Patent Product

INDEXABLE TOOL

2021. 03 New table of Contents
(Europe-version)

- UFO FAMILY
- INDEXABLE SAW
- INDEXABLE SIDE / DISC MILLING CUTTER
- INDEXABLE CENTER DRILL / SPOT DRILL
- INDEXABLE COUNTERBORE
- INDEXABLE CHAMFER

Y.T.
SINCE 1977

Y.T.
SINCE 1977

COMPANY INTRODUCTION

Profil

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 43 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 ø4.0 ~ø110mm, 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 ø8.0mm. Patent applications in progress.

2014 - 2016 Special invitation in “Emerging Industry Incubation-Accelerating Program”, received “Top 1,000 Taiwan D&B SME Award” and “Ringier Technology Innovation Awards”.

2017 - 2019 Set up German company "Yih Troun Cutting Tools GmbH".

Announced UFO Mill officially with global patent.

Global Patent Certification

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 UFO Mill-Global Patent

Indexable Tap

Indexable Tap

Spot Drill

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 granded in a number of different countries.

COUNTRIES ISSUING FOR PATENT CERTIFICATION

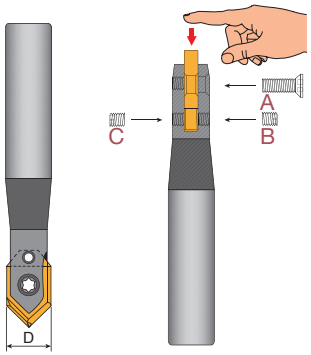
TAIWAN
CHINA
UNITED NATIONS
U.S.A
EU
GERMANY
ISRAEL
FRANCE
ITALY
SPAIN
GREAT BRITAIN
POLAND
CZECH REPUBLIC
TURKEY
JAPAN
CANADA
EUROPEAN ECONOMIC COMMUNITY
INDIA
KOREA
RUSSIA
THAILAND

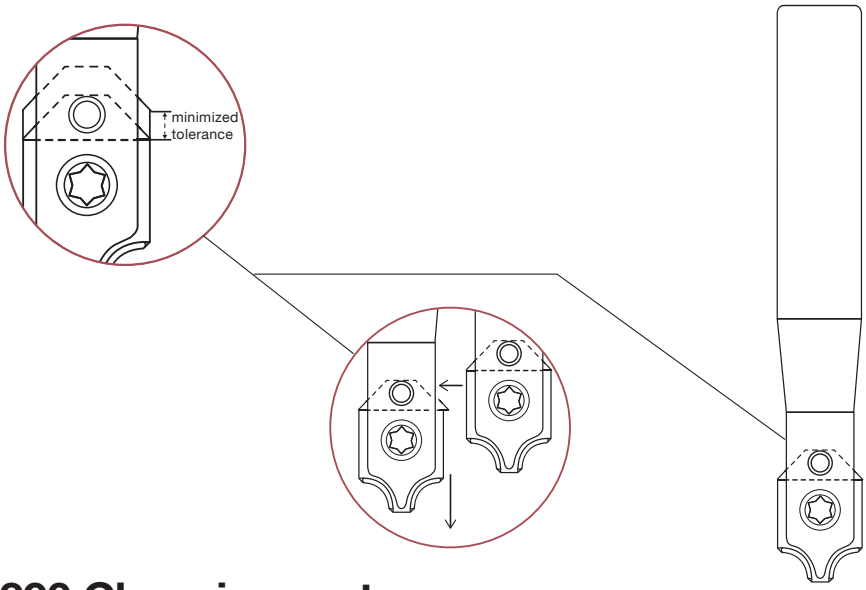
New System For Hole Making

390 Insert Center Positioning Patent Design

Optimal Center Positioning Design

The patented insert tapered profile was designed to minimize the tolerance ±0.008mm and optimizs 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 accurancy, 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

Patent No.
M473882
M474588
M473881

Patent No.
201310453057.2
201320772697.5

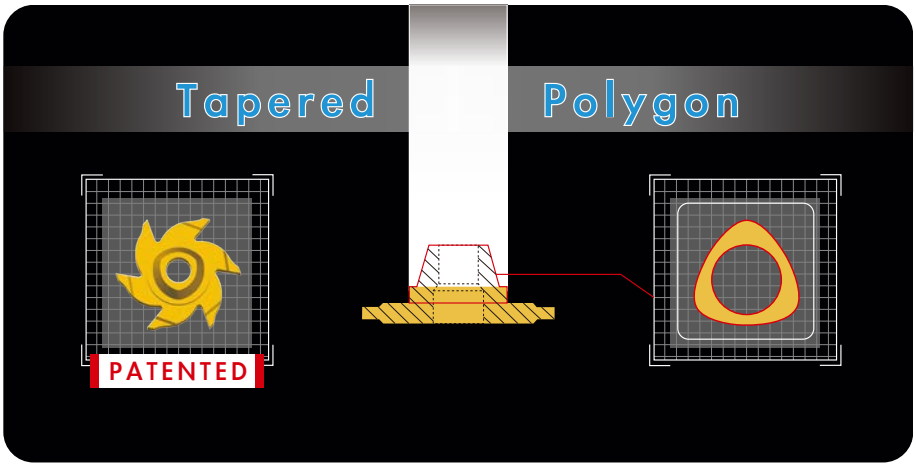
PCT Priority No.
PCT/ CN2013/086393

New Patent Design

UFO Family

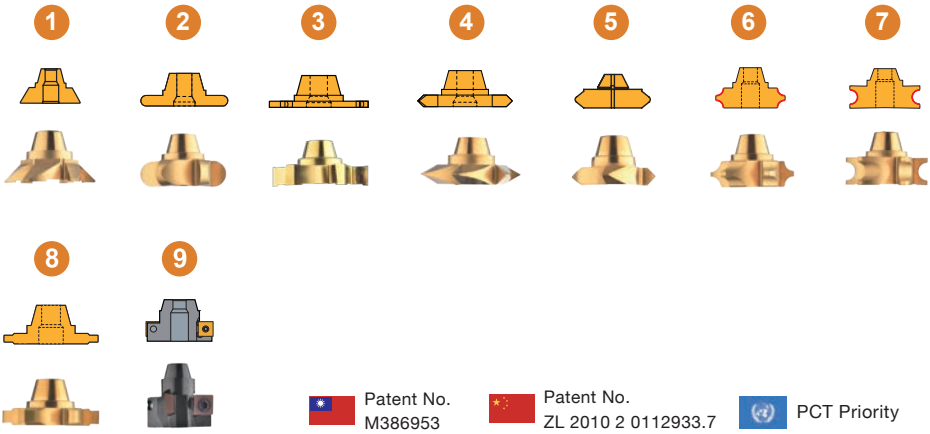
Optimal Tapered Polygon Design

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

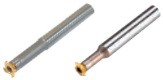
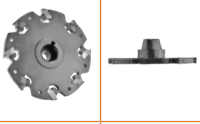
9 different kinds of application are available with UFO family:
T-slot, thread milling, radius, dovetail, chamfer, circlip,
counterbore, dual corner rounding and concave.



Patent No.
M386953

Patent No.
ZL 2010 2 0112933.7

PCT Priority

Code	Category	Product Image	Size Rang	Page
CB3 CB3W	HSS Shank Carbide Shank		Dia. 6~32 mm Length 50~200 mm	24 | 29
3T	UFO T-SLOT Insert		Dia. 10-30 mm AE 0.5~8.0 mm	33 | 59
	UFO T-SLOT Cutter		Dia. 32/35/40/50/60/80 mm AE 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	61 | 66
			Dia. 50/60/80 mm AE 4/5/6/7/8/10/12 mm	67 | 69
	UFO T-SLOT Cutter (Fit round insert)		Dia. 60/80 mm 4R/5R/6R	70
	UFO Radius Insert		Dia. 20 mm Radius 0.5/0.75/1.0/ 1.25/1.5/2.0/2.5/3.0	73
	UFO Dual Corner Rounding Insert		Dia. 9.8/11.8/19.8 mm Radius 0.5/0.75/1.0/1.25/1.5/2.0	74
	UFO Dual Chamfer Insert		Dia. 9.8/11.8/14.8 mm Chamfer Angle 45°	75
	UFO Dovetail Insert		Dia. 20 mm Angle 45° /60°	
	UFO Concave Radius Insert		Dia. 20 mm Radius 1.0/1.25/1.5/2.0	76
C3T	UFO Circlip Insert		Dia. 20 mm A: 1.21/1.41/1.71/1.96/2.26/ 2.76/3.26/4.26 mm	77
AT BT/BTL UT/UTL	Solid Carbide Thread Milling Cutter		Dia. 1.95~10mm Pitch 0.35~2.5mm TPI 40~13	83 | 85

Code	Category	Product Image	Size Rang		Page
3T1	UFO Thread Milling Insert (Partial Profile)		Dia. 12/15/20/25 mm Pitch 1.0~5.0 mm /16-5 TPI		86 | 89
3T	UFO Thread Milling Insert (Full Profile)		Dia. 10/12/15/20 mm Pitch 1.0/1.25/1.5/2.0/2.5/3.0/3.5mm UNC 16~8 TPI BSW 16~8 TPI		90 | 99
B3T	UFO Back Boring Cutter		Entrance 10.4 12.4 16.4 25.4	Back Bore 18-22 23-30 31-40 41-60	115 | 117

Code	Category	Product Image	Size Rang	Page
SB	Saw Blade		Dia. 50/63/80/100/125/160/ 200/250/285/300 mm AE 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 mm	136 | 147
SBL	Saw Milling Cutter		Dia. 80/100/125/160 mm AE 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 mm	150 | 152
STL	Side Milling Cutter		Dia. 80/100/125/160 mm AE 4/5 mm	153
BL BLL	Adapter Holder		Dia. 45/58 mm I.D. 22/25.4/31.75/32 mm	154
SCL	Side Milling Cutter		Dia. 160/200/250 mm AE 6/8/10/12 mm	157
CEL	Disc Milling Cutter		Dia. 160/200/250 mm AE 14/16/18/20/22/25/30 mm	158 | 159
CWL	Back Milling Cutter		Dia. 160/200/250 mm AE 12 mm	160
BCL	Adapter Holder		Dia. 65/90 mm I.D. 32/31.75/40/38.1/60/ 50.8 mm	160 | 161

Code	Category	Product Image	Size Rang	Page
SC	Side Milling Cutter		Dia. 80/100/125/160 mm AE 4/5/6/7/8/10/12 mm	163 | 168
ST			Dia. 80/100/125/160 mm AE 6/7/8/10/12 mm	169 | 170
CE	Disc Milling Cutter		Dia. 80/100/125 mm AE 14/16/18/20/22/25/30 mm	172 | 174
CW			Dia 80/100/125 mm AE 14/16/18/20/22/25/30 mm	175 | 177
CB	Back Milling Cutter		Dia. 100/125 mm AE 12 mm	180
CDL CDR	Straddle Milling Cutter		Dia. 100/125/160 mm AE 12 mm	181

Code	Category	Product Image	Size Rang	Page
13	Spot Drill		Dia. 8/10/12/16 mm Angle 90° / 90° +142° / 142°	205
GA	Centralizer		I.D. 8.2/10.2/12.2/16.2 mm	217
TU1 TU	Center Drill		Pilot Dia. 1.6/2.0/2.5/3.0/4.0/5.0/6.0 mm Angle 1) A type 60° 3) C type 90° 2) B type 60° +120° 4) D type 60°	218
	Engraving Tool		E type 60° Tip Width 0.15 mm	222

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/ M8.0/M9.0/M10/M11/ M12/M14	232
CBK	Counter Bore for Traditional Machine		Dia. 14/15/18/20/22/24/25/ 26/27 mm	242

Code	Category	Product Image	Size Rang	Page
HBM	Counter Bore for Traditional Machine		Dia. 26/29/33/36/40/50/ 58 mm	243
CBI	Counter Bore for CNC Machine		Dia. 15/18/20/24/26/29/33/ 36/40/50/58 mm Chamfer Angle 45°	244

Code	Category	Product Image	Size Rang	Page
CI	Countersink		Dia. 4~39 mm Countersink Angle 60° /90° /120°	252
HCI				253
			Dia. 20~110 mm Countersink Angle 90°	254
C	Chamfer Cutter for CNC Machine		Dia. 10~70 mm Angle 30° / 45°	262
MC			Dia. 11~45 mm Angle 45°	264
HMC				
15	Corner Rounding Cutter		DIA. 16/ 25 mm Radius R1~R10	268

Code	Category	Product Image	Size Rang	Page
XD	Dovetail Milling Cutter		Dia. 40/ 60/ 80 mm Angle 50° /55° /60°	273
XV			Dia. 120 mm Angle 50° /55° /60°	274
MO	Face Milling Cutter for Alluminium		Dia. 80/100/125/160/200/ 250/300 mm AP 3 mm	280

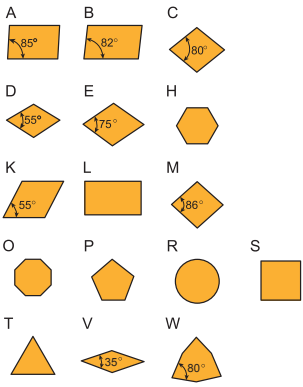
TECHNICAL GUIDE

Code Keys

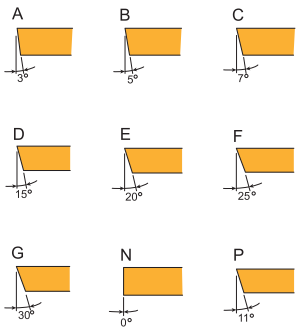
Insert-Metric series, extract from the international standard. Listed dimensions are the theory measurement for reference. The normal size and tolerance of type codes indicaced, on the following list are exactly different. To check the exact tolerance of each insert, pleases refer to the relative page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

S	E	K	R	12	03	AF	T	N	ME12	6H
1	2	3	4	5	6	7	8	9	10	11

1. Shape



2. Side Clearance Angle



0 = Special

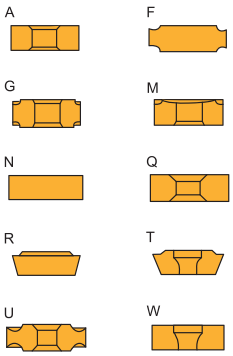
Code Keys

3.Tolerances

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

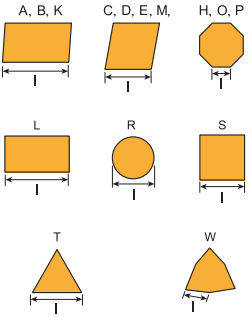
Inserts Code Keys

4. Type

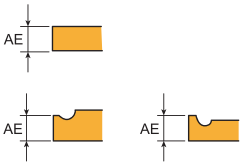


X=Special

5. Cutting edge length



6. Thickness



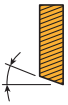
01=1,59 mm	04=4,76 mm
T1=1,98 mm	05=5,56 mm
02=2,38 mm	06=6,35 mm
03=3,18 mm	07=7,94 mm
T3=3,97 mm	08=8,00 mm
	09=9,52 mm

7. Insert with corner chamfers / nose radius

1nd letter

A=45°
D=60°
E=75°
F=85°
P=90°

Z=Special



2nd letter

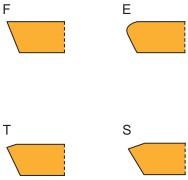
A=3°
B=5°
C=7°
D=15°
E=20°
F=25°
G=30°
N= 0°
P=11°

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

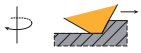
8. Cutting edge designation



Not mandatory information

9. Direction of cutting

R



Right-rotated

L

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

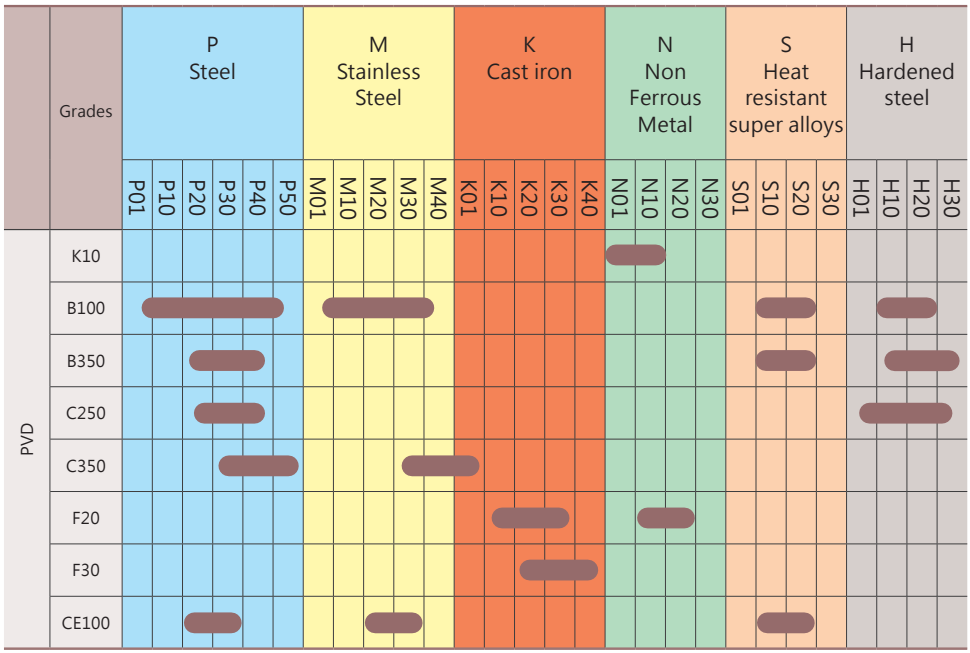
Cemented carbide is an alloy of tungsten carbide (WC) and cobalt (Co). Cubic carbides like tantalum carbide (TaC),titanium car-bide (TiC) and niobium carbide (NbC) can also be added. Tungsten carbide is the main component and gives the hardness. Cobalt is the binder phase and gives the toughness. Cubic 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.

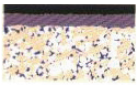
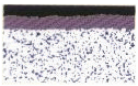
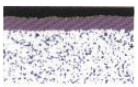
With CVD-technique layers of titanium carbide (TiC), titanium nitride (TiN), titanium carbonitride (Ti(C,N)) and alumina (Al0) can be made.CVD-coated grades are suitable for wear resistance in demanding applications with high feed rates and intermediate to high cutting speed.

The common coating materials made by PVD-technique are titanium nitride (TiN), titanium carbonitride (Ti(C,N)) and titanium alu-minium 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.



Insert Grades

PVD coated grades

	B100	B100 is a unique rare metal grade with great heat and cracking resistance. TiaIn
	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. TiaIn
	C250	C250 has a tough substrate in steel machining. Helica
	C350	C350 is the best recommend grade for steel machining. Especially in 390 system. (Spot Drill, 4-1 Counterbore, Corner Rounding) 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. Tin
	F30	F30 is the substrate with new and heat-resistance coating suitable for cast iron. Helica
	CE100	CE100 is an innovative cermet substrate with great heat and abrasion resistance to improve durability in stable machining conditions. TiaIn

Uncoated grades

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

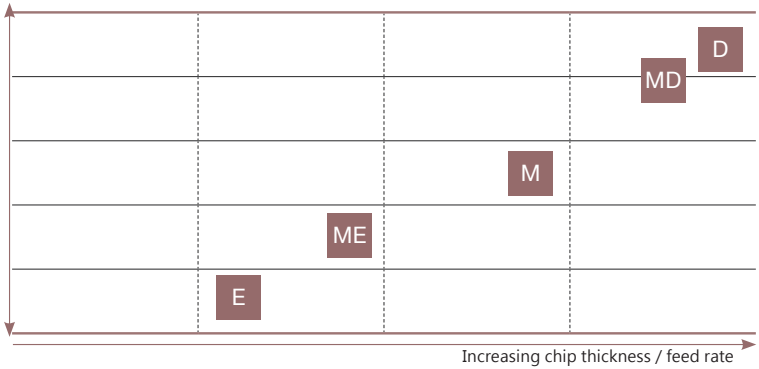
Insert Geometries

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.



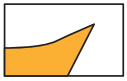
Examples of different insert geometries for a specific insert type.

..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

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

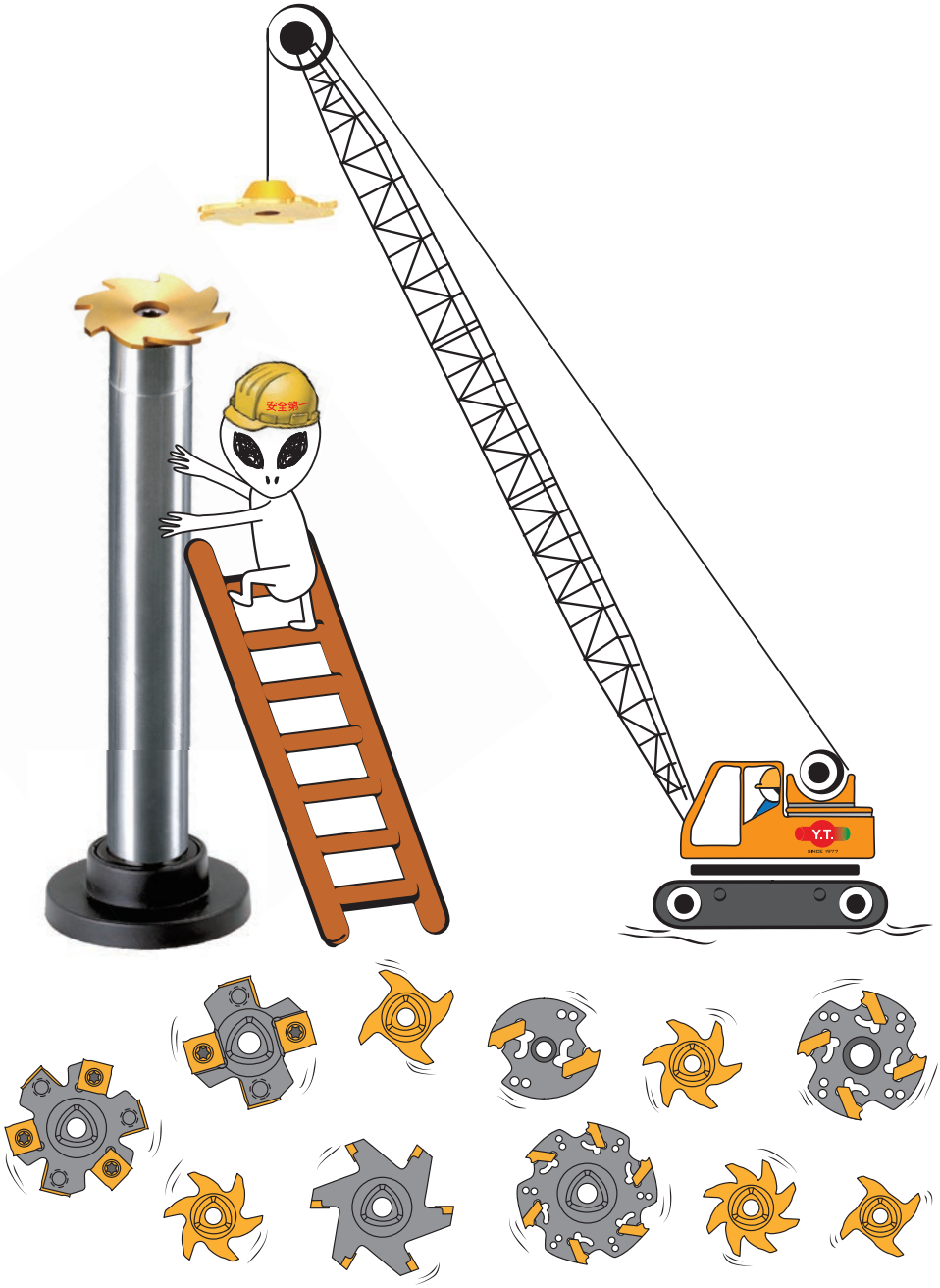
Patent No. M530197

Patent No. ZL 201620538204.5

PCT Priority

PATENTED

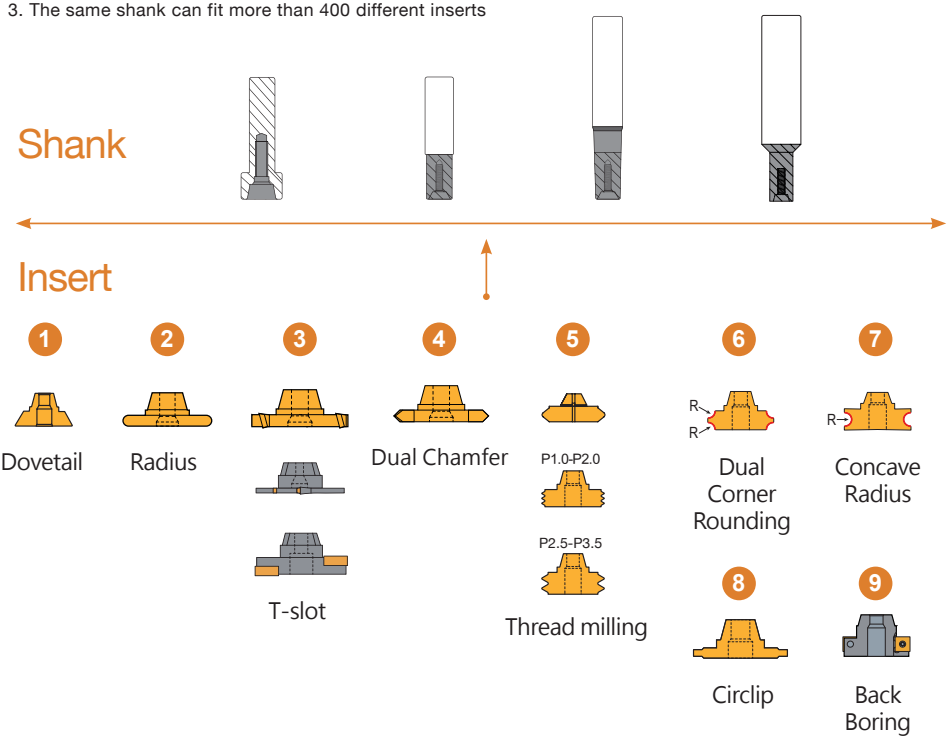
One holder fits differen inserts up to 400 types



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



Tapered Polygon (Grinded)

Capacity

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

Multi Application

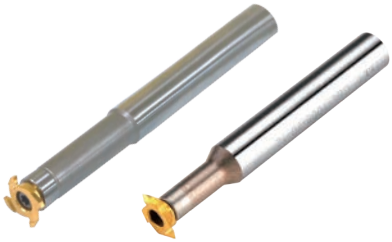
Tapered polygon design offers a simple connection with different inserts and applications.

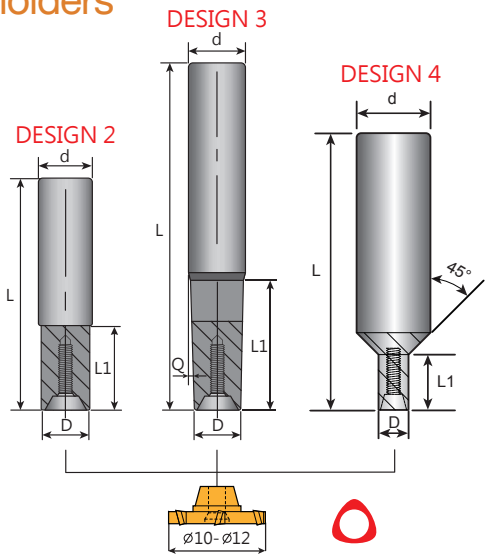
Center Positioning

The interface is tapered design for keeping eccentricity ≤ 0.01mm, which enhance the cutting speed and insert tool life.

PRODUCT SPECIFICATIONS

UFO Family Common Toolholders





CB3 • HSS Shanks

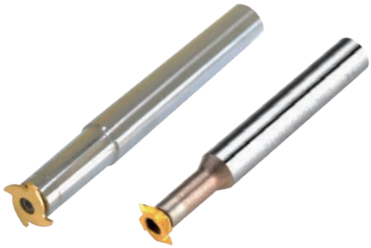
Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3-0606-55-12	6.5	6	55	10	-	2	0.07	ø10 ø11 ø12	C03012	T09P
CB3-0808-80-12	7.9	8	80				0.09			
CB3-1006-100-12	6.5	10	100	20	1°	3	0.11			
CB3-1008-100-12	7.9			30						
CB3-1606-60-12	6.5	16	60	12	-	4	0.24			
CB3-1608-65-12	7.9		65	16			0.26			

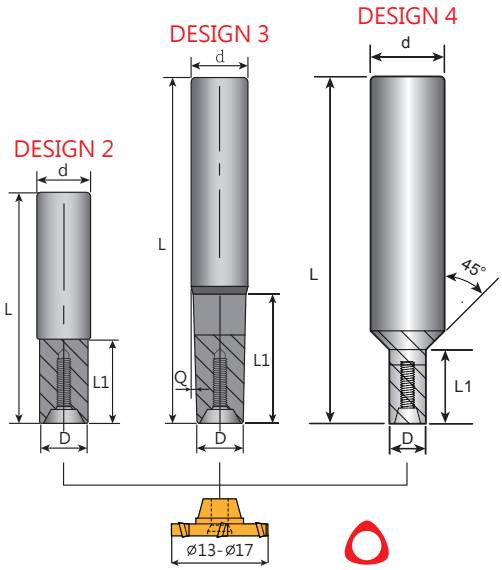
CB3W • Carbide Shanks

Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3W-0808-80-12	7.9	8	80	10	-	2	0.11	ø10 ø11 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

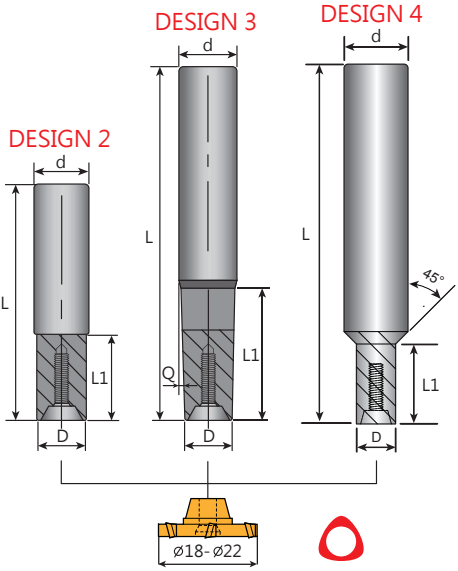
Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3-0808-55-15	7.9	8	55	10	-	2	0.08	ø13 ø14 ø15 ø16 ø17	C03012	T09P
CB3-1010-90-15	9.9	10	90				0.11			
CB3-1208-110-15	7.9	12	110	30	1°	3	0.14			
CB3-1210-120-15	9.9		120				0.15			
CB3-1608-75-15	7.9	16	75	16	-	4	0.24			
CB3-1610-80-15	9.9		80	20			0.26			

CB3W • Carbide Shanks

Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3W-1010-90-15	9.9	10	90	10	-	2	0.15	ø13 ø14 ø15 ø16 ø17	C03012	T09P
CB3W-1208-110-15	7.9	12	110	30	1°	3	0.21			
CB3W-1210-120-15	9.9		120				0.24			

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

UFO Family Common Toolholders



CB3 • HSS Shanks

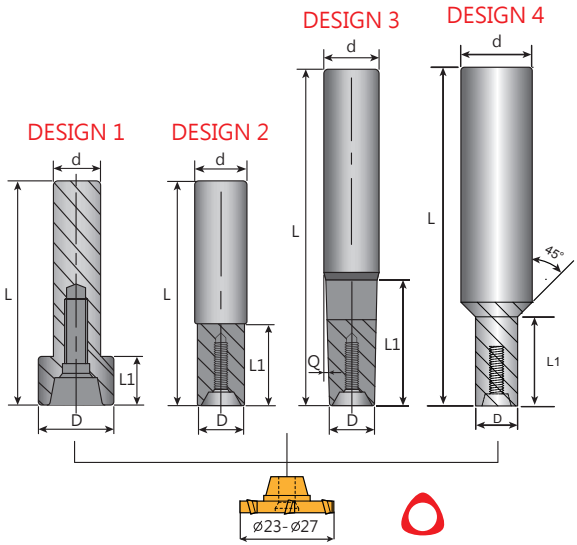
Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3-1010-80-20	9.8	10	80	12	-	2	0.12	ø18 ø19 ø20 ø21 ø22	C03513	T10P
CB3-1010-100-20			100				0.13			
CB3-1210-90-20		12	90	25	3.2°	3	0.14			
CB3-1210-130-20			130	40	1.7°		0.18			
CB3-1610-90-20		16	90	20	-	4	0.20			
CB3-1612-95-20	11.8		95	25	-	4	0.23			
CB3-1612-150-20			150	55	2.4°	3	0.29			
CB3-1616-150-20	15.8			20	-	2	0.31			

CB3W • Carbide Shanks

Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3W-1010-100-20	9.8	10	100	12	-	2	0.18	ø18 ø19 ø20 ø21 ø22	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

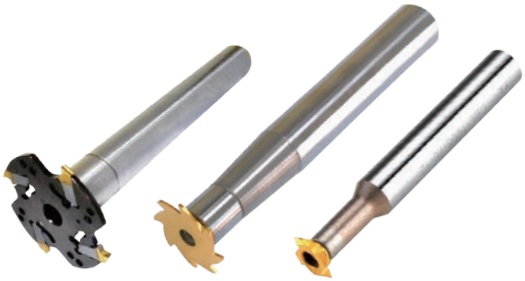
Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3-1012-50-25	11.8	10	50	10	-	1	0.11	ø 23 ø 24 ø 25 ø 26 ø 27	C04014	T15P
CB3-1212-90-25		12	90	12	-	2	0.16			
CB3-1212-110-25			110		-		0.18			
CB3-1612-110-25		16		35	4.2°		0.24			
CB3-1612-150-25			150	55	2.4°	3	0.31			
CB3-2012-95-25		20	95	25	-	4	0.50			
CB3-2016-95-25	15.8			30	-		0.55			
CB3-2020-150-25	19.8		150	20	-	2	0.46			

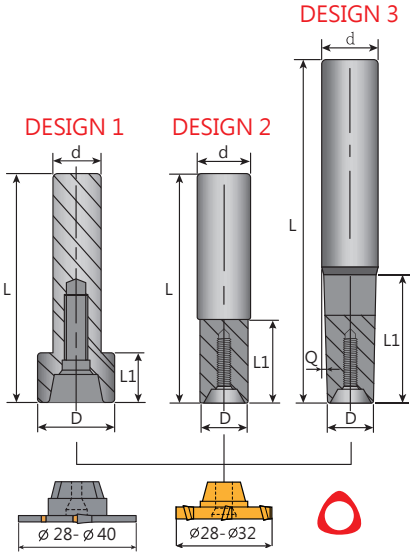
CB3W • Carbide Shanks

Order code	Dimensions (mm)					Design	KG	Inserts	Screw	Key
	D	d	L	L1	Q					
CB3W-1212-110-25	11.8	12	110	12	-	2	0.26	ø23 ø24 ø25 ø26 ø27	C04014	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 ø 29 ø 30 ø 32 ø 35 ø 40	C05016	T20P
CB3-1616-120-30		16	120	15		2	0.28			
CB3-1616-150-30			150				0.34			
CB3-2016-150-30		20		45	3.8°	3	0.45			
CB3-2016-180-30			180	70	2.0°		0.51			
CB3-2020-180-30	19.8			20	-	2	0.54			

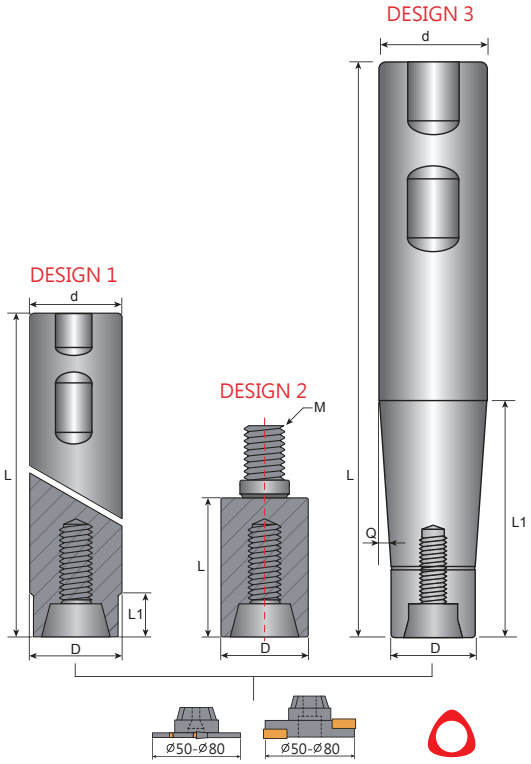
CB3W • Carbide Shanks

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 ø 30 ø 32 ø 35 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. 285 - 286



CB3

Order code	Dimensions (mm)						Design	KG	Inserts	Screw	Key
	D	d	L	L1	M	Q					
CB3-2525-110	24.8	25	110	15	-	-	1	0.42	Ø 50 ~ Ø 80	M0825	-
CB3-2525-170			170		-	-		0.66			
CB3-25	25.0	-	40	-	12	-	2	0.17			
CB3-3225-110	24.8	32	110	40	-	10°	3	0.62			
CB3-3225-170			170	70	-	4°		0.96			

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

UFO T-SLOT CUTTER

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

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.

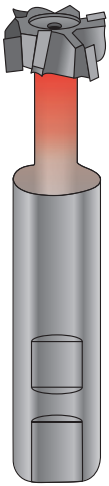
2. 9 different types of inserts are available for selection, the minimum diameter is 10mm.

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

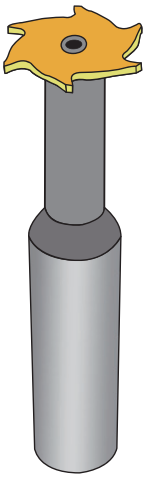
Other Brands



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.

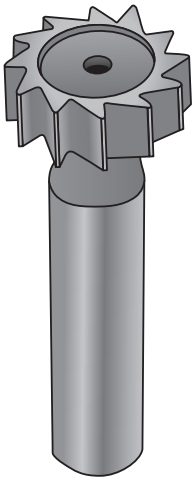
Y.T.
UFO T-slot



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.

Other Brands

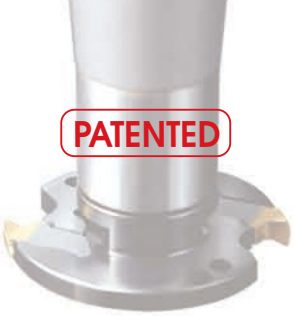


Toolholders grade: HSS

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

UFO T-SLOT®

FULL RANGE



- P. 33-59

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.10/12/15/20/25/30 mm

- P. 61-66

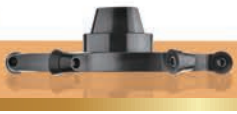
Thickness:
1.4/1.5/1.6/1.8/2.0/2.2/2.5/2.7/3.0/ 3.2/
3.5/4.0/4.2/4.5/5.0/5.2/5.5 /6.0/8.0 mm

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

- P. 67-69

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

Dia. 50/60/80 mm



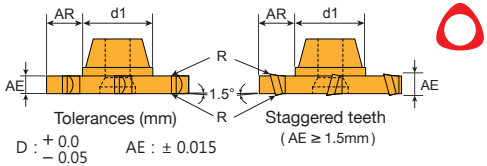
- P. 70

Radius:
R4/R5/R6 mm

Dia. 60/80 mm

UFO T-slot Inserts

- Toolholders P. 24
- Cutting Data P. 119 - 120



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

Dimensions (mm)				
D	d1	AE	Max. AR	R
10	6.5	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	1.5	R0.05 ± 0.025

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

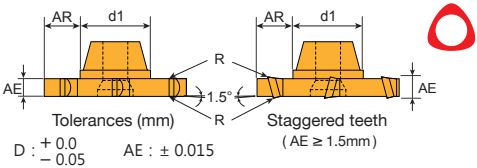
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
 4 flutes	3T0610-0.5-E										
	3T0610-0.6-E										
	3T0610-0.7-E										
	3T0610-0.8-E										
	3T0610-0.9-E										
	3T0610-1.0-E										
	3T0610-1.1-E										
	3T0610-1.2-E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

Inserts 2 PCS / Box

- 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. 119 - 120



Dimensions (mm)				
D	d1	AE	Max. AR	R
11	6.5	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	2.0	R0.05 ± 0.025

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

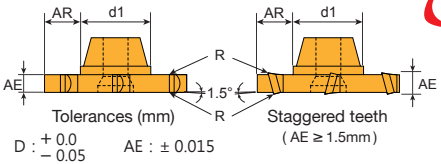
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0611-0.5-E								■		
	3T0611-0.6-E								■		
	3T0611-0.7-E								■		
	3T0611-0.8-E								■		
	3T0611-0.9-E								■		
	3T0611-1.0-E								■		
	3T0611-1.1-E								■		
	3T0611-1.2-E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

★ M.O.Q: 12PCS
★ Make-to-Order.

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

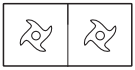
- Toolholders P. 24
- Cutting Data P. 119 - 120



D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Dimensions (mm)				
D	d1	AE	Max. AR	R
12	6.5	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	2.5	R0.05 ± 0.025

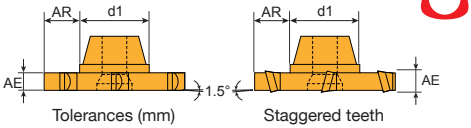
★ Only "ME, B100 & ME, F20" insert are designed with corner radius.

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0612-0.5-E								■		
	3T0612-0.6-E								■		
	3T0612-0.7-E								■		
	3T0612-0.8-E								■		
	3T0612-0.9-E								■		
	3T0612-1.0-E								■		
	3T0612-1.1-E								■		
	3T0612-1.2-E								■		
	3T0612-1.3-E								■		
	3T0612-1.4-E								■		
	3T0612-1.5-E								■		
	3T0612-1.6-E								■		
	3T0612-1.7-E								■		
	3T0612-1.8-E								■		
	3T0612-1.9-E								■		
	3T0612-2.0-E								■		
	3T0612-2.2-E								■		
	3T0612-2.5-E								■		
	3T0612-3.0-E								■		
4 flutes	3T0612-0.5-ME	◎			■						 Inserts 2 PCS / Box
	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. 119 - 120



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

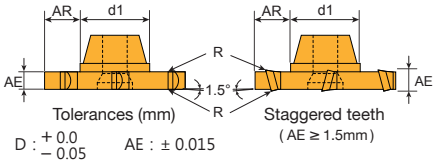
Dimensions (mm)			
D	d1	AE	Max. AR
13	7.9	0.5-0.6	2.0
		0.7-0.8	
		0.9-1.0	
		1.1-1.2	
		1.3-1.4	
		1.5-1.6	
		1.7-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0	
		4.0	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0813-0.5-E										* M.O.Q: 12PCS * Make-to-Order.
	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										

- 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. 119 - 120



Dimensions (mm)				
D	d1	AE	Max. AR	R
13	7.9	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 4.0	2.0	R0.05 ± 0.025

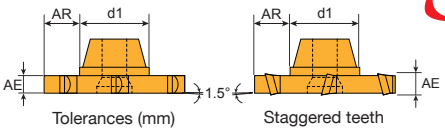
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0813-0.5-ME	◎									
	3T0813-0.6-ME	◎									
	3T0813-0.7-ME	◎									
	3T0813-0.8-ME	◎									
	3T0813-0.9-ME	◎									
	3T0813-1.0-ME	◎									
	3T0813-1.1-ME	◎									
	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. 119 - 120



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

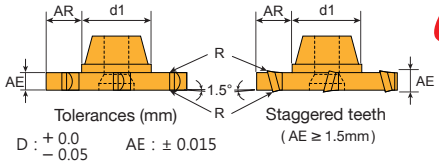
Dimensions (mm)			
D	d1	AE	Max. AR
14	7.9	0.5-0.6	2.5
		0.7-0.8	
		0.9-1.0	
		1.1-1.2	
		1.3-1.4	
		1.5-1.6	
		1.7-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0	
		4.0	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0814-0.5-E										* M.O.Q: 12PCS * Make-to-Order.
	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										

- 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. 119 - 120



Dimensions (mm)				
D	d1	AE	Max. AR	R
14	7.9	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 4.0	2.5	R0.05 ± 0.025

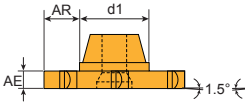
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0814-0.5-ME	◎									
	3T0814-0.6-ME	◎									
	3T0814-0.7-ME	◎									
	3T0814-0.8-ME	◎									
	3T0814-0.9-ME	◎									
	3T0814-1.0-ME	◎									
	3T0814-1.1-ME	◎									
	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. 119 - 120



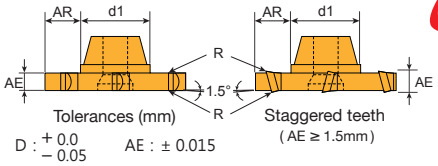
Dimensions (mm)			
D	d1	AE	Max. AR
15	7.9	0.5-0.6	3.0
		0.7-0.8	
		0.9-1.0	
		1.1-1.2	
		1.3-1.4	
		1.5-1.6	
		1.7-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0	
		4.0	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0815-0.5-E										Inserts 2 PCS / Box
	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. 119 - 120



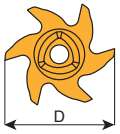
Dimensions (mm)				
D	d1	AE	Max. AR	R
15	7.9	0.5-0.6 0.7-0.8 0.9-1.0 1.1-1.2 1.3-1.4 1.5-1.6 1.7-1.8 1.9-2.0 2.2-2.5 3.0 4.0	3.0	R0.05 ± 0.025

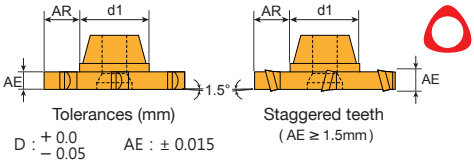
Inserts	Order Code	Grades									ME
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
4 flutes	3T0815-0.5-ME	◎									Inserts 2 PCS / Box
	3T0815-0.6-ME	◎									
	3T0815-0.7-ME	◎									
	3T0815-0.8-ME	◎									
	3T0815-0.9-ME	◎									
	3T0815-1.0-ME	◎									
	3T0815-1.1-ME	◎									
	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. 119 - 120





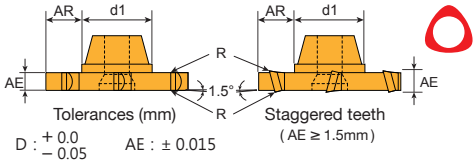
Dimensions (mm)			
D	d1	AE	Max. AR
18	10	0.5-0.6	3.5
		0.7-0.8	
		0.9-1.0	
		1.1-1.2	
		1.3-1.4	
		1.5-1.6	
		1.7-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0-4.0	
		4.2-5.0	
		6.0	
		8.0	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1018-0.5-E										* M.O.Q: 12PCS * Make-to-Order.
	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										

- 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. 119 - 120



Dimensions (mm)				
D	d1	AE	Max. AR	R
18	10	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 3.0-4.0 4.2-5.0 6.0 8.0	3.5	R0.05 ± 0.025

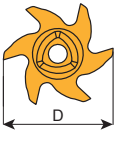
Inserts	Order Code	Grades									ME
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1018-0.5-ME	◎									
	3T1018-0.6-ME	◎									
	3T1018-0.7-ME	◎									
	3T1018-0.8-ME	◎									
	3T1018-0.9-ME	◎									
	3T1018-1.0-ME	◎									
	3T1018-1.1-ME	◎						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

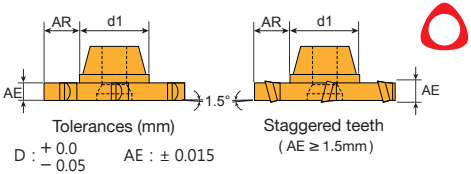
* M.O.Q: 12PCS
* Make-to-Order.

- 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. 119 - 120





Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

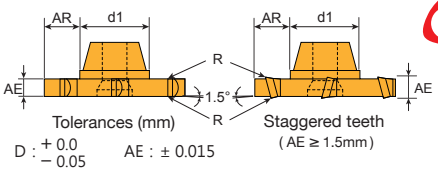
Dimensions (mm)			
D	d1	AE	Max. AR
19	10	0.5-0.6	4.0
		0.7-0.8	
		0.9-1.0	
		1.1-1.2	
		1.3-1.4	
		1.5-1.6	
		1.7-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0-4.0	
		4.2-5.0	
		6.0	
		8.0	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1019-0.5-E										* M.O.Q: 12PCS * Make-to-Order.
	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										

- 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. 119 - 120



Dimensions (mm)				
D	d1	AE	Max. AR	R
19	10	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 3.0-4.0 4.2-5.0 6.0 8.0	4.0	R0.05 ± 0.025

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

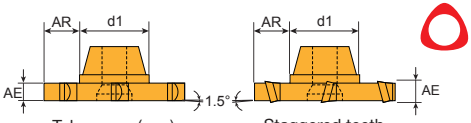
* M.O.Q: 12PCS
* Make-to-Order.

