br>Sol. treated | 15-5-PH<br><br>17-4-PH                                                                 | Super austenite<br>PH<br>Duplex<br>Super austenite        |      |

| Cast iron                                               |                                                          |                                                                                                                                                                                                                                          |                                                                                                          |  |  |                                                                                                                                                          |  |
|---------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| G10<br>G15                                              | 01 10-00<br>01 15-00<br>07 17-15                         | A18 20 B<br>A48 25 B                                                                                                                                                                                                                     | F11401<br>F11601                                                                                         |  |  | GC<br>GC<br>DC                                                                                                                                           |  |
| GS 400-12<br>GSO 42/17<br>B 35-12<br>P 45-06<br>P 55-04 | 07 17-02<br>07 17-12<br>08 15-00<br>08 52-00<br>08 54-00 | 60-40-18<br>60-40-18<br>A47 32510<br>A220 45008<br>A220 60004                                                                                                                                                                            | F32800<br>F32800<br>F22200<br>F23130<br>F24130                                                           |  |  | DC<br>DC<br>DC<br>Martensite<br>Martensite<br>Martensite                                                                                                 |  |
| G20<br>G25<br>GS 500-7<br>GS 600-3                      | 01 20-00<br>01 25-00<br>07 27-02<br>07 32-03             | A48 30 B<br>A48 35 B<br>A536 80-55-6<br>A476 80-60-03<br>A436 Type D-2<br>A436 Type D-2B                                                                                                                                                 | F12101<br>F12401<br>F33800<br>F34100<br>F43000<br>F43001                                                 |  |  | GC<br>GC<br>DC<br>DC<br>Austenite<br>Austenite                                                                                                           |  |
|                                                         | 07 72-00<br>05 23-00                                     | -<br>A436 Type 2                                                                                                                                                                                                                         | -<br>F41002                                                                                              |  |  | Austenite<br>Austenite                                                                                                                                   |  |
| P65-02                                                  | 08 56-00                                                 | A436Type 2b<br>A220 70003                                                                                                                                                                                                                | F41003<br>F24830                                                                                         |  |  | Austenite<br>Martensite                                                                                                                                  |  |
| G30<br>GS 700-2                                         | 01 30-00<br>07 37-01                                     | A48 45 B<br>A536 100-70-03<br>A436 Type 1<br>A436 Type 1b                                                                                                                                                                                | F13101<br>F34800<br>F41000<br>F41001                                                                     |  |  | GC<br>DC<br>Austenite<br>Austenite                                                                                                                       |  |
| P 70-02                                                 | 08 62-00                                                 | A220 90001                                                                                                                                                                                                                               | F26230                                                                                                   |  |  | Martensite                                                                                                                                               |  |
| G35<br><br>GS 800-2                                     | 01 35-00<br>01 40-00                                     | A48 50 B<br>A278 60 B<br>A536 120-90-02<br>A439 Type D-2B<br>A439 Type D-5<br>A436 Type D-3A<br>A436 Type D-3<br>A436 Type D-5B<br>A439 Type D-2M<br>Nicrosilal Spheronic<br>A439 Type D-4<br>A436 Type 3<br>Nicrosilal<br>A436 Type D-4 | F13502<br>F14102<br>F36200<br><br>F43006<br>F43004<br>F43003<br>F43007<br>F43010<br><br>F43005<br>F41001 |  |  | GC<br>GC<br>Martensite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite |  |





