



CUTTING TOOL CATALOG (INCH)

2023



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

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

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



Company Profile

Ganzhou Achtech Tool Technology Co., Ltd. is a wholly-owned subsidiary of Chongyi Zhangyuan Tungsten Co., Ltd. (Listed Company with stock code 002378). The registered capital of Achtech is 260 million USD with 700 employees. The main products include: Coated Carbide Inserts, Carbide Rod and supporting tool holders. Achtech is known for its outstanding R&D competence, production and testing equipment and its coated carbide insert production technology. Achtech produces inserts for Turning, Grooving, Milling and Drilling that are widely applied in automotive, energy, die and mold, general machinery, aerospace and other industries.

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

Small Tools



2023
NEW

Product Features and Applications

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

Round Tools



Product Features and Applications

- Achteck has abundant solid carbide round tools including drills and end mills. Offering higher productivity and cost effectivitiy to all customers.
- Drills: D106/ D108 standard drills, diameter range from 0.12 inch to 0.79 inch; universal 3xDc to 8xDc solid carbide drills.
- End mills: ECO/PRO/XP solid carbide end mills are 3 product lines, from 2 cutting edges to 6 cutting edges, from round corner to waved edge, from univeral machining to dedicated machining. Solid carbide end mills have various product types.



Product Features and Applications

- Cermet inserts have high thermal conductivity, good chemical stability and toughness.
- AT202 grade is the 1st choice for general machining, is suitable for steel finishing and semi-finishing, has great performance at high-speed continuous machining and stable machining under poor machining condition.



Cermet Inserts

Grooving Inserts



Product Features and Applications

Double edged inserts

- Holder offering includes external, internal, face grooving, turning and profile machining.
- Inserts width: 0.079 inch to 0.31 inch
- Grooving and parting off geometries: CS, CM, CH
- Grooving and turning geometries: GS, TS, TM, RM, RA.
- Precision ground inserts cover 0.039 inch to 0.31 inch , can be used in parting, grooving and profile machining.
- Unique rake geometry design combined with double relief angle on the sides, obtains more clearance in face grooving and internal grooving, so it can machine larger diameters.

New! Triangular Insert

- Three types of insert: ATG32, ATG43, ASG32.
- Holder offering covers external grooving, internal grooving and profile machining.
- Insert width range: 0.013 inch to 0.19 inch. More choices and good expansibility.
- High precision ground insert obtained excellent surface quality.



Product Features and Applications

- Positive square shoulder milling insert, three cutting edges, economical choice.
- Positive rake angle and spiral edge design, light cutting.
- Nose radius range: R0.8, R1.2, R1.6, R2.0, R2.4, R3.1, R4.0.
- Insert with short wiper, better surface quality.
- Pressed and ground insert choices for different machining precision requests.
- Wide application range: Used for square shoulder milling, face milling, slot milling, ramping, helical interpolate milling.
- Insert tip is protected due to the unique design.

ASM90-TD15 series

Square Shoulder Milling Tools



Product Features and Applications

- Cutter diameter range (Dc): Ø2.50 inch -Ø 10.00 inch, both left and right hand tool body.
- Close and coarse pitch cutter design, with arbor coupling.
- Negative tangential insert, four left and four right hand cutting edges.
- E class peripheral ground insert, cutting edge with short wiper.
- Application range: Square shoulder milling and face milling; good surface finishing.
- Suitable for steel, stainless steel and cast iron rough and finish milling, good versatility.

ASM90-LN12 series

Square Shoulder Milling Tools

BS, SC1, SL3 New geometries for steel profile turning and stainless steel and heat resistant alloy turning.

ISO Turning Inserts

Features and Applications

BS Geometry

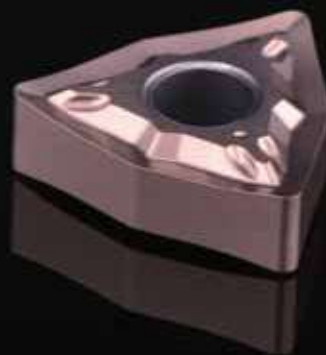
- Suitable for profile machining and corner turning.
- Good chip breaking and smooth chip evacuation in machining at low cutting depth.
- Keep constant chip evacuation in machining at various cutting depth.

SC1 Geometry

- Suitable for stainless steel and heat resistant alloy finish machining.
- Good chip control in machining at low feed and low cutting depth.
- Curved cutting edge reduced cutting force and built-up edge to obtain good surface quality and longer tool life.

SL3 Geometry

- Suitable for machining slender shaft, thin wall and unstably clamped parts.
- Guiding slot is good for precision cooling.
- Suitable for machining stainless steel and heat resistant alloy.





Features and Applications

- CVD coated grade.
- Excellent crater wear resistance and anti-plastic deformation.
- Used in steel high productivity medium and rough turning under stable conditions, high metal removal rate.
- Can withstand high temperature, and maintain good edge reliability under wet and dry machining condition.



AC052P High Productivity Turning Grade
ISO Turning Inserts



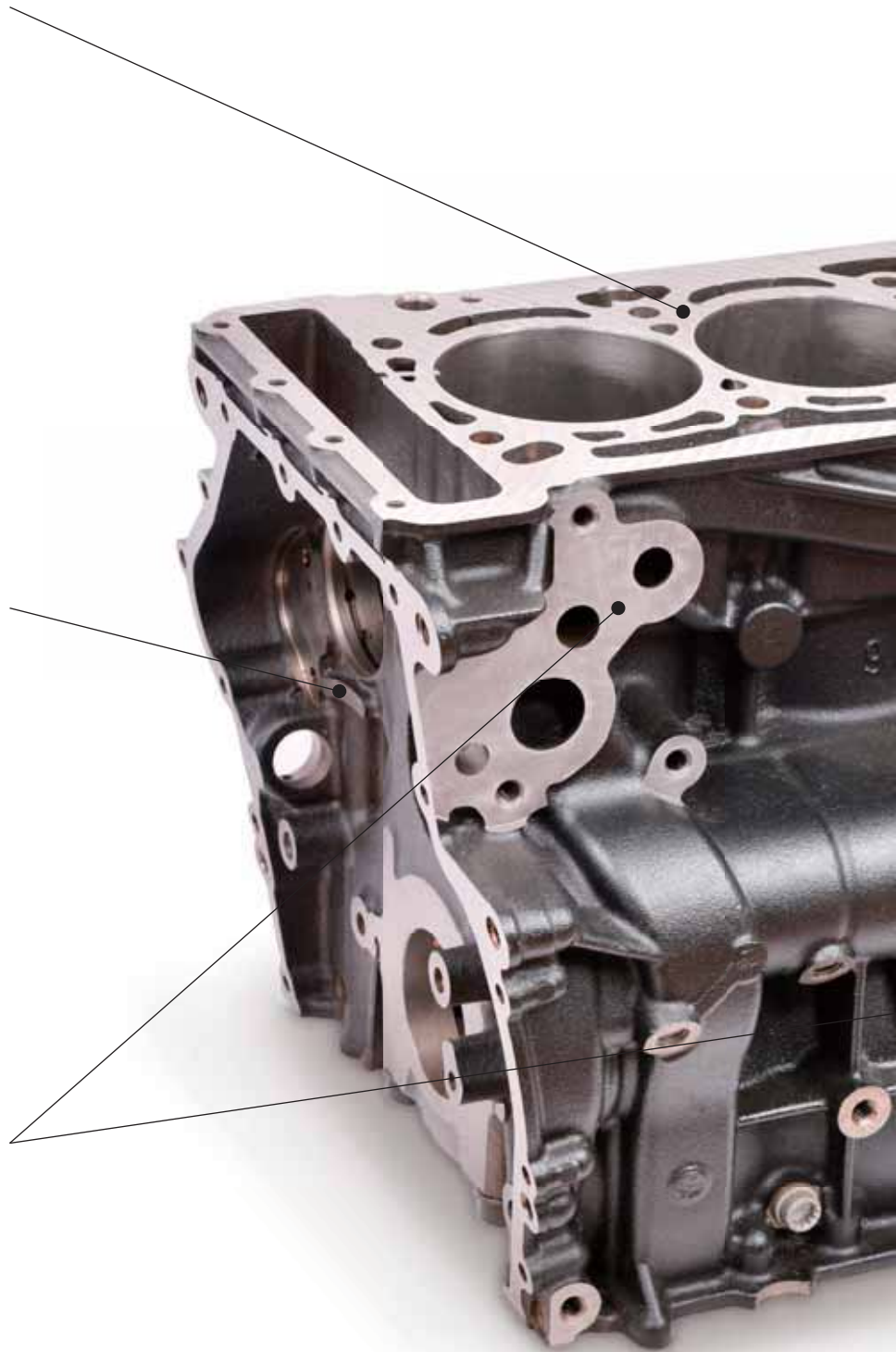
AFM45-XN09-W milling cutter with heptagon inserts, extra close pitch with wedge clamping, combined with heat resistant CVD coated inserts. The ideal choice for cast iron rough milling.



APE90-LN09/LN13 porcupine milling tools in full teeth, high metal removal rate, reliable and safe milling environment.



ASM90-LN09/LN13 square shoulder milling cutter with 4 cutting edge tangential inserts with helical edge profile. The reliable cutting edge can adopt 30% higher f_z , higher metal removal rate and productivity.





AFF40-LN12/15 cast iron finish milling cutter, combined with octagon main cutting inserts and wiper inserts. It's cost efficient and easy to handle. The good wear resistant grade and high precision cutting edge guaranteed excellent surface finishing and longer tool life.



D106 drill series, the substrate has both hardness and toughness, combined with high wear resistant PVD coating. It can reach higher tool life in cast iron machining. The unique drill tip geometry can reduce the edge chipping.

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Machining Solutions for Engine Block

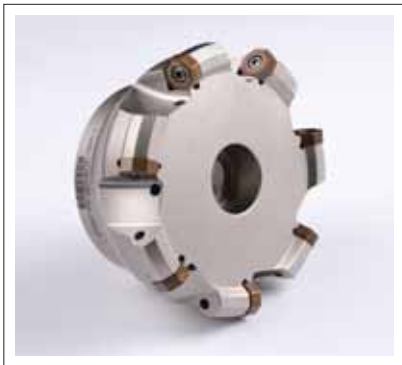
Machining Solution for Turbocharger Housing



Special side face milling cutter is used in machining the back face of flange.



ASM90-LN13 square shoulder milling cutter with tangential mounted inserts. The insert has 4 cutting edges, can be used to machine the boss surface on the turbocharger.



AFF45-0N05-C-S, with 45 degree approach angle, using 16 cutting edge insert with wiper edge. Used in finish milling the flange face of turbocharger casing



AFM45-XN07 face milling cutter with heptagon inserts, 14 cutting edges, with nanostructured PVD coating. Used in rough milling the flange face, with a high performance/cost ratio.





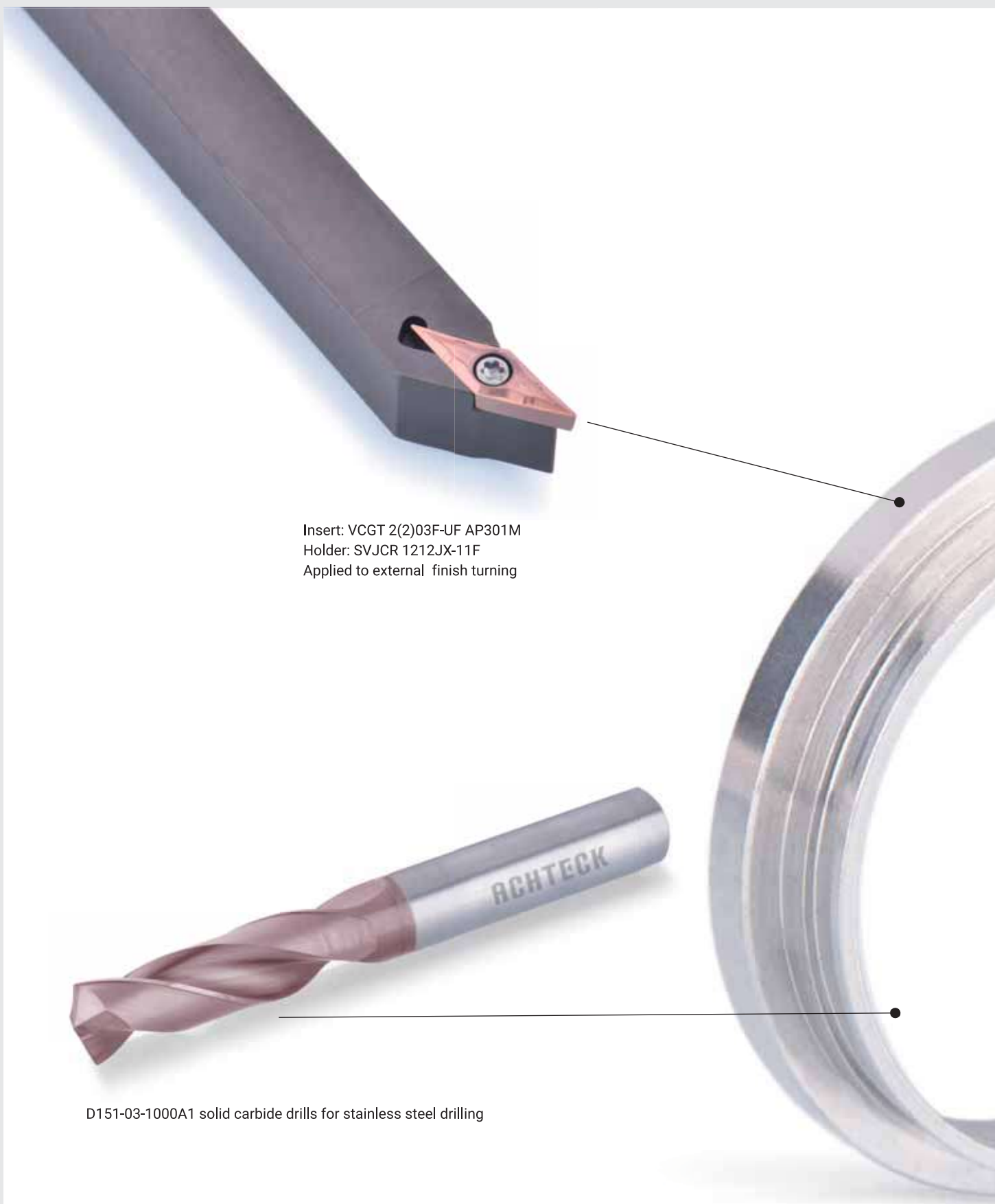
AP100S/AP301M PVD grades, used in rough external turning and face turning of turbocharger housing



ATD grooving insert series can be used in external, face and V-shaped grooving.



Special boring tool, used in the turbocharger housing boring.



Insert: VCGT 2(2)03F-UF AP301M
Holder: SVJCR 1212JX-11F
Applied to external finish turning

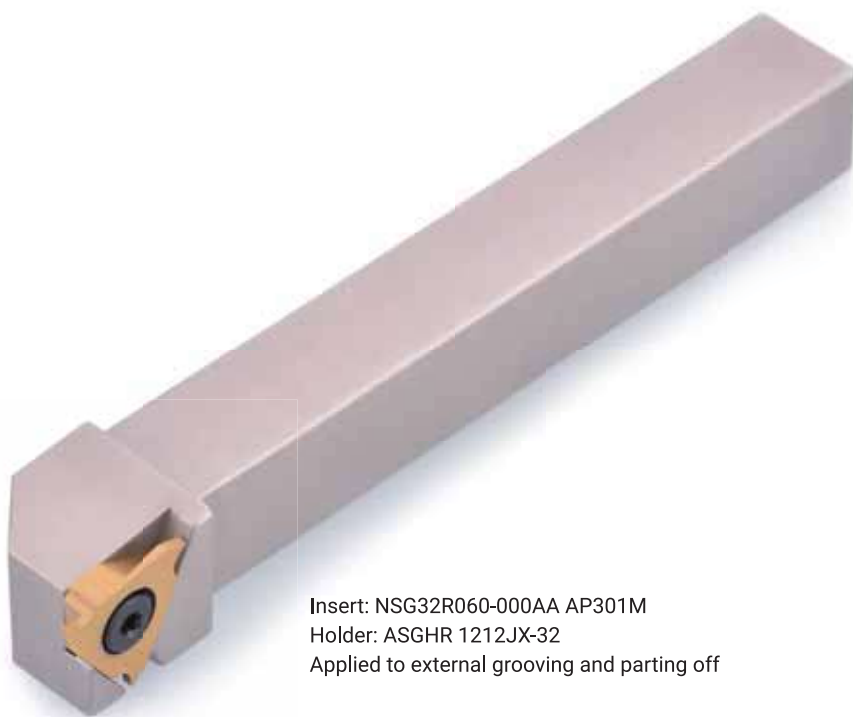


D151-03-1000A1 solid carbide drills for stainless steel drilling

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**Machining Solution
for Cellphone Camera Lens Supporting Ring**



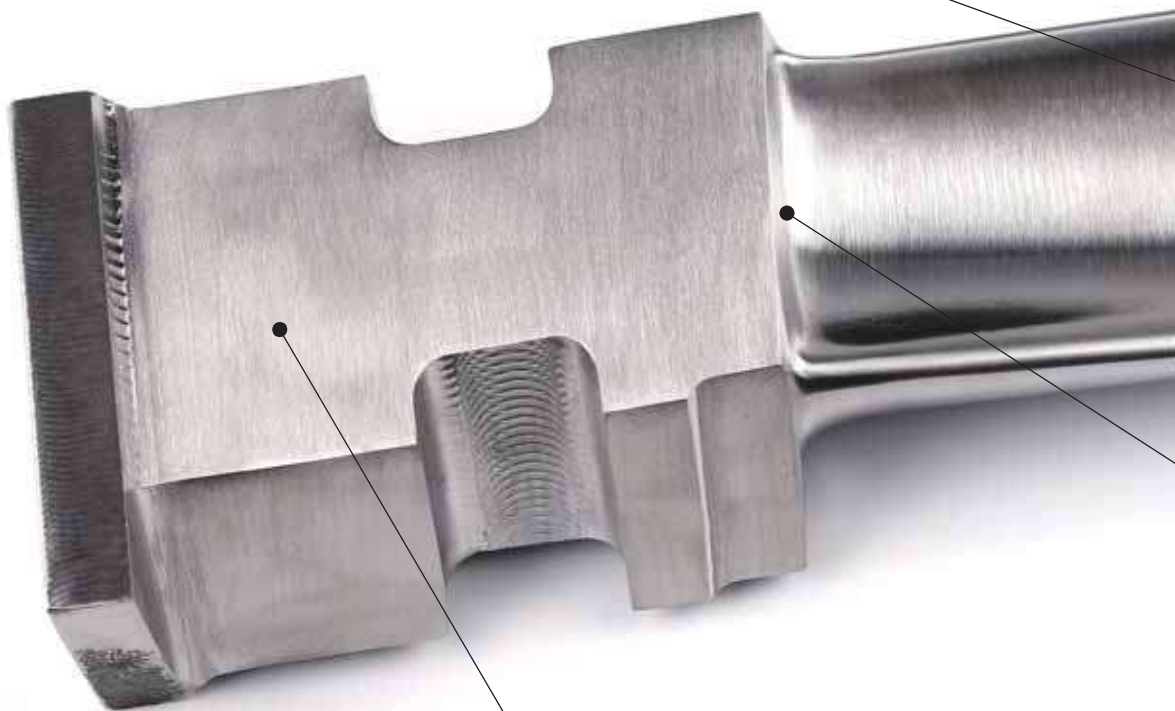
Insert: NSG32R060-000AA AP301M
Holder: ASGHR 1212JX-32
Applied to external grooving and parting off



Insert: NSW10L105-020AA AP301M
Holder: Special
Applied to internal grooving and finish boring



APM00-R012 cutter, used in rough milling of blade airfoil



ASM90-WN08 square shoulder milling cutter with negative insert, 6 cutting edges, accurate 90 degree design, used in rough or finish milling blade root and shroud.

