



SINCE 1977

**YIH TROUN**

*Patent Product*

# INDEXABLE TOOL

2026. 01

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.



## 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  $\phi 4.0$  ~ $\phi 110$ 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  $\phi 8.0$ 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** Innovation Awards”.
- 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 Patentgenehmigung 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



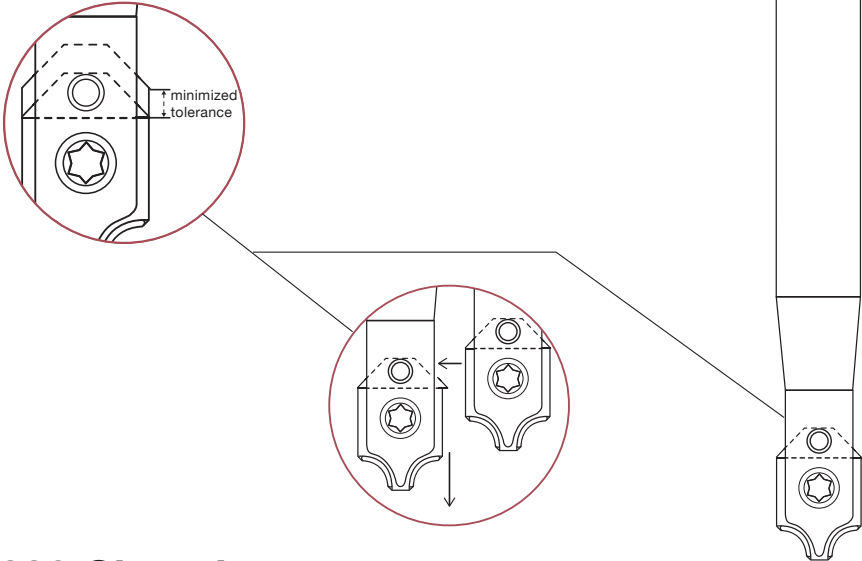
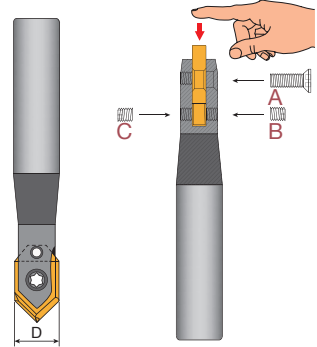
New  
System  
For Hole  
Making

# 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



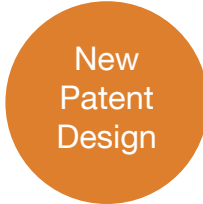
Engraving tool

Patent No.  
 M473882  
 M474588  
 M473881

Patent No.  
 201310453057.2  
 201320772697.5

PCT Priority No.  
 PCT/ CN2013/086393





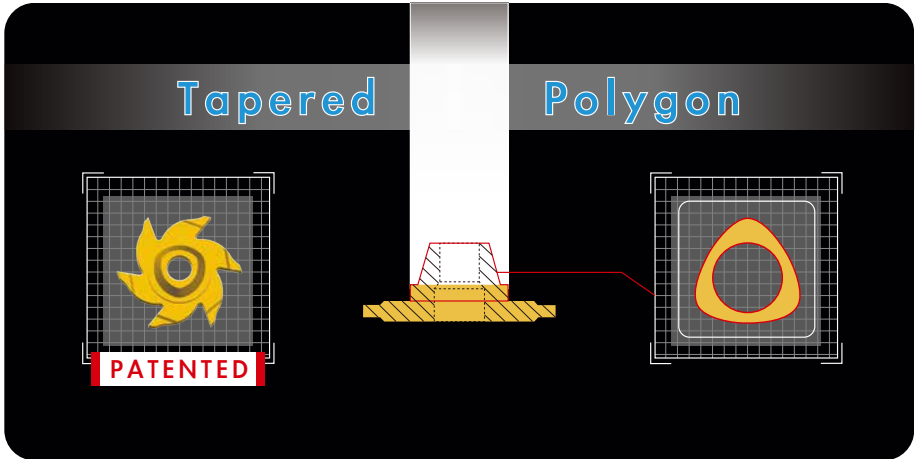
New  
Patent  
Design

# UFO

## Family

### Optimal Tapered Polygon Design

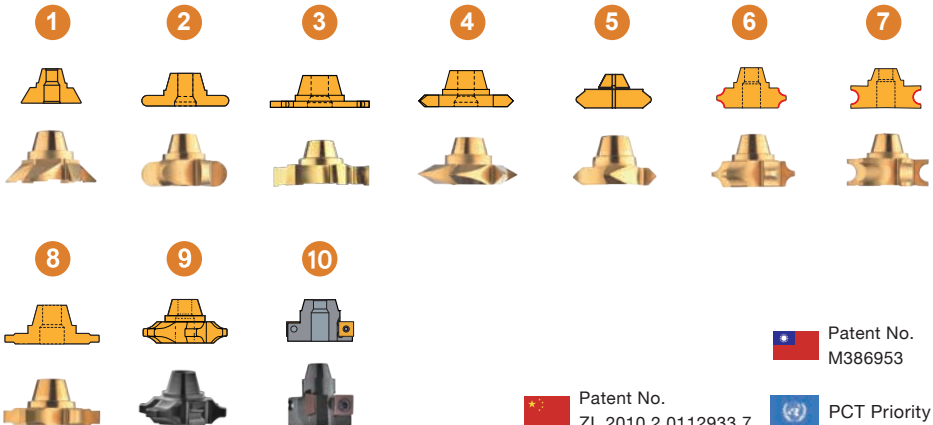
This unique UFO insert is designed with a tapered polygon profile to optimize the stability and precision. It's an optimal center positioning with varieties of different UFO inserts, easy to change the insert and keep the tolerance minmization.






## 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.

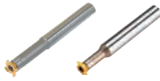
















 Patent No.  
M386953

 Patent No.  
ZL 2010 2 0112933.7

 PCT Priority



| 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 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 |
|                              |   |    |   |   |               |
|                              | 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/<br>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 (Full Profile) |  | Pitch 1.0/ 1.25/ 1.5/ 2.0/ 2.5/ 3.0/ 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 1.4/ 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 | 200<br> <br>211 |
| 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                                | 214<br> <br>216 |
| STL       | Side Milling Cutter |               | Dia. 80/ 100/ 125/ 160 mm<br>AE 4/ 5 mm   | 217             |
| BL<br>BLL | Adapter Holder      |               | Dia. 45/ 58 mm<br>I.D. 22/ 25.4/ 31.75/ 32 mm   | 218             |
| SCL       | Side Milling Cutter |               | Dia. 160/ 200/ 250 mm<br>AE 6/ 8/ 10/ 12 mm   | 221             |

| 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  | 222<br> <br>223 |
| CWL        | Back Milling Cutter     |    | Dia. 160/ 200/ 250 mm<br>AE 12 mm                          | 224             |
| BCL        | Adapter Holder          |    | Dia. 65/ 90 mm<br>I.D. 32/ 31.75/ 40/ 38.1/ 60/<br>50.8 mm | 224<br> <br>225 |
| SC         | Side Milling Cutter     |    | Dia. 80/ 100/ 125/ 160 mm<br>AE 4/ 5/ 6/ 7/ 8/ 10/ 12 mm   | 227<br> <br>232 |
| ST         |                         |    | Dia. 80/ 100/ 125/ 160 mm<br>AE 6/ 7/ 8/ 10/ 12 mm         | 233<br> <br>234 |
| CE         | Disc Milling Cutter     |    | Dia. 80/ 100/ 125 mm<br>AE 14/ 16/ 18/ 20/ 22/ 25/ 30 mm   | 236<br> <br>238 |
| CW         |                         |    | Dia 80/ 100/ 125 mm<br>AE 14/ 16/ 18/ 20/ 22/ 25/<br>30 mm | 239<br> <br>241 |
| CB         | Back Milling Cutter     |   | Dia. 100/ 125 mm<br>AE 12 mm                               | 244             |
| CDL<br>CDR | Straddle Milling Cutter |  | Dia. 100/ 125/ 160 mm<br>AE 12 mm                          | 245             |

| Code      | Category       | Product Image   | Size Rang  | Page |
|-----------|----------------|---|--|------|
| 13        | Spot Drill     |  | Dia. 8/ 10/ 12/ 16 mm<br>Angle 90° / 90° +142° / 142°  | 269  |
| GA        | Centralizer    |  | I.D. 8.2/ 10.2/ 12.2/ 16.2 mm  | 281  |
| TU1<br>TU | Center Drill   |  | Pilot Dia. 1.6/ 2.0/ 2.5/ 3.0/ 4.0/<br>5.0/ 6.0/ 8.0mm<br>Angle<br>1) A type 60°    3) D type 60°<br>2) C type 90° | 282  |
|           |                |  |  |      |
|           | Engraving Tool |  | E type 60°<br>Tip Width 0.15 mm  | 286  |

| 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 | 297  |
| CBK  | Counter Bore for Traditional Machine |  | Dia. 14/ 15/ 18/ 20/ 22/ 24/ 25/ 26/ 27 mm                                  | 306  |
| HBM  | Counter Bore for Traditional Machine |  | Dia. 26/ 29/ 33/ 36/ 40/ 50/ 58 mm  | 307  |
| CBI  | Counter Bore for CNC Machine         |  | Dia. 15/ 18/ 20/ 24/ 26/ 29/ 33/ 36/ 40/ 50/ 58 mm<br>Chamfer Angle 45°     | 308  |

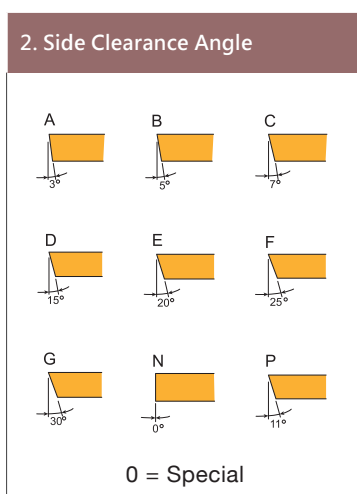
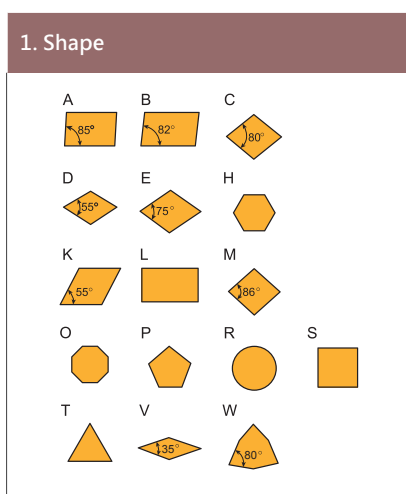
| Code   | Category                       | Product Image   | Size Rang   | Page |
|--------|--------------------------------|---|---|------|
| CI     | Countersink                    |    | Dia. 4~39 mm<br>Countersink Angle 60°/90°/100°/120° | 316  |
| HCI    |                                |    | Dia. 4~39 mm<br>Countersink Angle 60°/90°/120°      | 317  |
|        |                                |    | Dia. 20~110 mm<br>Countersink Angle 90°             | 318  |
| C      | Chamfer Cutter for CNC Machine |    | Dia. 10~70 mm<br>Angle 30°/45°                      | 324  |
| MC HMC |                                |  | Dia. 11~45 mm<br>Angle 45°                          | 326  |
| 15     | Corner Rounding Cutter         |  | Dia. 16/ 25 mm<br>Radius R1~R10                     | 330  |

| Code | Category                           | Product Image   | Size Rang   | Page |
|------|------------------------------------|---|---|------|
| XD   | Dovetail Milling Cutter            |  | Dia. 40/ 60/ 80 mm<br>Angle 45°/50°/55°/60°         | 335  |
| XV   |                                    |  | Dia. 120 mm<br>Angle 45°/50°/55°/60°                | 336  |
| MO   | Face Milling Cutter for Alluminium |  | Dia. 80/ 100/ 125/ 160/ 200/ 250/ 300 mm<br>AP 3 mm | 343  |




# 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 indicated, on the following list are exactly different. To check the exact tolerance of each insert, please refer to the relative page of inserts.



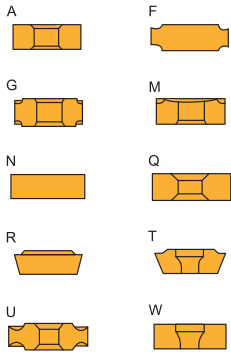
## Code Keys

| 3.Tolerances   |  |   |  |                      |      |      |       |      |        |       |      |       |      |
|----------------|--|---|--|----------------------|------|------|-------|------|--------|-------|------|-------|------|
| Tol.-<br>Class | Tolerance +/-mm  |   |  | For d, dimension(mm) |      |      |       |      |        |       |      |       |      |
|                | <br>m | <br>AE | <br>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   |                      |      |      |       |      |        |       | •    | •     | •    |



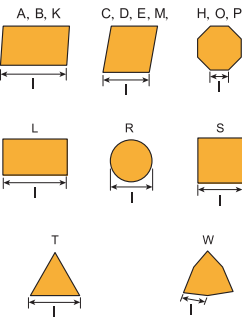
# Inserts Code Keys

## 4. Type

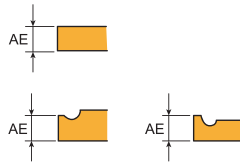


X=Special

## 5. Cutting edge length

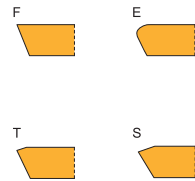


## 6. Thickness



|            |            |
|------------|------------|
| 01=1,59 mm | 04=4,76 mm |
| T1=1,98 mm | 05=5,56 mm |
| 02=2,38 mm | 06=6,35 mm |
| 03=3,18 mm | 07=7,94 mm |
| T3=3,97 mm | 08=8,00 mm |
|            | 09=9,52 mm |

## 8. Cutting edge designation



Not mandatory information

## 7. Insert with corner chamfers / nose radius



1nd letter

A=45°  
D=60°  
E=75°  
F=85°  
P=90°

Z=Special



2nd letter

A=3°      F=25°  
B=5°      G=30°  
C=7°      N=0°  
D=15°     P=11°  
E=20°

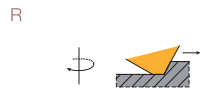
Z=Special



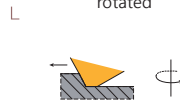
nose radius

M0\*= round inserts  
00= sharp  
01= 0,1mm  
02= 0,2mm  
04= 0,4mm  
08= 0,8mm  
12= 1,2mm  
etc  
\*Metric version

## 9. Direction of cutting



Right-rotated



Left-rotated

N  
Neutral  
(R- and L-rotated)

## 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 aluminium 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>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>Tialn |
|  | C250 | C250 has a tough substrate in steel machining.<br>Helica  |
|  | C350 | C350 is the best recommend grade for steel machining. Especially in 390 system. ( Spot Drill, 4-1 Counterbore, Corner Rounding )<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>Tin                          |
|  | F30  | F30 is the substrate with new and heat-resistance coating suitable for cast iron.<br>Helica   |

## Uncoated grades

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

# Insert Geometries

## Designation system

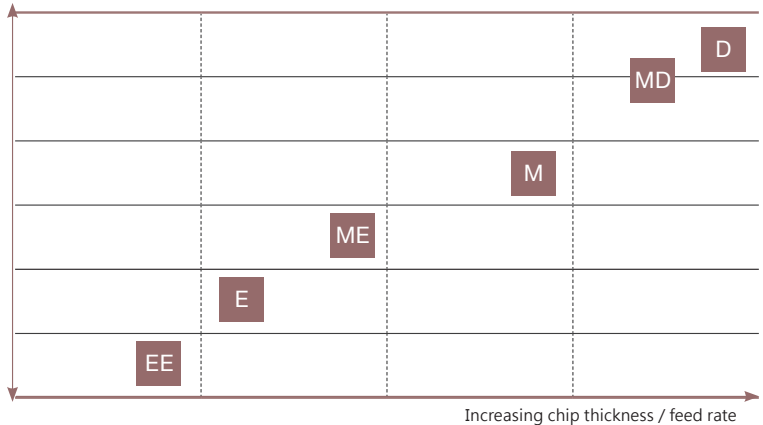
The Y.T. designation system for milling inserts has been developed to provide users with better guidance concerning the fields of application for various insert geometries.



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





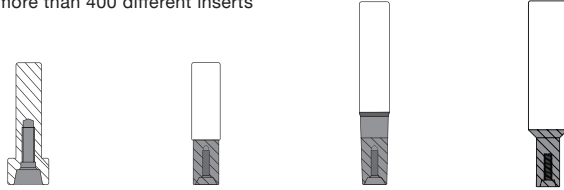
**PATENTED**

# Design Of UFO Family

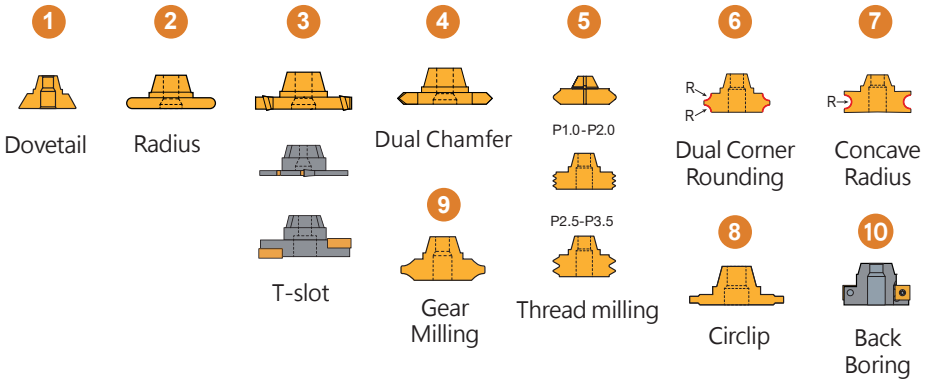
## Shank

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

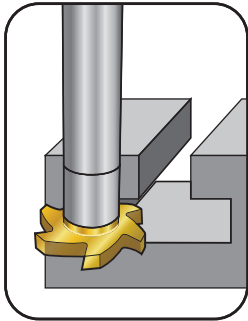
The interface is tapered design for keeping eccentricity  $\leq 0.01\text{mm}$ , which enhance the cutting speed and insert tool life.



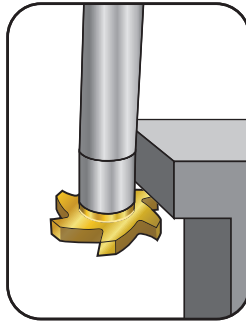
# UFO Series T-Slot Cutter Machining Applications



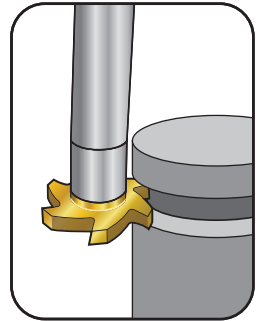
UFO Family



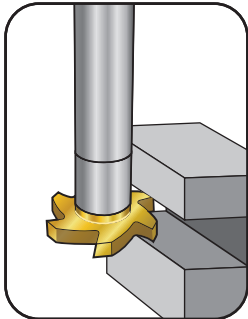
T-Slot Milling



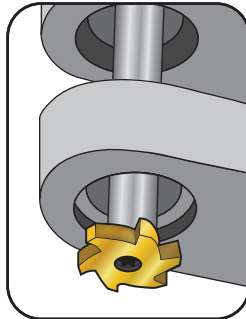
Backside Undercutting



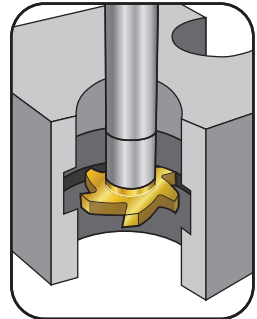
Circular Groove



Straight Groove



Bottom Circular Groove

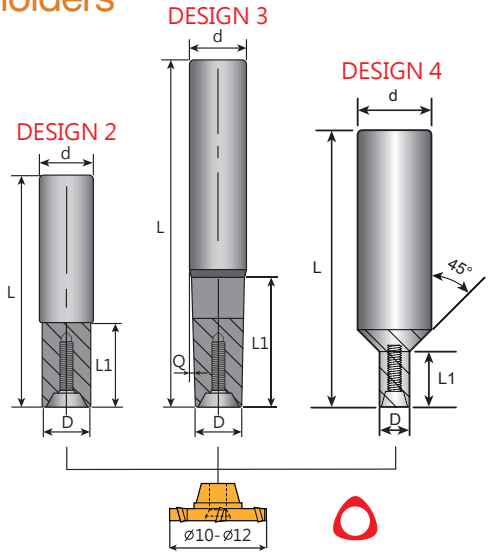
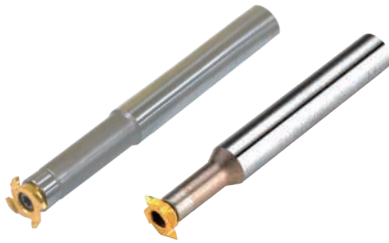


Internal Circular Groove



# PRODUCT SPECIFICATIONS

## UFO Family Common Toolholders



### CB3

• HSS Shanks

| Order code      | Dimensions (mm) |    |     |    |    | Design | KG                | Inserts | Screw | Key |
|-----------------|-----------------|----|-----|----|----|--------|-------------------|---------|-------|-----|
|                 | D               | d  | L   | L1 | Q  |        |                   |         |       |     |
| CB3-0606-55-12  | 6.5             | 6  | 55  | 10 | -  | 2      | ø10<br>ø11<br>ø12 | C03012  | T09P  |     |
| CB3-0808-80-12  | 7.9             | 8  | 80  |    |    |        |                   |         |       |     |
| CB3-1006-100-12 | 6.5             | 10 | 100 | 20 | 1° | 3      |                   |         |       |     |
| CB3-1008-100-12 | 7.9             |    |     | 30 |    |        |                   |         |       |     |
| CB3-1606-60-12  | 6.5             | 16 | 60  | 12 | -  | 4      |                   |         |       |     |
| CB3-1608-65-12  | 7.9             |    | 65  | 16 |    |        |                   |         |       |     |

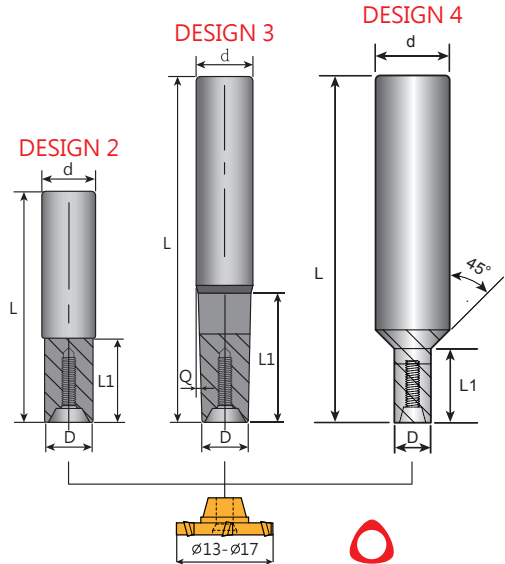
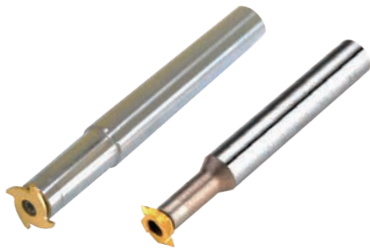
### CB3W

• Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |    | Design | KG   | Inserts           | Screw  | Key  |
|------------------|-----------------|----|-----|----|----|--------|------|-------------------|--------|------|
|                  | D               | d  | L   | L1 | Q  |        |      |                   |        |      |
| CB3W-0808-80-12  | 7.9             | 8  | 80  | 10 | -  | 2      | 0.11 | ø10<br>ø11<br>ø12 | C03012 | T09P |
| CB3W-1008-100-12 | 7.9             | 10 | 100 | 30 | 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 | Ø13<br>Ø14<br>Ø15<br>Ø16<br>Ø17 | C03012 | T09P |
| CB3-1010-90-15  | 9.9             | 10 | 90  |    |    |        |      |                                 |        |      |
| CB3-1208-110-15 | 7.9             | 12 | 110 | 30 | 1° | 3      | 0.14 |                                 |        |      |
| CB3-1210-120-15 | 9.9             |    | 120 |    |    |        |      |                                 |        |      |
| CB3-1608-75-15  | 7.9             | 16 | 75  | 16 | -  | 4      | 0.24 |                                 |        |      |
| CB3-1610-80-15  | 9.9             |    | 80  |    |    |        |      |                                 |        |      |

## CB3W

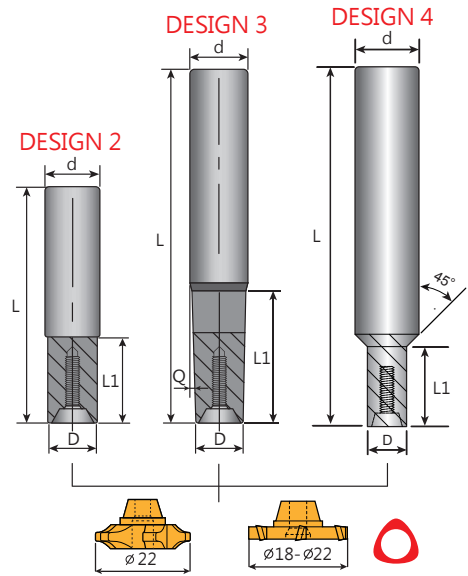
• Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |    | Design | KG   | Inserts                         | Screw  | Key  |
|------------------|-----------------|----|-----|----|----|--------|------|---------------------------------|--------|------|
|                  | D               | d  | L   | L1 | Q  |        |      |                                 |        |      |
| CB3W-1010-90-15  | 9.9             | 10 | 90  | 10 | -  | 2      | 0.15 | Ø13<br>Ø14<br>Ø15<br>Ø16<br>Ø17 | C03012 | T09P |
| CB3W-1208-110-15 | 7.9             | 12 | 110 | 30 | 1° | 3      | 0.21 |                                 |        |      |
| CB3W-1210-120-15 | 9.9             |    | 120 |    |    |        |      |                                 |        |      |

• 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      | ø 18<br>ø 19<br>ø 20<br>ø 21<br>ø 22 | C03513  | T10P  |     |
| CB3-1010-100-20 |                 |     | 100 |      |      |        |                                      |         |       |     |
| CB3-1210-90-20  |                 | 12  | 90  | 25   | 3.2° | 3      |                                      |         |       |     |
| CB3-1210-130-20 |                 |     | 130 | 40   | 1.7° |        |                                      |         |       |     |
| CB3-1610-90-20  | 11.8            | 16  | 90  | 20   | -    | 4      | C03513                               | T10P    |       |     |
| CB3-1612-95-20  |                 |     | 95  | 25   | -    | 4      |                                      |         |       |     |
| CB3-1612-150-20 |                 | 150 | 150 | 55   | 2.4° | 3      |                                      |         |       |     |
| CB3-1616-150-20 |                 |     |     | 15.8 | 20   | -      |                                      |         | 2     |     |

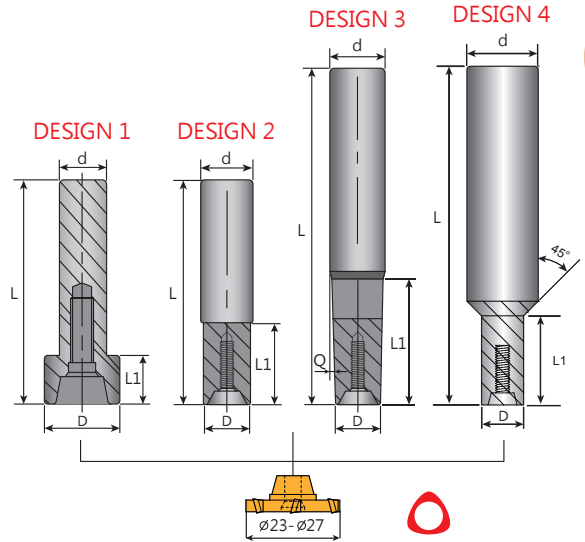
## CB3W

• Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |   | Design | KG   | Inserts                              | Screw  | Key  |
|------------------|-----------------|----|-----|----|---|--------|------|--------------------------------------|--------|------|
|                  | D               | d  | L   | L1 | Q |        |      |                                      |        |      |
| CB3W-1010-100-20 | 9.8             | 10 | 100 | 12 | - | 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 | 35 | 4.2° |        | 0.18 |                                      |        |      |
| CB3-1612-110-25 |                 |    | 150 | 55 | 2.4° | 0.24   |      |                                      |        |      |
| CB3-1612-150-25 |                 | 20 | 95  | 25 | -    | 4      | 0.50 |                                      |        |      |
| CB3-2012-95-25  |                 |    | 30  | -  | 0.55 |        |      |                                      |        |      |
| CB3-2016-95-25  | 15.8            |    | 150 | 20 | -    | 2      | 0.46 |                                      |        |      |
| CB3-2020-150-25 | 19.8            |    |     |    |      |        |      |                                      |        |      |

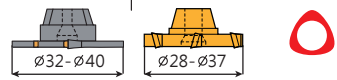
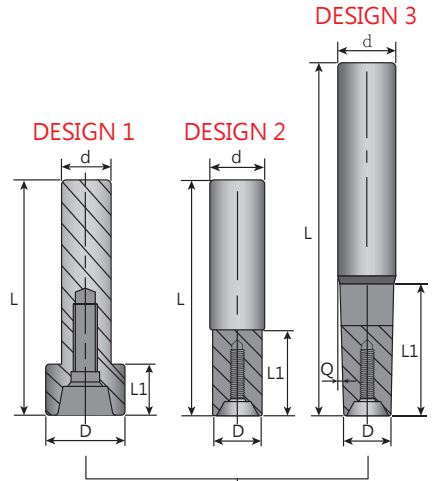
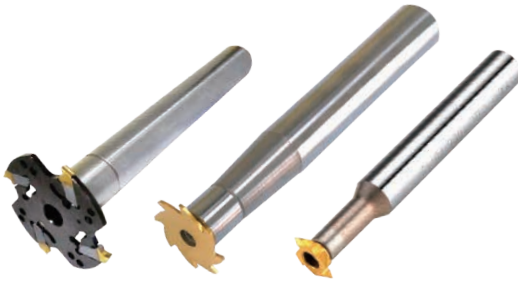
## CB3W • Carbide Shanks

| Order code       | Dimensions (mm) |    |     |    |   | Design | KG   | Inserts                         | Screw  | Key  |
|------------------|-----------------|----|-----|----|---|--------|------|---------------------------------|--------|------|
|                  | D               | d  | L   | L1 | Q |        |      |                                 |        |      |
| CB3W-1212-110-25 | 11.8            | 12 | 110 | 12 | - | 2      | 0.26 | ø23<br>ø24<br>ø25<br>ø26<br>ø27 | C04017 | T15P |
| CB3W-1616-150-25 | 15.8            | 16 | 150 | 20 |   |        | 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° | 3    | 0.34   |      |  |        |      |
| CB3-2016-150-30 |                 | 180  |     |      |      | 0.45   |      |  |        |      |
| CB3-2016-180-30 |                 | 180  | 70  | 2.0° | 0.51 |        |      |  |        |      |
| CB3-2020-90-30  |                 | 19.8 | 20  | 90   | 20   | -      | 2    |  |        |      |
| CB3-2020-150-30 | 150             |      |     | 0.56 |      |        |      |  |        |      |
| CB3-2020-180-30 | 180             |      |     | 0.58 |      |        |      |  |        |      |

## CB3W • Carbide Shanks

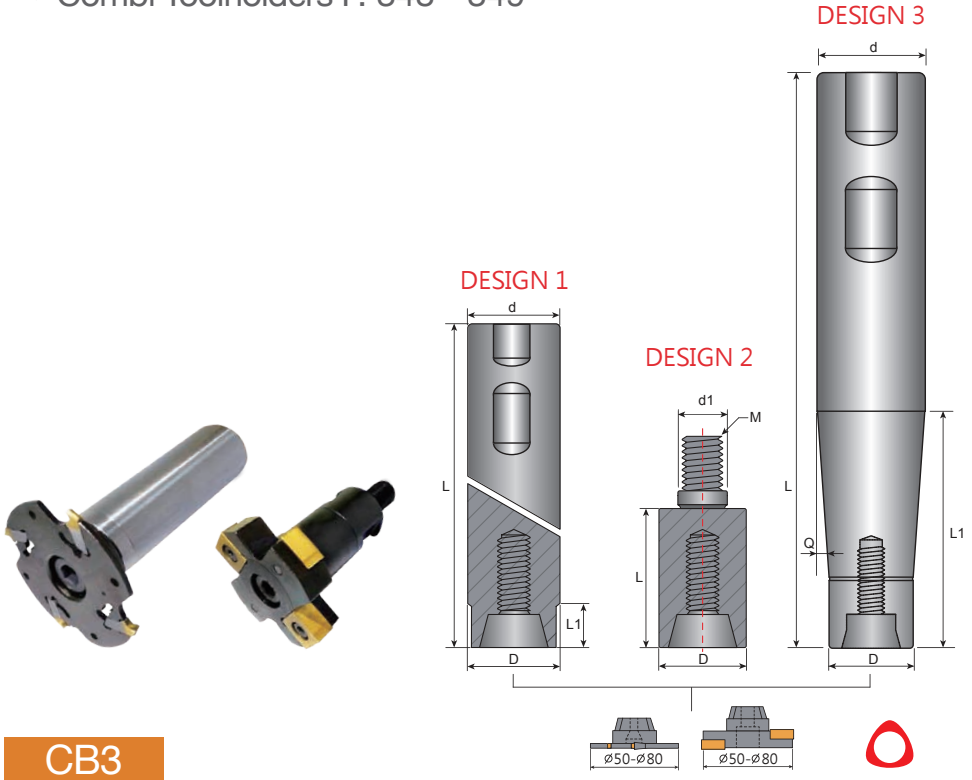
| Order code       | Dimensions (mm) |    |     |    |      | Design | KG   | Inserts                                     | Screw  | Key  |
|------------------|-----------------|----|-----|----|------|--------|------|---|--------|------|
|                  | D               | d  | L   | L1 | Q    |        |      |   |        |      |
| CB3W-1616-150-30 | 15.8            | 16 | 150 | 15 | -    | 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 | 70 | 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 | KG   | Inserts           | Screw | Key |
|--------------|-----------------|----|------|-----|----|----|-----|--------|------|-------------------|-------|-----|
|              | D               | d  | d1   | L   | L1 | M  | Q   |        |      |                   |       |     |
| CB3-2525-110 | 24.8            | 25 | -    | 110 | 15 | -  | -   | 1      | 0.42 | ø 50<br> <br>ø 80 | M0825 | -   |
| CB3-2525-170 |                 |    |      | 170 |    |    |     |        |      |                   |       |     |
| CB3-25A      | 25.0            | -  | 12.5 | 40  | -  | 12 | -   | 2      | 0.17 | ø 50<br> <br>ø 80 | M0825 | -   |
| CB3-25       |                 |    | 14   |     |    |    |     |        |      |                   |       |     |
| CB3-3225-110 | 24.8            | 32 | -    | 110 | 40 | -  | 10° | 3      | 0.62 | ø 50<br> <br>ø 80 | M0825 | -   |
| CB3-3225-170 |                 |    |      | 170 |    |    | 70  |        |      |                   |       |     |

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



# UFO T-SLOT CUTTER



Video

## Features

Available in materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

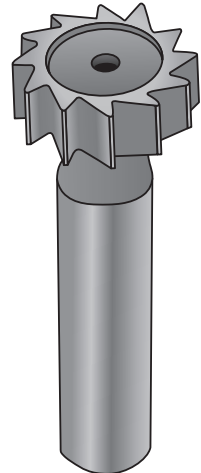
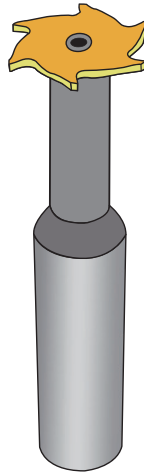
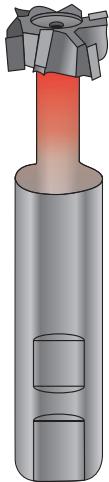
Efficiency  
**400%**  
UP

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 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

### 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 :

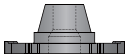


1. Machining exceptionally wide slots.
2. Machining in long overhang.
3. Larger cutting depths.
4. Machining difficult materials.

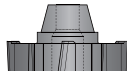


← C Series → ← CN Series → ← N Series → ←

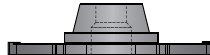
1



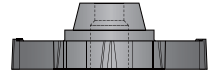
2



3



4

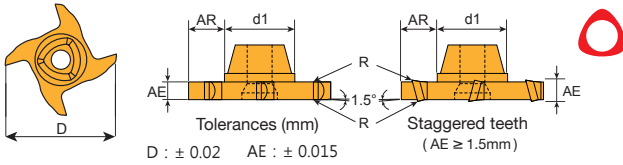


- $\varnothing 22 / \varnothing 27 / \varnothing 32 / \varnothing 35 / \varnothing 37$
- AE: 0.5 mm - 8.0 mm
- Max. AR10 mm



# 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>±<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 |
| <p>4 flutes</p> | 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    |               |         |      |      |     |     |        |      |          |  |    |
| <p>4 flutes</p> | 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   | ⊙             |         |      |      |     |     |        |      |          |  |    |

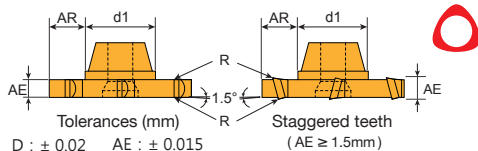


Inserts 2 PCS / Box

- ■ 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.

UFO Family

| Inserts         | Order Code    | Grades  |      |      |     |        |       |          |     |  |    |
|-----------------|---------------|---------|------|------|-----|--------|-------|----------|-----|--|----|
|                 |               | Carbide |      |      |     | Cermet |       | Uncoated |     |  |    |
|                 |               | B100    | C200 | C250 | F20 | F30    | CE100 | CE60     | K10 |  | CE |
| <p>4 flutes</p> | 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    |               |         |      |      |     |        |       |          |     |  |    |
| <p>4 flutes</p> | 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   | ☉             |         |      |      |     |        |       |          |     |  |    |

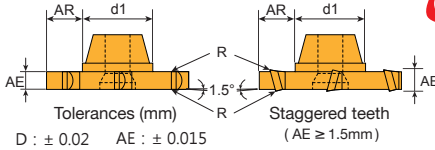
\* M.O.Q: 12PCS  
\* Make-to-Order.

- ■ Steel ■ Stainless Steel ☉ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ☉ Steel/Stainless 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 ± 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             |     |         |         |               |

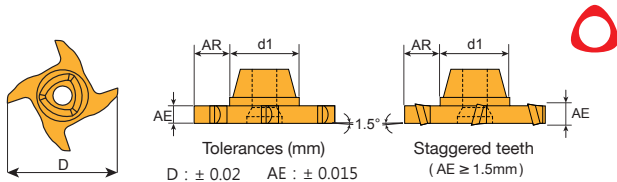
\* Only "ME, B100 & ME, F20" insert are designed with corner radius.

| Inserts   | Order Code    | Grades  |      |      |     |     |        |      |          |   |    |  |
|---|---------------|---------|------|------|-----|-----|--------|------|----------|--|----|--|
|   |               | Carbide |      |      |     |     | Cermet |      | Uncoated |  |    |  |
|   |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |  | CE |  |
|  <p>4 flutes</p>   | 3T0612-0.5-E  |         |      |      |     |     |        |      |          |  |    |  <p>Inserts 2 PCS / Box</p> |
|   | 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  |         |      |      |     |     |        |      |          |  |    |  |
| 3T0612-2.0-E  |               |         |      |      |     |     |        |      |          |  |    |  |
| 3T0612-2.2-E  |               |         |      |      |     |     |        |      |          |  |    |  |
| 3T0612-2.5-E  |               |         |      |      |     |     |        |      |          |  |    |  |
| 3T0612-3.0-E  |               |         |      |      |     |     |        |      |          |  |    |  |
|  <p>4 flutes</p> | 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   | ⊗             |         |      |      |     |     |        |      |          |  |    |  |



-  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      |   | CE |
| <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  |              |         |      |      |     |     |        |      |          |   |    |

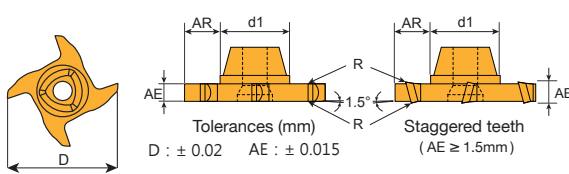
\* M.O.Q: 12PCS  
\* Make-to-Order.

- ■ 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             |    |         |         |                     |

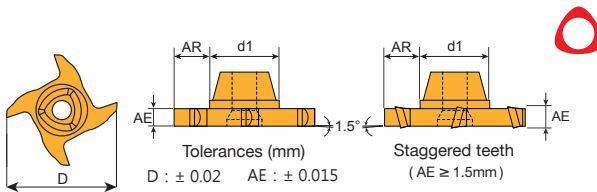
| Inserts   | Order Code    | Grades  |      |      |     |     |        |          |     |  |    |  |
|---|---------------|---------|------|------|-----|-----|--------|----------|-----|---|----|--|
|   |               | Carbide |      |      |     |     | Cermet | Uncoated |     |   |    |  |
|   |               | 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



| 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             |    |         |         |

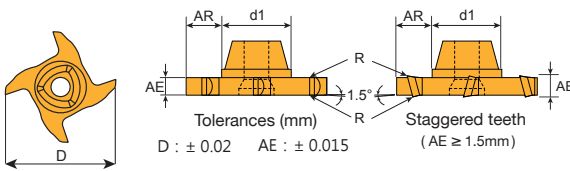
| Inserts         | Order Code   | Grades  |      |      |     |     |        |          |     |  |    |  |
|-----------------|--------------|---------|------|------|-----|-----|--------|----------|-----|--|----|--|
|                 |              | Carbide |      |      |     |     | Cermet | Uncoated |     |  |    |  |
|                 |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60     | K10 |  | CE |  |
| <p>4 flutes</p> | 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  
 \* 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 ± 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  | 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 | ☉             |         |      |      |     |        |       |          |     |  |    |

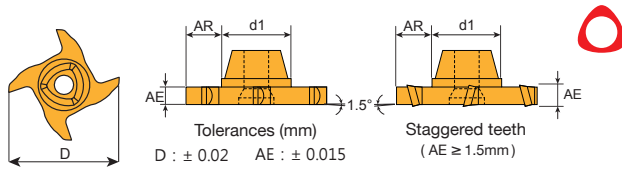
\* M.O.Q: 12PCS  
\* Make-to-Order.

- 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




# UFO T-slot Inserts








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

UFO Family



| 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             |    |         |         |

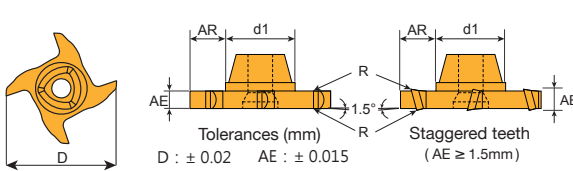
| Inserts  | Order Code   | Grades  |      |      |     |     |        |      |          |  |  |
|--|--------------|---------|------|------|-----|-----|--------|------|----------|---|--|
|  |              | Carbide |      |      |     |     | Cermet |      | Uncoated |   |  |
|  |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |   | CE   |
|  <p>4 flutes</p> | 3T0815-0.5-E |         |      |      |     |     |        |      |          |   |  <p>Inserts 2 PCS / Box</p> |
|  | 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   |              |         |      |      |     |     |        |      |          |   |  |

-  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



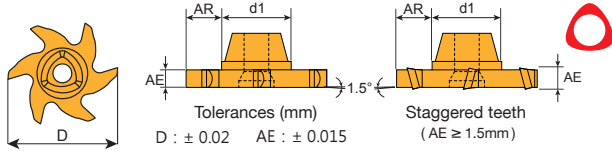
| Dimensions (mm) |    |         |         |                     |
|-----------------|----|---------|---------|---------------------|
| D               | d1 | AE      | Max. AR | R                   |
| 15              | 8  | 0.5-0.6 | 3.0     | R0.05<br>±<br>0.025 |
|                 |    | 0.7-0.8 |         |                     |
|                 |    | 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  | 3T0815-0.5-ME | ☉       |      |      |        |     |          |      |  |     |    |  | <br>Inserts 2 PCS / Box |
|               | 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 | ☉             |         |      |      |        |     |          |      |  |     |    |  |                         |

- ■ 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 |
|         | 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 |         |      |      |     |        |       |          |     |  |    |

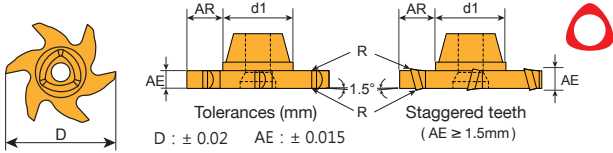
\* M.O.Q: 12PCS  
\* Make-to-Order.

- ■ 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>±<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 | CZ50 | F20 | F50    | CE100 | CE60     | K10 |   | CE |
|         | 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 | ☉       |      |      |     |        |       |          |     |   |    |



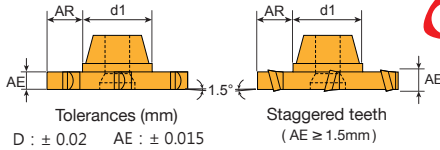
6 flutes

\* 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 |
|         | 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 |         |      |      |     |        |       |          |     |  |    |



6 flutes

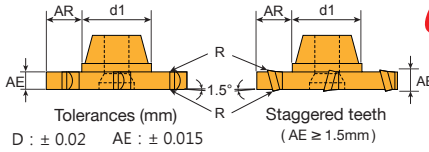
\* M.O.Q: 12PCS  
\* Make-to-Order.

- ■ 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 |         |                     |
|                 |    | 6.0     |         |                     |
|                 |    | 8.0     |         |                     |

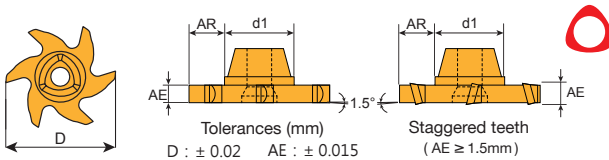
| Inserts  | Order Code    | Grades  |      |      |     |        |       |          |     |  |    |
|--|---------------|---------|------|------|-----|--------|-------|----------|-----|---|----|
|  |               | Carbide |      |      |     | Cermet |       | Uncoated |     |   |    |
|  |               | B100    | C200 | C250 | F20 | F30    | CE100 | CE60     | K10 |   | CE |
|  | 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.

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



6 flutes



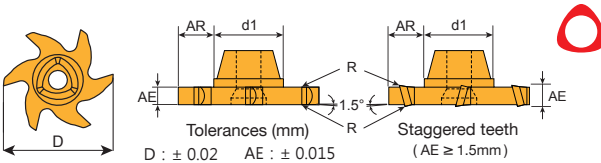
Inserts 2 PCS / Box

- ■ 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-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 |  | CE |
| <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 | ⊙             |         |      |      |     |        |       |          |     |  |    |

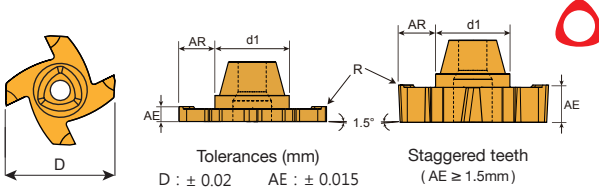


Inserts 2 PCS / Box

- ■ 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 |   |
|  <p>4 flutes</p> | 3T1022C-0.5-ME | ⊙       |      |      |     |     |        |      |          |    |   |
|  | 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   | ⊙              |         |      |      |     |     |        |      |          |    |   |



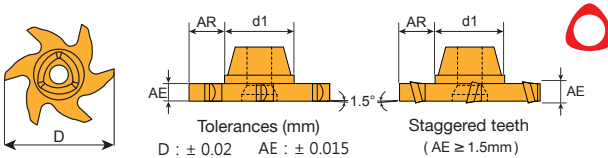
Inserts 2 PCS / Box

-  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.: 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             |    |         |         |

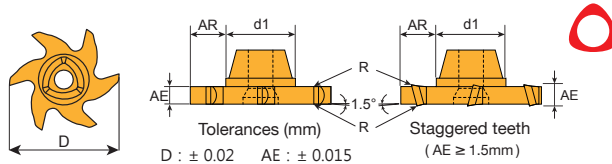
| Inserts  | Order Code   | Grades  |      |      |     |     |        |      |          |  |    |  |  |
|--|--------------|---------|------|------|-----|-----|--------|------|----------|---|----|--|--|
|  |              | Carbide |      |      |     |     | Cermet |      | Uncoated |   |    |  |  |
|  |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |   | CE |  |  |
|  <p>6 flutes</p> | 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.

-  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 ± 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 |  |  |
|         | 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 | ☉       |      |      |     |     |        |      |          |    |  |  |



6 flutes

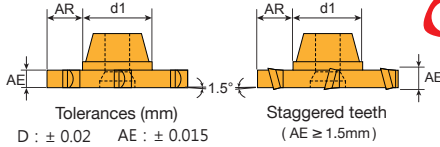
\* M.O.Q: 12PCS  
\* Make-to-Order.

- ■ 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             |    |         |         |

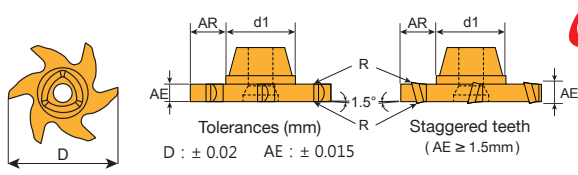
| Inserts  | Order Code   | Grades  |      |      |     |     |        |      |          |  |    |  |  |  |
|--|--------------|---------|------|------|-----|-----|--------|------|----------|---|----|--|--|--|
|  |              | Carbide |      |      |     |     | Cermet |      | Uncoated |   |    |  |  |  |
|  |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |   | CE |  |  |  |
|  <p>6 flutes</p> | 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>$\pm$<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 |
|         | 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 | ⊙       |      |      |     |        |       |          |     |  |    |



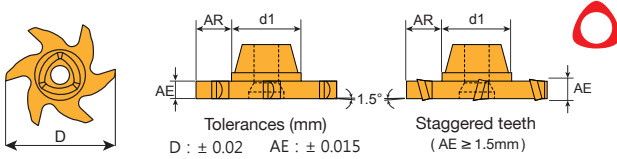
\* M.O.Q: 12PCS  
 \* Make-to-Order.

- ■ 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



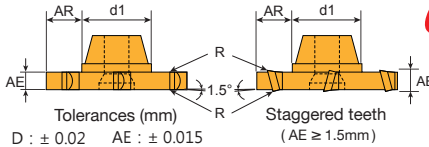
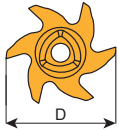
| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 25              | 12 | 0.5-0.6 | 6.0     |
|                 |    | 0.7-0.8 |         |
|                 |    | 0.9-1.0 |         |
|                 |    | 1.1-1.2 |         |
|                 |    | 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 |   | CE   |
|  <p>6 flutes</p> | 3T1225-0.5-E |         |      |      |     |        |       |          |     |   |  <p>Inserts 2 PCS / Box</p> |
|  | 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   |              |         |      |      |     |        |       |          |     |   |  |

-  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>±<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 |
|         | 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



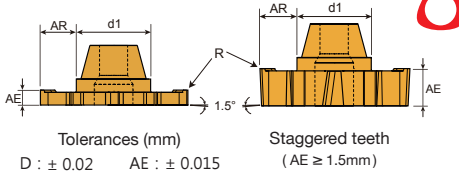
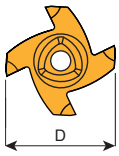
Inserts 2 PCS / Box

- ■ 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



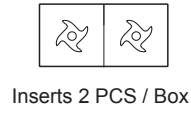
# UFO T-slot Inserts

- 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             |    |         |         |                     |

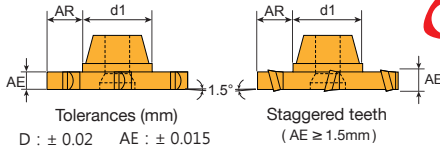
| Inserts  | Order Code     | Grades  |      |      |     |     |        |      |          |  |    |  |  |  |  |  |  |  |  |  |
|--|----------------|---------|------|------|-----|-----|--------|------|----------|---|----|--|--|--|--|--|--|--|--|--|
|  |                | Carbide |      |      |     |     | Cermet |      | Uncoated |   |    |  |  |  |  |  |  |  |  |  |
|  |                | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |   | CE |  |  |  |  |  |  |  |  |  |
|  <p>4 flutes</p> | 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   | ☉              |         |      |      |     |     |        |      |          |   |    |  |  |  |  |  |  |  |  |  |



- ☉ 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 |         |

UFO Family

| Inserts  | Order Code   | Grades  |      |      |     |         |       |          |     |  |    |  |  |  |
|--|--------------|---------|------|------|-----|---------|-------|----------|-----|---|----|--|--|--|
|  |              | Carbide |      |      |     | Cermets |       | Uncoated |     |   |    |  |  |  |
|  |              | B100    | C200 | C250 | F20 | F30     | CE100 | CE60     | K10 |   | CE |  |  |  |
|  <p>8 flutes</p> | 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   |              |         |      |      |     |         |       |          |     |   |    |  |  |  |

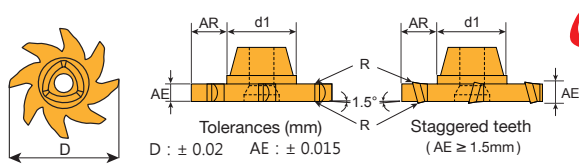
\* M.O.Q: 12PCS  
\* Make-to-Order.

- ■ 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>±<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 |         |                     |

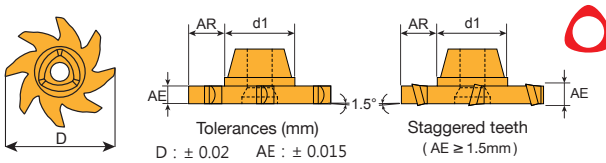
| Inserts   | Order Code    | Grades  |      |      |     |         |       |          |     |  |    |
|---|---------------|---------|------|------|-----|---------|-------|----------|-----|--|----|
|   |               | Carbide |      |      |     | Cermets |       | Uncoated |     |  |    |
|   |               | B100    | C200 | C250 | F20 | F30     | CE100 | CE60     | K10 |  | CE |
| <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.