• Non-Ferrous metal

| mat.<br>group | The material group of workpieces |                     |               |                          |                |               |                                                   |
|---------------|----------------------------------|---------------------|---------------|--------------------------|----------------|---------------|---------------------------------------------------|
|               | W.- Nr                           | EN                  | EN-Nr         | DIN                      | BS             | AFNOR         | JIS                                               |
| 16            | 3.0205                           | AW-1200             | Al99          | Al99                     | 1C/1200        | A-4/1200      | A1200<br>(A1050)                                  |
|               | 3.0255                           | AW-1050A            | Al99.5        | Al99.5                   | 1B/1050A       | A-5/1050A     |                                                   |
|               | 3.0275                           | AW-1070             | Al99.7        | Al99.7                   |                | A-7/1070      |                                                   |
|               | 3.0285                           | AW-1080             | Al99.8        | Al99.8                   | 1A             | A-8/1080      |                                                   |
|               | 3.1305                           |                     |               | AlCu2.5Mg0.5             | 2L69           | A-U2G         |                                                   |
|               | 3.1655                           | AW-2011             | AlCuBiPb      | AlCuBiPb                 | FC1/2011       | A-U5PbBi/2011 | A2011<br>A2017                                    |
|               | 3.1325                           | AW-2024             | AlCuMg1       | AlCuMg1                  | H14            | A-U4G/2024    |                                                   |
|               | 3.1355                           |                     |               | AlCuMg2                  | 2L97/98        | A-U4G1        |                                                   |
|               | 3.1255                           | AW-2014             | AlCuSiMn      | AlCuSiMn                 | H15/2014       | A-U4SG/2014   |                                                   |
|               | 3.3315                           | AW-5005A            | AlMg1         | AlMg1                    | N41/5005       | A-G0.6        |                                                   |
|               | 3.3316                           |                     |               | AlMg1.5                  |                | A-G1.5        | A6061<br>A5052<br>A5454                           |
|               | 3.3211                           | AW-6061             | AlMg1SiCu     | AlMg1SiCu                | H20            | (6061)        |                                                   |
|               | 3.3523                           | AW-5052             | AlMg2.5       | AlMg2.5                  | (N4)           | A-G2.5C/5052  |                                                   |
|               | 3.3537                           | AW-5454             | AlMg2.7Mn     | AlMg2.7Mn                | N51/5454       | A-G2.5MC/5454 |                                                   |
|               | 3.3525                           | AW-5251             | AlMg2Mn0.3    | AlMg2Mn0.3               | N4 /5251       | A-G2M         |                                                   |
|               | 3.3527                           | AW-5049             | AlMg2Mn0.8    | AlMg2Mn0.8               |                | A-G2Mn0.8     | A5082                                             |
|               | 3.3535                           | AW-5754             | AlMg3         | AlMg3                    |                | A-G3M         |                                                   |
|               | 3.3345                           |                     |               | AlMg4.5                  |                |               |                                                   |
|               | 3.3547                           | AW-5083             | AlMg4.5Mn     | AlMg4.5Mn                | N8/5083        | A-G4.5MC      |                                                   |
|               | 3.3545                           | AW-5086             | AlMg4Mn       | AlMg4Mn                  | (N5/6)         | A-G4MC-5086   |                                                   |
|               | 3.3206                           | AW-6060             | AlMgSi0.5     | AlMgSi0.5                | (H9)/(6060)    | A-GS/6060     | (A6063)                                           |
|               | 3.3210                           | AW-6063             | AlMgSi0.7     | AlMgSi0.7                | (H10)          | A-GSUC/6061   |                                                   |
|               | 3.2315                           | AW-6082             | AlMgSi1       | AlMgSi1                  | H30/6082       | A-SGMO.7/6082 |                                                   |
|               | 3.0615                           |                     |               | AlMgSiPb                 |                | A-SGPb        |                                                   |
|               | 3.0505                           | AW-3105             | AlMn0.5Mg0.5  | AlMn0.5Mg0.5             | N31            |               |                                                   |
|               | 3.0525                           | AW-3005             | AlMn0.5Mg0.5  | AlMn0.5Mg0.5             |                | A-MG0.5/3005  | -                                                 |
|               | 3.0515                           | AW-3103             | AlMn1         | AlMn1                    | N3/3103        |               | A3003<br>-                                        |
|               | 3.0517                           | AW-3003             | AlMn1Cu       | AlMn1Cu                  |                | A-M1/3003     |                                                   |
|               | 3.0526                           | AW-3004             | AlMn1Mg1      | AlMn1Mg1                 |                | A-M1G/3004    |                                                   |
|               | 3.4335                           | AW-7020             | AlZn4.5Mg1    | AlZn4.5Mg1               | H17/7020       | A-Z5G/7020    |                                                   |
|               | 3.4345                           |                     |               | AlZnMgCu0.5              |                | A-Z4GU        |                                                   |
|               | 3.4365                           | AW-7075             |               | AlZnMgCu1.5              | 2L95/96        | A-Z5GU/7075   | A7075                                             |
|               | 3.1841                           | AC-21100            | AlCu4Ti       | G-AlCu4Ti                |                |               |                                                   |
|               | 3.1371                           | AC-21000            | AlCu4TiMg     | G-AlCu4TiMg              | 2L91/92        | A-U5GT        |                                                   |
|               | 3.3541                           | AC-51100            | AlMg3         | G-AlMg3                  |                | A-G3T         |                                                   |
|               | 3.3241                           |                     |               | G-AlMg3Si                |                |               |                                                   |
|               | 3.3261                           | AC-51400            | AlMg5(Si)     | G-AlMg5                  |                |               | A-S10G<br>A-S7G                                   |
|               | 3.3555                           | AC-51400            | AlMg5         | G-AlMg5                  | LM5            |               |                                                   |
|               | 3.3292                           | AC-51200            | AlMg9         | G-AlMg9                  |                |               |                                                   |
|               | 3.2381                           | AC-43400            | AlSi10Mg(Fe)  | G-AlSi10Mg               | LM9            | A-S10G        |                                                   |
|               | 3.2341                           | AC-42000            |               | G-AlSi5Mg                | LM25           | A-S7G         |                                                   |
|               | 3.2151                           | AC-45000            | AlSi6Cu4      | G-AlSi6Cu4               |                |               | A-S10G                                            |
|               | 3.2371                           | AC-42100            | AlSi7Mg       | G-AlSi7Mg                | 2L99           | A-S7GO3       |                                                   |
|               | 3.2161                           | AC-46200            | AlSi8Cu3(Si)  | G-AlSi8Cu3               |                |               |                                                   |
|               | 3.2373                           | AC-43200            | AlSi9Mg       | G-AlSi9Mg                |                |               |                                                   |
|               | 3.5106                           |                     |               | G-MgAg3Se2Zr1            |                |               |                                                   |
|               | 3.5314                           | MG-P-62             | MgAl3Zn       | G-MgAl3Zn                | MAG-E-111      | G-A3-Z1       | G-A6-Z1<br>G-A9<br>G-A92<br>G-A92<br>G-M2<br>ZRE1 |
|               | 3.5662                           | MC 21230            | MgAl6Mn       | G-MgAl6Mn                |                |               |                                                   |
|               | 3.5612                           | MG-P-63             | MgAl6Zn       | G-MgAl6Zn                | MAG-E-121      |               |                                                   |
|               | 3.5812                           | MG-P-61             | MgAl8Zn       | G-MgAl8Zn                | MAG1-M         |               |                                                   |
|               | 3.5812                           | MC 21110            | MgAl8Zn1      | G-MgAl8Zn1               | A82            |               |                                                   |
|               | 3.5912                           | MC 21120            | MgAl9Zn       | G-MgAl9Zn1               | MAG3           |               | CuAl10Fe<br>CuAl10Ni5Fe5                          |
|               | 3.5200                           |                     |               | G-MgMn2                  | MAG-E-101      |               |                                                   |
|               | 3.5103                           | MB 65110            | MgSe3Zn2Zr1   | G-MgSe3Zn2Zr1            | MAG6-TE        |               |                                                   |
|               | 3.5105                           |                     |               | G-MgTh3Zn2Zr1            |                |               |                                                   |
|               |                                  |                     |               |                          |                |               |                                                   |
| 17            | 3.2383                           | AC-43200            | AlSi10Mg(Cu)  | G-AlSi10Mg(Cu)           | LM9            |               | ADC12<br>ADC14                                    |
|               | 3.2382                           | AC-44200            | AlSi12        | GD-AlSi12                |                |               |                                                   |
|               |                                  | AC-46100            | AlSi11Cu2(Fe) |                          |                |               |                                                   |
|               |                                  | AC-47100            | AlSi12Cu1(Fe) |                          |                |               |                                                   |
|               |                                  |                     | AlSi17Cu5     |                          |                |               |                                                   |
| 18            | 2.1203                           | CW004A              | CuAg0.1       | Cu                       | Cu-Ag-4<br>AB1 | CuAl10Fe      |                                                   |
|               | 2.0940.01                        | CW013A              |               | CuAg0.1                  |                |               |                                                   |
|               |                                  | CC331G              |               | CuAl10Fe                 |                |               |                                                   |
|               | 2.0975.01                        | CC333G-GZ<br>CC333G |               | CuAl10Fe5Ni5<br>CuAl10Ni |                |               |                                                   |