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Machining Solutions for Steam Turbine and Aircraft Turbine Blade



APM00-RP080/100 is used in rough milling the transition area between blade airfoil and root

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THE EXPERTS OF DIFFICULT MACHINING



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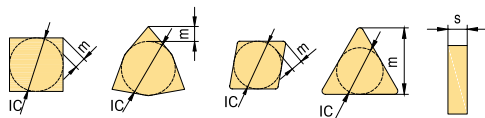
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ISO Turning Insert Denomination System

C	N	M	G
1	2	3	4
</			

3- Tolerance



Class	Unit	In.Circle dimension IC	Nose height m	Thickness s
A	in	± 0.0010	± 0.0002	± 0.0010
C	in	± 0.0010	± 0.0005	± 0.0010
E	in	± 0.0010	± 0.0010	± 0.0010
F	in	± 0.0005	± 0.0002	± 0.0010
G	in	± 0.0010	± 0.0010	± 0.0005
H	in	± 0.0005	± 0.0005	± 0.0010
J	in	*	± 0.0002	± 0.0010
K	in	*	± 0.0005	± 0.0010
L	in	*	± 0.0010	± 0.0010
M	in	*	*	± 0.0005
U	in	*	*	± 0.0005
N	in	*	*	± 0.0010

* For details refer to right and below tables

Shape: C, E, H, M, O, P, S, T, R, W				
IC	d		m	
	J,K,L,M,N	U	M,N	U
3/16	±0.002	±0.003	±0.003	±0.005
7/32	±0.002	±0.003	±0.003	±0.005
0.236	±0.002	±0.003	±0.003	±0.005
1/4	±0.002	±0.003	±0.003	±0.005
5/16	±0.002	±0.003	±0.003	±0.005
0.315	±0.002	±0.003	±0.003	±0.005
3/8	±0.002	±0.003	±0.003	±0.005
0.394	±0.002	±0.003	±0.003	±0.005
0.472	±0.003	±0.005	±0.005	±0.007
1/2	±0.003	±0.005	±0.005	±0.008
5/8	±0.004	±0.007	±0.005	±0.011
0.630	±0.003	± 0.007	±0.006	±0.011
3/4	±0.004	±0.007	±0.005	±0.011
0.787	±0.004	±0.007	±0.006	±0.011
0.984	±0.005	±0.010	±0.007	±0.015
1	±0.005	±0.010	±0.007	±0.015
1¼	±0.006	±0.010	±0.008	±0.015
1.260	±0.006	±0.010	±0.200	±0.015

M&N shape	D shape		V shape	
IC	d	m	d	m
7/32	±0.002	±0.004		
1/4	±0.002	±0.004	±0.002	±0.006
5/16	±0.002	±0.004	±0.002	±0.006
3/8	±0.002	±0.004	±0.002	±0.006
1/2	±0.003	±0.006	±0.003	±0.008
5/8	±0.004	±0.007	±0.004	±0.011
3/4	±0.004	±0.007	±0.004	±0.011

4 - Type of insert				
A	B	C	F	G
H	J	M	N	Q
R	T	U	W	Z
				Special

4

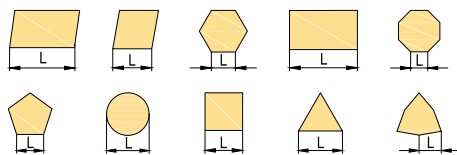
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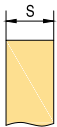
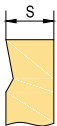
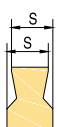
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6

5- Cutting edge length

in	In.Circle Dimension (in)	insert shape						
		C	D	R	S	T	V	W
1.2 (5)	5/32					06		02
1.5 (6)	5			05				
1.8 (7)	7/32			09				
	0.236		06					
2	1/4	06	07			11	11	04
	0.315			08				
3	3/8	09	11	09	09	16	16	06
	0.394			10				
	0.472			12				
4	1/2	12	15	12	12	22	22	08
5	5/8	16		15	15	27		
	0.630			16				
6	3/4	19		19	19	33		
	0.787			20				
	0.984			25				
8	1	25		25	25			
10	1 1/4			31				
	1.260			32				

**6- Thickness**

A, B, C, N, O, W,		Example: 0.5(1) = 1/32 0.6 = 0.040 1(2) = 0.625 1.2 = 0.075 1.5(3) = 3/32 2 = 1/8 2.5 = 5/32 3 = 3/16 3.5 = 7/32 4 = 1/4 5 = 5/16 6 = 3/8 7 = 7/16 8 = 1/2
H, M, R, T,		
F, G, J, U,		

2

7

F

8

-

-

R

9

7- Nose radius

Corner radius

Example:

M0 = round insert (metric)

00 = Sharp

0 = 0.004

0.5 = 0.008

1 = 1/64

2 = 1/32

3 = 3/64

4 = 1/16

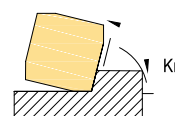
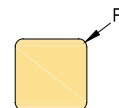
5 = 5/64

6 = 3/32

7 = 7/64

8 = 1/8

X = Others



Wiper

Approaching angle (Kr)

A = 45°

D = 60°

E = 75°

F = 85°

G = 87°

P = 90°

Z = Others

Wiper clearance angle (an)

A = 3°

B = 5°

C = 7°

D = 15°

E = 20°

F = 25°

G = 30°

N = 0°

P = 11°

Z = Others

8- Edge preparation

F	Sharp cutting edge
NO	Edge processing

9-Direction of the blade

L	Left
R	Right

10- Chip Breaker Illustration

Refer to page : 28-43

Ground positive insert sample

CCET 3 2.5 03 F P R -- F

F: Sharp cutting edge
NO: Edge processingP: Insert
polishingL: Left
R: Right

Chip breaker

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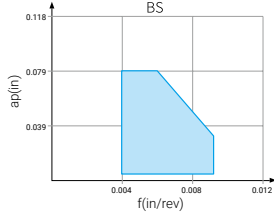
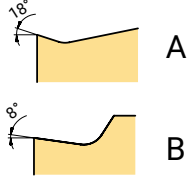
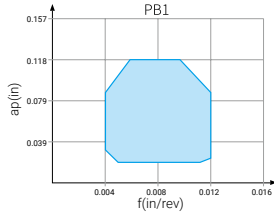
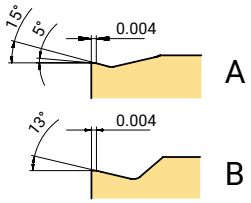
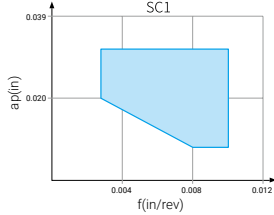
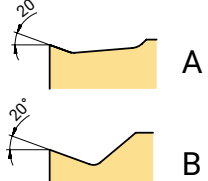
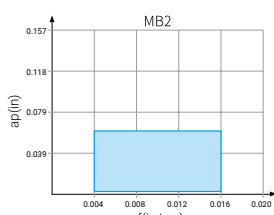
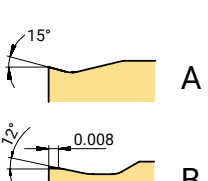
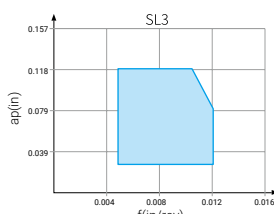
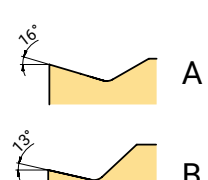
Turning Inserts

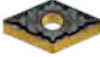
Turning and Grooving Grade Application Guide

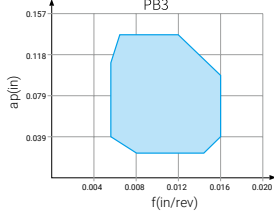
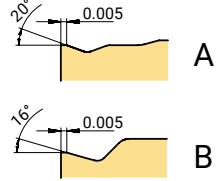
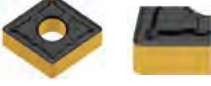
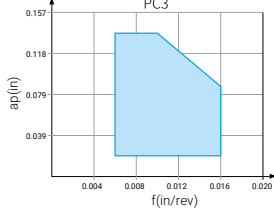
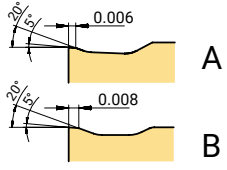
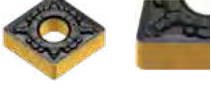
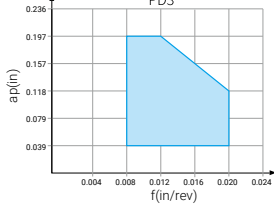
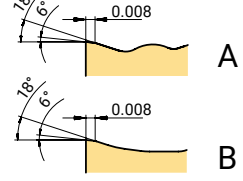
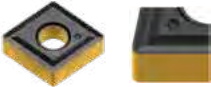
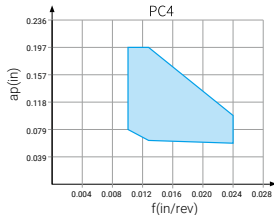
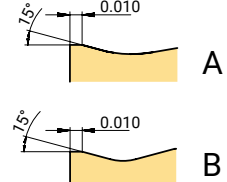
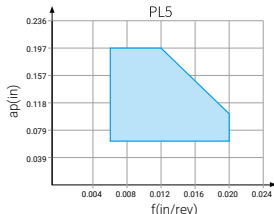
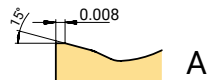
Material Group		ISO	Turning							Grooving/ Parting off		ISO
			Coated		Cermet	Uncoated	PCBN	PCD	Coated		Uncoated	
			CVD	PVD					CVD	PVD		
P	Non-alloy steels/ Alloyed steels	P01	AC052P									P01
		P10	AC150P						AC230P	AP301U		P10
		P20	AC250P	AP200U	AT202					AP330M		P20
		P30	AC350P									P30
		P40										P40
		P50										P50
M	Stainless steels	M01										M01
		M10	AC100M	AP100S						AP301U		M10
		M20	AC200M	AP301M	AP200U					AP330M		M20
		M30										M30
		M40										M40
		M50										M50
K	Cast iron	K01	AC100K	AC102K			PB90					K01
		K10	AC202K		AT202				AC230P	AP301U		K10
		K20										K20
		K30										K30
		K40										K40
		K50										K50
N	Aluminum/Aluminum alloys	N01				AW100K		PD20			AW100K	N01
		N10										N10
		N20										N20
		N30										N30
S	Heat resistant alloys	S01		AP100S								S01
		S10	AC100M	AP301M	AP200U							S10
		S20	AC200M									S20
		S30										S30
		S40										S40
H	Hardened steels/ Chilled cast iron	H01					PB30					H01
		H10					PB60					H10
		H20										H20
		H30										H30

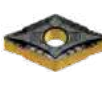
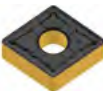
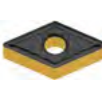
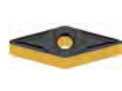
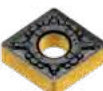
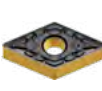
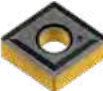
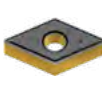
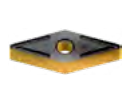
Overview of Turning Insert Geometries

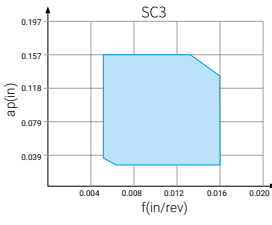
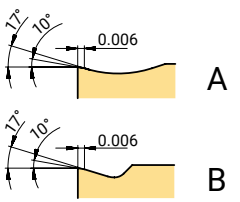
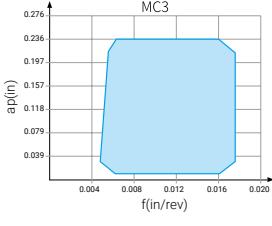
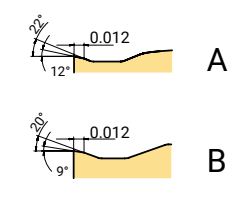
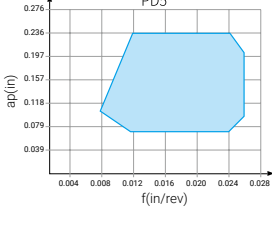
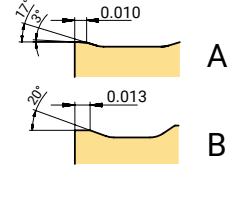
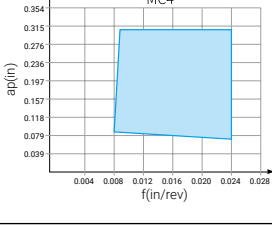
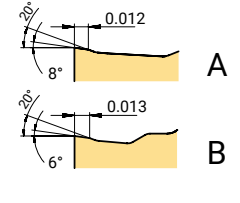
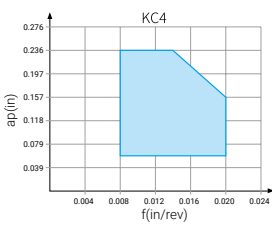
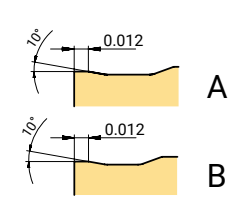
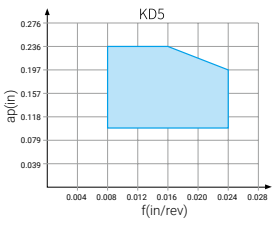
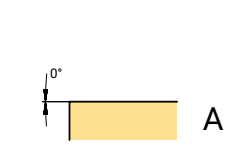
Negative Inserts

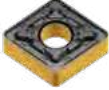
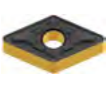
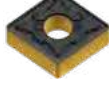
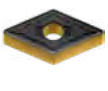
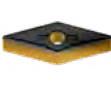
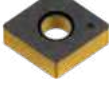
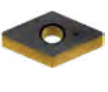
Application	Chip breaker	Features	Chip breaking range	Cross section geometry 	
Profiling	BS 	Finishing and semi-finishing profile turning Suitable for turning with changing depth of cut. Smooth chip evacuation			
Finishing	PB1 	First choice for steel finish turning Light cutting chip breaker, low cutting force, suitable for machining slender shaft, thin wall and unstably clamped parts, good cutting performance			
	SC1 	First choice for heat resistant alloy finish turning Excellent performance at low depth of cut.			
	MB2 	First choice for stainless steel finish turning High positive rake angle reduced cutting force and built-up edge, can obtain much better surface quality. Very good chip breaking at low feed and cutting depth.			
Light cutting	SL3 	Recommended for heat resistant alloy light turning. Suitable for heat resistant alloy, Ti-alloy. Sharp and wavy cutting edge can get good surface finish and good chip breaking results.			