- 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. 119 - 120

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	



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

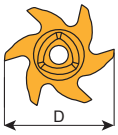
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1020-0.5-E										Inserts 2 PCS / Box
	3T1020-0.6-E										
	3T1020-0.7-E										
	3T1020-0.8-E										
	3T1020-0.9-E										
	3T1020-1.0-E										
	3T1020-1.1-E										
	3T1020-1.2-E										
	3T1020-1.3-E										
	3T1020-1.4-E										
	3T1020-1.5-E										
	3T1020-1.6-E										
	3T1020-1.7-E										
	3T1020-1.8-E										
	3T1020-1.9-E										
	3T1020-2.0-E										
	3T1020-2.2-E										
	3T1020-2.5-E										
	3T1020-3.0-E										
	3T1020-3.5-E										
	3T1020-4.0-E										
	3T1020-4.2-E										
	3T1020-4.5-E										
	3T1020-5.0-E										
	3T1020-6.0-E										
	3T1020-8.0-E										

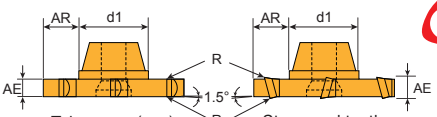
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-0.5-E,K10

UFO T-slot Inserts

- Toolholders P. 26
- Cutting Data P. 119 - 120

Dimensions (mm)				
D	d1	AE	Max. AR	R
20	10	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 3.0-4.0 4.2-5.0 6.0 8.0	4.5	R0.05 ± 0.025





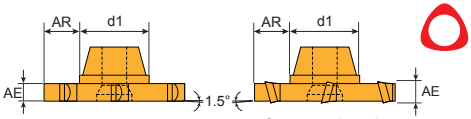
Inserts	Order Code	Grades									ME
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1020-0.5-ME	◎									
	3T1020-0.6-ME	◎									
	3T1020-0.7-ME	◎									
	3T1020-0.8-ME	◎									
	3T1020-0.9-ME	◎									
	3T1020-1.0-ME	◎					◎				
	3T1020-1.1-ME	◎									
	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. 27
- Cutting Data P. 119 - 120



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

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		E
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1223-0.5-E										
	3T1223-0.6-E										
	3T1223-0.7-E										
	3T1223-0.8-E										
	3T1223-0.9-E										
	3T1223-1.0-E										
	3T1223-1.1-E										
	3T1223-1.2-E										
	3T1223-1.3-E										
	3T1223-1.4-E										
	3T1223-1.5-E										
	3T1223-1.6-E										
	3T1223-1.7-E										
	3T1223-1.8-E										
	3T1223-1.9-E										
	3T1223-2.0-E										
	3T1223-2.2-E										
	3T1223-2.5-E										
	3T1223-3.0-E										
	3T1223-3.5-E										
	3T1223-4.0-E										
	3T1223-4.2-E										
	3T1223-4.5-E										
	3T1223-5.0-E										
	3T1223-6.0-E										
	3T1223-8.0-E										

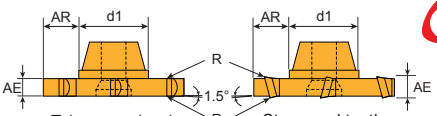
* M.O.Q: 12PCS
* Make-to-Order.

- 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. 119 - 120

Dimensions (mm)				
D	d1	AE	Max. AR	R
23	12	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 3.0-4.0 4.2-5.0 6.0 8.0	5.0	R0.05 ± 0.025



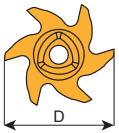
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1223-0.5-ME	◎									
	3T1223-0.6-ME	◎									
	3T1223-0.7-ME	◎									
	3T1223-0.8-ME	◎									
	3T1223-0.9-ME	◎									
	3T1223-1.0-ME	◎									
	3T1223-1.1-ME	◎						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

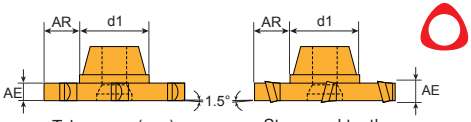
* M.O.Q: 12PCS
* Make-to-Order.

- ■ 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-ME,B100

UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 119 - 120





Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

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	

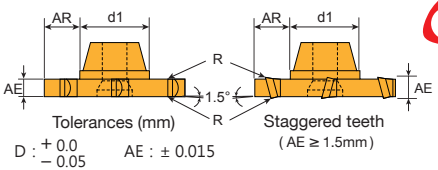
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1224-0.5-E										* M.O.Q: 12PCS * Make-to-Order.
	3T1224-0.6-E										
	3T1224-0.7-E										
	3T1224-0.8-E										
	3T1224-0.9-E										
	3T1224-1.0-E										
	3T1224-1.1-E										
	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										

- 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. 119 - 120

Dimensions (mm)				
D	d1	AE	Max. AR	R
24	12	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 3.0-4.0 4.2-5.0 6.0 8.0	5.5	R0.05 ± 0.025



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

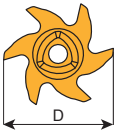
* M.O.Q: 12PCS
* Make-to-Order.

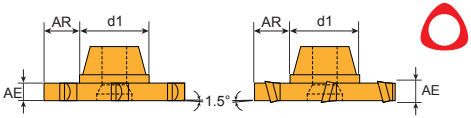
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1224-0.5-ME,B100

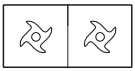
UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 119 - 120

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	





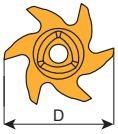
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
6 flutes	3T1225-0.5-E								●		 Inserts 2 PCS / Box
	3T1225-0.6-E								●		
	3T1225-0.7-E								●		
	3T1225-0.8-E								●		
	3T1225-0.9-E								●		
	3T1225-1.0-E								●		
	3T1225-1.1-E								●		
	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								●		

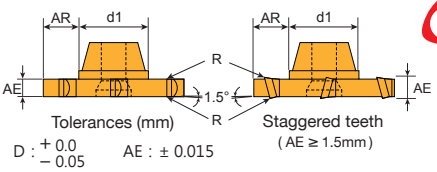
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1225-0.5-E,K10

UFO T-slot Inserts

- Toolholders P. 27
- Cutting Data P. 119 - 120

Dimensions (mm)				
D	d1	AE	Max. AR	R
25	12	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 3.0-4.0 4.2-5.0 6.0 8.0	6.0	R0.05 ± 0.025



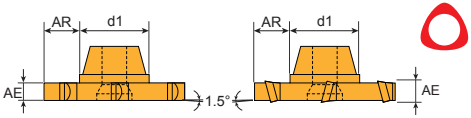


Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
 6 flutes	3T1225-0.5-ME	◎									 Inserts 2 PCS / Box
	3T1225-0.6-ME	◎									
	3T1225-0.7-ME	◎									
	3T1225-0.8-ME	◎									
	3T1225-0.9-ME	◎									
	3T1225-1.0-ME	◎									
	3T1225-1.1-ME	◎									
	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	◎									

- ◎ 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. 28
- Cutting Data P. 119 - 120



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

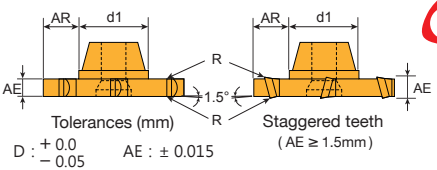
Dimensions (mm)			
D	d1	AE	Max. AR
28	15.7	0.8-0.9	5.5
		1.0-1.1	
		1.2-1.3	
		1.4-1.5	
		1.6-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0-4.0	
		4.2-5.0	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
8 flutes	3T1628-0.8-E								■		
	3T1628-0.9-E								■		
	3T1628-1.0-E								■		
	3T1628-1.1-E								■		
	3T1628-1.2-E								■		
	3T1628-1.3-E								■		
	3T1628-1.4-E								■		
	3T1628-1.5-E								■		
	3T1628-1.6-E								■		
	3T1628-1.7-E								■		
	3T1628-1.8-E								■		
	3T1628-1.9-E								■		
	3T1628-2.0-E								■		
	3T1628-2.2-E								■		
	3T1628-2.5-E								■		
	3T1628-3.0-E								■		
	3T1628-3.5-E								■		
	3T1628-4.0-E								■		* M.O.Q: 12PCS * Make-to-Order.
	3T1628-4.2-E								■		
	3T1628-4.5-E								■		
	3T1628-5.0-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.: 3T1628-0.8-E,K10

UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 119 - 120



D : $^{+0.0}_{-0.05}$ AE : ± 0.015

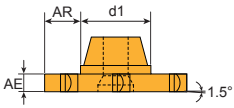
Dimensions (mm)				
D	d1	AE	Max. AR	R
28	15.7	0.8-0.9 1.0-1.1 1.2-1.3 1.4-1.5 1.6-1.8 1.9-2.0 2.2-2.5 3.0-4.0 4.2-5.0	5.5	R0.05 ± 0.025

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
 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	◎									* M.O.Q: 12PCS * Make-to-Order.
	3T1628-4.2-ME	◎									
	3T1628-4.5-ME	◎									
	3T1628-5.0-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.: 3T1628-0.8-ME,B100

UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 119 - 120



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

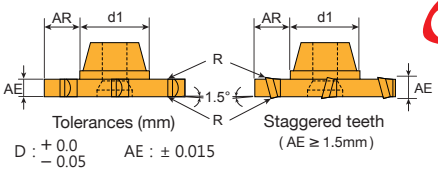
Dimensions (mm)			
D	d1	AE	Max. AR
29	15.7	0.8-0.9	6.0
		1.0-1.1	
		1.2-1.3	
		1.4-1.5	
		1.6-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0-4.0	
		4.2-5.0	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
8 flutes	3T1629-0.8-E										* M.O.Q: 12PCS * Make-to-Order.
	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										

- 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. 119 - 120



Dimensions (mm)				
D	d1	AE	Max. AR	R
29	15.7	0.8-0.9 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	R0.05 ± 0.025

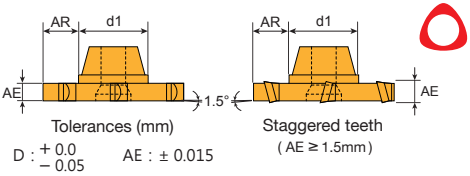
Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
8 flutes	3T1629-0.8-ME	◎									
	3T1629-0.9-ME	◎									
	3T1629-1.0-ME	◎									
	3T1629-1.1-ME	◎									
	3T1629-1.2-ME	◎									
	3T1629-1.3-ME	◎									
	3T1629-1.4-ME	◎									
	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. 119 - 120



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.015

Staggered teeth

(AE ≥ 1.5mm)

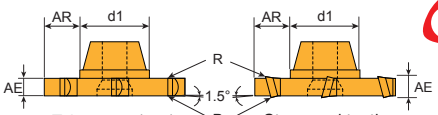
Dimensions (mm)			
D	d1	AE	Max. AR
30	15.7	0.8-0.9	6.5
		1.0-1.1	
		1.2-1.3	
		1.4-1.5	
		1.6-1.8	
		1.9-2.0	
		2.2-2.5	
		3.0-4.0	
		4.2-5.0	

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

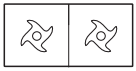
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1630-0.8-E,K10

UFO T-slot Inserts

- Toolholders P. 28
- Cutting Data P. 119 - 120



Dimensions (mm)				
D	d1	AE	Max. AR	R
30	15.7	0.8-0.9 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	6.5	R0.05 ± 0.025

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
8 flutes	3T1630-0.8-ME	◎									 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 CUTTER

Patent No. : M538848 Patent No. : ZL 2016 2 1300067.8 PCT Priority

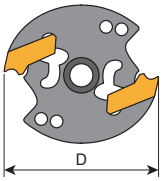
Features

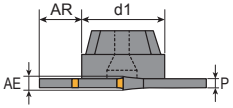
- Available in materials: P K M N S H
- Cost 200~300% SAVING
- Applicable Machines: CNC Milling machine
- Efficiency 400% UP
- Durability 300% UP

UFO T-slot Cutters

- Toolholders P. 28
- Inserts P. 182 - 189
- Cutting Data P. 121 - 122

3T





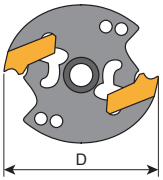
Order Code	Dimensions (mm)					Z	KG	MAX RPM	Inserts **LNGT**	Wrench
	D	d1	AR	AE	P					
3T1632-1.4	32	16	7.5	1.4 1.5	1.2	2	0.03	8000	1414 1415	150.10-30
3T1632-1.6				1.6	1.4				1616	
3T1632-1.8				1.8	1.6				1818	
3T1632-2.0				2.0 2.2 2.5	1.75				2020 2022 2025	
3T1632-2.5				2.5 2.7 3.0	2.25				2525 2527 2530	
3T1632-3.0				3.0 3.2 3.5	2.7		0.04		3030 3032 3035	
3T1632-4.0				4.0 4.2 4.5	3.7		0.05		4040 4042 4045	
3T1632-5.0				5.0 5.2 5.5	4.5				5050 5052 5055	

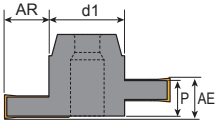
* Wrench for above holders sold seperately.

UFO T-slot Cutters

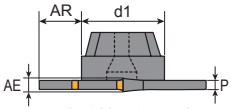
- Toolholders P. 28
- Insert P. 182 - 189
- Cutting Data P. 121 - 122

3T





3T1635-6.0, 3T1635-8.0



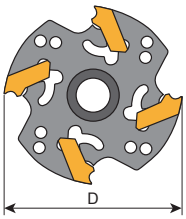
3T1635-1.4~5.0

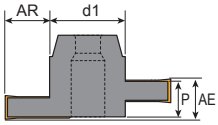
Order Code	Dimensions (mm)					Z	ZC	KG	MAX RPM	Inserts **LNGT**	Wrench
	D	d1	AR	AE	P						
3T1635-1.4	35	16	9.0	1.4 1.5	1.2	2	-	0.03	8000	1414 1415	150.10-30
3T1635-1.6				1.6	1.4					1616	
3T1635-1.8				1.8	1.6					1818	
3T1635-2.0				2.0 2.2 2.5	1.75					2020 2022 2025	
3T1635-2.5				2.5 2.7 3.0	2.25					2525 2527 2530	
3T1635-3.0				3.0 3.2 3.5	2.7			0.04		3030 3032 3035	
3T1635-4.0				4.0 4.2 4.5	3.7					4040 4042 4045	
3T1635-5.0				5.0 5.2 5.5	4.5					5050 5052 5055	
3T1635-6.0				6.0	5.5		1	0.05		5050NS	
3T1635-8.0				8.0	7.5						

* Wrench for above holders sold seperately.

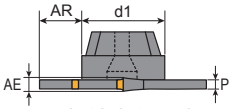
UFO T-slot Cutters

- Toolholders P. 28
- Insert P. 182 - 189
- Cutting Data P. 121 - 122





3T1640-6.0, 3T1640-8.0



3T1640-1.4~5.0

3T

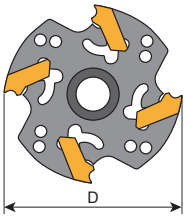
Order Code	Dimensions (mm)					Z	ZC	KG	MAX RPM	Inserts LNGT	Wrench
	D	d1	AR	AE	P						
3T1640-1.4	40	16	11.5	1.4 1.5	1.2	4	-	0.03	7500	1414 1415	150.10-30
3T1640-1.6				1.6	1.4					1616	
3T1640-1.8				1.8	1.6					1818	
3T1640-2.0				2.0 2.2 2.5	1.75					2020 2022 2025	
3T1640-2.5				2.5 2.7 3.0	2.25			0.05		2525 2527 2530	
3T1640-3.0				3.0 3.2 3.5	2.7					3030 3032 3035	
3T1640-4.0				4.0 4.2 4.5	3.7			0.06		4040 4042 4045	
3T1640-5.0				5.0 5.2 5.5	4.5					5050 5052 5055	
3T1640-6.0				6.0	5.5		2			5050NS	
3T1640-8.0				8.0	7.5						

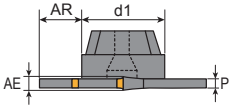
* Wrench for above holders sold seperately.

UFO T-slot Cutters

- Toolholders P. 29
- Insert P. 182 - 189
- Cutting Data P. 121 - 122

3T





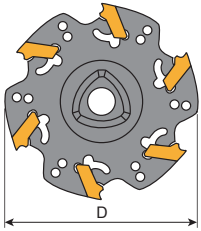
Order Code	Dimensions (mm)					Z	KG	MAX RPM	Inserts **LNGT**	Wrench
	D	d1	AR	AE	P					
3T2550-1.4	50	25	12	1.4 1.5	1.2	4	0.07	7000	1414 1415	150.10-30
3T2550-1.6				1.6	1.4		0.08		1616	
3T2550-1.8				1.8	1.6		0.08		1818	
3T2550-2.0				2.0 2.2 2.5	1.75		0.08		2020 2022 2025	
3T2550-2.5				2.5 2.7 3.0	2.25		0.09		2525 2527 2530	
3T2550-3.0				3.0 3.2 3.5	2.7		0.09		3030 3032 3035	
3T2550-4.0				4.0 4.2 4.5	3.7		0.10		4040 4042 4045	
3T2550-5.0				5.0 5.2 5.5	4.5		0.10		5050 5052 5055	

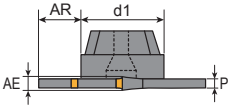
* Wrench for above holders sold seperately.

UFO T-slot Cutters

- Toolholders P. 29
- Insert P. 182 - 189
- Cutting Data P. 121 - 122

3T



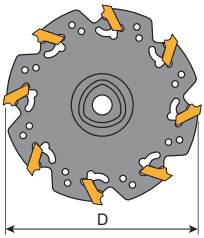


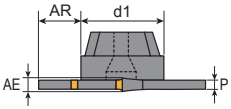
Order Code	Dimensions (mm)					Z	KG	MAX RPM	Inserts **LNGT**	Wrench
	D	d1	AR	AE	P					
3T2560-1.4	60	25	17	1.4 1.5	1.2	6	0.09	6500	1414 1415	150.10-30
3T2560-1.6				1.6	1.4				1616	
3T2560-1.8				1.8	1.6				1818	
3T2560-2.0				2.0 2.2 2.5	1.75				2020 2022 2025	
3T2560-2.5				2.5 2.7 3.0	2.25				2525 2527 2530	
3T2560-3.0				3.0 3.2 3.5	2.7		0.12		3030 3032 3035	
3T2560-4.0				4.0 4.2 4.5	3.7				4040 4042 4045	
3T2560-5.0				5.0 5.2 5.5	4.5				5050 5052 5055	

* Wrench for above holders sold seperately.

UFO T-slot Cutters

- Toolholders P. 29
- Insert P. 182 - 189
- Cutting Data P. 121 - 122





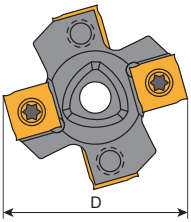
3T

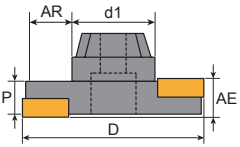
Order Code	Dimensions (mm)					Z	KG	MAX RPM	Inserts **LNGT**	Wrench
	D	d1	AR	AE	P					
3T2580-1.4	80	25	27	1.4 1.5	1.2	8	0.11	6500	1414 1415	150.10-30
3T2580-1.6				1.6	1.4				1616	
3T2580-1.8				1.8	1.6				1818	
3T2580-2.0				2.0 2.2 2.5	1.75				2020 2022 2025	
3T2580-2.5				2.5 2.7 3.0	2.25				2525 2527 2530	
3T2580-3.0				3.0 3.2 3.5	2.7		0.15		3030 3032 3035	
3T2580-4.0				4.0 4.2 4.5	3.7		0.17		4040 4042 4045	
3T2580-5.0				5.0 5.2 5.5	4.5				5050 5052 5055	

* Wrench for above holders sold seperately.

UFO T-slot Cutters

- Toolholders P. 29
- Insert P. 190 - 192
- Cutting Data P. 123 - 124





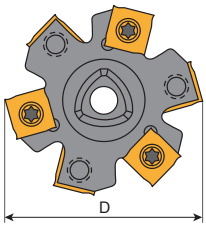
3TS

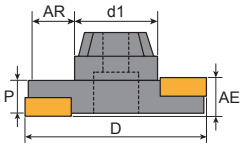
Order Code	Dimensions (mm)					Z	Zc	KG	MAX RPM	Inserts SNGX SNGW	Screw	Key
	D	d1	AR	AE	P							
3TS2550-4.0	50	25	12	4	3.4	4	2	0.09	17000	1102	T9354	908-T9
3TS2550-5.0				5	4.2					1103	T9355	908-T8
3TS2550-6.0				6	5					1203	T945	908-T15
3TS2550-7.0				7	6			0.10		1204	T946	
3TS2550-8.0				8	7				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

UFO T-slot Cutters

- Toolholders P. 29
- Insert P. 190 - 192
- Cutting Data P. 123 - 124

3TS



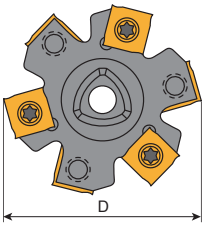


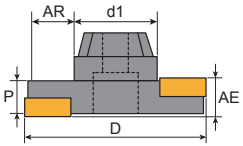
Order Code	Dimensions (mm)					Z	Zc	KG	MAX RPM	Inserts SNGX SNGW	Screw	Key
	D	d1	AR	AE	P							
3TS2560-4.0	60	25	17	4	3.4	6	3	0.10	15000	1102	T9354	908-T9
3TS2560-5.0				5	4.2					1103	T9355	908-T8
3TS2560-6.0				6	5			0.12		1203	T945	908-T15
3TS2560-7.0				7	6					1204	T946	
3TS2560-8.0				8	7					12045	T947	
3TS2560-10				10	9			0.17		1205	T948	
3TS2560-12				12	11			0.18		1207	T9411	

UFO T-slot Cutters

- Toolholders P. 29
- Insert P. 190 - 192
- Cutting Data P. 123 - 124

3TS

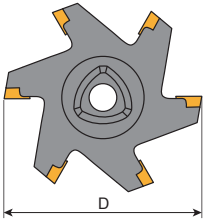


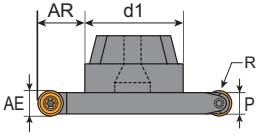


Order Code	Dimensions (mm)					Z	Zc	KG	MAX RPM	Inserts SNGX SNGW	Screw	Key
	D	d1	AR	AE	P							
3TS2580-4.0	80	25	27	4	3.4	8	4	0.13	14000	1102	T9354	908-T9
3TS2580-5.0				5	4.2					1103	T9355	908-T8
3TS2580-6.0				6	5			0.19		1203	T945	908-T15
3TS2580-7.0				7	6			0.21		1204	T946	
3TS2580-8.0				8	7	6	3			12045	T947	
3TS2580-10				10	9			0.31		1205	T948	
3TS2580-12				12	11					1207	T9411	

UFO T-slot Cutters

• Toolholders P. 29

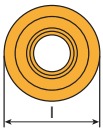




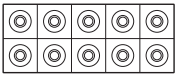
3T

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

RDKT / RDKW / RPKT Inserts



Tolerances (mm)
D=±0.04 S=±0.05



Inserts 10 PCS / Box

Dimensions (mm)			
Code	S	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

PATENTED

Video

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 R-groove Chamfer Series

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 differenf inserts. All items are available from stock.

Fig.1

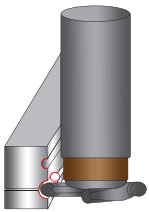


Fig.3

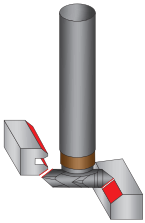


Fig.2

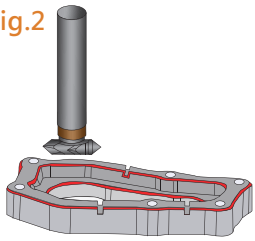
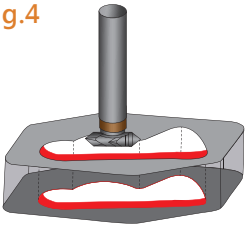


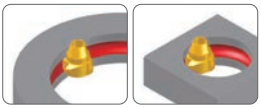
Fig.4

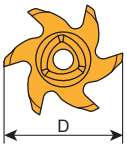


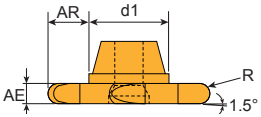
UFO Radius Inserts

- Toolholders P. 26
- Cutting Data P. 119 - 120

O-Ring



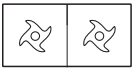




Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ±0.015

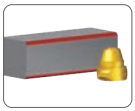
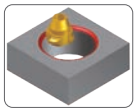
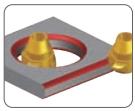
Dimensions (mm)				
D	d1	AE	R	Max. AR
20	9.9	1.0	0.5	4.5
		1.5	0.75	
		2.0	1.0	
		2.5	1.25	
		3.0	1.5	
		4.0	2.0	
		5.0	2.5	
		6.0	3.0	

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

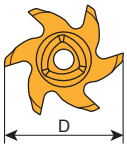
- ■ Steel ■ Stainless Steel ◎ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-R0.5-E, F20

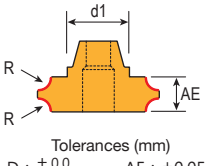
UFO Dual Corner Rounding Inserts

- Toolholders P. 24 、P. 26
- Cutting Data P. 119 - 120

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	9.9	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





Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ±0.05

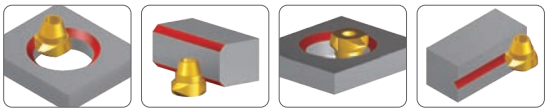
Inserts	Order Code	Grades									
		Carbide					Metal cermet		Uncoated		
		B100	C200	C250	F20	F30	CE25	CE60	K10	CE	
4 flutes	3T0610-DCR0.5-E										
	3T0612-DCR0.5-E										
	3T0612-DCR1.0-E										
	3T0612-DCR1.5-E										
	3T1020-DCR0.5-E										
	3T1020-DCR0.75-E										
	3T1020-DCR1.0-E										
	3T1020-DCR1.25-E										
	3T1020-DCR1.5-E										
	3T1020-DCR2.0-E										
6 flutes	3T0610-DCR0.5-ME	◎									
	3T0612-DCR0.5-ME	◎									
	3T0612-DCR1.0-ME	◎									
	3T0612-DCR1.5-ME	◎									
	3T1020-DCR0.5-ME	◎									
	3T1020-DCR0.75-ME	◎									
	3T1020-DCR1.0-ME	◎									
	3T1020-DCR1.25-ME	◎									
	3T1020-DCR1.5-ME	◎									
	3T1020-DCR2.0-ME	◎									

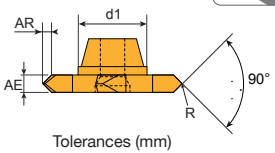
Inserts 2 PCS / Box

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

UFO Dual Chamfer Inserts

- Toolholders P. 24 - 25
- Cutting Data P. 119 - 120





Tolerances (mm)

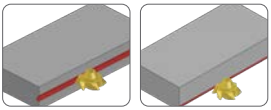
D : $^{+0.0}_{-0.05}$ AE : ±0.05

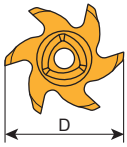
Dimensions (mm)				
D	d1	AE	Max. AR	R
9.8	6.5	3	0.5	0.2
11.8			1.0	
14.8	7.9			

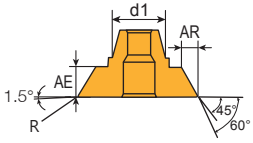
Inserts	Order Code	Grades									
		Carbide					Metal cermet		Uncoated		
		B100	C200	C250	F20	F30	CE25	CE60	K10	CE	
4 flutes	3T0610-3-45-E				●						Inserts 2 PCS / Box
	3T0612-3-45-E				●						
	3T0815-3-45-E				●						
	3T0610-3-45-ME	◎			●						
	3T0612-3-45-ME	◎			●						
	3T0815-3-45-ME	◎			●						

UFO Dovetail Inserts

- Toolholders P. 26
- Cutting Data P. 119 - 120







Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ±0.05

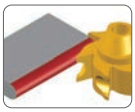
Dimensions (mm)					
D	d1	AE	Angle	Max. AR	R
20	9.9	5.0	45°	3.0	0.4
			60°	2.5	

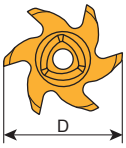
Inserts	Order Code	Grades									
		Carbide					Metal cermet		Uncoated		
		B100	C200	C250	F20	F30	CE25	CE60	K10	CE	
6 flutes	3T1020-45-E				●						Inserts 2 PCS / Box
	3T1020-60-E				●						
	3T1020-45-ME	◎			●						
	3T1020-60-ME	◎			●						

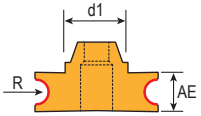
- ■ Steel ■ Stainless Steel ◎ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-45-E,F20

UFO Concave Radius Inserts

- Toolholders P. 26
- Cutting Data P. 119 - 120







Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ±0.05

Dimensions (mm)			
D	d1	AE	R
20	9.9	4.5	1.0
		5.0	1.25
		5.5	1.5
		6.5	2.0

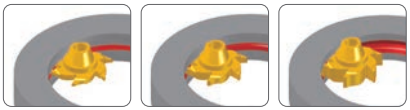
Inserts	Order Code	Grades									
		Carbide					Metal cermet		Uncoated		
		B100	C200	C250	F20	F30	CE25	CE60	K10	CE	
6 flutes	3T1020-CR1.0-E				■						
	3T1020-CR1.25-E				■						
	3T1020-CR1.5-E				■						
	3T1020-CR2.0-E				■						
	3T1020-CR1.0-ME	◎			■						Inserts 2 PCS / Box
	3T1020-CR1.25-ME	◎			■						
	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

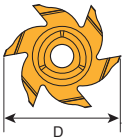
UFO Circlip Inserts

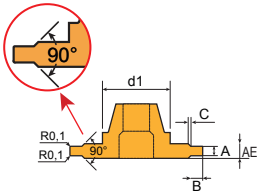
- Toolholders P. 26
- Cutting Data P. 119 - 120

DIN471 DIN472



Offer customized items at standard prices by MOQ 12 pcs



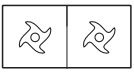


Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ±0.05

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

Inserts	Order Code	Grades									
		Carbide					Metal cermet		Uncoated		E / ME
		B100	C200	C250	F20	F30	CE25	CE60	K10	CE	
6 flutes	C3T1020-1.1-E								■		
	C3T1020-1.3-E								■		
	C3T1020-1.6-E								■		
	C3T1020-1.85-E								■		
	C3T1020-2.15-E								■		
	C3T1020-2.65-E								■		
	C3T1020-3.15-E								■		
	C3T1020-4.15-E								■		
	C3T1020-1.1-ME	◎			■						
	C3T1020-1.3-ME	◎			■						
	C3T1020-1.6-ME	◎			■						
	C3T1020-1.85-ME	◎			■						
	C3T1020-2.15-ME	◎			■						
	C3T1020-2.65-ME	◎			■						
	C3T1020-3.15-ME	◎			■						
	C3T1020-4.15-ME	◎			■						



Inserts 2 PCS / Box

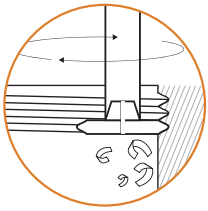
- ■ Steel ■ Stainless Steel ◎ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: C3T1020-1.1-E,K10

UFO THREAD MILLING

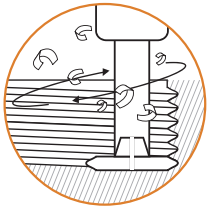
Features

- Available in materials: P K M N S H
- Cost 200~300% SAVING
- Applicable Machines CNC Milling machine
- Efficiency 400% UP
- Durability 300% UP

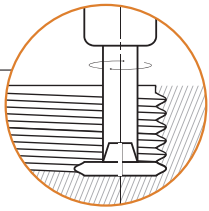
1 / Excellent chip evacuation

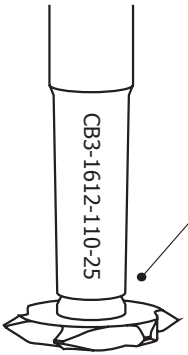


2 / High stability & Low cutting forces



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 Ø10/pitch1.0; partial profile inserts are available from Ø12/pitch1.0.

2. Unique tapered polygon design to get the excellent stability in high speed machining.

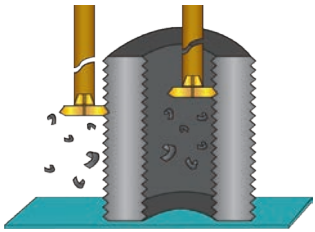
3. The front-mounted insert are positioned in a taper seat for center-positioning, giving secure and continuous performance.

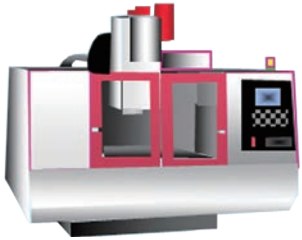
4. High productivity with many teeth (4-6 teeth).

New

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

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





Old

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

Advantages Of Partial Profile Ufo Th ead 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.

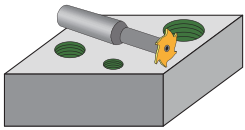
FIG.3

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.



Multiple Application

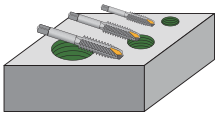


FIG.1

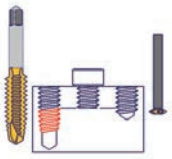


FIG.2

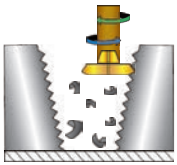


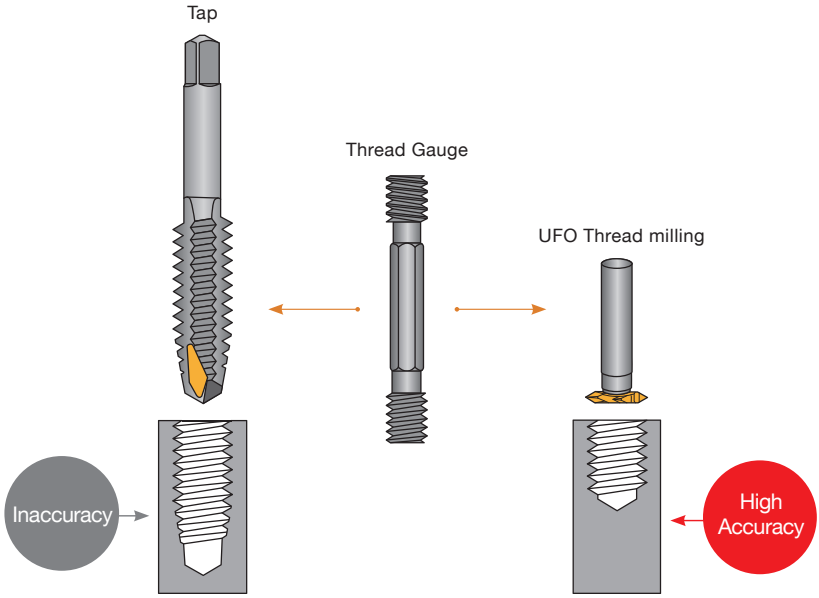
FIG.3

FIG.4

Tools Comparison

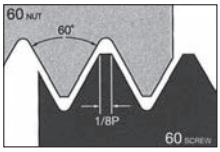
UFO partial profile insert	Tap	Solid carbide thread milling	Thread milling insert
One insert applicable to a wide pitch range	Single pitch	Single pitch	Single pitch
		expensive	
min dia. 12mm , 4~6 teeth			large size and less no. of tooth
	deeper pre-drilling hole is required		
single cutting edge with 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 higer cutting force and lower feed in machining difficult material	multiple pitches design results in higer 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

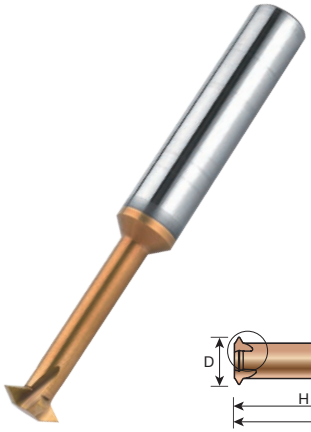
Precise Thread By UFO Thread Milling

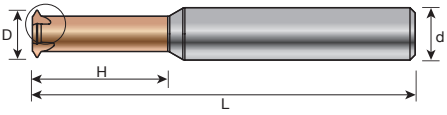


Solid Carbide Thread Milling - Partial Profile 60°

• Cutting Data P. 125



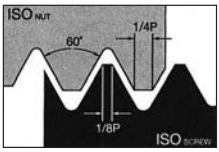


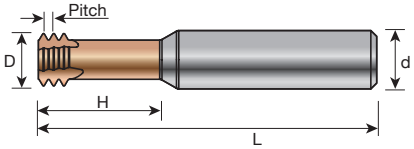


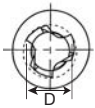
Order code	Pitch Range		D	H	T	d	L
	MM	TPI					
AT0195-50	0.35-0.6	72-40	1.95	6.0	3	3	50
AT0245-50	0.5-0.8	48-32	2.45	7.7	3	3	50
AT0315-50	0.5-0.8	48-32	3.15	10	3	4	50
AT0400-50	0.5-1.0	48-24	4.0	12	3	4	50
AT0470-60	0.5-1.25	48-20	4.7	15	3	6	60
AT0600-60	0.5-1.25	48-20	6.0	18	3	6	60
AT0800-60	0.75-1.5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

• Cutting Data P. 125



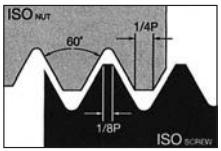


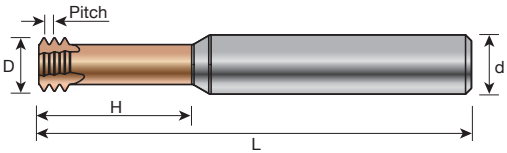


Thread Length Up To 2D

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) 6°



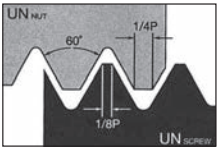


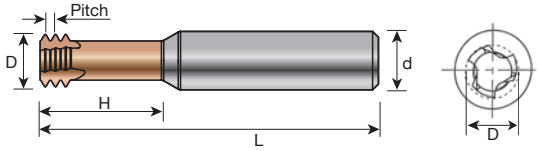
Thread Length Up To 3D

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 6°

- Cutting Data P. 125

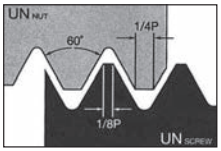


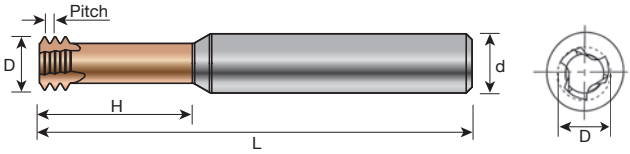


Thread Length Up To 2D

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 6°





Thread Length Up To 3D

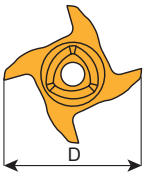
Order code	UNC	UNF	T.P.I	D	H	T	d	L
UTL404-50	No.5 - 40 UNC	No.6 - 40 UNF	40	2.46	9.8	3	4	50
UTL324-60	No.6 - 32 UNC	-	32	2.57	10.7	3	4	50
UTL326-60	No.8 - 32 UNC	No.10 - 32 UNF	32	3.22	12.7	3	6	60
UTL286-60	-	1/4 - 28 UNF	28	5.2	19.3	3	6	60
UTL248-60	-	5/16 - 24 UNF	24	6.65	24.2	3	8	60
UTL206-60	1/4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

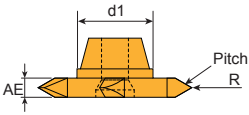
UFO Thread Milling Inserts (Partial Profile

- Toolholders P. 24
- Cutting Data P. 126 - 127

External / Internal

Inserts 2 PCS / Box



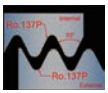


Tolerances (mm)

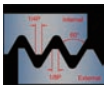
D : $^{+0.0}_{-0.05}$ AE : ± 0.05

Dimensions (mm)								
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	R	Minimum hole diameter	
							MM	INCH
12	6.5	3.2	-	16~10	55°	0.08~0.1	16.51	0.65"
		2.0	1.0~1.5	-	60°	0.05	14.00	-
		3.2	1.75~2.5			0.08~0.1		

Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		
		B100	C200	C250	F20	F30	CE25	CE100	CE60	K10	CE	E / ME
55° BSW/BSF	3T1-0612-55-16~10TPI-E				■							
	3T1-0612-55-16~10TPI-ME	◎			■							
60° 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



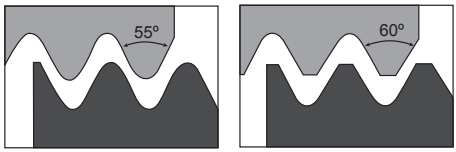
Defined by: R262 (DIN 13)
Tolerance class:6g/6H

- ■ 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

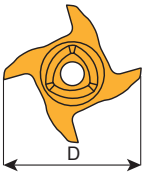
UFO Thread Milling Inserts (Partial Profile

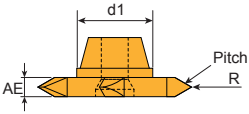
- Toolholders P. 25
- Cutting Data P. 126 - 127

External / Internal



Inserts 2 PCS / Box

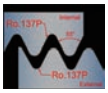
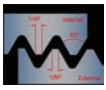




Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.05

Dimensions (mm)								
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	R	Minimum hole diameter	
							MM	INCH
15	7.9	4.0	-	11~8	55°	0.08~0.1	17.78	0.7"
		2.0	1.0~1.5	-	60°	0.05	17.00	-
		4.0	1.75~3.0			0.08~0.1		

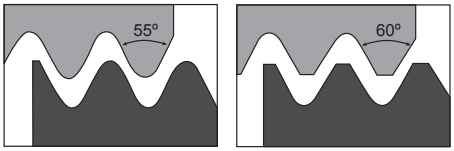
Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		
		B100	C200	C250	F20	F30	CE25	CE100	CE60	K10	CE	E / ME
55° BSW/BSF	3T1-0815-55-11~8TPI-E				■							 BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982 BSF Defined by: B.S.2779:1956 Tolerance class: BSW-Medium class A, BSF-Medium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

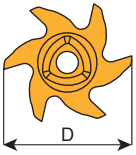
UFO Thread Milling Inserts (Partial Profile

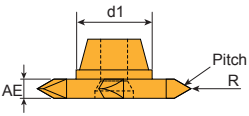
- Toolholders P. 26
- Cutting Data P. 126 - 127

External / Internal



Inserts 2 PCS / Box



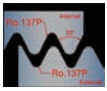


Tolerances (mm)

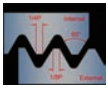
D : $^{+0.0}_{-0.05}$ AE : ± 0.05

Dimensions (mm)								
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	R	Minimum hole diameter MM	Minimum hole diameter INCH
20	9.9	4.6	-	11~6	55°	0.08~0.1	22.86	0.9"
		2.0	1.0~1.5	-	60°	0.05	22.00	-
		4.6	1.75~3.5			0.08~0.1		

Inserts	Order Code	Grades: Carbide B100	C200	C250	F20	F30	Cermet CE25	CE100	CE60	Uncoated K10	CE
55° BSW/BSF	3T1-1020-55-11~6TPI-E				■						
	3T1-1020-55-11~6TPI-ME	◎			■						
60° ISO Metric(M,MF)	3T1-1020-60-1.0~1.5-E				■						
	3T1-1020-60-1.75~3.5-E				■						
	3T1-1020-60-1.0~1.5-ME	◎			■						
	3T1-1020-60-1.75~3.5-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



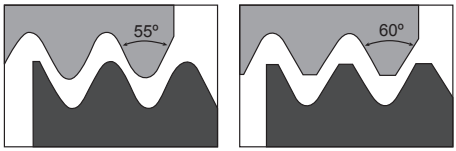
Defined by: R262 (DIN 13)
Tolerance class:6g/6H

- ■ 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.: 3T1-1020-55-11~6TPI-E,F20

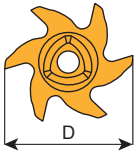
UFO Thread Milling Inserts (Partial Profile

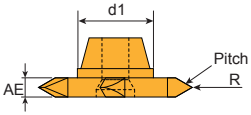
- Toolholders P. 27
- Cutting Data P. 126 - 127

External / Internal



Inserts 2 PCS / Box

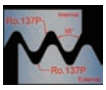
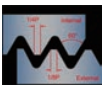




Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.05

Dimensions (mm)								
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	R	Minimum hole diameter MM	Minimum hole diameter INCH
25	12	4.6	-	11~5	55°	0.08~0.1	28.58	1.125"
		2.0	1.0~1.5	-	60°	0.05	27.00	-
		4.6	1.75~5.0			0.08~0.1		

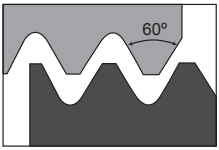
Inserts	Order Code	Grades: Carbide B100	C200	C250	F20	F30	Cermet CE25	CE100	CE60	Uncoated K10	CE	E / ME
55° BSW/BSF	3T1-1225-55-11~5TPI-E				■							 BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982 BSF Defined by: B.S.2779:1956 Tolerance class: BSW-Medium class A, BSF-Medium class
	3T1-1225-55-11~5TPI-ME	◎			■							
60° ISO Metric(M,MF)	3T1-1225-60-1.0~1.5-E				■							 Defined by: R262 (DIN 13) 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	◎			■							

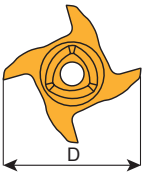
- ■ Steel ■ Stainless Steel ◎ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1-1225-55-11~5TPI-E, F20

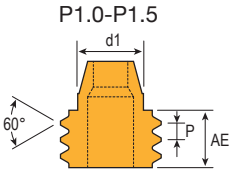
UFO Thread Milling Inserts(Full Profile

- Toolholders P. 24
- Cutting Data P. 126 - 127

ISO





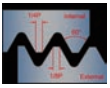


Tolerances (mm)

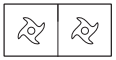
D : $^{+0.0}_{-0.05}$ AE : ± 0.05

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

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



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



Inserts 2 PCS / Box

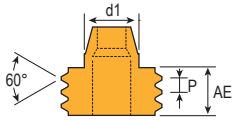
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0610-ISO1.0-E, F20

UFO Thread Milling Inserts (Full Profile

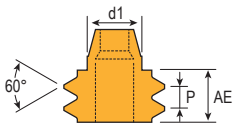
- Toolholders P. 24
- Cutting Data P. 126 - 127

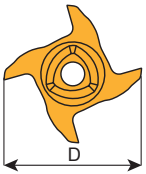
ISO

P1.0-P2.0



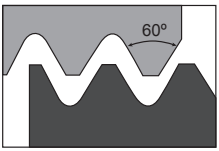
P2.5





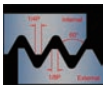
Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ± 0.05



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

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



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

Inserts 2 PCS / Box

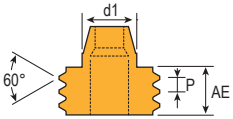
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0612-ISO1.0-E, F20

UFO Thread Milling Inserts (Full Profile

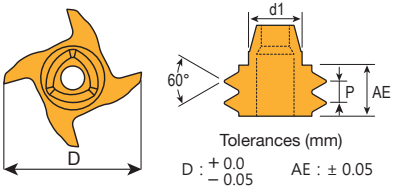
- Toolholders P. 24
- Cutting Data P. 126 - 127

UNC

TPI 16 - TPI 13

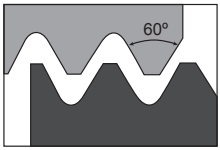


TPI 12 - TPI 10



Tolerances (mm)

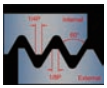
D : $^{+0.0}_{-0.05}$ AE : ± 0.05



Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter 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	
	3T0612-UNC16-E				■						
	3T0612-UNC14-E				■						
	3T0612-UNC13-E				■						
	3T0612-UNC12-E				■						
	3T0612-UNC11-E				■						
	3T0612-UNC10-E				■						
	3T0612-UNC16-ME	◎			■						
	3T0612-UNC14-ME	◎			■						
	3T0612-UNC13-ME	◎			■						
	3T0612-UNC12-ME	◎			■						
	3T0612-UNC11-ME	◎			■						
	3T0612-UNC10-ME	◎			■						

UNC/UNF



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

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

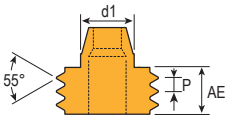
- ■ Steel ■ Stainless Steel ◎ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0612-UNC16-E,F20

UFO Thread Milling Inserts (Full Profile)

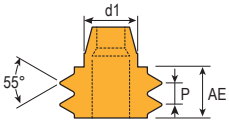
- Toolholders P. 24
- Cutting Data P. 126 - 127

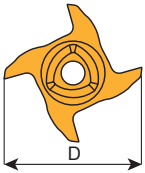
BSW

TPI 16 - TPI 14



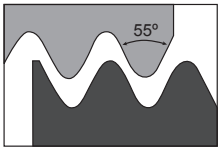
TPI 12 - TPI 10





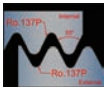
Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ± 0.05



Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter 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	
BSW/BSF	3T0612-BSW16-E				●						
	3T0612-BSW14-E				●						
	3T0612-BSW12-E				●						
	3T0612-BSW11-E				●						
	3T0612-BSW10-E				●						
	3T0612-BSW16-ME	◎			●						
	3T0612-BSW14-ME	◎			●						
	3T0612-BSW12-ME	◎			●						
	3T0612-BSW11-ME	◎			●						
	3T0612-BSW10-ME	◎			●						



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.

