

PACE (INDIA) CUTTING TOOLS



CUTTING TOOLS



PACE (INDIA)

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PACE (INDIA)

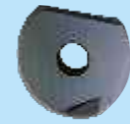
Myco
Tooling Solution



TNGM-A7



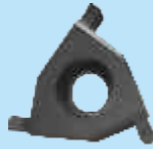
PCD-A45



PBX-B19



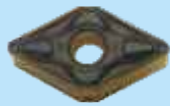
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U-LOCK
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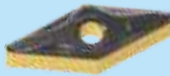


THREADING-A93



50 HRC

ENDMILL-B52



VNMG-A24



ONMU-B4

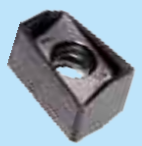


60 HRC

BALLNOSE-B58



CCMT-A25



PNX-B8



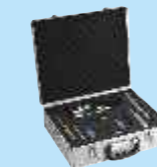
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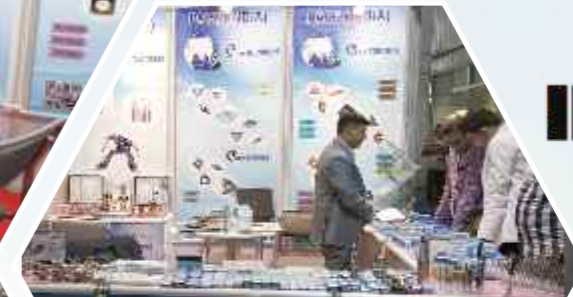


WPGT-B14



ADOPTOR-D2
WBGT-B14

PACE (INDIA) EXHIBITION



COMPANY PROFILE

INTRODUCTION

Our Company Established in 2008, Pace (India) is located in New Delhi (India). **Mr. Divay Bhasin** along with our whole Pace (India) team has given a distinctive edge to the organization with his vast experience and knowledge.

Backed by an enthusiastic team of experts, we have grown in leaps and bounds in the industry. Our talented team includes HR personnel, quality control inspectors, sales & marketing executives and other allied professionals. With their market awareness and hard toil, we are able to provide superior quality products to the clients.

We have a well-structured network that assists us in spreading the business prospects in every nook and corner of the country. With our formidable network, we provide our high-performance products to every part of the country.

Pace India is one of largest Providers of Comprehensive Metal Cutting Solutions for Milling, Turning, Cast Iron, Threading & Grooving, Drilling, CBN & PCD, and Rich Mill Etc. We have been delivering high-quality industrial tools for over more than decades. These industrial and cutting tools offered by us are precisely designed in adherence to industry laid standards by using advanced machinery that is based on latest technology.

Pace India has remarkably earned a reputation for themselves by always rendering the best services & genuine material to their customer at any required hour of need. Our purpose is to satisfy and fulfil the needs of our customers by delivering high-quality products at competitive pricing.

Our technically qualified sales engineers always there to support our valuable customers. Our focus is building healthy relationship with our customers by providing quality cutting tools at reasonable price with our enhanced technical support. Our goal is to be customer oriented and to work on different application areas, adding value to our products by providing services of our technically qualified sales team.



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Selection Method of General Turning Tools:

1. Understand the processed material condition, Machine Model and condition
2. Select the suitable insert shape, setting angle and clamping designation.
3. According to above conditions select details of tools as L/R, dimension, etc.
4. Select the type, chip break and grade of insert according To all conditions.

Selection Method Of Grooving:

1. Understand the processed material condition. Machine Model and condition.
2. Select the basic type according to processing methods (external, internal, face grooving)
3. According to above conditions select details of tools as L/R, dimensions, etc.
4. Select the type, clamping designation, chip break And grade of insert according to all conditions.

Selection Method of Threading Tools:

1. Understand the processed material condition, Machine Model and condition.
2. Select the tool's type according to thread's type, processing methods, etc.
3. According to above conditions select details of cutting tools as L/R, dimension, etc.
4. Select the type, chip break and grade of insert according to all conditions.

Selection Method of Hole-processing Tools:

1. Understand the processed material condition, Machine Model And condition.
2. Select the basic type of drilling tools according to the processing. (drilling, boring, threading, etc.)
3. Select the adoption of solid cutters or indexable tools according to the machining accuracy and size.
4. According to above conditions to select details of interface, dimensions, etc.
5. Select the type, chip break and grade of insert according to all conditions.

Recommended Cutting Parameters Of Turning Inserts

ISO	P			Grade	PC25SH	PC25G	PC22G	PC15S	PC05S	PC30	PC30H
Materials	Carbon Steel	Alloy Steel	Hardened And Tempered Steel	Vc(m/min)	480-260	450-200	430-200	460-240	430-180	300-200	350-250
Hardness	HB120-180	HB180-240	HB240-350		340-150	320-140	300-140	330-150	300-130	200-120	250-150
-	-	-	-		220-80	200-80	210-80	210-70	190-70	150-70	180-70

ISO	M			Grade	PC25H	PC20H	PC05SS				
Materials	Austenite		Martensite	Vc(m/min)	220-100	210-110	190-90				
Hardness	HB120-200		HB300		260-170	220-140	210-130				

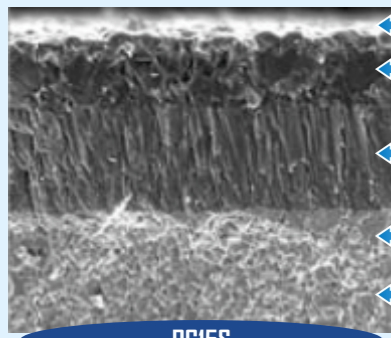
ISO	K			Grade	PC15C	PC15CC	PC15CH				
Materials	Grey Cast Iron		Nodular Cast Iron	Vc(m/min)	280-160	380-200	400-190				
Hardness	HB150-220		HB140-220		280-140	220-110	300-150				

ISO	N			Grade	PC01	PC01H	PCD				
Materials	Aluminum			Vc(m/min)	600-300	900-400	300-1500				
Hardness	HB60				-	-	-				

ISO	H			Grade	PCN						
Materials	Hard materials			Vc(m/min)	150-60						
Hardness	HB500-550				-	-	-				

COMMON TURNING

ISO	CODE	GENERAL TURNING					GENERAL GROOVING & THREADING				
		CVD	PVD	CERMET	CEMENTED CARBIDE	CBN	PCD	CVD	PVD	CEMENTED CARBIDE	
P	01										
	10	PC15S									
	20	PC15S	PC05S					PC32G		PC25G	
	30	PC15SSH		PC30	PC30H						
	40										
M	01										
	10										
	20	PC05SS								PC25H	PC20H
	30										
	40										
K	01										
	10	PC15C									
	20	PC15C	PC15CC	PC15CH							
	30										
N	01						PC01				
	10						PC01H		PCD		PC01H
	20										
H	10										
	20							PCN			



PC15S

- Surface gold TiN has the excellency of reducing the friction and wear recognition effect.
- Special structure of Al_2O_3 settled layer has the best thermal barrier performance, high speed dry cutting, ensure resistance to plastic deformation of blade matrix at high speed dry cutting.
- TiCN layer with anti-wear material abrasion performance lead to the best wear resistant of the face of clearance angle.
- Using gradient sintering technology, and increase the impact resistance and wear resistance of insert, so as to improve the ability to resist damage of the insert.
- Carbide with special crystal structure improves the red hardness of the blade matrix, and strengthened the high temperature resistant performance of insert.

PC25SH CVD coated carbide grade, Universal grade suitable for steel and cast steel continuous cutting and cutting finishing to roughing, grades with a wide range of applications, stainless steel continuous cutting and interrupted cutting

PC05S CVD coated carbide grade, It is suitable for low-medium speed semi-finishing and finishing steel parts.

PC15S CVD coated carbide grade, it is for smooth free cutting excellent result machining grade for semi finishing and finishing iso material

PC05SS CVD coated micro-grain carbide, it is optimized for the best combines for the best combination for toughness and wearing resistance. It is wide range applicative and suitable for stain less and finishing ISO M material.

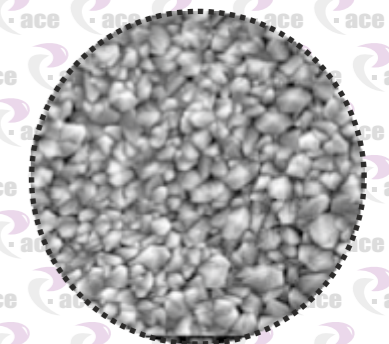
Black General Insert

FIRST CHOICE FOR HIGH-SPEED AND EFFICIENT

Processing Of Cast Iron

PC15CH CVD coated carbide grade, cemented, it is optimized for good wear resistance, toughness and performed excellently in interrupted for CAST IRON machining, it is also suitable for tougher casting with excellent result requirements.

PC15CC CVD coated carbide grade, cemented, carbide, the hard substrate coated with a smooth and wear-resistant coating, can bear harsh intermittent cutting conditions, universal grade for all cast iron roughing cutting at low medium speed.



Density in grain layer of surface

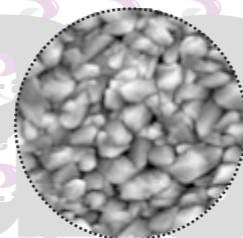
Higher Cutting Speed And Longer Life Of Insert

Black General Insert

The inserts with special surface technology, greatly improved the surface roughness, effectively reduce the cutting force, reduce the adhesive between the cutter surface and the processed material, greatly improve the stability of inserts to use.

Fibrous TiCN and the perfect combination of fine grain Al_2O_3 coating significantly improved the wear resistance and resistance to collapse of insert.

The second generation of steel processing



Before the surface treatment



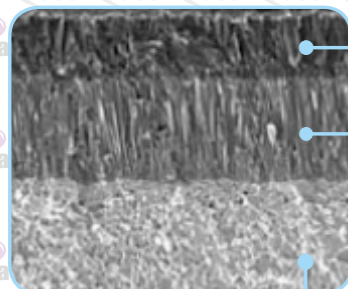
After the surface treatment

Contrast Effect Of Insert Abrasion Test

Workpiece 42CrMo Type: CNMG120408-GS Cutting

parameter: $V_c=390m/min$ $a_p=1.5mm$ $f_n=0.2mm/r$

Grade of company PC15S



Al_2O_3

TiCN

The carbide substrate

Machining Example

Insert for use	Type	CNMG120408-GM	CNMG190616-GM	TNMA220412
	Grade	PC15S	PC05SS	PC15C
Shape				
Material & Hardness		42CrMo HB280	ICr13 HB270	Ferrosteel HB280
condition	parameters	$V=240m/min$ $a_p=1.5\sim 2mm$ $f=0.2mm/r$	$V=100m/min$ $a_p=1.5\sim 3.0mm$ $f=0.3mm/r$	$V_{max}=400m/min$ $a_p=1.3\sim 2.5mm$ $f=0.4\sim 1.1m/r$
	type	Dry cutting	Dry cutting	Dry cutting
Contrast	No.			
		Competitors	Competitors	Competitors

Let The Difficult Machining Materials Gets Easy

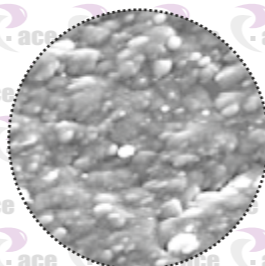
High performance TiAlN coated of nano structure ensures that the insert has a very high toughness and hardness. Unique coating technology makes the insert with smooth surface and high wear resistance, excellent thermal stability and chemical stability provide effective protection of cutting edge

PC22G 2-4 μ m TiAlN PVD coated, combining with fineparticles' substrates with high-toughness, suitable for all materials, high-temperature alloy & Ti alloy in finishing, semi-finishing.

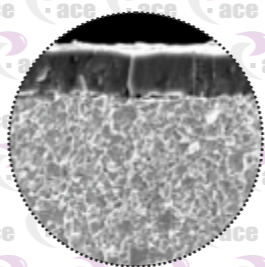
PC20H 2-4 μ m TiAlNPVD coated, combining with ultra fine particles' substrates with high-toughness, suitable for all materials, stainless steel & high-temperature alloy in finishing, semi-finishing.

PC25H 2-4 μ m AlCrN+AlCrSiN PVD coated, combining with ultra fine particles' substrates with high-toughness, suitable in light & medium loadmilling, stainless steel & high-temperature high hardness' in finishing, semi-finishing.

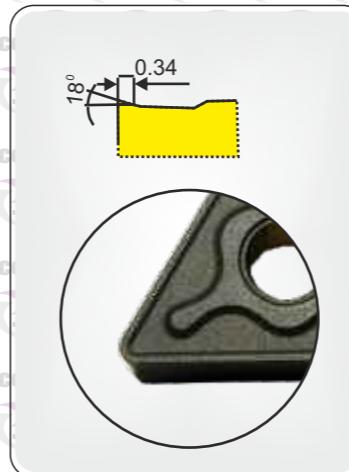
PC25G 2-4 μ m TiAlN+TiAlSiN PVD high wear resistant e.g oxidation resistance, combined with hard alloy with excellent toughness cemented carbide' substrates, suitable for all kinds of processed materials with high hardness and medium load milling and drilling, stainless steel and high and high temperature alloy in semi-fishing, rough turning, cutting and grooving, achieving the combination of the perfect safety and wevar resistance.



The coating surface of PC20H



nc-TiAlN Coating(PC20H)



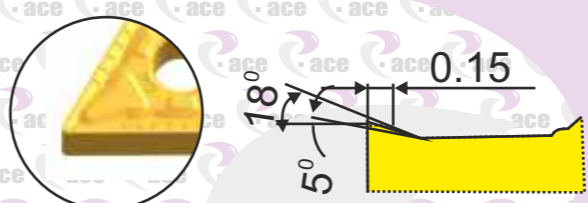
GH

For rough turning.
Gray and nodular cast iron.
Operations: Turning, facing and profiling.
Advantages: A wide range of rough machining of cast iron, provides good economy of machining.
Typical parts: Parts of cast iron.



U

For semi-finishing to finishing turning.
With broad applied range for cast iron.
Operations: turning, facing.
Advantages: high cutting edge hardness, low cutting resistance force, easy chip-flow. Combined with more abrasive grade can get better efficiency.
Limitations: Sensitive to casting, forging and discontinuous cutting.
Typical parts : pieces of cast iron.



-GM

For semi-finishing machining;
For semi finishing turning of steel.
Operations: turning, facing, profiling
Typical parts : Steel Parts
Advantages: High universality, easy chip-flow, special bulge close to the nose radius and big rake angle generate the cutting ability and low cutting force of chipbreaker.



GF

for finishing turning with good chip control above all in steel, stainless steel
operations :- turning facing, profile and back facing.
advantages : light cutting chip breaker with low cutting force, suitable for processing slender shaft, thin-walled parts and unstable clamped parts.
limitations : depth of cut and feed.
typical parts : shaft, wheel and gear hub.



LH

Used for finish turning,
Aluminum alloy and other non-ferrous metals.
Operations: turning, facing and copying cutting.
Advantages: open positive rake angle groove in hiy cutting speed cutting light. Used as far as possible the high cutting speed (high2500m / min) can obtain more production efficiency.
Limitations : used for nonferrous metal material process
Typical parts: ordinary aluminum parts.

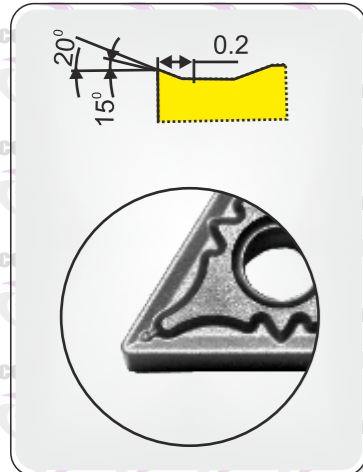


-AK

Used for finish turning, suitable for non-ferrous metals.
Operations: turning, facing and copying cutting.
Advantages: open positive rake angle groove in high cutting speed cutting light. Used as far as the high cutting speed can obtained more production efficiency.
Limitations : used for nonferrous metal material process
Typical parts: ordinary aluminum parts.

Processing case

Insert for use	Type	CNMG120404-GM	DNMG150404-BM
	Grade	PC20H	PC20H
Shape			
Material & Hardness		40Cr HB280	1Cr18Ni9Ti HB240
condition	parameters	V=220m/min ap=2.0mm f=0.15mm/r	Vc=150m/min ap=1.0mm f=0.15mm/r
	type	Dry Cutting	Dry Cutting
Performance		<p>Machine part No.(piece)/edge</p>	<p>Tool life(min)</p>



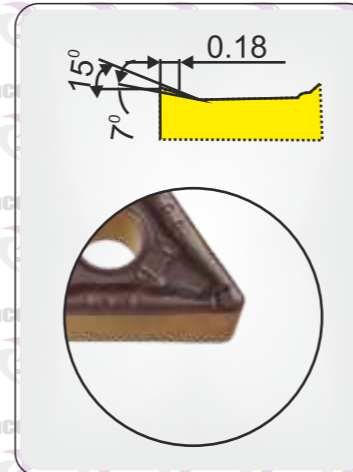
◀ -DPM

Negative chamfer designed on sharp blade, blade intensity and impact-resistance are increased, it can efficiently break chip and extend chip break filed. -DPM is suitable for semi-finishing and slight interrupted cutting ISO P material.



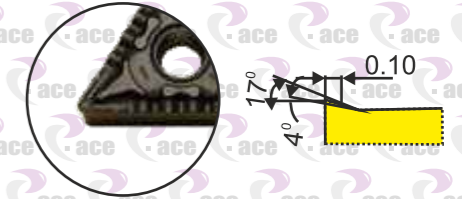
◀ -OPF

Special designed for cutting ISO P material, -OPF can efficiently control and break chip, with sharp cutting edge, it has low cutting forces and good chip-controlling, which help it obtains excellent precision and surface quality, suitable for finishing.



◀ MD

For medium turning. With broad applied range for steel. Operations: longitudinal cutting, facing and profiling. Advantages: High reliability and universality with fault-free cutting. This chip breaker matches with wear-resisting Grade will be better. Components typically: axles, hubs, gears, etc in steel.



◀ FW

For Steel Finishing Turning. Cutting control ability is better than other chip breakers in steel process. Operations: longitudinal cutting, facing, back-turning and profiling. Advantages: light cutting geometry, low cutting forces suitable for slender Shafts, thin walled and unstably clamped components. This chip breaker matches with wear-resisting Grade will be better. Limitations: depth of cut and feed range. Components typically: axles, gears where good surface finish is a priority.



◀ -DTF

Special designed rake angle and cutting edge inclination for finishing material, it has sharp cutting edge which can decrease cutting resistance, and efficiently control chip and acquire good surface quality.



◀ -DPR

Three-dimension designed with double rake angle, wide margin and negative chamfer, -DPR get ideal balance between blade intensity and sharp. It can efficiently guide chip's flow direction and suitable for rough cutting and interrupted cutting.



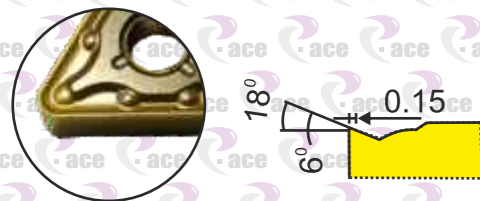
◀ TM

For semi-finishing machining. For semi finishing turning of steel. Operations: turning, facing, profiling. Typical parts: Ordinary Steel Parts. Advantages: High universality, easy chip-flow, special bulge close to the nose radius and big rake angle generate the cutting ability and low cutting force of chipbreaker. Limitations: the depth of cutting and feed. Typical parts: ordinary steel parts.



◀ MA

For semi-finishing turning. For semi-finishing of steel and cast iron. Operations: Turning, facing and profiling. Advantages: Suitable for general field. Positive edge shape of blade, performance of Sharp cutting. Typical parts: Ordinary steel parts and cast iron parts.



◀ -DMM

Special designed rake angle and cutting edge inclination for finishing material, it has sharp cutting edge which can decrease cutting resistance, and efficiently control chip and acquire good surface quality.



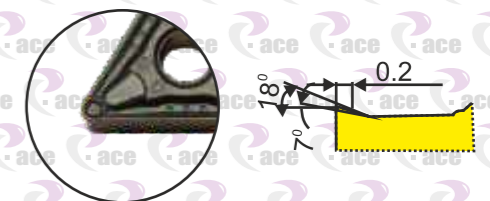
◀ -MF

Special chip breaker design to keep both sharp cutting edge and increased blade intensity which can efficiently solve break chip, high cutting temperature, sticking, work hardening and other machining problem.



◀ CQ

For semi-finish turning. For semi finishing turning of steel. Operations: Longitudinal Turning, facing and profiling. Advantages: Reliable giving trouble-free machining. Limitations: Lower strength of Cutting edge in the. Typical parts: Ordinary parts of Steel.



◀ PM

For Heavy machining turning. With broad applied range for steel. Operations: longitudinal cutting, facing, step cutting and profiling. Advantages: High reliability and universality with heavy cutting. This chip breaker matches with wear-resisting Grade will be better. Components typically: axles, hubs, gears, etc in steel.

COMMON TURNING INSERTS

Shape/Code			Metric				
Code	Wite Without Hole	With/Without	Section plane	Code	Wite Without Hole	Chipbreaker	Section plane
A	With	Without		N	Without	Without	
B	With	One-side		R	Without	One-side	
C	With	Without		F	Without	Double-side	
D	With	Double-side		A	With	Without	
E	With	Without		M	With	One-side	
F	With	One-side		G	With	Double-side	
G	With	Without		X	---	---	Special
H	With	Double-side		U	With	Double-side	
I	With	Without					
J	With	Without					
K	With	Without					
L	With	Without					
M	With	Without					
N	With	Without					
O	With	Without					
P	With	Without					
Q	With	Without					
R	With	Without					
S	With	Without					
T	With	Without					
U	With	Without					
V	With	Without					
W	With	Without					
X	With	Without					
Y	With	Without					
Z	With	Without					

Diameter of I.C.(mm)	Shape							
	C	D	R	S	T	V	W	K
3.97					06			
5.0			05					
5.56					09			
6.0			06					
6.35	06	07			11	11		
8.0			08					
9.525	09	11	09	09	16	16	06	16
10.0			10					
12.0			12					
12.7	12	15	12	12	22	22	08	
15.875	16		15	15	27			
16.0		19	16					
19.05	19		19	19	33			
20.0			20					
25.0	25	25	25					
25.4			25	25				
31.75			31					
32			32					

Code	Insert Thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.96
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

C N M G

12 04 08 - MD

Code	Clearance Angle	Code	Clearance Angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Others

Tolerance			
Code	Nose height M tolerance(mm)	Tolerance of I.C.(mm)	Thickness S tolerance(mm)
A	±0.005	±0.025	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05±0.13	±0.025
K	±0.013	±0.05±0.13	±0.025
L	±0.025	±0.05±0.13	±0.025
M	±0.08±0.18	±0.05±0.13	±0.13
N	±0.08±0.18	±0.05±0.13	±0.025
U	±0.13±0.38	±0.08±0.25	±0.13

Inscribed Circle	
Code	Diameter of I.C.(mm)
2	6.35
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4

Thickness	
Code	Thickness
2	3.18
3	4.76
4	6.35
5	7.94
6	9.52

Nose Radius Code	
Code	Nose Radius
00	No radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Round Insert

Chipbreaker Code		
Code	Code	Code
MD	GM	BM
DPM	HM	QPR
FW	MF-2	CQ
MT	OMM	FG
QTM	AK	

INTRODUCTION OF CHIPBREAKER

Type	Suitable Material	Process Type	Chip Breaker	Tolerance	Chipbreaker Diagram	Recommended Cutting Parameter	CVD Coating	PVD Coating	Carbide Grade
Negative Angle Blade Before Process On Steel & Stainless Steel		Finishing	CQ	M		$ap=0.2-6.0mm, fn=0.15-0.5 mm/r$	PC05S		
			FG	M		$ap=0.4-1.0mm, fn=0.1-0.65 mm/r$	PC05S		PC30
			MT	M		$ap=0.5-1.5mm, fn=0.1-0.6 mm/r$	PC05S		PC30
			FW	M		$ap=0.3-1.5mm, fn=0.07-0.5 mm/r$	PC25SH		
			DMF	M		$ap=1.0-3.2mm, fn=0.1-0.3 mm/r$	PC15S	PC25G	
			OPF	M		$ap=0.4-2mm, fn=0.15-0.35mm/r$	PC15S/PC15GH	PC25G	
			DTF	M		$ap=0.8-3mm, fn=0.1-0.3 mm/r$	PC15S/PC05SS	PC25H	
		GF	M		$ap=0.3-2mm, fn=0.2-0.5 mm/r$	PC15S	PC25H/PC25G		
		Semi-finishing	CM	M		$ap=0.8-3.0mm, fn=0.1-0.4mm/r$	PC05SS		
			GM	M		$ap=1.5-5mm, fn=0.15-0.5 mm/r$	PC15S/PC05S	PC25H/PC25G	
			MA	M		$ap=0.8-3.2mm, fn=0.1-0.3 mm/r$		PC20H	
			MD	M		$ap=0.4-8.6mm, fn=0.1-0.65mm/r$	PC25SH	PC20H	
			TM	M		$ap=1.5-4.5mm, fn=0.2-0.5 mm/r$	PC25SH		
			MF	M		$ap=0.5-3.0mm, fn=0.1-0.4mm/r$	PC15S		
			OMM	M		$ap=1.0-3.0mm, fn=0.15-0.3mm/r$	PC15S	PC25H	
			OPM	M		$ap=1.0-3.5mm, fn=0.1-0.35mm/r$	PC15S	PC25H/PC25G	
			OPR	M		$ap=0.5-1.5mm, fn=0.07-0.5 mm/r$	PC15S		
			PM	M		$ap=0.5-10mm, fn=0.15-0.65mm/r$	PC25SH		
			DTM	M		$ap=0.5-1.5mm, fn=0.07-0.5 mm/r$	PC15S	PC25H/PC25G	
			OTR	M		$ap=0.5-10mm, fn=0.15-0.35mm/r$	PC15S	PC25H/PC25G	
BM	M			$ap=1.5-5mm, fn=0.15-0.5 mm/r$	PC15S	PC25H/PC25G			
L	G		$ap=0.8-2.0mm, fn=0.05-0.2 mm/r$	PC25H		PC30			
Is The Former Angle Blade	Non-ferrous Metals	Finishing	AK	G		$ap=0.8-3.0mm, fn=0.1-0.4mm/r$			PC01/PC01H
			LH	G		$ap=0.5-2.5mm, fn=0.05-0.5mm/r$			PC01/PC01H
Negative Angle Blade Before	Process On Cast Iron	Rough Finish	GH	M		$ap=0.4-10mm, fn=0.19-0.85 mm/r$	PC15CC		
			NO SLOT	M		$ap=0.2-12.0mm, fn=0.1-1.19 mm/r$	PC15C/PC15CC/PC15GH		
		Semi-finishing	TK	M		$ap=1-3.0mm, fn=0.1-0.5 mm/r$	PC15C		
			OPR	M		$ap=0.5-1.5mm, fn=0.07-0.5 mm/r$	PC15C		
			U	M		$ap=1-4.0mm, fn=0.15-0.5 mm/r$	PC15C/PC15CC		

PAGE (INDIA)

- 
PC25SH CVD coated carbide grade , Universal grade suitable for steel and cast steel continuous cutting and cutting finishing to roughing. grades with a wide rage of applications. stainless steel continuous cutting and in interrupted cutting
- 
PC25G PVD coated carbide grade ,it is high hardness and excellent versatility with good free cutting material for interrupted roughing and as well as difficult machining grade for semi finishing & finishing for steel Machining.
- 
PC22G PVD coated carbide grade ,it is highly hard substrate combines both favorable shock resistance and blade security. used PVD coating with excellent versatility, it is preferred in interrupted turning and milling steel.
- 
PC15S CVD coated carbide grade , it is for smooth free cutting excellent result machining grade for semi finishing and finishing iso material
- 
PC05S CVD coated carbide grade , It is suitable for low-medium speed semi-finishing and finishing steel parts.
- 
PC25H PVD coated carbide grade ,it optimized for impact resistance , and wearing resistance, toughness and performed good for rough cutting in continuous and interrupted . it can realize high-speed , high -efficiency and environments cutting it is preferred in turning stainless steel.
- 
PC20H PVD coated micro-grain carbide . use for a variety of stainless steel finishing at medium to low cutting speed. When need excellent edge strength and high surface quality provide the perfect ride cutting a high thermal shock resistance . Suitable for light interrupted cuts.
- 
PC05SS CVD coated micro-grain carbide, it is optimized for the best combines for the best combination for toughness and wearing resistance . It is wide range applicative and suitable for stain less and finishing ISO M material.
- 
PC15GH CVD coated carbide grade ,cemented, it is optimized for good wear resistance , toughness and performed excellently in interrupted for CAST IRON machining. it is also suitable for tougher casting with excellent result requirements.
- 
PC15CC CVD coated carbide grade ,cemented, carbide, the hard substrate coated with a smooth and wear - resistant coating , can bear harsh intermittent cutting conditions . universal grade for all cast iron roughing cutting at low medium speed.
- 
PC15C CVD coated carbide grade ,cemented, it is optimized for general wear resistance ,toughness and performed good for cast iron Machining. It is good for free cutting of cast Iron.



PAGE (INDIA)

TURNING SERIES



TURNING INSERT (Negative)



CN□□

Insert Shape	Type	Dimension					P					M			K		
		L	∅I.C	S	∅D	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	CNMG 120404 CM	12.9	12.7	4.76	5.16	0.4							▲				
	CNMG 120408 CM	12.9	12.7	4.76	5.16	0.8							●				
	CNMG 120412 CM	12.9	12.7	4.76	5.16	1.2							▲				
	CNMG 120404 CQ	12.9	12.7	4.76	5.16	0.4					▲						
	CNMG 120408 CQ	12.9	12.7	4.76	5.16	0.8					▲						
	CNMG 120412 CQ	12.9	12.7	4.76	5.16	1.2					▲						
	CNMG 120404 FG	12.9	12.7	4.76	5.16	0.4					▲						
	CNMG 120408 FG	12.9	12.7	4.76	5.16	0.8					▲						
	CNMG 120412 FG	12.9	12.7	4.76	5.16	1.2					▲						
	CNMG 120404 FW	12.9	12.7	4.76	5.16	0.4	★										
	CNMG 120408 FW	12.9	12.7	4.76	5.16	0.8	★										
	CNMG 120412 FW	12.9	12.7	4.76	5.16	1.2	▲										
	CNMG 120404 GH	12.9	12.7	4.76	5.16	0.4									▲		
	CNMG 120408 GH	12.9	12.7	4.76	5.16	0.8									●		
	CNMG 120412 GH	12.9	12.7	4.76	5.16	1.2									●		
	CNMG 120404 GM	12.9	12.7	4.76	5.16	0.4		▲		▲	▲	▲					
	CNMG 120408 GM	12.9	12.7	4.76	5.16	0.8		▲		●	●	▲					
	CNMG 120412 GM	12.9	12.7	4.76	5.16	1.2		▲		▲	▲	▲					
	CNMG 120404 MA	12.9	12.7	4.76	5.16	0.4						▲					
	CNMG 120408 MA	12.9	12.7	4.76	5.16	0.8						★					
	CNMG 120412 MA	12.9	12.7	4.76	5.16	1.2						▲					
	CNMG 120404 MD	12.9	12.7	4.76	5.16	0.4	★										
	CNMG 120408 MD	12.9	12.7	4.76	5.16	0.8	★										
	CNMG 120412 MD	12.9	12.7	4.76	5.16	1.2	★										
	CNMG 120404 MF	12.9	12.7	4.76	5.16	0.4				▲							
	CNMG 120408 MF	12.9	12.7	4.76	5.16	0.8				▲							
	CNMG 120412 MF	12.9	12.7	4.76	5.16	1.2				▲							
	CNMG 120404 MT	12.9	12.7	4.76	5.16	0.4					▲						
	CNMG 120408 MT	12.9	12.7	4.76	5.16	0.8					▲						
	CNMG 120412 MT	12.9	12.7	4.76	5.16	1.2					▲						
	CNMG 120404 OMM	12.9	12.7	4.76	5.16	0.4			●		▲						
	CNMG 120408 OMM	12.9	12.7	4.76	5.16	0.8			●		★						
	CNMG 120412 OMM	12.9	12.7	4.76	5.16	1.2			●		▲						
	CNMG 120404 OPM	12.9	12.7	4.76	5.16	0.4		▲		●		▲					▲
	CNMG 120408 OPM	12.9	12.7	4.76	5.16	0.8		●		●		▲					●
	CNMG 120412 OPM	12.9	12.7	4.76	5.16	1.2		▲		●		▲					●
	CNMG 160408 OPM	16.1	15.875	6.35	6.35	0.8		▲		●							▲
	CNMG 160612 OPM	16.1	15.875	6.35	6.35	1.2		▲		▲							▲
	CNMG 160616 OPM	16.1	15.875	6.35	6.35	1.6		▲		▲							▲
	CNMG 190612 OPM	19.3	19.05	6.35	7.94	1.2				●							
	CNMG 190616 OPM	19.3	19.05	6.35	7.94	1.6				▲							
	CNMG 190624 OPM	19.3	19.05	6.35	7.94	2.4				▲							

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)



CN□□

Insert Shape	Type	Dimension					P					M			K		
		L	∅I.C	S	∅D	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	CNMG 120404 DPR	12.9	12.7	4.76	5.16	0.4					●	▲					
	CNMG 120408 DPR	12.9	12.7	4.76	5.16	0.8					▲	▲					
	CNMG 120412 DPR	12.9	12.7	4.76	5.16	1.2					▲	▲					
	CNMG 120404 PM	12.9	12.7	4.76	5.16	0.4	★										
	CNMG 120408 PM	12.9	12.7	4.76	5.16	0.8	★										
	CNMG 120412 PM	12.9	12.7	4.76	5.16	1.2	▲										
	CNMG120404 U	12.9	12.7	4.76	5.16	0.4											●
	CNMG120408 U	12.9	12.7	4.76	5.16	0.8											●
	CNMG120412 U	12.9	12.7	4.76	5.16	1.2											▲
	CNMA 120404	12.9	12.7	4.76	5.16	0.4									★	▲	●
	CNMA 120408	12.9	12.7	4.76	5.16	0.8									★	●	●
	CNMA 120412	12.9	12.7	4.76	5.16	1.2									★	●	●
	CNMG120404	12.9	12.7	4.76	5.16	0.4									★		●
	CNMG120408	12.9	12.7	4.76	5.16	0.8									★		●
	CNMG120412	12.9	12.7	4.76	5.16	1.2									★		●
	CNMG 120404 DMF	12.9	12.7	4.76	5.16	0.4		▲		▲							
	CNMG 120408 DMF	12.9	12.7	4.76	5.16	0.8		●		●							
	CNMG 120412 DMF	12.9	12.7	4.76	5.16	1.2		▲		▲							
	CNMG 120404 BM	12.9	12.7	4.76	5.16	0.4		▲		▲	▲	▲					
	CNMG 120408 BM	12.9	12.7	4.76	5.16	0.8		▲		▲	▲	★					
	CNMG 120412 BM	12.9	12.7	4.76	5.16	1.2		▲		▲	▲	▲					
	CNMG 120404 GF	12.9	12.7	4.76	5.16	0.4		▲		▲	▲	▲					
	CNMG 120408 GF	12.9	12.7	4.76	5.16	0.8		▲		▲	▲	▲					
	CNMG 120412 GF	12.9	12.7	4.76	5.16	1.2		▲		▲	▲	▲					

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)



DN□□

Insert Shape	Type	Dimension					P					M			K			
		L	øI.C	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C	
	DNMG 110404 MD	11.6	9.525	4.76	3.81	0.4	★											
	DNMG 110408 MD	11.6	9.525	4.76	3.81	0.8	★											
	DNMG 150604 MD	15.5	12.7	6.35	5.16	0.4	★											
	DNMG 150608 MD	15.5	12.7	6.35	5.16	0.8	★											
	DNMG 150612 MD	15.5	12.7	6.35	5.16	1.2	★											
	DNMG 110404 OMM	11.6	9.525	4.76	3.81	0.4				▲								
	DNMG 110408 OMM	11.6	9.525	4.76	3.81	0.8				●								
	DNMG 150604 OMM	15.5	12.7	6.35	5.16	0.4				▲								
	DNMG 150608 OMM	15.5	12.7	6.35	5.16	0.8				●								
	DNMG 110404 OPM	11.6	9.525	4.76	3.81	0.4				●								
	DNMG 110408 OPM	11.6	9.525	4.76	3.81	0.8				▲								
	DNMG 110412 OPM	11.6	9.525	4.76	3.81	1.2				▲								
	DNMG150604 OPM	15.5	12.7	6.35	5.16	0.4				▲	▲							▲
	DNMG150608 OPM	15.5	12.7	6.35	5.16	0.8				●	●							●
	DNMG150612 OPM	15.5	12.7	6.35	5.16	1.2				▲	●							▲
	DNMG 150604 DPR	15.5	12.7	6.35	5.16	0.4				▲								▲
	DNMG 150608 DPR	15.5	12.7	6.35	5.16	0.8				●								▲
	DNMG 150612 DPR	15.5	12.7	6.35	5.16	1.2				●								▲
	DNMA150604	15.5	12.7	6.35	5.16	0.4								▲				▲
	DNMA150608	15.5	12.7	6.35	5.16	0.8								▲				●
	DNMA150612	15.5	12.7	6.35	5.16	1.2								▲				▲
	DNMG 150604 GM	15.5	12.7	6.35	5.16	0.4				▲								
	DNMG 150608 GM	15.5	12.7	6.35	5.16	0.8				●								
	DNMG 150612 GM	15.5	12.7	6.35	5.16	1.2				▲								

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)



WN□□

Insert Shape	Type	Dimension					P					M			K			
		L	øI.C	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C	
	WNMG060404 GH	6.5	9.525	4.76	3.81	0.4												▲
	WNMG060408 GH	6.5	9.525	4.76	3.81	0.8												▲
	WNMG060412 GH	6.5	9.525	4.76	3.81	1.2												▲
	WNMG080404 GH	8.7	12.7	4.76	5.16	0.4												▲
	WNMG080408 GH	8.7	12.7	4.76	5.16	0.8												●
	WNMG080412 GH	8.7	12.7	4.76	5.16	1.2												●
	WNMG 080404 MA	8.7	12.7	4.76	5.16	0.4							▲					
	WNMG 080408 MA	8.7	12.7	4.76	5.16	0.8							●					
	WNMG 080412 MA	8.7	12.7	4.76	5.16	1.2							▲					
	WNMG 060404 MD	6.5	9.525	4.76	3.81	0.4	★											
	WNMG 060408 MD	6.5	9.525	4.76	3.81	0.8	★											
	WNMG 080404 MD	8.7	12.7	4.76	5.16	0.4	★						▲					
	WNMG 080408 MD	8.7	12.7	4.76	5.16	0.8	★						●					
	WNMG 080412 MD	8.7	12.7	4.76	5.16	1.2	★						▲					
	WNMG 080404 MF	8.7	12.7	4.76	5.16	0.4							▲	▲				
	WNMG 080408 MF	8.7	12.7	4.76	5.16	0.8							●	▲				
	WNMG 080412 MF	8.7	12.7	4.76	5.16	1.2							▲	▲				
	WNMG 080404 MT	8.7	12.7	4.76	5.16	0.4									▲			
	WNMG 080408 MT	8.7	12.7	4.76	5.16	0.8								▲				
	WNMG 080412 MT	8.7	12.7	4.76	5.16	1.2								▲				
	WNMG 060404 DMF	6.5	9.525	4.76	3.81	0.4								▲	▲			
	WNMG 060408 DMF	6.5	9.525	4.76	3.81	0.8								●	●	●		
	WNMG 080404 DMF	8.7	12.7	4.76	5.16	0.4								▲	▲			
	WNMG 080408 DMF	8.7	12.7	4.76	5.16	0.8								▲	▲			
	WNMG 080412 DMF	8.7	12.7	4.76	5.16	1.2								▲	▲			
	WNMG 080404 OMM	8.7	12.7	4.76	5.16	0.4								▲	▲	▲		
	WNMG 080408 OMM	8.7	12.7	4.76	5.16	0.8								●	●	★		
	WNMG 080412 OMM	8.7	12.7	4.76	5.16	1.2								▲	▲	▲		
	WNMG 060404 OPF	6.5	9.525	4.76	3.81	0.4							●					●
	WNMG 060408 OPF	6.5	9.525	4.76	3.81	0.8							▲					●
	WNMG080404 OPF	8.7	12.7	4.76	5.16	0.4							▲					
	WNMG080408 OPF	8.7	12.7	4.76	5.16	0.8							▲					
	WNMG080412 OPF	8.7	12.7	4.76	5.16	1.2							▲	▲	▲			
	WNMG 080404 OPM	8.7	12.7	4.76	5.16	0.4							●	●	●	★		
	WNMG 080408 OPM	8.7	12.7	4.76	5.16	0.8							●	▲	▲	▲		
	WNMG 080412 OPM	8.7	12.7	4.76	5.16	1.2							▲	●	▲	▲		▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)

WN□□



Insert Shape	Type	Dimension					P					M			K		
		L	øLC	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	WNMG 080404 DPR	8.7	12.7	4.76	5.16	0.4				●	▲	★					▲
	WNMG 080408 DPR	8.7	12.7	4.76	5.16	0.8				▲	●	▲					●
	WNMG 080412 DPR	8.7	12.7	4.76	5.16	1.2				▲	●	▲					●
	WNMG 080404 PM	8.7	12.7	4.76	5.16	0.4	★										
	WNMG 080408 PM	8.7	12.7	4.76	5.16	0.8	★										
	WNMG 080412 PM	8.7	12.7	4.76	5.16	1.2	▲										
	WNMG080404 TK	8.7	12.7	4.76	5.16	0.4											▲
	WNMG080408 TK	8.7	12.7	4.76	5.16	0.8											●
	WNMG080412 TK	8.7	12.7	4.76	5.16	1.2											▲
	WNMG 080404 TM	8.7	12.7	4.76	5.16	0.4	▲										
	WNMG 080408 TM	8.7	12.7	4.76	5.16	0.8	★										
	WNMG 080412 TM	8.7	12.7	4.76	5.16	1.2	▲										
	WNMA 060404	6.5	9.525	4.76	3.81	0.4								▲	▲	▲	
	WNMA 060408	6.5	9.525	4.76	3.81	0.8								▲	●	▲	
	WNMA 060412	6.5	9.525	4.76	3.81	1.2								▲	▲	▲	
	WNMA 080404	8.7	12.7	4.76	5.16	0.4								▲	▲	▲	
	WNMA 080408	8.7	12.7	4.76	5.16	0.8								▲	●	●	
	WNMA 080412	8.7	12.7	4.76	5.16	1.2								▲	●	●	
	WNMG080404	8.7	12.7	4.76	5.16	0.4								▲		▲	
	WNMG080408	8.7	12.7	4.76	5.16	0.8								★		▲	
	WNMG080412	8.7	12.7	4.76	5.16	1.2								▲		●	
	WNMG080404 FW	8.7	12.7	4.76	5.16	0.4	▲										
	WNMG080408 FW	8.7	12.7	4.76	5.16	0.8	★										
	WNMG080412 FW	8.7	12.7	4.76	5.16	1.2	▲										
	WNMG080404 BM	8.7	12.7	4.76	3.81	0.4		▲	▲		▲						
	WNMG080408 BM	8.7	12.7	4.76	3.81	0.8		▲	▲		▲						
	WNMG080412 BM	8.7	12.7	4.76	3.81	1.2		▲	▲		▲						
	WNMG080404 GM	8.7	12.7	4.76	3.81	0.4		▲	▲		▲						
	WNMG080408 GM	8.7	12.7	4.76	3.81	0.8		▲	▲		▲						
	WNMG080412 GM	8.7	12.7	4.76	3.81	1.2		▲	▲		▲						
	WNMG 080404 CM	8.7	12.7	4.76	3.81	0.4						▲					
	WNMG 080408 CM	8.7	12.7	4.76	3.81	0.8						●					
	WNMG 080412 CM	8.7	12.7	4.76	3.81	1.2						▲					
	WNMG 080404 CQ	8.7	12.7	4.76	3.81	0.4					▲						
	WNMG 080408 CQ	8.7	12.7	4.76	3.81	0.8					▲						
	WNMG 080412 CQ	8.7	12.7	4.76	3.81	1.2					▲						
	WNMG 080404 FG	8.7	12.7	4.76	3.81	0.4					▲						
	WNMG 080408 FG	8.7	12.7	4.76	3.81	0.8					▲						
	WNMG 080412 FG	8.7	12.7	4.76	3.81	1.2					▲						

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)

TN□□



Insert Shape	Type	Dimension					P					M			K		
		L	øLC	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	TNMG 160404 CM	16.5	9.525	4.76	3.81	0.4											▲
	TNMG 160408 CM	16.5	9.525	4.76	3.81	0.8											●
	TNMG 160412 CM	16.5	9.525	4.76	3.81	1.2											▲
	TNMG 160404 CQ	16.5	9.525	4.76	3.81	0.4					●						
	TNMG 160408 CQ	16.5	9.525	4.76	3.81	0.8					●						
	TNMG 160412 CQ	16.5	9.525	4.76	3.81	1.2					▲						
	TNMG 160404 FG	16.5	9.525	4.76	3.81	0.4					▲						
	TNMG 160408 FG	16.5	9.525	4.76	3.81	0.8					▲						
	TNMG 160412 FG	16.5	9.525	4.76	3.81	1.2					▲						
	TNMG 160404 FW	16.5	9.525	4.76	3.81	0.4	★										
	TNMG 160408 FW	16.5	9.525	4.76	3.81	0.8	★										
	TNMG 160412 FW	16.5	9.525	4.76	3.81	1.2	▲										
	TNMG160404 GH	16.5	9.525	4.76	3.81	0.4											▲
	TNMG160408 GH	16.5	9.525	4.76	3.81	0.8											●
	TNMG160412 GH	16.5	9.525	4.76	3.81	1.2											●
	TNMG220408 GH	22	12.7	4.76	5.16	0.8											●
	TNMG220412 GH	22	12.7	4.76	5.16	1.2											▲
	TNMG 160404 GM	16.5	9.525	4.76	3.81	0.4		▲		▲	▲	●					
	TNMG 160408 GM	16.5	9.525	4.76	3.81	0.8		▲		●	▲	●					
	TNMG 160412 GM	16.5	9.525	4.76	3.81	1.2		▲		▲	▲	●					
	TNMG 160404 MA	16.5	9.525	4.76	3.81	0.4						★					
	TNMG 160408 MA	16.5	9.525	4.76	3.81	0.8						★					
	TNMG 160412 MA	16.5	9.525	4.76	3.81	1.2						▲		▲			
	TNMG 160404 MF	16.5	9.525	4.76	3.81	0.4					▲						
	TNMG 160408 MF	16.5	9.525	4.76	3.81	0.8					●						
	TNMG 160412 MF	16.5	9.525	4.76	3.81	1.2					▲						
	TNMG 160404 MT	16.5	9.525	4.76	3.81	0.4						▲					
	TNMG 160408 MT	16.5	9.525	4.76	3.81	0.8						●					
	TNMG 160412 MT	16.5	9.525	4.76	3.81	1.2						▲					
	TNMG 160404 OMM	16.5	9.525	4.76	3.81	0.4					●		▲				
	TNMG 160408 OMM	16.5	9.525	4.76	3.81	0.8					●		▲				
	TNMG 160412 OMM	16.5	9.525	4.76	3.81	1.2					▲		▲				
	TNMG 160404 OPM	16.5	9.525	4.76	3.81	0.4		●	▲	●		★					
	TNMG 160408 OPM	16.5	9.525	4.76	3.81	0.8		●	●	●		★					
	TNMG 160412 OPM	16.5	9.525	4.76	3.81	1.2		▲	▲	●		▲					
	TNMG 160404 DPR	16.5	9.525	4.76	3.81	0.4					▲						★
	TNMG 160408 DPR	16.5	9.525	4.76	3.81	0.8					●						▲
	TNMG 160412 DPR	16.5	9.525	4.76	3.81	1.2					●						▲
	TNMG 220408 DPR	22	12.7	4.76	5.16	0.8					▲						▲
	TNMG 220412 DPR	22	12.7	4.76	5.16	1.2					▲						▲

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TURNING INSERT (Negative)

TN□□

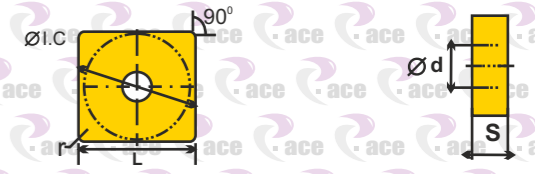


Insert Shape	Type	Dimension					P					M			K		
		L	ØI.C	S	ØD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	TNMG 160404 PM	16.5	9.525	4.76	3.81	0.4	▲										
	TNMG 160408 PM	16.5	9.525	4.76	3.81	0.8	★										
	TNMG 160412 PM	16.5	9.525	4.76	3.81	1.2	▲										
	TNMG 160404 TM	16.5	9.525	4.76	3.81	0.4	●										
	TNMG 160408 TM	16.5	9.525	4.76	3.81	0.8	●										
	TNMG 160412 TM	16.5	9.525	4.76	3.81	1.2	●										
	TNMG160404 U	16.5	9.525	4.76	3.81	0.4							▲	▲			
	TNMG160408 U	16.5	9.525	4.76	3.81	0.8							▲	●			
	TNMG160412 U	16.5	9.525	4.76	3.81	1.2							▲	●			
	TNMA 160404	16.5	9.525	4.76	3.81	0.4							★	▲	●		
	TNMA 160408	16.5	9.525	4.76	3.81	0.8							★	●	●		
	TNMA 160412	16.5	9.525	4.76	3.81	1.2							★	●	●		
	TNMG 160404	16.5	9.525	4.76	3.81	0.4							▲	●	▲		
	TNMG 160408	16.5	9.525	4.76	3.81	0.8							★	▲	●		
	TNMG 160412	16.5	9.525	4.76	3.81	1.2							▲	▲	●		
	TNMG 160404 DPF	16.5	9.525	4.76	3.81	0.4				●							
	TNMG 160408 DPF	16.5	9.525	4.76	3.81	0.8				●							
	TNMG 160412 DPF	16.5	9.525	4.76	3.81	1.2				▲							
	TNMG 160404 MF2	16.5	9.525	4.76	3.81	0.4		▲									
	TNMG 160408 MF2	16.5	9.525	4.76	3.81	0.8		●				★					
	TNMG 160412 MF2	16.5	9.525	4.76	3.81	1.2		▲				▲					
	TNMG160404 MD	16.5	9.525	4.76	3.81	0.4	★										
	TNMG160408 MD	16.5	9.525	4.76	3.81	0.8	★										
	TNMG160412 MD	16.5	9.525	4.76	3.81	1.2	★										
	TNMG160404 GF	16.5	9.525	4.76	3.81	0.4		▲		▲		▲					
	TNMG160408 GF	16.5	9.525	4.76	3.81	0.8		▲		▲		▲					
	TNMG160412 GF	16.5	9.525	4.76	3.81	1.2		▲		▲		▲					
	TNMG160404 BM	16.5	9.525	4.76	3.81	0.4		▲		▲		▲					
	TNMG160408 BM	16.5	9.525	4.76	3.81	0.8		▲		▲		▲					
	TNMG160412 BM	16.5	9.525	4.76	3.81	1.2		▲		▲		▲					

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)

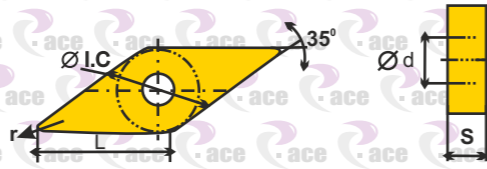
SN□□



Insert Shape	Type	Dimension					P					M			K		
		L	ØI.C	S	ØD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	SNMG 120404 MD	12.7	12.7	4.76	5.16	0.4	▲										
	SNMG 120408 MD	12.7	12.7	4.76	5.16	0.8	★										
	SNMG 120412 MD	12.7	12.7	4.76	5.16	1.2	★										
	SNMG 190608 MD	19.1	19.1	6.35	7.94	0.8	▲										
	SNMG 190612 MD	19.1	19.1	6.35	7.94	1.2	▲										
	SNMG 120404 DPM	12.7	12.7	4.76	5.16	0.4		▲		▲							
	SNMG 120408 DPM	12.7	12.7	4.76	5.16	0.8		▲		●							●
	SNMG 120412 DPM	12.7	12.7	4.76	5.16	1.2		▲		●							▲
	SNMG 190608 DPM	19.1	19.1	6.35	7.94	0.8		▲		▲							▲
	SNMG 190612 DPM	19.1	19.1	6.35	7.94	1.2		▲		▲							▲
	SNMG 120404 DPR	12.7	12.7	4.76	5.16	0.4		▲		▲							▲
	SNMG 120408 DPR	12.7	12.7	4.76	5.16	0.8		▲		▲							▲
	SNMG 120412 DPR	12.7	12.7	4.76	5.16	1.2		▲		▲							▲
	SNMA 120404	12.7	12.7	4.76	5.16	0.4										▲	▲
	SNMA 120408	12.7	12.7	4.76	5.16	0.8										▲	●
	SNMA 120416	12.7	12.7	4.76	5.16	1.6										▲	▲
	SNMG 120404	12.7	12.7	4.76	5.16	0.4											●
	SNMG 120408	12.7	12.7	4.76	5.16	0.8											●
	SNMG 120412	12.7	12.7	4.76	5.16	1.2											●
	SNMG120404 BM	12.7	12.7	4.76	5.16	0.4		▲		▲		▲					
	SNMG120408 BM	12.7	12.7	4.76	5.16	0.8		▲		▲		▲					
	SNMG120412 BM	12.7	12.7	4.76	5.16	1.2		▲		▲		▲					
	SNMG120404 GM	12.7	12.7	4.76	5.16	0.4		▲		▲		▲					
	SNMG120408 GM	12.7	12.7	4.76	5.16	0.8		▲		▲		▲					
	SNMG120412 GM	12.7	12.7	4.76	5.16	1.2		▲		▲		▲					

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)

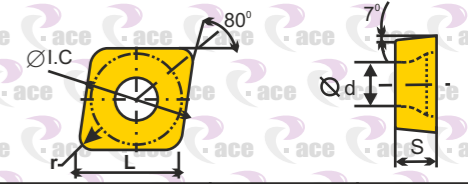


VN□□

Insert Shape	Type	Dimension					P					M			K			
		L	øLC	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C	
	VNMG 160404 MD	16.6	9.525	4.76	3.81	0.4	★											
	VNMG 160408 MD	16.6	9.525	4.76	3.81	0.8	★											
	VNMG 160412 MD	16.6	9.525	4.76	3.81	1.2	★											
	VNMG 160404 OPM	16.6	9.525	4.76	3.81	0.4				●	★							●
	VNMG 160408 OPM	16.6	9.525	4.76	3.81	0.8				●	★							●
	VNMG 160412 OPM	16.6	9.525	4.76	3.81	1.2				▲	▲							▲
	VNMA160404	16.6	9.525	4.76	3.81	0.4												▲
	VNMA160408	16.6	9.525	4.76	3.81	0.8												▲
	VNMA160412	16.6	9.525	4.76	3.81	1.2												▲
	VNMG 12T302	12.4	9.525	3.97	2.85	0.2		▲	▲									▲
	VNMG 12T304	12.4	9.525	3.97	2.85	0.4		▲	▲									▲
	VNMG 12T308	12.4	9.525	3.97	2.85	0.8		▲	▲									▲
	VNMG160404 OPF	16.6	9.525	4.76	3.81	0.4				▲								★
	VNMG160408 OPF	16.6	9.525	4.76	3.81	0.8				●								★
	VNMG160412 OPF	16.6	9.525	4.76	3.81	1.2				▲								▲
	VNMG160404 GM	16.6	9.525	4.76	3.81	0.4		▲	▲		▲							
	VNMG160408 GM	16.6	9.525	4.76	3.81	0.8		▲	▲		▲							
	VNMG160412 GM	16.6	9.525	4.76	3.81	1.2		▲	▲		▲							
	VNMG 160404 GF	16.6	9.525	4.76	3.81	0.4		▲	▲	▲	▲							
	VNMG 160408 GF	16.6	9.525	4.76	3.81	0.8		▲	●	▲	★							
	VNMG 160412 GF	16.6	9.525	4.76	3.81	1.2		▲	▲	▲	▲							

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)



CC□□

Insert Shape	Type	Dimension					P					M			K			
		L	øLC	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C	
	CCMT 060202 FW	6.4	6.35	2.38	2.8	0.2	★											▲
	CCMT 060204 FW	6.4	6.35	2.38	2.8	0.4	▲											★
	CCMT 060208 FW	6.4	6.35	2.38	2.8	0.8	★											▲
	CCMT 09T302 FW	9.7	9.525	3.97	4.4	0.2	▲											▲
	CCMT 09T304 FW	9.7	9.525	3.97	4.4	0.4	★											★
	CCMT 09T308 FW	9.7	9.525	3.97	4.4	0.8	★											★
	CCMT 060202 MD	6.4	6.35	2.38	2.8	0.2	▲											▲
	CCMT 060204 MD	6.4	6.35	2.38	2.8	0.4	▲											●
	CCMT 060208 MD	6.4	6.35	2.38	2.8	0.8	▲											▲
	CCMT 09T302 MD	9.7	9.525	3.97	4.4	0.2	▲											▲
	CCMT 09T304 MD	9.7	9.525	3.97	4.4	0.4	▲											★
	CCMT 09T308 MD	9.7	9.525	3.97	4.4	0.8	▲											★
	CCMT 060202 DTF	6.4	6.35	2.38	2.8	0.2				▲		▲						
	CCMT 060204 DTF	6.4	6.35	2.38	2.8	0.4				●		★						
	CCMT 060208 DTF	6.4	6.35	2.38	2.8	0.8				▲		▲						
	CCMT 09T302 DTF	9.7	9.525	3.97	4.4	0.2				▲		▲						
	CCMT 09T304 DTF	9.7	9.525	3.97	4.4	0.4				▲		★						
	CCMT 09T308 DTF	9.7	9.525	3.97	4.4	0.8				▲		★						
	CCMT 060202 DTM	6.4	6.35	2.38	2.8	0.2		▲	▲									▲
	CCMT 060204 DTM	6.4	6.35	2.38	2.8	0.4		▲	▲									●
	CCMT 060208 DTM	6.4	6.35	2.38	2.8	0.8		●	●									★
	CCMT 09T302 DTM	9.7	9.525	3.97	4.4	0.2		▲	▲		▲							▲
	CCMT 09T304 DTM	9.7	9.525	3.97	4.4	0.4		▲	●		★							●
	CCMT 09T308 DTM	9.7	9.525	3.97	4.4	0.8		▲	●		★							●
	CCMT 060202 DTR	6.4	6.35	2.38	2.8	0.2				▲		▲						▲
	CCMT 060204 DTR	6.4	6.35	2.38	2.8	0.4				▲		▲						▲
	CCMT 060208 DTR	6.4	6.35	2.38	2.8	0.8				▲		▲						▲
	CCMT 09T302 DTR	9.7	9.525	3.97	4.4	0.2				▲		▲						▲
	CCMT 09T304 DTR	9.7	9.525	3.97	4.4	0.4				▲		▲						▲
	CCMT 09T308 DTR	9.7	9.525	3.97	4.4	0.8				▲		▲						▲
	CCMT 060202 HF	6.4	6.35	2.38	2.8	0.2		▲			▲	▲						
	CCMT 060204 HF	6.4	6.35	2.38	2.8	0.4		▲			▲	▲						
	CCMT 060208 HF	6.4	6.35	2.38	2.8	0.8		▲			▲	▲						
	CCMT 09T302 HF	9.7	9.525	3.97	4.4	0.2		▲			▲	▲						
	CCMT 09T304 HF	9.7	9.525	3.97	4.4	0.4		▲			▲	▲						
	CCMT 09T308 HF	9.7	9.525	3.97	4.4	0.8		▲			▲	▲						
	CCMT 060202 HM	6.4	6.35	2.38	2.8	0.2		▲			▲	▲						
	CCMT 060204 HM	6.4	6.35	2.38	2.8	0.4		▲			▲	▲						
	CCMT 060208 HM	6.4	6.35	2.38	2.8	0.8		▲			▲	▲						
	CCMT 09T302 HM	9.7	9.525	3.97	4.4	0.2		▲			▲	▲						
	CCMT 09T304 HM	9.7	9.525	3.97	4.4	0.4		▲			●	▲						
	CCMT 09T308 HM	9.7	9.525	3.97	4.4	0.8		▲			●	▲						

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

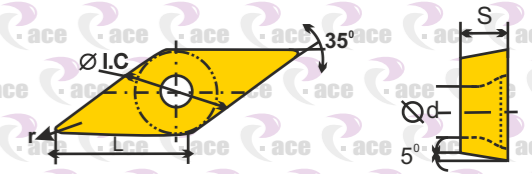


DC□□

Insert Shape	Type	Dimension					P					M			K		
		L	ø1.C	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	DCMT 070202 FW	7.8	6.35	2.38	2.8	0.2	▲					▲					
	DCMT 070204 FW	7.8	6.35	2.38	2.8	0.4	▲					▲					
	DCMT 070208 FW	7.8	6.35	2.38	2.8	0.8	▲					▲					
	DCMT 11T302 FW	11.6	9.525	3.97	4.4	0.2	▲					▲					
	DCMT 11T304 FW	11.6	9.525	3.97	4.4	0.4	▲					▲					
	DCMT 070202 MD	7.8	6.35	2.38	2.8	0.2	▲					▲					
	DCMT 070204 MD	7.8	6.35	2.38	2.8	0.4	▲					▲					
	DCMT 070208 MD	7.8	6.35	2.38	2.8	0.8	▲					▲					
	DCMT 11T302 MD	11.6	9.525	3.97	4.4	0.2	▲					▲					
	DCMT 11T304 MD	11.6	9.525	3.97	4.4	0.4	★					▲					
	DCMT 070204 DTM	7.8	6.35	2.38	2.8	0.4				▲		▲					▲
	DCMT 070208 DTM	7.8	6.35	2.38	2.8	0.8				▲		★					▲
	DCMT 11T304 DTM	11.6	9.525	3.97	4.4	0.4				●		▲					▲
	DCMT 11T308 DTM	11.6	9.525	3.97	4.4	0.8				▲		★					▲
	DCMT 070204 DTR	7.8	6.35	2.38	2.8	0.4				▲		▲					▲
	DCMT 070208 DTR	7.8	6.35	2.38	2.8	0.8				▲		▲					▲
	DCMT 11T302 DTR	11.6	9.525	3.97	4.4	0.2				▲		▲					▲
	DCMT 11T304 DTR	11.6	9.525	3.97	4.4	0.4				▲		▲					▲
	DCMT 11T308 DTR	11.6	9.525	3.97	4.4	0.8				▲		▲					▲
	DCMT 070204 DTF	7.8	6.35	2.38	2.8	0.4				▲		★					
	DCMT 070208 DTF	7.8	6.35	2.38	2.8	0.8				▲		▲					
	DCMT 11T304 DTF	11.6	9.525	3.97	4.4	0.4				▲		★					
	DCMT 11T308 DTF	11.6	9.525	3.97	4.4	0.8				▲		▲					
	DCMT 070204 HF	7.8	6.35	2.38	2.8	0.4		▲		▲	▲	▲					
		DCMT 070208 HF	7.8	6.35	2.38	2.8	0.8		▲		▲	▲	▲				
DCMT 11T302 HF		11.6	9.525	3.97	4.4	0.2		▲		▲	▲	▲					
DCMT 11T304 HF		11.6	9.525	3.97	4.4	0.4		▲		▲	▲	▲					
DCMT 11T308 HF		11.6	9.525	3.97	4.4	0.8		▲		▲	▲	▲					
		DCMT 070204 HM	7.8	6.35	2.38	2.8	0.4		▲		▲	▲	▲				
	DCMT 070208 HM	7.8	6.35	2.38	2.8	0.8		▲		▲	▲	▲					
	DCMT 11T302 HM	11.6	9.525	3.97	4.4	0.2		▲		▲	▲	▲					
	DCMT 11T304 HM	11.6	9.525	3.97	4.4	0.4		▲		▲	▲	▲					
	DCMT 11T308 HM	11.6	9.525	3.97	4.4	0.8		▲		▲	▲	▲					

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)



VB□□

Insert Shape	Type	Dimension					P					M			K		
		L	ø1.C	S	øD	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	VBMT 160404 MD	16.5	9.525	4.76	4.4	0.4	★										
	VBMT 160408 MD	16.5	9.525	4.76	4.4	0.8	★										
	VBMT 160412 MD	16.5	9.525	4.76	4.4	1.2	▲										
	VBMT 160404 DTF	16.5	9.525	4.76	4.4	0.4				▲		▲					
	VBMT 160408 DTF	16.5	9.525	4.76	4.4	0.8				●		▲					
	VBMT 160412 DTF	16.5	9.525	4.76	4.4	1.2				▲		▲					
	VBMT 160404 DTM	16.5	9.525	4.76	4.4	0.4				▲		▲					▲
	VBMT 160408 DTM	16.5	9.525	4.76	4.4	0.8				▲		★					▲
	VBMT 160412 DTM	16.5	9.525	4.76	4.4	1.2				▲		▲					▲
	VBMT 160404 DTR	16.5	9.525	4.76	4.4	0.4				▲		▲					▲
	VBMT 160408 DTR	16.5	9.525	4.76	4.4	0.8				●		★					▲
	VBMT 160412 DTR	16.5	9.525	4.76	4.4	1.2				▲		▲					▲
	VBMT 160404 HM	16.5	9.525	4.76	4.4	0.4		▲		▲	▲	▲					
	VBMT 160408 HM	16.5	9.525	4.76	4.4	0.8		▲		▲	▲	▲					
	VBMT 160412 HM	16.5	9.525	4.76	4.4	1.2		▲		▲	▲	▲					

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

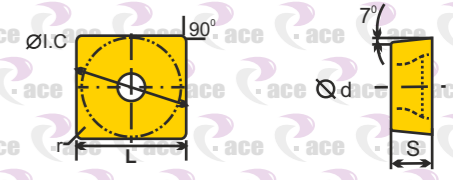


TC□□

Insert Shape	Type	Dimension					P					M			K		
		L	øLC	S	øD	r	PCZ5SH	PCZ5G	PCZ2G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	TCMT 090204 FW	9.6	5.56	2.38	2.5	0.4	▲										
	TCMT 090208 FW	9.6	5.56	2.38	2.5	0.8	▲										
	TCMT 110204 FW	11	6.35	2.38	2.8	0.4	▲										
	TCMT 110208 FW	11	6.35	2.38	2.8	0.8	▲										
	TCMT 16T304 FW	16.5	9.525	3.97	4.4	0.4	▲										
	TCMT 16T308 FW	16.5	9.525	3.97	4.4	0.8	▲										
	TCMT 090202 MD	9.6	5.56	2.38	2.5	0.2	▲					▲					
	TCMT 090204 MD	9.6	5.56	2.38	2.5	0.4	▲					▲					
	TCMT 090208 MD	9.6	5.56	2.38	2.5	0.8	▲					▲					
	TCMT 110202 MD	11	6.35	2.38	2.8	0.2	▲					▲					
	TCMT 110204 MD	11	6.35	2.38	2.8	0.4	▲					▲					
	TCMT 110208 MD	11	6.35	2.38	2.8	0.8	▲					▲					
	TCMT 16T304 MD	16.5	9.525	3.97	4.4	0.4	★					★					
	TCMT 16T308 MD	16.5	9.525	3.97	4.4	0.8	★					★					
	TCMT 16T312 MD	16.5	9.525	3.97	4.4	1.2	▲					▲					
	TCMT 090202 OTM	9.6	5.56	2.38	2.5	0.2					▲						▲
	TCMT 090204 OTM	9.6	5.56	2.38	2.5	0.4					●						▲
	TCMT 090208 OTM	9.6	5.56	2.38	2.5	0.8					●						▲
	TCMT 110202 OTM	11	6.35	2.38	2.8	0.2					▲						▲
	TCMT 110204 OTM	11	6.35	2.38	2.8	0.4					▲	★					▲
	TCMT 110208 OTM	11	6.35	2.38	2.8	0.8					▲	★					▲
	TCMT 16T304 OTM	16.5	9.525	3.97	4.4	0.4					●	★					▲
	TCMT 16T308 OTM	16.5	9.525	3.97	4.4	0.8					▲	★					▲
	TCMT 16T312 OTM	16.5	9.525	3.97	4.4	1.2					▲	▲					▲
	TCMT 090204 OTF	9.6	5.56	2.38	2.5	0.4					▲	▲					
	TCMT 090208 OTF	9.6	5.56	2.38	2.5	0.8					▲						
	TCMT 110204 OTF	11	6.35	2.38	2.8	0.4					▲						
	TCMT 110208 OTF	11	6.35	2.38	2.8	0.8					▲						
	TCMT 16T304 OTF	16.5	9.525	3.97	4.4	0.4					●	▲					
	TCMT 16T308 OTF	16.5	9.525	3.97	4.4	0.8					▲						
	TCMT 090204 HF	9.6	5.56	2.38	2.5	0.4		▲		▲	▲	▲					
	TCMT 090208 HF	9.6	5.56	2.38	2.5	0.8		▲		▲	▲	▲					
	TCMT 110204 HF	11	6.35	2.38	2.8	0.4		▲		▲	▲	▲					
	TCMT 110208 HF	11	6.35	2.38	2.8	0.8		▲		▲	▲	▲					
	TCMT 16T304 HF	16.5	9.525	3.97	4.4	0.4		▲		▲	▲	▲					
	TCMT 16T308 HF	16.5	9.525	3.97	4.4	0.8		▲		▲	▲	▲					
	TCMT 090204 HM	9.6	5.56	2.38	2.5	0.4		▲		▲	▲	▲					
	TCMT 090208 HM	9.6	5.56	2.38	2.5	0.8		▲		▲	▲	▲					
	TCMT 110204 HM	11	6.35	2.38	2.8	0.4		▲		▲	▲	▲					
	TCMT 110208 HM	11	6.35	2.38	2.8	0.8		▲		▲	▲	▲					
	TCMT 16T304 HM	16.5	9.525	3.97	4.4	0.4		▲		▲	▲	▲					
	TCMT 16T308 HM	16.5	9.525	3.97	4.4	0.8		▲		▲	▲	▲					

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)



SC□□

Insert Shape	Type	Dimension					P					M			K		
		L	øLC	S	øD	r	PCZ5SH	PCZ5G	PCZ2G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C
	SCMT 09T304 MD	9.525	9.525	3.97	4.4	0.4	▲								▲		
	SCMT 09T308 MD	9.525	9.525	3.97	4.4	0.8	▲								▲		
	SCMT 120404 MD	12.7	12.7	4.76	5.56	0.4	▲								▲		
	SCMT 120408 MD	12.7	12.7	4.76	5.56	0.8	▲								▲		
	SCMT 120412 MD	12.7	12.7	4.76	5.56	1.2	▲								▲		
	SCMT 09T304 OTF	9.525	9.525	3.97	4.4	0.4									▲		
	SCMT 09T308 OTF	9.525	9.525	3.97	4.4	0.8									▲		
	SCMT 120404 OTF	12.7	12.7	4.76	5.56	0.4									▲		
	SCMT 120408 OTF	12.7	12.7	4.76	5.56	0.8									▲		
	SCMT 120412 OTF	12.7	12.7	4.76	5.56	1.2									▲		
	SCMT 09T304 OTM	9.525	9.525	3.97	4.4	0.4									▲		
	SCMT 09T308 OTM	9.525	9.525	3.97	4.4	0.8									●		▲
	SCMT 120404 OTM	12.7	12.7	4.76	5.56	0.4									▲		
	SCMT 120408 OTM	12.7	12.7	4.76	5.56	0.8									▲		
	SCMT 120412 OTM	12.7	12.7	4.76	5.56	1.2									●		▲
	SCMT 09T304 OTR	9.525	9.525	3.97	4.4	0.4									▲		▲
	SCMT 09T308 OTR	9.525	9.525	3.97	4.4	0.8									●		▲
	SCMT 120404 OTR	12.7	12.7	4.76	5.56	0.4									▲		▲
	SCMT 120408 OTR	12.7	12.7	4.76	5.56	0.8									●		▲
	SCMT 120412 OTR	12.7	12.7	4.76	5.56	1.2									▲		▲
	SCMT 09T304 HF	9.525	9.525	3.97	4.4	0.4									▲	▲	▲
	SCMT 09T308 HF	9.525	9.525	3.97	4.4	0.8									▲	▲	▲
	SCMT 120404 HF	12.7	12.7	4.76	5.56	0.4									▲	▲	▲
	SCMT 120408 HF	12.7	12.7	4.76	5.56	0.8									▲	▲	▲
	SCMT 120412 HF	12.7	12.7	4.76	5.56	1.2									▲	▲	▲
	SCMT 09T304 HM	9.525	9.525	3.97	4.4	0.4									▲	▲	▲
	SCMT 09T308 HM	9.525	9.525	3.97	4.4	0.8									▲	●	▲
	SCMT 120404 HM	12.7	12.7	4.76	5.56	0.4									▲	▲	▲
	SCMT 120408 HM	12.7	12.7	4.76	5.56	0.8									▲	●	▲
	SCMT 120412 HM	12.7	12.7	4.76	5.56	1.2									▲	▲	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING

GENERAL TURNING INSERT

TURNING INSERT (Positive)

TP□□

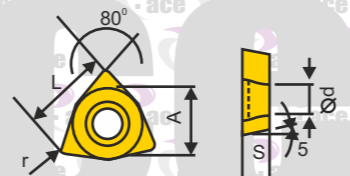


Insert Shape	Type	Dimension					P					M			K			
		L	∅L.C	S	∅D	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C	
	TPGH 060102-L	6.4	3.97	1.59	2.2	0.2						▲						
	TPGH 080202-L	8.5	4.76	2.38	2.3	0.2						▲						
	TPGH 080204-L	8.5	4.76	2.38	2.3	0.4						▲						
	TPGH 090202-L	9.6	5.56	2.38	2.8	0.2						▲						
	TPGH 090204-L	9.6	5.56	2.38	2.8	0.4						★						
	TPGH 110302-L	11	6.35	3.18	3.18	0.2						▲						
	TPGH 110304-L	11	6.35	3.18	3.18	0.4						★						

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

WB□□



Insert Shape	Type	Dimension					P					M			K			
		L	∅L.C	S	∅D	r	PC25SH	PC25G	PC22G	PC15S	PC05S	PC25H	PC20H	PC05SS	PC15CH	PC15CC	PC15C	
	WBGT 060102-L	6.4	3.97	1.59	2.3	0.2						★						
	WBGT 060104-L	6.4	3.97	1.59	2.3	0.2						★						

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING

ALUMINUM SERIES

GRADES SPECIFICATION

- **PC01** Best Suitable Grade in all kind of NON Ferrous material for excellent Machining for Free cutting. For Mirror finishing in Aluminum, Copper, Brass as well as other Soft material.
- **PC01H** The premium Suitable Grade in all kind of sub-micron grain, suitable for the continuous and interrupted finishing of NON Ferrous metal. For Super Mirror finishing in Aluminum, Copper, Brass as well as other Soft material.