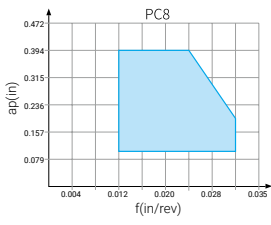
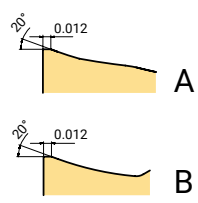
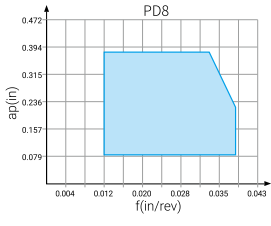
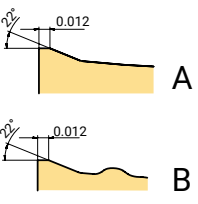
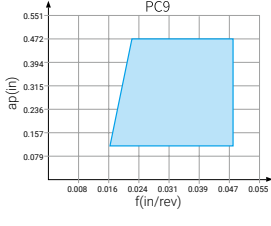
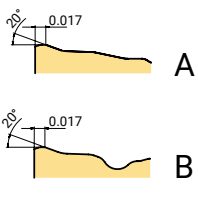
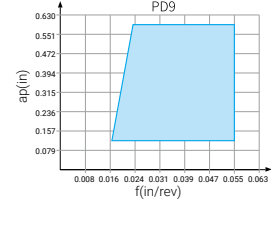
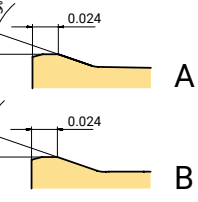
	80° Rhombus 	55° Rhombus 	90° Square 	60° Triangle 	35° Rhombus 	80° Trigon 	Round 
		DNMG-BS  P54			VNMG-BS  P63		
	CNMG-PB1  P50	DNMG-PB1  P54	SNMG-PB1  P57	TNMG-PB1  P60	VNMG-PB1  P63	WNMG-PB1  P65	
	CNMG-SC1  P50	DNMG-SC1  P54		TNMG-SC1  P60	VNMG-SC1  P63	WNMG-SC1  P65	
	CNMG-MB2  P50	DNMG-MB2  P54	SNMG-MB2  P57	TNMG-MB2  P60	VNMG-MB2  P63	WNMG-MB2  P65	
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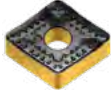
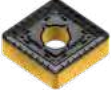
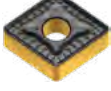
Application	Chip breaker	Features	Chip breaking range	Cross section geometry 	
Semi-finishing	PB3 	First choice for steel semi finish turning The positive rake angle combined with small land guarantees edge strength and sharpness, reducing the cutting forces. The wavy side edge design has a good chip breaking results in out-copying turning on the shoulder, and in profile turning at different cutting depths.			
	PC3 	Alternative chipbreaker for steel semi-finish turning Unique geometry design offers wider chip breaking range. Double rake angle for smooth cutting. Enhanced insert tip reduced crater wear.			
Medium	PD3 	First choice for steel medium turning It has a strong chip control ability at low feed and cutting depth, and reduces crater wear. The chip breaking is also very good at high feed and cutting depth due to the geometry design. Double rake angle design makes sharp cutting edge and reduces cutting force.			
	PC4 	First choice for cast iron medium turning Alternative chipbreaker for carbon steel and alloy steel medium turning Flat T-land guarantees the strength of the cutting edge. This multi-purpose geometry can be used in universal applications.			
	PL5 	First choice for steel slender bar turning Open chip breaker leads to smooth cutting with low cutting force, which is suitable for slender shaft turning.			

	80° Rhombus 	55° Rhombus 	90° Square 	60° Triangle 	35° Rhombus 	80° Trigon 	Round 
	CNMG-PB3  P50	DNMG-PB3  P54		TNMG-PB3  P60	VNMG-PB3  P63	WNMG-PB3  P65	
	CNMG-PC3  P50	DNMG-PC3  P55	SNMG-PC3  P57	TNMG-PC3  P60	VNMG-PC3  P63	WNMG-PC3  P65	
	CNMG-PD3  P50	DNMG-PD3  P55	SNMG-PD3  P57	TNMG-PD3  P60	VNMG-PD3  P64	WNMG-PD3  P66	
	CNMG-PC4  P51	DNMG-PC4  P56	SNMG-PC4  P58	TNMG-PC4  P61	VNMG-PC4  P64	WNMG-PC4  P66	
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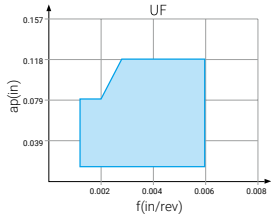
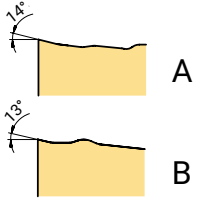
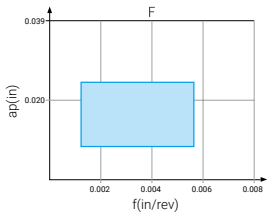
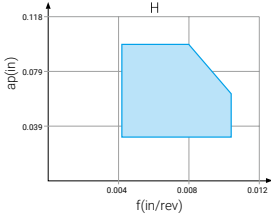
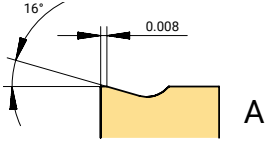
Application	Chip breaker	Features	Chip breaking range	Cross section geometry 	
Medium	SC3 	First choice for heat resistant alloy medium turning Used in heat resistant alloy and titanium alloy medium turning. Large rake angle and small land width design allows for easy cutting and is suitable for soft steel turning.			
	MC3 	First choice for stainless steel medium turning Sharp cutting edge, low cutting force, wide chip breaking range and good chip removability.			
Roughing	PD5 	Alternative chipbreaker for steel rough turning A strong cutting edge. Double rake angle design effectively reduces the cutting force, can still have good chip breaking at small cutting depth.			
	MC4 	Alternative chipbreaker for stainless steel and heat resistant alloy rough turning Large chip breaker design, smooth chip evacuation, good chip breaking, with high metal removal rate.			
	KC4 	First choice for cast iron turning It has strong cutting edge, reliable and stable performance.			
	KD5 	First choice for cast iron rough turning High cutting edge strength, suitable for interrupt cutting and unstable cutting.			

	80° Rhombus 	55° Rhombus 	90° Square 	60° Triangle 	35° Rhombus 	80° Trigon 	Round 
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	CNMA-KD5  P52	DNMA-KD5  P56	SNMA-KD5  P59	TNMA-KD5  P62		WNMA-KD5  P67	

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

	80° Rhombus 	55° Rhombus 	90° Square 	60° Triangle 	35° Rhombus 	80° Trigon 	Round 
	CNMM-PC8  P53						
	CNMM-PD8  P53		SNMM-PD8  P59	TNMM-PD8  P62			
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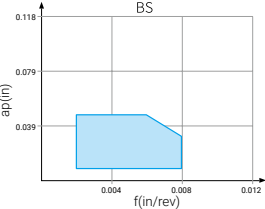
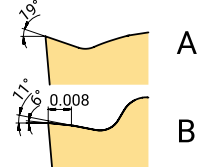
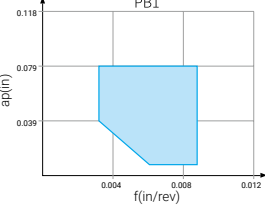
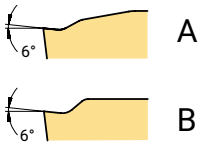
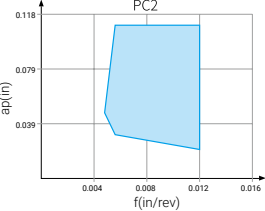
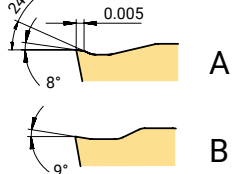
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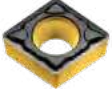
Application	Chip breaker	Features	Chip breaking range	Cross section geometry 	
Finishing	UF 	Suitable for precision turning Low cutting forces, good chip breaking, suitable for finish turning.			
	F 	Finish turning Low cutting force, good chip control. The sharp edge produces a good surface finish.			
Semi-finishing-Rough machining	H 	Light turning Excellent chip control at low to medium feed rates. Strong edge strength.			

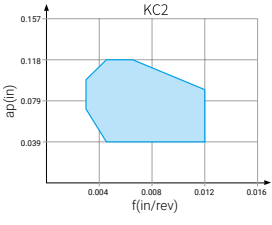
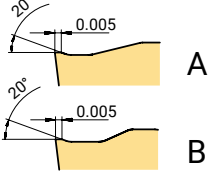
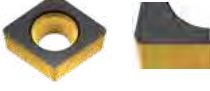
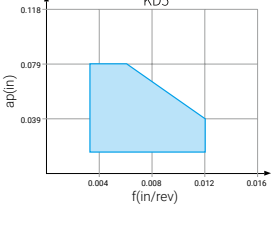
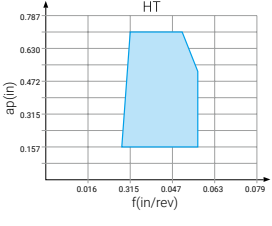
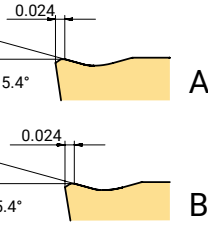
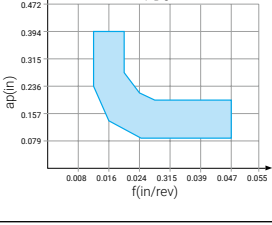
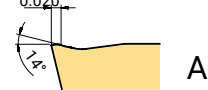
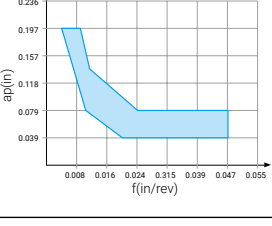
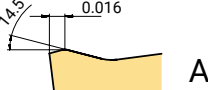
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				TNGG-UF  P62	VNGG-UF  P64		
				TNGG-F  P62			
				TNGG-H  P62			

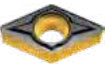
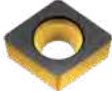
Overview of Turning Insert Geometry

Positive Pressed Insert

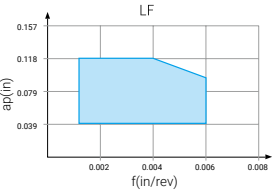
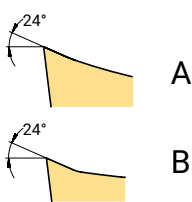
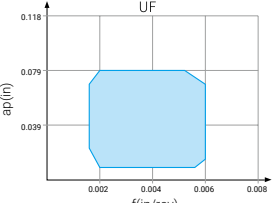
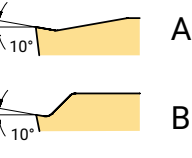
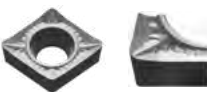
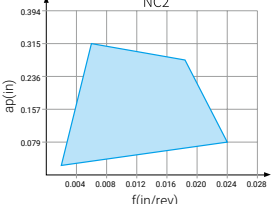
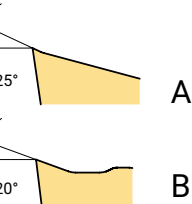
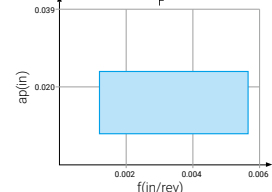
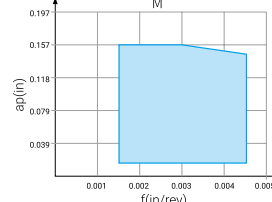
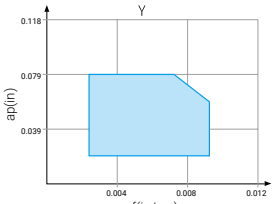
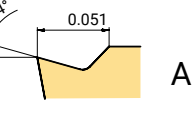
Application	Chip breaker	Features	Chip breaking range	Cross section geometry 	
Profiling	BS 	Profile turning Profile turning or turning with changing depth of cut, smooth chip evacuation.			
Finishing	PB1 	First choice for steel finish turning Positive rake angle reduces cutting force and built-up edge,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

	80° Rhombus 	55° Rhombus 	90° Square 	60° Triangle 	35° Rhombus 	80° Trigon 	Round 
					VBMT-BS  P85		
	CCMT-PB1 CPMT-PB1  P71	DCMT-PB1  P75	SCMT-PB1  P78	TCMT-PB1 TPMT-PB1  P80	VBMT-PB1 VCMT-PB1  P86		
	CCMT-PC2 CPMT-PC2  P71	DCMT-PC2  P75	SCMT-PC2  P78	TCMT-PC2 TPMT-PC2  P80	VBMT-PC2 VCMT-PC2  P86		

Application	Chip breaker	Features	Chip breaking range	Cross section geometry 	
Medium	KC2 	General purpose geometry for steel, stainless steel and cast iron turning Suitable for medium and rough turning. Simple and durable chip breaker design, very good versatility and wide application range.			
Roughing	KD5 	Geometry for cast iron rough turning Suitable for unstable machining due to its strong cutting edge. Reduced chipping.			
	HT 	Geometry for steel turning with large cutting depth Open chip breaker is suitable for large cutting depth with smooth chip evacuation. Good cost efficiency.			
Semi-finishing	PD8 	Geometry for carbon steel and alloy steel heavy turning The wide chip breaker avoids chip jamming at deep depth of cut. Has good chip control at light depth of cut as well.			
Medium	No code 	Alternative chipbreaker for cast iron and alloy steel medium turning Negative land and big rake angle design ensure cutting edge strength and sharpness.			

	80° Rhombus 	55° Rhombus 	90° Square 	60° Triangle 	35° Rhombus 	80° Trigon 	Round 
	CCMT-KC2  P72	DCMT-KC2  P75	SCMT-KC2  P78	TCMT-KC2  P81	VBMT-KC2  P86		
	CCMW-KD5  P72	DCMW-KD5  P76	SCMW-KD5  P78	TCMW-KD5  P81			
			SCMT-HT  P78				
							RCMX-PD8  P90
							RCMX  P90

Positive Ground Insert

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

	80° Rhombus 	55° Rhombus 	90° Square 	60° Triangle 	35° Rhombus 	80° Trigon 	Round 
	CCGT-LF  P70	DCGT-LF  P74		TCGT-LF  P79	VBGT-LF VCGT-LF VPGT-LF  P84		
	CCGT-UF  P70	DCGT-UF  P74		TCGT-UF  P79	VBGT-UF VCGT-UF VPGT-UF  P84, 85		
	CCGT-NC2  P71	DCGT-NC2  P75	SCGT-NC2  P78	TCGT-NC2  P79	VCGT-NC2  P85		RCGT-NC2  P90
	CCET-F  P73	DCET-F  P76		TBET-F TCET-F TPEH-F  P81, 82, 83	VBET-F VCET-F VPET-F  P86, 87	WBET-F  P89	
	CCET-M  P73	DCET-M  P77		TCET-M  P83	VBET-M VPET-M  P87, 88		
					VBET-Y  P88		

Turning Grade Description

Basic Grades for Turning

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

Basic grade

AC052P P05(P01-P15)

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

AC150P P15(P10-P25)

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

AC250P P25(P20-P35)

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

AC350P P35(P25-P45)

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

Supplemental grade

AP200U P25(P15-P35)

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

AC200M P35(P25-P40)

CVD coated grade. Supplemental grade for steel turning where high toughness is required.

AT202 P15(P10-P20)

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

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

Basic grade

AC100M M15(M05-M20)

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

AC200M M25(M15-M30)

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

AP200U M25(M15-M35)

PVD coated grade, used in finish turning at low to medium speed and also in interrupted turning due to excellent thermal stability, outstanding performance in machining when sharp edge and edge toughness or good surface quality are required.

AP301M M25(M15-M35)

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

Supplemental grade

AP100S M15(M05-M25)

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

K**Cast iron, chilled cast iron and short chip malleable cast iron****Basic grade****AC100K K05(K01-K15)**

CVD coated grade, has thick and smooth wear resistant coating and hard substrate, recommended for grey cast iron high speed turning.

AC102K K05(K01-K15)

CVD coated grade, has thick and smooth wear resistant coating and hard substrate, recommended for nodular cast iron high speed turning.

AC202K K15(K10-K30)

1st choice for cast iron turning. It can deal with interrupted cutting due to its high wear resistant CVD coating, used in finish to rough turning on cast iron at low to medium cutting speed.

Supplemental grade**PB90 K10(K01-K20)**

CBN grade. Suitable for grey cast iron and chilled cast iron interrupted finish turning due to its good edge strength and wear resistance.

AT202 K15(K10-K20)

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

N**Non-ferrous metals****Basic grade****AW100K N15 (N05-N15)**

Uncoated grade. It has both excellent wear resistance and sharp edge. Used in Al alloy rough to finish machining.

PD20 N10 (N01-N20)

PCD grade, used in non-ferrous material and non-metal material machining which can have longer tool life, completely clean cutting and good surface quality.

S**Heat resistant alloys****Basic grade****AP100S S15(S05-S25)**

1st choice for heat resistant alloys. PVD coated grade has high hardness and plastic deformation resistance, can keep high performance and good wear resistance.

AP200U S25(S15-S35)

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

Supplemental grade**AC100M S15(S05-S20)**

CVD coated grade, suitable for heat resistant alloy continuous high speed machining.

AC200M S25(S15-S35)

CVD coated grade, suitable for heat resistant alloy general machining.

H**Hardened materials****Basic grade****PB30 H10(H05-H15)**

CBN grade with low CBN content, is used in hardened steel continuous machining at high speed and light interrupted machining.

PB60 H15(H10-H25)

1st choice of CBN grade medium CBN content for hardened steel interrupted machining and continuous machining at medium speed.