• Non-Ferrous metal

| The material group of workpieces |    |                            |                                                          |           |              |           |      |
|----------------------------------|----|----------------------------|----------------------------------------------------------|-----------|--------------|-----------|------|
| UNI                              | SS | AISI/ASTM                  | UNS                                                      | Condition | Misc. Brands | Structure | Form |
| 4010<br>4007<br>4005<br>4004     |    |                            | AA1200<br>AA1050A<br>AA1070A<br>AA1080A                  |           |              |           |      |
| 4355                             |    |                            | AA2117<br>AA2011<br>AA2017A<br>AA2024                    |           |              |           |      |
| 4338<br>4106                     |    |                            | AA2014<br>AA5005A<br>AA5050B<br>AA6061                   |           |              |           |      |
| 4120                             |    |                            | AA5052<br>AA5454<br>AA5251                               |           |              |           |      |
| 4115<br>4125                     |    |                            | AA5049<br>AA5754<br>AA5082                               |           |              |           |      |
| 4140                             |    |                            | AA5083<br>AA5086                                         |           |              |           |      |
| 4103<br>4104,4107<br>4212        |    |                            | AA6060<br>AA6005<br>AA6082<br>AA6012<br>AA3105<br>AA3005 |           |              |           |      |
| 4054                             |    |                            | AA3103<br>AA3003<br>AA3004                               |           |              |           |      |
| 4425                             |    |                            | AA7020<br>AA7022<br>AA7075                               |           |              |           |      |
| 4337                             |    | 204<br>5140<br>5056A       | A02040<br>A05140                                         |           |              |           |      |
| 4163                             |    |                            |                                                          |           |              |           |      |
| 4253<br>4244                     |    | B85<br>B26                 | A13600                                                   |           |              |           |      |
| 4245<br>4251                     |    |                            | A13560                                                   |           |              |           |      |
|                                  |    | A380<br>359,2<br>4418      |                                                          |           |              |           |      |
| 4633                             |    |                            | AZ31B<br>AM60A<br>AZ61A<br>AZ80A                         |           |              |           |      |
| 4637<br>4635                     |    | 4437                       | AZ81A<br>AZ91A/B                                         |           |              |           |      |
|                                  |    | 4442                       | M1A<br>B80<br>B80                                        |           |              |           |      |
|                                  |    | A413.2<br>A384.0<br>B390.0 | AA384                                                    |           |              |           |      |
| 5015<br>5030<br>5710             |    | CA952                      | C11600<br>C95200                                         |           |              |           |      |
| 5716                             |    | CA955                      | C95500                                                   |           |              |           |      |



• Non-Ferrous metal

| mat.<br>group | The material group of workpieces |           |               |               |       |               |       |
|---------------|----------------------------------|-----------|---------------|---------------|-------|---------------|-------|
|               | W.- Nr                           | EN        | EN-Nr         | DIN           | BS    | AFNOR         | JIS   |
| 18            | 2.0966                           | CW307G    | CuAl10Ni5Fe4  | CuAl10Ni5Fe4  | Ca104 | CuAl10Ni      | C6301 |
|               | 2.0978                           | CW308G    | CuAl11Ni6Fe6  | CuAl11Ni6Fe5  |       |               |       |
|               | 2.0916                           |           |               | CuAl5         |       |               |       |
|               | 2.0918                           | CW300G    | CuAl5As       | CuAl5As       |       |               |       |
|               | 2.0932                           |           |               | CuAl8 Fe3     |       |               | C6140 |
|               | 2.1291                           |           |               | CuCr          |       |               |       |
|               | 2.1310                           | CW107C    | CuFe2P        | CuFe2P        |       |               |       |
|               | 2.0853                           | CW109C    | CuNi1Si       | CuNi1.5Si     |       |               |       |
|               | 2.0872                           |           | CuNi10Fe1Mn   | CuNi10Fe1Mn   | CZ102 | CuNi10Fe1Mn   |       |
|               |                                  |           |               | CuNi10Zn45    |       |               |       |
|               | 2.0780                           | CW406J    | CuNi12Zn30Pb1 | CuNi12Zn30Pb1 |       |               |       |
|               | 2.0790                           |           | CW408J        | CuNi18Zn19Pb  |       | CuNi18Zn19Pb1 |       |
|               | 2.0790                           | CW408J    | CuNi18Zn19Pb1 | CuNi18Zn19Pb1 |       | CuNi18Zn19Pb1 |       |
|               | 2.0740                           | CW409J    | CuNi18Zn20    | CuNi18Zn20    | Ns106 | CuNi18Zn20    | C7451 |
|               | 2.0742                           | CW410J    | CuNi18Zn27    | CuNi18Zn27    | NS107 |               |       |
|               | 2.0822                           |           |               | CuNi20        |       |               |       |
|               | 2.0830                           |           |               | CuNi25        | CN105 | CuNi25        |       |
|               | 2.0835                           |           |               | CuNi30        |       |               |       |
|               | 2.0883                           |           |               | CuNi30Fe2Mn2  |       |               |       |
|               |                                  |           |               | CuNi30FeMn    |       |               |       |
|               | 2.0882                           | CW354H    | CuNi30Mn1Fe   | CuNi30Mn1Fe   | CN107 | CuNi30Mn1Fe   |       |
|               | 2.0857                           | CW112C    | CuNi3Si       | CuNi3Si       |       |               |       |
|               | 2.0842                           |           |               | CuNi44Mn1     |       | CuNi44Mn      |       |
|               |                                  |           |               | CuNi5Fe1Mn    |       | CuNi5Fe1Mn    |       |
|               | 2.0875                           | CW351H    | CuNi9Sn2      | CuNi9Sn2      |       |               |       |
|               | 2.1176                           | CW352H    |               | CuPb10Sn      | LB2   | CuSn10Pb10    |       |
|               | 2.1183                           | CC496K-GZ |               | CuPb15Sn      |       |               |       |
|               | 2.1160                           | CW113C    | Cupb1p        | CuPb1P        |       |               |       |
|               | 2.1189                           |           |               | CuPb20Sn      |       |               |       |
|               | 2.1050.01                        | CC480K    |               | CuSn10        | CT1   | CuSn10        |       |
|               | 2.1087                           |           |               | CuSn10Zn      |       |               |       |
|               | 2.1051.01                        | CC483K    |               | CuSn12        | PB2   | CuSn12        |       |
|               |                                  |           |               | CuSn14        |       | CuSn14        |       |
|               | 2.1016                           | CW450K    | CuSn4         | CuSn4         | PB101 | CuSn4p        | C5111 |
|               |                                  |           | CW451K        | CuSn5         |       |               |       |
|               | 2.1020                           | CW452K    | CuSn6         | CuSn6         | PB103 | CuSn6         | C5191 |
|               | 2.1080                           |           |               | CuSn6Zn6      |       |               |       |
|               |                                  |           |               | CuSn7         |       |               |       |
|               | 2.1090.03                        | CC493K-GZ |               | CuSn7Zn Pb    |       |               |       |
|               | 2.1030                           | CW453K    | CuSn8         | CuSn8         | PB104 | CuSn8P        | C5210 |
|               | 2.0230                           | CW501L    | CuZn10        | CuZn10        | CZ101 | CuZn10        | C2200 |
|               | 2.0240                           | CW502L    | CuZn15        | CuZn15        | CZ102 | CuZn15        | C2300 |
|               | 2.0250                           | CW503L    | CuZn20        | CuZn20        | CZ103 |               | C2400 |
|               | 2.0460                           | CW702R    | CuZn20Al2     | CuZn20Al2     | CZ110 | CuZn22Al2     |       |
|               |                                  |           |               | CuZn25Al15    |       |               |       |
|               | 2.0261                           | CW504L    | CuZn28        | CuZn28        | CZ105 |               | C4430 |
|               | 2.0470                           | CW706R    | CuZn28Sn1     | CuZn28Sn1     |       | CuZn29Sn1     |       |
|               | 2.0265                           | CW505L    | CuZn30        | CuZn30        | CZ106 | CuZn30        | C2600 |
|               |                                  |           |               | CuZn30AlFeMn  |       | CuZn30AlFeMn  |       |
|               | 2.0490                           | CW708R    | CuZn31Si1     | CuZn31Si1     |       |               |       |
|               | 2.0280                           | CW506L    | CuZn33        | CuZn33        | CZ107 |               | C2680 |
|               | 2.0592.01                        | CC765S    |               | CuZn35Al1     | HTB1  | CuZn30AlFeMn  |       |
|               | 2.0540                           | CW710R    | CuZn35Ni2     | CuZn35Ni2     |       |               |       |
|               | 2.0335                           | CW507L    | CuZn36        | CuZn36        | CZ108 | CuZn36        | C2720 |
|               | 2.0331                           | CW601N    | CuZn35Pb2     | CuZn36Pb1.5   | CZ131 | CuZn35Pb2     |       |
|               | 2.0375                           | CW602N    | CuZn36Pb3     | CuZn36Pb3     | CZ124 | CuZn36Pb3     |       |
|               | 2.0321                           | CW508L    | CuZn37        | CuZn37        | CZ108 | CuZn37        |       |
|               | 2.0332                           | CW604N    | CuZn37Pb0.5   | CuZn37Pb0.5   | CZ118 |               |       |
|               | 2.0371                           | CW607N    | CuZn38Pb1.5   | CuZn38Pb1.5   | CZ119 | (CuZn38Pb2)   |       |
|               | 2.0530                           | CW717R    | CuZn38Sn1     | CuZn38Sn1     |       |               |       |
|               | 2.0525                           | CW715R    | CuZn38SnAl    | CuZn38SnAl    |       |               |       |
|               |                                  |           |               | CuZn39AlFeMn  |       |               |       |
|               | 2.0372                           | CW610N    | CuZn39Pb0.5   | CuZn39Pb0.5   | CZ123 | CuZn39Pb0.8   |       |
|               | 2.0380                           | CW612N    | CuZn39Pb2     | CuZn39Pb2     | CZ128 |               |       |
|               | 2.0401                           | CW614N    | CuZn39Pb3     | CuZn39Pb3     | CZ121 | CuZn39Pb3     |       |
|               | 2.0360                           | CW509     | CuZn40        | CuZn40        | CZ109 | CuZn40        | C2800 |
|               | 2.0550                           | CW713R    |               | CuZn40A12     |       |               |       |