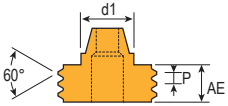
- ◎ Steel ◎ Stainless Steel ◎ Steel/Stainless Steel/Super alloy ◎ Cast Iron ◎ Aluminum ◎ Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0612-BSW16-E,F20

UFO Thread Milling Inserts (Full Profile)

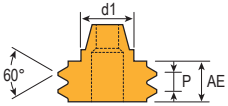
- Toolholders P. 25
- Cutting Data P. 126 - 127

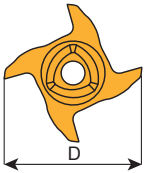
ISO

P1.0 - P2.0



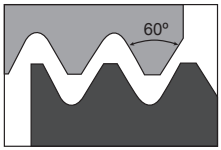
P2.5





Tolerances (mm)

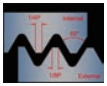
D : $^{+0.0}_{-0.05}$ AE : ± 0.05



Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter INCH
15	7.9	3.5	1.0	-	60°	17	-
		4.5	1.25	-			
		5.0	1.5	-		19	
		6.5	2.0	-			
		5.5	2.5	-			

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
	3T0815-ISO1.0-E										
	3T0815-ISO1.25-E										
	3T0815-ISO1.5-E										
	3T0815-ISO2.0-E										
	3T0815-ISO2.5-E										
	3T0815-ISO1.0-ME	◎									
	3T0815-ISO1.25-ME	◎									
	3T0815-ISO1.5-ME	◎									
	3T0815-ISO2.0-ME	◎									
	3T0815-ISO2.5-ME	◎									

ISO Metric (M,MF)



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

Inserts 2 PCS / Box

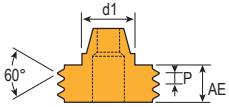
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0815-ISO1.0-E,F20

UFO Thread Milling Inserts (Full Profile)

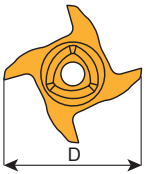
- Toolholders P. 25
- Cutting Data P. 126 - 127

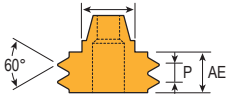
UNC

TPI 16 - TPI 13



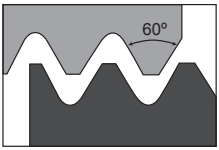
TPI 12 - TPI 10





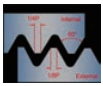
Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.05



Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter INCH
15	7.9	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									E	ME
		Carbide					Cermet		Uncoated			
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE		
UNC/UNF	3T0815-UNC16-E											
	3T0815-UNC14-E											
	3T0815-UNC13-E											
	3T0815-UNC12-E											
	3T0815-UNC11-E											
	3T0815-UNC10-E											
	3T0815-UNC16-ME	◎										
	3T0815-UNC14-ME	◎										
	3T0815-UNC13-ME	◎										
	3T0815-UNC12-ME	◎										
	3T0815-UNC11-ME	◎										
	3T0815-UNC10-ME	◎										



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

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

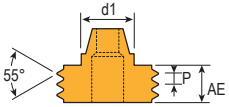
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T0815-UNC16-E,F20

UFO Thread Milling Inserts (Full Profile)

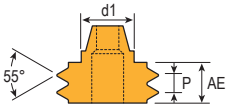
- Toolholders P. 25
- Cutting Data P. 126 - 127

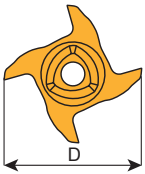
BSW

TPI 16 - TP14



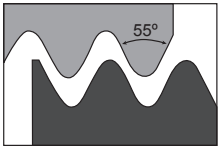
TPI 12 - TP10





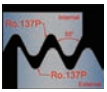
Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ± 0.05



Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter INCH
15	7.9	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	CE	
BSW/BSF	3T0815-BSW16-E										
	3T0815-BSW14-E										
	3T0815-BSW12-E										
	3T0815-BSW11-E										
	3T0815-BSW10-E										
	3T0815-BSW16-ME	◎									
	3T0815-BSW14-ME	◎									
	3T0815-BSW12-ME	◎									
	3T0815-BSW11-ME	◎									
	3T0815-BSW10-ME	◎									



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

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

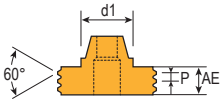
- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-BSW16-E,F20

UFO Thread Milling Inserts (Full Profile)

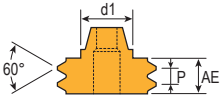
- Toolholders P. 26
- Cutting Data P. 126 - 127

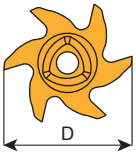
ISO

P1.0 - P2.0



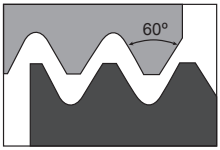
P2.5 - P3.5





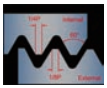
Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.05

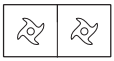


Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter INCH
20	9.9	3.5	1.0	-	60°	22	-
		4.5	1.25	-			
		5.0	1.5	-			
		6.5	2.0	-		24	
		5.5	2.5	-			
		6.5	3.0	-		26	
		7.5	3.5	-			

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



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



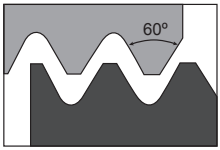
Inserts 2 PCS / Box

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

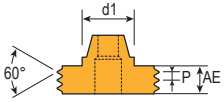
UFO Thread Milling Inserts (Full Profile)

- Toolholders P. 26
- Cutting Data P. 126 - 127

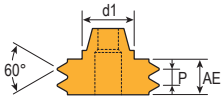
UNC

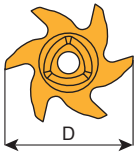


TPI 16 - TPI 13



TPI 12 - TPI 8

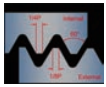




Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.05}$ AE : ± 0.05

Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter INCH
20	9.9	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		E / ME
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
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.

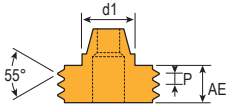
- ■ Steel ■ Stainless Steel ◎ Steel/Stainless Steel/Super alloy ■ Cast Iron ■ Aluminum ■ Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: 3T1020-UNC16-E,F20

UFO Thread Milling Inserts (Full Profile)

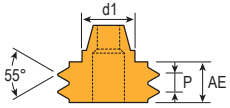
- Toolholders P. 26
- Cutting Data P. 126 - 127

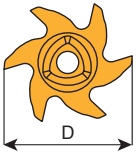
BSW

TPI 16 - TPI 14



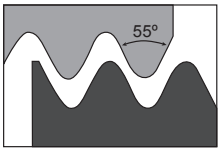
TPI 12 - TPI 8



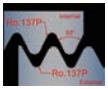


Tolerances (mm)

D : $^{+0.0}_{-0.05}$ AE : ± 0.05



Dimensions (mm)							
D	d1	AE	Pitch mm	Pitch t.p.i	Angle	Minimum hole diameter MM	Minimum hole diameter INCH
20	9.9	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	
BSW/BSF	3T1020-BSW16-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
	3T1020-BSW14-E				■						
	3T1020-BSW12-E				■						
	3T1020-BSW11-E				■						
	3T1020-BSW10-E				■						
	3T1020-BSW9-E				■						
	3T1020-BSW8-E				■						
	3T1020-BSW16-ME	◎			■						* M.O.Q: 12PCS * Make-to-Order.
	3T1020-BSW14-ME	◎			■						
	3T1020-BSW12-ME	◎			■						
	3T1020-BSW11-ME	◎			■						
	3T1020-BSW10-ME	◎			■						
	3T1020-BSW9-ME	◎			■						
	3T1020-BSW8-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-BSW16-E,F20

TECHNICAL GUIDE

Thread Infeed Depth and Number of Passes Recommendation

Below recommended data are applicable to steel

• External ISO - metric threads

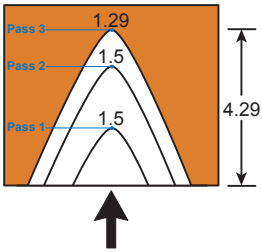
Pitch(mm)	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.80	0.75	0.50
Tot.inf.depth (mm)	3,82	3,52	3,19	2,87	2,53	2,23	1,92	1,60	1,25	1,13	0,93	0,81	0,65	0,52	0,48	0,48
Pass 1 (mm)	1,50	1,50	1,30	1,60	1,53	1,23	1,0	1,60	1,25	1,13	0,93	0,81	0,65	0,52	0,48	0,48
Pass 2 (mm)	1,30	1,20	1,10	1,37	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

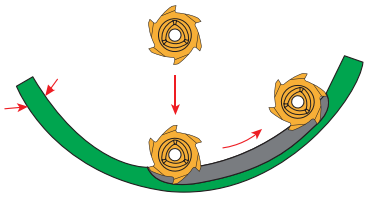
• To stainless steel, the infeed depth per pass should be decreased.

• The threading insert nose radius is relatively small and can be easily damaged if it is overloaded.

Technical Guide

Internal Thread

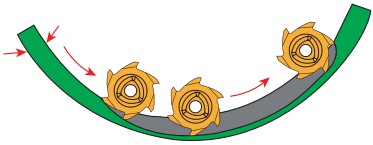
1



Plunging is not recommended

2

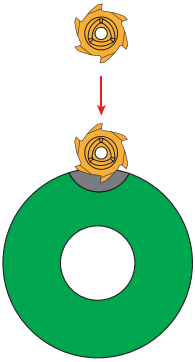
Highly Recommended



Ramping is the best choice

External Thread

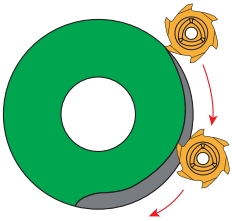
1



Plunging is not recommended

2

Highly Recommended



Ramping is the best choice

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.

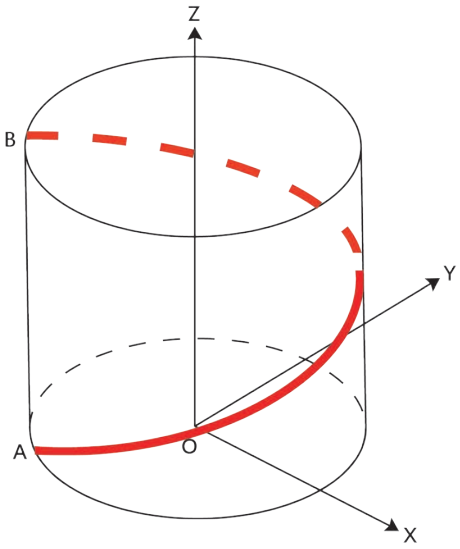
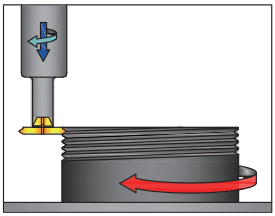


Fig. A

Thread Milling Methods

External

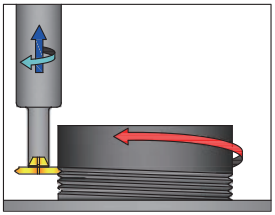
FIG.1



Highly Recommended

Right Hand Thread-Climb Milling

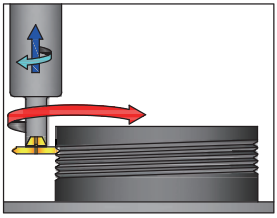
FIG.2



Highly Recommended

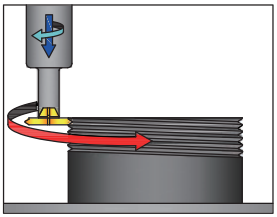
Left Hand Thread- Climb Milling

FIG.3



Right Hand Thread-
Conventional Milling

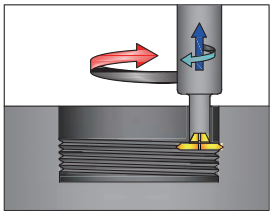
FIG.4



Left Hand Thread-
Conventional Milling

Internal

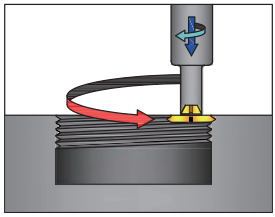
FIG.1



Highly Recommended

Right Hand Thread-Climb Milling

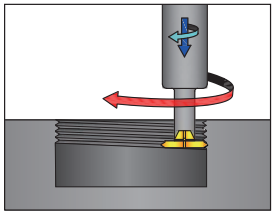
FIG.2



Highly Recommended

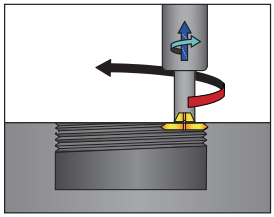
Left Hand Thread-Climb Milling

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
- Thread / M16×2.0P
- Milling / Climb milling / Internal thread
- CNC programme / Fanuc / Mitsubishi

FIG. 1

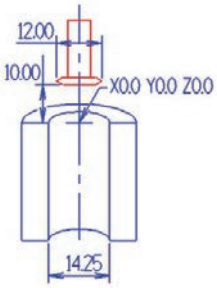
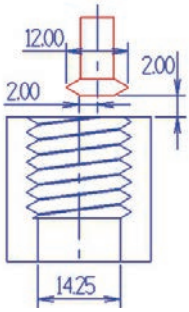


FIG. 2



Fanuc

G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 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 125-127

Internal Thread Milling Example CNC Code - Partial Profile Programm

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

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

FIG. 1

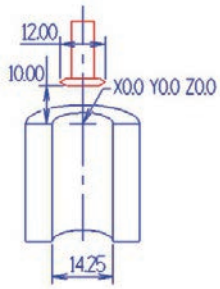
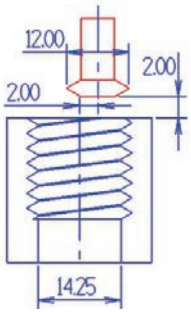


FIG. 2



Fanuc

G90 G0 G54 X0.0 Y0.0
G43 Z10.0 H1 S3978 M3 (On centerline of workpiece Fig1)
M7
G00 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 125-127

External Thread Milling Example CNC Code - Partial Profile P ogramm

Method 1/Tool offset-cutter compensation

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

FIG. 1

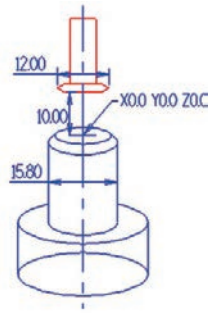
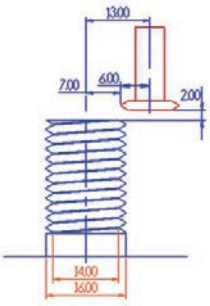


FIG. 2



Fanuc

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

Exact cutting data see page 125-127

External Thread Milling Example CNC Code - Partial Profile P ogramm

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

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

FIG. 1

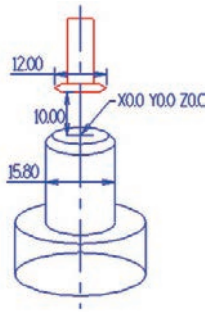
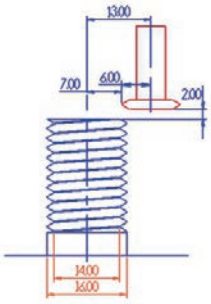


FIG. 2



Fanuc

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

Exact cutting data
see page 125-127

Recommended Preparatory Drill Diameter And Available Inserts

Insert diameter : ● Ø12 ● Ø15 ● Ø20 ● Ø25

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

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

Recommended Preparatory Drill Diameter And Available Inserts

Insert diameter : ● Ø12 ● Ø15 ● Ø20 ● Ø25

Size		Maximum drill diameter		
		4H	5H	6H
M17 x 0.75		16.30	16.33	16.37
M17 x 0.50		16.54	16.57	16.59
M18 x 2.50	●	15.57	15.64	15.74
M18 x 2.00	●	16.07	16.13	16.21
M18 x 1.50	●	16.56	16.61	16.67
M18 x 1.00	● ●	17.06	17.10	17.15
M19 x 2.50	●	16.57	16.64	16.74
M19 x 2.00	● ●	17.07	17.13	17.21
M19 x 1.50	● ●	17.56	17.61	17.67
M19 x 1.25	● ●	17.81	17.85	17.91
M19 x 1.00	● ●	18.06	18.10	18.15
M19 x 0.75		18.30	18.33	18.37
M19 x 0.50		18.54	18.57	18.59
M20 x 2.50	● ●	17.57	17.64	17.74
M20 x 2.00	● ●	18.07	18.13	18.21
M20 x 1.50	● ●	18.56	18.61	18.67
M20 x 1.00	● ●	19.06	19.10	19.15
M21 x 2.50	● ●	18.57	18.64	18.74
M21 x 1.50	● ●	19.56	19.61	19.67
M21 x 1.00	● ●	20.06	20.10	20.15
M22 x 2.50	● ●	19.57	19.64	19.74
M22 x 2.00	● ●	20.07	20.13	20.21
M22 x 1.50	● ●	20.56	20.61	20.67
M22 x 1.00	● ●	21.06	21.10	21.15
M23 x 2.50	● ●	20.57	20.64	20.74
M23 x 2.00	● ●	21.07	21.13	21.21
M23 x 1.50	● ●	21.56	21.61	21.67
M23 x 1.00	● ● ●	22.06	22.10	22.15
M24 x 3.00	●	21.06	21.15	21.25
M24 x 2.00	● ● ●	22.07	22.13	22.21
M24 x 1.50	● ● ●	22.56	22.61	22.67
M24 x 1.00	● ● ●	23.06	23.10	23.15
M25 x 3.00	● ●	22.06	22.15	22.25
M25 x 2.00	● ● ●	23.07	23.13	23.21
M25 x 1.50	● ● ●	23.56	23.61	23.67
M25 x 1.00	● ● ●	24.06	24.10	24.15
M26 x 3.00	● ●	23.06	23.15	23.25
M26 x 2.00	● ● ●	24.07	24.13	24.21
M26 x 1.50	● ● ●	24.56	24.61	24.67
M27 x 3.00	● ●	24.06	24.15	24.25
M27 x 2.50	● ● ●	24.57	24.64	24.74
M27 x 2.00	● ● ●	25.07	25.13	25.21
M27 x 1.50	● ● ●	25.56	25.61	25.67
M27 x 1.00	● ● ●	26.06	26.10	26.15
M28 x 3.00	● ●	25.06	25.15	25.25
M28 x 2.00	● ● ●	26.07	26.13	26.21
M28 x 1.50	● ● ●	26.56	26.61	26.67

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	32.16	32.67
M34 x 1.00	● ● ●	33.06	33.10	33.15
M35 x 3.00	● ●	32.06	32.15	32.25
M35 x 1.50	● ● ●	33.56	33.61	33.67
M35 x 1.00	● ● ●	34.06	34.10	34.15
M36 x 4.00	●	32.04	32.14	32.27
M36 x 3.00	● ●	33.06	33.15	33.25
M36 x 2.00	● ● ●	34.07	34.13	34.21
M36 x 1.50	● ● ●	34.56	34.61	34.67
M36 x 1.00	● ● ●	35.06	35.10	35.15
M37 x 1.50	● ● ●	35.56	35.61	35.67
M37 x 1.00	● ● ●	36.06	36.10	36.15
M38 x 4.00	●	34.04	34.14	34.27
M38 x 3.00	● ●	35.06	35.15	35.25
M38 x 2.00	● ● ●	36.07	36.13	36.21
M38 x 1.50	● ● ●	36.56	36.61	36.67
M39 x 4.00	●	35.04	35.14	35.27
M39 x 3.00	● ● ●	36.06	36.15	36.25
M39 x 2.00	● ● ●	37.07	37.13	37.21
M39 x 1.50	● ● ●	37.56	37.61	37.67
M39 x 1.00	● ● ●	38.06	38.10	38.15
M40 x 4.00	●	36.04	36.14	36.27
M40 x 3.00	● ●	37.06	37.15	37.25
M40 x 2.00	● ● ●	38.07	38.13	38.21
M40 x 1.50	● ● ●	38.56	38.61	38.67
M40 x 1.00	● ● ●	39.06	39.10	39.15
M42 x 4.50	●	37.55	37.65	37.79
M42 x 4.00	●	38.04	38.14	38.27
M42 x 3.00	● ●	39.06	39.15	39.25
M42 x 2.00	● ● ●	40.70	40.13	40.21
M42 x 1.50	● ● ●	40.56	40.61	40.67

Recommended Preparatory Drill Diameter And Available Inserts

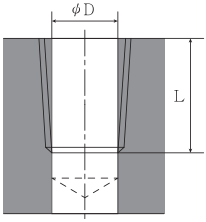
Insert diameter : ● Ø12 ● Ø15 ● Ø20 ● Ø25

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

Size		Maximum drill diameter		
		4H	5H	6H
M62 x 1.50	● ● ●	60.5	60.6	60.6
M64 x 6.00		58	58.1	58.2
M64 x 4.00	●	60	60.1	60.2
M64 x 3.00	● ●	61	61.1	61.2
M64 x 2.00	● ● ●	62	62.1	62.2
M64 x 1.50	● ● ●	62.5	62.6	62.6
M65 x 4.00	●	61	61.1	61.2
M65 x 3.00	● ●	62	62.1	62.2
M65 x 2.00	● ● ●	63	63.1	63.2
M65 x 1.50	● ● ●	63.5	63.6	63.6
M68 x 6.00		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

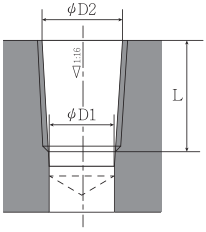
RC (BSPT)
Recommended Thread Dia / T.P.I / Minimum Bore Dia

1. Cylindrical drilling without reamer



Nom. size D	P Gg/1" (tpi)	ϕD	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

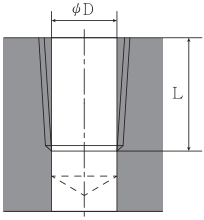
2. Cylindrical drilling with reamer to form taper thread



Nom. size D	P Gg/1" (tpi)	ϕD1	ϕD2	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

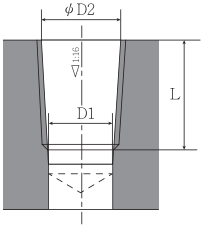
NPT
Recommended Thread Dia / T.P.I / Minimum Bore Dia

1. Cylindrical drilling without reamer



Nom. size D	P Gg/1" (tpi)	ϕD	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)	ϕD1	ϕD2	L
NPT 1/16"	27	5,95	6,39	8,3
1/8"	27	8,3	8,74	8,3
1/4"	18	10,75	11,36	12,15
3/8"	18	14,15	14,80	12,45
1/2"	14	17,45	18,32	16,3
3/4"	14	22,8	23,67	16,3
1"	11 1/2"	28,65	29,69	19,55
1 1/4"	11 1/2"	37,35	38,45	20,05
1 1/2"	11 1/2"	43,45	44,52	20,05
2"	11 1/2"	55,45	56,56	20,45

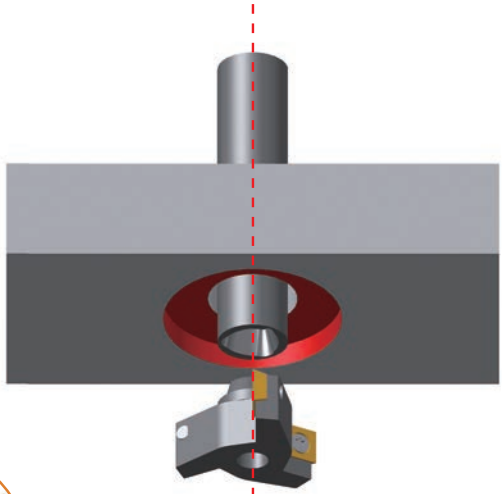
UFO
BACK BORING

Features

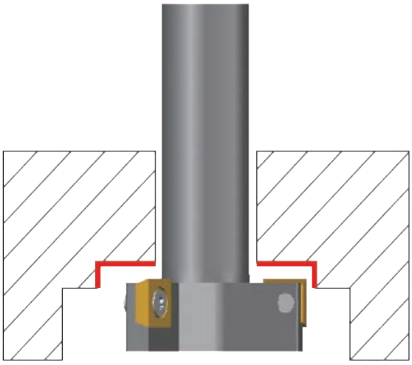
- Available in materials: P K M N S H
- Cost **200~300%** SAVING
- Applicable Machines: CNC Milling machine, Drilling M/C
- Efficiency **400%** UP
- Durability **300%** UP

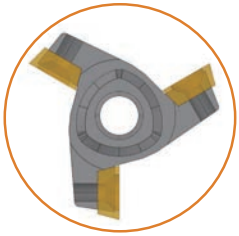
UFO
A Type
Back Boring
Cutter

UFO



Inserts set at unequal distance from the center. Applicable with cutter ø23-ø60 mm.



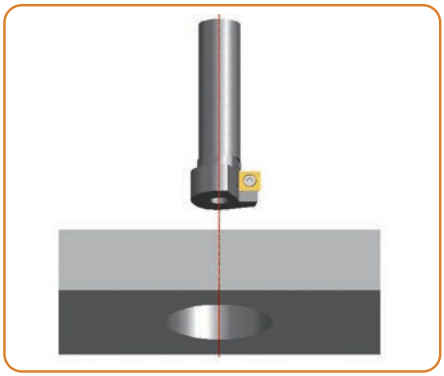


Inserts set at equal distance from the center. Applicable with cutter ø18-ø22 mm

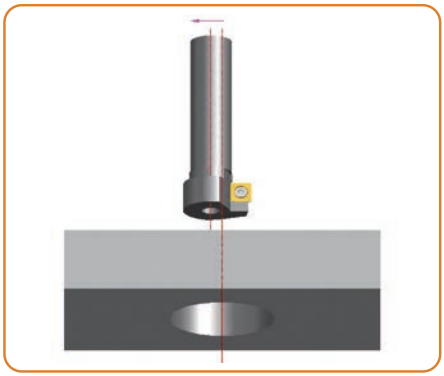
UFO
B Type
Back Boring
Cutter

UFO

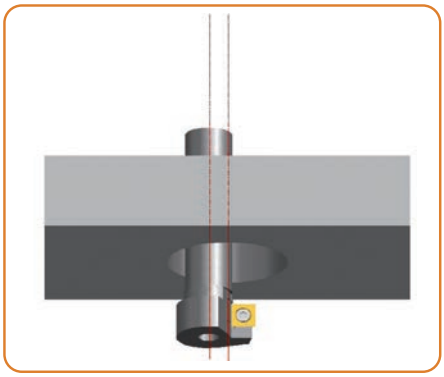
1. Centerline



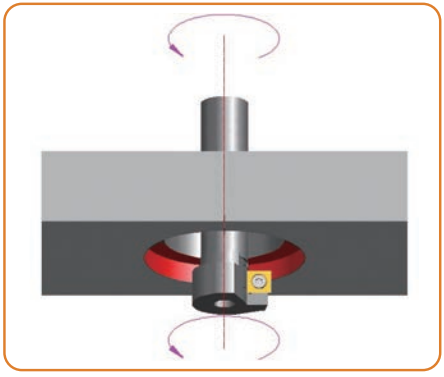
2. Tool displacement



3. Machining



4. Back to center line

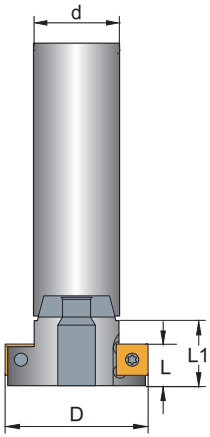


* The price and lead time are based on present conditions.

PRODUCT SPECIFICATIONS

UFO Back Boring Cutter - A Type

- Toolholders P. 26
- Insert P. 118
- Cutting Data P. 118

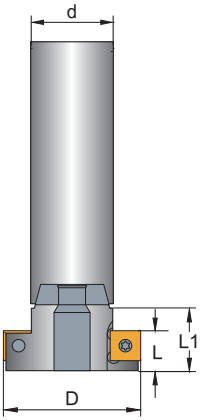


B3T

Order Code						Z	ZC	KG	MAX RPM	Inserts SDET	Screw	Key
Shank	Cutter	D	d	L	L1							
CB3-1010-80-20 CB3-1010-100-20	B3T-1018	18	10.4	9	14	2	1	0.04	14000	0602	C02506	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. 118
- Cutting Data P. 118

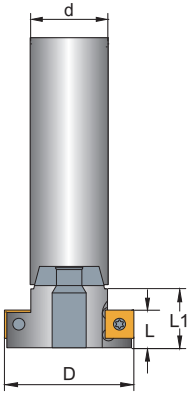


B3T

Order Code						Z	ZC	KG	MAX RPM	Inserts SDET	Screw	Key
Shank	Cutter	D	d	L	L1							
CB3-1212-90-25 CB3-1212-110-25	B3T-1223	23	12.4	9	14	3	1	0.04	13000	0602	C02506	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 CB3-1616-150-30	B3T-1631	31	16.4					0.06	12500			
	B3T-1632	32										
	B3T-1633	33										
	B3T-1634	34						0.07				
	B3T-1635	35										
	B3T-1636	36		12	17			0.10	12000	09T3	C04008	T15P
	B3T-1637	37										
	B3T-1638	38						0.11				
	B3T-1639	39										
	B3T-1640	40										

UFO Back Boring Cutter - A Type

- Toolholders P. 29
- Insert P. 118
- Cutting Data P. 118



B3T

Order Code						Z	ZC	KG	MAX RPM	Inserts SDET	Screw	Key
Shank	Cutter	D	d	L	L1							
CB3-2525-110 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						0.17				
	B3T-2556	56										
	B3T-2557	57										
	B3T-2558	58										
	B3T-2559	59										
	B3T-2560	60										

Recommended Insert Grades

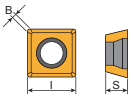
• UFO Back Boring Cutter Insert Grade Selection

Material group	Recom. fz (mm/tooth)	Inserts			
		SDET.....ME	SDET.....E		
1	0.04-0.08	B100	-	-	-
2		B100	-	-	-
3	0.04-0.07	B100	-	-	-
4		B100	-	-	-
5	0.04-0.06	B100	-	-	-
6		B100	-	-	-
7		B100	-	-	-
8	0.04-0.08	B100	-	-	-
9		B100	-	-	-
10	0.04-0.06	B100	-	-	-
11		B100	-	-	-
12	0.07-0.1	F30	-	-	-
13		F30	-	-	-
14	0.07-0.08	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	-	-	-

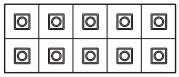
Recommended Cutting Data - UFO Back Boring Cutter

• 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_c (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 -	-	-	-	-	-	-



	Tolerances (± mm)	
	l	S
SDET	0,03	0,025



Inserts 10 PCS /Box

Code	Dimensions (mm)		
	l	S	B
0602	6.0	2.3	0.4
09T3	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	◎									

• 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

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

• Insert Grade Selection

Material group	Recom. fz (mm/tooth) 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)			Speed Factor
Full engagement	-	0.05	0.10	0.14	0.65
Side Milling	2%	0.21	0.44	0.65	1.20
	5%	0.14	0.28	0.41	1.10
	10%	0.10	0.20	0.30	1.00
	20%	0.07	0.14	0.21	0.90
	30%	0.06	0.12	0.18	0.85
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

• Recommended Cutting Speed, Vc (m/min)

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

* Coolant is always required

• 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
4.2-5.0 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 T-slot Cutter Insert Grade Selection

Material group	Recom. fz (mm/tooth) 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)			Speed Factor
Full engagement	-	0.05	0.10	0.14	0.65
Side Milling	2%	0.21	0.44	0.65	1.20
	5%	0.14	0.28	0.41	1.10
	10%	0.10	0.20	0.30	1.00
	20%	0.07	0.14	0.21	0.90
	30%	0.06	0.12	0.18	0.85
Average Chip Thickness (hm)	-	0.03	0.06	0.09	-

Recommended Cutting Data - UFO T-slot Cutter

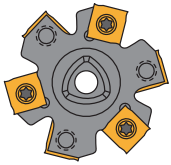
• Recommended Cutting Speed, Vc(m/min)

Material group	Grades						
	B100	C350	F20	CE60	CE	K10	F30
	Cutting speed, v_c (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)

AE	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



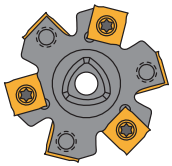
• UFO T-slot Cutter Insert Grade Selection

Material group	Recom. fz (mm/tooth) 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)			Speed Factor
Full engagement	-	0.05	0.10	0.14	0.65
Side Milling	2%	0.21	0.44	0.65	1.20
	5%	0.14	0.28	0.41	1.10
	10%	0.10	0.20	0.30	1.00
	20%	0.07	0.14	0.21	0.90
	30%	0.06	0.12	0.18	0.85
Average Chip Thickness (hm)	-	0.03	0.06	0.09	-

Recommended Cutting Data - UFO T-slot Cutter



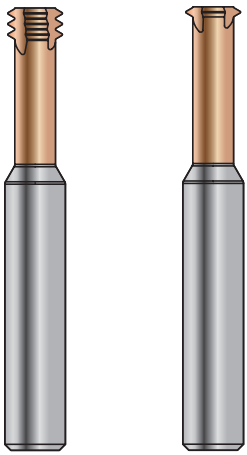
• Recommended Cutting Speed, Vc (m/min)

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)

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	0.06-0.0 8	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) 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)

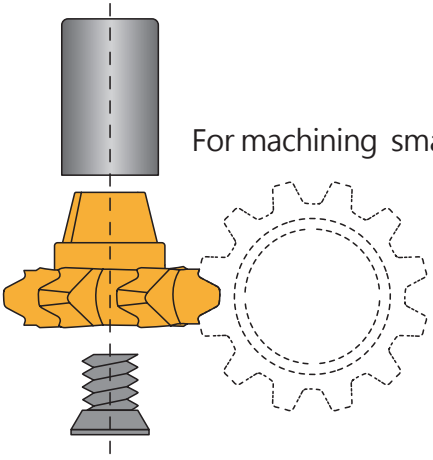
Pitch (mm)	fz (mm/tooth)					
	Material group					
	1 2 3 4	5 6	8 9 10 11	12 13 14 15	16 17	20 21 22
1.0-1.5	0.04-0.06	0.03-0.05	0.04-0.06	0.04-0.07	0.05-0.08	0.03-0.04
1.75-2.5	0.05-0.07	0.04-0.06	0.05-0.07	0.05-0.08	0.06-0.09	0.04-0.05
3.0-4.0	0.06-0.0 8	0.05-0.07	0.06-0.08	0.06-0.09	0.07-0.1	0.05-0.06
5.0-6.0	0.06-0.08	0.05-0.07	0.06-0.08	0.06-0.09	0.07-0.1	0.05-0.06

Recommended Cutting Data - UFO Thread Milling Inserts

• Recommended Cutting Speed, Vc (m/min)

Material group	Grades						
	B100	C350	F20	CE60	CE	K10	F30
	Cutting speed, v_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



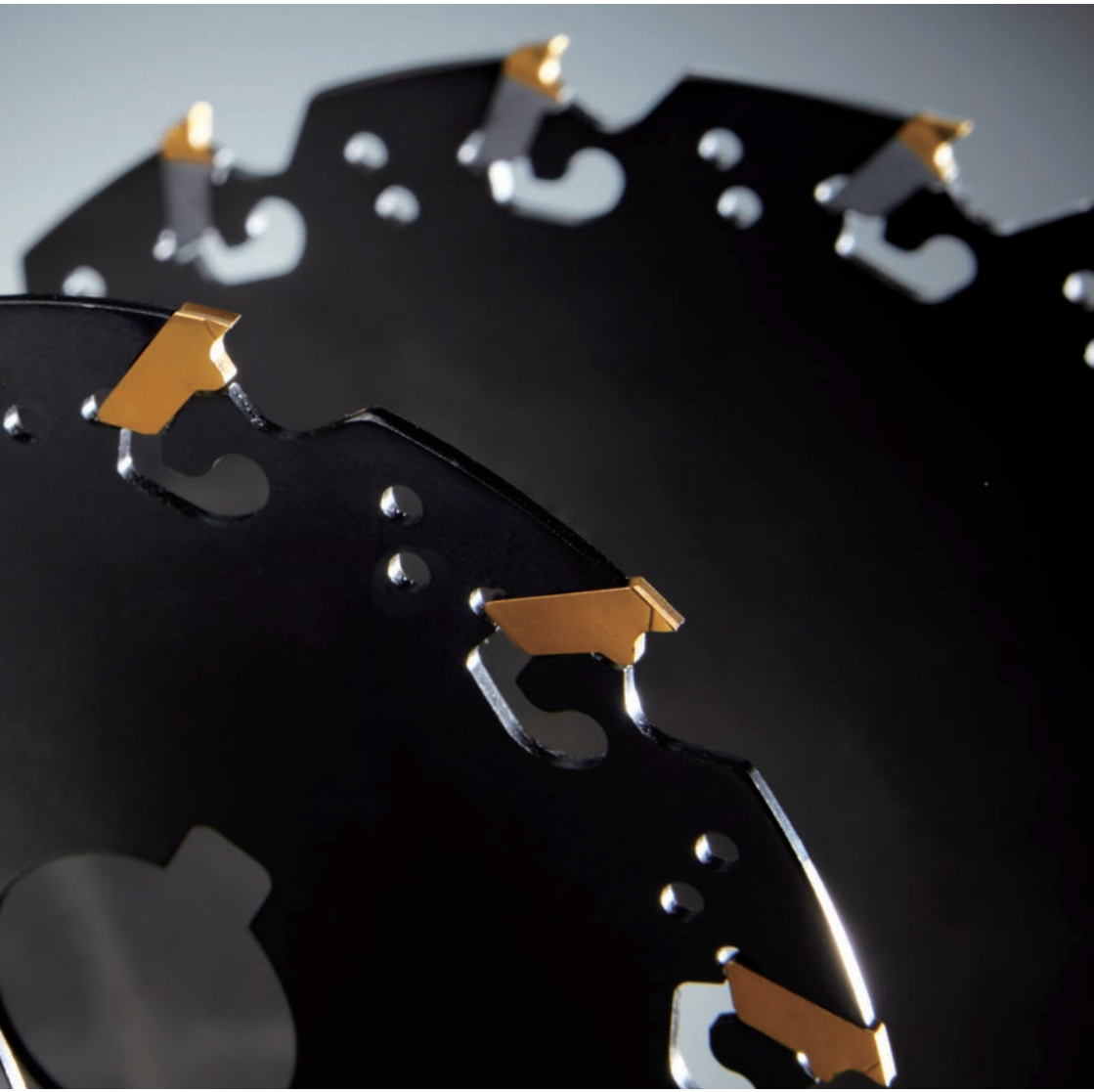
For machining small gears

SLITTING/ SLOTTING/ CUT-OFF SERIES

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.



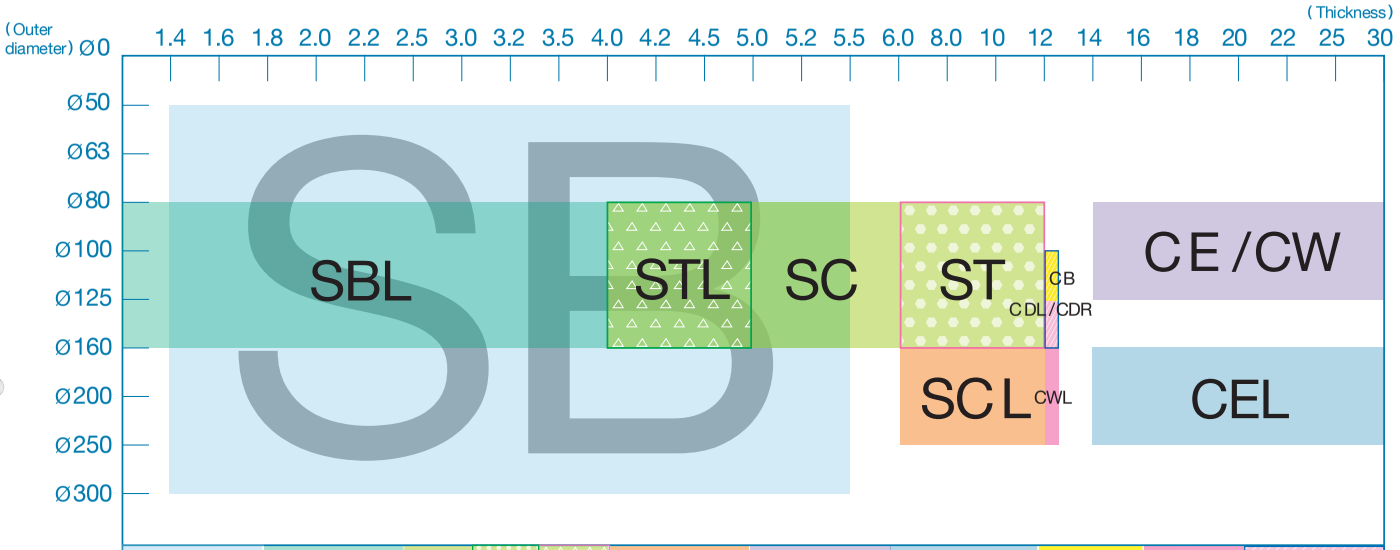
SAW BLADE

Video

Features

- Available in materials: P K M N S H
- Cost **200~300%** SAVING
- Applicable Machines: Milling machine
- Efficiency **300~500%** UP
- Durability **300%** UP

SLITTING/SLOTTING/CUT-OFF SERIES
Classification table



Product	SB	SBL	SC	ST	STL	SCL	CE/CW	CEL	CB	CWL	CDL/CDR
Outer diameter	Ø50-300	Ø80-160	Ø80-160			Ø160-250	Ø80-125	Ø160-250	Ø100-125	Ø160-250	Ø100-160
Thickness	1.4-5.5	1.4-5.5	4-12	6-12	4-5	6-12	14-30	14-30	12	12	12

Unit : mm

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 :

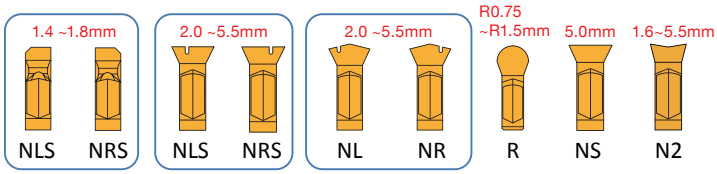
A. Different materials

P M K N S H

B. Different thickness

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

C. Different insert forms

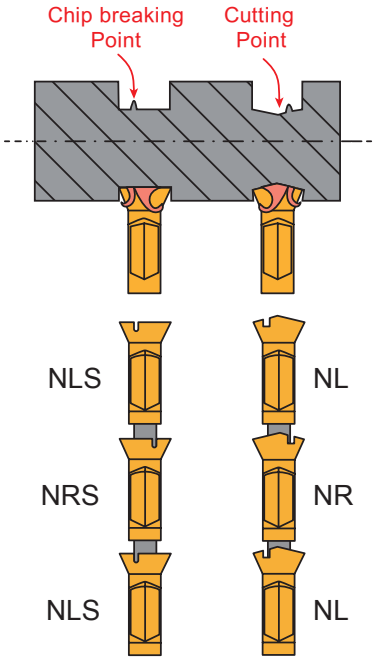


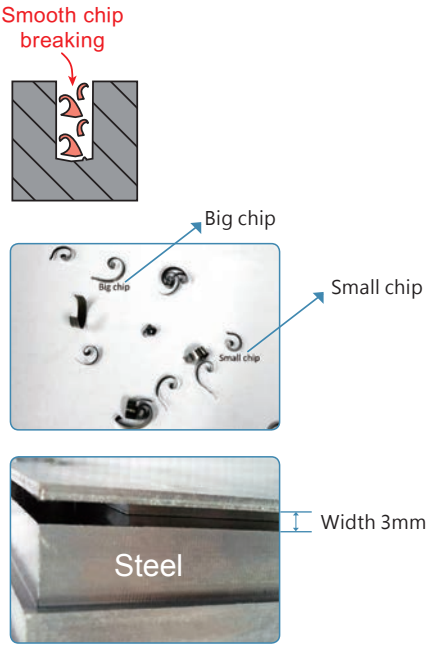
2 Patented embedding system

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



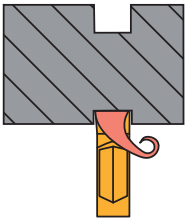


Excellent surface finishing quality and chip evacuation at the live test for machining 20mm deep slots by one pass

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.

Other Brands



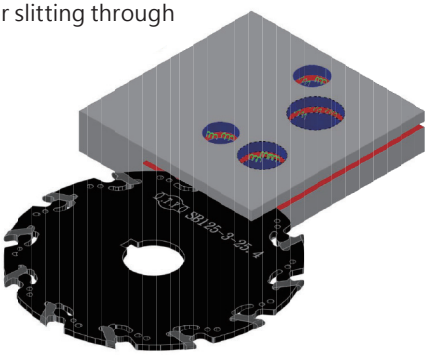
Characteristics

- While in deep grooving, chips easily 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 whil large contact machining.

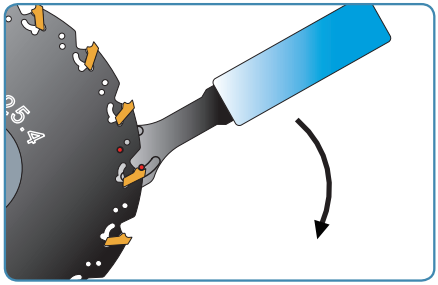
The Solution To Interrupted Cutting:

LNGT Radius Inserts

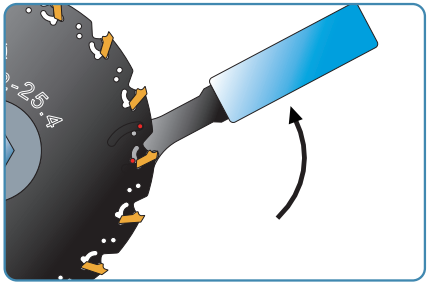
The radius insert with smooth entering cut provides excellent solution to the interrupted cutting, especially for slitting through the workpiece with holes inside.



Change The Inserts



Mount inserts



Remove inserts

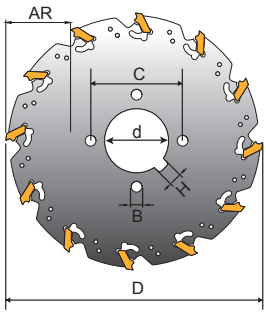
Video

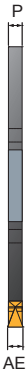
Before mouning inserts, use marker pen (oil-based) to wipe across the concave surface of the insert for helping fit the insert into the blade smoothly.