Cutting Data Recommendation--Negative Insert

Materials																		
ISO	Workpiece Materials				Brinell Hardness (HB)	Tensile strength Rm(lbs/in ²)												
							AT202			AC052P			AC150P			AC250P		
							f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)		
							0.004	0.012	0.020	0.004	0.016	0.024	0.004	0.016	0.024	0.004	0.016	0.024
P	Unalloyed steel	C ≤ 0.25%	Annealed	125	62000	650	330	230	2000	1470	1080	1590	1180	880	1240	850	680	
		0.25 < C ≤ 0.55%	Annealed	190	92700	650	330	230	1800	1300	960	1200	880	680	920	650	490	
		0.25 < C ≤ 0.55%	Heat-treated	210	103000	650	260	160	1300	920	650	850	720	550	650	520	440	
		C > 0.55%	Annealed	190	92700	650	260	160	1700	1260	900	880	720	520	780	520	410	
		C > 0.55%	Heat-treated	300	147000	650	260	160	1200	800	590	680	590	490	520	390	360	
		Free cutting steel(short chip)	Annealed	220	108000	650	260	160	1900	1380	980	1440	1010	820	1110	720	570	
	Low-alloyed steel	Annealed		175	85700	590	260	160	2000	1300	930	1140	850	720	780	570	440	
		Heat-treated		300	146900	590	260	160	1700	1150	820	720	550	490	460	320	270	
		Heat-treated		380	186000	590	260	160	1080	750	570	520	390	320	320	230	180	
		Heat-treated		430	214200	590	260	160	870	600	460	290	230					
	High-alloyed steel and high-alloyed tool steel	Annealed		200	97900	520	260	160	1460	960	700	1080	750	490	680	470	270	
		Hardened and tempered		300	147000	520	260	160	980	650	520	750	460	360	420	270	210	
		Hardened and tempered		400	197000	490	260	160	720	460	340	260	230					
	Stainless steel	Ferritic/Martensite,Annealed		200	97900										590	490	390	
		Martensite,Heat-treated		330	162000										460	320	230	
M	Stainless steel	Austenitic,hardened		200	97900													
		Austenitic,precipitation hardened stainless steel(PH stainless steel)		300	147000													
		Austenitic,ferritic,duplex		230	113000													
K	Malleable cast iron	Ferritic		200	58000													
		Pearlitic		260	101000													
	Grey cast iron	Low tensile strength		180	29000													
		High tensile strength/Austenitic		245	50800													
	Nodular cast iron	Ferritic		155	58000													
		Pearlitic		265	101000													
		GGV(CGI)		230	58000													
N	Wrought aluminum alloy	Non-aging alloy		30	-													
		Aged alloy		100	49300													
	Cast aluminum alloy	≤ 12% Si, non-aging alloy		75	37700													
		≤ 12% Si, aged alloy		90	45000													
		> 12% Si, non-aging alloy		130	65300													
	Magnesium alloy		70	36300														
	Copper and copper alloy(bronze/ brass)	Unalloyed,electrolytic copper		100	49300													
		Brass,bronze,red brass		90	45000													
		Cu alloy,short chip		110	55100													
High tensile,Ampco alloy		300	146500															
S	Heat-resistant alloy	Fe-based	Annealed	200	98600													
			Aged	280	136000													
		Ni or Co based	Annealed	250	122000													
			Aged	350	171000													
			Cast	320	156600													
	Titanium alloy	Pure Titanium		200	98600													
		α and β alloy,aged		375	182700													
		β alloy		410	203000													
	Tungsten alloy			300	146500													
	Molybdenum alloy			300	146500													
H	Hardened steel	Hardened and tempered		50HRC														
		Hardened and tempered		55HRC														
		Hardened and tempered		60HRC														
	Chilled cast iron	Hardened and tempered		50HRC														

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

47 ▶

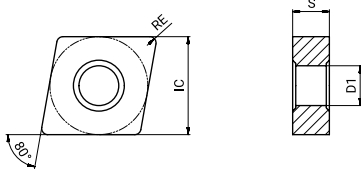
Cutting Data Recommendation--Positive Insert

Materials																					
ISO	Workpiece Materials				Brinell Hardness (HB)	Tensile strength Rm(lbs/in ²)															
							AT202			AC052P			AC150P			AC250P					
							f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)					
							0.004	0.008	0.016	0.004	0.008	0.016	0.004	0.008	0.016	0.004	0.008	0.016			
P	Unalloyed steel	C ≤ 0.25%		Annealed	125	62000	656	328	230	1960	1410	1010	1520	1310	1080	1180	1010	850			
		0.25 < C ≤ 0.55%		Annealed	190	92700	656	328	230	1770	1260	900	1180	1080	850	950	820	620			
		0.25 < C ≤ 0.55%		Heat-treated	210	103000	650	260	160	1250	850	590	880	780	720	650	590	520			
		C > 0.55%		Annealed	190	92700	650	260	160	1700	1190	830	1080	980	950	820	720	680			
		C > 0.55%		Heat-treated	300	147000	650	260	160	1180	730	520	680	590	550	520	420	390			
	Free cutting steel(short chip)		Annealed	220	108000	650	260	160	1900	1310	910	1440	1310	1240	1050	950	900				
	Low-alloyed steel	Annealed		175	85700	590	260	160	1930	1280	860	1140	1010	980	850	780	720				
		Heat-treated		300	146900	590	260	160	1670	1080	750	650	550	520	440	390	320				
		Heat-treated		380	186000	590	260	160	1050	680	500	390	320	290	320	270	210				
	Heat-treated		430	214200	590	260	160	870	540	390	260	230		210	180						
	High-alloyed steel and high-alloyed tool steel	Annealed		200	97900	520	260	160	1390	900	640	1050	950	910	880	780	720				
		Hardened and tempered		300	147000	520	260	160	920	590	460	650	550	490	550	450	390				
		Hardened and tempered		400	197000	490	260	160	650	390	340	260	230		210	180					
	Stainless steel	Ferritic/Martensite,Annealed		200	97900										620	550	490				
		Martensite,Heat-treated		330	162000										290	260	190				
M	Stainless steel	Austenitic,hardened		200	97900																
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	Grey cast iron	Low tensile strength		180	29000																
		High tensile strength/Austenitic		245	50800																
	Nodular cast iron	Ferritic		155	58000																
		Pearlitic		265	101000																
		GGV(CGI)		230	58000																
N	Wrought aluminum alloy	Non-aging alloy		30	-																
		Aged alloy		100	49300																
	Cast aluminum alloy	≤ 12% Si, non-aging alloy		75	37700																
		≤ 12% Si, aged alloy		90	45000																
		> 12% Si, non-aging alloy		130	65300																
	Magnesium alloy		70	36300																	
	Copper and copper alloy(bronze/ brass)	Unalloyed,electrolytic copper		100	49300																
		Brass,bronze,red brass		90	45000																
Cu alloy,short chip		110	55100																		
High tensile,Ampco alloy		300	146500																		
S	Heat-resistant alloy	Fe-based	Annealed	200	98600																
			Aged	280	136000																
		Ni or Co based	Annealed	250	122000																
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			Cast	320	156600																
	Titanium alloy	Pure Titanium		200	98600																
		α and β alloy,aged		375	182700																
		β alloy		410	203000																
	Tungsten alloy		300	146500																	
Molybdenum alloy		300	146500																		
H	Hardened steel	Hardened and tempered		50HRC																	
		Hardened and tempered		55HRC																	
		Hardened and tempered		60HRC																	
	Chilled cast iron		Hardened and tempered		50HRC																

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

IO Turning Insert

Negative 80° (C)

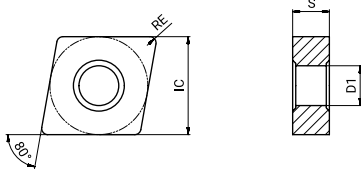


Dimension (in)			
Product code	IC	S	D1
CN_43_	1/2	3/16	0.203
CN_54_	5/8	1/4	0.250
CN_64_	3/4	1/4	0.313

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition														ISO
				Recommended parameters		P					M			K			N	S		
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	
Finishing		CNMG 431-PB1	1/64	0.002-0.006	0.01-0.126	●		●	●											CNMG 120404E-PB1
		CNMG 432-PB1	1/32	0.004-0.012	0.02-0.126	●		●	●											CNMG 120408E-PB1
		CNMG 433-PB1	3/64	0.006-0.018	0.031-0.126			●	●											CNMG 120412E-PB1
		CNMG 431-SC1	1/64	0.003-0.007	0.008-0.031								●							CNMG 120404E-SC1
		CNMG 432-SC1	1/32	0.004-0.010	0.008-0.031								●							CNMG 120408E-SC1
		CNMG 431-MB2	1/64	0.002-0.006	0.01-0.126						●	●	●							CNMG 120404E-MB2
CNMG 432-MB2		1/32	0.004-0.012	0.02-0.126						●	●	●							CNMG 120408E-MB2	
Light cutting		CNMG 431-SL3	1/64	0.005-0.010	0.024-0.118							●						●	CNMG 120404E-SL3	
		CNMG 432-SL3	1/32	0.006-0.012	0.031-0.118							●						●	CNMG 120408E-SL3	
Semi-finishing		CNMG 431-PB3	1/64	0.002-0.007	0.012-0.138	●		●	●										CNMG 120404E-PB3	
		CNMG 432-PB3	1/32	0.005-0.014	0.024-0.138	●	●	●	●										CNMG 120408E-PB3	
		CNMG 433-PB3	3/64	0.007-0.021	0.035-0.138	●	●	●	●										CNMG 120412E-PB3	
		CNMG 431-PC3	1/64	0.003-0.008	0.013-0.154	●													CNMG 120404E-PC3	
		CNMG 432-PC3	1/32	0.006-0.016	0.027-0.154	●	●	●	●										CNMG 120408E-PC3	
		CNMG 433-PC3	3/64	0.008-0.024	0.04-0.154	●													CNMG 120412E-PC3	
Medium		CNMG 431-PD3	1/64	0.003-0.009	0.016-0.169	●	●	●	●										CNMG 120404E-PD3	
		CNMG 432-PD3	1/32	0.006-0.017	0.031-0.169	●	●	●	●	●									CNMG 120408E-PD3	
		CNMG 433-PD3	3/64	0.009-0.026	0.047-0.169	●	●	●	●	●									CNMG 120412E-PD3	
		CNMG 542-PD3	1/32	0.006-0.017	0.031-0.209		●	●	●	●									CNMG 160608E-PD3	
		CNMG 543-PD3	3/64	0.009-0.026	0.047-0.209		●	●	●										CNMG 160612E-PD3	
		CNMG 642-PD3	1/32	0.006-0.017	0.031-0.252		●	●	●	●									CNMG 190608E-PD3	
		CNMG 643-PD3	3/64	0.009-0.026	0.047-0.252		●	●	●										CNMG 190612E-PD3	
		CNMG 644-PD3	1/16	0.012-0.026	0.063-0.252		●	●	●										CNMG 190616E-PD3	

●: Stock available

Negative 80° (C)

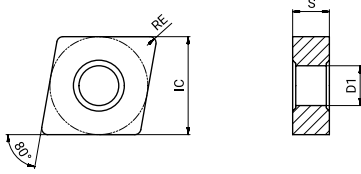


Dimension (in)			
Product code	IC	S	D1
CN_43_	1/2	3/16	0.203
CN_54_	5/8	1/4	0.250
CN_64_	3/4	1/4	0.313

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						● ● ● ● ● ✖ ✖ ✖ ✖ ✖ ✖ ✖ ✖ ✖																
				Recommended parameters		P					M				K			N	S			
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Medium		CNMG 431-SC3	1/64	0.003-0.009	0.016-0.169							●	●	●						●	CNMG 120404E-SC3	
		CNMG 432-SC3	1/32	0.006-0.017	0.031-0.169							●	●	●						●	CNMG 120408E-SC3	
		CNMG 433-SC3	3/64	0.009-0.026	0.047-0.169							●	●	●						●	CNMG 120412E-SC3	
		CNMG 543-SC3	3/64	0.009-0.026	0.047-0.209							●	●	●						●	CNMG 160612E-SC3	
		CNMG 544-SC3	1/16	0.012-0.035	0.063-0.209							●	●	●						●	CNMG 160616E-SC3	
		CNMG 643-SC3	3/64	0.009-0.026	0.047-0.252							●	●	●						●	CNMG 190612E-SC3	
		CNMG 644-SC3	1/16	0.012-0.035	0.063-0.252							●	●	●						●	CNMG 190616E-SC3	
		CNMG 431-MC3	1/64	0.003-0.009	0.013-0.169							●	●	●							CNMG 120404E-MC3	
		CNMG 432-MC3	1/32	0.006-0.017	0.025-0.169							●	●	●						●	CNMG 120408E-MC3	
		CNMG 433-MC3	3/64	0.009-0.026	0.038-0.169							●	●	●							CNMG 120412E-MC3	
		CNMG 434-MC3	1/16	0.012-0.035	0.05-0.169							●	●	●							CNMG 120416E-MC3	
		CNMG 542-MC3	1/32	0.006-0.017	0.025-0.209							●	●	●							CNMG 160608E-MC3	
		CNMG 543-MC3	3/64	0.009-0.026	0.038-0.209							●	●	●							CNMG 160612E-MC3	
		CNMG 642-MC3	1/32	0.006-0.017	0.025-0.252							●	●	●							CNMG 190608E-MC3	
		CNMG 643-MC3	3/64	0.009-0.026	0.038-0.252							●	●	●							CNMG 190612E-MC3	
		CNMG 431-PC4	1/64	0.003-0.009	0.016-0.169			●	●							●	●				CNMG 120404E-PC4	
		CNMG 432-PC4	1/32	0.006-0.017	0.031-0.169			●	●	●						●	●				CNMG 120408E-PC4	
		CNMG 433-PC4	3/64	0.009-0.026	0.047-0.169			●	●	●						●	●				CNMG 120412E-PC4	
		CNMG 543-PC4	3/64	0.009-0.026	0.047-0.209			●	●	●						●	●				CNMG 160612E-PC4	
		CNMG 544-PC4	1/16	0.012-0.035	0.063-0.209			●	●	●						●	●				CNMG 160616E-PC4	
		CNMG 643-PC4	3/64	0.009-0.026	0.047-0.252			●	●	●						●	●				CNMG 190612E-PC4	
Roughing		CNMG 432-MC4	1/32	0.008-0.024	0.047-0.252							●	●	●						●	CNMG 120408E-MC4	
		CNMG 433-MC4	3/64	0.012-0.035	0.071-0.252							●	●	●						●	CNMG 120412E-MC4	
		CNMG 543-MC4	3/64	0.012-0.035	0.071-0.319							●	●	●						●	CNMG 160612E-MC4	
		CNMG 544-MC4	1/16	0.016-0.047	0.094-0.319							●	●	●							CNMG 160616E-MC4	
		CNMG 643-MC4	3/64	0.012-0.035	0.071-0.382							●	●	●							CNMG 190612E-MC4	
		CNMG 644-MC4	1/16	0.016-0.047	0.094-0.382							●	●	●							CNMG 190616E-MC4	

●: Stock available

Negative 80° (C)



Dimension (in)			
Product code	IC	S	D1
CN_32_	3/8	1/8	0.150
CN_43_	1/2	3/16	0.203
CN_54_	5/8	1/4	0.250
CN_64_	3/4	1/4	0.313

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ½ General condition ½ Bad condition																ISO
						●	●	●	½	½	●	½	½	½	●	½	½	½	●			
				Recommended parameters		P					M				K			N	S			
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S							
Roughing		CNMG 322-KC4	1/32	0.007-0.019	0.038-0.154										●	●			CNMG 090308E-KC4			
		CNMG 431-KC4	1/64	0.004-0.009	0.019-0.205										●	●			CNMG 120404E-KC4			
		CNMG 432-KC4	1/32	0.007-0.019	0.038-0.205									●	●	●			CNMG 120408E-KC4			
		CNMG 433-KC4	3/64	0.01-0.028	0.057-0.205									●	●	●			CNMG 120412E-KC4			
		CNMG 434-KC4	1/16	0.014-0.038	0.076-0.205										●	●			CNMG 120416E-KC4			
		CNMG 542-KC4	1/32	0.007-0.019	0.038-0.252										●	●			CNMG 160608E-KC4			
		CNMG 543-KC4	3/64	0.01-0.028	0.057-0.252										●	●			CNMG 160612E-KC4			
		CNMG 544-KC4	1/16	0.014-0.038	0.076-0.252										●	●			CNMG 160616E-KC4			
		CNMG 642-KC4	1/32	0.007-0.019	0.038-0.303										●	●			CNMG 190608E-KC4			
		CNMG 643-KC4	3/64	0.01-0.028	0.057-0.303										●	●			CNMG 190612E-KC4			
		CNMG 644-KC4	1/16	0.014-0.038	0.076-0.303										●	●			CNMG 190616E-KC4			
		CNMG 646-KC4	3/32	0.021-0.057	0.113-0.303										●	●			CNMG 190624E-KC4			
		CNMG 432-PD5	1/32	0.008-0.024	0.047-0.252		●	●	●	●									CNMG 120408E-PD5			
		CNMG 433-PD5	3/64	0.012-0.035	0.071-0.252		●	●	●	●									CNMG 120412E-PD5			
		CNMG 543-PD5	3/64	0.012-0.035	0.071-0.319		●	●	●	●									CNMG 160612E-PD5			
		CNMG 544-PD5	1/16	0.016-0.047	0.094-0.319		●	●	●	●									CNMG 160616E-PD5			
		CNMG 546-PD5	3/32	0.024-0.071	0.142-0.319		●	●	●										CNMG 160624E-PD5			
		CNMG 643-PD5	3/64	0.012-0.035	0.071-0.382		●	●	●	●									CNMG 190612E-PD5			
		CNMG 644-PD5	1/16	0.016-0.047	0.094-0.382		●	●	●	●									CNMG 190616E-PD5			
		CNMA 431-KD5	1/64	0.004-0.012	0.024-0.252										●	●			CNMA 120404E-KD5			
		CNMA 432-KD5	1/32	0.008-0.024	0.047-0.252									●	●	●			CNMA 120408E-KD5			
		CNMA 433-KD5	3/64	0.012-0.035	0.071-0.252									●	●	●			CNMA 120412E-KD5			
		CNMA 434-KD5	1/16	0.016-0.047	0.094-0.252									●	●	●			CNMA 120416E-KD5			
		CNMA 542-KD5	1/32	0.008-0.024	0.047-0.319										●	●			CNMA 160608E-KD5			
		CNMA 543-KD5	3/64	0.012-0.035	0.071-0.319									●	●	●			CNMA 160612E-KD5			
		CNMA 544-KD5	1/16	0.016-0.047	0.094-0.319									●	●	●			CNMA 160616E-KD5			
		CNMA 545-KD5	0.079	0.02-0.059	0.118-0.319										●	●			CNMA 160620E-KD5			
		CNMA 642-KD5	1/32	0.008-0.024	0.047-0.382									●	●	●			CNMA 190608E-KD5			
		CNMA 643-KD5	3/64	0.012-0.035	0.071-0.382									●	●	●			CNMA 190612E-KD5			
		CNMA 644-KD5	1/16	0.016-0.047	0.094-0.382									●	●	●			CNMA 190616E-KD5			

●: Stock available

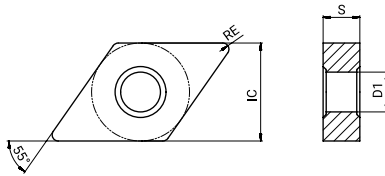
The technical drawing shows two views of a square nut. The left view is a perspective-like representation of the top face, which is a square rotated by 80° . It features concentric circles representing the hole, with labels 'RE' pointing to the outer edge and 'IC' indicating the inner circle diameter. The right view is a side profile showing the square's thickness 'S' and the central hole's diameter 'D1'. Hatching is used to indicate the cross-section of the nut.