• Non-Ferrous metal

| The material group of workpieces |                              |           |        |           |              |           |      |
|----------------------------------|------------------------------|-----------|--------|-----------|--------------|-----------|------|
| UNI                              | SS                           | AISI/ASTM | UNS    | Condition | Misc. Brands | Structure | Form |
| CuNi30                           | 5667                         |           | C62730 |           |              |           |      |
|                                  |                              |           | C60800 |           |              |           |      |
|                                  |                              |           | C18400 |           |              |           |      |
|                                  |                              |           | C19400 |           |              |           |      |
|                                  |                              |           | C70600 |           |              |           |      |
|                                  |                              |           | C79300 |           |              |           |      |
|                                  |                              |           | C76300 |           |              |           |      |
|                                  |                              |           | C76300 |           |              |           |      |
|                                  |                              |           | C75200 |           |              |           |      |
|                                  |                              |           | C77000 |           |              |           |      |
|                                  |                              |           | C71300 |           |              |           |      |
|                                  |                              |           | C71580 |           |              |           |      |
|                                  | 5682                         |           | C70600 |           |              |           |      |
|                                  |                              |           | C70250 |           |              |           |      |
|                                  |                              |           | C72150 |           |              |           |      |
| CuSn7                            | 5640                         | CA937     | C72500 |           |              |           |      |
|                                  |                              |           | C93700 |           |              |           |      |
|                                  |                              |           | C93800 |           |              |           |      |
|                                  |                              |           | C19000 |           |              |           |      |
|                                  |                              |           | C94100 |           |              |           |      |
|                                  | 5443<br>5458<br>5465<br>5475 | CA907     | C90700 |           |              |           |      |
|                                  |                              |           | C90500 |           |              |           |      |
|                                  |                              |           | C91000 |           |              |           |      |
|                                  |                              |           | C51100 |           |              |           |      |
|                                  | 5428                         |           | C51000 |           |              |           |      |
|                                  |                              |           | C51900 |           |              |           |      |
|                                  |                              |           | C93200 |           |              |           |      |
|                                  |                              |           | C83600 |           |              |           |      |
|                                  | 5112                         |           | C52100 |           |              |           |      |
|                                  |                              |           | C22000 |           |              |           |      |
|                                  |                              |           | C23000 |           |              |           |      |
|                                  |                              |           | C24000 |           |              |           |      |
|                                  | 5217                         |           | C68700 |           |              |           |      |
|                                  |                              |           | C86300 |           |              |           |      |
|                                  |                              |           | C25600 |           |              |           |      |
|                                  |                              |           | C44300 |           |              |           |      |
|                                  | 5220<br>5122                 |           | C26000 |           |              |           |      |
|                                  |                              |           | C26800 |           |              |           |      |
|                                  |                              |           | C96500 |           |              |           |      |
|                                  | 5256                         | CA865     | C27200 |           |              |           |      |
|                                  |                              |           | C34200 |           |              |           |      |
|                                  |                              |           | C36000 |           |              |           |      |
|                                  |                              |           | C27200 |           |              |           |      |
|                                  | 5150                         |           | C33500 |           |              |           |      |
|                                  |                              |           | C35300 |           |              |           |      |
|                                  |                              |           | C46400 |           |              |           |      |
|                                  |                              |           | C47000 |           |              |           |      |
|                                  | 5165                         |           | C36500 |           |              |           |      |
|                                  |                              |           | C37700 |           |              |           |      |
|                                  |                              |           | C38500 |           |              |           |      |
|                                  |                              |           | C28000 |           |              |           |      |
|                                  | 5170                         |           | C67410 |           |              |           |      |
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• Non-Ferrous metal

| mat.<br>group                                 | The material group of workpieces                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 18                                            | 2.0572                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| 21                                            | NiMo30<br>NiMo30<br><br>NiMo16Cr15W<br>NiMo16Cr16Ti<br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><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|        |             |             |                                  |           |       |