PRODUCT SPECIFICATIONS

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195





SB

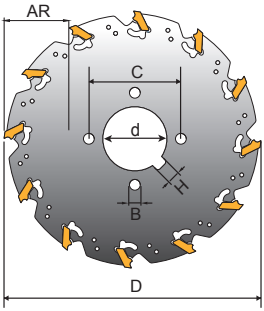
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserst LNGT	Wrench
	D	AE	AR	P	d	C	B						
SB050-1.4-13	50	1.4 1.5	14.5	1.2	13	-	-	4	-	0.07	12000	1414 1415	150.10-30
SB050-1.4-12.7					12.7								
SB063-1.4-16	63		18		16			6			11000		
SB063-1.4-15.875					15.875								
SB080-1.4-22	80		22.5		22			8	6	0.09	8000		
SB080-1.4-25.4			19.5		25.4				6.35				
SB100-1.4-22	100		32.5		22			10	6	0.13	6300		
SB100-1.4-25.4			29.5		25.4				6.35				
SB100-1.4-27					27				7				
SB125-1.4-22	125		45		22			12	6	0.20	5000		
SB125-1.4-25.4					25.4				6.35				
SB125-1.4-32			39		32				8				

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195

SB

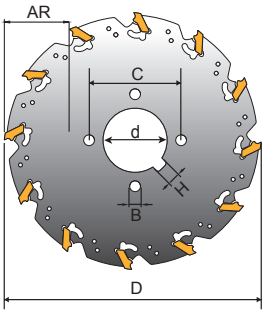


Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SB050-1.6-13	50	1.6	14.5	1.4	13	-	-	4	-	0.08	12000	1616	150.10-30
SB050-1.6-12.7					12.7								
SB063-1.6-16	63		18		16			6			11000		
SB063-1.6-15.875					15.875								
SB080-1.6-22	80		22.5		22			8	6	0.09	8000		
SB080-1.6-25.4			19.5		25.4				6.35				
SB100-1.6-22	100		32.5		22			10	6	0.14	6300		
SB100-1.6-25.4			29.5		25.4				6.35				
SB100-1.6-27					27				7				
SB125-1.6-22	125		45		22			12	6	0.21	5000		
SB125-1.6-25.4			42		25.4				6.35				
SB125-1.6-32			39		32				8				
SB160-1.6-25.4	160		59.5		25.4			16	6.35	0.35	4000		
SB160-1.6-32			56.5		32				8				
SB160-1.6-40			52		40				10				

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195



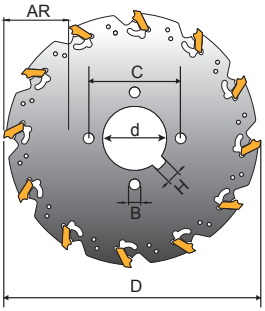
SB

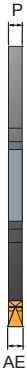
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SB050-1.8-13	50	1.8	14.5	1.6	13	-	-	4	-	0.09	12000	1818	150.10-30
SB050-1.8-12.7					12.7								
SB063-1.8-16	63		18		16			6			11000		
SB063-1.8-15.875					15.875								
SB080-1.8-22	80		22.5		22			8	6	0.10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

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195





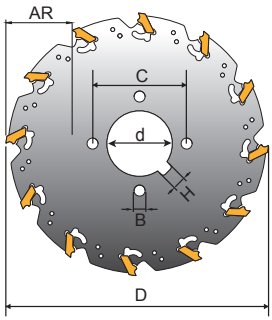
SB

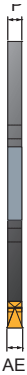
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SB050-2-13	50	2.0 2.2 2.5	14.5	1.75	13	-	-	4	-	0.08	12000	2020 2022 2025	150.10-30
SB050-2-12.7					12.7								
SB063-2-16	63		18		16			6			11000		
SB063-2-15.875					15.875								
SB080-2-22	80		22.5		22			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			29.5		25.4				6.35				
SB100-2-27					27				7				
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 for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195





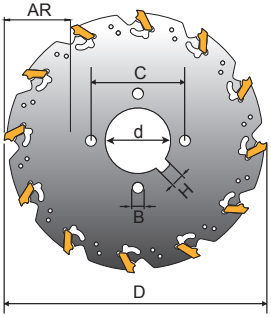
SB

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 2.2 2.5	79.5	1.75	25.4	-	-	20	6.35	0.64	3200	2020 2022 2025	150.10-30
SB200M-2-25.4								26					
SB200-2-32			76.5		32	63	11	20	8				
SB200M-2-32								26					
SB200-2-40			72		40	90		20	10		3200		
SB200M-2-40								26					
SB250-2-25.4	250		104.5		25.4	-	-		6.35	0.96	2600		
SB250M-2-25.4								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					
SB050-2.5-13	50	2.5 2.7 3.0	14.5	2.25	13	-	-	4	-	0.1	12000	2525 2527 2530	150.10-30
SB050-2.5-12.7					12.7								

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195



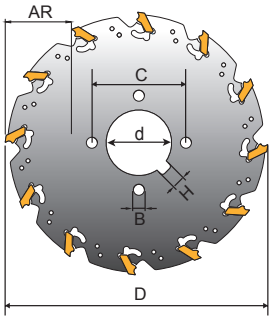
SB

Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SB063-2.5-16	63	2.5 2.7 3.0	18	2.25	16	-	-	6	-	0.11	11000	2525 2527 2530	150.10-30
SB063-2.5-15.875					15.875								
SB080-2.5-22	80		22.5		22			8	6	0.12	8000		
SB080-2.5-25.4			19.5		25.4				6.35				
SB100-2.5-22	100		32.5		22			10	6	0.18	6300		
SB100-2.5-25.4			29.5		25.4				6.35				
SB100-2.5-27					27				7				
SB125-2.5-22	125		45		22			12	6	0.27	5000		
SB125-2.5-25.4			42		25.4				6.35				
SB125-2.5-32			39		32				8				
SB160-2.5-25.4	160		59.5		25.4			16	6.35	0.47	4000		
SB160-2.5-32			56.5		32				8				
SB160-2.5-40			52		40				10				
SB200-2.5-25.4	200		79.5		25.4			20	6.35	0.73	3200		
SB200M-2.5-25.4								26					

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195



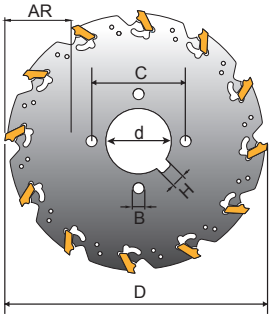
SB

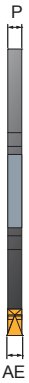
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts **LNGT**	Wrench
	D	AE	AR	P	d	C	B						
SB200-2.5-32	200	2.5 2.7 3.0	76.5	2.25	32	63	11	20	8	0.73	3200	2525 2527 2530	150.10-30
SB200M-2.5-32								26					
SB200-2.5-40			72		40	90		20	10				
SB200M-2.5-40								26					
SB250-2.5-25.4	250		104.5		25.4	-	-	26	6.35	1.12	2600		
SB250M-2.5-25.4								34					
SB250-2.5-32			101.5		32	63	11	26	8				
SB250M-2.5-32								34					
SB250-2.5-40			97		40	90		26	10				
SB250M-2.5-40								34					
SB300-2.5-25.4	300		129.5		25.4	-	-	30	6.35	1.61	2200		
SB300M-2.5-25.4								40					
SB300-2.5-32			126.5		32	63	11	30	8		2200		
SB300M-2.5-32								40					
SB300-2.5-40			122		40	90		30	10				
SB300M-2.5-40								40					

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195





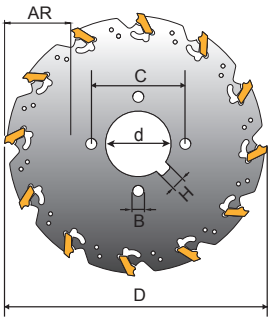
SB

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 3.2 3.5	14.5	2.7	13	-	-	4	-	0.10	12000	3030 3032 3035	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					27				7				
SB125-3-22	125		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 for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195



SB

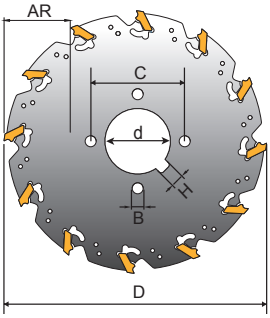
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SB200-3-32	200	3.0 3.2 3.5	76.5	2.7	32	63	11	20	8	0.85	3200	3030 3032 3035	150.10-30
SB200M-3-32								26					
SB200-3-40			72		40	90		20	10				
SB200M-3-40								26					
SB250-3-25.4	250		104.5		25.4	-	-		6.35	1.38	2600		
SB250M-3-25.4								34					
SB250-3-32			101.5		32	63	11	26	8				
SB250M-3-32								34					
SB250-3-40			97		40	90		26	10				
SB250M-3-40								34					
SB300-3-25.4	300		129.5		25.4	-	-	30	6.35	1.86	2200		
SB300M-3-25.4								40					
SB300-3-32			126.5		32	63	11	30	8		2200		
SB300M-3-32								40					
SB300-3-40			122		40	90		30	10				
SB300M-3-40								40					

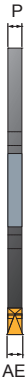
* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195

SB



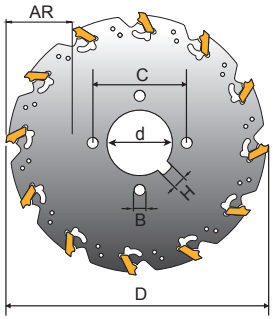


Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts **LNGT**	Wrench
	D	AE	AR	P	d	C	B						
SB050-4-13	50	4.0 4.2 4.5	14.5	3.7	13	-	-	4	-	0.09	12000	4040 4042 4045	150.10-30
SB050-4-12.7					12.7								
SB063-4-16	63		18		16			6	-	0.12	11000		
SB063-4-15.875					15.875								
SB080-4-22	80		22.5		22			8	6	0.15	8000		
SB080-4-25.4			19.5		25.4				6.35				
SB100-4-22	100		32.5		22			10	6	0.25	6300		
SB100-4-25.4			29.5		25.4				6.35				
SB100-4-27					27				7				
SB125-4-22	125		45		22			12	6	0.40	5000		
SB125-4-25.4			42		25.4				6.35				
SB125-4-32			39		32				8				
SB160-4-25.4	160		59.5		25.4			16	6.35	0.66	4000		
SB160-4-32			56.5		32				8				
SB160-4-40			52		40				10				
SB200-4-25.4	200		79.5		25.4			20	6.35	1.02	3200		
SB200M-4-25.4								26					

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195



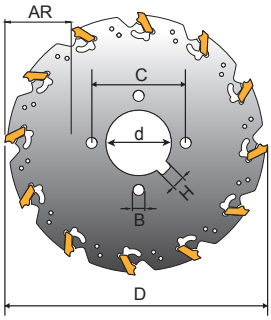
SB

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 4.2 4.5	76.5	3.7	32	63	11	20	8	1.02	3200	4040 4042 4045	150.10-30
SB200M-4-32								26					
SB200-4-40			72		40	90		20	10				
SB200M-4-40								26					
SB250-4-25.4	250		104.5		25.4	-	-		6.35	1.69	2600		
SB250M-4-25.4								34					
SB250-4-32			101.5		32	63	11	26	8				
SB250M-4-32								34					
SB250-4-40			97		40	90		26	10				
SB250M-4-40								34					
SB300-4-25.4	300		129.5		25.4	-	-	30	6.35	2.18	2200		
SB300M-4-25.4								40					
SB300-4-32			126.5		32	63	11	30	8				
SB300M-4-32								40					
SB300-4-40			122		40	90		30	10				
SB300M-4-40								40					

* Wrench for above holders sold seperately.

Saw Blades

- Inserts P. 182 - 189
- Cutting Data P. 193 - 195



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 5.2 5.5	14.5	4.5	13	-	-	4	-	0.13	12000	5050 5052 5055	150.10-30
SB050-5-12.7					12.7								
SB063-5-16	63		18		16			6			11000		
SB063-5-15.875					15.875								
SB080-5-22	80		22.5		22			8	6	0.18	8000		
SB080-5-25.4			19.5		25.4				6.35				
SB100-5-22	100		32.5		22			10	6	0.28	6300		
SB100-5-25.4			29.5		25.4				6.35				
SB100-5-27					27				7				
SB125-5-22	125		45		22			12	6	0.45	5000		
SB125-5-25.4			42		25.4				6.35				
SB125-5-32			39		32				8				
SB160-5-25.4	160		59.5		25.4			16	6.35	0.75	4000		
SB160-5-32			56.5		32				8				
SB160-5-40			52		40				10				

* Wrench for above holders sold seperately.

ADAPTER HOLDER SERIES

Video

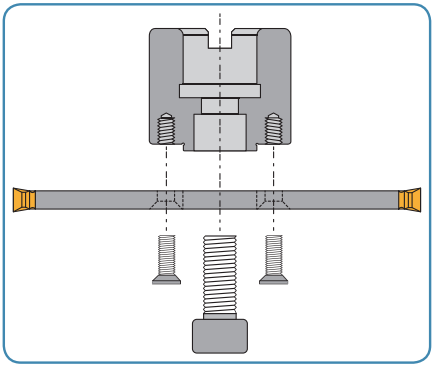
Features

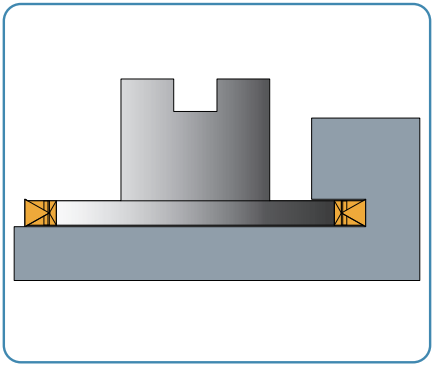
- Available in materials: P K M N S H
- Cost 200~300% SAVING
- Applicable Machines: Milling machine
- Efficiency 300~500% UP
- Durability 300% UP

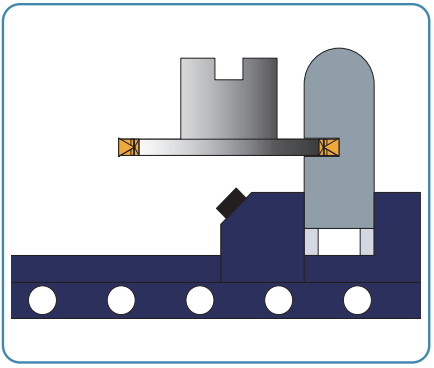
New System For T-Slot Milling

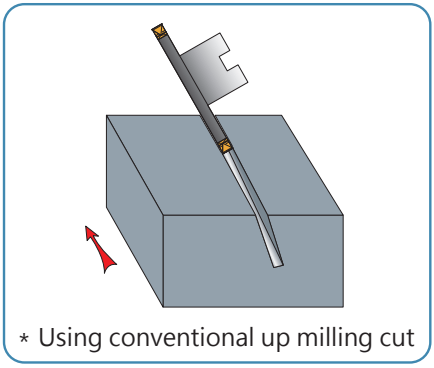
ADAPTER HOLDER

Slitting / Slotting / Cut-off







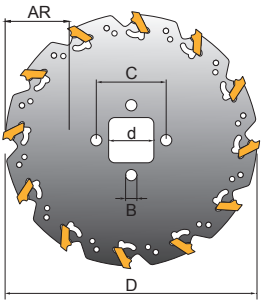


* Using conventional up milling cut

PRODUCT SPECIFICATIONS

Saw Milling Cutters

- Adapter Holders P. 154
- Inserts P. 182 - 189
- Cutting Data P. 193 - 195



SBL

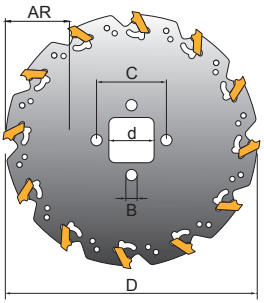
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SBL080-1.4-22	80	1.4 1.5	17	1.2	22	34	5	8	-	0.08	8000	1414 1415	150.10-30
SBL100-1.4-22	100		27					10		0.13	6300		
SBL125-1.4-32	125		33		32	46	6	12		0.18	5000		
SBL160-1.4-32	160		50.5					16		0.33	4000		
SBL080-1.6-22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

* Wrench for above holders sold seperately.

Saw Milling Cutters

- Adapter Holders P. 154
- Inserts P. 182 - 189
- Cutting Data P. 193 - 195

SBL

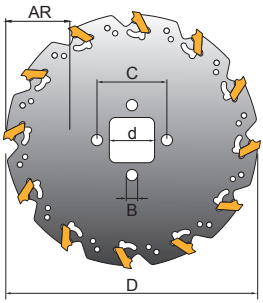


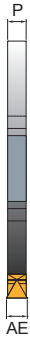
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SBL080-1.8-22	80	1.8	17	1.6	22	34	5	8	-	0.10	8000	1818	150.10-30
SBL100-1.8-22	100		27					10		0.15	6300		
SBL125-1.8-32	125		33		32	46	6	12		0.21	5000		
SBL160-1.8-32	160		50.5					16		0.37	4000		
SBL080-2-22	80	2.0 2.2 2.5	17	1.75	22	34	5	8	-	0.10	8000	2020 2022 2025	150.10-30
SBL100-2-22	100		27					10		0.15	6300		
SBL125-2-32	125		33		32	46	6	12		0.22	5000		
SBL160-2-32	160		50.5					16		0.39	4000		
SBL080-2.5-22	80	2.5 2.7 3.0	17	2.25	22	34	5	8	-	0.11	8000	2525 2527 2530	150.10-30
SBL100-2.5-22	100		27					10		0.17	6300		
SBL125-2.5-32	125		33		32	46	6	12		0.26	5000		
SBL160-2.5-32	160		50.5					16		0.45	4000		

* Wrench for above holders sold seperately.

Saw Milling Cutters

- Adapter Holders P. 154
- Inserts P. 182 - 189
- Cutting Data P. 193 - 195





SBL

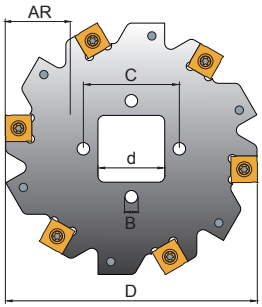
Order Code	Dimensions (mm)							Z	H	KG	MAX. RPM	Inserts LNGT	Wrench
	D	AE	AR	P	d	C	B						
SBL080-3-22	80	3.0 3.2 3.5	17	2.7	22	34	5	8	-	0.12	8000	3030 3032 3035	150.10-30
SBL100-3-22	100		27					10		0.20	6300		
SBL125-3-32	125		33		32	46	6	12		0.29	5000		
SBL160-3-32	160		50.5					16		0.51	4000		
SBL080-4-22	80	4.0 4.2 4.5	17	3.7	22	34	5	8	-	0.15	8000	4040 4042 4045	150.10-30
SBL100-4-22	100		27					10		0.24	6300		
SBL125-4-32	125		33		32	46	6	12		0.36	5000		
SBL160-4-32	160		50.5					16		0.64	4000		
SBL080-5-22	80	5.0 5.2 5.5	17	4.5	22	34	5	8	-	0.17	8000	5050 5052 5055	150.10-30
SBL100-5-22	100		27					10		0.27	6300		
SBL125-5-32	125		33		32	46	6	12		0.42	5000		
SBL160-5-32	160		50.5					16		0.74	4000		

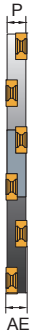
* Wrench for above holders sold seperately.

Side Milling Cutters

- Adapter Holders P. 154
- Inserts P. 190 - 192
- Cutting Data P. 196 - 197

STL

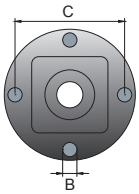


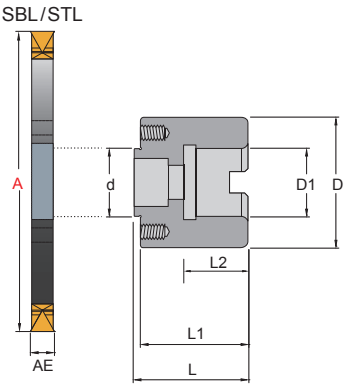


Order Code	Dimensions (mm)							Z	Zc	KG	MAX. RPM	Inserts SNGX SNGW	Screw	Key
	D	AE	AR	P	d	C	B							
STL080-4-22	80	4	17	3.4	22	34	5	8	4	0.16	13700	1102	T9354	T09P
STL080-5-22		5		4.2								1103	T9355	T08P
STL100-4-22	100	4	27	3.4				10	5	0.26	12000	1102	T9354	T09P
STL100-5-22		5		4.2								1103	T9355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

* Wrench for above holders sold seperately.

Adapter Holders





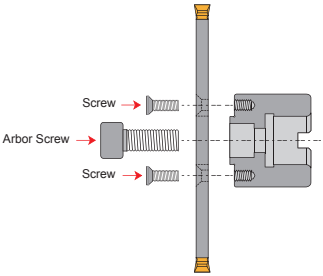
BL / BLL

Order Code	Dimensions (mm)									KG	Available AE
	D	D1	d	C	B	L	L1	L2	A		
BL45-22	45	22	22	34	5	43	41.8	27	80 100	0.47	
BL45-25.4		25.4				45	43.8				
BL58-31.75	58	31.75	32	46	6	55	53.8	28	125 160	0.95	AE AE 1-2mm
BL58-32		32									
BLL45-22	45	22	22	34	5	43	40.5	27	80 100	0.47	
BLL45-25.4		25.4				45	42.5				
BLL58-31.75	58	31.75	32	46	6	55	52.5	28	125 160	0.95	AE AE 2.5-5.5mm
BLL58-32		32									

* Please follow the step 1、2、3 to choose the cutter and holder to match: 1. Available AE 2. “d” size 3. “D1” size.

Standard Spare Parts

Holders	Screw	Holders	Screw	Arbor Screw
BL45-22	C90512	BLL45-22	C90512	M1035
BL45-25.4		BLL45-25.4		M1235
BL58-31.75	C90612	BLL58-31.75	C90612	M1235/M1635/ W2403
BL58-32		BLL58-32		M1635

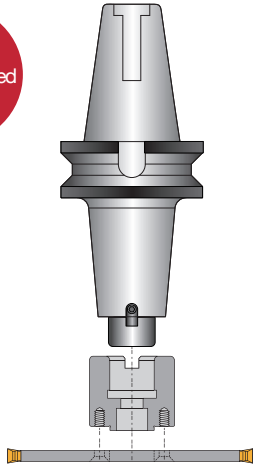


SOLUTION-1

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

SBL/STL Series

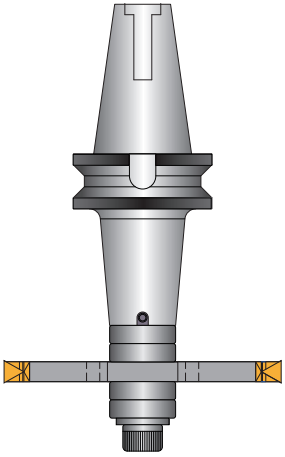
Highly Recommended



SOLUTION-2

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

SB Series



It might cause mechanism interferences.

ADAPTER HOLDER SERIES

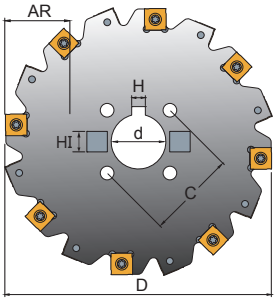
Features

- Available in materials: P K M N S H
- Cost **200~300%** SAVING
- Applicable Machines: Milling machine
- Efficiency **300~500%** UP
- Durability **300%** UP

PRODUCT SPECIFICATIONS

Side Milling Cutters

- Adapter Holders P. 160
- Inserts P. 190 - 192
- Cutting Data P. 196 - 197

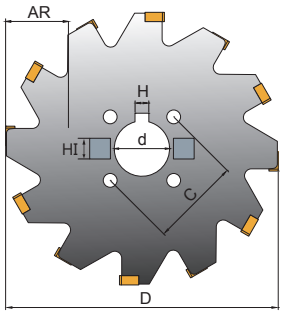


SCL

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	0.87	8300	1203	T945	T15P
SCL-160-8-32		8		7							1.11		12045	T947	
SCL-160-10-32		10		9							1.35		1205	T948	
SCL-160-12-32		12		11							1.56		1207	T9411	
SCL-200-6-40	200	6	54	5	10	70	40		18	9	1.34	4200	1203	T945	
SCL-200-8-40		8		7							1.72		12045	T947	
SCL-200-10-40		10		9							2.11		1205	T948	
SCL-200-12-40		12		11							2.49		1207	T9411	
SCL-250-6-40	250	6	79	5					24	12	2.05	3800	1203	T945	
SCL-250-8-40		8		7							2.57		12045	T947	
SCL-250-10-40		10		9							3.09		1205	T948	
SCL-250-12-40		12		11							3.61		1207	T9411	

Disc Milling Cutters

- Adapter Holders P. 160
- Inserts P. 193
- Cutting Data P. 198-199

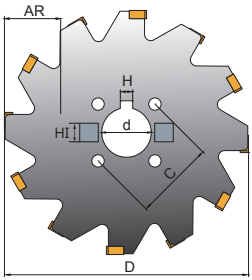


CEL

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

Disc Milling Cutters

- Adapter Holders P. 160
- Inserts P. 193
- Cutting Data P. 198 -199

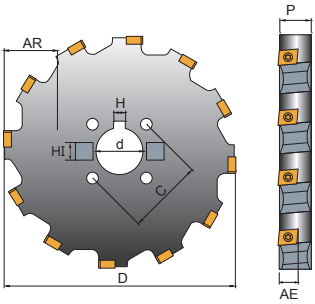


CEL

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	3.20	5500	1005	C04011	T15P
CEL-250-16-40		16		14.5							3.72				
CEL-250-18-40		18		16.5							4.24		1305		
CEL-250-20-40		20		18.5							4.76				
CEL-250-22-40		22		20.5					16	8	5.28				
CEL-250-25-40		25		23.5							6.06		1605		
CEL-250-30-40		30		28.5							7.36				

Back Milling Cutters

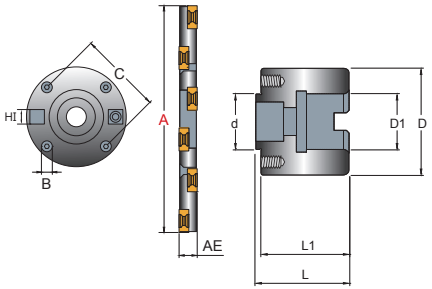
- Adapter Holders P. 160
- Inserts P. 193
- Cutting Data P. 198 -199



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	10	70	40	12X12	16	1.90	6900	1305	C04011	T15P
CWL-200-40	200		54						20	2.30	6100			
CWL-250-40	250		79						24	3.20	5500			

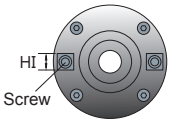
Adapter Holders



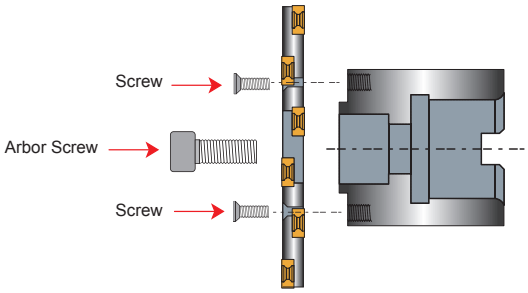
BCL

Order Code	Dimensions (mm)								KG
	D	D1	d	C	B	L	L1	A	HI	
BCL65-32	65	32	32	52	8	50	44.5	160	12X12	0.84
BCL65-31.75		31.75								
BCL65-40		40								0.74
BCL65-38.1		38.1								
BCL90-40	90	40	40	70	8	60	54.5	200 250	12X12	2.29
BCL90-38.1		38.1								1.89
BCL90-60		60								1.83
BCL90-50.8		50.8								1.65

Standard Spare Parts



BCL



Holders	Screw	Arbor Screw	HI+Screw
SCL-160-6-32	C90815	M1635	W12.12.8 + M0510
SCL-160-8-32			
SCL-160-10-32	C90820		
SCL-160-12-32			
SCL-200-6-40	C90815		
SCL-200-8-40			
SCL-200-10-40	C90820		
SCL-200-12-40			
SCL-250-6-40	C90815		
SCL-250-8-40			
SCL-250-10-40	C90820		
SCL-250-12-40			
CWL-160-32	C90825		
CWL-200-40			
CWL-250-40			

Holders	Screw	Arbor Screw	HI+Screw
CEL-160-14-32	C90820	M1635	W12.12.8 + M0510
CEL-160-16-32			
CEL-160-18-32	C90825		
CEL-160-20-32	C90830		
CEL-160-22-32			
CEL-160-25-32			
CEL-160-30-32	C90835		
CEL-200-14-40	C90820		
CEL-200-16-40			
CEL-200-18-40	C90825		
CEL-200-20-40	C90830		
CEL-200-22-40			
CEL-200-25-40			
CEL-200-30-40	C90835		
CEL-250-14-40	C90820		
CEL-250-16-40			
CEL-250-18-40	C90825		
CEL-250-20-40	C90830		
CEL-250-22-40			
CEL-250-25-40			
CEL-250-30-40	C90835		

SIDE MILLING CUTTER

Video

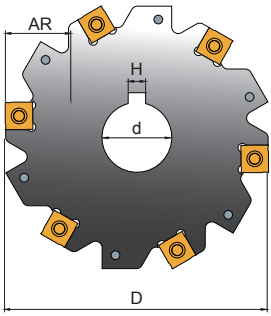
Features

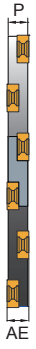
- Available in materials: P K M N S H
- Cost **200~300%** SAVING
- Applicable Machines: Milling machine
- Efficiency **300~500%** UP
- Durability **300%** UP

PRODUCT SPECIFICATIONS

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197



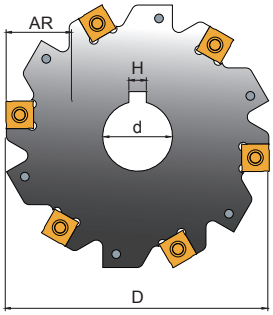


SC

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	0.15	13700	1102	T9354	T09P
SC-80-5-22		5		4.2					0.16		1103	T9355	T08P
SC-80-6-22		6		5					0.22		1203	T945	T15P
SC-80-7-22		7	19.5	6					0.23		1204	T946	
SC-80-8-22		8		7					0.25		12045	T947	
SC-80-10-22		10		9					0.30		1205	T948	
SC-80-12-22		12		11					0.34		1207	T9411	
SC-80-4-25.4		4		3.4	6.35	25.4			0.15		1102	T9354	T09P
SC-80-5-25.4		5		4.2					0.17		1103	T9355	T08P
SC-80-6-25.4		6		5					0.21		1203	T945	T15P
SC-80-7-25.4		7		6					0.23		1204	T946	
SC-80-8-25.4		8		7					0.24		12045	T947	
SC-80-10-25.4		10		9					0.29		1205	T948	
SC-80-12-25.4		12		11					0.33		1207	T9411	

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197

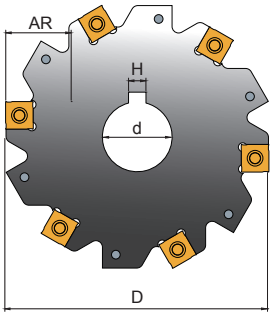


SC

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	0.23	12000	1102	T9354	T09P
SC-100-5-25.4		5		4.2					0.26		1103	T9355	T08P
SC-100-6-25.4		6		5					0.32		1203	T945	T15P
SC-100-7-25.4		7		6					0.36		1204	T946	
SC-100-8-25.4		8		7					0.39		12045	T947	
SC-100-10-25.4		10		9					0.46		1205	T948	
SC-100-12-25.4		12		11					0.54		1207	T9411	
SC-100-4-27		4		3.4	7	27			0.23		1102	T9354	T09P
SC-100-5-27		5		4.2					0.26		1103	T9355	T08P
SC-100-6-27		6		5					0.31		1203	T945	T15P
SC-100-7-27		7		6					0.35		1204	T946	
SC-100-8-27		8		7					0.39		12045	T947	
SC-100-10-27		10		9					0.46		1205	T948	
SC-100-12-27		12		11					0.53		1207	T9411	

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197

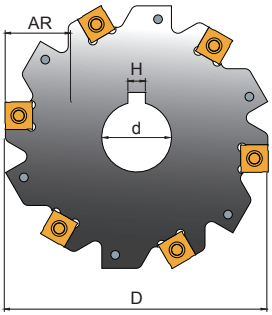


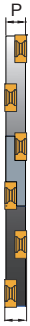
SC

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	0.35	10900	1102	T9354	T09P
SC-125-5-32		5		4.2					0.39		1103	T9355	T08P
SC-125-6-32		6		5					0.43		1203	T945	T15P
SC-125-7-32		7		6					0.53		1204	T946	
SC-125-8-32		8		7					0.59		12045	T947	
SC-125-10-32		10		9					0.73		1205	T948	
SC-125-12-32		12		11					0.86		1207	T9411	
SC-125-4-40		4	34.5	3.4	10	40			0.35		1102	T9354	T09P
SC-125-5-40		5		4.2					0.39		1103	T9355	T08P
SC-125-6-40		6		5					0.43		1203	T945	T15P
SC-125-7-40		7		6					0.53		1204	T946	
SC-125-8-40		8		7					0.59		12045	T947	
SC-125-10-40		10		9					0.73		1205	T948	
SC-125-12-40		12		11					0.86		1207	T9411	

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197



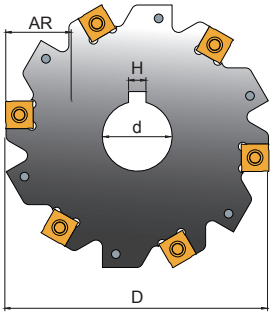


SC

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	0.36	10900	1102	T9354	T09P
SC-125-5-25.4		5		4.2					0.41		1103	T9355	T08P
SC-125-6-25.4		6		5					0.48		1203	T945	T15P
SC-125-7-25.4		7		6					0.55		1204	T946	
SC-125-8-25.4		8		7					0.61		12045	T947	
SC-125-10-25.4		10		9					0.74		1205	T948	
SC-125-12-25.4		12		11					0.88		1207	T9411	
SC-125-4-31.75		4	39	3.4	8	31.75			0.36		1102	T9354	T09P
SC-125-5-31.75		5		4.2					0.41		1103	T9355	T08P
SC-125-6-31.75		6		5					0.48		1203	T945	T15P
SC-125-7-31.75		7		6					0.55		1204	T946	
SC-125-8-31.75		8		7					0.61		12045	T947	
SC-125-10-31.75		10		9					0.74		1205	T948	
SC-125-12-31.75		12		11					0.88		1207	T9411	

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197

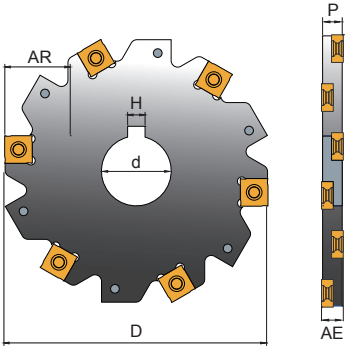


SC

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	0.56	8300	1102	T9354	T09P
SC-160-5-32		5		4.2					0.70		1103	T9355	T08P
SC-160-6-32		6		5					0.82		1203	T945	T15P
SC-160-7-32		7		6					0.94		1204	T946	
SC-160-8-32		8		7					1.04		12045	T947	
SC-160-10-32		10		9					1.28		1205	T948	
SC-160-12-32		12		11					1.52		1207	T9411	
SC-160-4-40		4	52	3.4	10	40			0.56		1102	T9354	T09P
SC-160-5-40		5		4.2					0.70		1103	T9355	T08P
SC-160-6-40		6		5					0.82		1203	T945	T15P
SC-160-7-40		7		6					0.94		1204	T946	
SC-160-8-40		8		7					1.04		12045	T947	
SC-160-10-40		10		9					1.28		1205	T948	
SC-160-12-40		12		11					1.52		1207	T9411	

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197



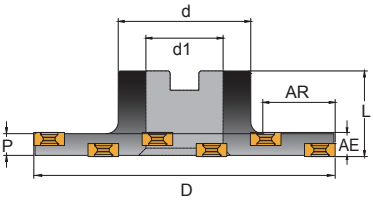
SC

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	0.56	8300	1102	T9354	T09P
SC-160-5-25.4		5		4.2					0.71		1103	T9355	T08P
SC-160-6-25.4		6		5					0.84		1203	T945	T15P
SC-160-7-25.4		7		6					0.95		1204	T946	
SC-160-8-25.4		8		7					1.06		12045	T947	
SC-160-10-25.4		10		9					1.31		1205	T948	
SC-160-12-25.4		12		11					1.55		1207	T9411	
SC-160-4-31.75		4	56.5	3.4	8	31.75			0.56		1102	T9354	T09P
SC-160-5-31.75		5		4.2					0.71		1103	T9355	T08P
SC-160-6-31.75		6		5					0.84		1203	T945	T15P
SC-160-7-31.75		7		6					0.95		1204	T946	
SC-160-8-31.75		8		7					1.06		12045	T947	
SC-160-10-31.75		10		9					1.31		1205	T948	
SC-160-12-31.75		12		11					1.55		1207	T9411	

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197

ST

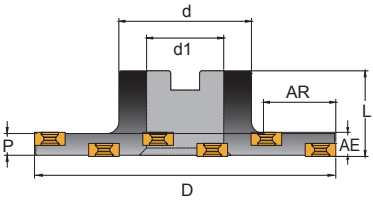


Order Code	Dimensions (mm)							Z	Zc	KG	MAX. RPM	Inserts SNGX SNGW	Screw	Key
	D	AE	AR	P	d	d1	L							
ST-80-6-22	80	6	16.5	5	40	22	35	8	4	0.47	13700	1203	T945	T15P
ST-80-7-22		7		6						0.48		1204	T946	
ST-80-8-22		8		7						0.49		12045	T947	
ST-80-10-22		10		9						0.52		1205	T948	
ST-80-12-22		12		11						0.55		1207	T9411	
ST-100-6-27	100	6	26.5	5		27		10	5	0.56	12000	1203	T945	
ST-100-7-27		7		6						0.57		1204	T946	
ST-100-8-27		8		7						0.59		12045	T947	
ST-100-10-27		10		9						0.66		1205	T948	
ST-100-12-27		12		11						0.72		1207	T9411	
ST-125-6-32	125	6	30.5	5	55	32		12	6	0.96	10900	1203	T945	
ST-125-7-32		7		6						1.02		1204	T946	
ST-125-8-32		8		7						1.05		12045	T947	
ST-125-10-32		10		9						1.16		1205	T948	
ST-125-12-32		12		11						1.26		1207	T9411	
ST-160-6-32	160	6	48	5				16	8	1.42	8300	1203	T945	
ST-160-7-32		7		6						1.48		1204	T946	
ST-160-8-32		8		7						1.60		12045	T947	
ST-160-10-32		10		9						1.82		1205	T948	
ST-160-12-32		12		11						2.01		1207	T9411	

Side Milling Cutters

- Inserts P. 190 - 192
- Cutting Data P. 196 - 197

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	16.5	5	40	25.4	35	8	4	0.47	13700	1203	T945	T15P
ST-80-7-25.4		7		6						0.48		1204	T946	
ST-80-8-25.4		8		7						0.49		12045	T947	
ST-80-10-25.4		10		9						0.52		1205	T948	
ST-80-12-25.4		12		11						0.55		1207	T9411	
ST-100-6-25.4	100	6	26.5	5				10	5	0.56	12000	1203	T945	
ST-100-7-25.4		7		6						0.57		1204	T946	
ST-100-8-25.4		8		7						0.59		12045	T947	
ST-100-10-25.4		10		9						0.66		1205	T948	
ST-100-12-25.4		12		11						0.72		1207	T9411	
ST-125-6-31.75	125	6	30.5	5	55	31.75		12	6	0.96	10900	1203	T945	
ST-125-7-31.75		7		6						1.02		1204	T946	
ST-125-8-31.75		8		7						1.05		12045	T947	
ST-125-10-31.75		10		9						1.16		1205	T948	
ST-125-12-31.75		12		11						1.26		1207	T9411	
ST-160-6-31.75	160	6	48	5				16	8	1.42	8300	1203	T945	
ST-160-7-31.75		7		6						1.48		1204	T946	
ST-160-8-31.75		8		7						1.60		12045	T947	
ST-160-10-31.75		10		9						1.82		1205	T948	
ST-160-12-31.75		12		11						2.01		1207	T9411	

DISC MILLING CUTTER

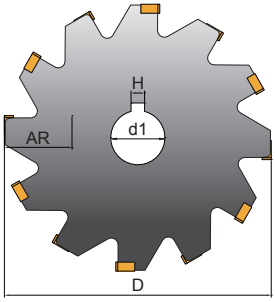
Features

- Available in materials: P K M N S H
- Cost 200~300% SAVING
- Applicable Machines: Milling machine
- Efficiency 300~500% UP
- Durability 300% UP

PRODUCT SPECIFICATIONS

Disc Milling Cutters

- Inserts P. 193
- Cutting Data P. 198 - 199



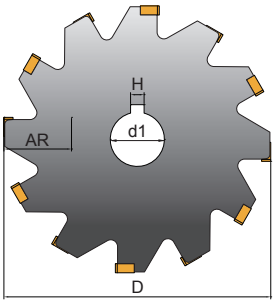
CE

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		1305		
CE080-20-22		20		18.5					0.59				
CE080-22-22		22		20.5					0.69				
CE080-25-22		25		23.5					0.75		1605		
CE080-30-22		30		28.5					0.88				
CE100-14-27	100	14	29.5	12.5	7	27	10	5	0.67	12000	1005		
CE100-16-27		16		14.5					0.76				
CE100-18-27		18		16.5					0.84		1305		

Disc Milling Cutters

- Inserts P. 193
- Cutting Data P. 198 - 199

CE

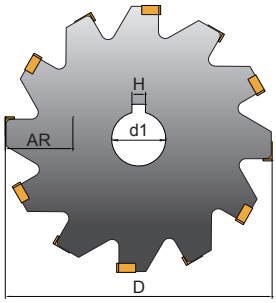


Order Code	Dimensions (mm)						Z	Zc	KG	MAX. RPM	Inserts CNGX	Screw	Key
	D	AE	AR	P	H	d1							
CE100-20-27	100	20	29.5	18.5	7	27	10	5	0.91	12000	1305	C04011	T15P
CE100-22-27		22		20.5					1.01				
CE100-25-27		25		23.5					1.16		1605		
CE100-30-27		30		28.5					1.40				
CE125-14-32	125	14	39	12.5	8	32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

Disc Milling Cutters

- Inserts P. 193
- Cutting Data P. 198 - 199

CE

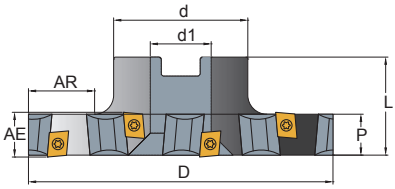


Order Code	Dimensions (mm)						Z	Zc	KG	MAX. RPM	Inserts CNGX	Screw	Key
	D	AE	AR	P	H	d1							
CE080-25-25.4	80	25	19.5	23.5	6.35	25.4	8	4	0.75	13700	1605	C04011	T15P
CE080-30-25.4		30		28.5					0.88				
CE100-14-25.4	100	14	29.5	12.5			10	5	0.67	12000	1005		
CE100-16-25.4		16		14.5					0.76				
CE100-18-25.4		18		16.5					0.84		1305		
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		1605		
CE100-30-25.4		30		28.5					1.40				
CE125-14-25.4	125	14	42	12.5			12	6	1.02	10900	1005		
CE125-16-25.4		16		14.5					1.17				
CE125-18-25.4		18		16.5					1.36		1305		
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		1605		
CE125-30-25.4		30		28.5					1.92				

Disc Milling Cutters

- Inserts P. 193
- Cutting Data P. 198 - 199

CW

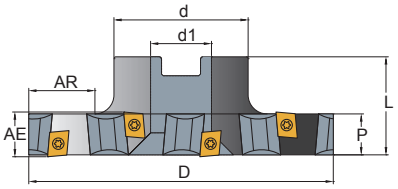


Order Code	Dimensions (mm)							Z	Zc	KG	MAX. RPM	Inserts CNGX	Screw	Key
	D	AE	AR	P	d	d1	L							
CW080-14-22	80	14	16.5	12.5	40	22	35	8	4	0.67	13700	1005	C04011	T15P
CW080-16-22		16		14.5						0.72				
CW080-18-22		18		16.5						0.76		1305		
CW080-20-22		20		18.5						0.78				
CW080-22-22		22		20.5						0.79				
CW080-25-22		25		23.5						0.85		1605		
CW080-30-22		30		28.5			40			0.92				
CW100-14-27	100	14	26.5	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		1305		
CW100-20-27		20		18.5						1.09				
CW100-22-27		22		20.5						1.17				
CW100-25-27		25		23.5						1.25		1605		
CW100-30-27		30		28.5			40			1.32				
CW125-14-32	125	14	30	12.5	55	32	35	12	6	1.42	10900	1005		
CW125-16-32		16		14.5						1.53				

Disc Milling Cutters

- Inserts P. 193
- Cutting Data P. 198 - 199

CW

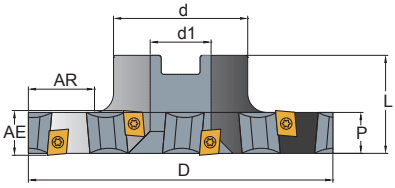


Order Code	Dimensions (mm)							Z	Zc	KG	MAX. RPM	Inserts CNGX	Screw	Key
	D	AE	AR	P	d	d1	L							
CW125-18-32	125	18	30	16.5	55	32	35	12	6	1.68	10900	1305	C04011	T15P
CW125-20-32		20		18.5						1.92				
CW125-22-32		22		20.5						1.94				
CW125-25-32		25		23.5						1.96		1605		
CW125-30-32		30		28.5			40			2.29				
CW080-14-25.4	80	14	16.5	12.5	40	25.4	35	8	4	0.67	13700	1005	C04011	T15P
CW080-16-25.4		16		14.5						0.72				
CW080-18-25.4		18		16.5						0.76		1305		
CW080-20-25.4		20		18.5						0.78				
CW080-22-25.4		22		20.5						0.79				
CW080-25-25.4		25		23.5						0.85		1605		
CW080-30-25.4		30		28.5			40			0.92				
CW100-14-25.4	100	14	26.5	12.5	45		35	10	5	0.86	12000	1005		
CW100-16-25.4		16		14.5						0.94				
CW100-18-25.4		18		16.5						1.02		1305		
CW100-20-25.4		20		18.5						1.09				

Disc Milling Cutters

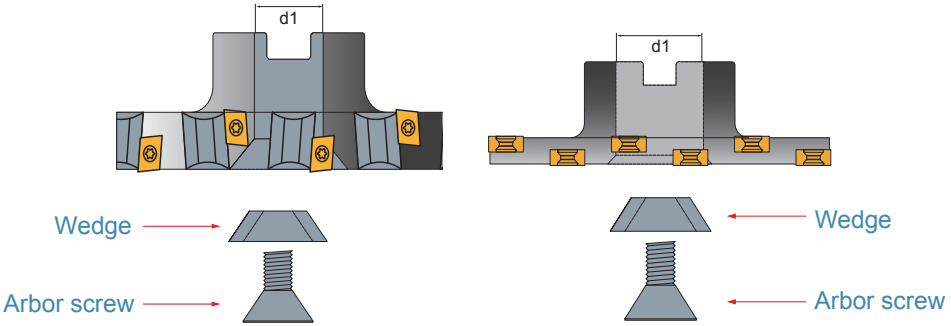
- Inserts P. 193
- Cutting Data P. 198 - 199

CW



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	26.5	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			40			1.32				
CW125-14-31.75	125	14	30	12.5	55	31.75	35	12	6	1.42	10900	1005		
CW125-16-31.75		16		14.5						1.53				
CW125-18-31.75		18		16.5						1.68		1305		
CW125-20-31.75		20		18.5						1.92				
CW125-22-31.75		22		20.5						1.94				
CW125-25-31.75		25		23.5						1.96		1605		
CW125-30-31.75		30		28.5			40			2.29				

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	C901235, C901635	WE30, 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	C901235, C901635	WE30, WE45
CW Ø 38.1	C901635	WE63
CW Ø 50.8		

* Cutter price includes the wedge.