Dimension (in)			
Product code	IC	S	D1
CN_43_	1/2	3/16	0.203
CN_54_	5/8	1/4	0.250
CN_64_	3/4	1/4	0.313
CN_85_	1.0	5/16	0.359
CN_86_	1.0	3/8	0.359

[illegible]

S0 Turning Insert

Negative 55° (D)

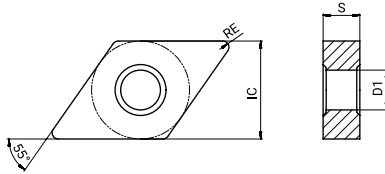


Dimension (in)			
Product code	IC	S	D1
DN_33_	3/8	3/16	0.150
DN_43_	1/2	3/16	0.203
DN_44_	1/2	1/4	0.203

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						● ● ● ● ✖ ● ● ● ● ● ● ● ● ● ● ● ● ● ●																
				Recommended parameters		P					M				K			N	S			
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S							
Profiling		DNMG 332-BS	1/32	0.004-0.010	0.028-0.079		●													DNMG 110408E-BS		
Finishing		DNMG 331-PB1	1/64	0.002-0.006	0.01-0.091	●		●	●											DNMG 110404E-PB1		
		DNMG 431-PB1	1/64	0.002-0.006	0.01-0.122	●		●	●											DNMG 150404E-PB1		
		DNMG 432-PB1	1/32	0.004-0.012	0.02-0.122	●	●	●	●											DNMG 150408E-PB1		
		DNMG 441-PB1	1/64	0.002-0.006	0.01-0.122	●		●	●											DNMG 150604E-PB1		
		DNMG 442-PB1	1/32	0.004-0.012	0.02-0.122	●	●	●	●											DNMG 150608E-PB1		
		DNMG 443-PB1	3/64	0.006-0.014	0.031-0.122															DNMG 150612E-PB1		
		DNMG 431-SC1	1/64	0.003-0.007	0.008-0.031															DNMG 150404E-SC1		
		DNMG 432-SC1	1/32	0.004-0.010	0.008-0.031															DNMG 150408E-SC1		
		DNMG 441-SC1	1/64	0.003-0.007	0.008-0.031															DNMG 150604E-SC1		
		DNMG 442-SC1	1/32	0.004-0.010	0.008-0.031															DNMG 150608E-SC1		
		DNMG 431-MB2	1/64	0.002-0.006	0.01-0.114						●	●							●	DNMG 150404E-MB2		
		DNMG 432-MB2	1/32	0.004-0.012	0.02-0.114						●	●							●	DNMG 150408E-MB2		
		DNMG 441-MB2	1/64	0.002-0.006	0.01-0.114						●	●							●	DNMG 150604E-MB2		
		DNMG 442-MB2	1/32	0.004-0.012	0.02-0.114						●	●							●	DNMG 150608E-MB2		
Light cutting		DNMG 332-SL3	1/32	0.005-0.012	0.031-0.098								●						●	DNMG 110408E-SL3		
		DNMG 431-SL3	1/64	0.005-0.010	0.024-0.098								●						●	DNMG 150404E-SL3		
		DNMG 432-SL3	1/32	0.005-0.012	0.031-0.098								●						●	DNMG 150408E-SL3		
		DNMG 441-SL3	1/64	0.005-0.010	0.024-0.098								●						●	DNMG 150604E-SL3		
		DNMG 442-SL3	1/32	0.005-0.012	0.031-0.098								●						●	DNMG 150608E-SL3		
Semi-finishing		DNMG 431R-M1T	1/64	0.004-0.014	0.028-0.177	●														DNMG 150404R-M1T		
		DNMG 432L-M1T	1/32	0.004-0.014	0.028-0.177	●														DNMG 150408L-M1T		
		DNMG 431-PB3	1/64	0.002-0.007	0.012-0.122	●		●	●												DNMG 150404E-PB3	
		DNMG 432-PB3	1/32	0.005-0.014	0.024-0.122	●	●	●	●												DNMG 150408E-PB3	
		DNMG 433-PB3	3/64	0.007-0.021	0.035-0.122	●	●	●	●												DNMG 150412E-PB3	
		DNMG 441-PB3	1/64	0.002-0.007	0.012-0.122	●		●	●												DNMG 150604E-PB3	
		DNMG 442-PB3	1/32	0.005-0.014	0.024-0.122	●	●	●	●												DNMG 150608E-PB3	
		DNMG 443-PB3	3/64	0.007-0.021	0.035-0.122	●	●	●	●												DNMG 150612E-PB3	

● : Stock available

Negative 55° (D)

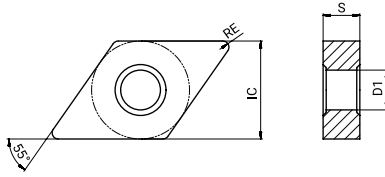


Dimension (in)			
Product code	IC	S	D1
DN_33_	3/8	3/16	0.150
DN_43_	1/2	3/16	0.203
DN_44_	1/2	1/4	0.203

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						●	●	●	●	✖	●	●	●	●	●	✖	✖	●	●			
				Recommended parameters		P					M				K		N	S				
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S							
Semi-finishing 	DNMG 332-PC3	1/32	0.006-0.016	0.027-0.102		●	●	●									DNMG 110408E-PC3					
	DNMG 333-PC3	3/64	0.008-0.024	0.04-0.102		●	●	●									DNMG 110412E-PC3					
	DNMG 431-PC3	1/64	0.003-0.008	0.013-0.138	●	●	●	●									DNMG 150404E-PC3					
	DNMG 432-PC3	1/32	0.006-0.016	0.027-0.138	●	●	●	●									DNMG 150408E-PC3					
	DNMG 433-PC3	3/64	0.008-0.024	0.04-0.138	●	●	●	●									DNMG 150412E-PC3					
	DNMG 441-PC3	1/64	0.003-0.008	0.013-0.138	●	●	●	●									DNMG 150604E-PC3					
	DNMG 442-PC3	1/32	0.006-0.016	0.027-0.138	●	●	●	●									DNMG 150608E-PC3					
	DNMG 443-PC3	3/64	0.008-0.024	0.04-0.138	●	●	●	●									DNMG 150612E-PC3					
Medium    	DNMG 331-PD3	1/64	0.003-0.009	0.016-0.114	●		●	●									DNMG 110404E-PD3					
	DNMG 332-PD3	1/32	0.006-0.017	0.031-0.114	●	●	●	●										DNMG 110408E-PD3				
	DNMG 431-PD3	1/64	0.003-0.009	0.016-0.154	●		●	●										DNMG 150404E-PD3				
	DNMG 432-PD3	1/32	0.006-0.017	0.031-0.154	●	●	●	●	●									DNMG 150408E-PD3				
	DNMG 433-PD3	3/64	0.009-0.026	0.047-0.154		●	●	●	●									DNMG 150412E-PD3				
	DNMG 441-PD3	1/64	0.003-0.009	0.016-0.154			●	●										DNMG 150604E-PD3				
	DNMG 442-PD3	1/32	0.006-0.017	0.031-0.154		●	●	●	●									DNMG 150608E-PD3				
	DNMG 443-PD3	3/64	0.009-0.026	0.047-0.154		●	●	●	●									DNMG 150612E-PD3				
	DNMG 442R-PL5	1/32	0.006-0.017	0.031-0.154			●	●										DNMG 150608R-PL5				
	DNMG 431-SC3	1/64	0.003-0.009	0.016-0.154						●	●	●					●	DNMG 150404E-SC3				
	DNMG 432-SC3	1/32	0.006-0.017	0.031-0.154						●	●	●					●	DNMG 150408E-SC3				
	DNMG 433-SC3	3/64	0.009-0.026	0.047-0.154						●	●	●					●	DNMG 150412E-SC3				
	DNMG 441-SC3	1/64	0.003-0.009	0.016-0.154						●	●	●					●	DNMG 150604E-SC3				
	DNMG 442-SC3	1/32	0.006-0.017	0.031-0.154						●	●	●					●	DNMG 150608E-SC3				
	DNMG 443-SC3	3/64	0.009-0.026	0.047-0.154						●	●	●					●	DNMG 150612E-SC3				
	DNMG 331-MC3	1/64	0.003-0.009	0.013-0.114						●	●	●						DNMG 110404E-MC3				
DNMG 332-MC3	1/32	0.006-0.017	0.025-0.114						●	●	●						DNMG 110408E-MC3					
DNMG 431-MC3	1/64	0.003-0.009	0.013-0.154						●	●	●						DNMG 150404E-MC3					
DNMG 432-MC3	1/32	0.006-0.017	0.025-0.154						●	●	●						DNMG 150408E-MC3					
DNMG 433-MC3	3/64	0.009-0.026	0.038-0.154						●	●	●						DNMG 150412E-MC3					
DNMG 441-MC3	1/64	0.003-0.009	0.013-0.154						●	●	●						DNMG 150604E-MC3					
DNMG 442-MC3	1/32	0.006-0.017	0.025-0.154						●	●	●						DNMG 150608E-MC3					
DNMG 443-MC3	3/64	0.009-0.026	0.038-0.154						●	●	●						DNMG 150612E-MC3					

● : Stock available

Negative 55° (D)

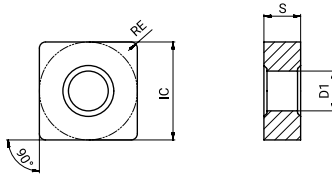


Dimension (in)			
Product code	IC	S	D1
DN_33_	3/8	3/16	0.150
DN_43_	1/2	3/16	0.203
DN_44_	1/2	1/4	0.203

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ½ General condition ¼ Bad condition														ISO
						●	●	●	½	¼	●	½	½	½	●	½	¼	½	●	
				Recommended parameters		P					M				K		N	S		
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S					
Medium		DNMG 431-PC4	1/64	0.003-0.009	0.016-0.154	●		●	●						●	●		DNMG 150404E-PC4		
		DNMG 432-PC4	1/32	0.006-0.017	0.031-0.154	●	●	●	●						●	●		DNMG 150408E-PC4		
		DNMG 433-PC4	3/64	0.009-0.026	0.047-0.154		●	●	●						●	●		DNMG 150412E-PC4		
		DNMG 441-PC4	1/64	0.003-0.009	0.016-0.154	●		●	●						●	●		DNMG 150604E-PC4		
		DNMG 442-PC4	1/32	0.006-0.017	0.031-0.154	●	●	●	●						●	●		DNMG 150608E-PC4		
		DNMG 443-PC4	3/64	0.009-0.026	0.047-0.154		●	●	●						●	●		DNMG 150612E-PC4		
Roughing		DNMG 432-MC4	1/32	0.008-0.024	0.047-0.213						●	●	●					DNMG 150408E-MC4		
		DNMG 433-MC4	3/64	0.012-0.035	0.071-0.213						●	●	●					DNMG 150412E-MC4		
		DNMG 442-MC4	1/32	0.008-0.024	0.047-0.213						●	●	●				●	DNMG 150608E-MC4		
		DNMG 443-MC4	3/64	0.012-0.035	0.071-0.213						●	●	●				●	DNMG 150612E-MC4		
		DNMG 331-KC4	1/64	0.004-0.009	0.019-0.138										●	●		DNMG 110404E-KC4		
		DNMG 332-KC4	1/32	0.007-0.019	0.038-0.138										●	●		DNMG 110408E-KC4		
		DNMG 431-KC4	1/64	0.004-0.009	0.019-0.181										●	●		DNMG 150404E-KC4		
		DNMG 432-KC4	1/32	0.007-0.019	0.038-0.181										●	●		DNMG 150408E-KC4		
		DNMG 433-KC4	3/64	0.01-0.028	0.057-0.181										●	●		DNMG 150412E-KC4		
		DNMG 441-KC4	1/64	0.004-0.009	0.019-0.181										●	●		DNMG 150604E-KC4		
		DNMG 442-KC4	1/32	0.007-0.019	0.038-0.181										●	●		DNMG 150608E-KC4		
		DNMG 443-KC4	3/64	0.01-0.028	0.057-0.181										●	●		DNMG 150612E-KC4		
		DNMG 432-PD5	1/32	0.008-0.024	0.047-0.213		●	●	●	●								DNMG 150408E-PD5		
		DNMG 433-PD5	3/64	0.012-0.035	0.071-0.213		●	●	●	●								DNMG 150412E-PD5		
		DNMG 434-PD5	1/16	0.016-0.047	0.094-0.213		●	●	●									DNMG 150416E-PD5		
		DNMG 442-PD5	1/32	0.008-0.024	0.047-0.213		●	●	●	●								DNMG 150608E-PD5		
		DNMG 443-PD5	3/64	0.012-0.035	0.071-0.213		●	●	●	●								DNMG 150612E-PD5		
		DNMG 444-PD5	1/16	0.016-0.047	0.094-0.213		●	●	●	●								DNMG 150616E-PD5		
		DNMA 431-KD5	1/64	0.004-0.012	0.024-0.213										●	●		DNMA 150404E-KD5		
		DNMA 432-KD5	1/32	0.008-0.024	0.047-0.213										●	●	●	DNMA 150408E-KD5		
		DNMA 433-KD5	3/64	0.012-0.035	0.071-0.213										●	●	●	DNMA 150412E-KD5		
		DNMA 441-KD5	1/64	0.004-0.012	0.024-0.213										●	●		DNMA 150604E-KD5		
		DNMA 442-KD5	1/32	0.008-0.024	0.047-0.213										●	●	●	DNMA 150608E-KD5		
		DNMA 443-KD5	3/64	0.012-0.035	0.071-0.213										●	●	●	DNMA 150612E-KD5		

●: Stock available

Negative 90° (S)



Dimension (in)			
Product code	IC	S	D1
SN_43_	1/2	3/16	0.203
SN_54_	5/8	1/4	0.250
SN_64_	3/4	1/4	0.313

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ½ General condition ✖ Bad condition														ISO
						●	●	●	½	✖	●	½	½	½	●	½	✖	½	●	
				Recommended parameters		P					M				K			N	S	
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Finishing		SNMG 431-PB1	1/64	0.002-0.006	0.01-0.126	●		●	●										SNMG 120404E-PB1	
		SNMG 432-PB1	1/32	0.004-0.012	0.02-0.126	●	●	●	●										SNMG 120408E-PB1	
		SNMG 433-PB1	3/64	0.006-0.018	0.031-0.126		●	●	●										SNMG 120412E-PB1	
		SNMG 431-MB2	1/64	0.002-0.006	0.01-0.126						●	●	●						SNMG 120404E-MB2	
		SNMG 432-MB2	1/32	0.004-0.012	0.02-0.126						●	●	●						SNMG 120408E-MB2	
Light cutting		SNMG 431-SL3	1/64	0.005-0.010	0.024-0.118							●						●	SNMG 120404E-SL3	
		SNMG 432-SL3	1/32	0.006-0.012	0.031-0.118							●						●	SNMG 120408E-SL3	
		SNMG 433-SL3	3/64	0.007-0.014	0.039-0.118							●						●	SNMG 120412E-SL3	
Semi-finishing		SNMG 431-PC3	1/64	0.003-0.008	0.013-0.15	●		●	●										SNMG 120404E-PC3	
		SNMG 432-PC3	1/32	0.006-0.016	0.027-0.15	●		●	●										SNMG 120408E-PC3	
		SNMG 433-PC3	3/64	0.008-0.024	0.04-0.15	●		●	●										SNMG 120412E-PC3	
Medium		SNMG 431-PD3	1/64	0.003-0.009	0.016-0.165	●		●	●	●									SNMG 120404E-PD3	
		SNMG 432-PD3	1/32	0.006-0.017	0.031-0.165	●	●	●	●	●									SNMG 120408E-PD3	
		SNMG 433-PD3	3/64	0.009-0.026	0.047-0.165	●	●	●	●	●									SNMG 120412E-PD3	
		SNMG 642-PD3	1/32	0.006-0.017	0.031-0.248		●	●	●	●									SNMG 190608E-PD3	
		SNMG 432-SC3	1/32	0.006-0.017	0.031-0.165						●	●	●						●	SNMG 120408E-SC3
		SNMG 433-SC3	3/64	0.009-0.026	0.047-0.165						●	●	●						●	SNMG 120412E-SC3
		SNMG 543-SC3	3/64	0.009-0.026	0.047-0.205						●	●	●						●	SNMG 150612E-SC3
		SNMG 544-SC3	1/16	0.012-0.035	0.063-0.205						●	●	●						●	SNMG 150616E-SC3
		SNMG 643-SC3	3/64	0.009-0.026	0.047-0.248						●	●	●						●	SNMG 190612E-SC3
		SNMG 431-M3T	1/64	0.008-0.016	0.039-0.157	●														SNMG 120404-M3T
		SNMG 432-M3T	1/32	0.008-0.016	0.039-0.157	●														SNMG 120408-M3T
		SNMG 431-MC3	1/64	0.003-0.009	0.013-0.165						●	●	●							SNMG 120404E-MC3
		SNMG 432-MC3	1/32	0.006-0.017	0.025-0.165						●	●	●							SNMG 120408E-MC3
		SNMG 433-MC3	3/64	0.009-0.026	0.038-0.165						●	●	●							SNMG 120412E-MC3
		SNMG 543-MC3	3/64	0.009-0.026	0.038-0.205						●	●	●							SNMG 150612E-MC3
		SNMG 544-MC3	1/16	0.012-0.035	0.05-0.205						●	●	●							SNMG 150616E-MC3
		SNMG 643-MC3	3/64	0.009-0.026	0.038-0.248						●	●	●							SNMG 190612E-MC3
SNMG 644-MC3		1/16	0.012-0.035	0.05-0.248						●	●	●							SNMG 190616E-MC3	