TURNING INSERT (Negative)

CN □ □



Insert Shape	Type	Dimension					ALUMINUM INSERT	
		L	øI.C	S	øD	r	PCDI	PCDH
	CNMG 120404 AK	12.9	12.7	4.76	5.16	0.4	●	★
	CNMG 120408 AK	12.9	12.7	4.76	5.16	0.8	●	★
	CNMG 120404 LH	12.9	12.7	4.76	5.16	0.4	●	★
	CNMG 120408 LH	12.9	12.7	4.76	5.16	0.8	●	★

★ Best Suitable Available ▲ Only On Order ● Generally Available

TN □ □



Insert Shape	Type	Dimension					ALUMINUM INSERT	
		L	øI.C	S	øD	r	PCDI	PCDH
	TNMG 160404 AK	16.5	9.525	4.76	3.81	0.4	●	★
	TNMG 160408 AK	16.5	9.525	4.76	3.81	0.8	●	★
	TNMG 160404 LH	16.5	9.525	4.76	3.81	0.4	●	★
	TNMG 160408 LH	16.5	9.525	4.76	3.81	0.8	●	★

★ Best Suitable Available ▲ Only On Order ● Generally Available

WN □ □

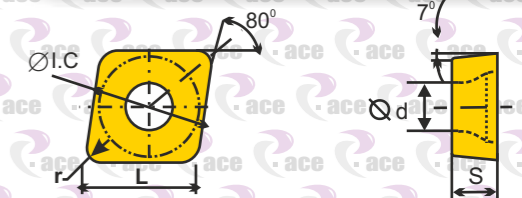


Insert Shape	Type	Dimension					ALUMINUM INSERT	
		L	øI.C	S	øD	r	PCDI	PCDH
	WNMG 060404 AK	6.5	9.525	4.76	3.81	0.4	▲	▲
	WNMG 060408 AK	6.5	9.525	4.76	3.81	0.8	▲	▲
	WNMG 080404 AK	8.7	12.7	4.76	5.16	0.4	▲	▲
	WNMG 080408 AK	8.7	12.7	4.76	5.16	0.8	▲	▲
	WNMG 060404 LH	6.5	9.525	4.76	3.81	0.4	▲	▲
	WNMG 060408 LH	6.5	9.525	4.76	3.81	0.8	▲	▲
	WNMG 080404 LH	8.7	12.7	4.76	5.16	0.4	▲	▲
	WNMG 080408 LH	8.7	12.7	4.76	5.16	0.8	▲	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

CC □ □



Insert Shape	Type	Dimension						ALUMINUM INSERT	
		L	øI.C	S	øD	r	a	PCDI	PCDH
	CCGT 060202 AK	6.4	6.35	2.38	2.8	0.2	7°	●	★
	CCGT 060204 AK	6.4	6.35	2.38	2.8	0.4	7°	●	★
	CCGT 060208 AK	6.4	6.35	2.38	2.8	0.8	7°	●	★
	CCGT 09T302 AK	9.7	9.525	3.97	4.4	0.2	7°	●	★
	CCGT 09T304 AK	9.7	9.525	3.97	4.4	0.4	7°	●	★
	CCGT 09T308 AK	9.7	9.525	3.97	4.4	0.8	7°	●	★
	CCGT 120404 AK	12.9	12.7	4.76	5.56	0.4	7°	●	★
	CCGT 120408 AK	12.9	12.7	4.76	5.56	0.8	7°	●	★
	CCGT 060202 LH	6.4	6.35	2.38	2.8	0.2	7°	●	★
	CCGT 060204 LH	6.4	6.35	2.38	2.8	0.4	7°	●	★
	CCGT 060208 LH	6.4	6.35	2.38	2.8	0.8	7°	●	★
	CCGT 09T302 LH	9.7	9.525	3.97	4.4	0.2	7°	●	★
	CCGT 09T304 LH	9.7	9.525	3.97	4.4	0.4	7°	●	★
	CCGT 09T308 LH	9.7	9.525	3.97	4.4	0.8	7°	●	★
	CCGT 120404 LH	12.9	12.7	4.76	5.56	0.4	7°	●	★
	CCGT 120408 LH	12.9	12.7	4.76	5.56	0.8	7°	●	★

★ Best Suitable Available ▲ Only On Order ● Generally Available

TC □ □



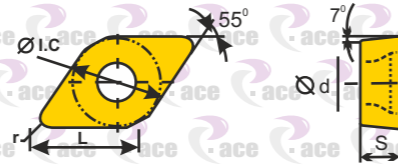
Insert Shape	Type	Dimension						ALUMINUM INSERT	
		L	øI.C	S	øD	r	a	PCDI	PCDH
	TCGT 090202 AK	9.6	5.56	2.38	2.5	0.2	7°	▲	▲
	TCGT 090204 AK	9.6	5.56	2.38	2.5	0.4	7°	▲	▲
	TCGT 110204 AK	11	6.35	3.18	2.8	0.4	7°	●	★
	TCGT 110208 AK	11	6.35	3.18	2.8	0.8	7°	●	★
	TCGT 16T302 AK	16.5	9.525	3.97	4.4	0.2	7°	▲	▲
	TCGT 16T304 AK	16.5	9.525	3.97	4.4	0.4	7°	●	★
	TCGT 16T308 AK	16.5	9.525	3.97	4.4	0.8	7°	●	★
	TCGT 090202 LH	9.6	5.56	2.38	2.5	0.2	7°	▲	▲
	TCGT 090204 LH	9.6	5.56	2.38	2.5	0.4	7°	▲	▲
	TCGT 110204 LH	11	6.35	3.18	2.8	0.4	7°	▲	▲
	TCGT 110208 LH	11	6.35	3.18	2.8	0.8	7°	▲	▲
	TCGT 16T302 LH	16.5	9.525	3.97	4.4	0.2	7°	●	★
	TCGT 16T304 LH	16.5	9.525	3.97	4.4	0.4	7°	●	★
	TCGT 16T308 LH	16.5	9.525	3.97	4.4	0.8	7°	▲	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING

ALUMINUM TURNING INSERT

TURNING INSERT (Positive)

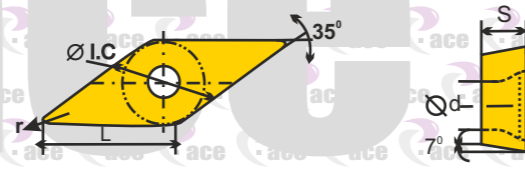


DC □ □

Insert Shape	Type	Dimension						ALUMINUM INSERT	
		L	ØI.C	S	ØD	r	a	PCDI	PCDIH
	DCGT 070202 AK	7.8	6.35	2.38	2.8	0.2	7°	▲	▲
	DCGT 070204 AK	7.8	6.35	2.38	2.8	0.4	7°	●	★
	DCGT 11T304 AK	11.6	9.525	3.97	4.4	0.4	7°	●	★
	DCGT 11T308 AK	11.6	9.525	3.97	4.4	0.8	7°	●	★
	DCGT 070202 LH	7.8	6.35	2.38	2.8	0.2	7°	●	★
	DCGT 070204 LH	7.8	6.35	2.38	2.8	0.4	7°	●	★
	DCGT 11T304 LH	11.6	9.525	3.97	4.4	0.4	7°	●	★
	DCGT 11T308 LH	11.6	9.525	3.97	4.4	0.8	7°	●	★

★ Best Suitable Available ▲ Only On Order ● Generally Available

VC □ □



Insert Shape	Type	Dimension						ALUMINUM INSERT	
		L	ØI.C	S	ØD	r	a	PCDI	PCDIH
	VCGT 11T304 AK	11	6.35	3.18	2.8	0.4	7°	▲	▲
	VCGT 11T308 AK	11	6.35	3.18	2.8	0.8	7°	▲	▲
	VCGT 160402 AK	16.6	9.525	4.76	4.4	0.2	7°	●	▲
	VCGT 160404 AK	16.6	9.525	4.76	4.4	0.4	7°	●	▲
	VCGT 160408 AK	16.6	9.525	4.76	4.4	0.8	7°	●	▲
	VCGT 11T304 LH	11	6.35	3.18	2.8	0.4	7°	●	★
	VCGT 11T308 LH	11	6.35	3.18	2.8	0.8	7°	●	★
	VCGT 160402 LH	16.6	9.525	4.76	4.4	0.2	7°	●	★
	VCGT 160404 LH	16.6	9.525	4.76	4.4	0.4	7°	●	★
	VCGT 160408 LH	16.6	9.525	4.76	4.4	0.8	7°	●	★
	VCGT 220530 LHC	22	12.7	5.56	5.5	3	7°	●	★

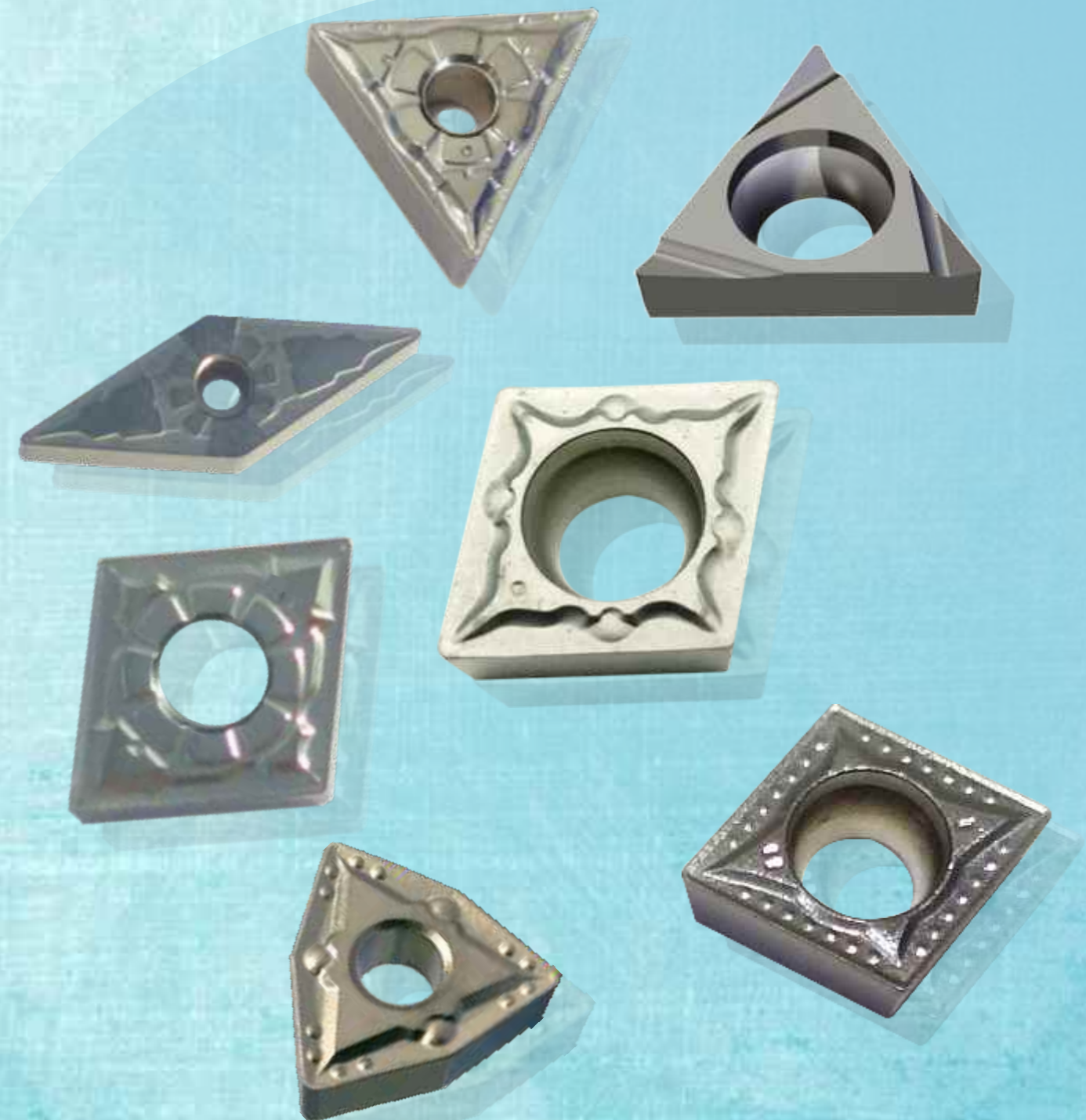
★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING CERMET SERIES

GRADES SPECIFICATION

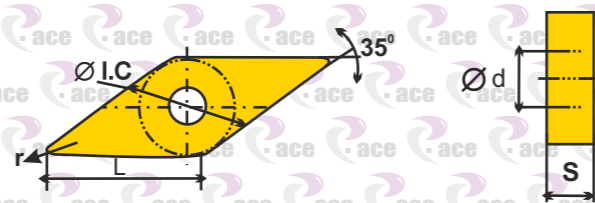
PC30 Is Cermet Inserts Suitable for free cutting Material Specially for fine finishing

PC30H Is the premium coated grades Suitable for free cutting Material Specially for fine finishing



TURNING INSERT (Negative)

VN□□

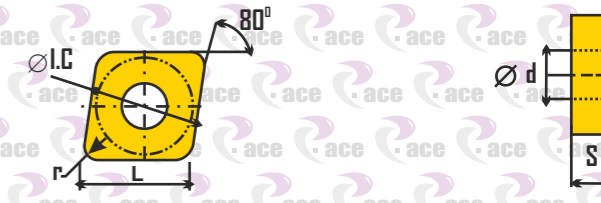


Insert Shape	Type	Dimension					CERMET GRADE	
		L	Ø.I.C	S	ØD	r	PC30	PC30H
	VNMG160404 FG	16.6	9.525	4.76	3.81	0.4	●	▲
	VNMG160408 FG	16.6	9.525	4.76	3.81	0.8	▲	▲
	VNMG160404 MT	16.6	9.525	4.76	3.81	0.4	▲	▲
	VNMG160408 MT	16.6	9.525	4.76	3.81	0.8	●	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Negative)

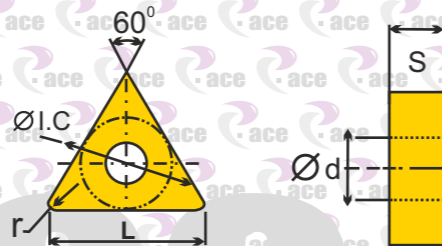
CN□□



Insert Shape	Type	Dimension					CERMET GRADE	
		L	Ø.I.C	S	ØD	r	PC30	PC30H
	CNMG120404 FG	12.9	12.7	4.76	5.16	0.4	●	▲
	CNMG120408 FG	12.9	12.7	4.76	5.16	0.8	●	▲
	CNMG120404 MT	12.9	12.7	4.76	5.16	0.4	●	▲
	CNMG120408 MT	12.9	12.7	4.76	5.16	0.8	●	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

WN□□



Insert Shape	Type	Dimension					CERMET GRADE	
		L	Ø.I.C	S	ØD	r	PC30	PC30H
	TNMG160404 FG	16.5	9.525	4.76	3.81	0.4	●	▲
	TNMG160408 FG	16.5	9.525	4.76	3.81	0.8	●	▲
	TNMG160404 MT	16.5	9.525	4.76	3.81	0.4	●	▲
	TNMG160408 MT	16.5	9.525	4.76	3.81	0.8	●	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

WN□□

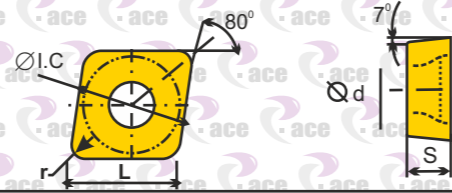


Insert Shape	Type	Dimension					CERMET GRADE	
		L	Ø.I.C	S	ØD	r	PC30	PC30H
	WNMG060404 FG	6.5	9.525	4.76	3.81	0.4	▲	▲
	WNMG060408 FG	6.5	9.525	4.76	3.81	0.8	▲	▲
	WNMG080404 FG	8.7	12.7	4.76	3.81	0.4	●	▲
	WNMG080408 FG	8.7	12.7	4.76	3.81	0.8	●	▲
	WNMG060404 MT	6.5	9.525	4.76	3.81	0.4	●	▲
	WNMG060408 MT	6.5	9.525	4.76	3.81	0.8	●	▲
	WNMG080404 MT	8.7	12.7	4.76	3.81	0.4	●	▲
	WNMG080408 MT	8.7	12.7	4.76	3.81	0.8	●	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

CC □ □



Insert Shape	Type	Dimension					CERMET GRADE	
		L	øI.C	S	øD	r	PC30	PC30H
	CCMT 060204 FG	6.4	6.35	2.38	2.8	0.4	●	▲
	CCMT 09T304 FG	9.7	9.525	3.97	4.4	0.4	●	▲
	CCMT 09T308 FG	9.7	9.525	3.97	4.4	0.8	●	▲
	CCMT 060204 MT	6.4	6.35	2.38	2.8	0.4	▲	▲
	CCMT 09T304 MT	9.7	9.525	3.97	4.4	0.4	●	▲
	CCMT 09T308 MT	9.7	9.525	3.97	4.4	0.8	●	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

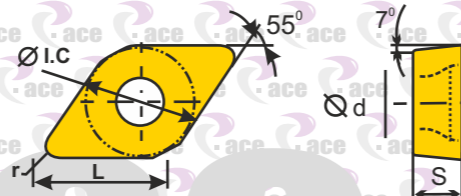
TP □ □



Insert Shape	Type	Dimension					CERMET GRADE	
		L	øI.C	S	øD	r	PC30	PC30H
	TBGT 060102-L	6.4	3.97	1.59	2.2	0.2	●	▲
	TPGX 080202-L	8.5	4.76	2.38	2.3	0.2	●	▲
	TPGX 080204-L	8.5	4.76	2.38	2.3	0.4	●	▲
	TPGX 090202-L	9.6	5.56	2.38	2.8	0.2	●	▲
	TPGX 090204-L	9.6	5.56	2.38	2.8	0.4	●	▲
	TPGX 110302-L	11	6.35	3.18	3.18	0.2	●	▲
TPGX 110304-L	11	6.35	3.18	3.18	0.4	●	▲	

★ Best Suitable Available ▲ Only On Order ● Generally Available

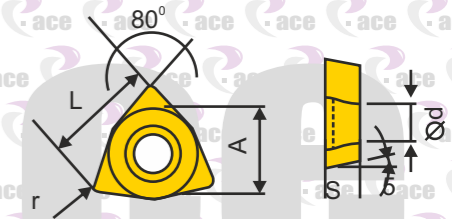
DC □ □



Insert Shape	Type	Dimension					CERMET GRADE	
		L	øI.C	S	øD	r	PC30	PC30H
	DCMT 070204 FG	7.8	6.35	2.38	2.8	0.4	▲	▲
	DCMT 11T304 FG	11.6	9.525	3.97	4.4	0.4	●	▲
	DCMT 11T308 FG	11.6	9.525	3.97	4.4	0.8	●	▲
	DCMT 070204 MT	7.8	6.35	2.38	2.8	0.4	●	▲
	DCMT 11T304 MT	11.6	9.525	3.97	4.4	0.4	●	▲
	DCMT 11T308 MT	11.6	9.525	3.97	4.4	0.8	●	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

WB □ □



Insert Shape	Type	Dimension					CERMET GRADE	
		L	øI.C	S	øD	r	PC30	PC30H
	WGBT 060102-L	6.2	3.97	1.59	2.3	0.2	●	▲
	WGBT 060104-L	6.2	3.97	1.59	2.3	0.4	●	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING CBN SERIES

GRADES SPECIFICATION

PCN

Good balance of toughness and wear resistance , non -coated CBN application : General grade of hardened steel ,high speed and high feed cutting

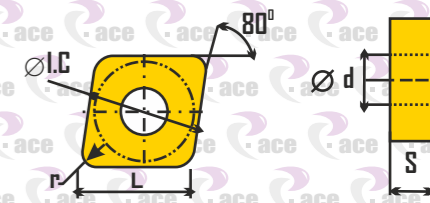


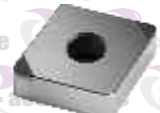
TURNING

CBN TURNING INSERT

TURNING INSERT (Negative)

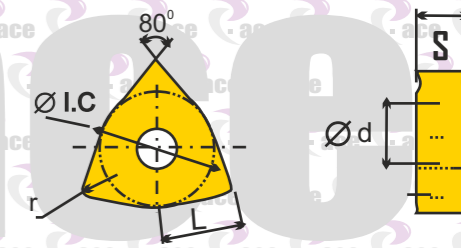
CN□□




Insert Shape	Type	No. of Edges	Dimension					PCN GRADE	
			L	Ø.I.C	S	ØD	r	PCN	
	CNGA 120404	1	12.9	12.7	4.76	5.16	0.4	●	
	CNGA 120408	1	12.9	12.7	4.76	5.16	0.8	●	
	CNGA 120404	2	12.9	12.7	4.76	5.16	0.4	●	
	CNGA 120408	2	12.9	12.7	4.76	5.16	0.8	●	

★ Best Suitable Available ▲ Only On Order ● Generally Available

WN□□



Insert Shape	Type	No. of Edges	Dimension					PCN GRADE	
			L	Ø.I.C	S	ØD	r	PCN	
	WNGA 080404	1	8.7	12.7	4.76	5.16	0.4	●	
	WNGA 080408	1	8.7	12.7	4.76	5.16	0.8	●	
	WNGA 080404	3	8.7	12.7	4.76	5.16	0.4	●	
	WNGA 080408	3	8.7	12.7	4.76	5.16	0.8	●	

★ Best Suitable Available ▲ Only On Order ● Generally Available

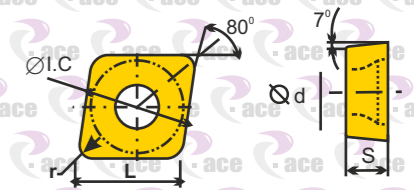
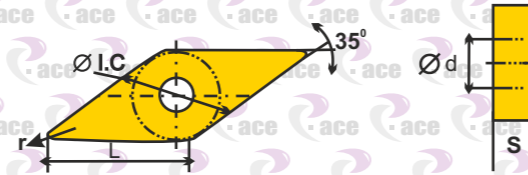
TURNING

TURNING INSERT (Negative)

TURNING INSERT (Positive)

VN □ □

CC □ □



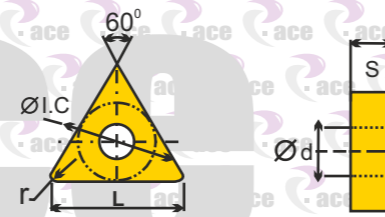
Insert Shape	Type	No. of Edges	Dimension					PCN GRADE	
			L	øI.C	S	øD	r	PCN	
	VNGA 16D404	1	16.6	9.525	4.76	3.81	0.4	●	
	VNGA 16D408	1	16.6	9.525	4.76	3.81	0.8	●	
	VNGA 16D404	2	16.6	9.525	4.76	3.81	0.4	●	
	VNGA 16D408	2	16.6	9.525	4.76	3.81	0.8	●	

Insert Shape	Type	No. of Edges	Dimension					PCN GRADE	
			L	øI.C	S	øD	r	PCN	
	CCMW 06D204	1	6.4	6.35	2.38	2.8	0.4	▲	
	CCMW 06D204	2	6.4	6.35	2.38	2.8	0.4	●	
	CCMW 09T304	1	9.7	9.525	3.97	4.4	0.4	▲	
	CCMW 09T308	1	9.7	9.525	3.97	4.4	0.8	▲	
	CCMW 09T304	2	9.7	9.525	3.97	4.4	0.4	●	
	CCMW 09T308	2	9.7	9.525	3.97	4.4	0.8	●	

★ Best Suitable Available ▲ Only On Order ● Generally Available

★ Best Suitable Available ▲ Only On Order ● Generally Available

TN □ □



Insert Shape	Type	No. of Edges	Dimension					PCN GRADE	
			L	øI.C	S	øD	r	PCN	
	TNGA 16D404	1	16.5	9.525	4.76	3.81	0.4	●	
	TNGA 16D408	1	16.5	9.525	4.76	3.81	0.8	●	
	TNGA 16D404	3	16.5	9.525	4.76	3.81	0.4	●	
	TNGA 16D408	3	16.5	9.525	4.76	3.81	0.8	●	

★ Best Suitable Available ▲ Only On Order ● Generally Available

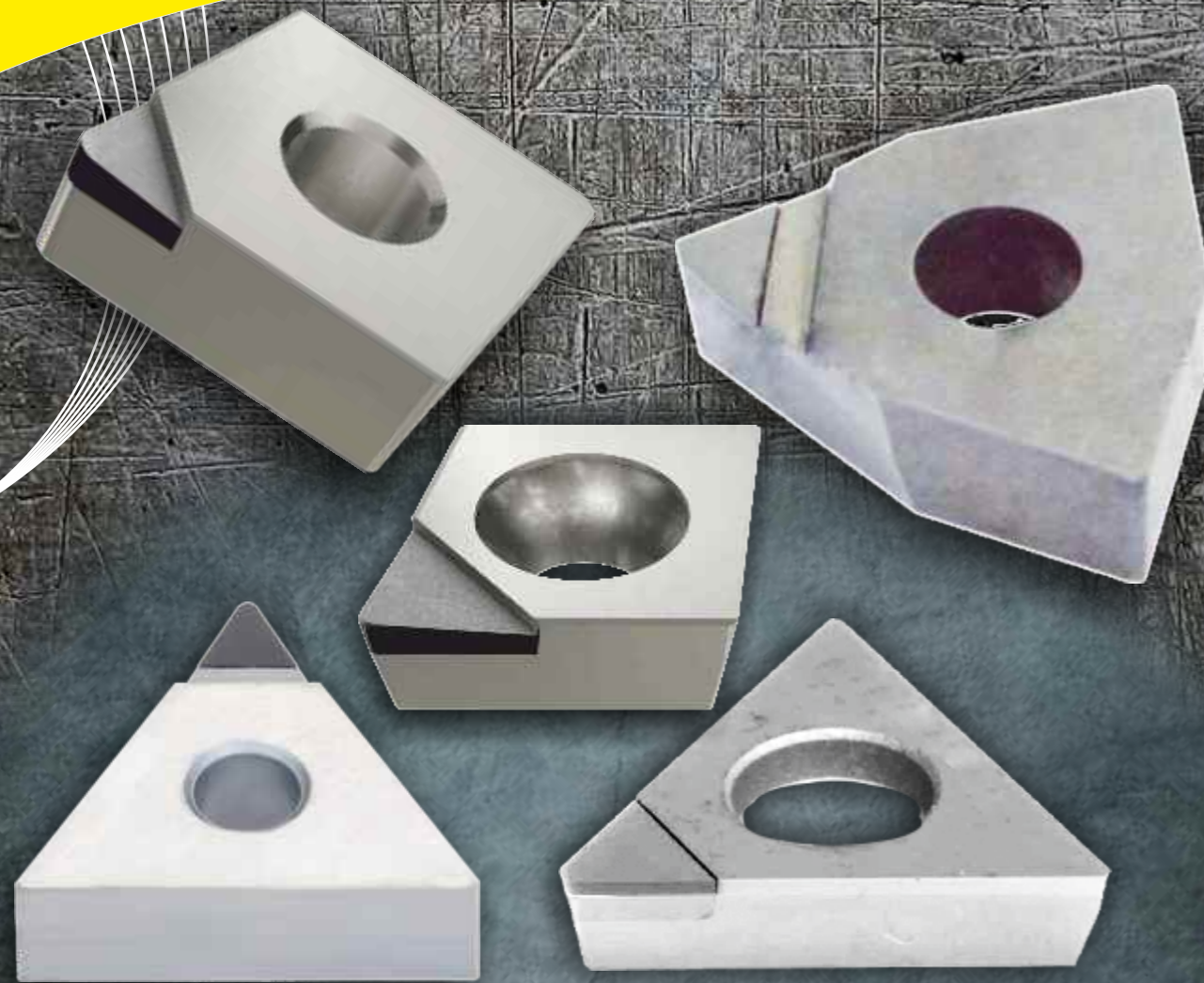
TURNING

PCD SERIES

GRADES SPECIFICATION

PCD

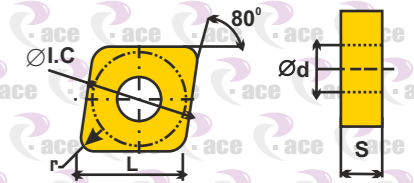
Super Micro-Grain PCD features cutting edge strength, wear resistance, fracture resistance, good edge sharpening performance and long, stable tool life applicable for high speed cutting of aluminum alloys, copper, brass, non-ferrous metals and non-metals including plastics, fiberglass, carbide and ceramics.



TURNING

CBN TURNING INSERT

TURNING INSERT (Positive)

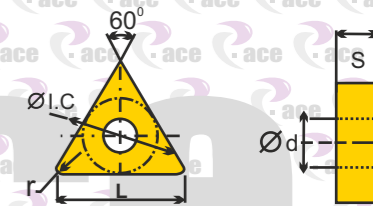


CN□□

Insert Shape	Type	No. Of Edges	Dimension					PCD GRADE
			L	øI.C	S	øD	r	PCD
	CNMM 120404	1	12.9	12.7	4.76	5.16	0.4	▲
	CNMM 120408	1	12.9	12.7	4.76	5.16	0.8	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TN□□

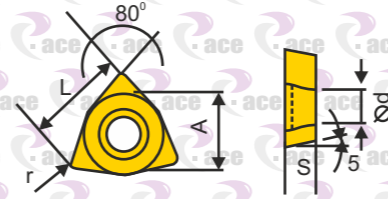


Insert Shape	Type	No. of Edges	Dimension					PCD GRADE
			L	øI.C	S	øD	r	PCD
	TNMM 160404	1	16.5	9.525	4.76	3.81	0.4	●
	TNMM 160408	1	16.5	9.525	4.76	3.81	0.8	●

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

WB □ □

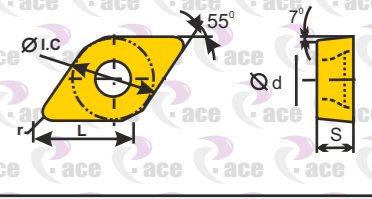


Insert Shape	Type	No. of Edges	Dimension					PCD GRADE	
			L	∅I.C	S	∅D	r	a	PCD
	WBGT 060102	1	6.4	3.97	1.59	2.3	0.2	5°	▲
	WBGT 060104	1	6.4	3.97	1.59	2.3	0.4	5°	●

★ Best Suitable Available ▲ Only On Order ● Generally Available

TURNING INSERT (Positive)

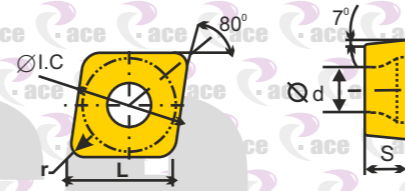
DC □ □



Insert Shape	Type	No. of Edges	Dimension					PCD GRADE	
			L	∅I.C	S	∅D	r	a	PCD
	DCGT 070204	1	7.8	6.35	2.38	2.8	0.4	7°	●
	DCGT 11T304	1	11.6	9.525	3.97	4.4	0.4	7°	●
	DCGT 11T308	1	11.6	9.525	3.97	4.4	0.8	7°	●

★ Best Suitable Available ▲ Only On Order ● Generally Available

CC □ □



Insert Shape	Type	No. of Edges	Dimension					PCD GRADE	
			L	∅I.C	S	∅D	r	a	PCN
	CCGT 030102	1	3.6	3.5	1.4	1.9	0.2	7°	▲
	CCGT 030104	1	3.6	3.5	1.4	1.9	0.4	7°	▲
	CCGT 060202	1	6.4	6.35	2.38	2.8	0.2	7°	●
	CCGT 060204	1	6.4	6.35	2.38	2.8	0.4	7°	●
	CCGT 09T302	1	9.7	9.525	3.97	4.4	0.2	7°	●
	CCGT 09T304	1	9.7	9.525	3.97	4.4	0.4	7°	●
	CCGT 09T308	1	9.7	9.525	3.97	4.4	0.8	7°	●

★ Best Suitable Available ▲ Only On Order ● Generally Available

TP □ □



Insert Shape	Type	No. of Edges	Dimension					PCD GRADE	
			L	∅I.C	S	∅D	r	PCD	
	TPGH 080204	1	6.4	3.97	1.59	2.2	0.4	▲	
	TPGH 090202	1	9.6	5.56	2.38	2.8	0.2	●	
	TPGH 090204	1	9.6	5.56	2.38	2.8	0.4	●	
	TPGH 110302	1	11	6.35	3.18	3.18	0.2	●	
	TPGH 110304	1	11	6.35	3.18	3.18	0.4	●	

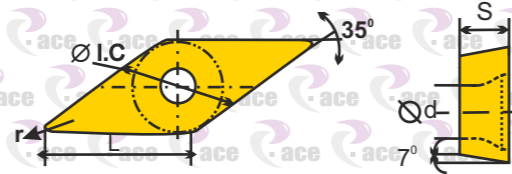
★ Best Suitable Available ▲ Only On Order ● Generally Available


TURNING

CBN TURNING INSERT

TURNING INSERT
(Positive)

VC □ □



Insert Shape	Type	No. of Edges	Dimension						PCD GRADE
			L	ØI.C	S	ØD	r	a	PCD
	VCGT 11T304	1	11	6.35	3.18	2.8	0.4	7°	●
	VCGT 16D404	1	16.6	9.525	4.76	4.4	0.4	7°	●
	VCGT 16D408	1	16.6	9.525	4.76	4.4	0.8	7°	●

★ Best Suitable Available ▲ Only On Order ● Generally Available

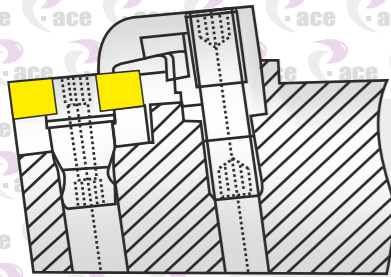
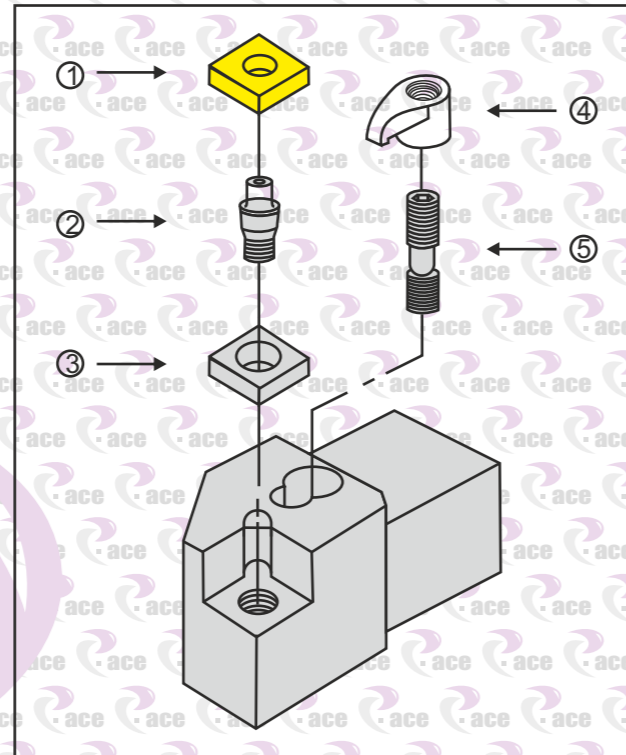
Myco
Tooling Solution

EXTERNAL TURNING TOOLS



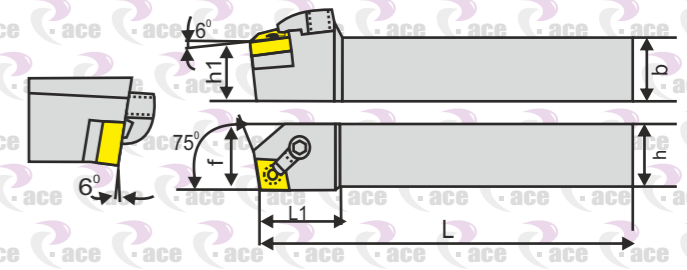
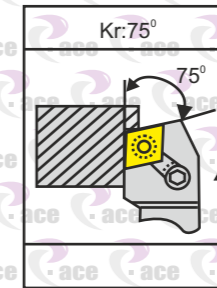
ace







M-TYPE



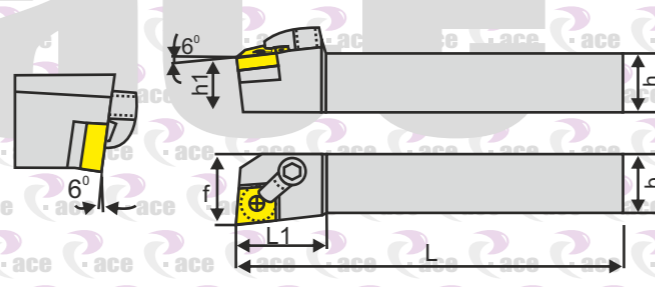
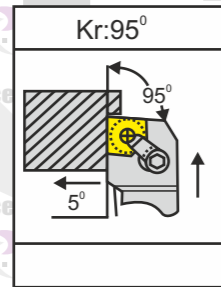
- ① → Insert
- ② → Lock Pin
- ③ → Shim
- ④ → Clamp
- ⑤ → Screw







MCKNR/L



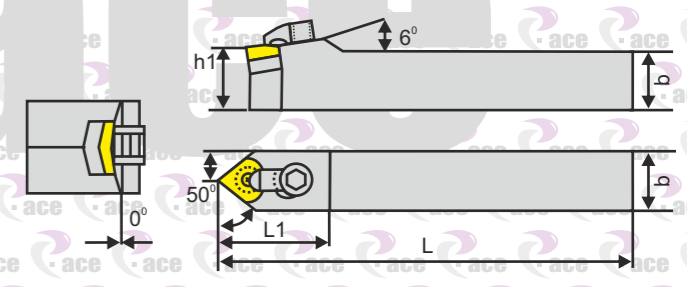
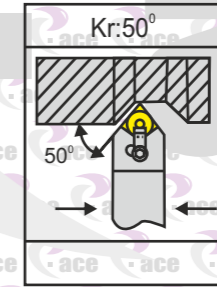
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f					
MCKNR/L2020K12	CN□1204□□	20	20	125	32.0	20	25	SC1204	CTM617	HL1814	ML0625	L2.5 L3.0
MCKNR/L2525M12		25	25	150	32.0	25	32					
MCKNR/L2525M16	CN□1606□□	25	25	150	32.0	25	33	SC1604	CTM822	HL2217	ML0830	L4.0/L5.0







MCLNR/L



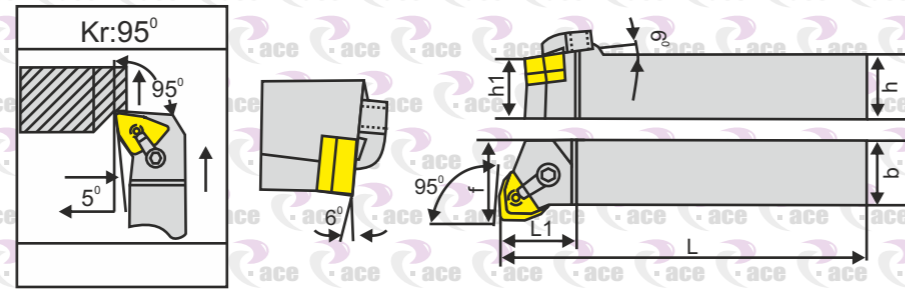
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f					
MCLNR/L1616H12		16	16	100	16.0	16	20					
MCLNR/L2020K12	CN□1204□□	20	20	125	25.0	20	32	SC1204	CTM617	HL1814	ML0625	L2.5 L3.0
MCLNR/L2525M12		25	25	150	32.0	25	32					
MCLNR/L2525M16	CN□1606□□	25	25	150	32.0	25	33	SC1604	CTM822	HL2217	ML0830	L4.0/L5.0

MCMNN



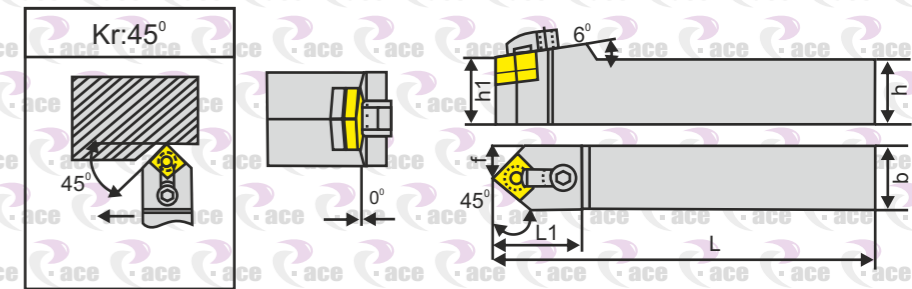
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f					
MCMNN1616K12		16	16	100	16	16	7.5					
MCMNN2020K12	CN□1204□□	20	20	125	32	20	10	SC1204	CTM617	HL1814	ML0625	L2.5 L3.0
MCMNN2525M12		25	25	150	32	25	12.5					

MWLN/L



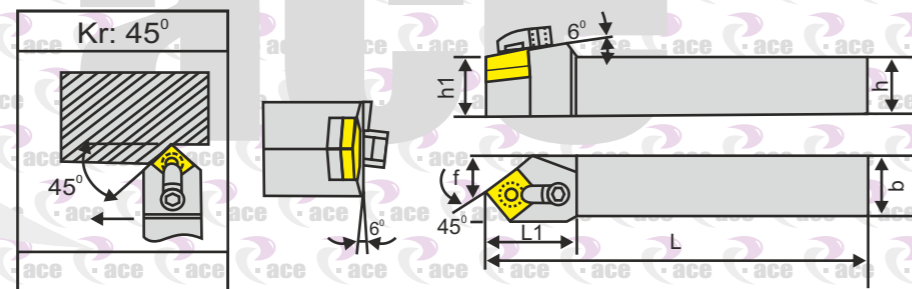
Description	Insert Number	Dimension (mm)						Spare Parts				
		h	b	L	L1	hl	f	Shim	Lock Pin	Clamp	Screw	Wrench
MWLN/L2020K06	WN□0604□□	20	20	125	25.0	20	32	SW0603	CTM513	HL1814	ML0625	L2.0 L3.0
MWLN/L2525M06	WN□0804□□	25	25	150	32.0	25	32	SW0804	CTM617	HL1814	ML0625	L2.5 L3.0
MWLN/L2020K08	WN□0804□□	20	20	125	25.0	20	32	SW0804	CTM617	HL1814	ML0625	L2.5 L3.0
MWLN/L2525M08	WN□0804□□	25	25	150	32.0	25	32	SW0804	CTM617	HL1814	ML0625	L2.5 L3.0

MSDNN



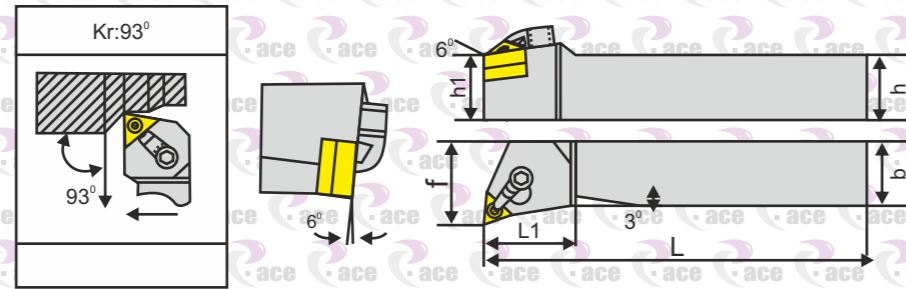
Description	Insert Number	Dimension (mm)						Spare Parts				
		h	b	L	L1	hl	f	Shim	Lock Pin	Clamp	Screw	Wrench
MSDNN 1616H12	SN□1204□□	16	16	100	34	16	8	MSI204	CTM617	HL1814	ML0625	L2.5 L3.0
MSDNN 2020K12		20	20	125	34	20	10					
MSDNN 2525M12		25	25	150	34	25	12.5					


MSSNR/L



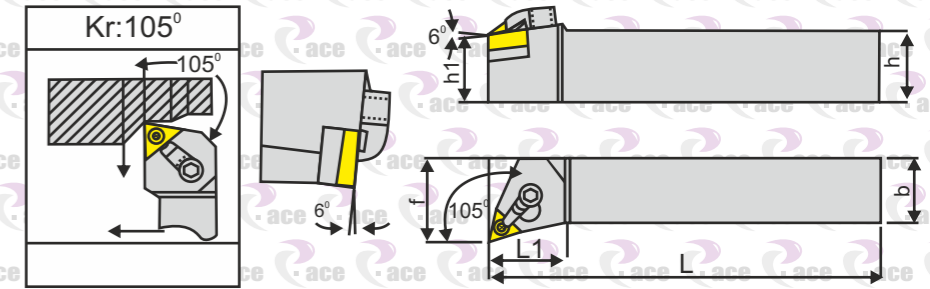
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MSSNR/L1616H12	SN□1204□□	16	16	100	16	16	17	MSI204	CTM617	HL1814	ML0625	L2.5 L3.0
MSSNR/L2020K12		20	20	125	32	20	17					
MSSNR/L2525M12		25	25	150	32	25	22					


MTJNR/L



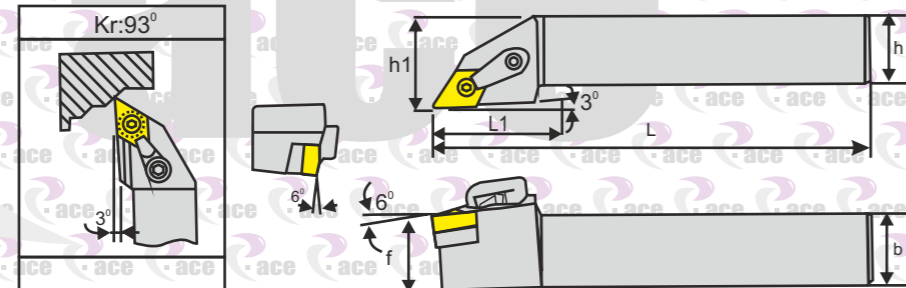
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MTJNR/L 1616H16	TN □□1604□□	16	16	100	30	16	20	ST1603	CTM513	HL1814	MLO625	L2.0
MTJNR/L 2020K16		20	20	125	32	20	25					L3.0
MTJNR/L 2525M16		25	25	150	32	25	32					
MTJNR/L 2525M22		25	25	150	38	25	32					


MTQNR/L



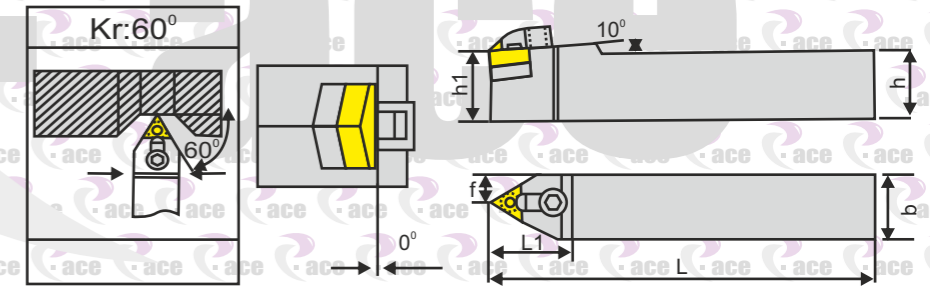
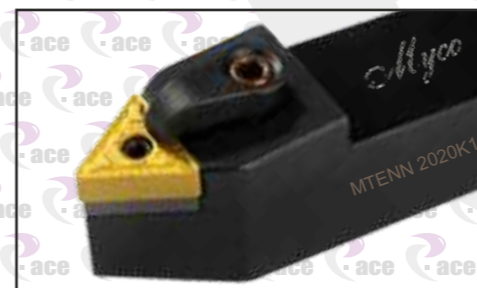
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f	Shim	Lock Pin	Clamp	Screw	Wrench
MTQNR/L 2020K16	TN □□1604□□	20	20	125	26	20	25	ST1603	CTM513	HL1814	MLO625	L2.0
MTQNR/L 2525M16		25	25	150	26	25	32					L3.0


MDJNR/L



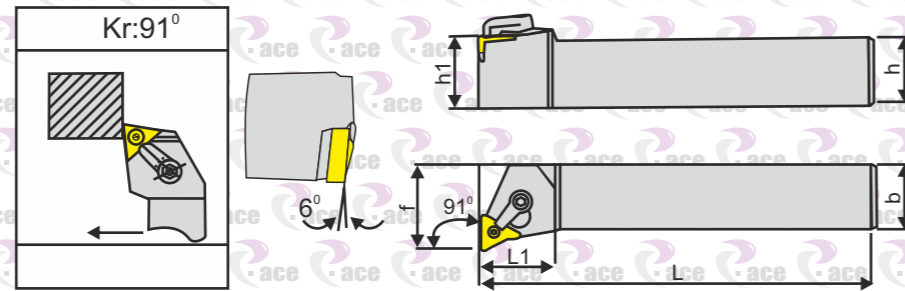
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MDJNR/L1616H11	DN □□1104□□	16	16	100	30	16	20	SD1103	CTM513	HL1814	MLO625	L2.0
MDJNR/L2020K11		20	20	125	30	20	25					L3.0
MDJNR/L2525M11		25	25	150	30	25	32					
MDJNR/L2020K15		20	20	125	38	20	25					
MDJNR/L2525M15	25	25	150	38	25	32		SD1506	CTM619	HL2114	MLO625	L2.5 L3.0

MTENN



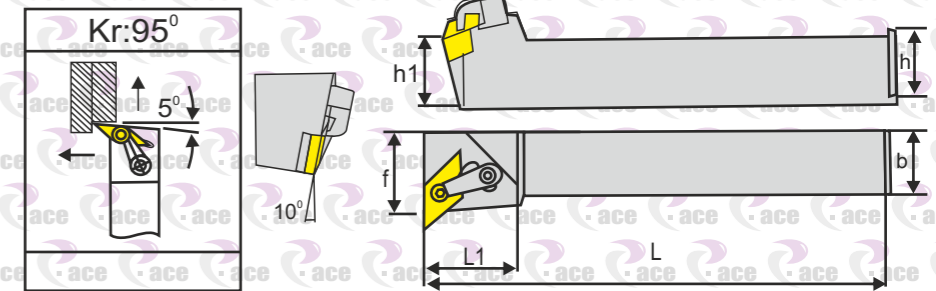
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		h	b	L	L1	h1	f	Shim	Lock Pin	Clamp	Screw	Wrench
MTENN 2020K16	TN □□1604□□	20	20	125	35	20	10	ST1603	CTM513	HL1814	MLO625	L2.0
MTENN 2525M16		25	25	150	35	25	12.5					L3.0
MTENN 2525M22	TN □□2204□□	25	25	150	38	25	12.5	ST2204	CTM822	HL1917	MLO830	L2.5/L4.0

MTFNR/L



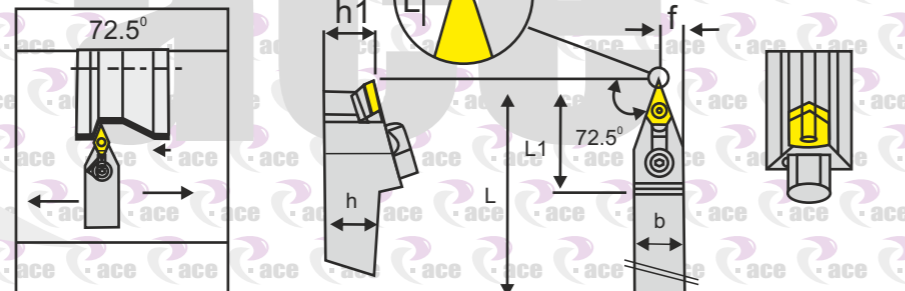
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f	Shim	Lock Pin	Clamp	Screw	Wrench
MTFNR/L161H16		16	16	100	28	16	20					
MTFNR/L20K16	TN□□1604□□	20	20	125	28	20	25	ST1603	CTM513	HL1814	ML0625	L2.0 L3.0
MTFNR/L25M16		25	25	150	28	25	32					
MTFNR/L25M22	TN□□2204□□	25	25	150	32	25	32	ST2204	CTM822	HL1917	ML0830	L2.5/L4.0

MVUNR/L



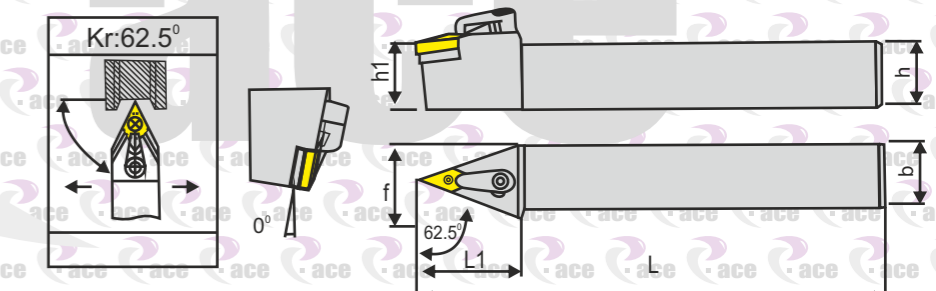
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f	Shim	Lock Pin	Clamp	Screw	Wrench
MVUNR/L2020K16	VN□□1604□□	20	20	125	21	20	25	SV1603	CTM513	HL2414	ML0625	L2.0 L3.0
MVUNR/L2525M16		25	25	150	21	25	32					

MVVNN



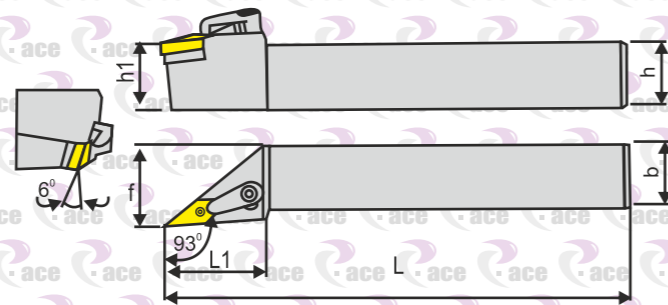
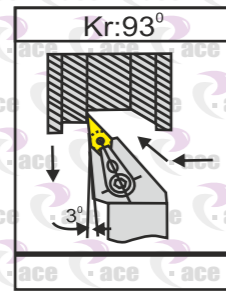
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f	Shim	Lock Pin	Clamp	Screw	Wrench
MVVNN 2020K16		20	20	125	42	20	10					
MVVNN 2525M16	VN□□1604□□	25	25	150	42	25	12.5	SV1603	CTM513	HL2414	ML0630	L2.0 L3.0







MDPNN



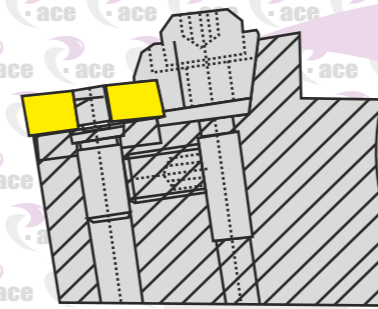
Description	Insert Number 	Dimension (mm)						Spare Parts				
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MDPNN 1616H11		16	16	100	36	16	8					
MDPNN 2020K11	DN□□1104□□	20	20	125	36	20	10	SD1103	CTM513	HL1814	ML0625	L2.0 L3.0
MDPNN 2525M11		25	25	150	36	25	12.5					
MDPNN 2020K15	DN□□1504□□	20	20	125	42	20	10	SD1506	CTM619	HL2114	ML0625	L2.5 L3.0
MDPNN 2525M15		25	25	150	42	25	12.5					

MVJNR/L

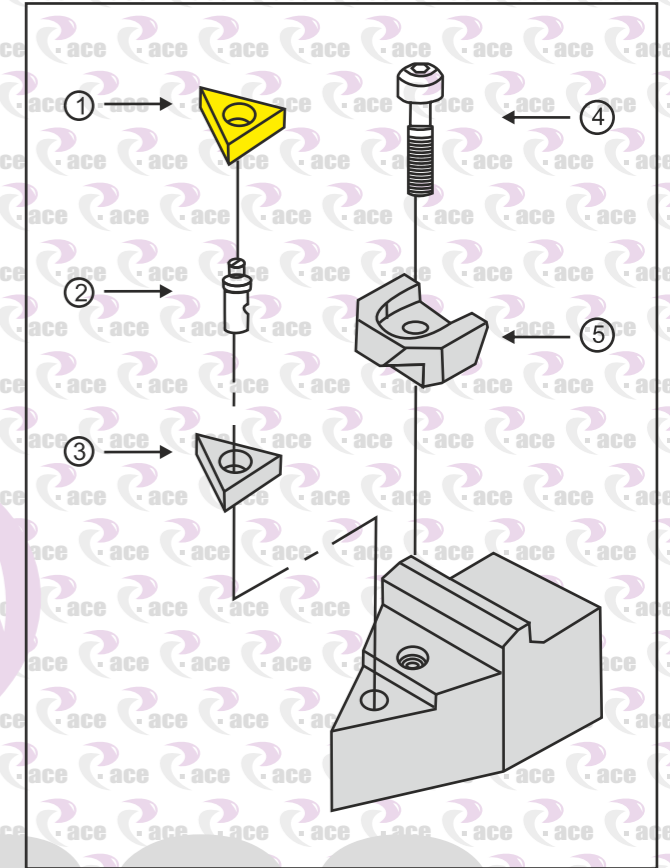


Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f					
MVJNR/L 2020 K16	VN□□1604□□	20	20	125	42	20	20	SV1603	CTM513	HL2414	ML0625	L2.0
MVJNR/L 2525 M16		25	25	150	42	25	25					L3.0

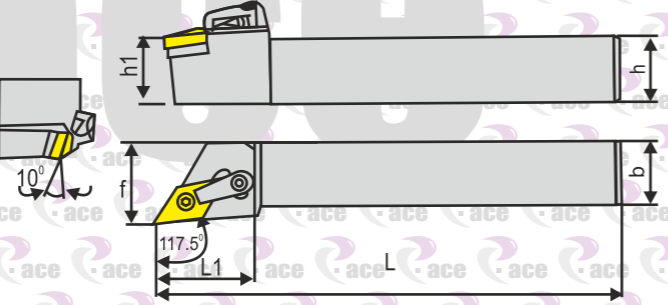
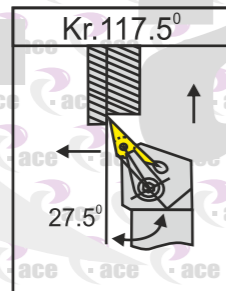
W-TYPE - S









- ① Insert
- ② Lock Pin
- ③ Shim
- ④ Screw
- ⑤ Clamp

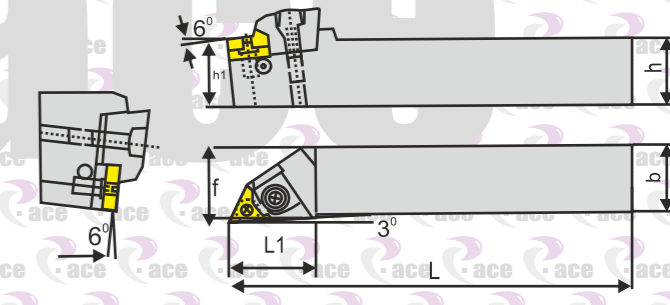
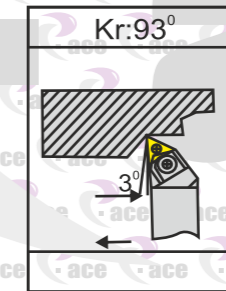








MVQNR/L



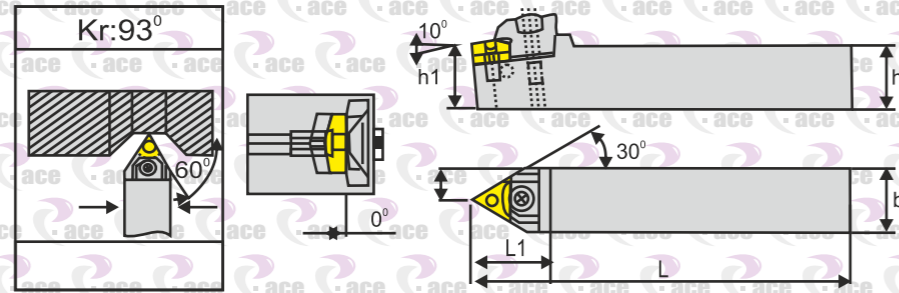
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MVQNR/L 2020 K16	VN□□1604□□	20	20	125	40	20	25	SV1603	CTM513	HL2414	ML0625	L2.0
MVQNR/L 2525 M16		25	25	150	40	25	32					L3.0


WTJNR/L



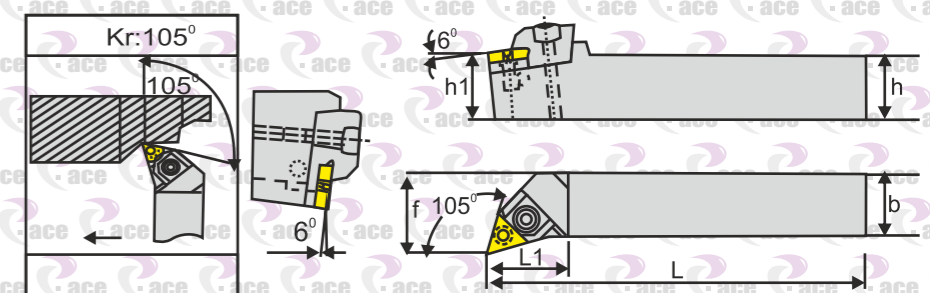
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f					
WTJNR/L 1616 K16		16	16	125	16	16	30	ST1603	CTM515	WT-Y	M5X25	L2.5
WTJNR/L 2020 K16	TN□□1604□□	20	20	125	25	20	33					L4.0
WTJNR/L 2525 M16	TN□□2204□□	25	25	150	32	25	33	ST2204	CTM818	WT-Y	ML0830	L3.0
WTJNR/L 2525 M22		25	25	150	32	40	35					L4.0


WTENN



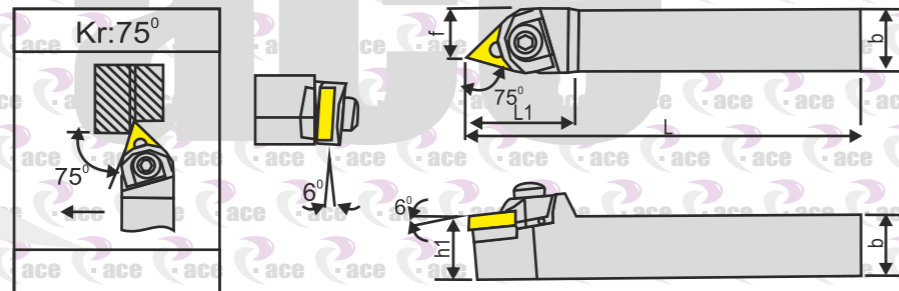
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f	Shim	Lock Pin	Clamp	Screw	Wrench
WTENN2020K16	TN□□1604□□	20	20	125	32	20	25	ST1603	CTM515	WT-Y	M5X25	L2.5 L4.0
WTENN2525K16		25	25	150	32	25	32					


WTQNR/L



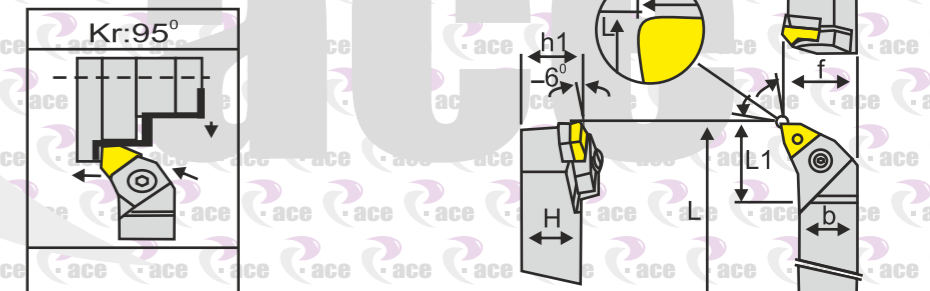
Description	Insert Number 	Dimension (mm)						Spare Parts				
		h	b	L	L1	h1	f	Shim	Lock Pin	Clamp	Screw	Wrench
WTQNR/L2020K16	TN□□1604□□	20	20	125	32	20	25	ST1603	CTM515	WT-Y	M5X25	L2.5 L4.0
WTQNR/L2525K16		25	25	150	32	25	32					