- 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-ME,B100

# UFO T-slot Inserts

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



| 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 |
|  <p>8 flutes</p> | 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   |              |         |      |      |     |     |        |      |          |   |    |

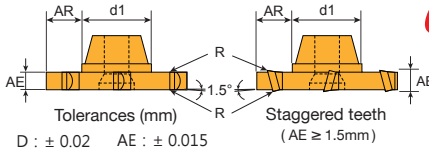
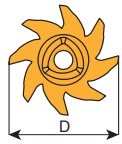
\* M.O.Q: 12PCS  
\* Make-to-Order.

- ■ 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>±<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         |    |         |         |                     |

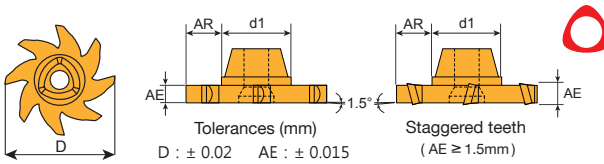
| Inserts       | Order Code    | Grades  |      |      |     |        |       |          |     |  |    |  |  |
|---------------|---------------|---------|------|------|-----|--------|-------|----------|-----|--|----|--|--|
|               |               | Carbide |      |      |     | Cermet |       | Uncoated |     |  |    |  |  |
|               |               | B100    | C200 | C250 | F20 | F30    | CE100 | CE60     | K10 |  | CE |  |  |
| 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.




- ■ 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 |         |

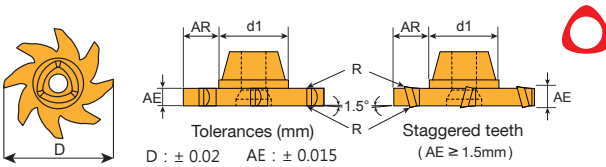
| Inserts  | Order Code   | Grades  |      |      |     |        |       |          |     |  |    |   |
|--|--------------|---------|------|------|-----|--------|-------|----------|-----|---|----|---|
|  |              | Carbide |      |      |     | Cermet |       | Uncoated |     |   |    |   |
|  |              | B100    | C200 | C250 | F20 | F30    | CE100 | CE60     | K10 |   | CE |   |
|  <p>8 flutes</p> | 3T1630-0.8-E |         |      |      |     |        |       |          |     |   |    |  <p>Inserts 2 PCS / Box</p> |
|  | 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   |              |         |      |      |     |        |       |          |     |   |    |   |

- ■ 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



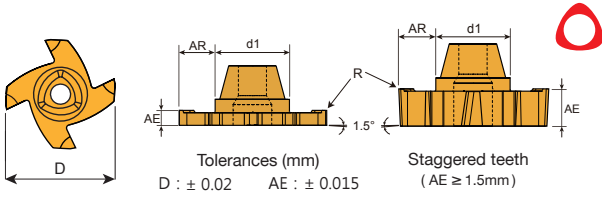
| Dimensions (mm) |    |         |         |                  |
|-----------------|----|---------|---------|------------------|
| D               | d1 | AE      | Max. AR | R                |
| 30              | 16 | 0.8-0.9 | 6.5     | R0.05<br>± 0.025 |
|                 |    | 1.0-1.1 |         |                  |
|                 |    | 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 |   | CE |   |
| <br>8 flutes | 3T1630-0.8-ME | ☉       |      |      |     |        |       |          |     |   |    | <br>Inserts 2 PCS / Box |
|  | 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  | ☉             |         |      |      |     |        |       |          |     |   |    |   |

- ■ 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>$\pm$<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 |
|  <p>4 flutes</p> | 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  | ☉              |         |      |      |     |        |       |          |     |   |    |



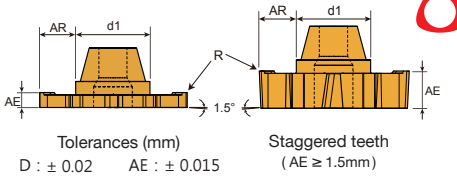
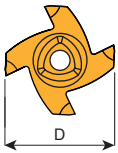
Inserts 2 PCS / Box

- ☉ 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



| 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      |   |
|         | 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 | ⊙       |      |      |     |     |        |      |          |   |



4 flutes

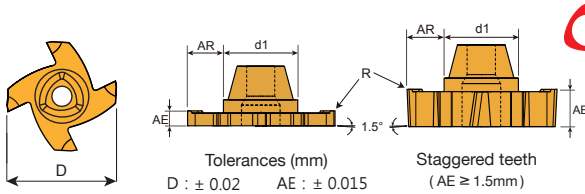


Inserts 2 PCS / Box

- ⊙ 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>$\pm$<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             |    |         |         |                         |

UFO Family

| Inserts  | Order Code     | Grades  |      |      |     |        |       |          |     |  |    |
|--|----------------|---------|------|------|-----|--------|-------|----------|-----|---|----|
|  |                | Carbide |      |      |     | Cermet |       | Uncoated |     |   |    |
|  |                | B100    | C200 | C250 | F20 | F30    | CE100 | CE60     | K10 |   | CE |
|  | 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 | ⊙       |      |      |     |        |       |          |     |   |    |

4 flutes

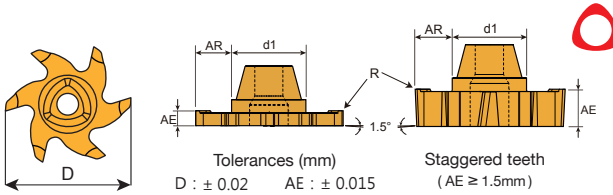
 Inserts 2 PCS / Box

- ⊙ 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             |    |         |         |

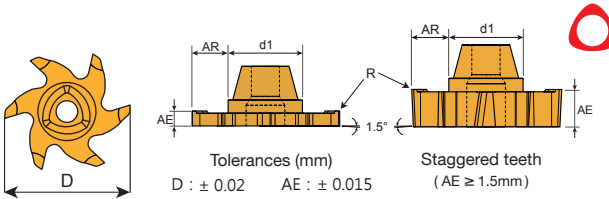
| Inserts   | Order Code   | Grades  |      |      |     |     |         |      |          |  |    |   |
|---|--------------|---------|------|------|-----|-----|---------|------|----------|---|----|---|
|   |              | Carbide |      |      |     |     | Cermets |      | Uncoated |   |    |   |
|   |              | B100    | C200 | C250 | F20 | F30 | CE100   | CE60 | K10      |   | CE |   |
|  <p>6 flutes</p> | 3T1635-0.8-E |         |      |      |     |     |         |      |          |   |    |  <p>Inserts 2 PCS / Box</p> |
|   | 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  |              |         |      |      |     |     |         |      |          |   |    |   |

- ■ 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

UFO Family



| Dimensions (mm) |    |         |         |                         |
|-----------------|----|---------|---------|-------------------------|
| D               | d1 | AE      | Max. AR | R                       |
| 35              | 16 | 0.8-0.9 | 9       | R0.05<br>$\pm$<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 |
|  <p>6 flutes</p> | 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  | ⊙             |         |      |      |     |        |          |      |     |   |    |



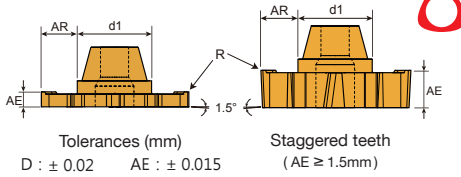
Inserts 2 PCS / Box

- ⊙ 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



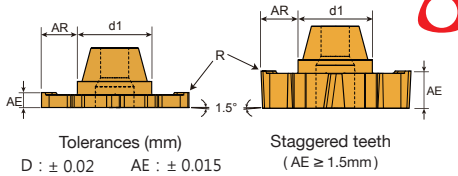
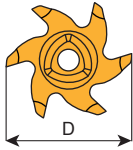
| Dimensions (mm) |    |         |         |
|-----------------|----|---------|---------|
| D               | d1 | AE      | Max. AR |
| 37              | 16 | 0.8-0.9 | 10      |
|                 |    | 1.0-1.1 |         |
|                 |    | 1.2-1.3 |         |
|                 |    | 1.4-1.5 |         |
|                 |    | 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 |   |
|  <p>6 flutes</p> | 3T1637-0.8-E |         |      |      |     |        |       |          |     |   |    |  <p>Inserts 2 PCS / Box</p> |
|  | 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   |              |         |      |      |     |        |       |          |     |   |    |   |

- ■ 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>$\pm$<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             |    |         |         |                         |

UFO Family

| Inserts   | Order Code    | Grades  |      |      |     |     |        |          |     |  |   |
|---|---------------|---------|------|------|-----|-----|--------|----------|-----|---|---|
|   |               | Carbide |      |      |     |     | Cermet | Uncoated |     |   |   |
|   |               | B100    | C200 | C250 | F20 | F30 | CE100  | CE60     | K10 |   | CE  |
| <br>6 flutes | 3T1637-0.8-ME | ☉       |      |      |     |     |        |          |     |   | <br>Inserts 2 PCS / Box |
|   | 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   | ☉             |         |      |      |     |     |        |          |     |   |   |

- ☉ 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

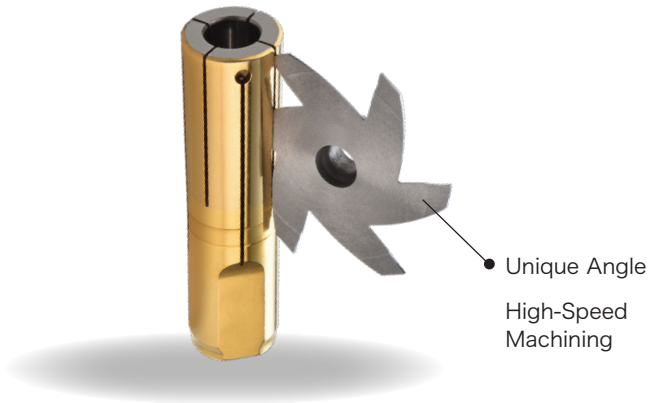
**New UFO-T-slot cutter**  
CN / N series  
( 4 flutes · 6 flutes )

**Traditional / slitting saw**



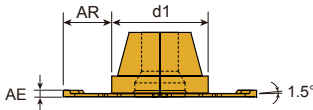
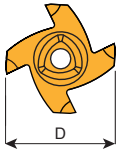
The latest collet-exclusive UFO T-slot cutter features an unique cutting edge design, effectively reducing machining resistance and achieving cutting speeds up to 10 times faster than traditional slitting saw.

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



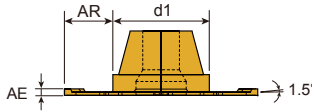
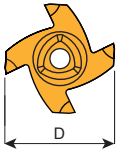
| Dimensions (mm) |    |     |         |                     |
|-----------------|----|-----|---------|---------------------|
| D               | d1 | AE  | Max. AR | R                   |
| 35              | 16 | 0.6 | 9       | R0.05<br>±<br>0.025 |
|                 |    | 0.8 |         |                     |
|                 |    | 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  |
|  <p>4 flutes</p> | 3T1635CN-0.6-ME | ☉       |      |      |     |     |        |      |          |  | <br>Inserts 2 PCS / Box |
|   | 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 | ☉       |      |      |     |     |        |      |          |  |   |




- ☉ 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



| 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             |    |     |         |                  |

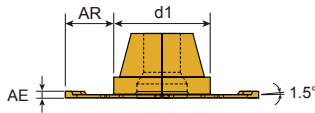
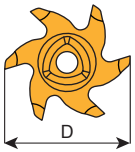
| Inserts   | Order Code      | Grades  |      |      |     |     |        |      |          |  |   |
|---|-----------------|---------|------|------|-----|-----|--------|------|----------|--|---|
|   |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |  |   |
|   |     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

- ⊙ 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



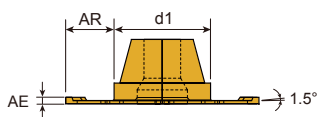
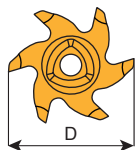
| Dimensions (mm) |    |     |         |                     |
|-----------------|----|-----|---------|---------------------|
| D               | d1 | AE  | Max. AR | R                   |
| 35              | 16 | 0.6 | 9       | R0.05<br>±<br>0.025 |
|                 |    | 0.8 |         |                     |
|                 |    | 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  |
|  <p>6 flutes</p> | 3T1635N-0.6-ME | ⊙       |      |      |     |        |       |          |     |   |  <p>Inserts 2 PCS / Box</p> |
|   | 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



| Dimensions (mm) |    |     |         |                     |
|-----------------|----|-----|---------|---------------------|
| D               | d1 | AE  | Max. AR | R                   |
| 37              | 16 | 0.6 | 10      | 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>6 flutes | 3T1637N-0.6-ME | ☉       |      |      |     |        |       |          |     |   | <br>Inserts 2 PCS / Box |
|   | 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 | ☉       |      |      |     |        |       |          |     |   |   |


- ☉ 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

P K M  
N S H

Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

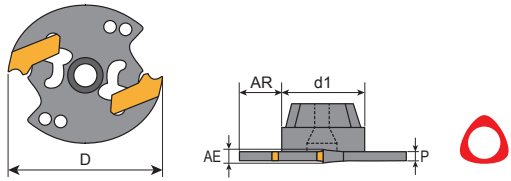
Efficiency  
**400%**  
UP

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 LNGT | Wrench    |
|------------|-----------------|-----|-----|-----|------|---|------|---------|--------------|-----------|
|            | D               | d1  | AR  | AE  | P    |   |      |         |              |           |
| 3T1632-1.4 | 32              | 16  | 7.5 | 1.4 | 1.2  | 2 | 0.03 | 8000    | 1414         | 150.10-30 |
| 3T1632-1.6 |                 |     |     | 1.5 |      |   |      |         | 1415         |           |
| 3T1632-1.8 |                 |     |     | 1.6 | 1616 |   |      |         |              |           |
| 3T1632-2.0 |                 |     |     | 1.8 | 1818 |   |      |         |              |           |
| 3T1632-2.5 |                 |     |     | 2.0 | 1.7  |   |      |         |              |           |
|            |                 |     |     | 2.2 |      |   |      |         |              |           |
|            |                 |     |     | 2.5 |      |   |      |         |              |           |
| 3T1632-3.0 |                 |     |     | 2.5 | 2.25 |   |      |         |              |           |
|            |                 |     |     | 2.7 |      |   |      |         |              |           |
|            |                 |     |     | 3.0 |      |   |      |         |              |           |
| 3T1632-4.0 | 3.0             | 2.7 |     |     |      |   |      |         |              |           |
|            | 3.2             |     |     |     |      |   |      |         |              |           |
|            | 3.5             |     |     |     |      |   |      |         |              |           |
| 3T1632-5.0 | 4.0             | 3.7 |     |     |      |   |      |         |              |           |
|            | 4.2             |     |     |     |      |   |      |         |              |           |
|            | 4.5             |     |     |     |      |   |      |         |              |           |
| 3T1632-5.0 | 5.0             | 4.5 |     |     |      |   |      |         |              |           |
|            | 5.2             |     |     |     |      |   |      |         |              |           |
|            | 5.5             |     |     |     |      |   |      |         |              |           |

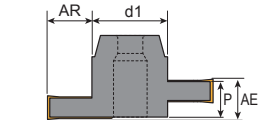
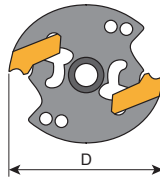
\* Wrench 150.10-30 for above cutter order seperately.



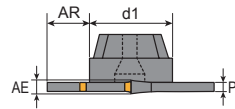
# UFO T-slot Cutters

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

**3T**



3T1635-6.0, 3T1635-8.0



3T1635-1.4~5.0



| 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 | 1.2  | 2 | 2  |    | 8000    | 1414         | 150.10-30 |
| 3T1635-1.6 |                 |      |      | 1.6 | 1.4  |   |    |    |         | 1415         |           |
| 3T1635-1.8 |                 |      |      | 1.8 | 1.6  |   |    |    |         | 1616         |           |
| 3T1635-2.0 |                 |      |      | 2.0 | 1.7  |   |    |    |         | 1818         |           |
| 3T1635-2.5 |                 |      |      | 2.2 | 2.25 |   |    |    |         | 2020         |           |
|            |                 |      |      | 2.5 |      |   |    |    |         | 2022         |           |
|            |                 |      |      | 2.7 |      |   |    |    |         | 2025         |           |
| 3T1635-3.0 |                 |      |      | 2.9 | 2.7  |   |    |    |         | 2525         |           |
|            |                 |      |      | 3.2 |      |   |    |    |         | 2527         |           |
|            |                 |      |      | 3.5 |      |   |    |    |         | 2530         |           |
| 3T1635-4.0 |                 |      |      | 4.0 | 3.7  |   |    |    |         | 3030         |           |
|            |                 |      |      | 4.2 |      |   |    |    |         | 3032         |           |
|            | 4.5             | 3035 |      |     |      |   |    |    |         |              |           |
| 3T1635-5.0 | 5.0             | 4.5  | 4040 |     |      |   |    |    |         |              |           |
|            | 5.2             |      | 4042 |     |      |   |    |    |         |              |           |
|            | 5.5             |      | 4045 |     |      |   |    |    |         |              |           |
| 3T1635-6.0 | 6.0             | 5.5  | 5050 |     |      |   |    |    |         |              |           |
| 3T1635-8.0 | 8.0             | 7.5  | 5052 |     |      |   |    |    |         |              |           |
|            |                 |      | 5055 |     |      |   |    |    |         |              |           |

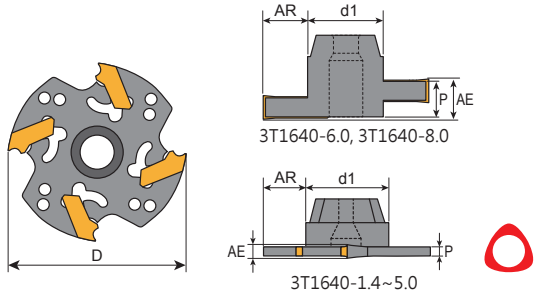
\* Wrench 150.10-30 for above cutter order seperately.

# UFO T-slot Cutters

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

UFO Family

3T



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

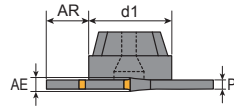
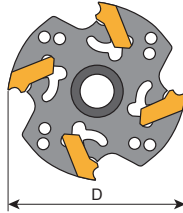
\* Wrench 150.10-30 for above cutter order seperately.



# UFO T-slot Cutters

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

**3T**



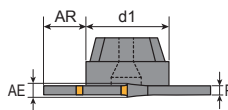
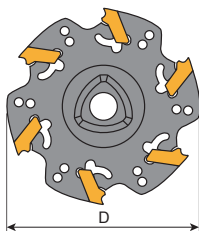
| Order Code | Dimensions (mm) |     |    |     |      | Z | KG   | MAX RPM      | Inserts LNGT | Wrench |
|------------|-----------------|-----|----|-----|------|---|------|--------------|--------------|--------|
|            | D               | d1  | AR | AE  | P    |   |      |              |              |        |
| 3T2550-1.4 | 50              | 25  | 12 | 1.4 | 1.2  | 4 | 7000 | 1414<br>1415 | 150.10-30    |        |
| 3T2550-1.6 |                 |     |    | 1.6 |      |   |      |              |              |        |
| 3T2550-1.8 |                 |     |    | 1.8 | 1.6  |   |      |              |              |        |
| 3T2550-2.0 |                 |     |    | 2.0 |      |   |      |              |              |        |
| 3T2550-2.5 |                 |     |    | 2.2 | 2.25 |   |      |              |              |        |
|            |                 |     |    | 2.5 |      |   |      |              |              |        |
|            |                 |     |    | 2.7 |      |   |      |              |              |        |
| 3T2550-3.0 |                 |     |    | 3.0 | 2.7  |   |      |              |              |        |
|            |                 |     |    | 3.2 |      |   |      |              |              |        |
|            |                 |     |    | 3.5 |      |   |      |              |              |        |
| 3T2550-4.0 | 4.0             | 3.7 |    |     |      |   |      |              |              |        |
|            | 4.2             |     |    |     |      |   |      |              |              |        |
|            | 4.5             |     |    |     |      |   |      |              |              |        |
| 3T2550-5.0 | 5.0             | 4.5 |    |     |      |   |      |              |              |        |
|            | 5.2             |     |    |     |      |   |      |              |              |        |
|            | 5.5             |     |    |     |      |   |      |              |              |        |

\* 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    |   |      |         |              |           |
| 3T2560-1.4 | 60              | 25  | 17   | 1.4 | 1.2  | 6 | 0.09 | 6500    | 1414         | 150.10-30 |
| 3T2560-1.6 |                 |     |      | 1.5 |      |   |      |         | 1415         |           |
| 3T2560-1.8 |                 |     |      | 1.6 | 1616 |   |      |         |              |           |
| 3T2560-2.0 |                 |     |      | 1.8 | 1818 |   |      |         |              |           |
| 3T2560-2.5 |                 |     |      | 2.0 | 2.25 |   |      |         | 2020         |           |
|            |                 |     |      | 2.2 |      |   |      |         | 2022         |           |
|            |                 |     |      | 2.5 |      |   |      |         | 2025         |           |
| 3T2560-3.0 |                 |     |      | 2.5 | 2.7  |   |      |         | 2525         |           |
|            |                 |     |      | 2.7 |      |   |      |         | 2527         |           |
|            |                 |     |      | 3.0 |      |   |      |         | 2530         |           |
| 3T2560-4.0 | 3.0             | 2.7 | 3030 |     |      |   |      |         |              |           |
|            | 3.2             |     | 3032 |     |      |   |      |         |              |           |
|            | 3.5             |     | 3035 |     |      |   |      |         |              |           |
| 3T2560-5.0 | 4.0             | 3.7 | 4040 |     |      |   |      |         |              |           |
|            | 4.2             |     | 4042 |     |      |   |      |         |              |           |
|            | 4.5             |     | 4045 |     |      |   |      |         |              |           |
| 3T2560-5.0 | 5.0             | 4.5 | 5050 |     |      |   |      |         |              |           |
|            | 5.2             |     | 5052 |     |      |   |      |         |              |           |
|            | 5.5             |     | 5055 |     |      |   |      |         |              |           |

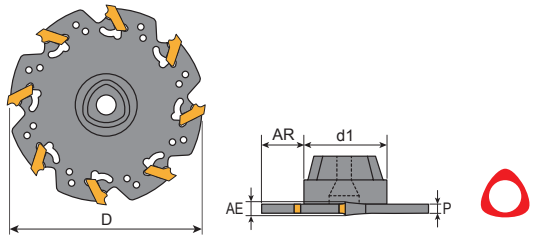
\* Wrench 150.10-30 for above cutter order seperately.



# UFO T-slot Cutters

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

3T



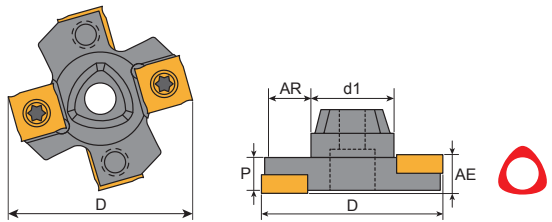
| Order Code | Dimensions (mm) |     |    |     |      | Z | KG   | MAX RPM | Inserts LNGT | Wrench    |
|------------|-----------------|-----|----|-----|------|---|------|---------|--------------|-----------|
|            | D               | d1  | AR | AE  | P    |   |      |         |              |           |
| 3T2580-1.4 | 80              | 25  | 27 | 1.4 | 1.2  | 8 | 0.11 | 6500    | 1414         | 150.10-30 |
| 3T2580-1.6 |                 |     |    | 1.5 |      |   |      |         | 1415         |           |
| 3T2580-1.8 |                 |     |    | 1.6 | 1616 |   |      |         |              |           |
| 3T2580-2.0 |                 |     |    | 1.8 | 1818 |   |      |         |              |           |
| 3T2580-2.5 |                 |     |    | 2.0 | 2.25 |   |      |         |              |           |
|            |                 |     |    | 2.2 |      |   |      |         |              |           |
|            |                 |     |    | 2.5 |      |   |      |         |              |           |
| 3T2580-3.0 |                 |     |    | 2.5 | 2.7  |   |      |         |              |           |
|            |                 |     |    | 2.7 |      |   |      |         |              |           |
|            |                 |     |    | 3.0 |      |   |      |         |              |           |
| 3T2580-4.0 | 3.0             | 2.7 |    |     |      |   |      |         |              |           |
|            | 3.2             |     |    |     |      |   |      |         |              |           |
|            | 3.5             |     |    |     |      |   |      |         |              |           |
| 3T2580-5.0 | 4.0             | 3.7 |    |     |      |   |      |         |              |           |
|            | 4.2             |     |    |     |      |   |      |         |              |           |
|            | 4.5             |     |    |     |      |   |      |         |              |           |
| 3T2580-5.0 | 5.0             | 4.5 |    |     |      |   |      |         |              |           |
|            | 5.2             |     |    |     |      |   |      |         |              |           |
|            | 5.5             |     |    |     |      |   |      |         |              |           |

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

# 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   |   |    |      |         | 1204              | T946  |         |
| 3TS2550-8.0 |                 |    |    | 8  | 7   |   |    |      |         | 12045             | T947  |         |
| 3TS2550-10  |                 |    |    | 10 | 9   |   |    |      |         | 1205              | T948  |         |
| 3TS2550-12  |                 |    |    | 12 | 11  |   |    |      |         | 1207              | T9411 |         |

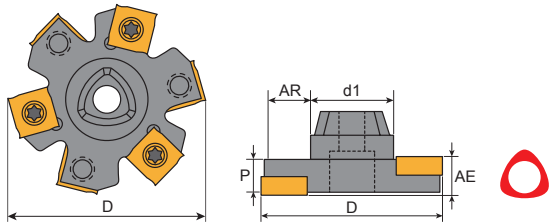
\* Fit Insert SNGW...R2.5 and R3.0, cutter have to modified (ask salesman).




# UFO T-slot Cutters

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

**3TS**



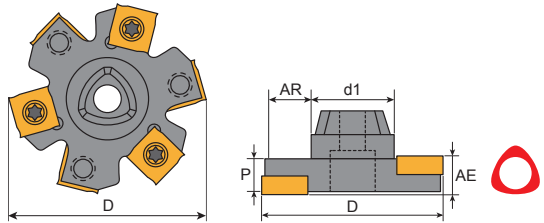
| Order Code  | Dimensions (mm) |    |    |    |     | Z | Zc | <br>KG | MAX RPM | Inserts SNGX SNGW | Screw | Key     |
|-------------|-----------------|----|----|----|-----|---|----|---|---------|-------------------|-------|---------|
|             | D               | d1 | AR | AE | P   |   |    |   |         |                   |       |         |
| 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   |   |    |   |         | 1203              | T945  | 908-T15 |
| 3TS2560-7.0 |                 |    |    | 7  | 6   |   |    | 0.12  |         | 1204              | T946  |         |
| 3TS2560-8.0 |                 |    |    | 8  | 7   |   |    | 12045   |         | T947              |       |         |
| 3TS2560-10  |                 |    |    | 10 | 9   |   |    | 0.17  |         | 1205              | T948  |         |
| 3TS2560-12  |                 |    |    | 12 | 11  |   |    | 0.18  |         | 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   | KG   | 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  |         |
| 3TS2580-8.0 |                 |    |    | 8  | 7   | 12045 | T947 |      |         |                   |       |         |
| 3TS2580-10  |                 |    |    | 10 | 9   | 6     | 3    |      |         | 0.31              | 1205  | T948    |
| 3TS2580-12  |                 |    |    | 12 | 11  | 0.31  | 1207 |      |         | T9411             |       |         |

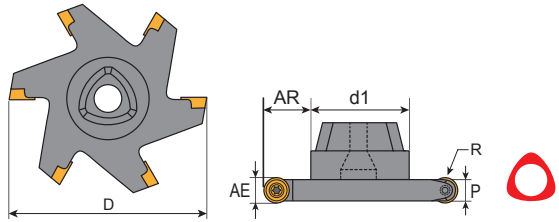
\* Fit Insert SNGW...R2.5 and R3.0,cutter have to modified (ask salesman).



# UFO T-slot Cutters

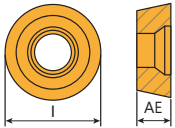
• Toolholders P. 29

3T

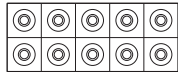


| Order Code | Dimensions (mm) |    |    |    |     |    | Z | KG   | MAX RPM | Inserts<br>RDKW<br>RDKT<br>RPKT | Screw  | Key        |      |
|------------|-----------------|----|----|----|-----|----|---|------|---------|---------------------------------|--------|------------|------|
|            | 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 |    |     |    |   |      |         |                                 |        |            |      |
| 3T2560-R5  | 60              |    | 17 | 10 | 8.0 | 5R |   | 4    | 0.30    | 13000                           | 10T3   | C03007     | T09P |
| 3T2580-R5  | 80              |    | 27 |    |     |    |   |      |         |                                 |        |            |      |
| 3T2560-R6  | 60              |    | 17 | 12 | 10  | 6R |   | 4    | 0.40    | 9500                            | 1204   | C03508-T15 | T15P |
| 3T2580-R6  | 80              |    | 27 |    |     |    |   |      |         |                                 |        |            |      |

## 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 | K10      | CE |
|         | 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

**PATENTED**

## Features

Available in materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

Efficiency  
**400%**  
UP

Durability  
**300%**  
UP





# 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.

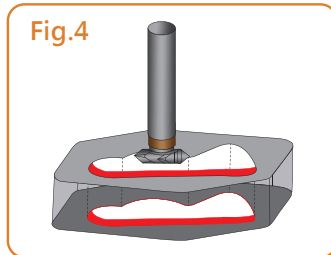
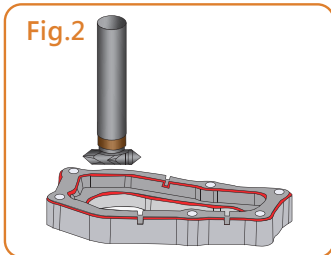
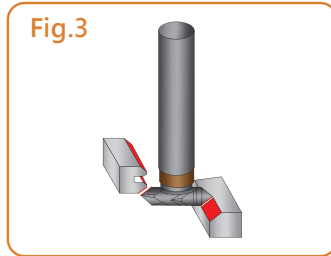
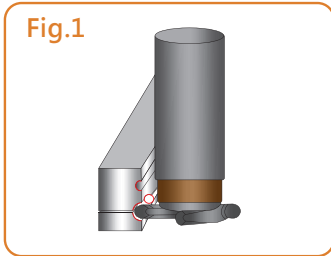
Support different angles and radii:

- 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

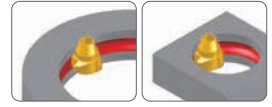
## UFO Circlip Inserts

For circlip range: 1.1~4.15 mm  
Same shank fits all different inserts. All items are available from stock.

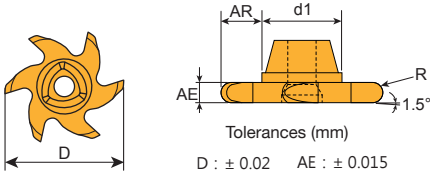


# UFO Radius Inserts

- 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  |         |

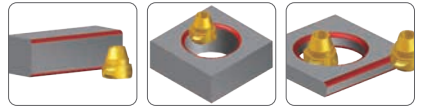
| Inserts         | Order Code      | Grades  |      |      |     |     |              |      |          |    |  |  |                            |
|-----------------|-----------------|---------|------|------|-----|-----|--------------|------|----------|----|--|--|----------------------------|
|                 |                 | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |  |  |                            |
|                 |                 | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |  |  |                            |
| <p>6 flutes</p> | 3T1020-R0.5-E   |         |      |      |     |     |              |      |          |    |  |  | <p>Inserts 2 PCS / Box</p> |
|                 | 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

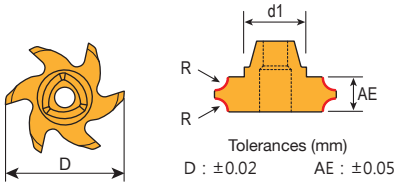






# UFO Dual Corner Rounding Inserts

- 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     |

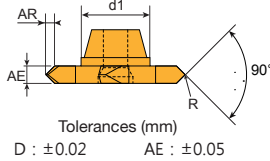
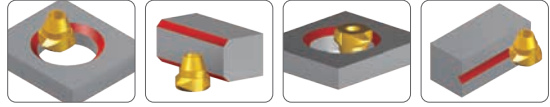


| Inserts  | Order Code        | Grades  |      |      |     |     |              |      |          |    |  |  |  |   |
|--|-------------------|---------|------|------|-----|-----|--------------|------|----------|----|--|--|--|---|
|  |                   | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |  |  |  |   |
|  |                   | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |  |  |  |   |
| <br>4 flutes<br>dia 10-12 | 3T0610-DCR0.5-E   |         |      |      |     |     |              |      |          |    |  |  |  | <br>Inserts 2 PCS / Box |
|  | 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  | ☉       |      |      |     |     |              |      |          |    |  |  |  |   |

- ■ 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

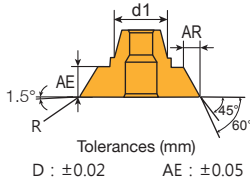
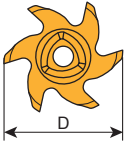
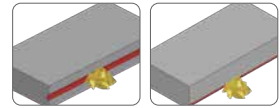


| Dimensions (mm) |     |    |         |     |
|-----------------|-----|----|---------|-----|
| D               | d1  | AE | Max. AR | R   |
| 9.8             | 6.5 | 3  | 0.5     | 0.2 |
| 11.8            |     |    | 1.0     |     |
| 14.8            | 8   |    |         |     |

| Inserts             | Order Code     | Grades  |      |      |     |     |              |      |          |    |  |                         |
|---------------------|----------------|---------|------|------|-----|-----|--------------|------|----------|----|--|-------------------------|
|                     |                | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |  |                         |
|                     |                | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |  |                         |
| <br><b>4 flutes</b> | 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     |     |

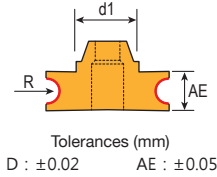
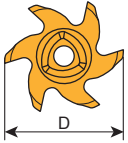
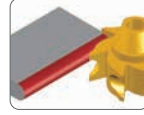
| Inserts             | Order Code   | Grades  |      |      |     |     |              |      |          |    |                         |
|---------------------|--------------|---------|------|------|-----|-----|--------------|------|----------|----|-------------------------|
|                     |              | Carbide |      |      |     |     | Metal cermet |      | Uncoated |    |                         |
|                     |              | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      | CE |                         |
| <br><b>6 flutes</b> | 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
- ⊙ Steel/Stainless 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 |  |   |
|  <p>6 flutes</p> | 3T1020-CR1.0-E   |         |      |      |     |     |              |          |     |  |    |  |  <p>Inserts 2 PCS / Box</p> |
|   | 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  | ☉       |      |      |     |     |              |          |     |  |    |  |   |
|   |                  |         |      |      |     |     |              |          |     |  |    |  |   |
|   |                  |         |      |      |     |     |              |          |     |  |    |  |   |
|   |                  |         |      |      |     |     |              |          |     |  |    |  |   |
|   |                  |         |      |      |     |     |              |          |     |  |    |  |   |

- ■ 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



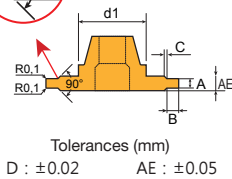
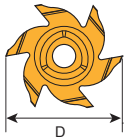
DIN471



DIN472



Offer customized items at standard prices by MOQ 12 pcs



| 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  |     | 3.5 |
|                 |    | 2.76 | 2.65    | 1.75 |     | 4   |
|                 |    | 3.26 | 3.15    | 1.75 |     | 5   |
|                 |    | 4.26 | 4.15    | 2.0  |     |     |

| Inserts         | Order Code      | Grades  |      |      |     |     |      |              |          |  |    |                            |
|-----------------|-----------------|---------|------|------|-----|-----|------|--------------|----------|--|----|----------------------------|
|                 |                 | Carbide |      |      |     |     |      | Metal cermet | Uncoated |  |    |                            |
|                 |                 | B100    | C200 | C250 | F20 | F30 | CE25 | CE60         | K10      |  | CE |                            |
| <p>6 flutes</p> | C3T1020-1.1-E   |         |      |      |     |     |      |              |          |  |    | <p>Inserts 2 PCS / Box</p> |
|                 | 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 | ⊙       |      |      |     |     |      |              |          |  |    |                            |

- ■ 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

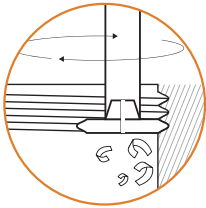
Applicable  
Machines  
CNC Milling machine

Efficiency  
**400%**  
UP

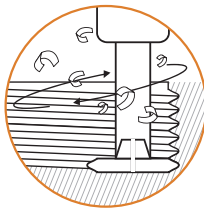
Durability  
**300%**  
UP



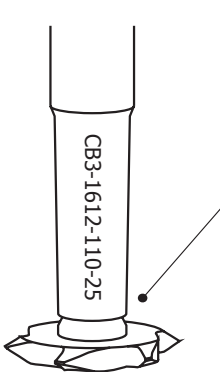
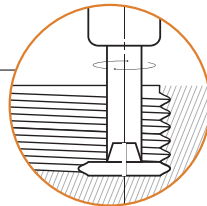
**1** / Excellent chip evacuation



**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.

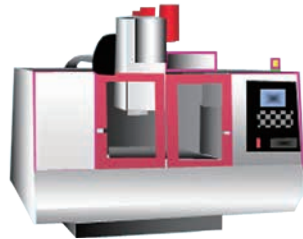
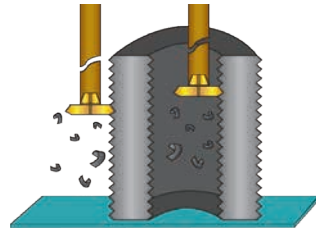
## Insert Design

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  $\text{Ø}10/\text{pitch}1.0$ ; partial profile inserts are available from  $\text{Ø}12/\text{pitch}1.0$ .
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.

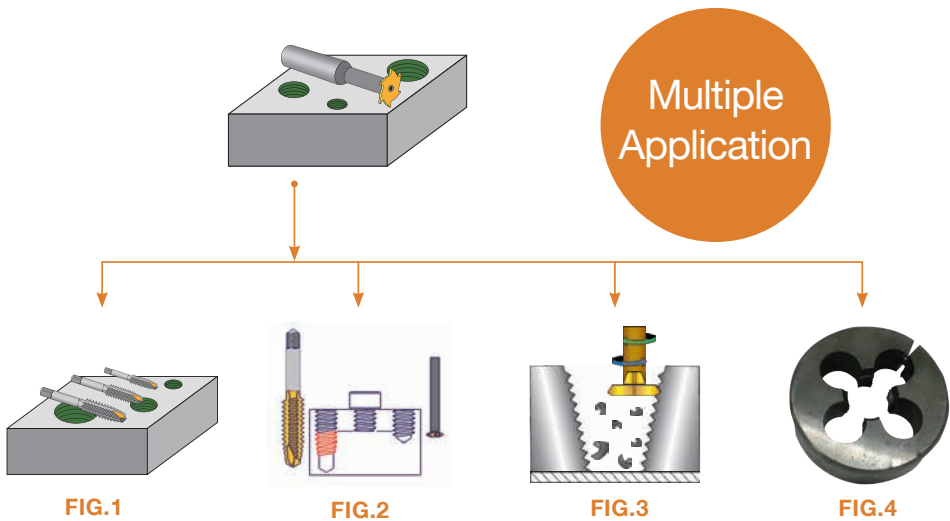
## FIG.3

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

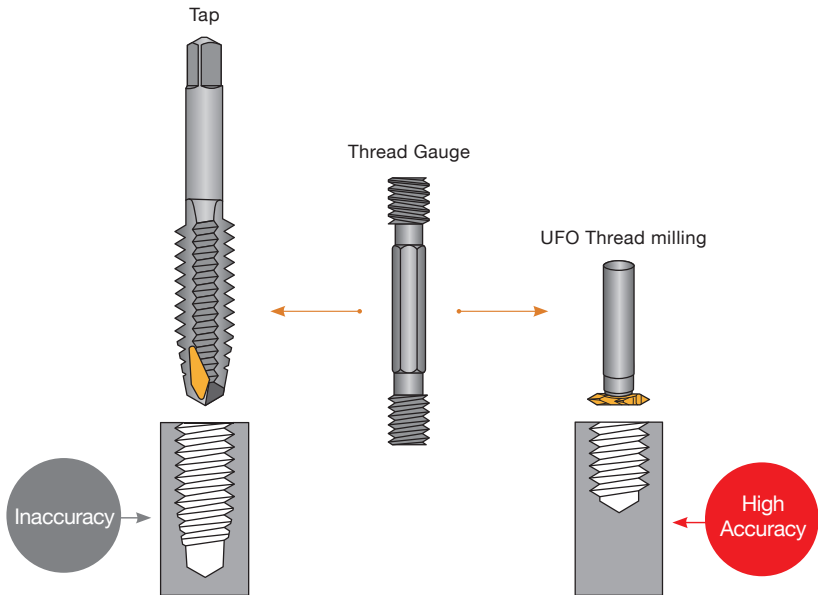
Same UFO thread milling insert is available for both external and internal threads.



# Tools Comparison

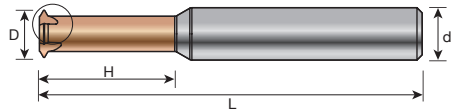
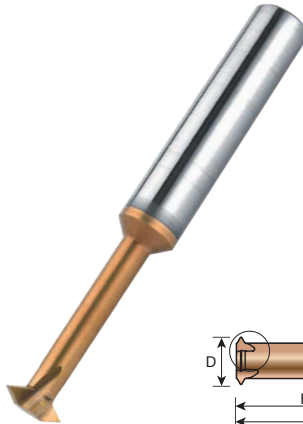
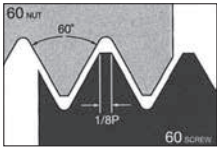
| UFO partial profile insert   | Tap   | Solid carbide thread milling   | Thread milling insert  |
|--|---|--|--|
|                               |  |                       |                       |
| One insert applicable to a wide pitch range  | Single pitch  | Single pitch   | Single pitch   |
|  |   | 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

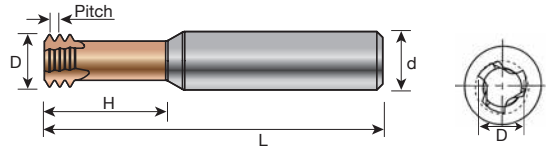
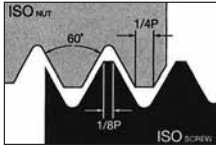


| Order code | Pitch Range |       | D    | H   | T | d  | L  |
|------------|-------------|-------|------|-----|---|----|----|
|            | MM          | TPI   |      |     |   |    |    |
| AT0195-50  | 0.35-0.6    | 72-40 | 1.95 | 6.0 | 3 | 3  | 50 |
| AT0245-50  | 0.5-0.8     | 48-32 | 2.45 | 7.7 | 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°

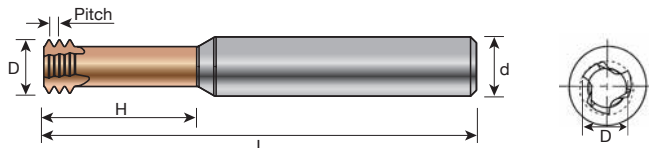
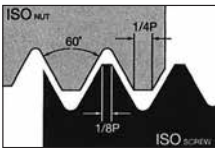
• Cutting Data P. 153



Thread Length Up To 2D

| 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°

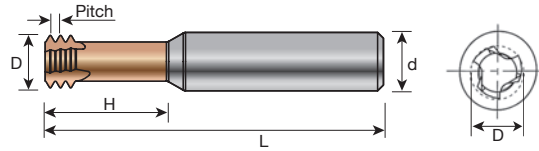
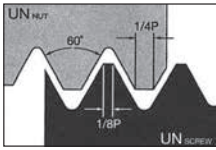


Thread Length Up To 3D

| 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°

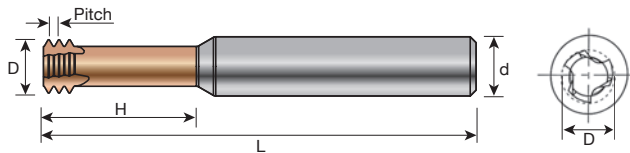
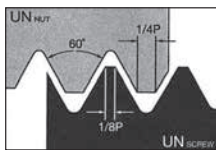
• Cutting Data P. 153



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

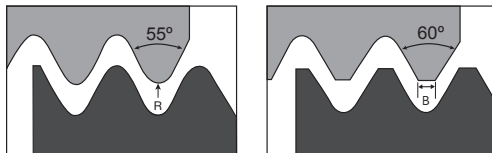
| Order code | UNC           | UNF            | T.P.I | D    | H    | T | d | L  |
|------------|---------------|----------------|-------|------|------|---|---|----|
| UTL404-50  | No.5 - 40 UNC | No.6 - 40 UNF  | 40    | 2.46 | 9.8  | 3 | 4 | 50 |
| UTL324-60  | No.6 - 32 UNC | -              | 32    | 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 |



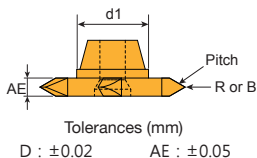
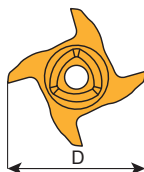
# UFO Thread Milling Inserts (Partial Profile)

- 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 | 14.00                 | -     |
|                 |     | 3.2 | 1.75~2.5 | -           |       | -    | 0.22 |                       |       |

| Inserts  | Order Code              | Grades  |      |      |     |     |        |       |      |          |    |
|--|-------------------------|---------|------|------|-----|-----|--------|-------|------|----------|----|
|  |                         | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |
|  |                         | B100    | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |
| <br>55°<br>BSW/BSF           | 3T1-0612-55-16~10TPI-E  |         |      |      |     |     |        |       |      |          |    |
|  | 3T1-0612-55-16~10TPI-ME | ☉       |      |      |     |     |        |       |      |          |    |
|  |                         |         |      |      |     |     |        |       |      |          |    |
| <br>60°<br>ISO Metric(M,MF) | 3T1-0612-60-1.0~1.5-E   |         |      |      |     |     |        |       |      |          |    |
|  | 3T1-0612-60-1.75~2.5-E  |         |      |      |     |     |        |       |      |          |    |
|  |                         |         |      |      |     |     |        |       |      |          |    |
|  | 3T1-0612-60-1.0~1.5-ME  | ☉       |      |      |     |     |        |       |      |          |    |
|  | 3T1-0612-60-1.75~2.5-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

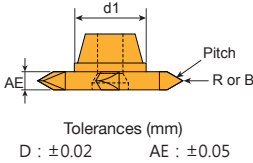
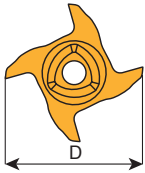
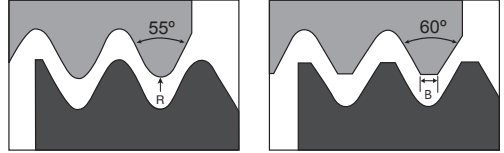
Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H

- ■ 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



Inserts 2 PCS / Box

| Dimensions (mm) |    |     |              |      |       |      |      |                       |      |
|-----------------|----|-----|--------------|------|-------|------|------|-----------------------|------|
| D               | d1 | AE  | Pitch mm     |      | Angle | R    | B    | Minimum hole diameter |      |
|                 |    |     | Pitch t.p.i. |      |       |      |      | 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  |      |      |     |     |        |       |      |          |  |    |   |
|-----------------------------|-------------------------|---------|------|------|-----|-----|--------|-------|------|----------|--|----|---|
|                             |                         | 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 | ⊙       |      |      |     |     |        |       |      |          |  |    |   |

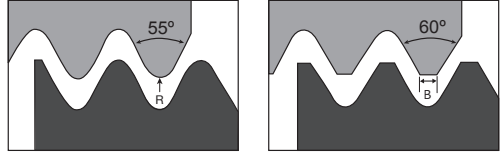
- ■ Steel ■ Stainless Steel ⊙ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ⊙ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1-0815-55-11~8TPI-E,F20



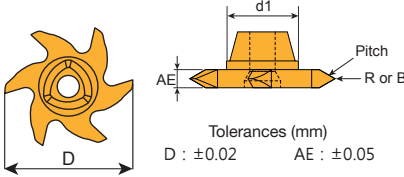
# UFO Thread Milling Inserts (Partial Profile)

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

External / Internal



Inserts 2 PCS / Box



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

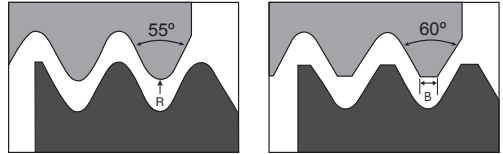
| Inserts                     | Order Code              | Grades  |      |      |     |        |      |       |          |     |  |    |   |
|-----------------------------|-------------------------|---------|------|------|-----|--------|------|-------|----------|-----|--|----|---|
|                             |                         | 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

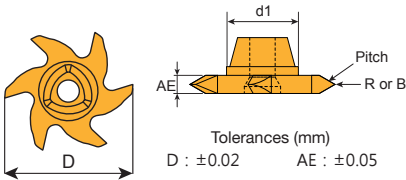
# UFO Thread Milling Inserts (Partial Profile)

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

External / Internal



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 | -                     | -      |
|                 |    | 4.6 | 1.75~5.0 | -           | -     | -    | 0.22 | 27.00                 | -      |

| 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   |         |      |      |     |        |      |       |          |     |  |    | <br>BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982<br>BSF Defined by: B.S.2779:1956<br>Tolerance class: BSW-Medium class A, BSF-Medium class |
|                             | 3T1-1225-55-11~5TPI-ME  | ⊙       |      |      |     |        |      |       |          |     |  |    |   |
|                             |                         |         |      |      |     |        |      |       |          |     |  |    |   |
|                             |                         |         |      |      |     |        |      |       |          |     |  |    |   |
| <br>60°<br>ISO Metric(M,MF) | 3T1-1225-60-1.0~1.5-E   |         |      |      |     |        |      |       |          |     |  |    | <br>Defined by: R262 (DIN 13)<br>Tolerance class: 6g/6H   |
|                             | 3T1-1225-60-1.75~5.0-E  |         |      |      |     |        |      |       |          |     |  |    |   |
|                             | 3T1-1225-60-1.0~1.5-ME  | ⊙       |      |      |     |        |      |       |          |     |  |    |   |
|                             | 3T1-1225-60-1.75~5.0-ME | ⊙       |      |      |     |        |      |       |          |     |  |    |   |

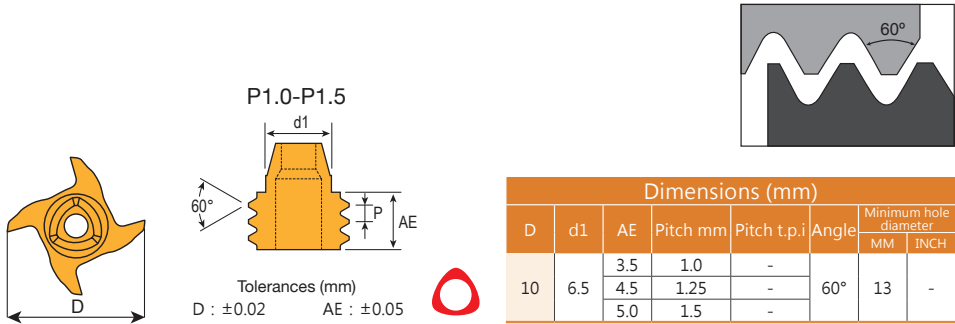
- ■ Steel ■ Stainless Steel ⊙ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ⊙ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1-1225-55-11~5TPI-E, F20



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

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

## ISO



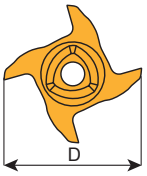
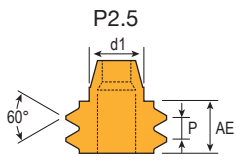
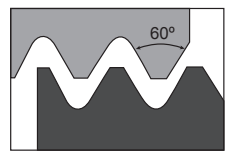
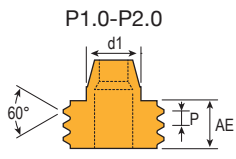
| Inserts                 | Order Code       | Grades  |      |      |     |     |        |      |          |  |    |  |
|-------------------------|------------------|---------|------|------|-----|-----|--------|------|----------|--|----|--|
|                         |                  | Carbide |      |      |     |     | Cermet |      | Uncoated |  |    |  |
|                         |                  | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |  | CE |  |
| <p>ISO Metric(M,MF)</p> | 3T0610-ISO1.0-E  |         |      |      |     |     |        |      |          |  |    | <p>Defined by: R262 (DIN 13)<br/>Tolerance class:6g/6H</p> |
|                         | 3T0610-ISO1.25-E |         |      |      |     |     |        |      |          |  |    |  |
|                         | 3T0610-ISO1.5-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.: 3T0610-ISO1.0-E, F20

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

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

## ISO

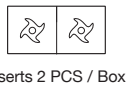
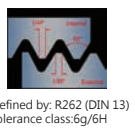


Tolerances (mm)  
D : ±0.02    AE : ±0.05



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

| Inserts                 | Order Code       | Grades  |      |       |     |     |        |      |          |  |    |
|-------------------------|------------------|---------|------|-------|-----|-----|--------|------|----------|--|----|
|                         |                  | Carbide |      |       |     |     | Cermet |      | Uncoated |  |    |
|                         |                  | B100    | C200 | C2.50 | F20 | F30 | CE100  | CE60 | K10      |  | CE |
| <p>ISO Metric(M,MF)</p> | 3T0612-ISO1.0-E  |         |      |       |     |     |        |      |          |  |    |
|                         | 3T0612-ISO1.25-E |         |      |       |     |     |        |      |          |  |    |
|                         | 3T0612-ISO1.5-E  |         |      |       |     |     |        |      |          |  |    |
|                         | 3T0612-ISO2.0-E  |         |      |       |     |     |        |      |          |  |    |
|                         | 3T0612-ISO2.5-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.: 3T0612-ISO1.0-E, F20

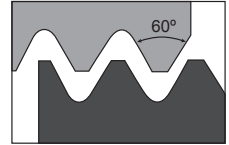
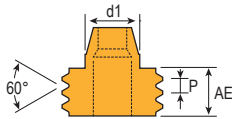


# UFO Thread Milling Inserts (Full Profile) - Internal threads

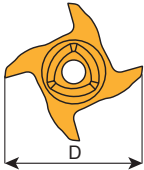
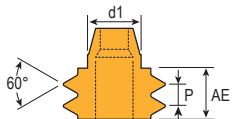
- Toolholders P. 24
- Cutting Data P. 154 - 155

## 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            |
| 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          |       |                       |

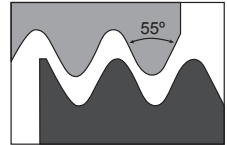
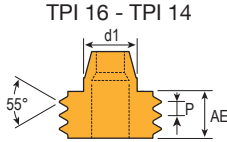
| Inserts        | Order Code      | Grades  |      |      |     |     |        |      |          |  |   |
|----------------|-----------------|---------|------|------|-----|-----|--------|------|----------|--|---|
|                |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |  |   |
|                |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |  | CE  |
| <p>UNC/UNF</p> | 3T0612-UNC16-E  |         |      |      |     |     |        |      |          |  | <p>Defined by: R262 (DIN 13)<br/>Tolerance class: 6g/6H</p> |
|                | 3T0612-UNC14-E  |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC13-E  |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC12-E  |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC11-E  |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC10-E  |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC16-ME |         |      |      |     |     |        |      |          |  | <p>* M.O.Q: 12PCS<br/>* Make-to-Order.</p>                  |
|                | 3T0612-UNC14-ME |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC13-ME |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC12-ME |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC11-ME |         |      |      |     |     |        |      |          |  |   |
|                | 3T0612-UNC10-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.: 3T0612-UNC16-E,F20

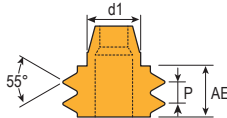
# UFO Thread Milling Inserts (Full Profile) - Internal threads

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

## BSW



TPI 12 - TPI 10



Tolerances (mm)  
D : ±0.02    AE : ±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 |
| <p>BSW/BSF</p> | 3T0612-BSW16-E |         |      |      |     |     |        |      |          |  |    |
|                | 3T0612-BSW14-E |         |      |      |     |     |        |      |          |  |    |
|                | 3T0612-BSW12-E |         |      |      |     |     |        |      |          |  |    |
|                | 3T0612-BSW11-E |         |      |      |     |     |        |      |          |  |    |
|                | 3T0612-BSW10-E |         |      |      |     |     |        |      |          |  |    |
|                |                |         |      |      |     |     |        |      |          |  |    |
|                |                |         |      |      |     |     |        |      |          |  |    |
|                |                |         |      |      |     |     |        |      |          |  |    |
|                |                |         |      |      |     |     |        |      |          |  |    |
|                |                |         |      |      |     |     |        |      |          |  |    |
|                |                |         |      |      |     |     |        |      |          |  |    |
|                |                |         |      |      |     |     |        |      |          |  |    |

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.