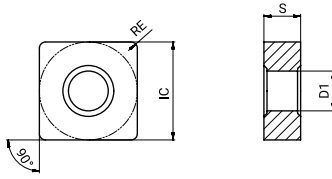
●: Stock available

Dimension (in)			
Product code	IC	S	D1
SN_32_	3/8	1/8	0.150
SN_43_	1/2	3/16	0.203
SN_54_	5/8	1/4	0.250
SN_64_	3/4	1/4	0.313

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ½ General condition ✖ Bad condition																ISO
						●	●	●	½	✖	●	½	½	½	●	½	✖	½	●			
				Recommended parameters		P					M				K			N	S			
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S			
Medium		SNMG 431-PC4	1/64	0.003-0.009	0.016-0.165	●		●	●							●	●			SNMG 120404E-PC4		
		SNMG 432-PC4	1/32	0.006-0.017	0.031-0.165	●	●	●	●							●	●			SNMG 120408E-PC4		
		SNMG 433-PC4	3/64	0.009-0.026	0.047-0.165	●	●	●	●							●	●			SNMG 120412E-PC4		
Roughing		SNMG 432-MC4	1/32	0.008-0.024	0.047-0.252							●	●	●						SNMG 120408E-MC4		
		SNMG 433-MC4	3/64	0.012-0.035	0.071-0.252							●	●	●						SNMG 120412E-MC4		
		SNMG 543-MC4	3/64	0.012-0.035	0.071-0.311							●	●	●						SNMG 150612E-MC4		
		SNMG 544-MC4	1/16	0.016-0.047	0.094-0.311							●	●	●						SNMG 150616E-MC4		
		SNMG 643-MC4	3/64	0.012-0.035	0.071-0.374							●	●	●						SNMG 190612E-MC4		
		SNMG 644-MC4	1/16	0.016-0.047	0.094-0.374							●	●	●						SNMG 190616E-MC4		
		SNMG 321-KC4	1/64	0.004-0.009	0.019-0.15															SNMG 090304E-KC4		
		SNMG 322-KC4	1/32	0.007-0.019	0.038-0.15															SNMG 090308E-KC4		
		SNMG 431-KC4	1/64	0.004-0.009	0.019-0.201											●	●			SNMG 120404E-KC4		
		SNMG 432-KC4	1/32	0.007-0.019	0.038-0.201											●	●			SNMG 120408E-KC4		
		SNMG 433-KC4	3/64	0.01-0.028	0.057-0.201											●	●			SNMG 120412E-KC4		
		SNMG 542-KC4	1/32	0.007-0.019	0.038-0.252											●	●			SNMG 150608E-KC4		
		SNMG 543-KC4	3/64	0.01-0.028	0.057-0.252											●	●			SNMG 150612E-KC4		
		SNMG 544-KC4	1/16	0.014-0.038	0.076-0.252											●	●			SNMG 150616E-KC4		
		SNMG 642-KC4	1/32	0.007-0.019	0.038-0.299											●	●			SNMG 190608E-KC4		
		SNMG 643-KC4	3/64	0.01-0.028	0.057-0.299											●	●			SNMG 190612E-KC4		
		SNMG 644-KC4	1/16	0.014-0.038	0.076-0.299											●	●			SNMG 190616E-KC4		
		SNMG 646-KC4	3/32	0.021-0.057	0.113-0.299															SNMG 190624E-KC4		
		SNMG 542-PD5	1/32	0.008-0.024	0.047-0.311		●	●	●	●										SNMG 150608E-PD5		
		SNMG 543-PD5	3/64	0.012-0.035	0.071-0.311		●	●	●	●										SNMG 150612E-PD5		
		SNMG 544-PD5	1/16	0.016-0.047	0.094-0.311		●	●	●	●										SNMG 150616E-PD5		
		SNMG 643-PD5	3/64	0.012-0.035	0.071-0.374		●	●	●	●										SNMG 190612E-PD5		
		SNMG 644-PD5	1/16	0.016-0.047	0.094-0.374		●	●	●	●										SNMG 190616E-PD5		

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Negative 90° (S)

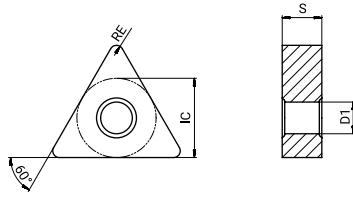


Dimension (in)			
Product code	IC	S	D1
SN_43_	1/2	3/16	0.203
SN_54_	5/8	1/4	0.250
SN_64_	3/4	1/4	0.313
SN_85_	1	5/16	0.359
SN_86_	1	3/8	0.359
SN_10(6)_	1¼	3/8	0.372

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						●	●	●	●	✖	●	●	●	●	●	●	✖	●	●			
				Recommended parameters		P					M				K			N	S			
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S							
Roughing		SNMA 432-KD5	1/32	0.008-0.024	0.047-0.252										●	●	●		SNMA 120408E-KD5			
		SNMA 433-KD5	3/64	0.012-0.035	0.071-0.252										●	●	●		SNMA 120412E-KD5			
		SNMA 434-KD5	1/16	0.016-0.047	0.094-0.252										●	●	●		SNMA 120416E-KD5			
		SNMA 543-KD5	3/64	0.012-0.035	0.071-0.311											●	●		SNMA 150612E-KD5			
		SNMA 544-KD5	1/16	0.016-0.047	0.094-0.311											●	●		SNMA 150616E-KD5			
		SNMA 643-KD5	3/64	0.012-0.035	0.071-0.374											●	●		SNMA 190612E-KD5			
		SNMA 644-KD5	1/16	0.016-0.047	0.094-0.374											●	●		SNMA 190616E-KD5			
Heavy roughing		SNMM 432-PD8	1/32	0.006-0.013	0.057-0.201			●	●	●									SNMM 120408E-PD8			
		SNMM 433-PD8	3/64	0.009-0.019	0.085-0.201			●	●	●									SNMM 120412E-PD8			
		SNMM 543-PD8	3/64	0.009-0.019	0.085-0.252			●	●	●									SNMM 150612E-PD8			
		SNMM 544-PD8	1/16	0.013-0.025	0.113-0.252		●	●	●	●									SNMM 150616E-PD8			
		SNMM 643-PD8	3/64	0.009-0.019	0.085-0.299			●	●	●									SNMM 190612E-PD8			
		SNMM 644-PD8	1/16	0.013-0.025	0.113-0.299		●	●	●	●									SNMM 190616E-PD8			
		SNMM 646-PD8	3/32	0.019-0.038	0.17-0.299		●	●	●	●									SNMM 190624E-PD8			
		SNMM 856-PD8	3/32	0.019-0.038	0.17-0.402			●	●	●									SNMM 250724E-PD8			
		SNMM 866-PD8	3/32	0.019-0.038	0.17-0.402			●	●	●									SNMM 250924E-PD8			
		SNMM 643-PC9	3/64	0.01-0.024	0.094-0.374			●	●										SNMG 190612S-PC9			
		SNMM 644-PC9	1/16	0.014-0.031	0.126-0.374			●	●	●									SNMG 190616S-PC9			
		SNMM 646-PC9	3/32	0.021-0.047	0.189-0.374			●	●	●									SNMG 190624S-PC9			
		SNMM 856-PC9	3/32	0.021-0.047	0.189-0.5			●	●	●									SNMG 250724S-PC9			
		SNMM 866-PC9	3/32	0.021-0.047	0.189-0.5			●	●	●									SNMG 250924S-PC9			
		SNMH 10(6)6-PC9	3/32	0.021-0.047	0.189-0.626				●										SNMH 310924S-PC9			
		SNMM 643-PD9	3/64	0.012-0.028	0.104-0.449			●	●	●									SNMM 190612S-PD9			
		SNMM 644-PD9	1/16	0.016-0.038	0.139-0.449			●	●	●									SNMM 190616S-PD9			
		SNMM 646-PD9	3/32	0.024-0.057	0.208-0.449			●	●	●									SNMM 190624S-PD9			
		SNMM 856-PD9	3/32	0.024-0.057	0.208-0.598			●	●	●									SNMM 250724S-PD9			
		SNMM 866-PD9	3/32	0.024-0.057	0.208-0.598			●	●	●									SNMM 250924S-PD9			
		SNMX 10(6)6-PD9	3/32	0.024-0.057	0.208-0.752				●	●									SNMX 310924S-PD9			

●: Stock available

Negative 60° (T)

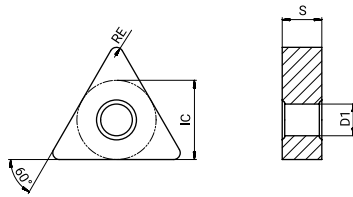


Dimension (in)			
Product code	IC	S	D1
TN_22_	1/4	1/8	0.089
TN_33_	3/8	3/16	0.150
TN_43_	1/2	3/16	0.203

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ½ General condition ½ Bad condition																ISO
						● ● ● ½ ½ ● ½ ½ ½ ● ● ½ ½ ●																
				Recommended parameters		P					M				K			N	S			
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Finishing		TNMG 331-PB1	1/64	0.002-0.006	0.01-0.122	●		●	●											TNMG 160404E-PB1		
		TNMG 332-PB1	1/32	0.004-0.012	0.02-0.122	●	●	●	●											TNMG 160408E-PB1		
		TNMG 333-PB1	3/64	0.006-0.018	0.031-0.122	●	●	●	●											TNMG 160412E-PB1		
		TNMG 331-SC1	1/64	0.003-0.007	0.008-0.031															TNMG 160404E-SC1		
		TNMG 332-SC1	1/32	0.004-0.010	0.008-0.031															TNMG 160408E-SC1		
		TNMG 331-MB2	1/64	0.002-0.006	0.01-0.122						●	●	●						●	TNMG 160404E-MB2		
Light cutting		TNMG 332-MB2	1/32	0.004-0.012	0.02-0.122						●	●	●						●	TNMG 160408E-MB2		
		TNMG 331-SL3	1/64	0.005-0.010	0.024-0.118								●						●	TNMG 160404E-SL3		
		TNMG 332-SL3	1/32	0.006-0.012	0.031-0.118								●						●	TNMG 160408E-SL3		
		TNMG 333-SL3	3/64	0.007-0.012	0.039-0.118								●						●	TNMG 160412E-SL3		
	Semi-finishing		TNMG 331R-M1T	1/64	0.004-0.012	0.028-0.138	●														TNMG 160404R-M1T	
			TNMG 331L-M1T	1/64	0.004-0.012	0.028-0.138	●														TNMG 160404L-M1T	
		TNMG 332R-M1T	1/32	0.004-0.012	0.028-0.138	●														TNMG 160408R-M1T		
		TNMG 332L-M1T	1/32	0.004-0.012	0.028-0.138	●														TNMG 160408L-M1T		
		TNMG 331-PB3	1/64	0.002-0.007	0.012-0.13	●		●	●											TNMG 160404E-PB3		
		TNMG 332-PB3	1/32	0.005-0.014	0.024-0.13	●	●	●	●											TNMG 160408E-PB3		
		TNMG 333-PB3	3/64	0.007-0.021	0.035-0.13	●	●	●	●											TNMG 160412E-PB3		
		TNMG 331-PC3	1/64	0.003-0.008	0.013-0.146	●		●	●											TNMG 160404E-PC3		
	TNMG 332-PC3	1/32	0.006-0.016	0.027-0.146	●		●	●											TNMG 160408E-PC3			
Medium		TNMG 333-PC3	3/64	0.008-0.024	0.04-0.146	●		●	●											TNMG 160412E-PC3		
		TNMG 331-PD3	1/64	0.003-0.009	0.016-0.161	●		●	●	●										TNMG 160404E-PD3		
		TNMG 332-PD3	1/32	0.006-0.017	0.031-0.161	●	●	●	●	●										TNMG 160408E-PD3		
		TNMG 333-PD3	3/64	0.009-0.026	0.047-0.161	●	●	●	●	●										TNMG 160412E-PD3		
		TNMG 331R-M2T	1/64	0.004-0.012	0.028-0.138	●														TNMG 160404R-M2T		
		TNMG 331L-M2T	1/64	0.004-0.012	0.028-0.138	●														TNMG 160404L-M2T		
		TNMG 331R-PL5	1/64	0.003-0.009	0.016-0.161	●		●	●											TNMG 160404R-PL5		
			TNMG 332R-PL5	1/32	0.006-0.017	0.031-0.161	●	●	●	●											TNMG 160408R-PL5	
			TNMG 331L-PL5	1/64	0.003-0.009	0.016-0.161	●		●	●											TNMG 160404L-PL5	
			TNMG 332L-PL5	1/32	0.006-0.017	0.031-0.161	●	●	●	●											TNMG 160408L-PL5	

●: Stock available

Negative 60° (T)

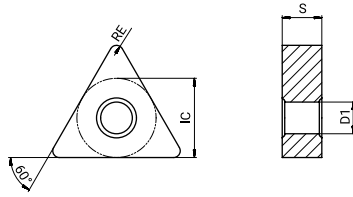


Dimension (in)			
Product code	IC	S	D1
TN_22_	1/4	1/8	0.089
TN_33_	3/8	3/16	0.150
TN_43_	1/2	3/16	0.203

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition														ISO
						●	●	●	●	✖	●	●	●	●	●	●	✖	●		
				Recommended parameters		P					M				K			N	S	
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Medium		TNMG 331-SC3	1/64	0.003-0.009	0.016-0.161						●	●	●					●	TNMG 160404E-SC3	
		TNMG 332-SC3	1/32	0.006-0.017	0.031-0.161						●	●	●					●	TNMG 160408E-SC3	
		TNMG 333-SC3	3/64	0.009-0.026	0.047-0.161						●	●	●					●	TNMG 160412E-SC3	
		TNMG 331-MC3	1/64	0.003-0.009	0.013-0.161						●	●	●						TNMG 160404E-MC3	
		TNMG 332-MC3	1/32	0.006-0.017	0.025-0.161						●	●	●						TNMG 160408E-MC3	
		TNMG 333-MC3	3/64	0.009-0.026	0.038-0.161						●	●	●						TNMG 160412E-MC3	
		TNMG 432-MC3	1/32	0.006-0.017	0.025-0.193						●	●	●					●	TNMG 220408E-MC3	
		TNMG 433-MC3	3/64	0.009-0.026	0.038-0.193						●	●	●						TNMG 220412E-MC3	
		TNMG 331-PC4	1/64	0.003-0.009	0.016-0.161	●		●	●										TNMG 160404E-PC4	
		TNMG 332-PC4	1/32	0.006-0.017	0.031-0.161	●	●	●	●										TNMG 160408E-PC4	
		TNMG 333-PC4	3/64	0.009-0.026	0.047-0.161		●	●	●										TNMG 160412E-PC4	
		TNMG 433-PC4	3/64	0.009-0.026	0.047-0.193			●	●										TNMG 220412E-PC4	
Roughing		TNMG 332-MC4	1/32	0.008-0.024	0.047-0.228						●	●	●					●	TNMG 160408E-MC4	
		TNMG 333-MC4	3/64	0.012-0.035	0.071-0.228						●	●	●					●	TNMG 160412E-MC4	
		TNMG 432-MC4	1/32	0.008-0.024	0.047-0.26						●	●	●						TNMG 220408E-MC4	
		TNMG 433-MC4	3/64	0.012-0.035	0.071-0.26						●	●	●						TNMG 220412E-MC4	
		TNMG 221-KC4	1/64	0.004-0.009	0.019-0.13											●	●		TNMG 110304E-KC4	
		TNMG 331-KC4	1/64	0.004-0.009	0.019-0.193											●	●		TNMG 160404E-KC4	
		TNMG 332-KC4	1/32	0.007-0.019	0.038-0.193											●	●		TNMG 160408E-KC4	
		TNMG 333-KC4	3/64	0.01-0.028	0.057-0.193											●	●		TNMG 160412E-KC4	
		TNMG 334-KC4	1/16	0.014-0.038	0.076-0.193											●	●		TNMG 160416E-KC4	
		TNMG 433-KC4	3/64	0.01-0.028	0.057-0.236											●	●		TNMG 220412E-KC4	
		TNMG 434-KC4	1/16	0.014-0.038	0.076-0.236											●	●		TNMG 220416E-KC4	
		TNMG 332-PD5	1/32	0.008-0.024	0.047-0.228		●	●	●	●									TNMG 160408E-PD5	
		TNMG 333-PD5	3/64	0.012-0.035	0.071-0.228		●	●	●	●									TNMG 160412E-PD5	
		TNMG 432-PD5	1/32	0.008-0.024	0.047-0.303		●	●	●	●									TNMG 220408E-PD5	
		TNMG 433-PD5	3/64	0.012-0.035	0.071-0.303		●	●	●	●									TNMG 220412E-PD5	
		TNMG 434-PD5	1/16	0.016-0.047	0.094-0.303		●	●	●	●									TNMG 220416E-PD5	