WTBNR/L



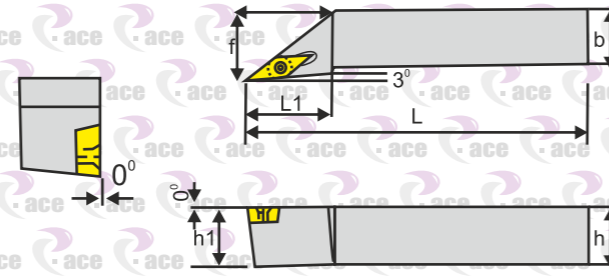
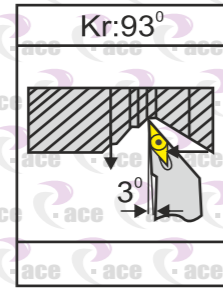
Description	Insert Number 	Dimension (mm)						Spare Parts				
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WTBNR/L2020K16	TN□□1604□□	20	20	125	32	20	15.5	ST1603	CTM515	WT-Y	M5X25	L2.5 L4.0
WTBNR/L2525M16		25	25	150	32	25	20.5					

WWLNR/L



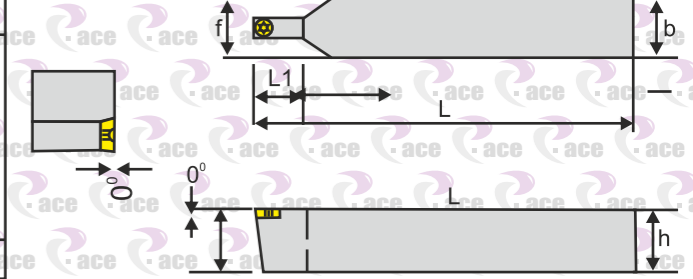
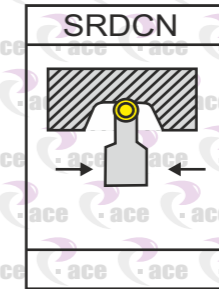
Description	Insert Number 	Dimension (mm)						Spare Parts				
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WWLNR/L2020K08	WN□□0804□□	20	20	125	32	20	25	SW0804	CTM618	WW-Y	MBX25	L3.0 L4.0
WWLNR/L2525M08		25	25	150	33	25	32					

SVJ*R/L



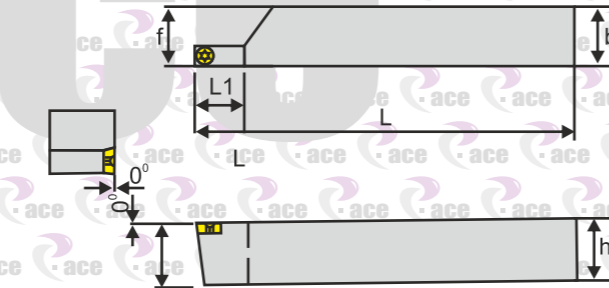
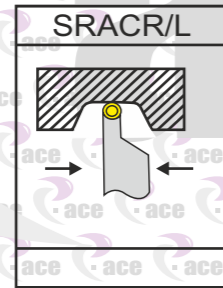
Description	Insert Number	Dimension (mm)						Spare Parts	
		h	b	L	L1	h1	f	Screw	Wrench
SVJ-R/L1616H16	VC□□1604□□	16	16	100	32	16	20	M4x10	T15
SVJ-R/L2020K16	VB□□1604□□	20	20	125	32	20	25		
SVJ-R/L2525M16		25	25	150	32	25	32		

SRDCN



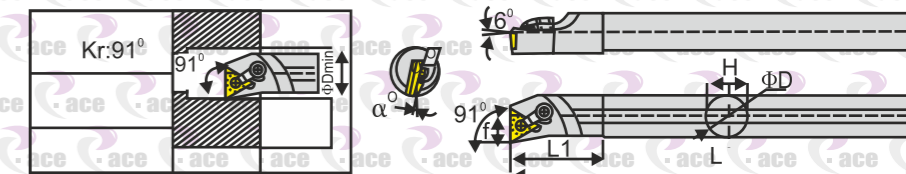
Description	Insert Number	Dimension (mm)						Spare Parts	
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SRDCN1616H08		16	16	100	16	16	8	M3X8	T8
SRDCN2020K08	RC□□0803□□	20	20	125	16	20	10		
SRDCN2525M08		25	25	150	16	25	12.5		
SRDCN1010H10	RC□□1003□□	10	10	100	20.3	10	5	M4X8	T15
SRDCN1616H10		16	16	100	20.3	16	8		
SRDCN2020K10		20	20	125	20.3	20	10		
SRDCN2525M10		25	25	150	20.3	25	12.5		

SRACR/L



Description	Insert Number	Dimension (mm)						Spare Parts	
		h	b	L	L1	h1	f	Screw	Wrench
SRACR/L1616H08		16	16	100	16	16	16.5	M3X8	T10
SRACR/L2020K08	RC□□0803□□	20	20	125	16	20	20.5		
SRACR/L2525M08		25	25	150	16	25	25.5		
SRACR/L2020K10		20	20	125	20.3	20	20.4	M4X10	T15
SRACR/L2525M10	RC□□1003□□	25	25	150	20.3	25	25.4		

MTFNR/L



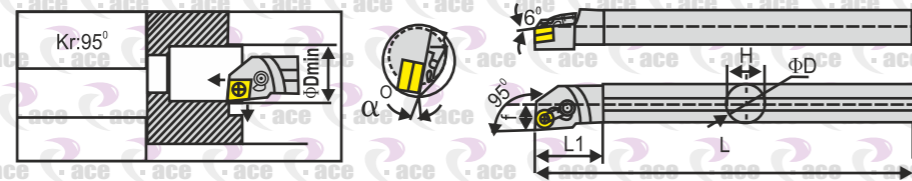
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦDmin	Φd	L	L1	H	f	α°					
S20R-MTFNR/L/L16		Φ25	Φ20	200	40	19	13	15°					
S25S-MTFNR/L/L16	TN □ □ 1604 □ □	Φ32	Φ25	250	45	24	16.5	12°	SC1603	CTM510	HL1810	ML0620	L2.0 L3.0
S32T-MTFNR/L/L16		Φ41	Φ32	300	54	30	22.5	17°		CTM513	HL1814	MI0625	







MTJNR/L



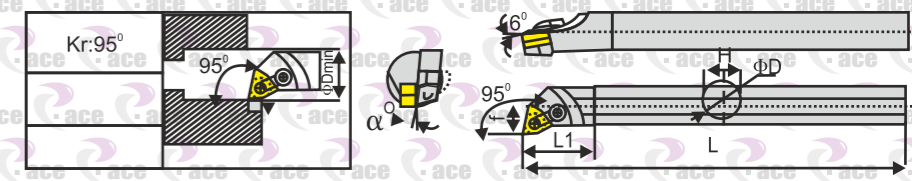
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦDmin	Φd	L	L1	H	f	α°					
S20R-MTJNR/L/L16		Φ25	Φ20	200	40	19	13	15°					
S25S-MTJNR/L/L16	TN □ □ 1604 □ □	Φ32	Φ25	250	45	24	16	12°	SC1603	CTM510	HL1810	ML0620	L2.0 L3.0
S32T-MTJNR/L/L16		Φ41	Φ32	300	54	30	22.5	17°		CTM513	HL1814	MI0625	







MCLNR/L



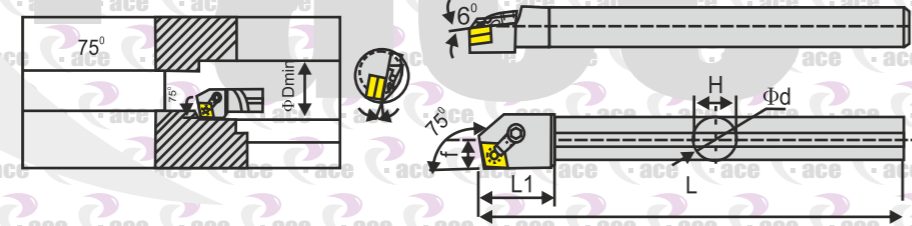
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦDmin	Φd	L	L1	H	f	α°					
S20R-MCLNR/LI2	CN□□1204□□	Φ25	Φ20	200	45	19	13	15°	SC1204	CTM613	HL1810	ML0620	L2.5 L3.0
S25R-MCLNR/LI2		Φ32	Φ25	250	45	24	16.5	12°					
S32T-MCLNR/LI2		Φ40	Φ32	300	50	30	22.5	17°					






MWLNRL/L



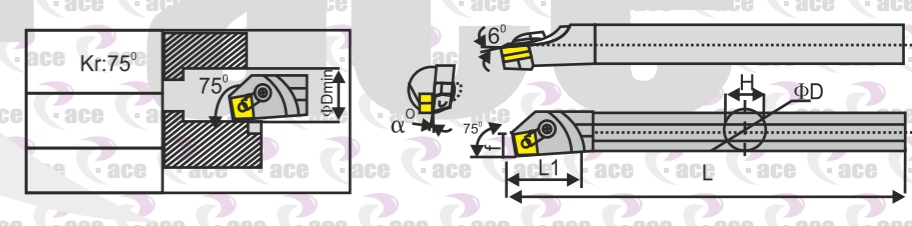
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦDmin	Φd	L	L1	H	f	α°					
S16Q-MWLNRL/LO6	WN□□604□□	Φ22	Φ16	180	35	15	11.0	18°	SW0603	CTM510	HL1510	ML0520	L2.0 L3.0
S20R-MWLNRL/LO6		Φ25	Φ20	200	40	19	13.0	15°					
S25S-MWLNRL/LO6		Φ32	Φ25	250	36	23	17.0	18°					
S32T-MWLNRL/LO6		Φ40	Φ32	300	50	30	22.0	15°					
S25S-MWLNRL/LO8	WN□□804□□	Φ32	Φ25	250	36	23	17.0	12°	SW0803	CTM617	HL1814	ML0625	L3.0 L4.0
S32T-MWLNRL/LO8		Φ40	Φ32	300	50	30	22.0	17°					







MCKNR/L



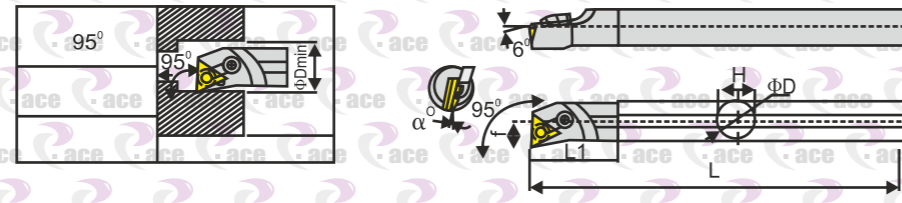
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦDmin	Φd	L	L1	H	f	α°					
S20R-MCKNR/LI2	CN□□1204□□	Φ26	Φ20	200	45	19	14	15°	SC1204	CTM613	HL1810	ML0620	L2.5 L3.0
S25R-MCKNR/LI2		Φ32	Φ25	250	45	24	16	12°					
S32T-MCKNR/LI2		Φ40	Φ32	300	50	30	22	17°					


MSKNR/L



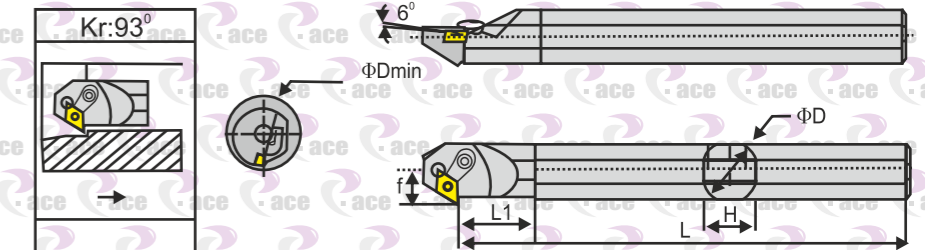
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦDmin	Φd	L	L1	H	f	α°					
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S25R-MSKNR/LI2		Φ32	Φ25	250	45	24	17	12°					
S32T-MSKNR/LI2		Φ40	Φ32	300	50	30	22	17°					


MTUNR/L



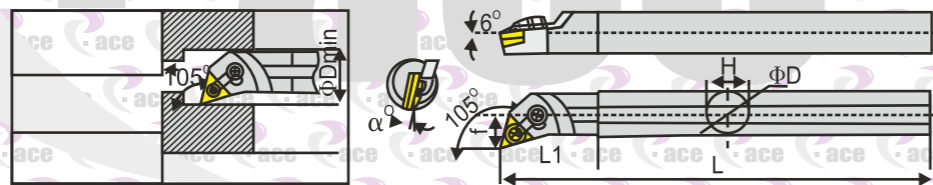
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦD_{min}	Φd	L	L1	H	f	α°	Shim	Lock Pin	Clamp	Screw	Wrench
S20R-MTUNR/L/L16	TN □ □ 1604 □ □	$\Phi 25$	$\Phi 20$	200	40	13	13	15°	ST1603	CTM510	HL1810	ML0620	L2.0 L3.0
S25S-MTUNR/L/L16		$\Phi 32$	$\Phi 25$	250	45	24	16.5	12°					
S32T-MTUNR/L/L16		$\Phi 41$	$\Phi 32$	300	54	30	22.5	17°					


MDZNR/L



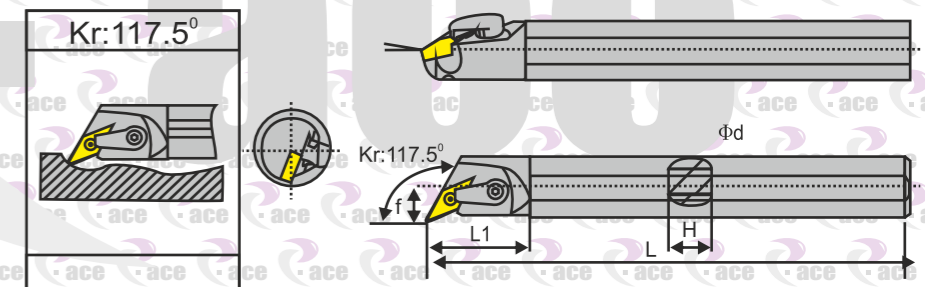
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦD_{min}	Φd	L	L1	H	f	α°	Shim	Lock Pin	Clamp	Screw	Wrench
S32T-MDZNR/L15	DN □ □ 1504 □ □	$\Phi 40$	$\Phi 32$	300	50	30	23	17°	SD1506	CTM619	HL2114	ML0625	L2.5 L3.0
S40U-MDZNR/L15		$\Phi 50$	$\Phi 40$	350	55	38	27	15°					


MTQNR/L



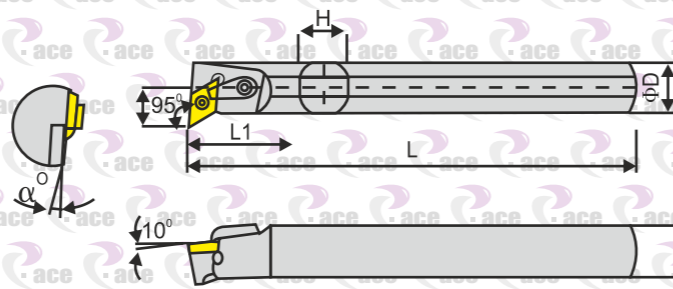
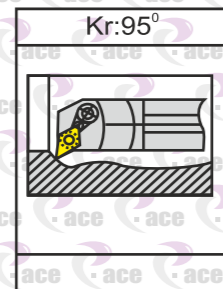
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦD_{min}	Φd	L	L1	H	f	α°	Shim	Lock Pin	Clamp	Screw	Wrench
S20R-MTQNR/L/L16	TN □ □ 1604 □ □	$\Phi 25$	$\Phi 20$	200	40	19	12.5	15°	MT1603	CTM510	HL1810	ML0620	L2.0 L3.0
S25S-MTQNR/L/L16		$\Phi 32$	$\Phi 25$	250	45	24	16	12°					
S32T-MTQNR/L/L16		$\Phi 41$	$\Phi 32$	300	54	30	22.5	17°					







MVQNR/L



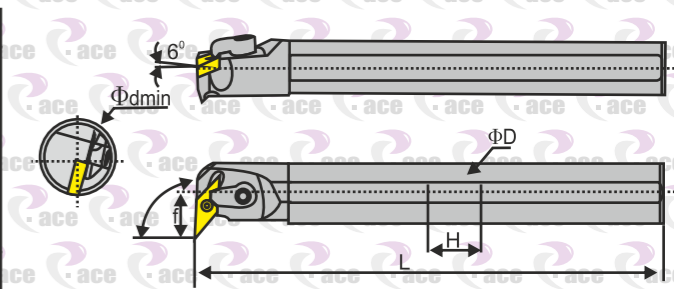
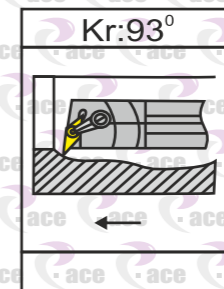
Description	Insert Number 	Dimension (mm)							Spare Parts				
		ΦD_{min}	Φd	L	L1	H	f	α°	Shim	Lock Pin	Clamp	Screw	Wrench
S25S-MVQNR/L16	VN □ □ 1604 □ □	$\Phi 32$	$\Phi 25$	250	45	24	17	12°	SV1603	CTM519	HL2114	ML0625	L2.0/L3.0
S32T-MVQNR/L16		$\Phi 42$	$\Phi 32$	300	50	30	23	17°					







MDUNR/L



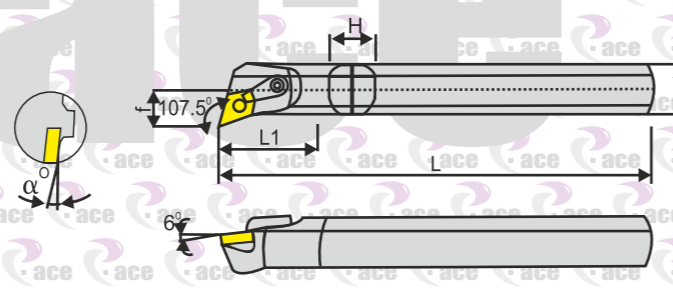
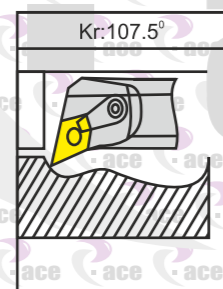
Description	Insert Number 	Dimension (mm)							Spare Parts				
		Φ_{Dmin}	Φ_d	L	L1	H	f	α°					
S25S-MDUNR/L15	DN□□1504□□	$\Phi 32$	$\Phi 25$	250	45	24	16	12°	SD1506	CTM619	HL2114	ML0625	L2.5
S32T-MDUNR/L15	DN□□1504□□	$\Phi 40$	$\Phi 32$	300	50	30	21	17°					L3.0







MVUNR/L



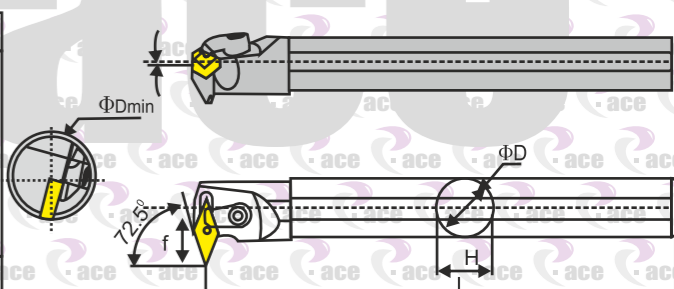
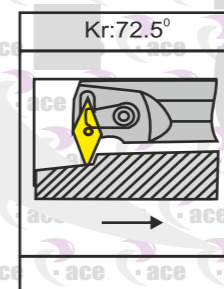
Description	Insert Number 	Dimension (mm)							Spare Parts				
		Φ_{Dmin}	Φ_d	L	L1	H	f	α°					
S25S-MVUNR/L16	VN□□1604□□	$\Phi 36$	$\Phi 25$	250	45	24	17	12°	SV1603	CTM519	HL2114	ML0625	L2.0/L3.0
S32T-MVUNR/L16	VN□□1604□□	$\Phi 42$	$\Phi 32$	300	50	30	23	17°					







MDQNR/L



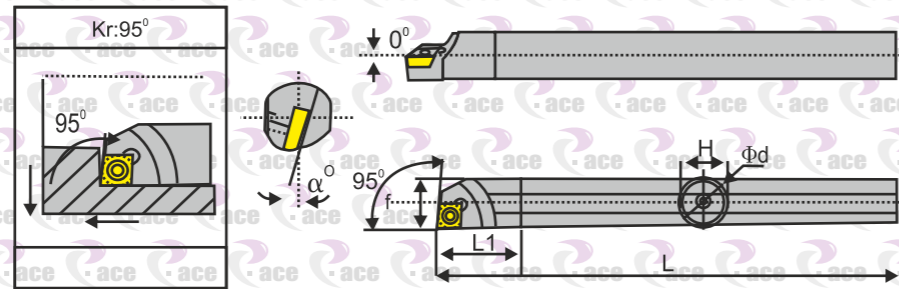
Description	Insert Number 	Dimension (mm)							Spare Parts				
		Φ_{Dmin}	Φ_d	L	L1	H	f	α°					
S25S-MDQNR/L15	DN□□1504□□	$\Phi 32$	$\Phi 25$	250	45	24	17	12°	SD1506	CTM619	HL2114	ML0625	L2.5
S32T-MDQNR/L15	DN□□1504□□	$\Phi 40$	$\Phi 32$	300	50	30	22.5	17°					L3.0

MVWNR/L



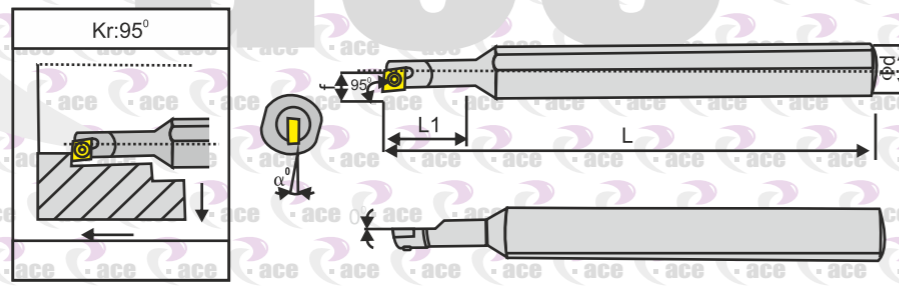
Description	Insert Number 	Dimension (mm)							Spare Parts				
		Φ_{Dmin}	Φ_d	L	L1	H	f	α°					
S25S-MVWNR/L16	VN□□1604□□	$\Phi 40$	$\Phi 25$	250	45	24	26	12°	SV1603	CTM519	HL1810	ML0625	L2.0/L3.0
S32T-MVWNR/L16	VN□□1604□□	$\Phi 48$	$\Phi 32$	300	50	30	30	17°			HL1814		

SCLCR/L



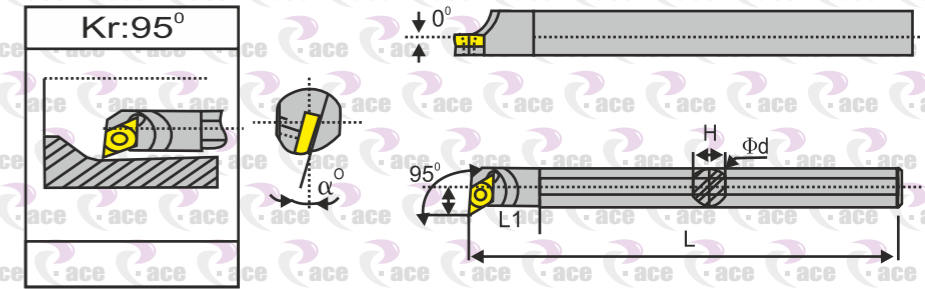
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	f	L1	L	H	α°	Screw	Wrench
SO8K-SCLCR/LO6	CC□□0602□□	Φ10	Φ8	5	125	14	7	-15°	M2.5x6	T8
SI0K-SCLCR/LO6		Φ12	Φ10	6	125	14	9	-13°		
SI0K-SCLCR/LO6		Φ12	Φ10	6	125	14	9	-13°		
SI2M-SCLCR/LO6	CC□□09T3□□	Φ16	Φ12	9	150	25	11	-10°	M4x8	T15
SI6Q-SCLCR/LO6		Φ20	Φ16	11	180	32	15	-8°		
SI2M-SCLCR/LO9		Φ16	Φ12	9	150	25	11	-10°		
SI6Q-SCLCR/LO9	CC□□1204□□	Φ20	Φ16	11	180	32.5	15	-12°	M5x12	T20
S20R-SCLCR/LO9		Φ25	Φ20	13	200	38	18	-8°		
S25S-SCLCR/LO9		Φ32	Φ25	17	250	45	23	-6°		
S25S-SCLCR/LI2	CC□□1204□□	Φ32	Φ25	17	250	45	23	-6°	M5x12	T20
S32T-SCLCR/LI2		Φ40	Φ32	22	300	50	30	-10°		
S40U-SCLCR/LI2		Φ50	Φ40	27	350	60	37	-8°		

SCLCR/L 95°



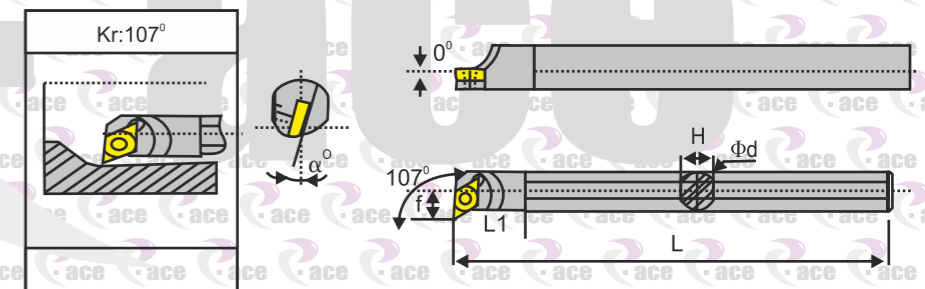
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	L	L1	H	f	α°	Screw	Wrench
SO7M-SCLCR/LO6-A16	CC□□0602□□	10	16	150	10	15	4.9	15°	M2.5x5	T8
SO8M-SCLCR/LO6-A16		11	16	150	12	15	5.5	13°		
SI0M-SCLCR/LO6-A16		12	16	150	14	15	6	12°		
SI2M-SCLCR/LO6-A16		14	16	150	17	15	7	10°		

SDUCR/L



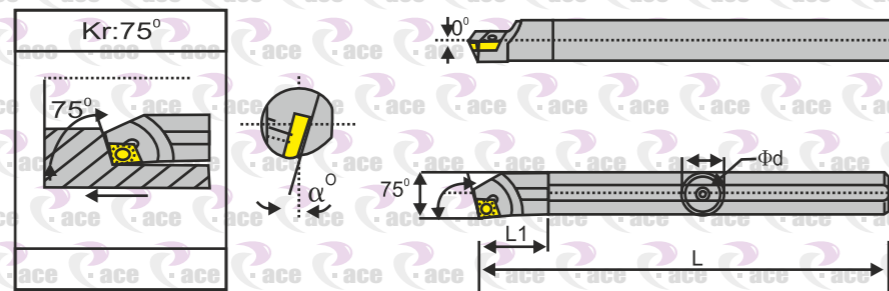
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	L	L1	H	f	α°	Screw	Wrench
SI0K-SDUCR/LO7	DC□□0702□□	Φ15	Φ10	8	125	25	9	10°	M2.5x6	T8
SI2M-SDUCR/LO7		Φ17	Φ12	9	150	28	11	8°		
SI6Q-SDUCR/LO7		Φ22	Φ16	11	180	30	15	6°		
SI6Q-SDUCR/LI1	DC□□11T3□□	Φ25	Φ20	13	180	40	19	6°	M4x8	T15
S20R-SDUCR/LI1		Φ32	Φ25	16	200	40	24	4°		
S25S-SDUCR/LI1		Φ39	Φ32	20	250	45	30	4°		
S32T-SDUCR/LI1		Φ50	Φ40	24	300	50	38	2°		

SDQCR/L



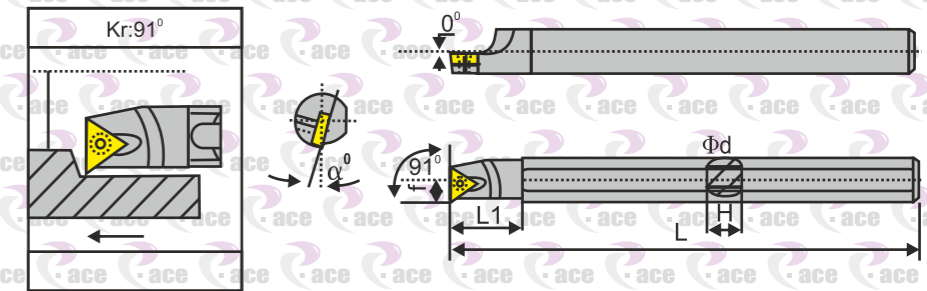
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	L	L1	h1	f	α°	Screw	Wrench
SI0K-SDQCR/LO7	DC□□0702□□	Φ13	Φ10	7	125	23	9	10°	M2.5x6	T8
SI2M-SDQCR/LO7		Φ16	Φ12	9	150	30	11	8°		
SI6Q-SDQCR/LO7		Φ20	Φ16	10.5	180	30	15	6°		
S20R-SDQCR/LI1	DC□□11T3□□	Φ25	Φ20	13	200	39	19	6°	M4x10	T15
S25S-SDQCR/LI1		Φ32	Φ25	16	250	40	24	4°		
S32T-SDQCR/LI1		Φ39	Φ32	20	300	43	30	4°		

SCKCR/L



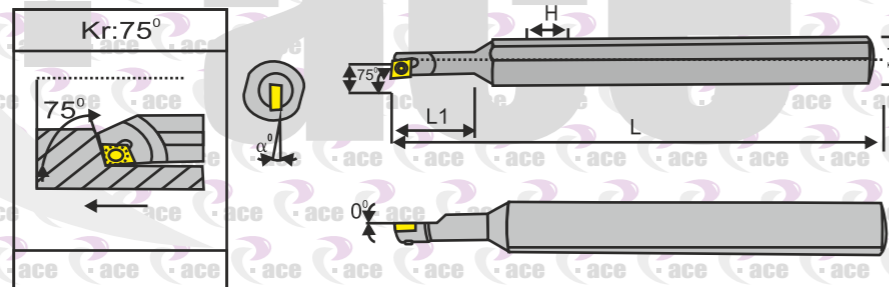
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	f	L	L1	H	α°	Screw	Wrench
S08K-SCKCR/L06	CC□□0602□□	Φ10.5	Φ8	5.5	125	20	7	13°	M2.5x6	T8
S10K-SCKCR/L06		Φ13.5	Φ10	6	125	22	9	12°		
S12M-SCKCR/L06		Φ16	Φ12	7	150	23	11	10°		
S12M-SCKCR/L09	CC□□09T3□□	Φ16	Φ12	8	150	30	11	12°	M4x8	T15
S14N-SCKCR/L09		Φ17	Φ14	8	160	30	13	10°		
S16Q-SCKCR/L09		Φ20	Φ16	9.5	180	30	15	10°		
S20R-SCKCR/L09		Φ25	Φ20	11.5	200	35	19	8°		
S25S-SCKCR/L09		Φ31	Φ25	14	250	40	24	8°		

STFCR/L



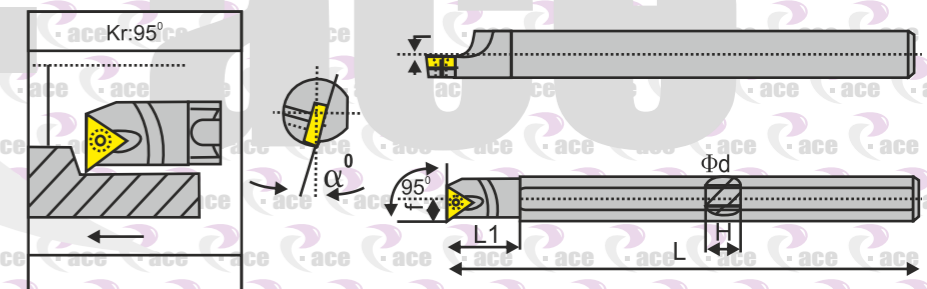
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	S	L	L1	H	α°	Screw	Wrench
S08K-STFCR/L09	TC□□0902□□	Φ11	Φ8	5	125	23	7	15°	M2.2x5	T7
S10K-STFCR/L09		Φ13.5	Φ10	6	125	24	9	13°		
S12M-STFCR/L09		Φ16	Φ10	6	150	24	9	12°		
S10K-STFCR/L11	TC□□1102□□	Φ13.5	Φ12	7	125	27	11	10°	M2.5x6	T8
S12M-STFCR/L11		Φ20	Φ16	9	150	30	15	8°		
S16Q-STFCR/L11		Φ25	Φ20	11	180	35	19	6°		
S20R-STFCR/L11		Φ31	Φ25	13.5	200	40	24	4°		
S20R-STFCR/L16		Φ25	Φ20	11	200	40	19	8°		
S25S-STFCR/L16	TC□□16T3□□	Φ31	Φ25	14	250	40	24	6°	M4x8	T15
S32T-STFCR/L16		Φ39	Φ32	17.5	300	45	30	4°		

SCKCR/L 75°



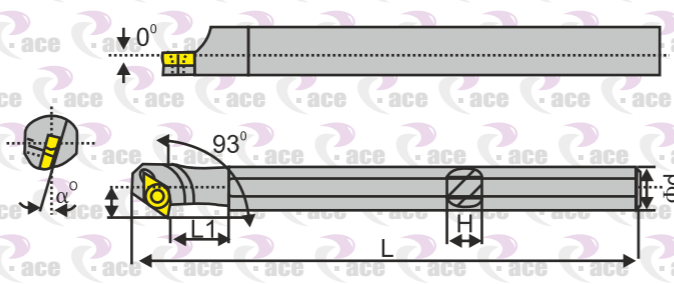
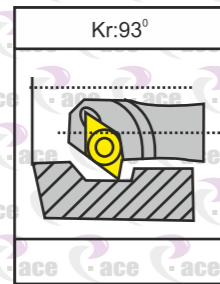
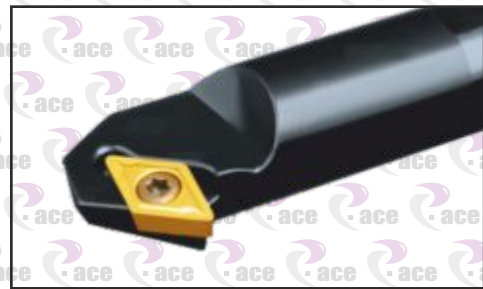
Type	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	L	L1	h1	f	α°	Screw	Wrench
S07M-SCKCR/L06-A16	CC□□0602□□	Φ10	Φ16	150	10	15	4.9	15°	M2.5x5	T8
S08M-SCKCR/L06-A16		Φ11	Φ16	150	12	15	5.5	13°		
S10M-SCKCR/L06-A16		Φ12	Φ16	150	14	15	6	12°		
S10M-SCKCR/L06-A16		Φ14	Φ16	150	17	15	7	10°		

STUCR/L



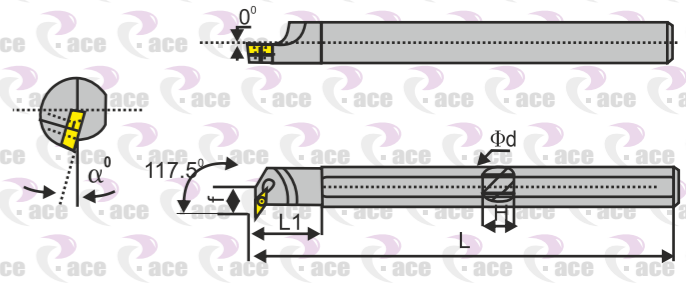
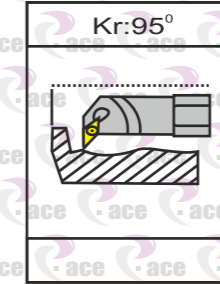
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	S	L	L1	H	α°	Screw	Wrench
S08K-STUCR/L09	TC□□0902□□	Φ10.5	Φ8	5	125	23	7	15°	M2.2x5	T7
S10K-STUCR/L09		Φ13.5	Φ10	6	125	24	9	13°		
S10K-STUCR/L11		Φ13.5	Φ10	6	125	24	9	12°		
S12M-STUCR/L11	TC□□1102□□	Φ16	Φ12	7	150	27	11	10°	M2.5x6	T8
S16Q-STUCR/L11		Φ20	Φ16	9	180	30	15	8°		
S20R-STUCR/L11		Φ25	Φ20	11	200	35	19	6°		
S25S-STUCR/L11		Φ31	Φ25	13.5	250	40	24	4°		
S20R-STUCR/L16		Φ25	Φ20	11.5	200	40	19	8°		
S25S-STUCR/L16	TC□□16T3□□	Φ31	Φ25	14	300	40	24	6°	M4x10	T15
S32T-STUCR/L16		Φ39	Φ32	17.5	350	45	30	4°		

SDZCR/L



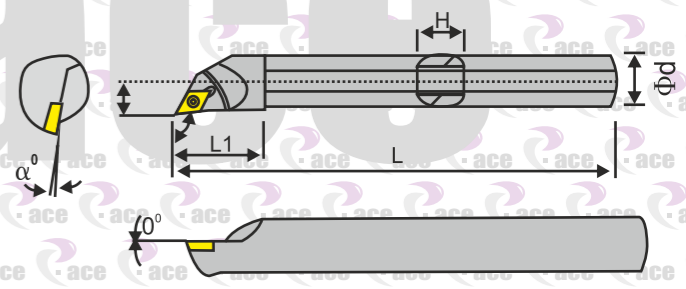
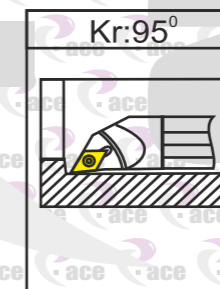
Description	Insert Number	Dimension (mm)							Spare Parts	
		$\Phi Dmin$	Φd	L	L1	h1	f	α°	Screw	Wrench
S10K-SDZCR/L07		$\Phi 16$	$\Phi 10$	8.5	125	28	9	12°	M2.5x6	T8
S12M-SDZCR/L07	DC□□0702□□	$\Phi 18$	$\Phi 12$	9.5	150	30	11	10°		
S16Q-SDZCR/L07		$\Phi 24$	$\Phi 16$	11.5	180	30	15	8°	M4x10	T15
S20R-SDZCR/L11		$\Phi 28$	$\Phi 20$	14.5	200	40	19	8°		
S25S-SDZCR/L11	DC□□11T3□□	$\Phi 34$	$\Phi 25$	17	250	45	24	6°		
S32T-SDZCR/L11		$\Phi 38$	$\Phi 32$	20.5	300	50	30	4°		

SVU*R/L



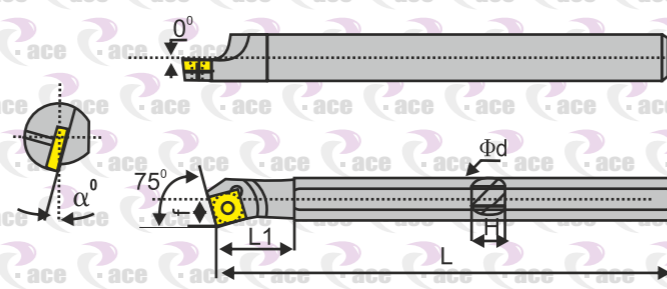
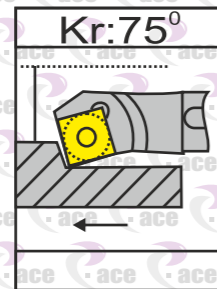
Description	Insert Number	Dimension (mm)							Spare Parts	
		$\Phi Dmin$	Φd	f	L	L1	H	α°	Screw	Wrench
S16Q-SVU-R/L11	VC□□1603□□	$\Phi 22$	$\Phi 16$	11.5	180	30	15	10°	M2.5x6	T8
S20R-SVU-R/L11	VB□□1603□□	$\Phi 27$	$\Phi 20$	14	200	32	19	8°		
S20R-SVUR/L16		$\Phi 31$	$\Phi 20$	19	200	50	19	10°	M4x10	T15
S25S-SVUR/L16	VC□□1604□□	$\Phi 35$	$\Phi 25$	20	250	50	24	8°		
S32T-SVUR/L16	VB□□1604□□	$\Phi 42$	$\Phi 32$	22.5	300	50	30	10°		

SWLCR/L



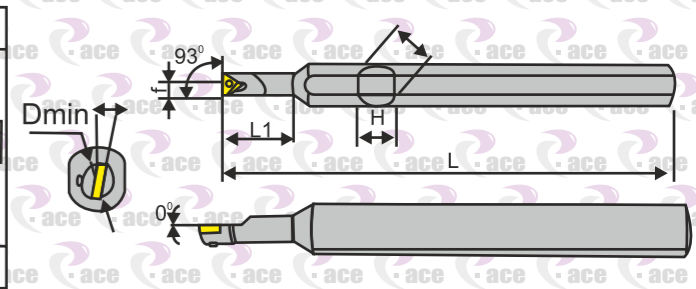
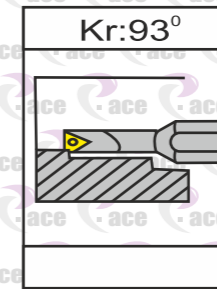
Description	Insert Number	Dimension (mm)							Spare Parts	
		$\Phi Dmin$	Φd	L	L1	h1	f	α°	Screw	Wrench
S08K-SWLCR/L04		$\Phi 10$	$\Phi 8$	125	20	7	5	12°	M2.5x6	T10
S10K-SWLCR/L04		$\Phi 13$	$\Phi 10$	125	25	9	6	10°		
S12M-SWLCR/L04	WC□□0402□□	$\Phi 16$	$\Phi 12$	150	30	11	7	8°	M4x8	T15
S16Q-SWLCR/L06		$\Phi 20$	$\Phi 16$	180	30	15	6	6°		
S20R-SWLCR/L06		$\Phi 25$	$\Phi 20$	200	40	19	11.5	6°		
S25S-SWLCR/L06	WC□□06T3□□	$\Phi 32$	$\Phi 25$	250	40	24	14	4°		

SSKCR/L



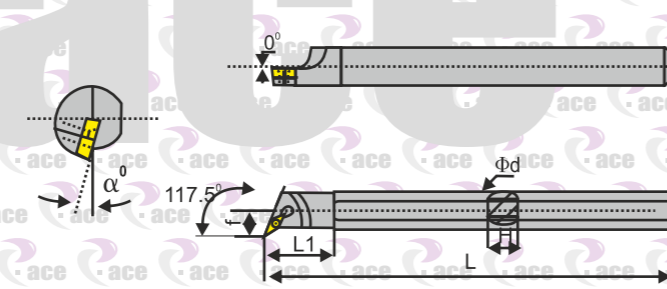
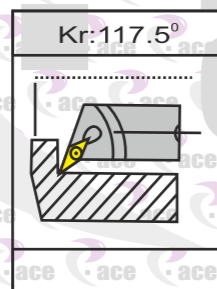
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	f	L	L1	H	α°	Screw	Wrench
S12M-SSKCR/L09	SC□□09T3□□	Φ16	Φ12	8.5	125	30	11	12°	M4x8	T15
S16Q-SSKCR/L09		Φ20	Φ16	10.5	180	30	15	10°		
S20R-SSKCR/L09		Φ24	Φ20	12.5	200	40	19	8°		
S25R-SSKCR/L09		Φ31	Φ25	15	250	40	24	6°		

STU□R/L93°



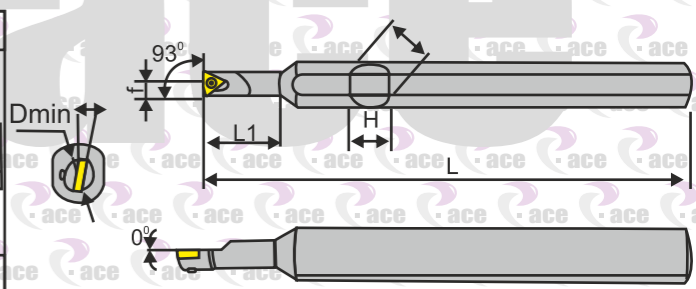
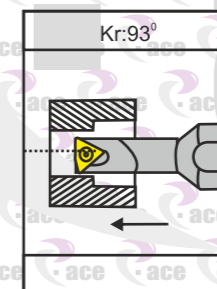
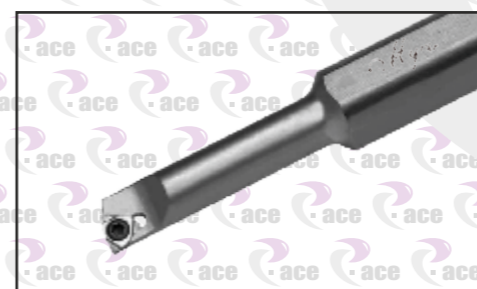
Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	L	L1	H	f	α°	Screw	Wrench
S07K-STUPR/L08-A12	TP□□0802□□	Φ9	Φ12	125	25	11	4.5	12°	M2.2x6	T6
S08M-STUPR/L08-A16	TC□□0902□□	Φ10	Φ16	150	28	15	5	13°		
S08K-STUPR/L08-A12		Φ10	Φ12	125	28	11	5.5	15°	M2.5x6	T8
S08M-STUPR/L08-A16	Φ10	Φ16	150	28	15	5.5	10°			
S10M-STUPR/L11-A16	TC□□1102□□	Φ12	Φ16	150	30	15	6	12°	M2.5x6	T8
S12M-STUPR/L11-A16		Φ14	Φ16	150	33	15	7	10°		
S10M-STUPR/L11-A16	TP□□1103□□	Φ12	Φ16	150	30	15	6	12°	M3x8	
S12M-STUPR/L11-A16		Φ14	Φ16	150	33	15	7	10°		

SVQ*R/L



Description	Insert Number	Dimension (mm)								Spare Parts	
		ΦDmin	Φd	f	L	L1	H	α°		Screw	Wrench
S16Q-SVQ-R/L11	VC□□1103□□	Φ22	Φ16	11.5	180	35	15	10°	8°	M2.5x6	T8
S20R-SVQ-R/L11	VB□□1103□□	Φ27	Φ20	14	200	39	19	8°	6°		
S20R-SVQR/L16	VC□□1604□□	Φ27	Φ20	14	200	50	19	1°	8°	M4x10	T15
S25S-SVQR/L16		Φ32	Φ25	16.5	250	50	24	8°	6°		
S32T-SVQR/L16	VB□□1604□□	Φ41	Φ32	22.5	300	55	30	10°	8°		

SWUBR/L



Description	Insert Number	Dimension (mm)							Spare Parts	
		ΦDmin	Φd	f	L	L1	H	α°	Screw	Wrench
S06H-SWUBR/L06	WBGTO60102□□	Φ7	Φ6	3.5	100	16	5.4	15°	M2.2x6	T6
S0705H-SWUBR/L06		Φ6	Φ7	3	100	16	6	15°		
S0805H-SWUBR/L06		Φ6	Φ8	3	100	16	7	15°		
S1005K-SWUBR/L06		Φ6	Φ10	3	125	16	9	15°		
S1205K-SWUBR/L06		Φ6	Φ12	3	125	20	11	15°		
S1605K-SWUBR/L06		Φ6	Φ16	3	125	20	15	15°		
S0806J-SWUBR/L06		Φ7	Φ8	3.5	110	20	7	15°		
S1006J-SWUBR/L06		Φ7	Φ10	3.5	125	20	9	15°		
S1207K-SWUBR/L06		Φ8	Φ12	4	125	25	11	12°		
S1607M-SWUBR/L06		Φ8	Φ16	4	150	25	15	12°		

Common problems and solution

Problems	Reason	solution	Material		Cutting condition				Shape					Machine clamping				
			Material with higher hardness	Material with better toughness	Cutting speed	Feed rate	Cutting depth	Cutting liquid	Change insert groove	Rake angle	Nose radius	Approach angle	Strength of cutting edge	Improve insert accuracy	Improve the rigidity of toolholder	Clamping system of workpiece	Overhang of tool	Power gap
Severe abrasion tool face	Bad precision in machining	Flank surface of blade insert wear increased	✓															
		Cutting condition is not appropriate			↓	↑												
Surface accuracy deterioration	Poor surface quality	Tool wear increase and cutting edge not sharp enough	✓		↓					↑	↑		↑		✓			
		Fracture of cutting edge		✓		↓	↓		✓		↑	↑		✓		✓		✓
		Unsuitable geometrical shape of cutting edge							✓		↑	↑		✓				
		Cutting condition is not appropriate			↑	↓	↓											
		Vibration, tremble		✓		↓	↓		✓		↑	↑	↓		✓		✓	✓
Thermal expansion accuracy	The influence of cutting heat	Cutting condition is not appropriate			↓	↓	↓											
		Unsuitable geometrical shape of cutting edge	✓						✓		↑	↓						
		Insert tolerance												✓				
Thermal expansion accuracy	Unstable size	Offset of workpiece or tools						✓		↑	↓	↑		✓		✓	✓	
		Abrasion on clearance angle	✓		↓				✓		↑	↑	↓					
Fracture of cutting edge	Flank surface	Abrasion on rake angle	✓		↓	↓	↓		✓		↑	↑	↓					
		Vibration, impact		✓		↓	↓		✓		↑	↑	↓		✓		✓	✓
	Built-up edge	The hardness of workpiece and cutting condition does not adapt			↑	↑		✓		↑	↑	↓		✓				
	Heat crack	The hardness of workpiece and cutting tool materials and cutting condition does not adapt			↓	↓	↓		✓		↑	↑	↓					
	Deformation of cutting edge nose	In the interrupted cutting with high feed	✓		↑	↓	↓		✓		↑	↑	↓					
	Tool life	Material and cutting condition is not appropriate		✓		↓	↓		✓		↑	↑	↓		✓		✓	✓
Chippings control	Long chip winding	Cutting condition is not appropriate			↓	↑	↑											
		Unsuitable geometrical shape of cutting edge							✓		↓	↑						
Burr side collapse	Steel aluminum produce burr	Cutting condition is not appropriate			↑	↓												
		Tool abrasion and unsuitable geometrical shape	✓						✓		↑	↓	↑	↓				
	Cast iron, the collapse edge	Cutting condition is not appropriate			↓	↑			✓		↓	↓	↓					
Burr side collapse	Mild steel, the burrs	Tool abrasion and unsuitable geometrical shape	✓					✓		↓	↓	↓						
		Cutting condition is not appropriate			↓	↓												
Burr side collapse	Mild steel, the burrs	Tool abrasion and unsuitable geometrical shape	✓					✓		↑	↑	↑		✓		✓	✓	
		Cutting condition is not appropriate			↓	↓												

Abrasion of tools and various damages

Tool damage type	Phenomenon	Reason	Solution
lank wear	cutting resistance increase groove wear gradually in lank surface	tool material is too soft cutting speed is too high the clearance angle is too small low feed	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ lower cutting speed ◆ increase clearance angle ◆ increase cutting feed
rake face wear (crater wear)	chipbreaking control is bad surface quality deterioration	tool material is too soft cutting speed is too high high feed	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ lower cutting speed ◆ reduce cutting feed
cutting edge breakage	sudden collapse edge tool life is unstable	tool material is too tough high feed cutting intensity is not enough tool rod and handle less rigid	<ul style="list-style-type: none"> ◆ choose higher material toughness ◆ reduce cutting feed ◆ increase the edge grinding (if rounding, chamfer instead) ◆ increase the toolholder size
damage	cutting resistance increase deterioration of the surface roughness	tool material is too tough high cutting feed cutting edge strength is not enough tool rod and handle less rigid	<ul style="list-style-type: none"> ◆ choose higher material toughness ◆ reduce cutting feed ◆ increase the edge grinding (if rounding, chamfer instead) ◆ increase the toolholder size
plastic deformation (cutting edge collapse)	workpiece size change nose abrasion	tool material is too soft cutting speed is too high cutting depth and feed are too high cutting depth and feed is too high cutting edge temperature is too high	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ lower cutting speed ◆ reduce cutting depth and feed ◆ use high thermal conductivity of tool materials
built-up edge (bond)	finishing surface deterioration cutting resistance increase	low cutting speed cutting edge is not sharp tool material is not suitable	<ul style="list-style-type: none"> ◆ higher cutting speed ◆ increase rake angle ◆ choose small affinity tool material (coating, cermet, etc.)
heat crack	collapse loss due to thermal cycling in interrupted cutting	expansion and contraction caused by cutting heat tool material is too tough	<ul style="list-style-type: none"> ◆ dry cutting ◆ choose higher material toughness
boundary wear	produce burr cutting resistance increase	high feed, high cutting speed	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ increase rake angle to improve the edge sharpness ◆ lower cutting speed
peel off	usually occurring in high hardness materials, vibration cutting	cutting edge bonding poor chip removal	<ul style="list-style-type: none"> ◆ increase rake angle to improve the edge sharpness ◆ increase the chip lute

■ Abrasion of tools and various damages

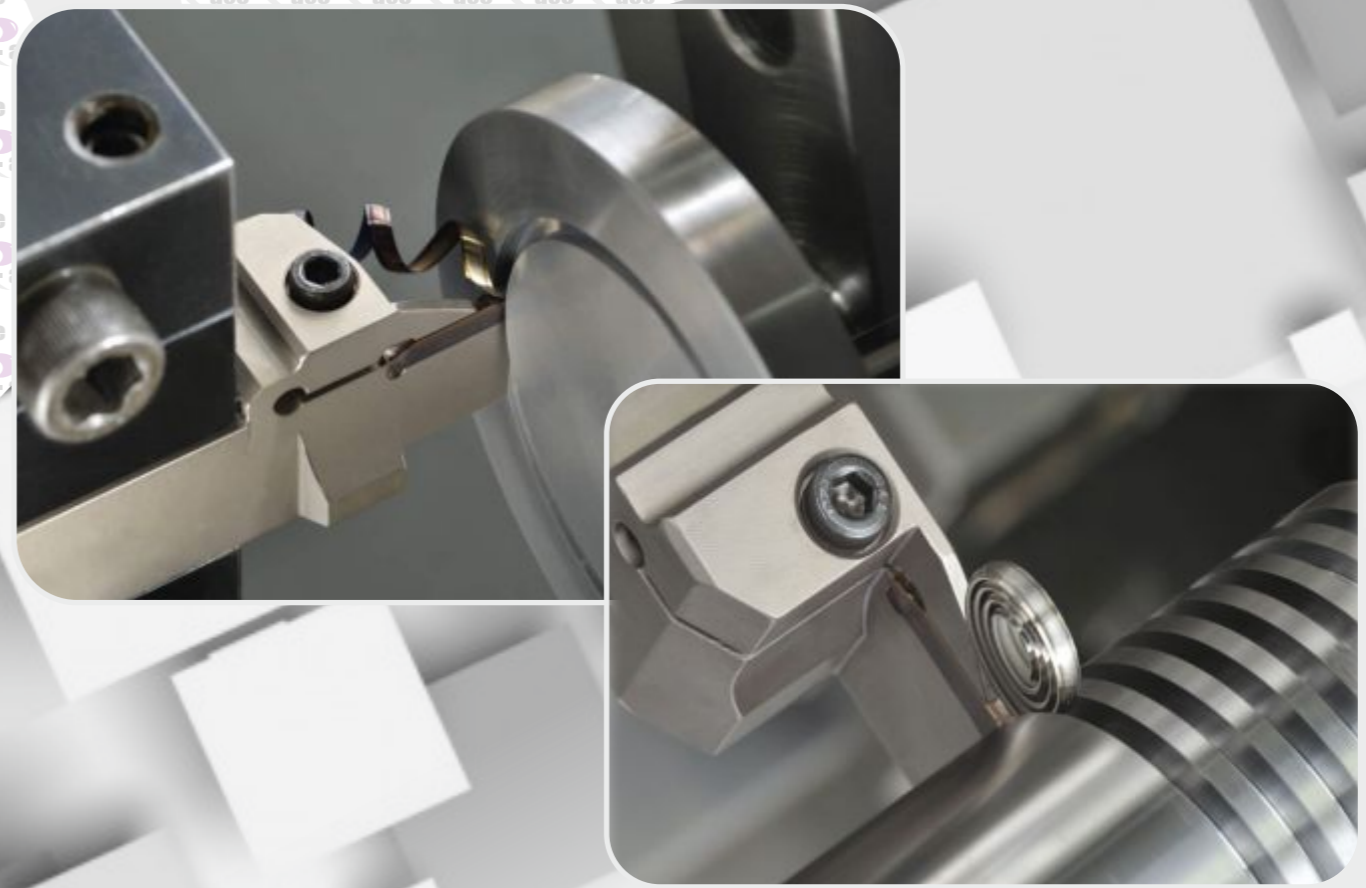
Tool damage type	Phenomenon	Reason	Solution
flank wear	cutting resistance increase groove wear gradually in flank surface	tool material is too soft cutting speed is too high the clearance angle is too small low feed	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ lower cutting speed ◆ increase clearance angle ◆ increase cutting feed
rake face wear (crater wear)	chipbreaking control is bad surface quality deterioration	tool material is too soft cutting speed is too high high feed	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ lower cutting speed ◆ reduce cutting feed
cutting edge breakage	sudden collapse edge tool life is unstable	tool material is too tough high feed cutting intensity is not enough tool rod and handle less rigid	<ul style="list-style-type: none"> ◆ choose higher material toughness ◆ reduce cutting feed ◆ increase the edge grinding (if rounding, chamfer instead) ◆ increase the toolholder size
damage	cutting resistance increase deterioration of the surface roughness	tool material is too tough high cutting feed cutting edge strength is not enough tool rod and handle less rigid	<ul style="list-style-type: none"> ◆ choose higher material toughness ◆ reduce cutting feed ◆ increase the edge grinding (if rounding, chamfer instead) ◆ increase the toolholder size
plastic deformation (cutting edge collapse)	workpiece size change nose abrasion	tool material is too soft cutting speed is too high cutting depth and feed are too high cutting depth and feed is too high cutting edge temperature is too high	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ lower cutting speed ◆ reduce cutting depth and feed ◆ use high thermal conductivity of tool materials
built-up edge (bond)	finishing surface deterioration cutting resistance increase	low cutting speed cutting edge is not sharp tool material is not suitable	<ul style="list-style-type: none"> ◆ higher cutting speed ◆ increase rake angle ◆ choose small affinity tool material (coating, cermet, etc.)
heat crack	collapse loss due to thermal cycling in interrupted cutting	expansion and contraction caused by cutting heat tool material is too tough	<ul style="list-style-type: none"> ◆ dry cutting ◆ choose higher material toughness
boundary wear	produce burr cutting resistance increase	high feed, high cutting speed	<ul style="list-style-type: none"> ◆ choose tool materials of high wear resistance ◆ increase rake angle to improve the edge sharpness ◆ lower cutting speed
peel off	usually occurring in high hardness materials, vibration cutting	cutting edge bonding poor chip removal	<ul style="list-style-type: none"> ◆ increase rake angle to improve the edge sharpness ◆ increase the chip lute

TURNING

TURNING

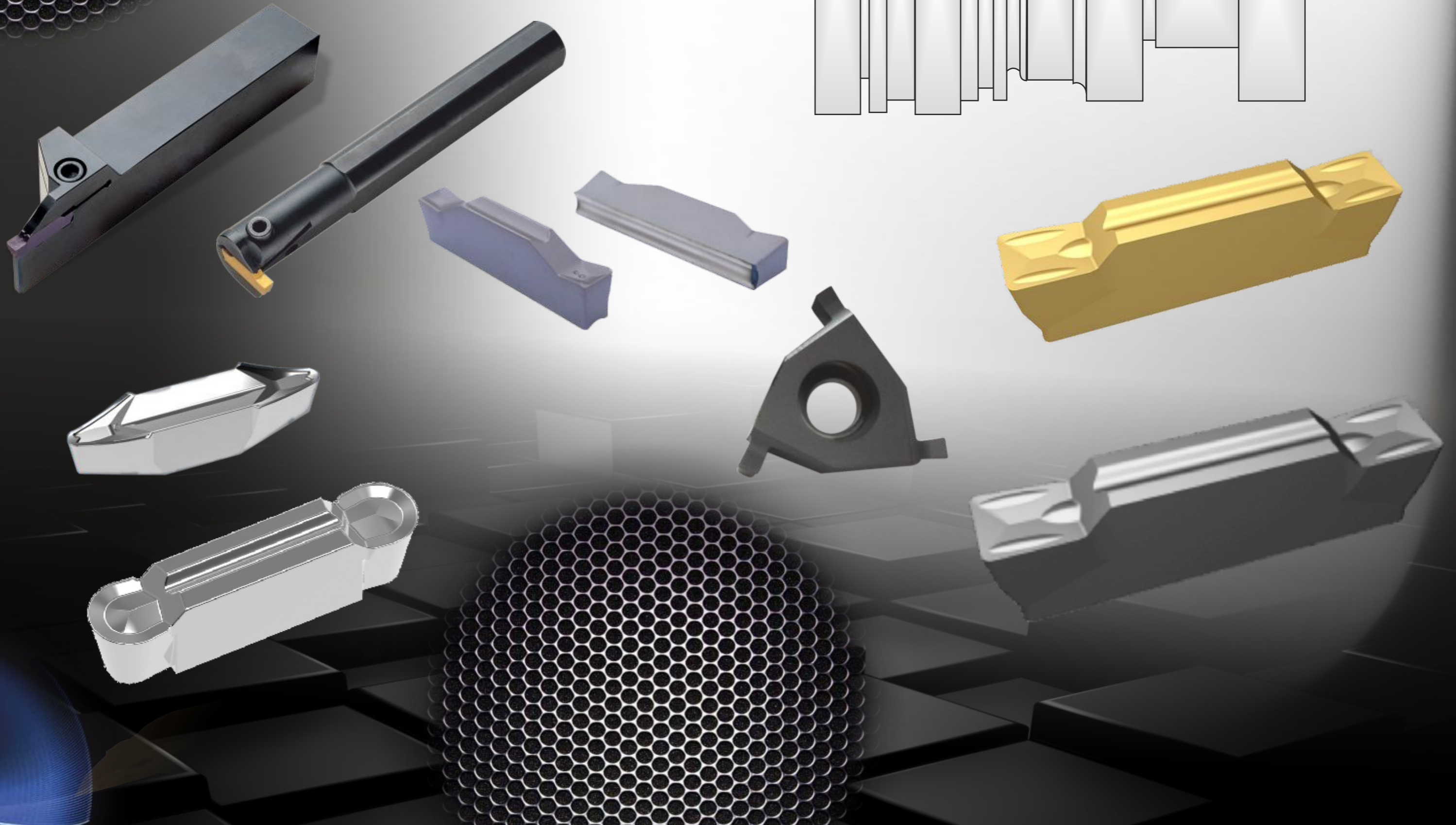
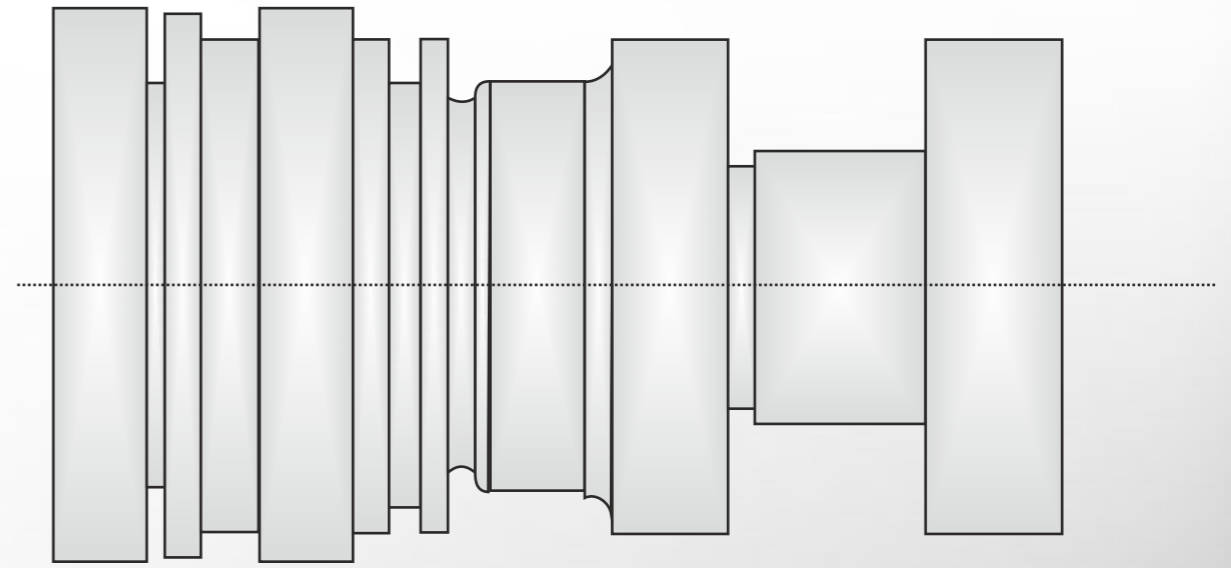
GRADES SPECIFICATION

- **PC01H** Cemented carbide grade .The premium Suitable Grade in all kind of sub-micron grain, suitable for the continuous and interrupted finishing of NON Ferrous metal. For Super Mirror finishing in Aluminum, Copper as well as other Soft material.
- **PC25G** PVD coated carbide grade .it is high hardness and excellent versatility with good free cutting material for roughing and well as for finishing. This Grade is having excellent result in Grooving Inserts.
- **PC32G** CVD coated micro-grain carbide. it is highly hard substrate combines both favorable shock resistance and blade security. Used CVD coated carbide grade, high -strength alloy substrate .with thick wear -resistant coating. Machining steel and cast steel in bad conditions. Edge line security for interrupted cutting high metal removal rate.
- **PC20H** PVD COATED MICRO-GRAIN CARBIDE EXCELLENCE GRADE Suitable for all material. It has excellent Results for all type machining Application use For A Variety Of Stainless Steel Finishing At Medium To Low Cutting Speed. when Need Excellent Edge Strength And High Surface Quality, Provide The Perfect Ride Cutting. a High Resistance. suitable For Light Interrupted Cuts.
- **PC25H** PVD COATED MICRO-GRAIN CARBIDE EXCELLENCE GRADE : it is the Premium Grade Suitable for all kind material. It have good versatility & preferred in interrupted as well as free cutting Machine Component for all kind of material like Cast Iron, Steel FORGING, as well stainless steel for EXCELLENCE Result Machining. This is a All rounder Grade. Of Pace.





GROOVING SERIES



T-MAX U-LOCK GROOVING

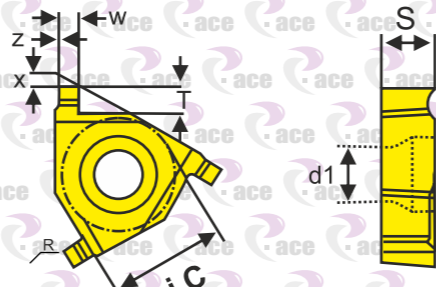


For Economical Circip Grooving And Machining Of Shallow Grooves

Description	W	T	Insert	X	Z	re	Grade	
							PC25G	PC25H
16ER/IL 0.4	0.4	0.6	16ER	1.35	0.05	0.08	▲	▲
16ER/IL 0.5	0.5	0.7		▲	▲			
16ER/IL 0.6	0.6	0.8		▲	▲			
16ER/IL 0.75	0.75	0.9		▲	▲			
16ER/IL 0.8	0.8	0.95		▲	▲			
16ER/IL 0.85	0.85	0.95		▲	▲			
16ER/IL 0.90	0.90	1.0		●	●			
16ER/IL 0.95	0.95	1.0		▲	▲			
16ER/IL 1.0	1.0	1.2		●	▲			
16ER/IL 1.10	1.10	1.25		●	▲			
16ER/IL 1.20	1.20	1.4		●	▲			
16ER/IL 1.30	1.30	1.5		●	▲			
16ER/IL 1.40	1.40	1.6		●	▲			
16ER/IL 1.50	1.50	1.75		●	▲			
16ER/IL 1.95	1.95	2.0		●	▲			
16ER/IL 2.00	2.00	2.25		●	▲			
16ER/IL 2.25	2.25	2.3		●	▲			
16ER/IL 2.50	2.50	2.75		●	▲			
16ER/IL 3.0	3.0	3.25	●	▲				

Tolerances, mm:
W=+0.13
+0.05
T=±0.13

Symbol	i.C	d1	s
	16	9.525	4.4
			3.97



MGMN/MRMN SERIES

Basic shape of Insert	Type	Dimension (mm)					Grade recommended			
		B	R	L	D	S	CVD Coating Grade	PVD Coating Grade	Uncoated Grade	
	MGMN200-M	2	0.2	16	1.2	3.5	●	★	●	▲
	MGMN250-M	2.5	0.2	18.5	2	3.85	▲	▲	▲	▲
	MGMN300-M	3	0.4	21	2.35	4.8	▲	★	●	▲
	MGMN400-M	4	0.4	21	3.3	4.8	▲	★	●	▲
	MGMN500-M	5	0.8	26	4.1	5.8	●	★	●	▲
	MGMN600-M	6	0.8	26	5	5.8	▲	▲	▲	▲
	MGMN150-G	1.5	0.15	16	1.2	3.5	▲	★	▲	▲
	MGMN200-G	2	0.2	16	1.6	3.5	●	★	●	▲
	MGMN300-G	3	0.4	21	2.35	4.8	▲	★	●	▲
	MGMN400-G	4	0.4	21	3.3	4.8	▲	▲	●	▲
	MRMN200-M	2	1	16	1.5	3.5	●	★	●	▲
	MRMN300-M	3	1.5	21	2.35	4.8	▲	★	▲	▲
	MRMN400-M	4	2	21	3.3	4.8	▲	▲	▲	▲
	MRMN500-M	5	2.5	25.86	4.12	5.8	▲	▲	▲	▲
	MRMN600-M	6	3	26	5	5.8	▲	▲	▲	▲

★ Best Suitable Available ▲ Only On Order ● Generally Available

TDJ/TDC/TDT SERIES

Basic shape of Insert	Type	Dimension (mm)					Grade recommended			
		B	R	L	D	S	CVD Coating Grade	PVD Coating Grade	Uncoated Grade	
	TDJ2	2	0.2	20	1.7	3.9	▲	★	●	▲
	TDJ3	3	0.2	20	2.4	4	▲	★	●	▲
	TDJ4	4	0.3	19.76	3	4.05	▲	★	●	▲
	TDJ5	5	0.3	25	4	4.89	●	★	●	▲
	TDC2	2	0.2	20	1.7	3.9	●	★	●	▲
	TDC3	3	0.2	20	2.4	4	●	★	●	▲
	TDC4	4	0.3	20	3	4.05	●	★	●	▲
	TDC5	5	0.3	25	4	4.89	●	▲	●	▲
	TDT2	2	0.2	20	1.7	3.9	●	★	●	▲
	TDT3	3	0.2	20	2.4	4	●	★	●	▲
	TDT4	4	0.3	19.76	3	4.05	●	★	●	▲
	TDT5	5	0.3	25	4	4.89	●	★	●	▲

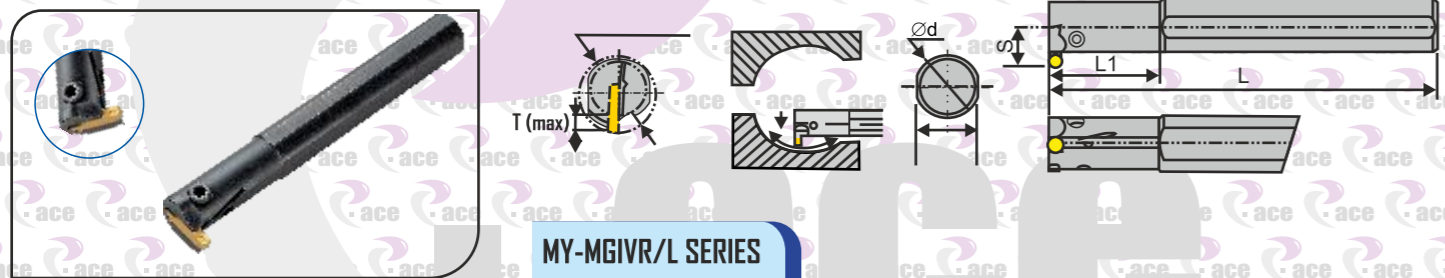
★ Best Suitable Available ▲ Only On Order ● Generally Available

Note: The right hand insert can be used for right hand external and left hand internal holders, and right hand internal holders.