BACK AND STRADDLE

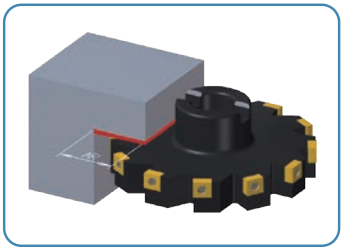
Features

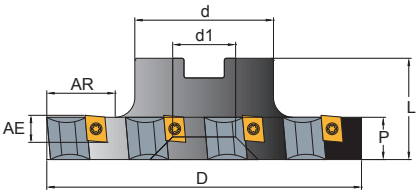
- Available in materials: P K M N S H
- Cost **200~300%** SAVING
- Applicable Machines: Milling machine
- Efficiency **300~500%** UP
- Durability **300%** UP

PRODUCT SPECIFICATIONS

Back milling Cutters

- Inserts P. 193
- Cutting Data P. 198 - 199



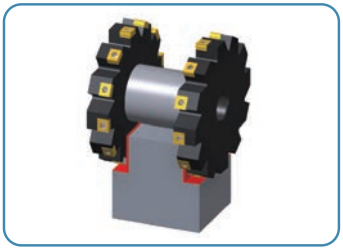


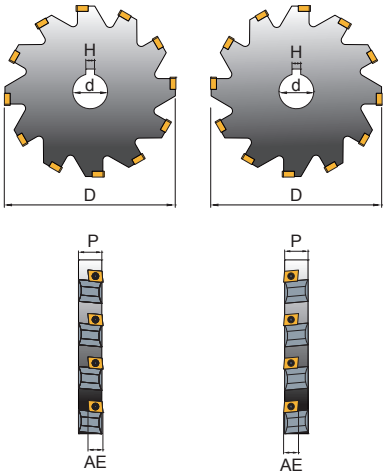
CB

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	25	10	0.97	12000	1305	C04011	T15P
CB-125-32	125			55	32		30	12	1.76	10900			

Straddle milling cutters

- Inserts P. 182
- Cutting Data P. 198 - 199

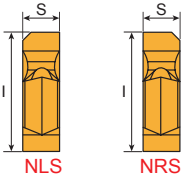




CDL/CDR

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			32	8	L	12	1.42	10900			
CDR-125-32						R						
CDL-160-40	160			40	10	L	16	2.52	6900			
CDR-160-40						R						

LNGT Inserts



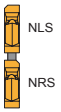
Tolerances (mm)
S : ±0.02

Inserts 10 PCS / Box

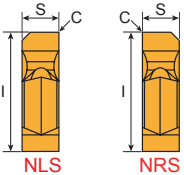
Dimensions (mm)		
Blade Thickness	S	I
1.2	1.4	9
1.2	1.5	
1.4	1.6	
1.6	1.8	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	EE
NLS	LNGT 1414NLS-EE				■						
	LNGT 1415NLS-EE				■						
	LNGT 1616NLS-EE				■						
	LNGT 1818NLS-EE				■						
NRS	LNGT 1414NRS-EE				■						
	LNGT 1415NRS-EE				■						
	LNGT 1616NRS-EE				■						
	LNGT 1818NRS-EE				■						

Inserts Sequencing Position



(Interleaving one after another different one.)



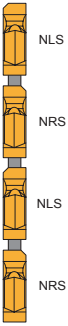
Tolerances (mm)
S : ±0.02

Inserts 10 PCS / Box

Dimensions (mm)			
Blade Thickness	S	I	C
1.2	1.4	9	0.03
1.2	1.5		
1.4	1.6		
1.6	1.8		

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	M / ME
NLS	LNGT 1414NLS-M	■									
	LNGT 1415NLS-M	■									
	LNGT 1616NLS-M	■									
	LNGT 1818NLS-M	■									
	LNGT 1414NLS-ME	◎			■						
	LNGT 1415NLS-ME	◎			■						
	LNGT 1616NLS-ME	◎			■						
	LNGT 1818NLS-ME	◎			■						
NRS	LNGT 1414NRS-M	■									
	LNGT 1415NRS-M	■									
	LNGT 1616NRS-M	■									
	LNGT 1818NRS-M	■									
	LNGT 1414NRS-ME	◎			■						
	LNGT 1415NRS-ME	◎			■						
	LNGT 1616NRS-ME	◎			■						
	LNGT 1818NRS-ME	◎			■						

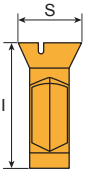
Inserts Sequencing Position



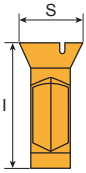
(Interleaving one after another different one.)

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

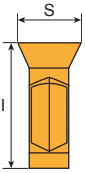
LNGT Inserts



NLS



NRS



NS

Tolerances (mm)
S : ±0.02

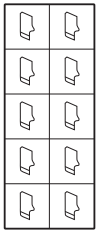
Only applicable in cutter width 6,8mm

Dimensions (mm)		
Blade Thickness	S	l
1.75	2.0 2.2 2.5	9
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	EE
NLS	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 2020NRS-EE				■						
	LNGT 2022NRS-EE				■						
	LNGT 2025NRS-EE				■						
	LNGT 2525NRS-EE				■						
	LNGT 2527NRS-EE				■						
	LNGT 2530NRS-EE				■						
	LNGT 3030NRS-EE				■						
	LNGT 3032NRS-EE				■						
	LNGT 3035NRS-EE				■						
	LNGT 4040NRS-EE				■						
	LNGT 4042NRS-EE				■						
	LNGT 4045NRS-EE				■						
	LNGT 5050NRS-EE				■						
	LNGT 5052NRS-EE				■						
	LNGT 5055NRS-EE				■						
NS	LNGT 5050NS-EE				■						

Inserts Sequencing Position

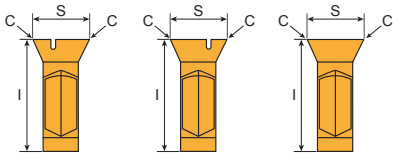
(Interleaving one after another different one.)



Inserts 10 PCS / Box

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: LNGT 2020NLS-EE, F20

LNGT Inserts



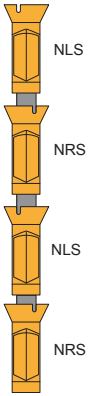
Tolerances (mm)
S : ±0.02

Only applicable in cutter width 6,8mm

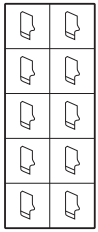
Dimensions (mm)			
Blade Thickness	S	I	C
1.75	2.0 2.2 2.5	9	0.05
2.25	2.5 2.7 3.0		
2.7	3.0 3.2 3.5		
3.7	4.0 4.2 4.5		
4.5	5.0 5.2 5.5		

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	M
NLS	LNGT 2020NLS-M	■									
	LNGT 2022NLS-M	■									
	LNGT 2025NLS-M	■									
	LNGT 2525NLS-M	■									
	LNGT 2527NLS-M	■									
	LNGT 2530NLS-M	■									
	LNGT 3030NLS-M	■									
	LNGT 3032NLS-M	■									
	LNGT 3035NLS-M	■									
	LNGT 4040NLS-M	■									
	LNGT 4042NLS-M	■									
	LNGT 4045NLS-M	■									
	LNGT 5050NLS-M	■									
	LNGT 5052NLS-M	■									
	LNGT 5055NLS-M	■									
NRS	LNGT 2020NRS-M	■									
	LNGT 2022NRS-M	■									
	LNGT 2025NRS-M	■									
	LNGT 2525NRS-M	■									
	LNGT 2527NRS-M	■									
	LNGT 2530NRS-M	■									
	LNGT 3030NRS-M	■									
	LNGT 3032NRS-M	■									
	LNGT 3035NRS-M	■									
	LNGT 4040NRS-M	■									
	LNGT 4042NRS-M	■									
	LNGT 4045NRS-M	■									
	LNGT 5050NRS-M	■									
	LNGT 5052NRS-M	■									
	LNGT 5055NRS-M	■									
NS	LNGT 5050NS-M	■									

Inserts Sequencing Position



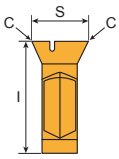
(Interleaving one after another different one.)



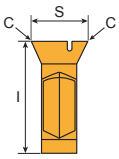
Inserts 10 PCS / Box

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

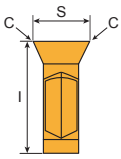
LNGT Inserts



NLS



NRS



NS

Tolerances (mm)
S : ±0.02

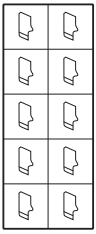
Only applicable in cutter width 6,8mm

Dimensions (mm)			
Blade Thickness	S	I	C
1.75	2.0 2.2 2.5	9	0.05
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	ME
NLS	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 2020NRS-ME	◎					◎				
	LNGT 2022NRS-ME	◎									
	LNGT 2025NRS-ME	◎									
	LNGT 2525NRS-ME	◎					◎				
	LNGT 2527NRS-ME	◎									
	LNGT 2530NRS-ME	◎									
	LNGT 3030NRS-ME	◎					◎				
	LNGT 3032NRS-ME	◎									
	LNGT 3035NRS-ME	◎									
	LNGT 4040NRS-ME	◎					◎				
	LNGT 4042NRS-ME	◎									
	LNGT 4045NRS-ME	◎									
	LNGT 5050NRS-ME	◎					◎				
	LNGT 5052NRS-ME	◎									
	LNGT 5055NRS-ME	◎									
NS	LNGT 5050NS-ME	◎									

Inserts Sequencing Position

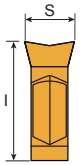
(Interleaving one after another different one.)



Inserts 10 PCS / Box

- 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



N2

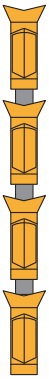
Tolerances (mm)
S : ±0.02

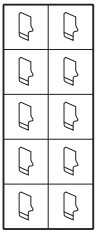
For the application in Alu. pipe and Alu. plate

Dimensions (mm)		
Blade Thickness	S	I
1.4	1.6	9
1.6	1.8	
1.75	2.0 2.2 2.5	
2.25	2.5 2.7 3.0	
2.7	3.0 3.2 3.5	
3.7	4.0 4.2 4.5	
4.5	5.0 5.2 5.5	

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		EE
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
N2	LNGT 1616N2-EE				■						
	LNGT 1818N2-EE				■						
	LNGT 2020N2-EE				■						
	LNGT 2022N2-EE				■						
	LNGT 2025N2-EE				■						
	LNGT 2525N2-EE				■						
	LNGT 2527N2-EE				■						
	LNGT 2530N2-EE				■						
	LNGT 3030N2-EE				■						
	LNGT 3032N2-EE				■						
	LNGT 3035N2-EE				■						
	LNGT 4040N2-EE				■						
	LNGT 4042N2-EE				■						
	LNGT 4045N2-EE				■						
	LNGT 5050N2-EE				■						
	LNGT 5052N2-EE				■						
	LNGT 5055N2-EE				■						

Inserts Sequencing Position

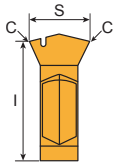




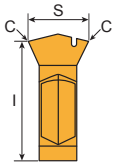
Inserts 10 PCS / Box

- 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 1616N2-EE,F20

LNGT Inserts



NL



NR

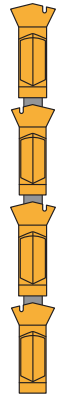
V shape insert designed for superior stability and durability

Tolerances (mm)
S : ±0.02

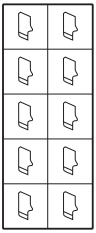
Dimensions (mm)			
Blade Thickness	S	I	C
1.75	2.0 2.2 2.5	9	0.05
2.25	2.5 2.7 3.0		
2.7	3.0 3.2 3.5		
3.7	4.0 4.2 4.5		
4.5	5.0 5.2 5.5		

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	M
NL	LNGT 2020NL-M	■									
	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	■									
	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	■									

Inserts Sequencing Position



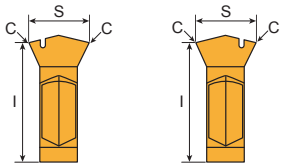
(Interleaving one after another different one.)



Inserts 10 PCS / Box

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

LNGT Inserts

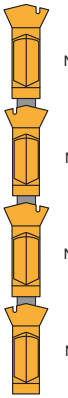


Tolerances (mm)
S : ±0.02

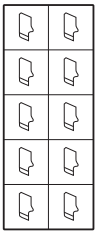
Dimensions (mm)			
Blade Thickness	S	I	C
1.75	2.0 2.2 2.5	9	0.05
2.25	2.5 2.7 3.0		
2.7	3.0 3.2 3.5		
3.7	4.0 4.2 4.5		
4.5	5.0 5.2 5.5		

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
NL	LNGT 2020NL-ME	◎					◎				
	LNGT 2022NL-ME	◎									
	LNGT 2025NL-ME	◎									
	LNGT 2525NL-ME	◎					◎				
	LNGT 2527NL-ME	◎									
	LNGT 2530NL-ME	◎									
	LNGT 3030NL-ME	◎					◎				
	LNGT 3032NL-ME	◎									
	LNGT 3035NL-ME	◎									
	LNGT 4040NL-ME	◎					◎				
	LNGT 4042NL-ME	◎									
	LNGT 4045NL-ME	◎									
	LNGT 5050NL-ME	◎					◎				
	LNGT 5052NL-ME	◎									
	LNGT 5055NL-ME	◎									
NR	LNGT 2020NR-ME	◎					◎				
	LNGT 2022NR-ME	◎									
	LNGT 2025NR-ME	◎									
	LNGT 2525NR-ME	◎					◎				
	LNGT 2527NR-ME	◎									
	LNGT 2530NR-ME	◎									
	LNGT 3030NR-ME	◎					◎				
	LNGT 3032NR-ME	◎									
	LNGT 3035NR-ME	◎									
	LNGT 4040NR-ME	◎					◎				
	LNGT 4042NR-ME	◎									
	LNGT 4045NR-ME	◎									
	LNGT 5050NR-ME	◎					◎				
	LNGT 5052NR-ME	◎									
	LNGT 5055NR-ME	◎									

Inserts Sequencing Position



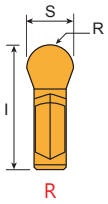
(Interlearing one after another different one.)



Inserts 10 PCS / Box

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

LNGT Inserts

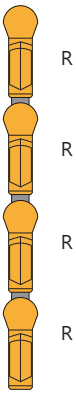


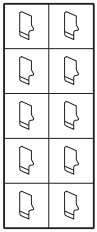
Tolerances (mm)
S : ±0.02

Dimensions (mm)			
Blade Thickness	S	I	R
1.2	1.5	9	0.75
1.75	2.0		1.0
2.25	2.5		1.25
2.7	3.0		1.5

Inserts	Order Code	Grades									ME
		Carbide					Cermet		Uncoated		
		B100	C200	C250	F20	F30	CE100	CE60	K10	CE	
R	LNGT 1415R075-ME	◎			■						
	LNGT 2020R100-ME	◎			■						
	LNGT 2525R125-ME	◎			■						
	LNGT 3030R150-ME	◎			■						

Inserts Sequencing Position

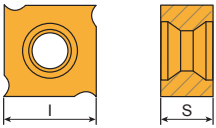




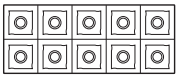
Inserts 10 PCS / Box

- 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 1415R075-ME,B100

SNGX Inserts



Tolerances (mm)
I=±0.025 S=±0.025



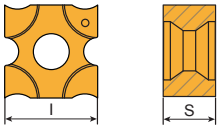
Inserts 10 PCS / Box

Dimensions (mm)		
Cutter Thickness	S	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	

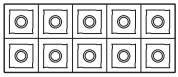
Inserts	Order Code	Cutting Rake	Grades								
			Carbide					Cermet		Uncoated	
			B100	C200	C250	F20	F30	CE100	CE60	K10	CE
E / ME / M	SNGX 1102-E	25 °				■					
	SNGX 1103-E					■					
	SNGX 1203-E					■					
	SNGX 1204-E					■					
	SNGX 12045-E					■					
	SNGX 1205-E					■					
	SNGX 1207-E					■					
	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 S=±0.025



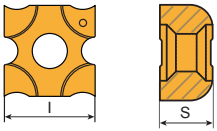
Inserts 10 PCS / Box

Dimensions (mm)		
Cutter Thickness	S	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	

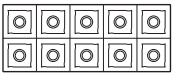
Inserts	Order Code	Cutting Rake	Grades								
			Carbide					Cermet		Uncoated	
			B100	C200	C250	F20	F30	CE100	CE60	K10	CE
E / ME / M	SNGW 1102-E	25 °				■					
	SNGW 1103-E					■					
	SNGW 1203-E					■					
	SNGW 1204-E					■					
	SNGW 12045-E					■					
	SNGW 1205-E					■					
	SNGW 1207-E					■					
	SNGW 1102-ME	15 °	◎				■				
	SNGW 1103-ME		◎				■				
	SNGW 1203-ME		◎				■				
	SNGW 1204-ME		◎				■				
	SNGW 12045-ME		◎				■				
	SNGW 1205-ME		◎				■				
	SNGW 1207-ME		◎				■				
	SNGW 1102T-M	15 °	■								
	SNGW 1103T-M		■								
	SNGW 1203T-M		■								
	SNGW 1204T-M		■								
	SNGW 12045T-M		■								
	SNGW 1205T-M		■								
	SNGW 1207T-M		■								

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

SNGW Inserts - R0.4~R3.0



Tolerances (mm)
I=±0.025 S=±0.025



Inserts 10 PCS / Box

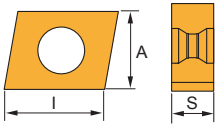
Dimensions (mm)			
Cutter Thickness	S	I	R
1102	2.3	11.0	0.4
1102			0.8
1103	2.7		0.4
1103			0.8
1203	3.2	12.7	0.4
1203			0.8
1203			1.2
1204	4.0		0.4
1204			0.8
1204			1.2
1204			1.6
12045	4.5		0.4
12045			0.8
12045			1.2

Dimensions (mm)			
Cutter Thickness	S	I	R
12045	4.5	12.7	1.6
12045			2.0
1205	5.4		0.4
1205			0.8
1205			1.2
1205			1.6
1205			2.0
1205			2.5
1207	7.0		0.4
1207			0.8
1207			1.2
1207			1.6
1207			2.0
1207			2.5
1207			3.0

Inserts	Order Code	Cutting Rake	Grades								
			Carbide					Cermet		Uncoated	
			B100	C200	C250	F20	F30	CE100	CE60	K10	CE
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		◎								

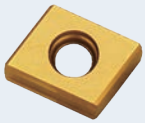
- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: SNGW 1102R04-ME,F20

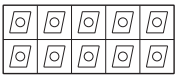
CNGX Inserts



Tolerances (mm)
I=±0.025 S=±0.025 A=±0.025

Dimensions (mm)			
Cutter Thickness	S	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				■						E
	CNGX 1305-E				■						
	CNGX 1605-E				■						
	CNGX 1005-ME	◎				■					ME
	CNGX 1305-ME	◎				■					
	CNGX 1605-ME	◎				■					
	CNGX 1005T-M	■		■							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

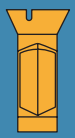
• LNGT Insert Recommended Cutting speed, Vc(m/min)

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 -	-	-	-	-	-	-

• Cutting Data-Side Milling

Operations	AR / Dc	Recom.fz (mm/tooth)			Speed Factor
Full engagement	-	0.05	0.10	0.14	0.65
Side Milling	2%	0.21	0.44	0.65	1.20
	5%	0.14	0.28	0.41	1.10
	10%	0.10	0.20	0.30	1.00
	20%	0.07	0.14	0.21	0.90
	30%	0.06	0.12	0.18	0.85
Average Chip Thickness (hm)	-	0.03	0.06	0.09	-

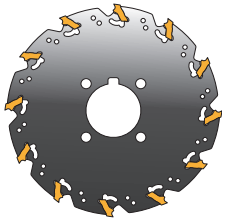
• Type Of Inserts



Insert Code	Width of slot (mm)
1414	1.4
2020	2.0
2525	2.5
3030	3.0
4040	4.0
5050	5.0

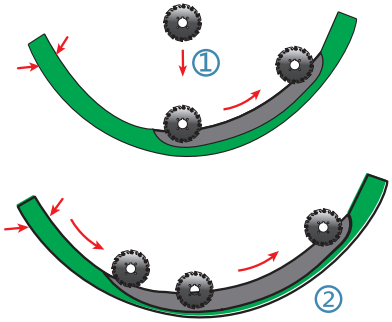
Recommendation-LNGT Inserts

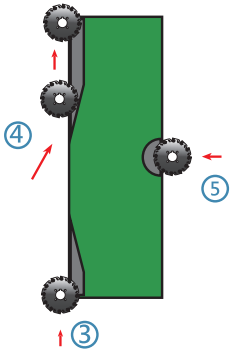
f_z (mm / thooh)



• fz (mm/tooth)

AE	fz (mm/tooth)					
	Material group					
	1 2 3 4	5 6	8 9 10 11	12 13 14 15	16 17 18	19 20 21 22
1.4-1.7 mm	0.02-0.03	0.015-0.025	0.03-0.04	0.02-0.04	0.02-0.04	0.015-0.025
1.8-2.2 mm	0.03-0.05	0.03-0.04	0.03-0.04	0.03-0.06	0.03-0.08	0.02-0.03
2.5-3.0 mm	0.03-0.06	0.03-0.05	0.02-0.03	0.03-0.08	0.03-0.1	0.03-0.04
3.0-3.5 mm	0.04-0.08	0.03-0.06	0.03-0.06	0.04-0.1	0.04-0.1	0.03-0.05
4.0-4.5 mm						
5.0-5.5 mm	0.05-0.1	0.04-0.08	0.04-0.07	0.05-0.12	0.05-0.17	0.04-0.06





① Plunging to mill : Fz reduce to 50%
② Ramping to mill : Fz remain 100%
③ Mill : Fz remain 100%
④ Ramping : Fz remain 100%
⑤ Plunging to mill : Fz reduce to 50%

Recommendation-SNGX / SNGW Inserts

• SNGX / SNGW Insert Grade Selection

Material group	Recom. fz (mm/tooth)	Inserts			
		SNGX ... M SNGW ...M	SNGX ... ME SNGW ... ME	SNGX ... EE 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

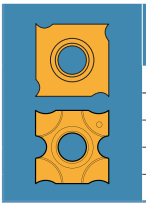
• Recommended Cutting Speed, Vc(m/min)

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 0.3
	Cutting Speed, Vc (m/min)						
1	186 166 150	166 146 130	-	-	-	-	-
2	168 150 135	148 130 115	-	-	-	-	-
3	151 136 122	131 116 102	-	-	-	-	-
4	136 122 110	116 102 90	-	-	-	-	-
5	120 110 99	100 90 79	-	-	-	-	-
6	92 78 -	72 58 -	-	-	-	-	-
7	-	-	-	-	-	-	-
8	160 - 80	-	-	-	-	-	-
9	160 - 80	-	-	-	-	-	-
10	80 - 50	-	-	-	-	-	-
11	80 - 50	-	-	-	-	-	-
12	-	-	-	-	-	-	140 119 105
13	-	-	-	-	-	-	126 105 98
14	-	-	-	-	-	-	119 98 91
15	-	-	-	-	-	-	91 88 -
16	-	-	1150 950 850	-	-	-	-
17	-	-	950 780 700	-	-	-	-
18	-	-	950 780 700	-	-	-	-
19	55 45 -	-	-	-	-	-	-
20	55 45 -	-	-	-	-	-	-
21	46 38 -	-	-	-	-	-	-
22	55 45 -	-	-	-	-	-	-

• Cutting Data-Side Milling

Operations	AR / Dc	Recom.fz (mm/tooth)			Speed Factor
Full Engagement	-	0.05	0.10	0.14	0.65
Side Milling	2%	0.21	0.44	0.65	1.20
	5%	0.14	0.28	0.41	1.10
	10%	0.10	0.20	0.30	1.00
	20%	0.07	0.14	0.21	0.90
	30%	0.06	0.12	0.18	0.85
Average Chip Thickness (hm)	-	0.03	0.06	0.09	-

• 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	-	-

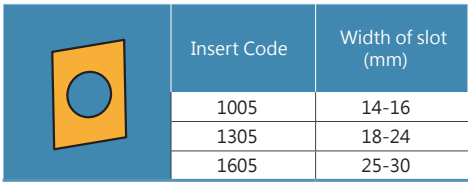
• Cutting Data-Side Milling

Operations	AR / Dc	Recom. fz (mm/tooth)			Speed Factor
Full engagement	-	0.05	0.10	0.14	0.65
Side Milling	2%	0.21	0.44	0.65	1.20
	5%	0.14	0.28	0.41	1.10
	10%	0.10	0.20	0.30	1.00
	20%	0.07	0.14	0.21	0.90
	30%	0.06	0.12	0.18	0.85
Average Chip Thickness (hm)	-	0.03	0.06	0.09	-

• Recommended Cutting Speed, Vc(m/min)

Material group	Grades						
	B100	C250	F20	CE60	CE	K10	F30
	fz (mm/tooth)						
	0.1 0.2 0.3	0.1 0.2 0.3	0.1 0.2 0.3				
	Cutting Speed, Vc (m/min)						
1	162 140 123	162 140 123	-	-	-	-	-
2	146 123 105	146 123 105	-	-	-	-	-
3	120 101 92	120 101 92	-	-	-	-	-
4	109 92 84	109 92 84	-	-	-	-	-
5	90 78 70	90 78 70	-	-	-	-	-
6	63 56 -	64 56 -	-	-	-	-	-
7	-	28 - -	-	-	-	-	-
8	160 - 70	-	-	-	-	-	-
9	160 - 70	-	-	-	-	-	-
10	80 - 50	-	-	-	-	-	-
11	80 - 50	-	-	-	-	-	-
12	-	-	-	-	-	-	140 119 105
13	-	-	-	-	-	-	126 105 98
14	-	-	-	-	-	-	119 98 91
15	-	-	-	-	-	-	91 84 -
16	-	-	805 665 595	-	-	-	-
17	-	-	665 549 490	-	-	-	-
18	-	-	-	-	-	-	-
19	40 37 -	-	-	-	-	-	-
20	40 37 -	-	-	-	-	-	-
21	35 30 -	-	-	-	-	-	-
22	40 37 -	-	-	-	-	-	-

• Type Of Inserts



Insert Code	Width of slot (mm)
1005	14-16
1305	18-24
1605	25-30

CENTER SERIES

- CENTER/SPOT DRILL IN MILLING AND TURNING

Features Description

The precise eccentricity only ±0.008mm enhences the toollife of taps and drills, Special carbide inserts with unique geometry improve the strength of insert tip.

Center Drill: ø1.6 - ø10 mm
Spot Drill: ø8 - ø16 mm

SPOT DRILL - 390 SYSTEM

Video

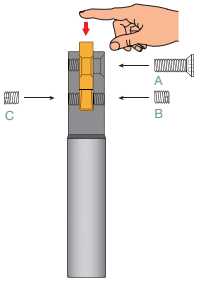
Features

- Available in materials: P K M N S H
- Cost **300~500%** SAVING
- Applicable Machines: Milling / Turning / Drilling
- Efficiency **300%** UP
- Durability **300%** UP

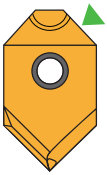
Design

Center point eccentricity ±0.008mm

1.Plug-and-clamp self-centering design



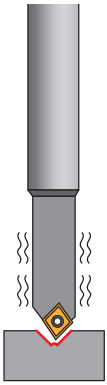
2.Back taper



Gives awesome stabilities that conduces to excellent verticality precision.

Product Introduction

Other brands



Big eccentricity tolerance minimum ±0.3 mm

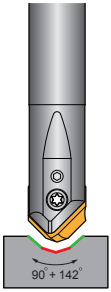
1. To use this kind of chamfer tool for centering processes is likely break drills and taps often.
2. This chamfer tool works with single flute only, it performs low speed.

YIH TROUN

23 Inserts

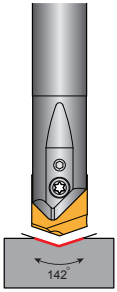
1. Designed with chip breaking teeth both on the front and back side of indexable inserts.
2. The most popular spot drill which has 45°chamfer angle and suitable in various applications: such as spot positioning, V-shape grooving and engraving.
3. Can also be used in round-hole and side corner chamfering with 2 effective flutes.

A23 Inserts



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

B23 Inserts

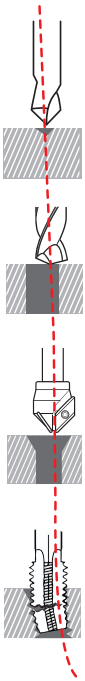


142°point angle is perfect for all different size of drills.

Subtle eccentricity tolerance maximum is ±0.008 mm

Operations prior to small / long depth drills and Tapping

Imprecise spot drills



1. Big eccentricity tolerarnce
2. Resulting in off centre drilling, poor hole quality and reduced tool life
3. Unequal chamfering, poor surface finish and reduced tool life
4. Regular tap breakage and scrap components

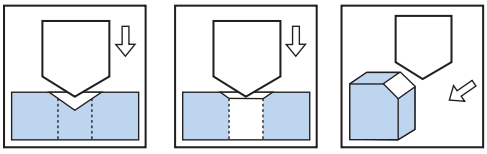
Y.T. accurate spot drills

1. Y.T. 142° spot drill with 45° chamfer angle (Finish two operations in one)
2. Accurate drilled hole, good finish and tool life

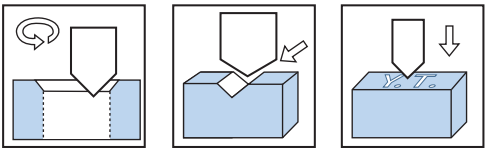
1 Process reduced

3. Resulting in best tap tool life and thread quality

Y.T. 90° Spot Drill With Multipurpose Function



Centering and chamfering at the same time | Chamfering | Chamfering edges



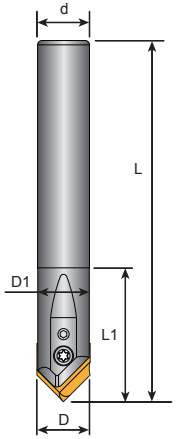
Chamfering large diameter holes | Cutting V grooves | Engraving

Can be used in M/C and drilling machine

PRODUCT SPECIFICATIONS

Spot Drill Toolholders

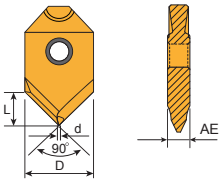
- Inserts P. 206 - 207
- Cutting Data P. 208 - 212



13

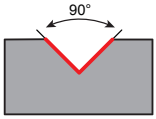
Order Code	Dimensions (mm)						KG	Inserts 23 A23 B23	Screw	Key
	D	D1	d	L	L1	L2				
13-0808-60	8	7.9	8	60	20	-	0.06	0802	C02506 S025025	T08P L013
13-0808-85				85			0.07			
13-1008-60		9.9	10	60			0.09			
13-1010-65	10			65			0.09	1002	C03008 S02503	T09P L013
13-1010-100				100			0.12			
13-1010-150				150			0.12			
13-1210-65			12	65			0.12			
13-1212-80	12	11.9		80	30		0.12	1203	C03010 S0304	T09P L015
13-1212-110				110			0.15			
13-1212-160				160			0.18			
13-1612-80			16	80			0.21			
13-1616-100	16	15.8		100	35		0.21	1603	C03512 S0405	T10P L02
13-1616-130				130			0.26			
13-1616-180				180			0.36			

23 Inserts

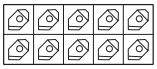


Tolerances (mm)

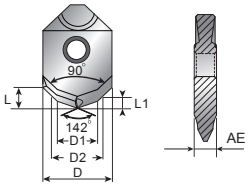
AE : + 0.01 / – 0.02



Dimensions (mm)				
D	d	L	AE	angle
8	0.7	4	2.0	90°
10	0.8	5	2.5	
12	0.9	6	3.0	
16	1.0	8		

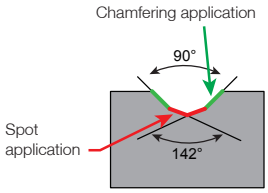
Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		E / ME
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	23-0802-90-E											 Inserts 10 PCS / Box
	23-1002-90-E											
	23-1203-90-E											
	23-1603-90-E											
	23-0802-90-ME		◎									
	23-1002-90-ME		◎									
	23-1203-90-ME		◎									
	23-1603-90-ME		◎									

A23 Inserts

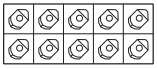


Tolerances (mm)

AE : + 0.01 / – 0.02

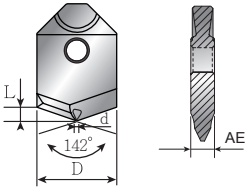


Dimensions (mm)							
D	L	D1	D2	L1	AE	M	angle
8	2.8	3.3	4.2	1.02	2.0	M4 x 0.7	90° 142°
10	3.5	4.2	5.25	1.25	2.5	M5 x 0.8	
12	4.2	5.0	6.3	1.55	3.0	M6 x 1.0	
16	5.6	6.8	8.4	1.97	3.0	M8 x 1.25	
16	5.1	8.5	10.5	2.46	3.0	M10 x 1.5	

Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		ME
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	A23-0802-M4-ME		◎									 Inserts 10 PCS / Box
	A23-1002-M5-ME		◎									
	A23-1203-M6-ME		◎									
	A23-1603-M8-ME		◎									
	A23-1603-M10-ME		◎									

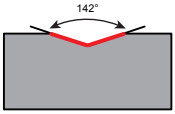
- Steel Stainless Steel ◎ Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron ◎ Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: A23-0802-M4-ME,B350

B23 Inserts

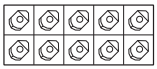


Tolerances (mm)

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		ME
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	B23-0802-142-ME		◎									 Inserts 10 PCS / Box
	B23-1002-142-ME		◎									
	B23-1203-142-ME		◎									
	B23-1603-142-ME		◎									

- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: B23-0802-142-ME,B350

Recommended Cutting Data And Insert Grades

- Recommended spot cutting speed in Vc (m/min), fz(mm/ tooth).
- For spotting the effective no. of teeth is calculated with 1 flute.

Material group	Cutting Speed Vc(m/min) Spotting	fz (mm/tooth) D: 8~10mm	fz (mm/tooth) D: 12~16mm	Grades ME	Grades E
1-2	50-70	0.10 0.13	0.11 0.14	B350/C350	-
3	50-70	0.10 0.13	0.11 0.14	B350/C350	-
4-5-6	45-60	0.08 0.10	0.10 0.12	B350/C350	-
7	25-30	0.06 0.08	0.06 0.08	B350	-
8-9	35-45	0.08 0.10	0.10 0.12	B350	-
10-11	35-40	0.07 0.09	0.09 0.12	B350	-
12-13	70-90	0.12 0.15	0.13 0.16	C350	-
14-15	60-80	0.10 0.14	0.10 0.15	C350	-
16-18	200-300	0.12 0.15	0.13 0.16	-	F20

How to Fit Inserts - Screw A.B.C.

Screwing the Insert

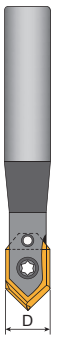
Step 1: • Put the insert into the slot of shank and press it with the finger
• Fully tighten the screw A first

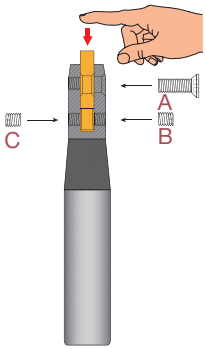
Step 2: Half tighten the screw B on one side

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)

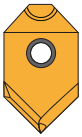


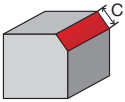


Standard spare parts

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



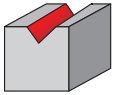


Side Chamfering

- 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 (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)
ø8	1mm	4800	720	2000	240	2400	280	1600	190	3200	640	8000	2000
ø10	1mm	3800	570	1600	190	1900	220	1300	160	2550	510	6300	1500
	2mm	3800	450	1600	160	1900	190	1300	130	2550	400	6300	1260
ø12	1mm	3200	480	1300	150	1600	190	1050	125	2100	420	5300	1250
	2mm	3200	380	1300	130	1600	160	1050	105	2100	340	5300	1050
	3mm	3200	320	1300	100	1600	130	1050	85	2100	250	5300	850
ø16	1mm	2400	360	1000	120	1200	145	800	95	1600	320	4000	960
	2mm	2400	290	1000	100	1200	120	800	80	1600	255	4000	800
	3mm	2400	240	1000	80	1200	100	800	65	1600	190	4000	480
	4mm	2000	160	800	65	1000	80	600	50	1400	140	3500	420

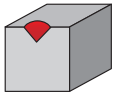
Recommended Cutting Data



Grooving

V Groove Application													
Materials		Steel		Heat Treatment		Stainless Steel		Inconel		Cast Iron		Aluminium	
Using Inserts		C350		C350		B350		B350		C350		F20	
Inserts	Cut Depth	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (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

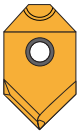
Recommended Cutting Data

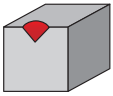


Spotting and Chamfering in one step

Spot Application													
Materials		Steel		Heat Treatment		Stainless Steel		Inconel		Cast Iron		Aluminium	
Using Insert		C350		C350		B350		B350		C350		F20	
Inserts	Cut Depth	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (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

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 (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (mm/min)	S (rev/min)	F (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 μm

Video

Video

Features

Available in materials P K M N S H

Cost **300~500%** SAVING

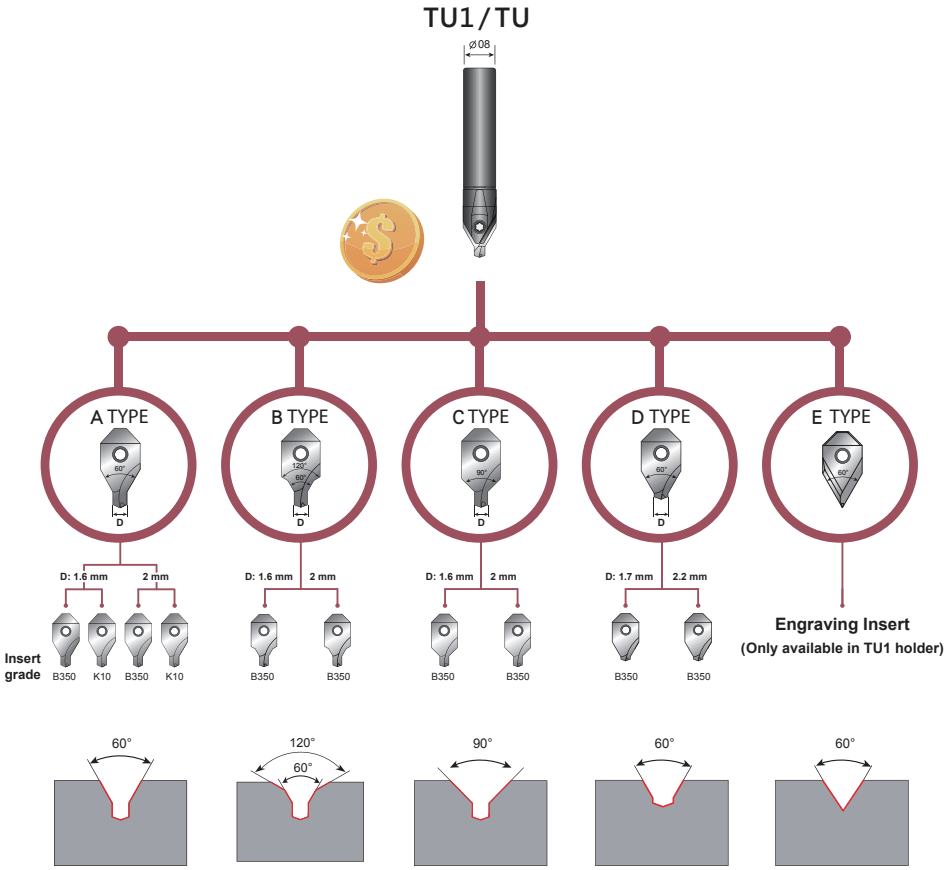
Applicable Machines Milling / Turning

Efficiency **300%** UP

Durability **300%** UP

Product Design

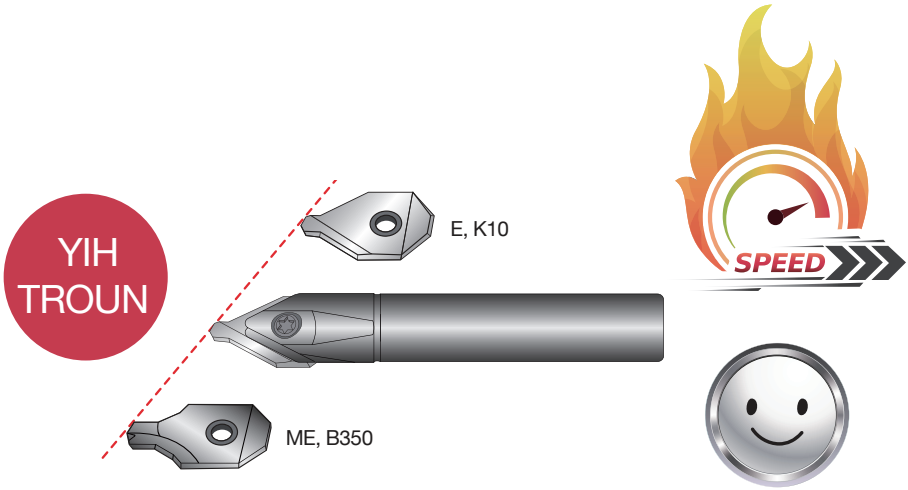
One Shank fits 11 different inserts



TECHNICAL GUIDE

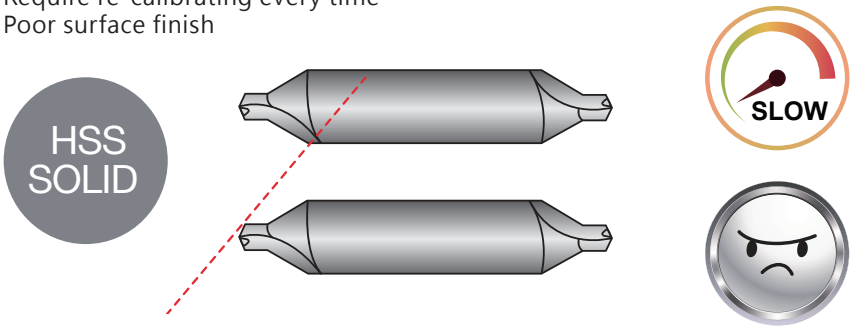
Indexable center drill

- Extremely accuracy in center positioning, minimized eccentricity ±0.008mm.
- Perfect surface finish with Ra 0.36 μm, 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.



Solid center drill

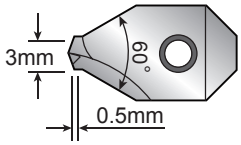
- Imprecise center accuracy
- Poor tool life
- Require re-calibrating every time
- Poor surface finish



New Design vs. Traditional Type

D-type Center Drill:

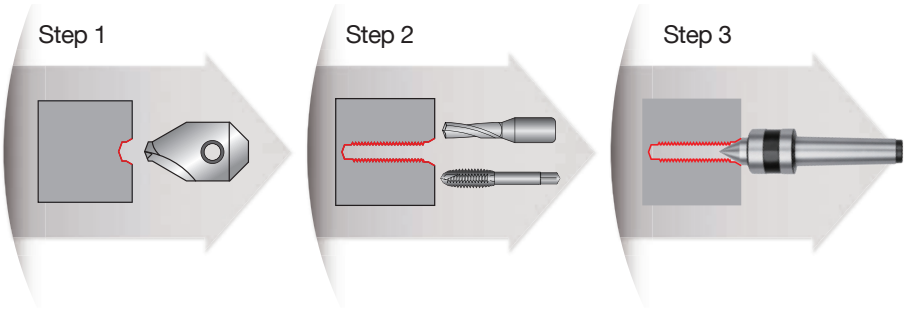
Designed with a shorter drill bit, suitable for center spotting with 60° chamfer simultaneously prior to hole drilling. It performs a greater machining durability itself and conduce to improve the tool life of drills and taps from its high accuracy.



Efficiency
400~600% up

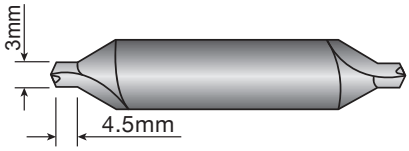
Durability
400~600% up

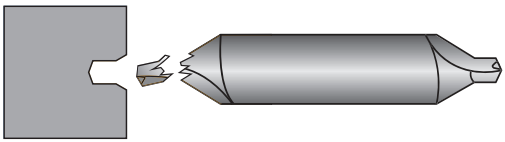
No broken



Traditional

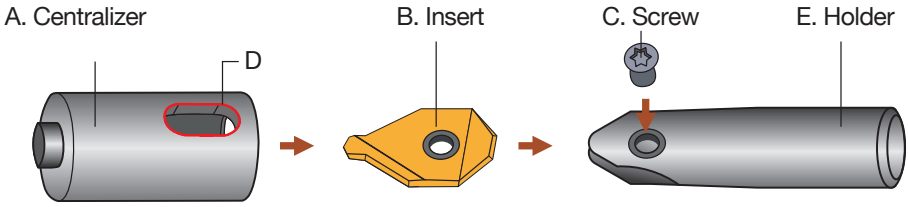
Standard center drill: The long pilot length causes pilot broken often and poor tool life in high feed machining.





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.

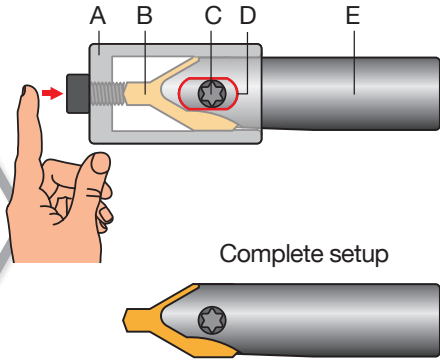
Step 2. Put on the centralizer.

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.

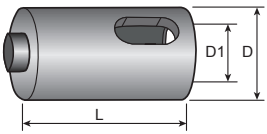
Step 5. Tighten up the screw.

Step 6. Remove the centralizer, carry tool changing and calibrating off in a minute.