●: Stock available

Negative 60° (T)

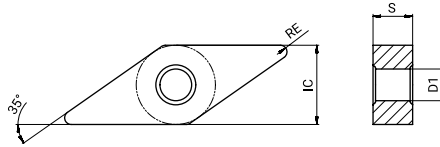


Dimension (in)			
Product code	IC	S	D1
TN_22_	1/4	1/8	0.089
TN_33_	3/8	3/16	0.150
TN_43_	1/2	3/16	0.203

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition												ISO			
						●	●	●	●	✖	●	●	●	●	●	✖	●		●		
				Recommended parameters		P				M			K		N	S					
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K		AW100K	AP100S	
Roughing		TNMA 331-KD5	1/64	0.004-0.012	0.024-0.228											●	●			TNMA 160404E-KD5	
		TNMA 332-KD5	1/32	0.008-0.024	0.047-0.228											●	●	●		TNMA 160408E-KD5	
		TNMA 333-KD5	3/64	0.012-0.035	0.071-0.228											●	●	●		TNMA 160412E-KD5	
		TNMA 334-KD5	1/16	0.016-0.047	0.094-0.228											●	●	●		TNMA 160416E-KD5	
		TNMA 432-KD5	1/32	0.008-0.024	0.047-0.303												●	●		TNMA 220408E-KD5	
		TNMA 433-KD5	3/64	0.012-0.035	0.071-0.303											●	●			TNMA 220412E-KD5	
		TNMA 434-KD5	1/16	0.016-0.047	0.094-0.303											●	●			TNMA 220416E-KD5	
Heavy roughing		TNMM 332-PD8	1/32	0.006-0.013	0.057-0.193				●											TNMM 160408E-PD8	
		TNMM 333-PD8	3/64	0.009-0.019	0.085-0.193				●											TNMM 160412E-PD8	
		TNMM 432-PD8	1/32	0.006-0.013	0.057-0.236				●											TNMM 220408E-PD8	
		TNMM 433-PD8	3/64	0.009-0.019	0.085-0.236				●											TNMM 220412E-PD8	
		TNMM 434-PD8	1/16	0.013-0.025	0.113-0.236				●											TNMM 220416E-PD8	
Finishing		TNGG 3(3)03FP-UF	0.004	0.001-0.004	0.012-0.098									●						TNGG 160401FP-UF	
		TNGG 3(3)05FP-UF	0.008	0.001-0.004	0.012-0.098										●					TNGG 160402FP-UF	
		TNGG 331FP-UF	1/64	0.001-0.004	0.012-0.098										●					TNGG 160404FP-UF	
		TNGG 3(3)05FR-F	0.008	0.003-0.008	0.02-0.091										●						TNGG 160402FR-F
		TNGG 3(3)05FL-F	0.008	0.003-0.008	0.02-0.091										●						TNGG 160402FL-F
		TNGG 331FR-F	1/64	0.003-0.008	0.02-0.091										●						TNGG 160404FR-F
		TNGG 331FL-F	1/64	0.003-0.008	0.02-0.091										●						TNGG 160404FL-F
Semi-finishing–Roughing		TNGG 331R-H	1/64	0.009-0.015	0.047-0.15										●					TNGG 160404R-H	
		TNGG 331L-H	1/64	0.009-0.015	0.047-0.15										●						TNGG 160404L-H
		TNGG 332R-H	1/32	0.009-0.015	0.047-0.15										●						TNGG 160408R-H
		TNGG 332L-H	1/32	0.009-0.015	0.047-0.15										●						TNGG 160408L-H

● : Stock available

Negative 35° (V)

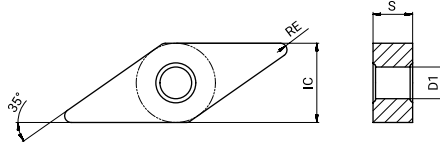


Dimension (in)			
Product code	IC	S	D1
VN_33_	3/8	3/16	0.150

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						●	●	●	◐	✖	●	◐	◐	◐	●	●	✖	◐	●			
				Recommended parameters		P					M				K			N	S			
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S			
Finishing		VNMG 331-PB1	1/64	0.002-0.006	0.01-0.083	●		●	●											VNMG 160404E-PB1		
		VNMG 332-PB1	1/32	0.004-0.012	0.02-0.083	●	●	●	●											VNMG 160408E-PB1		
		VNMG 331-SC1	1/64	0.004-0.010	0.008-0.031							●							VNMG 160404E-SC1			
		VNMG 332-SC1	1/32	0.006-0.012	0.008-0.031							●							VNMG 160408E-SC1			
		VNMG 331-MB2	1/64	0.002-0.006	0.01-0.083						●	●	●					●	VNMG 160404E-MB2			
		VNMG 332-MB2	1/32	0.004-0.012	0.02-0.083						●	●	●					●	VNMG 160408E-MB2			
Light cutting		VNMG 331-SL3	1/64	0.004-0.008	0.024-0.098							●						●	VNMG 160404E-SL3			
		VNMG 332-SL3	1/32	0.005-0.010	0.031-0.098							●						●	VNMG 160408E-SL3			
Profiling		VNMG 331-BS	1/64	0.003-0.008	0.008-0.079	●	●												VNMG 160404E-BS			
		VNMG 332-BS	1/32	0.003-0.008	0.008-0.079	●	●												VNMG 160408E-BS			
Semi-finishing		VNMG 331-PB3	1/64	0.002-0.007	0.012-0.122	●		●	●										VNMG 160404E-PB3			
		VNMG 332-PB3	1/32	0.005-0.014	0.024-0.122	●	●	●	●										VNMG 160408E-PB3			
		VNMG 333-PB3	3/64	0.007-0.021	0.035-0.122	●	●	●	●										VNMG 160412E-PB3			
		VNMG 331-PC3	1/64	0.003-0.008	0.013-0.13	●		●	●										VNMG 160404E-PC3			
		VNMG 332-PC3	1/32	0.006-0.016	0.027-0.13	●		●	●										VNMG 160408E-PC3			
		VNMG 333-PC3	3/64	0.008-0.024	0.04-0.13	●		●	●										VNMG 160412E-PC3			

●: Stock available

Negative 35° (V)



Dimension (in)			
Product code	IC	S	D1
VN_33_	3/8	3/16	0.150

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						● ● ● ◐ ✖ ● ◐ ◐ ◐ ● ✖ ✖ ◐ ●																
				Recommended parameters		P					M				K			N	S			
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Medium		VNMG 331-PD3	1/64	0.003-0.009	0.016-0.13	●		●	●											VNMG 160404E-PD3		
		VNMG 332-PD3	1/32	0.006-0.017	0.031-0.13	●	●	●	●	●										VNMG 160408E-PD3		
		VNMG 333-PD3	3/64	0.009-0.026	0.047-0.13	●	●	●	●	●										VNMG 160412E-PD3		
		VNMG 331-M3T	1/64	0.008-0.016	0.039-0.157	●														VNMG 160404-M3T		
		VNMG 332-M3T	1/32	0.008-0.016	0.039-0.157	●														VNMG 160408-M3T		
		VNMG 331-SC3	1/64	0.003-0.009	0.016-0.13						●	●	●						●	VNMG 160404E-SC3		
		VNMG 332-SC3	1/32	0.006-0.017	0.031-0.13						●	●	●						●	VNMG 160408E-SC3		
		VNMG 333-SC3	3/64	0.009-0.026	0.047-0.13						●	●	●						●	VNMG 160412E-SC3		
		VNMG 331-MC3	1/64	0.003-0.009	0.013-0.13						●	●	●							VNMG 160404E-MC3		
		VNMG 332-MC3	1/32	0.006-0.017	0.025-0.13						●	●	●							VNMG 160408E-MC3		
		VNMG 331-PC4	1/64	0.003-0.009	0.016-0.13	●		●	●							●	●			VNMG 160404E-PC4		
		VNMG 332-PC4	1/32	0.006-0.017	0.031-0.13	●	●	●	●							●	●			VNMG 160408E-PC4		
VNMG 333-PC4		3/64	0.009-0.026	0.047-0.13	●	●	●	●							●	●			VNMG 160412E-PC4			
Roughing		VNMG 331-KC4	1/64	0.004-0.009	0.019-0.13										●	●			VNMG 160404E-KC4			
		VNMG 332-KC4	1/32	0.007-0.019	0.038-0.13										●	●			VNMG 160408E-KC4			
		VNMG 333-KC4	3/64	0.01-0.028	0.057-0.13										●	●			VNMG 160412E-KC4			
Finishing		VNGG 3(3)03FP-UF	0.004	0.001-0.004	0.020-0.079								●						VNGG 160401FP-UF			
		VNGG 3(3)05FP-UF	0.008	0.001-0.004	0.020-0.079								●						VNGG 160402FP-UF			
		VNGG 331FP-UF	1/64	0.001-0.004	0.020-0.079								●						VNGG 160404FP-UF			

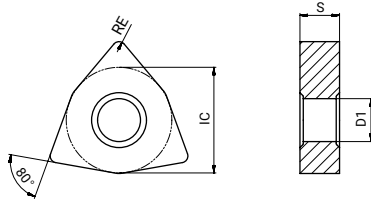
●: Stock available

Dimension (in)			
Product code	IC	S	D1
WN_33_	3/8	3/16	0.150
WN_43_	1/2	3/16	0.203

[illegible]

S0 Turning Insert

Negative 80° (W)

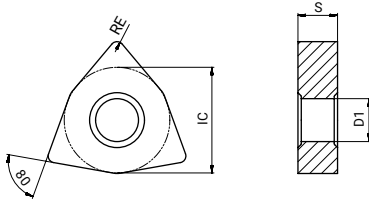


Dimension (in)			
Product code	IC	S	D1
WN_33_	3/8	3/16	0.150
WN_43_	1/2	3/16	0.203

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						● ● ● ◐ ✖ ● ◐ ◐ ◐ ● ◐ ✖ ◐ ●																
				Recommended parameters		P					M				K			N	S			
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Medium		WNMG 431R-PL5	1/64	0.008-0.020	0.016-0.157				●											WNMG 080404R-PL5		
		WNMG 431L-PL5	1/64	0.008-0.020	0.016-0.157				●											WNMG 080404L-PL5		
		WNMG 432R-PL5	1/32	0.008-0.020	0.016-0.197				●			●								WNMG 080408R-PL5		
		WNMG 432L-PL5	1/32	0.008-0.020	0.016-0.197				●			●								WNMG 080408L-PL5		
		WNMG 332-PD3	1/32	0.006-0.017	0.031-0.083		●	●	●												WNMG 060408E-PD3	
		WNMG 431-PD3	1/64	0.003-0.009	0.016-0.114	●	●	●	●	●											WNMG 080404E-PD3	
		WNMG 432-PD3	1/32	0.006-0.017	0.031-0.114	●	●	●	●	●											WNMG 080408E-PD3	
		WNMG 433-PD3	3/64	0.009-0.026	0.047-0.114	●	●	●	●	●											WNMG 080412E-PD3	
		WNMG 431-SC3	1/64	0.003-0.009	0.016-0.114						●	●	●						●		WNMG 080404E-SC3	
		WNMG 432-SC3	1/32	0.006-0.017	0.031-0.114						●	●	●						●		WNMG 080408E-SC3	
		WNMG 433-SC3	3/64	0.009-0.026	0.047-0.114						●	●	●						●		WNMG 080412E-SC3	
		WNMG 431-M3T	1/64	0.008-0.016	0.039-0.157	●															WNMG 080404-M3T	
		WNMG 432-M3T	1/32	0.008-0.016	0.039-0.157	●															WNMG 080408-M3T	
		WNMG 332-MC3	1/32	0.006-0.017	0.025-0.083						●	●	●								WNMG 060408E-MC3	
		WNMG 333-MC3	3/64	0.009-0.026	0.038-0.083						●	●	●								WNMG 060412E-MC3	
		WNMG 431-MC3	1/64	0.003-0.009	0.013-0.114						●	●	●								WNMG 080404E-MC3	
		WNMG 432-MC3	1/32	0.006-0.017	0.025-0.114						●	●	●						●		WNMG 080408E-MC3	
		WNMG 433-MC3	3/64	0.009-0.026	0.038-0.114						●	●	●								WNMG 080412E-MC3	
		WNMG 431-PC4	1/64	0.003-0.009	0.016-0.114	●		●	●							●	●				WNMG 080404E-PC4	
		WNMG 432-PC4	1/32	0.006-0.017	0.031-0.114	●	●	●	●							●	●				WNMG 080408E-PC4	
		WNMG 433-PC4	3/64	0.009-0.026	0.047-0.114	●	●	●	●							●	●				WNMG 080412E-PC4	

● : Stock available

Negative 80° (W)

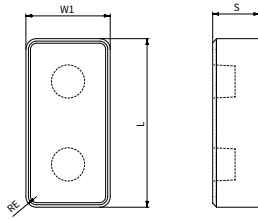


Dimension (in)			
Product code	IC	S	D1
WN_33_	3/8	3/16	0.150
WN_43_	1/2	3/16	0.203

Inserts	ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition														ISO
			Recommended parameters		P					M				K			N	S	
			f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Roughing		WNMG 332-MC4	1/32	0.008-0.024	0.047-0.13														WNMG 060408E-MC4
		WNMG 333-MC4	3/64	0.012-0.035	0.071-0.13					●	●	●							WNMG 060412E-MC4
		WNMG 432-MC4	1/32	0.008-0.024	0.047-0.169					●	●	●						●	WNMG 080408E-MC4
		WNMG 433-MC4	3/64	0.012-0.035	0.071-0.169					●	●	●						●	WNMG 080412E-MC4
		WNMG 331-KC4	1/64	0.004-0.009	0.019-0.102										●	●			WNMG 060404E-KC4
		WNMG 332-KC4	1/32	0.007-0.019	0.038-0.102										●	●			WNMG 060408E-KC4
		WNMG 431-KC4	1/64	0.004-0.009	0.019-0.138										●	●			WNMG 080404E-KC4
		WNMG 432-KC4	1/32	0.007-0.019	0.038-0.138									●	●	●			WNMG 080408E-KC4
		WNMG 433-KC4	3/64	0.01-0.028	0.057-0.138									●	●	●			WNMG 080412E-KC4
		WNMG 434-KC4	1/16	0.014-0.038	0.076-0.138										●	●			WNMG 080416E-KC4
		WNMG 432-PD5	1/32	0.008-0.024	0.047-0.169	●	●	●	●										WNMG 080408E-PD5
		WNMG 433-PD5	3/64	0.012-0.035	0.071-0.169	●	●	●	●										WNMG 080412E-PD5
		WNMA 431-KD5	1/64	0.004-0.012	0.024-0.169										●	●			WNMA 080404E-KD5
		WNMA 432-KD5	1/32	0.008-0.024	0.047-0.169									●	●	●			WNMA 080408E-KD5
		WNMA 433-KD5	3/64	0.012-0.035	0.071-0.169									●	●	●			WNMA 080412E-KD5
		WNMA 434-KD5	1/16	0.016-0.047	0.094-0.169										●	●			WNMA 080416E-KD5

●: Stock available

Negative 90° (L)

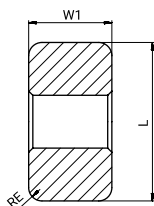
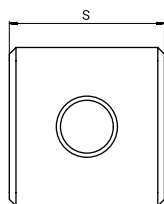


Dimension (in)			
Product code	L	S	W1
LN_5014_	2.0	0.559	1.0

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition														ISO
						●	●	◐	✖	●	◐	◐	◐	●	●	✖	◐	●		
				Recommended parameters		P				M				K			N	S		
				f (in/rev)	ap (in)	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S		
Heavy roughing 	—	0.126	0.028-0.063	0.236-1.575				●										LNMX 501432S-HE		

●: Stock available

Railway wheel re-turning

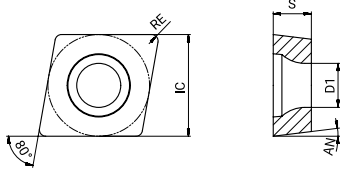


Dimension (in)			
Product code	L	S	W1
LN_1919_	3/4	3/4	0.394
LN_3019_	1.181	1.181	0.472

[illegible]

●: Stock available

Positive 80° (C)