GIPA/MRGN SERIES

Basic shape of Insert	Type	Dimension (mm)					Grade recommended			
		L	R	BI	S	R	CVD Coating Grade		Uncoated Grade	
							PC32G	PC20H	PC25G	PC0IH
	GIP600E-3.00-LHC	18	6	4.8	6.5	3				▲
	GIPATYZ-35V1.2LHC	30	7.2	6	8.2	1.2				▲
	MRGN 400-A-LHC	21	4	3.3	4.8	2				▲
	MRGN 500-A-LHC	26	5	4.1	5.8	2.5				▲
	MRGN 600-A-LHC	26	6	5	5.8	3				▲

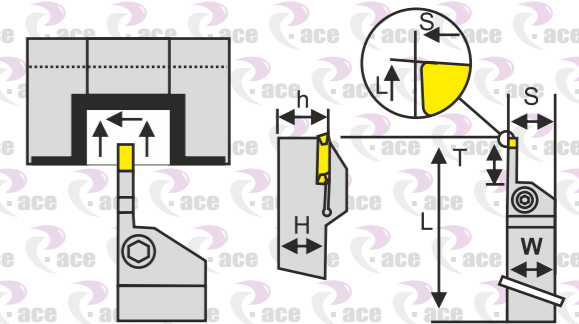
Internal Grooving And Turning Tool



MY-MGIVR/L SERIES

Description	Recommended Insert	Application							Parts	
		L	Internal Grooving, Turning					Screw	Wrench	
			ØD	Ød	L	L1	T (max)			H
MGIVR/L2016-1.5	MGMN150-G	20	16	125	35	4	15	11.3	MH0310	L2.5
MGIVR/L2520-1.5		25	20	150	45	4	18	13.1	MHA0512	L4.0
MGIVR/L2925-1.5		29	25	200	45	4	23	16.2	MH0310	L2.5
MGIVR/L2016-2.0	MGMN200-G	20	16	125	35	5	15	12.4	MH0310	L2.5
MGIVR/L2520-2.0		25	20	150	45	5	18	14	MHA0512	L4.0
MGIVR/L2925-2.0		29	25	200	45	5	23	17.2	MH0310	L2.5
MGIVR/L2016-2.5	MGMN250-G	20	16	125	35	6	15	12.5	MH0310	L2.5
MGIVR/L2520-2.5		25	20	150	45	6	18	15.1	MHA0512	L4.0
MGIVR/L2925-2.5		29	25	200	45	6	23	18.2	MH0310	L2.5
MGIVR/L2520-3.0	MGMN300-M	25	20	150	45	6	18	15.6	MHA0512	L4.0
MGIVR/L3125-3.0		31	25	200	45	6	25	18.9		
MGIVR/L3732-3.0		37	32	250	65	6	30	21.5		
MGIVR/L2520-4.0	MGMN400-M	25	20	150	45	6	18	15.6	MHA0512	L4.0
MGIVR/L3125-4.0		31	25	200	45	6	23	18.9		
MGIVR/L3732-4.0		37	32	250	65	6	30	21.5		
MGIVR/L3125-5	MGMN500-M	31	25	200	45	8	25	19.5	MHA0512	L4.0
MGIVR/L3732-5	MRMN500-M	37	32	250	65	8	30	21.5		
MGIVR/L3125-6	MGMN600-M	31	25	200	45	8	23	19.4		
MGIVR/L3732-6	MRMN600-M	37	32	250	65	8	30	21.5		

External Parting And Grooving Tool



MY-MGEHR/L SERIES

Description	H=(H)	W	L	S	T	Internal Grooving Turning	Screw	Wrench
MGEHR/L1616-1.5	16	16	100	16.25	14.5	MGMN150-G	M5X22	L4.0
MGEHR/L2020-1.5	20	20	125	20.25	14.5			
MGEHR/L2525-1.5	25	25	150	25.25	14.5			
MGEHR/L1212-2	12	12	100	14.25	14.5	MGMN200-G	M6X25	L5.0
MGEHR/L1616-2	16	16	100	16.25	14.5			
MGEHR/L2020-2	20	20	125	20.25	14.5			
MGEHR/L2525-2	25	25	150	25.25	14.5	MGMN200-M	M6X25	L5.0
MGEHR/L1616-2.5	16	16	100	16.30	16.5			
MGEHR/L2020-2.5	20	20	125	20.30	16.5			
MGEHR/L2525-2.5	25	25	150	25.30	16.5	MGMN250-G	M5X22	L5.0
MGEHR/L1616-3	16	16	100	16.35	18.5			
MGEHR/L2020-3	20	20	125	20.4	18			
MGEHR/L2020-3-T10	20	20	125	20.4	10	MGMN300-G	M6X25	L5.0
MGEHR/L2525-3	25	25	150	25.4	18			
MGEHR/L2525-3-T10	25	25	150	25.4	10			
MGEHR/L3232-3	32	32	170	32.4	18	MGMN300-M	M6X25	L5.0
MGEHR/L3232-3-T10	32	32	170	32.4	10			
MGEHR/L2020-4	20	20	125	20.4	18			
MGEHR/L2020-4-T10	20	20	125	20.4	10	MRMN300-G	M6X25	L5.0
MGEHR/L2525-4	25	25	150	25.4	18.0			
MGEHR/L2525-4-T10	25	25	150	25.4	10			
MGEHR/L3232-4	32	32	170	32.4	18	MGMN400-G	M6X25	L5.0
MGEHR/L3232-4-T10	32	32	170	32.4	10			
MGEHR/L2020-5	20	20	150	20.5	23			
MGEHR/L2020-5-T15	20	20	150	20.5	15	MGMN400-M	M6X25	L5.0
MGEHR/L2525-5	25	25	150	25.5	23			
MGEHR/L2525-5-T15	25	25	150	25.5	15			
MGEHR/L3232-5	32	32	170	32.5	23	MGMN500-G	M6X25	L5.0
MGEHR/L3232-5-T15	32	32	170	32.5	15			
MGEHR/L2020-6	20	20	125	20.6	23			
MGEHR/L2020-6-T15	20	20	125	20.6	15	MGMN500-M	M6X25	L5.0
MGEHR/L2525-6	25	25	150	25.6	23			
MGEHR/L2525-6-T15	25	25	150	25.6	15			
MGEHR/L3232-6	32	32	170	32.6	23	MGMN600-M	M6X25	L5.0
MGEHR/L3232-6-T15	32	32	170	32.6	15			
MGEHR/L2020-6	20	20	125	20.6	23			
MGEHR/L2020-6-T15	20	20	125	20.6	15	MGMN600-M	M6X25	L5.0
MGEHR/L2525-6	25	25	150	25.6	23			
MGEHR/L2525-6-T15	25	25	150	25.6	15			
MGEHR/L3232-6	32	32	170	32.6	23	MGMN600-M	M6X25	L5.0
MGEHR/L3232-6-T15	32	32	170	32.6	15			

Parting And Grooving Processing Applicable Data

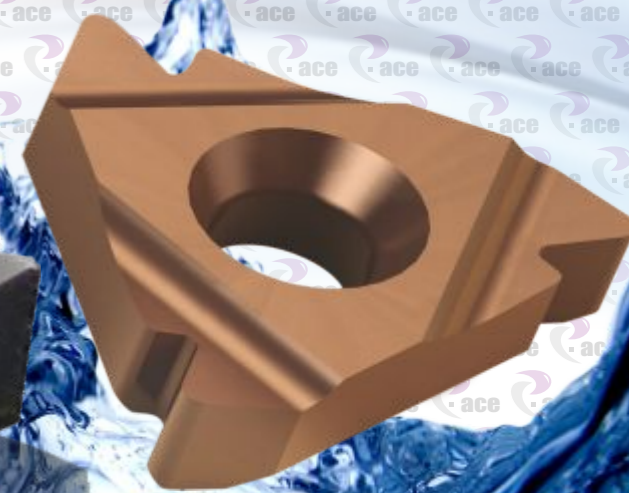
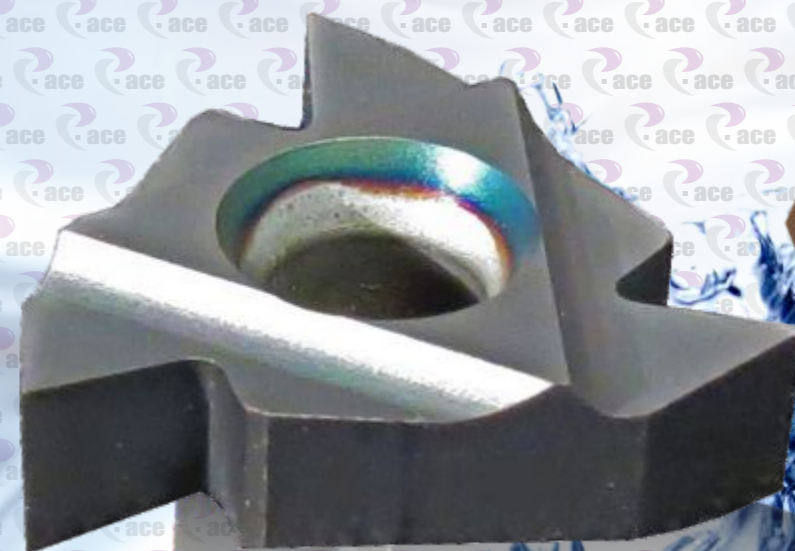
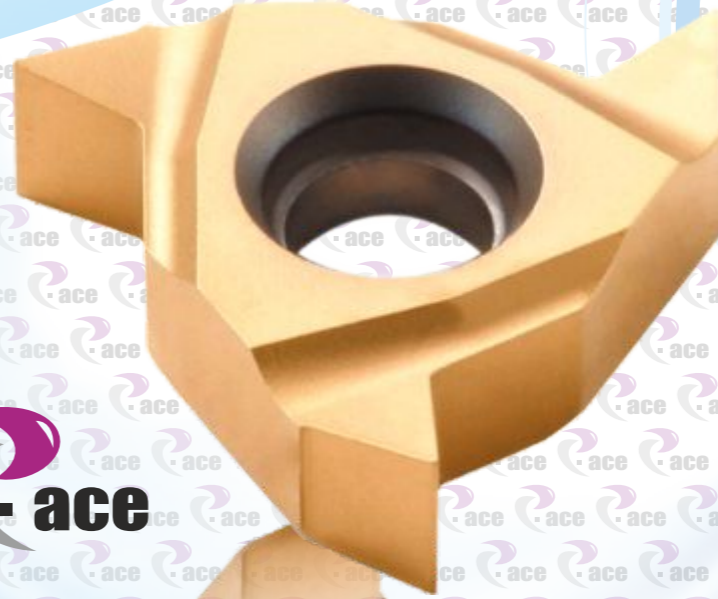
Dimension	Recommended cutting feed(mm/r)				
	Width□mm□	Cutting-off	Grooving	Turning	Profiling
1.5		0.05-0.15	0.05-0.15	0.05-0.15	0.05-0.15
2		0.05-0.15	0.05-0.15	0.05-0.15	0.05-0.15
2.5		0.05-0.15	0.05-0.15	0.05-0.15	0.05-0.15
3		0.05-0.15	0.05-0.15	0.07-0.15	0.1-0.2
4		0.05-0.2	0.05-0.2	0.07-0.25	0.1-0.2
5		0.07-0.2	0.07-0.22	0.1-0.25	0.15-0.3
6		0.1-0.3	0.07-0.25	0.1-0.3	0.15-0.3

Workpiece	Hardness	PC32G	PC20H	PC25G	PC01H
P	Carbon steel	125 ≤ HB ≤ 170	150-280	150-280	150-280
	Low alloy steel	180 ≤ HB ≤ 275	110-200	110-200	110-200
	High alloy steel	180 ≤ HB ≤ 325	110-190	110-190	110-190
M	Cast iron	180 ≤ HB ≤ 250	100-170	100-170	100-170
	Ferrite martensite	200 ≤ HB ≤ 300	100-200	100-200	100-200
K	Austenite	180 ≤ HB ≤ 300	110-220	110-220	110-220
	Malleable cast iron	130 ≤ HB ≤ 230	130-220	130-220	130-220
	Gray cast iron	180 ≤ HB ≤ 220	120-200	120-200	120-200
N	Nodular cast iron	160 ≤ HB ≤ 250	110-180	110-180	110-180
	Aluminium alloy	--	--	--	250-510
S	High temperature alloy	≤ 400	--	--	--

Cutting parameter suitable for GROOVING

Suggestion: Cutting speed should be reduced by 30% - 40% for internal and face turning.

THREAD CUTTING TOOL



Thread Insert Naming Rules

Insert Size

- 11 > D n behalf of I.C=6.35 mm
- 16 > D n behalf of I.C=9.525 mm

Insert size

- E > External thread turning insert
- I > Internal thread turning insert

Cutting Direction

- R > Right
- L > Left

16 **E** **R** - **1.5** **ISO** **PC25G**

Pitch

Full Profile (the Number Is The Pitch Range)

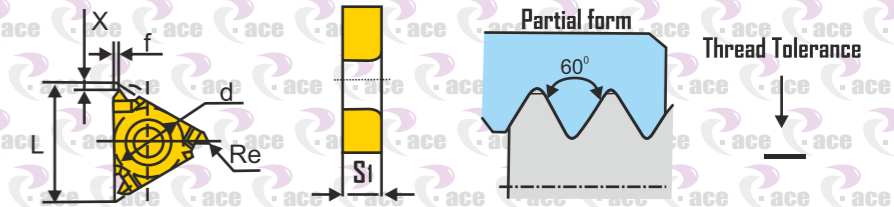
mm	TPI
0.35-9.0	72-2

V Partial (the Number Is The Pitch Range)

	mm	TPI
A	0.5-1.5	48-16
AG	0.5-3.0	48-8
G	1.75-3.0	14-8
N	3.5-5.0	7-5
Q	5.5-6.0	41/2-4

Tooth type of thread

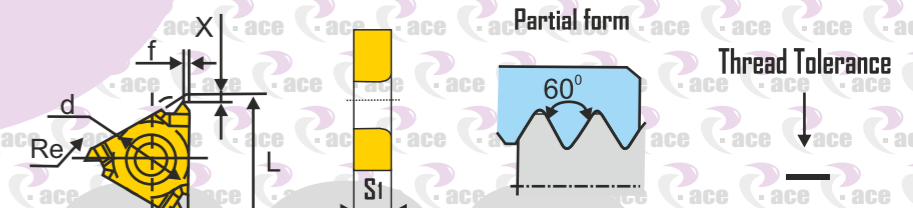
60	Partial profile 60°
55	Partial profile 55°
ISO	ISO Metric
U	American UN
UNJ	Unified Constant Thread
	Whitworth
NPT	American 60°Tape Pipe Thread
NPTF	National Pipe Threads-Dry seal
BSPT	British Standard 55°Pipe Thread
ACME	American ACME
STACME	Stub ACME
T	Trapes DIN 103
ABUT	American Buttress
RD	Round DIN 405
APIRD	API Round Thread



External Partial Profile 60°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	Si	Re		PC25G	PC32G	PC25H
	mm	TPI										
16ER-AG0	0.5-1.5	48-16	9.525	16	0.8	0.9	3.44	0.06	—	▲	▲	▲
16ER-G60	1.75-3.0	14-8	9.525	16	1.2	1.7	3.44	0.22	—	▲	▲	▲
16ER-AG60	0.5-3.0	48-8	9.525	16	1.2	1.7	3.44	0.06	—	●	▲	▲

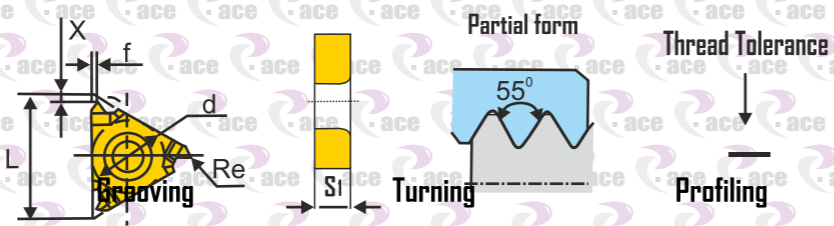
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Internal Partial Profile 60°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	Si	Re		PC25G	PC32G	PC25H
	mm	TPI										
06IR-AG0	0.5-1.5	48-16	3.97	06	0.6	0.6	1.91	0.05	—	▲	▲	▲
08IR-AG0	0.5-1.5	48-16	4.76	08	0.8	0.8	2.38	0.05	—	▲	▲	▲
11IR-AG0	0.5-1.5	48-16	6.35	11	0.8	0.9	3.04	0.05	—	▲	▲	▲
16IR-AG0	0.5-1.5	48-16	9.525	16	0.8	0.9	3.44	0.05	—	●	▲	▲
16IR-G60	1.75-3.0	14-8	9.525	16	1.2	1.7	3.44	0.16	—	●	▲	▲
16IR-AG60	0.5-3.0	48-8	9.525	16	1.2	1.7	3.44	0.05	—	●	▲	▲

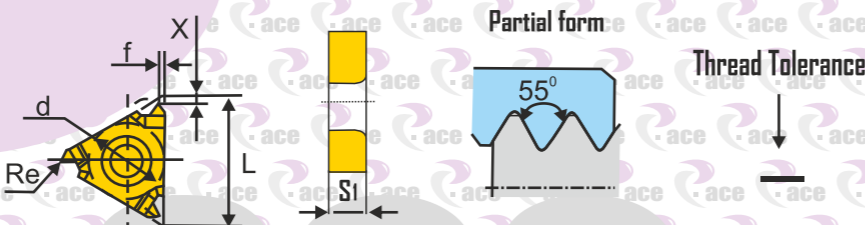
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External Partial Profile 55°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	R _e		PC25G	PC32G	PC25H
	mm	TPI										
IBER-A55	—	48-16	9.525	16	0.8	0.9	3.44	0.05	●	▲	▲	
IBER-G55	—	14-8	9.525	16	1.2	1.7	3.44	0.21	●	▲	▲	
IBER-AG55	—	48-8	9.525	16	1.2	1.7	3.44	0.07	●	▲	▲	

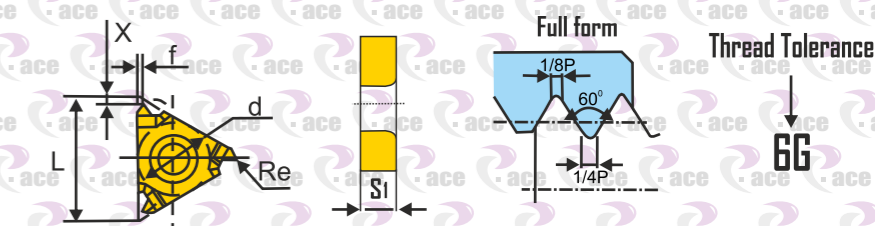
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Internal Partial Profile 55°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	R _e		PC25G	PC32G	PC25H
	mm	TPI										
06IR-A55	—	48-16	3.97	06	0.6	0.6	1.91	0.05	▲	▲	▲	
08IR-A55	—	48-16	4.76	08	0.8	0.8	2.38	0.05	▲	▲	▲	
11IR-A55	—	48-16	6.35	11	0.8	0.9	3.04	0.05	▲	▲	▲	
16IR-A55	—	48-16	9.525	16	0.8	0.9	3.44	0.05	●	▲	▲	
16IR-G55	—	14-8	9.525	16	1.2	1.7	3.44	0.21	●	▲	▲	
16IR-AG55	—	48-8	9.525	16	1.2	1.7	3.44	0.07	●	▲	▲	

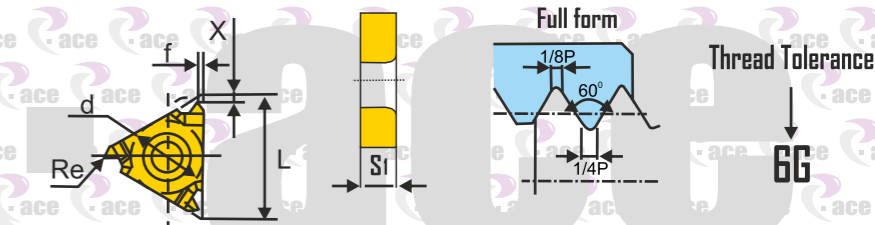
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External ISO Metric 60°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	R _e		PC25G	PC32G	PC25H
	mm	TPI										
16ER-0.5ISO	0.5	—	9.525	16	0.6	0.4	3.44	0.06	0.31	▲	▲	▲
16ER-0.75ISO	0.75	—	9.525	16	0.6	0.6	3.44	0.10	0.46	▲	▲	▲
16ER-1.0ISO	1	—	9.525	16	0.7	0.7	3.44	0.16	0.61	●	▲	▲
16ER-1.25ISO	1.25	—	9.525	16	0.8	0.9	3.44	0.19	0.77	●	▲	▲
16ER-1.5ISO	1.5	—	9.525	16	0.8	1	3.44	0.23	0.92	●	▲	▲
16ER-1.75ISO	1.75	—	9.525	16	0.9	1.2	3.44	0.21	1.07	●	▲	▲
16ER-2.0ISO	2	—	9.525	16	1	1.3	3.44	0.31	1.23	●	▲	▲
16ER-2.5ISO	2.5	—	9.525	16	1.1	1.5	3.44	0.32	1.53	●	▲	▲
16ER-3.0ISO	3	—	9.525	16	1.2	1.6	3.44	0.46	1.84	●	▲	▲

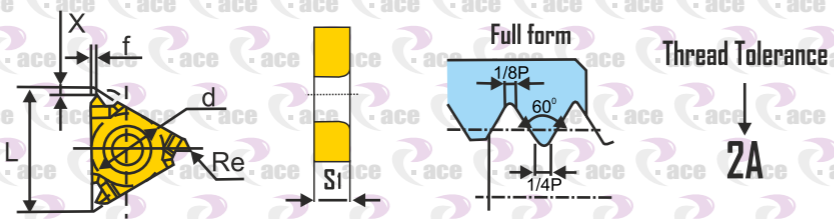
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Internal ISO Metric 60°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	R _e		PC25G	PC32G	PC25H
	mm	TPI										
11IR-0.75ISO	0.75	—	6.35	11	0.6	0.6	3.04	0.04	0.43	▲	▲	▲
11IR-1.0ISO	1	—	6.35	11	0.6	0.7	3.04	0.10	0.58	▲	▲	▲
11IR-1.25ISO	1.25	—	6.35	11	0.8	0.9	3.04	0.12	0.72	●	▲	▲
11IR-1.5ISO	1.5	—	6.35	11	0.8	1.0	3.04	0.14	0.87	●	▲	▲
11IR-2.0ISO	2	—	6.35	11	0.9	1.1	3.04	0.18	1.15	●	▲	▲
16IR-0.5ISO	0.5	—	9.525	16	0.6	0.4	3.44	0.03	0.29	▲	▲	▲
16IR-0.75ISO	0.75	—	9.525	16	0.6	0.6	3.44	0.04	0.43	▲	▲	▲
16IR-1.0ISO	1	—	9.525	16	0.6	0.7	3.44	0.10	0.58	●	▲	▲
16IR-1.25ISO	1.25	—	9.525	16	0.8	0.9	3.44	0.12	0.72	●	▲	▲
16IR-1.5ISO	1.5	—	9.525	16	0.8	1	3.44	0.14	0.87	●	▲	▲
16IR-1.75ISO	1.75	—	9.525	16	0.9	1.2	3.44	0.10	1.01	●	▲	▲
16IR-2.0ISO	2	—	9.525	16	1	1.3	3.44	0.18	1.15	●	▲	▲
16IR-2.5ISO	2.5	—	9.525	16	1.1	1.5	3.44	0.15	1.44	●	▲	▲
16IR-3.0ISO	3	—	9.525	16	1.1	1.5	3.44	0.26	1.73	●	▲	▲

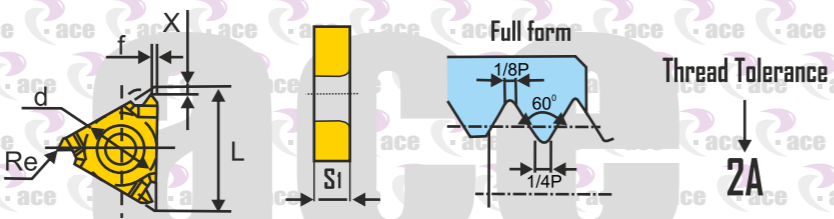
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External American UN 60°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	Re	PC25G		PC32G	PC25H	
	mm	TPI											
16ER-24UN	—	24	9.525	16	0.7	0.8	3.44	0.16	0.65	▲	▲	▲	
16ER-20UN	—	20	9.525	16	0.8	0.9	3.44	0.19	0.78	▲	▲	▲	
16ER-18UN	—	18	9.525	16	0.8	1	3.44	0.21	0.87	●	▲	▲	
16ER-16UN	—	16	9.525	16	0.9	1.1	3.44	0.24	0.97	●	▲	▲	
16ER-14UN	—	14	9.525	16	1	1.2	3.44	0.22	0.11	●	▲	▲	
16ER-13UN	—	13	9.525	16	1	1.3	3.44	0.24	1.20	▲	▲	▲	
16ER-12UN	—	12	9.525	16	1.1	1.4	3.44	0.32	1.30	●	▲	▲	
16ER-10UN	—	10	9.525	16	1.1	1.5	3.44	0.32	1.56	▲	▲	▲	
16ER-8UN	—	8	9.525	16	1.2	1.6	3.44	0.48	1.95	▲	▲	▲	

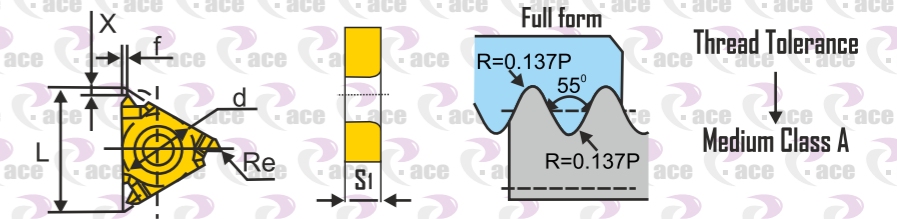
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Internal American UN 60°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	Re	PC25G		PC32G	PC25H	
	mm	TPI											
16IR-24UN	—	24	9.525	16	0.7	0.8	3.44	0.09	0.61	▲	▲	▲	
16IR-20UN	—	20	9.525	16	0.8	0.9	3.44	0.11	0.73	▲	▲	▲	
16IR-18UN	—	18	9.525	16	0.8	1	3.44	0.12	0.81	●	▲	▲	
16IR-16UN	—	16	9.525	16	0.9	1.1	3.44	0.14	0.92	●	▲	▲	
16IR-14UN	—	14	9.525	16	0.9	1.2	3.44	0.11	1.05	●	▲	▲	
16IR-13UN	—	13	9.525	16	1	1.3	3.44	0.10	1.13	▲	▲	▲	
16IR-12UN	—	12	9.525	16	1.1	1.4	3.44	0.18	1.22	●	▲	▲	
16IR-10UN	—	10	9.525	16	1.1	1.5	3.44	0.15	1.47	▲	▲	▲	
16IR-8UN	—	8	9.525	16	1.1	1.5	3.44	0.27	1.83	▲	▲	▲	

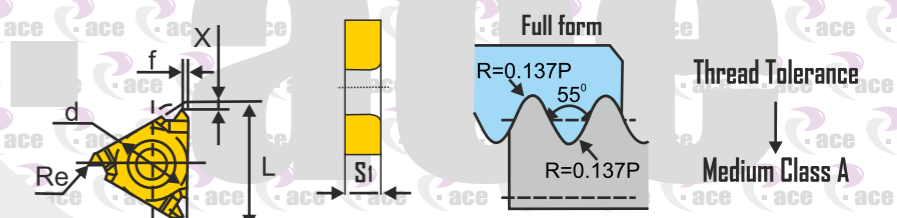
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External Whitworth for BSW, BSP 60°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	Re	PC25G		PC32G	PC25H	
	mm	TPI											
16ER-28W	—	28	9.525	16	0.6	0.7	3.44	0.09	0.58	▲	▲	▲	
16ER-26W	—	26	9.525	16	0.7	0.8	3.44	0.10	0.63	▲	▲	▲	
16ER-20W	—	20	9.525	16	0.8	0.9	3.44	0.18	0.81	▲	▲	▲	
16ER-19W	—	19	9.525	16	0.8	1	3.44	0.19	0.86	●	▲	▲	
16ER-16W	—	16	9.525	16	0.9	1.1	3.44	0.23	1.02	●	▲	▲	
16ER-14W	—	14	9.525	16	1	1.2	3.44	0.26	1.16	●	▲	▲	
16ER-12W	—	12	9.525	16	1.1	1.4	3.44	0.30	1.36	●	▲	▲	
16ER-11W	—	11	9.525	16	1.1	1.5	3.44	0.33	1.48	▲	▲	▲	
16ER-08W	—	08	9.525	16	1.2	1.5	3.44	0.39	2.03	▲	▲	▲	

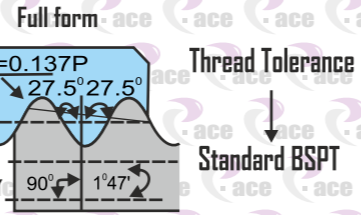
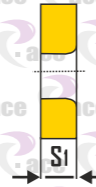
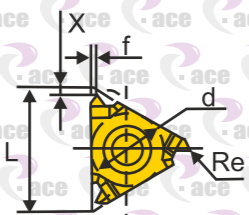
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Internal Whitworth for BSW, BSP 60°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S ₁	Re	PC25G		PC32G	PC25H	
	mm	TPI											
11IR-19W	—	19	6.35	11	0.8	1	3.04	0.19	0.86	▲	▲	▲	
11IR-14W	—	14	6.35	11	0.9	1.1	3.04	0.26	1.16	▲	▲	▲	
16IR-28W	—	28	9.525	16	0.6	0.7	3.44	0.09	0.58	▲	▲	▲	
16IR-26W	—	26	9.525	16	0.7	0.8	3.44	0.10	0.63	▲	▲	▲	
16IR-20W	—	20	9.525	16	0.8	0.9	3.44	0.18	0.81	▲	▲	▲	
16IR-19W	—	19	9.525	16	0.8	1	3.44	0.19	0.86	●	▲	▲	
16IR-16W	—	16	9.525	16	0.9	1.1	3.44	0.23	1.02	▲	▲	▲	
16IR-14W	—	14	9.525	16	1	1.2	3.44	0.26	1.16	●	▲	▲	
16IR-12W	—	12	9.525	16	1.1	1.4	3.44	0.30	1.36	●	▲	▲	
16IR-11W	—	11	9.525	16	1.1	1.5	3.44	0.33	1.48	▲	▲	▲	
16IR-08W	—	08	9.525	16	1.2	1.5	3.44	0.39	2.03	▲	▲	▲	

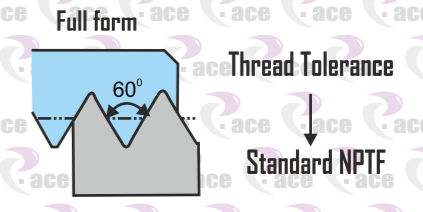
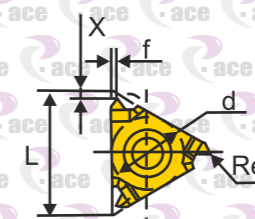
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External British Standard Thread 55°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	Si	Re	PC25G		PC32G	PC25H	
	mm	TPI											
16ER-28BSPT	—	28	9.525	16	0.6	0.6	3.44	0.09	0.58	▲	▲	▲	
16ER-19BSPT	—	19	9.525	16	0.8	0.9	3.44	0.14	0.86	▲	▲	▲	
16ER-14BSPT	—	14	9.525	16	1	1.2	3.44	0.26	1.16	▲	▲	▲	
16ER-11BSPT	—	11	9.525	16	1.1	1.5	3.44	0.33	1.48	▲	▲	▲	

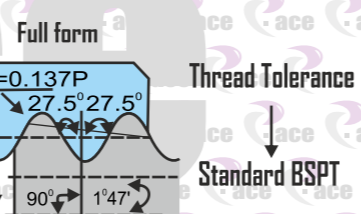
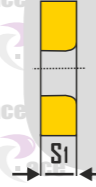
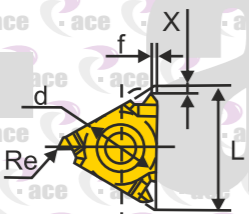
★ Best Suitable Available ▲ Only On Order ● Generally Available



External American NPTF 60°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	Si	Re	PC25G		PC32G	PC25H	
	mm	TPI											
16ER-27NPTF	—	27	9.525	16	0.7	0.8	3.44	0.04	0.64	▲	▲	▲	
16ER-18NPTF	—	18	9.525	16	0.8	1	3.44	0.04	1	▲	▲	▲	
16ER-14NPTF	—	14	9.525	16	0.9	1.2	3.44	0.04	1.35	▲	▲	▲	
16ER-11.5NPTF	—	11.5	9.525	16	1.1	1.5	3.44	0.04	1.63	▲	▲	▲	
16ER-08NPTF	—	8	9.525	16	1.3	1.8	3.44	0.04	2.38	▲	▲	▲	

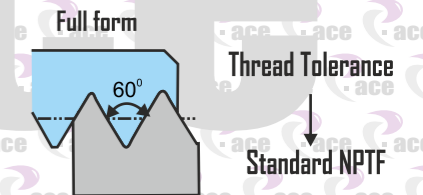
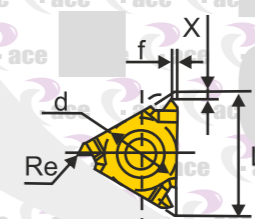
★ Best Suitable Available ▲ Only On Order ● Generally Available



Internal British Standard Thread 55°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	Si	Re	PC25G		PC32G	PC25H	
	mm	TPI											
11IR-19W	—	19	6.35	11	0.8	0.9	3.04	0.14	0.86	▲	▲	▲	
11IR-14W	—	14	6.35	11	0.9	1	3.04	0.26	1.16	▲	▲	▲	
16IR-19BSPT	—	19	9.525	16	0.8	0.9	3.44	0.14	0.86	▲	▲	▲	
16IR-14BSPT	—	14	9.525	16	1	1.2	3.44	0.26	1.16	▲	▲	▲	
16IR-11BSPT	—	11	9.525	16	1.1	1.5	3.44	0.33	1.48	▲	▲	▲	

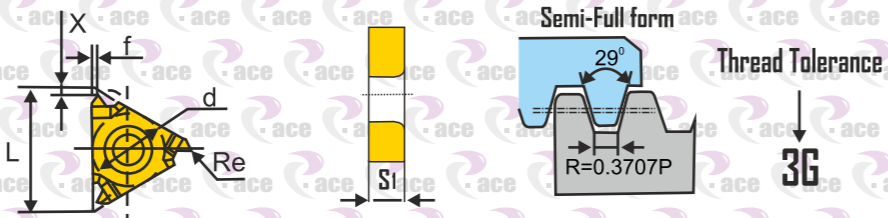
★ Best Suitable Available ▲ Only On Order ● Generally Available



Internal American NPTF 60°

Description	Applicable Thread		Dimensions							Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	Si	Re	PC25G		PC32G	PC25H	
	mm	TPI											
16IR-14NPTF	—	14	9.525	16	0.9	1.2	3.44	0.04	1.35	▲	▲	▲	
16IR-11.5NPTF	—	11.5	9.525	16	1.1	1.5	3.44	0.04	1.63	▲	▲	▲	
16IR-08NPTF	—	8	9.525	16	1.3	1.8	3.44	0.04	2.38	▲	▲	▲	

★ Best Suitable Available ▲ Only On Order ● Generally Available



External American ACME 29°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S1	Re		PC25G	PC32G	PC25H
	mm	TPI										
16ER-12ACME	—	12	9.525	16	1.1	1.2	3.44	0.08	1.19	▲	▲	▲
16ER-10ACME	—	10	9.525	16	1.3	1.4	3.44	0.08	1.52	▲	▲	▲
16ER-8ACME	—	8	9.525	16	1.4	1.5	3.44	0.10	1.84	▲	▲	▲

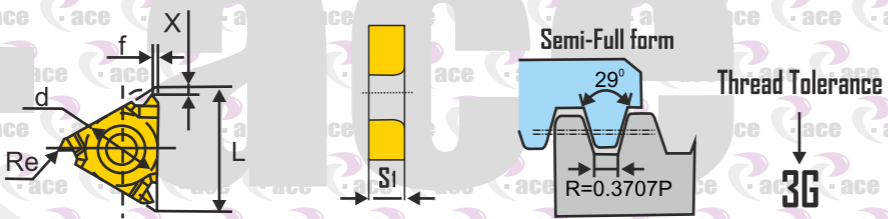
★ Best Suitable Available ▲ Only On Order ● Generally Available



External thread cutting tool

Size	Stock item	Dimension(mm)					Applicable Inserts	Screw	Shim	Screw	Wrench
		a	h	b	L	S					
SER	1616H16	▲	16	16	16	100	20	160M3.5X12	MT16-□□M	SM4 □□BC	WT15□□P
	2020K16	▲	20	20	20	125	25				
	2525M16	▲	25	25	25	150	32				
	3225P16	▲	32	32	25	170	32				
3232P16	▲	32	32	32	170	40					

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Internal American ACME 29°

Description	Applicable Thread		Dimensions						Total Cutting Depth (mm)	Recommended grade		
	Pitch		d	L	X	F	S1	Re		PC25G	PC32G	PC25H
	mm	TPI										
16IR-12ACME	—	12	9.525	16	1.2	1.3	3.44	0.05	1.19	▲	▲	▲
16IR-10ACME	—	10	9.525	16	1.2	1.3	3.44	0.08	1.52	▲	▲	▲
16IR-8ACME	—	8	9.525	16	1.4	1.5	3.44	0.10	1.84	▲	▲	▲

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Internal thread cutting tool

Size	Stock item	Dimension(mm)								Applicable Inserts	Screw	Shim	Screw	Wrench
		d	L	b	Dmin	S	h	L1						
0016K11	▲	16	125	16	12	10	15	20.9	16IR-□□□□	160M2.5X6.5			WT07IP	
016M11	▲	16	150	15.5	16	10.5	15	25.9						
0016M16	▲	16	150	15.5	20	12	15	27						
0020M16	▲	20	150	19	25	14	18	28.7	16IR-□□□□	160M3.5X8			WT15IP	
0020Q16	▲	20	180	19	25	14	18	34						
0025M16	▲	25	150	24	32	17	23	28.8						
0032R16	▲	32	200	31	40	22	30	30.9						
0032S16	▲	32	250	31	40	22	30	30.9						
0040T16	▲	42	300	38.5	50	27	37	31.5						
0050U16	▲	50	350	49.5	63	35	49	40.2						

★ Best Suitable Available ▲ Only On Order ● Generally Available

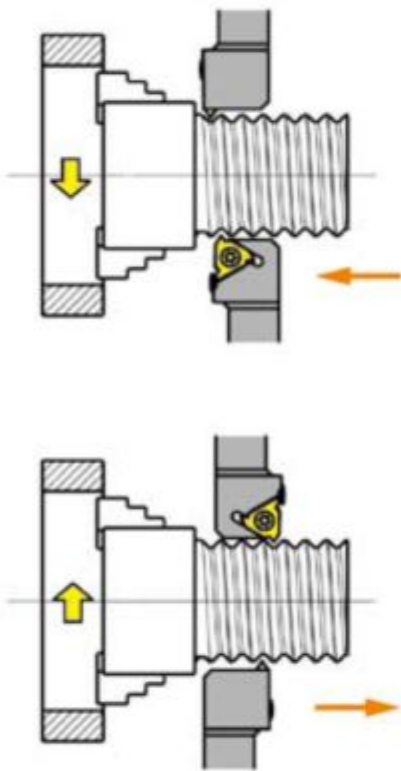
THREAD PROCESSING APPLICATIONS DATA

In Order To Obtain The Best Thread Processing Effect, please Follow The Steps Below:

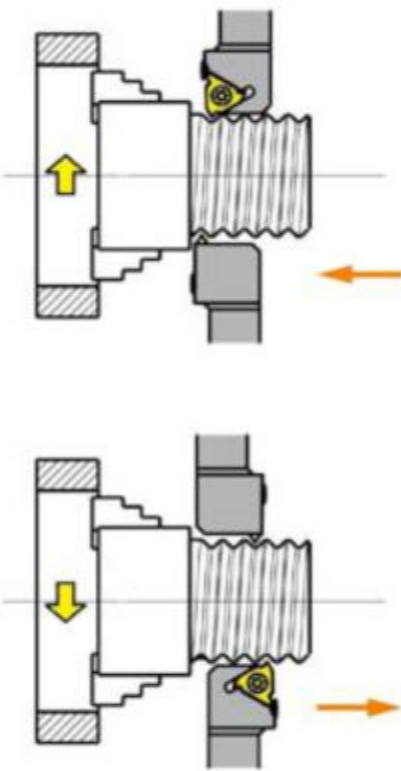
- Choosing the right thread processing way.
- Choose helix angle, choose shim.
- Choose the appropriate insert and size of toolholder.
- Reference standard thread processing programming parameter table, choose appropriate cutting data.
- Choose feed method.

Machine type of thread tool

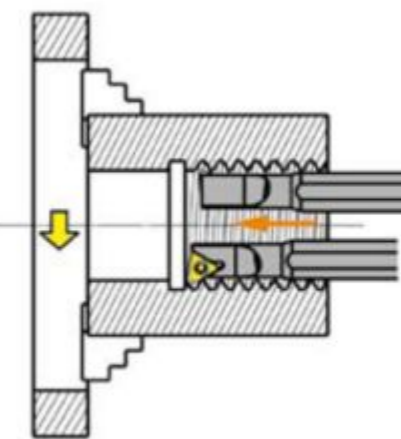
External processing Right hand thread



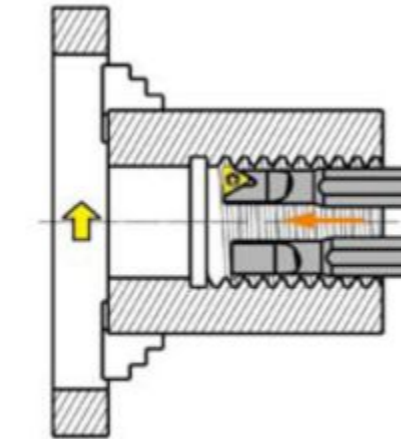
External processing Left hand thread



Internal processing Right hand thread



Internal processing Left hand thread



Thread processing applications data

Choose helix angle and shim

The clearance angle of thread mainly along the edge of tool. This will significantly impact on heat dissipation, tool wear extension, tool life, production safety, the quality of the thread. The clearance angle of thread proile depend on the helix angle, because both are similar. If inclined angle different from helix angle, and the clearance angle is changed.

The inclined angle must be the same as helix angle to avoid excessive wear and lead to shorten the tool life. Helix angle is calculated by the following formula:

$$\rho = \arctan \frac{P}{d_2 \times \pi}$$

P = Pitch
 d_2 = Pitch diameter
 Common inclined angle is 1° , MT standard
 shim inclined angle is 1° .
 Calculation of clearance angle:
 The clearance angle is calculated by the following formula:

$$\beta = \arcc(\tan \theta \times \tan \alpha)$$

2θ = Thread proile angle

α = Rake angle, external is 10° , internal is 15° for standard tool

If helix angle < clearance angle, the side insert can produce interference, must be replace the shim.

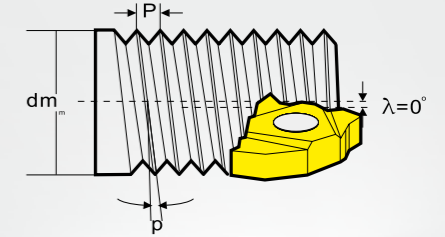
Please adjust the difference between helix angel and inclined angle to $2^\circ - 0^\circ$ through replace the shim.

Ex: if $P=1.5, d_2=24\text{mm}$
 Helix angle $1.14^\circ - (2^\circ - 0^\circ) = \text{Inclined } (-0.86^\circ \sim 1.14^\circ)$
 Choose standard shim 1° to processe.

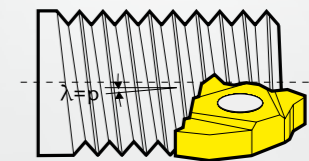
Pitch	Size	Inclined angle	Shim
0.5-3.0	16	0	MT16-00M
		1	MT16-01M
		2	MT16-02M
		3	MT16-03M
3.5-6.0	22	0	MT22-00M
		1	MT22-01M
		2	MT22-02M
		3	MT22-03M

(MT16-01M or MT22-01M)

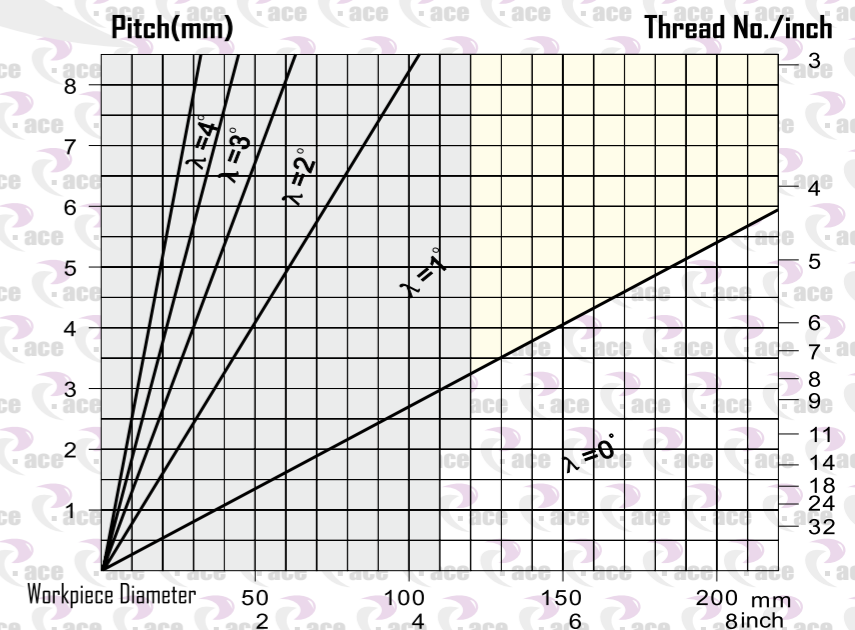
ρ = Helix angle



λ = Inclined angle



Thread proile 2θ	β	
	External	Internal
60°	8.5°	6°
55°	7°	7°
30°	4°	2.5°
29°	4°	2.5°



THREAD PROCESSING APPLICATIONS DATA

Metric ISO External thread with wiper feed quantity recommend table

Pitch	1.0	1.25	1.5	1.75	2.0	2.5	3.0	4.0	5.0
The total amount of feed	0.72	0.86	1.02	1.17	1.33	1.63	1.94	2.58	3.21
Feed time	5	6	7	8	9	11	13	15	17
Tool Moving Styles	Radial Feed(x)and Tooth Side Feed(z)								
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.20/-	0.20/-	0.21/-	0.22/-	0.24/-	0.25/-	0.26/-	0.35/-	0.40/-
2	0.18/0.10	0.18/0.10	0.18/0.10	0.20/0.12	0.22/0.13	0.24/0.14	0.24/0.14	0.30/0.17	0.35/0.20
3	0.16/0.09	0.16/0.09	0.18/0.10	0.18/0.10	0.20/0.12	0.21/0.12	0.20/0.12	0.25/0.14	0.30/0.17
4	0.10/0.06	0.14/0.09	0.15/0.09	0.15/0.09	0.15/0.09	0.18/0.10	0.20/0.12	0.20/0.12	0.28/0.16
5	0.08/-	0.10/0.06	0.12/0.07	0.13/0.08	0.12/0.07	0.15/0.09	0.18/0.10	0.18/0.10	0.25/0.14
6		0.08/-	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.18/0.10	0.20/0.12
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.13/0.08	0.16/0.09	0.18/0.10
8				0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.15/0.09	0.16/0.09
9					0.08/-	0.10/0.06	0.10/0.06	0.15/0.09	0.15/0.09
10						0.08/0.05	0.10/0.06	0.13/0.08	0.15/0.09
11							0.08/-	0.10/0.06	0.12/0.07
12								0.08/0.06	0.12/0.07
13								0.08/-	0.11/0.06
14									0.10/0.06
15									0.08/-
16									0.10/0.06
17									0.08/-

Choose appropriate insert and size of tool holder (reference the list of thread turning tool)
Different standard thread processing programming parameter table

Thread processing applications data

AMERICAN UN EXTERNAL THREAD FEED QUANTITY RECOMMEND TABLE

Pitch	24	20	18	16	14	12	11	10	9	8	7	6	5
The total amount of feed	0.649	0.779	0.866	0.974	1.113	1.299	1.416	1.558	1.731	1.948	2.226	2.597	3.116
Feed time	5	6	6	7	9	9	10	11	12	13	14	15	16
Tool moving styles	Radial feed(X)and tooth side feed(Z)												
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.206 / -	0.210 / -	0.233 / -	0.226 / -	0.196 / -	0.229 / -	0.220 / -	0.214 / -	0.210 / -	0.211 / -	0.213 / -	0.218 / -	0.229 / -
2	0.148 / 0.086	0.163 / 0.094	0.181 / 0.104	0.188 / 0.109	0.189 / 0.110	0.222 / 0.128	0.228 / 0.132	0.240 / 0.139	0.256 / 0.148	0.276 / 0.160	0.304 / 0.176	0.343 / 0.198	0.399 / 0.230
3	0.114 / 0.066	0.125 / 0.072	0.139 / 0.080	0.145 / 0.083	0.146 / 0.084	0.170 / 0.098	0.176 / 0.102	0.184 / 0.106	0.196 / 0.113	0.212 / 0.122	0.234 / 0.135	0.263 / 0.152	0.306 / 0.177
4	0.096 / 0.055	0.105 / 0.061	0.117 / 0.068	0.122 / 0.070	0.123 / 0.071	0.143 / 0.083	0.148 / 0.086	0.155 / 0.090	0.165 / 0.095	0.179 / 0.103	0.197 / 0.114	0.222 / 0.128	0.258 / 0.149
5	0.085 / 0.049	0.093 / 0.054	0.103 / 0.059	0.107 / 0.062	0.108 / 0.062	0.126 / 0.073	0.131 / 0.075	0.137 / 0.079	0.146 / 0.084	0.158 / 0.091	0.173 / 0.100	0.195 / 0.113	0.227 / 0.131
6		0.084 / 0.048	0.093 / 0.054	0.097 / 0.056	0.098 / 0.056	0.114 / 0.066	0.118 / 0.068	0.124 / 0.072	0.132 / 0.076	0.142 / 0.082	0.157 / 0.091	0.177 / 0.102	0.205 / 0.119
7				0.089 / 0.052	0.090 / 0.052	0.105 / 0.061	0.109 / 0.063	0.114 / 0.066	0.121 / 0.070	0.131 / 0.076	0.144 / 0.083	0.163 / 0.094	0.189 / 0.109
8					0.084 / 0.048	0.098 / 0.056	0.101 / 0.058	0.106 / 0.061	0.113 / 0.065	0.122 / 0.070	0.134 / 0.078	0.151 / 0.087	0.176 / 0.101
9						0.079 / 0.045	0.092 / 0.053	0.095 / 0.055	0.100 / 0.057	0.106 / 0.061	0.114 / 0.066	0.126 / 0.073	0.142 / 0.082
10								0.090 / 0.052	0.094 / 0.054	0.100 / 0.058	0.108 / 0.063	0.119 / 0.069	0.134 / 0.078
11									0.090 / 0.052	0.095 / 0.055	0.103 / 0.059	0.113 / 0.065	0.128 / 0.074
12										0.091 / 0.053	0.098 / 0.057	0.108 / 0.063	0.122 / 0.071
13											0.094 / 0.054	0.104 / 0.060	0.117 / 0.068
14												0.100 / 0.058	0.113 / 0.065
15													0.109 / 0.063
16													0.122 / 0.071

Thread processing applications data

METRIC ISO INTERNAL THREAD WITH WIPER FEED QUANTITY RECOMMEND TABLE

Pitch	1.00	1.25	1.5	1.75	2.0	2.5	3.0	4.0	5.0
The total amount of feed	0.62	0.77	0.92	1.06	1.21	1.49	1.79	2.36	2.95
Feed time	5	6	7	8	9	11	13	15	17
Tool moving styles	Radial feed(X)and tooth side feed(Z)								
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.18/-	0.20/-	0.22/-	0.23/-	0.24/-	0.25/-	0.26/-	0.30/-	0.32/-
2	0.14/0.08	0.15/0.09	0.16/0.09	0.16/0.09	0.18/0.10	0.20/0.12	0.20/0.12	0.25/0.14	0.28/0.16
3	0.12/0.07	0.12/0.07	0.14/0.08	0.14/0.08	0.15/0.09	0.15/0.09	0.20/0.12	0.22/0.13	0.25/0.14
4	0.10/0.06	0.12/0.07	0.12/0.07	0.13/0.08	0.14/0.08	0.15/0.09	0.18/0.10	0.20/0.12	0.22/0.13
5	0.08/-	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.13/0.08	0.15/0.09	0.18/0.10	0.21/0.12
6		0.08/-	0.09/0.05	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.20/0.12
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.18/0.10
8				0.08/-	0.09/0.05	0.10/0.06	0.10/0.06	0.15/0.09	0.18/0.10
9					0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.15/0.09
10						0.09/0.05	0.10/0.06	0.12/0.07	0.15/0.09
11						0.08/-	0.10/0.06	0.12/0.07	0.15/0.09
12							0.08/0.05	0.11/0.06	0.15/0.09
13							0.08/-	0.11/0.06	0.12/0.07
14								0.10/0.06	0.11/0.06
15								0.08/-	0.10/0.06
16									0.10/0.06
17									0.08/-

Thread processing applications data

British Internal and External feed quantity recommend table

Pitch	28	20	19	16	14	12	11	10	9	8	7	6	5
The total amount of feed	0.581	0.813	0.856	1.017	1.162	1.355	1.479	1.626	1.807	2.033	2.324	2.711	3.253
Feed time	5	6	6	8	8	9	9	10	11	12	14	15	16
Tool moving styles	Radial feed(X)and tooth side feed(Z)												
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.179/-	0.211/-	0.223/-	0.196/-	0.223/-	0.226/-	0.246/-	0.236/-	0.230/-	0.255/-	0.195/-	0.197/-	0.204/-
2	0.134/0.070	0.172/0.089	0.181/0.094	0.186/0.097	0.213/0.111	0.234/0.122	0.255/0.133	0.226/0.139	0.282/0.147	0.304/0.158	0.322/0.167	0.361/0.189	0.421/0.219
3	0.104/0.054	0.132/0.069	0.139/0.072	0.143/0.074	0.163/0.085	0.180/0.093	0.197/0.102	0.206/0.106	0.216/0.113	0.233/0.121	0.247/0.128	0.278/0.145	0.323/0.168
4	0.087/0.045	0.111/0.058	0.117/0.061	0.120/0.063	0.138/0.072	0.151/0.079	0.165/0.086	0.172/0.090	0.182/0.095	0.197/0.102	0.208/0.108	0.234/0.122	0.272/0.142
5	0.077/0.040	0.098/0.051	0.103/0.054	0.106/0.055	0.121/0.063	0.133/0.069	0.145/0.076	0.152/0.079	0.161/0.084	0.1738/0.090	0.183/0.095	0.207/0.108	0.240/0.125
6		0.089/0.046	0.093/0.049	0.096/0.050	0.110/0.057	0.121/0.063	0.131/0.068	0.137/0.071	0.145/0.076	0.157/0.082	0.166/0.086	0.187/0.097	0.217/0.113
7				0.088/0.046	0.101/0.052	0.111/0.058	0.121/0.063	0.126/0.066	0.134/0.070	0.144/0.075	0.152/0.079	0.172/0.089	0.200/0.104
8					0.082/0.043	0.093/0.049	0.103/0.054	0.113/0.059	0.117/0.061	0.124/0.065	0.134/0.070	0.142/0.074	0.160/0.083
9						0.097/0.050	0.106/0.055	0.110/0.057	0.117/0.061	0.126/0.066	0.133/0.069	0.150/0.078	0.174/0.091
10								0.104/0.054	0.111/0.058	0.119/0.062	0.126/0.066	0.142/0.074	0.165/0.086
11									0.105/0.055	0.113/0.059	0.120/0.062	0.135/0.070	0.157/0.082
12										0.108/0.056	0.114/0.060	0.129/0.067	0.150/0.078
13											0.110/0.055	0.124/0.064	0.144/0.075
14												0.119/0.062	0.138/0.072
15													0.115/0.060
16													0.129/0.067

Thread processing applications data

American UN Internal thread feed quantity recommend table

Pitch	24	20	18	16	14	12	11	10	9	8	7	6	5
	0.573	0.687	0.764	0.860	0.982	1.146	1.250	1.375	1.528	1.719	1.964	2.291	2.750
Feed time	5	6	6	7	8	9	9	10	11	12	13	14	15
Tool moving styles	Radial feed(X)and tooth side feed(Z)												
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.193 /	0.200 /	0.222 /	0.219 /	0.220 /	0.228 /	0.250 /	0.247 /	0.246 /	0.252 /	0.262 /	0.278 /	0.302 /
2	0.127 /0.073	0.239 /0.081	0.155 /0.089	0.161 /0.093	0.173 /0.100	0.190 /0.110	0.207 /0.120	0.216 /0.125	0.229 /0.132	0.247 /0.142	0.271 /0.156	0.304 /0.176	0.353 /0.204
3	0.098 /0.056	0.107 /0.062	0.119 /0.069	0.124 /0.072	0.132 /0.076	0.146 /0.084	0.159 /0.092	0.166 /0.096	0.176 /0.101	0.189 /0.109	0.208 /0.120	0.234 /0.135	0.271 /0.156
4	0.082 /0.048	0.090 /0.052	0.100 /0.058	0.104 /0.060	0.112 /0.064	0.123 /0.071	0.134 /0.077	0.140 /0.081	0.148 /0.086	0.160 /0.092	0.175 /0.101	0.197 /0.114	0.228 /0.132
5	0.073 /0.042	0.079 /0.046	0.088 /0.051	0.092 /0.053	0.098 /0.057	0.108 /0.062	0.118 /0.068	0.123 /0.071	0.130 /0.075	0.141 /0.081	0.1543 /0.089	0.173 /0.100	0.201 /0.116
6		0.072 /0.041	0.080 /0.046	0.083 /0.048	0.089 /0.051	0.098 /0.056	0.107 /0.062	0.111 /0.064	0.118 /0.068	0.127 /0.073	0.140 /0.081	0.157 /0.091	0.182 /0.105
7				0.077 /0.044	0.082 /0.047	0.090 /0.052	0.098 /0.057	0.102 /0.059	0.108 /0.063	0.117 /0.067	0.128 /0.074	0.144 /0.083	0.167 /0.097
8				0.076 /0.044	0.084 /0.048	0.091 /0.053	0.095 /0.055	0.101 /0.058	0.109 /0.063	0.119 /0.069	0.134 /0.078	0.156 /0.090	
9					0.079 /0.045	0.086 /0.050	0.090 /0.052	0.095 /0.055	0.102 /0.059	0.112 /0.065	0.126 /0.073	0.146 /0.084	
10						0.085 /0.049	0.090 /0.052	0.097 /0.056	0.106 /0.061	0.119 /0.069	0.138 /0.080		
11							0.085 /0.049	0.092 /0.053	0.101 /0.058	0.113 /0.065	0.131 /0.076		
12								0.088 /0.051	0.096 /0.056	0.108 /0.063	0.126 /0.073		
13									0.092 /0.053	0.101 /0.060	0.121 /0.070		
14										0.100 /0.058	0.116 /0.067		
15												0.112 /0.065	

Thread processing applications data

NPTF60° External thread feed quantity recommend table

Pitch	8	11.5	14	18	27
The total amount of feed	2.38	1.63	1.35	1.00	0.64
Feeding times	15	12	10	8	6
Tool moving styles	Radial feed				
	1	0.32	0.24	0.23	0.19
2	0.27	0.23	0.21	0.16	0.14
3	0.23	0.19	0.16	0.14	0.11
4	0.19	0.15	0.14	0.13	0.09
5	0.17	0.13	0.13	0.12	0.08
6	0.16	0.11	0.12	0.11	0.06
7	0.15	0.11	0.11	0.09	
8	0.14	0.11	0.10	0.06	
9	0.13	0.10	0.09		
10	0.12	0.10	0.06		
11	0.12	0.10			
12	0.11	0.06			
13	0.11				
14	0.10				
15	0.06				

NPTF60° Internal thread feed quantity recommend table

Pitch	8	11.5	14	18	27
The total amount of feed	2.38	1.63	1.35	1.00	0.64
Feeding times	15	12	10	8	6
Tool moving styles	Radial feed				
	1	0.35	0.27	0.25	0.2
2	0.29	0.22	0.20	0.17	0.13
3	0.26	0.20	0.18	0.15	0.12
4	0.20	0.16	0.14	0.12	0.09
5	0.17	0.13	0.12	0.1	0.08
6	0.15	0.12	0.11	0.09	0.08
7	0.14	0.10	0.10	0.09	
8	0.12	0.10	0.09	0.08	
9	0.12	0.09	0.08		
10	0.11	0.08	0.08		
11	0.10	0.08			
12	0.10	0.08			
13	0.09				
14	0.09				
15	0.09				

Thread processing applications data

NPT Internal and External thread feed quantity recommend table

Pitch	27	18	14	11.5	8
The total amount of feed	0.75	1.129	1.451	1.767	2.54
Feed time	6	8	10	12	14
Tool moving styles	Radial feed(X)and tooth side feed(Z)				
	x/z	x/z	x/z	x/z	x/z
1	0.19/-	0.22/-	0.240/-	0.24/-	0.255/-
2	0.15/0.087	0.181/0.104	0.200/0.115	0.208/0.120	0.250/0.144
3	0.13/0.075	0.152/0.088	0.170/0.098	0.182/0.105	0.245/0.141
4	0.11/0.063	0.141/0.081	0.150/0.086	0.168/0.097	0.230/0.133
5	0.09/0.052	0.131/0.075	0.140/0.081	0.155/0.089	0.210/0.121
6	0.08/0.46	0.121/0.070	0.130/0.075	0.145/0.084	0.195/0.112
7		0.101/0.058	0.120/0.069	0.138/0.079	0.180/0.104
8		0.082/0.047	0.110/0.063	0.124/0.072	0.175/0.101
9			0.100/0.058	0.117/0.067	0.170/0.098
10			0.091/0.052	0.105/0.060	0.155/0.089
11				0.095/0.055	0.140/0.080
12				0.090/0.052	0.125/0.072
13					0.110/0.063
14					0.100/0.058

BSPT Internal and External thread feed quantity recommend table

Pitch	28	19	14	11
The total amount of feed	0.581	0.856	1.162	1.479
Feed time	5	6	8	10
Tool moving styles	Radial feed(X)and tooth side feed(Z)			
	x/z	x/z	x/z	x/z
1	0.179/-	0.223/-	0.222/-	0.214/-
2	0.134/0.070	0.181/0.094	0.213/0.111	0.242/0.126
3	0.103/0.054	0.139/0.072	0.163/0.085	0.186/0.097
4	0.087/0.045	0.117/0.061	0.138/0.072	0.157/0.082
5	0.078/0.040	0.103/0.054	0.121/0.063	0.138/0.072
6		0.093/0.049	0.110/0.057	0.125/0.065
7			0.101/0.052	0.115/0.060
8			0.094/0.049	0.107/0.056
9				0.100/0.052
10				0.095/0.049

Thread processing applications data

ACME Internal External thread feed quantity recommend table

Pitch	8	10	12	14	16
The total amount of feed	1.86	1.55	1.21	1.05	0.94
Feeding times	12	10	8	7	6
Tool moving styles	Radial feed				
1	0.31	0.28	0.25	0.23	0.23
2	0.26	0.23	0.21	0.20	0.19
3	0.23	0.21	0.18	0.18	0.17
4	0.18	0.16	0.15	0.14	0.14
5	0.15	0.15	0.12	0.11	0.11
6	0.14	0.13	0.11	0.10	0.10
7	0.12	0.11	0.10	0.09	
8	0.11	0.10	0.09		
9	0.10	0.09			
10	0.09	0.09			
11	0.09				
12	0.08				

Turning Condition Recommended List

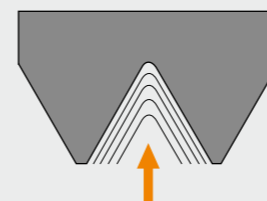
Thread Processing Applications Data

ISO	Material		Unit cutting force Kc0.4 N/mm ²	Hardness HB	Grade		
					PC25G	PC25H	
					Cutting speed(m/min)		
P	Carbon steel	C=0.15%	1900	125	150-175	160-185	
		C=0.35%	2100	150	140-155	150-165	
		C=0.60%	2250	200	130-145	140-155	
	Alloy steel	Annealed	2100	180	110-130	120-140	
		Hardened	2600	275	80-100	90-110	
		Hardened	2700	300	70-90	80-100	
		Hardened	2850	350	60-80	70-90	
	High alloy steel	Annealed	2600	200	90-115	100-125	
		Hardened	3900	325	70-90	80-100	
	Cast steel	Un alloy	2000	180	180-210	200-220	
Low alloy		2500	200	90-115	100-125		
High alloy		2700	225	90-115	100-125		
Martensitic steel		3600	250	40-50	50-60		
M	Stainless steel	Austenitic	2450	180	110-130	120-140	
		Martensitic/Ferritic	2300	200	130-170	140-180	
K	Malleable cast iron	Ferritic	1100	130	110-140	120-150	
		Pearlitic	1100	230	85-105	95-115	
	Grey cast iron	Low tensile strength	1100	180	110-140	120-150	
		High tensile strength	1500	260	90-115	100-125	
Nodular cast iron	Ferritic Pearlitic	1100	160	110-130	120-140		
		1800	250	80-100	90-110		
N	Alumium alloy	Non aging	500	60	1300-1450	1400-1550	
		Aged	800	100	450-500	460-510	
S	Cast alumium alloy	Non aging	750	75	430-470	440-480	
			900	90	250-290	260-300	
S	Heat-resistant alloy	Fe based	Annealed	3000	200	35-50	45-55
			Aged	3050	280	25-35	35-45
	Nickel or Cobalt based	Annealed Aged Cast	3500	250	15-25	25-35	
			4150	350	10-20	20-30	
			4150	320	10-15	20-25	
H	Harded steel	Harded steel	4500	HRC55	40-50	50-60	

Thread processing applications data

THREAD TOOLS FEED METHOD

Radial in-feed



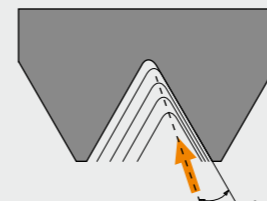
- Simple to use, high generality.
- The V type chipping caused by machining steel will produce high bend stress on cutting edge.
- It ask for small cutting depth, sharp edge and good toughness when processing.
- High cutting heat, it's hard to control the V type chipping.
- Due to the left and the right of the chipping contact length is long, easy to produce vibration, and increase the nose load.

Flank in-feed



- Small bending stress of cutting edge, stable condition, better shape chipping, large cutting depth.
- There is enough space for chipping discharge when flank in-feed.
- Severe wear on right flank.

Modiied Lank In-feed



- Right cutting edge also engage on cutting depth to a certain extent, it can reduce the abrasion on right size of clearance face.
- Small bending stress of cutting edge, stable condition, better shape chipping, large cutting depth
- Good cutting processing performance.

Alternate Lank In-feed



- Alternate use cutting edge, even wearing of left and right side back tool face, can lengthen tool life.
- Chipping discharge from left and right direction, good chip low.
- Suitable for big pitch thread cutting.