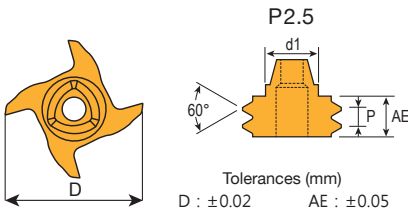
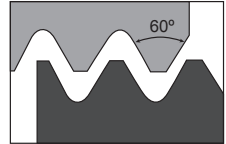
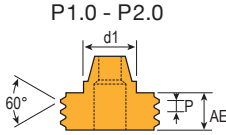
- ■ Steel ■ Stainless Steel ● Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ● Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, i.e.: 3T0612-BSW16-E,F20





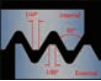

# UFO Thread Milling Inserts (Full Profile) - Internal threads








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

## ISO



| Dimensions (mm) |    |     |          |             |       |                       |      |
|-----------------|----|-----|----------|-------------|-------|-----------------------|------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |      |
|                 |    |     |          |             |       | MM                    | INCH |
| 15              | 8  | 3.5 | 1.0      | -           | 60°   | 17                    | -    |
|                 |    | 4.5 | 1.25     | -           |       |                       |      |
|                 |    | 5.0 | 1.5      | -           |       |                       |      |
|                 |    | 6.5 | 2.0      | -           |       |                       |      |
|                 |    | 5.5 | 2.5      | -           |       |                       |      |

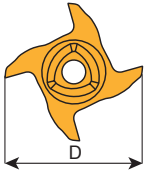
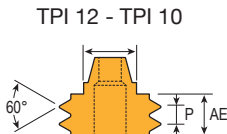
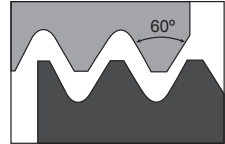
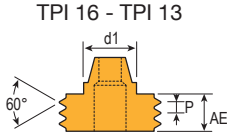
| Inserts  | Order Code        | Grades  |      |      |     |     |         |      |          |  |   |
|--|-------------------|---------|------|------|-----|-----|---------|------|----------|--|---|
|  |                   | Carbide |      |      |     |     | Cermets |      | Uncoated |  |   |
|  |                   | B100    | C200 | C250 | F20 | F30 | CE100   | CE60 | K10      |  | CE  |
|  <p>ISO Metric (M,MF)</p> | 3T0815-ISO1.0-E   |         |      |      |     |     |         |      |          |  |  <p>Defined by: R262 (DIN 13)<br/>Tolerance class: 6g/6H</p> |
|  | 3T0815-ISO1.25-E  |         |      |      |     |     |         |      |          |  |   |
|  | 3T0815-ISO1.5-E   |         |      |      |     |     |         |      |          |  |   |
|  | 3T0815-ISO2.0-E   |         |      |      |     |     |         |      |          |  |   |
|  | 3T0815-ISO2.5-E   |         |      |      |     |     |         |      |          |  |   |
|  |                   |         |      |      |     |     |         |      |          |  |   |
|  | 3T0815-ISO1.0-ME  | ⊙       |      |      |     |     |         |      |          |  |  <p>Inserts 2 PCS / Box</p>                                 |
|  | 3T0815-ISO1.25-ME | ⊙       |      |      |     |     |         |      |          |  |   |
|  | 3T0815-ISO1.5-ME  | ⊙       |      |      |     |     |         |      |          |  |   |
|  | 3T0815-ISO2.0-ME  | ⊙       |      |      |     |     |         |      |          |  |   |
|  | 3T0815-ISO2.5-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.: 3T0815-ISO1.0-E,F20

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

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

## UNC



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



| Dimensions (mm) |    |     |          |             |       |       | Minimum hole diameter |  |
|-----------------|----|-----|----------|-------------|-------|-------|-----------------------|--|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | 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 |  |   |
| <p>UNC/UNF</p> | 3T0815-UNC16-E  |         |      |      |     |     |        |      |          |    |  | <p>Defined by: R262 (DIN 13)<br/>Tolerance class: 6g/6H</p> |
|                | 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 | ☉       |      |      |     |     |        |      |          |    |  |   |

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

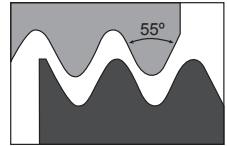
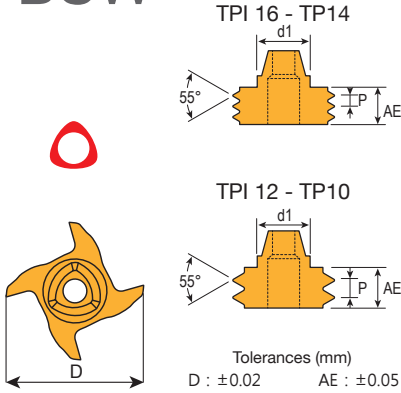
- ■ Steel ■ Stainless Steel ⊗ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ⊗ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, i.e.: 3T0815-UNC16-E,F20




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


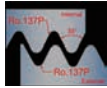
- Toolholders P. 25
- Cutting Data P. 154 - 155

## BSW



| Dimensions (mm) |    |     |          |             |       |                       |       |
|-----------------|----|-----|----------|-------------|-------|-----------------------|-------|
| D               | d1 | AE  | Pitch mm | Pitch t.p.i | Angle | Minimum hole diameter |       |
|                 |    |     |          |             |       | MM                    | INCH  |
| 15              | 8  | 5.0 | -        | 16          | 55°   | 18.03                 | 0.71" |
|                 |    | 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      |
|  <p>BSW/BSF</p> | 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.

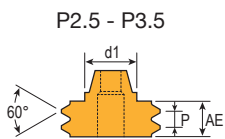
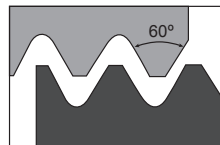
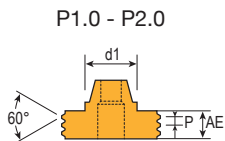
- ■ Steel ■ Stainless Steel ☉ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ☉ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-BSW16-E,F20

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

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

UFO Family



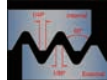

## ISO



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 |
| 20              | 10 | 3.5 | 1.0      | -           | 60°   | 22                    | -    |
|                 |    | 4.5 | 1.25     | -           |       | 24                    |      |
|                 |    | 5.0 | 1.5      | -           |       | 26                    |      |
|                 |    | 6.5 | 2.0      | -           |       |                       |      |
|                 |    | 5.5 | 2.5      | -           |       |                       |      |
|                 |    | 6.5 | 3.0      | -           |       |                       |      |
|                 |    | 7.5 | 3.5      | -           |       |                       |      |

| 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   |         |      |      |     |     |        |      |          |  | <br>Defined by: R262 (DIN 13)<br>Tolerance class: 6g/6H<br><br><br>Inserts 2 PCS / Box |
|  | 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  |         |      |      |     |     |        |      |          |  |   |

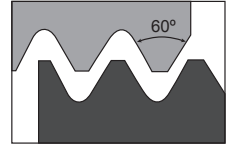
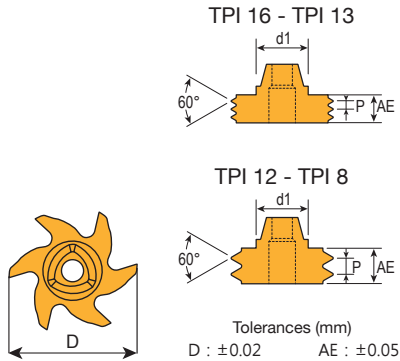
- ■ Steel ■ Stainless Steel ○ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ○ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-ISO1.0-E,F20



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

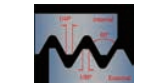
- Toolholders P. 26
- Cutting Data P. 154 - 155

## 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.

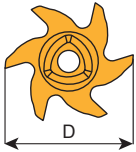
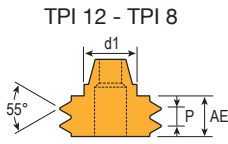
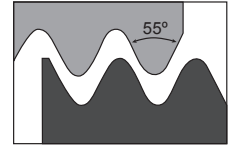
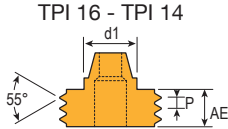
- ■ Steel ■ Stainless Steel ⊙ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron
- ⊙ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-UNC16-E,F20

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

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

## BSW

UFO Family



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 |
| 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  |
| <p>BSW/BSF</p> | 3T1020-BSW16-E  |         |      |      |     |     |        |      |          |  | <p>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</p> |
|                | 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  | ⊙       |      |      |     |     |        |      |          |  |   |

\* 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

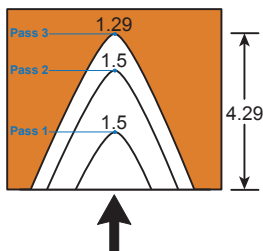
| Pitch(mm)          | 6.0  | 5.5  | 5.0  | 4.5  | 4.0  | 3.5  | 3.0  | 2.5  | 2.0  | 1.75 | 1.5  | 1.25 | 1.0  | 0.80 | 0.75 | 0.50 |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Tot.inf.depth (mm) | 3,82 | 3,52 | 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.inf.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.inf.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 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |



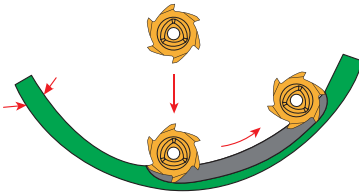
### Example of thread infeed method

- 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

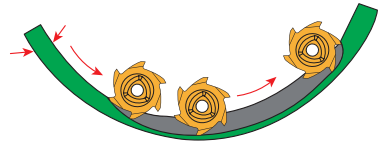
## Internal Thread

①



Plunging is not recommended

②



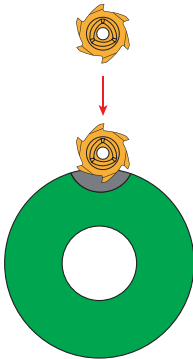
Ramping is the best choice

Highly Recommended

- ① Plunging to mill : Fz reduce to 50%
- ② Ramping to mill : Fz remain 100%

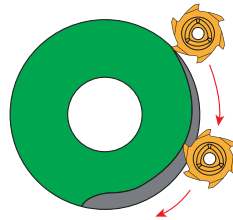
## External Thread

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.

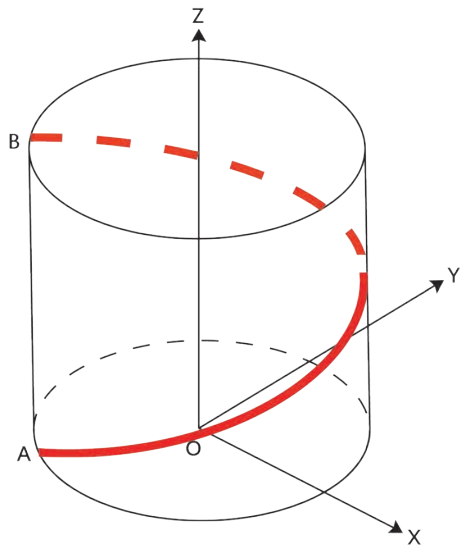
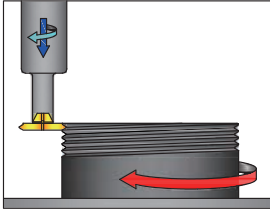


Fig. A

# Thread Milling Methods

## External

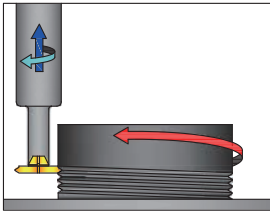
FIG.1



Right Hand Thread-Climb Milling



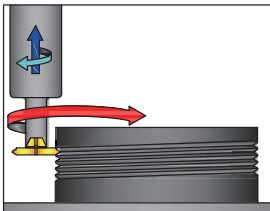
FIG.2



Left Hand Thread- Climb Milling

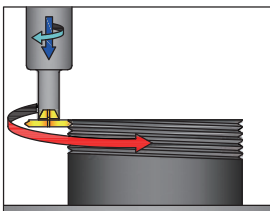


FIG.3



Right Hand Thread-  
Conventional Milling

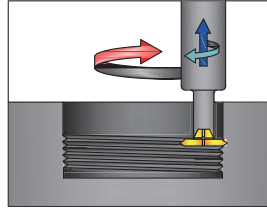
FIG.4



Left Hand Thread-  
Conventional Milling

## Internal

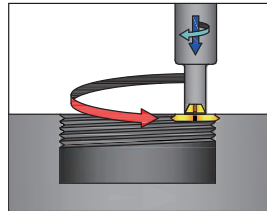
FIG.1



Right Hand Thread-Climb Milling



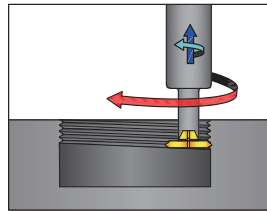
FIG.2



Left Hand Thread-Climb Milling

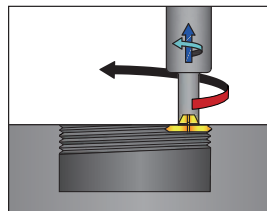


FIG.3



Right Hand Thread-  
Conventional Milling

FIG.4



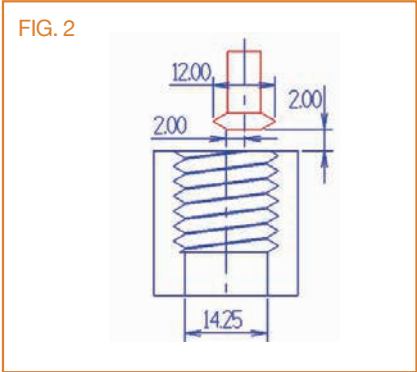
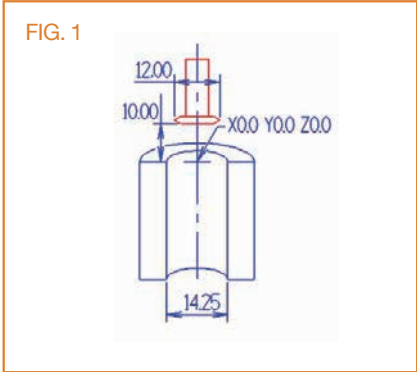
Left Hand Thread-  
Conventional Milling



# 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 / M16x2.0P
- CNC programme / Fancu / Mitsubishi



## Fanuc

```

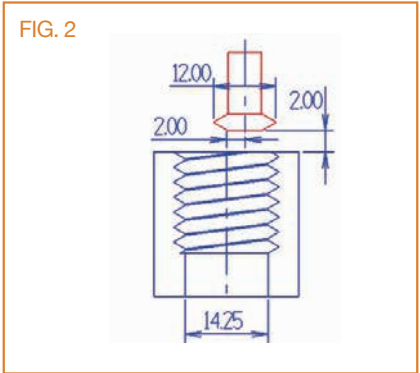
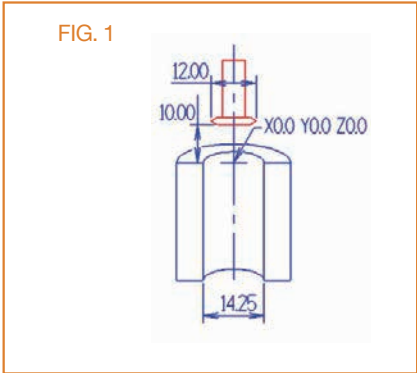
G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 Z1.0 (Move to the starting point Fig 2)
G01 Z-6.0 F200
G41 D? (cutter compensation)
G91 G03 X2.0 Y0.0 R2.0 F150
G03I-2.0 Z2.0 F630 (Thread milling)
G03I-2.0 Z2.0
G03I-2.0 Z2.0
G03I-2.0 Z2.0
G90 G01 X0.0 Y0.0 (Move out 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



## 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)
    
```

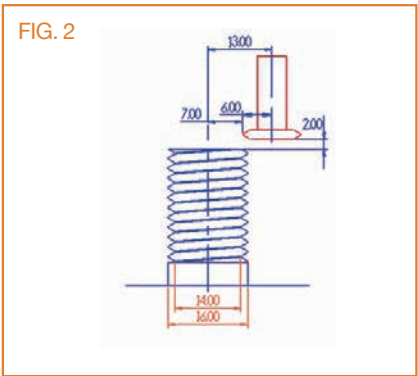
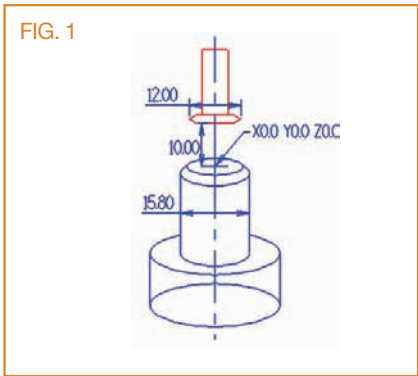
Exact cutting data  
see page 141-143