• Non-Ferrous metal

| The material group of workpieces              |              |           |                                                                                                                          |                                     |                                                                                                                                                                                                                                    |           |                                                                                                       |
|-----------------------------------------------|--------------|-----------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------|
| UNI                                           | SS           | AISI/ASTM | UNS                                                                                                                      | Condition                           | Misc.Brands                                                                                                                                                                                                                        | Structure | Form                                                                                                  |
|                                               | 5168<br>5272 |           | C37800<br>C68700<br>C21000                                                                                               |                                     | AMPCO 15<br>AMPCO 18<br>AMPCO 18.136<br>AMPCO 18.22<br>AMPCO 18.23<br>AMPCO 21<br>AMPCO 22<br>AMPCO 25<br>AMPCO 26<br>AMPCO 45<br>AMPCO 483<br>AMPCO 642<br>AMPCO 673<br>AMPCO 674<br>AMPCO 8<br>AMPCO 863<br>AMPCO M4             |           |                                                                                                       |
| Heat resistant super alloys / Titanium alloys |              |           |                                                                                                                          |                                     |                                                                                                                                                                                                                                    |           |                                                                                                       |
|                                               |              |           | S66286<br>S35000<br>S35000<br>S35500<br>S45500<br><br>N08800<br><br>N19909<br><br>R30155<br>R30155                       | Precip.hardened<br><br>heat treated | A286<br>AM350<br>AM350<br>AM355<br>Custom 455<br>Discalloy<br>Incoloy 800<br>Incoloy 801<br>Incoloy 909<br>Lapelloy<br>M-308<br>N-155<br>N-155                                                                                     |           | cast<br><br><br><br><br><br><br><br><br>bar, forge, ring                                              |
|                                               |              |           | R30195                                                                                                                   |                                     | Air Resist 13<br>FSX-414<br>H531<br>Haynes 188<br>Haynes 188<br>Haynes 25<br>Mar-M-302<br>Mar-M-509<br>MP159<br>MP35N<br>Stellite 21<br>Stellite 30<br>Stellite 31<br>W152<br>W162                                                 |           | bar, forge, ring<br>tube                                                                              |
|                                               |              |           | N10665<br>N10002<br>N10002<br><br>N10276<br>N06455<br>N06007<br>N06985<br>N10003<br>N10003<br>N06635<br>N10004<br>N06002 |                                     | Astroloy<br>GTD222<br>Hastelloy B-2<br>Hastelloy C<br>Hastelloy C<br>Hastelloy C-22<br>Hastelloy C-276<br>Hastelloy C-4<br>Hastelloy G<br>Hastelloy G-3<br>Hastelloy N<br>Hastelloy N<br>Hastelloy S<br>Hastelloy W<br>Hastelloy X |           | all forms<br><br>plate<br>cast<br><br><br><br><br>bar, sforge, ring<br>cast<br>all forms<br>all forms |



• Heat resistant super alloys / Titanium alloys

| mat.<br>group | The material group of workpieces |                     |       |             |    |       |     |
|---------------|----------------------------------|---------------------|-------|-------------|----|-------|-----|
|               | W.- Nr                           | EN                  | EN-Nr | DIN         | BS | AFNOR | JIS |
| 21            | 2.4816                           | NiCr15Fe            |       |             |    |       |     |
|               | 2.4851                           |                     |       |             |    |       |     |
|               | 2.4856                           | NiCr22Mo9Nb         |       |             |    |       |     |
|               | 2.4856                           | NiCr22Mo9Nb         |       |             |    |       |     |
|               | 2.4856                           | NiCr22Mo9Nb         |       |             |    |       |     |
|               |                                  | NiFe38Cr16Nb        |       |             |    |       |     |
|               | 2.4668                           | NiCr19Fe19Nb5Mo3    |       |             |    |       |     |
|               | 2.4668                           | NiCr19Fe19Nb5Mo3    |       |             |    |       |     |
|               | 2.4668                           | NiCr19Fe19Nb5Mo3    |       |             |    |       |     |
|               | 2.4669                           |                     |       |             |    |       |     |
|               | 2.4669                           |                     |       |             |    |       |     |
|               | 2.4061                           | Ni99.6              |       |             |    |       |     |
|               | 2.4634                           |                     |       |             |    |       |     |
|               | 2.4636                           |                     |       |             |    |       |     |
| 22            | 2.4650                           | NiCr20TiAl          |       |             |    |       |     |
|               | 2.4631                           |                     |       |             |    |       |     |
|               | 2.4632                           |                     |       |             |    |       |     |
|               | 2.4662                           |                     |       |             |    |       |     |
|               | ppm                              | NiCr19Co18Mo4Ti3Al3 |       |             |    |       |     |
|               | 2.4654                           | NiCr20Co13Mo4Ti3Al  |       |             |    |       |     |
|               | 2.4654                           | NiCr20Co13Mo4Ti3Al  |       |             |    |       |     |
|               | 3.7024                           |                     |       | TiV10Fe2A13 |    |       |     |
|               | 3.7024                           |                     |       |             |    |       |     |
|               | 3.7124                           | TiCu2               |       |             |    |       |     |
|               |                                  | TiAl5Sn2.5          |       |             |    |       |     |
|               |                                  | TiAl5Sn2.5          |       |             |    |       |     |
|               |                                  | TiAl5Sn2.5          |       |             |    |       |     |
|               | 3.7164                           | TiAl6V4             |       |             |    |       |     |
|               | 3.7164                           | TiAl6V4             |       |             |    |       |     |
|               | 3.7164                           | TiAl6V4             |       |             |    |       |     |
|               | 3.7164                           | TiAl6V4             |       |             |    |       |     |

- Heat resistant super alloys / Titanium alloys

[illegible]