Note: The list shows the range number would choose high number in cutting, when use new cutting speed, should check the edge condition.

- Would use high cutting speed in stainless thread cutting, avoid built-up.
- Would reduce cutting parameter in small pitch threading and using small nose radius tool.
- Would use big nose radius roughing to improve small nose radius tool life in using small nose radius tool threading.



Try to use Flank in-feed or Alternate flank in-feed under the condition of machine tools and programming system allows, and can effectively eliminate vibration, enough space for chipping discharge between teeth, small stress of cutting edge, stable condition, chipping controlled when processing thread.

THREAD PROCESSING APPLICATIONS DATA

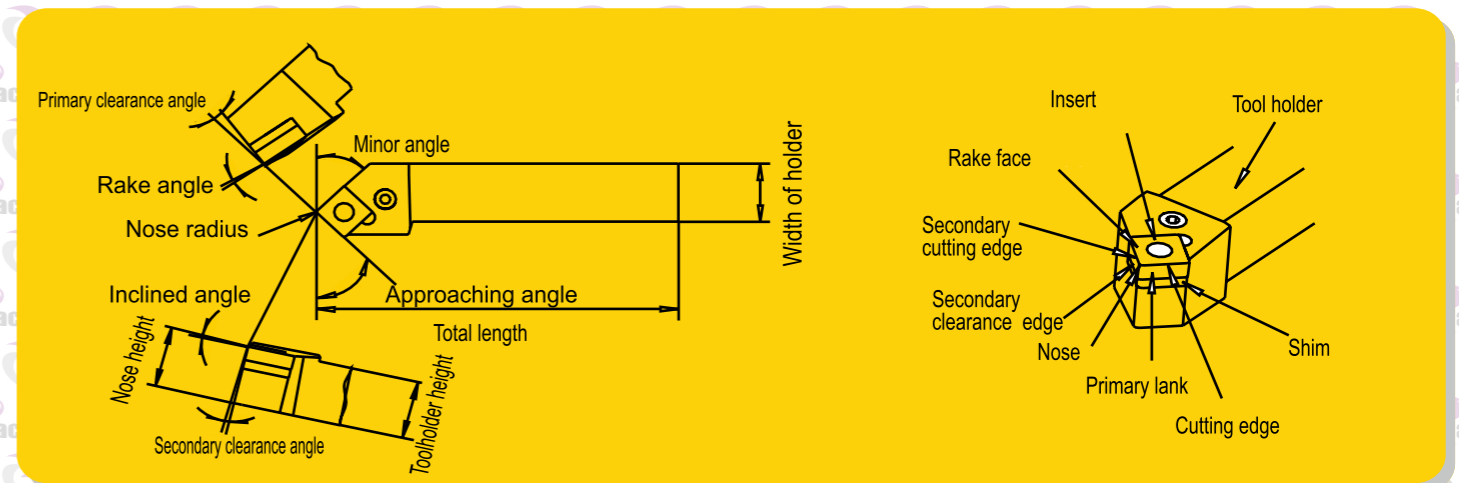
Thread Processing Common Problems And Solutions

Trouble	Reason	Solution
Severe abrasion of clearance face	High cutting speed	Lower cutting speed
	Small feed, cause abrasion	Reduce feed times and edge friction times
	The insert is located in the center line of the above angle of inclination	Choose proper shim to obtain correct angle of inclination
Uneven cutting edge wear	Angle of inclination and helix angle are inconsistent	Change infeed method
	Wrong infeed method	Change infeed method
Breakage	Low cutting speed	Improve the cutting speed
	High cutting force	Increase infeed times, reduce Max. cutting feed
	Turning in the unstable clamping condition	Check stability. Reduce the tool overhanging volume verify clamping of workpiece and tool.
	Chipping are twisting	Increase the cooling luid pressure, blow chip
Plastic deformation	High cutting speed, high temperature of cutting zone	Reduce cutting speed Increase feed times, reduce max feed depth
	Insuficient cutting luid	Increase the cooling luid supply
Poor surface quality	Low cutting speed	Increase cutting speed
	The insert is located in the center line of the above Chipping uncontrolled.	Adjust the center height Change the feed type of tool, proper handle chipping
Incorrect thread proile	Incorrect center height.	Adjust the center height.
	Incorrect pitch.	Check the machine tool
Shallow thread proile	Wrong set of cutting depth	Change cutting depth
Surface damage	Chipping involved or contact.	Use tooth lank cross cutting, control chipping discharge direction.
Built-up edge	Low temperature of cutting edge When machining stainless steel and low carbon steel.	Increase the cutting speed cutting luid pressure and concentration, choose better toughness tool
Fracture of surface	High cutting force	Reduce cutting depth
Vibration	Incorrect clamping of workpiece or tool	check the clamping condition Min overhang of tool.
	Incorrect of cutting parameter	Increase cutting speed or largely reduce cutting speed
	Incorrect of tool clamping.	Adjust the center height

General Technical Information Of Turning

The functions of each part of turning tools

1 The names of each part of turning tools



2. Effects of rake angle

Large rake angle makes cutting edge sharper, reduces resistant forces of chip flow, diminishes friction and prevent deformation, leading to smaller cutting forces and cutting power, lower cutting temperature, less abrasion and higher surface quality. However, too large rake angle would reduce the rigidity and strength of tool. Heat can't be diffused easily. Serious breakage and abrasion on tool would occur, reducing tool life. Please choose rake angle according to machining conditions.

Value selection	Situations
Small rake angle	<ul style="list-style-type: none"> When machining brittle and hard materials When roughing and intermittent cutting
Big rake angle	<ul style="list-style-type: none"> When machining plastic or soft materials When inishing

3. Effects of clearance angle

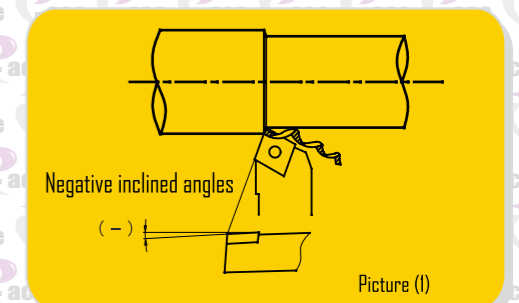
The main function of clearance angle is to reduce the friction between the clearance face of tool and surface of workpiece. When the rake angle is fixed, larger clearance angle can increase the sharpness of cutting edge, reduce cutting force and friction, and then achieve higher surface quality. However, if clearance angle is too large, the strength of cutting edge would decrease. Also, heat can't be diffused easily and serious abrasion would occur, reducing tool life. The principle of choosing clearance angle: Choose small clearance angle if friction is not serious.

Value selection	Situations
Small clearance angle	<ul style="list-style-type: none"> In order to increase nose strength when roughing When machining brittle and hard materials
Big clearance angle	<ul style="list-style-type: none"> In order to reduce friction when inishing When machining materials easy to be hardened

4. Effect of inclined angle

Positive or negative inclined angle determines the direction of chip flow, and also affects the strength and impact resistance of insert nose.

◆ As diagram (I) shows, when the inclined angle is negative, namely nose is in the lowest point as apposed to the bottom of tool, chips flow to the machined surface of workpiece.

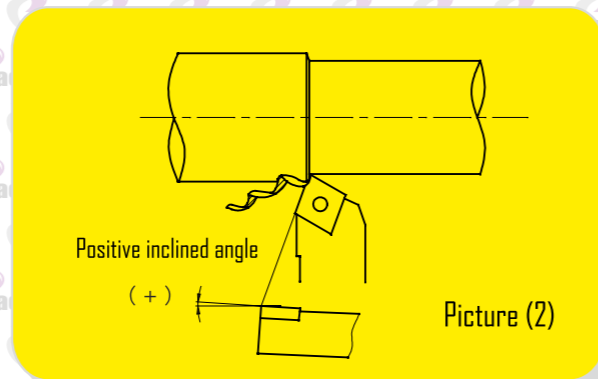


General Technical Information Of Turning

General Technical Information Of Turning

Technical Information Of Turning Processing

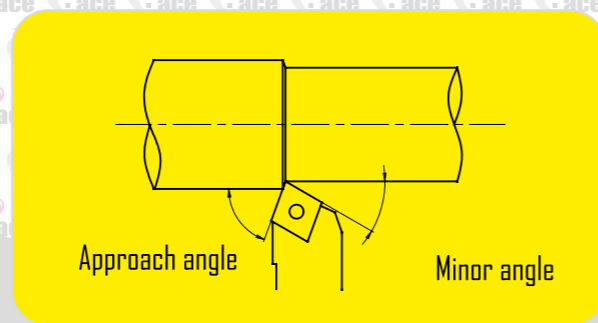
- As diagram(2) shows, when inclined angle is positive, namely the nose is in the highest point as apposed to the bottom of the tool, chips low to the areas of workpiece surface that haven't been machined.
- The change of inclined angle also affects insert nose strength and impact resistance. When the inclined angle is negative, the nose is in the lowest point of cutting edge. When the cutting edge enters the workpiece, the contacting point is on the cutting edge or rake face, protecting the nose from impact and increase the strength of the nose. Normally, negative inclined angle should be chosen for tools with big rake angle. This can not only increase nose strength, but also prevent the impact of entry.



5 Effect of approach angle

Reduced approaching angle increase the strength of tools and enable heat to diffuse easily, improving surface quality. This is because when the approach angle is small, cutting edge width is large, and then the unit width of cutting edge bears less cutting force. Meanwhile, tool life can be improved.

Normally, select 90 approach angle for turning of slender and step shaft; select 45 approach angle for external turning, end surface machining and chamfering. When approach angle is larger, radia force is reduced, cutting is stable, cutting thickness is increased, and chip breaking is excellent.



Value Selection	Situauions
Small approach angle	<ul style="list-style-type: none"> For those materials with high intensity,high hardness and hardened loger on the surface
Big approach angle	<ul style="list-style-type: none"> When rigidity of the machine is not enough

6 Effect of minor angle

Minor angle is the main angle that can affect surface quality, and it can also affect tool strength. If the approach angle is too small, the friction between the secondary lank and machined surface of workpiece will increase, causing vibration. The principle of selecting minor angle: Select small minor angle when roughing or when the friction is unaffected and there is no vibration. Select large minor angle when inishing.

Value Selection	Situauions
Small nose radius	<ul style="list-style-type: none"> Finishing at small cutting depth Machining parts such as slender shaft When the rigidity of the machine is not enough
Large nose radius	<ul style="list-style-type: none"> When roughing When machining hard materials,intermittent cutting

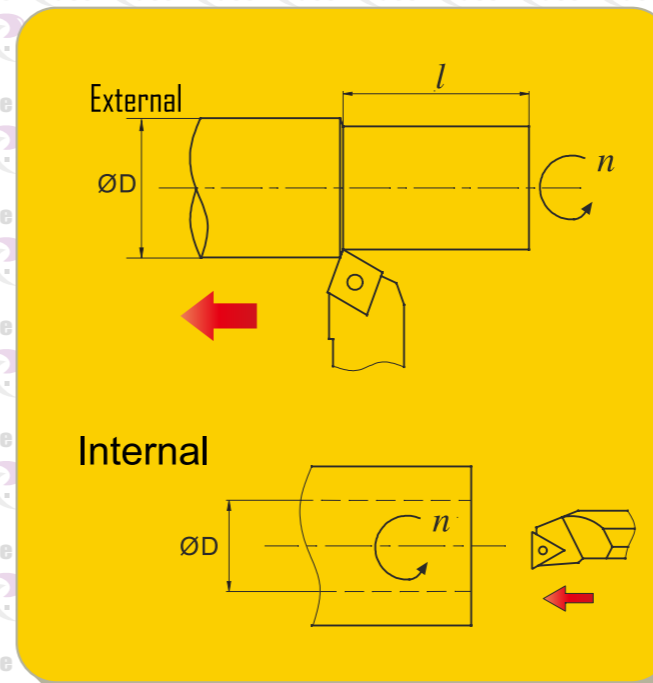
7. Nose radius

Nose radius significantly affects nose strength and surface quality. Large nose radius means higher cutting edge strength, and the abrasion on the rake face and clearance face can be reduced to some extent. However, if the nose radius is too large, radias force will increase, and vibration ia easy to occur, affecting machining precision and surface quality.

Technical Information Of Turning Processing

Calculate method of turning parameter

1. Calculating the cutting speed



$$V_c = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

V_c : Cutting speed

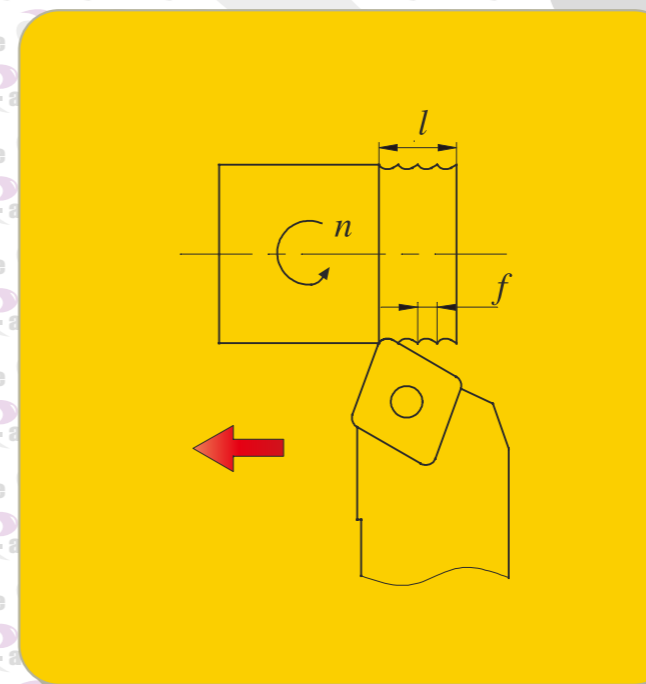
n : Spindle speed

D : Workpiece diameter

Ex: If spindle speed is 280 rev/min,turning the diameter of 150mm,the cutting speed is:

$$V_c = \frac{\pi \times D \times n}{1000} \text{ (m/min)} = 132 \text{ (m/min)}$$

2. Calculating the cutting feed



$$f = \frac{l}{n} \text{ (mm/rev)}$$

f : Feed rate per revolution

l : Cutting length per minute

n : Spindle speed

Ex: If spindle speed is 500rev/min,cutting length per minvte is 100mm/min,the feed rate per revolution is:

$$f = \frac{l}{n} = \frac{100}{500} = 0.2 \text{ (mm/rev)}$$

General Technical Information Of Turning

General Technical Information Of Turning

Technical Information Of Turning Processing

Technical Information Of Turning Processing

3. Calculating the cutting time of external and internal

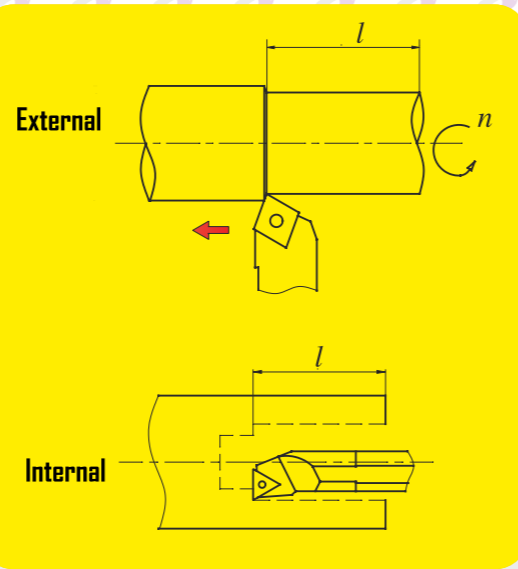
T:Cutting time

$$T = \frac{l}{f \times n} \text{ (min)}$$

l:Length of cutting zone
f:Feed rate
n:Spindle speed

Ex:If spindle speed is 250rev/min,feed rate is 0.2mm/rev, the cutting length is 150mm, the time requires:

$$T = \frac{l}{f \times n} = \frac{150}{0.2 \times 250} = 3 \text{ (min)}$$



Effect Of Three Main Tuning Parameters On Machining

★ Effect Of Three Main Parameters

Normally, short machining time, long tool life and high machining precision are expected in machining, so the material quality, hardness, and the shape of the workpiece, and properties of machine should be fully considered, and then we can select suitable tools adopt high-efficiency cutting parameters, namely Three Parameters.

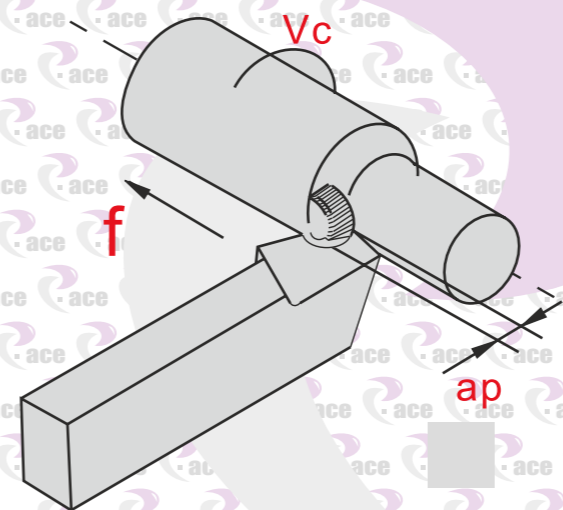
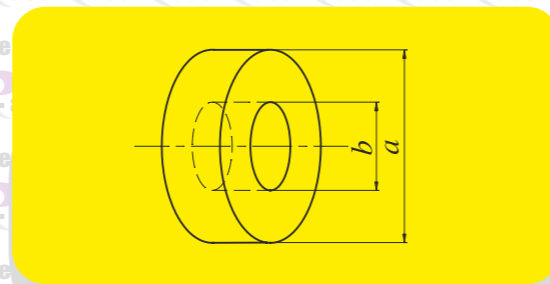
- (1) Normally tool life would be reduced to half when the cutting speed is increased by 20%. Tool life would be 20% of the original life if the cutting speed is raised by 50%.
- (2) Low speed (20-40m/min) cutting would easily cause vibration and shorten tool life.

4. Calculating the time of face turning(constant line speed)

$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times Vc \times f} \text{ (min)}$$

T:Cutting time
Vc:Cutting speed
f:Feed rate

If it's no inner hole of turning face,b=0,the formula is still valid.



➤ Feed Rate (fm)

Feed rate is defined as the moving distance of tool after workpiece rotates for one circle, measured by mm/rotation

➤ Effect of feed rate

Feed rate is a key factor that determines surface quality. Meanwhile it also affect the 'range' of chip forming and the 'thickness' of chips during machining. In terms of the effect on tool life, small feed rate leads to serious abrasion on clearance face, greatly reducing tool life.

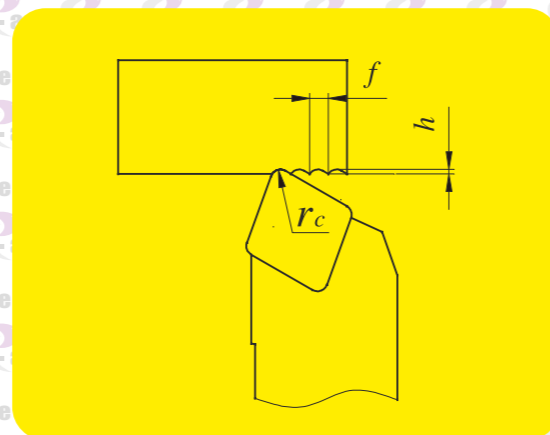
7. Calculating the theoretical value of surface roughness

$$R = \frac{f^2}{8r_c} \times 1000 \text{ (\mu m)}$$

R:The theoretical value of surface roughness
f:Feed rate
rc:Nose radius

Ex: If feed rate is 0.2mm/rev,nose radius is 0.4mm,the theoretical value of surface roughness is:

$$R = \frac{f^2}{8r_c} \times 1000 = \frac{0.2^2}{8 \times 0.4} \times 1000 = 12.5 \text{ (\mu m)}$$



★ Cutting Speed (vc)

When the workpiece is rotating on the machine, the number of its rotation per minute is defined as Rotating speed of main axle (n). Because of its rotation, the cutting speed measured on the contacting point of diameter is defined as linear speed, m/min. Normally, linear speed is considered to measure the effect of cutting speed on machining.

➤ Cutting Depth (ap)

Cutting depth is deined as the difference between machined surface and unmachined surface, measured by mm. It is half the difference value between the original diameter and machined diameter.

★ Effect Of Cutting Speed

Cutting speed has significant effect on tool life. When the cutting speed is increased, cutting temperature will increase and tool life will be shortened. Cutting speed varies according to the different types and hardness of workpiece. The below conclusions are reached after many cutting experiments:

➤ Effect of cutting depth

Cutting depth should be determined by the machining allowance and shape of workpiece, power, and rigidity of machine, and tool rigidity. The change of cutting depth has little effect on tool life. If the cutting depth is too low, the cutting nose only scrapes the hardened layer on the workpiece surface, reducing tool life. When there is hardened oxide layer on workpiece surface, higher cutting depth should be adopted within the 'possible range' of machine's power to avoid cutting nose just cutting the hardened layer of workpiece. Cutting depth (ap)

Negative Insert

Comparison Table For Turning Insert Chip Breaker

ISO CASSATION	PROCESSING CATEGORY	PAGE	TAEGUTEK	KENAMETAL	HITACHI	ZCCCT	SANDVIK	TUNGALOY	KYOCERA	KORLOY	SUMTOMO	MISTUBISHI
P	Finishing	DPF,GF CQ,FG FW	FG,FA	LF, FN	BE, CE, BH	DF	XF,PF,MF	TSF, AS NS, 27	HQ, CQ, CJ,PQ,VF,GP	HF	SU, LU, SX, SP,FP,FA, FL,SE,ST,C	C,SA,SH, LP
	Finishing (Soft Steel)	DPF			Y,V	SF	WL	17,TS,NS,CB, 11, 27, ZF	XQ, XS	HF	EXSKSJSX UU,UJ	SY
	Semifinishing	OPM,BM TM,PM MD	ML,ET,MP, MC,SM, MT	MN,P,MG	AB,AY,AR AH,CT	DM,PM	PM,DM, SM,XM	TM M'DM'ZM'N' 33,38,37,TH, 32Y,32, 37	CJ GS,HK PS H's,p,r,'cs"A	HC, HM, H A	GU,UG,UX, GE,UA,UM,	MV,MP,A4Z, MA,MH
	Roughing	OPR	RT, RH,HT	MR, RMn RH,PR,MG,	HX, HE'H	DR HDR	QR,MR,PR,HR 23	57,65, TU 31, 33, F- K,THS	HX PX PH	HR,HH	MP, HG,HP, MC,MU,MX, UZ	HZ, HX,HV, HZ,HXD,HA,H AS,HBS,HCS, H D S . H X D
M	Finishing	FW,GF DMF	FG, SF	K, FP	MP,SE	EF	MF	SS	GU,MQ	HA	SU	FS,SH,FJ,LM
	Semifinishing	MD,OMM MA,CM	ML, MP .EM,VF	P, MP	PV,DE,AH	EM	MM,K	SA, SM, S,SF	SU,HU, MU,MS,ST, TK	HS	EX, UP,MU, HM,GU	MS, ES,MA,M,J,M H, GM,MM,ES,2 G
	Roughing	MT	MT, RH	UP,RP		ER	MR	TH,SH		GS, HM	MP,MU,HP,HG	GH, HZ,RM
K	Semifinishing	TK,U GH	MC, MT,MG	P,UN, UM,RP Through chipbreaker	Y,V	PM	KM	CF,CM,33 Through chipbreaker	ZS,C Through chipbreaker	Through chipbreaker HM	UX,GZ,UX,UJ	Through chipbreaker
	Roughing	OPR	RH,RT	UN,MG		Without chip breaker	KR	.CH	GC Without chip breaker	HR,GH,G R	UZ,MU,MM Without chipbreaker	Without chipbreaker

Grade Comparison

APPLICATION	ISO CODE	PAGE	TAEGUTEK	KENAMETAL	HITACHI	ZCCCT	SANDVIK	TUNGALOY	KYOCERA	KORLOY	SUMTOMO	MISTUBISHI	
CVD TURNING	P01		TT7080								ACP100		
	P10				GX2030 GX2140	YBC201	GC4220	T3130			NCM325 PC3500	ACP100 F7030 FH7030	
	P20	PC15S PC05S	TT7800	KC930M	GX2030 GX2140 GX2160	YBC301 YBC302 YBM251 YBM253		GC4230	T3130			NCM325 NCM335 PC5300	F7030
	P30	PC25SH		KC935M	GX2030 GX30 GF30 GX2160	YBM351 YBC401		GC4240				NCM335	F7030
	P40			KC925M									
	M10												
	M20	PC05SS			GX2160 GF30 GX30	YBM251 YBM253			T3130			NCM325 PC5300 NC5330	ACP100 F7030
	M30				KC930M KC935M	GX2160 GF30 GX30	YBM351	GC2040	T3130			NCM325 NCM335 PC5300	
	M40											NCM335	
	K10	PC15C	TT7800				YBD151 YBD152	GC3220 K20W	TH15 T1015			NCM310 K	ACP200 MC5020 F5010
	K20	PC15CC			KC915M				TH15 T1015			NCM320 K	MC5020 F5010
	K30	PC15CH			KC920M KC930M KC935M	GX2030 GX30	YBD252	GC3040					

Positive Insert

The Correction Coefficient Table Of Insert Life And Cutting Speed

ISO CASSATION	PROCESSING CATEGORY	PAGE	TAEGUTEK	KENAMETAL	HITACHI	ZCCCT	SANDVIK	TUNGALOY	KYOCERA	KORLOY	SUMTOMO	MISTUBISHI
P	Finishing	FG,FW, DTF,HF	FA, FG	11,UF, GF,LF,FP	JQ	SF, HF	UF, PF	01 & , PF,	GP,CK,XP VF,CF,GQ,G F	HFP	FP, LU, FC,SU, SK,FK	FV,SV, FP,SQ,SMG
	Semi finishing	BM,HM OTM,MD	MT,CMX	MF,MP	JE	HM	UM,WF,PM	PM,PS,PF,PSF	HQ,XQ,GK	HMP,C25	MU,SC	MV,MQ,AM, MP Through Chipbreaker
M	Finishing	HF,FW	FA, FG	FW,MW,FP		EF	MF	SS&	CF,CK,GQ, GF,DP	HFP	LU	SV,FV
	Semi finishing	BM,HM MF,MD	MT,CMX	MP		EM	MM	PM	HQ,GK	HMP,C25		F M,MV,LM, Through chipbreaker
K	Semi finishing	OTM	MT,CMX			HR,HM Without chipbreaker	KM,KR,KF	Without CM chipbreaker	Without chipbreaker	HMP,C25	Without chipbreaker	Without chipbreaker
N	general cutting	LH,AK	FL	HP		LH	AL	PP,AL	A3, AH	TA, AK	AG,AW,FY	AZ

Grade Comparison

Grade Comparison

APPLICATION	ISO CODE	PAGE	TAEGUTEK	KENAMETAL	HITACHI	ZCCCT	SANDVIK	TUNGALOY	KYOCERA	KORLOY	SUMTOMO	MISTUBISHI
CVD TURNING	P01			KCP05 KC9105	HC5000 HG8010		GC4005 GC4205	T9005 T9105	CA5505		AC700G AC810P	UE6105
	P10	PC05S	TT8115	KCP10 KCP25 KC9110	HG8010 HG8020 GM8015 GM10	YBC151 YBC152	GC4015 GC4215	T9005 T9105 T9115	CA5505 CA5515	NC3010 NC3015	AC810P AC820P	UE6105 UE6110 MY5015
	P20	PC15S PC25SH	TT5100 TT8125	KCP25 KC9125 KC9225	HG8025 GM8020 GM25	YBC251 YBC252	GC4015 GC4025 GC4225 GC2015	T9115 T9015 T9025 T9125	CA5515 CA5525 CA5025 CR9025	NC3020 NC3120	AC820P	UE6110 MC6025 UE6020 MY5015
	P30	PC15S PC25SH	TT8125 T5100	KCP30 KCP40 KC8050	GM8035 GM25	YBC252 YBC351	GC4025 GC4225 GC4035 GC2025 GC4235	T9025 T9035 T9135 T9125	CA5525 CA5535 CR9025	NC3030	AC630M AC830P	MC6025 UE6020 UE6035 UH6400 US735
	P40	PC15S	TT8135 TT7100	KC9140 KC9040 KC9240 KX9245 TN7035 TPC35	GM8035 3X30	YBC351 YBC352	GC4035 GC235 GC4235	T9035 T9135	CA5535	NC500H	AC630M AC830P	UE6035 UH6400 US735
	M10		TT9215	KCM15	GM10	YBM151 YBM153	GC2015	T9115 T9015	CA6515 CA6D15		AC610M	US7020 MC7015
	M20	PC05SS	TT9225	KCM15 KC9225	GM25 GM8020	YBM251 YBM253	GC2015	T6020 T6130 T9025 T9125	CA6515 CA6525	NC9020 NC9025	AC610M AC630M	US7020 MC7015 MC7025
	M30	PC05SS	TT9235	KCM25 KC9230 KC8050 TN8025	HG8035 HG8025 GX30	YBM351	GC2135 GC2025	T6030	CA6525	NC3030 NC5530	AC630M AC830P	MC7025 US735
	M40		TT5100	KCM35 KC9240 KC9245	GX30	YB235	GC2025			NC3030	AC630M	US735
	K01		TT7005	KCK05	HX3505 HG3305 GM3005	YBD052	GC3205 GC3210	T5105 T5010	CA4010 CA4505	NC6015	AC405K AC410K	UC5105
	K10	PC15C	TT1300	KCK15 KCK20 KC9315	HX3515 HG3315 HG8010 GM8015	YBD102 YBD152 YBD152 C	GC3205 GC3210 GC3215	T5010 T115 T5115	CA4515 CA4010 CA4115	N305K NC6010 NC6110	AC415K	MY5015 UC5115
	K20	PC15CC	TT7105 TT7310 TT1500	KCK20 KC9110 KC9320	HG8025 GM8020	YBD152	GC3215	T5115 T5125 T5020	CA4515 CA4115 CA4120	N315K NC5330 PC5300 NC6010	AC420K AC700G	MY5015 UE6110 UC5115
	K30	PC15CH		KC9125 KC9325		YBD252		T5125 T9125			AC820P	UE6110

APPLICATION	ISO CODE	PAGE	TAEGUTEK	KENAMETAL	HITACHI	ZCCCT	SANDVIK	TUNGALOY	KYOCERA	KORLOY	SUMTOMO	MISTUBISHI	
PVD TURNING	P10	PC22G	TT7030 TT7080	KC715M	ATH800 CY9020 PCAL2M TB6005 JX1020 PC20M		GC1010 GC1025		PR730 PR830 PRI025 PRI225	PC3525	ACP100 ACP200		
	P20	PC22G	TT9030 TT9080	KC522M KC525M	TB6020 CY115D JX1015 CY15	YBG202	GC1010 GC1025 GC2030	AH725 AH120 GH330 AH330	PR730 PR830 PRI025 PRI225 PrI230	PC230 PC3525 PC3535	ACP200	VPI5TF	
	P30		TT9080	KC725M KC530M	JS4060 JS4045 TB6045 CY250 CY25 HC844 JX1045 PTH30E	YBG302	GC1030 GC1010 GC2030	AH730 GH130 AH725 AH130 GH330 AH330 AH120	PR660 PRI230	PC3535 PC130	ACZ300 ACZ350 ACZ200	VPI5TF VP30RT	
	P40		TT8020 TT8080	KC735M	JS4060 JX1060 GF30 GX30 PTH30E T66060	YBG402	GC1030	AH140 AH130 AH120 AH730	PR660 PRI230	PC3545	ACZ350 ACP300	VP30RT	
	M10			KC715M	CY9020 Jx1020		GC1025 GC1030		PR630 PR660 PR730 PR830			ACP200	
	M20	PC25G PC25H	TT8020 TT9030 TT9080	KC730 KC522M KC525M	TB6020 CY150 CY15 JX1015	YBG202 YBG205	GC1025 GC1030 GC1040 GC2030	AH330 GH110 AH120 GH330 AH725	PR630 PR730 PR830 PR660 PRI025 PRI225		ACZ310 AC520U ACP300	VPI5TF VP20RT VP20MF	
	M30		TT8020 TT8080 TT8030	KC725M KC735M	TB6045 CY250 HC844 JM4060 Jx1045	YBG302	GC1040 GC2030	AH120 AH130 AH140 AH725 GH130 AH730 GH340	PR630 PR730 PR830	PC9530	ACZ330 AC520U ACZ350	VPI5TF VP20RT VP30RT M P7035	
	M40		TT8020 TT8080		TB6060 PTH40H GF30 GX30 JX1060			AH140	PR660		ACZ350 ACP300	VP30RT	
	K10			KC510M	JX1005 JX1020 ASC05E CY9020 TB6005 CY100H	YBG102	GC1010		PR510 PR905 PRI210	PC205K PC215K	ACZ310 ACK200		
	K20	PC22G	TT6030 TT6080	KC520M KC525M	TB6020 CY150 JX1015 PTH13S	YBG202 YBG152	GC1020 AH725		PR905 PRI210	PC215K	ACZ310 ACK200	VPI5TF VP20RT	
	K30	PC25G PC25H		KC725M KC735M	TB6045 GX2030 CY250 JX1045 PTH30E PTH40H	YBG205	GC1020	GH130			ACZ330 ACK300	VPI5TF VP20RT	

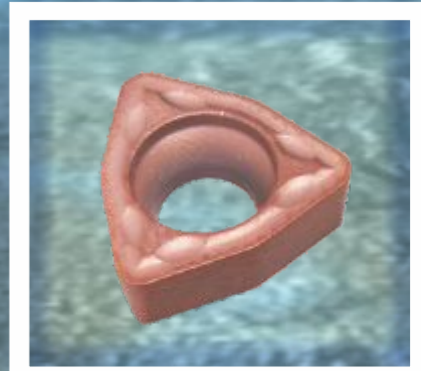
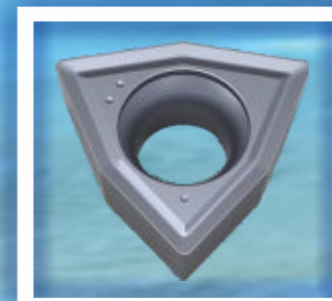
Grade Comparison

APPLICATION	ISO CODE	PAGE	TAEGUTEK	KENAMETAL	HITACHI	ZCCCT	SANDVIK	TUNGALOY	KYOCERA	KORLOY	SUMTOMO	MISTUBISHI	
PVD TURNING	P10		TT6080	KC5010 KC5510 KU10T		YBG102	GC1025 GC1525	AH710	PR915 PR1005 PR930 PR1025 PR1115 PR1225			VPI0MF	
	P20	PC22G PC25G PC25H		KC5025 KC5525 KC7215 KC7315 KU25T	IP2000	YBG202 YBG205	GC1020 GC1025 GC1525 GC1125	AH710 AH330 AH725 AH120 SH730 GH730 GH130	PR930 PR1025 PR1115 PR1225	P0230		VPI0RT VP20RT VPI5TF VP20MF	
	P30	PC22G		KC7015 KC7020 KC7035 KU25T	IP3000	YBG202 YBG302	GC1020 GC4125 GC1125	AH710 AH725 AH120 SH730 GH730 GH130	PR930 PR1025 PR1115 PR1225	PC3535 PC3545	AC530U	VPI0RT VP20RT VPI5TF VP20MF	
	P40		TT8020	KC7030 KC7040 KC7140			GC1020 GC2145	AH740	PR630 PR660	PC240		VPI5TF VP20MF	
	M10		TT5030	KC5010 KC5510 KC6005 KC6015		YBG102	GC1005 GC1025 GC1105 GC1125	AH710	PR915 PR1025 PR1215 PR1225		AC510U	VPI0MF	
	M20	PC20H	TT9080	KC5025 KC730 KC5525 KC7020 KC7025	IP100S	YBG202	GC1020 GC1025 GC1125 GC4125	AH710 AH725 AH120 SH730 GH730 GH130 GH330 AH630	PR915 PR930 PR1025 PR1125 PR1215 PR1225	PC9030	AC520U	VPI0RT VP20RT VPI5TF VP20MF	
	M30	PC20H PC25H		KC7030 KC7225		YBG202 YBG205 YBG302	GC1020 GC1025 GC2035	AH120 GH330 AH645 SH730 GH730	PR1125	PC9030	AC520U AC530U	VPI0RT VP20RT VPI5TF VP20MF	
	M40		TT8020				GC2035 GC2145				AC530U	MP7035	
	K10				K05010 KC7210		YBG102		AH710 GH110 AH110	PR905 PR1215	PC205K	AC510U	
	K20	PC22G			KC7015 KC7020 KC7215 KC7315		YBG202	GC1020	AH110 AH710 AH725 AH120 GH110 GH730 GH130	PR905 PR1215	PC215K		VPI0RT VP20RT VPI5TF
	K30				KC7225			GC4125	GH730 GH130 AH725 AH120				VPI0RT VP20RT VPI5TF



DRILLING TOOLS

Myco



COMMON DRILLING INSERTS

Shape/Code		
		Others
Z	Z	Z

Insert shape

Metric							
Code	With/Without Hole	With/Without	Section plane	Code	With/Without hole	Chipbreaker	Section plane
B	With	Without		N	Without	Without	
H	With	One-side		R	Without	One-side	
C	With	Without		F	Without	Double-side	
J	With	Double-side		A	With	Without	
W	With	Without		M	With	One-side	
T	With	One-side		G	With	Double-side	
Q	With	Without		X	---	---	Special
U	With	Double-side					

Chipbreaker and clamping type

Diameter of I.C.(mm)	Shape	
03	3.8	
04	4.3	
05	5.4	
06	6.5	6.35
08	8.7	8.0
09	-	9.525
12	-	12.7

Length Of Cutting Edge

Code	Insert Thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.96
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

Insert Thickness

S P M G

06 02 04

ZV

Clearance angle of main cutting edge			
Code	Clearance angle	Code	Clearance angle
A		B	
C		D	
E		F	
G		N	
P		O	Others

Tolerance			
Code	Nose height M tolerance(mm)	Tolerance of I.C.(mm)	Thickness S tolerance(mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05±0.13	±0.025
K	±0.013	±0.05±0.13	±0.025
L	±0.025	±0.05±0.13	±0.025
M	±0.08±0.18	±0.05±0.13	±0.13
N	±0.08±0.18	±0.05±0.13	±0.025
U	±0.13±0.38	±0.08±0.25	±0.13

Nose Radius Code	
Code	Nose Radius
00	No radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	
Diameter of insert(metric)	Round Insert

Chipbreaker Code		
ZV	ZK	OPM

INSERTS FOR SHALLOW HOLE DRILLING

SPMG/SPGT SERIES

Basic shape of Insert	Type	Dimension (mm)						Grade Recommended		
		L	ØLC	S	d	r	α°	PVD mating grade		
								PC25G	PC20H	PC25H
	SPMG050204-ZV	5.56	2.38	2.5	0.4	11°	●	★	▲	
	SPMG060204-ZV	6.35	2.38	2.8	0.4	11°	●	★	▲	
	SPMG071308-ZV	7.94	3.97	2.8	0.8	11°	●	★	▲	
	SPMT090408-ZV	9.8	4.3	4.1	0.8	11°	●	★	▲	
	SPMG110408-ZV	11.5	4.76	4.4	0.8	11°	●	★	▲	
	SPMG140512-ZV	14.3	5.56	5.5	1.2	11°	●	★	▲	
	SPGT050204-DPM	5.56	2.38	2.5	0.4	11°	●	★	▲	
	SPGT060204-DPM	6.35	2.38	2.8	0.4	11°	●	★	▲	
	SPGT071308-DPM	7.94	3.97	2.8	0.8	11°	●	★	▲	
	SPGT090408-DPM	9.8	4.3	4.1	0.8	11°	●	★	▲	
SPGT110408-DPM	11.5	4.76	4.4	0.8	11°	●	★	▲		
SPGT140512-DPM	14.3	5.56	5.5	1.2	11°	●	★	▲		

★ Best Suitable Available ▲ Only On Order ● Generally Available

WCMX/WCGX SERIES

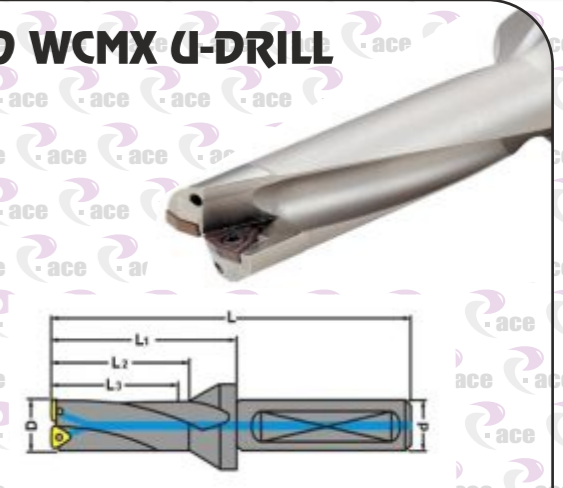
Basic shape of Insert	Type	Dimension (mm)						Grade Recommended		
		L	ØLC	S	d	r	α°	PVD mating grade		
								PC25G	PC20H	PC25H
	WCMX030208-ZK	5.56	2.38	2.5	0.4	7°	●	★	▲	
	WCMX040208-ZK	6.35	2.38	2.8	0.4	7°	●	★	▲	
	WCMX050308-ZK	7.94	3.18	3.4	0.4	7°	●	★	▲	
	WCMX06T308-ZK	9.525	3.97	4.4	0.4	7°	●	★	▲	
	WCMX080408-ZK	12.7	4.76	5.5	0.4	7°	●	★	▲	
	WCMX08T412-ZK	12.7	4.76	5.5	1.2	7°	●	★	▲	
	WCGX030208-ZV	5.56	2.38	2.5	0.8	7°	●	★	▲	
	WCGX040208-ZV	6.35	2.38	2.8	0.8	7°	●	★	▲	
	WCGX050308-ZV	7.94	3.18	3.4	0.8	7°	●	★	▲	
	WCGX06T308-ZV	9.525	3.97	4.4	0.8	7°	●	★	▲	
	WCGX080408-ZV	12.7	4.76	5.5	0.8	7°	●	★	▲	
	WCGX08T412-ZV	12.7	4.76	5.5	1.2	7°	●	★	▲	

★ Best Suitable Available ▲ Only On Order ● Generally Available

MYCO SPMG U-DRILL



MYCO WCMX U-DRILL



MYCO SPMG CODE	MYCO WCMX CODE	D	L	L1	L2	L3	d	SPMG U DRILL			WCMX U DRILL	
								INSERT	SCREW	WRENCH	INSERT	
MY-SP-C25-SD14-3D	MY-WC-C25-SD14-3D	14	115	65	45	42	25	SPMG050204-DG	M2.0X4	T6		
MY-SP-C25-SD15-3D	MY-WC-C25-SD15-3D	15	118	68	47	45	25					
MY-SP-C25-SD16-3D	MY-WC-C25-SD16-3D	16	130	74	53	48	25					
MY-SP-C25-SD17-3D	MY-WC-C25-SD17-3D	17	133	77	56	51	25	SPMG060204-DG	M2.2X5	T7	WCMX030208	
MY-SP-C25-SD18-3D	MY-WC-C25-SD18-3D	18	137	81	59	54	25					
MY-SP-C25-SD19-3D	MY-WC-C25-SD19-3D	19	140	84	62	57	25					
MY-SP-C25-SD20-3D	MY-WC-C25-SD20-3D	20	140	89	66	60	25	SPMG070308-DG	M2.5X6	T8	M2.5X6.3	
MY-SP-C25-SD21-3D	MY-WC-C25-SD21-3D	21	148	92	68	63	25					
MY-SP-C32-SD22-3D	MY-WC-C32-SD22-3D	22	151	95	71	66	32					
MY-SP-C32-SD23-3D	MY-WC-C32-SD23-3D	23	155	99	74	69	32	SPMG090408-DG	M3.5X8	T15	WCMX040208	T8
MY-SP-C32-SD24-3D	MY-WC-C32-SD24-3D	24	159	103	78	72	32					
MY-SP-C32-SD25-3D	MY-WC-C32-SD25-3D	25	163	107	81	75	32					
MY-SP-C32-SD26-3D	MY-WC-C32-SD26-3D	26	170	110	83	78	32	SPMG110408-DG	M4.0X9	T15	WCMX050308	M3X7
MY-SP-C32-SD27-3D	MY-WC-C32-SD27-3D	27	173	113	86	81	32					
MY-SP-C32-SD28-3D	MY-WC-C32-SD28-3D	28	177	117	89	84	32					
MY-SP-C32-SD29-3D	MY-WC-C32-SD29-3D	29	180	120	92	87	32	SPMG140512-DG	M5X10	T20	WCMX06T308	M3.5X8
MY-SP-C32-SD30-3D	MY-WC-C32-SD30-3D	30	185	125	96	90	32					
MY-SP-C32-SD31-3D	MY-WC-C32-SD31-3D	31	189	129	99	93	32					
MY-SP-C32-SD32-3D	MY-WC-C32-SD32-3D	32	192	132	102	96	32	SPMG140512-DG	M5X10	T20	WCMX080412	M4X10
MY-SP-C32-SD33-3D	MY-WC-C32-SD33-3D	33	196	136	105	99	32					
MY-SP-C32-SD34-3D	MY-WC-C32-SD34-3D	34	199	139	108	102	32					
MY-SP-C32-SD35-3D	MY-WC-C32-SD35-3D	35	203	143	111	105	32	SPMG140512-DG	M5X10	T20		
MY-SP-C32-SD36-3D	MY-WC-C32-SD36-3D	36	203	143	111	108	32					
MY-SP-C32-SD37-3D	MY-WC-C32-SD37-3D	37	210	150	117	111	32					
MY-SP-C32-SD38-3D	MY-WC-C32-SD38-3D	38	214	154	120	114	32	SPMG140512-DG	M5X10	T20		
MY-SP-C32-SD39-3D	MY-WC-C32-SD39-3D	39	217	157	123	117	32					
MY-SP-C40-SD40-3D	MY-WC-C40-SD40-3D	40	231	161	126	120	40					
MY-SP-C40-SD41-3D	MY-WC-C40-SD41-3D	41	235	165	129	123	40	SPMG140512-DG	M5X10	T20		
MY-SP-C40-SD42-3D	MY-WC-C40-SD42-3D	42	238	168	132	126	40					
MY-SP-C40-SD43-3D	MY-WC-C40-SD43-3D	43	241	171	135	129	40					
MY-SP-C40-SD44-3D	MY-WC-C40-SD44-3D	44	245	175	138	132	40	SPMG140512-DG	M5X10	T20		
MY-SP-C40-SD45-3D	MY-WC-C40-SD45-3D	45	248	178	141	135	40					
MY-SP-C40-SD46-3D	MY-WC-C40-SD46-3D	46	252	182	144	138	40					
MY-SP-C40-SD47-3D	MY-WC-C40-SD47-3D	47	255	185	147	141	40	SPMG140512-DG	M5X10	T20		
MY-SP-C40-SD48-3D	MY-WC-C40-SD48-3D	48	259	189	150	144	40					
MY-SP-C40-SD49-3D	MY-WC-C40-SD49-3D	49	262	192	153	147	40					
MY-SP-C40-SD50-3D	MY-WC-C40-SD50-3D	50	262	192	158	150	40					

Shape/Code		

Insert shape

Metric							
Code	with/without hole	Chipbreaker	Section Plane	code	With/Without Hole	Chipbreaker	Section Plane
B	with	without		N	without	without	
H	with	One-side		R	without	One-side	
C	with	without		F	without	Double-side	
J	with	Double-side		A	with	without	
W	with	without		M	with	One-side	
T	with	One-side		G	with	Double-side	
Q	with	without		X	---	---	Special
U	with	Double-side					

chipbreaker and clamping type

Diameter of I.C.(mm)	Insert Shape						
	C	D	R	S	T	V	W
3.97					06		
5.0			05				
5.56					09		
6.0			06				
6.35	06	07			11	11	
8.0			08				
9.525	09	11	09	09	16	16	06
10.0			10				
12.0			12				
12.7	12	15	12	12	22	22	08
15.875	16		15	15	27		
16.0		19	16				
19.05	19		19	19	33		
20.0			20				
25.0	25	25	25				
25.4			25	25			
31.75			31				
32			32				

Length Of Cutting Edge

Code	Insert Thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.56
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

Insert Thickness

S P K N

15 04 ED S32 L

Clearance Angle Of Main Cutting Edge	
code	Clearance angle
A	3°
B	5°
C	15°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Others

Tolerance										
Code	Nose Height tolerance(mm)	Tolerance of I.C.(mm)	Thickness Tolerance(mm)	(Reference) Details of M- class tolerance (Identified By shape and Size)						
				● Nose Height Tolerance(mm)						
				Inscribed Circle	Regular Triangle	Square	Diamond With 80	Diamond With 55	Diamond With 35	Round
A	±0.005	±0.025	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
F	±0.005	±0.013	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
C	±0.013	±0.025	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---
H	±0.013	±0.013	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---
E	±0.025	±0.025	±0.025	19.05	±0.15	±0.15	±0.15	±0.18	---	---
G	±0.025	±0.025	±0.13	25.4	---	±0.18	---	---	---	---
J	±0.005	±0.05±0.13	±0.025							
K	±0.013	±0.05±0.13	±0.025							
L	±0.025	±0.05±0.13	±0.025							
M	±0.08±0.18	±0.05±0.13	±0.13							
N	±0.08±0.18	±0.05±0.13	±0.025							
U	±0.13±0.38	±0.08±0.25	±0.13							
				● Tolerance of inscribed circle (mm)						
				Inscribed circle	Regular Triangle	square	Diamond With 80	Diamond With 55	Diamond With 35	Round
				6.35	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
				9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
				12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
				15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
				19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
				25.4	---	±0.13	---	---	---	±0.13

Wiper	
Code	Angle
A	45°
D	60°
E	75°
F	85°
P	90°
Z	Others

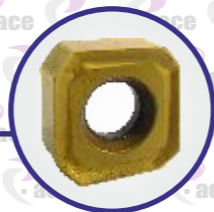
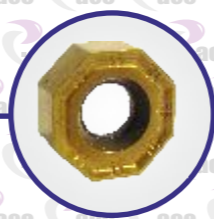
Chamfer(mm)	
Code	Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
Z	Others

Cutting Direction	
R	Right hand
L	Left hand
N	Neutral

TWO TYPE OF INSERT FOR ONE CUTTER



OCTAGON INSERT (DOUBLE-SIDE & 16 FLUTES)



SQUARENESS INSERT (DOUBLE-SIDE & 8 FLUTES)

Two Face Spiral Blade 45 Degree Face Milling Cutter

it is suitable for all kinds of plane process, and it is used for many places. and we provide goods in high quality at good price. it can clamp two kind of insert to the same retaining nest. The inserts are the two-side square ones with 8 cutting edges and the two-side octagonal ones with 16 cutting edges.

Main Characters

- ☑ Orthogonal screw clamp could ensure better clamp rigidity and safety.
- ☑ thick tooth design makes much higher efficiency.
- ☑ Square insert could cut 5mm in depth at most, and the orthogonal ones 3mm.
- ☑ One cutter with two kind of inserts is suitable for roughing, semi-finishing and finishing.
- ☑ It is very economical, with 8 cutting edges and 16 cutting edges.
- ☑ It has repairing light blade inserts, and could lead to high quality.
- ☑ The diameter of cutter is from 50 mm to 315mm, and it could cover the whole plane.

DN □ □



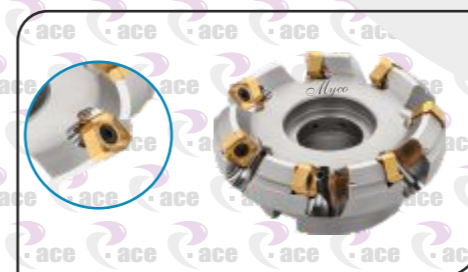
Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		Di	ap	S	f	r	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
DNMU060506-H-R	DNMU060506-H	13	3.5	5.5	5	0.5				●		●	
										●		●	

SN □ □

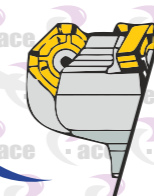


Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		Di	ap	S	f	r	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
SNMU150515-H-W	SNMU150515-H	13	6	6.2	3	0.5				●		●	
										●		●	

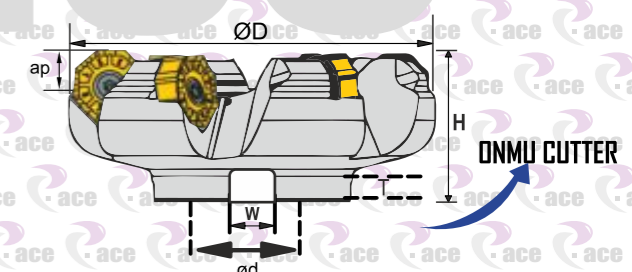
★ Best Suitable Available ▲ Only On Order ● Generally Available



SNMU CUTTER



DNMU CUTTER



MY-SNMU & DNMU SERIES

Specification	Teeth	Figure	ØD	d	H	W	T	Insert	Screw	Wrench
45-MY-050-22-4T	4	A	50	22	50	10.4	6.3	DNMU060506 SNMU150515	M4X12.5	T15
45-MY-063-22-6T	6	A	63	22	50	10.4	6.3			
45-MY-080-27-7T	7	A	80	27	50	12.4	7			
45-MY-100-32-8T	8	A	100	32	50	14.4	8			
45-MY-125-40-10T	10	A	125	40	63	16.4	9			
45-MY-160-40-12T	12	A	160	40	63	16.7	9			
45-MY-200-60-14T	14	A	200	60	63	25.7	14			
45-MY-250-60-16T	16	A	250	60	63	25.7	14			
45-MY-315-60-20T	20	A	315	60	63	25.7	14			



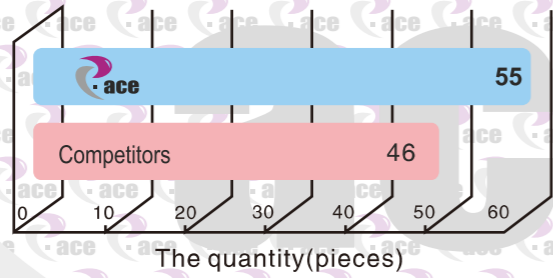
Recommended Cutting Data.

Workpiece Materials	Materials Hardness	Grade	Recommended Cutting Speed Vc(m/min)	mm/tooth		
				Light Cutting	Medium Cutting	Heavy Cutting
P	Low-carbon steel	≤HB180	PC25G 180 (150-220)	0.08 (0.05-0.15)	0.1 (0.08-0.15)	0.12 (0.08-0.2)
	Low-carbon steel Alloy steel	HB180-350	PC25G 160 (140-200)	0.18 (0.1-0.25)	0.25 (0.1-0.35)	0.3 (0.1-0.45)
	Per-hardened steel	HRC35-45	PC25G 120 (100-160)	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.1-0.25)
M	stainless steel	≤HB270	PC25G 140 (120-180)	0.15 (0.1-0.25)	0.2 (0.15-0.3)	0.25 (0.2-0.35)
	K	Grey cast Iron	≤HB280	PC15G 180 (150-220)	0.18 (0.1-0.25)	0.25 (0.1-0.35)
S		Nodular cast Iron	≤HB350	PC15G 120 (100-180)	0.08 (0.05-0.15)	0.1 (0.08-0.15)
	heat-resistant alloy and Titanium Alloy	HRC25-35	PC25G 40 (30-60)	0.1 (0.05-0.15)	0.12 (0.08-0.2)	0.15 (0.1-0.25)

CASE STUDY 1



Material	20 Mncr5 (HRC30)
Processing method	Face milling, dry cutting
Insert	ONMU060506-H-R-PC25G
Cutter head	45-MY-080-27-7T



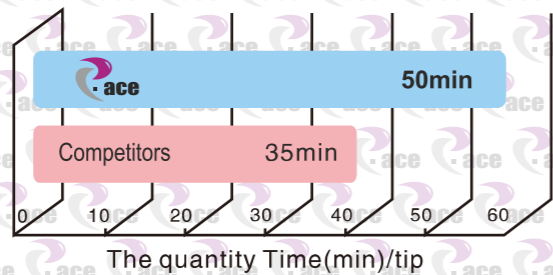
The cutting parameters
Vc=200m/min
fz=0.15mm/t
ap=3.5mm
ae=50mm

Cutting Life
+20%

CASE STUDY 2



Material	20 Mncr5 (HRC30)
Processing method	Face milling, dry cutting
Insert	SNMU150515-H-W-PC25G
Cutter head	45-MY-080-27-7T



The cutting parameters
Vc=250m/min
fz=0.2mm/t
ap=2mm
ae=25mm

Cutting Life
+40%

★ Tool RPM (min⁻¹) = (1000 X Cutting Speed) / (3.14 X Diameter of Cutter)
★ Workpiece Feed (mm/min) = Feed Per Tooth X Number Of Tooth X Tool RPM

Two Side Swallow Tail Solid Cutter Insert

PNX 1706 Two-side Insert, Every One With 4 Blades

Before The Big Angle Design
Sharp Edge Is Strong



DOUBLE-SIDED FOUR EDGES

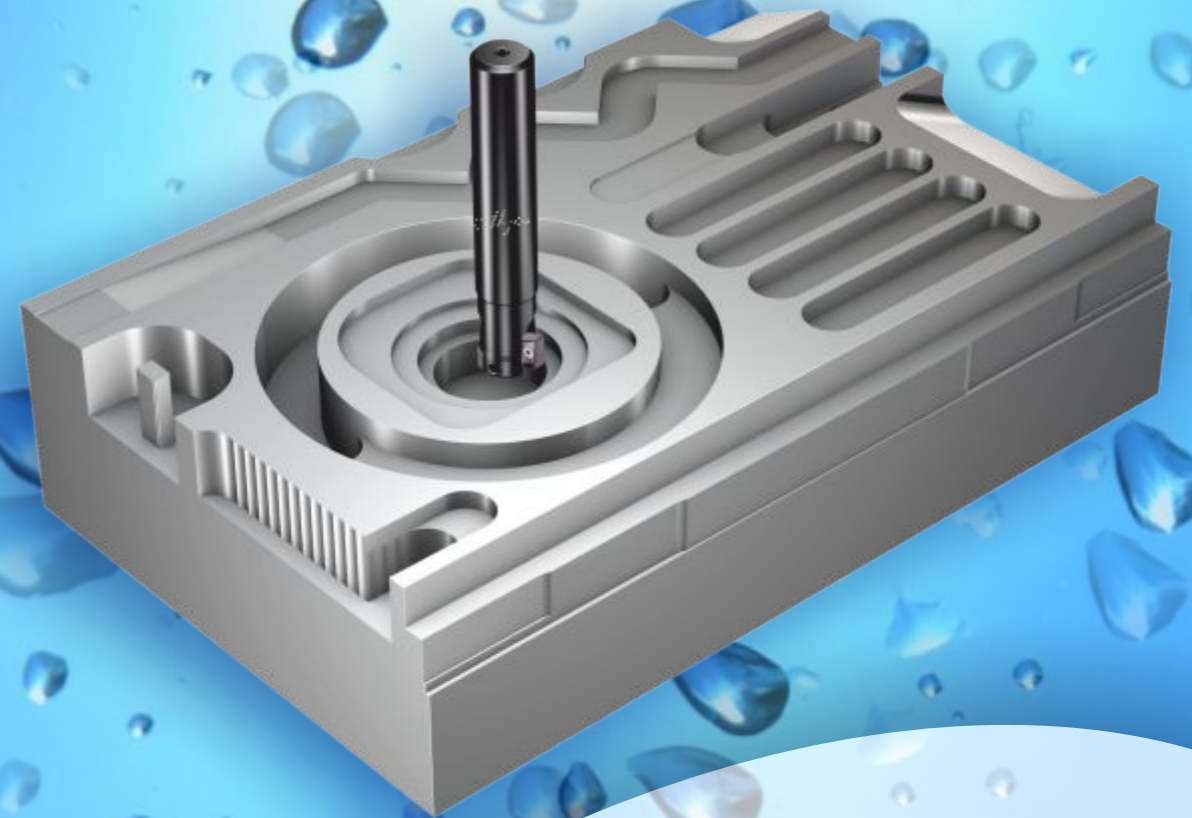
Milling Cutter

Two-side spiral blade 90 degree shoulder facing end mill-- it is suitable for all kinds of plane, ladder, slotting machining, is in best efficiency and precision.

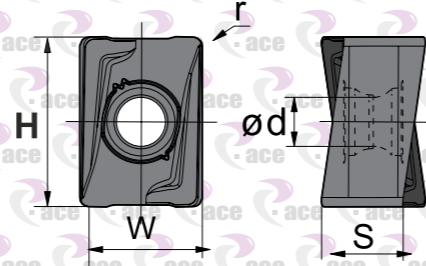
Main Characters

1. The inserts are in two-side and four-blade design, and they are thick and strong for deep milling process.
2. The design of swallow tail oblique trough, combine with insert repairing blade, could satisfy milling process for high finishing surface requirement.
3. Cutters adopt to orthogonal screw clamp to ensure higher clamp rigidity and safety.
4. Cutters' thick teeth design, combined with the design of low cutting resistance is a high process efficiency.
5. The model 06 thickness design could ensure the most cutting depth up to more than 10mm.

MY-PNX SERIES



PN□□



Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		W	H	ød	r	S	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	PNX090408-H	6.6	8.6	2.5	0.8	5.2				●		▲	
	PNX120508-H	10	13.7	3.8	0.8	9.15				●		▲	
	PNX170608-H	11.2	16.7	4.7	0.8	10.4				●		▲	

★ Best Suitable Available ▲ Only On Order ● Generally Available

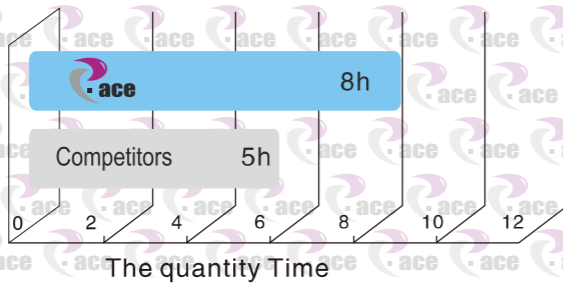
Recommended Cutting Data.

Workpiece Material	Hardness HB	Grade	Cutting Data		
			V (m/min)	f (mm/z)	apmax
P Low-carbon steel Soft steel	≤180	PC25G	270 (220-350)	0.25 (0.1-0.4)	8 (PN09) 12 (PN12) 16.3 (PN17)
K Cast iron	180-250	PC15C	270 (150-300)	0.25 (0.1-0.4)	

Case Study



Material	20 Mncr5 (HRC30)
Processing method	Face milling, dry cutting
Insert	PNX170608-H PC25G
Cutter head	90-MY-063-22-5T



The cutting parameters
Vc=180m/min
f=1.34mm
ap=1.5mm
ae=40mm

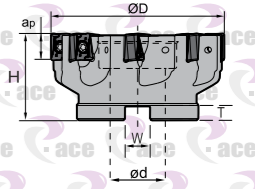
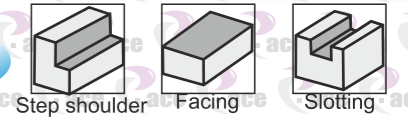
Cutting Life

+60%

MY-PNX SERIES

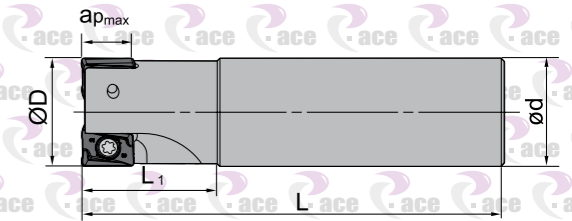
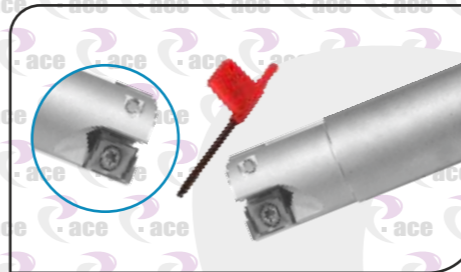


Kr:90°



(Figure-A)

Specification	Teeth	Figure	øD	ød	ap	H	W	T	Insert	Screw	Wrench
90-MY-050-22-4T	4	A	50	22	16.3	50	10.4	6.3	PNX170608	M5.0X14	T-20
90-MY-063-22-6T	6	A	63	22	16.3	50	10.4	6.3			
90-MY-080-27-7T	7	A	80	27	16.3	50	12.4	7			
90-MY-100-32-8T	8	A	100	32	16.3	50	14.4	8			
90-MY-125-40-10T	10	A	125	40	16.3	63	16.4	9			
90-MY-160-40-12T	12	A	160	40	16.3	63	16.7	9			



(Figure-B)

MY-PNX SERIES

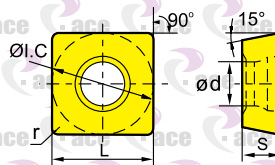
Specification	Teeth	Figure	øD	ød	ap	L1	L	Insert	Screw	Wrench
90-MY-09-C16-16-125-2T	2	B	16	16	8	25	125	PNX0904	M3.0x7	T-8
90-MY-09-C20-20-125-3T	3	B	20	20	8	25	125			
90-MY-09-C25-25-125-4T	4	B	25	25	8	25	125			
90-MY-09-C32-32-160-5T	5	B	32	32	8	25	160	PNX1205	M4.0X12	T-15
90-MY-12-C25-25-125-2T	2	B	25	25	12	25	125			
90-MY-12-C32-32-160-3T	3	B	32	32	12	25	160			
90-MY-12-C40-40-200-4T	4	B	40	40	12	25	200			

Mounting Double Side Inserts:



Please make sure that the faces with same marks are in the same direction.