# 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 / M16x2.0P
- CNC programme / Fanuc/Mitsubishi



## Fanuc

```

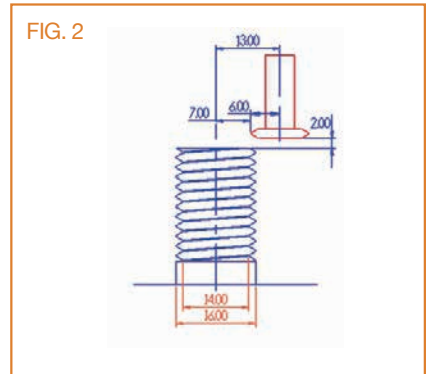
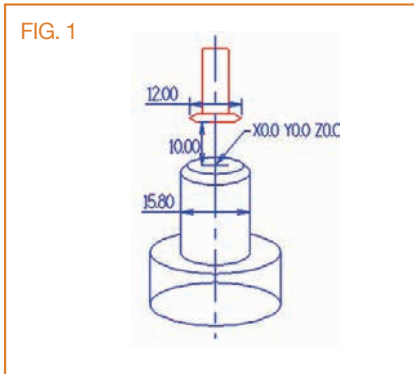
G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 X13.0 Y0.0 (Move to the starting point Fig 2)
G41 D? (Cutter compensation)
G01 Z2.0 F200
G91 G02I-13.0 Z-2.0 F630 (Thread milling)
G02I-13.0 Z-2.0
G02I-13.0 Z-2.0
G02I-13.0 Z-2.0
G90 G01 X16.0 (Move out from workpiece, 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



## 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 : ●  $\varnothing 12$  ●  $\varnothing 15$  ●  $\varnothing 20$  ●  $\varnothing 25$

| 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 : ●  $\varnothing$ 12 ●  $\varnothing$ 15 ●  $\varnothing$ 20 ●  $\varnothing$ 25

| 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 2.50 | ● ● ●                  | 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 |

| Size       | Maximum drill diameter |       |       |       |
|------------|------------------------|-------|-------|-------|
|            | 4H                     | 5H    | 6H    |       |
| 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 3.50 | ● ● ● ●                | 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 | ● ● ● ●                | 40.07 | 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

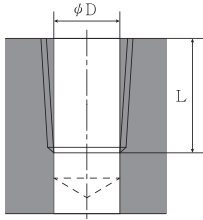
| Size       | Maximum drill diameter |       |       |       |
|------------|------------------------|-------|-------|-------|
|            | 4H                     | 5H    | 6H    |       |
| M45 x 4.50 | ●                      | 40.55 | 40.65 | 40.79 |
| M45 x 4.00 | ●                      | 41.04 | 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 2.00 |                        | 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 )

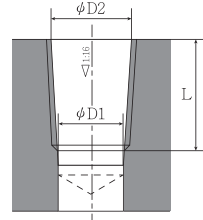
## Recommended Thread Dia / T.P.I / Minimum Bore Dia

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

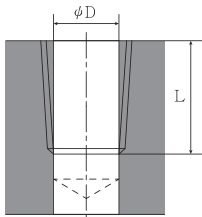


| Nom. size D | P Gg/1" (tpi) | φ D1  | φ D2  | L     |
|-------------|---------------|-------|-------|-------|
| Rc 1/16"    | 28            | 6,1   | 6,56  | 7,85  |
| 1/8"        | 28            | 8,1   | 8,57  | 7,85  |
| 1/4"        | 19            | 10,75 | 11,45 | 11,65 |
| 3/8"        | 19            | 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

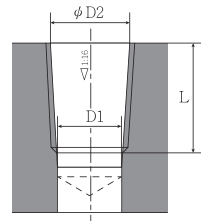
## Recommended Thread Dia / T.P.I / Minimum Bore Dia

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



**PATENTED**

## Features

Available in  
materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine  
Drilling M/C

Efficiency  
**400%**  
UP

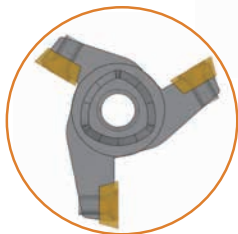
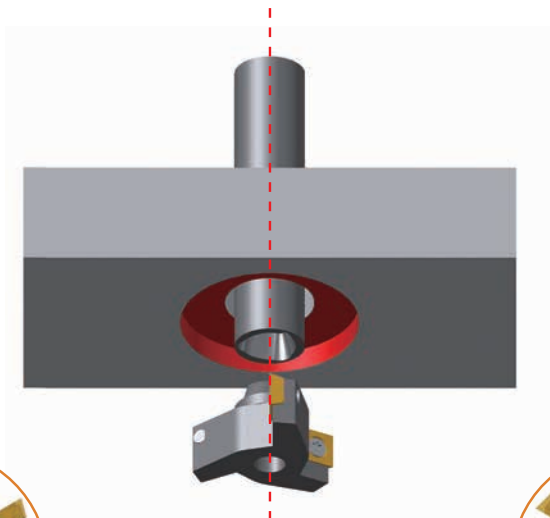
Durability  
**300%**  
UP

UFO  
A Type  
Back Boring  
Cutter

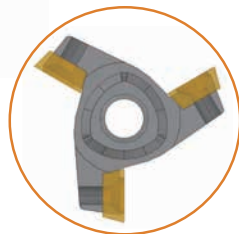
# UFO



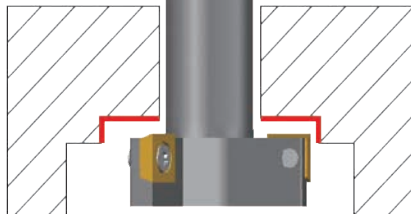
UFO Family



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

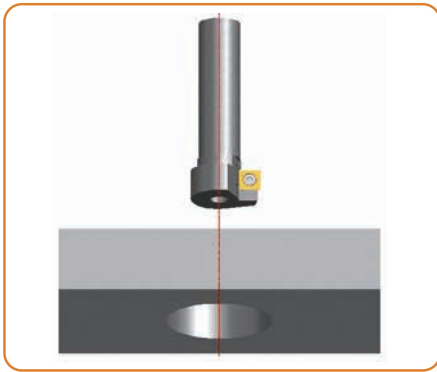


UFO  
B Type  
Back Boring  
Cutter

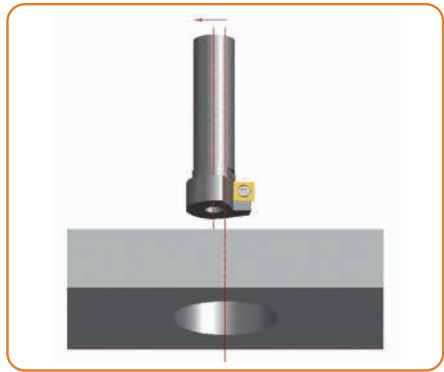
# UFO



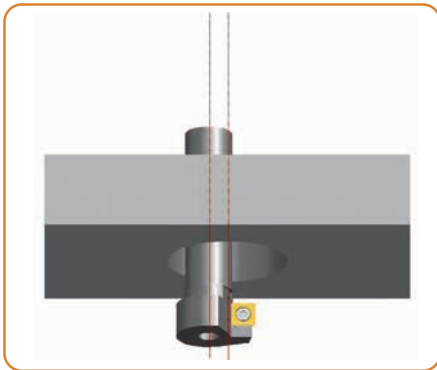
### 1. Centerline



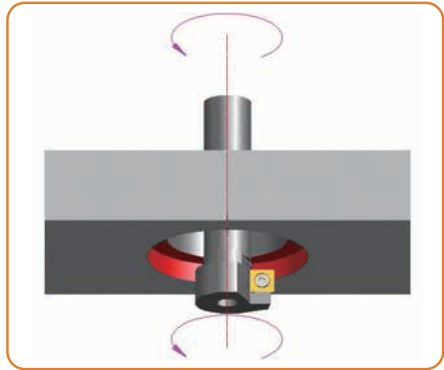
### 2. Tool displacement



### 3. Machining



### 4. Back to center line

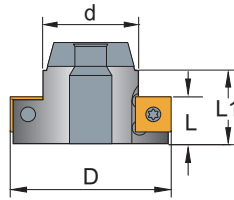


\* The price and lead time are based on present conditions.

# PRODUCT SPECIFICATIONS

## UFO Back Boring Cutter - A Type

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



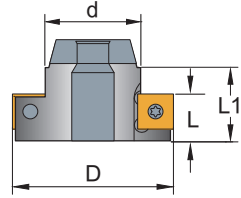
### B3T

| Order Code                        |            |      |      |   |    | Z | ZC | KG   | 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 |      |   |    | 3 |    |      |         |              |         |      |
|                                   | B3T-1020   | 20   |      |   |    |   |    |      |         |              |         |      |
|                                   | 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

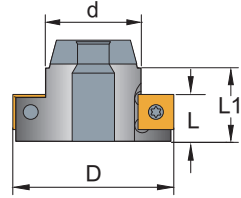


## B3T

| Order Code                         |          |    |      |    |    | Z | ZC | KG   | 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 |      |    |    |   |    | 0.07 |         |              |         |      |
|                                    | B3T-1635 | 35 |      |    |    |   |    |      |         |              |         |      |
|                                    | B3T-1636 | 36 |      |    |    |   |    |      |         |              |         |      |
|                                    | B3T-1637 | 37 |      |    |    |   |    |      |         |              |         |      |
|                                    | B3T-1638 | 38 |      |    |    |   |    | 0.10 |         |              |         |      |
|                                    | B3T-1639 | 39 |      |    |    |   |    |      |         |              |         |      |
|                                    | B3T-1640 | 40 |      |    |    |   |    |      |         |              |         |      |
|                                    |          |    |      |    |    |   |    | 0.11 |         |              |         |      |

# UFO Back Boring Cutter - A Type


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



UFO Family

## B3T



| Order Code                   |          |    |      |    |    | Z | ZC |  KG | 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 |      |    |    |   |    |  |         |              |        |      |
|                              | 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 |      |    |    |   |    |  |         |              |        |      |
|                              |          |    |      |    |    |   |    | 0.17   |         |              |        |      |



# Recommended Insert Grades

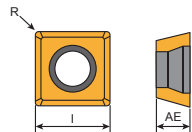
## • UFO Back Boring Cutter Insert Grade Selection

| 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              | 0.04-0.06            | B100        | -          | - |
| 7              |                      | B100        | -          | - |
| 8              |                      | B100        | -          | - |
| 9              | 0.04-0.08            | B100        | -          | - |
| 10             |                      | B100        | -          | - |
| 11             | 0.04-0.06            | B100        | -          | - |
| 12             |                      | B100        | -          | - |
| 13             | 0.07-0.1             | F30         | -          | - |
| 14             |                      | F30         | -          | - |
| 15             |                      | F30         | -          | - |
| 16             | 0.1-0.2              | -           | -          | - |
| 17             |                      | -           | -          | - |
| 18             |                      | -           | -          | - |
| 19             | 0.04-0.06            | B100        | -          | - |
| 20             | 0.04-0.05            | B100        | -          | - |
| 21             | 0.03-0.04            | 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                                    | -             | -    | -    | -    | -  | -    | -    | -    | -    | -    | -    | -  |
| 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         | CE100 | 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 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

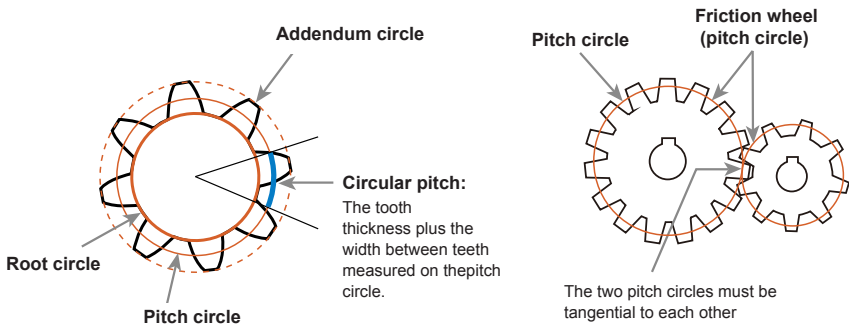
Gears rely on the engagement of teeth to transmit torque. The transmission of movement, and method of such between gears to other toothed components is called meshing transmission. Gears are comprised of gear teeth, tooth slots, end faces, normal planes, addendum circles, dedendum circles, base circles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

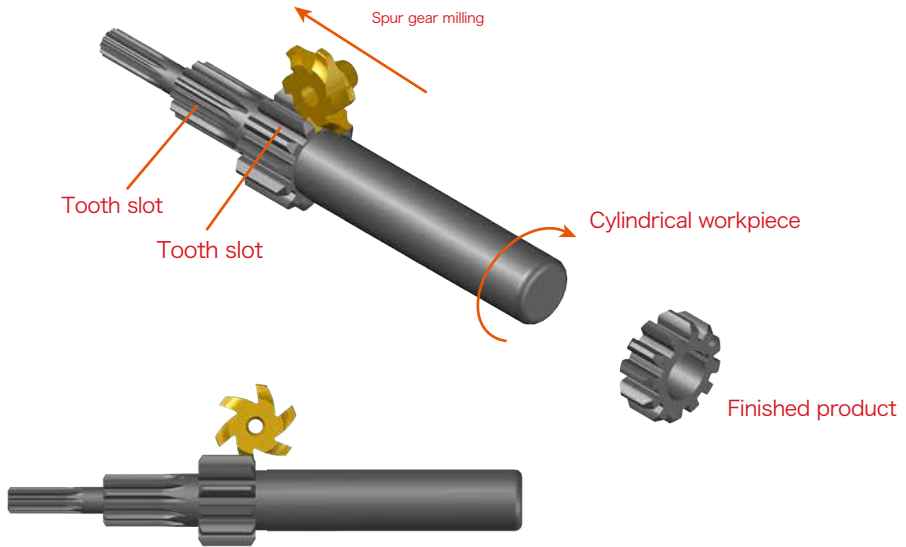
The pitch circle and the number of teeth will inevitably affect the number of teeth cut and the pressure angle. The relative number of teeth will affect the module cut on the workpiece.

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

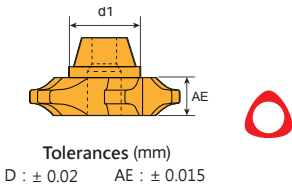
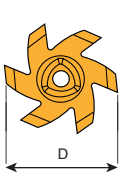


- $\text{Ø} 22$
- Thickness 2.5, 2.8, 3.5, 3.7, 4, 4.8, 5.5, 5.8 mm
- Module 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.25, 1.5, 1.75 mm



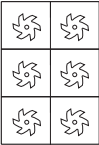



# UFO Gear Cutter Inserts ( DIN3972 )

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



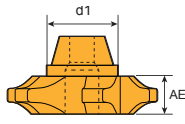
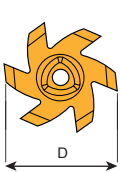
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-050-1 | 22              | 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   | Order Code      | Grades  |      |      |     |     |        |      |     |  |   |
|---|-----------------|---------|------|------|-----|-----|--------|------|-----|---|---|
|   |                 | Carbide |      |      |     |     | Cermet |      |     |   | Uncoated  |
|   |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10 |   | CE  |
| <br>6 flutes | 3T1022-050-1-ME |         |      |      |     |     |        |      |     |   | <br>Inserts 6 PCS / Box |
|   | 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 |         |      |      |     |     |        |      |     |   |   |

-  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 )



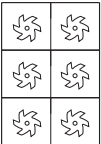
- Toolholders P. 26
- Cutting Data P. 147-148




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> |
| 3T1022-060-1 | 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              |

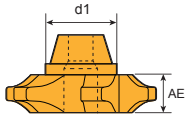
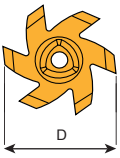
| Inserts   | Order Code      | Grades  |      |      |     |     |        |      |     |  |   |
|---|-----------------|---------|------|------|-----|-----|--------|------|-----|---|---|
|   |                 | Carbide |      |      |     |     | Cermet |      |     |   | Uncoated  |
|   |          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

-  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 )



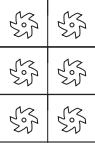
- Toolholders P. 26
- Cutting Data P. 147-148




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



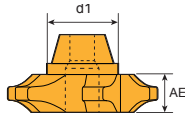
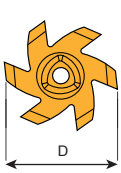
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-070-1 | 22              | 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   | Order Code      | Grades  |      |      |     |     |        |      |          |  |   |
|---|-----------------|---------|------|------|-----|-----|--------|------|----------|---|---|
|   |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |   |   |
|   |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |   | CE  |
| <br>6 flutes | 3T1022-070-1-ME |         |      |      |     |     |        |      |          |   | <br>Inserts 6 PCS / Box |
|   | 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 |         |      |      |     |     |        |      |          |   |   |

-  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



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



| 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              |

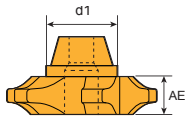
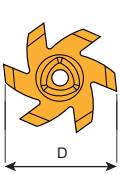
| Inserts             | Order Code      | Grades  |      |      |     |     |        |      |          |    |  |                         |
|---------------------|-----------------|---------|------|------|-----|-----|--------|------|----------|----|--|-------------------------|
|                     |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |                         |
|                     |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |                         |
| <br><b>6 flutes</b> | 3T1022-080-1-ME |         |      |      |     |     |        |      |          |    |  | <br>Inserts 6 PCS / Box |
|                     | 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 |         |      |      |     |     |        |      |          |    |  |                         |

- 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 )



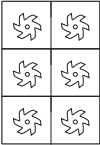
- Toolholders P. 26
- Cutting Data P. 147-148




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



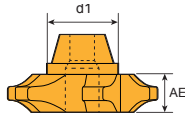
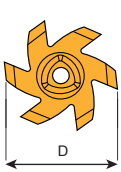
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-090-1 | 22              | 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   | Order Code      | Grades  |      |      |     |        |        |          |     |  |  |
|---|-----------------|---------|------|------|-----|--------|--------|----------|-----|---|--|
|   |                 | Carbide |      |      |     | Cermet |        | Uncoated |     |   |  |
|   |                 | B100    | C200 | C250 | F20 | F30    | CEI100 | CE60     | K10 |   | CE   |
| <br>6 flutes | 3T1022-090-1-ME |         |      |      |     |        |        |          |     |   | <br>Inserts 6 PCS / Box |
|   | 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 |         |      |      |     |        |        |          |     |   |  |

-  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 )



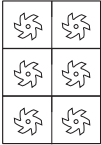
- Toolholders P. 26
- Cutting Data P. 147-148




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              |

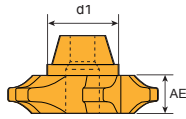
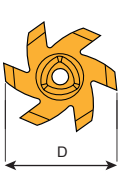
| Inserts   | Crdr Code       | Grades  |      |      |     |     |        |      |          |                          |
|---|-----------------|---------|------|------|-----|-----|--------|------|----------|---|
|   |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |   |
|   |                 | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      |   |
| <br>6 flutes | 3T1022-100-1-ME |         |      |      |     |     |        |      |          | <br>Inserts 6 PCS / Box |
|   | 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 |         |      |      |     |     |        |      |          |   |

-  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 )



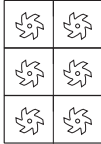
- Toolholders P. 26
- Cutting Data P. 147-148




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



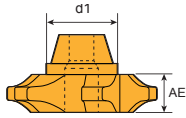
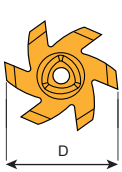
| Code         | Dimensions (mm) |     |     |        |                  |                  |
|--------------|-----------------|-----|-----|--------|------------------|------------------|
|              | D               | d1  | AE  | Module | Z <sub>min</sub> | Z <sub>max</sub> |
| 3T1022-125-1 | 22              | 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 )



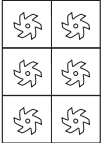
- Toolholders P. 26
- Cutting Data P. 147-148




**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              |

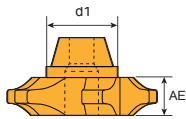
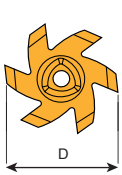
| Inserts  | Order Code      | Grades  |      |      |     |        |       |          |     |  |   |
|--|-----------------|---------|------|------|-----|--------|-------|----------|-----|---|---|
|  |                 | Carbide |      |      |     | Cermet |       | Uncoated |     |   |   |
|  |                 | B100    | C200 | C250 | F20 | F30    | CE100 | CE60     | K10 |   | CE  |
| <br><b>6 flutes</b> | 3T1022-150-1-ME | B100    |      |      |     |        |       |          |     |   | <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 )



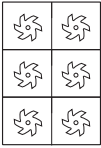
- Toolholders P. 26
- Cutting Data P. 147-148




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 |   |
| <br>6 flutes | 3T1022-175-1-ME |         |      |      |     |        |       |          |     | <br>Inserts 6 PCS / Box |
|   | 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 |         |      |      |     |        |       |          |     |   |

-  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



UFO Family

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



• 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 - 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

• 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    |
| 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



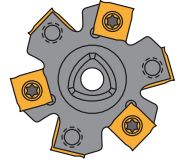
## • Recommended Cutting Speed, Vc (m/min)

| 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



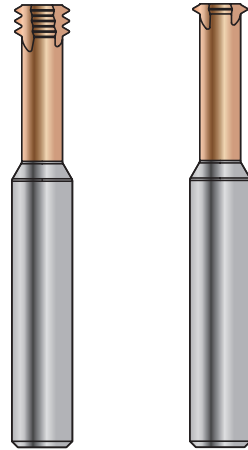
• Recommended Cutting Speed, Vc (m/min)

| 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. 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,  $V_c$  (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 - 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



For machining small gears





**UFO MILL<sup>®</sup>**

Simple \_ Speed \_ Smart

# Design of UFO Mill

Taper polygon + Centralizing cylinder



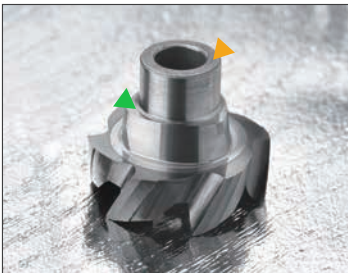
Taper Polygon

UFO MILL

► Taper polygon



• All grinded milling head

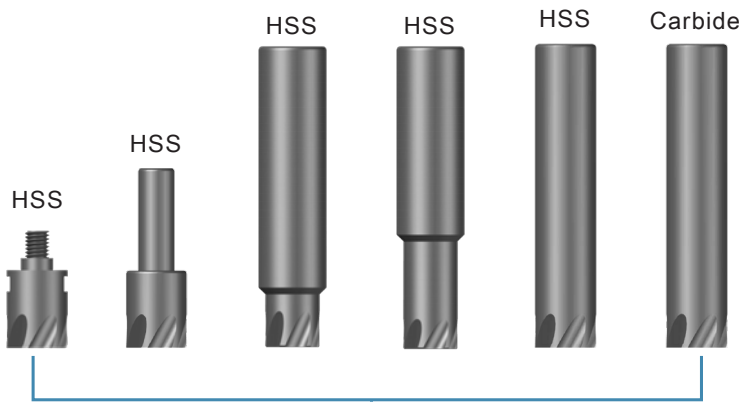


*The UFO MILL patented taper polygon design enhances the tight fit of insert joint. It gives a better resistance to the impacts from prolonged machining and solves the cutter slippery issue. The robust tri-face contact design makes the machining stable and durable.*

**Tri-face contact design**

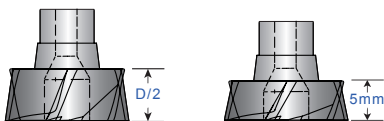


# Design of UFO Mill

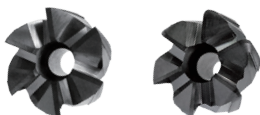


*288 different carbide heads*  
*48 different patented shanks*  
*1938 different combinations*

## Square Milling Heads 3B (M/ME/E)



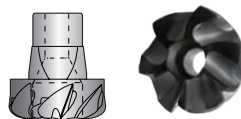
Ø10 - 25



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

## High Feed Milling Heads

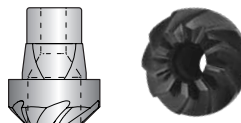
**3BH** Ø10 - 25



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

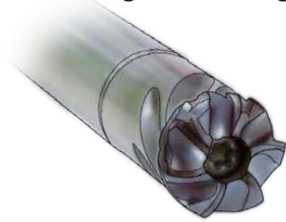
Optional length



Step Diameter



Customized Size



( Y.T. Design )  $\varnothing 20$  - 6 flutes  
Single head with multi - flutes



( Other brand )  $\varnothing 16$  - 3 flutes

UFO MILL

|   |   |  |  |   |
|---|---|--|--|---|
| Tools comparison                                  |   |  |  |   |
| <b>Productivity (<math>\varnothing 16</math>)</b> | 6 teeth+patented geometry achieves high metal removal 😊 | 2-6 teeth  | 2-3 teeth 😞                                | 2-6 teeth   |
| <b>Accuracy</b>                                   |   |  | 😞  |   |
| <b>Accuracy on the corner radius</b>              | 😊   |  | 😞  |   |
| <b>Regrinding</b>                                 | Not necessary, less tool inventory and management cost  | could be regrind but quality might not be equal  | not necessary                              | not necessary   |
| <b>Tool length resetting</b>                      | 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   |
| <b>Price</b>                                      | 😊   | high quality end mill is very expensive  | 😊  | 😞   |
| <b>Flexibility</b>                                | 😊   | 😞  |  |   |
| <b>Disadvantage</b>                               | 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

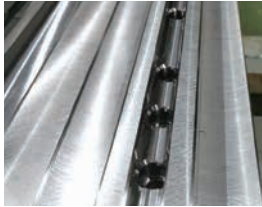


Mould & Die



Medical parts

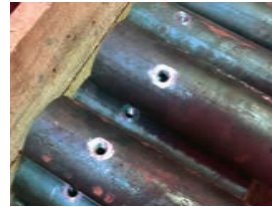
### 2 General machining



Milling



Flat surface



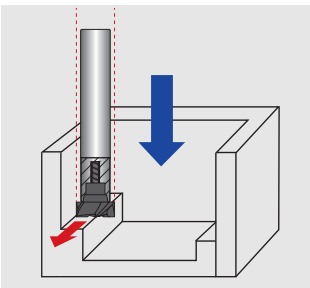
Screw hole plane

### 3 Casting / forging parts by mass production

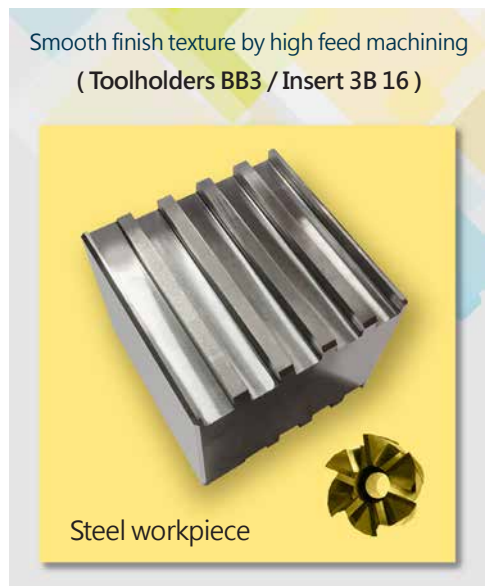


Smooth finish texture by high feed machining  
( Toolholders BB3 / Insert 3B 16 )

### 4 Deep Cavity Milling



Step diameter avoids body interference



Steel workpiece

# Common Holders



D:10~15

D:16~25

Taper Polygon

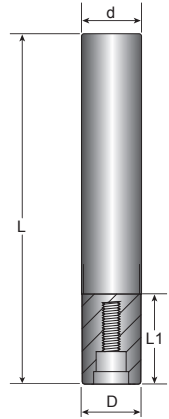
**BB3**

• HSS



Tolerances (mm)

D :  $+0.0$   
 $-0.01 \sim -0.02$       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  |      | 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          |        |      |
| BB3-1414-110 |                 |    | 110 |      | 0.16    | ø15          |        |      |
| BB3-1616-80  | 15.5            | 16 | 80  | 24   | 0.15    | ø16          | C05021 | T20P |
| 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          | C05021 | T20P |
| 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



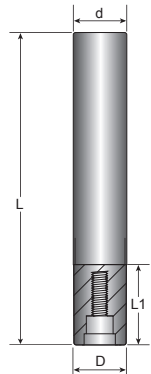
D:10~15    D:16~25

Taper Polygon



Tolerances (mm)

D :  $+0.0$   
 $-0.01 \sim -0.02$   
 d : h6



**BB3W** • Carbide

| 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  |                 |    | 80  |    | 0.30 |                          |        |      |
| BB3W-1414-110 | 13.5            | 14 | 110 | 26 | 0.40 | ø14<br>ø15               | C04020 | T15P |
| BB3W-1616-80  |                 |    | 80  |    | 0.40 |                          |        |      |
| BB3W-1616-110 | 15.5            | 16 | 110 | 26 | 0.50 | ø16<br>ø17<br>ø18        | C04020 | T15P |
| BB3W-1616-170 |                 |    | 170 |    | 0.70 |                          |        |      |



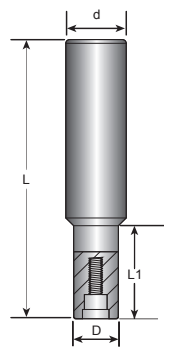
D:10~15    D:16~25

Taper Polygon

**BB3** · HSS



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



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

• Not available in shrink fit arbor



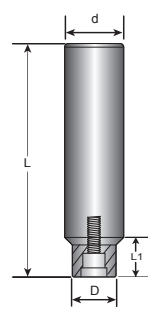
D:10~15    D:16~25

Taper Polygon

**BB3** · HSS



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



| Part No.      | Dimensions (mm) |    |     |    | KG   | Carbide Head     | Screw  | Key  |
|---------------|-----------------|----|-----|----|------|------------------|--------|------|
|               | D               | d  | L   | L1 |      |                  |        |      |
| BB3-1610-70S  | 9.7             | 16 | 70  | 12 | 0.09 | ∅10-11           | C03016 | T09P |
| BB3-1612-80S  | 11.5            |    | 80  |    | 0.12 | ∅12-13<br>∅14-15 | C03517 | T10P |
| BB3-2014-90S  | 13.5            | 20 | 90  |    | 0.21 | ∅14-15           | C04020 | T15P |
| BB3-2016-90S  | 15.5            |    |     |    |      | ∅16-17<br>∅18    |        |      |
| BB3-2518-90S  | 17.5            | 25 | 90  |    | 0.32 | ∅18              | C05021 | T20P |
| BB3-2520-90S  | 19.5            |    |     |    |      | ∅20-21<br>∅25    |        |      |
| BB3-3225-100S | 24.5            | 32 | 100 |    | 0.59 | ∅25              |        |      |

• Not available in shrink fit arbor



# Common Holders



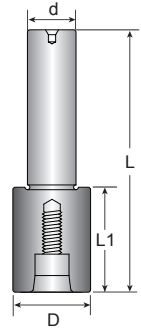
D:10~15    D:16~25

Taper Polygon

**BB3** · HSS



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



| Part No. | Dimensions (mm) |    |    |    | KG   | Carbide Head   | Screw  | Key  |
|----------|-----------------|----|----|----|------|--|--------|------|
|          | D               | d  | L  | L1 |      |  |        |      |
| BB3-1012 | 11.5            | 10 | 50 | 10 | 0.09 | $\begin{matrix} \phi 12-13 \\ \phi 14-15 \end{matrix}$ | C03517 | T10P |
| BB3-1016 | 15.5            |    |    | 12 | 0.10 | $\begin{matrix} \phi 16-17 \\ \phi 18 \end{matrix}$    | C04020 | T15P |
| BB3-1220 | 19.5            | 12 |    | 13 | 0.11 | $\begin{matrix} \phi 20-21 \\ \phi 25 \end{matrix}$    | C05021 | T20P |
| BB3-1225 | 24.5            |    |    |    | 0.12 | $\phi 25$  |        |      |

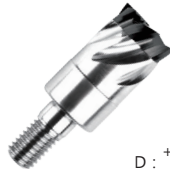
- Not available in shrink fit arbor



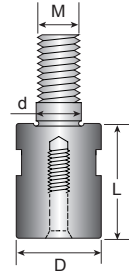
D:10~15    D:16~25

Taper Polygon

**BB3** · HSS

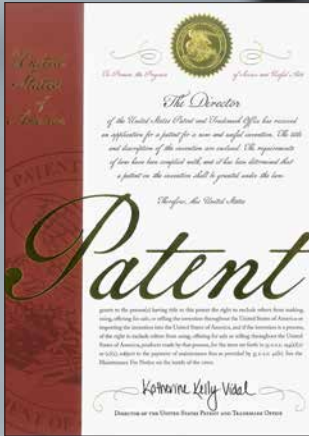


Tolerances (mm)  
 D :  $\begin{matrix} +0.0 \\ -0.01 \sim -0.02 \end{matrix}$



| Part No. | Dimensions (mm) |      |    |    | KG   | Carbide Head   | Screw  | Key  |
|----------|-----------------|------|----|----|------|--|--------|------|
|          | D               | d    | L  | M  |      |  |        |      |
| BB3-10   | 9.7             | 6.5  | 22 | 6  | 0.05 | $\begin{matrix} \phi 10 \\ \phi 11 \end{matrix}$       | C03016 | T09P |
| BB3-12   | 11.5            |      | 24 |    | 0.06 | $\begin{matrix} \phi 12-13 \\ \phi 14-15 \end{matrix}$ | C03517 | T10P |
| BB3-16   | 15.5            | 8.5  | 26 | 10 | 0.08 | $\begin{matrix} \phi 16-17 \\ \phi 18 \end{matrix}$    | C04020 | T15P |
| BB3-20   | 19.5            | 10.5 |    |    | 0.09 | $\begin{matrix} \phi 20-21 \\ \phi 25 \end{matrix}$    | C05021 | T20P |
| BB3-25   | 24.5            | 12.5 |    |    | 0.10 | $\phi 25$  |        |      |

- 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                                      |

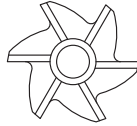
# Milling Heads - M

Flute length : D/2

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



4 flutes  
D:10-15mm



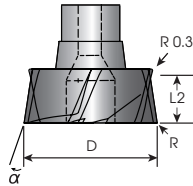
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

**3B**

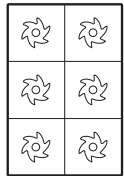


Tolerances (mm)

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

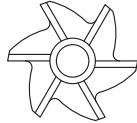
# Milling Heads - M

Flute length : D/2

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



4 flutes  
D:10-15mm



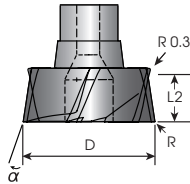
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

**3B**



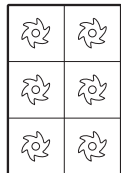
Tolerances (mm)

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



| 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 | CE2.5        | 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



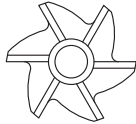
# Milling Heads - M

Flute length : D/2

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



4 flutes  
D:10-15mm



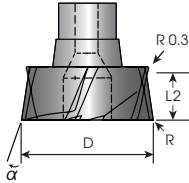
6 flutes  
D:16-25mm

| 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   |          |



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 | CE2.5        | CE60 | K10      | CE |  |                                 |
|               | 3B1809-M     | ⊗       |      |      |     |     |              |      |          |    |  | <br><br><br>Inserts 4 PCS / Box |
|               | 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 | ⊗       |      |      |     |     |              |      |          |    |  |                                 |

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

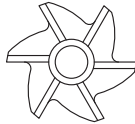
# Milling Heads - M E

Flute length : D/2

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



4 flutes  
D:10-15mm



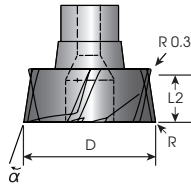
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

**3B**


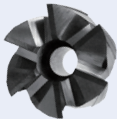


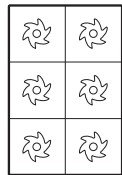
Tolerances (mm)

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   |          |

UFO MILL

| Milling Heads   | Part No.      | Grades  |      |      |     |     |              |      |          |  |    |  |  |
|---|---------------|---------|------|------|-----|-----|--------------|------|----------|---|----|--|--|
|   |               | Carbide |      |      |     |     | Metal cermet |      | Uncoated |   |    |  |  |
|   |               | B100    | CZ00 | CZ50 | 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



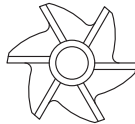
# Milling Heads - M E

Flute length : D/2

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



4 flutes  
D:10-15mm



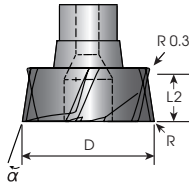
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon


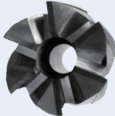
**3B**

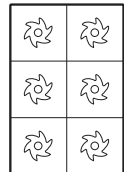


Tolerances (mm)



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 | F20 | F30 | CE25         | CE60 | K10      | CE |   |  |
|  | 3B1407-ME     | ⊙       |      |     |     |              |      |          |    |   |  |
|   | 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

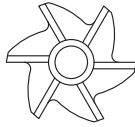
# Milling Heads - M E

Flute length : D/2

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



4 flutes  
D:10-15mm



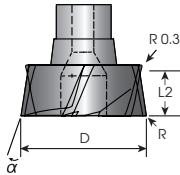
6 flutes  
D:16-25mm

| Dimensions (mm) |      |     |          |
|-----------------|------|-----|----------|
| D               | L2   | R   | $\alpha$ |
| 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   |          |



Taper Polygon


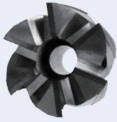
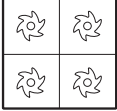
3B



Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

UFO MILL

| Milling Heads   | Part No.      | Grades  |      |      |     |              |      |          |     |  |    |  |
|---|---------------|---------|------|------|-----|--------------|------|----------|-----|---|----|--|
|   |               | Carbide |      |      |     | Metal cermet |      | Uncoated |     |   |    |  |
|   |               | B100    | C200 | C250 | F20 | F30          | CE25 | CE60     | K10 |   | OE |  |
|  | 3B1809-ME     | ⊙       |      |      |     |              |      |          |     |   |    |  <p>Inserts 4 PCS / Box</p> |
|   | 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 | ⊙       |      |      |     |              |      |          |     |   |    |  |

- ⊙ 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



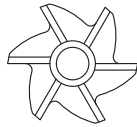
# Milling Heads - E

Flute length : D/2

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



4 flutes  
D:10-15mm



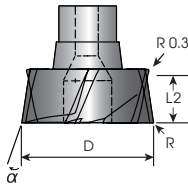
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

**3B**

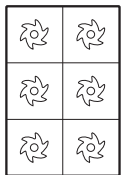


Tolerances (mm)

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

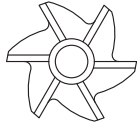
# Milling Heads - E

Flute length : D/2

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



4 flutes  
D:10-15mm



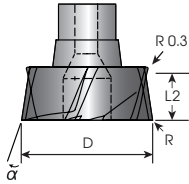
6 flutes  
D:16-25mm



D:10~15 D:16~25

Taper Polygon

**3B**




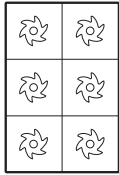
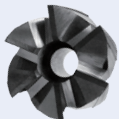
Tolerances (mm)

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   |          |

UFO MILL

| Milling Heads | Part No.     | Grades  |      |      |     |     |              |      |          |    |  |  |  |  |
|---------------|--------------|---------|------|------|-----|-----|--------------|------|----------|----|--|---|--|--|
|               |              | Carbide |      |      |     |     | Metal 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

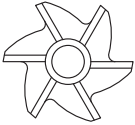
- Aluminum / Copper 
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1407R0.5-E, K10



# Milling Heads - E

Flute length : D/2

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



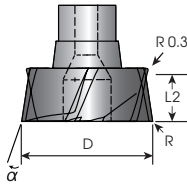
6 flutes  
D:16-25mm

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




Taper Polygon

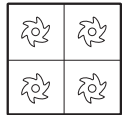
3B



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 |
|               | 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

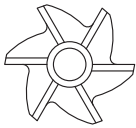
- Aluminum / Copper M
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1809R0.5-E, K10

# 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   |          |

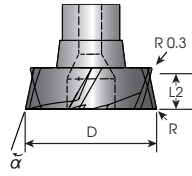


6 flutes  
D:16-25mm




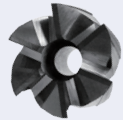
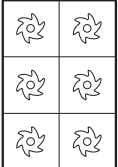
Taper Polygon

**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-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

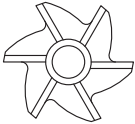
-  Steel / Hardened steel / Cast iron   
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1605R0.5-M,B100



# Milling Heads - M

Flute length : 5mm

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

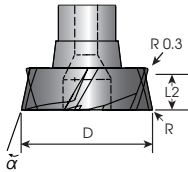


6 flutes  
D:16-25mm



Taper Polygon

3B

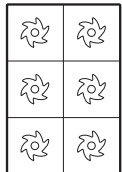


| Dimensions (mm) |    |     |          |
|-----------------|----|-----|----------|
| D               | L2 | R   | $\alpha$ |
| 18              | 5  | 0   | 48°      |
|                 |    | 0.5 |          |
|                 |    | 1   |          |
|                 |    | 1.5 |          |
|     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

Tolerances (mm)

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

| 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

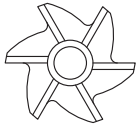
- Ⓞ Steel / Hardened steel / Cast iron Ⓟ Ⓜ Ⓝ
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1805R0.5-M,B100

# 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   |          |

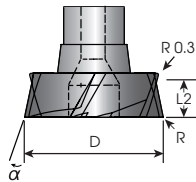


6 flutes  
D:16-25mm




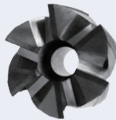
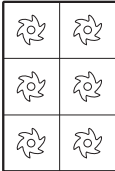
Taper Polygon

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 | ⊙       |      |      |     |     |              |      |          |   |   |

Inserts 6 PCS / Box

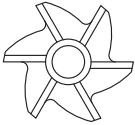
-  Stainless steel / Titanium alloy / Cast iron
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1605R0.5-ME, B100



# Milling Heads - M E

Flute length : 5mm

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



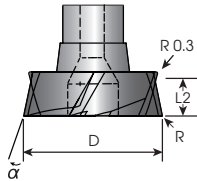
6 flutes  
D:16-25mm

| 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   |          |




Taper Polygon

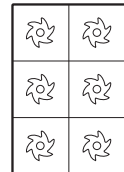
3B



Tolerances (mm)

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

| Milling Heads | Part No.      | Grades  |      |      |     |     |              |      |          |  |
|---------------|---------------|---------|------|------|-----|-----|--------------|------|----------|---|
|               |               | Carbide |      |      |     |     | Metal cermet |      | Uncoated |   |
|               |               | B100    | C200 | C250 | F20 | F30 | CE25         | CE60 | K10      |   |
|               | 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

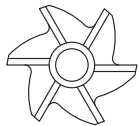
- ⊙ Stainless steel / Titanium alloy / Cast iron
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1805R0.5-ME, B100

# 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   |          |

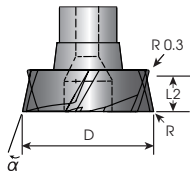


6 flutes  
D:16-25mm




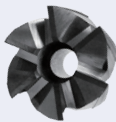
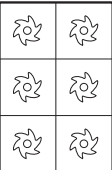
Taper Polygon

3B



Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

| Milling Heads   | Part No.     | Grades  |      |      |     |     |              |      |          |    |  |  |   |
|---|--------------|---------|------|------|-----|-----|--------------|------|----------|----|---|--|---|
|   |              | Carbide |      |      |     |     | Metal 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

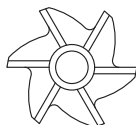
- Aluminum / Copper N
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1605R0.5-E, K10



# Milling Heads - E

Flute length : 5mm

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



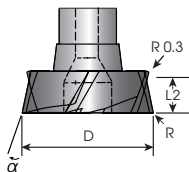
6 flutes  
D:16-25mm

| 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   |          |




Taper Polygon

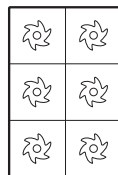
3B



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 |
|               | 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

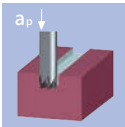
-  Aluminum / Copper 
- Price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3B1805R0.5-E, K10

# Cutting Parameter **3B-M**

Applicable to Steel / Hardened steel / Cast iron

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

| 3B-M                            | Materials              | D (mm) | Z   | Vc (m/min) | fz (mm/tooth) | a <sub>p</sub> (mm) | a <sub>e</sub> (mm) | S (rev/min) | F (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.

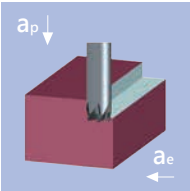



UFO MILL



# Cutting Parameter **3B-ME**

Applicable to Stainless steel / Titanium alloy / Cast iron

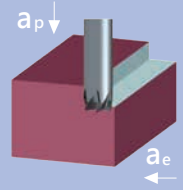


• Keep  $Fz \geq 0.025\text{mm}$

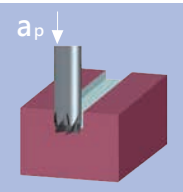


| 3B-ME  | Materials  | D (mm) | Z | Vc (m/min) | $f_z$ (mm/tooth) | $a_p$ (mm) | $a_e$ (mm) | S (rev/min) | F (mm/min) |
|--|--|--------|---|------------|------------------|------------|------------|-------------|------------|
|  | Stainless steel<br> | 10     | 4 | 55         | 0.04             | 2          | 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        |

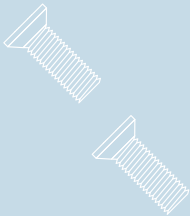
# Cutting Parameter 3B-E

Applicable to Aluminum / Copper

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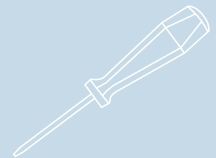
| 3B-E  | Materials   | D (mm) | Z | Vc (m/min) | fz (mm/tooth) | a <sub>p</sub> (mm) | a <sub>e</sub> (mm) | S (rev/min) | F (mm/min) |
|---|---|--------|---|------------|---------------|---------------------|---------------------|-------------|------------|
|  | Aluminum<br> | 10     | 4 | 800        | 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<br>   | 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       |

| 3B-E  | Materials   | D (mm) | Z | Vc (m/min) | fz (mm/tooth) | a <sub>p</sub> (mm) | a <sub>e</sub> (mm) | S (rev/min) | F (mm/min) |
|---|---|--------|---|------------|---------------|---------------------|---------------------|-------------|------------|
|  | Aluminum<br> | 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<br> | 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.

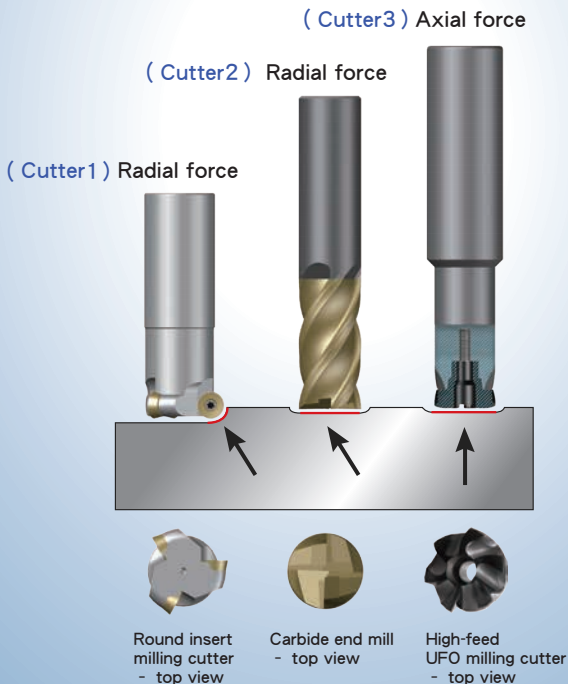
### (Cutter 2) Radial force > Axial force

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.

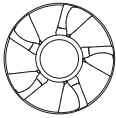


# High Feed Milling Heads - 3BH

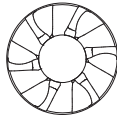
- Toolholders P. 161 -164
- Cutting Data P. 186



4 flutes  
D: 10-11mm



5 flutes  
D: 12-13mm

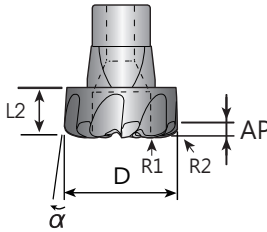


6 flutes  
D: 16-25mm



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

**3BH**



Tolerances (mm)

D : +0.0  
-0.01~-0.02 L2 : ± 0.03

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

- $\varnothing$  10-11 Maximum AP 0.8mm
- $\varnothing$  12-13 Maximum AP 0.9mm
- $\varnothing$  16-25 Maximum AP 1.2mm

UFO MILL

| 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

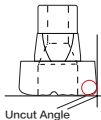
- Steel / Stainless steel / Titanium alloy
- Correct price and stock are based on current situation
- Please specify model number and grade of insert, ie.: 3BH1005-M, B100



# Cutting Parameter - 3BH

• Keep  $Fz \geq 0.02\text{mm}$

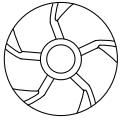
| 3BH  | Materials          | D (mm) | Z | Vc (m/min) | $f_z$ (mm/tooth) | $a_p$ (mm) | $a_e$ (mm) | S (rev/min) | F (mm/min) |
|--|--------------------|--------|---|------------|------------------|------------|------------|-------------|------------|
|   | Steel<br>24-32 HRC | 10     | 4 | 200        | 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 | 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     | 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 (mm) | $r_D$ (mm) | Uncut Angle (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             |

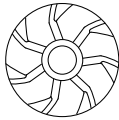
# High Feed Chamfer Milling Heads - 3BC

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

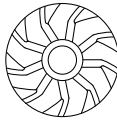
| Dimensions (mm) |    |    |      |     |               |
|-----------------|----|----|------|-----|---------------|
| D               | L2 | d  | AP   | C   | Angle Chamfer |
| 10              | 5  | 6  | 3.4  | 4.0 | 30°           |
|                 |    |    | 2.0  | 2.7 | 45°           |
|                 |    |    | 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



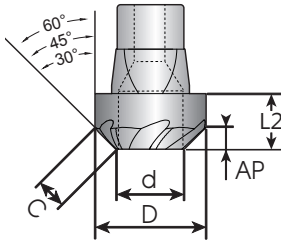
9 flutes  
D: 16mm



D:10~15 D:16~25



Taper Polygon

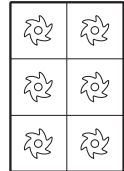
**3BC**



Tolerances (mm)

D :  $+0.0$   
 $-0.01 \sim -0.02$  L2 :  $\pm 0.03$

| 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 | ★       |      |      |     |              |      |          |     |   |    |  |  |
|   |                |         |      |      |     |              |      |          |     |   |    |  |  |
|   |                |         |      |      |     |              |      |          |     |   |    |  |  |



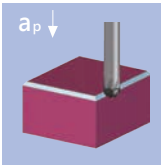






Inserts 6 PCS / Box

★ 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

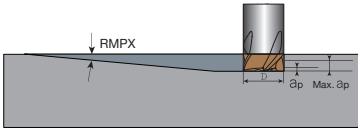


# Cutting Parameter **3BC**

| 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

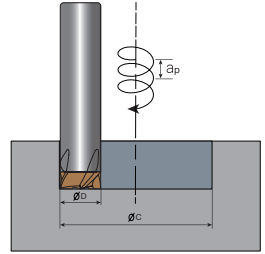


Unit : mm

| $\phi D$ | 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

| $\phi D$ | Min. $\phi C$ / Max. $a_p$ |                  |               |                  |
|----------|----------------------------|------------------|---------------|------------------|
|          | Min. $\phi C$              | Max. $a_p$<br>mm | Max. $\phi C$ | 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              |

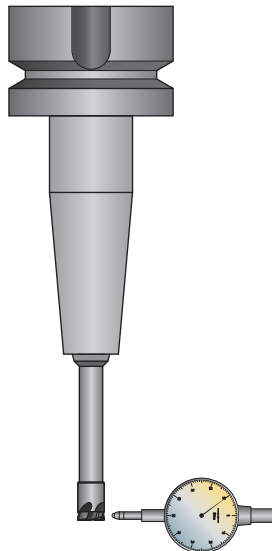
• It's calculated with exchangeable milling head R0.

## Arbor and chuck

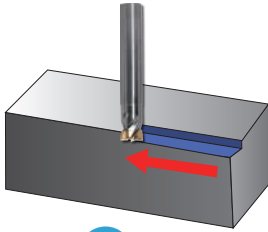
Precise arbor and chuck will improve the tool life in high speed machining.

Arbor recommendation:

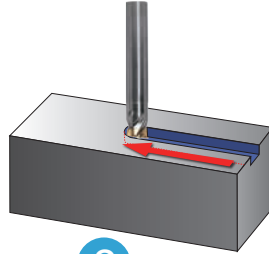
Hydraulic chuck, shrink fit chuck or highly precision chuck.



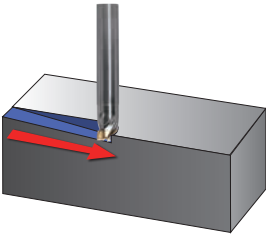
# Different Applications



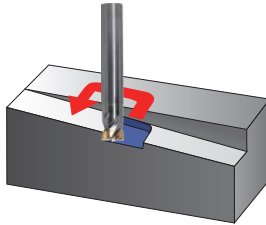
1



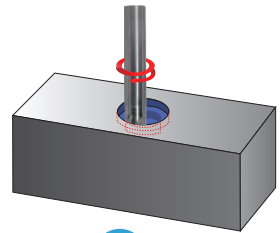
2



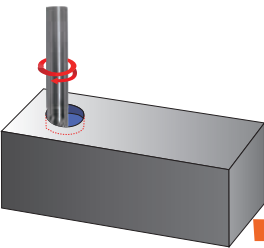
3



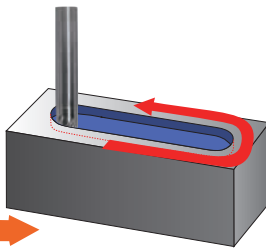
4



5

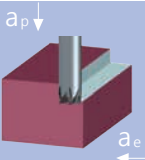



6



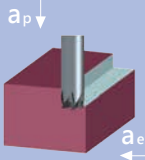

7

# 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**

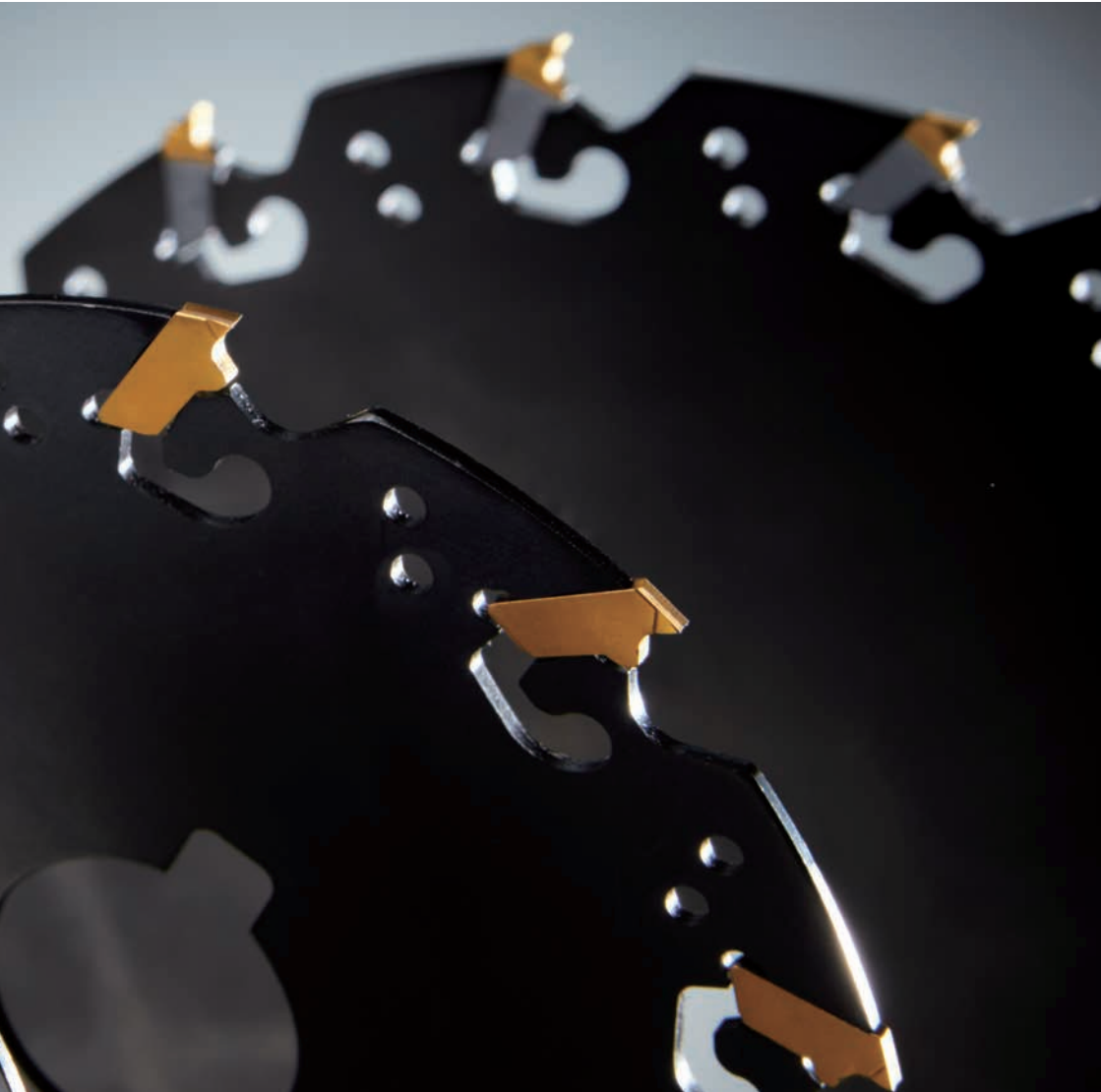


Video



# 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



# 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 :

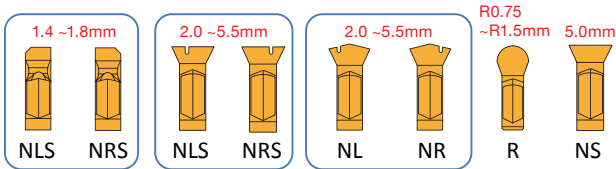
A. Different materials



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

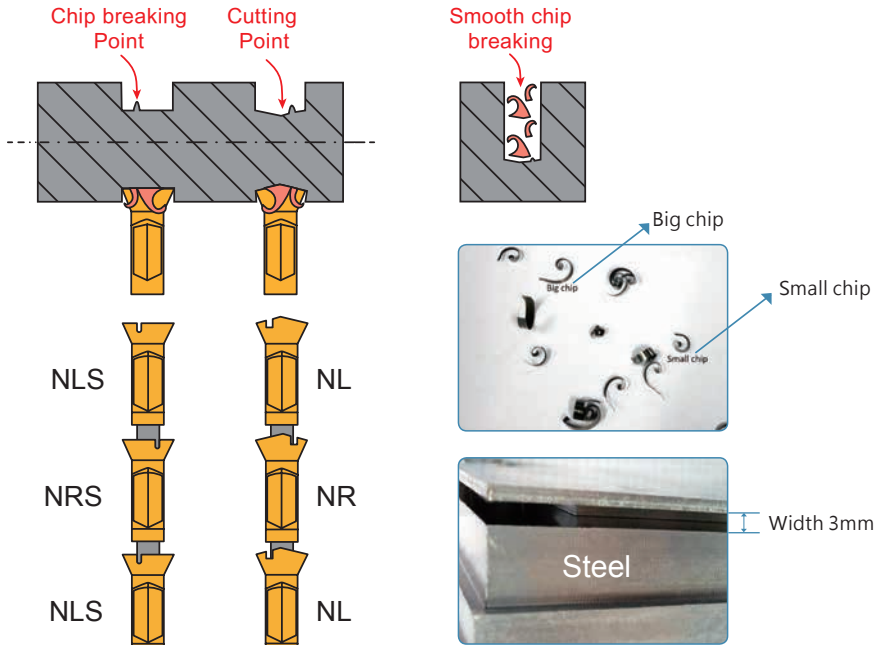
Strong clamping even in high feed machining



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



# Y.T. Patented Chip Breaking System

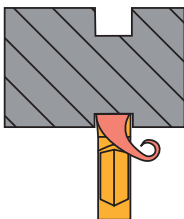


Excellent surface finishing quality and chip evacuation at the live test for machining 20mm deep slots by one pass

## 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



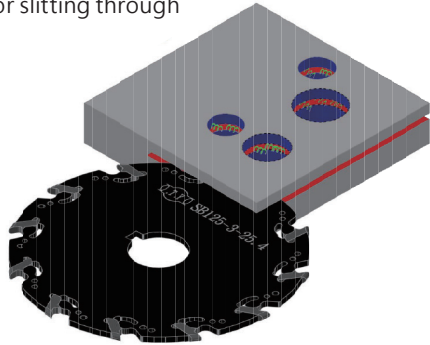
### Characteristics

- 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:

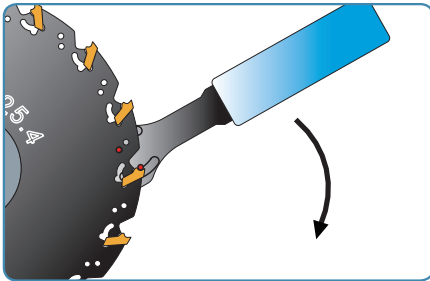
## LNGT Radius Inserts

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

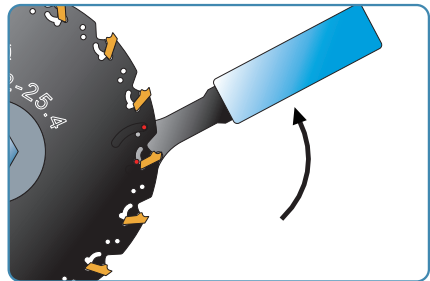


Slitting

## Change The Inserts



Mount inserts



Remove inserts



Video



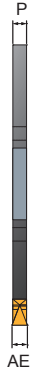
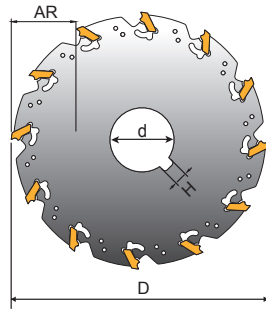
Before mounting inserts, use marker pen ( oil-based ) to wipe across the concave surface of the insert for helping fit the insert into the blade smoothly.



# PRODUCT SPECIFICATIONS

## Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



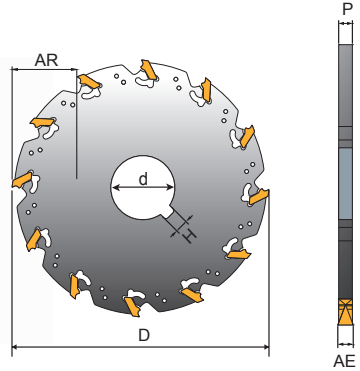
**SB**

| Order Code       | Dimensions (mm) |     |      |     |        |   |   | Z    | H  | KG   | MAX. RPM | Insert 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   |   |   |      |    |      |          |             |           |      |
| SB063-1.4-16     | 63              |     | 18   |     | 16     |   |   |      |    |      |          |             |           |      |
| SB063-1.4-15.875 |                 |     |      |     | 15.875 |   |   |      |    |      |          |             |           |      |
| SB080-1.4-22     | 80              |     | 19.5 |     | 22.5   |   |   | 22   | 8  | 6    | 0.09     |             |           | 8000 |
| SB080-1.4-25.4   |                 |     |      |     | 25.4   |   |   | 6.35 |    |      |          |             |           |      |
| SB100-1.4-22     | 100             |     | 29.5 |     | 22     |   |   | 22   | 10 | 6    | 0.13     |             |           | 6300 |
| SB100-1.4-25.4   |                 |     |      |     |        |   |   | 25.4 |    | 6.35 |          |             |           |      |
| SB100-1.4-27     |                 |     |      |     |        |   |   | 27   |    | 7    |          |             |           |      |
| SB125-1.4-22     | 125             |     | 45   |     | 22     |   |   | 22   | 12 | 6    | 0.20     |             |           | 5000 |
| SB125-1.4-25.4   |                 |     |      |     |        |   |   | 25.4 |    | 6.35 |          |             |           |      |
| SB125-1.4-32     |                 |     |      |     |        |   |   | 32   |    | 8    |          |             |           |      |

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

# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



**SB**

Slitting

| Order Code       | Dimensions (mm) |     |      |     |        |   |   | Z  | H    | KG   | MAX. RPM | Inserts 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   |   |   |    |      |      |          |              |           |
| SB063-1.6-16     | 63              | 1.6 | 18   | 1.4 | 16     | - | - | 6  | -    | 0.09 | 11000    | 1616         | 150.10-30 |
| SB063-1.6-15.875 |                 |     |      |     | 15.875 |   |   |    |      |      |          |              |           |
| SB080-1.6-22     | 80              | 1.6 | 22.5 | 1.4 | 22     | - | - | 8  | 6    | 0.09 | 8000     | 1616         | 150.10-30 |
| SB080-1.6-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB100-1.6-22     | 100             | 1.6 | 32.5 | 1.4 | 22     | - | - | 10 | 6    | 0.14 | 6300     | 1616         | 150.10-30 |
| SB100-1.6-25.4   |                 |     | 29.5 |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB100-1.6-27     |                 |     | 27   |     | 7      |   |   |    |      |      |          |              |           |
| SB125-1.6-22     | 125             | 1.6 | 45   | 1.4 | 22     | - | - | 12 | 6    | 0.21 | 5000     | 1616         | 150.10-30 |
| SB125-1.6-25.4   |                 |     | 42   |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB125-1.6-32     |                 |     | 39   |     | 32     |   |   |    | 8    |      |          |              |           |
| SB160-1.6-25.4   | 160             | 1.6 | 59.5 | 1.4 | 25.4   | - | - | 16 | 6.35 | 0.35 | 4000     | 1616         | 150.10-30 |
| SB160-1.6-32     |                 |     | 56.5 |     | 32     |   |   |    | 8    |      |          |              |           |
| SB160-1.6-40     |                 |     | 52   |     | 40     |   |   |    | 10   |      |          |              |           |

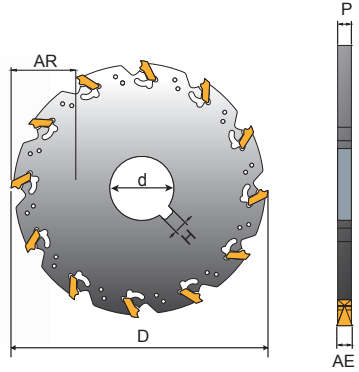
\* Wrench 150.10-30 for above cutter order separately.



# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259

**SB**

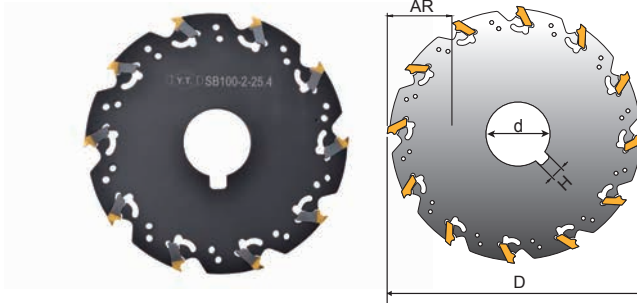


| Order Code       | Dimensions (mm) |     |      |     |        |   |   | Z  | H | KG   | MAX. RPM | Inserts LNGT | Wrench    |
|------------------|-----------------|-----|------|-----|--------|---|---|----|---|------|----------|--------------|-----------|
|                  | D               | AE  | 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     |   |   |    |   |      |          |              |           |
| SB063-1.8-15.875 |                 |     |      |     | 15.875 |   |   |    |   |      |          |              |           |
| SB080-1.8-22     | 80              |     | 22.5 |     | 22     |   |   |    |   |      |          |              |           |
| SB080-1.8-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    |   |      |          |              |           |
| SB100-1.8-22     | 100             |     | 32.5 |     | 22     |   |   |    |   |      |          |              |           |
| SB100-1.8-25.4   |                 |     | 29.5 |     | 25.4   |   |   |    |   |      |          |              |           |