# Dimensions And Torque Values Of Insert Screw

| Screw                                                                             | Th                                                                                | Nm  | ISO Size | Key                                                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|----------|-----------------------------------------------------------------------------------|
|  |  |     |          |  |
| C018035                                                                           | M1.8(4h)                                                                          | 0.5 | 6IP      | T06P                                                                              |
| C025045                                                                           | M2.5(4h)                                                                          | 1.2 | 8IP      | T08P                                                                              |
| C02506                                                                            | M2.5(4h)                                                                          | 1.2 | 8IP      | T08P                                                                              |
| C03006                                                                            | M3.0(4h)                                                                          | 2.0 | 9IP      | T09P                                                                              |
| C03007                                                                            | M3.0(4h)                                                                          | 2.0 | 9IP      | T09P                                                                              |
| C03008                                                                            | M3.0(4h)                                                                          | 2.0 | 9IP      | T09P                                                                              |
| C03010                                                                            | M3.0(4h)                                                                          | 2.0 | 9IP      | T09P                                                                              |
| C03012                                                                            | M3.0(4h)                                                                          | 2.0 | 9IP      | T09P                                                                              |
| C03505                                                                            | M3.5(4h)                                                                          | 3.0 | 10IP     | T10P                                                                              |
| C03506                                                                            | M3.5(4h)                                                                          | 3.0 | 10IP     | T10P                                                                              |
| C03507                                                                            | M3.5(4h)                                                                          | 3.0 | 10IP     | T10P                                                                              |
| C03508-T15                                                                        | M3.5(4h)                                                                          | 3.5 | 15IP     | T15P                                                                              |
| C03510                                                                            | M3.5(4h)                                                                          | 3.0 | 10IP     | T10P                                                                              |
| C03511                                                                            | M3.5(4h)                                                                          | 3.0 | 10IP     | T10P                                                                              |
| C03512                                                                            | M3.5(4h)                                                                          | 3.0 | 10IP     | T10P                                                                              |
| C03513                                                                            | M3.5(4h)                                                                          | 3.0 | 10IP     | T10P                                                                              |
| C04008                                                                            | M4.0(4h)                                                                          | 4.0 | 15IP     | T15P                                                                              |
| C04011                                                                            | M4.0(4h)                                                                          | 4.0 | 15IP     | T15P                                                                              |
| C04013                                                                            | M4.0(4h)                                                                          | 4.0 | 15IP     | T15P                                                                              |
| C04014                                                                            | M4.0(4h)                                                                          | 4.0 | 15IP     | T15P                                                                              |
| C04016                                                                            | M4.0(4h)                                                                          | 4.0 | 15IP     | T15P                                                                              |
| C04017                                                                            | M4.0(4h)                                                                          | 4.0 | 15IP     | T15P                                                                              |
| C04511                                                                            | M4.5(4h)                                                                          | 5.0 | 20IP     | T20P                                                                              |
| C05013                                                                            | M5.0(4h)                                                                          | 6.0 | 20IP     | T20P                                                                              |

• Always apply solid lubricant paste prior to fasten screws.

# Cutting Data Calculation

## • Nomenclature and formulae

### RPM

$$n = \frac{v_c \cdot 1000}{\pi \cdot D} \quad (\text{rev/min})$$

### Cutting speed

$$v_c = \frac{n \cdot \pi \cdot D}{1000} \quad (\text{m/min})$$

### Feed speed

$$v_f = n \cdot z \cdot f_z \quad (\text{mm/min})$$

$$v_f = n \cdot z_c \cdot f_z \quad (\text{mm/min})$$

### Feed per revolution

$$f_n = z \cdot f_z \quad (\text{mm/rev})$$

$a_e$  = Width of cut mm/radial depth of cut

(mm)

$a_p$  = Depth of cut mm/axial depth of cut

(mm)

$D$  = Cutter diameter

(mm)

$f$  = Feed per revolution

(mm/rev)

$f_z$  = Feed per tooth

(mm/tooth)

$z_c$  = Effective no. of teeth for calculation of feed speed or feed per rev (see below)

$n$  = RPM

(rev/min)

$Q$  = Material removal rate

(cm<sup>3</sup>/min)

$v_c$  = Cutting speed

(m/min)

$v_f$  = Feed speed

(mm/min)

$z$  = No of teeth

### Metal removal rate

$$Q = \frac{a_e \cdot a_p \cdot v_f}{1000} \quad (\text{cm}^3/\text{min})$$

### Cutting speed and RPM for copying

$$v_c = \frac{n \cdot \pi \cdot D}{1000} \quad (\text{m/min})$$

$$n = \frac{v_c \cdot 1000}{\pi \cdot D} \quad (\text{RPM})$$

$$D = 2 \cdot \sqrt{a_p (D - a_p)} \quad (\text{RPM})$$

### Feed speed in tapping

$$v_f = n \cdot \text{pitch} \quad (\text{mm/min})$$

### Effective no. of teeth ( $z_c$ )

The effective no. of teeth (  $z_c$  ) is used to calculate the feed speed (  $v_f$  ) and the feed per revolution (  $f$  ). For most of cutters, effective no. of teeth (  $z_c$  ) is equal to the no. of teeth of the cutter (  $z$  ), but for some of cutters  $z_c$  is less than  $z$ , such as SC/SCL/ST/STL/CE/CWL/CEL cutter and spot drill.

Especially in spot drill, the  $z_c$  need to be calculated with 1 flute in centering process and 2 flutes in chamfering process.



# TECHNICAL GUIDE

Standard keyway and pin hole figures

FIG.1

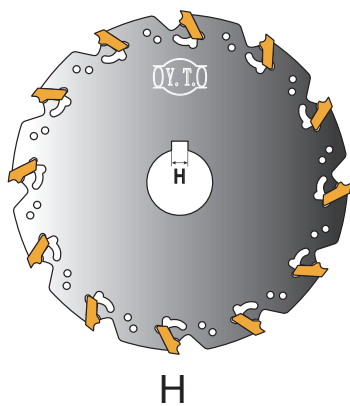
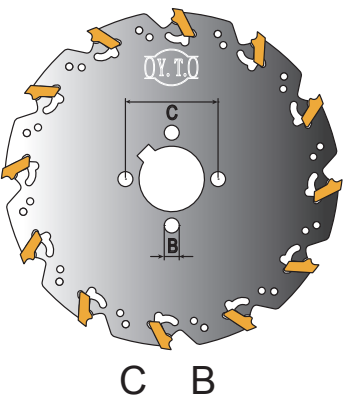
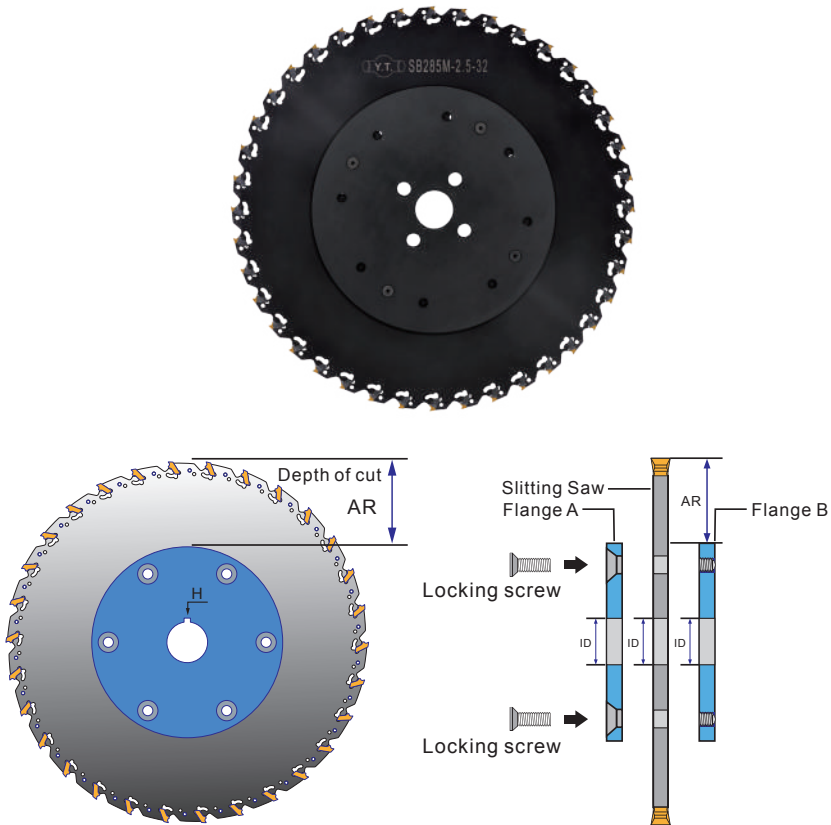