SD□□

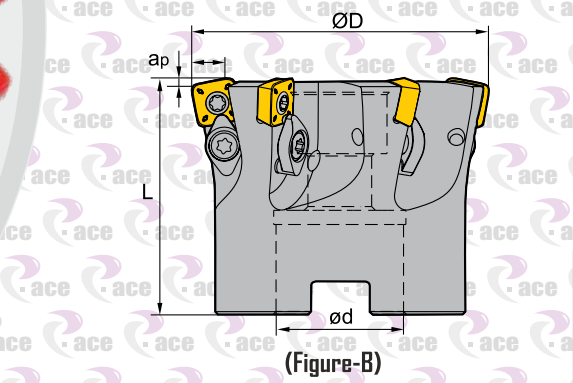
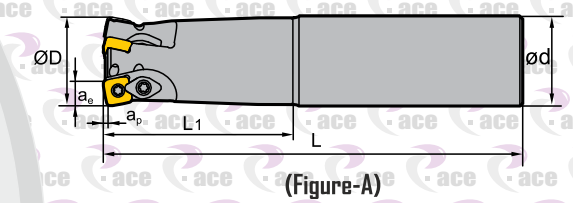
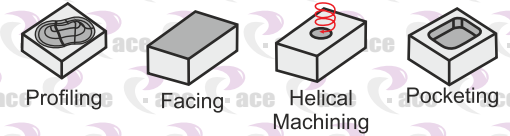


Shape	Size	Dimension (mm)						PVD Coating					CVD Coating	Cemented Carbide
		L	I.C	S	d	r	α°	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	SDMT09T312-OPM	9.525	9.525	3.97	4	1.2	15	▲	★		●		▲	
	SDMT09T312-SM							▲	★		●		▲	
	SDMT09T312-GM							▲	★		●		▲	
	SDMT12D412-OPM	12.7	12.7	4.76	4.4	1.2	15	★	★		★	★		
	SDMT12D412-SM							★	▲		●		▲	
	SDMT12D412-GM							★	▲		●		▲	
	SDMT12D512-GM	12.7	12.7	4.76	4.4	1.2	15	★	▲		●		▲	
								★	▲		●		▲	

★ Best Suitable Available ▲ Only On Order ● Generally Available

High Feed Milling Cutters

MY-SD SERIES



MY-SDMT SERIES (Figure-A)

Specification	Teeth	Figure	ØD	d	ap	ae	L1	L	Insert
MY-SD09-C25-25-140-2T	2	A	25	25	1.4	8.8	60	140	SDMT09T3
MY-SD09-C32-32-150-3T	3	A	32	32	1.4	8.8	70	150	SDMT09T3
MY-SD12-C32-32-150-2T	2	A	32	32	1.8	11.7	70	150	SDMT12D4
MY-SD12-C40-40-150-3T	3	A	40	40	1.8	11.7	70	150	SDMT12D4

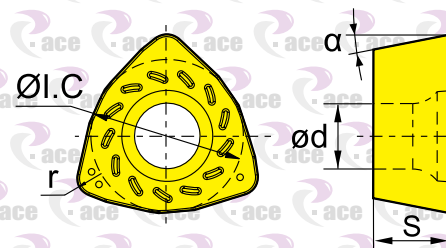
MY-SDMT SERIES (Figure-B)

Specification	Teeth	Figure	ØD	d	ap	ae	H	W	T	Insert
MY-SD09-50-22-4T	4	B	50	22	1.4	8.8	40	10.4	6.3	SDMT09T3
MY-SD09-63-22-6T	6	B	63	22	1.4	8.8	40	10.4	6.3	
MY-SD12-50-22-3T	3	B	50	22	1.8	11.7	40	10.4	6.3	SDMT12D4
MY-SD12-63-22-5T	5	B	63	22	1.8	11.7	40	10.4	6.3	
MY-SD12-80-27-5T	5	B	80	27	1.8	11.7	50	12.4	7	
MY-SD12-100-32-6T	6	B	100	32	1.8	11.7	50	14.4	8	

MY-SDMT SPARE PART

Specification	Insert Screw	Clamp Screw	Clamp	Insert Wrench	Clamp Wrench
MY-SD09	M3.5x8	M4x8	MY-SD09	T10	T10
MY-SD12D4	M4x8	M4x8	MY-SD12	T15	T15

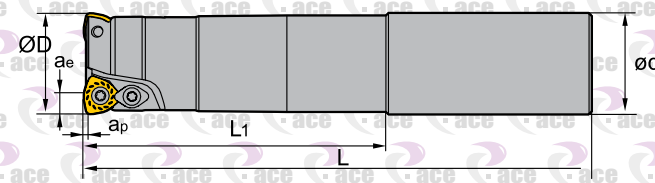
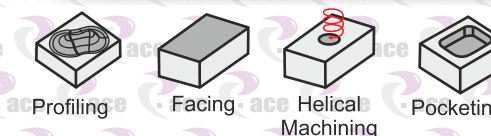
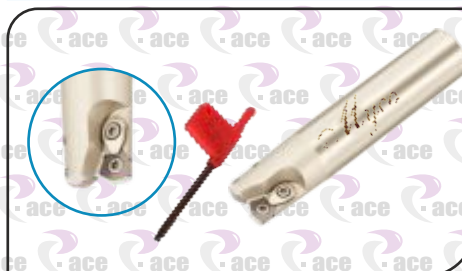
WP



Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		I.C	S	d	r	α°	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	WPGT06D415-ZSR	9.525	4.2	4.4	1.5	11	▲	▲		▲		▲	
	WPGT06D415-GM						▲	▲		▲		▲	
	WPGT08D615-ZSR	12.85	6.35	5.5	1.5	11	▲	★		★		▲	
	WPGT08D615-GM						▲	▲		●		▲	

★ Best Suitable Available ▲ Only On Order ● Generally Available

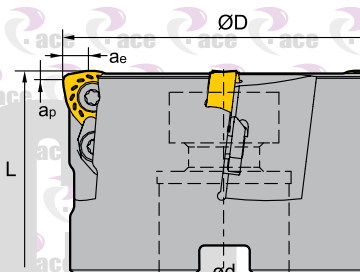
High Feed Milling Cutters



(Figure-A)

MY-WP SERIES

Specification	Teeth	Figure	$\varnothing D$	d	a_p	a_e	L_1	L	Insert
MY-WP06-C25-25-140-2T	2	A	25	25	1.5	4.35	60	140	WPGT06
MY-WP06-C25-25-200-2T	2	A	25	25	1.5	4.35	120	200	
MY-WP06-C25-25-300-2T	2	A	25	25	1.5	4.35	180	300	
MY-WP06-C32-32-150-3T	3	A	32	32	1.5	4.35	70	150	
MY-WP06-C32-32-200-3T	3	A	32	32	1.5	4.35	120	200	
MY-WP06-C32-32-300-3T	3	A	32	32	1.5	4.35	180	300	
MY-WP08-C32-40-150-2T	2	A	40	32	1.5	5.66	50	150	WPGT08
MY-WP08-C32-40-250-2T	2	A	40	32	1.5	5.66	50	250	
MY-WP08-C32-40-300-2T	2	A	40	32	1.5	5.66	50	300	



(Figure-B)

MY-WPGT SERIES

Specification	Teeth	Figure	$\varnothing D$	d	a_p	a_e	H	W	T	Insert
MY-WP06-50-22-4T	4	B	50	22	1.5	4.35	40	10.4	6.3	WPGT06
MY-WP08-50-22-3T	3	B	50	22	1.5	5.66	50	10.4	6.3	
MY-WP08-63-22-4T	4	B	63	22	1.5	5.66	50	10.4	6.3	
MY-WP08-80-27-5T	5	B	80	27	1.5	5.66	63	12.4	7	WPGT08
MY-WP08-100-32-6T	6	B	100	32	1.5	5.66	63	14.4	8	
MY-WP08-125-40-7T	7	B	125	40	1.5	5.66	63	16.4	9	

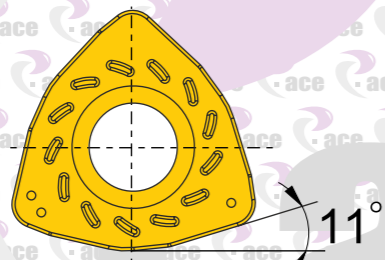
WPGT SPARE PART

Specification	Insert Screw	Clamp Screw	Clamp	Insert Wrench	Clamp Wrench
MY-WP06	M4x8	M4x8	MY-WP06	T15	T15
MY-WP08	M5x13	M5x13	MY-WP08	T20	T20

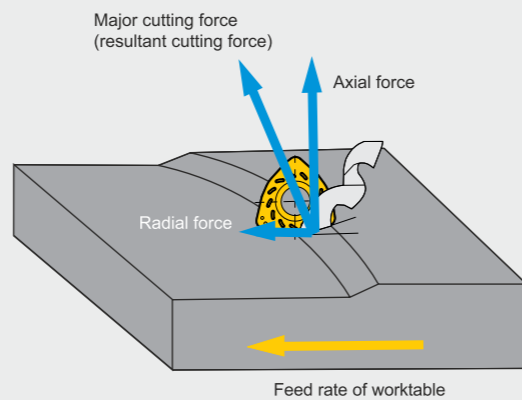
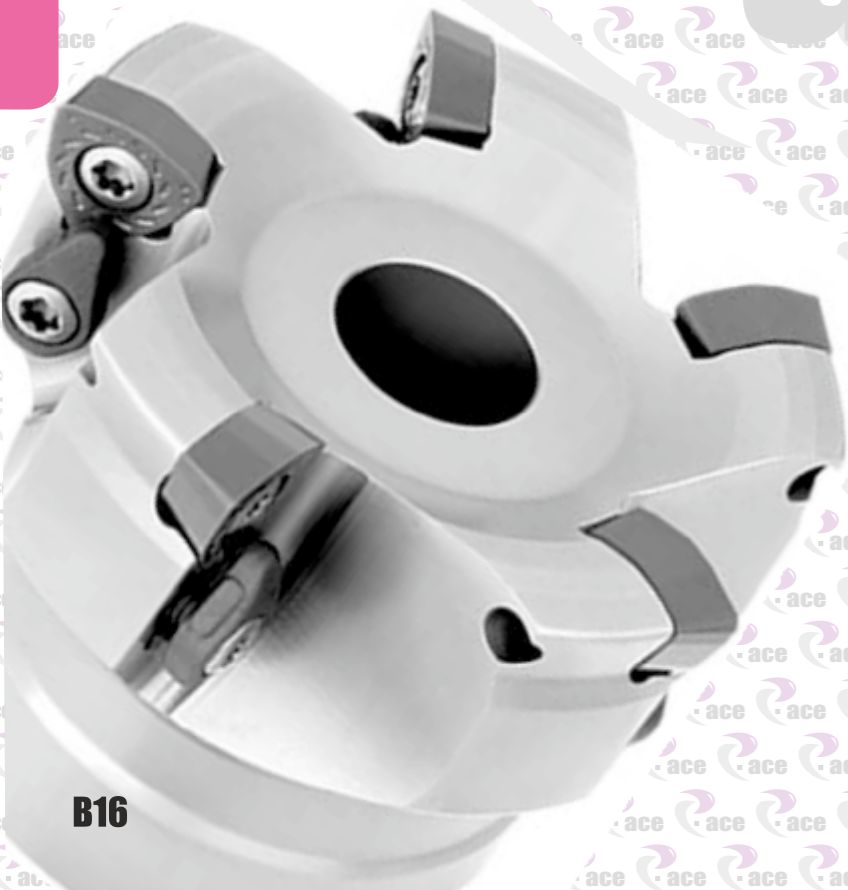


MY-WP

Series High Feed Milling Tools



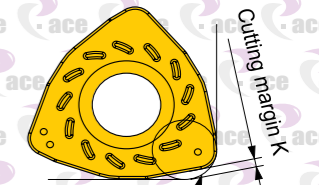
MILLING



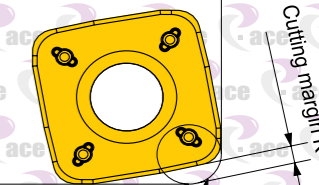
The feature of high feed tool is to resolve the major cutting force into the axial direction, greatly reduce the radial cutting force, thus improve tool's capability of shock resistance. In addition, this structure can effectively reduce the vibration in long overhang milling application.

Approximate R in machining program

Insert	approx. R(mm)	Cutting margin K(mm)
WPGT060415ZSR	2.5	0.7
WPGT060415GM	2.5	0.7
WPGT080615ZSR	2.0	0.7
WPGT080615GM	2.0	0.7
SDMT09T312-GM	2.5	0.87
SDMT120512-GM	4.0	0.93
SDMT09T312-SM	2.5	0.87
SDMT120412-SM	4.0	0.93
SDMT09T312-OPM	2.5	0.87
SDMT120412-OPM	4.0	0.93



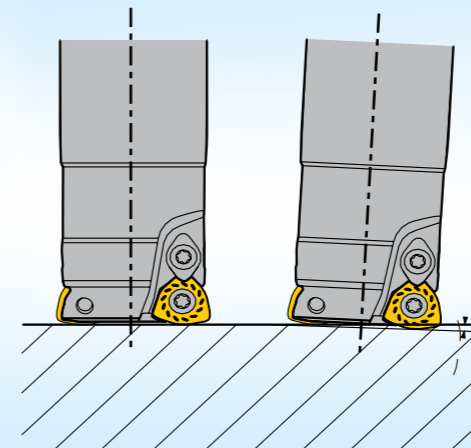
Piont R in programming



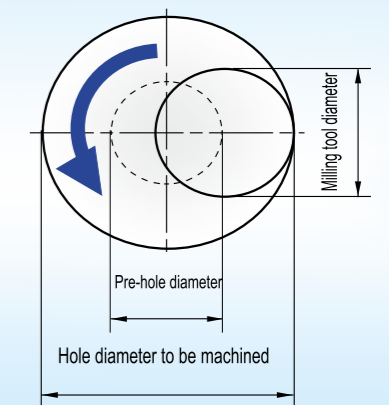
Piont R in programming

Different Machining Styles

Ramp Machining



Helical Interpolation Milling



- Please Reduce The Feed Speed For Inclined Plane Machining And Sprial Processing
- Please Put The Axial Feed In Below 0.2 Mm/rev For Drilling
- There May Be A Long Chip Fly Out When Drilling Just Be Careful
- When Sprial Reaming Processing, Weekly Cutting Depth Can Not Exceed The Maximum Cutting Depth Ap
- S-shaped Insert In Addition To The Above Processing, Can Also Be Plunge Milling

MY-SD-Series

MY-SD series tools (installSD**inserts) possess perfect edge strength and excellent economical efficiency ,have more advantages in face milling.

MY-WP-Series

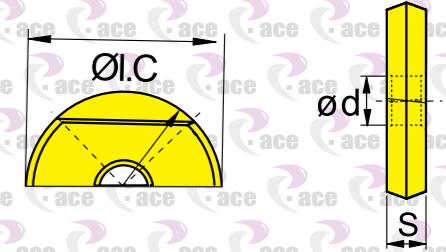
MY-WP series tools (installWP**inserts) possess good capability of chip removal,have moreadvantages incavity milling.

MILLING

Recommended Cutting Data.

Workpiece material	Hardness HB	Grade	Cutting speed (m/min)	Ø25		Ø32		
				Axial Cutting Depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth	
P carbon steel soft steel	≤HB180HB180-280	PC25G	170(120-220)	0.6~1.0	0.8~1.2	0.8~1.2	1.0~1.4	
			150(100-200)					
	Alloy steel Alloy tool steel	HB280-350 ≤HB350	PC20H PC25H	150(100-200)	0.4~0.8	0.8~1.2	0.6~1.0	1.0~1.4
130(80-180)								
hardened steel	≤HRC35	PC20H PC25H	150(100-200)	0.4~0.8	0.6~1.0	0.6~1.0	0.8~1.2	
			120(80-160)					
M Stainless steel	≤HB270	PC20H PC25H	150(100-200)	0.6~1.0	0.6~1.0	0.8~1.2	0.8~1.2	
			120(80-160)					
K Cast Iron	Tensile strength ≤350MPa	PC15C	170(120-220)	0.6~1.0	1.0~1.4	0.8~1.2	1.2~1.6	
			150(100-200)					
	Nodular Cast iron	Tensile strength ≤800MPa	PC15C	150(100-200)	0.4~0.8	0.8~1.2	0.6~1.0	1.0~1.4
				120(80-160)				

PB□□



Shape	Size	Dimension (mm)			PVD Coating				CVD Coating	Cemented Carbide	
		I.C	S	d	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	PBX-D08	8	4	2.4		▲		●			
	PBX-D10.0	10	5	2.6		▲		●			
	PBX-D12.0	12	6	3		▲		●			
	PBX-D16.0	16	8	4		▲		●			
	PBX-D20.0	20	10	5		▲		●			
	PBX-D25.0	25	12.5	6		▲		●			

★ Best Suitable Available ▲ Only On Order ● Generally Available

Recommended Cutting Data.

Workpiece material	Hardness HB	Grade	Cutting speed (m/min)	Ø40		Ø50/63		Ø80/100/125		
				Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth	
P carbon steel soft steel	≤HB180HB180-280	PC25G	170(120-220)	0.8~1.2	1.0~1.4	1.1~1.5	1.1~1.5	1.0~1.5	1.0~1.5	
			150(100-200)							
	Alloy steel	HB280-350 ≤HB350	PC20H PC25H	150(100-200)	0.6~1.0	1.0~1.4	0.9~1.3	1.1~1.5	0.8~1.3	1.0~1.5
130(80-180)										
hardened steel	≤HRC35	PC20H PC25H	150(100-200)	0.6~1.0	0.8~1.2	0.9~1.3	0.9~1.3	0.8~1.3	0.8~1.3	
			120(80-160)							
M Stainless steel	≤HB270	PC20H PC25H	150(100-200)	0.8~1.2	0.8~1.2	1.1~1.5	0.9~1.3	1.0~1.5	0.8~1.3	
			120(80-160)							
K Cast iron	Tensile strength ≤350MPa	PC15C	170(120-220)	0.8~1.2	1.2~1.6	1.1~1.5	1.3~1.7	1.0~1.5	1.2~1.7	
			150(100-200)							
	Nodular Cast iron	Tensile strength ≤800MPa	PC15C	150(100-200)	0.6~1.0	1.0~1.4	0.9~1.3	1.1~1.5	0.8~1.3	1.0~1.5
				120(80-160)						

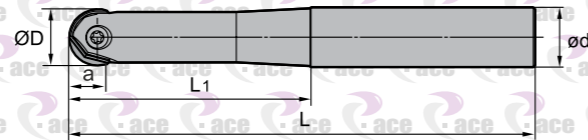
Recommended Cutting Data.

Workpiece material	Hardness HB	Grade	Cutting Data	Diameter		
				Ø12	Ø16	Ø20
P Carbon Steel	HB≤180		V(m/min)	100~200	100~200	100~200
			fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
			apmax(mm)	0.8	1	1.25
			aemax(mm)	0.8	1	1.25
			V(m/min)	80~180	80~180	80~180
			fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
P Alloy steel	HB180~280		apmax(mm)	0.8	1	1.25
			aemax(mm)	0.8	1	1.25
			V(m/min)	60~100	60~100	60~100
			fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
			apmax(mm)	0.4	0.5	0.6
			aemax(mm)	0.4	0.5	0.6
M Hardened steel	HRC55~65	PC25G PC25H	V(m/min)	70~150	70~150	70~150
			fz(mm/z)	0.1~0.2	0.1~0.25	0.1~0.25
			apmax(mm)	0.6	0.8	1
K Stainless steel	HB≤270		aemax(mm)	0.6	0.8	1
			V(m/min)	160~300	160~300	160~300
			fz(mm/z)	0.2~0.3	0.25~0.35	0.25~0.35
K Cast iron	HB180-250		apmax(mm)	1	1.5	1.8
			aemax(mm)	1	1.5	1.8
			V(m/min)	160~300	160~300	160~300

MILLING

RICH MILL SERIES

Profile Milling Cutter



MY-PBX SERIES

Specification	ØD	ød	A	L1	L	Insert	Screw	Wrench
MY-C8-4R-110	8	8	5	25	110	PBX-D08	M3x7-Z	T8
MY-C10-4R-110	8	10	5	25	110			
MY-C12-4R-130	8	12	5	40	130			
MY-C10-5R-130	10	10	6	30	130	PBX-D10	M4x8-Z	T10
MY-C10-5R-160	10	10	6	40	160			
MY-C12-5R-130	10	12	6	30	130			
MY-C12-5R-160	10	12	6	40	160	PBX-D12	M5x10-Z	T10
MY-C12-6R-130	12	12	8	40	130			
MY-C12-6R-160	12	12	8	50	160			
MY-C16-8R-160	16	16	10	50	160	PBX-D16	M5x13-Z	T20
MY-C16-8R-200	16	16	10	60	200			
MY-C20-10R-160	20	20	12.5	50	160	PBX-D20	M6x18-Z	T20
MY-C20-10R-200	20	20	12.5	60	200			
MY-C20-10R-250	20	20	12.5	60	250			
MY-C25-12.5R-160	25	25	15	60	160	PBX-D25	M6x20-Z	T20
MY-C25-12.5R-200	25	25	15	60	200			
MY-C25-12.5R-250	25	25	15	60	250			

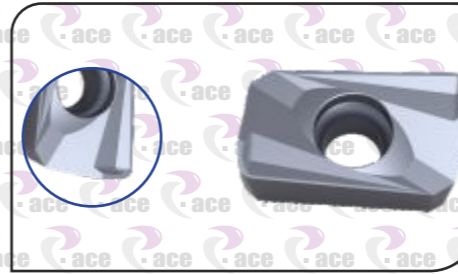
INDEXABLE MILLING

DIE & MOULD SERIES





AP□□



Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		L	I. W	S	Qd	r	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PC01H
	APMT1135PDER-H2	11.21	6.2	3.5	2.8	0.8	★	★	★	●	●	●	●
	APMT1135PDER-M2						●	●	●	●	●	●	
	APMT1604PDER-H2	17.15	9.28	4.76	4.4	0.8	★	★	★	●	●	●	●
	APMT1604PDER-M2						●	●	●	●	●	●	

★ Best Suitable Available ▲ Only On Order ● Generally Available

Plunge Milling

Recommended Cutting Data.

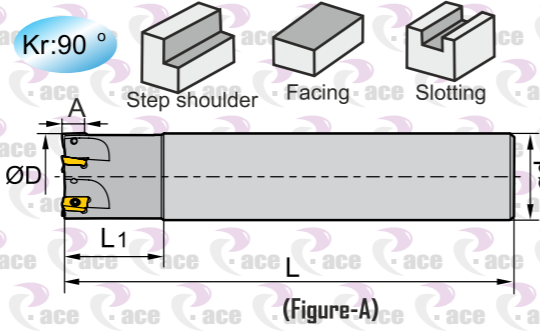
	Workpiece Material	Hardness HB	Grade	Cutting Data.	
				V(m/min)	f(mm/z)
P	Low-carbon steel Soft steel	≤180	PC22G PC25G	180 (150-220)	0.2 (0.08-0.25)
	High-carbon steel Alloy steel	180-280	PC20H PC25H	160 (130-200)	0.15 (0.08-0.2)
	Alloy tool steel	280-350	PC20H PC25H PC60H	140 (120-180)	0.12 (0.05-0.2)
M	Stainless steel	≤270	PC20H PC25H	80 (50-150)	0.08 (0.03-0.15)
K	Cast iron	180-250	PC15C	150 (100-220)	0.15 (0.08-0.2)

Milling

Recommended Cutting Data.

	Workpiece Material	Hardness HB	Grade	Cutting Data.	
				V(m/min)	f(mm/z)
P	Low-carbon steel Soft steel	≤180	PC22G PC25G	190 (140-250)	0.08 (0.04-0.15)
	High-carbon steel Alloy steel	180-280	PC20H PC25H	170 (130-250)	0.08 (0.04-0.15)
	Alloy tool steel	280-350	PC20H PC25H PC60H	150 (110-240)	0.08 (0.04-0.15)
M	Stainless steel	≤270	PC20H PC25H	120 (80-190)	0.08 (0.04-0.15)
K	Cast iron	180-250	PC15C	120 (80-210)	0.08 (0.04-0.15)

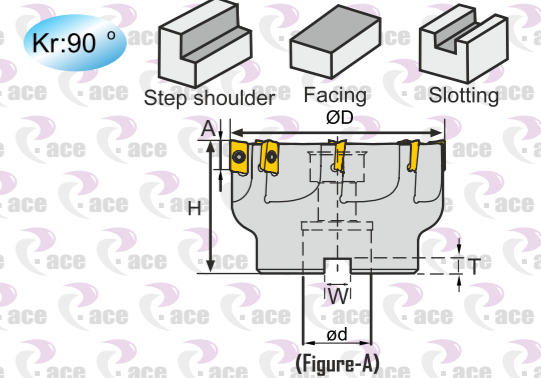
Square Shoulder Milling Cutter



MY-BAP300R & MY-BAP400R SERIES

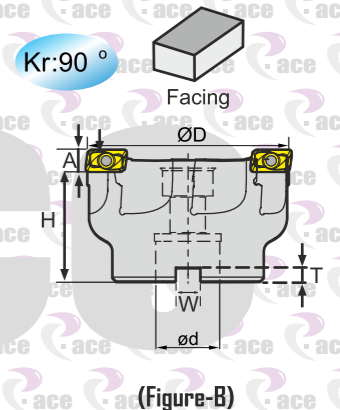
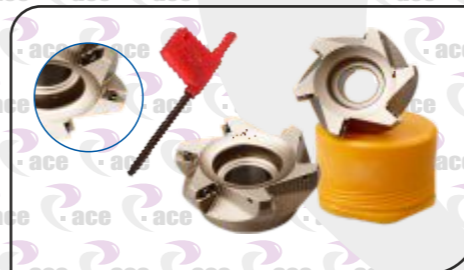
Specification	Teeth	Figure	ØD	Ød	ap	L1	L	Insert	Screw	Wrench
BAP300R-C12-12-130-1T	1	A	12	12	9	30	130	APMT1135PDER	M2.5x5	T8
BAP300R-C15-16-160-2T	2	A	16	15						
BAP300R-C15-16-200-2T	2	A	16	15						
BAP300R-C16-16-160-2T	2	A	16	16						
BAP300R-C16-16-200-2T	2	A	16	16						
BAP300R-C16-16-250-2T	2	A	16	16						
BAP300R-C16-16-300-2T	2	A	16	16						
BAP300R-C19-20-160-2T	2	A	20	19						
BAP300R-C19-20-200-2T	2	A	20	19						
BAP300R-C20-20-160-2T	2	A	20	20						
BAP300R-C20-20-200-2T	2	A	20	20						
BAP300R-C20-20-250-2T	2	A	20	20						
BAP300R-C24-25-160-3T	3	A	25	24						
BAP300R-C24-25-200-3T	3	A	25	24						
BAP300R-C25-25-160-3T	3	A	25	25						
BAP300R-C25-25-200-3T	3	A	25	25						
BAP300R-C25-25-250-3T	3	A	25	25						
BAP300R-C25-25-300-3T	3	A	25	25						
BAP400R-C24-25-160-2T	2	A	25	24	14	50	160	APMT1604PDER	MX4	T15
BAP400R-C24-25-200-2T	2	A	25	24						
BAP400R-C24-25-250-2T	2	A	25	24						
BAP400R-C25-25-160-2T	2	A	25	25						
BAP400R-C25-25-200-2T	2	A	25	25						
BAP400R-C25-25-250-2T	2	A	25	25						
BAP400R-C25-25-300-2T	2	A	25	25						
BAP400R-C25-25-400-2T	2	A	25	25						
BAP400R-C32-32-160-2T	2	A	32	32						
BAP400R-C32-32-200-2T	2	A	32	32						
BAP400R-C32-32-250-2T	2	A	32	32						
BAP400R-C32-32-300-2T	2	A	32	32						
BAP400R-C32-35-200-3T	3	A	35	32						
BAP400R-C32-35-250-3T	3	A	35	32						
BAP400R-C32-35-300-3T	3	A	35	32						
BAP400R-C32-40-200-3T	3	A	40	32						
BAP400R-C32-40-250-3T	3	A	40	32						
BAP400R-C32-40-300-3T	3	A	40	32						

Square Shoulder Milling Cutter



MY-BAP300R & MY-BAP400R SERIES

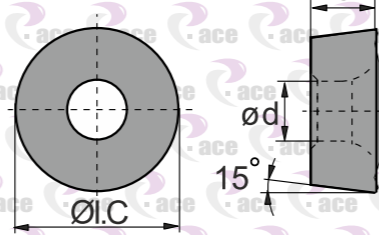
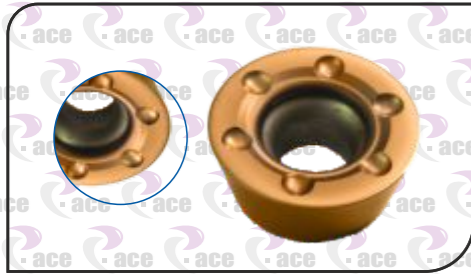
Specification	Teeth	Figure	ØD	Ød	H	W	T	A	Insert	Screw	Wrench
BAP300R-50-22-4T	4	A	50	22	45	10.4	6.3	9	APMT1135PDER	M2.5x6	T8
BAP300R-63-22-4T	4	A	63	22	45	10.4	6.3				
BAP400R-50-22-4T	4	A	50	22	47	10.4	6.3				
BAP400R-63-22-4T	4	A	63	22	47	10.4	6.3				
BAP400R-80-27-5T	5	A	80	27	50	12.4	7				
BAP400R-100-32-6T	6	A	100	32	50	14.4	8				
BAP400R-125-40-7T	7	A	125	40	63	16.4	9				
BAP400R-160-40-8T	8	A	160	40	63	16.4	9				
BAP400R-200-60-10T	10	A	200	60	63	25.7	14				



MY-RAP300R & MY-RAP400R SERIES

Specification	Teeth	Figure	ØD	Ød	H	W	T	A	Insert	Screw	Wrench
RAP300R-50-22-4T	4	B	50	22	45	10.4	6.3	6	APMT1135PDER	M2.5x6	T8
RAP400R-63-22-4T	4	B	63	22	47	10.4	6.3				
RAP400R-80-27-5T	5	B	80	27	50	12.4	7				
RAP400R-100-32-6T	6	B	100	32	50	14.4	8				
RAP400R-125-40-7T	7	B	125	40	63	16.4	9				

RD□□



Shape	Size	Dimension (mm)				PVD Coating					CVD Coating	Cemented Carbide
		L	S	Ød	α°	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
RDHX	RDHX0803-MD	8	3.18	3.4	15	▲	▲	▲				
	RDHX1003-MD	10	3.18	4	15	▲	▲	▲				
	RDHX1203-MD	12	3.97	4.4	15	★	★	★				
	RDHX1605-MD	16	5.56	5.5	15	▲	▲	▲				
RDKW	RDKW0803-MD-BG	8	3.18	3.4	15	▲	▲	▲	●	●	▲	
	RDKW1003-MD-BG	10	3.97	4.4	15	★	★	★	●	●	▲	●
	RDKW1204-MD-BG	12	4.76	4.4	15	★	★	▲	●	●	▲	▲
	RDKW1605-MD-BG	16	5.56	5.5	15	▲	★	▲	▲	▲	▲	
RDKX	RDKX0803-MD-BG	8	3.18	3.4	15	▲	▲		▲	▲		
	RDKX1003-MD-BG	10	3.97	4.4	15	▲	▲		▲	▲		
	RDKX1204-MD-BG	12	4.76	4.4	15	★	★		●	●		
	RDKX1605-MD-BG	16	5.56	5.5	15	▲	▲		▲	▲		
RDMT	RDMT0803-MD	8	3.18	3.4	15	▲	▲		▲	▲		
	RDMT1003-MD	10	3.97	4.4	15	▲	▲		▲	▲		
	RDMT1204-MD	12	4.76	4.4	15	★	★		●	●		
	RDMT1605-MD	16	5.56	5.5	15	▲	▲		▲	▲		

Recommended Cutting Data.

Workpiece Material	Hardness HB	Grade	Cutting Data	
			V (m/min)	f (mm/z)
Low-carbon steel Soft steel	≤180	PC22G PC25G	270 (220-350)	0.2 (0.08-0.45)
		PC20H PC25H	220 (180-300)	0.25 (0.15-0.45)
		PC25H	270 (200-360)	0.2 (0.1-0.45)
High-carbon steel Alloy steel	180-280	PC22G PC25G	240 (200-320)	0.2 (0.08-0.45)
		PC20H PC25H	200 (160-280)	0.25 (0.15-0.45)
		PC60H	240 (180-350)	0.2 (0.1-0.45)
Alloy tool steel	280-350	PC22G PC25G	220 (180-300)	0.2 (0.08-0.45)
		PC20H PC25H	180 (150-250)	0.25 (0.15-0.45)
		PC60H	220 (170-340)	0.2 (0.1-0.45)
Stainless steel	≤270	PC20H PC25H	150 (120-240)	0.2 (0.08-0.45)
		PC20H PC25H	150 (100-220)	0.25 (0.1-0.45)
		PC20H PC25H	160 (110-270)	0.2 (0.1-0.45)
Cast iron	180-250	PC15C	210 (120-300)	0.2 (0.1-0.45)

★ Best Suitable Available ▲ Only On Order ● Generally Available

CASE STUDY FOR MY-EMRW-6R-63-22



Workpiece material - 42CrMo (HRC35)

Cooling system- dry cutting

Machine: vertical machining center

Cutting data

Vc=200m/min

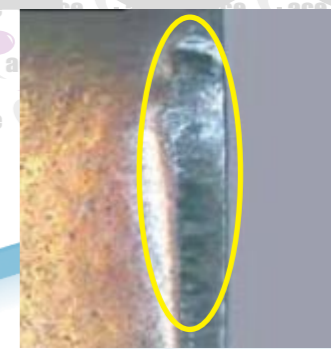
ap=3mm

fz=0.3mm/z

Tool - MY-EMRW-6R-63-22

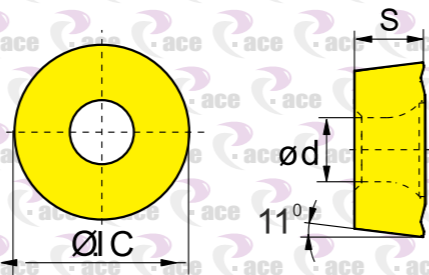
Insert - RDKW1204MO-BG-PC25G

Wear comparison after 90 min



Competitor A

RP□□



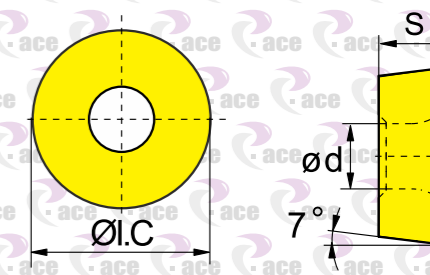
Shape	Size	Dimension (mm)				PVD Coating					CVD Coating	Cemented Carbide
		L	S	Qd	α°	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	RPMW0803-MD	8	3.18	3.4	11	●	▲		▲	▲		
	RPMW10T3-MD	10	3.97	4.4	11	▲	▲		▲	▲		
	RPMW1204-MD	12	4.76	4.4	11	★	★		●	●	▲	
	RPMW1605-MD	16	5.56	5.5	11	▲	▲		▲	▲		
	RPMT0803-MDE-JS	8	3.18	3.4	11	▲	▲		▲	▲		
	RPMT10T3-MDE-JS	10	3.97	4.4	11	▲	▲		▲	▲		
	RPMT1204-MDE-JS	12	4.76	4.4	11	★	★		●	●	▲	
	RPMT1605-MDE-JS	16	5.56	5.5	11	▲	▲		▲	▲		
	RPKT0803-MDE-JS	8	3.18	3.4	11	▲	▲		▲	▲		
	RPKT10T3-MDE-JS	10	3.97	4.4	11	▲	▲		▲	▲		
	RPKT1204-MDE-JS	12	4.76	4.4	11	★	★		▲	▲	▲	
	RPKT1605-MDE-JS	16	5.56	5.5	11	▲	▲		▲	▲		

Recommended Cutting Data.

★ Best Suitable Available ▲ Only On Order ● Generally Available

Workpiece Material	Hardness HB	Grade	Cutting Data		
			V (m/min)	f (mm/z)	
				MD	JS
P Low-carbon steel Soft steel	≤180	PC22G PC25G	270 (220-350)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
		PC20H PC25H	220 (180-300)	0.25 (0.1-0.5)	0.3 (0.2-0.8)
		PC25H	270 (200-360)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
P High-carbon steel Alloy steel	180-280	PC20H PC25H	240 (200-320)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
		PC25H	200 (160-280)	0.25 (0.1-0.5)	0.3 (0.2-0.8)
		PC25H PC60H	240 (180-350)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
P Alloy tool steel	280-350	PC20H PC25H	220 (180-300)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
		PC25H PC60H	180 (150-250)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
		PC20H	220 (170-340)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
M Stainless steel	≤270	PC20H	150 (120-240)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
		PC25H	150 (100-220)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
		PC60H	160 (110-270)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
K Cast iron	180-250	PC15C	210 (120-300)	0.2 (0.1-0.5)	0.3 (0.2-0.8)

RC□□



Shape	Size	Dimension (mm)				PVD Coating					CVD Coating	Cemented Carbide
		L	S	Qd	α°	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	RCGT0803-LHC	8	3.18	3.4	7							▲
	RCGT10T3-LHC	10	3.97	4.4	7							★
	RCGT1204-LHC	12	4.76	4.4	7							★
	RCGT1605-LHC	16	5.56	5.5	7							▲
	RCKT0803	8	3.18	3.4	7	▲	▲		▲	▲		
	RCKT10T3	10	3.97	4.4	7	▲	▲		▲	▲		
	RCKT1204	12	4.76	4.4	7	★	★		▲	▲	▲	
	RCKT1605	16	5.56	5.5	7	▲	▲		▲	▲		

Recommended Cutting Data.

★ Best Suitable Available ▲ Only On Order ● Generally Available

Workpiece Material	Hardness HB	Grade	Cutting Data	
			V (m/min)	f (mm/z)
P Low-carbon steel Soft steel	≤180	PC22G PC25G	270 (220-350)	0.3 (0.2-0.8)
		PC20H PC25H	220 (180-300)	0.3 (0.2-0.8)
		PC25H	270 (200-360)	0.3 (0.2-0.8)
		PC20H PC25H	240 (200-320)	0.3 (0.2-0.8)
		PC25H	200 (160-280)	0.3 (0.2-0.8)
		PC25H	240 (180-350)	0.3 (0.2-0.8)
P High-carbon steel Alloy steel	180-280	PC20H PC25H	220 (180-300)	0.3 (0.2-0.6)
		PC25H	180 (150-250)	0.3 (0.2-0.8)
		PC20H	220 (170-340)	0.3 (0.2-0.6)
M Stainless steel	≤270	PC20H	150 (120-240)	0.3 (0.2-0.6)
		PC25H	150 (100-220)	0.3 (0.2-0.6)
K Cast iron	180-250	PC15C	210 (120-300)	0.3 (0.2-0.8)

Case Study for MY-EMR-5R-C20-25-160



Workpiece material - 42CrMo (HRC35)

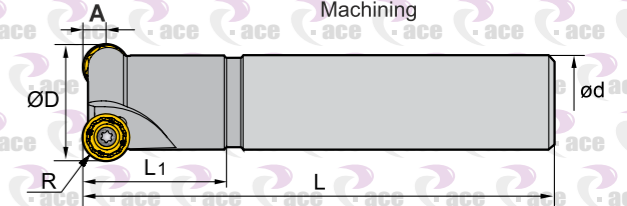
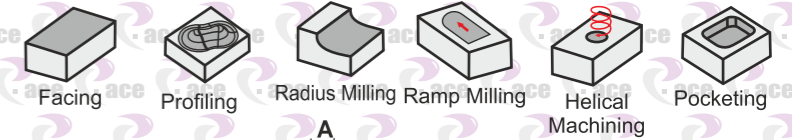
Cooling system: dry cutting

Machine: vertical machining center

Cutting data
 $V_c=200\text{m/min}$
 $a_p=3\text{mm}$
 $f_z=0.2\text{mm/z}$



Face Milling Tools



(Figure-A)

MY-EMR-SERIES

Specification	Teeth	Figure	ØD	ød	A	L1	L	Insert (R)	Screw	Clamp	Wrench
EMR-C12-4R-12-130-1T	1	A	12	12	4	30	130	RPMT0803MD	M3x6 M3x8	MY-R4	T10
EMR-C15-4R-16-150-2T	2	A	16	15	4	40	150				
EMR-C15-4R-16-200-2T	2	A	16	15	4	40	200				
EMR-C16-4R-16-150-2T	2	A	16	16	4	40	150				
EMR-C16-4R-16-200-2T	2	A	16	16	4	40	200				
EMR-C19-4R-20-150-2T	2	A	20	19	4	40	150				
EMR-C19-4R-20-200-2T	2	A	20	19	4	60	200				
EMR-C20-4R-20-150-2T	2	A	20	20	4	40	150				
EMR-C20-4R-20-200-2T	2	A	20	20	4	60	200				
EMR-C19-5R-20-150-2T	2	A	20	19	5	40	150				
EMR-C19-5R-20-200-2T	2	A	20	19	5	60	200				
EMR-C20-5R-20-150-2T	2	A	20	20	5	40	150				
EMR-C20-5R-20-200-2T	2	A	20	20	5	60	200				
EMR-C20-5R-25-150-2T	2	A	25	20	5	60	150	RPMT10T3MD RDKWIOT3MD RDMT10T3MD	M4x8 M4x9	MY-R5	T15
EMR-C20-5R-25-200-2T	2	A	25	20	5	60	200				
EMR-C25-5R-25-150-2T	2	A	25	25	5	60	150				
EMR-C25-5R-25-200-2T	2	A	25	25	5	70	200				
EMR-C25-5R-25-250-2T	2	A	25	25	5	80	250				
EMR-C32-5R-35-150-3T	3	A	35	32	5	50	150	RPMT1204MD RDKWI204MD RDMT1204MD	M4x9 M4x10	MY-R6	T15
EMR-C32-5R-35-200-3T	3	A	35	32	5	60	200				
EMR-C32-5R-35-250-3T	3	A	35	32	5	70	250				
EMR-C32-6R-32-150-2T	2	A	32	32	6	50	150				
EMR-C32-6R-32-200-2T	2	A	32	32	6	60	200				
EMR-C32-6R-32-250-2T	2	A	32	32	6	70	250				
EMR-C32-6R-32-300-2T	2	A	32	32	6	80	300				
EMR-C32-6R-35-150-3T	3	A	35	32	6	50	150				
EMR-C32-6R-35-200-3T	3	A	35	32	6	60	200				
EMR-C32-6R-35-250-3T	3	A	35	32	6	70	250				
EMR-C32-6R-35-300-3T	3	A	35	32	6	70	300				
EMR-C32-6R-35-350-3T	3	A	35	32	6	70	350				

Tool-MY EMR-C20-25-160

Insert RDKWIOT3MD-PC25G

Wear comparison of insert



Competitor A

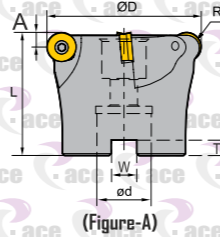


22 minutes later



22 minutes later

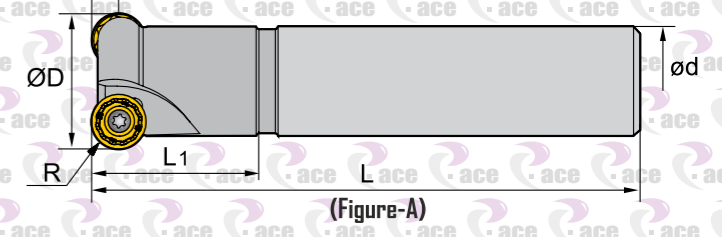
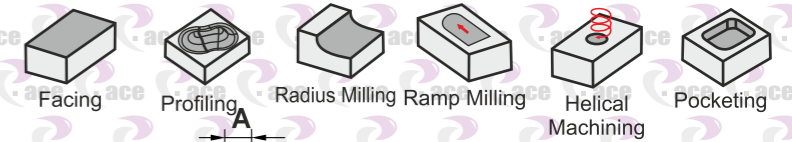
Face Milling Tools



MY-EMRW-SERIES

Specification	Teeth	Figure	øD	ød	H	W	T	A	Insert (R)	Screw	Clamp	Wrench			
EMRW-5R-50-22-4T	4	A	50	22	42	10.4	6.3	5	RPMT10T3MO	MY-R5	M4x8	T15			
EMRW-6R-50-22-4T	4	A	50	22	47	10.4	6.3	6	RPMT12D4MO RDKW12D4MO RDMT12D4MO	MY-R6	M4x9 M4x10				
EMRW-6R-63-22-4T	4	A	63	22	47	10.4	6.3	6							
EMRW-6R-80-27-6T	6	A	80	27	50	12.4	7	6							
EMRW-6R-100-32-6T	6	A	100	32	50	12.4	8	6							
EMRW-6R-125-40-7T	7	A	125	40	63	16.4	9	6							
EMRW-6R-160-40-8T	8	A	160	40	63	16.4	9	6							
EMRW-6R-200-60-10T	10	A	200	60	63	25.7	14	6							
EMRW-8R-63-22-4T	4	A	63	22	47	10.4	6.3	6					RPMT16D5MO RDKW16D5MO	MY-R8	M5x12
EMRW-8R-80-27-6T	6	A	80	27	50	12.4	7	8							
EMRW-8R-100-32-6T	6	A	100	32	50	12.4	8	8							
EMRW-8R-125-40-6T	6	A	125	40	63	16.4	9	8							

Face Milling Tools

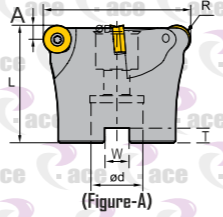
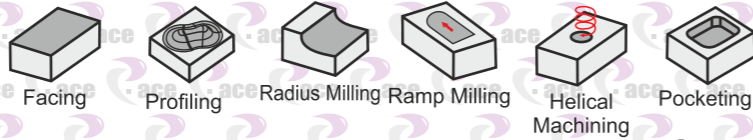


MY-TRS-SERIES

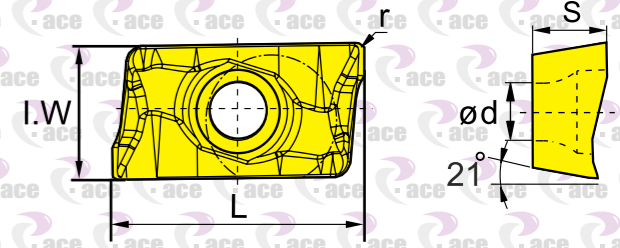
Specification	Teeth	Figure	øD	ød	A	L1	L	Insert (R)	Screw	Clamp	Wrench
TRS-C12-4R-12-130-1T	1	A	12	12	4	30	130	RPMT08T2MO	M3x6 M3x8	MY-R4	T10
TRS-C15-4R-16-150-2T	2	A	16	15	4	40	150				
TRS-C15-4R-16-200-2T	2	A	16	15	4	40	200				
TRS-C16-4R-16-150-2T	2	A	16	16	4	40	150				
TRS-C16-4R-16-200-2T	2	A	16	16	4	40	200				
TRS-C19-4R-20-150-2T	2	A	20	19	4	40	150				
TRS-C19-4R-20-200-2T	2	A	20	19	4	60	200				
TRS-C20-4R-20-150-2T	2	A	20	20	4	40	150				
TRS-C20-4R-20-200-2T	2	A	20	20	4	60	200				
TRS-C19-5R-20-150-2T	2	A	20	19	5	40	150				
TRS-C19-5R-20-200-2T	2	A	20	19	5	60	200				
TRS-C20-5R-20-150-2T	2	A	20	20	5	40	150				
TRS-C20-5R-20-200-2T	2	A	20	20	5	60	200				
TRS-C20-5R-25-150-2T	2	A	25	20	5	60	150				
TRS-C20-5R-25-200-2T	2	A	25	20	5	60	200				
TRS-C25-5R-25-150-2T	2	A	25	25	5	60	150				
TRS-C25-5R-25-200-2T	2	A	25	25	5	70	200				
TRS-C25-5R-25-250-2T	2	A	25	25	5	80	250				
TRS-C32-5R-35-150-3T	3	A	35	32	5	50	150	RDHX12T3MO RDKW12T3MO RPMW12T3MO	M4x9 M4x10	MY-R6	
TRS-C32-5R-35-200-3T	3	A	35	32	5	60	200				
TRS-C32-5R-35-250-3T	3	A	35	32	5	70	250				
TRS-C32-6R-32-150-2T	2	A	32	32	6	50	150				
TRS-C32-6R-32-200-2T	2	A	32	32	6	60	200				
TRS-C32-6R-32-250-2T	2	A	32	32	6	70	250				
TRS-C32-6R-32-300-2T	2	A	32	32	6	80	300				
TRS-C32-6R-35-150-3T	3	A	35	32	6	50	150				
TRS-C32-6R-35-200-3T	3	A	35	32	6	60	200				
TRS-C32-6R-35-250-3T	3	A	35	32	6	70	250				
TRS-C32-6R-35-300-3T	3	A	35	32	6	70	300				
TRS-C32-6R-35-350-3T	3	A	35	32	6	70	350				

ace

Face Milling Tools



R3 □ □



MY-TRS-SERIES

Specification	Teeth	Figure	∅D	∅d	H	W	T	A	Insert (R)	Screw	Clamp	Wrench
TRS-5R-50-22-4T	4	A	50	22	42	10.4	6.3	5	RDHX10Q3MO	MY-R5	M4x8	T15
TRS-6R-50-22-4T	4	A	50	22	47	10.4	6.3	6				
TRS-6R-63-22-4T	4	A	63	22	47	10.4	6.3	6				
TRS-6R-80-27-6T	6	A	80	27	50	12.4	7	6	RDHX12T3MO RDKW12T3MO RPMW12T3MO	MY-R6	M4x9 M4x10	T15
TRS-6R-100-32-6T	6	A	100	32	50	12.4	8	6				
TRS-6R-125-40-7T	7	A	125	40	63	16.4	9	6				
TRS-6R-160-40-8T	8	A	160	40	63	16.4	9	6	RPMT1606MO RDKW1606MO	MY-R8	M5x12	T20
TRS-6R-200-60-10T	10	A	200	60	63	25.7	14	6				
TRS-8R-63-22-4T	4	A	63	22	47	10.4	6.3	6				
TRS-8R-80-27-6T	5	A	80	27	50	12.4	7	8				
TRS-8R-100-32-6T	6	A	100	32	50	12.4	8	8				
TRS-8R-125-40-6T	6	A	125	40	63	16.4	9	8				

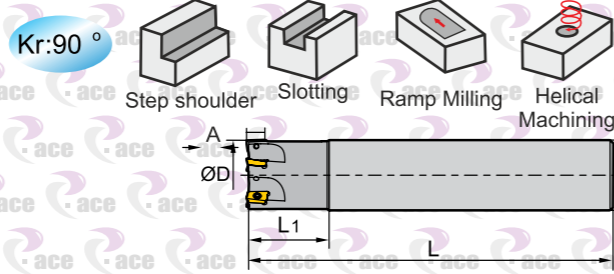
Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		L	I.W	S	Qd	r	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PC01H
	R390-11T308-PM	11.72	6.9	3.58	2.8	0.8	★			▲	▲	▲	
	R390-170408-PM	17.82	9.6	4.76	4.12	0.8	▲		▲	▲	▲		

★ Best Suitable Available ▲ Only On Order ● Generally Available

Recommended Cutting Data.

Workpiece Material	Hardness HB	Grade	Cutting Data		
			V (m/min)	f (mm/z)	
				PM	
P Low-carbon steel Soft steel	≤180	PC22G PC25G	270 (220-350)	0.2 (0.1-0.3)	
		PC20H	220 (180-300)	0.2 (0.1-0.3)	
			270 (200-360)	0.2 (0.1-0.3)	
	High-carbon steel Alloy steel	180-280	PC20H	240 (200-320)	0.2 (0.1-0.3)
				200 (160-280)	0.2 (0.1-0.3)
				240 (180-350)	0.2 (0.1-0.3)
Alloy tool steel	280-350	PC20H	220 (180-300)	0.2 (0.1-0.3)	
			180 (150-250)	0.2 (0.1-0.3)	
			220 (170-340)	0.2 (0.1-0.3)	
M Stainless steel	≤270	PC20H	150 (120-240)	0.2 (0.1-0.3)	
			150 (100-220)	0.2 (0.1-0.3)	
			160 (110-270)	0.2 (0.1-0.3)	
K Cast iron	180-250	PC15C	210 (120-300)	0.2 (0.1-0.3)	

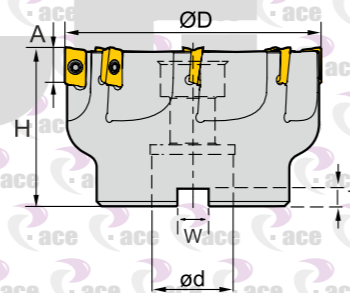
Square Shoulder Milling



(Figure-A)

MY-R390-SERIES

Specification	Teeth	Figure	ØD	Ød	A	L1	L	Insert	Screw	Wrench
R390-11-C15-16-150-2T	2	A	16	15	10	25	150	R390-11T308	M2.5x6	T8
R390-11-C15-16-200-2T	2	A	16	15			200			
R390-11-C16-16-150-2T	2	A	16	16			150			
R390-11-C16-16-200-2T	2	A	16	16			200			
R390-11-C19-20-150-2T	2	A	20	19			150			
R390-11-C19-20-200-2T	2	A	20	19			200			
R390-11-C20-20-150-2T	2	A	20	20			150			
R390-11-C20-20-200-2T	2	A	20	20	200					
R390-17-C24-25-150-2T	2	A	25	24	17	50	R390-170408	M4x11	T15	
R390-17-C24-25-200-2T	2	A	25	24		60				
R390-17-C25-25-150-2T	2	A	25	25		50				
R390-17-C25-25-200-2T	2	A	25	25		60				
R390-17-C32-32-150-2T	2	A	32	32		50				
R390-17-C32-32-200-2T	2	A	32	32		60				

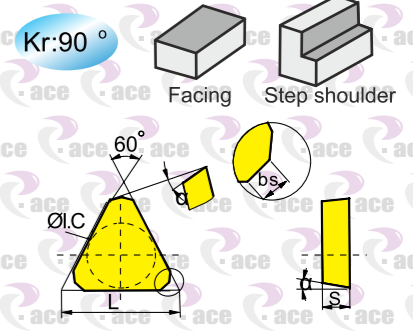
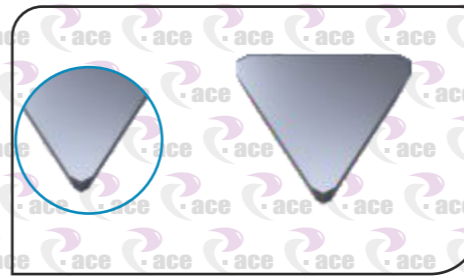


(Figure-B)

MY-R390-SERIES

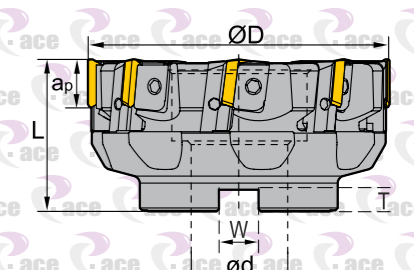
Specification	Teeth	Figure	ØD	Ød	H	W	T	A	Insert	Screw	Wrench
R390-11-50-22-6T	6	B	50	22	40	10.4	6.3	11	R390-11T308	M2.5x7	T8
R390-11-63-22-7T	7	B	63	22	40	10.4	6.3				
R390-17-50-22-5T	5	B	50	22	40	10.4	6.3	17	R390-170408	M4x11	T15
R390-17-63-22-6T	6	B	63	22	40	10.4	6.3				
R390-17-80-27-7T	7	B	80	27	50	12.4	7				

TP



Shape	Size	Dimension (mm)					PVD Coating				CVD Coating	Cemented Carbide	
		L	I. W	S	bs	α°	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
▽	TPKNIG03PDR/L	16	9.525	3.18	1.2	11		▲		●	●		
	TPKN2204PDR/L	22	12.7	4.76	1.4	11		▲		●	●		

★ Best Suitable Available ▲ Only On Order ● Generally Available



(Figure-A)

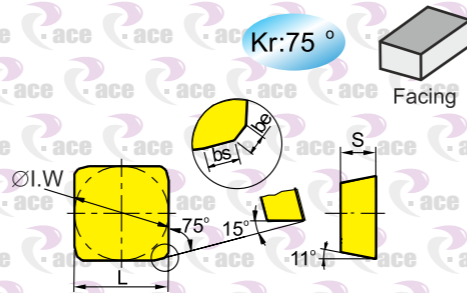
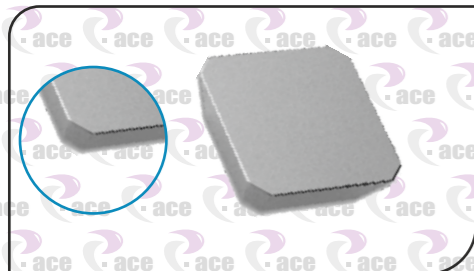
MY-TP SERIES

Specification	Teeth	Figure	ØD	Ød	H	W	T	apmax	Insert	Clamp	Screw	Wrench
TP16-50-22-3T	3	A	50	22	50	10.4	6.3	13	TPKNIG03	MY-1604	M6	M6T
TP22-63-22-3T	3	A	63	22	50	10.4	6.3	18	TPKN2204	MY-2204	M8	M8T
TP22-80-27-4T	4	A	80	27	50	12.4	7					
TP22-100-32-4T	4	A	100	32	63	14.4	8					
TP22-125-40-6T	6	A	125	40	63	16.4	9					
TP22-160-40-6T	6	A	160	40	63	16.4	9					
TP22-200-60-8T	8	A	200	60	47	25.7	14					

Recommended Cutting Data.

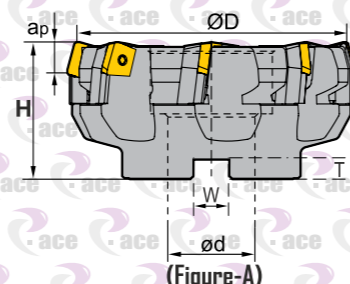
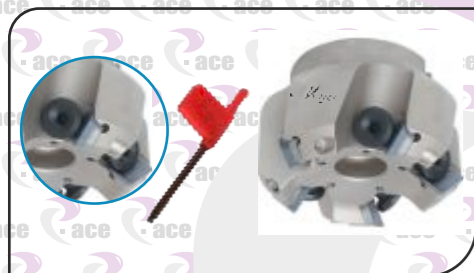
Workpiece Material	Hardness HB	Grade	Cutting Data	
			V (m/min)	f (mm/z)
P	Low-carbon steel Soft steel	PC25G PC22G	270(200-360)	0.2 (0.1-0.4)
		PC25H	230 (170-350)	0.24 (0.1-0.3)
	High-carbon steel Alloy steel	PC25G PC22G	240 (200-320)	0.2 (0.1-0.4)
		PC25H	200 (160-280)	0.25 (0.15-0.3)
Alloy tool steel	280-350	PC25G PC22G	220 (170-340)	0.2 (0.1-0.3)
		PC25H	190 (130-300)	0.24 (0.1-0.3)
M	Stainless steel	PC25G PC22G	160 (110-270)	0.22 (0.1-0.3)
		PC25H	140 (100-250)	0.2 (0.1-0.3)

SP□□



Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		L	ØI.W	S	be	bs	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
SPKNI203EDER/L	SPKNI203EDER/L	12.7	12.7	3.18	1	1.4		★		●	●		
	SPKNI504EDER/L	15.875	15.875	4.76	1	1.4		▲		●	●		

★ Best Suitable Available ▲ Only On Order ● Generally Available



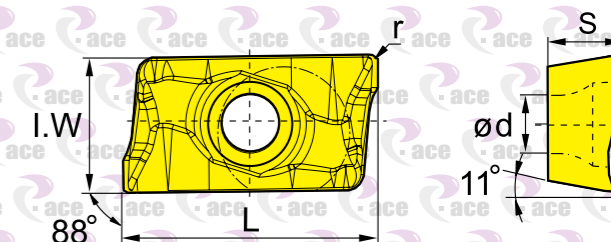
(Figure-A)

Specification	Teeth	Figure	ØD	ød	H	W	T	apmax	Insert	Clamp	Screw	Wrench
SPKNI203-80-27-4T	4	A	80	27	50	12.4	7	6	SPKNI203	MY-1203	M6	M6T
SPKNI203-100-32-6T	6	A	100	32	63	14.4	8	6				
SPKNI203-125-40-8T	8	A	125	40	63	16.4	9	6				
SPKNI504-80-27-4T	4	A	80	27	50	12.4	7	8	SPKNI504	MY-1504	M8	M8T
SPKNI504-100-32-6T	6	A	100	32	63	14.4	8	8				
SPKNI504-125-40-8T	8	A	125	40	63	16.4	9	8				
SPKNI504-160-40-10T	10	A	160	40	63	16.4	9	8				
SPKNI504-200-60-12T	12	A	200	60	63	25.7	14	8				

Recommended Cutting Data.

Workpiece Material	Hardness HB	Grade	Cutting Data	
			V (m/min)	f (mm/z)
P	low-carbon steel soft steel	PC25G PC22G	270(200-360)	0.2 (0.1-0.4)
		PC25H	230 (170-350)	0.24 (0.1-0.3)
	High-carbon steel Alloy steel	PC25G PC22G	240 (200-320)	0.2 (0.1-0.4)
		PC25H	200 (160-280)	0.25 (0.15-0.3)
	Alloy tool steel	PC25G PC22G	220 (170-340)	0.2 (0.1-0.3)
		PC25H	190 (130-300)	0.24 (0.1-0.3)
M	Stainless steel	PC25G PC22G	160 (110-270)	0.22 (0.1-0.3)
		PC25H	140 (100-250)	0.2 (0.1-0.3)

AP□□



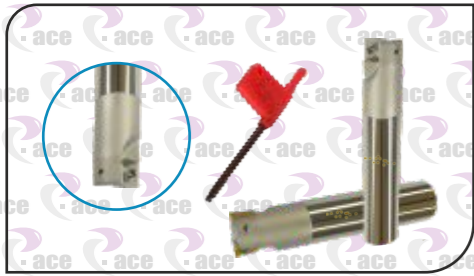
Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		L	I.W	S	Ød	r	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
APKTIIT304-ZM	APKTIIT304-ZM	12.24	6.5	3.6	2.8	0.4	★	▲		●		●	
	APKTIIT304-PM						★	▲	▲	●		●	
	APKTIIT304-LH												
APKTIIT308-ZM	APKTIIT304-GM	12.24	6.5	3.6	2.8	0.8		▲					
	APKTIIT308-GM							★					
	APKTIIT308-ZM						★	★		●		●	
	APKTIIT308-PM						★	▲	▲	●		●	★
	APKTIIT308-LH												
APKTI160408-ZM	APKTI160408-ZM	17.877	9.33	5.76	4.4	0.8	★	▲		●		●	
	APKTI160408-PM						★	▲		●		●	
	APKTI160408-LH												

★ Best Suitable Available ▲ Only On Order ● Generally Available

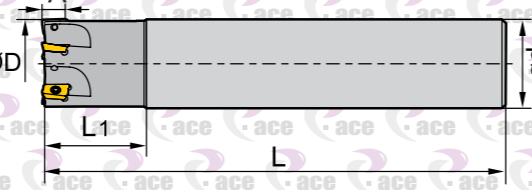
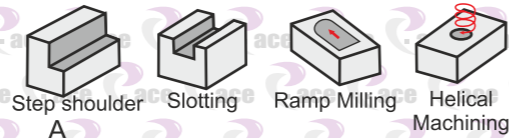
Recommended Cutting Data.

Workpiece Material	Hardness HB	Grade	Cutting Data	
			V (m/min)	f (mm/z)
P	low-carbon steel soft steel	PC22G PC25G	190 (140-250)	0.08 (0.04-0.15)
		PC20H PC25H	170 (130-250)	0.08 (0.04-0.15)
	Alloy tool steel	PC20H PC25H PC60H	150 (110-240)	0.08 (0.04-0.15)
M	Stainless steel	PC20H PC25H	120 (80-190)	0.08 (0.04-0.15)
K	Cast iron	PC15C	120 (80-210)	0.08 (0.04-0.15)

SQUARE SHOULDER MILLING



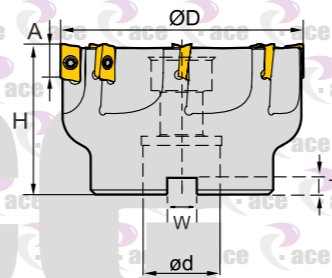
Kr:90°



(Figure-A)

MY-APKT SERIES

Specification	Teeth	Figure	ØD	d	A	L1	L	Insert	Screw	Wrench
APKT11-C16-12-120-1T	1	A	12	16	10.5	125	120	APKT11T3	M2.5x6	T8
APKT11-C16-16-120-2T	2	A	16	16		25	120			
APKT11-C20-20-150-2T	2	A	20	20		30	150			
APKT11-C25-25-150-3T	3	A	25	25	15.5	30	150	APKT1604	M4x8	T15
APKT11-C32-32-150-3T	3	A	32	32		40	150			
APKT16-C25-25-150-2T	2	A	25	25		35	150			
APKT16-C32-32-150-2T	2	A	32	32	40	150				
APKT16-C32-40-150-2T	2	A	40	32	45	150				

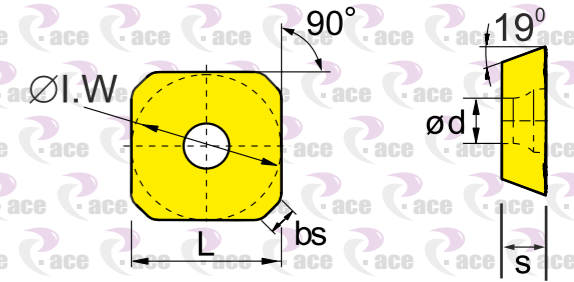
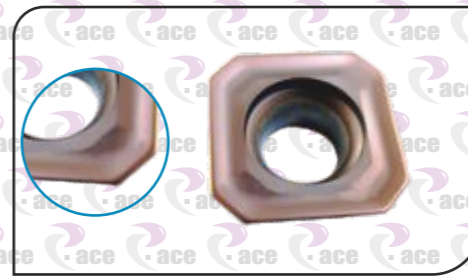


(Figure-B)

MY-APKT SERIES

Specification	Teeth	Figure	ØD	d	H	W	T	A	Insert	Screw	Wrench
APKT11-50-22-6T	6	B	50	22	40	10.4	6.3	10.5	APKT11T3	M2.5x6	T8
APKT11-63-22-8T	8	B	63	22	40	10.4	6.3	10.5			
APKT16-50-22-5T	5	B	50	22	40	10.4	6.3	15	APKT1604	M4x10	T15
APKT16-63-22-6T	6	B	63	22	40	10.4	6.3	15			
APKT16-80-27-7T	7	B	80	27	50	12.4	7	15			
APKT16-100-32-8T	8	B	100	32	50	14.4	8	15	APKT1705	M4x10	T15
APKT1705-50-22-5T	5	B	50	22	40	10.4	6.3	15.5			
APKT1705-63-22-6T	6	B	63	22	40	10.4	6.3	15.5			
APKT1705-80-27-7T	7	B	80	27	50	12.4	7	15.5			
APKT1705-100-32-8T	8	B	100	32	50	14.4	8	15.5			
APKT1705-125-40-9T	9	B	125	40	63	16.4	9	15.5			

SE□□



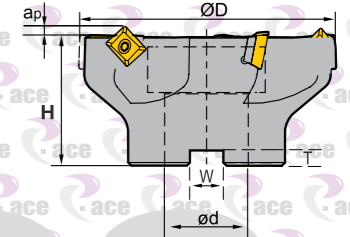
Shape	Size	Dimension (mm)					PVD Coating				CVD Coating	Cemented Carbide	
		L	I.W	S	Qd	α°	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PC01H
	SEHT1204-AFSN	12.7	12.7	4.76	4.4	1.9	▲	★		●			
	SEHT1204-AK												

★ Best Suitable Available ▲ Only On Order ● Generally Available

Square Shoulder Milling



Kr:45°



(Figure-A)

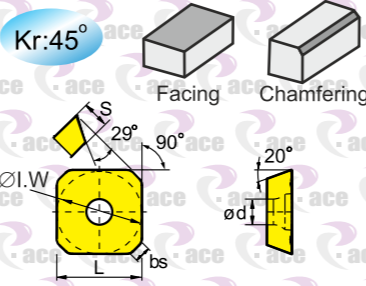
MY-KM12 SERIES

Specification	Teeth	Figure	ØD	ød	H	W	T	apmax	Insert	Screw	Wrench
KM12-50-22-4T	4	A	50	22	47	10.4	6.3	6	SEKT1204 SEHT1204	M5x12	T20
KM12-63-22-4T	4	A	63	22	47	10.4	6.3	6			
KM12-80-27-5T	5	A	80	27	50	12.4	7	6			
KM12-100-32-5T	5	A	100	32	50	14.4	8	6			
KM12-125-40-6T	6	A	125	40	50	16.4	9	6			
KM12-160-40-6T	6	A	160	40	63	16.4	9	6			
KM12-200-60-8T	8	A	200	60	63	25.7	14	6			

Recommended Cutting Data.

Workpiece Material	Hardness HB	Grade	V (m/min)	Cutting Data
				AFSN
P	Low-carbon steel soft steel	PC25G PC25G	270(220-350)	0.15(0.1-0.2)
			270(200-360)	0.15(0.1-0.2)
			230(170-350)	0.15(0.1-0.2)
	High-carbon steel Alloy steel	PC20H PC25H	240(200-320)	0.15(0.1-0.2)
			240(180-350)	0.15(0.1-0.2)
			220(150-330)	0.15(0.1-0.2)
Alloy tool steel	PC20H PC25H	220(180-300)	0.1(0.1-0.2)	
		220(170-340)	0.1(0.1-0.2)	
		190(130-300)	0.15(0.1-0.2)	
M	Stainless steel	PC20H PC25H	150(120-240)	0.1(0.1-0.2)
			160(110-270)	0.1(0.1-0.2)
			140(100-250)	0.15(0.1-0.2)
N	Al alloy	PC01H	300-	-

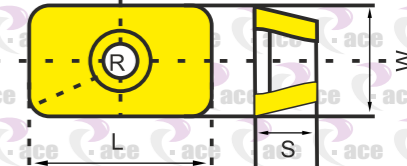
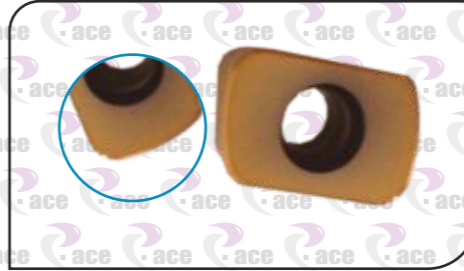
SE□□



Shape	Size	Dimension (mm)					PVD Coating					CVD Coating	Cemented Carbide
		L	I.W	S	Ød	r	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	SEET12T308-PER-FM	13.3	13.3	4.04	4.1	0.8	★	★		▲			
	SEET12T308-PER-PM						▲	▲		▲			

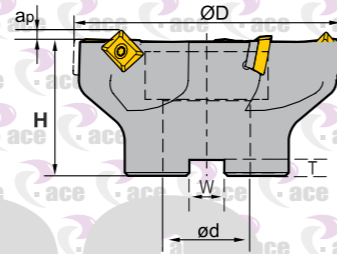
★ Best Suitable Available ▲ Only On Order ● Generally Available

EP□□



Shape	Size	Dimension (mm)				PVD Coating					CVD Coating	Cemented Carbide
		W	L	S	r	PC20H	PC25H	PC60H	PC25G	PC22G	PC15C	PCDIH
	EPNW0603TN-8	6.35	10	3.18	8		▲		●			
	EPMT0603TN-8	6.35	10	3.18	8		▲		▲			

★ Best Suitable Available ▲ Only On Order ● Generally Available



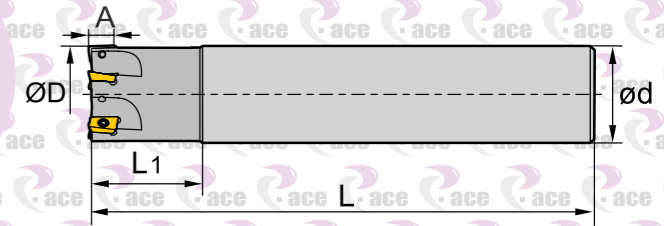
(Figure-A)

MY-SEET SERIES

Specification	Teeth	Figure	ØD	ød	H	W	T	apmax	Insert	Screw	Wrench
MY-SEET12-50-22-3T	3	A	50	22	47	10.4	6.3	10	SEET12T308-PER-FM SEET12T308-PER-PM	M5x12	T20
MY-SEET12-63-22-4T	4	A	63	22	47	10.4	6.3	10			
MY-SEET12-80-27-4T	4	A	80	27	50	12.4	7	10			
MY-SEET12-100-32-5T	5	A	100	32	50	14.4	8	10			
MY-SEET12-125-40-6T	6	A	125	40	50	16.4	9	10			
MY-SEET12-160-40-8T	8	A	160	40	63	16.4	9	10			
MY-SEET12-200-60-10T	10	A	200	60	63	25.7	14	10			



MY-ASR SERIES

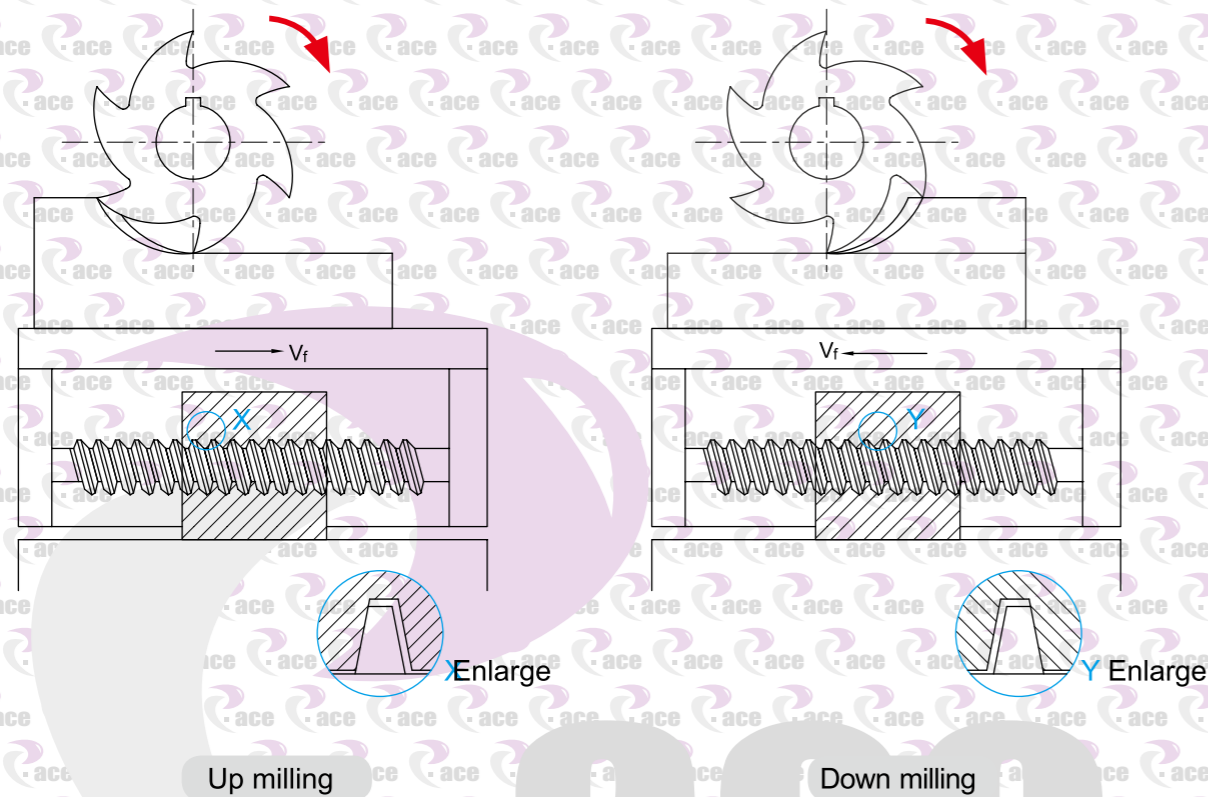


(Figure-A)

Specification	Teeth	Figure	ØD	d	L1	L	Insert	Screw	Wrench
ASR-C16-16-120-2T	2	A	16	16	25	120	EPNW0603	M2.5x6	T8
ASR-C16-16-150-2T	2	A	16	16	30	150			
ASR-C16-16-200-2T	2	A	16	16	40	200			
ASR-C20-20-120-3T	3	A	20	20	25	120			
ASR-C20-20-150-3T	3	A	20	20	30	150			
ASR-C20-20-200-3T	3	A	20	20	40	200			
ASR-C25-25-150-3T	3	A	25	25	30	150			
ASR-C25-25-200-3T	3	A	25	25	40	200			
ASR-C25-25-250-3T	3	A	25	25	50	250			
ASR-C32-32-150-4T	4	A	32	32	30	150			
ASR-C32-32-200-4T	4	A	32	32	40	200			
ASR-C32-32-250-4T	4	A	32	32	50	250			

Technical information

Difference and selection between down milling and up milling



Down milling: the feed direction of workpiece is the same as that of the milling rotation at the connecting position.