Devices to centralize the inserts

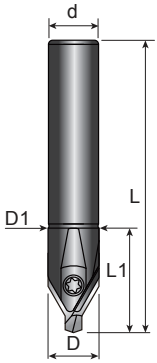
Video



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. 219 - 222
- Cutting Data P. 223
- Centralizer P. 217

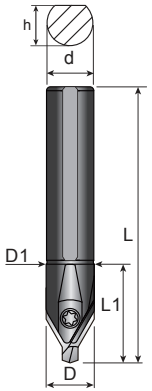


TU 1

Order Code	Dimensions (mm)					KG	Inserts A/B/C/D/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)

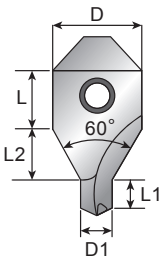
- Inserts P. 219 - 221
- Cutting Data P. 223
- Centralizer P. 217

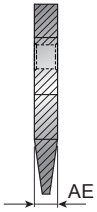


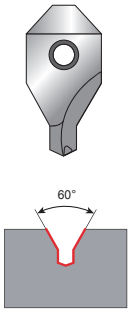
TU

Order Code	Dimensions (mm)						KG	Inserts A/B/C/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





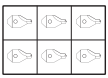


Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.02}$ AE : $^{+\ 0.01}_{-\ 0.02}$

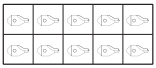
Dimensions (mm)						
D	L	AE	D1	L1	L2	Angle
8.2	6	2.0	1.6	1.6	5.0	60°
			2.0	2.0	5.0	
10.2	7	2.5	2.5	2.2	6.0	
			3.0	2.6	6.0	
12.2		3.0	4.0	3.3	7.0	
			5.0	4.0	6.0	
16.2	8		5.0	4.0	9.0	
			6.0	4.7	8.0	
			8.0	6.5	6.5	
			10.0	8.0	5.0	

Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	A24-080216-60-E									■		
	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		◎	■								
	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		◎	■								
	A24-1603100-60-ME		◎	■								



Inserts 6 PCS / Box

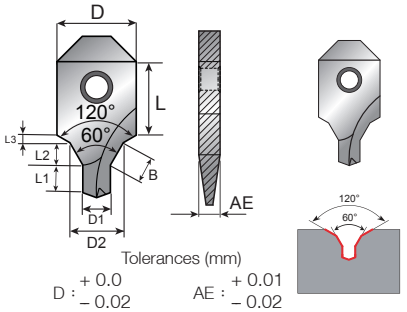
Only for insert: A24-16***



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.: A24-080216-60-E,K10

B24 Inserts



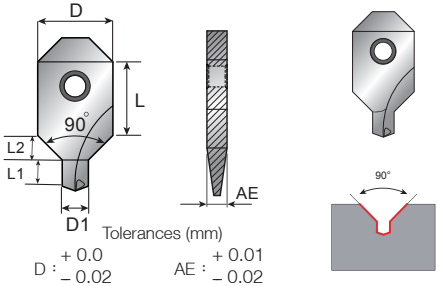
Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.02}$ AE : $^{+\ 0.01}_{-\ 0.02}$

Dimensions (mm)									
D	L	AE	D1	D2	L1	L2	L3	B	Angle
8.2	8	2.0	1.6	2.4	1.6	0.69	1.0	0.8	120° 60°
			2.0	3.0	2.0	0.87	1.0	1.0	
10.2	10	2.5	2.5	3.75	2.2	1.08	1.0	1.25	
			3.0	4.5	2.6	1.3	1.0	1.5	
12.2	10	3.0	4.0	6.0	3.3	1.7	1.0	2.0	
			5.0	7.5	4.0	2.2	1.0	2.5	
16.2	12	3.0	5.0	7.5	4.0	2.2	1.0	2.5	
			6.0	9.0	4.7	2.6	1.0	3.0	

Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	B24-080216-120-ME		◎									Inserts 6 PCS / Box Only for insert:B24-16***
	B24-080220-120-ME		◎									
	B24-100225-120-ME		◎									
	B24-100230-120-ME		◎									
	B24-120340-120-ME		◎									
	B24-120350-120-ME		◎									
	B24-160350-120-ME		◎									
	B24-160360-120-ME		◎									Inserts 10 PCS / Box

C24 Inserts



Tolerances (mm)

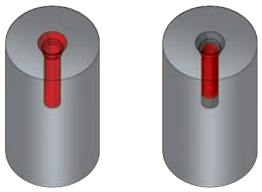
D : $^{+\ 0.0}_{-\ 0.02}$ AE : $^{+\ 0.01}_{-\ 0.02}$

Dimensions (mm)						
D	L	AE	D1	L1	L2	Angle
8.2	8	2.0	1.6	1.6	3.0	90°
			2.0	2.0	3.0	
10.2	10	2.5	2.5	2.2	3.5	
			3.0	2.6	3.5	
12.2	10	3.0	4.0	3.3	4.0	
			5.0	4.0	3.5	
16.2	12	3.0	5.0	4.0	5.5	
			6.0	4.7	5.0	

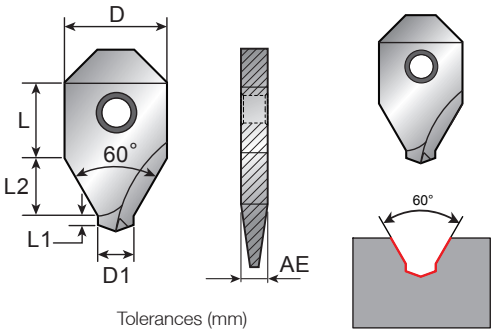
Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	C24-080216-90-ME		◎									Inserts 6 PCS / Box Only for insert: C24-16***
	C24-080220-90-ME		◎									
	C24-100225-90-ME		◎									
	C24-100230-90-ME		◎									
	C24-120340-90-ME		◎									
	C24-120350-90-ME		◎									
	C24-160350-90-ME		◎									
	C24-160360-90-ME		◎									Inserts 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

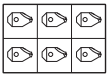


Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.02}$ AE : $^{+\ 0.01}_{-\ 0.02}$

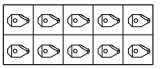
Dimensions (mm)						
D	L	AE	D1	L1	L2	Angle
8.2	6	2.0	1.7	0.6	5.5	60°
			2.2	0.6	5.0	
10.2	7	2.5	2.7	0.6	6.0	
			3.2	0.7	6.0	
			3.7	0.7	5.5	
12.2	7	3.0	4.3	0.8	6.5	
			5.3	1.0	5.5	
16.2	8	3.0	5.3	1.0	9.0	
			6.3	1.1	8.0	

Inserts	Order Code	Grades										
		Carbide					Cermet			Uncoated		ME
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	D24-080217-60-ME		◎									
	D24-080222-60-ME		◎									
	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		◎									



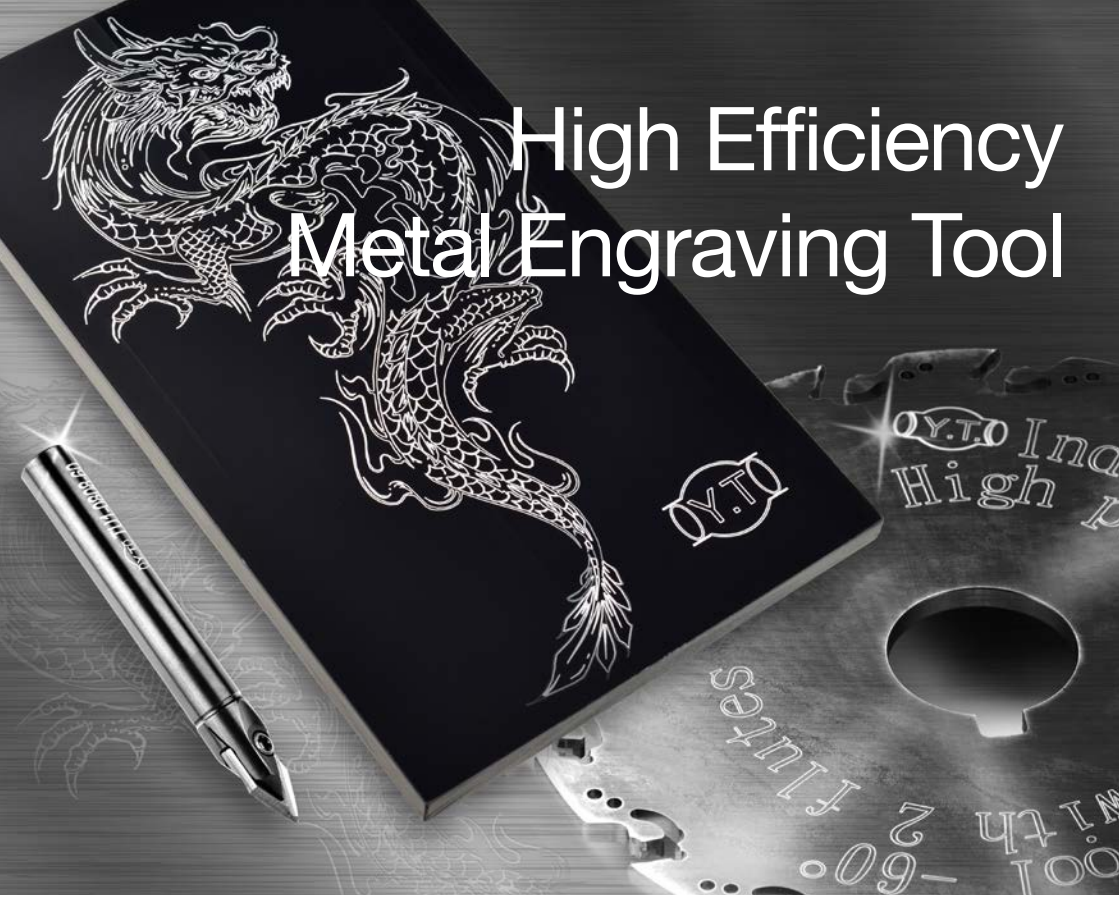
Inserts 6 PCS / Box

Only for insert:D24-16***



Inserts 10 PCS / Box

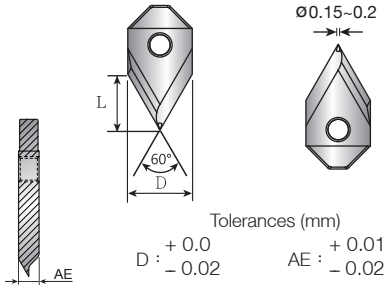
- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers and the grade of inserts, ie.: D24-080217-60-ME,B350



E24 Inserts

- Toolholder P. 218
- Centralizer P. 217

(Centralizer is necessary)



Tolerances (mm)

D : $^{+\ 0.0}_{-\ 0.02}$ AE : $^{+\ 0.01}_{-\ 0.02}$

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)
  Fz:0.01-0.03mm/teeth.

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)	fz(mm/ tooth)		Grades	
			D1:1.5~2.5mm	D1:3~10mm	ME	E
1-2	15-20	50-120	0.03 0.06	0.05 0.10	B350	-
3	12-18		0.03 0.06	0.05 0.10	B350	-
4-5-6	10-15		0.03 0.06	0.05 0.10	B350	-
7	5-10	22-30	0.03 0.06	0.05 0.08	B350	-
8-9	8-12		0.03 0.06	0.05 0.09	B350	-
10-11	5-10		0.03 0.06	0.03 0.08	B350	-
12-13	20-25	60-80	0.05 0.08	0.06 0.13	B350	-
14-15	15-20		0.05 0.08	0.06 0.13	B350	-
16-18	30-50	300-800	0.05 0.08	0.06 0.13	-	K10

Surface Finishing Test Result

Holder	TU-1010-100
Insert	24-100225-60-ME, B100
S	1600 min^{-1}
f	0.05 mm/rev
Material	ScM440

TRY ME BOX

1 shank + 2 inserts + 1 Centralizer gauge

Available sizes in A24 inserts :
1.6/2.0/2.5/3.0/4.0/5.0/6.0

Order Code	Description	Type	Quantity
CD081620B350	TU1-0808-60	Shank: 8mm-60L	1
	A24-080216-60-ME,B350	Insert: 1,6mm for P M K S H	1
	A24-080220-60-ME,B350	Insert: 2,0mm for P M K S H	1
	GA-0814	Centralizer	1
CD102530B350	TU1-1010-65	Shank: 10mm-65L	1
	A24-100225-60-ME,B350	Insert: 2,5mm for P M K S H	1
	A24-100230-60-ME,B350	Insert: 3,0mm for P M K S H	1
	GA-1016	Centralizer	1
CD124050B350	TU1-1212-65	Shank: 12mm-65L	1
	A24-120340-60-ME,B350	Insert: 4,0mm for P M K S H	1
	A24-120350-60-ME,B350	Insert: 5,0mm for P M K S H	1
	GA-1218	Centralizer	1
CD165060B350	TU1-1616-70	Shank: 16mm-70L	1
	A24-160350-60-ME,B350	Insert: 5,0mm for P M K S H	1
	A24-160360-60-ME,B350	Insert: 6,0mm for P M K S H	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

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.

4 In 1 Counter Bore: M3-M12

Counterbore reduce machining process from 5 steps to 2 steps.

4 IN 1 COUNTER BORE

Video

Patent No.
M473882
M474588
M473881

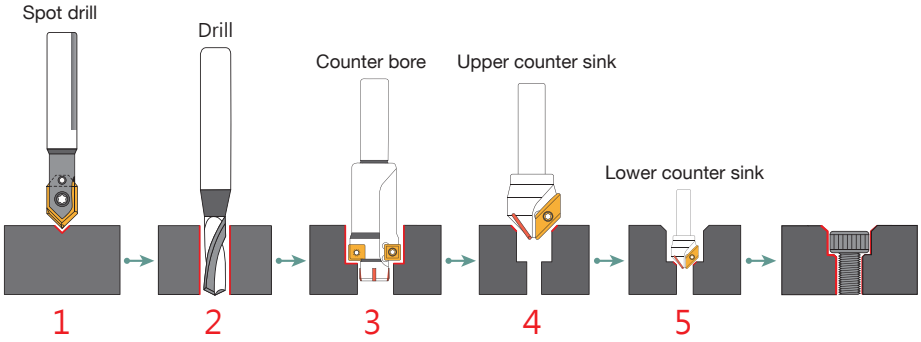
Patent No.
201310453057.2
201320772697.5

PCT Priority

Features

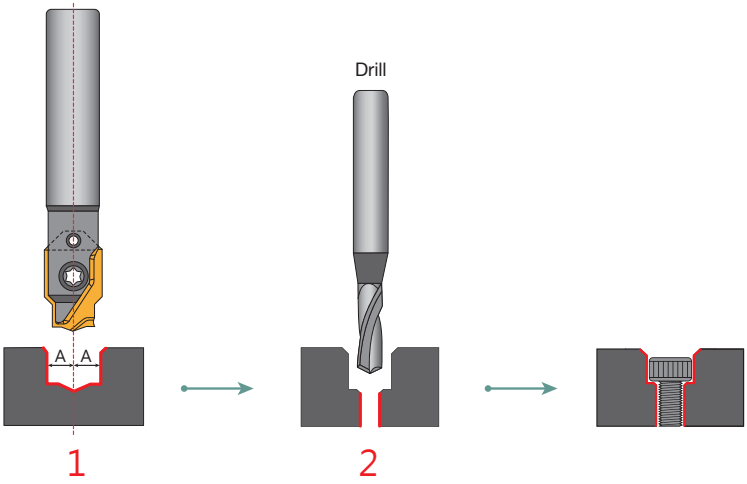
- Available in materials: P K M S H
- Cost **300~500%** SAVING
- Applicable Machines: Milling / Drilling / Radial drilling
- Efficiency **300%** UP
- Durability **300%** UP

Traditional Procedure: 5 Steps



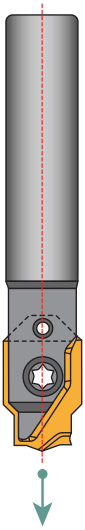
Innovative solution: 2 Steps

4 in 1 counter bore = 1+3+4+5



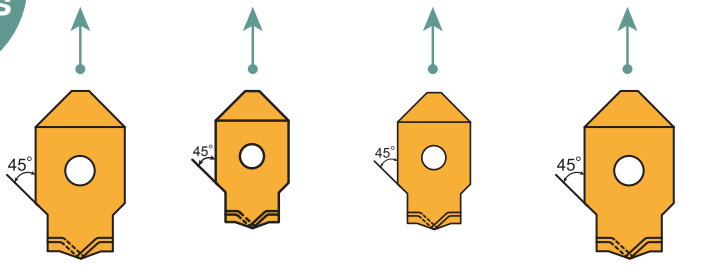
- Finish 4 operations in one.
- Extremely accuracy in center positioning, minimized eccentricity ±0.008mm.
- Create a counter bore within 3 seconds.

Product Design



- The same shank fits max. 20 different inserts.

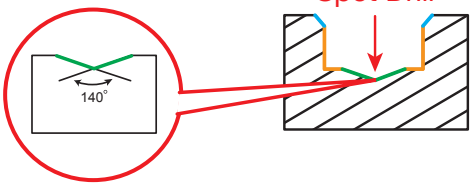
4 main functions



Bolt counter bore MM large | Bolt counter bore MM standard | Bolt counter bore INCH standard | Punch counter bore

* Screws M3~M12

140° accurate center spot



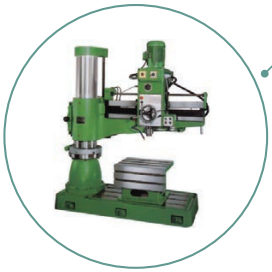
Up Chamfering
Bolt Counter Bore
Down Chamfering

Machines And Tools Application

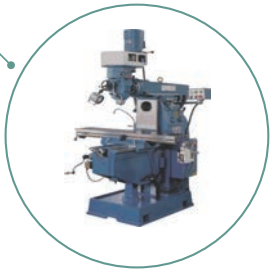
Suitable for various kinds of machines

A. Drilling machine

B. CNC Milling machine



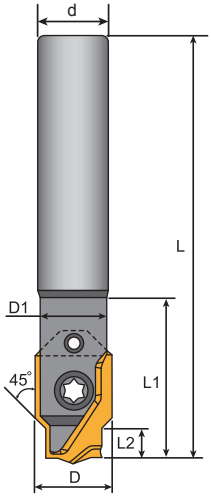
C. Radial drilling machine



D. Traditional milling machine

4 in 1 Counter Bore Shank

- Inserts P. 233 - 235
- Cutting Data P. 237

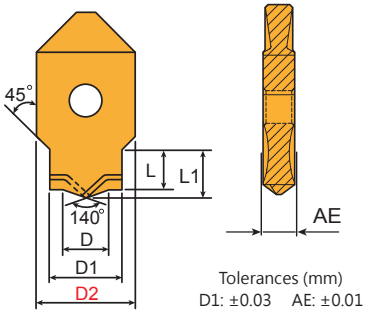


14

Order Code	Socket Cap Screw Size		Dimensions (mm)						KG	Screw	Key
	MM	INCH	D	D1	d	L	L1	L2			
14-0803-70	3.0 3.5	1/8	8	7.4	8	70	15	3.1 3.6	0.08	C02506 S025025	T08P L013
14-0803-90		-				90	20		0.09		
14-1004-80	4.0	3/16	10	9.4	10	80	16	4.2	0.11	C03007 S02503	T09P L013
14-1004-100						100	21		0.12		
14-1206-80	5.0 6.0	-	12	11.3	12	80	20	5.3 6.4	0.12	C03008 S0303	T09P L015
14-1206-110		1/4				110	25		0.15		
14-1208-80	7.0 8.0	5/16	16	15.4	16	80	22	8.4	0.13	C03510 S0405	T10P L02
14-1608-100		-				100	25	7.4 8.4	0.22		
14-1608-130		5/16				130	30		0.27		
14-2010-100	10 12	3/8	20	19.0	20	100		10.3	0.30	C04012 S0506	T15P L025
14-2010-140						140	35		0.42		

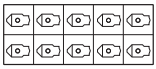
4 in 1 Counter Bore Inserts

MM / INCH standard size dimensions- DIN373



Tolerances (mm)
D1: ±0.03 AE: ±0.01

Inserts 6 PCS / Box
Only for insert : 26-20***



Inserts 10 PCS / Box

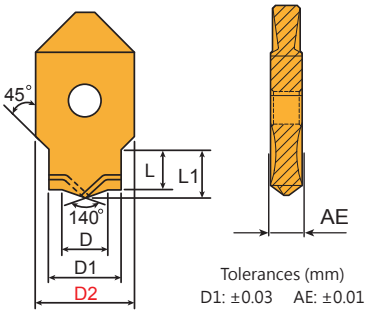
Dimensions (mm)						Socket Cap Screw Size	
D	D1	D2	L	L1	AE	MM	INCH
3.6	5.8	8	3.1	3.7	2.0	M3.0	1/8
4.1	6.3		3.6	4.3		M3.5	-
4.6	7.4	10	4.2	5.0	2.5	M4.0	-
5.6	9.3	12	5.3	6.2	3.0	M5.0	3/16
6.7	10.4		6.4	7.4		M6.0	1/4
7.7	11.5	16	7.4	8.4		M7.0	-
8.7	13.5		8.4	9.8		M8.0	5/16
10.8	16.5	20	10.3	12.0	3.5	M10	3/8
13.3	19.0		12.3	14.5		M12	-

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	26-0803-E											14-0803-70 14-0803-90
	26-0803-M		◎									
	26-0835-E											
	26-0835-M		◎									
	26-1004-E											14-1004-80 14-1004-100
	26-1004-M		◎									
	26-1205-E											14-1206-80 14-1206-110
	26-1205-M		◎									
	26-1206-E											
	26-1206-M		◎									
	26-1607-E											14-1208-80 14-1608-100 14-1608-130
	26-1607-M		◎									
	26-1608-E											
	26-1608-M		◎									
	26-2010-E											14-2010-100 14-2010-140
	26-2010-M		◎									
	26-2012-E											
	26-2012-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 presen conditions
- Please specify model numbers the and grade of inserts, ie.: 26-0803-E,F20

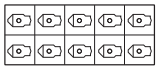
4 in 1 Counter Bore Inserts

MM large size dimensions- DIN373



Tolerances (mm)
D1: ±0.03 AE: ±0.01

Inserts 6 PCS / Box
Only for insert : 26-20***



Inserts 10 PCS / Box

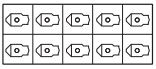
Dimensions (mm)						Socket Cap Screw Size
D	D1	D2	L	L1	AE	MM
3.8	6.5	8	3.1	3.7	2.0	M3.5
4.8	8.0	10	4.2	5.0	2.5	M4
5.8	10	12	5.3	6.2	3.0	M5
6.9	11		6.4	7.4		M6
9.3	15	16	8.4	9.8		M8
11.3	18	20	10.3	12	3.5	M10

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	26-0803S-E											14-0803-70 14-0803-90
	26-0803S-M		◎									
	26-1004S-E											14-1004-80 14-1004-100
	26-1004S-M		◎									
	26-1205S-E											14-1206-80 14-1206-110
	26-1205S-M		◎									
	26-1206S-E											
	26-1206S-M		◎									
	26-1608S-E											14-1208-80 14-1608-100 14-1608-130
	26-1608S-M		◎									
	26-2010S-E											14-2010-100 14-2010-140
	26-2010S-M		◎									

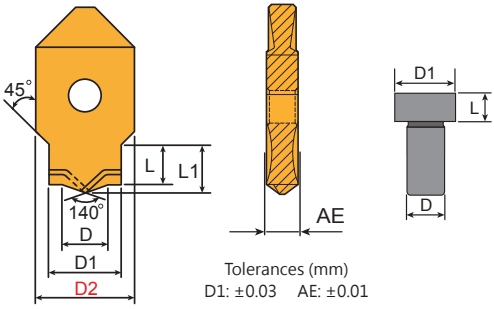
- Steel Stainless Steel Steel/Stainless Steel /Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on presen conditions
- Please specify model numbers the and grade of inserts, ie.: 26-0803S-E,F20

4 in 1 Punch Counter Bore Inserts

Inserts 6 PCS / Box
Only for insert : 27-20***

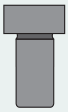


Inserts 10 PCS / Box



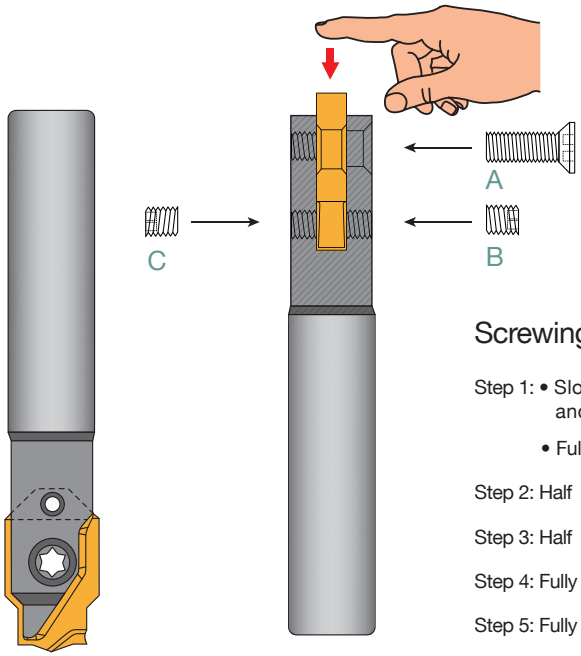
Tolerances (mm)
D1: ±0.03 AE: ±0.01

Dimensions (mm)						Socket Cap Screw Size
D	D1	D2	L	L1	AE	MM
5.0	8	10	5	-	2.5	M5.0
5.5						M5.5
6.0	10	12	6	-	3.0	M6.0
6.5						M6.5
7.0	11		8	-		M7.0
7.5						M7.5
8.0	13	16				M8.0
9.0	14					M9.0
10	15					M10
11	16	20			3.5	M11
12	17					M12
14	19					M14

Inserts	Order Code	Grades										Corresponding shank
		Carbide					Cermet			Uncoated		
		C125	B350	C350	F20	F30	CE25	CE100	CE60	K10	CE	
	27-1005-M			■								14-1004-80 14-1004-100
	27-10055-M			■								
	27-1206-M			■								14-1206-80 14-1206-110
	27-12065-M			■								
	27-1207-M			■								
	27-12075-M			■								
	27-1608-M			■								14-1208-80 14-1608-100 14-1608-130
	27-1609-M			■								
	27-1610-M			■								
	27-2011-M			■								14-2010-100 14-2010-140
	27-2012-M			■								
	27-2014-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 presen conditions
- Please specify model numbers the and grade of inserts, ie.: 27-1005-M,C350

How to Fit Insert - Screw A.B.C.



Screwing the Inserts

Step 1: • Slot the insert into the shank and push it agsinst on the bottom

• Fully tighten the screw A firs

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

Step 5: Fully tighten the screw C again

Standard spare parts

Insert dimension D2 (mm)	Screw A	Screw B/C	Key	Key
8	C02506	S025025	T08P	L013
10	C03007	S02503	T09P	
12	C03008	S0304		L015
16	C03510	S0404	T10P	L02
20	C04012	S0506	T15P	L025

Recommended Cutting Data And Insert Grade

The effective no. of teeth is calculated with 1 flute.

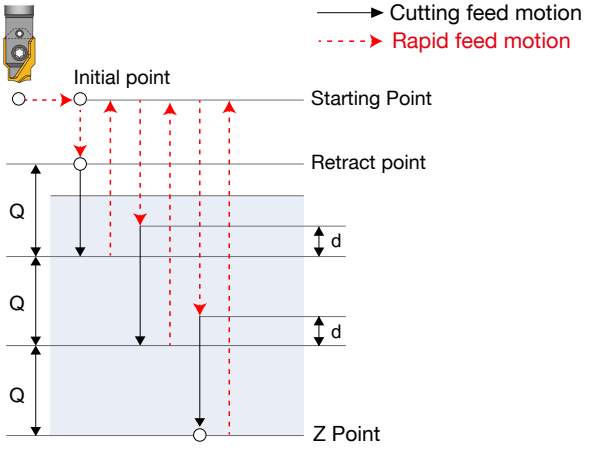
Material group	Cutting Speed Vc (m/min)	fz (mm/ tooth)				Grades	
		140°				M	E
		(D2) 8	(D2) 10	(D2) 12	(D2) 16-20		
1-2	50-70	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	B350/C350	-
3	50-70	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	B350/C350	-
4-5-6	45-60	0.05 0.07	0.05 0.07	0.06 0.08	0.06 0.08	B350/C350	-
7	25-30	0.04 0.06	0.04 0.06	0.05 0.07	0.05 0.07	B350	-
8-9	35-45	0.06 0.08	0.06 0.08	0.07 0.09	0.07 0.09	B350	-
10-11	35-40	0.05 0.07	0.05 0.07	0.06 0.08	0.06 0.08	B350	-
12-13	70-90	0.12 0.15	0.12 0.15	0.13 0.16	0.13 0.16	F30	-
14-15	60-80	0.11 0.14	0.11 0.14	0.12 0.15	0.12 0.15	F30	-
16-18	100-150	0.10 0.13	0.10 0.13	0.11 0.14	0.11 0.14	-	F20

• While applying it as a spot drill the RPM and FEED can be increased 50%.

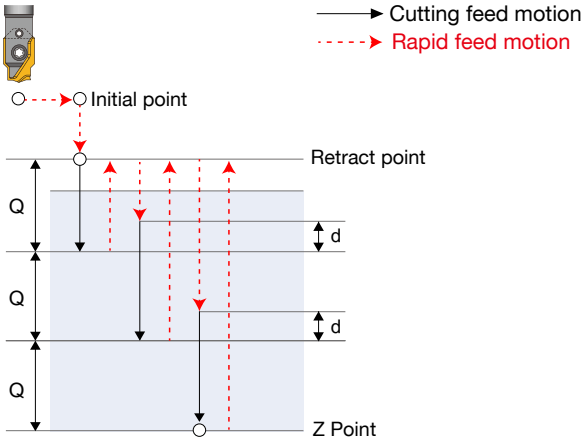
4 In 1 Counter Bore Program Description

Peck drilling (CNC No.G83)

CNC No. G83 (G98)

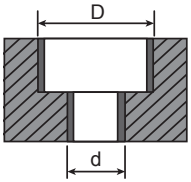
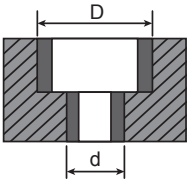
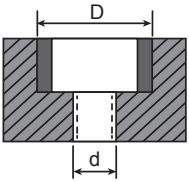


CNC No. G83 (G99)



- The G83 peck drilling cycle is for deep hole drilling and with chip breaking. The retracts cycle cleans chips in the hole and cut off long stringers (which happens often while drilling aluminum materials). This cycle takes a Q number which represents a "delta" increment along with the Z-axis.
- Program: G83 X_Y_Z_Q_R_F. It is an error if: The Q number is negative or zero.
- Peck drilling is not necessary in cast iron machining.

Bolt counter bore dimensions (DIN 373 - ISO 4205)

Screw Dimensions	Standard (D x d)	Large (D x d)	Screw (D x d)
Dimension			
M1.0	2.1 x 1.1	2.2 x 1.2	2.2 x 0.75
M1.2	2.4 x 1.3	2.5 x 1.4	2.5 x 0.95
M14	2.7 x 1.5	2.8 x 1.6	2.8 x 1.1
M1.5-M1.6	3.2 x 1.7	3.3 x 1.8	3.3 x 1.25
M1.7	3.7 x 1.8	3.8 x 1.9	3.8 x 1.3
M2.0	4.2 x 2.2	4.3 x 2.4	4.3 x 1.6
M2.2	4.6 x 2.4	4.8 x 2.6	4.8 x 2.6
M2.3	5.0 x 2.7	5.2 x 2.9	5.0 x 1.9
M2.5-M2.6	5.4 x 2.8	5.5 x 3.0	5.5 x 2.1
M3.0	5.8 x 3.2	6.0 x 3.4	6.0 x 2.5
M3.5	6.3 x 3.7	6.5 x 3.9	6.5 x 2.9
M4.0	7.4 x 4.3	8.0 x 4.5	8.0 x 3.3
M5.0	9.3 x 5.3	10.0 x 5.5	10.0 x 4.2
M6.0	10.4 x 6.4	11.0 x 6.6	11.0 x 5.0
M8.0	13.5 x 8.4	15.0 x 9.0	15.0 x 6.8
M10	16.5 x 10.5	18.0 x 11	18.0 x 8.5
M12	19.0 x 13	20.0 x 14	20.0 x 10.2
M14	24.0 x 15	24.0 x 16	-
M16	26.0 x 17	26.0 x 18	-

INDEXABLE COUNTER BORE

Video

Features

- Available in materials: P K M S H
- Cost **300~500%** SAVING
- Applicable type is available — max. 300mm
- Applicable Machines — Milling / Drilling / Radial drilling
- Efficiency **300%** UP
- Durability **300%** UP

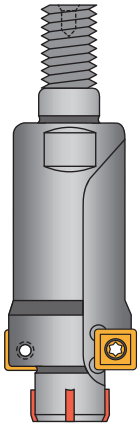
Product Design

CBK

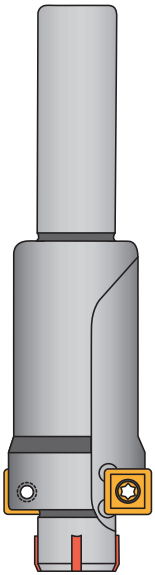
Counter bore tools application for bolts, nuts & screws

Patent No. ZL 01 2 23413.3

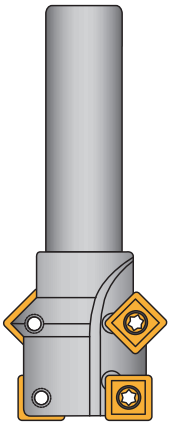
PCT Priority



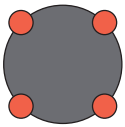
HBM



CBK



CBI

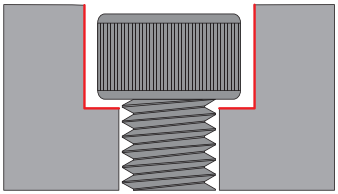


CBK

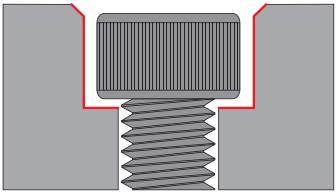
better cutter toollife
with patented carbide strip

Counterbore

Screw ranges M8~M36



counterbore

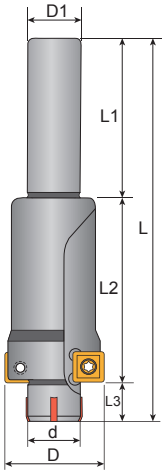


counterbore + chamfer

PRODUCT SPECIFICATIONS

Counterbore Toolholders

- Inserts P. 245
- Cutting Data P. 245



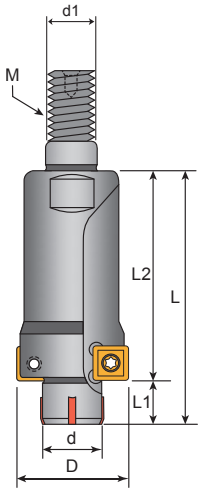
CBK

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							0.12				
CBK-10S	20												
CBK-12		13.4	12	80	35	37			0.16	22000		C02506	
CBK-12S	22												
CBK-14	24	14.9							0.20		09T308	C04007	T15P
CBK-14S	25	15.4											
CBK-16	26	17.4		90	38	44			0.24	17000		C04008	
CBK-16S	27												

Counterbore Combi Cutters

- Toolholder P. 285
- Inserts P. 245
- Cutting Data P. 245



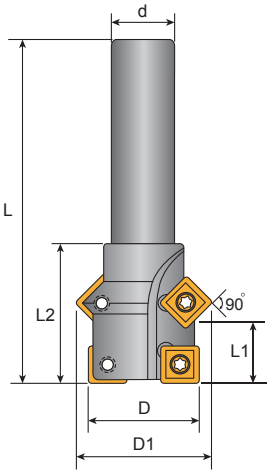
HBM

DIN 373

Order code	Dimensions (mm)							Z	KG	MAX RPM	Inserts SDET	Screw	Key
	D	d	L	L1	L2	M	d1						
HBM-16	26	17.4	48	8	40	16	22	2	0.23	17000	09T308	C04008	T15P
HBM-18	29	19.4	53		45			3	0.28				
HBM-20	33	21.9	56		48				0.33	15000			
HBM-22	36	23.4	60	10	50				0.40			C04011	
HBM-24	40	25.9	62		52				0.47	12000			
HBM-30	50	32.9							0.56				
HBM-36	58	38.8							0.65	10000			

Counterbore + Chamfer Toolholders

- Inserts P. 245
- Cutting Data P. 245

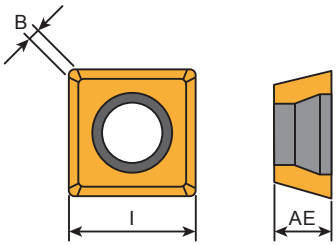


CBI

DIN 373

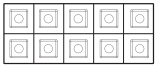
Order Code	Dimensions (mm)						Z	Zc	KG	MAX RPM	Inserts SDET	Screw	Key
	D	d	D1	L	L1	L2							
CBI-08	15	10	20.0	65	9	23	4	2	0.09	25000	060208	C025045	T08P
CBI-10	18		22.0		11				0.09				
CBI-12	20	12	23.8	70	13				0.12	22000			
CBI-14	24		31.4		15	30			0.17		09T308	C04007	T15P
CBI-16	26		33.4	80	16.5	33			0.20	17000		C04008	
CBI-18	29	16	35.4		19.5	36			0.25	16000			
CBI-20	33		37.4		21				0.27			C04011	
CBI-22	36	20	40.4	90	23.5	40			0.41	15000			
CBI-24	40		44.4		25	43			0.45				
CBI-30	50	25	53.4	100	34	50	6	3	0.71	14000			
CBI-36	58		61.4	110	38	60			0.94				

SDET / SEHT Inserts



Tolerances (mm)

I	AE	B
±0,03	±0,025	±0,03



Inserts 10 PCS / Box

Code	Dimensions (mm)		
	I	AE	B
060208	6.0	2.3	0.4
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	◎									

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

Counterbore

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	0.06 0.10	0.10 0.15	B100	B100
3	35-60	0.06 0.10	0.08 0.12	B100	B100
4-5-6	30-55	0.06 0.10	0.08 0.10	B100	B100
7	20-30	0.06 0.08	0.06 0.08	B100	B100
12-13	40-70	0.08 0.12	0.10 0.15	F30	F30
14-15	35-65	0.08 0.10	0.10 0.15	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 ø4 - ø110 mm.

INDEXABLE CHAMFER KING

PATENTED

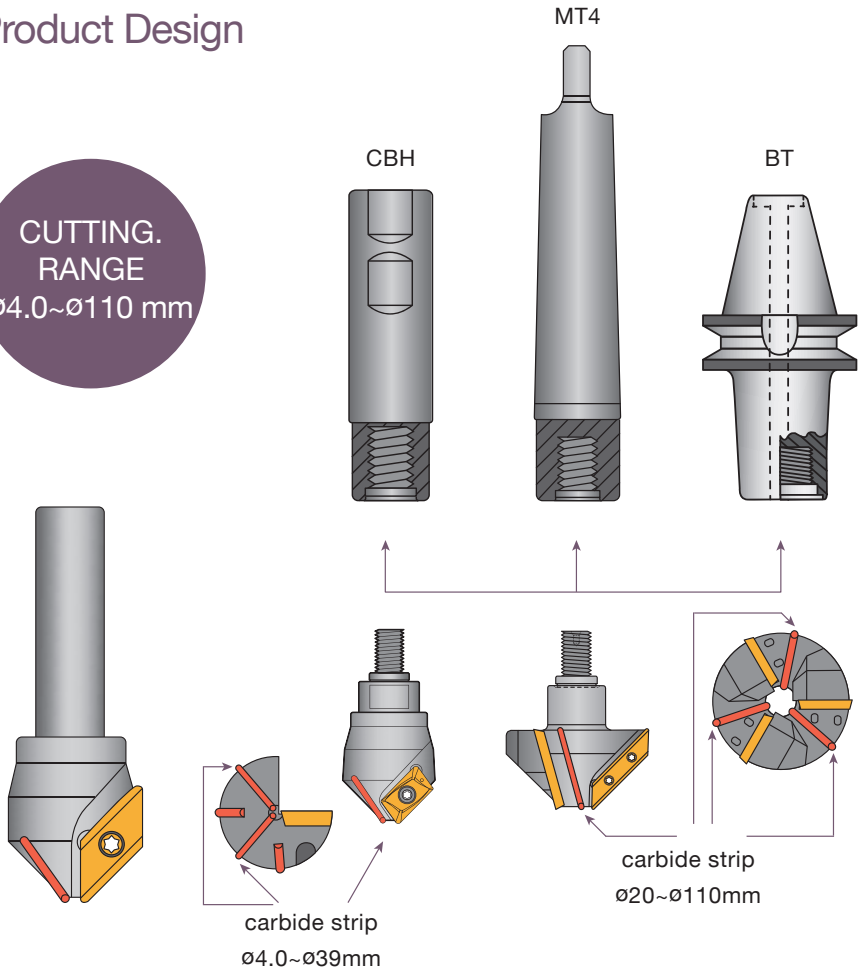
Video

Features

- Available in materials: P K M N S H
- 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



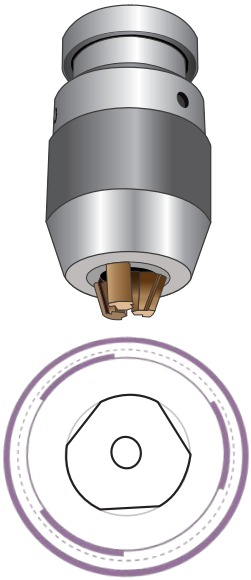
Carbide Strip Cutter With Carbide Inserts:

- 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

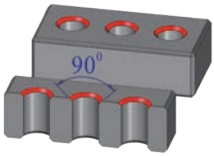
The shank with three flat designs is mo e suitable for drilling machine (three-jaw chuck) which achieves stable clamping and longer tool life.

▲ Optimal surface finishin

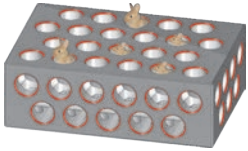


▲ Top view of the shank

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.

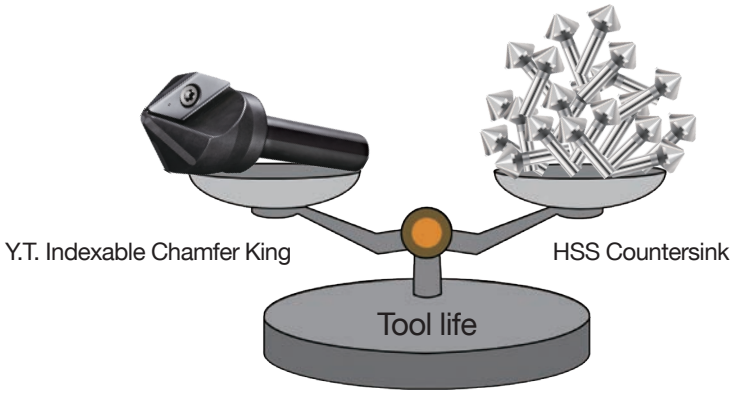
PIN

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

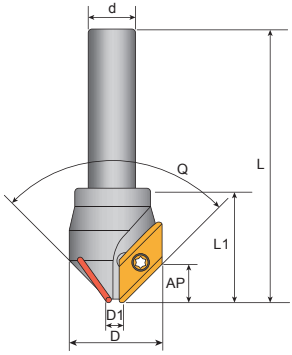
Coated carbide insert provides excellent toolife. Insert with 2 cutting edges maximizes toolcost-saving.



PRODUCT SPECIFICATIONS

Chamfer King Toolholders

- Inserts P. 257
- Cutting Data P. 258 - 259



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	C04011	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			0.32	25000	190408	C04011	T15P
CI-36-90° -2								2	0.33				

• 100°

Order Code	Dimensions(mm)						Q	Z	KG	MAX RPM	Inserts ADGT/XDGT	Screw	Key
	D1	D	d	L	AP	L1							
CI-12-100°	4	10	10	60	3	14	100°	1	0.05	45000	060204	C018035	T06P
CI-24-100°	5	24		65	7.5	27			0.15	35000	120308	C03506	T10P
CI-38-100°	15	38	12	78	10	38			0.40	25000	190408	C04011	T15P
CI-38-100° -2								2	0.41				

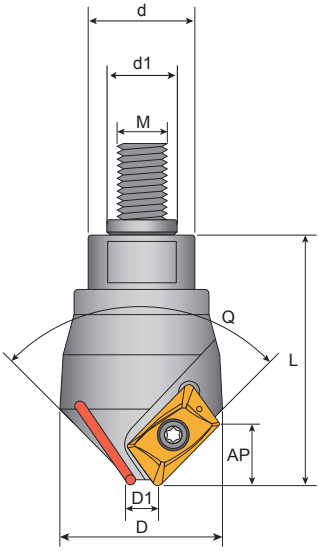
• 120°

Order Code	Dimensions(mm)						Q	Z	KG	MAX RPM	Inserts XDGT	Screw	Key
	D1	D	d	L	AP	L1							
CI-26-120°	7	26	10	65	5	27	120°	1	0.18	35000	120308	C03506	T10P
CI-39-120°	11	39	12	78	8	35			0.36	25000	190408	C04011	T15P

• Insert is included with purchase of a chamfer king.

Chamfer King Toolholders

- Combi holders P. 255 - 256
- Inserts P. 257
- Cutting Data P. 258 - 259



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	C04011	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	C04011	T15P

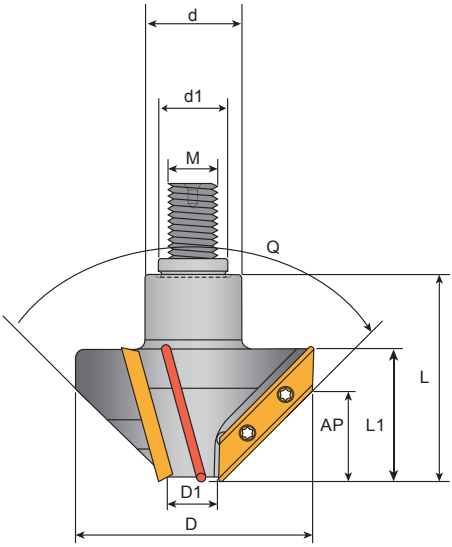
• 120°

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	C04011	T15P

• Insert is included with purchase of a chamfer king.

Chamfer King Toolholders

- Combi holders P. 255 - 256
- Insert P. 257
- Cutting Data P. 258 - 259



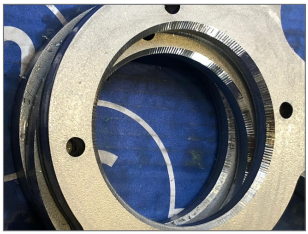
HCI

• 90°

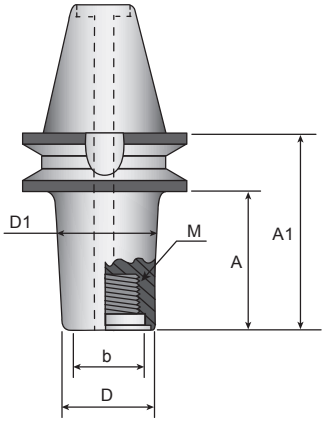
Order Code	Dimensions (mm)									Z	KG	MAX RPM	Inserts XDGT	Screw	Key
	D1	D	d	d1	L	AP	L1	M	Q						
HCI-76-90°	20	76	30	22	65	28	41	16	90°	3	0.85	13700	400408	C04011	T15P
HCI-110-90°	55	110									1.55	10900			

Note:

- For clunker radial drilling machine which is too stiff to position at the hole center of workpiece it might cause vibration and poor surface finishing during machining.
- For workpieces which are heavy and difficult to align the toolcenter, it might cause vibration and results in chatter marks on the chamfering surface.