| SB100-1.8-27     |                 |     |      |     | 27     |   |   |    |   |      |          |              |           |
| SB125-1.8-22     | 125             |     | 45   |     | 22     |   |   |    |   |      |          |              |           |
| SB125-1.8-25.4   |                 |     | 42   |     | 25.4   |   |   |    |   |      |          |              |           |
| SB125-1.8-32     |                 |     | 39   |     | 32     |   |   |    |   |      |          |              |           |
| SB160-1.8-25.4   | 160             |     | 59.5 |     | 25.4   |   |   |    |   |      |          |              |           |
| SB160-1.8-32     |                 |     | 56.5 |     | 32     |   |   |    |   |      |          |              |           |
| SB160-1.8-40     |                 |     |      |     | 52     |   |   | 40 |   |      |          |              |           |

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

# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



**SB**

Slitting

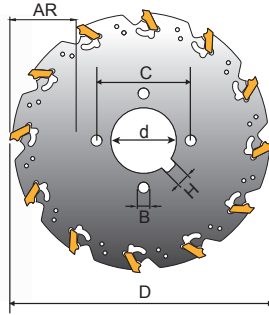
| Order Code     | Dimensions (mm) |      |      |     |        |      |      | Z  | H    | KG   | MAX. RPM | Inserts LNGT         | Wrench    |
|----------------|-----------------|------|------|-----|--------|------|------|----|------|------|----------|----------------------|-----------|
|                | 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   |      |      |    |      |      |          |                      |           |
| SB063-2-16     | 63              |      | 18   |     | 16     |      |      | 6  | -    | 0.08 | 11000    |                      |           |
| SB063-2-15.875 |                 |      |      |     | 15.875 |      |      |    |      |      |          |                      |           |
| SB080-2-22     | 80              |      | 22.5 |     | 22     |      |      | 8  | 6    | 0.10 | 8000     |                      |           |
| SB080-2-25.4   |                 |      | 19.5 |     | 25.4   |      |      |    | 6.35 |      |          |                      |           |
| SB100-2-22     | 100             |      | 32.5 |     | 22     |      |      | 10 | 6    | 0.16 | 6300     |                      |           |
| SB100-2-25.4   |                 |      | 2.2  |     | 25.4   |      |      |    | 6.35 |      |          |                      |           |
| SB100-2-27     |                 |      | 2.5  |     | 29.5   |      |      |    | 27   |      |          |                      |           |
| SB125-2-22     | 125             |      | 45   |     | 22     |      |      | 12 | 6    | 0.24 | 5000     |                      |           |
| 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 separately.



# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



**SB**

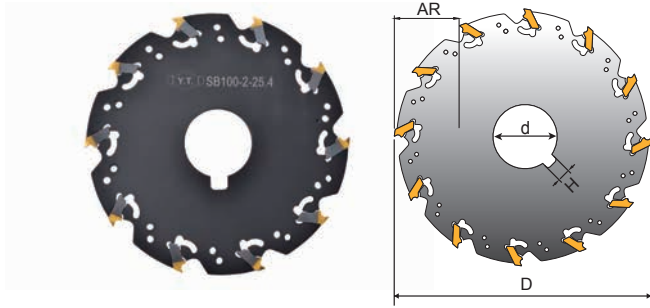
| Order Code    | Dimensions (mm) |       |       |     |      |    |      | Z    | H    | KG   | MAX. RPM | Inserts LNGT | Wrench    |
|---------------|-----------------|-------|-------|-----|------|----|------|------|------|------|----------|--------------|-----------|
|               | D               | 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         | 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   | 3200 |      |          |              |           |
| SB200M-2-40   |                 |       |       |     |      |    | 26   |      |      |      |          |              |           |
| SB250-2-25.4  | 250             | 2.2   | 104.5 | 1.7 | 25.4 | -  | -    | 26   | 6.35 | 0.96 | 2600     | 2022         | 150.10-30 |
| SB250M-2-25.4 |                 | 2.5   |       |     |      |    |      | 34   |      |      |          |              |           |
| SB250-2-32    |                 | 101.5 | 32    |     | 63   | 11 | 26   | 8    |      |      |          |              |           |
| SB250M-2-32   |                 |       |       |     |      |    | 34   |      |      |      |          |              |           |
| SB250-2-40    |                 | 97    | 40    |     | 90   | 26 | 10   |      |      |      |          |              |           |
| SB250M-2-40   |                 |       |       |     |      | 34 |      |      |      |      |          |              |           |
| 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. 247 - 253
- Cutting Data P. 257 - 259

**SB**



Slitting

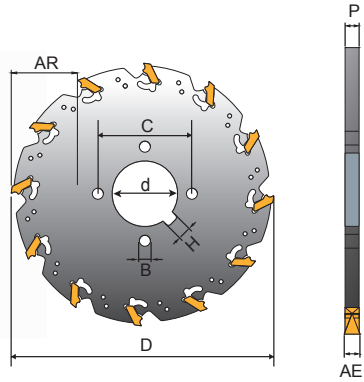
| Order Code       | Dimensions (mm) |     |      |      |        |   |   | Z  | H    | KG   | MAX. RPM | Inserts LNGT | Wrench    |
|------------------|-----------------|-----|------|------|--------|---|---|----|------|------|----------|--------------|-----------|
|                  | D               | AE  | AR   | P    | d      | C | B |    |      |      |          |              |           |
| SB050-2.5-13     | 50              | 2.5 | 14.5 | 2.25 | 13     | - | - | 4  | -    | 0.1  | 12000    | 2525         | 150.10-30 |
| SB050-2.5-12.7   |                 |     |      |      | 12.7   |   |   |    |      |      |          |              |           |
| SB063-2.5-16     | 63              | 3.0 | 18   | 2.25 | 16     | - | - | 6  | -    | 0.11 | 11000    | 2530         | 150.10-30 |
| SB063-2.5-15.875 |                 |     |      |      | 15.875 |   |   |    |      |      |          |              |           |
| SB080-2.5-22     | 80              | 3.0 | 22.5 | 2.25 | 22     | - | - | 8  | 6    | 0.12 | 8000     | 2525         | 150.10-30 |
| SB080-2.5-25.4   |                 |     | 19.5 |      | 25.4   |   |   |    |      |      |          |              |           |
| SB100-2.5-22     | 100             | 2.7 | 32.5 | 2.25 | 22     | - | - | 10 | 6    | 0.18 | 6300     | 2527         | 150.10-30 |
| SB100-2.5-25.4   |                 |     | 29.5 |      | 25.4   |   |   |    |      |      |          |              |           |
| SB100-2.5-27     |                 |     | 27   |      | 27     |   |   |    |      |      |          |              |           |
| SB125-2.5-22     | 125             | 3.0 | 45   | 2.25 | 22     | - | - | 12 | 6    | 0.27 | 5000     | 2530         | 150.10-30 |
| SB125-2.5-25.4   |                 |     | 42   |      | 25.4   |   |   |    |      |      |          |              |           |
| SB125-2.5-32     |                 |     | 39   |      | 32     |   |   |    |      |      |          |              |           |
| SB160-2.5-25.4   | 160             | 3.0 | 59.5 | 2.25 | 25.4   | - | - | 16 | 6.35 | 0.47 | 4000     | 2530         | 150.10-30 |
| SB160-2.5-32     |                 |     | 56.5 |      | 32     |   |   |    |      |      |          |              |           |
| SB160-2.5-40     |                 |     | 52   |      | 40     |   |   |    |      |      |          |              |           |
| SB200-2.5-25.4   | 200             | 3.0 | 79.5 | 2.25 | 25.4   | - | - | 20 | 6.35 | 0.73 | 3200     | 2530         | 150.10-30 |
| SB200M-2.5-25.4  |                 |     |      |      |        |   |   | 26 |      |      |          |              |           |

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



# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



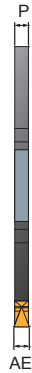
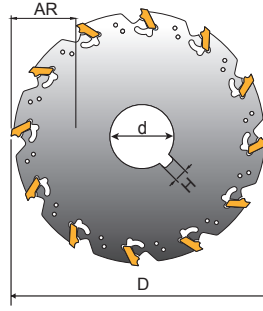
**SB**

| Order Code      | Dimensions (mm) |     |       |      |       |    |    | Z  | H    | ⚖️<br>MAX. 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    |                 |     | 20    |      | 72    | 40 | 90 | 11 | 20   |                |                 |                      |           | 10 |
| SB200M-2.5-40   |                 |     |       |      |       |    |    |    | 26   |                |                 |                      |           |    |
| SB250-2.5-25.4  | 250             | 2.5 | 104.5 | 2.25 | 25.4  | -  | -  | 26 | 6.35 | 1.12           | 2600            |                      |           |    |
| SB250M-2.5-25.4 |                 |     |       |      |       |    |    | 34 |      |                |                 |                      |           |    |
| SB250-2.5-32    |                 |     | 26    |      | 101.5 | 32 | 63 | 11 | 26   |                |                 |                      |           | 8  |
| SB250M-2.5-32   |                 |     |       |      |       |    |    |    | 34   |                |                 |                      |           |    |
| SB250-2.5-40    |                 |     | 26    |      | 97    | 40 | 90 | 11 | 26   |                |                 |                      |           | 10 |
| SB250M-2.5-40   |                 |     |       |      |       |    |    |    | 34   |                |                 |                      |           |    |
| SB300-2.5-25.4  | 300             | 3.0 | 129.5 | 2.25 | 25.4  | -  | -  | 30 | 6.35 | 1.61           | 2200            |                      |           |    |
| SB300M-2.5-25.4 |                 |     |       |      |       |    |    | 40 |      |                |                 |                      |           |    |
| SB300-2.5-32    |                 |     | 30    |      | 126.5 | 32 | 63 | 11 | 30   |                |                 | 8                    |           |    |
| SB300M-2.5-32   |                 |     |       |      |       |    |    |    | 40   |                |                 |                      |           |    |
| SB300-2.5-40    |                 |     | 30    |      | 122   | 40 | 90 | 11 | 30   | 10             |                 |                      |           |    |
| SB300M-2.5-40   |                 |     |       |      |       |    |    |    | 40   |                |                 |                      |           |    |

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

# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



**SB**

Slitting

| Order Code     | Dimensions (mm) |      |      |     |        |      |      | Z    | H    | KG   | MAX. RPM | Inserts 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   |                 |      | 29.5 |     | 25.4   |      |      |      | 6.35 |      |          |              |           |      |
| SB100-3-27     |                 |      |      |     | 3.2    |      |      |      | 27   |      |          |              |           | 7    |
| SB125-3-22     | 125             |      | 3.5  |     | 45     |      |      | 22   | 12   | 6    | 0.31     |              |           | 5000 |
| 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   |      |      |          |              |           |      |

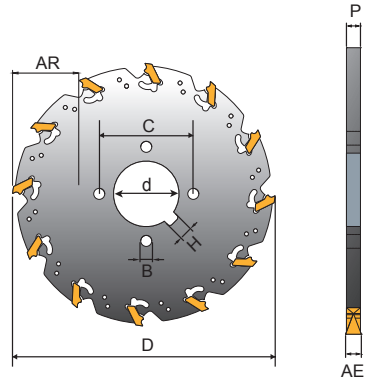
\* Wrench 150.10-30 for above cutter order separately.



# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259

**SB**

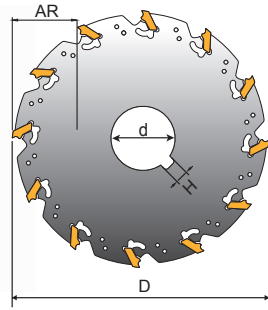


| Order Code    | Dimensions (mm) |     |       |     |      |    |    | Z  | H    | KG   | MAX. RPM | Inserts LNGT | Wrench    |
|---------------|-----------------|-----|-------|-----|------|----|----|----|------|------|----------|--------------|-----------|
|               | D               | AE  | AR    | P   | d    | C  | B  |    |      |      |          |              |           |
| SB200-3-32    | 200             |     | 76.5  | 2.7 | 32   | 63 | 11 | 20 | 8    | 0.85 | 3200     |              |           |
| SB200M-3-32   |                 |     |       |     |      |    |    | 26 |      |      |          |              |           |
| SB200-3-40    |                 |     | 20    |     | 10   |    |    |    |      |      |          |              |           |
| SB200M-3-40   |                 |     |       |     |      | 26 |    |    |      |      |          |              |           |
| SB250-3-25.4  | 250             | 3.0 | 104.5 | 2.7 | 25.4 | -  | 11 | 26 | 6.35 | 1.38 | 2600     | 3030         | 150.10-30 |
| SB250M-3-25.4 |                 |     |       |     |      |    |    | 34 |      |      |          |              |           |
| SB250-3-32    |                 |     | 26    |     | 8    |    |    |    |      |      |          |              |           |
| SB250M-3-32   |                 |     |       |     |      | 34 |    |    |      |      |          |              |           |
| SB250-3-40    |                 |     | 26    |     | 10   |    |    |    |      |      |          |              |           |
| SB250M-3-40   |                 |     |       |     |      | 34 |    |    |      |      |          |              |           |
| SB300-3-25.4  | 300             | 3.2 | 129.5 | 2.7 | 25.4 | -  | 11 | 30 | 6.35 | 1.86 | 2200     | 3032         | 150.10-30 |
| SB300M-3-25.4 |                 |     |       |     |      |    |    | 40 |      |      |          |              |           |
| SB300-3-32    |                 |     | 30    |     | 8    |    |    |    |      |      |          |              |           |
| SB300M-3-32   |                 |     |       |     |      | 40 |    |    |      |      |          |              |           |
| SB300-3-40    |                 |     | 30    |     | 10   |    |    |    |      |      |          |              |           |
| SB300M-3-40   |                 |     |       |     |      | 40 |    |    |      |      |          |              |           |
| SB300-3-40    | 122             |     | 40    | 90  |      |    | 11 | 30 |      |      |          |              |           |
| SB300M-3-40   |                 |     |       |     |      |    |    | 40 |      |      |          |              |           |

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

# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



**SB**

Slitting

| Order Code     | Dimensions (mm) |     |      |     |        |   |   | Z  | H    | KG   | MAX. RPM | Inserts 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              | 4.5 | 18   | 3.7 | 16     | - | - | 6  | -    | 0.12 | 11000    | 4045         | 150.10-30 |
| SB063-4-15.875 |                 |     |      |     | 15.875 |   |   |    |      |      |          |              |           |
| SB080-4-22     | 80              | 4.5 | 22.5 | 3.7 | 22     | - | - | 8  | 6    | 0.15 | 8000     | 4045         | 150.10-30 |
| SB080-4-25.4   |                 |     |      |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB100-4-22     | 100             | 4.0 | 32.5 | 3.7 | 22     | - | - | 10 | 6    | 0.25 | 6300     | 4040         | 150.10-30 |
| SB100-4-25.4   |                 |     |      |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB100-4-27     |                 |     |      |     | 27     |   |   |    | 7    |      |          |              |           |
| SB125-4-22     | 125             | 4.5 | 45   | 3.7 | 22     | - | - | 12 | 6    | 0.40 | 5000     | 4045         | 150.10-30 |
| SB125-4-25.4   |                 |     |      |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB125-4-32     |                 |     |      |     | 32     |   |   |    | 8    |      |          |              |           |
| SB160-4-25.4   | 160             | 4.5 | 59.5 | 3.7 | 25.4   | - | - | 16 | 6.35 | 0.66 | 4000     | 4045         | 150.10-30 |
| SB160-4-32     |                 |     |      |     | 32     |   |   |    | 8    |      |          |              |           |
| SB160-4-40     |                 |     |      |     | 40     |   |   |    | 10   |      |          |              |           |
| SB200-4-25.4   | 200             | 4.5 | 79.5 | 3.7 | 25.4   | - | - | 20 | 6.35 | 1.02 | 3200     | 4045         | 150.10-30 |
| SB200M-4-25.4  |                 |     |      |     |        |   |   | 26 |      |      |          |              |           |

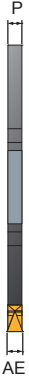
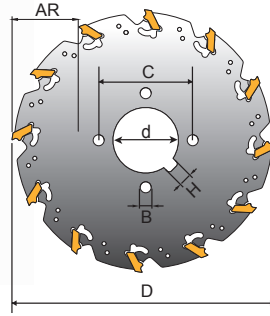
\* Wrench 150.10-30 for above cutter order separately.



# Saw Blades

- Inserts P. 247 - 253
- Cutting Data P. 257 - 259

**SB**

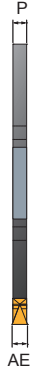
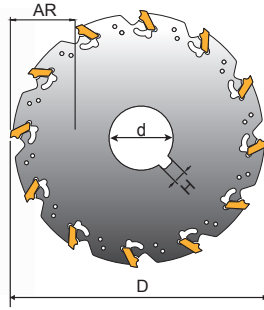


| Order Code    | Dimensions (mm) |     |       |     |      |       |     | Z    | H    | KG   | MAX. RPM | Inserts LNGT | Wrench    |    |    |      |      |      |      |           |
|---------------|-----------------|-----|-------|-----|------|-------|-----|------|------|------|----------|--------------|-----------|----|----|------|------|------|------|-----------|
|               | 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     |              |           |    |    |      |      |      |      |           |
| SB200M-4-32   |                 |     |       |     |      |       |     | 26   |      |      |          |              |           |    |    |      |      |      |      |           |
| SB200-4-40    |                 |     | 72    |     | 40   | 90    |     | 20   | 10   |      |          |              |           |    |    |      |      |      |      |           |
| SB200M-4-40   |                 |     |       |     |      |       |     | 26   |      |      |          |              |           |    |    |      |      |      |      |           |
| SB250-4-25.4  | 250             | 4.0 | 104.5 | 3.7 | 25.4 | -     | 11  | 26   | 6.35 | 1.69 | 2600     | 4040         | 150.10-30 |    |    |      |      |      |      |           |
| SB250M-4-25.4 |                 |     |       |     |      |       |     | 32   |      |      |          |              |           |    |    |      |      |      |      |           |
| SB250-4-32    |                 |     | 101.5 |     | 32   | 63    |     | 26   | 8    |      |          |              |           |    |    |      |      |      |      |           |
| SB250M-4-32   |                 |     |       |     |      |       |     | 32   |      |      |          |              |           |    |    |      |      |      |      |           |
| SB250-4-40    |                 |     | 97    |     | 40   | 90    | 26  | 10   |      |      |          |              |           |    |    |      |      |      |      |           |
| SB250M-4-40   |                 |     |       |     |      |       | 32  |      |      |      |          |              |           |    |    |      |      |      |      |           |
| SB300-4-25.4  |                 |     | 300   |     | 4.2  | 129.5 | 3.7 | 25.4 | -    |      |          |              |           | 11 | 30 | 6.35 | 2.18 | 2200 | 4042 | 150.10-30 |
| SB300M-4-25.4 |                 |     |       |     |      |       |     |      |      |      |          |              |           |    | 40 |      |      |      |      |           |
| SB300-4-32    | 126.5           | 32  |       | 63  |      | 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. 247 - 253
- Cutting Data P. 257 - 259



Slitting

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              | 5.2 | 18   | 4.5 | 16     | - | - | 6  | -    | 0.18 | 11000    | 5052         | 150.10-30 |
| SB063-5-15.875 |                 |     |      |     | 15.875 |   |   |    |      |      |          |              |           |
| SB080-5-22     | 80              | 5.5 | 22.5 | 4.5 | 22     | - | - | 8  | 6    | 0.18 | 8000     | 5055         | 150.10-30 |
| SB080-5-25.4   |                 |     | 19.5 |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB100-5-22     | 100             | 5.0 | 32.5 | 4.5 | 22     | - | - | 10 | 6    | 0.28 | 6300     | 5050         | 150.10-30 |
| SB100-5-25.4   |                 | 5.2 | 29.5 |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB100-5-27     |                 | 5.5 | 27   |     | 27     |   |   |    | 7    |      |          |              |           |
| SB125-5-22     | 125             | 5.5 | 45   | 4.5 | 22     | - | - | 12 | 6    | 0.45 | 5000     | 5055         | 150.10-30 |
| SB125-5-25.4   |                 |     | 42   |     | 25.4   |   |   |    | 6.35 |      |          |              |           |
| SB125-5-32     |                 |     | 39   |     | 32     |   |   |    | 8    |      |          |              |           |
| SB160-5-25.4   | 160             | 5.5 | 59.5 | 4.5 | 25.4   | - | - | 16 | 6.35 | 0.75 | 4000     | 5055         | 150.10-30 |
| 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

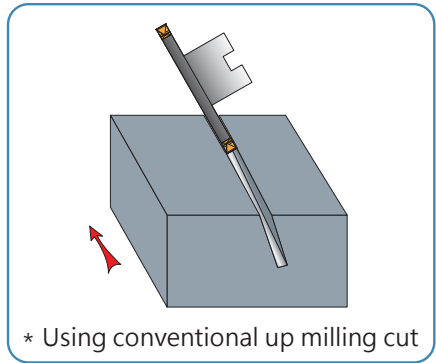
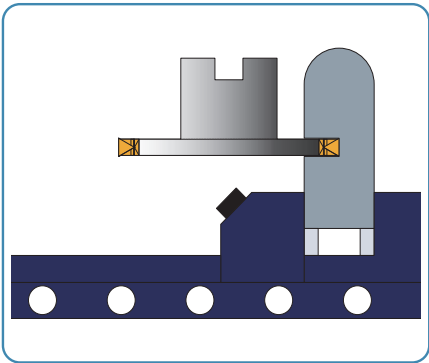
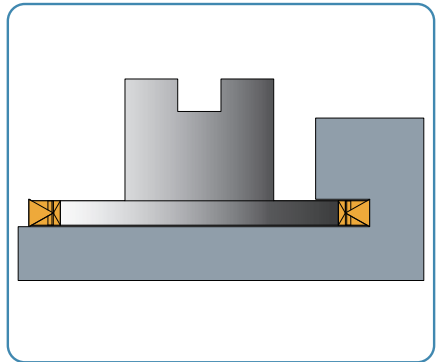
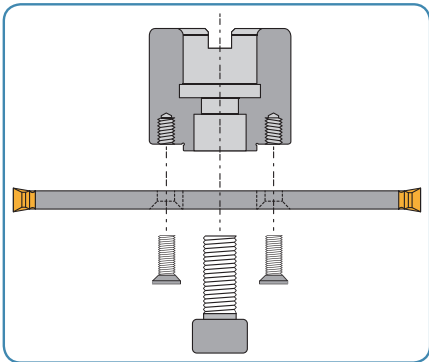
Durability  
**300%**  
UP

New System For T-Slot Milling

# ADAPTER HOLDER

Slotting

## Slitting / Slotting / Cut-off



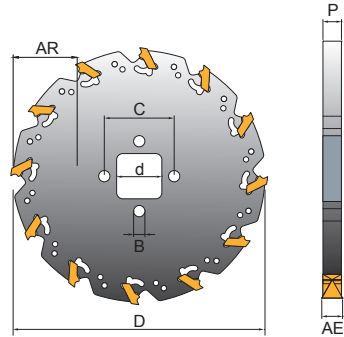
\* Using conventional up milling cut



# PRODUCT SPECIFICATIONS

## Saw Milling Cutters

- Adapter Holders P. 218
- Inserts P. 247 - 253
- Cutting Data P. 257 - 259



**SBL**

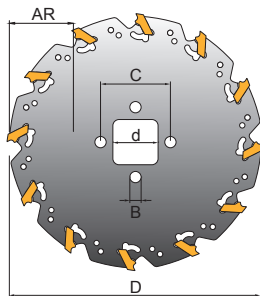
| Order Code    | Dimensions (mm) |      |      |     |      |      |      | Z  | H | KG   | MAX. RPM | Inserts LNGT | Wrench    |
|---------------|-----------------|------|------|-----|------|------|------|----|---|------|----------|--------------|-----------|
|               | D               | AE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

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

# Saw Milling Cutters

- Adapter Holders P. 218
- Inserts P. 247 - 253
- Cutting Data P. 257 - 259

## SBL



Slotting

| 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   |      | 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             |     | 2.2  |      | 33   | 12   | 0.22 | 5000 |   |      |          |                      |           |
| SBL160-2-32   | 160             |     | 2.5  |      | 50.5 | 16   | 0.39 | 4000 |   |      |          |                      |           |
| SBL080-2.5-22 | 80              | 2.5 | 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             |     | 2.7  |      | 33   | 12   | 0.26 | 5000 |   |      |          |                      |           |
| SBL160-2.5-32 | 160             |     | 3.0  |      | 50.5 | 16   | 0.45 | 4000 |   |      |          |                      |           |

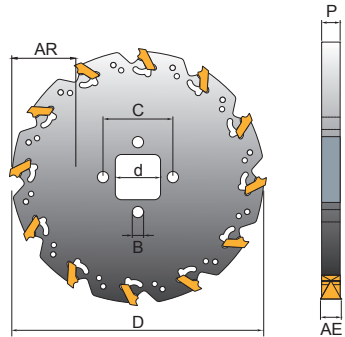
\* Wrench 150.10-30 for above cutter order seperately.



# Saw Milling Cutters

- Adapter Holders P. 218
- Inserts P. 247 - 253
- Cutting Data P. 257 - 259

## SBL

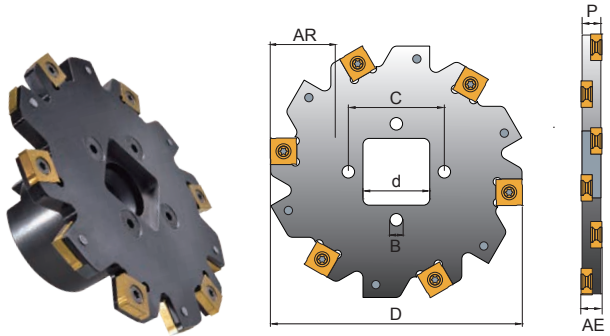


| Order Code  | Dimensions (mm) |     |      |     |    |    |   | Z  | H | KG   | MAX. RPM | Inserts LNGLT        | Wrench    |
|-------------|-----------------|-----|------|-----|----|----|---|----|---|------|----------|----------------------|-----------|
|             | D               | AE  | AR   | P   | d  | C  | B |    |   |      |          |                      |           |
| SBL080-3-22 | 80              | 3.0 | 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 | 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 | 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 separately.

# Side Milling Cutters

- Adapter Holders P. 218
- Inserts P. 254 - 256
- Cutting Data P. 260 - 261



## STL

Slotting

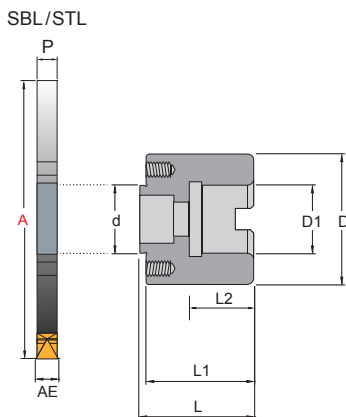
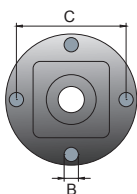
| Order Code  | Dimensions (mm) |    |      |     |    |    |   | Z  | Zc | KG   | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|-------------|-----------------|----|------|-----|----|----|---|----|----|------|----------|-------------------|-------|------|
|             | D               | AE | AR   | 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).



# Adapter Holders



**BL / BLL**

| Order Code  | Dimensions (mm) |       |    |    |   |            |      |    |            | KG   | Available P    |               |
|-------------|-----------------|-------|----|----|---|------------|------|----|------------|------|----------------|---------------|
|             | D               | D1    | d  | C  | B | L          | L1   | L2 | A          |      |                |               |
| BL45-22     | 45              | 22    | 22 | 34 | 5 | 43         | 41.8 | 27 | 80<br>100  | 0.47 | <br>1.2-2.25mm |               |
| BL45-25.4   |                 | 25.4  |    |    |   | 45         |      |    |            |      |                | 43.8          |
| BL58-31.75  | 58              | 31.75 | 32 | 46 | 6 | 55         | 53.8 | 28 | 125<br>160 | 0.95 |                |               |
| BL58-32     |                 | 32    |    |    |   | 125<br>160 |      |    |            |      |                |               |
| BLL45-22    | 45              | 22    | 22 | 34 | 5 | 43         | 40.5 | 27 | 80<br>100  | 0.47 |                | <br>2.7-4.5mm |
| BLL45-25.4  |                 | 25.4  |    |    |   | 45         |      |    |            |      |                |               |
| BLL58-31.75 | 58              | 31.75 | 32 | 46 | 6 | 55         | 52.5 | 28 | 125<br>160 | 0.95 |                |               |
| BLL58-32    |                 | 32    |    |    |   | 125<br>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

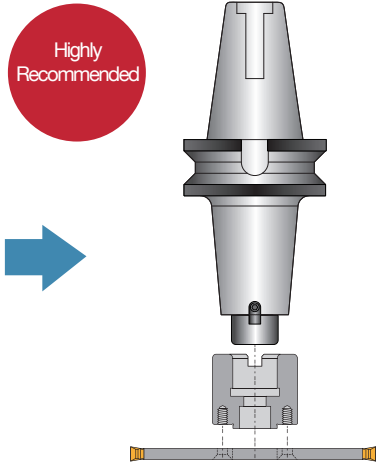
| Holder     | Screw      | Holder      | Screw      | Arbor Screw           |  |
|------------|------------|-------------|------------|-----------------------|--|
| BL45-22    | <br>C90512 | BLL45-22    | <br>C90512 | <br>M1035             |  |
| BL45-25.4  |            | BLL45-25.4  |            | M1235                 |  |
| BL58-31.75 | <br>C90612 | BLL58-31.75 | <br>C90612 | M1235/M1635/<br>W2403 |  |
| BL58-32    |            | BLL58-32    |            | M1635                 |  |

# SOLUTION-1

SBL/STL Series



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

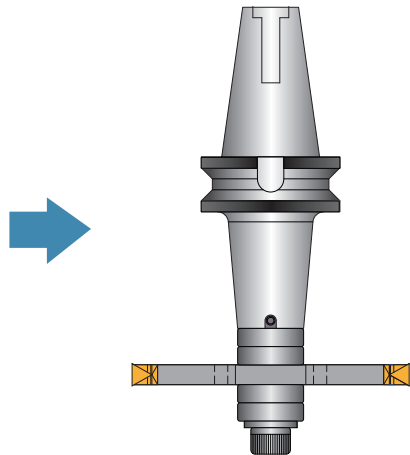


# SOLUTION-2

SB Series



**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

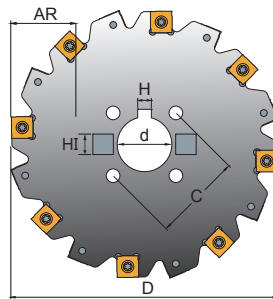
Efficiency  
**300~500%**  
UP

Durability  
**300%**  
UP

# PRODUCT SPECIFICATIONS

## Side Milling Cutters

- Adapter Holders P. 224
- Inserts P. 254 - 256
- Cutting Data P. 260 - 261



Slotting

SCL

| 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 | 12X12 | 16 | 8  | 8300 | 1203     | T945              | T15P  |     |
| SCL-160-8-32  |                 | 8  |      | 7  |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-160-10-32 |                 | 10 |      | 9  |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-160-12-32 |                 | 12 |      | 11 |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-200-6-40  | 200             | 6  | 54   | 5  | 10 | 70 | 40 | 12X12 | 18 | 9  | 4200 | 1203     | T945              |       |     |
| SCL-200-8-40  |                 | 8  |      | 7  |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-200-10-40 |                 | 10 |      | 9  |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-200-12-40 |                 | 12 |      | 11 |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-250-6-40  | 250             | 6  | 79   | 5  | 10 | 70 | 40 | 12X12 | 24 | 12 | 3800 | 1203     | T945              |       |     |
| SCL-250-8-40  |                 | 8  |      | 7  |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-250-10-40 |                 | 10 |      | 9  |    |    |    |       |    |    |      |          |                   |       |     |
| SCL-250-12-40 |                 | 12 |      | 11 |    |    |    |       |    |    |      |          |                   |       |     |

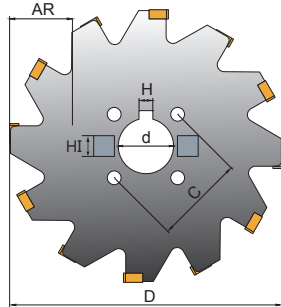
\* Use Zc (effective no. of teeth) to calculate the feed.

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



# Disc Milling Cutters

- Adapter Holders P. 224
- Inserts P. 257
- Cutting Data P. 262 - 263



**CEL**

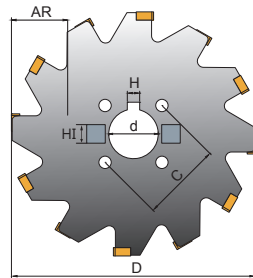
| Order Code    | Dimensions (mm) |    |      |      |    |    |    |      | Z    | Zc   | Ⓚ<br>KG | MAX.<br>RPM | Inserts<br>CNGX | Screw | Key |
|---------------|-----------------|----|------|------|----|----|----|------|------|------|---------|-------------|-----------------|-------|-----|
|               | D               | AE | AR   | P    | H  | C  | d  | HI   |      |      |         |             |                 |       |     |
| CEL-160-14-32 | 160             | 14 | 46.5 | 12.5 | 8  | 52 | 32 | 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 |         |             |                 |       |     |
| CEL-200-14-40 | 200             | 14 | 54   | 12.5 | 10 | 70 | 40 | 16   | 8    | 2.68 | 6100    | 1005        | C04011          | T15P  |     |
| 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 |    |    |    | 4.20 |      |      |         |             |                 |       |     |
| CEL-200-25-40 |                 | 25 |      | 23.5 |    |    |    | 4.77 | 1605 |      |         |             |                 |       |     |
| CEL-200-30-40 |                 | 30 |      | 28.5 |    |    |    | 5.72 |      |      |         |             |                 |       |     |

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

# Disc Milling Cutters

- Adapter Holders P. 224
- Inserts P. 257
- Cutting Data P. 262 - 263

## CEL



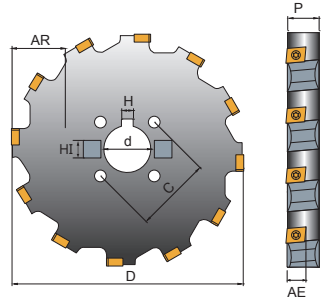
| Order Code    | Dimensions (mm) |    |    |      |    |    |    |       | Z  | Zc | KG   | MAX. RPM | Inserts CNGX | Screw | Key |
|---------------|-----------------|----|----|------|----|----|----|-------|----|----|------|----------|--------------|-------|-----|
|               | D               | AE | AR | P    | H  | C  | d  | HI    |    |    |      |          |              |       |     |
| CEL-250-14-40 | 250             | 14 | 79 | 12.5 | 10 | 70 | 40 | 12X12 | 20 | 10 | 5500 | 1305     | C04011       | T15P  |     |
| CEL-250-16-40 |                 | 16 |    | 14.5 |    |    |    |       |    |    |      |          |              |       |     |
| CEL-250-18-40 |                 | 18 |    | 16.5 |    |    |    |       |    |    |      |          |              |       |     |
| CEL-250-20-40 |                 | 20 |    | 18.5 |    |    |    |       |    |    |      |          |              |       |     |
| CEL-250-22-40 |                 | 22 |    | 20.5 |    |    |    |       | 16 | 8  |      |          |              |       |     |
| CEL-250-25-40 |                 | 25 |    | 23.5 |    |    |    |       |    |    |      | 1605     |              |       |     |
| CEL-250-30-40 |                 | 30 |    | 28.5 |    |    |    |       |    |    |      |          |              |       |     |

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



# Back Milling Cutters

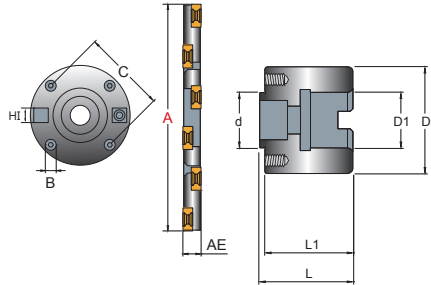
- Adapter Holders P. 224
- Inserts P. 257
- Cutting Data P. 262 - 263



## CWL

| Order Code | Dimensions(mm) |    |      |      |    |    |    |       | Z  | KG   | 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     |              |        |      |

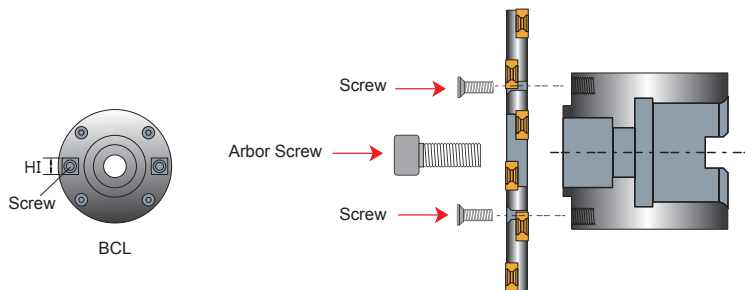
# Adapter Holders



## BCL

| Order Code  | Dimensions (mm) |       |    |    |   |      |      |            |       | KG   |
|-------------|-----------------|-------|----|----|---|------|------|------------|-------|------|
|             | 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  |    |    |   |      |      |            |       |      |
| 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    |    |    |   |      |      |            |       | 1.80 |
| BCL90-50.8  |                 | 50.8  |    |    |   | 1.85 |      |            |       |      |
| BCL90-60    |                 | 60    |    |    |   | 1.90 |      |            |       |      |
|             |                 |       |    |    |   |      |      |            |       |      |

# Standard Spare Parts



Slotting

| 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      | C90830 |             |                        |
| SCL-160-12-32 | CEL-160-20-32 |                    |                        |                    |        |             |                        |
| SCL-200-6-40  | CEL-160-22-32 |                    |                        |                    |        |             |                        |
| SCL-200-8-40  | CEL-160-25-32 | C90835             |                        |                    |        |             |                        |
| SCL-200-10-40 | C90820        | M1650<br><br>M2050 |                        |                    |        |             |                        |
| SCL-200-12-40 | C90815        |                    |                        |                    |        |             |                        |
| SCL-250-6-40  | C90815        |                    |                        |                    |        |             |                        |
| SCL-250-8-40  | C90820        |                    |                        |                    |        |             |                        |
| SCL-250-10-40 | C90825        |                    |                        |                    |        |             |                        |
| SCL-250-12-40 |               |                    |                        |                    |        |             |                        |
| CWL-160-32    | C90825        |                    |                        | M1650<br><br>M2050 |        |             |                        |
| CWL-200-40    |               |                    |                        |                    |        |             |                        |
| CWL-250-40    |               |                    |                        |                    |        |             |                        |
| CEL-200-14-40 | C90825        |                    | M1650<br><br>M2050     |                    |        |             |                        |
| CEL-200-16-40 | C90830        |                    |                        |                    |        |             |                        |
| CEL-200-18-40 |               |                    |                        |                    |        |             |                        |
| CEL-200-20-40 |               |                    |                        |                    |        |             |                        |
| CEL-200-22-40 |               |                    |                        |                    |        |             |                        |
| CEL-200-25-40 |               |                    |                        |                    |        |             |                        |
| CEL-250-14-40 | C90835        |                    |                        |                    |        |             |                        |



# SIDE MILLING CUTTER



Video

## Features

Available in materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
Milling machine

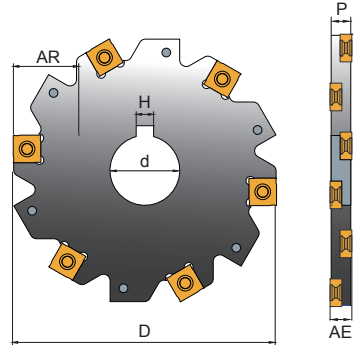
Efficiency  
**300~500%**  
UP

Durability  
**300%**  
UP

# PRODUCT SPECIFICATIONS

## Side Milling Cutters

- Inserts P. 254 - 256
- Cutting Data P. 260 - 261



Slotting

SC

| Order Code    | Dimensions (mm) |    |      |       |       |      | Z    | Zc   | KG    | 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              | T15P  |      |
| SC-80-12-22   |                 | 12 | 11   | 1207  | T9411 |      |      |      |       |          |                   |       |      |
| SC-80-4-25.4  |                 | 4  | 19.5 | 3.4   | 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 | T15P |       |          |                   |       |      |
| SC-80-12-25.4 | 12              | 11 | 1207 | T9411 |       |      |      |      |       |          |                   |       |      |

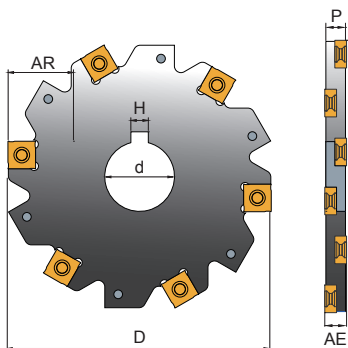
\* Use Zc (effective no. of teeth) to calculate the feed.

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



# Side Milling Cutters

- Inserts P. 254 - 256
- Cutting Data P. 260 - 261



**SC**

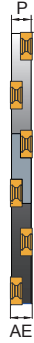
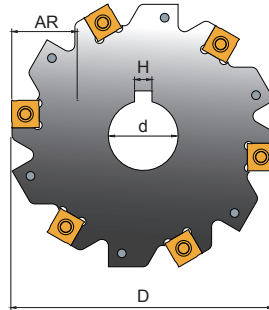
| Order Code     | Dimensions (mm) |     |      |      |      |      | Z  | Zc | KG    | MAX. RPM | Inserts SNGX SNGW | Screw | Key |    |   |       |      |       |      |
|----------------|-----------------|-----|------|------|------|------|----|----|-------|----------|-------------------|-------|-----|----|---|-------|------|-------|------|
|                | 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  |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-6-25.4  |                 | 6   |      | 5    |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-7-25.4  |                 | 7   |      | 6    |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-8-25.4  |                 | 8   |      | 7    |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-10-25.4 |                 | 10  |      | 9    |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-12-25.4 |                 | 12  | 11   |      |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-4-27    |                 | 100 | 4    | 29.5 | 3.4  | 7    |    |    |       |          |                   |       | 27  | 10 | 5 | 12000 | 1102 | T9354 | T09P |
| SC-100-5-27    |                 |     | 5    |      | 4.2  |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-6-27    |                 |     | 6    |      | 5    |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-7-27    |                 |     | 7    |      | 6    |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-8-27    |                 |     | 8    |      | 7    |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-10-27   | 10              |     | 9    |      |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |
| SC-100-12-27   | 12              |     | 11   |      |      |      |    |    |       |          |                   |       |     |    |   |       |      |       |      |

\* 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. 254 - 256
- Cutting Data P. 260 - 261



Slotting

SC

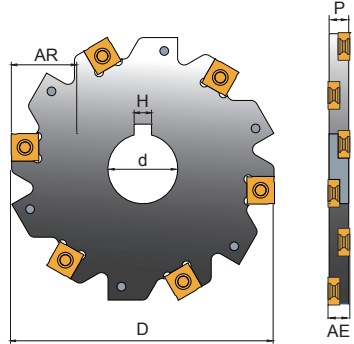
| Order Code   | Dimensions (mm) |    |      |      |       |    | Z  | Zc | KG    | MAX. RPM | Inserts SNGX SNGW | Screw | Key |    |   |       |       |       |
|--------------|-----------------|----|------|------|-------|----|----|----|-------|----------|-------------------|-------|-----|----|---|-------|-------|-------|
|              | 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  | 12 | 6 | 10900 | 1102  | T9354 |
| 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. 254 - 256
- Cutting Data P. 260 - 261



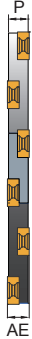
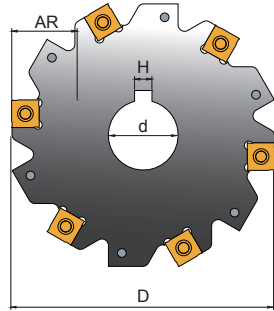
SC

| Order Code      | Dimensions (mm) |    |    |       |      |       | Z     | Zc | KG    | MAX. RPM | Inserts SNGX 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  | 10900 | 1102     | T9354             | T09P  |     |
| SC-125-5-25.4   |                 | 5  |    | 4.2   |      |       |       |    |       | T08P     |                   |       |     |
| SC-125-6-25.4   |                 | 6  |    | 5     |      |       |       |    |       | T945     |                   |       |     |
| SC-125-7-25.4   |                 | 7  |    | 6     |      |       |       |    |       | T946     |                   |       |     |
| SC-125-8-25.4   |                 | 8  |    | 7     |      |       |       |    |       | T947     | T15P              |       |     |
| SC-125-10-25.4  |                 | 10 |    | 9     |      |       |       |    |       | T948     |                   |       |     |
| SC-125-12-25.4  |                 | 12 | 11 | T9411 |      |       |       |    |       |          |                   |       |     |
| SC-125-4-31.75  |                 | 39 | 4  | 3.4   | 8    | 31.75 |       |    |       | 1102     | T9354             | T09P  |     |
| SC-125-5-31.75  |                 |    | 5  | 4.2   |      |       |       |    |       | 1103     | T9355             | T08P  |     |
| SC-125-6-31.75  |                 |    | 6  | 5     |      |       |       |    |       | 1203     | T945              | T15P  |     |
| SC-125-7-31.75  |                 |    | 7  | 6     |      |       |       |    |       | 1204     | T946              |       |     |
| SC-125-8-31.75  |                 |    | 8  | 7     |      |       |       |    |       | 12045    | T947              |       |     |
| SC-125-10-31.75 | 10              |    | 9  | 1205  |      |       | T948  |    |       |          |                   |       |     |
| SC-125-12-31.75 | 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. 254 - 256
- Cutting Data P. 260 - 261



Slotting

SC

| 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  | 8300 | 1102     | T9354             | T09P  |     |
| SC-160-5-32  |                 | 5  |       | 4.2   |    |    |    |    |      | T08P     |                   |       |     |
| SC-160-6-32  |                 | 6  |       | 5     |    |    |    |    |      | T945     |                   |       |     |
| SC-160-7-32  |                 | 7  |       | 6     |    |    |    |    |      | T946     |                   |       |     |
| SC-160-8-32  |                 | 8  |       | 7     |    |    |    |    |      | T947     |                   |       |     |
| SC-160-10-32 |                 | 10 |       | 9     |    |    |    |    |      | T948     |                   |       |     |
| SC-160-12-32 |                 | 12 | 11    | T9411 |    |    |    |    |      |          |                   |       |     |
| SC-160-4-40  |                 | 4  | 52    | 3.4   | 10 | 40 |    |    |      | 1102     | T9354             | T09P  |     |
| SC-160-5-40  |                 | 5  |       | 4.2   |    |    |    |    |      | T08P     |                   |       |     |
| SC-160-6-40  |                 | 6  |       | 5     |    |    |    |    |      | T945     |                   |       |     |
| SC-160-7-40  |                 | 7  |       | 6     |    |    |    |    |      | T946     |                   |       |     |
| SC-160-8-40  |                 | 8  |       | 7     |    |    |    |    |      | T947     |                   |       |     |
| SC-160-10-40 | 10              | 9  |       | T948  |    |    |    |    |      |          |                   |       |     |
| SC-160-12-40 | 12              | 11 | T9411 |       |    |    |    |    |      |          |                   |       |     |

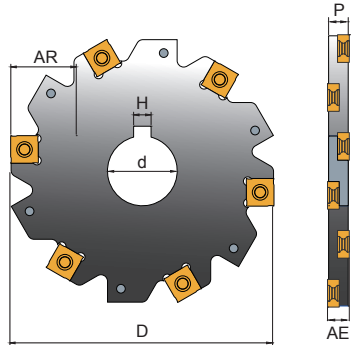
\* Use Zc (effective no. of teeth) to calculate the feed.

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



# Side Milling Cutters

- Inserts P. 254 - 256
- Cutting Data P. 260 - 261



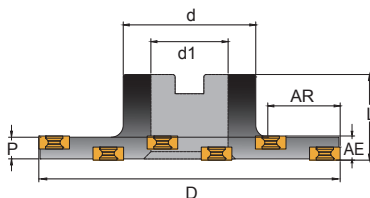
## SC

| Order Code      | Dimensions (mm) |    |      |       |      |       | Z    | Zc | KG   | 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 | 1102     | T9354             | T09P  |     |
| SC-160-5-25.4   |                 | 5  |      | 4.2   |      |       |      |    |      | T08P     |                   |       |     |
| SC-160-6-25.4   |                 | 6  |      | 5     |      |       |      |    |      | T945     |                   |       |     |
| SC-160-7-25.4   |                 | 7  |      | 6     |      |       |      |    |      | T946     |                   |       |     |
| SC-160-8-25.4   |                 | 8  |      | 7     |      |       |      |    |      | T947     | T15P              |       |     |
| SC-160-10-25.4  |                 | 10 | 9    | T948  |      |       |      |    |      |          |                   |       |     |
| SC-160-12-25.4  |                 | 12 | 11   | T9411 |      |       |      |    |      |          |                   |       |     |
| SC-160-4-31.75  |                 | 4  | 56.5 | 3.4   | 8    | 31.75 |      |    |      | 1102     | T9354             | T09P  |     |
| SC-160-5-31.75  |                 | 5  |      | 4.2   |      |       |      |    |      | T08P     |                   |       |     |
| SC-160-6-31.75  |                 | 6  |      | 5     |      |       |      |    |      | T945     |                   |       |     |
| SC-160-7-31.75  | 7               | 6  |      | T946  |      |       |      |    |      |          |                   |       |     |
| SC-160-8-31.75  | 8               | 7  |      | T947  |      |       | T15P |    |      |          |                   |       |     |
| SC-160-10-31.75 | 10              | 9  |      | T948  |      |       |      |    |      |          |                   |       |     |
| SC-160-12-31.75 | 12              | 11 |      | 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. 254 - 256
- Cutting Data P. 260 - 261



Slotting

ST

| Order Code   | Dimensions (mm) |    |      |    |    |    |      | Z     | Zc    | ⚖️   | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |       |      |       |      |      |       |      |       |       |      |      |      |
|--------------|-----------------|----|------|----|----|----|------|-------|-------|------|----------|-------------------|-------|------|-------|------|-------|------|------|-------|------|-------|-------|------|------|------|
|              | D               | AE | AR   | P  | d  | d1 | L    |       |       |      |          |                   |       |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-80-6-22   | 80              | 6  | 17   | 5  | 40 | 22 | 8    | 4     | 13700 | 1203 | T945     | T15P              |       |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-80-7-22   |                 | 7  |      | 6  |    |    |      |       |       |      |          |                   | 1204  | T946 |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-80-8-22   |                 | 8  |      | 7  |    |    |      |       |       |      |          |                   |       |      | 12045 | T947 |       |      |      |       |      |       |       |      |      |      |
| ST-80-10-22  |                 | 10 |      | 9  |    |    |      |       |       |      |          |                   |       |      |       |      | 1205  | T948 |      |       |      |       |       |      |      |      |
| ST-80-12-22  |                 | 12 |      | 11 |    |    |      |       |       |      |          |                   |       |      |       |      |       |      | 1207 | T9411 |      |       |       |      |      |      |
| ST-100-6-27  | 100             | 6  | 27   | 5  | 35 | 10 | 5    | 12000 | 1203  | T945 |          |                   |       |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-100-7-27  |                 | 7  |      | 6  |    |    |      |       |       |      | 1204     |                   |       |      |       |      |       |      |      |       | T946 |       |       |      |      |      |
| ST-100-8-27  |                 | 8  |      | 7  |    |    |      |       |       |      |          |                   |       |      |       |      |       |      |      |       |      | 12045 | T947  |      |      |      |
| ST-100-10-27 |                 | 10 |      | 9  |    |    |      |       |       |      |          |                   |       |      |       |      |       |      |      |       |      |       |       | 1205 | T948 |      |
| ST-100-12-27 |                 | 12 |      | 11 |    |    |      |       |       |      |          |                   |       |      |       |      |       |      |      |       |      |       |       |      |      | 1207 |
| ST-125-6-32  | 125             | 6  | 31   | 5  | 55 | 32 | 12   | 6     | 10900 | 1203 | T945     |                   |       |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-125-7-32  |                 | 7  |      | 6  |    |    |      |       |       |      |          |                   |       |      |       |      |       |      |      |       | 1204 | T946  |       |      |      |      |
| ST-125-8-32  |                 | 8  |      | 7  |    |    |      |       |       |      |          |                   |       |      |       |      |       |      |      |       |      |       | 12045 | T947 |      |      |
| ST-125-10-32 |                 | 10 |      | 9  |    |    |      |       |       |      |          |                   |       |      |       |      |       |      |      |       |      |       |       |      | 1205 | T948 |