Up milling: the feed direction of workpiece is opposite to the milling rotation at the connecting position.

In down milling, the major force of cutting edge is compressive stress; in up milling, cutting edge bears the tensile stress. The compressive strength of cemented carbide material is larger than its tensile strength. In down milling, chip becomes thin from thick gradually, cutting edge and workpiece press each other. The friction between edge and workpiece is small, thus can reduce the abrasion of edge, the hardening of workpiece surface and the surface roughness (Ra). In up milling, chip becomes thin gradually. When insert cutting into the workpiece, it generates strong friction and more heat than down milling, and make workpiece surface harden.

In up milling, because horizontal direction of cutting force that milling cutter conduction on workpiece is opposite to the feed direction of workpiece, therefore the lead screw of work table joints closely with one side of screw nut. In down milling, the direction of cutting force is same as the feed direction. When edge's radial force on workpiece is big enough to some extent, the work table will bounce left and right, thus make the gap fall behind. The gap will return to front side along with the continuing rotation of lead screw. At this moment the work table stops motion, however it will bounce left and right again when the radial cutting force is big enough to some extent again. The periodical bounce of work table will cause poor surface quality of workpiece and tool breakage.

When use end mills for down milling, every time the edges begin the cutting at workpiece surface, therefore end mills are not suitable for machining the workpiece with the hardened surface.

Up milling is recommended for milling the thin-wall components or square milling with the demand of high precision.

Technical information

Pitch Selection

Pitch is the distance between one point on one cutting edge and the same point on the next edge. Milling cutters are mainly classified into coarse, close and extra close pitches.

Stability of operation		
L (Low)	M (Medium)	H (High)
Coarse pitch	Close pitch	Extra close pitch
When the milling width is equal to diameter of cutter, the machining system is stable and main power of machine is sufficient, selecting coarse pitch can achieve high productive efficiency.	General milling function and multiple mixed productions	When the milling width is less than diameter of cutter, cutting by maximum edges can achieve high productive efficiency.

Approach Angle Selection

The approach angle is composed by insert and tool body, chip thickness, cutting forces and tool-life are affected especially by the approach thickness and spreads the cutting area between cutting edge and workpiece for a given feed rate.

A smaller approach angle also guarantee that it is stable entering into or exiting workpiece, to protect the cutting edge and extend tool life.

However this will increase higher axial cutting forces on the workpiece, thus is not suitable for machining thin workpiece such as thin plate.

Approach Angle	Feed Rate Per Tooth	Maximum Cutting Depth
90°	f_z	$h_{ex} = f_z \times \sin \alpha$
75°	f_z	$h_{ex} = 0.96 \times f_z$
60°	f_z	$h_{ex} = 0.86 \times f_z$
45°	f_z	$h_{ex} = 0.707 \times f_z$
Round insert	f_z	$h_{ex} = \frac{\sqrt{i C^2 \times (i C - 2 a_p)^2}}{i C} \times f_z$

Technical information

- V_c : Cutting speed(m/min) V_f : Feed rate of worktable(feed speed)(mm/min) D_c : Nominal diameter of milling tool(mm)
- f_z : Feed rate per tooth(mm/z) n : Spindle speed(rev/min)
- π : Circumference ratio ≈ 3.14
- Z_n : Tooth NO. T_c : Machining time (min)
- Q : Metal removal rate(cm³/min)
- f_z : Feed rate per revolution(mm/rev) L : Real cutting distance(mm)

● Cutting speed

$$V_c = \frac{\pi \times D_c \times n}{1000} \text{ (m/min)}$$

● Spindle speed

$$n = \frac{1000 \times V_c}{\pi \times D_c} \text{ (rev/min)}$$

● Feed rate of worktable(feed speed)

$$V_f = f_z \times n \times Z_n \text{ (mm/min)}$$

● Feed rate per tooth

$$f_z = \frac{V_f}{n \times Z_n} \text{ (mm/z)}$$

● Feed rate per revolution

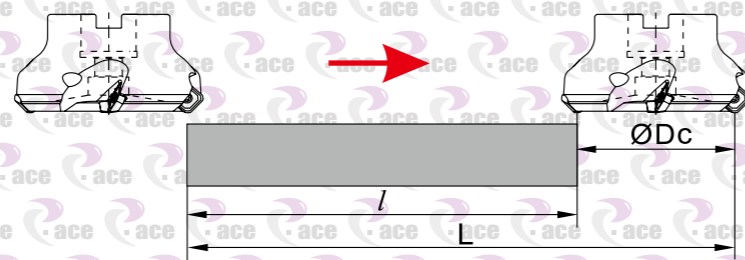
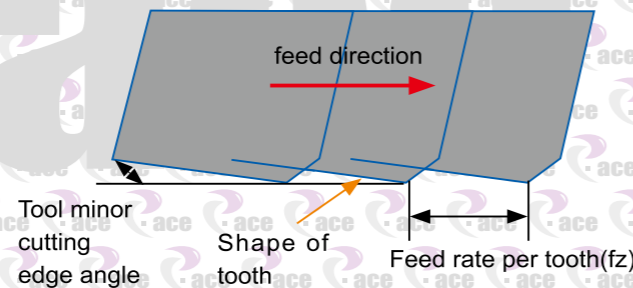
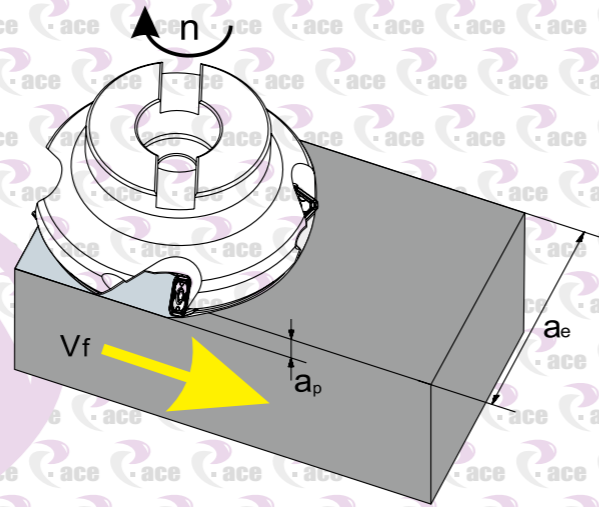
$$f_n = \frac{V_f}{n} \text{ (mm/rev)}$$

● Machining time

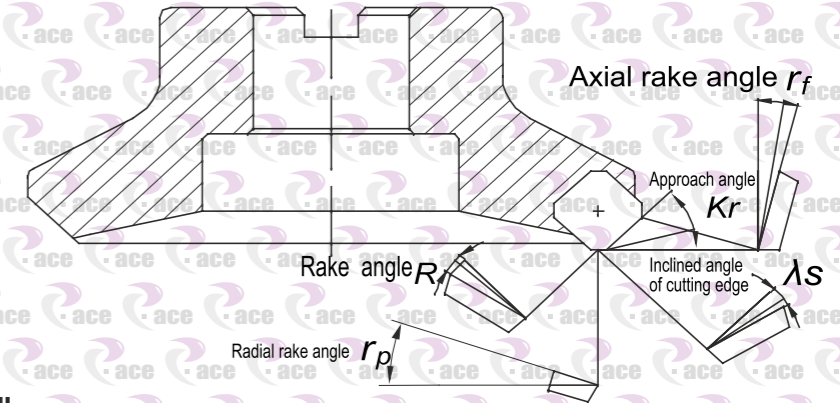
$$T_c = \frac{L}{V_f} \text{ (min)}$$

● Metal removal rate

$$Q = \frac{a_p \times a_e \times V_f}{1000} \text{ (cm}^3\text{/min)}$$



Function Of Each Part In Face Milling



Main angles of face mills

■ Main angles of face mills

Name	Function	Effect
Axial rake angle r_r	Determining the chip direction	Negative angle: good chip removal performance
Radial rake angle r_p	Determining whether the cutting is light and fast or not	Positive angle: good chip removal performance
Approach angle K_r	Determining the chip direction	$K_r \uparrow$, chip thickness \uparrow ; $K_r \downarrow$, chip thickness \downarrow ;
Rake angle R	Determining whether the cutting is light and fast or not	Poor cutting performance, high strength of cutting edge (-) $\leftarrow 0 \rightarrow$ (+) Good cutting performance, low strength of cutting edge
Inclined angle of cutting edge λ_s	Determining the chip direction	Poor cutting performance, high strength of cutting edge (-) $\leftarrow 0 \rightarrow$ (+) Good cutting performance, low strength of cutting edge

■ Characteristics of different rake angles combined

		Double Positive	Double Negative	Positive, One Negative
Negative Rake Angle				
0° rake Angle				
Positive rake angle				
	Axial rake angle r_f	+	-	-
	Radial rake angle	+	-	-
Applicable Material Machined	P	√		√
	M	√		√
	K		√	√
	N	√		√
	S	√		√

MILLING

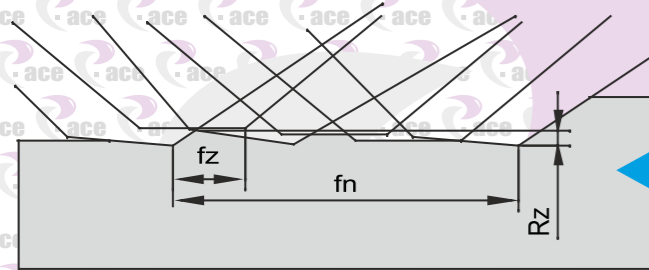
INDEXABLE MILLING CUTTER

Technical information

■ Cutting Performances Of Different Approach Angles

Approach angle	45°	75°	90°
Schematic diagram			
Instruction	Axial force is the largest. It will bend when machining thin-wall workpiece, and reduces the precision of workpiece. It is benefit to avoid fringe breakage of workpiece when machining cast iron.	The main purpose is to resolve the radial cutting force, it is often used for general face milling.	The axial force is zero in theory, suitable for milling thin plate workpiece.

Wiper insert

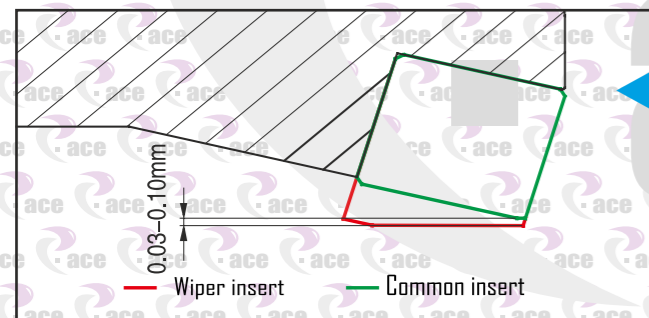


It has axial and radial run out because of tools and inserts exist manufacturing tolerance. The axial runout lead to poor surface roughness.

SOLUTION

Assembling Wiper Insert

Usage



The wiper insert must protrude below the other insert by 0.03-0.05mm at axial direction, only that the wiping function can take into effect. Generally speaking, a cutter can just assemble only one one wiper insert. If the diameter of cutter is much bigger or cutter's feed rate per revolution is bigger than the length of wiper edge, 2 to 3 wiper inserts can be assembled.

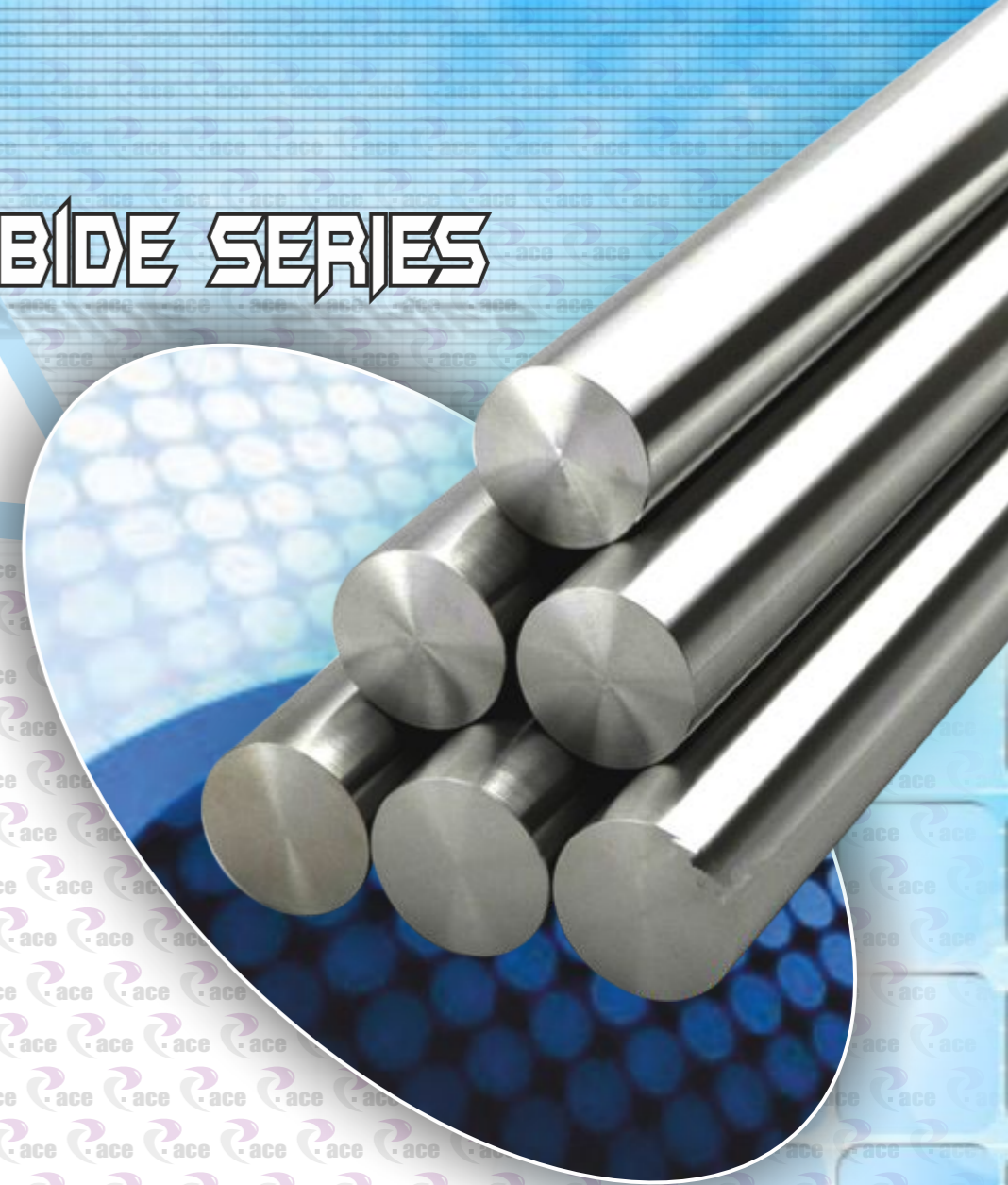
■ Selection Of Cutting Width And Tool Cutting Diameter In Face Milling



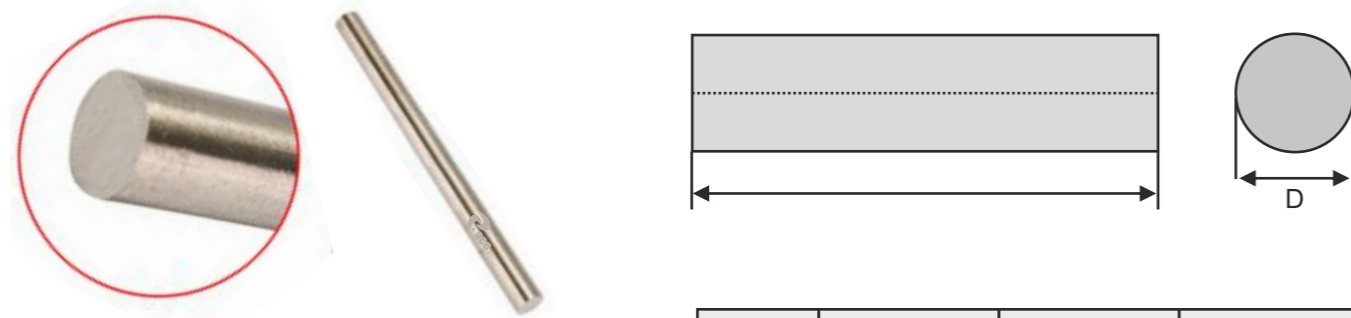
Dc: Tool cutting diameter $Dc=ae$
ae: Cutting width

Generally speaking, the relation between cutting width and tool cutting diameter is $Dc=(1.2-1.5)ae$. In the machining practice, it need to avoid coincidence of tool center and workpiece center as much as possible.

SOLID CARBIDE SERIES



Unground Carbide Rod

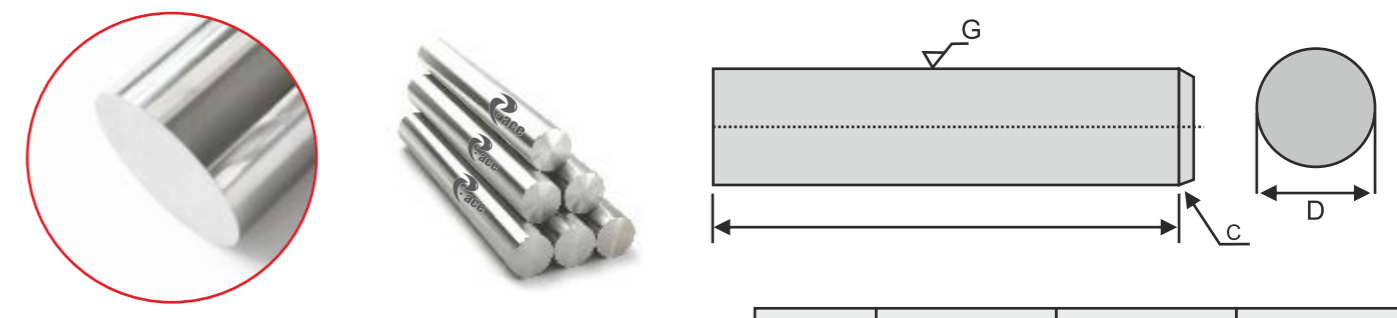


D(mm)	Tolerance(mm)	L(mm)	Tolerance(mm)
D ≤ 5	+ 0.3	L-330	+ 6.0
D5 ≤ D20	+ 0.4		

>> Grade And Specification Of Rods

MATERIAL DESCRIPTION	RESULT	Semi finish carbide rods Dimension	
		∅D (mm)	L (mm)
✓ TUNGSTEN (W3C)	87.99%	3.3	330
✓ COBALT (Co)	10.76%	4.3	330
✓ CHROMIUM (Cr)	0.51%	5.3	330
✓ IRON (Fe)	0.33%	6.3	330
✓ NICKEL (Ni)	0.10%	8.3	330
✓ HARDNESS	88HRA	10.3	330
✓ DENSITY	13.67 gm/cc	12.3	330
✓ ISO CODE	K30	14.3	330
✓ TRS	2200 N/mm ²	16.3	330
✓ GAIN SIZE	FINE GRAIN 0.6-0.8	20.3	330

Ground Carbide Rod H6

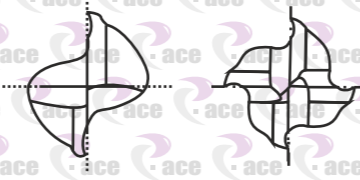


D(mm)	Tolerance(mm)	L(mm)	Tolerance(mm)
All Types	h6	L-100	+ 1.5

>> Grade And Specification Of Rods

MATERIAL DESCRIPTION	RESULT	Finish carbide rods h6 Dimension		
		∅D (mm)	L (mm)	C (mm)
✓ TUNGSTEN (W3C)	88.83%	2	100	0.2
✓ COBALT (Co)	10.02%	3	100	0.3
✓ CHROMIUM (Cr)	0.45%	4	100	0.5
✓ IRON (Fe)	0.12%	5	100	0.5
✓ NICKEL (Ni)	0.20%	6	100	0.5
✓ HARDNESS	87HRA	8	100	1.0
✓ DENSITY	14.60 gm/cc	10	100	1.0
✓ ISO CODE	K30	12	100	1.0
✓ TRS	2200 N/mm ²	14	100	1.0
✓ GAIN SIZE	FINE GRAIN 0.6-0.8	16	100	1.5
-	-	20	100	1.5

Pace Carbide Endmill, Hrc50,tisin Coating



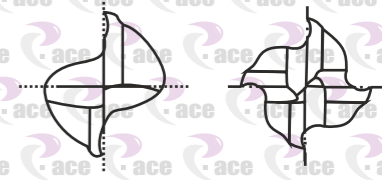
PC CARBIDE SERIES 2&4 FLUTE SHORT LENGTH

- Designed to machine tool steel, alloy steel and mold steel.
- Flute allows for better work piece finishes.
- Increased production.



MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6

Pace Carbide Endmill, Hrc50,tisin Coating



PC CARBIDE SERIES 2&4 FLUTE SHORT LENGTH

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MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6

EOP No. (2F)	EOP No. (4F)	Mill Diameter (D1)	Shank Diameter (D2)	Length of Cut (L1)	Overall Length (L2)
PC-2E-D1.OSS	PC-4E-D1.OSS	1	3	3	50
PC-2E-D1.OS	PC-4E-D1.OS	1	4	3	50
PC-2E-D1.O	PC-4E-D1.O	1	6	3	50
PC-2E-D1.5SS	PC-4E-D1.5SS	1.5	3	4	50
PC-2E-D1.5S	PC-4E-D1.5S	1.5	4	4	50
PC-2E-D2.OSS	PC-4E-D2.OSS	2	3	6	50
PC-2E-D2.OS	PC-4E-D2.OS	2	4	6	50
PC-2E-D2.O	PC-4E-D2.O	2	6	6	50
PC-2E-D2.5SS	PC-4E-D2.5SS	2.5	3	8	50
PC-2E-D2.5S	PC-4E-D2.5S	2.5	4	8	50
PC-2E-D3.OSS	PC-4E-D3.OSS	3	3	8	50
PC-2E-D3.OS	PC-4E-D3.OS	3	4	8	50
PC-2E-D3.O	PC-4E-D3.O	3	6	8	50
PC-2E-D4.OS	PC-4E-D4.OS	4	4	10	50
PC-2E-D4.O	PC-4E-D4.O	4	6	11	50
PC-2E-D5.OS	PC-4E-D5.OS	5	5	13	50
PC-2E-D5.O	PC-4E-D5.O	5	6	13	50
PC-2E-D6.O	PC-4E-D6.O	6	6	15	50
PC-2E-D8.O	PC-4E-D8.O	8	8	20	60
PC-2E-D10.O	PC-4E-D10.O	10	10	25	75
PC-2E-D12.O	PC-4E-D12.O	12	12	30	75
PC-2E-D16.O	PC-4E-D16.O	16	16	40	100
PC-2E-D20.O	PC-4E-D20.O	20	20	45	100

EOP No. (2F)	EOP No. (4F)	Mill Diameter (D1)	Shank Diameter (D2)	Length of Cut (L1)	Overall Length (L2)
PC-2EL-D3.OSS	PC-4EL-D3.OSS	3	3	15	75
PC-2EL-D4.OS	PC-4EL-D4.OS	4	4	20	75
PC-2EL-D4.O	PC-4EL-D4.O	4	6	20	75
PC-2EL-D5.OS	PC-4EL-D5.OS	5	5	20	75
PC-2EL-D6.O	PC-4EL-D6.O	6	6	18	75
PC-2EL-D8.O	PC-4EL-D8.O	8	8	28	75
PC-2EL-D10.O	PC-4EL-D10.O	10	10	30	100
PC-2EL-D12.O	PC-4EL-D12.O	12	12	35	100
PC-2EL-D16.O	PC-4EL-D16.O	16	16	50	150
PC-2EL-D20.O	PC-4EL-D20.O	20	20	75	150

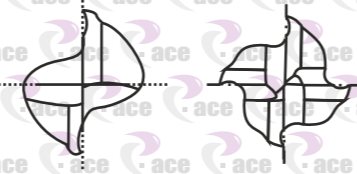
⊙ Excellent ○ Good

Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Craphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50								
○	○	○	○		○		○		○		

⊙ Excellent ○ Good

Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Craphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50								
○	○	○	○		○		○		○		

Pace Carbide Endmill, Hrc50, tisin Coating



PC CARBIDE SERIES 2&4 FLUTE EXTRA LONG LENGTH

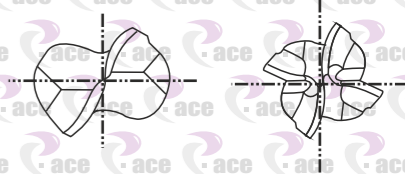
Designed to machine tool steel, alloy steel and mold steel.
Flute allows for better work piece finishes.
Increased production.



MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6

EDP No. (2F)	EDP No. (4F)	Mill Diameter (D1)	Shank Diameter	Length of Cut (L1)	Overall Length (L2)
PC-2EXL-D4.OS	PC-4EXL-D4.OS	4	4	25	100
PC-2EXL-D5.OS	PC-4EXL-D5.OS	5	5	30	100
PC-2EXL-D6.O	PC-4EXL-D6.O	6	6	25	100
PC-2EXXL-D6.O	PC-4EXXL-D6.O	6	6	50	150
PC-2EXL-D8.O	PC-4EXL-D8.O	8	8	28	100
PC-2EXXL-D8.O	PC-4EXXL-D8.O	8	8	50	150
PC-2EXL-D10.O	PC-4EXL-D10.O	10	10	50	150
PC-2EXL-D12.O	PC-4EXL-D12.O	12	12	50	150

Pace Carbide Ball Nose ,HRC50,TISIN Coating



PC CARBIDE SERIES 2&4 FLUTE SHORT LENGTH

Designed to machine tool steel, alloy steel and mold steel.
Flute allows for better work piece finishes.
Increased production.



MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6

EDP No. (2F)	EDP No. (4F)	Mill Diameter (D1)	R	Shank Diameter (D2)	Length of Cut (L1)	Overall Length (L2)
PC-2B-R0.5SS	PC-4B-R0.5SS	1	R0.5	3	3	50
PC-2B-R0.5S	PC-4B-R0.5S	1	R0.5	4	3	50
PC-2B-R0.5	PC-4B-R0.5	1	R0.5	6	6	50
PC-2B-R0.75SS	PC-4B-R0.75SS	1.5	R0.75	3	3	50
PC-2B-R0.75S	PC-4B-R0.75S	1.5	R0.75	4	3	50
PC-2B-R1.0SS	PC-4B-R1.0SS	2	R1.0	3	5	50
PC-2B-R1.0S	PC-4B-R1.0S	2	R1.0	4	5	50
PC-2B-R1.0	PC-4B-R1.0	2	R1.0	6	5	50
PC-2B-R1.25SS	PC-4B-R1.25SS	2.5	R1.25	3	6	50
PC-2B-R1.25S	PC-4B-R1.25S	2.5	R1.25	4	6	50
PC-2B-R1.5SS	PC-4B-R1.5SS	3	R1.5	3	8	50
PC-2B-R1.5S	PC-4B-R1.5S	3	R1.5	4	8	50
PC-2B-R1.5	PC-4B-R1.5	3	R1.5	6	9	50
PC-2B-R2.0S	PC-4B-R2.0S	4	R2.0	4	20	50
PC-2B-R2.0	PC-4B-R2.0	4	R2.0	6	12	50
PC-2B-R2.5S	PC-4B-R2.5S	5	R2.5	5	15	50
PC-2B-R2.5	PC-4B-R2.5	5	R2.5	6	15	50
PC-2B-R3.0	PC-4B-R3.0	6	R3.0	6	15	50
PC-2B-R4.0	PC-4B-R4.0	8	R4.0	8	20	60
PC-2B-R5.0	PC-4B-R5.0	10	R5.0	10	25	75
PC-2B-R6.0	PC-4B-R6.0	12	R6.0	12	25	75
PC-2B-R8.0	PC-4B-R8.0	16	R8.0	16	40	100
PC-2B-R10.0	PC-4B-R10.0	20	R10.0	20	40	100



⊙ Excellent ○ Good

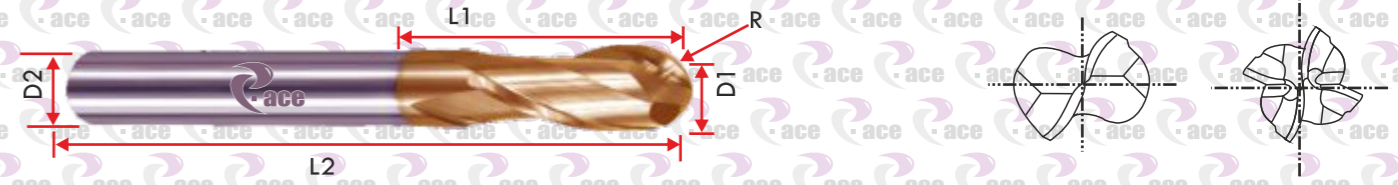
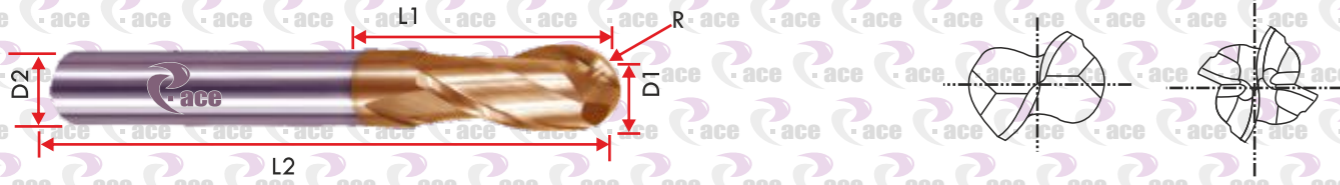
Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50								
○	○	○	○		○		○		○		

⊙ Excellent ○ Good

Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50								
○	○	○	○		○		○		○		

PACE CARBIDE BALL NOSE ,HRC50,TISIN COATING

PACE CARBIDE BALL NOSE ,HRC50,TISIN COATING



PC CARBIDE SERIES 2&4 FLUTE LONG LENGTH

- Designed to machine tool steel, alloy steel and mold steel.
- Flute allows for better work piece finishes.
- Increased production.



MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6

PC SERIES CARBIDE 2&4 FLUTE EXTRA LONG LENGTH

- Designed to machine tool steel, alloy steel and mold steel.
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- Increased production.



MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6

EDP No. (2F)	EDP No. (4F)	Mill Diameter (D1)	R	Shank Diameter (D2)	Length of Cut (L1)	Overall Length (L2)
PC-2BL-R1.0	PC-4BL-R1.0	2	R1.0	6	6	75
PC-2BL-R1.5SS	PC-4BL-R1.5SS	3	R1.5	3	12	75
PC-2BL-R1.5S	PC-4BL-R1.5S	3	R1.5	4	12	75
PC-2BL-R1.5	PC-4BL-R1.5	3	R1.5	6	12	75
PC-2BL-R2.0	PC-4BL-R2.0	4	R2.0	6	12	75
PC-2BL-R2.0S	PC-4BL-R2.0S	4	R2.0	4	20	75
PC-2BL-R2.5S	PC-4BL-R2.5S	5	R2.5	5	22	75
PC-2BL-R3.0	PC-4BL-R3.0	6	R3.0	6	22	75
PC-2BL-R4.0	PC-4BL-R4.0	8	R4.0	8	28	75
PC-2BL-R5.0	PC-4BL-R5.0	10	R5.0	10	30	100
PC-2BL-R6.0	PC-4BL-R6.0	12	R6.0	12	30	100
PC-2BL-R10.0	PC-4BL-R10.0	20	R10.0	20	70	150
PC-2BL-R2.5	PC-4BL-R2.5	5	R2.5	6	22	75

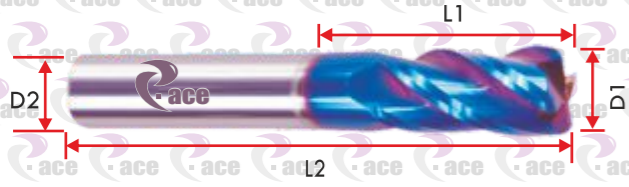
EDP No. (2F)	EDP No. (4F)	Mill Diameter (D1)	R	Shank Diameter (D2)	Length of Cut (L1)	Overall Length (L2)
PC-2BXL-R2.0S	PC-4BXL-R2.0S	4	R2.0	4	25	100
PC-2BXL-R2.5S	PC-4BXL-R2.5S	5	R2.5	5	30	100
PC-2BXL-R3.0	PC-4BXL-R3.0	6	R3.0	6	30	100
PC-2BXL-R4.0	PC-4BXL-R4.0	8	R4.0	8	28	100
PC-2BXL-R5.0	PC-4BXL-R5.0	10	R5.0	10	30	150
PC-2BXL-R6.0	PC-4BXL-R6.0	12	R6.0	12	50	150
PC-2BXXL-R4.0	PC-4BXXL-R4.0	8	R4.0	8	28	150

Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Craphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50								
○	○	○	○		○		○		○		

Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Craphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50								
○	○	○	○		○		○		○		

PACE CARBIDE ENDMILL , HRC60,NANO COATING

PACE CARBIDE BALL NOSE , HRC60,NANO COATING

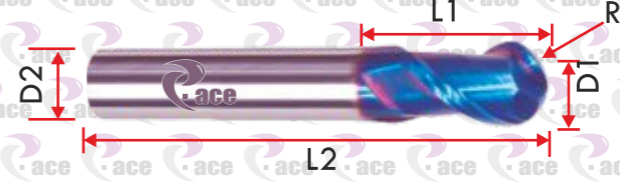


PH CARBIDE SERIES 2&4 FLUTE LONG LENGTH

Designed to machine tool steel, alloy steel, mold steel and High Hardened Steels
Flute allows for better work piece finishes.
Increased production.



MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6



PH CARBIDE SERIES 2&4 FLUTE SHORT LENGTH

Designed to machine tool steel, alloy steel, mold steel
High Hardened Steels
Flute allows for better work piece finishes.
Increased production.



MILL Dia. Tolerance (mm)	Shank Dia. Tolerance (mm)
0~-0.03	h6

EDP No. (2F)	EDP No. (4F)	Mill Diameter (D1)	Shank Diameter	Length of Cut (L1)	Overall Length (L2)
PH-2E-D1.0S	PH-4E-D1.0S	1	4	3	50
PH-2E-D1.5S	PH-4E-D1.5S	1.5	4	4	50
PH-2E-D2.0S	PH-4E-D2.0S	2	4	6	50
PH-2E-D2.5S	PH-4E-D2.5S	2.5	4	8	50
PH-2E-D3.0S	PH-4E-D3.0S	3	4	8	50
PH-2EL-D4.0S	PH-4EL-D4.0S	4	4	10	75
PH-2E-D4.0S	PH-4E-D4.0S	4	4	20	50
PH-2E-D5.0	PH-4E-D5.0	5	6	13	50
PH-2E-D6.0	PH-4E-D6.0	6	6	15	50
PH-2EL-D6.0	PH-4EL-D6.0	6	6	18	75
PH-2E-D8.0	PH-4E-D8.0	8	8	20	60
PH-2EL-D8.0	PH-4EL-D8.0	8	8	28	100
PH-2E-D10.0	PH-4E-D10.0	10	10	25	75
PH-2EL-D10.0	PH-4EL-D10.0	10	10	30	100
PH-2E-D12.0	PH-4E-D12.0	12	12	30	75
PH-2EL-D12.0	PH-4EL-D12.0	12	12	35	100
PH-2E-D4.0	PH-4E-D4.0	4	6	10	50

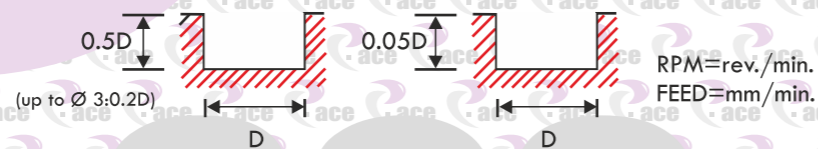
EDP No. (2F)	EDP No. (4F)	Mill Diameter (D1)	R	Shank Diameter (D2)	Length of Cut (L1)	Overall Length (L2)
PH-2B-R0.5S	PH-4B-R0.5S	1	R0.5	4	3	50
PH-2B-R0.75S	PH-4B-R0.75S	1.5	R0.75	4	3	50
PH-2B-R1.0S	PH-4B-R1.0S	2	R1.0	4	5	50
PH-2B-R1.25S	PH-4B-R1.25S	2.5	R1.25	4	6	50
PH-2B-R1.5S	PH-4B-R1.5S	3	R1.5	4	8	50
PH-2BL-R1.5	PH-4BL-R1.5	3	R1.5	6	12	75
PH-2B-R2.0S	PH-4B-R2.0S	4	R2.0	4	20	50
PH-2BL-R2.0S	PH-4BL-R2.0S	4	R2.0	4	20	75
PH-2BXL-R2.0	PH-4BXL-R2.0	4	R2.0	4	16	100
PH-2B-R2.5	PH-4B-R2.5	5	R2.5	6	15	50
PH-2B-R3.0	PH-4B-R3.0	6	R3.0	6	15	50
PH-2BL-R3.0	PH-4BL-R3.0	6	R3.0	6	22	75
PH-2BXL-R3.0	PH-4BXL-R3.0	6	R3.0	6	30	100
PH-2B-R4.0	PH-4B-R4.0	8	R4.0	8	20	60
PH-2BL-R4.0	PH-4BL-R4.0	8	R4.0	8	24	100
PH-2B-R5.0	PH-4B-R5.0	10	R5.0	10	25	75
PH-2BL-R5.0	PH-4BL-R5.0	10	R5.0	10	30	100
PH-2B-R6.0	PH-4B-R6.0	12	R6.0	12	25	75
PH-2BL-R6.0	PH-4BL-R6.0	12	R6.0	12	30	100

Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Craphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50								
○	○	○	○		○		○		○		

Carbon Steels	Ally Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Craphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~50	50-60							
○	○	○	○	○			○		○		

PC & PH SERIES CARBIDE 2 FLUTE SHORT - SLOTTING

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Stainless Steels		Hardened Steels		Hardened Steels	
	~Hrc30		~HRc30~HRc45		~HRc35~HRc40		~HRc40~HRc50		~HRc50~HRc60	
Strength	~1000N/mm ²		~1000~1500N/mm ²		~1000~1500N/mm ²		~1500~2000N/mm ²		2000N/mm ² ~	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	9250	190	6050	120	5050	90	4030	35		
3.0	7150	210	4450	140	3700	120	2690	40	1900	40
4.0	6050	300	3700	180	3100	150	2350	40	1480	40
5.0	5050	320	3020	190	2530	160	1860	50	1260	40
6.0	4450	350	2690	220	2270	180	1600	55	1100	40
8.0	3360	380	2020	200	1680	180	1350	75	840	40
10.0	2600	330	1600	160	1350	160	1090	60	680	35
12.0	2200	280	1350	130	1090	130	930	55	560	35
16.0	1760	220	1090	110	850	110	720	40	440	20
20.0	1350	170	850	80	670	80	550	30	320	20
25.0	1090	130	670	70	550	60	430	20	260	15



PC & PH SERIES CARBIDE 2 FLUTE LONG - SLOTTING

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Hardened Steels	
	~Hrc30		~HRc40~HRc50		~HRc50~HRc60	
Strength	~1000N/mm ²		~1000~1500N/mm ²		~1500~2000N/mm ²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7560	70	6050	60	3780	30
3.0	5290	85	4280	70	2640	35
4.0	4280	100	3410	85	2150	40
5.0	3660	125	2900	100	1900	45
6.0	3160	150	2520	125	1640	60
8.0	2400	160	1900	125	1260	60
10.0	2020	160	1640	125	1010	60
12.0	1640	125	1390	115	840	45
16.0	1390	115	1070	90	670	40
20.0	1010	85	820	60	500	30



PC & PH SERIES CARBIDE 4 FLUTE SHORT - SLOTTING

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Stainless Steels		Hardened Steels		Hardened Steels	
	~Hrc30		~HRc30~HRc45		~HRc35~HRc40		~HRc40~HRc50		~HRc50~HRc60	
Strength	~1000N/mm ²		1000~1500N/mm ²		~1000~1500N/mm ²		~1500~2000N/mm ²		2000N/mm ² ~	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	280	7560	170	6300	140	5040	50		
3.0	8920	320	5560	200	4620	170	3360	60	1900	50
4.0	7560	570	4620	350	3880	280	2940	60	1480	50
5.0	6300	600	3780	360	3160	300	2320	70	1260	50
6.0	5560	660	3360	410	2840	330	2000	80	1100	50
8.0	4200	710	2520	380	2100	350	1680	110	840	50
10.0	3260	610	2000	300	1680	300	1360	90	680	40
12.0	2740	520	1680	250	1360	240	1160	80	560	40
16.0	2200	410	1360	200	1100	200	900	60	440	25
20.0	1680	320	1060	160	840	150	680	40	320	25
25.0	1360	250	840	130	680	120	540	30	260	20



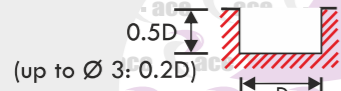
PC & PH SERIES CARBIDE 4 FLUTE LONG - SLOTTING

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Stainless Steels		Hardened Steels	
	~Hrc30		~HRc30~HRc45		~HRc40~HRc50		~HRc50~HRc60	
Strength	~1000N/mm ²		~1000~1500N/mm ²		~1500~2000N/mm ²		2000N/mm ² ~	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	8820	200	5040	80	3150	45		
3.0	6170	230	3570	100	2200	55	1890	30
4.0	5000	280	2840	115	1790	60	1470	35
5.0	4270	360	2420	140	1580	70	1260	40
6.0	3680	430	2100	180	1370	90	1160	50
8.0	2800	460	1580	180	1050	90	840	50
10.0	2350	460	1370	180	840	90	670	50
12.0	1920	360	1160	160	700	70	560	40
16.0	1620	320	890	125	560	60	440	35
20.0	1180	230	680	90	420	45	340	25



PH SERIES CARBIDE 4 FLUTE SHORT SLOTTING

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Stainless Steels		Cast Iron		Aluminum Alloys		Copper, Brass Non-ferrous Metals	
	~Hrc30		~HRc30~HRc45		~HRc35~HRc40		~HRc30~HRc40		---		---	
Strength	~1000N/mm ²		1000~1500N/mm ²		~1000~1500N/mm ²		~1000~1500N/mm ²		---		---	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	14300	105	8500	65	7150	50	18700	205	44000	330	24700	200
1.5	9350	150	5550	85	5600	80	12100	205	27500	385	20300	300
2.0	7850	160	5150	100	4300	80	9350	220	22000	460	16500	340
3.0	6100	180	3800	120	3150	100	6050	220	15400	460	11000	340
4.0	5150	255	3150	155	2650	130	4600	220	11000	460	8800	340
5.0	4300	270	2550	160	2150	135	3650	220	9150	460	6800	375
6.0	3800	300	2300	190	1950	155	2950	255	7600	485	5700	375
8.0	2850	325	1700	170	1450	155	2200	275	5700	485	4400	375
10.0	2200	280	1350	135	1150	135	1850	285	4600	485	3400	375
12.0	1850	240	1150	110	950	110	1450	295	3750	485	2850	375
14.0	1700	215	1050	100	850	100	1300	310	3300	485	2400	375
16.0	1500	185	950	95	700	95	1100	320	2850	485	2200	375
20.0	1150	145	700	70	550	70	900	340	2200	485	1700	3500



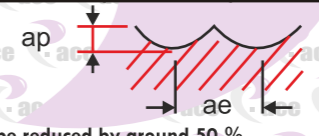
RPM=rev./min.
FEED=mm/min.

* The FEED, in Long & extra long types, should be reduced by around 50 %

PC CARBIDE SERIES 2 FLUTE BALL NOSE

Material	Carbon Steels Ally Steels Tools Steels		Carbon Steels Ally Steels Tools Steels		Hardened Steels		Cast Iron		Aluminum Alloys	
	~Hrc30		~HRc30~HRc45		~HRc45~HRc50		~HRc30~HRc40		---	
Strength	~1000N/mm ²		1000~1500N/mm ²		~1500N/mm ²		~1000~1500N/mm ²		---	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	12350	640	9150	415	4000	125	10500	220	30800	395
3.0	11400	575	8550	390	3800	125	7050	230	20500	395
4.0	8950	630	7150	450	3600	150	5150	285	15400	395
5.0	7800	700	6200	490	3100	150	4150	330	12100	470
6.0	7250	870	5900	705	2700	160	3400	360	10300	470
8.0	6100	1090	4900	785	2050	190	2500	460	7900	540
10.0	5450	1330	4350	870	1750	190	2050	460	6150	540
12.0	4990	1500	3950	950	1500	210	1750	460	5150	630
14.0	4530	1495	3600	925	1300	210	1400	460	4300	630
16.0	4085	1470	3200	905	1150	210	1300	460	3850	540
18.0	3800	1425	3000	800	1050	210	1100	460	3400	540
20.0	3550	1425	2800	885	950	210	1050	420	2950	540

ap : D1 ~ D6 =0.2mm
D8~D20=0.3mm
ae : 0.2D

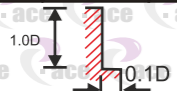


RPM=rev./min.
FEED=mm/min.

* The FEED, in Long & extra long types, should be reduced by around 50 %

PH SERIES CARBIDE 4 FLUTE LONG CUTTING

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Stainless Steels		Cast Iron		Aluminum Alloys		Copper, Brass Non-ferrous Metals	
	~Hrc30		~HRc30~HRc45		~HRc35~HRc40		~HRc30~HRc40		---		---	
Strength	~1000N/mm ²		1000~1500N/mm ²		~1000~1500N/mm ²		~1000~1500N/mm ²		---		---	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	17600	150	10250	85	8650	75	18700	620	44000	1050	24700	605
1.5	11800	215	7050	115	7050	120	12100	620	27500	1160	20300	910
2.0	9850	240	6450	145	5350	120	9350	640	22000	1320	16500	1035
3.0	7600	270	4750	170	3950	145	6050	640	15400	1320	11000	1005
4.0	6450	485	3950	300	3300	240	4600	640	11000	1320	8800	1035
5.0	5350	510	3200	305	2700	255	3650	640	9150	1320	6800	1035
6.0	4750	560	2850	350	2400	280	2950	770	7600	1430	5700	1100
8.0	3550	605	2150	325	1800	300	2200	815	5700	1430	4400	1100
10.0	2750	520	1700	255	1450	255	1850	860	4600	1430	3400	1100
12.0	2350	440	1450	215	1150	205	1450	900	3750	1430	2850	1100
14.0	2100	395	1300	195	1050	190	1300	945	3300	1430	2400	1100
16.0	1850	350	1150	170	950	170	1100	970	2850	1430	2200	1100
20.0	1450	270	900	135	700	130	900	1035	2200	1430	1700	1100

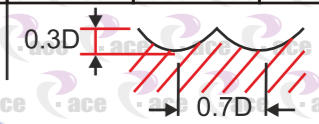
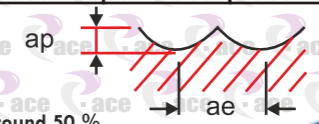


* The FEED, in Long & extra long types, should be reduced by around 50 %

PC CARBIDE SERIES 4 FLUTE BALL NOSE

Material	Carbon Steels Ally Steels Tools Steels		Carbon Steels Ally Steels Tools Steels		Hardened Steels		Cast Iron		Aluminum Alloys	
	~Hrc30		~HRc30~HRc45		~HRc45~HRc50		~HRc30~HRc40		---	
Strength	~1000N/mm ²		1000~1500N/mm ²		~1500N/mm ²		~1000~1500N/mm ²		---	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	13300	680	10000	405	4100	135	10500	330	30800	605
3.0	11500	870	8550	585	3850	190	7050	340	20500	605
4.0	8950	950	7150	680	3600	230	5150	430	15400	605
5.0	7800	1045	6200	745	3100	230	4150	495	12100	715
6.0	7250	1330	5900	1090	2700	235	3400	540	10300	715
8.0	6100	1660	4900	1185	2100	285	2500	680	7900	820
10.0	5450	1950	4350	1330	1750	290	2025	680	6150	820
12.0	4985	2230	4000	1425	1500	320	1750	680	5150	945
14.0	4500	2230	3600	1425	1300	320	1400	700	4300	945
16.0	4085	2230	3200	1380	1100	320	1300	700	3850	820
18.0	3800	2135	3000	1330	1095	320	1100	700	3400	820
20.0	3550	2135	2800	1330	950	320	1050	630	2950	820

ap : D1 ~ D6 =0.2mm
D8~D20=0.3mm
ae : 0.2D



RPM=rev./min.
FEED=mm/min.

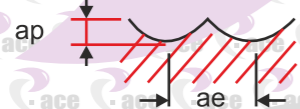
* The FEED, in Long & extra long types, should be reduced by around 50 %



PH CARBIDE SERIES 2 FLUTE BALL NOSE

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Hardened Steels	
	~Hrc30		~HRc30~HRc45		~HRc50~HRc60	
Strength	~1000N/mm ²		1000~1500N/mm ²		~1500N/mm ²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
RO.5	15760	250	12720	200	5800	90
RO.75	15760	350	12140	270	5320	120
R1.0	14400	750	10700	490	4680	150
R1.25	14400	750	10700	490	4680	150
R1.5	13100	680	10000	460	4520	150
R2.0	10500	740	8400	530	4200	180
R2.5	9140	820	7300	580	3680	180
R3.0	8490	1020	6900	830	3180	190
R4.0	7190	1290	5770	920	2470	220
R5.0	6370	1530	5090	1020	2040	225
R6.0	5840	1750	4640	1110	1750	245
R8.0	4770	1720	3780	1060	1350	245
R10.0	4140	1660	3260	1040	1110	250

ap : D1 ~ D6 =0.2mm
D8~D20=0.3mm
ae : 0.2xD



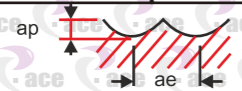
RPM=rev./min.
FEED=mm/min.

ap : D1 ~ D6 =0.2mm
D8~D20=0.3mm
ae : 0.1xD

PH CARBIDE SERIES 4 FLUTE BALL NOSE

Material	Non-Alloyed Steels Alloy Steels Cast Iron		Alloy Steels Heat Resistant Steels		Hardened Steels	
	~Hrc30		~HRc30~HRc45		~HRc50~HRc60	
Strength	~1000N/mm ²		1000~1500N/mm ²		~1500N/mm ²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
RO.5	12600	200	10180	160	4640	70
RO.75	12600	280	9710	220	4250	95
R1.0	12600	420	9250	260	3870	90
R1.25	11520	600	8560	390	3740	120
R1.5	10500	540	8000	370	3620	120
R2.0	8400	590	6720	420	3360	140
R2.5	7310	660	5840	460	2940	140
R3.0	6800	820	5500	600	2550	150
R4.0	5700	1030	4600	740	2000	175
R5.0	5100	1220	4070	820	1650	180
R6.0	4700	1400	3700	890	1400	195
R8.0	3800	1380	3000	850	1100	195
R10.0	3300	1330	2600	830	890	200

ap : D1 ~ D6 =0.2mm
D8~D20=0.3mm
ae : 0.2xD



RPM=rev./min.
FEED=mm/min.

ap : D1 ~ D6 =0.2mm
D8~D20=0.3mm
ae : 0.1xD

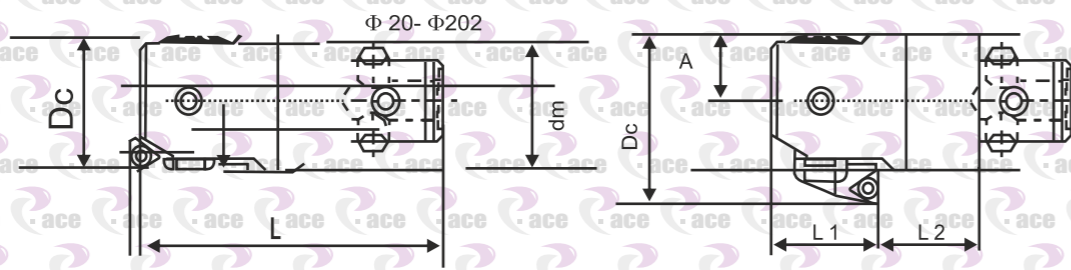
MYCO BORING SYSTEM

Myco
Tooling Solution



MY-CBH MICRO FINISH BORING HEAD

MY-LBK SHANK CBH BORING HEAD



CBH BORING HEAD	LBK NO.	ENH CARTRIDGE ACCESSORIES	BORING RANGE (Dc)	dm	L	BACK BORING RANGE (Dc)	L1	L2	A	INSERT	CLAMP SCREW	WRENCH	WEIGHT (kg)
CBH20	LBK1	ENH1-1	20-26	19	32.5	----	20	10	10				0.09
		ENH1-2	25-31			30-31							
		ENH1-3	30-36			30-36							
CBH25	LBK2	ENH2-1	25-33	24	35.5	----	22	10	12.5	TP..0802..	M2.2X5	T7	0.15
		ENH2-2	32-40			36-40							
		ENH2-3	39-47			39-47							
CBH32	LBK3	ENH3-1	32-42	31	40	----	25	9	16				0.25
		ENH3-2	41-51			46-51							
		ENH3-3	50-60			50-60							
CBH40	LBK4	ENH4-1	41-51	39	47	----	30	13	20				0.43
		ENH4-2	50-63			53-66							
		ENH4-3	61-74			61-74							
CBH52	LBK5	ENH5-1	53-70	49	57	62-70	34	19	25.5				1.25
		ENH5-2	65-82			65-82							
		ENH5-3	78-95			78-95							
CBH68	LBK6	ENH6-1	68-100	63	71	80-100	45	23	45	TC..1102..	M2.5X8	T9	1.78
		ENH6-2	94-126			94-126							
		ENH6-3	118-150			118-150							
CBH100	LBK6	ENH6-1	100-153	80	87	112-153	45	38	45				2.52
		ENH6-2	126-179			126-179							
		ENH6-3	150-203			150-202							
CBH150	LBK6	ENH7-1	100-153	80	87	112-153	45	38	45				3.06
		ENH7-2	126-179			126-179							
		ENH7-3	150-202			150-202							



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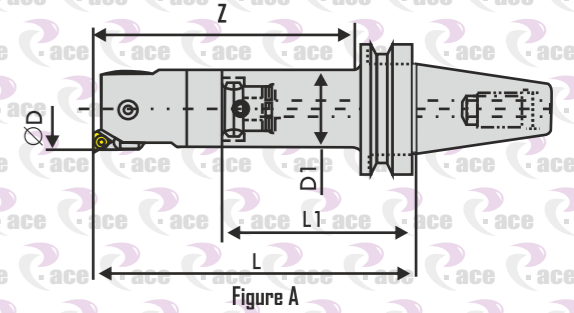


Figure A

Specification	Figure	ØD(mm)	Z mm	LBK	CBH BORING HEAD	LBK NO.	L mm	L1 mm	D1 mm	WEIGHT KG.
BT30-CBH20-105	A	20-26	75	BT30-LBK1-70	CBH20	1	105	70	19	0.6
BT30-CBH25-120		25-33	90	BT30-LBK2-80	CBH25	2	120	80	24	0.8
BT30-CBH32-120		32-42		BT30-LBK3-80	CBH32	3		31	1.0	
BT30-CBH40-120		40-55		BT30-LBK4-70	CBH40	4		70	39	1.3
BT30-CBH52-120		52-75		BT30-LBK5-60	CBH52	5		60	50	1.8
BT30-CBH68-130		68-102	100	BT30-LBK6-60	CBH68	6	130	60	64	3.0
BT40-CBH20-110		20-26	75	BT40-LBK1-75	CBH20	1	110	75	19	1.1
BT40-CBH20-140			105	BT40-LBK1-105	CBH20	1	140	105	19	1.3
BT40-CBH25-125		25-33	90	BT40-LBK2-85	CBH25	2	125	85	24	1.3
BT40-CBH25-155			120	BT40-LBK2-115	CBH25	2	155	115	24	1.6
BT40-CBH32-135			100	BT40-LBK3-95	CBH32	3	135	95	31	1.5
BT40-CBH32-165		32-42	130	BT40-LBK3-125	CBH32	3	165	125	31	1.8
BT40-CBH32-195			160	BT40-LBK3-155	CBH32	3	195	155	31	2.0
BT40-CBH40-135			100	BT40-LBK4-85	CBH40	4	135	85	39	1.8
BT40-CBH40-180		40-55	145	BT40-LBK4-130	CBH40	4	180	130	39	2.4
BT40-CBH40-225			190	BT40-LBK4-175	CBH40	4	225	175	39	2.7
BT40-CBH52-135			100	BT40-LBK5-75	CBH52	5	135	75	50	2.3
BT40-CBH52-185		52-75	150	BT40-LBK5-125	CBH52	5	185	125	50	3.3
BT40-CBH52-235			200	BT40-LBK5-175	CBH52	5	235	175	50	4.0
BT40-CBH68-135			100	BT40-LBK6-65	CBH68	6	135	65	64	3.3
BT40-CBH68-185		68-102	150	BT40-LBK6-115	CBH68	6	185	115	64	4.7
BT40-CBH68-235			200	BT40-LBK6-165	CBH68	6	235	165	64	5.9
BT40-CBH100-135			100	BT40-LBK6-65	CBH100	6	135	65	64	4.2
BT40-CBH100-185		100-152	150	BT40-LBK6-115	CBH100	6	185	115	64	5.6
BT40-CBH100-235	200		BT40-LBK6-165	CBH100	6	235	165	64	6.8	
BT40-CBH150-135	100		BT40-LBK6-65	CBH150	6	135	65	64	5.5	
BT40-CBH150-185	152-202	150	BT40-LBK6-115	CBH150	6	185	115	64	6.9	
BT40-CBH150-235		200	BT40-LBK6-165	CBH150	6	235	165	64	8.1	

ENH CARTRIDGE	ENH1-1	ENH2-1	ENH3-1	ENH4-1	ENH5-1	ENH6-1	ENH6-1	ENH7-1
	ENH1-2	ENH2-2	ENH3-2	ENH4-2	ENH5-2	ENH6-2	ENH6-2	ENH7-2
	ENH1-3	ENH2-3	ENH3-3	ENH4-3	ENH5-3	ENH6-3	ENH6-3	ENH7-3
CARTRIDGE ANGLE								
CBH BORING HEAD	CBH20	CBH25	CBH32	CBH40	CBH52	CBH68	CBH100	CBH150

★ ALL CBH HAVE SINGLE CARTRIDGE ENH#-1

Extension Specification	Figure	ØD(mm)	Ød(mm)	L mm	APPLICABLE BORING HEADS	WEIGHT KG.
LBK1-30L	B	11	19	30	CBH20	0.07
LBK2-30L	B	14	24	30	CBH25/RBH25	0.1
LBK3-30L	B	18	31	30	CBH32/RBH32	0.15
LBK4-45L	B	22	39	45	CBH40/RBH40	0.4
LBK5-60L	B	28	50	60	CBH52/RBH52	0.8
LBK6-60L	B	36	64	60	CBH68/CBH100/CBH150/RBH68/RBH90	1.4

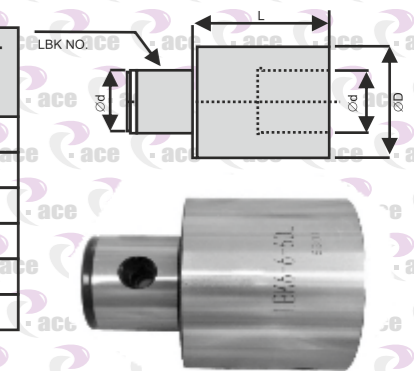
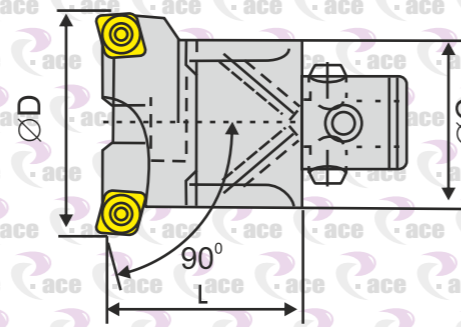
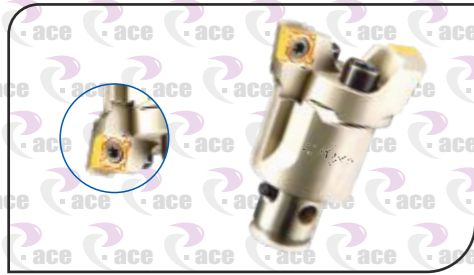


Figure B

- CBH Finish Boring Head Is Suitable for fine boring with working range from $\varnothing 20\text{mm} \sim \varnothing 202\text{mm}$ on diameter.
- Every division for adjustment is 0.01mm on diameter
- High precision lead screw and nut have been heat treated and hardened with high durability .
- Built-in coolant nozzle easy for chip removal and work cooling. Insert holder is with two - face support , free of vibration , which will also extend the working life of insert and ensure smoothness of working surface

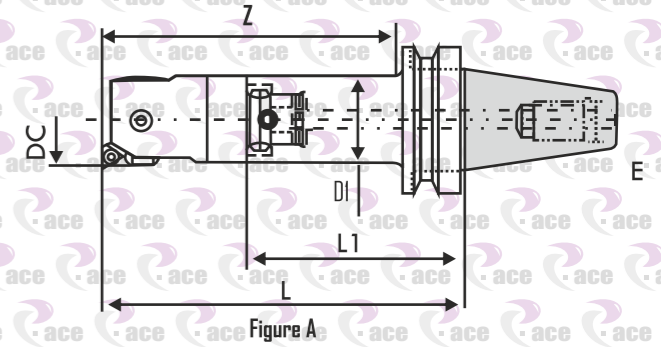
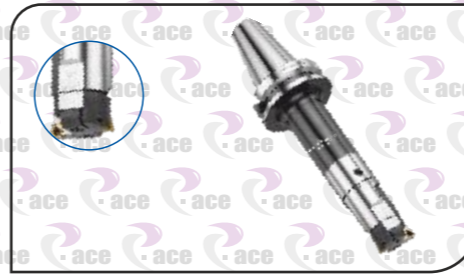


MY-RBH TWIN BIT ROUGH BORING HEAD



Boring Head Type	LBK NO.	BORING RANGE $\varnothing D$ mm	L mm	$\varnothing C$ mm	INSERT	CLAMP SCREW	WRENCH	WEIGHT KG.
RBH25-C	LBK-2	25-33	50	24	CCMT06	M2.5X5.5	T8	0.15
RBH32-C	LBK-3	32-42	60	31	CCMT06	M2.5X5.5	T8	0.3
RBH32-T					TCMT11	M2.5X6.5	T8	
RBH40-C	LBK-4	40-55	74	39	CCMT09	M3.5X8	T15	0.6
RBH40-T					TCMT16	M3.5X12	T15	
RBH40-S					SCMT09	M3.5X8	T15	
RBH52-C	LBK-5	52-70	80	50	CCMT09	M3.5X8	T15	1
RBH52-T					TCMT16	M3.5X12	T15	
RBH52-S					SCMT09	M3.5X8	T15	
RBH68-C	LBK-6	68-92	90	66	CCMT12	M4X11	T15	2.5
RBH68-T					TCMT16	M3.5X12	T15	
RBH68-S					SCMT12	M4X11	T15	
RBH90-C		90-122	100	88	CCMT12	M4X11	T15	3.1
RBH90-T					TCMT22	M4X11	T15	
RBH90-S					SCMT12	M4X11	T15	