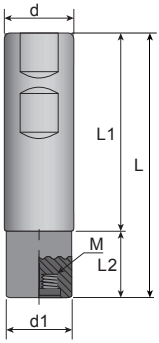
BT Arbor (Screw Type)



BT

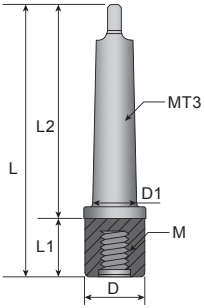
Order Code	Dimensions (mm)						KG
	D	A	A1	b	D1	M	
BT40-2380A	23	53	78	14	28	M12	1.40
BT40-23120A		93	118		31		2.00
BT40-3080A	30	53	78	22	35	M16	
BT40-30120A		93	118		38		2.40
BT40-4080A	40	53	78	28	45	M18	
BT40-40120A		93	118		48		2.90
BT50-2380A	23	42	77	14	28	M12	4.60
BT50-23120A		82	117		31		4.80
BT50-3080A	30	42	77	22	35	M16	4.60
BT50-30120A		82	117		38		5.50
BT50-4080A	40	42	77	28	45	M18	5.30
BT50-40120A		82	117		48		6.30
BT50-5080A	50	42	77	36	55	M25	6.10
BT50-50120A		82	117		58		7.00
BT50-50160A		122	157		61		8.10

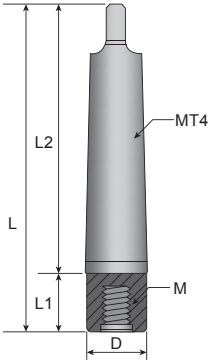
Chamfer King Combi Toolholders



CBH

Order Code	Dimensions (mm)						
	d	d1	L1	L2	L	M	KG
CBH-1009-100	10	9	60	20	80	M6	0.05
CBH-1211-120	12	11	80		100		0.09
CBH-1211-140			100		120		0.11
CBH-1616-100	16	16	-	-	70	M8	0.11
CBH-1615-120		15	70	20	90		0.14
CBH-1615-150			95	25	120		0.18
CBH-3232-120	32	32	-	-	80	M16	0.48
CBH-3230-140		30	80	20	100		0.56
CBH-3230-200			130	30	160		0.92
CBH-3230-240			170		200		1.16
CBH-3230-300			210	50	260		1.53

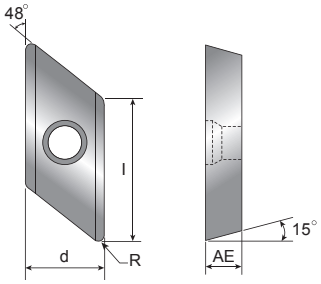




MTH

Order Code	Dimensions (mm)							
	D	D1	L	L1	L2	M	MT	KG
MTH-3	30	23.83	140	40	100	M16	3	0.50
MTH-4	31.6	-	165		125	M16	4	0.60

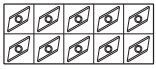
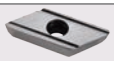
XDGT Chamfer King Insert



Tolerances (mm)

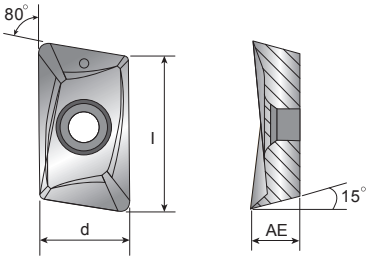
	d	AE	I
XDGT12	±0.03	±0.025	±0.03
XDGT19	±0.03	±0.025	±0.03
XDGT40	±0.03	±0.025	±0.03

Code	Dimensions (mm)				
	l	d	AE	Q	Q1
120308	12	8.3	3.10	0.8	-
190408	19	10.45	4.45	0.8	-
400408	40		4.70	0.8	-

Inserts	Order Code	Grades										
		Coated					Cermet			Uncoated		ME
		B100	C200	C250	F20	F30	CE25	CE100	CE60	K10	CE	
	XDGT120308TR-ME-C	★										 Inserts 10 PCS / Box
	XDGT190408TR-ME	★										
	XDGT400408TR-ME	★										Inserts 2 PCS / Box

★ All Materials

ADGT Chamfer King Insert



Tolerances (mm)

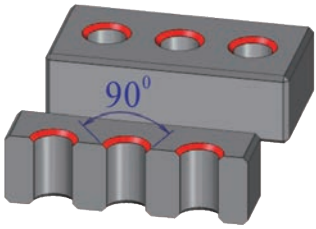
	d	AE
ADGT	±0.03	±0.025

Code	Dimensions (mm)		
	d	l	AE
060204	4.15	6.5	2.6

Inserts	Order Code	Grades										
		Coated					Cermet			Uncoated		ME
		B100	C200	C250	F20	F30	CE25	CE100	CE60	K10	CE	
	ADGT060204TR-ME-C	★										Inserts 10 PCS / Box

★ All Materials

TECHNICAL GUIDE



- Cutting data for hole countersinking

Material group												
Dia. of Hole (ϕmm)	Steel	Harden steel	Stainless steel	Cast iron			Aluminum			Titanium alloy Ni based superalloy 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 Fz:0.1 mm/tooth			Vc:15m/min Fz:0.12mm/tooth			Vc:50m/min Fz:0.15mm/tooth			Vc:20m/min Fz:0.1mm/tooth		
	RPM rev/min	Feed mm/min		RPM rev/min	Feed mm/min		RPM rev/min	Feed mm/min		RPM rev/min	Feed mm/min	
		1 Tooth	3 Teeth		1Tooth	3Teeth		1Tooth	3Teeth		1Tooth	3Teeth
5~7	1062	106	-	796	96	-	2654	398	-	796	80	-
8~10	708	71	-	531	64	-	1769	265	-	531	53	-
11~13	531	53	-	398	48	-	1327	199	-	398	40	-
14~16	425	42	-	318	38	-	1062	159	-	318	32	-
17~19	354	35	-	265	32	-	885	133	-	265	27	-
20~22	303	30	91	227	27	82	758	114	341	227	23	68
23~25	265	27	80	199	24	72	663	100	299	199	20	60
26~28	236	24	71	177	21	64	590	88	265	177	18	53
29~31	212	21	64	159	19	57	531	80	239	159	16	48
32~34	193	19	58	145	17	52	483	72	217	145	14	43
35~37	177	18	53	133	16	48	442	66	199	133	13	40
38~40	163	16	49	122	15	44	408	61	184	122	12	37
41~43	152	-	45	114	-	41	379	-	171	114	-	34
44~46	142	-	42	106	-	38	354	-	159	106	-	32
47~49	133	-	40	100	-	36	332	-	149	100	-	30
50~52	125	-	37	94	-	34	312	-	141	94	-	28
53~55	118	-	35	88	-	32	295	-	133	88	-	27
56~58	112	-	34	84	-	30	279	-	126	84	-	25

Material group												
Dia. of Hole (ϕmm)	Steel	Harden steel	Stainless steel	Cast iron			Aluminum			Titanium alloy Ni based superalloy 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 Fz:0.1 mm/tooth			Vc:15m/min Fz:0.12mm/tooth			Vc:50m/min Fz:0.15mm/tooth			Vc:20m/min Fz:0.1mm/tooth		
	RPM rev/min	Feed mm/min		RPM rev/min	Feed mm/min		RPM rev/min	Feed mm/min		RPM rev/min	Feed mm/min	
		1 Tooth	3 Teeth		1Tooth	3Teeth		1Tooth	3Teeth		1Tooth	3Teeth
59~61	106	-	32	80	-	29	265	-	119	80	-	24
62~64	101	-	30	76	-	27	253	-	114	76	-	23
65~67	97	-	29	72	-	26	241	-	109	72	-	22
68~70	92	-	28	69	-	25	231	-	104	69	-	21
71~73	88	-	27	66	-	24	221	-	100	66	-	20
74~76	85	-	25	64	-	23	212	-	96	64	-	19
77~79	82	-	24	61	-	-	204	-	92	61	-	18
80~82	79	-	24	59	-	-	197	-	88	59	-	18
83~85	76	-	23	57	-	-	190	-	85	57	-	17
86~88	73	-	22	55	-	-	183	-	82	55	-	16
89~91	71	-	21	53	-	-	177	-	80	53	-	16
92~94	68	-	21	51	-	-	171	-	77	51	-	15
95~97	66	-	20	50	-	-	166	-	75	50	-	15
98~100	64	-	19	48	-	-	161	-	72	48	-	14
101~103	62	-	19	47	-	-	156	-	70	47	-	14
104~106	61	-	18	45	-	-	152	-	68	45	-	14
107~109	59	-	18	44	-	-	147	-	66	44	-	13
110	58	-	17	43	-	-	145	-	65	43	-	13

CHAMFER MILLING CUTTERS SERIES

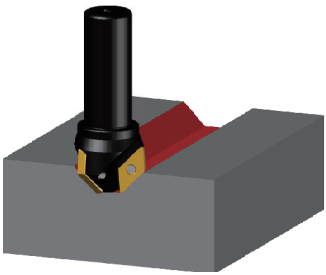
Features

- Available in materials: P K M N S H
- Cost **100~300%** SAVING
- Applicable Machines: CNC Milling machine
- Efficiency **300%** UP
- Durability **300%** UP

Product Application

Type of operation

1



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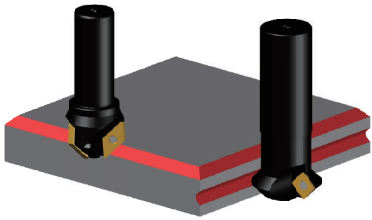

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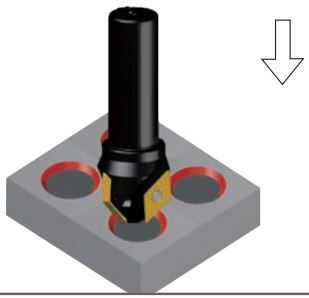

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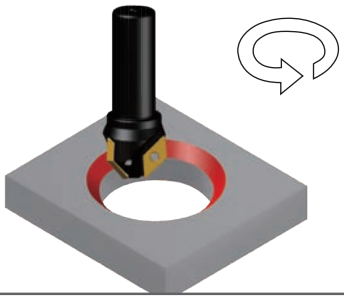
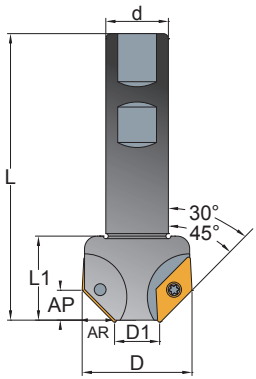


Chamfer Milling Cutters

- Inserts P. 275
- Cutting Data P. 258 - 259



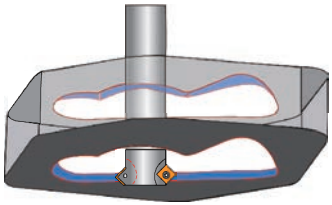
C

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	C04011	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	C04011	T15P
C-1770-45°	70	17	32	110	50	28	28		0.96	8500	400408		

Product Applications

Type of operation

1



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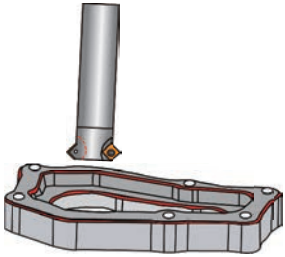

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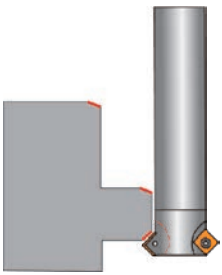

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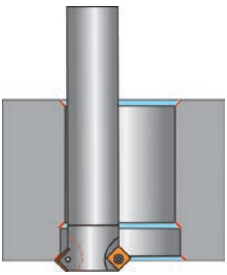
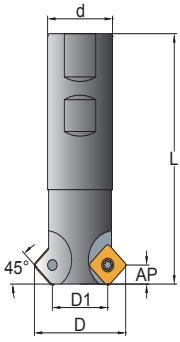
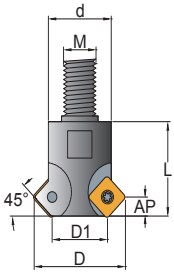


Dual Chamfer Milling Cutters

- Inserts P. 265
- Cutting Data P. 265
- Combi Toolholders P. 284 - 286

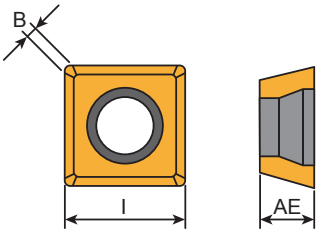
MC / HMC





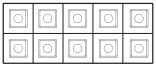
Order Code	Dimensions (mm)						Z	KG	MAX RPM	Inserts **SDET**	Screw	Key
	D	D1	d	L	AP	M						
MC-1218	18	11	12	90	3	-	2	0.12	35000	060208	C025045	T08P
MC-1625	25	19	16	100		-	3	0.21	25000			
MC-2032	32	22	20		6	-	2	0.31	17000	09T308	C04011	T15P
HMC-18	18	11	11	20	3	6	2	0.06	35000	060208	C025045	T08P
HMC-25	25	19	15	30		8	3	0.09	25000			
HMC-32	32	22	19		6	10	2	0.17	17000	09T308	C04011	T15P

Inserts - SDET



Tolerances (mm)

I	AE	B
±0,03	±0,025	±0,03



Inserts 10 PCS / Box

Code	Dimensions (mm)		
	I	AE	B
060208	6.0	2.3	0.4
09T308	9.0	3.97	0.5

Inserts	Order Code	Grades									
		Carbide					Metal cermet			Uncoated	
		B100	C200	C250	F20	F30	CE25	CE60		K10	CE
	SDET060208N-ME	◎				■					
	SDET09T308TN-M	◎									
	SDET09T308TN-ME	◎				■					

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

Recommended Cutting Data Insert Grades

Material Group	Recom. fz (mm/tooth)	Cutting Speed Vc (m/min)	Grades		
			SDET... M	SDET...ME	
1	0.08-0.20	130 160 185	-	B100	-
2	0.08-0.18		-	B100	-
3	0.08-0.18		-	B100	-
4	0.08-0.15	120 140 160	-	B100	-
5	0.06-0.13		-	B100	-
6	0.06-0.12	100 120 140	-	B100	-
7	0.08-0.18	65 80 90	B100	B100	-
8	0.08-0.15		-	B100	-
9	0.07-0.13		-	B100	-
10	0.06-0.12	60 70 80	-	B100	-
11	0.10-0.22		-	B100	-
12	0.10-0.22	100 120 140	-	F30	-
13	0.10-0.15		-	F30	-
14	0.10-0.15		-	F30	-
15	0.05-0.20		-	F30	-
16	0.05-0.20	400 500 600	-	-	-
17	0.06-0.10		-	-	-
18	0.06-0.15		-	-	-
19	0.05-0.08	30 40 50	-	B100	-
20	0.05-0.08		-	B100	-
21	0.06-0.10		-	B100	-
22	0.05-0.06		-	B100	-

CORNER ROUNDING CUTTER-390 SYSTEM

Patent No.
M473882
M474588
M473881

Patent No.
201310453057.2
201320772697.5

PCT Priority

Video

Features

- Available in materials: P M N S H
- Cost **300~500%** SAVING
- Applicable Machines: Milling
- Efficiency **300%** UP
- Durability **300%** UP

Product Design

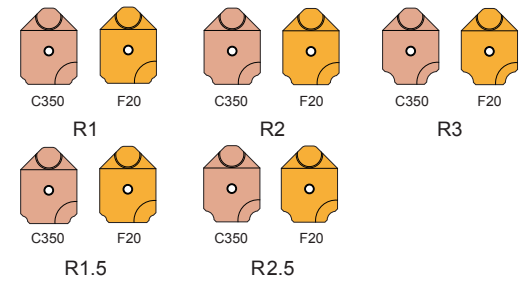
390 SYSTEM

- Max.eccentricity: ±0.008mm Accurate center positioning achieves excellent radius surface.
- 2 effective teeth.
- One shank fits max. 10 di ferent inserts.
- The shank in ⦰25mm are applicable with big radius inserts R6. R7. R8. R9. R10. that achieves marvellous productivity.

Insert radius: R1~R3

15-1616-100-R1~3

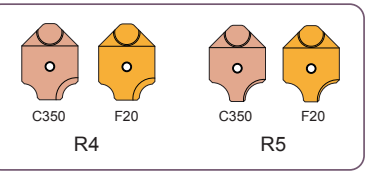
15-1616-130-R1~3



Insert radius: R4~R5

15-1616-100-R4~5

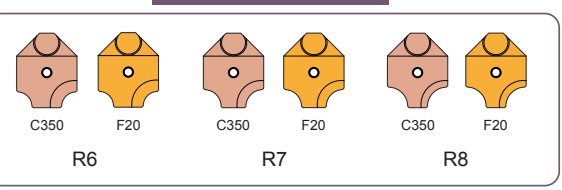
15-1616-130-R4~5



Insert radius: R6~R8

15-2525-100-R6~8

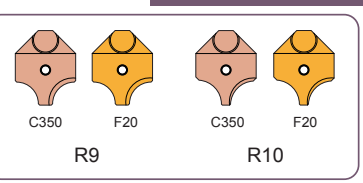
15-2525-130-R6~8



Insert radius: R9~R10

15-2525-100-R9~10

15-2525-130-R9~10

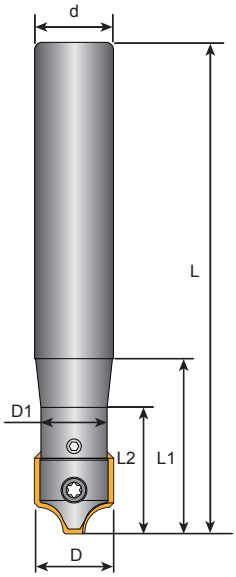


Chamfer

Indexable Corner Rounding Toolholders

- Inserts P. 269
- Cutting Data P. 271

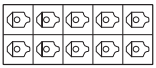
15



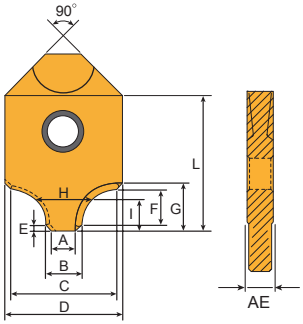
Order Code	Dimensions (mm)						KG	Inserts	Screw	Key
	D	D1	d	L	L1	L2				
15-1616-100-R1-3	16	14	16	100	35	25	0.21	R1-3	C03511 S0404	T10P L02
15-1616-130-R1-3				130			0.27			
15-1616-100-R4-5				100			0.21	R4-5		
15-1616-130-R4-5				130			0.27			
15-2525-110-R6-8	25	22	25	110	40	30	0.44	R6-8	C04017 S0508	T15P 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)

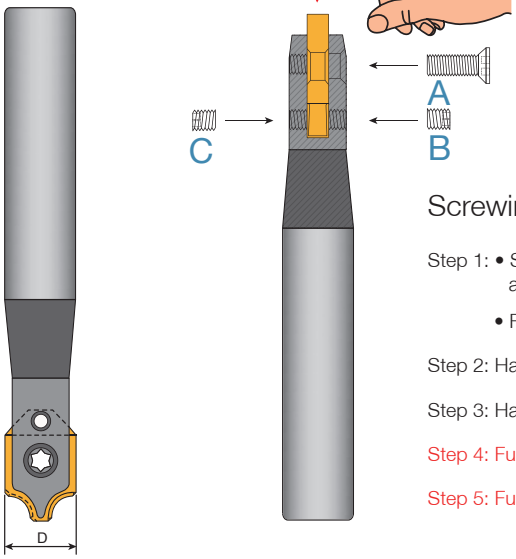
D : ± 0.05 AE : $^{+\ 0.01}_{-\ 0.02}$

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 the and grade of inserts, ie.: 25-1603-R1.0-E,F20

How to Fit Insert - Screw A.B.C.



Screwing the Inserts

Step 1: • Slot the insert into the shank and push against on the bottom.

• Fully tighten the screw A first

Step 2: Half tighten the screw B on one side

Step 3: Half tighten the screw C on other side

Step 4: Fully tighten the screw B again (Important)

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

Standard spare parts

Insert dimension D (mm)	Screw A	Screw B/C	Key	Key
16	C03510	S0404	T10P	L02
25	C04017	S0508	T15P	L025

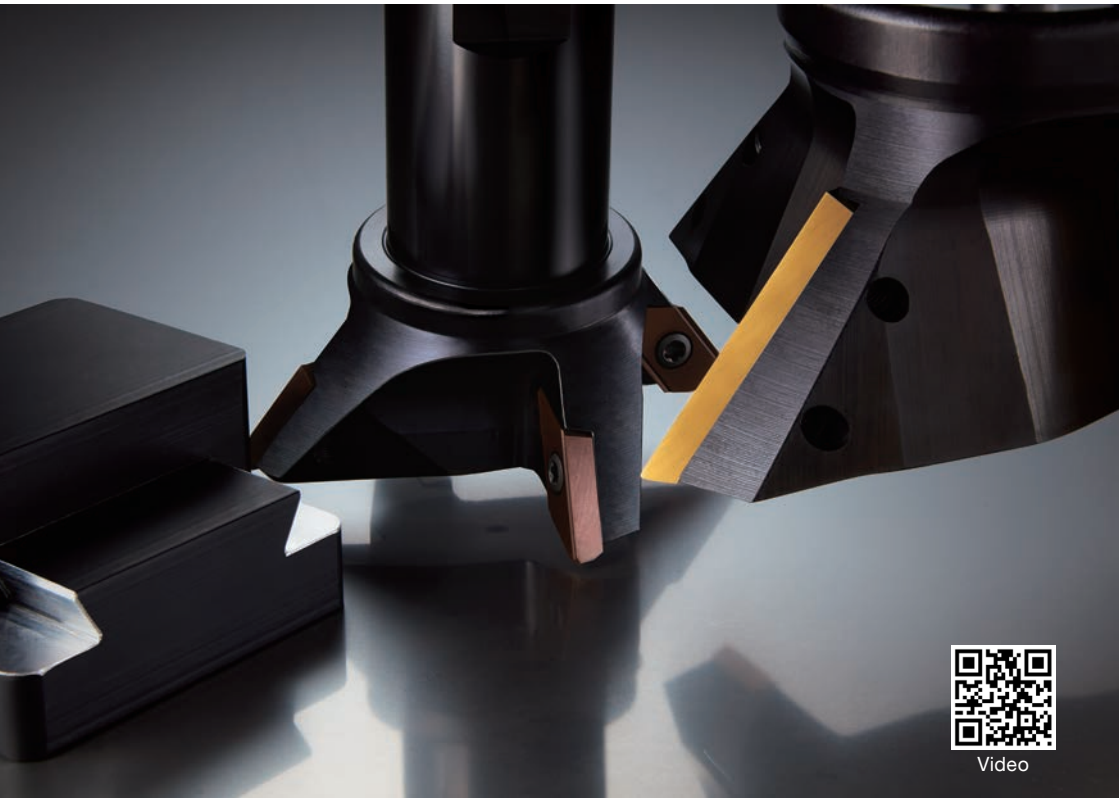
Recommended Cutting Data And Insert Grades

Material group	Recom. fz (mm/tooth) 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	

DOVETAIL MILLING CUTTERS SERIES



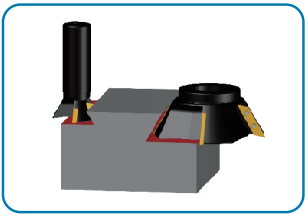
Features

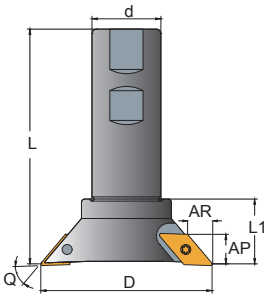
- Available in materials: P K M N S H
- Cost **100~300%** SAVING
- Applicable Machines: CNC Milling machine
- Efficiency **300%** UP
- Durability **300%** UP

PRODUCT SPECIFICATIONS

Dovetail Toolholders

- Inserts P. 275
- Cutting Data P. 276



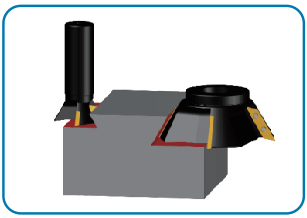


XD

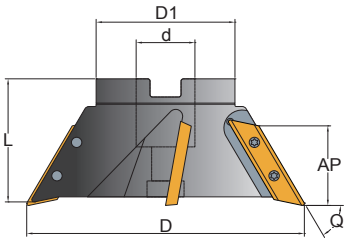
Order Code	Dimensions (mm)							Z	KG	MAX. RPM	Inserts XDGT	Screw	Key
	D	d	Q	L	AP	AR	L1						
XD2040-50	40	20	50	100	10	8	30	2	0.31	17000	120308	C03507	T10P
XD2040-55			55		10.5	7							
XD2040-60			60		11	6							
XD3260-50	60	32	50	110	14	11		3	0.76	7500	190408	C04011	T15P
XD3260-55			55		15	10							
XD3260-60			60		16	9							
XD3280-50	80		50		14	11		4	0.97	6500			
XD3280-55			55		15	10							
XD3280-60			60		16	9							

Dovetail Milling Cutters

- Inserts P. 275
- Cutting Data P. 276



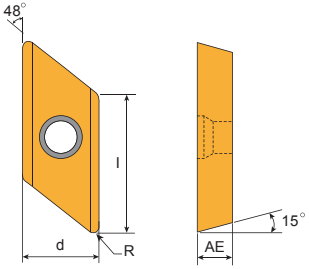
Big "AP"is available with insert XDGT40. Achieve better surface finising



XV

Order Code	Dimensions (mm)						Z	KG	MAX. RPM	Inserts XDGT	Screw	Key
	D	D1	d	L	AP	Q						
XV120-50-25.4	120	60	25.4	55	31	50	4	1.28	6000	400408	C04011	T15P
XV120-55-25.4					33	55						
XV120-60-25.4					35	60						
XV120-50-27			27		31	50						
XV120-55-27					33	55						
XV120-60-27					35	60						

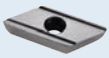
Recommended Insert Grades

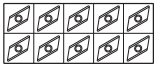


Tolerances (mm)

	d	AE	I
XDGT12	±0.03	±0.025	±0.03
XDGT19	±0.03	±0.025	±0.03
XDGT40	±0.03	±0.025	±0.03

Code	Dimensions (mm)				
	l	d	AE	R	Q1
120308	12	8.30	3.10	0.8	-
190408	19	10.45	4.45	0.8	-
400408	40		4.70	0.8	-

Inserts	Order Code	Grades										
		Coated					Cermet			Uncoated		
		B100	C200	C250	F20	F30	CE25	CE100	CE60	K10	CE	
	XDGT120308R-E				■							
	XDGT120308R-ME	◎				■						
	XDGT120308TR-M	◎										
	XDGT190408R-E				■							
	XDGT190408R-ME	◎				■						
	XDGT190408TR-M	◎										
	XDGT400408R-E				■							
	XDGT400408R-ME	◎				■						
	XDGT400408TR-M	◎										



Inserts 10 PCS / Box

Inserts
2 PCS / Box

- Steel Stainless Steel Steel/Stainless Steel/Super alloy Cast Iron Aluminum Steel/Cast Iron Steel/Stainless Steel/Cast Iron
- Prices and stocks are based on present conditions
- Please specify model numbers 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

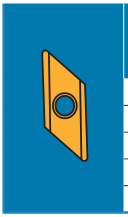
• Recommended Cutting speed, Vc(m/min)

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_c (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	-	-			-	-	-	-					

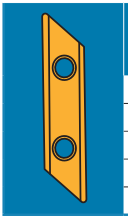
• Cutting Data

Operations	AR / Dc	Recom. fz (mm/tooth)			Speed factor
Full engagement	100%	0.02	0.07	0.12	1.00
Side milling	5%	0.06	0.20	0.34	1.60
	10%	0.04	0.14	0.25	1.50
	25%	0.03	0.09	0.16	1.30
Average chip thickness (hm)	-	0.01	0.04	0.08	-

• 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

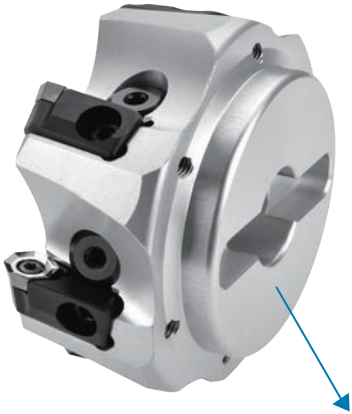
- Available in materials: N
- Cost: **150%** SAVING
- Applicable Machines: CNC Milling machine
- Efficiency: **150%** UP
- Durability: **150%** UP

Product Design

Clamping By A Catridge Centre-Lock Clamping

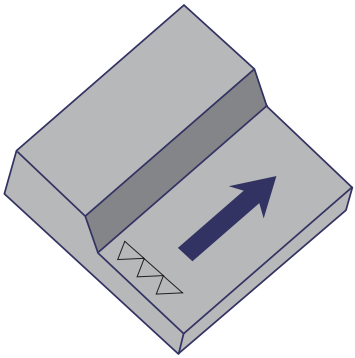
Designed with adjustable catridges by which inserts held in position and fine-tunable

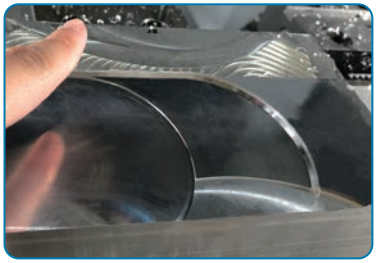
Octagon insert with 8 cutting edges, the best choice for economical cost



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

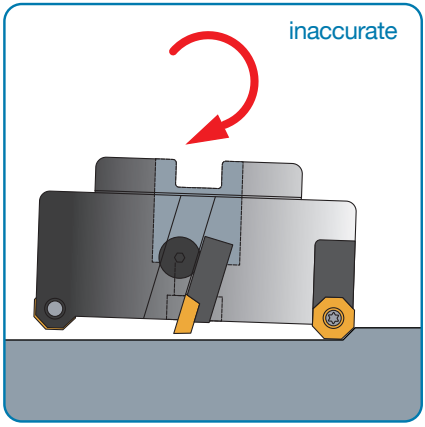
Surface Finish Ra < 1.5 μm

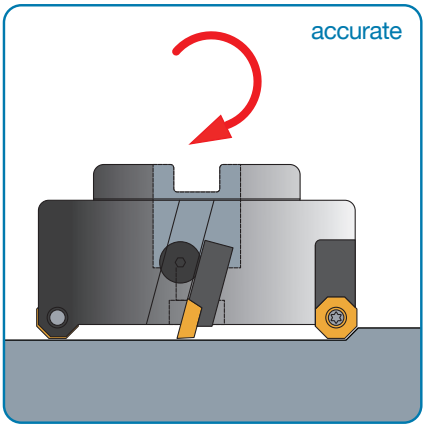


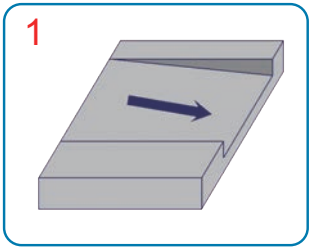


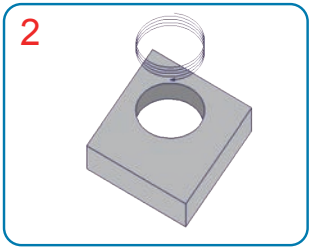
Features Description

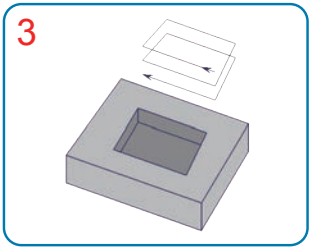
The importance of spindle accuracy in face milling.







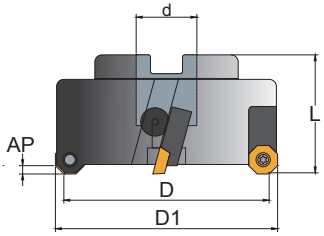




PRODUCT SPECIFICATIONS

Aluminium Alloy Face Milling Cutters

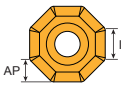
- Inserts P. 281
- Cutting Data P. 282



MO

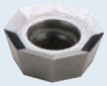
Order Code	Dimensions (mm)					Z	KG	MAX RPM	Inserts **ODGT**	Screw	Key
	D	D1	d	L	AP						
MO-080R-AL-C-22	80	92	22	50	3	5	0.68	4600	050408	C04011	T15P
MO-100R-AL-C-27	100	112	27			6	1.01	4100			
MO-125R-AL-C-27	125	137				7	1.60	3600			
MO-160R-AL-C-32	160	172	32	60		8	2.85	3100			
MO-200R-AL-C-40	200	212	40			10	4.35	2800			
MO-250R-AL-C-40	250	262				12	5.45	2500			
MO-300R-AL-C-40	300	312				14	7.95	2200			

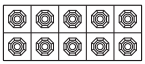
Insert - ODGT



Tolerances ±0.03 (mm)

Dimensions (mm)			
Code	S	I	AP
050408	4.7	12.7	3.5

Inserts	Order Code	Grades									
		Carbide					Cermet		Uncoated		E
		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 Instert 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	-	-	-	-	-
21	-	-	-	-	-
22	-	-	-	-	-

Recommended Cutting Data

• Recommended Cutting speed, Vc(m/min)

Material group	Grades						
	B100	C250	F20	CE60	CE	K10	F30
	fz (mm/tooth)						
						0.13 0.25 0.40	
	Cutting Speed, V_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

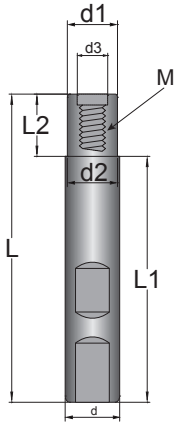
COMBIMASTER TOOLHOLDERS

Features

- Maximum Run Out At 3XD Is 5μm
- Cost **150%** SAVING
- Applicable Machines CNC Milling machine
- Efficiency **150%** UP
- Durability **150%** UP

PRODUCT SPECIFICATIONS

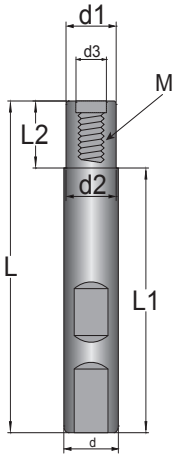
Combimaster Toolholders



CBH

Order Code	Dimensions (mm)								
	d	d1	d2	d3	L1	L2	L	M	KG
CBH-1010-80	10	10	10	6.5	-	-	60	M6	0.04
CBH-1009-100		9	9		60	20	80		0.05
CBH-1212-80	12	12	12		-	-	60		
CBH-1211-100		11	11		60	20	80		0.07
CBH-1211-120					80		100		0.09
CBH-1211-140					100		120		0.11
CBH-1616-100	16	16	16	8.5	-	-	70	M8	
CBH-1615-120		15	15		70	20	90		0.14
CBH-1615-150					95	25	120		0.18

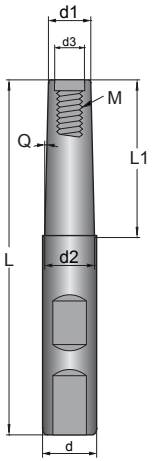
Combimaster Toolholders



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	30	130		0.46
CBH-2523-210					140		170		0.60
CBH-2523-240					170		200		0.72
CBH-2525-110		25	25		-	-	70		0.25
CBH-3232-120	32	32	32	22.0	-	-	80	M16	0.48
CBH-3230-140		30	30		80	20	100		0.56
CBH-3230-200					130	30	160		0.92
CBH-3230-240					170		200		1.16
CBH-3230-300					210	50	260		1.53
CBH-4240-220	42	40	40	28.0	130	20	150	M18	
CBH-50.849-215	50.8	49	49	36.0				M25	2.14
CBH-50.849-265					170	30	200		2.93

Combimaster Toolholders

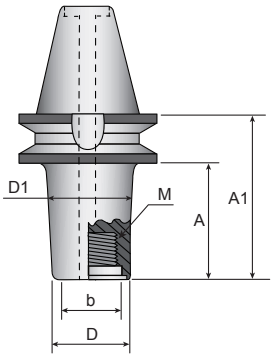


CBH

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						0.13
CBH-1611-150					60	130		2.5°	0.18
CBH-2015-160	20	15	19.5	8.5			M8	2°	0.25
CBH-2015-180					70	150			0.30
CBH-2015-230					80	200			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	14.0	75	160	M12	2°	0.81
CBH-3223-240			31.5		80	200			1.10
CBH-3230-240		30	39	22.0			M16	2.5°	1.16
CBH-3230-280					110	240		2°	1.42
CBH-4232-280	42	32	41.5						2.10
CBH-4232-340					120	300			2.63
CBH-4232-410					150	370			3.00

Face Milling Arbor

BT



Order Code	Dimensions (mm)						
	D	A	A1	b	D1	M	KG
BT40-2380A	23	53	78	14	28	M12	1.40
BT40-23120A		93	118		31		2.00
BT40-3080A	30	53	78	22	35	M16	
BT40-30120A		93	118		38		2.40
BT40-4080A	40	53	78	28	45	M18	
BT40-40120A		93	118		48		2.90
BT50-2380A	23	42	77	14	28	M12	4.60
BT50-23120A		82	117		31		4.80
BT50-3080A	30	42	77	22	35	M16	4.60
BT50-30120A		82	117		38		5.50
BT50-4080A	40	42	77	28	45	M18	5.30
BT50-40120A		82	117		48		6.30
BT50-5080A	50	42	77	36	55	M25	6.10
BT50-50120A		82	117		58		7.00
BT50-50160A		122	157		61		8.10

APPENDIX

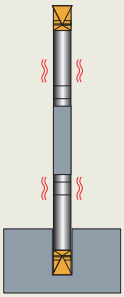
- RELEVANT INFORMATION

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	1. Cutting speed too high 2. Feed,fz too low, 3. chip is too thin 4. Insufficient coolant	1. Reduce the cutting speed 2. Increase feed rate 3. Increase coolant flow rate 4.Climb milling 5.use coated insert
	Chipping of cutting edge	1. Chip is too thick 2. Vibration	1. Reduce feed rate or increase RPM 2. Use the tangential arc method 3. Improve stability, minimize tool overhang 4. Increase number of infeed passes 5. Check toolholder run-out or insert mounting tolerance 6.Use conventional milling
	Material build up on the cutting edge	1. Unsuitable carbide grade 2. Cutting zone temperature is too low 3. Very sticky material, such as low-carbon steel, scainless steels, and aluminum	1. Use a coated carbide grade 2. Increase the cutting speed 3. Increase feed rate 4. Increase coolant flow rate
	Excessive wear causing short tool life	1. Vibration 2. Chips re-cutting 3. Burr formation on component 4. Poor surface finish 5. Heat generation 6. Excessive noise	1. Increase feed rate 2. Reduce the cutting speed 3. Down milling 4. Effectively evacuate chips with compressed air or cutting fluid 6. Check recommended cutting data

	Problem	Possible cause	Solution
	Vibration/runout	1. Weak fixturing 2. Tool overhang too long 3. Feed rate is too high	1. Use correct cutting data 2. Check clamping of the workpiece and tool 3. Minimize overhang 4. Check tool holder run out 5. Choose a tool with fewer teeth 6. Increase number of infeed passes 7. Use up-milling in finishing
	Insufficient thread accuracy	Tool deflection	Reduce feed rate Execute a"zero"cut, and make sure the tool in correct center line

Material Classification G oups

• Steel

mat. group	The material group of workpieces						
	W.- Nr	EN	EN-Nr	DIN	BS	AFNOR	JIS
1	1.1133 1.1165 1.0301 1.0401 1.0402 1.0406 1.1121 1.1141 1.1151 1.1158 1.0037 1.0116 1.0044 1.0144	G 28 Mn6 C10 C22+N C25+N C 10E C 15R C 22E S235JR S235JRG2 S275J0H S275J2G3	1.1165 1.0301 1.0402 1.0406 1.1121 1.1141 1.1151 1.0037 1.0038 1.0149 1.0144	20 Mn5 30 Mn5 C 10 C 15 C 22 C 25 Ck 10 Ck 15 Ck 22 Ck 25 St 37-2 St 37-3 St 44-2 St 44-3 N	120 M 19 120 M 36 045 M 10 080 M 15 050 A 20 070 M 26 040 A 10 080 M 15 040 A 22 060 A 25 4360-40 C 4360-43 B 4360-43 C	20 M 5 AF 34 C 10; XC 10 AF3 7 C 12; XC 18 C 20 AF 50 C 30 XC 10 XC 15; XC 18 XC25; XC 18 XC 25 E24-2 E 24-3; E 24-4 E 28-2 E 28-3; E 28-4	SMnC 420 SMn 1 H; SCMn 2 S 10 C S 25 C S 10 C; S 9 CK S 15 C; S 15 CK S 22 C; S 20 CK S 25 C STKM 12 C SM 41 B SM 41 C
2	1.0721 1.0722 1.0723 1.0726 1.0727 1.0728 1.0711 1.0715 1.0736 1.0718 1.0737	10 S 20 15 SMn13 35 S20 46 S20 60 S20 11 SMn30 11 Smn37 11 SMnPb30 11 SMnPb37	1.0721 1.0725 1.0726 1.0727 1.0728 1.0715 1.0736 1.0718 1.0737	10 S 20 10 SPb 20 15 S 20 35 S 20 46 S 20 60 S 20 9 S 20 9 SMn 28 9 SMn 36 9 SMnPb 28 9 SMnPb 36	210 M 15 210 A 15 212 M 36 212 M 44 220 M 07 230 M 07 240 M 07	10 F 1 10 PbF 2 35 MF 4 45 MF 4 60 MF 4 S 250 S 300 S 250 Pb S 300 Pb	 SUM 32 SUM 21 SUM 22 SUM 22 L
3	1.5622 1.5423 1.1167 1.1157 1.0528 1.0501 1.0511 1.0503 1.0540 1.1178 1.1181 1.1186 1.1206 1.1203 1.0570 1.0535	 G 28 Mn6+QT C35+N C40+N E 335 C50+N C 30E C 35E C 40E C 50E C 55E S355JR E 360	 1.1165 1.0503 1.1178 1.1181 1.1186 1.1206 1.1203 1.0570 1.0070	14 Ni 6 16 Mo 5 36 Mn 5 40 Mn 4 C 30 C 35 C 40 C 45 C 50 Ck 30 Ck 35 Ck 40 Ck 50 Ck 55 St 52-3 St 70-2	 1503-245-420 150 M 36 150 M 36 080 A 30 060 A 35 080 M 40 080 M 46 080 M 50 060 A 30 080 M 36 080 M 40 080 M 50 070 M 55 4360-50 C	16 N 6 40 M 5 35 M 5 C 30 AF 55 C 35 AF 60 C 40 AF 65 C 45 C 50 XC 38 H1:XC 32 XC 42 H1 XC 48 H1 XC 55 E 36-3; E 36-4 A 70-2	 SB 450 M SMn 438 (H); SCMn 3 S 30 C S 40 C S 45 C S 50 C S 30 C S 35 C S 40 C S 55 C SM 50 YA
4	1.5680 1.7012 1.7335 1.7715 1.5732 1.5752 1.7015 1.7262 1.8521 1.5919 1.5415 1.2735 1.7337 1.7131 1.7139 1.5920 1.6587 1.7311 1.7264 1.7147 1.7149 1.7321 1.7323 1.2162	 13 CrMo 4 5 14 NiCr 14 16 Mo 3 16 MnCr 5 16 MnCrS 5 17 CrNiMo 6 20 CrMo 5 20 MnCr 5 20 MnCrS 5	 1.7335 1.5752 1.5415 1.5715 1.7139 1.6587 1.7264 1.7147 1.7149	12 Ni 19 13 Cr 2 13 CrMo 4 4 14 MoV 6 3 14 NiCr 10 14 NiCr 14 15 Cr 3 15 CrMo 5 15 CrMoV 5 9 15 CrNi 6 15 Mo 3 15 NiCr 14 16 CrMo 44 16 MnCr 5 16 MnCrS 5 18 CrNi 8 18 CrNiMo 6 20 CrMo 2 20 CrMo 5 20 MnCr 5 20 MnCrS 5 20 MoCr 4 20 MoCrS 4 21 MnCr 5	 1501-620 Gr. 27 1503-660-440 655 M 13 523 M 15 S 107 1501-240 1501-620 Gr. 27 527 M 17 820 A 16	Z 18 N 5 15 CD 3.5 14 NC 11 12 NC 15 12 C 3 12 CD 4 16 NC 6 15 D 3 10 NC 12 15 CD 4.5 16 MC 5 20 NC 6 18 NCD 6 18 CD 4 20 MC 5 20 MnCrS 5 20 NC 5	SNC 415 (H) SNC 815 (H) SCr 415 (H) SCM 415 (H) SNC 22 SCR 415 SCM 421 SMnC 420 (H) SMnC 21H SCR 420H

• Steel

The material group of workpieces							
UNI	SS	AISI/ASTM	UNS	Condition	Misc. Brands	Structure	Form
G 22 Mn 3		1022; 1518	G10220				
		1330	G13300				
C 10		1010	G10100				
C 15; C 16	1350	1015	G10170				
C 20; C 21	1450	1023	G10200				
C 25		1025					
C 10	1265	1010	G10100				
15; C 16	1370	1015	G10170				
C 20		1022					
C 25		1025	G10250				
Fe 360 B	1311						
Fe 360 D FF	1312; 1313	A 573 Gr. 58					
Fe 430 B FN	1412	A 570 Gr. 40					
Fe 430 D FF	1412; 1414	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		4520	G45200				
	2120	1335	G13350				
		1039	G10390				
C 35	1550	1035	G10350				
C 40		1040					
C 45	1650	1045	G10430				
		1049					
		1030					
C 35	1572	1035	G10340				
C 40		1040					
		1050					
C 50		1055					
Fe 510 B; C; D	2172; 2132						
Fe 690	1655	1055					
		2515					
14 CrMo 4 5	2216	A 182-F11; F12					
16 NiCr 11		3415					
		3310; 9314	G 33106				
		5015	G 50150				
12 CrMo 4							
16 CrNi 4		4320					
16 Mo 3	2912	A 204 Gr. A					
		P6	T 51605				
14 CrMo 4 5	2216	A 387 Gr.12 Cl.2					
16 MnCr 5	2511	5115	G51170				
18 NiCrMo 7							
20 MnCr 5							
		5120	G51200				
		5120 H					

• Steel

mat. group	The material group of workpieces						
	W.- Nr	EN	EN-Nr	DIN	BS	AFNOR	JIS
4	1.6523	20 NiCrMoS 2 2	1.6526	21 NiCrMo 2	805 M 20	20 NCD 2	SNCM 220 (H)
	1.7271			23 CrMoB 3 3			
	1.7218	25 CrMo 4	1.7218	25 CrMo 4	1717 CDS 110	25 CD 4 S	SCM420;SCM430
	1.7325			25 MoCr 4			
	1.7326			25 MoCrS 4			
	1.7030	28 Cr4	1.7030	28 Cr 4	530 A 30		
	1.6513			28 NiCrMo4			SNCM 431
	1.7707			30 CrMoV 9			
	1.6580			30 CrNiMo 8	823 M 30	30 CND 8	SNC 836
	1.8519	31 CrMoV 9	1.8519	31 CrMov 9		32 CDV 12	
	1.5755			31 NiCr 14	653 M 31	30 NC 11	
	1.7020			32 Cr 2			SCr 430 (H)
	1.7361			32 CrMo 12	722 M 24	30 CD 12	SCM 432;
	1.7033	34 Cr 4	1.7033	34 Cr 4	530 A 32	32 C 4	SCCrM3
	1.7220	34 CrMo 4	1.7220	34 CrMo 4	708 A 37	35 CD 4	
	1.2330			35 CrMo 4	708 A 37	34 CD 4	
	1.5864			35 NiCr 18			
	1.6511	36CrNiMo4+TA		36 CrNiMo 4	816 M 40	40 NCD 3	
	1.5736			36 NiCr 10		35 NC 11	
	1.5710			36 NiCr 6	640 A 35	35 NC 6	
	1.7034			37 Cr 4	530 A 36	38 C 4	
	1.5122			37 MnSi 4			
	1.7003	38 Cr2	1.7003	38 Cr 2		38 C 2	
	1.5120			38 MnSi 4			
	1.8523			39 CrMoV 13 9	897 M 39		
	1.2311			40 CrMnMo 7			
	1.2312			40 CrMnMoS 8 6		40 CMD 8S	SCr 440 (H)
	1.2738			40 CrMnNiMo 8		40 CND 8	SCM 440
	1.7035	41 Cr 4	1.7035	41 Cr4	530 M 40	42 C 4	SCr 440
	1.7223			41 CrMo 4	708 M 40	42 CD 4 TS	SCM 440 (H)
	1.7045			42 Cr 4	530 A 40	42 C 4 TS	
	1.7225	42 CrMo 4	1.7225	42 CrMo 4	708 M 40	42 CD 4	
	1.7561			42 CrV 6			
	1.5223			42 MnV 7			
	1.3563			43 CrMo 4			
	1.3561			44 Cr 2			
	1.7006			46 Cr 2		42 C 2	
	1.5121			46 MnSi 4			SCM 445 (H)
	1.3565			48 CrMo 4			SUP 10
	1.7228			50 CrMo 4	708 A 47		
	1.8159	50 CrV 4	1.8159	50 CrV 4	735 A 50	50 CV 4	
	1.5131	50 MnSi4	1.5131	50 MnSi 4			SUP 9(A)
	1.5141			53 MnSi 4			
	1.7176	55 Cr 3	1.7176	55 Cr3	527 A 60	55 C 3	
	1.0904	55 SiCr7	1.7100	55 Si 7	250 A 53	55 S 7	SUP 7
	1.2103			58 SiCr 8			
	1.0961			60 SiCr 7		60 SC 7	
	1.2101			62 SiMnCr4			
	1.1730			C 45W		Y3 42	
	1.1820			C 55W			SK7
	1.0601	C60+N	1.0601	C 60	080 A 62	CC 55	
	1.1740			C 60W		Y3 55	
	1.1744			C 67W			
	1.1520			C 70W1			
	1.1620			C 70W2			
	1.1750	C 75 W	1.1750	C 75W	BW 1A		SKC 3; SK 5;
	1.1525			C 80W1		Y1 90; Y1 80	SK 6
	1.1625			C 80W2	BW 1 B	Y1 80	SK 5
	1.1830			C 85W		Y3 90	S 45 C
	1.1191	C 45E	1.1191	Ck 45	080 M 46	XC 42	S 58 C
	1.1221	C 60E	1.1221	Ck 60	080 A 62	XC 60	
	1.1231	C 67S	1.1231	Ck 67	060 A 67	XC 68	
	1.1248	C 75S	1.1248	Ck 75	060 A 78	XC 75	
	1.8159			GS-50 CrV 4			
	1.0060	E 335	1.0060	St 60-2	4360-SSE; SSC	A 60-2	SM 58

• Steel

The material group of workpieces							
UNI	SS	AISI/ASTM	UNS	Condition	Misc. Brands	Structure	Form
20 NiCrMo 2	2506	8620	G86170				
25 CrMo 4 (KB)	2225	4130	G41300				
		5130					
30 NiCrMo 8							
32 CrMo 12	2240						
34 Cr 4 (KB)		5132	G51320				
35 CrMo 4	2234	4135; 4137	G41350				
35 CrMo 4	2234	4135	T 51620				
38 NiCrMo 4 (KB)		9840	G98400				
35 NiCr 9		3435					
		3135					
38 Cr 4		5135					
38 Cr 2							
36 CrMoV 13 9							
		P 20					
		P 20+S					
		P 20+Ni					
41 Cr 4		5140	G51400				
41 CrMo 4	2244	4142; 4140	G41420				
42 Cr 4	2244	5140					
42 CrMo 4	2244	4142; 4140	G41400				
45 Cr 2		5045					
		5045					
		4150	G41470				
51 CrV 4	2230	6150	H61500				
55 Cr 3	2253	5155	G51550				
55 Si 8	2085; 2090	9255					
60 SiCr 8		9262					
C60		1060	G10600				
		W1	T72301				
C 80 KU		W 108					
C 80 KU							
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	2302	410; CA-15	S41000			Martensite	
X 10 CrAl 12		405	S40500			Ferrite	
X 16 Cr 26		446	S44600			Ferrite	
	2302	410 S	S41000			Martensite	
X 10 CrS 17	2383	430 F	S43020			Ferrite	
X 12 CrS 13	2380	416	S41600			Martensite	
			J91201			Martensite	
	2326	444				Ferrite	
	2326	444				Ferrite	
		309	S40977			Ferrite	
X 6 CrNi 13 04	2385		S41500		F6NM	Martensite	
X 6 CrTi 12		409 L	S40900			Ferrite	
X 6 Cr 13	2301	403	S41008			Ferrite	
X 8 Cr 17	2320	430	S43000			Ferrite	
X 6 CrAl 13		405	S40500			Ferrite	
X 6 CrTi 17		430 Ti	S43036			Ferrite	
X 6 CrNb 17		430 Nb				Ferrite	
12 CrMo 9 10	2218	A 182-F22	J 21890				
100 Cr 6	2258	52100	G51986				
95 MnWCr 5 KU	2140	O1	T31501				
102 V 2 KU		W 210	T 72302				
107 WCr 5 KU							
107 CrV 3 KU		L2	T61202				
110 W 4 KU							
34 CrAlMo 7		A 355 CI. D	K 23545				
			K 52440				
			K 23745				
35 NiCrMo 6 (KW)	2541	4340					
40 NiCrMo 2 (KB)		8740	G87400				
		4340					
41 CrAlMo 7	2940	A 355 CI. A	K 24065				
45 WCrV 8 KU	2710	S1	T41901				
55 WCrV 8 KU							
90 MnVCr 8 KU		O2	T31502				
C 100 KU	1880	W 110					
C 100 KU							
C 120 KU		W 112					
C 140 KU							
	1870	1095	G10950				
	2322	446	S44600			Ferrite	
X 20 Cr 13	2303	420	S42000			Martensite	
			S42200			Martensite	
X 16 CrNi 16	2321-03	431	S43100			Martensite	
X 22 CrMoV 12 1	2317					Martensite	
X 30 Cr 13	2304	420	J91153			Martensite	
X 38 CrMo 16 1 KU		422					
	2387		-			Martensite	
X 40 Cr 14	2304,2314	420	S40280			Martensite	