| ST-125-12-32 |                 | 12 |      | 11 |    |    |      |       |       |      |          |                   |       |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-160-6-32  | 160             | 6  | 48.5 | 5  | 16 | 8  | 8300 | 1203  | T945  |      |          |                   |       |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-160-7-32  |                 | 7  |      | 6  |    |    |      |       |       | 1204 | T946     |                   |       |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-160-8-32  |                 | 8  |      | 7  |    |    |      |       |       |      |          | 12045             | T947  |      |       |      |       |      |      |       |      |       |       |      |      |      |
| ST-160-10-32 |                 | 10 |      | 9  |    |    |      |       |       |      |          |                   |       | 1205 | T948  |      |       |      |      |       |      |       |       |      |      |      |
| ST-160-12-32 |                 | 12 |      | 11 |    |    |      |       |       |      |          |                   |       |      |       | 1207 | T9411 |      |      |       |      |       |       |      |      |      |

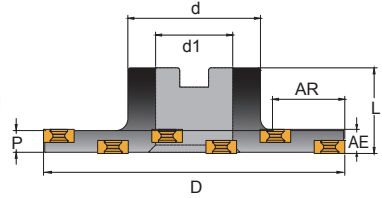
\* Use Zc (effective no. of teeth) to calculate the feed.

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



# Side Milling Cutters

- Inserts P. 254 - 256
- Cutting Data P. 260 - 261



ST

| Order Code      | Dimensions (mm) |    |      |    |    |       |    | Z  | Zc | KG   | MAX. RPM | Inserts SNGX SNGW | Screw | Key  |
|-----------------|-----------------|----|------|----|----|-------|----|----|----|------|----------|-------------------|-------|------|
|                 | D               | AE | AR   | P  | d  | d1    | L  |    |    |      |          |                   |       |      |
| ST-80-6-25.4    | 80              | 6  | 17   | 5  | 40 | 25.4  | 35 | 8  | 4  | 0.47 | 13700    | 1203              | T945  | T15P |
| ST-80-7-25.4    |                 | 7  |      | 6  |    |       |    |    |    |      |          | 1204              | T946  |      |
| ST-80-8-25.4    |                 | 8  |      | 7  |    |       |    |    |    |      |          | 12045             | T947  |      |
| ST-80-10-25.4   |                 | 10 |      | 9  |    |       |    |    |    |      |          | 1205              | T948  |      |
| ST-80-12-25.4   |                 | 12 |      | 11 |    |       |    |    |    |      |          | 1207              | T9411 |      |
| ST-100-6-25.4   | 100             | 6  | 27   | 5  | 40 | 25.4  | 35 | 10 | 5  | 0.56 | 12000    | 1203              | T945  | T15P |
| ST-100-7-25.4   |                 | 7  |      | 6  |    |       |    |    |    |      |          | 1204              | T946  |      |
| ST-100-8-25.4   |                 | 8  |      | 7  |    |       |    |    |    |      |          | 12045             | T947  |      |
| ST-100-10-25.4  |                 | 10 |      | 9  |    |       |    |    |    |      |          | 1205              | T948  |      |
| ST-100-12-25.4  |                 | 12 |      | 11 |    |       |    |    |    |      |          | 1207              | T9411 |      |
| ST-125-6-31.75  | 125             | 6  | 31   | 5  | 55 | 31.75 | 35 | 12 | 6  | 0.96 | 10900    | 1203              | T945  | T15P |
| ST-125-7-31.75  |                 | 7  |      | 6  |    |       |    |    |    |      |          | 1204              | T946  |      |
| ST-125-8-31.75  |                 | 8  |      | 7  |    |       |    |    |    |      |          | 12045             | T947  |      |
| ST-125-10-31.75 |                 | 10 |      | 9  |    |       |    |    |    |      |          | 1205              | T948  |      |
| ST-125-12-31.75 |                 | 12 |      | 11 |    |       |    |    |    |      |          | 1207              | T9411 |      |
| ST-160-6-31.75  | 160             | 6  | 48.5 | 5  | 55 | 31.75 | 35 | 16 | 8  | 1.42 | 8300     | 1203              | T945  | T15P |
| ST-160-7-31.75  |                 | 7  |      | 6  |    |       |    |    |    |      |          | 1204              | T946  |      |
| ST-160-8-31.75  |                 | 8  |      | 7  |    |       |    |    |    |      |          | 12045             | T947  |      |
| ST-160-10-31.75 |                 | 10 |      | 9  |    |       |    |    |    |      |          | 1205              | T948  |      |
| ST-160-12-31.75 |                 | 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).

# DISC MILLING CUTTER



## Features

Available in materials



Cost  
**200~300%**  
SAVING

Applicable  
Machines  
Milling machine

Efficiency  
**300~500%**  
UP

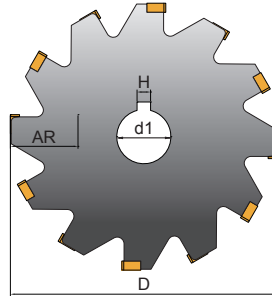
Durability  
**300%**  
UP



# PRODUCT SPECIFICATIONS

## Disc Milling Cutters

- Inserts P. 257
- Cutting Data P. 262 - 263



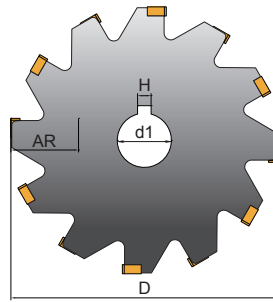
CE

| Order Code  | Dimensions (mm) |    |      |      |   |    | Z  | Zc | KG   | 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 |          |              |        |      |
| 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 |          |              |        |      |
| 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. 257
- Cutting Data P. 262 - 263



Slotting

CE

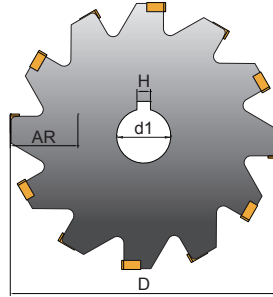
| Order Code    | Dimensions (mm) |      |      |      |      |      | Z  | Zc | KG   | MAX. RPM | Inserts CNGX | Screw  | Key  |
|---------------|-----------------|------|------|------|------|------|----|----|------|----------|--------------|--------|------|
|               | D               | AE   | AR   | P    | H    | d1   |    |    |      |          |              |        |      |
| CE100-20-27   | 100             | 20   | 29.5 | 18.5 | 7    | 27   | 10 | 5  | 0.91 | 12000    | 1305         |        |      |
| CE100-22-27   |                 | 22   |      | 20.5 |      |      |    |    | 1.01 |          |              |        |      |
| CE100-25-27   |                 | 25   |      | 23.5 |      |      |    |    | 1.16 |          | 1605         |        |      |
| CE100-30-27   |                 | 30   |      | 28.5 |      |      |    |    | 1.40 |          |              |        |      |
| CE125-14-32   | 125             | 14   | 39   | 12.5 | 8    | 32   | 12 | 6  | 1.02 | 10900    | 1005         | C04011 | T15P |
| CE125-16-32   |                 | 16   |      | 14.5 |      |      |    |    | 1.17 |          |              |        |      |
| CE125-18-32   |                 | 18   |      | 16.5 |      |      |    |    | 1.36 |          |              |        |      |
| CE125-20-32   |                 | 20   | 18.5 | 1.52 |      |      |    |    | 1305 |          |              |        |      |
| CE125-22-32   |                 | 22   | 20.5 | 1.57 |      |      |    |    |      |          |              |        |      |
| CE125-25-32   |                 | 25   | 23.5 | 1.85 |      |      |    |    | 1605 |          |              |        |      |
| 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 |          |              |        |      |
| CE080-18-25.4 |                 | 18   |      | 16.5 |      |      |    |    | 0.54 | 1305     |              |        |      |
| 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. 257
- Cutting Data P. 262 - 263



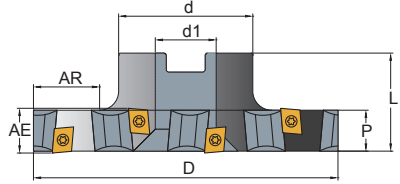
**CE**

| Order Code    | Dimensions (mm) |      |      |      |      |      | Z  | Zc | KG   | MAX. RPM | Inserts 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    | 1305         |        |      |      |
| CE100-16-25.4 |                 | 16   |      | 14.5 |      |      |    |    |      |          |              |        |      | 0.76 |
| CE100-18-25.4 |                 | 18   |      | 16.5 |      |      |    |    |      |          |              |        |      | 0.84 |
| CE100-20-25.4 |                 | 20   |      | 18.5 |      |      |    |    |      |          |              |        |      | 0.91 |
| 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 | 6  | 1.02 | 10900    | 1305         |        |      |      |
| CE125-16-25.4 |                 | 16   |      | 14.5 |      |      |    |    | 1.17 |          |              |        |      |      |
| CE125-18-25.4 |                 | 18   |      | 16.5 |      |      |    |    | 1.36 |          |              |        |      |      |
| CE125-20-25.4 |                 | 20   |      | 18.5 | 1.52 |      |    |    |      |          |              |        |      |      |
| 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 |      |    |    |      |          |              |        |      |      |
|               |                 |      |      |      |      |      |    |    |      |          |              |        |      | 1605 |

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

# Disc Milling Cutters

- Inserts P. 257
- Cutting Data P. 262 - 263



Slotting

CW

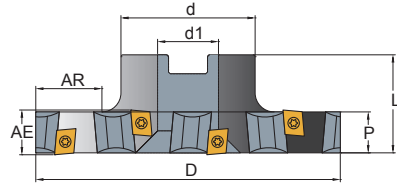
| Order Code  | Dimensions (mm) |    |      |      |    |    |    | Z  | Zc | KG   | MAX. RPM | Inserts CNGX | Screw  | Key  |    |   |      |       |      |
|-------------|-----------------|----|------|------|----|----|----|----|----|------|----------|--------------|--------|------|----|---|------|-------|------|
|             | 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 |    |    |    |    |    | 40   | 22       | 35           |        |      | 8  | 4 | 0.78 | 13700 | 1305 |
| 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 |    |    |    |    |    | 45   | 27       | 35           |        |      | 10 | 5 | 1.09 | 10900 | 1305 |
| 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. 257
- Cutting Data P. 262 - 263



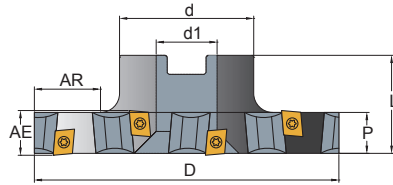
CW

| Order Code    | Dimensions (mm) |     |      |      |    |      |      | Z  | Zc | KG   | 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 |    |      |      |    |    |      |          |              |        |      |
| CW125-22-32   |                 | 22  |      | 20.5 |    |      |      |    |    |      |          |              |        |      |
| CW125-25-32   |                 | 25  |      | 23.5 |    |      |      |    |    |      |          |              |        |      |
| CW125-30-32   |                 | 30  |      | 28.5 |    |      | 40   |    |    |      |          |              |        |      |
| 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 |    |      |      |    |    |      |          |              |        |      |
| CW080-18-25.4 |                 | 18  |      | 16.5 |    |      |      |    |    |      |          |              |        |      |
| CW080-20-25.4 |                 | 20  |      | 18.5 |    |      |      |    |    |      |          |              |        |      |
| CW080-22-25.4 |                 | 22  |      | 20.5 |    |      |      |    |    |      |          |              |        |      |
| CW080-25-25.4 |                 | 25  |      | 23.5 |    |      |      |    |    |      |          |              |        |      |
| CW080-30-25.4 |                 | 30  |      | 28.5 |    |      | 40   |    |    |      |          |              |        |      |
| CW100-14-25.4 |                 | 100 |      | 14   |    |      | 24.5 |    |    | 12.5 |          | 45           |        |      |
| CW100-16-25.4 | 16              |     | 14.5 |      |    |      |      |    |    |      |          |              |        |      |
| CW100-18-25.4 | 18              |     | 16.5 |      |    |      |      |    |    |      |          |              |        |      |
| CW100-20-25.4 | 20              |     | 18.5 |      |    |      |      |    |    |      |          |              |        |      |
|               |                 |     |      |      |    |      |      |    |    |      |          |              |        | 1305 |

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

# Disc Milling Cutters

- Inserts P. 257
- Cutting Data P. 262 - 263



CW

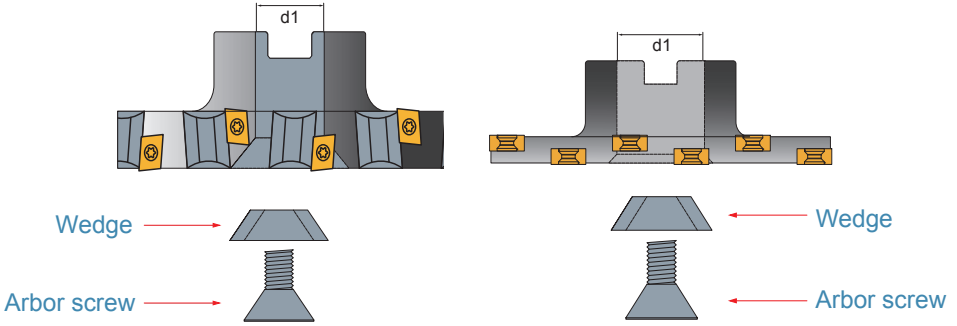
Slotting

| Order Code     | Dimensions (mm) |    |      |      |    |       |    | Z  | Zc | KG   | MAX. RPM | Inserts 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 |    |       |    |    |    | 1.32 |          | 1605         |        |      |
| 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 |          | 1305         |        |      |
| CW125-18-31.75 |                 | 18 |      | 16.5 |    |       |    |    |    | 1.68 |          | 1305         |        |      |
| CW125-20-31.75 |                 | 20 |      | 18.5 |    |       |    |    |    | 1.92 |          | 1605         |        |      |
| CW125-22-31.75 |                 | 22 |      | 20.5 |    |       |    |    |    | 1.94 |          | 1605         |        |      |
| CW125-25-31.75 |                 | 25 |      | 23.5 |    |       |    |    |    | 1.96 |          | 1605         |        |      |
| CW125-30-31.75 |                 | 30 |      | 28.5 |    |       |    |    |    | 2.29 |          | 1605         |        |      |

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



# Mounting Dimensions



| Dimension (mm)      |             |               |
|---------------------|-------------|---------------|
| Cutter dimension d1 | Arbor screw | Tapered Wedge |
| ST Ø 22             | C901035     | WE30          |
| ST Ø 27             | C901235     |               |
| ST Ø 32             | C901635     | WE45          |
| ST Ø 25.4           | C901235     | WE30          |
| ST Ø 31.75          | C901635     | WE45          |
| CW Ø 22             | C901035     | WE30          |
| CW Ø 27             | C901235     |               |
| CW Ø 32             | C901635     | WE45          |
| CW Ø 40             | C901640     | WE63          |
| CW Ø 25.4           | C901235     | WE30          |
| CW Ø 31.75          | C901635     | WE45          |
| CW Ø 38.1           | C901640     | WE63          |
| CW Ø 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

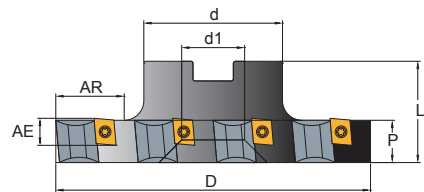
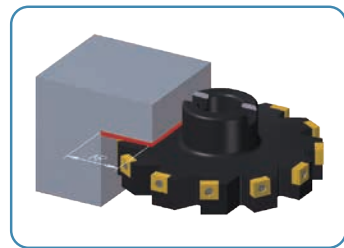
Durability  
**300%**  
UP




# PRODUCT SPECIFICATIONS

## Back milling Cutters

- Inserts P. 257
- Cutting Data P. 262 - 263

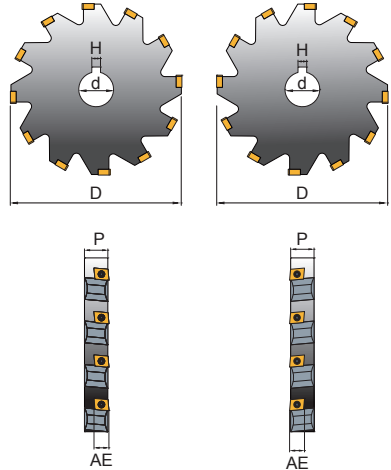
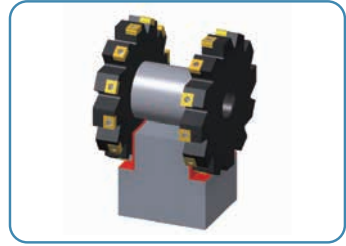


**CB**

| 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   |    |  |          |             |        |      |

# Straddle milling cutters

- Inserts P. 257
- Cutting Data P. 262 - 263

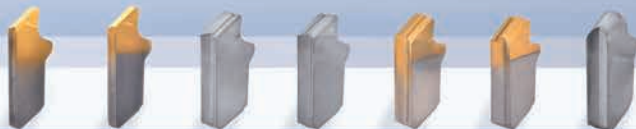


## CDL / CDR

| Order Code | Dimensions (mm) |    |      |    |    |      | Z    | KG   | 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             |    |      |    | 12 | 16.5 |      |      |          |             |        |      | 32 | 8  | L    | 12 | 1.42 | 10900 | 1305 | C04011 | T15P |      |      |        |      |
| CDR-125-32 |                 |    |      |    |    |      |      |      |          |             |        |      |    |    | R    |    |      |       |      |        |      |      |      |        |      |
| CDL-160-40 | 160             |    |      | 12 |    |      | 16.5 | 40   | 10       |             |        |      | L  | 16 | 2.52 |    |      |       |      |        |      | 6900 | 1305 | C04011 | T15P |
| CDR-160-40 |                 |    |      |    |    |      |      |      |          |             |        |      | R  |    |      |    |      |       |      |        |      |      |      |        |      |



# SLITTING/ SLOTTING/ CUT-OFF SERIES Inserts

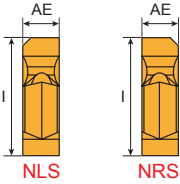


NRS / NLS

NR / NL

R

# LNGT Inserts


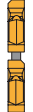


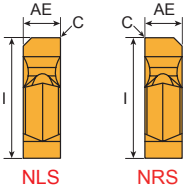
Tolerances (mm)  
AE=±0.02



Inserts 10 PCS / Box

| Dimensions (mm)      |     |   |
|----------------------|-----|---|
| Cutter thickness (P) | AE  | I |
| 1.2                  | 1.4 | 9 |
| 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     | LNLT 1414NLS-EE |         |      |      |     |     |        |      |          |   |  <p>Inserts Sequencing Position</p> <p>(Interleaving one after another different one.)</p> |
|         | LNLT 1415NLS-EE |         |      |      |     |     |        |      |          |   |   |
|         | LNLT 1616NLS-EE |         |      |      |     |     |        |      |          |   |   |
| NRS     | LNLT 1414NRS-EE |         |      |      |     |     |        |      |          |   |   |
|         | LNLT 1415NRS-EE |         |      |      |     |     |        |      |          |   |   |
|         | LNLT 1616NRS-EE |         |      |      |     |     |        |      |          |   |   |



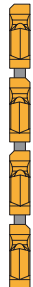


Tolerances (mm)  
AE=±0.02



Inserts 10 PCS / Box

| Dimensions (mm)      |     |   |      |
|----------------------|-----|---|------|
| Cutter thickness (P) | AE  | I | C    |
| 1.2                  | 1.4 | 9 | 0.03 |
| 1.2                  | 1.5 |   |      |
| 1.4                  | 1.6 |   |      |

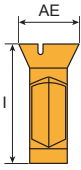
| Inserts | Order Code      | Grades  |      |      |     |     |        |      |          |   |   |
|---------|-----------------|---------|------|------|-----|-----|--------|------|----------|--|---|
|         |                 | Carbide |      |      |     |     | Cermet |      | Uncoated |  |   |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

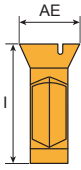


Insert

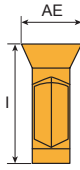
# LNGT Inserts



NLS



NRS


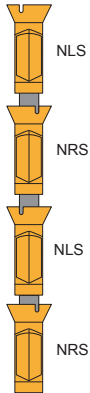
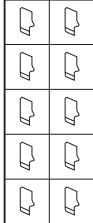


NS

Tolerances (mm)  
AE=±0.02

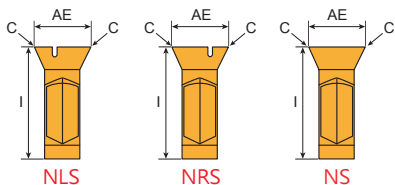
← Only applicable  
in cutter width  
6,8mm

| Dimensions (mm)      |               |   |
|----------------------|---------------|---|
| Cutter thickness (P) | AE            | I |
| 1.6                  | 1.8           | 9 |
| 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 |         |      |      |     |     |        |      |          |   |    |  |  | Inserts Sequencing<br>Position<br>                         |
|                 | 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 |         |      |      |     |     |        |      |          |   |    |  |  | (Interleaving one after<br>another different one.)<br><br> |
|                 | 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  |         |      |      |     |     |        |      |          |   |    |  |  |   |

- 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


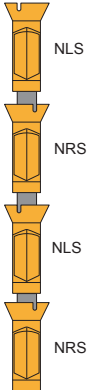
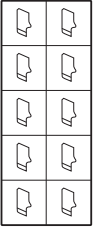
# LNGT Inserts



Tolerances (mm)  
AE : ±0.02

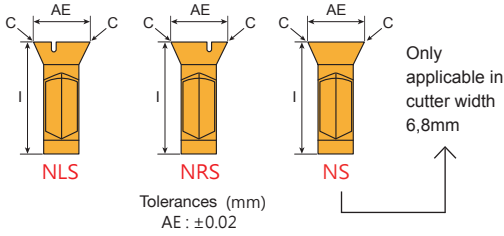
Only applicable in cutter width 6,8mm

| Dimensions (mm)      |               |   |      |
|----------------------|---------------|---|------|
| Cutter thickness (P) | AE            | I | C    |
| 1.6                  | 1.8           | 9 | 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 |   |      |


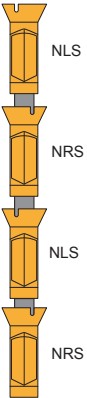

| Inserts        | Order Code     | Grades  |      |      |     |        |       |          |     |  |    |  |
|----------------|----------------|---------|------|------|-----|--------|-------|----------|-----|---|----|--|
|                |                | Carbide |      |      |     | Cermet |       | Uncoated |     |   |    |  |
|                |                | B100    | C200 | C250 | F20 | F30    | CE100 | CE60     | K10 |   | CE |  |
| <b>NLS</b>     | LNGT 1818NLS-M |         |      |      |     |        |       |          |     |   |    | Inserts Sequencing Position<br>                          |
|                | 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 |                |         |      |      |     |        |       |          |     |   |    |  |
| <b>NRS</b>     | LNGT 1818NRS-M |         |      |      |     |        |       |          |     |   |    | (Interleaving one after another different one.)<br><br> |
|                | 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 |                |         |      |      |     |        |       |          |     |   |    |  |
| <b>NS</b>      | LNGT 5050NS-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.: LNGT 2020NLS-M,B100

# LNGT Inserts

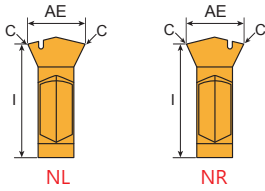


| Dimensions (mm)      |               |   |      |
|----------------------|---------------|---|------|
| Cutter thickness (P) | AE            | I | C    |
| 1.6                  | 1.8           | 9 | 0.05 |
| 1.75                 | 2.0, 2.2, 2.5 |   |      |
| 2.25                 | 2.5, 2.7, 3.0 |   |      |
| 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-ME | ⊙       |      |      |     |     |        |      |          |   |   | Inserts Sequencing Position<br> |
|                 | 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 | ⊙       |      |      |     |     |        |      |          |   | (Interleaving one after another different one.)<br> |  |
|                 | 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 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-ME,B100




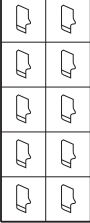
# LNGT Inserts



V shape insert designed for superior stability and durability

Tolerances (mm)  
AE : ±0.02

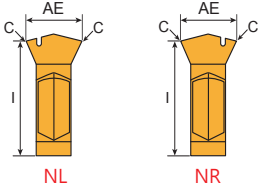
| Dimensions (mm)      |     |   |      |
|----------------------|-----|---|------|
| Cutter thickness (P) | AE  | I | C    |
| 1.75                 | 2.0 | 9 | 0.05 |
|                      | 2.2 |   |      |
|                      | 2.5 |   |      |
| 2.25                 | 2.5 |   |      |
|                      | 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 |      |      |     |     | Cermets |      | Uncoated |    |  |   |  |  |
|               |               | B100    | C200 | C250 | F20 | F30 | CE100   | CE60 | K10      | CE |  |   |  |  |
| NL            | LNGT 2020NL-M |         |      |      |     |     |         |      |          |    |  |   |  | Inserts Sequencing Position<br> NR<br>NL<br>NR<br>NL   |
|               | 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 |         |      |      |     |     |         |      |          |    |  |   |  | (Interleaving one after another different one.)<br><br> Inserts 10 PCS / Box |
|               | 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


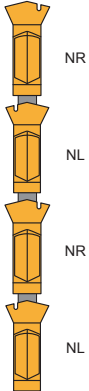
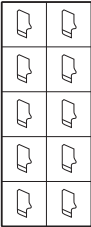


# LNGT Inserts



Tolerances (mm)  
AE : ±0.02

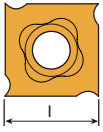
| Dimensions (mm)     |     |   |      |
|---------------------|-----|---|------|
| Cutter thickness(P) | AE  | I | C    |
| 1.75                | 2.0 | 9 | 0.05 |
|                     | 2.2 |   |      |
|                     | 2.5 |   |      |
| 2.25                | 2.5 |   |      |
|                     | 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 | ☉       |      |      |     |     |        |      |          |    |   | Inserts Sequencing Position<br>                     |
|                | 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 | ☉       |      |      |     |     |        |      |          |    |   | (Interleaving one after another different one.)<br> |
|                | 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 | ☉              |         |      |      |     |     |        |      |          |    |   |  |

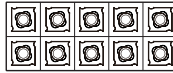
- ☐ Steel ☐ Stainless Steel ☐ Steel/Stainless Steel /Super alloy ☐ Cast Iron ☐ Aluminum ☐ Steel/Cast Iron
- ☉ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 2020NL-ME,B100



# SNGX Inserts




Tolerances (mm)  
I=±0.025 AE=±0.025



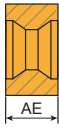
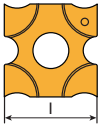
Inserts 10 PCS / Box

| Dimensions (mm) |     |      |
|-----------------|-----|------|
| Insert Code     | AE  | I    |
| 1102            | 2.3 | 11.0 |
| 1103            | 2.7 |      |
| 1203            | 3.2 | 12.7 |
| 1204            | 4.0 |      |
| 12045           | 4.5 |      |
| 1205            | 5.4 |      |
| 1207            | 7.0 |      |

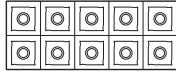
| Inserts   | Order Code    | Cutting Rate | Grades  |      |      |     |     |        |      |          |    |  |  |  |
|---|---------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|--|--|--|
|   |               |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |  |  |
|   |               |              | B100    | C200 | C250 | F20 | F30 | CE100  | CE60 | K10      | CE |  |  |  |
| <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  | I    |
| 1102            | 2.3 | 11.0 |
| 1103            | 2.7 |      |
| 1203            | 3.2 |      |
| 1204            | 4.0 | 12.7 |
| 12045           | 4.5 |      |
| 1205            | 5.4 |      |
| 1207            | 7.0 |      |

| Inserts   | Order Code    | Cutting Rake | Grades  |      |      |     |     |        |      |          |    |  |
|---|---------------|--------------|---------|------|------|-----|-----|--------|------|----------|----|--|
|   |               |              | Carbide |      |      |     |     | Cermet |      | Uncoated |    |  |
|   |               |              | B100    | C200 | C250 | 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  |              | ■       |      |      |     |     |        |      |          |    |  |

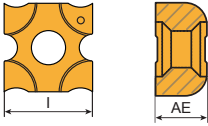
- Steel   ■ Stainless Steel   ⊙ Steel/Stainless Steel /Super alloy   ■ Cast Iron   ■ Aluminum   ■ Steel/Cast Iron
- ⊙ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: SNGW 1102-E,F20

Insert

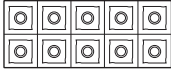


# SNGW Inserts - R0.4~R3.0

\* 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

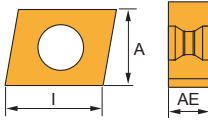
| Dimensions (mm) |     |      |     |
|-----------------|-----|------|-----|
| Insert Code     | AE  | I    | R   |
| 1102            | 2.3 | 11.0 | 0.4 |
| 1102            |     |      | 0.8 |
| 1103            | 2.7 |      | 0.4 |
| 1103            |     |      | 0.8 |
| 1203            | 3.2 | 12.7 | 0.4 |
| 1203            |     |      | 0.8 |
| 1203            |     |      | 1.2 |
| 1204            |     |      | 0.4 |
| 1204            | 4.0 |      | 0.8 |
| 1204            |     |      | 1.2 |
| 1204            |     |      | 1.6 |
| 12045           | 4.5 |      | 0.4 |
| 12045           |     | 0.8  |     |
| 12045           |     | 1.2  |     |

| Dimensions (mm) |     |      |     |
|-----------------|-----|------|-----|
| Inserts Code    | AE  | I    | R   |
| 12045           | 4.5 | 12.7 | 1.6 |
| 12045           |     |      | 2.0 |
| 1205            |     |      | 0.4 |
| 1205            | 0.8 |      |     |
| 1205            | 5.4 |      | 1.2 |
| 1205            |     |      | 1.6 |
| 1205            |     | 2.0  |     |
| 1205            | 7.0 | 2.5  |     |
| 1207            |     | 0.4  |     |
| 1207            |     | 0.8  |     |
| 1207            | 7.0 | 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

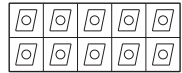


Tolerances (mm)

I=±0.025 AE=±0.025 A=±0.025

| Dimensions (mm) |     |      |    |
|-----------------|-----|------|----|
| Insert Code     | AE  | I    | A  |
| 1005            | 5.4 | 10.0 | 10 |
| 1305            |     | 12.7 |    |
| 1605            |     | 16.0 |    |

| 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      | -         | - |

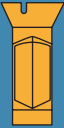


# Recommendation-LNGT Inserts

## • LNGT Insert Recommended Cutting speed, Vc(m/min)

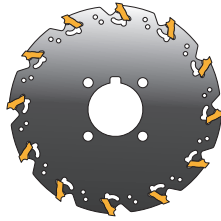
| Material group            | Grades         |      |                |      |    |     |     |
|---------------------------|----------------|------|----------------|------|----|-----|-----|
|                           | B100           | C250 | F20            | CE60 | CE | K10 | F30 |
|                           | 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

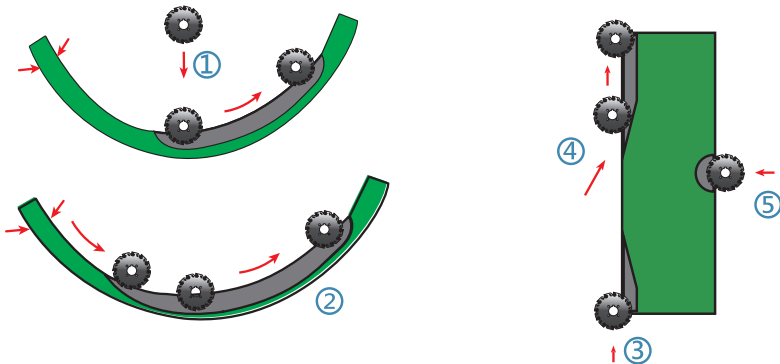
$f_z$  (mm / thoooh)



Insert

•  $f_z$  (mm/tooth)

|  AE | $f_z$ (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 :  $F_z$  reduce to 50%
- ② Ramping to mill :  $F_z$  remain 100%
- ③ Mill :  $F_z$  remain 100%
- ④ Ramping :  $F_z$  remain 100%
- ⑤ Plunging to mill :  $F_z$  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                       | -                          | - |

# 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 |
| 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  | -   | -    | -   | -   | -    | -   | -   | -    | -  | -   | -   | -   |

Insert

## • 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      | -        | - |

• 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  | -    | -   | -   | -   | -           | -   | -   | -   | -   | -       |

Insert

• 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

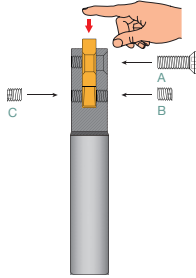
Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

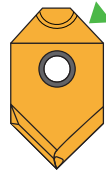
# Design

Center point eccentricity  $\pm 0.008\text{mm}$

## 1. Plug-and-clamp self-centering design



## 2. Back taper

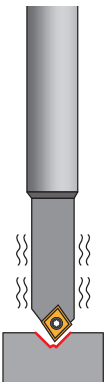


Gives awesome stabilities that conduces to excellent verticality precision.

# Product Introduction



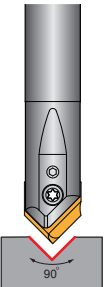
Spot Drill



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



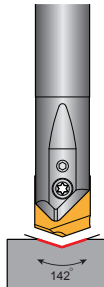
90

A23 Inserts



90 + 142

B23 Inserts



142

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.

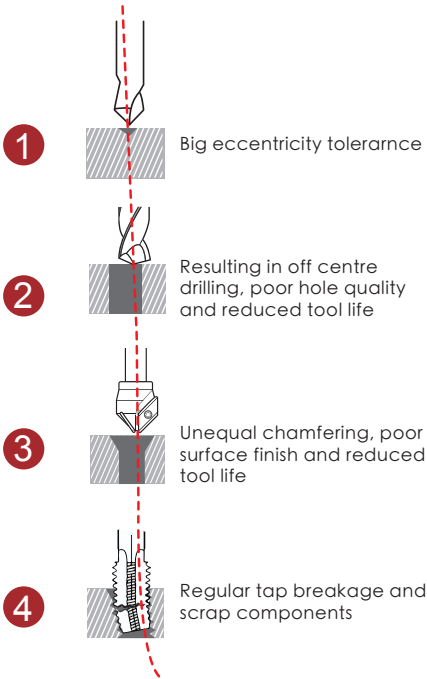
1. Designed with two point angles 90° + 142°.
2. It performs 45° chamfering and 142° spot positioning in one step.

142° point angle is perfect for all different size of drills.

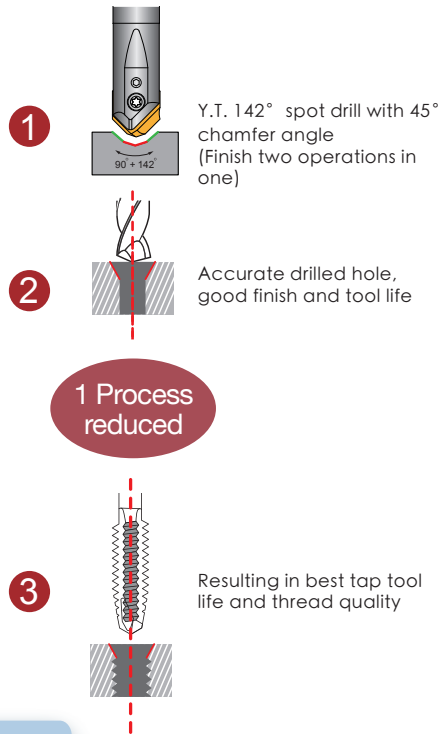


# Operations prior to small / long depth drills and Tapping

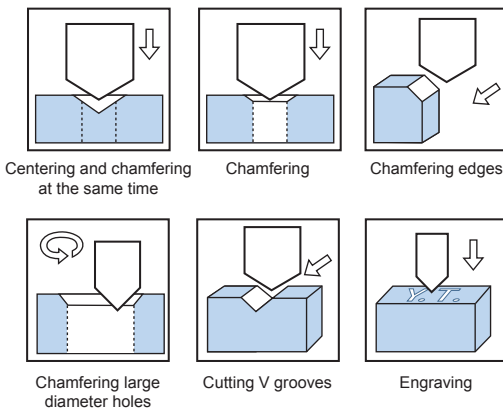
## Imprecise spot drills



## Y.T. accurate spot drills



## Y.T. 90° Spot Drill With Multipurpose Function



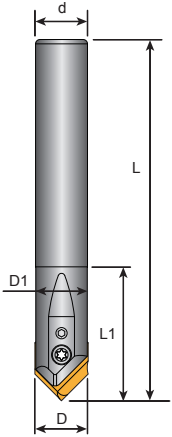
Can be used in M/C and drilling machine



# PRODUCT SPECIFICATIONS

## Spot Drill Toolholders

- Inserts P. 270 - 271
- Cutting Data P. 272 - 276



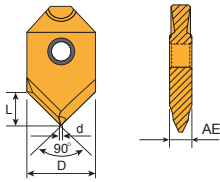
Spot Drill

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  |                 |      |    | 60  |    |    | 0.09 |                             |                   |              |
| 13-1010-65  | 10              | 9.9  | 10 | 65  | 20 |    | 0.09 | 1002                        | C03008<br>S02503  | T09P<br>L013 |
| 13-1010-100 |                 |      |    | 100 |    |    | 0.12 |                             |                   |              |
| 13-1010-150 |                 |      |    | 150 |    |    | 0.12 |                             |                   |              |
| 13-1210-65  | 12              | 11.9 | 12 | 65  | 30 |    | 0.12 | 1203                        | C03010<br>S0304   | T09P<br>L015 |
| 13-1212-80  |                 |      |    | 80  |    |    | 0.15 |                             |                   |              |
| 13-1212-110 |                 |      |    | 110 |    |    | 0.18 |                             |                   |              |
| 13-1212-160 | 12              | 11.9 | 12 | 160 | 30 |    | 0.21 | 1603                        | C03512<br>S0405   | T10P<br>L02  |
| 13-1612-80  |                 |      |    | 80  |    |    | 0.21 |                             |                   |              |
| 13-1616-100 |                 |      |    | 100 |    |    | 0.26 |                             |                   |              |
| 13-1616-130 | 16              | 15.8 | 16 | 130 | 35 |    | 0.26 | 1603                        | C03512<br>S0405   | T10P<br>L02  |
| 13-1616-180 |                 |      |    | 180 |    |    | 0.36 |                             |                   |              |

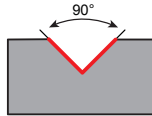


# 23 Inserts



Tolerances (mm)

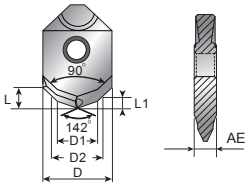
AE : + 0.01  
- 0.02



| 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 |     |       |  |

| Inserts | Order Code    | Grades  |      |      |     |     |        |       |      |          |  |    |                          |
|---------|---------------|---------|------|------|-----|-----|--------|-------|------|----------|--|----|--------------------------|
|         |               | Carbide |      |      |     |     | Cermet |       |      | Uncoated |  |    |                          |
|         |               | Cl25    | B350 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      |  | CE |                          |
|         | 23-0802-90-E  |         |      |      |     |     |        |       |      |          |  |    | <br>Inserts 10 PCS / Box |
|         | 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 |         | ⊙    |      |     |     |        |       |      |          |  |    |                          |

# A23 Inserts

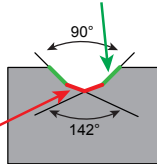


Tolerances (mm)

AE : + 0.01  
- 0.02

Chamfering application

Spot application

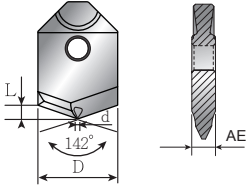


| Dimensions (mm) |     |     |      |      |     |           |             |  |
|-----------------|-----|-----|------|------|-----|-----------|-------------|--|
| D               | L   | D1  | D2   | L1   | AE  | M         | angle       |  |
| 8               | 2.8 | 3.3 | 4.2  | 1.02 | 2.0 | M4 x 0.7  | 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 |  |    |                          |
|         |                 | Cl25    | B350 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      |  | CE |                          |
|         | A23-0802-M4-ME  |         | ⊙    |      |     |     |        |       |      |          |  |    | <br>Inserts 10 PCS / Box |
|         | A23-1002-M5-ME  |         | ⊙    |      |     |     |        |       |      |          |  |    |                          |
|         | A23-1203-M6-ME  |         | ⊙    |      |     |     |        |       |      |          |  |    |                          |
|         | A23-1603-M8-ME  |         | ⊙    |      |     |     |        |       |      |          |  |    |                          |
|         | A23-1603-M10-ME |         | ⊙    |      |     |     |        |       |      |          |  |    |                          |

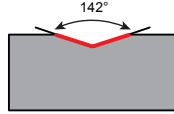
- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron
- Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: A23-0802-M4-ME,B350

# 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 | C350 | 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

Spot Drill



# 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   |
|                |   |              |              |           |     |
| 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

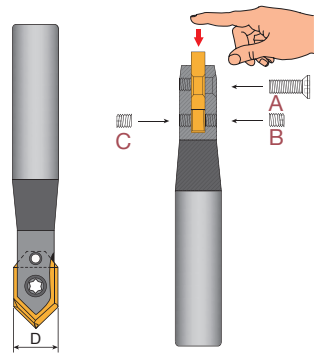
Step 1: • Put the insert into the slot of shank and press it with the finger  
 • Fully tighten the screw A first

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)

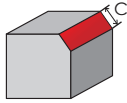
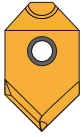
Step 5: Fully tighten the screw C again (Important)



## 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

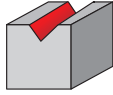
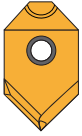
- For side chamfering the effective no. of teeth are 2 flutes.

| 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           |

Spot Drill



# Recommended Cutting Data

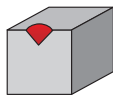


Grooving

## 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



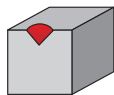
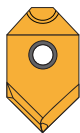
Spotting and Chamfering  
in one step

| 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

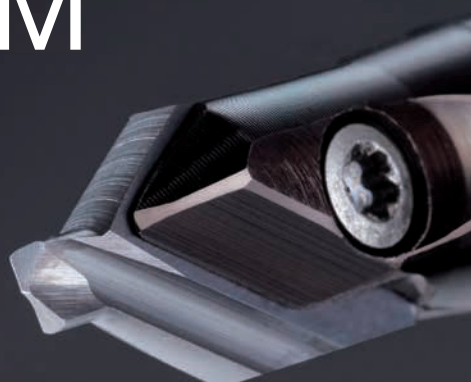
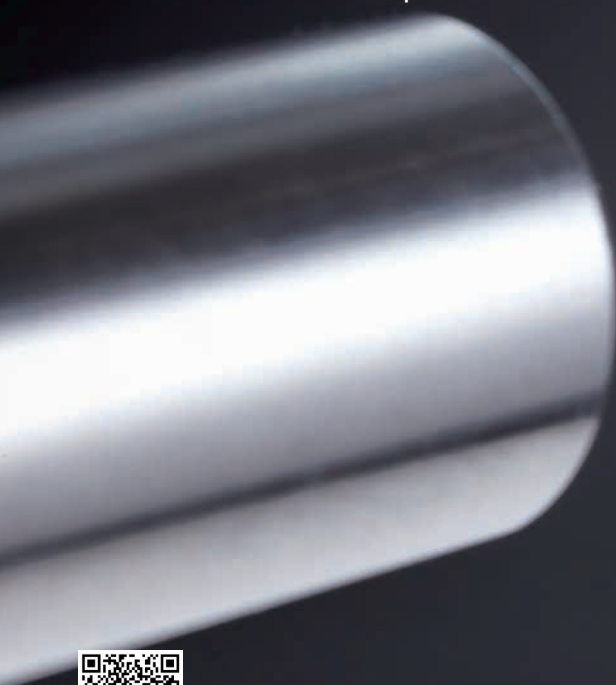


Spotting and Chamfering  
in one step

| 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  $\mu$ m



**PATENTED**



Video

## Features

Available in  
materials



Cost  
**300~500%**  
SAVING

Applicable  
Machines  
Milling / Turning

Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

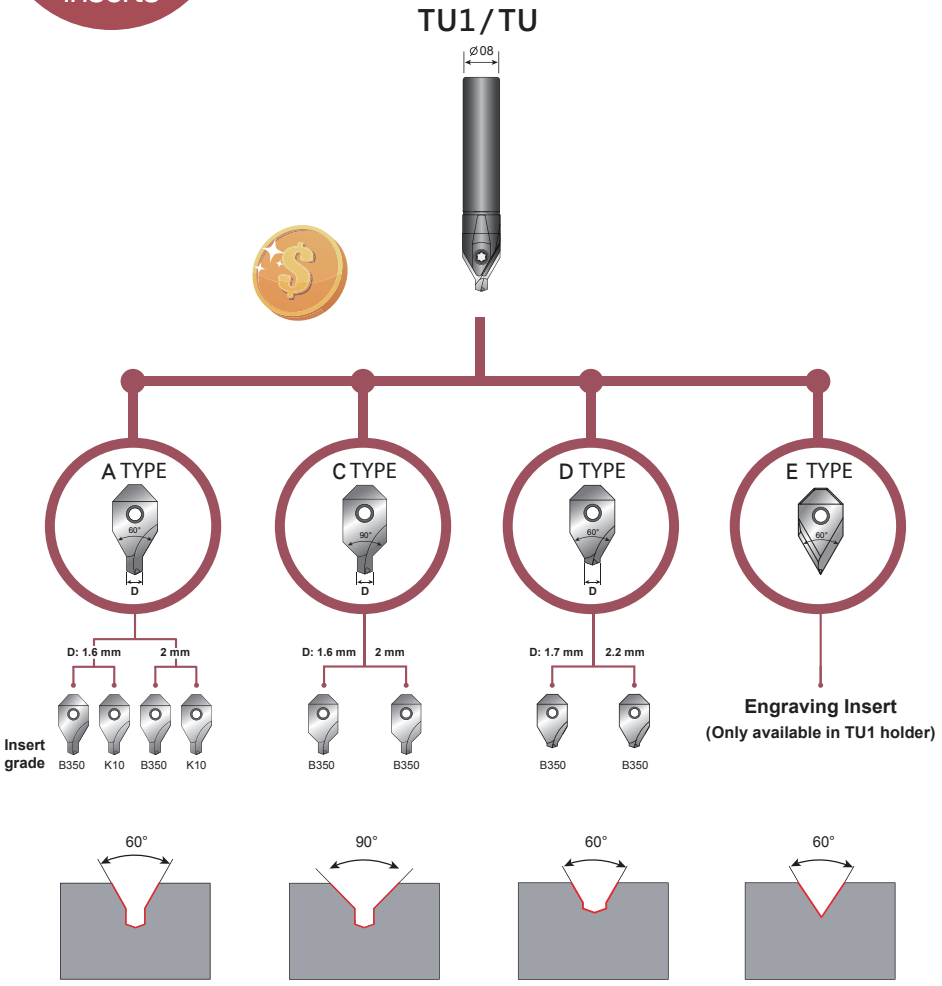


YIH TROUN ENTERPRISE CO., LTD

**277**

# Product Design

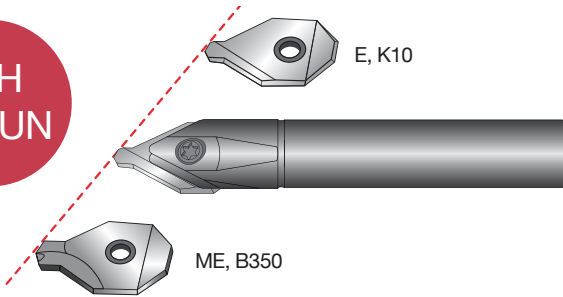
One Shank fits 9 different inserts



# TECHNICAL GUIDE

## Indexable center drill

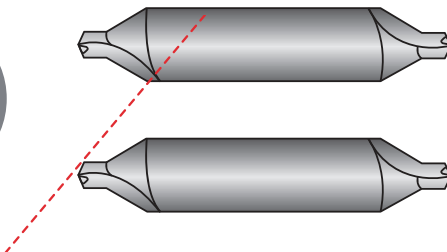
- Extremely accuracy in center positioning, minimized eccentricity  $\pm 0.008\text{mm}$ .
- Perfect surface finish with  $Ra\ 0.36\ \mu\text{m}$ , which leads to excellent accuracy.
- Re-centering and length calibrating are not required while changing the new insert.
- Y.T. indexable carbide inserts 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

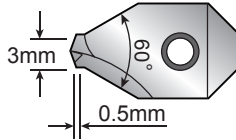


# New Design vs. Traditional Type



## 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.



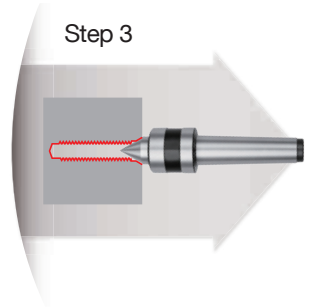
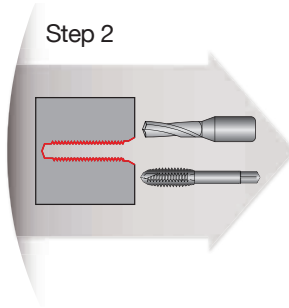
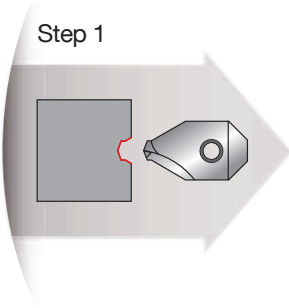
Efficiency  
400~600% up



Durability  
400~600% up

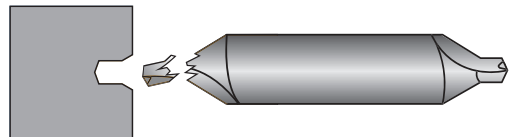
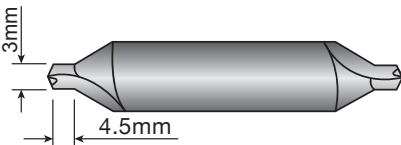


No broken



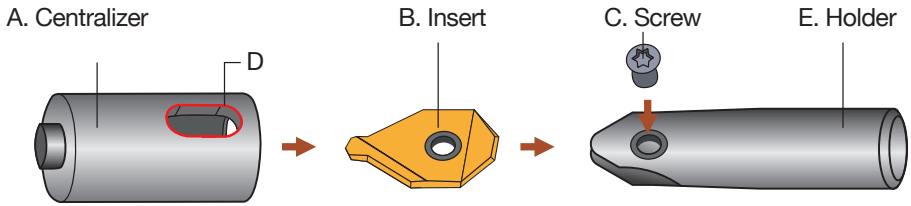
## Traditional

Standard center drill: The long pilot length causes pilot broken often and poor tool life in high feed machining.



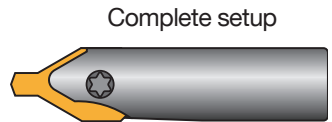
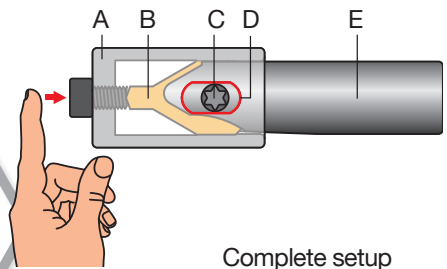
# CENTRALIZER-Quick Operation Guide

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.

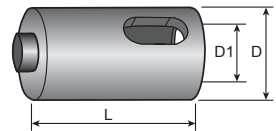


Center Drill

## Devices to centralizer the inserts



Video

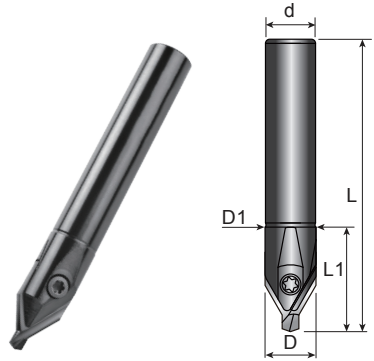


| Order Code | D  | D1   | L  |
|------------|----|------|----|
| GA-0814    | 14 | 8.2  | 25 |
| GA-1016    | 16 | 10.2 | 30 |
| GA-1218    | 18 | 12.2 | 33 |
| GA-1622    | 22 | 16.2 | 38 |



## Center Drill Toolholders ( Milling And Turning )

- Inserts P. 283 - 286
- Cutting Data P. 287
- Centralizer P. 281

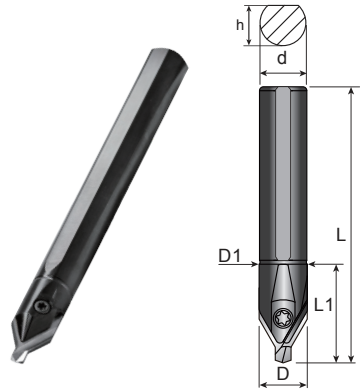


### TU 1

| 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 )

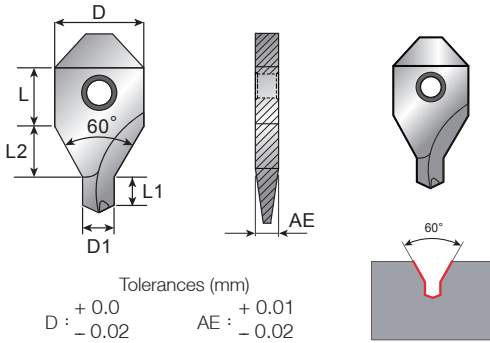
- Inserts P. 283 - 286
- Cutting Data P. 287
- Centralizer P. 281



### 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 |       |
|                 |   |     | 4.0 | 3.3 | 7.0 |       |
| 12.2            | 7 | 3.0 | 5.0 | 4.0 | 6.0 |       |
|                 |   |     | 5.0 | 4.0 | 9.0 |       |
| 16.2            | 8 | 3.0 | 6.0 | 4.7 | 8.0 |       |
|                 |   |     | 8.0 | 6.5 | 6.5 |       |

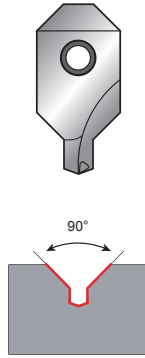
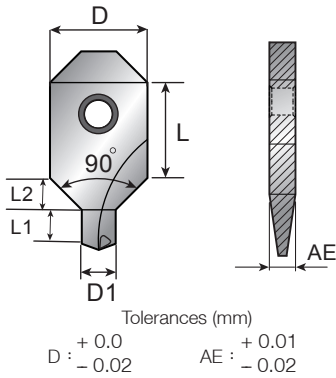
| Inserts | Order Code       | Grades  |      |      |     |     |        |       |      |          |    |  |  |   |
|---------|------------------|---------|------|------|-----|-----|--------|-------|------|----------|----|--|--|---|
|         |                  | Carbide |      |      |     |     | Cermet |       |      | Uncoated |    |  |  |   |
|         |                  | C125    | B350 | C350 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE |  |  |   |
|         | A24-080216-60-E  |         |      |      |     |     |        |       |      |          |    |  |  | <p>Inserts 6 PCS / Box<br/>Only for insert: A24-16***</p> |
|         | 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 |         | ⊗    |      |     |     |        |       |      |          |    |  |  | <p>Inserts 10 PCS / Box</p>                               |
|         | 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, i.e.: A24-080216-60-E,K10





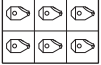
Center Drill

# 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 |      |      |     |     | Cermets |       |      | Uncoated |  |    |
|   |                  | C125    | B350 | C350 | F20 | F30 | CE25    | CE100 | CE60 | K10      |  | CE |
|  | C24-080216-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |
|   | C24-080220-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |
|   | C24-100225-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |
|   | C24-100230-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |
|   | C24-120340-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |
|   | C24-120350-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |
|   | C24-160350-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |
|   | C24-160360-90-ME |         | ⊗    |      |     |     |         |       |      |          |  |    |



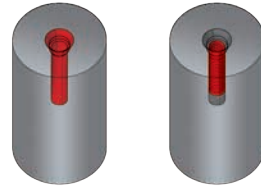
Inserts 6 PCS / Box  
Only for insert: C24-16\*\*\*



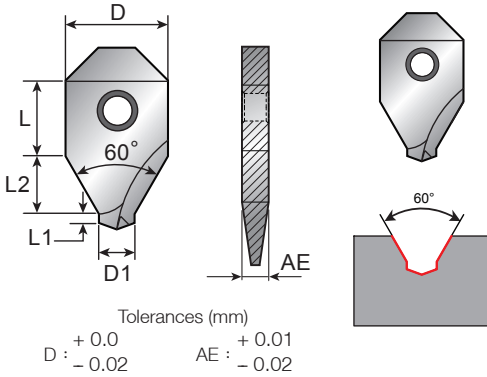
Inserts 10 PCS / Box

- 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.: C24-080216-90-ME,B350

# D24 Inserts



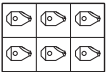
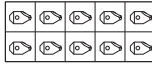


Center drill specially for pre-drilling and pre-tapping



| 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 |       |
|                 |   |     | 5.3 | 1.0 | 9.0 |       |
| 16.2            | 8 | 3.0 | 5.3 | 1.0 | 9.0 |       |
|                 |   |     | 6.3 | 1.1 | 8.0 |       |

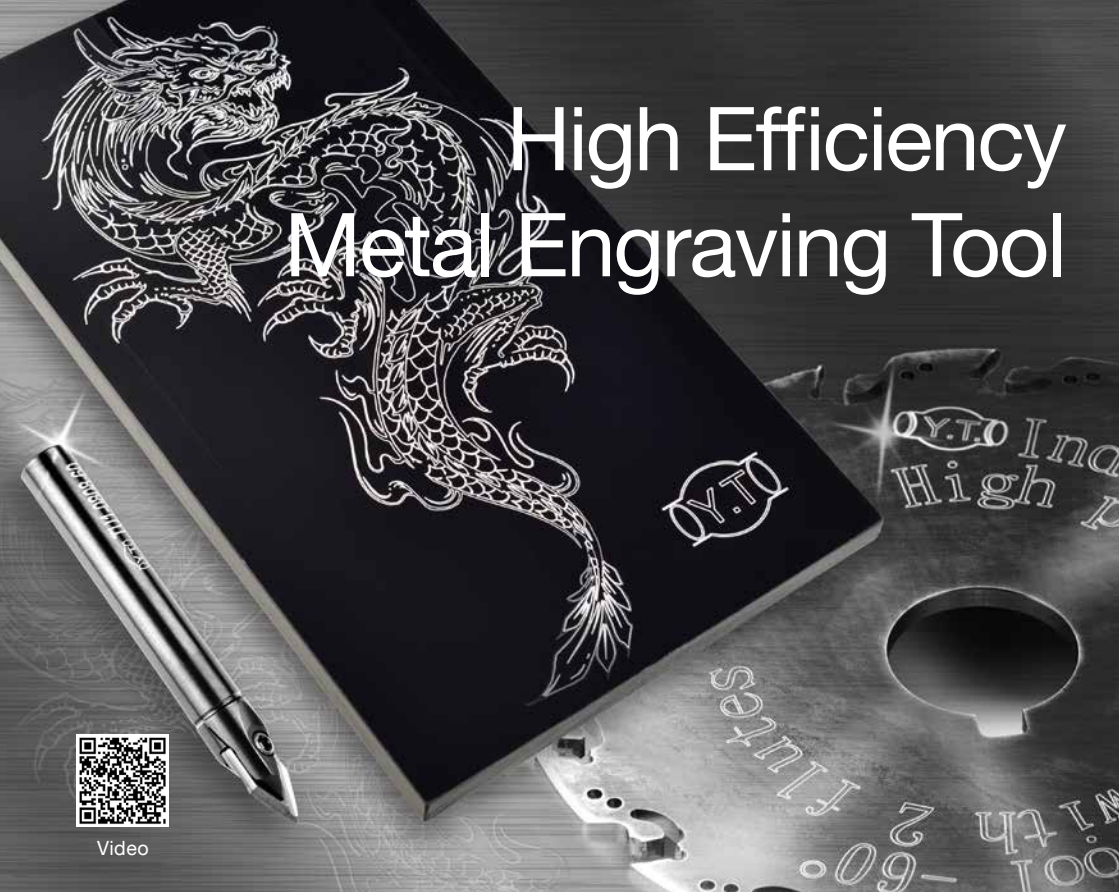
Center Drill

| 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 |         | ⊗    |      |     |     |        |       |      |          |    | <br>Inserts 10 PCS / Box |  |
|   | D24-100227-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |  |  |
|   | D24-100232-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |  |  |
|   | D24-100237-60-ME |         | ⊗    |      |     |     |        |       |      |          |    |  |  |
|   | 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



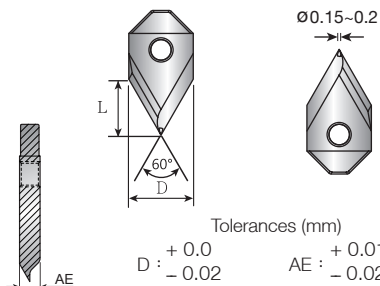
# High Efficiency Metal Engraving Tool



Video

## E24 Inserts

- Toolholder P. 282
- Centralizer P. 281  
(Centralizer is necessary)



| 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 Vc(m/min) | CNC lathe M/C 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> <u>SURFTEST SJ-410</u><br>日期 2017/07/05<br>時間 09:20:32 |
| Insert   | 24-100225-60-ME, B100  | Ra 0.360 μm<br>Rmax 2.056 μm   |
| S        | 1600 min <sup>-1</sup> | <b>Mitutoyo</b> <u>SURFTEST SJ-410</u><br>日期 2017/07/05<br>時間 09:20:32 |
| f        | 0.05 mm/rev            | 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



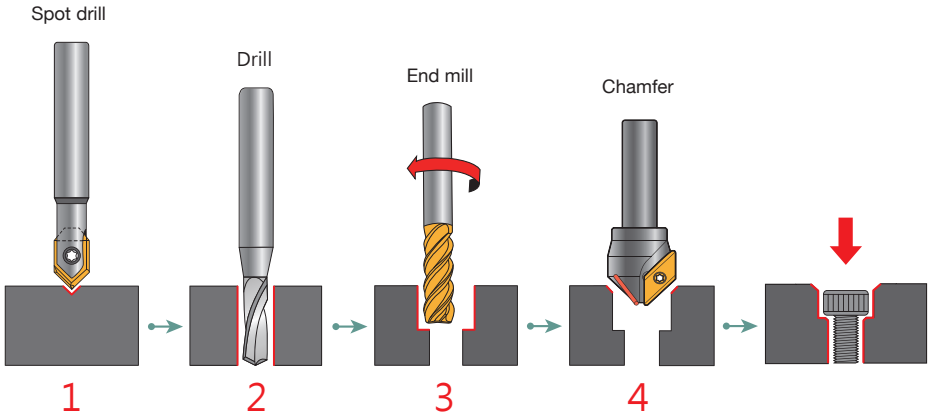
Cost  
**300~500%**  
SAVING

Applicable  
Machines  
Milling / Drilling  
/ Radial drilling

Efficiency  
**300%**  
UP

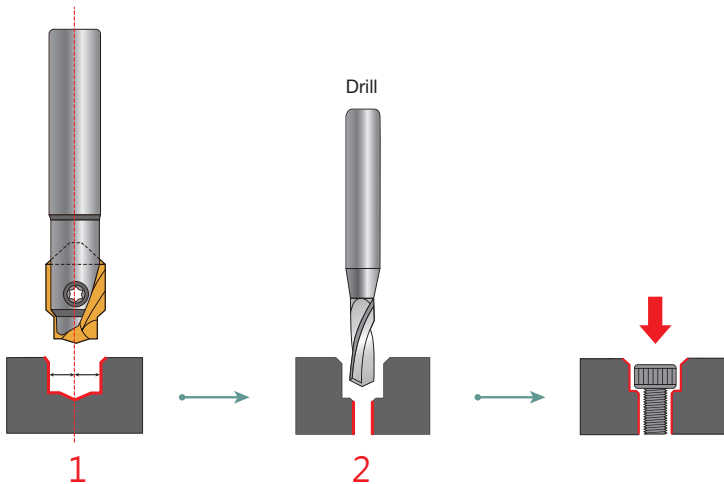
Durability  
**300%**  
UP

# Traditional Procedure: 5 Steps



# Innovative solution: 2 Steps

Get the job making counterbore within 2 seconds.



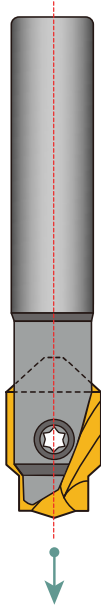
Counterbore

- Finish 4 operations in one.
- The center point is very accurate and does not deviate.

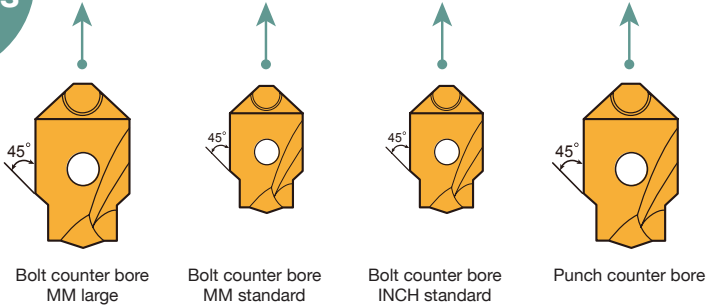


# Product Design

- The same shank fits max. 16 different inserts.

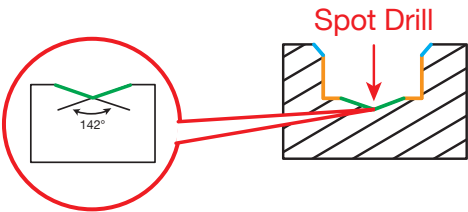


4 main functions



\* Screws M3~M12

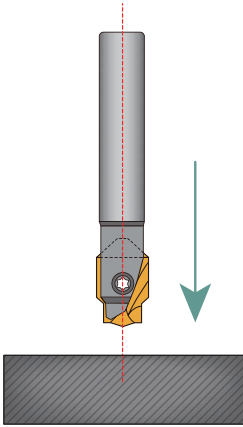
142° accurate center spot



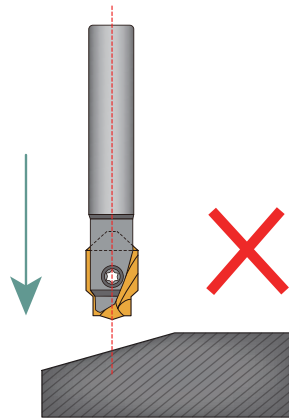
Spot Drill

- Up Chamfering
- Bolt Counter Bore
- Down Chamfering

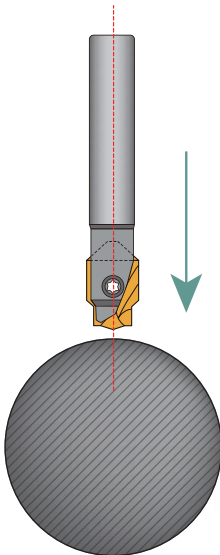
# Recommendations and constraints :



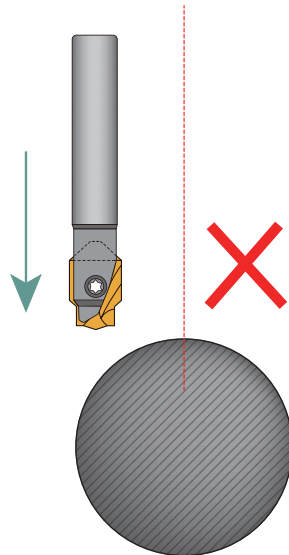
Suitable for vertical machining on flat surface.



It's not recommended to use 4 in 1 tool on inclined surface.

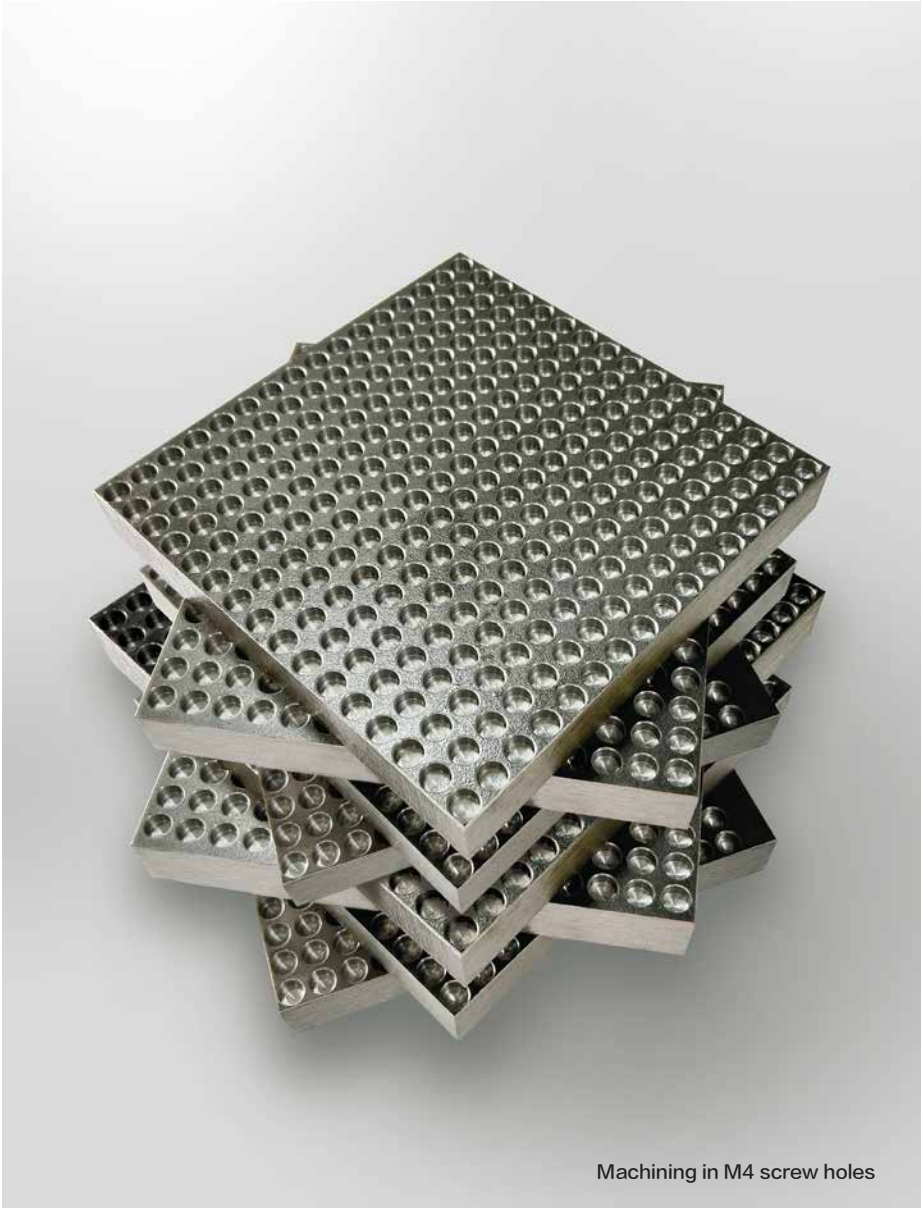


It can be used for round workpiece as long as it's center vertical alignment.



4 in 1 tool is not recommended to be used for curved surface or round workpiece when it's central misalignment.





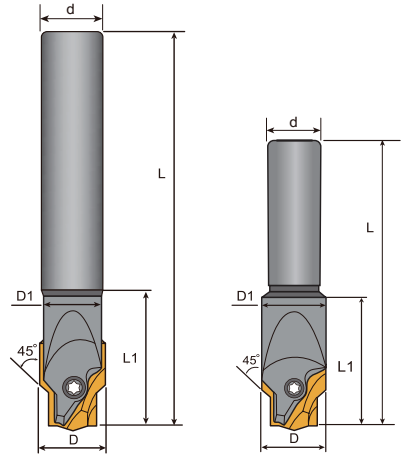
Machining in M4 screw holes

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. 298 - 300
- Cutting Data P. 303



14

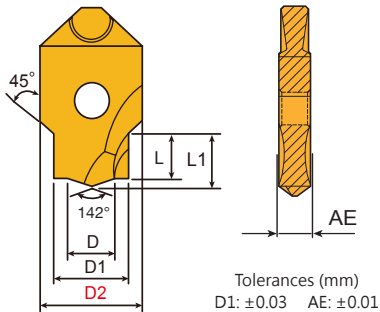
| Order Code  | Counterbore Screw size | Ejector Pin | Dimensions (mm) |      |    |     |    | KG   | Screw  | Key  |
|-------------|------------------------|-------------|-----------------|------|----|-----|----|------|--------|------|
|             | MM                     | MM          | D               | 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  | 33 | 0.12 | C03008 | T09P |
| 14-1206-110 |                        |             |                 |      |    | 110 |    | 0.15 |        |      |
| 14-1208-70  | 8.0                    | 8.0<br>10.0 | 16              | 15.8 | 16 | 12  | 30 | 0.19 | C03509 | T10P |
| 14-1608-100 |                        |             |                 |      |    | 100 |    | 0.22 |        |      |
| 14-1608-130 |                        |             |                 |      |    | 130 |    | 0.27 |        |      |
| 14-1210-70  | 10                     | 13.0        | 20              | 19.7 | 20 | 12  | 35 | 0.19 | C04011 | T15P |
| 14-2010-100 |                        |             |                 |      |    | 100 |    | 0.30 |        |      |
| 14-2010-140 |                        |             |                 |      |    | 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                       |

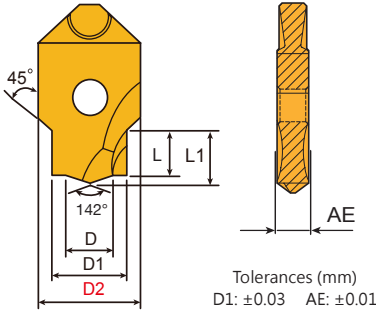
\* For other sizes, customization is acceptable.


| 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




 Inserts 6 PCS / Box  
 Only for insert : J26 - 2010

 Inserts 10 PCS / Box

| Dimensions (mm) |      |    |      |      |     | Counterbore 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   | 8  | 9.55 | M8.0 |     |                        |
| 11.5            | 17.5 | 20 | 10   | 11.9 | 3.5 | M10                    |

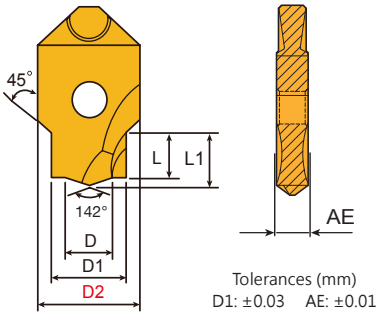
\* For other sizes, customization is acceptable.

| Inserts   | Order Code  | Grades  |      |      |     |     |        |       |      |          | Corresponding shank |  |                           |
|---|-------------|---------|------|------|-----|-----|--------|-------|------|----------|---------------------|--|---------------------------|
|   |             | Carbide |      |      |     |     | Cermet |       |      | Uncoated |                     |  |                           |
|   |             | B100    | Cl25 | 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




Tolerances (mm)  
 D1: ±0.03 AE: ±0.01

 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 |     | 6.0                    |
| 8.5             | 12 | 16 |   | 6.40 | 3.0 | 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

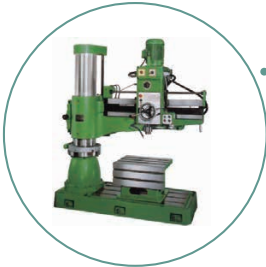
Suitable for various kinds of machines



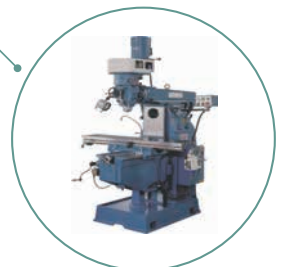
A. Drilling Machine



B. CNC Milling Machine



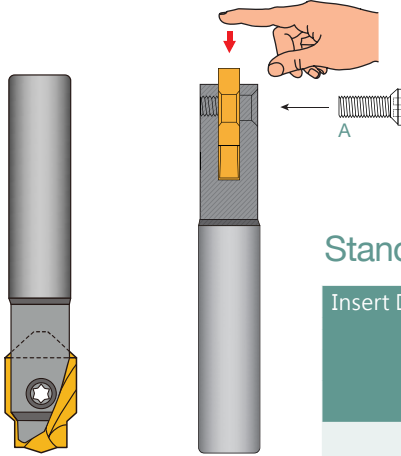
C. Radial Drilling Machine



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 on the bottom
  - Fully tighten the screw A

## Standard spare parts

| Insert Dimension D2 (mm)  | Screw A   | Key   |
|---|---|---|
|  |  |  |
| 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

Video for reference



M03 ;




Spindle ON Clockwise

# Cutting Data And Screw Size

| Screw size | Steel ( P )                   |               |                     | Stainless steel ( M )         |               |                     | Non-ferrous metals ( N )      |               |                     |
|------------|-------------------------------|---------------|---------------------|-------------------------------|---------------|---------------------|-------------------------------|---------------|---------------------|
|            | Cutting Speed Vc 50 / Fn 0.07 |               |                     | Cutting Speed Vc 15 / Fn 0.05 |               |                     | Cutting Speed Vc 100/ Fn 0.20 |               |                     |
| Unit       | 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 | <br>Cutting Speed<br>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%.