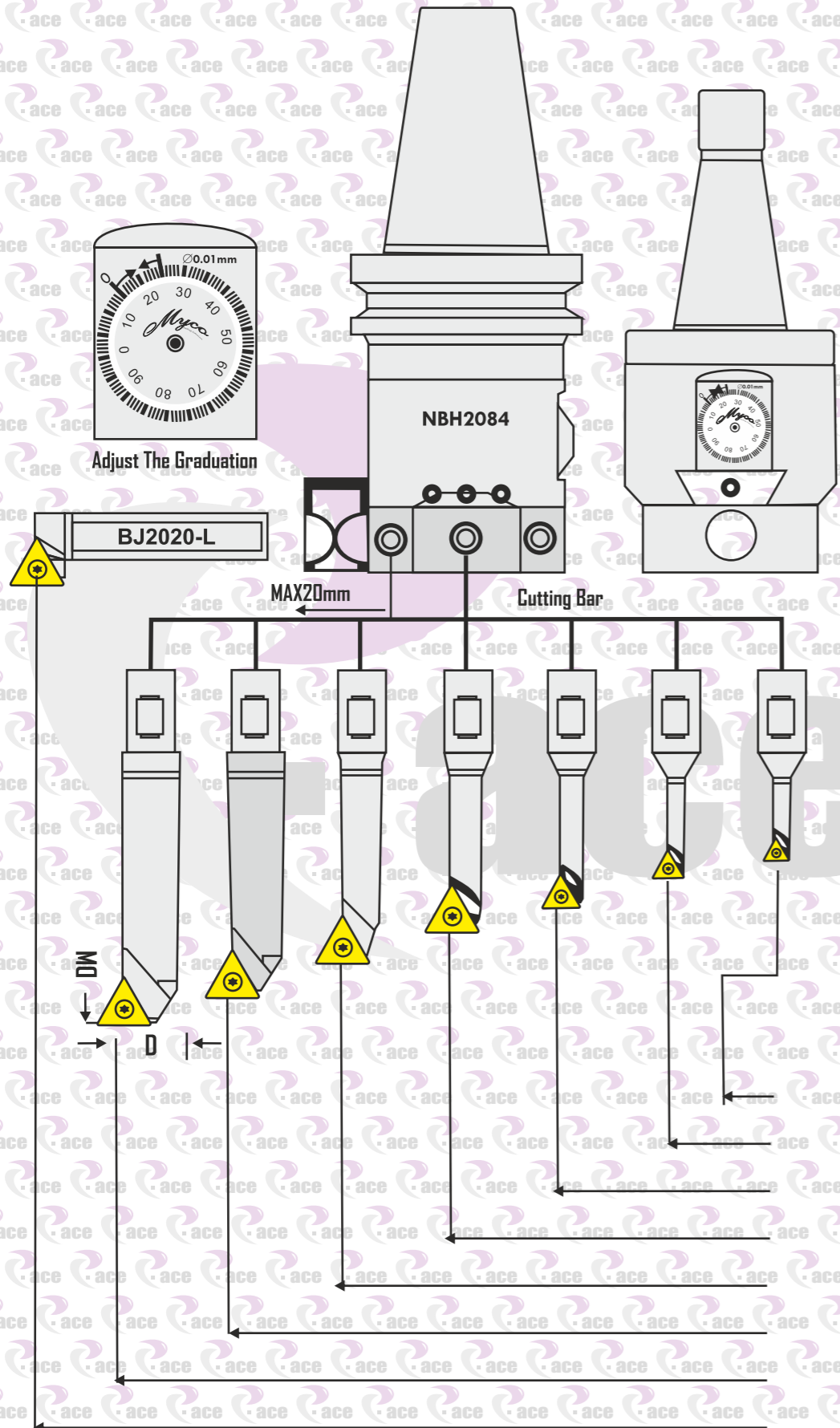
MY-LBK SHANK RBH BORING HEAD



Specification	Figure	$\varnothing D$ (mm)	Z	LBK	RBH BORING HEAD	LBK NO.	L	L1	DI	WEIGHT KG.
BT30-RBH-25-130	A	25-33	100	BT30-LBK2-80	RBH25-C	2	130	80	24	0.8
BT30-RBH32-140		32-42	110	BT30-LBK3-80	RBH32-C / RBH32-T	3	140	70	31	1.0
BT30-RBH40-140		40-55		BT30-LBK4-70	RBH40-C / RBH40-T / RBH40-S	4		39	1.3	
BT30-RBH52-140		52-70	BT30-LBK5-60	RBH52-C / RBH52-T / RBH52-S	5	50	1.8			
BT30-RBH68-150		68-92	120	BT30-LBK6-60	RBH68-C / RBH68-T / RBH68-S	6	150	60	64	3.0
BT30-RBH90-160		90-122			160		RBH90-C / RBH90-T / RBH90-S	3.9		
BT40-RBH25-135		25-33	100	BT40-LBK2-85	RBH25-C	2	135	85	24	1.3
BT40-RBH25-165			130	BT40-LBK2-115			165	115	1.6	
BT40-RBH32-155		32-42	120	BT40-LBK3-95	RBH32-C / RBH32-T	3	155	95	31	1.5
BT40-RBH32-185			150	BT40-LBK3-125			185	125	1.8	
BT40-RBH32-215			180	BT40-LBK3-155			215	155	2.0	
BT40-RBH40-155		40-55	120	BT40-LBK4-85	RBH40-C / RBH40-T / RBH40-S	4	155	85	39	1.8
BT40-RBH40-200			165	BT40-LBK4-130			200	130	2.4	
BT40-RBH40-245			210	BT40-LBK4-175			245	175	2.7	
BT40-RBH52-155		52-70	120	BT40-LBK5-75	RBH52-C / RBH52-T / RBH52-S	5	155	75	50	2.3
BT40-RBH52-205			170	BT40-LBK5-125			205	125	3.3	
BT40-RBH52-255			220	BT40-LBK5-175			255	175	4.0	
BT40-RBH68-155		68-92	120	BT40-LBK6-65	RBH68-C / RBH68-T / RBH68-S	6	155	65	64	3.3
BT40-RBH68-205	170		BT40-LBK6-115	205			115	4.7		
BT40-RBH68-255	220		BT40-LBK6-165	250			165	5.9		
BT40-RBH90-165	90-122	130	BT40-LBK6-65	RBH90-C / RBH90-T / RBH90-S	6	165	65	64	4.2	
BT40-RBH90-215		180	BT40-LBK6-115			215	115	5.6		
BT40-RBH90-265		230	BT40-LBK6-165			265	165	6.8		

MY-NBH2084 FINE-TUNE THE PRECISION BORING SYSTEM 8-280 MM

MY-NBH2084 BORING KIT 8MM-280 MM



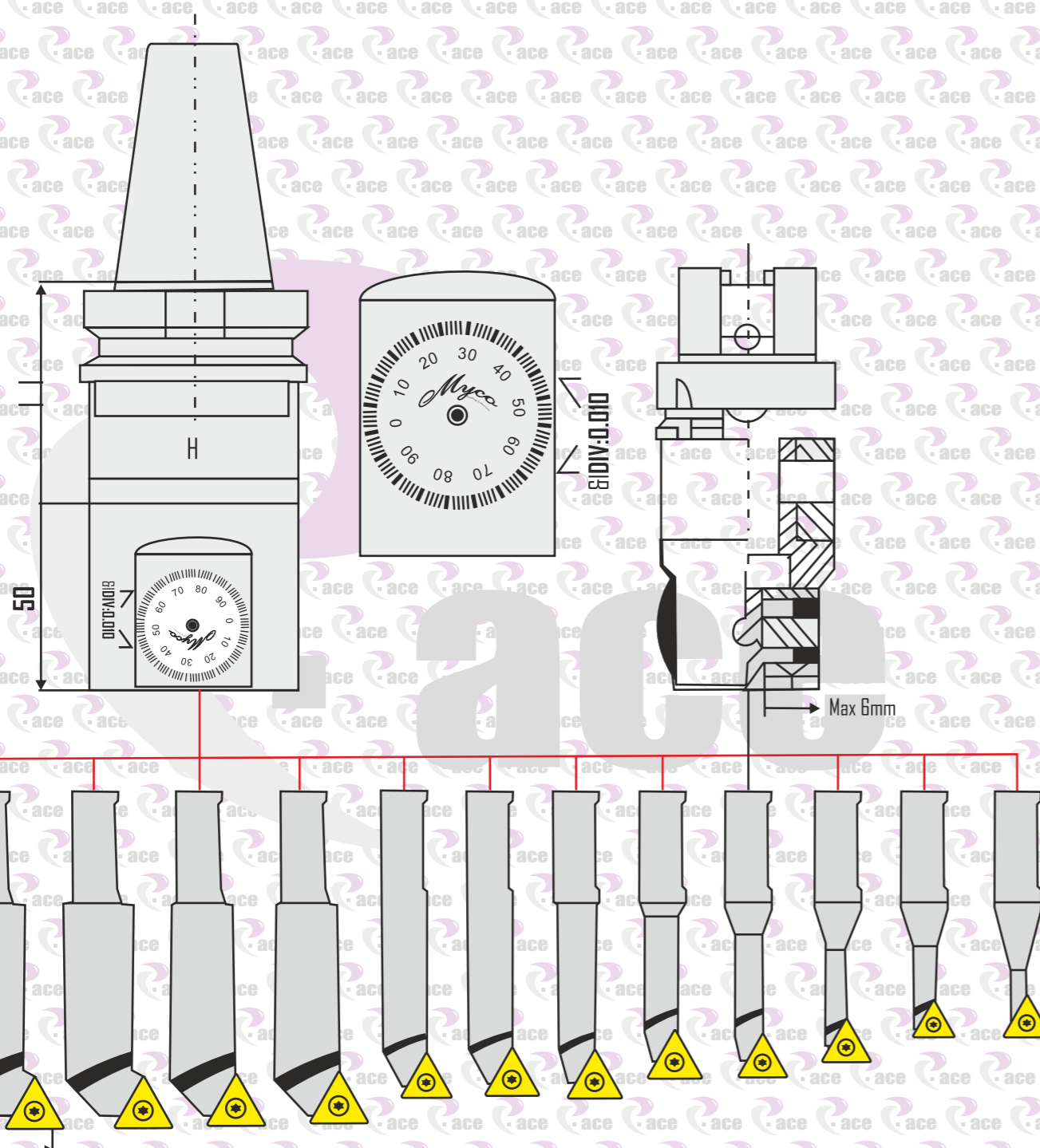
BORING HEAD MODEL NO.	BORING RANGE	TUNING PRECISION	STROKE	WEIGHT (KG)
NBH2084	8-280mm	0.01mm	28.0mm	3.0

BORING SET MODEL	BORING RANGE D MIN - MAX (mm)	SPINDE HANDLE MODELS	HEAD NO.	BORING BAR KEEP OUT	WEIGHT (KG.)
BT40-NBH2084	8-280	BT40-NBH-50	NBH2084	SBJ-20	9.5
BT50-NBH2084	8-280	BT50-NBH-55			12.0
SK40-NBH2084	8-280	SK40-NBH-50			9.5
SK50-NBH2084	8-280	SK50-NBH-55			12.0

BORING BAR MODEL	BORING -RANGE D MIN - D MAX (mm)	D	L1	L	APPLICABLE INSERT	CLAMP SCREW	WRENCH	WEIGHT (KG.)
SBJ2008-32	8 -11	20	32	80	TBGT0601..L	M2.0X5	T6	0.095
SBJ2010-40	10 -13		40	87				0.095
SBJ2012-53	12 -17		53	98				0.12
SBJ2016-68	16 -21		68	110	TPGH0902..L	M2.5X6		0.16
SBJ2020-83	20-25		83	123	TPGH1103..L	M3.0X7		0.22
SBJ2025-96	25-130		96	137				0.34
SBJ2030-115	30-135		115	152				0.54
SBJ2020-L	120-280		84+BT L1	100				0.23

MY-NBJ-16 FINE BORING KIT 6 MM - 51 MM

MY-NBJ-16 FINE TUNE THE PRECISION BORING SYSTEM 6 MM - 51 MM



BORING HEAD MODEL NO.	BORING RANGE	TUNING PRECISION	STROKE	WEIGHT (KG)
NBJ16	Ø6-Ø51mm	Ø0.01mm	6.0mm	1.2

BORING SET MODEL	BORING RANGE D MIN - MAX (mm)	SPINDE HANDLE MODELS	HEAD NO.	BORING BAR KEEP OUT	WEIGHT (KG.)
BT40-NBJ16	6-51	BT40-CK6-55	NBJ16	SBJ-16	9.1
BT50-NBJ16	6-51	BT50-CK6-65			11.7
SK40-NBJ16	6-51	SK40-CK6-55			8.9
SK50-NBJ16	6-51	SK50-CK6-65			10.5

BORING BAR MODEL	BORING -RANGE D MIN - D MAX (mm)	D	L1	L	APPLICABLE INSERT	CLAMP SCREW	WRENCH	WEIGHT (KG.)
SBJ1606-24	6-9	16	24	73	WBGT0601.L	M2.0X4	T6	0.014
SBJ1608-32	8-11		32	80	TBGT0601.L	M2.0X5		0.077
SBJ1610-40	10-13		40	87				0.082
SBJ1612-53	12-15		53	98	TPGH0902.L	M2.5X6	T8	0.095
SBJ1614-60	14-17		60	103				0.101
SBJ1616-68	16-21		68	110				0.143
SBJ1620-83	20-26		83	125	TPGH103.L	M3.0X7		0.203
SBJ1625-90	25-31		90	128				0.275
SBJ1630-90	30-36							0.275
SBJ1635-90	35-41						0.280	
SBJ1640-90	40-46						0.286	
SBJ1645-90	45-51				0.211			

General technical information

Cutting tool used in security matters needing attention

Risk	Measure
Direct contact with sharp cutting edge may cause harm to human body	When you install or remove the cutting tool in the machine tool, please use gloves and other protective labor insurance supplies.
Inappropriate use tool can lead to the breakage, attachment, cause damage	Read the sample and safety standards before use Please use the protective glasses and protective clothing
Excessive wear and dramatic impact the cutting resistance, can lead to rupture and the splash, cause harm to the operator	Replace the excessive wear of cutting tool in a timely manner Please use the protective glasses and protective clothing.
In the process of cutting chip may cause burns and scratches to the people	Use tools such as forceps to remove scraps in a timely manner Please use the protective glasses and protective clothing and protective glove
Sparks in cutting process and high temperature chip is in danger of ire and explosion.	Remove lammable items in the cutting area Please get everything ready for ire extinguishing equipment
Speed of machine tools such as ixture balance difference caused by violent vibration, result in tool breakage.	Before cutting, check whether the device is loose or abnormal sound Please use the protective glasses and protective clothing
The defects such as burrs on the work piece is very sharp,easy to scratch the body	Please don't touch the burr on the work piece Please use the protective gloves and protective clothing
No clamp work piece processed directly causes tool breakage and splash of work piece.	Must be irmly clamp the work piece Please use the protective glasses and protective clothing
In the insert or insert attachments were not tightened properly under the situation of cutting, tool shed fly out the risk of damage.	Conirmation before processing blades and other accessories have tighten properly with proper tools
With auxiliary tools such as excessive fastening screw pin or shim, insert or with broken splash of danger.	Please don't use auxiliary tools such as casing too tighten
When high speed cutting insert or attachment, likely due to the inertia fall off under the action of centrifugal force.	Please don't use auxiliary tools such as casing too tighten Please use the protective glasses and protective clothing
As a result of the milling cutter winger, directly touch may cause scratches	For your safety, under the condition of the blade must contact your protective gloves
Rotary cutting, clothing, gloves, etc. It is easy to ground to the high speed running equipment, causing casualties	When rotate cutting,please don't wear gloves in processing. Attention : don't let the clothes contact with the running machine parts
Eccentric rotating or balance tool in spinning processing will produce bad shake vibration damage caused by lying lead to harm	Please use cutting tools within the scope of permissible speed Check the balance of mechanical properties
When high speed cutting, high speed lying out of the chip is likely to cause harm	Use safety cover, protection screen, housing,etc Please use the protective glasses and protective clothing and gloves
With minimal cutting tools for drilling, easy to cause break splash and unable to remove the cutting tool	Reduce the vibration of the cutting tool and under appropriate speed processing Please use the protective glasses and protective clothing and gloves
The improper use, will cause the acceleration damage of machine tools and cutting tools, and other hazards.	Please use according to instructions and regulations

Remark: if without our permission, without authorization to modify tool caused by the accident, the company is not responsible for

Technical information

Diameter of thread bottom hole

The Metric System Common Thread

Thread Code	Recommended bottom hole diameter(mm)
M3×0.5	2.5
M3.5×0.6	2.9
M4×0.7	3.3
M5×0.8	4.2
M6×1.0	5.0
M7×1.0	6.0
M8×1.25	6.75
M9×1.25	7.75
M10×1.5	8.5
M11×1.5	9.5
M12×1.75	10.25
M14×2.0	12.0
M16×2.0	14.0
M18×2.5	15.5
M20×2.5	17.5
M24×3.0	21.0
M27×3.0	24.0
M30×3.5	26.5

□ Metric Ine Thread

Thread Code	Recommended bottom hole diameter(mm)	Thread Code	Recommended Bottom Hole Diameter(mm)
M3×0.35	2.65	M14×1.5	12.5
M3.5×0.35	3.15	M14×1.0	13.0
M4×0.5	3.5	M15×1.5	13.5
M4.5×0.5	4.0	M15×1.0	14.0
M5×0.5	4.5	M16×1.5	14.5
M5.5×0.5	5.0	M16×1.0	15.0
M6×0.75	5.25	M17×1.5	15.5
M7×0.75	6.25	M17×1.0	16.0
M8×1.0	7.0	M18×2.0	16.0
M8×0.75	7.25	M18×1.5	16.5
M9×1.0	8.0	M18×1.0	17.0
M9×0.75	8.25	M20×2.0	18.0
M10×1.25	8.75	M20×1.5	18.5
M10×1.0	9.0	M20×1.0	19.0
M10×0.75	9.25	M22×2.0	20.0
M11×1.0	10.0	M22×1.5	20.5
M11×0.75	10.25	M22×1.0	21.0
M12×1.5	10.5	M24×2.0	22.0
M12×1.25	10.75	M24×1.5	22.5
M12×1.0	11.0	M24×1.0	23.0

General technical information

Surface roughness

Surface roughness is refers to the processed surface of small spacing and small peak valley roughness. Surface roughness has close relation with the properties of mechanical parts, abrasion resistance, working accuracy and corrosion resistance, impact to the machine or equipment reliability and life expectancy.

variety	Code	computing method	Calculation method (figure)
Profile arithmetic average error	Ra	<p>Within the sampling length l contour offset distance absolute value of the arithmetic average</p> $R_a = \frac{1}{l} \int_0^l y(x) dx$ <p>Type in the contour offset y refers to the distance between the contour points and the reference line. Reference line for least squares line O outline. The line dividing profile and make it within the sampling length profile deviation from the line of sum of squares to a minimum.</p>	
	Rz	<p>Within the sampling length l of the outline of the five biggest peak height and the outline of the five biggest deep valley of the average the sum of the average</p> $R_z = \frac{\sum_{i=1}^5 y_{pi} + \sum_{i=1}^5 y_{vi}}{5}$ <p>Type: y_{pi} is the outline of the ith a maximum peak height, y_{vi} is one of the largest outline the ith a deep valley. Outline of the maximum height R_y: peak within the sampling length l contour line and contour of the distance between the bottom line.</p>	
Maximum height of the profile	Ry	<p>Peak within the sampling length l contour line and the contour of the distance between the bottom line. Outline the summit line is parallel to the baseline and peak by contour line. Outline the bottom line is parallel to the baseline and low by contour lines.</p>	

Sampling length l and assess value of length ln

$R_a / \mu m$	$R_z / \mu m$	l/mm	$ln=5l / mm$
$\geq 0.008 \sim 0.02$	$\geq 0.025 \sim 0.10$	0.08	0.4
$> 0.02 \sim 0.1$	$> 0.1 \sim 0.50$	0.25	1.25
$> 0.1 \sim 0.2$	$> 0.50 \sim 10.0$	0.8	4.0
$> 0.2 \sim 10.0$	$> 10.0 \sim 50.0$	2.5	12.5
$> 10.0 \sim 80.0$	$> 50 \sim 320$	8.0	40.0

General technical information

Material comparison table

ISO	Country and standard										
	China	America	Germany	England	Sweden	France	Italy	Spain	Japan		
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Structural steel										
	15	1015	1.0401	C15	080M15	-	1350	CC12	C15C16	F.111	-
	20	1020	1.0402	C22	050A20	2C	1450	CC20	C20C21	F.112	-
	35	1035	1.0501	C35	060A35	-	1550	CC35	C35	F.113	-
	45	1045	1.0503	C45	080M40	-	1650	CC45	C45	F.114	-
	55	1055	1.0535	C55	070M55	-	1655	-	C55	-	-
	60	1060	1.0601	C60	080A62	43D	-	CC55	C60	-	-
	Y15	1213	1.7015	9SMn28	230M07	-	1912	S250	CF9SMn28	11SMn28	SUM22
	-	12L13	1.0718	9SMnPb28	-	-	1914	S250Pb	CF9MnPb28	11SMnPb28	SUM22L
	-	-	1.0722	10SPb20	-	-	-	10PbF2	CF10Pb20	10SPb20	-
	-	1140	1.0726	35S20	212M36	8M	1957	35MF4	-	F210G	-
	Y13	1215	1.0736	9SMn36	240M07	1B	-	S300	CF9SMn36	12SMn35	-
	-	12L14	1.0737	9SMnPb36	-	-	1926	S300Pb	CF9SMnPb36	12SMnP35	-
	55Si2Mn	9255	1.0904	55Si9	250A53	45	2085	55S7	55Si8	56Si7	-
	-	9262	1.0961	60SiCr7	-	-	-	60SC7	60SiCr8	60SiCr8	-
	15	1015	1.1141	Ck15	080M15	32C	1370	XC12	C16	C15K	S15C
	40Mn	1039	1.1157	40Mn4	150M36	15	-	35M5	-	-	-
	25	1025	1.1158	Ck25	-	-	-	-	-	-	S25C
	35Mn2	1335	1.1167	36Mn5	-	-	2120	40Mn5	-	36Mn5	SMn438(H)
	30Mn	1330	1.1170	28Mn6	150M28	14A	-	20M5	C28Mn	-	SCMn1
	35Mn	1035	1.1183	Cf35	060A35	-	1572	XS38TS	C36	-	S35C
	Ck45	1045	1.1191	45	080M46	-	1672	XC42	C45	C45K	S45C
	55	1055	1.1203	Ck55	070M55	-	-	XC45	C50	C55K	S55C
	50	1050	1.1213	Cf53	060A52	-	1674	XC48TS	C53	-	S50C
	60Mn	1060	1.1221	Ck60	080A62	43D	1678	XC60	C60	-	S58C
	-	1095	1.1274	Ck101	060A96	-	1870	-	-	-	SUP4
	-	-	1.3401	X120Mn12	Z120M12	-	-	X120M12	XG120Mn12	X120Mn12	SCMnH/1
	Gr15;45Gr	52100	1.3505	100Cr6	534A99	31	2258	100C6	100Cr6	F.131	SUJ2
	-	ASTM A204Gr.A	1.5415	15Mo3	1501-240	-	2912	15D3	16Mo3KW	16Mo3	-
	-	4520	1.5426	16Mo5	1503-245-420	-	-	-	16Mo5	16Mo5	-
	-	ASTM A350LF5	1.5622	14Ni6	-	-	-	16N6	14Ni6	15Ni6	-
	-	ASTM A353	1.5662	X8Ni9	1501-509;510	-	-	-	X10Ni9	XBNI09	-

General technical information

Material comparison table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Structural steel										
	-	2515	1.5680	12Ni19	-	-	-	Z18N5	-	-	-
	-	3135	1.5710	36NiCr6	640A35	111A	-	35NC6	-	-	SNC236
	-	3415	1.5732	14NiCr10	-	-	-	14NC11	16NiCr11	15NiCr11	SNC415(H)
	-	3415 3310	1.5752	14NiCr14	655M13 655A12	36A	-	12NC15	-	-	SNC815(H)
	-	9840	1.6511	36CrNiMo4	816M40	110	-	40NCD3	38CrNiMo4(KB)	35CrNiMo4	-
	-	8620	1.6523	21NiCrMo2	850M20	362	2503	20NCD2	20NiCrMo2	20NiCrMo2	SNCCM220(H)
	-	8740	1.6546	40NiCrMo2	311-Type7	-	-	-	40NiCrMo2(KB)	40NiCrMo2	SNC240
	40CrNiMoA	4340	1.6582	34CrNiMo6	817M40	24	2541	35NCD6	35CrNiMo6(KB)	-	-
	-	-	1.6587	17CrNiMo6	820A16	-	-	18NCD6	-	14CrNiMo13	-
	15Cr	5015	1.7015	15Cr3	523M15	-	-	12C3	-	-	SCr415(H)
	35Cr	5132	1.7033	34Cr4	530A32	18B	-	32C4	34Cr4(KB)	35Cr4	SCr430(H)
	40Cr	5140	1.7035	41Cr4	530M40	18	-	42C4	41Cr4	42Cr4	SCr440(H)
	40Cr	5140	1.7045	42Cr4	-	-	2245	-	-	42Cr4	SCr440
	18CrMn	5115	1.7131	16MnCr15	(527M20)	-	2511	16MC5	16MnCr15	16MnCr15	-
	20CrMn	5155	1.7176	55Cr3	527A60	48	-	55C3	-	-	SUP9(A)
	30CrMn	4130	1.7218	25CrMo4	1717CDS110	-	2225	25CD4	25CrMo4(KB)	55Cr3	SCM420; SCM430
	35CrMo	4137;4135	1.7220	34CrMo4	708A37	19B	2234	35CD4	35CrMo4	34CrMo4	SCM432; SCRRM3
	40CrMoA	4140;4142	1.7223	41CrMo4	708M40	19A	2244	42CD4TS	41CrMo4	41CrMo4	SCM440
	42CrMo 42CrMnMo	4140	1.7225	42CrMo4	708M40	19A	2244	42CD4	42CrMo4	42CrMo4	SCM440(H)
	-	-	1.7262	15CrMo5	-	-	2216	12CD4	-	12CrMo4	SCM415(H)
-	ASTM A182 F11;F12	1.7335	13CrMo44	1501- 620Gr.27	-	-	15CD3.5; 15CD4.5	14CrMo44	14CrMo45	-	
-	-	1.7361	32CrMo12	722M24	40B	2240	30CD12	32CrMo12	F.124.A	-	
-	ASTM A182 F.22	1.7380	10CrMo910	1501- 622Gr.31;45	-	2218	12CD9;10	12CrMo9,10	TU.H	-	
-	-	1.7715	14MoV63	1503-660-440	-	-	-	-	13MoCrV6	-	
50CrVA	6150	1.8159	50CrV4	735A50	47	2230	50CV4	50CrV4	51CrV4	SUP10	
-	-	1.8509	41CrAlMo7	905M39	41B	2940	40CAD6,12	41CrAlMo7	41CrAlMo7	-	
-	-	1.8523	39CrMoV139	897M39	40C	-	-	36CrMoV12	-	-	

General technical information

Material comparison table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/ SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Chisel tool steel										
	T10	W.110	1.1545	C105W1	-	-	1880	Y1105	C98KU C100KU	F.515 F.516	-
	T12A	W.112	1.1663	C125W	-	-	-	Y2120	C120KU	(C120)	SK2
	CrV;9SiCr	L3	1.2067	100Cr6	BL3	-	-	Y100C6	-	100Cr6	-
	Cr12	D3	1.2080	X210Cr12	BD3	-	-	Z200Cr12	X210Cr13KU X250Cr12KU	X210Cr12	SKD1
	4Cr5MoVSi	H13	1.2344	X40CrMoV5 1	BH13	-	2242	Z40CDV5	X35CrMoV05KU X40CrMoV51KU	X40CrMoV5	SKD61
	Cr6WV	A2	1.2363	X100CrMoV5 1	BA2	-	2260	Z100CDV5	X100CrMoV51KU	X100CrMoV5	SKD12
	CrWMo	-	1.2419	105WCr6	-	-	2140	105WC13	10WCr6 107WCr5KU	105WCr5	SKS31 SKS2 SKS3
	Cr12W	-	1.2436	X210CrW12	-	-	2312	-	X215CrW12 1KU	X210CrW12	SKD2
	5CrNiMo	S1	1.2542	45WCrV7	BS1	-	2710	-	45WCrV8KU	45WCrSi8	-
	3Cr2W8V	H21	1.2581	X30WCrV9 3 X30WCrV93KU	BH21	-	-	Z30WCV9	X28W09KU X30WCrV9 3KU	X30WCrV9	SKD5
	Cr12MoV	-	1.2601	X165CrMoV 12	-	-	2310	-	X165CrMoV12KU	X160CrMoV12	SKD11
	5CrNiMo	L6	1.2713	55NiCrMoV6	-	-	-	55NCDV7	-	F.250.S	SKT4
	V	W210	1.2833	100V1	BW2	-	-	Y1105V	-	-	SKS43
	W6Mo5Cr4V2Co5	-	1.3243	S6-5-2-5	-	-	2723	Z85WDCV	HS6-5-2-5	HS6-5-2-5	SKH55
	W18Cr4VCo5	T4	1.3255	S18-1-2-5	BT4	-	-	Z80WKC 10-05-04-01	X78WCo1805KU	HS18-1-1-5	SKH3
	W6Mo5Cr4V2	M2	1.3343	S6-5-2	BM2	-	2722	Z85WDCV 06-05-04-02	X82WMo0605KU	HS6-5-2	SKH9
	-	M7	1.3348	S2-9-2	-	-Z-	2782	Z100WCWV 09-02-04-02	HS2-9-2	HS2-9-2	-
	W18Cr4V	T1	1.3355	S18-0-1	BT1	-	-	Z80WCV 18-04-01	X75W18KU	HS18-0-1	SKH2
	W6Mo5Cr4V3	M3	-	S6-5-3	-	-	-	-	-	-	SKH52
	-	M42	-	-	BM42	-	-	-	-	-	SKH59

General technical information

Material comparison table

ISO	Country and standard					Main application
	China	America	Germany	Japan	Datong (Japan)	
	GB	AISI/SAE	DIN	JIS	DAIDO	
Plastic die steel						
-	P20 mod.	-	-	PX5N	-	Mass production with large mirror mould. Auto tail lamp, mirror before the shell baffle, cameras, home appliances, etc
-	-	-	-	NAK55	-	High precision mirror mould. Camera, music, cosmetic containers, transparent cover glass, transparent film, etc
-	-	-	-	NAK80	-	High mirror high precision mold. Cameras, cosmetic containers, transparent cover, transparent film, etc
3Cr13	420 mod.	-	SUS420J2 mod.	S-STAR	-	Super mirror corrosion precision mold. Camera parts, CD, lens, watch case
Cold-work die steel						
-	02	-	-	SKS93	YK30	Stamping mold, gauge, paper knife, auxiliary tools
9CrWMn	01 mod.	-	-	SKS3 mod.	GOA	Blanking die, gauge, die, tap, a hole punch
Cr12MoV	D2	X165CrMoV12	-	SKD11	DC11	Die, cold, cold die, die forming roll, the punch
-	D2 mod.	-	-	SKD11 mod.	DC53	Die, cold, cold die, die forming roll, the punch
Hot-work die steel						
4Cr5MoSiV1	H13	X40CrMoV51	-	SKD61	DHA1	Aluminum die-casting mould, die-casting mould connection parts, stamping dies, hot extrusion die, hot shear blades
-	-	-	-	-	DH21	Long-life aluminum die-casting mould
-	-	-	-	-	DH31-S	Heavy die casting dies
-	-	-	-	-	DH2F	Die mold, plastic mold

General technical information

Material comparison table

ISO	Country and standard										
	China	America	Germany	England	Sweden	France	Italy	Spain	Japan		
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
Stainless steel											
0Cr13; 1Cr12	403	1.4000	X6Cr13	403S17	-	2301	Z6C13	X6Cr13	F.3110	SUS403	
-	-	1.4001	X7Cr14	-	-	-	-	-	F.8401	-	
1Cr13	410	1.4006	X10Cr13	410S21	56A	2302	Z10C14	X12Cr13	F.3401	SUS410	
1Cr17	430	1.4016	X6Cr17	430S15	60	220	Z8C17	X8Cr17	F.3113	SUS430	
2Cr13	410	1.4021	X20Cr13	S62	56B; 56C	-	Z20C13	X20C13	F.3401	SUS410	
-	-	1.4027	G-X20Cr14	420C29	56B	-	Z20C13M	-	-	SCS2	
4Cr13	-	1.4034	X46Cr13	420S45	56D	2304	Z40CM Z38C13M	X40Cr14	F.3405	SUS420J2	
1Cr17Ni2	431	1.4057	X20CrNi172	431S29	57	2321	Z15CNi6.02	X16CrNi16	F.3427	SUS431	
Y1Cr17	430F	1.4104	X12CrMoS17	-	-	2383	Z10CF17	X10CrS17	F.3117	SUS430F	
1Cr17Mo	434	1.4113	X6CrMo171	434S17	-	2325	Z8CD17.01	X8CrMo17	-	SUS434	
-	-	1.4313	X5CrNi134	425C11	-	-	Z4CND13.4M	-	-	SCS5	
-	-	1.4408	G-X6CrNiMo1810	316C16	-	-	-	-	F.8414	SCS14	
4Cr9Si2	HW3	1.4718	X45CrSi93	401S45	52	-	Z45CS9	X45CrSi8	F.322	SUH1	
0Cr13Al	405	1.4724	X10CrAl13	403S17	-	-	Z10C13	X10CrAl12	F.311	SUS405	
Cr17	430	1.4742	X10CrAl18	430S15	60	-	Z10CAS18	X8Cr17	F.3113	SUS430	
8Cr20Si2Ni	HNV6	1.4757	X80CrNiSi20	443S65	59	-	Z80CSN20.02	X80CrNiSi20	F.320V	SUH4	
2Cr25N	446	1.4762	X10CrAl24	-	-	2322	Z10CAS24	X16Cr26	-	SUH446	
Austenitic stainless steel											
0Cr18Ni9	304	1.4301	X5CrNi1810	304S15	58E	2332	Z6CN18.09	X5CrNi1810	F.3551; F.3541; F.3504	SUS304	
1Cr18Ni9MoZr	303	1.4305	X10CrNiS189	303S21	58M	2346	Z10CNF18.09	X10CrNiS18.09	F.3508	SUS303	
0Cr19Ni10	304L	1.4306	X2CrNi1911	304S12	-	2352	Z2CN18.10	X2CrNi18.11	F.3503	SCS19	
-	-	1.4308	G-X6CrNi189	304C15	-	-	Z6CN18.10M	-	-	SCS13	
Cr17Ni7	301	1.4310	X12CrNi177	-	-	2331	Z12CN17.07	X12CrNi1707	F.3517	SUS301	
-	304LN	1.4311	X2CrNiN1810	304S62	-	2371	Z2CN18.10	-	-	SUS304LN	
0Cr19Ni9	304	1.4350	X5CrNi189	304S31	58E	-	Z6CN18.09	X5CrNi1810	-	SUS304	
0Cr17Ni11Mo2	316	1.4401	X5CrNiMo1712	316S16	Z6CND17.11	2347	1.4401	X5CrNiMo1712	F.3543	SUS316	
00Cr17Ni13Mo2	316LN	1.4429	X2CrNiMoN17133	-	-	2375	Z2CND17.13	-	-	SUS316LN	
0Cr27Ni12Mo3	316L	1.4435	X2CrNiMo18143	316S12	-	2353	Z2CDN17.13	X2CrNiMo1713	-	SCS16	
00Cr19Ni13Mo3	317L	1.4438	X2CrNiMo17133	317S12	-	2367	Z2CND19.15	X2CrNiMo18.16	-	SUS317L	
-	329L	1.4460	X8CrNiMo275	-	-	2324	-	-	-	SUS329L; SCH11; SCS11	
1Cr18Ni9Ti	321	1.4541	X6CrNiTi1810	2337	321S12	58B	Z6CNT18.10	X6CrNiTi1811	F.3553	SUS321	
1Cr18Ni11Nb	347	1.4550	X6CrNiNb1810	347S17	58F	2338	Z6CNNb18.1	X6CrNiTi1811	F.3552	SUS347	
Cr18Ni12Mo2Ti	316Ti	1.4571	X6CrNiMoTi17122	320S17	58J	2350	Z6NDT17.12	X6CrNiMoTi17	F.3535	-	

General technical information

ISO	Country and standard											
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan	
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS	
M	Austenitic stainless steel											
	-	-	1.4581	G-X5CrNiMoNb1810	318C7	-	-	Z4CNDNb1812M	XG8CrNiMo18	-	-	SCS22
	Cr17Ni12Mo3Nb	318	1.4583	X10CrNiMoNb1812	-	-	-	Z6CNDNb1713B	X6CrNiMoTiNb17	-	-	-
	1Cr23Ni13	309	1.4828	X15CrNiSi2012	309S24	-	-	Z15CNS20.1	-	-	-	SUH309
	0Cr25Ni20	310S	1.4845	X12CrNi2521	310S24	-	2361	Z12CN2520	X6CrNi2520	F.331	-	SUH310
	Cr15Ni36W3Ti	330	1.4864	X12NiCrSi3616	-	-	-	Z12CNS35.1	-	-	-	SUH330
	-	-	1.4865	G-X40NiCrSi3818	330C11	-	-	-	XG50NiCr3919	-	-	SCH15
	5Cr2Mn9Ni4N	EV8	1.4871	X53CrMnNiN219	349S54; 321S12	-	58B	-	Z52CMN21.0	X53CrMnNiN219	-	-
1Cr18Ni9Ti	321	1.4878	X12CrNiTi189	321S320	58C	-	Z6CNT18.12	X6CrNiTi1811	F.3523	-	SU321	

ISO	Country and standard								
	China	America	Germany	England	Sweden	France	Italy	Spain	Japan
	Nodular cast iron								
QT400-18	60-40-18	GGG40	400/17	0717-02	FGS370-17	GS370-17	FGE38-17	-	FCD400
QT450-10	65-45-12	--	420/12	--	FGS400-12	GS400-12	FGE42-12	-	FCD450
QT500-7	70-50-05	GGG50	500/7	0727-02	FGS500-7	GS500-7	FGE50-7	-	FCD500
QT600-3	80-60-03	GGG60	600/7	0732-03	FGS600-2	GS600-2	FGE60-2	-	FCD600
QT700-2	100-70-03	GGG70	700/2	0737-01	FGS700-2	GS700-2	FGE70-2	-	FCD700
QT800-2	120-90-02	GGG80	800/2	0864-03	FGS800-2	GS800-2	FGE80-2	-	FCD800
QT900-2	--	--	900/2	--	--	--	--	--	--
Grey cast iron									
--	NO.60	GG40	--	0140	FGL400	--	--	--	--
HT350	NO.50	GG35	350	0135	FGL350	G35	FG35	-	FC350
HT300	NO.45	GG30	300	0130	FGL300	G30	FG30	-	FC300
HT250	NO.35	GG25	250	0125	FGL250	G25	FG25	-	FC250
HT200	NO.30	GG20	200	0120	FGL200	G20	FG20	-	FC200
HT150	NO.20	GG15	150	0115	FGL150	G15	FG15	-	FC150
HT100	--	--	100	0110	--	G10	--	--	FC100

General technical information

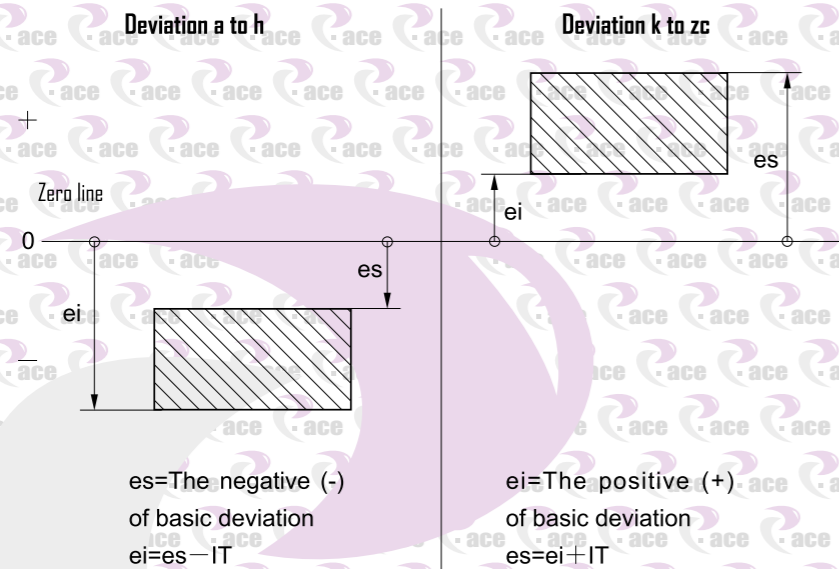
Dimension mm	Standard tolerance grade																			
			IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12	IT13	IT14	IT15	IT16	IT17	IT18
	Greater than	To	µm										mm							
---	3	0.8	1.2	2	3	4	6	10	14	25	40	60	0.1	0.14	0.25	0.4	0.6	1	1.4	
3	6	1	1.5	2.5	4	5	8	12	18	30	48	75	0.12	0.18	0.3	0.48	0.75	1.2	1.8	
6	10	1	1.5	2.5	4	6	9	15	22	36	58	90	0.15	0.22	0.36	0.58	0.9	1.5	2.2	
10	18	1.2	2	3	5	8	11	18	27	43	70	110	0.18	0.27	0.43	0.7	1.1	1.8	2.7	
18	30	1.5	2.5	4	6	9	13	21	33	52	84	130	0.21	0.33	0.52	0.84	1.3	2.1	3.3	
30	50	1.5	2.5	4	7	11	16	25	39	62	100	160	0.25	0.39	0.62	1	1.6	2.5	3.9	
50	80	2	3	5	8	13	19	30	46	74	120	190	0.3	0.46	0.74	1.2	1.9	3	4.6	
80	120	2.5	4	6	10	15	22	35	54	87	140	220	0.35	0.54	0.87	1.4	2.2	3.5	5.4	
120	180	3.5	5	8	12	18	25	40	63	100	160	250	0.4	0.63	1	1.6	2.5	4	6.3	
180	250	4.5	7	10	14	20	29	46	72	115	185	290	0.46	0.72	1.15	1.85	2.9	4.6	7.2	
250	315	6	8	12	16	23	32	52	81	130	210	320	0.52	0.81	1.3	2.1	3.2	5.2	8.1	
315	400	7	9	13	18	25	36	57	89	140	230	360	0.57	0.89	1.4	2.3	3.6	5.7	8.9	
400	500	8	10	15	20	27	40	63	97	155	250	400	0.63	0.97	1.55	2.5	4	6.3	9.7	
500	630	9	11	16	22	32	44	70	110	175	280	440	0.7	1.1	1.75	2.8	4.4	7	11	
630	800	10	13	18	25	36	50	80	125	200	320	500	0.8	1.25	2	3.2	5	8	12.5	
800	1000	11	15	21	28	40	56	90	140	230	360	560	0.9	1.4	2.3	3.6	5.6	9	14	
1000	1250	13	18	24	33	47	66	105	165	260	420	660	1.05	1.65	2.6	4.2	6.6	10.5	16.5	
1250	1600	15	21	29	39	55	78	125	195	310	500	780	1.25	1.95	3.1	5	7.8	12.5	19.5	
1600	2000	18	25	35	46	65	92	150	230	370	600	920	1.5	2.3	3.7	6	9.2	15	23	
2000	2500	22	30	41	55	78	110	175	280	440	700	1100	1.75	2.8	4.4	7	11	17.5	28	
2500	3150	26	36	50	68	96	135	210	330	540	860	1350	2.1	3.3	5.4	8.6	13.5	21	33	

Note
 1. The basic size greater than 500 mm, IT1 to IT5 standard tolerance value for trial.
 2. The basic size less than or equal to 1 mm, no IT4 to IT18.

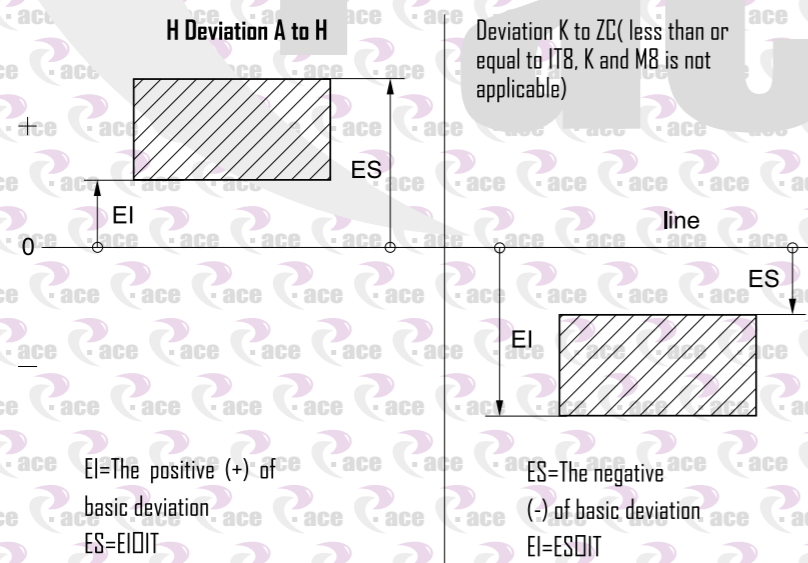
General technical information

Fit Dimension Tolerance

Lower deviation (ei) and upper deviation (es) of axis can be made of axis basic deviation and the standard of tolerance (IT)



Lower deviation (ei) and upper deviation (es) of hole can be made of hole basic deviation and the standard of tolerance (IT)



For example: for a $\varnothing 3$, tolerance grade for the H7 hole, from the basic principle of hole deviation value in the table to check the size range of tolerance grade class H

Lower deviation EI = 0, and tolerance to 7 class corresponding to the standard tolerance of IT

= 10 μ m, the upper deviation ES = EI + IT = 10 μ m.

hole fit dimension is $\varnothing 3 \begin{matrix} +0.01 \\ 0 \end{matrix}$ mm

General technical information

Fit Dimension Tolerance

The basic deviation value

Dimension mm	Basic deviation value												
	upper deviation es												
	All the standard tolerance grade												
Greater than	To	a	b	c	cd	d	e	ef	f	fg	g	h	js
---	3	-270	-140	-60	-34	-20	-14	-10	-6	-4	-2	0	
3	6	-270	-140	-70	-46	-30	-20	-14	-10	-6	-4	0	
6	10	-280	-150	-80	-56	-40	-25	-18	-13	-8	-5	0	
10	14												
14	18	-290	-150	-95		-50	-32		-16		-6	0	
18	24												
24	30	-300	-160	-110		-65	-40		-20		-7	0	
30	40												
40	50	-320	-180	-130		-80	-50		-25		-9	0	
50	65												
65	80	-340	-190	-140		-100	-60		-30		-10	0	
80	100												
100	120	-380	-220	-170		-120	-72		-36		-12	0	
120	140												
140	160	-460	-260	-200		-145	-85		-43		-14	0	
160	180												
180	200	-520	-280	-210									
200	225	-580	-310	-230									
225	250	-660	-340	-240									
250	280	-740	-380	-260									
280	315	-820	-420	-280									
315	355	-920	-480	-300									
355	400	-1050	-540	-330									
400	450	-1200	-600	-360									
450	500	-1350	-680	-400									
500	560	-1500	-760	-440									
560	630	-1650	-840	-480									
630	710												
710	800												
800	900												
900	1000												
1000	1120												
1120	1250												
1250	1400												
1400	1600												
1600	1800												
1800	2000												
2000	2240												
2240	2500												
2500	2800												
2800	3150												

Note: 1. The basic size less than or equal to 1 mm, basic deviation of a and b are not used.

2. If tolerance zone js7 to js11, ITn number values is odd, the deviation = $\pm \frac{ITn-1}{2}$

Deviation = $\pm \frac{ITn}{2}$, and ITn is the number of IT

General technical information

Fit Dimension Tolerance

Basic deviation value																		
lower deviation ei																		
IT5 and IT6	IT7	IT8	IT4 and IT7	≤IT3 >IT7	All the standard tolerance grade													
j			k		m	n	p	r	s	t	u	v	x	y	z	zn	zb	zc
-2	-4	-6	0	0	+2	+4	+6	+10	+14		+18		+20		+26	+32	+40	+60
-2	-4		+1	0	+4	+8	+12	+15	+19		+23		+28		+35	+42	+50	+80
-2	-5		+1	0	+6	+10	+15	+19	+23		+28		+34		+42	+52	+67	+97
-3	-6		+1	0	+7	+12	+18	+23	+28		+33		+40		+50	+64	+90	+130
-4	-8		+2	0	+8	+15	+22	+28	+35		+41	+47	+54	+63	+73	+98	+136	+188
-5	-10		+2	0	+9	+17	+26	+34	+43		+48	+60	+68	+80	+94	+112	+148	+200
-7	-12		+2	0	+11	+20	+32	+41	+53	+66	+87	+102	+122	+144	+172	+226	+300	+405
-9	-15		+3	0	+13	+23	+37	+51	+71	+91	+124	+146	+178	+214	+258	+335	+445	+585
-11	-18		+3	0	+15	+27	+43	+63	+92	+122	+170	+202	+248	+300	+365	+470	+620	+800
-13	-21		+4	0	+17	+31	+50	+77	+122	+166	+236	+284	+350	+425	+520	+670	+880	+1150
-16	-26		+4	0	+20	+34	+56	+84	+130	+180	+258	+310	+385	+470	+575	+740	+960	+1250
-18	-28		+4	0	+21	+37	+62	+94	+158	+218	+315	+385	+475	+580	+710	+920	+1200	+1550
-20	-32		+5	0	+23	+40	+68	+98	+170	+240	+350	+425	+525	+650	+790	+1000	+1300	+1700
			0	0	+26	+44	+78	+108	+190	+268	+390	+475	+590	+730	+900	+1150	+1500	+1900
			0	0	+30	+50	+88	+114	+208	+294	+435	+530	+660	+820	+1000	+1300	+1650	+2100
			0	0	+34	+56	+100	+126	+232	+330	+490	+595	+740	+920	+1100	+1450	+1850	+2400
			0	0	+40	+66	+120	+132	+252	+360	+540	+660	+820	+1000	+1250	+1600	+2100	+2600
			0	0	+48	+78	+140	+150	+280	+400	+600							
			0	0	+58	+92	+170	+155	+310	+450	+660							
			0	0	+68	+110	+195	+175	+340	+500	+740							
			0	0	+76	+135	+240	+185	+380	+560	+840							
					+80	+140	+250	+210	+430	+620	+940							
					+88	+150	+260	+220	+470	+680	+1050							
					+92	+155	+265	+225	+475	+685	+1055							
					+95	+160	+270	+230	+480	+690	+1060							
					+100	+165	+275	+235	+485	+695	+1065							
					+110	+175	+290	+245	+500	+710	+1080							
					+115	+180	+295	+250	+505	+715	+1085							
					+120	+185	+300	+255	+510	+720	+1090							
					+125	+190	+305	+260	+515	+725	+1095							
					+130	+195	+310	+265	+520	+730	+1100							
					+135	+200	+315	+270	+525	+735	+1105							
					+140	+205	+320	+275	+530	+740	+1110							
					+145	+210	+325	+280	+535	+745	+1115							
					+150	+215	+330	+285	+540	+750	+1120							
					+155	+220	+335	+290	+545	+755	+1125							
					+160	+225	+340	+295	+550	+760	+1130							
					+165	+230	+345	+300	+555	+765	+1135							
					+170	+235	+350	+305	+560	+770	+1140							
					+175	+240	+355	+310	+565	+775	+1145							
					+180	+245	+360	+315	+570	+780	+1150							
					+185	+250	+365	+320	+575	+785	+1155							
					+190	+255	+370	+325	+580	+790	+1160							
					+195	+260	+375	+330	+585	+795	+1165							
					+200	+265	+380	+335	+590	+800	+1170							
					+205	+270	+385	+340	+595	+805	+1175							
					+210	+275	+390	+345	+600	+810	+1180							
					+215	+280	+395	+350	+605	+815	+1185							
					+220	+285	+400	+355	+610	+820	+1190							
					+225	+290	+405	+360	+615	+825	+1195							
					+230	+295	+410	+365	+620	+830	+1200							
					+235	+300	+415	+370	+625	+835	+1205							
					+240	+305	+420	+375	+630	+840	+1210							
					+245	+310	+425	+380	+635	+845	+1215							
					+250	+315	+430	+385	+640	+850	+1220							
					+255	+320	+435	+390	+645	+855	+1225							
					+260	+325	+440	+395	+650	+860	+1230							
					+265	+330	+445	+400	+655	+865	+1235							
					+270	+335	+450	+405	+660	+870	+1240							
					+275	+340	+455	+410	+665	+875	+1245							
					+280	+345	+460	+415	+670	+880	+1250							
					+285	+350	+465	+420	+675	+885	+1255							
					+290	+355	+470	+425	+680	+890	+1260							
					+295	+360	+475	+430	+685	+895	+1265							
					+300	+365	+480	+435	+690	+900	+1270							
					+305	+370	+485	+440	+695	+905	+1275							
					+310	+375	+490	+445	+700	+910	+1280							
					+315	+380	+495	+450	+705	+915	+1285							
					+320	+385	+500	+455	+710	+920	+1290							
					+325	+390	+505	+460	+715	+925	+1295							
					+330	+395	+510	+465	+720	+930	+1300							
					+335	+400	+515	+470	+725	+935	+1305							
					+340	+405	+520	+475	+730	+940	+1310							
					+345	+410	+525	+480	+735	+945	+1315							
					+350	+415	+530	+485	+740	+950	+1320							
					+355	+420	+535	+490	+745	+955	+1325							
					+360	+425	+540	+495	+750	+960	+1330							
					+365	+430	+545	+500	+755	+965	+1335							
					+370	+435	+550	+505	+760	+970	+1340							
					+375	+440	+555	+510	+765	+975	+1345							
					+380	+445	+560	+515	+770	+980	+1350							
					+385	+450	+565	+520	+775	+985	+1355							
					+390	+455	+570	+525	+780	+990	+1360							
					+395	+460	+575	+530	+785	+995	+1365							
					+400	+465	+580	+535	+790	+1000	+1370							
					+405	+470	+585	+540	+795	+1005	+1375							
					+410	+475	+590	+545	+800	+1010	+1380							
					+415	+480	+595	+550	+805	+1015	+1385							
					+420	+485	+600	+555	+810	+1020	+1390							
					+425	+490	+605	+560	+815	+1025	+1395							
					+430	+495	+610	+565	+820	+1030	+1400							
					+435	+500	+615	+570	+825	+1035	+1405							
					+440	+505	+620	+575	+830	+1040	+1410							
					+445	+510	+625	+580	+835	+1045	+1415							
					+450	+515	+630	+585	+840	+1050	+1420							
					+455	+520	+635	+590	+845	+1055	+1425							
					+460	+525	+640	+595	+850	+1060	+1430							
					+465	+530	+645	+600	+855	+1065	+1435							
					+470	+535	+650	+605	+860	+1070	+1440							
					+475	+540	+655	+610	+865	+1075	+1445							
					+480	+545	+660	+615	+870	+1080	+1450							
					+485	+550	+665	+620	+875	+1085	+1455							
					+490	+555	+670	+625	+880	+1090	+1460							
					+495	+560	+675	+630	+885	+1095	+1465							
					+500													

General technical information

Fit Dimension Tolerance

Basic deviation value												The number of Δ					
upper deviation ES																	
Standard tolerance grade more than IT7												standard tolerance grade					
P	R	S	T	U	V	X	Y	Z	ZA	ZB	ZC	IT3	IT4	IT5	IT6	IT7	IT8
-6	-10	-14		-18		-20		-26	-32	-40	-60	0	0	0	0	0	0
-12	-15	-19		-23		-28		-35	-42	-50	-80	1	1.5	1	3	4	6
-15	-19	-23		-28		-34		-42	-52	-67	-97	1	1.5	2	3	6	7
-18	-23	-28		-33		-40		-50	-64	-90	-130	1	2	3	3	7	9
					-39	-45	-60	-77	-108	-150							
-22	-28	-35		-41	-47	-54	-63	-73	-98	-136	-188	1.5	2	3	4	8	12
			-41	-48	-55	-64	-75	-88	-118	-160	-218						
-26	-34	-43		-48	-60	-68	-80	-94	-112	-148	-200	1.5	3	4	5	9	14
			-54	-70	-81	-97	-114	-136	-180	-242	-325						
-32	-41	-53	-66	-87	-102	-122	-144	-172	-226	-300	-405	2	3	5	6	11	16
	-43	-59	-75	-102	-120	-146	-174	-210	-274	-360	-480						
-37	-51	-71	-91	-124	-146	-178	-214	-258	-335	-445	-585	2	4	5	7	13	19
	-54	-79	-104	-144	-172	-210	-254	-310	-400	-525	-690						
-43	-63	-92	-122	-170	-202	-248	-300	-365	-470	-620	-800	3	4	6	7	15	23
	-65	-100	-134	-190	-228	-280	-340	-415	-535	-700	-900						
	-68	-108	-146	-210	-252	-310	-380	-465	-600	-780	-1000						
-50	-77	-122	-166	-236	-284	-350	-425	-520	-670	-880	-1150	3	4	6	9	17	26
	-80	-130	-180	-258	-310	-385	-470	-575	-740	-960	-1250						
	-84	-140	-196	-284	-340	-425	-520	-640	-820	-1050	-1350						
-56	-94	-158	-218	-315	-385	-475	-580	-710	-920	-1200	-1550	4	4	7	9	20	29
	-98	-170	-240	-350	-425	-525	-650	-790	-1000	-1300	-1700						
-62	-108	-190	-268	-390	-475	-590	-730	-900	-1150	-1500	-1900	4	5	7	11	21	32
	-114	-208	-294	-435	-530	-660	-820	-1000	-1300	-1650	-2100						
-68	-126	-232	-330	-490	-595	-740	-920	-1100	-1450	-1850	-2400	5	5	7	13	23	34
	-132	-252	-360	-540	-660	-820	-1000	-1250	-1600	-2100	-2600						
-78	-150	-280	-400	-600													
	-155	-310	-450	-660													
-88	-175	-340	-500	-740													
	-185	-380	-560	-840													
100	-210	-430	-620	-940													
	-220	-470	-680	-1050													
-120	-250	-520	-780	-1150													
	-260	-580	-840	-1300													
-140	-300	-640	-960	-1450													
	-330	-720	-1050	-1600													
-170	-370	-820	-1200	-1850													
	-400	-920	-1350	-2000													
-195	-440	-1000	-1500	-2300													
	-460	-1100	-1650	-2500													
-240	-550	-1250	-1900	-2900													
	-580	-1400	-2100	-3200													

General technical information

Hardness comparison table (Black metal hardness and strength of approximate conversion value)

Hardness					Tensile Strength N/mm ²
Rockwell		Vickers	Brinell		
HRC	HRA	HV	HB		
70.0	86.6	1037	—		—
69.5	86.3	1017	—		—
69.0	86.1	997	—		—
68.5	85.8	978	—		—
68.0	85.5	959	—		—
67.5	85.2	941	—		—
67.0	85.0	923	—		—
66.5	84.7	906	—		—
66.0	84.4	889	—		—
65.5	84.1	872	—		—
65.0	83.9	856	—		—
64.5	83.6	840	—		—
64.0	83.3	825	—		—
63.5	83.1	810	—		—
63.0	82.8	795	—		—
62.5	82.5	780	—		—
62.0	82.2	766	—		—
61.5	82.0	752	—		—
61.0	81.7	739	—		—
60.5	81.4	726	—		—
60.0	81.2	713	—		2555
59.5	80.9	700	—		2500
59.0	80.6	688	—		2450
58.5	80.3	676	—		2395
58.0	80.1	664	—		2345
57.5	79.8	653	—		2295
57.0	79.5	642	—		2250
56.5	79.3	631	—		2205
56.0	79.0	620	—		2160
55.5	78.7	609	—		2115
55.0	78.5	599	—		2075
54.5	78.2	589	—		2035
54.0	77.9	579	—		1995
53.5	77.7	570	—		1955
53.0	77.4	561	—		1920
52.5	77.1	551	—		1885
52.0	76.9	543	—		1850
51.5	76.6	534	—		1815
51.0	76.3	525	—		1780
50.5	76.1	517	—		1750
50.0	75.8	509	—		1720
49.5	75.5	501	—		1690
49.0	75.3	493	—		1660
48.5	75.0	485	—		1630
48.0	74.7	478	—		1605
47.5	74.5	470	—		1575
47.0	74.2	463	—		1550
46.5	73.9	456	—		1525
46.0	73.7	449	—		1500
45.5	73.4	443	—		1475
45.0	73.2	436	—		1450
44.5	72.9	429	—		1430
44.0	72.6	423	—		1405
43.5	72.4	417	—		1385
43.0	72.1	411	—		1360
42.5	71.8	405	—		1340
42.0	71.6	399	—		1320
41.5	71.3	393	—		1300
41.0	71.1	388	—		1280
40.0	70.8	382	—		1260
40.0	70.5	377	—		1245
39.5	70.3	372	—		1225
39.0	70.0	367	—		1210
38.5	—	362	—		1190
38.0	—	357	—		1175
37.5	—	352	—		1160
37.0	—	347	—		1140
36.5	—	342	—		1125
36.0	—	338	—		1110
35.5	—	333	—		1095
35.0	—	329	—		1080
34.5	—	324	—		1065
34.0	—	320	—		1050
33.5	—	316	—		1035
33.0	—	312	—		1020
32.5	—	308	—		1010

General technical information

Hardness Comparison Table

Hardness				Tensile Strength N/mm ²	Hardness				Tensile Strength N/mm ²
Rockwell		Vickers	Brinell		Rockwell		Vickers	Brinell	
HRC	HRA	HV	HB	HRC	HRA	HV	HB		
32.0	—	304	298	995	24.0	—	249	245	820
31.5	—	300	294	980	23.5	—	246	242	810
31.0	—	296	291	970	23.0	—	243	240	800
30.5	—	292	287	960	22.5	—	240	237	790
30.0	—	289	283	950	22.0	—	237	234	785
29.5	—	285	280	935	21.5	—	234	232	775
29.0	—	281	276	920	21.0	—	231	229	765
28.5	—	278	273	910	20.5	—	229	227	760
28.0	—	274	269	900	20.0	—	226	225	750
27.5	—	271	266	890	19.5	—	223	222	745
27.0	—	268	263	880	19.0	—	221	220	735
26.5	—	264	260	870	18.5	—	218	218	730
26.0	—	261	257	860	18.0	—	216	216	725
25.5	—	258	254	850	17.5	—	214	214	715
25.0	—	255	251	835	17.0	—	211	211	710
24.5	—	252	248	830					

Note: this table listed all the equivalent value of steel tie, applicable to steel from low to high carbon content. Tensile strength values listed in this table, suitable for general steel grade of conversion accuracy is not high, IN/m²=MPa.

This table from GB1172-740

General technical information

The World Tool Grade Comparison Table

>> CVD Coated Grade

Category	Classification	Code	SANDVIK	KENAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT
P	P	P10			T200M T250M							
		P20	GC4020		T200M T250M T350M T25M	IC520M	F7030				JC730U	YBC201 YBM251
		P30	GC4030	KC930M	T250M T350M T25M	IC4050 IC450	F7030	AC230	T3030			YBC301
		P40	GC4030		T350M	IC4050 IC635						YBC401 YBM351 YB235
M	M	M10										
		M20		KC925M	T250M T25M		F7030				JC730U	YB235
		M30	GC2040	KC930M	T350M T25M		F7030		T3030			YBM351 YBC401
		M40										
K	K	K01										
		K10	PC15C		KC915M		IC4010 IC418	F5010	AC211	T1015		JC600
		K20	PC15C	GC3020	KC925M	T150M T200M	IC520M	F5020		T1020		JC610
		K30		GC3040	KC930M	T200M	IC4050 IC450					YBG40

>> PVD Coated Grade

Category	Classification	Code	SANDVIK	KENAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT	
P	P	P01									JC5003		
		P10	PC22G PC25G		KC792M KC715M			ACZ310 ACZ330		PR630PR730PR830	JC5003	YBG102	
		P20	PC20H PC25H	GC1025	KC522M KC525M	F25M	IC950 IC908	VP15TF	ACZ310 ACZ330		PR630PR730PR830	JC5003	YBM252
		P30	PC20H PC25H		KC725M	F25M F30M	IC250	VP15TF VP30RT	ACZ330 ACZ350	GH330AH330 AH120 AH740	PR660	JC5015 JC5040	YBG202 YB302
M	M	P40	PC25H		KC735M	F40M T60M	IC328 IC928	VP30RT	ACZ350		AH120	JC5040	YBG302 YBG402
		M01											
		M10	PC20H		KC715M						PR630PR730PR830	JC5003	
		M20	PC20H PC25H	GC1025	KC522M KC525M	F25M	IC908	VP15TF	ACZ310	GH330	PR630PR730PR830	JC5015JC5030JC5040YBG202	YBM252
M	M	M30	PC20H PC25H	GC2030	KC725M KC7355M	F30M F40M	IC928	VP15TF VP30RT	ACZ330 ACZ350	AH120	PR660	JC5015JC5030JC5040	YBM252
		M40	PC60H				IC328	VP30RT	ACZ350	AH140			YBG302 YBG402

General technical information

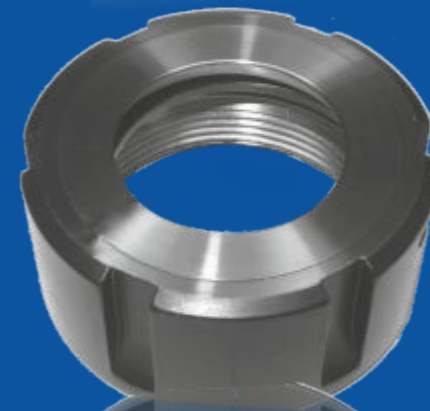
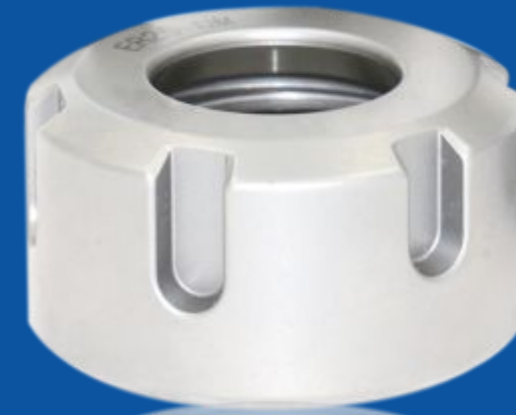
The World Tool Grade Comparison Table

>> Pvd Coated Grade

Category	Classification	CODE	ace	SANDVIK	KENAMETAL	SECO	ISCAR	mitsubishi	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT	
MILLING	K	K01								AH110	PR510	JC5003		
		K10			KC510M				ACZ310	AH110 GH110	PR510 PR905	JC5003 JC5015	YBG102	
		K20			KC520M KC522N KC525M		IC910 IC950		VP15TF	ACZ310	AH120	PR905	JC5015	YBG202
		K30			KC725M		IC328 IC908 IC928		VP15TF					YBG302
	S	S01											JC5003	
		S10	PC60H PC25H	GC1025	KC510M		IC908		VP15TF		AH120		JC5015	YBG202
		S20	PC60H PC25H		KC522M KC525M		IC908		VP15TF					YBG202
		S30			KC725M	F40M	IC328 IC928							YBG302
	H	H01											JC5003	
		H10	PC20H			F15M			VP15TF				JC5015	YBG102 YBG202
		H20	PC25H			F15M			VP15TF					YBG202
		H30				F30M								

>> Hard Alloy Material

Category	Classification	CODE	ace	SANDVIK	KENAMETAL	SECO	ISCAR	mitsubishi	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT
MILLING	P	P10		S1P								SRT	YC10
		P20	PC20H		K125		IC50M IC28	UT120T	A30N	TX25		SRT DX30	
		P30	PC25H	GX K600			IC50M IC28	UT120T	A30N	UX30	PW30	SR30 DX30	
		P40					IC28				PW30	SR30	
M	M10			K110M								UMN	
	M20	PC20H		K313			UT120T	A30N				DX25 UMS	
	M30	PC25H		KFM K600		IC28	UT120T	A30N	UX30			DX25 UMS	
	M40					IC28			TU40				
K	K01							HT105T				KG03	
	K10		AC-H1P	K110M K313		IC20	HT110	G10E	ATH10		KW10	KG10	YD051
	K20			KFM	HX	IC20 IC10	HT120T	G10E				KT9 CR1 KG20	
	K30					IC10 IC18	HT120T					KG30	



ER08 (A)

ER08 (M)

ER11 (A)

ER11 (M)

ER16 (A)

ER16 (M)

ER20 (A)

ER20 (M)

ER25 (M)

ER25 (UM)

ER32 (M)

ER32 (UM)

ER40 (UM)

ER50 (UM)

GER

SPANNER & NUTS



BT ADAPTOR

BT30-ER11-70 / 100	BT40-SLA12 - 60 / 100
BT30-ER16-70 / 100	BT40-SLA16 - 60 / 100
BT30-ER20-70 / 100	BT40-SLA20 - 70 / 100
BT30-ER25-70 / 100	BT40-SLA25 - 70 / 100
BT30-ER32-70 / 100	BT40-SLA32 - 70 / 100
BT30-ER40-70 / 100	BT40-MT - 70 / 100
BT30-FMB22 - 70 / 100	BT40-MT2 - 70 / 100
BT30-FMB27 - 70 / 100	BT40-MT3 - 70 / 100
BT30-SLA12 - 60 / 100	BT40-MT4 - 70 / 100
BT30-SLA16 - 60 / 100	BT50-ER11-70 / 100 / 150
BT30-SLA20 - 70 / 100	BT50-ER16-70 / 100 / 150 / 200
BT30-SLA25 - 70 / 100	BT50-ER20-70 / 100 / 150 / 200
BT30-SLA32 - 70 / 100	BT50-ER25-70 / 100 / 150 / 200 / 300
BT30-MT - 70 / 100	BT50-ER32-70 / 100 / 150 / 200 / 300
BT30-MT2 - 70 / 100	BT50-ER40-70 / 100 / 150 / 200 / 300
BT30-MT3 - 70 / 100	BT50-FMB22 - 70 / 100 / 150 / 200 / 300
BT30-MT4 - 70 / 100	BT50-FMB27 - 70 / 100 / 150 / 200 / 300
BT40-ER11-70 / 100 / 150	BT50-FMB32 - 100 / 150 / 200 / 300
BT40-ER16-70 / 100 / 150 / 200	BT50-FMB40 - 100 / 150 / 200 / 300
BT40-ER20-70 / 100 / 150 / 200	BT50-SLA10 - 60 / 100
BT40-ER25-70 / 100 / 150 / 200 / 300	BT50-SLA12 - 60 / 100
BT40-ER32-70 / 100 / 150 / 200 / 300	BT50-SLA16 - 60 / 100
BT40-ER40-70 / 100 / 150 / 200 / 300	BT50-SLA20 - 70 / 100
BT40-FMB22 - 70 / 100 / 150 / 200 / 300	BT50-SLA25 - 70 / 100
BT40-FMB27 - 70 / 100 / 150 / 200 / 300	BT50-SLA32 - 70 / 100
BT40-FMB32 - 100 / 150 / 200 / 300	BT50-MT - 70 / 100
BT40-FMB40 - 100 / 150 / 200 / 300	BT50-MT2 - 70 / 100
BT40-SLA10 - 60 / 100	BT50-MT3 - 70 / 100
BT40-SLA12 - 60 / 100	BT50-MT4 - 70 / 100



High Precision Adaptor

BT30-GER11-70 / 100	BT40-GER16-70 / 100
BT30-GER16-70 / 100	BT40-GER20-70 / 100
BT30-GER20-70 / 100	BT40-GER25-70 / 100
BT30-GER25-70 / 100	BT40-GER32-70 / 100
BT30-GER32-70 / 100	BT40-GER40-70 / 100
BT30-GER40-70 / 100	BT40-C20-105
BT30-C20-105	BT40-C32-105
BT30-APU13-100	BT40-APU13-110
BT40-GER11-70 / 100	BT40-APU16-120



ER BABY CHUCK

C10-ER08 M / A - 100 / 150	C25-ER25M 100 / 150 / 200
C12-ER08 M / A - 100 / 150	C32-ER16 M / A-100 / 150 / 200
C12-ER11 M / A - 100 / 150	C32-ER25M-100 / 150 / 200
C16-ER11 M / A - 100 / 150 / 200	C32-ER32M-100 / 150 / 200
C16-ER16 M / A - 100 / 150 / 200	C40-ER20M-100 / 150 / 200
C20-ER16 M / A - 100 / 150 / 200	C40-ER25M-100 / 150 / 200
C20-ER20 M / A - 100 / 150 / 200	C40-ER32M-100 / 150 / 200
C25-ER20 M / A - 100 / 150 / 200	C50-ER32M-100 / 150 / 200