FIG.2



# Vibrations Solution

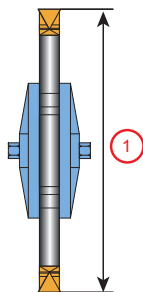


- Improve the stability of cutters and workpieces
- Minimize tool overhang
- Minimize the dia of cutter
- Increase the thickness of cutter, refer to above diagram



# Trouble Shooting

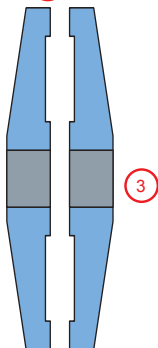
The solution for vibrations and unstable machining



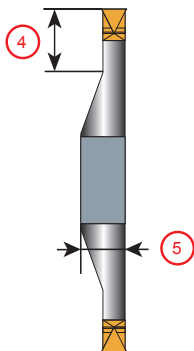
1. Reduce the diameter of the saw blade



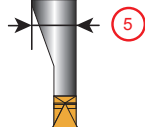
2. Increase the thickness of the saw blade



3. Use bigger flanges



4. Reduce the length of the efficient blade



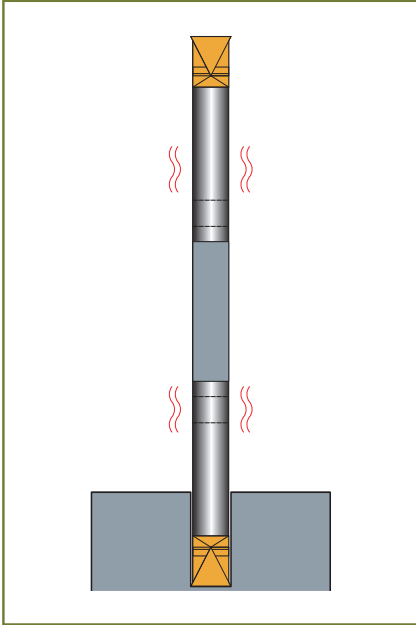
5. Increase body thickness

Attention :

1. Please follow the trouble shooting above in order to obtain better cutting surface finishes
2. Must conform to the speed factor

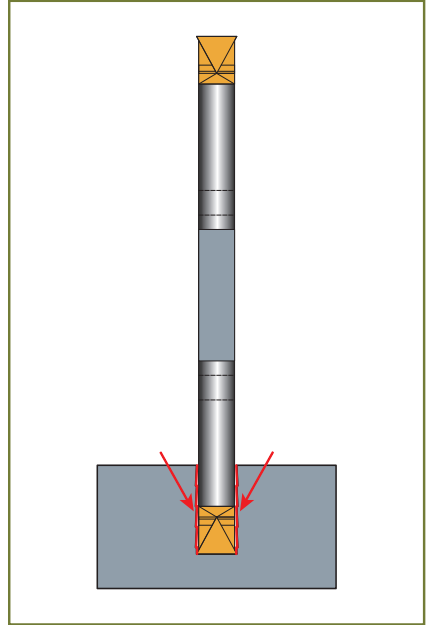
# Trouble Shooting

Vibrations



- Improve the stability of cutter and workpiece
- Change cutter positioning
- Minimize tool overhang
- Reduce the cutting speed
- Increase the feed rate
- Reduce the depth of cut

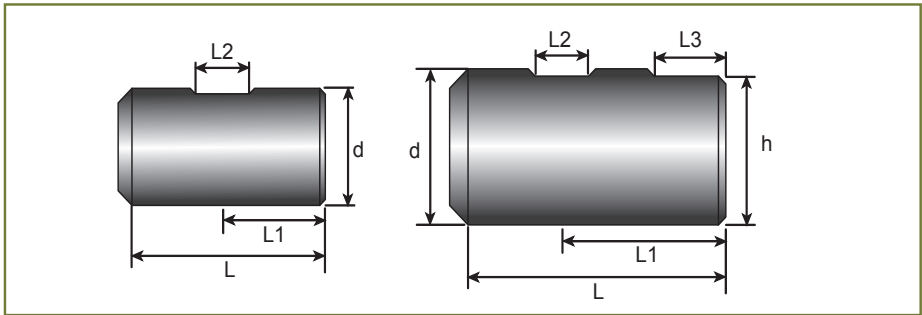
Poor Surface Finish



- Improve the stability of cutter and workpiece
- Minimize tool overhang
- Reduce the feed rate
- Increase the cutting speed
- Use a coolant