Counterbore



# 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

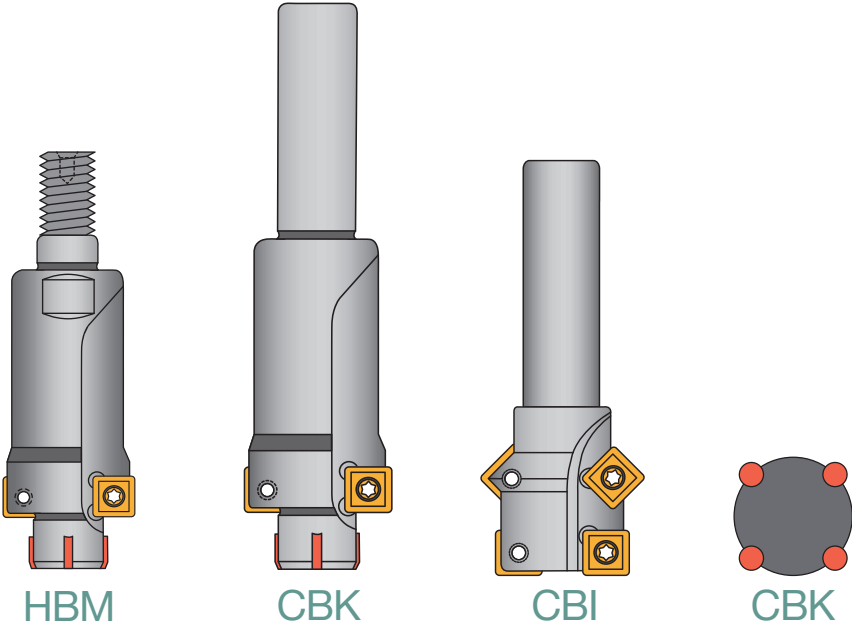
# Product Design



Counter bore tools application for bolts, nuts & screws

 Patent No. ZL 01 2 23413.3

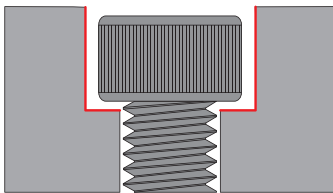
 PCT Priority



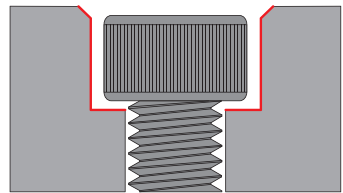
better cutter toollife  
with patented carbide strip

Counterbore

## Screw ranges M8~M36



counterbore



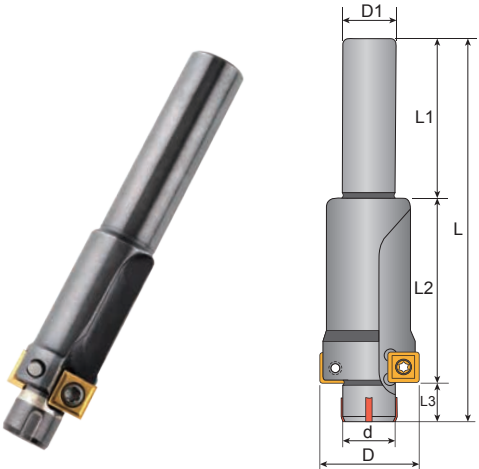
counterbore + chamfer



# PRODUCT SPECIFICATIONS

## Counterbore Toolholders

- Inserts P. 309
- Cutting Data P. 309



**CBK**

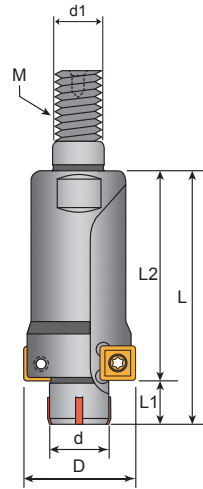
DIN 373

| 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  |    |    |    |    |    |   |      |         |              |         |      |
| CBK-10     | 18              | 10.9 |    |    |    |    |    |   |      |         |              |         |      |
| CBK-10S    | 20              | 13.4 | 12 | 80 | 35 | 37 | 8  | 2 | 0.16 | 22000   | 09T308       | C04007  | T15P |
| CBK-12     | 22              |      |    |    |    |    |    |   |      |         |              |         |      |
| CBK-12S    | 24              | 14.9 |    |    |    |    |    |   |      |         |              |         |      |
| CBK-14     | 25              | 15.4 |    |    |    |    |    |   |      |         |              |         |      |
| CBK-14S    | 26              | 17.4 |    |    |    |    |    |   |      |         |              |         |      |
| CBK-16     | 27              |      |    |    |    |    |    |   |      |         |              |         |      |
| CBK-16S    | 27              |      |    |    |    |    |    |   |      |         |              |         |      |

\* Use on drilling machine.

# Counterbore Combi Cutters

- Inserts P. 309
- Cutting Data P. 309
- Combi Toolholders P. 346



Counterbore

**HBM**

DIN 373

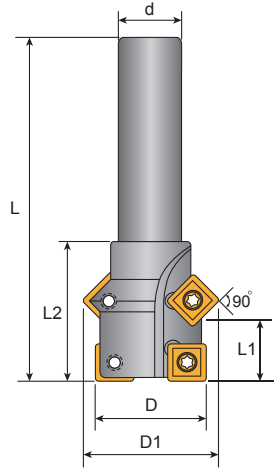
| Order code | Dimensions (mm) |      |    |    |    |    |    | Z | KG   | MAX RPM | Inserts SDET | Screw  | Key  |
|------------|-----------------|------|----|----|----|----|----|---|------|---------|--------------|--------|------|
|            | D               | d    | L  | L1 | L2 | M  | d1 |   |      |         |              |        |      |
| HBM-16     | 26              | 17.4 | 48 | 8  | 40 | 16 | 22 | 2 | 0.23 | 17000   | 09T308       | C04008 | T15P |
| HBM-18     | 29              | 19.4 | 53 |    | 45 |    |    |   |      |         |              |        |      |
| HBM-20     | 33              | 21.9 | 56 |    | 48 |    |    |   |      |         |              |        |      |
| HBM-22     | 36              | 23.4 | 60 | 10 | 50 | 16 | 22 | 3 | 0.40 | 15000   | 09T308       | C04008 | T15P |
| HBM-24     | 40              | 25.9 | 62 |    | 52 |    |    |   |      |         |              |        |      |
| HBM-30     | 50              | 32.9 |    |    | 56 |    |    |   |      |         |              |        |      |
| HBM-36     | 58              | 38.8 |    |    | 65 |    |    |   |      |         |              |        |      |

\* Use on drilling machine.



# Counterbore + Chamfer Toolholders

- Inserts P. 309
- Cutting Data P. 309



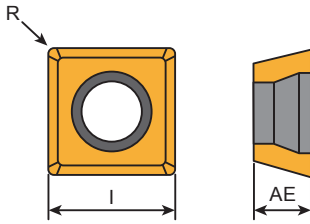
**CBI**

DIN 373

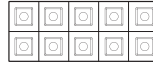
| Order Code | Dimensions (mm) |      |      |      |      |      | Z    | Zc | ⊖<br>KG | MAX<br>RPM | Inserts<br>SDET | Screw   | Key  |
|------------|-----------------|------|------|------|------|------|------|----|---------|------------|-----------------|---------|------|
|            | D               | 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 | 70   | 13   | 30   | 0.12 |      |    | 22000   |            |                 |         |      |
| CBI-14     | 24              | 31.4 |      | 15   |      | 0.17 |      |    |         |            |                 |         |      |
| CBI-16     | 26              | 33.4 | 80   | 16.5 | 33   | 0.20 |      |    | 17000   | 09T308     | C04007          |         |      |
| CBI-18     | 29              | 35.4 |      | 19.5 | 36   | 0.25 |      |    |         |            | 16000           | C04008  |      |
| CBI-20     | 33              | 37.4 | 90   | 21   | 43   | 0.27 |      |    | 15000   | C04011     |                 | T15P    |      |
| CBI-22     | 36              | 40.4 |      | 23.5 |      | 40   |      |    |         |            | 0.41            |         |      |
| 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 present conditions
- Please specify model numbers and the grade of inserts, i.e.: 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

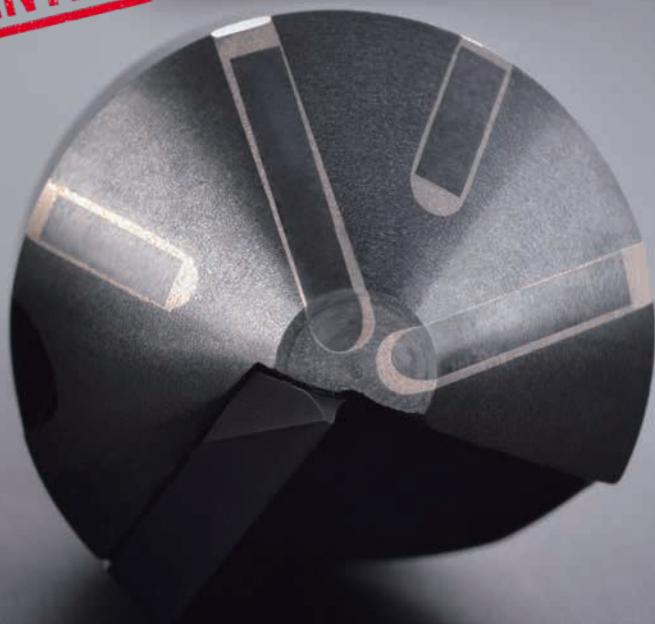
# Features Description

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 toollife. 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

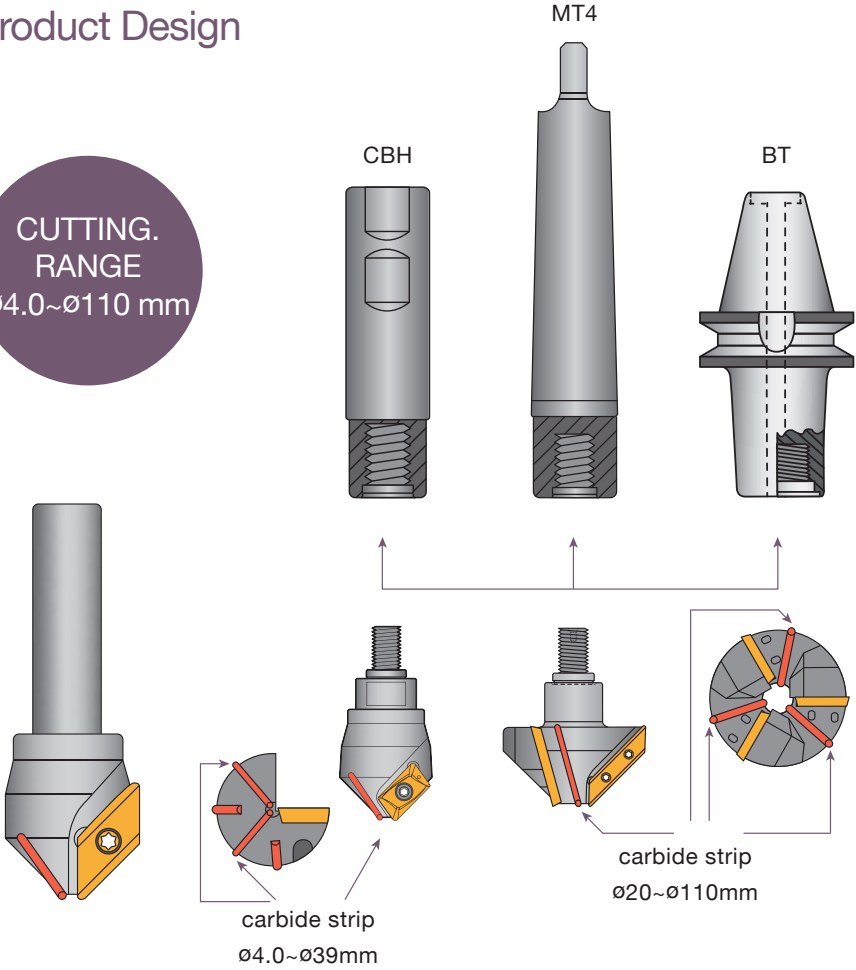
Applicable  
Machines  
Milling / drilling  
/ lathe / electric  
hand tool

Efficiency  
**300%**  
UP

Durability  
**500~1000%**  
UP

# Product Design

CUTTING.  
RANGE  
Ø4.0~Ø110 mm



## 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.

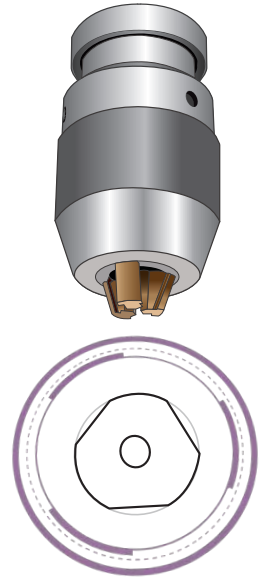


# New coming shank

The shank with three flat designs is more suitable for drilling machine (three-jaw chuck) which achieves stable clamping and longer tool life.

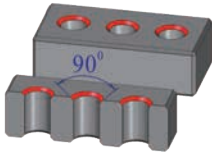


▲ Optimal surface finishing



▲ Top view of the shank

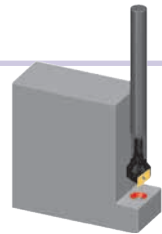
## Geometries Application



Standard chamfer with 90°



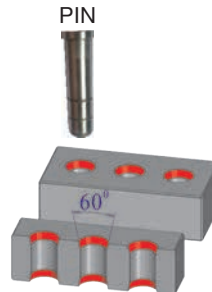
- Excellent Design
- No burrs.



Chamfer cutter with longer shank

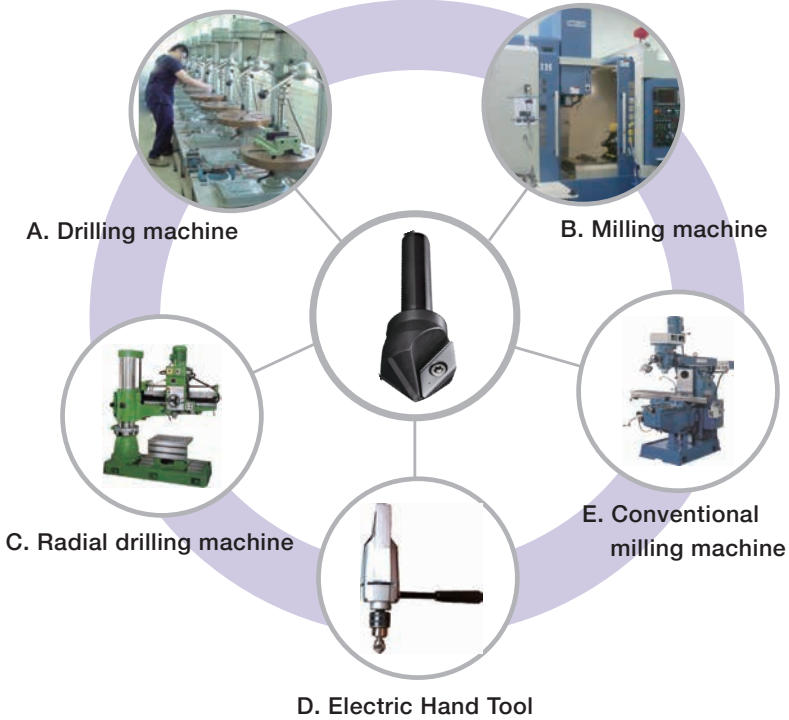


Chamfer with 120° used for tap holes, which reduce the loss of threads.



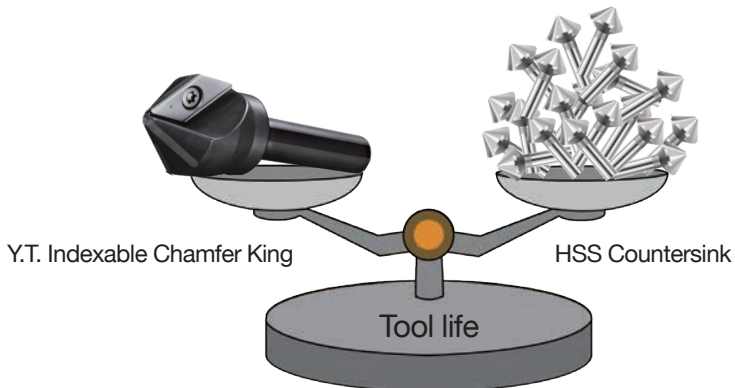
Chamfer with 60° used for deburring before "pin". 60° chamfer is easier than 90° or 120° to locate the pin.

# Applicable Machine And Tools



## Cost Effective Solution

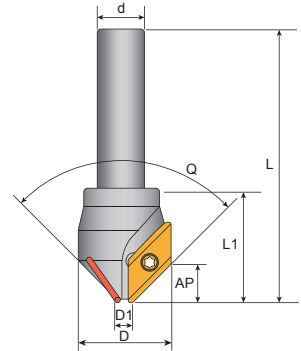
Coated carbide insert provides excellent tool life. Insert with 2 cutting edges maximizes tool cost-saving.



# PRODUCT SPECIFICATIONS

## Chamfer King Toolholders

- Inserts P. 320
- Cutting Data P. 321 - 322



### 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 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 |
| CI-38-100°    | 15              | 38 | 12 | 78 | 10  | 38 |      |   | 2    | 0.40    | 25000             | 190408  | C04008 | T15P  |
| CI-38-100° -2 |                 |    |    |    |     |    |      |   |      | 0.41    |                   |         |        |       |

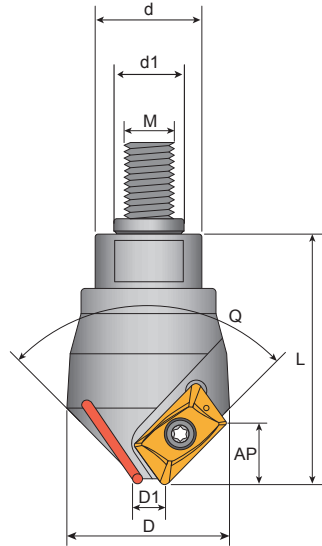
- 120°

| 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 |         |              |        |      |

- Insert is included with purchase of a chamfer king.

# Chamfer King Toolholders

- Combi holders P. 319
- Inserts P. 320
- Cutting Data P. 321 - 322



## 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 | 8 |     |   | 0.32 | 25000   | 190408            | C04008  | T15P |

- 120°

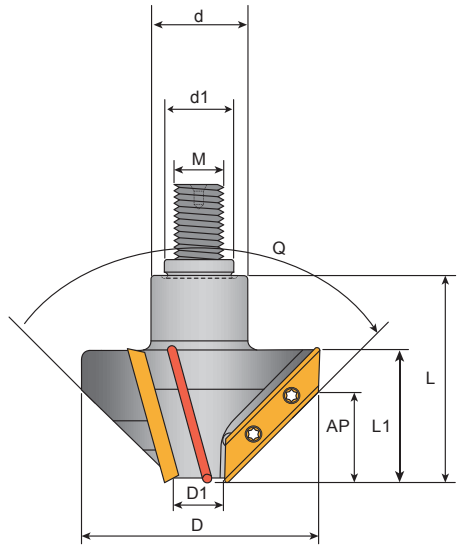
| Order Code  | Dimensions(mm) |    |    |     |    |    |   | Q    | Z | KG   | MAX RPM | Inserts XDGT | Screw  | Key  |
|-------------|----------------|----|----|-----|----|----|---|------|---|------|---------|--------------|--------|------|
|             | D1             | D  | d  | d1  | L  | AP | M |      |   |      |         |              |        |      |
| HCI-26-120° | 7              | 26 | 12 | 6.5 | 37 | 5  | 6 | 120° | 1 | 0.18 | 35000   | 120308       | C03506 | T10P |
| HCI-39-120° | 11             | 39 | 16 | 8.5 | 45 | 8  | 8 |      |   | 0.36 | 25000   | 190408       | C04008 | T15P |

- Insert is included with purchase of a chamfer king.



# Chamfer King Toolholders

- Combi holders P. 319
- Inserts P. 320
- Cutting Data P. 321 - 322



## HCI

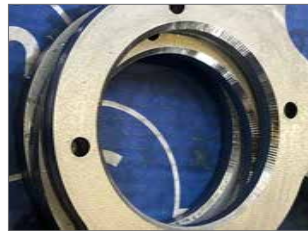
- 90°

| Order Code  | Dimensions (mm) |     |    |    |    |    |    |    |     | Z | Ⓚ<br>KG | MAX<br>RPM | Inserts<br>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    |            |                 |        |      |

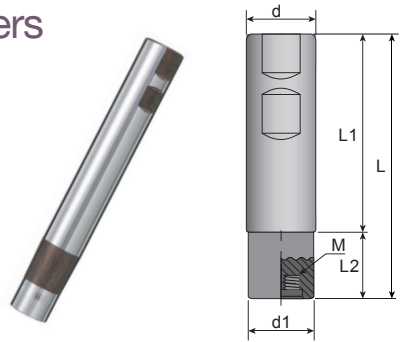
### Note:

- 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.



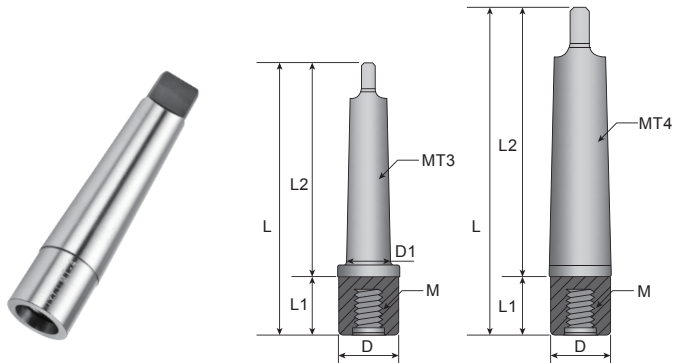
# Chamfer King Combi Toolholders



## 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

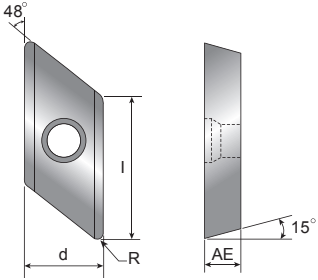


Chamfer

| 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)

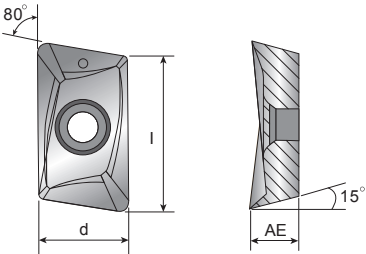
d      AE  
 $\pm 0.015$      $\pm 0.015$

| 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)

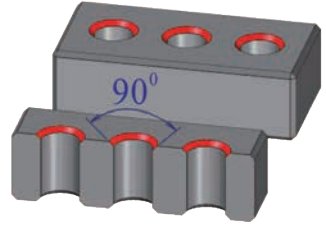
d      AE  
 $\pm 0.015$      $\pm 0.015$

| 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 | ★      |      |      |     |     |        |       |      |          |    |   | <br>Inserts 10 PCS / Box |

★ All Materials

# 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 |             |         |     |         |                             |         |    |         |  |  |
|                              | 1                           | 2       | 3           | 4            | 5               | 6       | 7                            | 8         | 9   | 10      | 11          | 12      | 13                           | 14  | 15          | 16      | 17  | 18      | 19                          | 20      | 21 | 22      |  |  |
|                              | Vc: 20 m/min Fn: 0.1 mm/rev |         |             |              |                 |         | Vc: 15 m/min Fn: 0.12 mm/rev |           |     |         |             |         | Vc: 50 m/min Fn: 0.15 mm/rev |   |             |         |     |         | Vc: 20 m/min Fn: 0.1 mm/rev |         |    |         |  |  |
|                              | RPM                         |         | Feed mm/min |              | RPM             |         | Feed mm/min                  |           | RPM |         | Feed mm/min |         | RPM                          |   | Feed mm/min |         | RPM |         | Feed mm/min                 |         |    |         |  |  |
| rev/min                      |                             | 1 Tooth |             | 3 Teeth      |                 | rev/min |                              | 1 Tooth   |     | 3 Teeth |             | rev/min |                              | 1 Tooth   |             | 3 Teeth |     | rev/min |                             | 1 Tooth |    | 3 Teeth |  |  |
| 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 |         |                         |        |             |        |    |         |    |        |    |        |  |
|                              | 1                         | 2       | 3            | 4               | 5                        | 6       | 7           | 8        | 9                        | 10     | 11  | 12      | 13                      | 14     | 15          | 16     | 17 | 18      | 19 | 20     | 21 | 22     |  |
|                              | 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                       |         | Feed mm/min  |                 | RPM                      |         | Feed mm/min |          | RPM                      |        | Feed mm/min   |         | RPM                     |        | Feed mm/min |        |    |         |    |        |    |        |  |
| rev/min                      |                           | 1 Tooth |              | 3 Teeth         |                          | rev/min |             | 1Tooth   |                          | 3Teeth |   | rev/min |                         | 1Tooth |             | 3Teeth |    | rev/min |    | 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

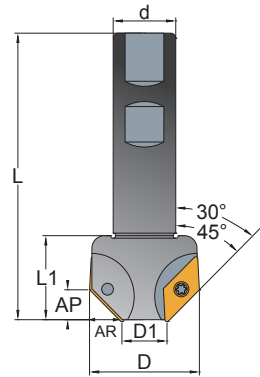
Durability  
**300%**  
UP



# PRODUCT SPECIFICATIONS

## Chamfer Milling Cutters

- Inserts P. 337
- Cutting Data P. 338 - 339

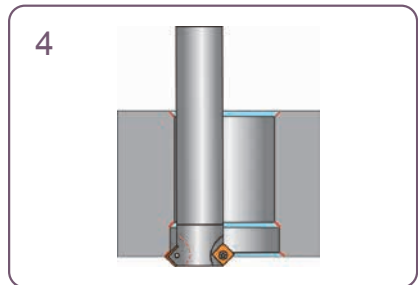
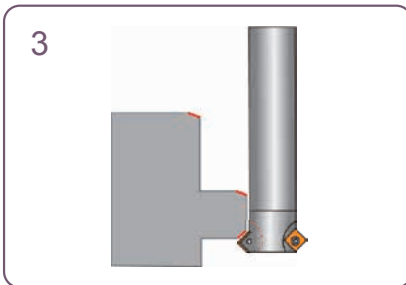
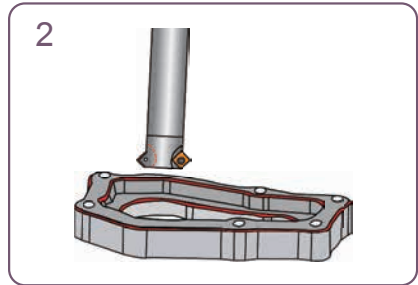
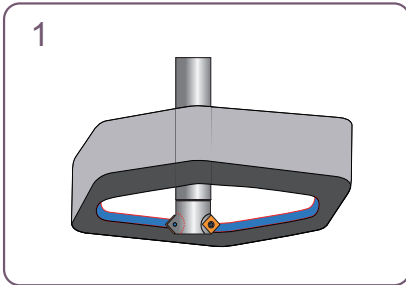
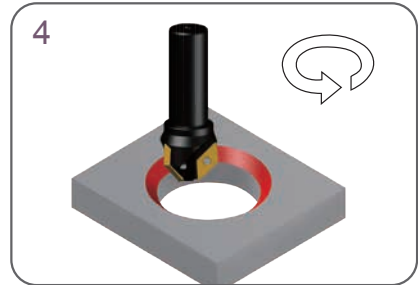
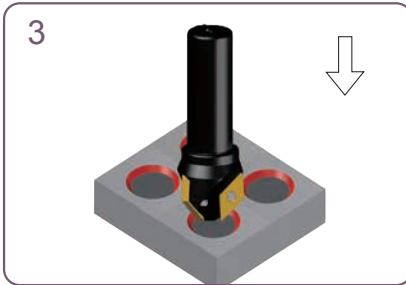
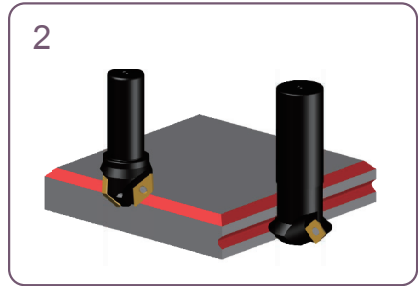
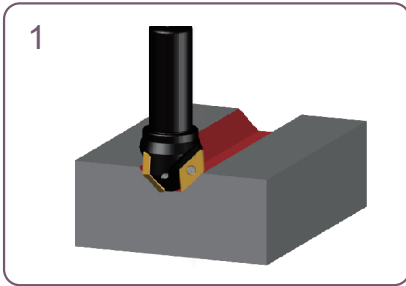


C

| Order Code | Dimensions (mm) |    |    |     |    |    |      | Z    | KG   | 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 |
| C-1770-45° | 70              | 17 | 32 | 110 | 50 | 28 | 28   | 0.96 |      | 8500    | 400408       |        |        |

# Product Applications

## Type of operation



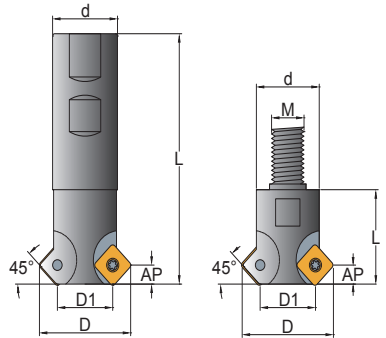
Chamfer



# Dual Chamfer Milling Cutters

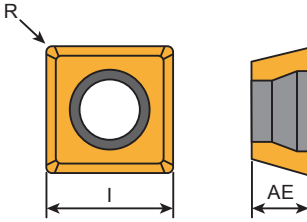
- Inserts P. 327
- Cutting Data P. 327
- Combi Toolholders P. 347 - 348

**MC/HMC**

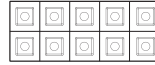


| Order Code | Dimensions (mm) |    |    |     |    |    | Z | KG   | MAX RPM | Inserts SDET | Screw   | Key  |
|------------|-----------------|----|----|-----|----|----|---|------|---------|--------------|---------|------|
|            | D               | D1 | d  | L   | AP | M  |   |      |         |              |         |      |
| 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      | 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, i.e.: 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            |                          | -         | B100      | - |
| 2              | 0.08-0.18            | 130 160 185              | -         | 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            |                          | -         | B100      | - |
| 20             | 0.05-0.08            | 30 40 50                 | -         | B100      | - |
| 21             | 0.06-0.10            |                          | -         | B100      | - |
| 22             | 0.05-0.06            |                          | -         | B100      | - |

Chamfer



# CORNER ROUNDING CUTTER-390 SYSTEM



**PATENTED**



Video

Patent No.  
M473882  
M474588  
M473881

Patent No.  
201310453057.2  
201320772697.5

 PCT Priority

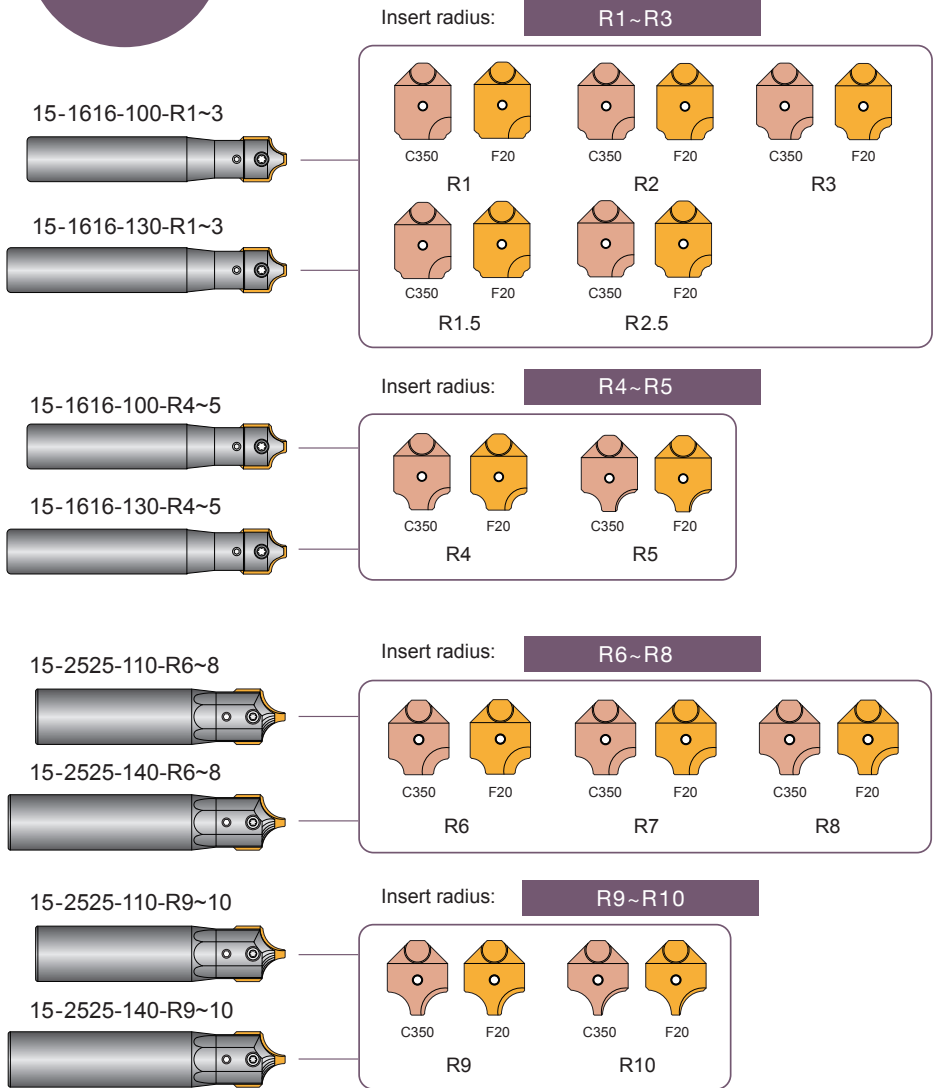
## Features



# 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.



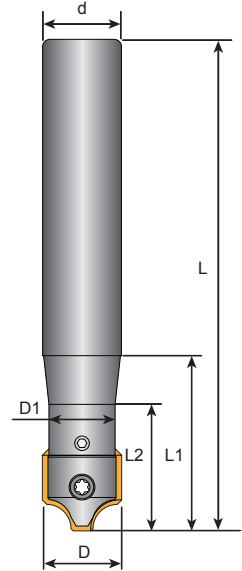
Chamfer



# Indexable Corner Rounding Toolholders

- Inserts P. 331
- Cutting Data P. 333

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 |         |                 |              |

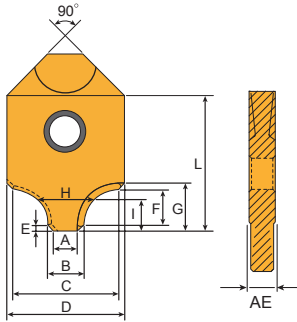
# 25 Carbide Inserts



Inserts 6 PCS / Box  
Only for insert :25-25\*\*\*



Inserts 10 PCS / Box



Tolerances (mm)

D : ± 0.05    AE :  $\begin{matrix} +0.01 \\ -0.02 \end{matrix}$

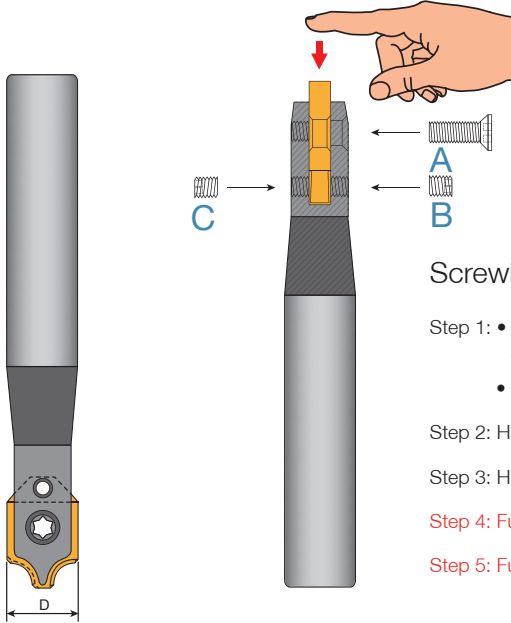
| Dimensions (mm) |      |       |       |       |      |      |       |       |      |      |     |
|-----------------|------|-------|-------|-------|------|------|-------|-------|------|------|-----|
| R               | A    | B     | C     | D     | E    | F    | G     | H     | I    | L    | AE  |
| 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 | 0.66  | 4.99 | 6.36 | 8.04  | 4.17  |      |      |     |
| 6.0             | 11.2 | 12.38 | 24.15 | 25.15 | 0.58 | 5.96 | 7.16  | 15.84 | 4.76 | 30.0 | 3.5 |
| 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 | 10.0 | 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 and the grade of inserts, i.e.: 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  |
|---|---|--|---|--|
| <br>16 | <br>C03510 | <br>S0404 | <br>T10P | <br>L02 |
| 25  | C04017  | S0508  | T15P  | L025   |

# Recommended Cutting Data And Insert Grades

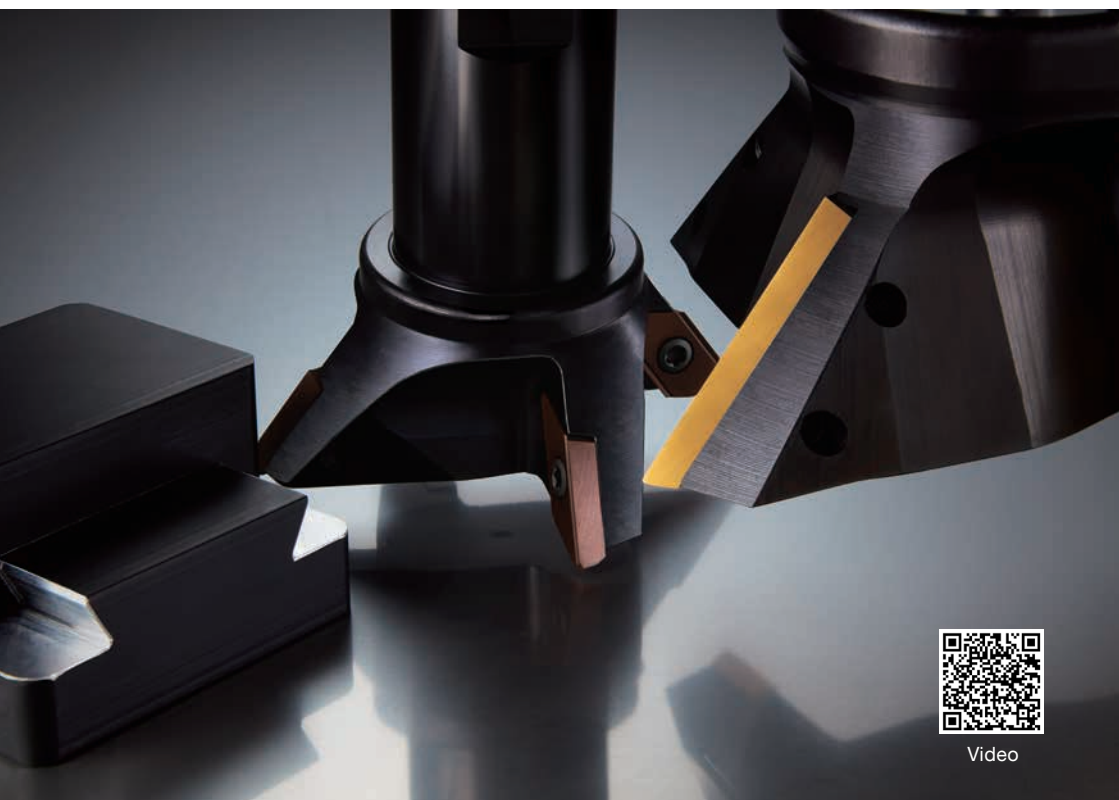
| Material group | Recom. fz (mm/tooth)<br>AR/Dc = 10% | Grades |     |
|----------------|-------------------------------------|--------|-----|
|                |                                     | ME     | E   |
| 1              | 0.10-0.12                           | C350   | -   |
| 2              | 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 |



# DOVETAILED MILLING CUTTERS SERIES



Video

## Features

Available in materials



Cost  
**100~300%**  
SAVING

Applicable  
Machines  
CNC Milling machine

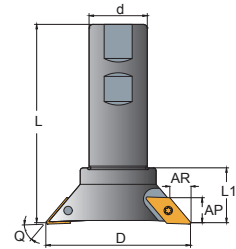
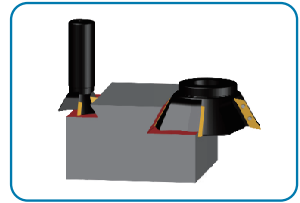
Efficiency  
**300%**  
UP

Durability  
**300%**  
UP

# PRODUCT SPECIFICATIONS

## Dovetail Toolholders

- Inserts P. 337
- Cutting Data P. 338 - 339



**XD**

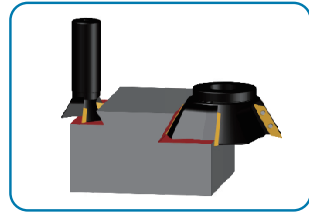
| Order Code | Dimensions (mm) |    |    |     |      |    |    | Z    | KG    | MAX. RPM | Inserts XDGT | Screw | Key |
|------------|-----------------|----|----|-----|------|----|----|------|-------|----------|--------------|-------|-----|
|            | D               | d  | Q  | L   | AP   | AR | L1 |      |       |          |              |       |     |
| XD2040-50  | 40              | 20 | 50 | 110 | 10   | 8  | 2  | 0.31 | 17000 | 120308   | C03506       | T10P  |     |
| XD2040-55  |                 |    | 55 |     | 10.5 | 7  |    |      |       |          |              |       |     |
| XD2040-60  |                 |    | 60 |     | 11   | 6  |    |      |       |          |              |       |     |
| XD3260-45  | 60              | 32 | 45 | 110 | 13   | 10 | 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  | 190408   | C04008       | T15P  |     |
| XD3280-50  |                 |    | 50 |     | 14   | 11 |    |      |       |          |              |       |     |
| XD3280-55  |                 |    | 55 |     | 15   | 10 |    |      |       |          |              |       |     |
| XD3280-60  |                 |    | 60 |     | 16   | 9  |    |      |       |          |              |       |     |

Dovetail

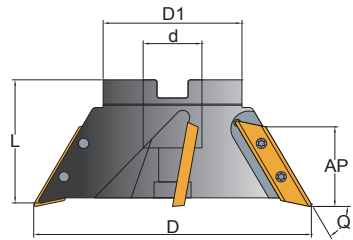


# Dovetail Milling Cutters

- Inserts P. 337
- Cutting Data P. 338 - 339



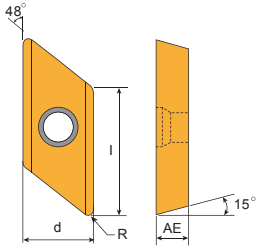
Big "AP" is available with insert XDGT40. Achieve better surface finishing.



## XV

| Order Code    | Dimensions (mm) |    |      |    |    |    | Z | KG   | 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

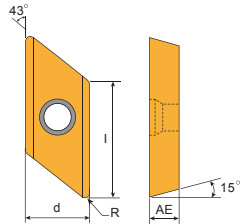


### Tolerances (mm)

d  $\pm 0.015$  AE  $\pm 0.015$

| 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 |      |      |     |     |        |       |      |          | Material |    |  |  |                      |                     |
|---------|----------------|--------|------|------|-----|-----|--------|-------|------|----------|----------|----|--|--|----------------------|---------------------|
|         |                | Coated |      |      |     |     | Cermet |       |      | Uncoated | E        | ME |  |  |                      |                     |
|         |                | B100   | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE       | M  |  |  |                      |                     |
|         | XDGT120308R-E  |        |      |      |     |     |        |       |      |          |          |    |  |  | Inserts 10 PCS / Box |                     |
|         | XDGT120308R-ME | ⊙      |      |      |     |     |        |       |      |          |          |    |  |  |                      |                     |
|         | XDGT120308TR-M | ⊙      |      |      |     |     |        |       |      |          |          |    |  |  |                      |                     |
|         | XDGT190408R-E  |        |      |      |     |     |        |       |      |          |          |    |  |  |                      |                     |
|         | XDGT190408R-ME | ⊙      |      |      |     |     |        |       |      |          |          |    |  |  |                      |                     |
|         | XDGT190408TR-M | ⊙      |      |      |     |     |        |       |      |          |          |    |  |  |                      |                     |
|         | XDGT400408R-E  |        |      |      |     |     |        |       |      |          |          |    |  |  |                      | Inserts 2 PCS / Box |
|         | XDGT400408R-ME | ⊙      |      |      |     |     |        |       |      |          |          |    |  |  |                      |                     |
|         | XDGT400408TR-M | ⊙      |      |      |     |     |        |       |      |          |          |    |  |  |                      |                     |



### Tolerances (mm)

d  $\pm 0.015$  AE  $\pm 0.015$

\* 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 |      |      |     |     |        |       |      |          | Material |    |  |                      |  |                     |
|---------|-----------------|--------|------|------|-----|-----|--------|-------|------|----------|----------|----|--|----------------------|--|---------------------|
|         |                 | Coated |      |      |     |     | Cermet |       |      | Uncoated | E        | ME |  |                      |  |                     |
|         |                 | B100   | C200 | C250 | F20 | F30 | CE25   | CE100 | CE60 | K10      | CE       | M  |  |                      |  |                     |
|         | XDGT120308NR-E  |        |      |      |     |     |        |       |      |          |          |    |  | Inserts 10 PCS / Box |  |                     |
|         | XDGT120308NR-ME | ⊙      |      |      |     |     |        |       |      |          |          |    |  |                      |  |                     |
|         | XDGT120308NTR-M | ⊙      |      |      |     |     |        |       |      |          |          |    |  |                      |  |                     |
|         | XDGT190408NR-E  |        |      |      |     |     |        |       |      |          |          |    |  |                      |  |                     |
|         | XDGT190408NR-ME | ⊙      |      |      |     |     |        |       |      |          |          |    |  |                      |  |                     |
|         | XDGT190408NTR-M | ⊙      |      |      |     |     |        |       |      |          |          |    |  |                      |  |                     |
|         | XDGT400408NR-E  |        |      |      |     |     |        |       |      |          |          |    |  |                      |  | Inserts 2 PCS / Box |
|         | XDGT400408NR-ME | ⊙      |      |      |     |     |        |       |      |          |          |    |  |                      |  |                     |
|         | 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



## 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                         |
|   | -      | -                          |
|   | -      | -                          |
|   | -      | -                          |





# ALUMINIUM ALLOY FACE MILLING CUTTER



## Features

Available in  
materials

N

Cost  
**150%**  
SAVING

Applicable  
Machines  
CNC Milling machine

Efficiency  
**150%**  
UP

Durability  
**150%**  
UP

# Product Design

## Clamping By A Catridge Centre-Lock Clamping

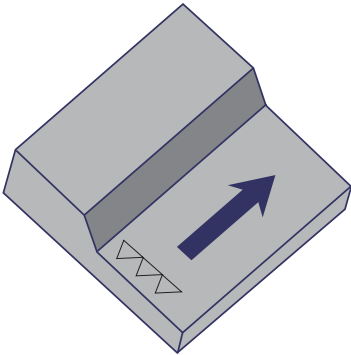
Designed with adjustable catridges by which inserts held in position and fine-tunable.

Octagon insert with 8 cutting edges, the best choice for economical cost



Light aluminum alloy cutter in better stability, specially for machining non-ferrous metals in high cutting speed. It performs excellent surface finishing.

Surface Finish  $Ra < 1.5 \mu m$

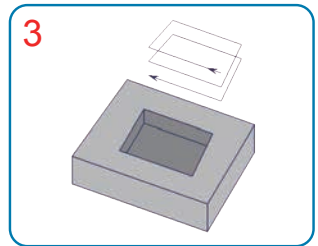
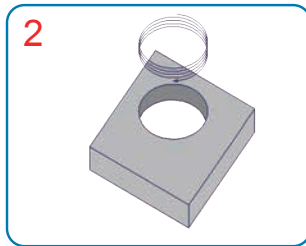
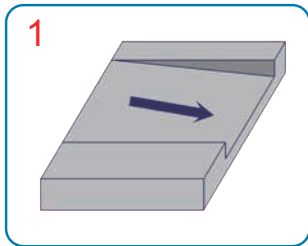
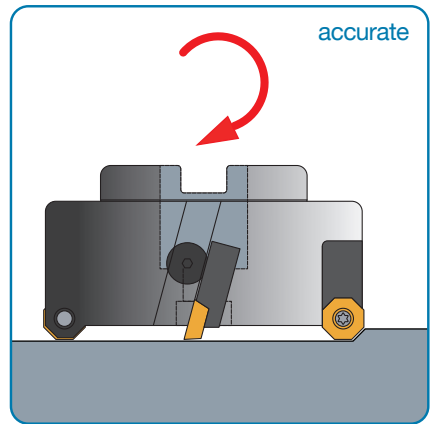
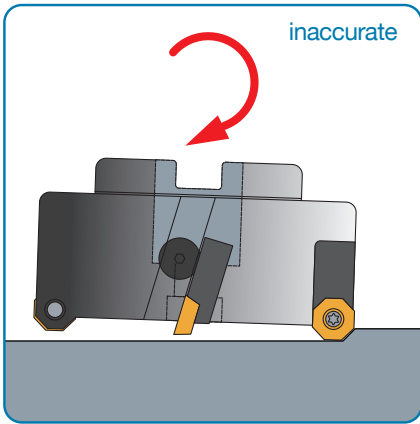


Alu-  
Face Milling



# Features Description

The importance of spindle accuracy in face milling.

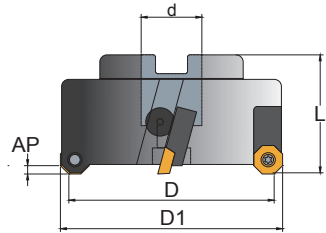


# PRODUCT SPECIFICATIONS

## Aluminium Alloy Face Milling Cutters

- Inserts P. 344
- Cutting Data P. 344-345

MO

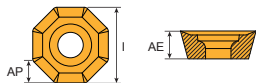


| Order Code      | Dimensions (mm) |     |    |    |    | Z  | KG   | MAX RPM | Inserts ODGT | Screw  | Key  |
|-----------------|-----------------|-----|----|----|----|----|------|---------|--------------|--------|------|
|                 | D               | D1  | d  | L  | AP |    |      |         |              |        |      |
| MO-080R-AL-C-22 | 80              | 92  | 22 | 50 |    | 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 | 3  | 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



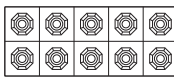


# ODGT Insert



Tolerances ±0.03 (mm)

| 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,  $V_c$ (m/min)

| Material group               | Grades        |      |     |      |    |               |      |
|------------------------------|---------------|------|-----|------|----|---------------|------|
|                              | B100          | C250 | F20 | CE60 | CE | K10           | F30  |
|                              | fz (mm/tooth) |      |     |      |    |               |      |
|                              |               |      |     |      |    | 0.13          | 0.25 |
| Cutting Speed, $V_c$ (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  |

Alu-  
Face Milling



# COMBIMASTER TOOLHOLDERS



## Features

Maximum  
Run Out At  
3XD Is 5 $\mu$ m

Cost  
**150%**  
SAVING

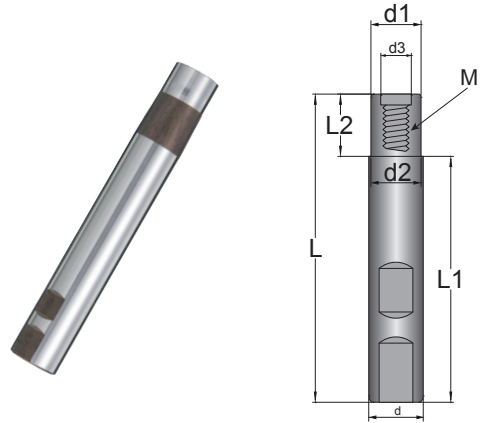
Applicable  
Machines  
CNC Milling machine

Efficiency  
**150%**  
UP

Durability  
**150%**  
UP

# PRODUCT SPECIFICATIONS

## Combimaster Toolholders

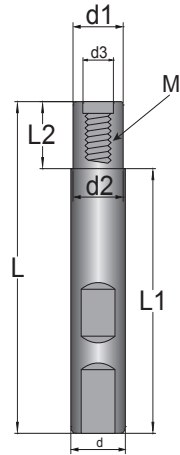


### CBH

| 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   |      |      |
| CBH-1212-80  | 12              | 12 | 12 |     | -  | -   | 60   |      | M6   |
| CBH-1211-100 |                 | 11 | 11 | 60  | 20 | 80  | 0.07 |      |      |
| CBH-1211-120 |                 |    |    | 80  |    | 100 |      | 0.09 |      |
| 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 |



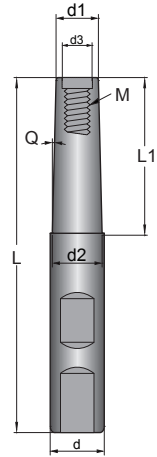
# Combimaster Toolholders



## CBH

| Order Code     | Dimensions (mm) |    |    |      |     |     |      |     |      |
|----------------|-----------------|----|----|------|-----|-----|------|-----|------|
|                | d               | d1 | d2 | d3   | L1  | L2  | L    | M   | KG   |
| 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 |     | 130  |     | 0.46 |
| CBH-2523-210   |                 |    |    |      | 140 | 30  | 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   |                 |    |    |      | 80  | 20  | 100  |     | 0.56 |
| CBH-3230-200   |                 |    | 30 |      | 130 | 30  | 160  |     | 0.92 |
| CBH-3230-240   |                 | 30 |    |      | 170 |     | 200  |     | 1.16 |
| CBH-3230-280   |                 |    |    |      | 190 | 50  | 240  |     | 1.42 |
| CBH-3230-300   |                 |    | 32 |      | 210 |     | 260  |     | 1.53 |
| CBH-4240-220   | 42              | 40 | 40 | 28   | 130 | 20  | 150  | M18 | 2.14 |
| CBH-50.849-215 | 50.8            | 49 | 49 | 36   | 170 | 30  | 200  | M25 | 2.93 |
| CBH-50.849-265 |                 |    |    |      |     |     |      |     |      |

# Combimaster Toolholders



## CBH

| Order Code   | Dimensions (mm) |    |      |      |      |     |     |      |      |
|--------------|-----------------|----|------|------|------|-----|-----|------|------|
|              | d               | d1 | d2   | d3   | L1   | L   | M   | Q    | KG   |
| CBH-1209-120 | 12              | 9  | 11.9 | 6.5  | 40   | 100 | M6  | 2°   | 0.10 |
| CBH-1611-120 | 16              | 11 | 15.5 |      | 60   | 130 |     |      | M8   |
| CBH-1611-150 |                 |    |      |      |      |     |     | 2.5° |      |
| 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 |                 |    |      |      | 0.43 |     |     |      |      |
| CBH-2519-180 | 25              | 19 | 24   | 10.5 | 70   | 150 | M10 |      | 0.47 |
| CBH-2519-220 |                 |    |      |      | 90   | 190 |     |      | 0.62 |
| CBH-3223-200 | 32              | 23 | 28   | 14   | 75   | 160 | M12 |      | 0.81 |
| CBH-3223-240 |                 |    | 31.5 |      | 80   | 200 |     | 1.10 |      |
| CBH-4232-280 | 42              | 32 | 41.5 | 22   | 110  | 240 | M16 | 2.10 |      |
| CBH-4232-340 |                 |    |      |      | 120  | 300 |     | 2.63 |      |
| CBH-4232-410 |                 |    |      |      | 150  | 370 |     | 3.00 |      |

Accessories



# APPENDIX

- RELEVANT INFORMATION



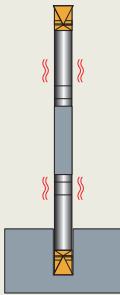

# Features Description

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, stainless 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             | <ol style="list-style-type: none"> <li>1. Weak fixturing</li> <li>2. Tool overhang too long</li> <li>3. Feed rate is too high</li> </ol> | <ol style="list-style-type: none"> <li>1. Use correct cutting data</li> <li>2. Check clamping of the workpiece and tool</li> <li>3. Minimize overhang</li> <li>4. Check tool holder run out</li> <li>5. Choose a tool with fewer teeth</li> <li>6. Increase number of infeed passes</li> <li>7. Use up-milling in finishing</li> </ol> |
|  | Insufficient thread accuracy | Tool deflection  | <p>Reduce feed rate<br/>Execute a "zero" cut, and make sure the tool in correct center line</p>  |
|   |                              |  |  |
|   |                              |  |  |



# Material Classification Groups

• Steel

| mat. 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     |                                  | 1.0301     | 30 Mn5       | 120 M 36                        |                          |  |                 |              |                |                |
|            | 1.0301     | C22+N                            | 1.0402     | C 10         | 045 M 10                        | AF 34 C 10; XC 10        | SMn 1 H; SCMn 2<br>S 10 C                                |                 |              |                |                |
|            | 1.0401     |                                  |            | C 15         | 080 M 15                        | AF3 7 C 12; XC 18        |  |                 |              |                |                |
|            | 1.0402     |                                  |            | C 22         | 050 A 20                        | C 20                     |  |                 |              |                |                |
|            | 1.0406     |                                  |            | C 10E        | 1.1121                          | C 25                     |  | 070 M 26        | AF 50 C 30   |                |                |
|            | 1.1121     |                                  |            | C 15R        | 1.1141                          | Ck 10                    |  | 040 A 10        | XC 10        |                |                |
|            | 1.1141     |                                  |            | C 22E        | 1.1151                          | Ck 15                    |  | 080 M 15        | XC 15; XC 18 |                |                |
|            | 1.1151     |                                  |            | S235JR       | 1.0037                          | Ck 22                    |  | 040 A 22        | XC25; XC 18  |                |                |
|            | 1.1158     |                                  |            |              |                                 | Ck 25                    |  | 060 A 25        | XC 25        |                |                |
|            | 1.0037     |                                  |            |              |                                 | S235JRG2                 |  | 1.0038          | St 37-2      | E24-2          | S 25 C         |
|            | 1.0116     |                                  |            |              |                                 | S275J0H                  |  | 1.0149          | St 37-3      | E 24-3; E 24-4 | S 10 C; S 9 CK |
|            | 1.0044     | S275J2G3                         | 1.0144     |              |                                 | St 44-2                  | 4360-40 C  | S 15 C; S 15 CK |              |                |                |
|            | 1.0144     |                                  |            |              |                                 | St 44-3 N                | 4360-43 B  | S 22 C; S 20 CK |              |                |                |
|            |            |                                  |            |              |                                 | 4360-43 C                | S 25 C   |                 |              |                |                |
|            |            |                                  |            |              |                                 |                          | STKM 12 C  |                 |              |                |                |
| 2          | 1.0721     | 10 S 20                          | 1.0721     | 10 S 20      | 210 M 15                        | 10 F 1                   | SUM 32   |                 |              |                |                |
|            | 1.0722     |                                  |            | 10 SPb 20    |                                 | 10 PbF 2                 |  |                 |              |                |                |
|            | 1.0723     | 15 SMn13                         | 1.0725     | 15 S 20      | 210 A 15                        |                          |  |                 |              |                |                |
|            | 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                        |                          |  |                 |              |                |                |
|            | 1.0715     | 11 SMn30                         | 1.0715     | 9 SMn 28     | 230 M 07                        | S 250                    |  |                 |              |                |                |
|            | 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                 |  |                 |              |                |                |
|            | 1.0737     | 11 SMnPb37                       | 1.0737     | 9 SMnPb 36   |                                 | S 300 Pb                 |  |                 |              |                |                |
| 3          | 1.5622     | G 28 Mn6+QT                      | 1.1165     | 14 Ni 6      | 1503-245-420                    | 16 N 6                   | SB 450 M<br>SMn 438 (H); SCMn 3                          |                 |              |                |                |
|            | 1.5423     |                                  |            | 16 Mo 5      |                                 |                          |  |                 |              |                |                |
|            | 1.1167     |                                  |            | 36 Mn 5      |                                 |                          |  |                 |              |                |                |
|            | 1.1157     |                                  |            | 40 Mn 4      |                                 |                          |  |                 |              |                |                |
|            | 1.0528     |                                  |            | C 30         |                                 |                          |  |                 |              |                |                |
|            | 1.0501     |                                  |            | C 35         |                                 |                          |  |                 |              |                |                |
|            | 1.0511     |                                  |            | C 40         |                                 |                          |  |                 |              |                |                |
|            | 1.0503     |                                  |            | C 45         |                                 |                          |  |                 |              |                |                |
|            | 1.0540     |                                  |            | C 50         |                                 |                          |  |                 |              |                |                |
|            | 1.1178     |                                  |            | Ck 30        |                                 |                          |  |                 |              |                |                |
|            | 1.1181     | C 35E                            | 1.1181     | Ck 35        | 060 A 30                        | 40 M 5                   |  |                 |              |                |                |
|            | 1.1186     | C 40E                            | 1.1186     | Ck 40        | 080 M 36                        | 35 M 5                   |  |                 |              |                |                |
|            | 1.1206     | C 50E                            | 1.1206     | Ck 50        | 080 M 40                        | 30 C 30                  |  |                 |              |                |                |
|            | 1.1203     | C 55E                            | 1.1203     | Ck 55        | 080 M 46                        | AF 55 C 35               |  |                 |              |                |                |
|            | 1.0570     | S355JR                           | 1.0570     | St 52-3      | 080 M 50                        | AF 60 C 40               |  |                 |              |                |                |
| 1.0535     | E 360      | 1.0070                           | St 70-2    | 070 M 55     | AF 65 C 45                      |                          |  |                 |              |                |                |
| 4          | 1.5680     | 13 CrMo 4 5                      | 1.7335     | 12 Ni 19     | 1501-620 Gr. 27<br>1503-660-440 | Z 18 N 5                 | SNC 415 (H)<br>SNC 815 (H)<br>SCR 415 (H)<br>SCM 415 (H) |                 |              |                |                |
|            | 1.7012     |                                  |            | 13 Cr 2      |                                 |                          |  |                 |              |                |                |
|            | 1.7335     |                                  |            | 13 CrMo 4 4  |                                 |                          |  |                 |              |                |                |
|            | 1.7715     |                                  |            | 14 MoV 6 3   |                                 |                          |  |                 |              |                |                |
|            | 1.5732     |                                  |            | 14 NiCr 10   |                                 |                          |  |                 |              |                |                |
|            | 1.5752     |                                  |            | 14 NiCr 14   |                                 |                          |  |                 |              |                |                |
|            | 1.7015     |                                  |            | 15 Cr 3      |                                 |                          |  |                 |              |                |                |
|            | 1.7262     |                                  |            | 15 CrMo 5    |                                 |                          |  |                 |              |                |                |
|            | 1.8521     |                                  |            | 15 CrMoV 5 9 |                                 |                          |  |                 |              |                |                |
|            | 1.5919     | 15 CrNi 6                        | 1.5752     | 14 NiCr 14   | 655 M 13                        | 14 NC 11                 |  |                 |              |                |                |
|            | 1.5415     | 16 Mo 3                          | 1.5415     | 15 Mo 3      | 523 M 15                        | 12 NC 15                 |  |                 |              |                |                |
|            | 1.2735     |                                  |            | 15 NiCr 14   |                                 | 12 C 3                   |  |                 |              |                |                |
|            | 1.7337     |                                  |            | 16 CrMo 44   |                                 | 12 CD 4                  |  |                 |              |                |                |
|            | 1.7131     | 16 MnCr 5                        | 1.5715     | 16 MnCr 5    | S 107                           | 16 NC 6                  |  |                 |              |                |                |
|            | 1.7139     | 16 MnCrS 5                       | 1.7139     | 16 MnCrS 5   | 1501-240                        | 15 D 3                   |  |                 |              |                |                |
|            | 1.5920     |                                  |            | 18 CrNi 8    |                                 | 10 NC 12                 |  |                 |              |                |                |
|            | 1.6587     | 17 CrNiMo 6                      | 1.6587     | 18 CrNiMo 6  | 1501-620 Gr. 27                 | 15 CD 4.5                |  |                 |              |                |                |
|            | 1.7311     |                                  |            | 20 CrMo 2    | 527 M 17                        | 16 MC 5                  |  |                 |              |                |                |
|            | 1.7264     | 20 CrMo 5                        | 1.7264     | 20 CrMo 5    |                                 | 20 NC 6                  |  |                 |              |                |                |
| 1.7147     | 20 MnCr 5  | 1.7147                           | 20 MnCr 5  | 820 A 16     | 18 NCD 6                        |                          |  |                 |              |                |                |
| 1.7149     | 20 MnCrS 5 | 1.7149                           | 20 MnCrS 5 |              | 20 NC 6                         |                          |  |                 |              |                |                |
| 1.7321     |            |                                  | 20 MoCr 4  |              | 18 NCD 6                        |                          |  |                 |              |                |                |
| 1.7323     |            |                                  | 20 MoCrS 4 |              | 20 NC 6                         |                          |  |                 |              |                |                |
| 1.2162     |            |                                  | 21 MnCr 5  |              | 20 MC 5                         |                          |  |                 |              |                |                |
|            |            |                                  |            |              | 20 MnCrS 5                      | SCR 420H                 |  |                 |              |                |                |
|            |            |                                  |            |              |                                 | SMnC 420 (H)<br>SMnC 21H |  |                 |              |                |                |

• 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

| The material group of workpieces |           |                |             |                |              |              |               |
|----------------------------------|-----------|----------------|-------------|----------------|--------------|--------------|---------------|
| mat. group                       | 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 Cr 4        | 530 A 30     |              | SNCM 431      |
|                                  | 1.7707    |                |             | 28 NiCrMo4     |              |              |               |
|                                  | 1.6580    |                |             | 30 CrMoV 9     |              |              |               |
|                                  | 1.8519    | 31 CrMoV 9     | 1.8519      | 30 CrNiMo 8    | 823 M 30     | 30 CND 8     | SNC 836       |
|                                  | 1.5755    |                |             | 31 CrMov 9     |              |              |               |
|                                  | 1.7020    |                |             | 31 NiCr 14     |              |              |               |
|                                  | 1.7361    | 34 Cr 4        | 1.7033      | 32 Cr 2        | 653 M 31     | 30 NC 11     | SCr 430 (H)   |
|                                  | 1.7033    |                |             | 32 CrMo 12     |              |              |               |
|                                  | 1.7220    |                |             | 34 Cr 4        |              |              |               |
|                                  | 1.2330    | 34 CrMo 4      | 1.7220      | 34 CrMo 4      | 722 M 24     | 530 A 32     | 30 CD 12      |
|                                  | 1.5864    |                |             | 35 CrMo 4      |              |              |               |
|                                  | 1.6511    |                |             | 35 NiCr 18     |              |              |               |
|                                  | 1.5736    | 36CrNiMo4+TA   |             | 36 CrNiMo 4    | 708 A 37     | 708 A 37     | 35 CD 4       |
|                                  | 1.5710    |                |             | 36 NiCr 10     |              |              |               |
|                                  | 1.7034    |                |             | 36 NiCr 6      |              |              |               |
|                                  | 1.5122    | 38 Cr2         | 1.7003      | 37 Cr 4        | 816 M 40     | 640 A 35     | 40 NCD 3      |
|                                  | 1.7003    |                |             | 37 MnSi 4      |              |              |               |
|                                  | 1.5120    |                |             | 38 Cr 2        |              |              |               |
|                                  | 1.8523    | 41 Cr 4        | 1.7035      | 38 MnSi 4      | 530 A 36     | 530 A 36     | 35 NC 11      |
|                                  | 1.2311    |                |             | 39 CrMoV 13 9  |              |              |               |
|                                  | 1.2312    |                |             | 40 CrMnMo 7    |              |              |               |
|                                  | 1.2738    | 42 CrMo 4      | 1.7225      | 40 CrMnMoS 8 6 | 897 M 39     | 40 CND 8     | SCr 440 (H)   |
|                                  | 1.7035    |                |             | 40 CrMnNiMo 8  |              |              |               |
|                                  | 1.7223    |                |             | 41 Cr4         |              |              |               |
|                                  | 1.7045    | 42 CrMo 4      | 1.7225      | 41 CrMo 4      | 530 M 40     | 708 M 40     | 40 CND 8      |
|                                  | 1.7225    |                |             | 42 Cr 4        |              |              |               |
|                                  | 1.7561    |                |             | 42 CrMo 4      |              |              |               |
|                                  | 1.5223    | 42 CrMo 4      | 1.7225      | 42 CrV 6       | 708 M 40     | 530 A 40     | 42 C 4 TS     |