• Steel

mat. group	The material group of workpieces						
	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 WKCV 18-05-04-0	SKH 51
	1.3346	HS 2-9-1	1.3346	S 2-9-1	BM 1	Z 110 DKCWV 09-08-04	
	1.3348	HS 2-9-2	1.3348	S 2-9-2		Z 85 DCWV 08-04-02-0	
	1.3249			S 2-9-2-8	BM 34	Z 100 DCWV 09-04-02-	
	1.3333	HS 3-3-2	1.3333	S 3-3-2			
	1.3343	HS 6-5-2	1.3343	S 6-5-2	BM 2		SKH 9; SKH 51
	1.3243	HS 6-5-2-5	1.3243	S 6-5-2-5		Z 85 WDCV 06-05-04-0	SKH 53
	1.3344	HS 6-5-3	1.3344	S 6-5-3	BM 4	Z85 WDKCV 06-05-05-04-02	SKH 52; SKH 53
	1.3345	S 6-5-3C	1.3345	S 6-5-3C			SKH 55
	1.3246	HS 7-4-2-5	1.3246	S 7-4-2-5		Z 120 WDCV 06-05-04-	
	1.2363	X 100 CrMoV 5	1.2363	X 100 CrMoV 5 1	BA 2		SKD 12
	1.4125	X 105 CrMo 17	1.4125	X 105 CrMo 17		Z 110 WKCDV 07-05-04	SUS 440 C
	1.2379	X 155 CrVMo 12 1		X 155 CrVMo 12 1	BD 2	Z 100 CDV 5	SKD 11
	1.2601			X 165 CrMoV 12		Z 100 CD 17	
	1.2709			X 2 NiCoMoTi 18 9 5		Z 160 CDV 12	
	1.2080	X 210 Cr 12	1.2080	X 210 Cr 12	BD 3		SKD 1
	1.2436			X 210 CrW 12		Z 2 NKD 19-09	SKD 2
	1.2706			X 3 NiCrMo 18 8 5		Z 200 C 12	
	1.2567			X 30 WCrV 5 3			SKD 4
	1.2581			X 30 WCrV 9 3	BH 21	E-Z 2 NKD 18	SKD 5
	1.2885			X 32 CrMoCoV 3 3 3		Z 32 WCV 5	
	1.2365			X 32 CrMoV 3 3	BH 10	Z 30 WCV 9	SKD 7
	1.2343			X 38 CrMoV 5 1	BH 11		SKD 6
	1.2367			X 38 CrMoV 5 3		32 DCV 28	
	1.2344	X 40 CrMoV 5 1	1.2344	X 40 CrMoV 5 1	BH 13	Z 38 CDV 5	SKD61
						Z 40 CDV 5	
Hardened steel							
7	1.3401	X 120 Mn 12	1.3401	X 120 Mn 12	BW 10	Z 120 M 12	SC MnH 1
Stainless steel							
8	1.4305	X 8 CrNiS 18 9	1.4305	X 10 CrNis 18 9	303 S 31	Z 10 CNF 18.09	SUS 303
	1.4310	X 9 CrNi 18 8	1.4310	X 12 CrNi 17 7	301 S 21	Z 12 CN 17.07	SUS 301
	1.4300	X 12 CrNi 18 8	1.4300	X 12 CrNi 18 8	302 S 25	Z 12 CN 18	SUS 302
	1.4546	X 5 CrNiNb 18 10	1.4546	X 5 CrNiNb 18 10	347 S 31		
	1.4301	X 5 CrNi 18 9	1.4301	X 6 CrNi 18 10	304 S 31	Z 6 CN 18.09	SUS 304
	1.4948	X 6 CrNi 18 11	1.4948	X 6 CrNi 18 11	304 S 51	Z 6 CN 18.09	SUS 304 H
	1.4303	X 4 CrNi 18 11	1.4303	X 6 CrNi 18 12	305 S 19	Z 8 CN 18.11 FF	SUS 305
	1.4550	X 6 CrNiNb 18 10	1.4550	X 6 CrNiNb 18 10	347 S 31	Z 6 CNNb 18.10	SUS 347
9	1.4583	X 5 CrNiMoNb 19 11 2	1.4583	X 10 CrNiMoNb 18 12	318 C 17	Z 6 CNDNb 17.13	SCS 22
	1.4335		1.4335		310 S 24	Z 12 CN 25.20	SUH 310; SUS 310 S
	1.4541	X 12 CrNi 25 21	1.4878	X 12 CrNi 25 21	321 S 51	Z 6 CNT 18.12	SUS 321
	1.4962	X 6 CrNiTi 18 10	1.4962	X 12 CrNiTi 18 9		Z 6 CNNb 18.10	
	1.4828	X 12 CrNiWTi 16 3	1.4828	X 12 CrNiWTi 16 3	309 S 24	Z 17 CNS 20.12	SUH 309
	1.4306	X 15 CrNiSi 20 12	1.4306	X 15 CrNiSi 20 12	304 S 12	Z 2 CN 18.10	SUS 304 L
	1.4404	X 2 CrNi 19 11	1.4404	X 2 CrNi 19 11	316 S 11	Z 2 CND 17.12.02	SUS 316 L
	1.4435	X 2 CrNiMo 17 12 2	1.4435	X 2 CrNiMo 17 13 2	316 S 12	Z 2 CND 17.13	SCS 16; SUS 316 L
	1.4438	X 3 CrNiMo 18 14 3	1.4438	X 2 CrNiMo 18 14 3	317 S 12	Z 2 CND 19.15.4	SUS 317L
		X 2 CrNiMo 18 15 4		X 2 CrNiMo 18 16 4			

• Steel

The material group of workpieces							
UNI	SS	AISI/ASTM	UNS	Condition	Misc. Brands	Structure	Form
	[2304]	-				Martensite	
X 45 CrNiW 18 9		SAE HNV 3				Martensite	
42 NiCrMo 15 7		6F7					
		440 A	S44002			Martensite	
X 80 CrSiNi 20		SAE HNV 6	S65006	sol. treated		PH	
X CrTi 12	2327	440 B	S44003			Martensite	
		6F2	T61206				
		L6					
HS 10-4-3-10							
			T12015				
		T15	T12001				
HS 18-0-1		T1	T12005				
HS 18-1-2-10		T5					
			T12004				
HS 18-1-1-5		T4	T11342				
HS 2-9-1-8		M42	T11301				
HS 1-8-1		H41; M1	T11307				
HS 2-9-2	2782	M7	T11333				
		M33;M34					
HS 3-3-2			T11302				
HS 6-5-2	2722	M2					
HS 6-5-2-5	2723	M35	T11323				
HS 6-5-3		M3 Cl.2	T11323				
		M3	T11341			Martensite	
HS 7-4-2-5		M41	T30102				
X 100 CrMoV 5 1 KU	2260	A2	S44004				
X 105 CrMo 17		440 C	T30402				
X 155 CrVMo 12 1 KU		D2					
X 166 CrMoW 12 KU	2310						
		18 MAR 300	T30403				
X 210 Cr 13 KU		D3					
X 215 CrW 12 1 KU	2312		K 93120				
X30 WCrV 5 3 KU			T20821				
X30 WCrV 9 3 KU		H21					
			T20810				
30 CrMoV 12 12 KU		H10	T20811				
X37 CrMoV 5 1 KU		H11					
			T20813				
X 40 CrMo 5 1 1 KU	2242	H13					
Hardened steel							
	2183	A128 Grade A					
Stainless steel							
X 10 CrNi 18 09	2346	303	S30300			Austenite	
X 12 CrNi 17 07	(2331)	301	S30100			Austenite	
	2331	302	S30200			Austenite	
X 6 CrNiNb 18 11		348	S34800			Austenite	
X 5 CrNi 18 11	2333	304; 304 H	S30400			Austenite	
X 5 CrNi 18 10 KW	2333	304 H	S30480			Austenite	
X 7 CrNi 18 10	2333	308; 305	S30500			Austenite	
X 6 CrNiNb 18 11	2338	347	S34700			Austenite	
X 6 CrNiMoNb 17 13	2361	318	S31008			Austenite	
X 6 CrNi 26 20	2337	310 S	S32100			Austenite	
X 6 CrNiTi 18 11		321; 321H	S34700			Austenite	
		347 H	S30900			Austenite	
	2352	309	S30403			Austenite	
X 3 Cr Ni 18 11	2348	304 L	S31603			Austenite	
X 2 CrNiMo 17 12 2	2353	316 L	S31603			Austenite	
X 2 CrNiMo 17 13 2	2367	316 L	S31703			Austenite	
X 2 CrNiMo 18 16		317 L				Austenite	

• Stainless steel

mat. group	The material group of workpieces						
	W.-Nr	EN	EN-Nr	DIN	BS	AFNOR	JIS
9	1.4311 1.4436 1.4308 1.4580 1.4571	X 2 CrNiN 18 10 X 5 CrNiMo 17 13 3 X 5 CrNi 19 10 X 6 CrNiMoNb 17 12 2 X 6 CrNiMoTi 17 12 2	1.4311 1.4436 1.4308 1.4580 1.4571	X 2 CrNiN 19 11 X 5 CrNiMo 17 13 3 X 6 CrNi 18 9 X 6 CrNiMoNb 17 12 2 X 6 CrNiMoTi 17 12 2	304 S 62 316 S 33 304 C 15 318 S 17 320 S 31	Z 2 CN 18. 10 Az Z 6 CND 18.12.03 Z 6 CN 18.10M Z 6 CNDNb 17.12 Z 6 CNDT 17.12	SUS 304 LN SUS 316 SUS 13 SUS 316 Ti
10	1.4841 1.4401	X 15 CrNiSi 25 20 X 5 CrNiMo 17 12 2	1.4841 1.4401	X 15 CrNiSi 25 20 X 5 CrNiMo 18 10	314 S 25 316 S 31	Z 15 CNS 25.20 Z 3 CND 17.11.1	SUH 310 SUS 316
11	1.4547 1.4563 1.4876 1.4864 1.4410 1.4507 1.4501 1.4406 1.4429 1.4439 1.4462 1.4462 1.4652 1.4362 1.4539 1.4539 1.4540 1.4460 1.4542	X 1 CrNiMoN 20 18 7 X 1 NiCrMoCuN 31 27 4 X 10 NiCrAlTi 32 20 X 12 NiCrSi 35 16 X 2 CrNimON 25 7 4 X 2 CrMoNICuN 25 6 3 X 2 CrNiMoCuWN 25 7 4 X 2 CrNiMoN 17 11 2 X 2 CrNiMoN 17 13 3 X 2 CrNiMoN 17 13 5 X 2 CrNiMoN 22 5 3 X 2 CrNiMoN 22 5 X 1 CrNiMoN 25 22 8 X 2 CrNiN 23 4 X 2 NiCrMoCu 25 20 5 X 1 NiCrMoCu 25 20 5 X 4 CrNiCuNb 16 4 X 3 CrNiMo 27 5 2 X 5 CrNiCnNb 16 4	1.4547 1.4563 1.4876 1.4864 1.4410 1.4507 1.4501 1.4406 1.4429 1.4439 1.4462 1.4462 1.4652 1.4362 1.4539 1.4539 1.4540 1.4460 1.4548	X 1 CrNiMoN 20 18 7 X 1 NiCrMoCuN 31 27 4 X 10 NiCrAlTi 32 20 X 12 NiCrSI 36 16 X 2 CrNiMoN 25 7 4 X 2 CrMoNiCuN 25 6 3 X 2 CrNiMoCuWN 25 7 4 X 2 CrNiMoN 17 12 2 X 2 CrNiMoN 17 13 3 X 2 CrNiMoN 17 13 3 X 2 CrNiMoN 22 5 X 2 CrNiMoN 22 5 X 2 CrNiMoN 25 22 7 X 2 CrNiN 23 4 X 2 NiCrMoCu 25 20 5 X 2 NiCrMoCu 25 20 5 X 4 CrNiCuNb 16 4 X 4 CrNiMo 27 5 2 X 5 CrNiCuNb 17 4	X1CrNiMoN2018 7 Z 10 NC 32 21 NA 17 4 316 S 61 316 S 62 (316 S 63) 332 S 15 318 S 13 904 S 13	Incoloy 800 Z 20 NCS 33.16 Z 3 CHD 25.07 Az Z 3 CND 25.06 Az Z 3 CND 17.12 Az Z 3 CND 17.13 Az Z 3 CHD 18.14.05Az Z 2 CHD 22.05 Az Z 2 CHD 22.05 Az Z 2 NCDU 25 20 Z 4 CNUNb 16.4 M Z 3 CND 25.7 Az Z 6 CNU 17.4	NCF 800 SUH 330 SUS 316 LN SUS 316 LN (SUS 316LN) SUS 329 J 3L SUS 329 J 1 SUS 24;SUS 630
Cast iron							
12	0.6100 0.6150 0.7033 0.7040 0.7043	EN-GJL-100 EN-GJL-150 EN-GJS-350-22 EN-GJS-400-15 EN-GJS-400-18 EN-GJMB-350-10 EN-GJMB-450-6 EN-GJMB-550-4	0.6100 0.6150 0.7033 0.7040 0.7043 0.8135 0.8145 0.8155	GG-10 GG-15 GGG-35.3 GGG-40 GGG-40.3 GTS-35-10 GTS-45-06 GTS-55-04	Grade 100 Grade 150 Grade 350/22 Grade 420/12 Grade 370/17 B 340/12 P 440/7 P 540/5	Ft 10 D Ft 15 D FGS 370-17 FGS 400-12 FGS -370-17 B 340/12 P 440/7 P 540/5	FC 100 FC 150 FCD 350-22L FCD 400-18L FCMB35-10 PCMP45-06 PCMP55-04
13	0.6200 0.6250 0.7050 0.7060 0.7660 0.7661 0.7652 0.6660 0.6661	EN-GJL-200 EN-GJL-250 EN-GJS-500-7 EN-GJS-600-3 EN-GJSA-XNiCr20-2 EN-GJSA-XNiCr20-3 EN-GJLA-XNiMn 13-7 EN-GJLA-XNiCr 20-2 EN-GJLA-XNiCr 20-3 EN-GJMB-600-3	0.6200 0.6250 0.7050 0.7060 0.7660 0.7661 0.7652 0.6660 0.6661 0.8165	GG-20 GG-25 GGG-50 GGG-60 GGG-NiCr 20 2 GGG-NiCr 20 3 GGG-NiMn 13 7 GGL-NiCr 20 2 GGL-NiCr 20 3 GTS-65-02	Grade 220 Grade 260 Grade 500/7 Grade 600/3 Grade S2 Grade S2B Grade S6 Grade F2 P 570/3	Ft 20 D Ft 25 D FGS 500-7 FGS 600-3 FGS Ni20 Cr2 FGS Ni20 Cr3 FGS Ni13 Mn7 FGL Ni20 Cr2 FGL Ni20 Cr3 P 570/3	FC 200 FC 250 FCD 500-7 FCD 600-3 PCMP60-03
14	0.6300 0.7070 0.6655 0.6655 0.6657	EN-GJL-300 EN-GJS-700-2 EN-GJLA-XNiCuCr15-6-2 EN-GJLA-XNiCuCr15-6-3 EN-GJMB-700-2	0.6300 0.7070 0.6655 0.6656 0.8170	GG-30 GGG-70 GGL-NiCuCr 15 6 2 GGL-NiCuCr 15 6 3 GTS-70-02	Grade 300 Grade 700/2 Grade F1 P 690/2	Ft 30 D FGS 700-2 FGL Ni15 Cu6 Cr2 FGL Ni15 Cu6 Cr3 P 690/2	FC 300 FCD 700-2 PCMP70-02
15	0.6350 0.6040 0.7080 0.7670 0.7683 0.7677 0.7676 0.7683 0.7673 0.7665 0.7680 0.6676 0.6667 0.6680	EN-GJL-350 - EN-GJS-800-2 EN-GJSA-XNi22 EN-GJSA-XNi35 - EN-GJSA-XNiCr30-3 EN-GJSA-XNiCr35-3 EN-GJSA-XNiMn23-4 EN-GJSA-XNiSiCr20-5-2 EN-GJSA-XNiSiCr30-5-5 EN-GJSA-XNiCr30-3 EN-GJSA-XNiSiCr20-5-3 -	0.6350 0.6040 0.7080 0.7670 0.7683 0.7677 0.7676 0.7683 0.7673 0.7665 0.7680 0.6676 0.6667 0.6680	GG-35 GG-40 GGG-80 GGG-Ni 22 GGG-Ni 35 GGG-NiCr 30 1 GGG-NiCr 30 3 GGG-NiCr 35 3 GGG-NiMn 23 4 GGG-NiSiCr 20 5 2 GGG-NiSiCr 30 5 5 GGL-NiCr 30 3 GGL-NiSiCr 20 5 3 GGL-NiSiCr 30 5 5	Grade 350 Grade 400 Grade S3 Grade S2M Grade F3	Ft 35 D Fgl 400 FGS 800-2 FGS Ni22 FGS Ni35 FGS Ni30 Cr1 FGS Ni30 Cr3 FGS Ni35 Cr3 FGS Ni23 Mn4 FGS Ni20 Si5 Cr2 FGS Ni30 Si5 Cr5 FGL Ni30 Cr3 FGL Ni20 Si5 Cr3 FGL Ni30 Si5 Cr5	FC 350 FCD 800-2 A1200 (A1050)

• Stainless steel

The material group of workpieces							
UNI	SS	AISI/ASTM	UNS	Condition	Misc.Brands	Structure	Form
X 2 CrNiN 18 11	2371	304 LN	S30453			Austenite	
X 5 CrNiMo 17 13 2	2343	316	S31600			Austenite	
	2333	CF8				Austenite	
X 6 CrNiMoNb 17 12		316 Cb	S31640			Austenite	
X 6 CrNiMoTi 17 12	2350	316 Ti				Austenite	
X 16 CrNiSi 25 20		314; 310	S31000	314 S 25		Austenite	
X 5 CrNiMo 17 12	2347	316	S31600	316 S 31		Austenite	
X 1 CrNiMoN 20 18 7	2778		S31254		254 SMO	Super austenite	
			N08028		Sanicro 28	Super austenite	
			N08800	Sol. treated	Alloy 800	PH	
		330	N08330		Incoloy DS	Austenite	
X 2 CrNiMoN 25 7 4	2328	F 53	S32750		SAF 2507	Super duplex	
		255	S32550		Ferralium	Super duplex	
		F 55	S32760		Zeron 100	Super duplex	
X 2 CrNiMoN 17 12		316 LN	S 31653			Austenite	
X 2 CrNiMoN 17 13 3	2375	316 LN	S31653			Austenite	
		(316 LN)	(S31653)			Austenite	
X 2 CrNiMoN 22 5	2377	329 LN	S31803		SAF 2205	Duplex	
X 2 CrNiMoN 22 5	2377	318	S32205		SAF 2205	Duplex	
			S32654		654 SMO	Super austenite	
	2327	-	S32304		SAF 2304	Duplex	
	2562	904L	N08904			Super austenite	
	2564	CN7M				Super austenite	
		XM-12	S15500	Sol. treated	15-5-PH	PH	
X 3 CrNiMo 27 5 2	2324	329	S32900			Duplex	
		630	S17400	Sol. treated	17-4-PH	Super austenite	
Cast iron							
G10	01 10-00	A18 20 B	F11401			GCI	
G15	01 15-00	A48 25 B	F11601			GCI	
	07 17-15					DCI	
GS 400-12	07 17-02	60-40-18	F32800			DCI	
GSO 42/17	07 17-12	60-40-18	F32800			DCI	
B 35-12	08 15-00	A47 32510	F22200			Martensite	
P 45-06	08 52-00	A220 45008	F23130			Martensite	
P 55-04	08 54-00	A220 60004	F24130			Martensite	
G20	01 20-00	A48 30 B	F12101			GCI	
G25	01 25-00	A48 35 B	F12401			GCI	
GS 500-7	07 27-02	A536 80-55-6	F33800			DCI	
GS 600-3	07 32-03	A476 80-60-03	F34100			DCI	
		A436 Type D-2	F43000			Austenite	
		A436 Type D-2B	F43001			Austenite	
	07 72-00	-	-			Austenite	
	05 23-00	A436 Type 2	F41002			Austenite	
		A436Type 2b	F41003			Austenite	
P65-02	08 56-00	A220 70003	F24830			Martensite	
G30	01 30-00	A48 45 B	F13101			GCI	
GS 700-2	07 37-01	A536 100-70-03	F34800			DCI	
		A436 Type 1	F41000			Austenite	
		A436 Type 1b	F41001			Austenite	
P 70-02	08 62-00	A220 90001	F26230			Martensite	
	01 35-00	A48 50 B	F13502			GCI	
G35	01 40-00	A278 60 B	F14102			GCI	
		A536 120-90-02	F36200			Martensite	
GS 800-2		A439 Type D-2B				Austenite	
		A439 Type D-5	F43006			Austenite	
		A436 Type D-3A	F43004			Austenite	
		A436 Type D-3	F43003			Austenite	
		A436 Type D-5B	F43007			Austenite	
		A439 Type D-2M	F43010			Austenite	
		Nicrosilal Spheronic	-			Austenite	
		A439 Type D-4	F43005			Austenite	
		A436 Type 3	F41001			Austenite	
		Nicrosilal				Austenite	
		A436 Type D-4				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-G2M	
	3.3527	AW-5049	AlMg2Mn0.8	AlMg2Mn0.8		A-G2Mn0.8	
	3.3535	AW-5754	AlMg3	AlMg3		A-G3M	
	3.3345			AlMg4.5			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-MgA18Zn	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)				
			AlSi17Cu5				ADC14
18		CW004A		Cu			
	2.1203	CW013A	CuAg0.1	CuAg0.1	Cu-Ag-4		
	2.0940.01	CC331G		CuAl10Fe	AB1	CuAl10Fe	
		CC333G-GZ		CuAl10Fe5Ni5			
	2.0975.01	CC333G		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					
			AZ31B				
	4633		AM60A				
			AZ61A				
			AZ80A				
	4637	4437	AZ81A				
	4635		AZ91A/B				
		4442	M1A				
			B80				
			B80				
		A413.2					
		A384.0					
			AA384				
		B390.0					
	5015						
	5030		C11600				
	5710	CA952	C95200				
	5716	CA955	C95500				

• Non-Ferrous metal

mat. group	The material group of workpieces						
	W.- Nr	EN	EN-Nr	DIN	BS	AFNOR	JIS
18	2.0966	CW307G	CuAl10Ni5Fe4	CuAl10Ni5Fe4	Ca104	CuAl10Ni	C6301
	2.0978	CW308G	CuAl11Ni6Fe6	CuAl11Ni6Fe5			
	2.0916			CuAl5			
	2.0918	CW300G	CuAl5As	CuAl5As			
	2.0932			CuAl8 Fe3			C6140
	2.1291			CuCr			
	2.1310	CW107C	CuFe2P	CuFe2P			
	2.0853	CW109C	CuNi1Si	CuNi1.5Si			
	2.0872		CuNi10Fe1Mn	CuNi10Fe1Mn	CZ102	CuNi10Fe1Mn	
				CuNi10Zn45			
	2.0780	CW406J	CuNi12Zn30Pb1	CuNi12Zn30Pb1			
	2.0790		CW408J	CuNi18Zn19Pb		CuNi18Zn19Pb1	
	2.0790	CW408J	CuNi18Zn19Pb1	CuNi18Zn19Pb1		CuNi18Zn19Pb1	
	2.0740	CW409J	CuNi18Zn20	CuNi18Zn20	Ns106	CuNi18Zn20	C7451
	2.0742	CW410J	CuNi18Zn27	CuNi18Zn27	NS107		
	2.0822			CuNi20			
	2.0830			CuNi25	CN105	CuNi25	
	2.0835			CuNi30			
	2.0883			CuNi30Fe2Mn2			
				CuNi30FeMn			
	2.0882	CW354H	CuNi30Mn1Fe	CuNi30Mn1Fe	CN107	CuNi30Mn1Fe	
	2.0857	CW112C	CuNi3Si	CuNi3Si			
	2.0842			CuNi44Mn1		CuNi44Mn	
				CuNi5Fe1Mn		CuNi5Fe1Mn	
	2.0875	CW351H	CuNi9Sn2	CuNi9Sn2			
	2.1176	CW352H		CuPb10Sn	LB2	CuSn10Pb10	
	2.1183	CC496K-GZ		CuPb15Sn			
	2.1160	CW113C	Cupb1p	CuPb1P			
	2.1189			CuPb20Sn			
	2.1050.01	CC480K		CuSn10	CT1	CuSn10	
	2.1087			CuSn10Zn			
	2.1051.01	CC483K		CuSn12	PB2	CuSn12	
				CuSn14		CuSn14	
	2.1016	CW450K	CuSn4	CuSn4	PB101	CuSn4p	C5111
			CW451K	CuSn5			
	2.1020	CW452K	CuSn6	CuSn6	PB103	CuSn6	C5191
	2.1080			CuSn6Zn6			
				CuSn7			
	2.1090.03	CC493K-GZ		CuSn7ZnPb			
	2.1030	CW453K	CuSn8	CuSn8	PB104	CuSn8P	C5210
	2.0230	CW501L	CuZn10	CuZn10	CZ101	CuZn10	C2200
	2.0240	CW502L	CuZn15	CuZn15	CZ102	CuZn15	C2300
	2.0250	CW503L	CuZn20	CuZn20	CZ103		C2400
	2.0460	CW702R	CuZn20Al2	CuZn20Al2	CZ110	CuZn22Al2	
				CuZn25All5			
	2.0261	CW504L	CuZn28	CuZn28	CZ105		C4430
	2.0470	CW706R	CuZn28Sn1	CuZn28Sn1		CuZn29Sn1	
	2.0265	CW505L	CuZn30	CuZn30	CZ106	CuZn30	C2600
				CuZn30AlFeMn		CuZn30AlFeMn	
	2.0490	CW708R	CuZn31Si1	CuZn31Si1			
	2.0280	CW506L	CuZn33	CuZn33	CZ107		C2680
	2.0592.01	CC765S		CuZn35Al1	HTB1	CuZn30AlFeMn	
	2.0540	CW710R	CuZn35Ni2	CuZn35Ni2			
	2.0335	CW507L	CuZn36	CuZn36	CZ108	CuZn36	C2720
	2.0331	CW601N	CuZn35Pb2	CuZn36Pb1.5	CZ131	CuZn35Pb2	
	2.0375	CW602N	CuZn36Pb3	CuZn36Pb3	CZ124	CuZn36Pb3	
	2.0321	CW508L	CuZn37	CuZn37	CZ108	CuZn37	
	2.0332	CW604N	CuZn37Pb0.5	CuZn37Pb0.5	CZ118		
	2.0371	CW607N	CuZn38Pb1.5	CuZn38Pb1.5	CZ119	(CuZn38Pb2)	
	2.0530	CW717R	CuZn38Sn1	CuZn38Snl			
	2.0525	CW715R	CuZn38SnAl	CuZn38SnAl			
				CuZn39AlFeMn			
	2.0372	CW610N	CuZn39Pb0.5	CuZn39Pb0.5	CZ123	CuZn39Pb0.8	
	2.0380	CW612N	CuZn39Pb2	CuZn39Pb2	CZ128		
	2.0401	CW614N	CuZn39Pb3	CuZn39Pb3	CZ121	CuZn39Pb3	
	2.0360	CW509	CuZn40	CuZn40	CZ109	CuZn40	C2800
	2.0550	CW713R		CuZn40A12			

• Non-Ferrous metal

The material group of workpieces							
UNI	SS	AISI/ASTM	UNS	Condition	Misc. Brands	Structure	Form
			C62730				
			C60800				
			C18400				
			C19400				
	5667		C70600				
			C79300				
			C76300				
			C76300				
			C75200				
			C77000				
			C71300				
CuNi30			C71580				
	5682		C70600				
			C70250				
			C72150				
			C72500				
	5640	CA937	C93700				
			C93800				
			C19000				
			C94100				
	5443		C90700				
	5458		C90500				
	5465	CA907					
	5475		C91000				
			C51100				
			C51000				
	5428		C51900				
CuSn7			C93200				
			C83600				
			C52100				
			C22000				
	5112		C23000				
			C24000				
	5217		C68700				
			C86300				
			C25600				
	5220		C44300				
	5122		C26000				
			C26800				
	5256	CA865	C96500				
			C27200				
			C34200				
			C36000				
	5150		C27200				
			C33500				
	5165		C35300				
			C46400				
			C47000				
			C36500				
			C37700				
	5170		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 2.0580 2.0402 2.0410 2.0220	CW723R CW720R CW612N CW622N CW500L	CuZn40Mn1 CuZn40Mn1Pb CuZn40Pb2 CuZn44Pb2 CuZn5	CuZn40Mn1 CuZn40Mn1Pb CuZn40Pb2 CuZn44Pb2 CuZn5	 CZ136 CZ120 CZ104 CZ125	 CuZn39Pb2	 C2100
Heat resistant super alloys / Titanium alloys							
19	X2NiCrAlTi3220		1.4876				
20							
21	NiMo30 NiMo30 NiMo16Cr15W NiMo16Cr16Ti NiCr21Fe18Mo9		2.4810 2.4810 2.4602 2.4819 2.4610 2.4619 2.4665				

• Non-Ferrous metal

The material group of workpieces							
UNI	SS	AISI/ASTM	UNS	Condition	Misc.Brands	Structure	Form
	5168 5272		C37800 C68700 C21000		AMPCO 15 AMPCO 18 AMPCO 18.136 AMPCO 18.22 AMPCO 18.23 AMPCO 21 AMPCO 22 AMPCO 25 AMPCO 26 AMPCO 45 AMPCO 483 AMPCO 642 AMPCO 673 AMPCO 674 AMPCO 8 AMPCO 863 AMPCO M4		
Heat resistant super alloys / Titanium alloys							
			S66286 S35000 S35000 S35500 S45500 N08800 N19909 R30155 R30155	Precip.hardened heat treated	A286 AM350 AM350 AM355 Custom 455 Discalloy Incoloy 800 Incoloy 801 Incoloy 909 Lapelloy M-308 N-155 N-155		 cast bar, forge, ring
			R30195		Air Resist 13 FSX-414 H531 Haynes 188 Haynes 188 Haynes 25 Mar-M-302 Mar-M-509 MP159 MP35N Stellite 21 Stellite 30 Stellite 31 W152 W162		 bar, forge, ring tube
			  N10665 N10002 N10002 N10276 N06455 N06007 N06985 N10003 N10003 N06635 N10004 N06002		Astroloy GTD222 Hastelloy B-2 Hastelloy C Hastelloy C Hastelloy C-22 Hastelloy C-276 Hastelloy C-4 Hastelloy G Hastelloy G-3 Hastelloy N Hastelloy N Hastelloy S Hastelloy W Hastelloy X		all forms plate cast bar, sforge, ring cast all forms all forms

• Heat resistant super alloys / Titanium alloys

mat. group	The material group of workpieces						
	W.- Nr	EN	EN-Nr	DIN	BS	AFNOR	JIS
21	2.4816 2.4851 2.4856 2.4856 2.4856 2.4668 2.4668 2.4668 2.4669 2.4669 2.4061 2.4634 2.4636 2.4650 2.4631 2.4632 2.4662 ppm 2.4654 2.4654	NiCr15Fe NiCr22Mo9Nb NiCr22Mo9Nb NiCr22Mo9Nb NiFe38Cr16Nb NiCr19Fe19Nb5Mo3 NiCr19Fe19Nb5Mo3 NiCr19Fe19Nb5Mo3 Ni99.6 NiCr20TiAl NiCr19Co18Mo4Ti3Al3 NiCr20Co13Mo4Ti3Al NiCr20Co13Mo4Ti3Al					
22	3.7024 3.7024 3.7124 3.7164 3.7164 3.7164 3.7164	 TiCu2 TiAl5Sn2.5 TiAl5Sn2.5 TiAl5Sn2.5 TiAl6V4 TiAl6V4 TiAl6V4 TiAl6V4 TiAl6V4		TiV10Fe2A13			

• Heat resistant super alloys / Titanium alloys

The material group of workpieces							
UNI	SS	AISI/ASTM	UNS	Condition	Misc.Brands	Structure	Form
					IN 100		IN 100
			N06600		Inconel 600		all forms
			N06601		Inconel 601		all forms
			N06625		Inconel 625		bar, forge, ring
			N06625		Inconel 625		tube
			N06625		Inconel 625		cast
			N09706		Inconel 706		
					Inconel 708		bar, forge, ring
			N07713		Inconel 713		
					Inconel 713LC		
			N07718		Inconel 718		bar, forge, ring
			N07718		Inconel 718		tube
			N07718		Inconel 718		cast
					Inconel 901		
			N07750	Sol.treated	Inconel X-750		
			N07750	precip.hardened	Inconel X-750		
					Mar-M-200		
					Mar-M-247		all forms
					Mod.IN 100		
					Mod.IN 792		
			N02205		Nickel 201		
					Nimonic 101		
					Nimonic 105		
					Nimonic 115		
			N07263		Nimonic 263		
			N07080		Nimonic 80A		
					Nimonic 81		
					Nimonic 86		
			N07090		Nimonic 90		
			N09901		Nimonic 901		
					Nimonic 91		
					René 95		
			N03260		TD Nickel		
			N07500		Udimet 500		
					Udimet 520		
					Udimet 700		
					Udimet 720		
			N07001		Waspalloy		bar, forge
			N07001		Waspalloy		cast
					Ti (pure)	Ti (α)	pure - tube
		AMS 4900, -01, -21			Ti (pure) (grd 1-4)	Ti (α)	pure - plate, bar,
		AMS 4986			Ti 10V-2Fe-3Al	Ti (β)	forge
		ASTM Grade 21	R58210		Ti 15Mo-3Nb-3Al-	Ti (β)	
		AMS 4995	R58650		0.2Si	Ti (α+β)	
					Ti 17	Ti (α)	
		AMS 4943	R56320	annealed	Ti 2Cu	Ti (α+β)	
		AMS 4943	R56320		Ti 3Al-2.5V	Ti (α+β)	tube
		AMS 4910	R54520	ELI	Ti 3Al-2.5V	Ti (α)	bar, forge
		AMS 4909	R54521		Ti 5Al-2.5Sn	Ti (α)	
		AMS 4910	R54520	annealed	Ti 5Al-2.5Sn	Ti (α)	
		AMS 4919	R54620	annealed	Ti 5Al-2.5Sn	Ti (α)	
		AMS 4919	R54621	precip. hardened	Ti 6-2-4-2	Ti (α)	
		AMS 4981	R56260	annealed	Ti 6-2-4-2	Ti (α+β)	
		AMS 4981	R56260	precip. hardened	Ti 6-2-4-6	Ti (α+β)	
		AMS 4920	R56400	annealed	Ti 6-2-4-6	Ti (α+β)	
		AMS 4920, Grd 5	R56400	annealed	Ti 6Al-4V	Ti (α+β)	
		AMS 4981	R56401	ELI	Ti 6Al-4V	Ti (α+β)	
		AMS 4920	R5640		Ti 6Al-4V	Ti (α+β)	EL1
		AMS 4920	R56400	precip. hardened	Ti 6Al-4V	Ti (α+β)	extrusion
					Ti 6Al-4V		

Dimensions And Torque Values Of Insert Screw

Screw	Th	Nm	ISO Size	Key
C018035	M1.8(4h)	0.5	6IP	T06P
C025045	M2.5(4h)	1.2	8IP	T08P
C02506	M2.5(4h)	1.2	8IP	T08P
C03006	M3.0(4h)	2.0	9IP	T09P
C03007	M3.0(4h)	2.0	9IP	T09P
C03008	M3.0(4h)	2.0	9IP	T09P
C03010	M3.0(4h)	2.0	9IP	T09P
C03012	M3.0(4h)	2.0	9IP	T09P
C03505	M3.5(4h)	3.0	10IP	T10P
C03506	M3.5(4h)	3.0	10IP	T10P
C03507	M3.5(4h)	3.0	10IP	T10P
C03508-T15	M3.5(4h)	3.5	15IP	T15P
C03510	M3.5(4h)	3.0	10IP	T10P
C03511	M3.5(4h)	3.0	10IP	T10P
C03512	M3.5(4h)	3.0	10IP	T10P
C03513	M3.5(4h)	3.0	10IP	T10P
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

$$n = \frac{vc \cdot 1000}{\pi . D} \quad \text{(rev/min)}$$

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

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

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

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

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^3/min)
v_c = Cutting speed	(m/min)
v_f = Feed speed	(mm/min)
z = No of teeth	

Effective no. of teeth (Zc)

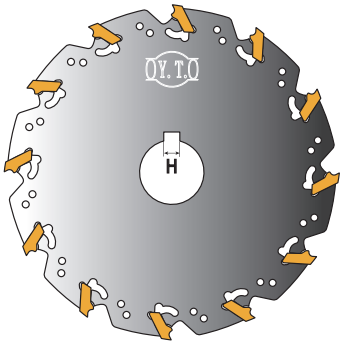
The effective no. of teeth (Zc) is used to calculate the feed speed (vf)and the feed per revolution (f). For most of cutters, effective no. of teeth (Zc) is equal to the no. of teeth of the cutter (z), but for some of cutters Zc is less than z.

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

TECHNICAL GUIDE

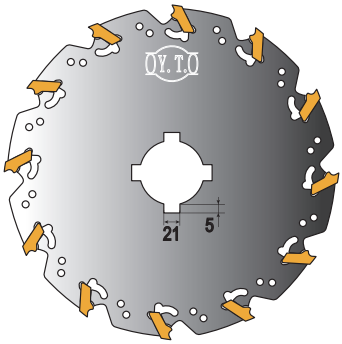
Standard keyway and pin hole figu es

FIG.1



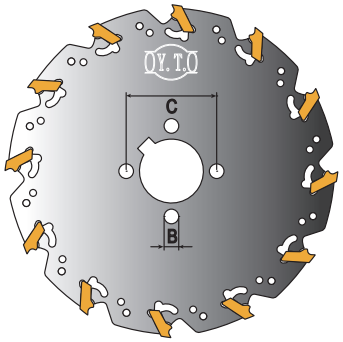
H

FIG.2



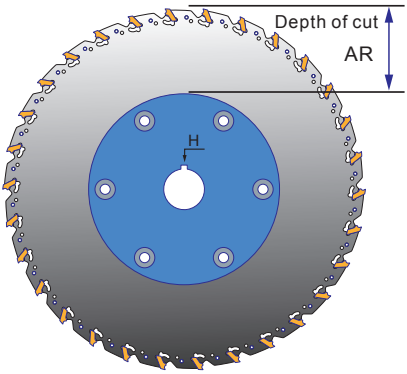
H

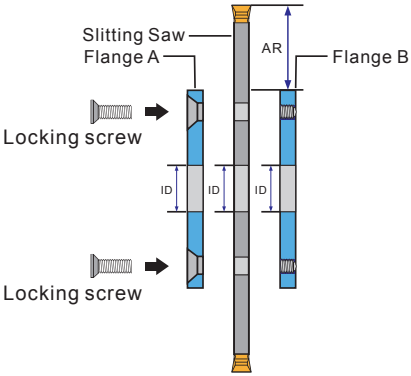
FIG.3



C B

Vibrations Solution

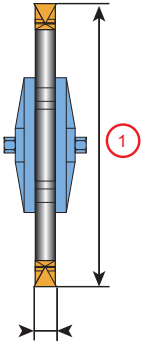




- Improve the stability of cutters and workpieces
- Minimize tool overhang
- Minimize the dia of cutter
- Increase the thickness of cutter, refer to above diagram

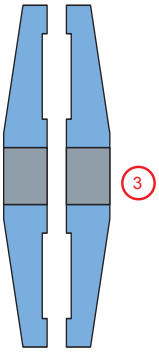
Trouble Shooting

The solution for vibrations and unstable machining

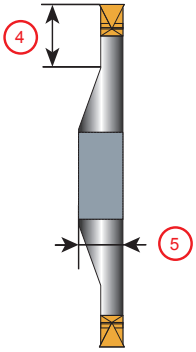


1. Reduce the diameter of the saw blade

2. Increase the thickness of the saw blade



3. Use bigger flange



4. Reduce the length of the efficient blad

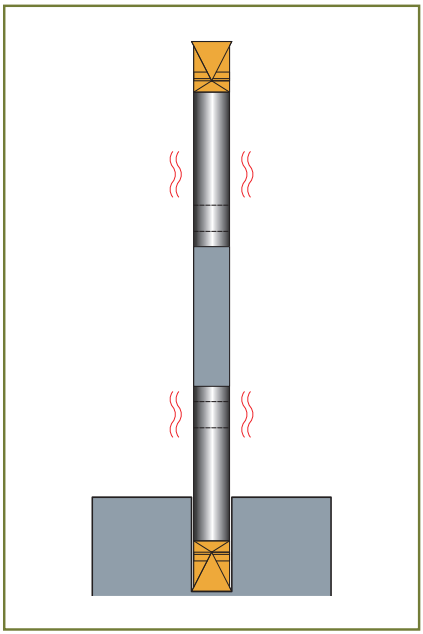
5. Increase body thickness

Attention :

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

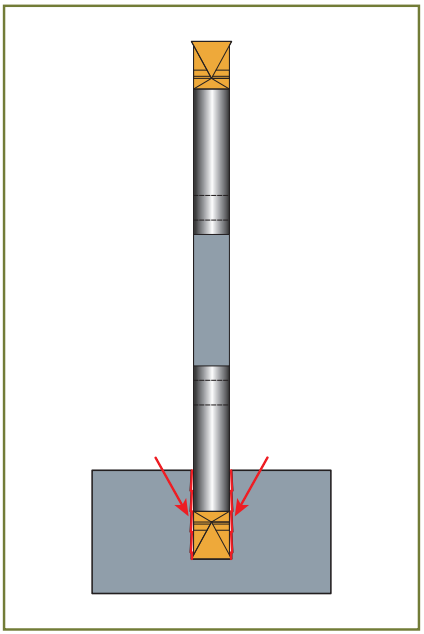
Trouble Shooting

Vibrations



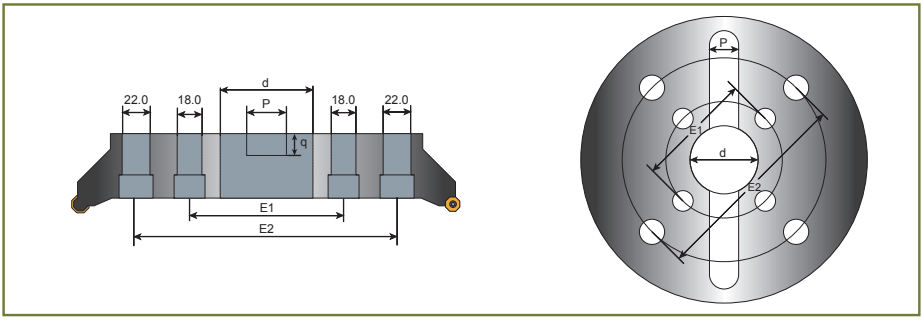
- Improve the stability of cutter and workpiece
- Change cutter positioning
- Minimize tool overhang
- Reduce the cutting speed
- Increase the feed rate
- Reduce the depth of cut

Poor Surface Finish



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

Technical Guide



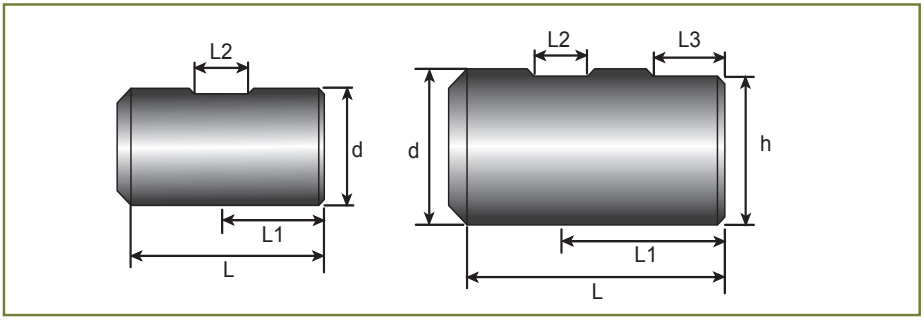
Dimensions Of Mounting Metric Size

Dimensions (mm)				
d	p	q	E1	E2
16	8.7	7	-	-
22	10.7	7.5	-	-
27	12.7	8	-	-
32	14.7	9	-	-
40	16.7	10	-	-
50	16.7	10	-	-
60	26	15	101.6	-
60	26	15	101.6	177.8

Dimensions Of Mounting Inch Size

Dimensions (mm)				
d	p	q	E1	E2
25.4	10.3	7	-	-
31.75	13	9	-	-
38.1	16.2	11	-	-
50.8	19.3	12	-	-
47.625	25.7	15	101.6	-
47.625	25.7	15	101.6	177.8

Technical Guide

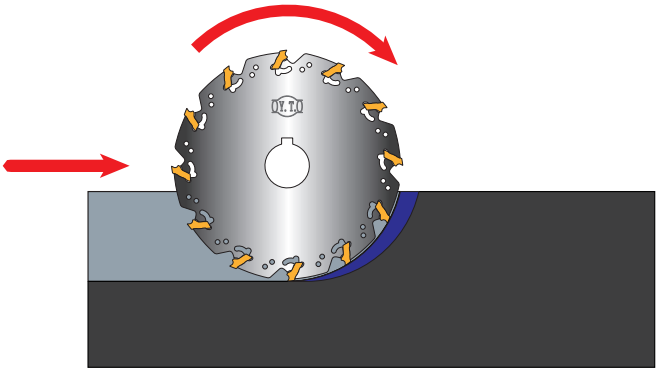


Dimensions Of Mounting Metric Size

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

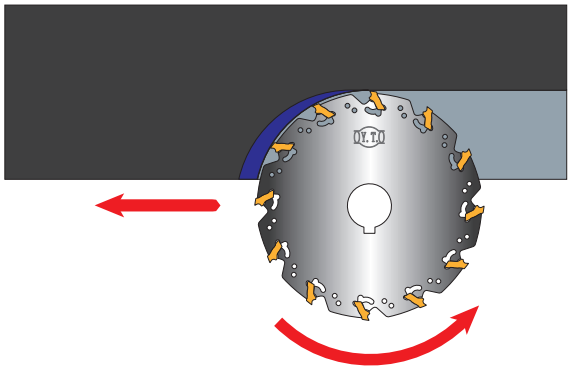
Climb & Conventional Milling

Climb Milling



Climb Milling : Chip thickness starts from maximum and decrease

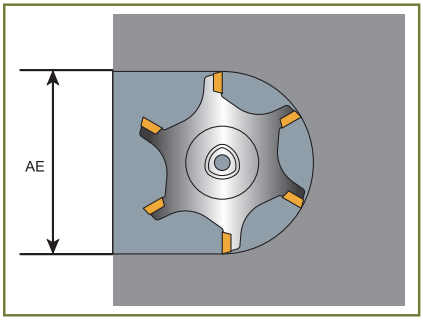
Conventional Milling



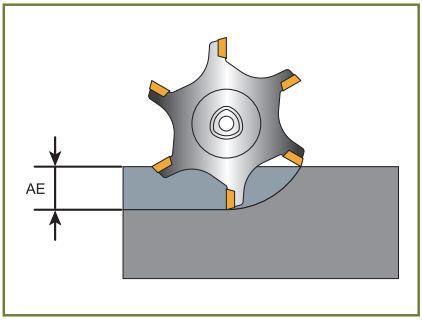
Conventional Milling : Chip thickness starts from zero and increase

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

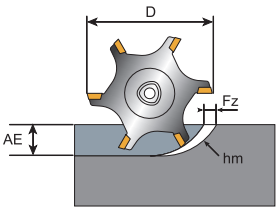
This Table Can Be Used For Cutters With Cutting Edge Angle = 90°

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 Inchding 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%

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

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



SINCE 1977

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