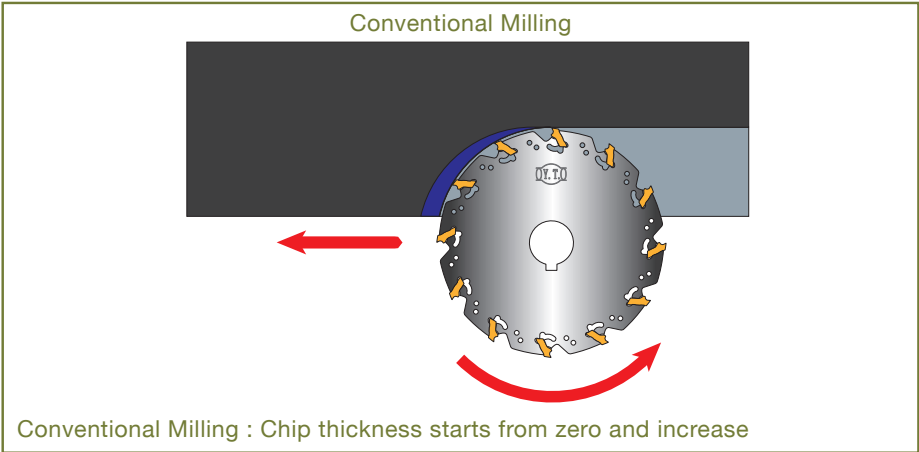
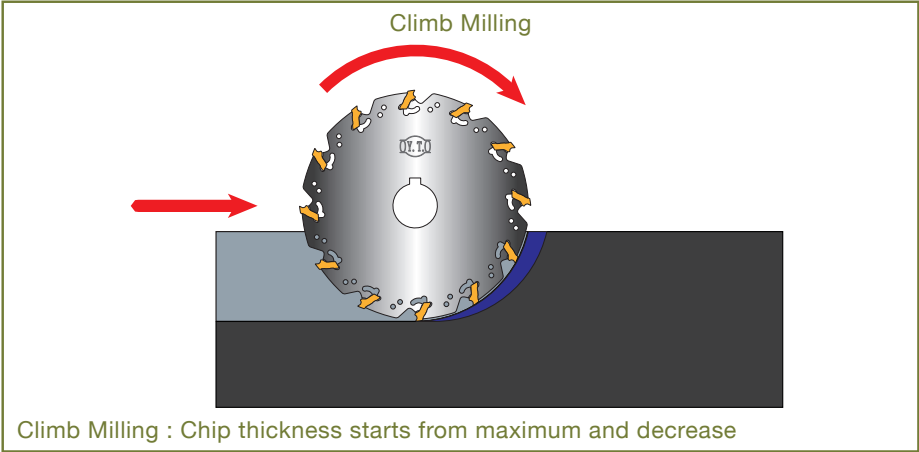
# Technical Guide



Dimensions Of Mounting Metric Size

| Dimensions (mm) |    |      |     |    |      |
|-----------------|----|------|-----|----|------|
| d               | L  | L1   | L2  | L3 | h    |
| 6               | 36 | 18   | 4.2 | -  | -    |
| 8               | 36 | 18   | 5.5 | -  | -    |
| 10              | 40 | 20   | 7   | -  | -    |
| 12              | 45 | 22.5 | 8   | -  | -    |
| 16              | 48 | 24   | 10  | -  | 14.2 |
| 20              | 50 | 25   | 11  | -  | 18.2 |
| 25              | 56 | 32   | 12  | 17 | 23   |
| 32              | 60 | 36   | 14  | 19 | 30   |
| 40              | 70 | 40   | 14  | 19 | 38   |

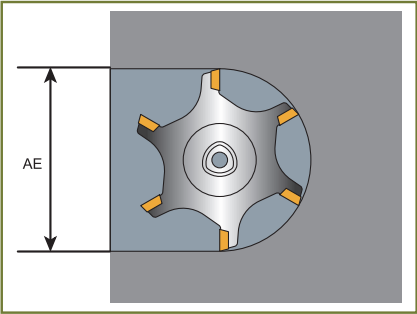
# Climb & Conventional Milling



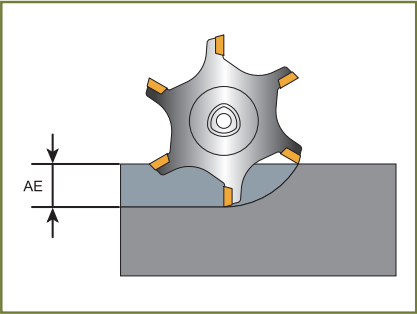


# Cutting Data

Slot Milling



Side Milling



| Relative Engagement<br>Of The Cutter Diameter | Multiply The Feed Per Tooth<br>By The Following Factor |
|-----------------------------------------------|--------------------------------------------------------|
| 30%                                           | 1.25                                                   |
| 20%                                           | 1.5                                                    |
| 10%                                           | 2.0                                                    |
| 5%                                            | 3.0                                                    |

This Table Can Be Used For Cutters With Cutting Edge Angle = 90°

| AE / D<br>%                          | Feed Per Tooth / mm ( fz )       |      |      |      |      |      |      |      |      |      |      |      |      | Speed<br>factor |
|--------------------------------------|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
|                                      | 0.03                             | 0.06 | 0.08 | 0.10 | 0.15 | 0.20 | 0.25 | 0.30 | 0.40 | 0.50 | 0.60 | 0.80 | 1.00 |                 |
|                                      | Average Chip Thickness mm ( hm ) |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Width Of Cut Up To And Inching D / 2 |                                  |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2 ( 0.02 )                           | -                                | -    | -    | -    | 0.02 | 0.03 | 0.04 | 0.04 | 0.06 | 0.07 | 0.08 | 0.11 | 0.14 | 1.8             |
| 3 ( 0.03 )                           | -                                | -    | -    | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.07 | 0.09 | 0.10 | 0.14 | 0.17 | 1.7             |
| 5 ( 0.05 )                           | -                                | -    | 0.02 | 0.02 | 0.03 | 0.04 | 0.06 | 0.07 | 0.09 | 0.11 | 0.13 | 0.18 | 0.22 | 1.6             |
| 10 ( 0.10 )                          | -                                | 0.02 | 0.02 | 0.03 | 0.05 | 0.06 | 0.08 | 0.09 | 0.12 | 0.16 | 0.19 | 0.25 | 0.31 | 1.5             |
| 15 ( 0.15 )                          | 0.011                            | 0.02 | 0.03 | 0.04 | 0.06 | 0.08 | 0.09 | 0.11 | 0.15 | 0.19 | 0.23 | 0.30 | -    | 1.4             |
| 20 ( 0.20 )                          | 0.013                            | 0.03 | 0.03 | 0.04 | 0.06 | 0.09 | 0.11 | 0.13 | 0.17 | 0.22 | 0.26 | -    | -    | 1.35            |
| 30 ( 0.30 )                          | 0.016                            | 0.03 | 0.04 | 0.05 | 0.08 | 0.10 | 0.13 | 0.16 | 0.21 | 0.26 | 0.31 | -    | -    | 1.3             |
| 40 ( 0.40 )                          | 0.018                            | 0.04 | 0.05 | 0.06 | 0.09 | 0.12 | 0.15 | 0.18 | 0.23 | 0.29 | -    | -    | -    | 1.25            |
| 50 ( 0.50 )                          | 0.02                             | 0.04 | 0.05 | 0.06 | 0.10 | 0.13 | 0.16 | 0.19 | 0.25 | 0.32 | -    | -    | -    | 1.2             |
| Slot Milling ( Width Of Cut = D )    |                                  |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 100 ( 1.0 )                          | 0.02                             | 0.04 | 0.05 | 0.06 | 0.10 | 0.13 | 0.16 | 0.19 | 0.25 | 0.32 | -    | -    | -    | 1.0             |

Instead Of Using The Table Above For Calculating  
hm And fz The Following Formulae Could Be Used  
If ( AE / D ) < 30%

hm = fz · √ $\frac{AE}{D}$

fz = hm · √ $\frac{D}{AE}$