|                                  | 1.3563    |                |             | 42 MnV 7       |              |              |               |
|                                  | 1.3561    |                |             | 43 CrMo 4      |              |              |               |
|                                  | 1.7006    | 50 CrV 4       | 1.8159      | 44 Cr 2        | 708 M 40     | 708 M 40     | 42 C 4 TS     |
|                                  | 1.5121    |                |             | 46 Cr 2        |              |              |               |
|                                  | 1.3565    |                |             | 46 MnSi 4      |              |              |               |
|                                  | 1.7228    | 50 MnSi4       | 1.5131      | 48 CrMo 4      | 708 A 47     | 735 A 50     | 42 C 2        |
|                                  | 1.8159    |                |             | 50 CrMo 4      |              |              |               |
|                                  | 1.5131    |                |             | 50 CrV 4       |              |              |               |
|                                  | 1.5141    | 55 Cr 3        | 1.7176      | 50 MnSi 4      | 527 A 60     | 250 A 53     | 50 CV 4       |
|                                  | 1.7176    |                |             | 53 MnSi 4      |              |              |               |
|                                  | 1.0904    |                |             | 55 Cr3         |              |              |               |
|                                  | 1.2103    | 55 SiCr7       | 1.7100      | 55 Si 7        | 527 A 60     | 250 A 53     | 55 C 3        |
|                                  | 1.0961    |                |             | 58 SiCr 8      |              |              |               |
| 1.2101                           | 60 SiCr 7 |                |             |                |              |              |               |
| 1.1730                           | C60+N     | 1.0601         | 62 SiMnCr4  | 080 A 62       | 080 A 62     | 55 S 7       |               |
| 1.1820                           |           |                | C 45W       |                |              |              |               |
| 1.0601                           |           |                | C 55W       |                |              |              |               |
| 1.1740                           | C 75 W    | 1.1750         | C 60        | BW 1A          | 080 A 62     | 60 SC 7      |               |
| 1.1744                           |           |                | C 60W       |                |              |              |               |
| 1.1520                           |           |                | C 67W       |                |              |              |               |
| 1.1620                           | C 45E     | 1.1191         | C 70W1      | BW 1 B         | 080 A 62     | Y3 42        |               |
| 1.1750                           |           |                | C 70W2      |                |              |              |               |
| 1.1525                           |           |                | C 75W       |                |              |              |               |
| 1.1625                           | C 60E     | 1.1221         | C 80W1      | 080 M 46       | 080 A 62     | Y1 90; Y1 80 |               |
| 1.1830                           |           |                | C 80W2      |                |              |              |               |
| 1.1191                           |           |                | C 85W       |                |              |              |               |
| 1.1221                           | C 67S     | 1.1231         | Ck 45       | 080 A 62       | 060 A 67     | XC 42        |               |
| 1.1231                           |           |                | Ck 60       |                |              |              |               |
| 1.1248                           |           |                | Ck 67       |                |              |              |               |
| 1.8159                           | C 75S     | 1.1248         | Ck 75       | 060 A 78       | 060 A 78     | XC 60        |               |
| 1.0060                           |           |                | GS-50 CrV 4 |                |              |              |               |
|                                  |           |                | St 60-2     |                |              |              |               |
|                                  | E 335     | 1.0060         |             | 4360-SSE; SSC  | A 60-2       | XC 68        | 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<br>5130 | G41300     |           |              |           |      |
| 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                    |            |              |            |           |              |           |      |
| 41 Cr 4                          |            | P 20         |            |           |              |           |      |
| 41 CrMo 4                        | 2244       | P 20+S       | G51400     |           |              |           |      |
| 42 Cr 4                          | 2244       | P 20+Ni      | G41420     |           |              |           |      |
| 42 CrMo 4                        | 2244       | 5140         | 5140       |           |              |           |      |
|                                  |            | 4142; 4140   | 4142; 4140 |           |              |           |      |
|                                  |            | 5140         | G41400     |           |              |           |      |
|                                  |            | 4142; 4140   |            |           |              |           |      |
| 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. group | The material group of workpieces |                 |                  |                     |                     |             |             |
|------------|----------------------------------|-----------------|------------------|---------------------|---------------------|-------------|-------------|
|            | W.-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      |             |
|            | 1.1645                           |                 |                  | C 105 W2            |                     | Y1 105      | SK 3        |
|            | 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  |      |
| 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<br>J91201                     |           |             | Martensite<br>Ferrite<br>Martensite<br>Martensite                            |      |
| 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                                | 2326<br>2326<br>2385<br>2301<br>2320 | 444<br>444<br>309<br>409 L<br>403<br>430<br>405 | S40977<br>S41500<br>S40900<br>S41008<br>S43000<br>S40500 |           | F6NM        | Ferrite<br>Ferrite<br>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<br>L2         | J 21890<br>G51986<br>T31501<br>T 72302<br>T61202         |           |             |  |      |
| 34 CrAlMo 7   |                                      | A 355 CI. D                                     | K 23545<br>K 52440<br>K 23745                            |           |             |  |      |
| 35 NiCrMo 6 (KW)<br>40 NiCrMo 2 (KB)  | 2541                                 | 4340<br>8740                                    | G87400   |           |             |  |      |
| 41 CrAlMo 7<br>45 WCrV 8 KU   | 2940<br>2710                         | 4340<br>A 355 CI. 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   |           |             |  |      |
| X 20 Cr 13  | 2322                                 | 446   | S44600   |           |             | Ferrite  |      |
| X 16 CrNi 16<br>X 22 CrMoV 12 1<br>X 30 Cr 13<br>X 38 CrMo 16 1 KU                                    | 2303<br>2321-03<br>2317<br>2304      | 420<br>431<br>420<br>422                        | S42000<br>S42200<br>S43100<br>J91153                     |           |             | Martensite<br>Martensite<br>Martensite<br>Martensite<br>Martensite           |      |
| X 40 Cr 14  | 2387<br>2304,2314                    | -<br>420  | -<br>S40280  |           |             | Martensite<br>Martensite   |      |



• Steel

| The material group of workpieces |                |                      |                    |                     |               |                        |                    |
|----------------------------------|----------------|----------------------|--------------------|---------------------|---------------|------------------------|--------------------|
| mat. group                       | W.-Nr          | EN                   | EN-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 WKCW 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 06-05-04-02 | 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          | Z 110 WKCDV 07-05-04   | SKD 12             |
|                                  | 1.4125         | X 105 CrMo 17        | 1.4125             | X 105 CrMo 17       | BD 2          | Z 100 CDV 5            | SUS 440 C          |
|                                  | 1.2379         | X 155 CrVMo 12 1     |                    | X 155 CrVMo 12 1    |               | Z 100 CD 17            | SKD 11             |
|                                  | 1.2601         |                      |                    | X 165 CrMoV 12      |               | Z 160 CDV 12           |                    |
|                                  | 1.2709         |                      |                    | X 2 NiCoMoTi 18 9 5 | BD 3          |                        | SKD 1              |
|                                  | 1.2080         | X 210 Cr 12          | 1.2080             | X 210 Cr 12         |               | Z 2 NKD 19-09          | SKD 2              |
| 1.2436                           |                |                      | X 210 CrW 12       |                     | Z 200 C.12    |                        |                    |
| 1.2706                           |                |                      | X 3 NiCrMo 18 8 5  |                     |               |                        |                    |
| 1.2567                           |                |                      | X 30 WCrV 5 3      | BH 21               | E-Z 2 NKD 18  | SKD 4                  |                    |
| 1.2581                           |                |                      | X 30 WCrV 9 3      |                     | Z 32 WCV 5    | SKD 5                  |                    |
| 1.2885                           |                |                      | X 32 CrMoCoV 3 3 3 | BH 10               | Z 30 WCV 9    | SKD 7                  |                    |
| 1.2365                           |                |                      | X 32 CrMoV 3 3     | BH 11               |               | SKD 6                  |                    |
| 1.2343                           |                |                      | X 38 CrMoV 5 1     |                     | Z 32 DCV 28   |                        |                    |
| 1.2367                           |                |                      | X 38 CrMoV 5 3     | BH 13               | Z 38 CDV 5    | SKD61                  |                    |
| 1.2344                           | X 40 CrMoV 5 1 | 1.2344               | X 40 CrMoV 5 1     |                     | Z 40 CDV 5    |                        |                    |
| <b>Hardened steel</b>            |                |                      |                    |                     |               |                        |                    |
| 7                                | 1.3401         | X 120 Mn 12          | 1.3401             | X 120 Mn 12         | BW 10         | Z 120 M 12             | SC MnH 1           |
| <b>Stainless steel</b>           |                |                      |                    |                     |               |                        |                    |
| 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             |                     | 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 CANNb 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<br>440 A              | S44002   |              |              | Martensite<br>Martensite                                      |      |
| X 80 CrSiNi 20<br>X CrTi 12   | 2327                         | SAE HNV 6<br>440 B                            | 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   |              |              |   |      |
| 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                      | T11323<br>T11323<br>T11341<br>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   |              |              |   |      |
| 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   |              |              |   |      |
| <b>Hardened steel</b>   |                              |   |  |              |              |   |      |
|   | 2183                         | A128 Grade A                                  |  |              |              |   |      |
| <b>Stainless steel</b>  |                              |   |  |              |              |   |      |
| 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>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<br>309     | S31008<br>S32100<br>S34700<br>S30900<br>S30403           |              |              | Austenite<br>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               | 2348<br>2353<br>2367         | 304 L<br>316 L<br>316 L<br>317 L              | S31603<br>S31603<br>S31703                               |              |              | Austenite<br>Austenite<br>Austenite<br>Austenite              |      |





• 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<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           | Sol. treated                 | 254 SMO<br>Sanicro 28<br>Alloy 800               | Super austenite<br>Super austenite<br>PH                  |      |
| X 2 CrNiMoN 25 7 4                       | 2328                 | 330<br>F 53<br>255<br>F 55   | N08330<br>S32750<br>S32550<br>S32760 |                              | Incoloy DS<br>SAF 2507<br>Ferralium<br>Zeron 100 | 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           |                              | SAF 2205<br>SAF 2205<br>654 SMO                  | Duplex<br>Duplex<br>Super austenite                       |      |
|  | 2327<br>2562<br>2564 | -<br>904L<br>CN7M            | S32304<br>N08904                     |                              | SAF 2304   | Duplex<br>Super austenite<br>Super austenite              |      |
| X 3 CrNiMo 27 5 2                        | 2324                 | XM-12<br>329<br>630          | S15500<br>S32900<br>S17400           | Sol. treated<br>Sol. treated | 15-5-PH<br>17-4-PH                               | 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  |  |  | GCI<br>GCI<br>DCI   |  |
| 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  |  |  | DCI<br>DCI<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  |  |  | GCI<br>GCI<br>DCI<br>DCI<br>Austenite<br>Austenite<br>Austenite<br>Austenite  |  |
| P65-02  | 07 72-00<br>05 23-00<br>08 56-00                         | -<br>A436 Type 2<br>A436Type 2b<br>A220 70003  | F41002<br>F41003<br>F24830  |  |  | 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  |  |  | GCI<br>DCI<br>Austenite<br>Austenite  |  |
| P 70-02   | 08 62-00   | A220 90001   | F26230  |  |  | Martensite  |  |
| G35<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>F43006<br>F43004<br>F43003<br>F43007<br>F43010<br>-<br>F43005<br>F41001 |  |  | GCI<br>GCI<br>Martensite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite<br>Austenite |  |



• Non-Ferrous metal

| mat. 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   |
|            | 3.0255                           | AW-1050A            | Al99.5                     | Al99.5                   | 1B/1050A    | A-5/1050A     | (A1050) |
|            | 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   |
|            | 3.1325                           | AW-2024             | AlCuMg1                    | AlCuMg1                  | H14         | A-U4G/2024    | A2017   |
|            | 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        |         |
|            | 3.3211                           | AW-6061             | AlMg1SiCu                  | AlMg1SiCu                | H20         | (6061)        | A6061   |
|            | 3.3523                           | AW-5052             | AlMg2.5                    | AlMg2.5                  | (N4)        | A-G2.5C/5052  | A5052   |
|            | 3.3537                           | AW-5454             | AlMg2.7Mn                  | AlMg2.7Mn                | N51/5454    | A-G2.5MC/5454 | A5454   |
|            | 3.3525                           | AW-5251             | AlMg2Mn0.3                 | AlMg2Mn0.3               | N4 /5251    | A-U2M         |         |
|            | 3.3527                           | AW-5049             | AlMg2Mn0.8                 | AlMg2Mn0.8               |             | A-G2Mn0.8     |         |
|            | 3.3535                           | AW-5754             | AlMg3                      | AlMg3                    |             | A-G3M         |         |
|            | 3.3345                           |                     |                            | AlMg3                    |             |               | A5082   |
|            | 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     |         |
|            | 3.3210                           | AW-6063             | AlMgSi0.7                  | AlMgSi0.7                | (H10)       | A-GSUC/6061   | (A6063) |
|            | 3.2315                           | AW-6082             | AlMgSi1                    | AlMgSi1                  | H30/6082    | A-SGM0.7/6082 |         |
|            | 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     |               |         |
|            | 3.0517                           | AW-3003             | AlMn1Cu                    | AlMn1Cu                  |             | A-M1/3003     | A3003   |
|            | 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                  |             |               |         |
|            | 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               |             |               |         |
|            | 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                |             | A-S10G        |         |
|            | 3.5106                           |                     |                            | G-MgAg3Se2Zr1            |             |               |         |
|            | 3.5314                           | MG-P-62             | MgAl3Zn                    | G-MgAl3Zn                | MAG-E-111   | G-A3-Z1       |         |
|            | 3.5662                           | MC 21230            | MgAl6Mn                    | G-MgAl6Mn                |             |               |         |
|            | 3.5612                           | MG-P-63             | MgAl6Zn                    | G-MgAl6Zn                | MAG-E-121   | G-A6-Z1       |         |
|            | 3.5812                           | MG-P-61             | MgAl8Zn                    | G-MgAl8Zn                | MAG1-M      | G-A9          |         |
|            | 3.5812                           | MC 21110            | MgAl8Zn1                   | G-MgAl8Zn1               | A82         | G-A92         |         |
|            | 3.5912                           | MC 21120            | MgAl9Zn                    | G-MgAl9Zn1               | MAG3        | G-A92         |         |
|            | 3.5200                           |                     |                            | G-MgMn2                  | MAG-E-101   | G-M2          |         |
| 3.5103     | MB 65110                         | MgSe3Zn2Zr1         | G-MgSe3Zn2Zr1              | MAG6-TE                  | ZRE1        |               |         |
| 3.5105     |                                  |                     | G-MgTh3Zn2Zr1              |                          |             |               |         |
| 17         | 3.2383                           | AC-43200            | AlSi10Mg(Cu)               | G-AlSi10Mg(Cu)           |             |               |         |
|            | 3.2382                           | AC-44200            | AlSi12                     | GD-AlSi12                |             |               |         |
|            |                                  | AC-46100            | AlSi11Cu2(Fe)              |                          | LM9         |               | ADC12   |
|            |                                  | AC-47100            | AlSi12Cu1(Fe)<br>AlSi17Cu5 |                          |             |               | ADC14   |
| 18         | 2.1203                           | CW004A              |                            | Cu                       |             |               |         |
|            | 2.0940.01                        | CW013A              | CuAg0.1                    | CuAg0.1                  | Cu-Ag-4     |               |         |
|            |                                  | CC331G              |                            | CuAl10Fe                 | AB1         | CuAl10Fe      |         |
|            | 2.0975.01                        | CC333G-GZ<br>CC333G |                            | CuAl10Fe5Ni5<br>CuAl10Ni | AB2         | CuAl10Ni5Fe5  |         |

• Non-Ferrous metal

| The material group of workpieces |    |           |         |           |              |           |      |
|----------------------------------|----|-----------|---------|-----------|--------------|-----------|------|
| UNI                              | SS | AISI/ASTM | UNS     | Condition | Misc. Brands | Structure | Form |
| 4010                             |    |           | AA1200  |           |              |           |      |
| 4007                             |    |           | AA1050A |           |              |           |      |
| 4005                             |    |           | AA1070A |           |              |           |      |
| 4004                             |    |           | AA1080A |           |              |           |      |
|                                  |    |           | AA2117  |           |              |           |      |
| 4355                             |    |           | AA2011  |           |              |           |      |
|                                  |    |           | AA2017A |           |              |           |      |
|                                  |    |           | AA2024  |           |              |           |      |
| 4338                             |    |           | AA2014  |           |              |           |      |
| 4106                             |    |           | AA5005A |           |              |           |      |
|                                  |    |           | AA5050B |           |              |           |      |
|                                  |    |           | AA6061  |           |              |           |      |
| 4120                             |    |           | AA5052  |           |              |           |      |
|                                  |    |           | AA5454  |           |              |           |      |
|                                  |    |           | AA5251  |           |              |           |      |
| 4115                             |    |           | AA5049  |           |              |           |      |
| 4125                             |    |           | AA5754  |           |              |           |      |
|                                  |    |           | AA5082  |           |              |           |      |
| 4140                             |    |           | AA5083  |           |              |           |      |
|                                  |    |           | AA5086  |           |              |           |      |
| 4103                             |    |           | AA6060  |           |              |           |      |
| 4104,4107                        |    |           | AA6005  |           |              |           |      |
| 4212                             |    |           | AA6082  |           |              |           |      |
|                                  |    |           | AA6012  |           |              |           |      |
|                                  |    |           | AA3105  |           |              |           |      |
|                                  |    |           | AA3005  |           |              |           |      |
| 4054                             |    |           | AA3103  |           |              |           |      |
|                                  |    |           | AA3003  |           |              |           |      |
|                                  |    |           | AA3004  |           |              |           |      |
| 4425                             |    |           | AA7020  |           |              |           |      |
|                                  |    |           | AA7022  |           |              |           |      |
|                                  |    |           | AA7075  |           |              |           |      |
| 4337                             |    | 204       | A02040  |           |              |           |      |
|                                  |    | 5140      | A05140  |           |              |           |      |
|                                  |    | 5056A     |         |           |              |           |      |
| 4163                             |    |           |         |           |              |           |      |
| 4253                             |    | B85       | A13600  |           |              |           |      |
| 4244                             |    | B26       |         |           |              |           |      |
| 4245                             |    |           | A13560  |           |              |           |      |
| 4251                             |    | A380      |         |           |              |           |      |
|                                  |    | 359,2     |         |           |              |           |      |
|                                  |    | 4418      |         |           |              |           |      |
| 4633                             |    |           | AZ31B   |           |              |           |      |
|                                  |    |           | AM60A   |           |              |           |      |
|                                  |    |           | AZ61A   |           |              |           |      |
|                                  |    |           | AZ80A   |           |              |           |      |
| 4637                             |    | 4437      | AZ81A   |           |              |           |      |
| 4635                             |    |           | AZ91A/B |           |              |           |      |
|                                  |    | 4442      | M1A     |           |              |           |      |
|                                  |    |           | B80     |           |              |           |      |
|                                  |    |           | B80     |           |              |           |      |
|                                  |    | A413.2    |         |           |              |           |      |
|                                  |    | A384.0    | AA384   |           |              |           |      |
|                                  |    | B390.0    |         |           |              |           |      |
| 5015                             |    |           | C11600  |           |              |           |      |
| 5030                             |    |           | C95200  |           |              |           |      |
| 5710                             |    | CA952     |         |           |              |           |      |
| 5716                             |    | CA955     | C95500  |           |              |           |      |



• Non-Ferrous metal

| mat.      |           | The material group of workpieces |               |               |       |              |               |
|-----------|-----------|----------------------------------|---------------|---------------|-------|--------------|---------------|
| group     | 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        | CuNi18Zn19Pb1 |       |              | CuNi18Zn19Pb1 |
|           | 2.0790    | CW408J                           | CuNi18Zn19Pb1 | CuNi18Zn19Pb1 |       |              | CuNi18Zn19Pb1 |
|           | 2.0740    | CW409J                           | CuNi18Zn20    | CuNi18Zn20    | Ns106 |              | CuNi18Zn20    |
|           | 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       |       |              | CuNi44Mn      |
|           | 2.0842    |                                  |               | CuNi44Mn1     |       |              | 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        |
|           |           |                                  | CW451K        | CuSn5         |       |              |               |
|           | 2.1020    | CW452K                           | CuSn6         | CuSn6         | PB103 |              | CuSn6         |
|           | 2.1080    |                                  |               | CuSn6Zn6      |       |              |               |
|           |           |                                  |               | CuSn7         |       |              |               |
|           | 2.1090.03 | CC493K-GZ                        |               | CuSn7ZnPb     |       |              |               |
|           | 2.1030    | CW453K                           | CuSn8         | CuSn8         | PB104 |              | CuSn8P        |
|           | 2.0230    | CW501L                           | CuZn10        | CuZn10        | CZ101 |              | CuZn10        |
|           | 2.0240    | CW502L                           | CuZn15        | CuZn15        | CZ102 |              | CuZn15        |
|           | 2.0250    | CW503L                           | CuZn20        | CuZn20        | CZ103 |              |               |
|           | 2.0460    | CW702R                           | CuZn20Al2     | CuZn20Al2     | CZ110 |              | CuZn22Al2     |
|           |           |                                  |               | CuZn25Al5     |       |              |               |
| 2.0261    | CW504L    | CuZn28                           | CuZn28        | CZ105         |       |              |               |
| 2.0470    | CW706R    | CuZn28Sn1                        | CuZn28Sn1     |               |       | CuZn29Sn1    |               |
| 2.0265    | CW505L    | CuZn30                           | CuZn30        | CZ106         |       | CuZn30       |               |
|           |           |                                  | CuZn30AlFeMn  |               |       | CuZn30AlFeMn |               |
| 2.0490    | CW708R    | CuZn31Si1                        | CuZn31Si1     |               |       |              |               |
| 2.0280    | CW506L    | CuZn33                           | CuZn33        | CZ107         |       |              |               |
| 2.0592.01 | CC765S    |                                  | CuZn33Al1     |               |       |              |               |
| 2.0540    | CW710R    | CuZn35Ni2                        | CuZn35Ni2     | HTB1          |       | CuZn30AlFeMn |               |
| 2.0335    | CW507L    | CuZn36                           | CuZn36        |               |       |              |               |
| 2.0331    | CW601N    | CuZn35Pb2                        | CuZn36Pb1.5   | CZ108         |       | CuZn36       |               |
| 2.0375    | CW602N    | CuZn36Pb3                        | CuZn36Pb3     | CZ131         |       | CuZn35Pb2    |               |
| 2.0321    | CW508L    | CuZn37                           | CuZn37        | CZ124         |       | CuZn36Pb3    |               |
| 2.0332    | CW604N    | CuZn37Pb0.5                      | CuZn37Pb0.5   | CZ108         |       | CuZn37       |               |
| 2.0371    | CW607N    | CuZn38Pb1.5                      | CuZn38Pb1.5   | CZ118         |       | (CuZn38Pb2)  |               |
| 2.0530    | CW717R    | CuZn38Sn1                        | CuZn38Sn1     | CZ119         |       |              |               |
| 2.0525    | CW715R    | CuZn38SnAl                       | 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       |               |
| 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 |           |              |           |      |  |  |  |
| CuNi30                           | 5682                         |           | C71300 |           |              |           |      |  |  |  |
|                                  |                              |           | C71580 |           |              |           |      |  |  |  |
| CuSn7                            | 5640                         | CA937     | C70600 |           |              |           |      |  |  |  |
|                                  |                              |           | C70250 |           |              |           |      |  |  |  |
|                                  |                              |           | C72150 |           |              |           |      |  |  |  |
|                                  |                              |           | C72500 |           |              |           |      |  |  |  |
|                                  |                              |           | C93700 |           |              |           |      |  |  |  |
|                                  |                              |           | C93800 |           |              |           |      |  |  |  |
|                                  |                              |           | C19000 |           |              |           |      |  |  |  |
|                                  |                              |           | C94100 |           |              |           |      |  |  |  |
|                                  |                              |           | C90700 |           |              |           |      |  |  |  |
|                                  |                              |           | C90500 |           |              |           |      |  |  |  |
| CuSn7                            | 5443<br>5458<br>5465<br>5475 | CA907     | C91000 |           |              |           |      |  |  |  |
|                                  |                              |           | C51100 |           |              |           |      |  |  |  |
|                                  |                              |           | C51000 |           |              |           |      |  |  |  |
|                                  |                              |           | C51900 |           |              |           |      |  |  |  |
|                                  |                              |           | CuSn7  | 5428      |              | C93200    |      |  |  |  |
|                                  |                              |           |        |           |              | C83600    |      |  |  |  |
|                                  |                              |           |        |           |              | C52100    |      |  |  |  |
|                                  |                              |           |        |           |              | C22000    |      |  |  |  |
|                                  |                              |           |        |           |              | C23000    |      |  |  |  |
|                                  |                              |           |        |           |              | C24000    |      |  |  |  |
| C68700                           |                              |           |        |           |              |           |      |  |  |  |
| C86300                           |                              |           |        |           |              |           |      |  |  |  |
| C25600                           |                              |           |        |           |              |           |      |  |  |  |
| C44300                           |                              |           |        |           |              |           |      |  |  |  |
| CuSn7                            | 5220<br>5122                 |           | C26000 |           |              |           |      |  |  |  |
|                                  |                              |           | C26800 |           |              |           |      |  |  |  |
|                                  |                              |           | C96500 |           |              |           |      |  |  |  |
|                                  |                              |           | C27200 |           |              |           |      |  |  |  |
|                                  |                              |           | C34200 |           |              |           |      |  |  |  |
|                                  |                              |           | C36000 |           |              |           |      |  |  |  |
|                                  |                              |           | C27200 |           |              |           |      |  |  |  |
|                                  |                              |           | C33500 |           |              |           |      |  |  |  |
|                                  |                              |           | C35300 |           |              |           |      |  |  |  |
|                                  |                              |           | C46400 |           |              |           |      |  |  |  |
| CuSn7                            | 5165                         |           | C47000 |           |              |           |      |  |  |  |
|                                  |                              |           | C36500 |           |              |           |      |  |  |  |
|                                  |                              |           | C37700 |           |              |           |      |  |  |  |
|                                  |                              |           | C38500 |           |              |           |      |  |  |  |
|                                  |                              |           | C28000 |           |              |           |      |  |  |  |
|                                  |                              |           | C67410 |           |              |           |      |  |  |  |
|                                  |                              |           | CuSn7  | 5256      | CA865        | C26800    |      |  |  |  |
|                                  |                              |           |        |           |              | C96500    |      |  |  |  |
|                                  |                              |           |        |           |              | C27200    |      |  |  |  |
|                                  |                              |           |        |           |              | C34200    |      |  |  |  |
| C36000                           |                              |           |        |           |              |           |      |  |  |  |
| C27200                           |                              |           |        |           |              |           |      |  |  |  |
| C33500                           |                              |           |        |           |              |           |      |  |  |  |
| C35300                           |                              |           |        |           |              |           |      |  |  |  |
| C46400                           |                              |           |        |           |              |           |      |  |  |  |
| C47000                           |                              |           |        |           |              |           |      |  |  |  |
| CuSn7                            | 5170                         |           | C36500 |           |              |           |      |  |  |  |
|                                  |                              |           | C37700 |           |              |           |      |  |  |  |
|                                  |                              |           | C38500 |           |              |           |      |  |  |  |
|                                  |                              |           | C28000 |           |              |           |      |  |  |  |
|                                  |                              |           | C67410 |           |              |           |      |  |  |  |



• Non-Ferrous metal

| mat. group | The material group of workpieces |        |             |             |       |           |       |
|------------|----------------------------------|--------|-------------|-------------|-------|-----------|-------|
|            | W.- Nr                           | EN     | EN-Nr       | DIN         | BS    | AFNOR     | JIS   |
| 18         | 2.0572                           | CW723R | CuZn40Mn1   | CuZn40Mn1   |       |           |       |
|            | 2.0580                           | CW720R | CuZn40Mn1Pb | CuZn40Mn1Pb | CZ136 | CuZn39Pb2 | C2100 |
|            | 2.0402                           | CW612N | CuZn40Pb2   | CuZn40Pb2   | CZ120 |           |       |
|            | 2.0410                           | CW622N | CuZn44Pb2   | CuZn44Pb2   | CZ104 |           |       |
|            | 2.0220                           | CW500L | CuZn5       | CuZn5       | CZ125 |           |       |

Heat resistant super alloys / Titanium alloys

|    |                |  |        |  |  |  |  |
|----|----------------|--|--------|--|--|--|--|
| 19 |                |  |        |  |  |  |  |
|    | X2NiCrAlTi3220 |  | 1.4876 |  |  |  |  |
| 20 |                |  |        |  |  |  |  |
|    |                |  |        |  |  |  |  |
| 21 | NiMo30         |  | 2.4810 |  |  |  |  |
|    | NiMo30         |  | 2.4810 |  |  |  |  |
|    | NiMo16Cr15W    |  | 2.4602 |  |  |  |  |
|    | NiMo16Cr16Ti   |  | 2.4819 |  |  |  |  |
|    |                |  | 2.4610 |  |  |  |  |
|    |                |  | 2.4619 |  |  |  |  |
|    | NiCr21Fe18Mo9  |  |        |  |  |  |  |
|    |                |  | 2.4665 |  |  |  |  |

• 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 |                                     | Astrolay<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><br><br>bar, sforge, ring<br>cast<br>all forms<br><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<br>2.4851<br>2.4856<br>2.4856<br>2.4856 | NiCr15Fe<br><br>NiCr22Mo9Nb<br>NiCr22Mo9Nb<br>NiCr22Mo9Nb<br>NiFe38Cr16Nb |       |             |    |       |     |
|               | 2.4668<br>2.4668<br>2.4668                     | NiCr19Fe19Nb5Mo3<br>NiCr19Fe19Nb5Mo3<br>NiCr19Fe19Nb5Mo3                  |       |             |    |       |     |
|               | 2.4669<br>2.4669                               |   |       |             |    |       |     |
|               | 2.4061   | Ni99.6  |       |             |    |       |     |
|               | 2.4634<br>2.4636<br>2.4650<br>2.4631           | NiCr20TiAl  |       |             |    |       |     |
|               | 2.4632<br>2.4662                               |   |       |             |    |       |     |
|               | ppm  | NiCr19Co18Mo4Ti3Al3   |       |             |    |       |     |
|               | 2.4654<br>2.4654                               | NiCr20Co13Mo4Ti3Al<br>NiCr20Co13Mo4Ti3Al                                  |       |             |    |       |     |
|               | 3.7024<br>3.7024                               |   |       | TiV10Fe2Al3 |    |       |     |
|               | 3.7124   | TiCu2   |       |             |    |       |     |
|               |  | TiAl5Sn2.5<br>TiAl5Sn2.5<br>TiAl5Sn2.5                                    |       |             |    |       |     |
|               | 3.7164<br>3.7164                               | TiAl6V4<br>TiAl6V4  |       |             |    |       |     |
|               | 3.7164<br>3.7164                               | TiAl6V4<br>TiAl6V4  |       |             |    |       |     |



# Dimensions And Torque Values Of Insert Screw

| <br>Screw | <br>Th | Nm  | ISO Size | <br>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

$$f_n = z \cdot f_z \quad (\text{mm/rev})$$

### 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

$$v_f = n \cdot \text{pitch} \quad (\text{mm/min})$$

|  |                        |
|--|------------------------|
| $a_e$ = 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  |                        |

### 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.

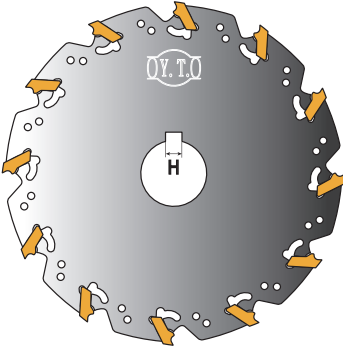
Especially in spot drill, the  $Z_c$  need to be calculated with 1 flute in centering process and 2 flutes in chamfering process.



# TECHNICAL GUIDE

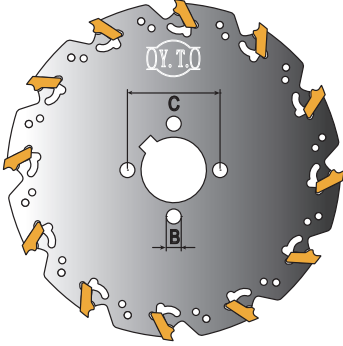
Standard keyway and pin hole figures

FIG.1



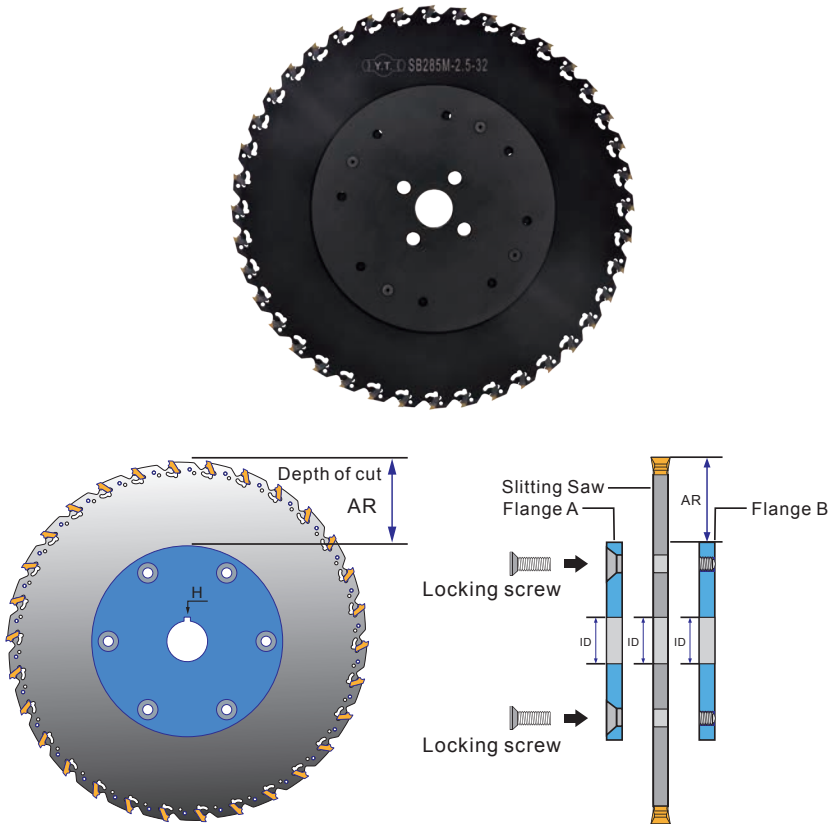
H

FIG.2



C B

# Vibrations Solution

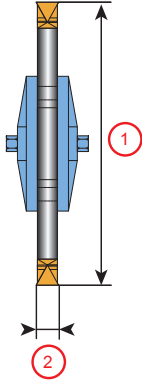


- Improve the stability of cutters and workpieces
- Minimize tool overhang
- Minimize the dia of cutter
- Increase the thickness of cutter, refer to above diagram

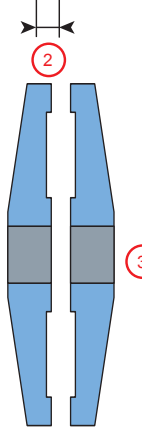


# Trouble Shooting

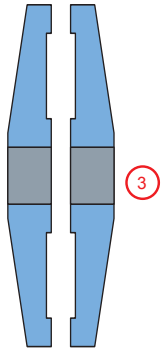
The solution for vibrations and unstable machining



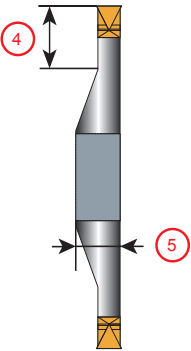
1. Reduce the diameter of the saw blade



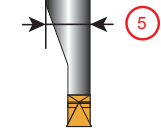
2. Increase the thickness of the saw blade



3. Use bigger flanges



4. Reduce the length of the efficient blade



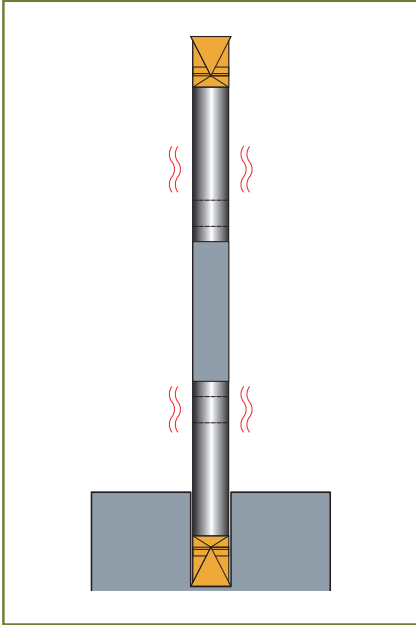
5. Increase body thickness

## Attention :

1. Please follow the trouble shooting above in order to obtain better cutting surface finishes
2. Must conform to the speed factor

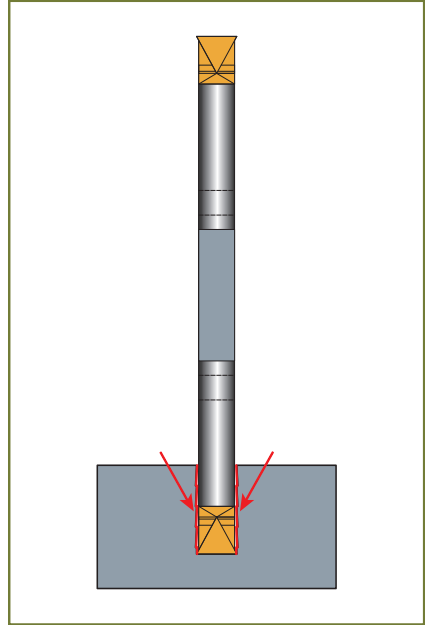
# Trouble Shooting

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

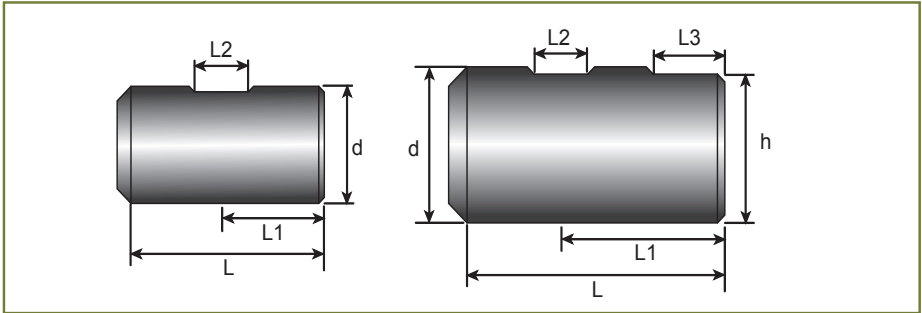
Poor Surface Finish



- Improve the stability of cutter and workpiece
- Minimize tool overhang
- Reduce the feed rate
- Increase the cutting speed
- Use a coolant



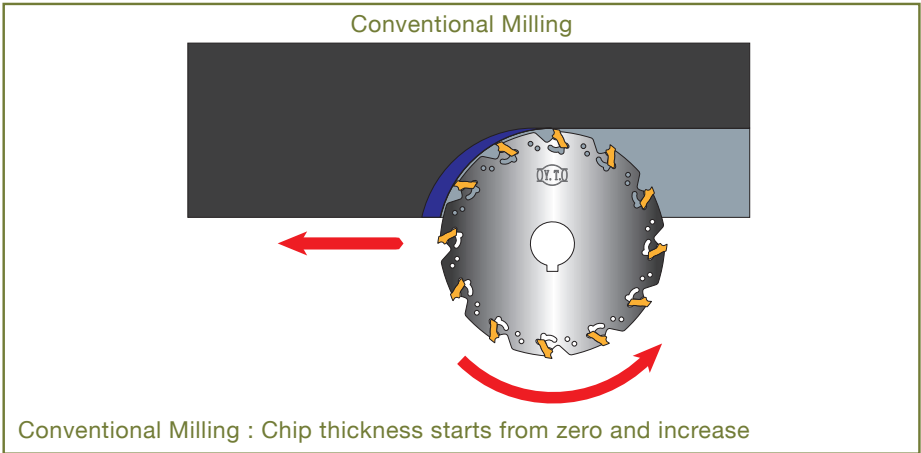
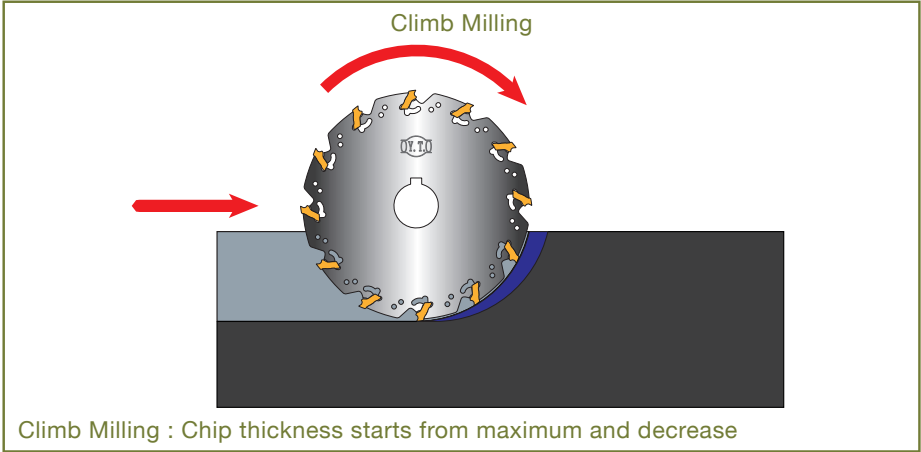
# Technical Guide



## Dimensions Of Mounting Metric Size

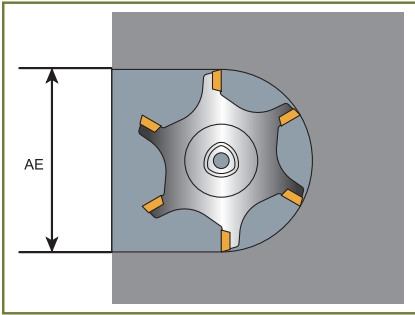
| Dimensions (mm) |    |      |     |    |      |
|-----------------|----|------|-----|----|------|
| d               | L  | L1   | L2  | L3 | h    |
| 6               | 36 | 18   | 4.2 | -  | -    |
| 8               | 36 | 18   | 5.5 | -  | -    |
| 10              | 40 | 20   | 7   | -  | -    |
| 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

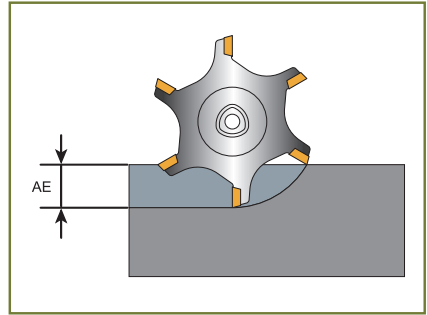


# Cutting Data

Slot Milling



Side Milling



| Relative Engagement Of The Cutter Diameter | Multiply The Feed Per Tooth 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 %                             | Feed Per Tooth / mm ( fz )       |      |      |      |      |      |      |      |      |      |      |      |      |      | Speed 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%

$$hm = fz \cdot \sqrt{\frac{AE}{D}}$$

$$fz = hm \cdot \sqrt{\frac{D}{AE}}$$