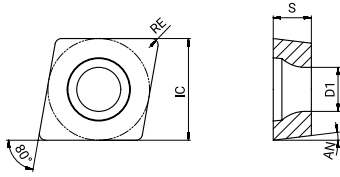


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
CC_2(1.5)_	1/4	3/32	0.110	7°
CC_3(2.5)_	3/8	5/32	0.173	7°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						● ● ● ◐ ✖ ● ◐ ◐ ◐ ● ● ✖ ◐ ●																
				Recommended parameters		P				M				K		N	S					
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S							
Finishing		CCGT 2(1.5)03FP-LF	<0.004	0.002-0.008	0.014-0.118									●						CCGT 060201FP-LF		
		CCGT 2(1.5)05FP-LF	0.008	0.002-0.008	0.014-0.118										●						CCGT 060202FP-LF	
		CCGT 2(1.5)1FP-LF	1/64	0.002-0.008	0.014-0.118										●						CCGT 060204FP-LF	
		CCGT 3(2.5)03FP-LF	<0.004	0.002-0.008	0.014-0.118										●						CCGT 09T301FP-LF	
		CCGT 3(2.5)05FP-LF	0.008	0.002-0.008	0.014-0.118										●						CCGT 09T302FP-LF	
		CCGT 3(2.5)1FP-LF	1/64	0.002-0.008	0.014-0.118										●						CCGT 09T304FP-LF	
		CCGT 2(1.5)03FP-UF	0.004	0.001-0.006	0.004-0.055										●						CCGT 060201FP-UF	
		CCGT 2(1.5)05FP-UF	0.008	0.001-0.006	0.004-0.055										●						CCGT 060202FP-UF	
		CCGT 2(1.5)1FP-UF	1/64	0.001-0.008	0.004-0.055										●						CCGT 060204FP-UF	
		CCGT 3(2.5)03FP-UF	0.004	0.001-0.006	0.004-0.094										●						CCGT 09T301FP-UF	
		CCGT 3(2.5)05FP-UF	0.008	0.001-0.006	0.004-0.094										●						CCGT 09T302FP-UF	
		CCGT 3(2.5)1FP-UF	1/64	0.001-0.008	0.004-0.094										●						CCGT 09T304FP-UF	
		CCGT 2(1.5)03F-UF	0.004	0.001-0.006	0.004-0.055										●						CCGT 060201F-UF	
		CCGT 2(1.5)05F-UF	0.008	0.001-0.006	0.004-0.055										●						CCGT 060202F-UF	
		CCGT 2(1.5)1F-UF	1/64	0.001-0.008	0.004-0.055										●						CCGT 060204F-UF	
		CCGT 3(2.5)03F-UF	0.004	0.001-0.006	0.004-0.094										●						CCGT 09T301F-UF	
		CCGT 3(2.5)05F-UF	0.008	0.001-0.006	0.004-0.094										●						CCGT 09T302F-UF	
		CCGT 3(2.5)1F-UF	1/64	0.001-0.008	0.004-0.094										●						CCGT 09T304F-UF	
		CCGT 3(2.5)2F-UF	1/32	0.001-0.010	0.004-0.094										●						CCGT 09T308F-UF	
		CCGT 2(1.5)03-UF	0.004	0.001-0.006	0.004-0.055										●				●		CCGT 060201E-UF	
		CCGT 2(1.5)05-UF	0.008	0.001-0.006	0.004-0.055										●				●		CCGT 060202E-UF	
		CCGT 2(1.5)1-UF	1/64	0.001-0.008	0.004-0.055										●				●		CCGT 060204E-UF	
		CCGT 3(2.5)03-UF	0.004	0.001-0.006	0.004-0.094										●				●		CCGT 09T301E-UF	
		CCGT 3(2.5)05-UF	0.008	0.001-0.006	0.004-0.094										●				●		CCGT 09T302E-UF	
		CCGT 3(2.5)1-UF	1/64	0.001-0.008	0.004-0.094										●				●		CCGT 09T304E-UF	
		CCGT 3(2.5)2-UF	1/32	0.001-0.010	0.004-0.094										●				●		CCGT 09T308E-UF	

●: Stock available

Positive 80° (C)

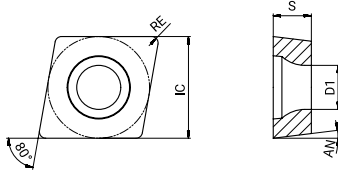


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
CC_2(1.5)_	1/4	3/32	0.110	7°
CC_3(2.5)_	3/8	5/32	0.173	7°
CC_43_	1/2	3/16	0.217	7°
CP_2.5(1.5)_	5/16	3/32	0.134	11°
CP_32_	3/8	1/8	0.173	11°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						●	●	●	◐	✖	●	◐	◐	◐	●	●	✖	◐	●			
				Recommended parameters		P					M				K			N	S			
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S			
Semi-Finishing		CCGT 2(1.5)1F-NC2	1/64	0.002-0.008	0.013-0.114													●	CCGT 060204F-NC2			
		CCGT 3(2.5)05F-NC2	0.008	0.001-0.004	0.006-0.173													●	CCGT 09T302F-NC2			
		CCGT 3(2.5)1F-NC2	1/64	0.002-0.008	0.013-0.173													●	CCGT 09T304F-NC2			
		CCGT 3(2.5)2F-NC2	1/32	0.004-0.016	0.025-0.173													●	CCGT 09T308F-NC2			
		CCGT 431F-NC2	1/64	0.002-0.008	0.013-0.228													●	CCGT 120404F-NC2			
		CCGT 432F-NC2	1/32	0.004-0.016	0.025-0.228													●	CCGT 120408F-NC2			
Finishing		CCMT 2(1.5)05-F1T	0.008	0.002-0.006	0.012-0.059	●													CCMT 060202-F1T			
		CCMT 2(1.5)1-F1T	1/64	0.002-0.006	0.012-0.059	●													CCMT 060204-F1T			
		CCMT 2(1.5)05-PB1	0.008	0.001-0.003	0.006-0.063	●		●	●		●	●	●						CCMT 060202E-PB1			
		CCMT 2(1.5)1-PB1	1/64	0.002-0.006	0.012-0.063	●		●	●		●	●	●						CCMT 060204E-PB1			
		CCMT 2(1.5)2-PB1	1/32	0.004-0.011	0.024-0.063	●		●	●		●	●	●						CCMT 060208E-PB1			
		CCMT 3(2.5)05-PB1	0.008	0.001-0.003	0.006-0.094	●		●	●		●	●	●						CCMT 09T302E-PB1			
		CCMT 3(2.5)1-PB1	1/64	0.002-0.006	0.012-0.094	●		●	●		●	●	●				●		CCMT 09T304E-PB1			
		CCMT 3(2.5)2-PB1	1/32	0.004-0.011	0.024-0.094	●		●	●		●	●	●						CCMT 09T308E-PB1			
		CPMT 2.5(1.5)05-PB1	0.008	0.001-0.003	0.006-0.079	●													CPMT 080202E-PB1			
		CPMT 2.5(1.5)1-PB1	1/64	0.002-0.006	0.012-0.079	●													CPMT 080204E-PB1			
		CPMT 3(2)05-PB1	0.008	0.001-0.003	0.006-0.094	●													CPMT 090302E-PB1			
		CPMT 321-PB1	1/64	0.002-0.006	0.012-0.094	●			●										CPMT 090304E-PB1			
		CPMT 322-PB1	1/32	0.004-0.011	0.024-0.094	●			●										CPMT 090308E-PB1			
Semi-Finishing		CCMT 2(1.5)1-PC2	1/64	0.002-0.006	0.014-0.075	●		●	●		●	●	●					●	CCMT 060204E-PC2			
		CCMT 2(1.5)2-PC2	1/32	0.004-0.013	0.028-0.075	●		●	●		●	●	●					●	CCMT 060208E-PC2			
		CCMT 3(2.5)1-PC2	1/64	0.002-0.006	0.014-0.114	●	●	●	●		●	●	●					●	CCMT 09T304E-PC2			
		CCMT 3(2.5)2-PC2	1/32	0.004-0.013	0.028-0.114	●	●	●	●		●	●	●					●	CCMT 09T308E-PC2			
		CCMT 3(2.5)3-PC2	3/64	0.006-0.019	0.041-0.114		●	●	●		●	●	●						CCMT 09T312E-PC2			
		CCMT 431-PC2	1/64	0.002-0.006	0.014-0.154	●		●	●		●	●	●					●	CCMT 120404E-PC2			
		CCMT 432-PC2	1/32	0.004-0.013	0.028-0.154	●		●	●		●	●	●					●	CCMT 120408E-PC2			
		CCMT 433-PC2	3/64	0.006-0.019	0.041-0.154	●		●	●		●	●	●					●	CCMT 120412E-PC2			
		CPMT 321-PC2	1/64	0.002-0.006	0.014-0.114	●													CPMT 090304E-PC2			
		CPMT 322-PC2	1/32	0.004-0.013	0.028-0.114	●													CPMT 090308E-PC2			

●: Stock available

Positive 80° (C)

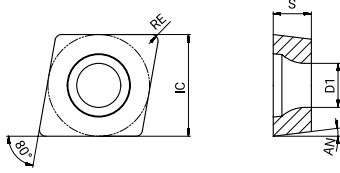


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
CC_1.2(1)_	0.138	0.055	0.079	7°
CC_2(1.5)_	1/4	3/32	0.110	7°
CC_3(2.5)_	3/8	5/32	0.173	7°
CC_43_	1/2	3/16	0.217	7°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						● ● ● ◐ ✖ ● ◐ ◐ ◐ ● ● ✖ ◐ ●																
				Recommended parameters		P					M				K			N	S			
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Semi-Finishing		CCMT 3(2.5)1-M2T	1/64	0.004-0.010	0.028-0.138	●															CPMT 09T304-M2T	
		CCMT 3(2.5)2-M2T	1/32	0.004-0.010	0.028-0.138	●															CPMT 09T308-M2T	
		CCMT 2(1.5)1-KC2	1/64	0.002-0.007	0.016-0.083	●		●	●	●	●	●	●			●	●			●	CCMT 060204E-KC2	
		CCMT 2(1.5)2-KC2	1/32	0.005-0.014	0.031-0.083	●		●	●	●	●	●	●			●	●				CCMT 060208E-KC2	
		CCMT 3(2.5)1-KC2	1/64	0.002-0.007	0.016-0.126	●		●	●	●	●	●	●		●	●	●				CCMT 09T304E-KC2	
		CCMT 3(2.5)2-KC2	1/32	0.005-0.014	0.031-0.126	●		●	●	●	●	●	●		●	●	●				CCMT 09T308E-KC2	
		CCMT 431-KC2	1/64	0.002-0.007	0.016-0.169	●		●	●	●	●	●	●			●	●				CCMT 120404E-KC2	
		CCMT 432-KC2	1/32	0.005-0.014	0.031-0.169	●		●	●	●	●	●	●			●	●				CCMT 120408E-KC2	
CCMT 433-KC2		3/64	0.007-0.021	0.047-0.169	●		●	●	●	●	●	●			●	●				CCMT 120412E-KC2		
Roughing		CCMW 2(1.5)1-KD5	1/64	0.004-0.009	0.016-0.126											●	●			CCMW 060204E-KD5		
		CCMW 3(2.5)1-KD5	1/64	0.004-0.009	0.016-0.189											●	●			CCMW 09T304E-KD5		
		CCMW 3(2.5)2-KD5	1/32	0.008-0.017	0.031-0.189											●	●			CCMW 09T308E-KD5		
		CCMW 431-KD5	1/64	0.004-0.009	0.016-0.252											●	●			CCMW 120404E-KD5		
		CCMW 432-KD5	1/32	0.008-0.017	0.031-0.252											●	●			CCMW 120408E-KD5		
		CCMW 433-KD5	3/64	0.012-0.026	0.047-0.252											●	●			CCMW 120412E-KD5		
Finishing		CCET 1.2(1)01FR-F	<0.03	0.0004-0.002	0.004-0.012									●						CCET 0301003FR-F		
		CCET 1.2(1)01FL-F	<0.001	0.0004-0.002	0.004-0.012									●						CCET 0301003FL-F		
		CCET 1.2(1)013FR-F	<0.002	0.0004-0.002	0.004-0.012									●						CCET 0301005FR-F		
		CCET 1.2(1)013FL-F	<0.002	0.0004-0.002	0.004-0.012									●						CCET 0301005FL-F		
		CCET 1.2(1)03FR-F	<0.004	0.0004-0.002	0.004-0.012									●						CCET 030101FR-F		
		CCET 1.2(1)03FL-F	<0.004	0.0004-0.002	0.004-0.012									●						CCET 030101FL-F		
		CCET 1.2(1)05FR-F	<0.008	0.0004-0.002	0.004-0.012									●						CCET 030102FR-F		
		CCET 1.2(1)05FL-F	<0.008	0.0004-0.002	0.004-0.012									●						CCET 030102FL-F		
		CCET 1.2(1)1FR-F	<1/64	0.0004-0.002	0.004-0.012									●						CCET 030104FR-F		
		CCET 1.2(1)1FL-F	<1/64	0.0004-0.002	0.004-0.012									●						CCET 030104FL-F		

●: Stock available

Positive 80° (C)

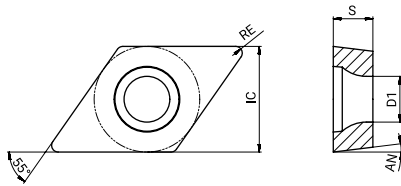


Product code	Dimension (in)			Clearance Angle(°)
	IC	S	D1	AN
CC_1.5(1)_	0.169	0.071	0.091	7°
CC_2(1.5)_	1/4	3/32	0.110	7°
CC_3(2.5)_	3/8	5/32	0.173	7°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						● ● ● ✖ ✖ ● ✖ ✖ ✖ ● ● ✖ ✖ ●																
				Recommended parameters		P					M			K			N	S				
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Finishing		CCET 1.5(1)01FR-F	<0.001	0.0004-0.002	0.004-0.016									●						CCET 0401003FR-F		
		CCET 1.5(1)01FL-F	<0.001	0.0004-0.002	0.004-0.016									●						CCET 0401003FL-F		
		CCET 1.5(1)013FR-F	<0.002	0.0004-0.002	0.004-0.016									●						CCET 0401005FR-F		
		CCET 1.5(1)013FL-F	<0.002	0.0004-0.002	0.004-0.016									●						CCET 0401005FL-F		
		CCET 1.5(1)03FR-F	<0.004	0.0004-0.002	0.004-0.016									●						CCET 040101FR-F		
		CCET 1.5(1)03FL-F	<0.004	0.0004-0.002	0.004-0.016									●						CCET 040101FL-F		
		CCET 1.5(1)05FR-F	<0.008	0.0004-0.002	0.004-0.016									●						CCET 040102FR-F		
		CCET 1.5(1)05FL-F	<0.008	0.0004-0.002	0.004-0.016									●						CCET 040102FL-F		
		CCET 1.5(1)1FR-F	<1/64	0.0004-0.002	0.004-0.016									●						CCET 040104FR-F		
		CCET 1.5(1)1FL-F	<1/64	0.0004-0.002	0.004-0.016									●						CCET 040104FL-F		
Low feed		CCET 2(1)01FR-M	<0.001	0.001-0.004	0.02-0.098									●						CCET 0602003FR-M		
		CCET 2(1)01FL-M	<0.001	0.001-0.004	0.02-0.098									●						CCET 0602003FL-M		
		CCET 2(1)03FR-M	<0.004	0.001-0.004	0.02-0.098									●						CCET 060201FR-M		
		CCET 2(1)03FL-M	<0.004	0.001-0.004	0.02-0.098									●						CCET 060201FL-M		
		CCET 2(1)05FR-M	<0.008	0.001-0.004	0.02-0.098									●						CCET 060202FR-M		
		CCET 2(1)05FL-M	<0.008	0.001-0.004	0.02-0.098									●						CCET 060202FL-M		
		CCET 211FR-M	<1/64	0.0004-0.004	0.02-0.098									●						CCET 060204FR-M		
		CCET 211FL-M	<1/64	0.0004-0.004	0.02-0.098									●						CCET 060204FL-M		
		CCET 3(2.5)01FR-M	<0.001	0.001-0.004	0.02-0.157									●						CCET 09T3003FR-M		
		CCET 3(2.5)01FL-M	<0.001	0.001-0.004	0.02-0.157									●						CCET 09T3003FL-M		
		CCET 3(2.5)013FR-M	<0.002	0.001-0.004	0.02-0.157									●						CCET 09T3005FR-M		
		CCET 3(2.5)013FL-M	<0.002	0.001-0.004	0.02-0.157									●						CCET 09T3005FL-M		
		CCET 3(2.5)03FR-M	<0.004	0.001-0.004	0.02-0.157									●						CCET 09T301FR-M		
		CCET 3(2.5)03FL-M	<0.004	0.001-0.004	0.02-0.157									●						CCET 09T301FL-M		
		CCET 3(2.5)05FR-M	<0.008	0.001-0.004	0.02-0.157									●						CCET 09T302FR-M		
		CCET 3(2.5)05FL-M	<0.008	0.001-0.004	0.02-0.157									●						CCET 09T302FL-M		
		CCET 3(2.5)1FR-M	<1/64	0.001-0.004	0.02-0.157									●						CCET 09T304FR-M		
		CCET 3(2.5)1FL-M	<1/64	0.001-0.004	0.02-0.157									●						CCET 09T304FL-M		

●: Stock available

Positive 55° (D)

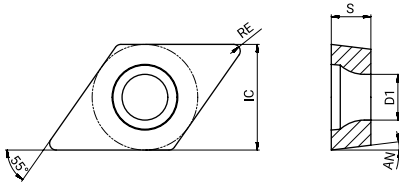


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
DC_2(1.5)_	1/4	3/32	0.110	7°
DC_3(2.5)_	3/8	5/32	0.173	7°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ½ General condition ¾ Bad condition																ISO
				Recommended parameters		P					M				K			N	S			
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S			
Finishing		DCGT 2(1.5)013FP-LF	<0.002	0.002-0.006	0.014-0.118									●						DCGT 0702005FP-LF		
		DCGT 2(1.5)013FP-LF	<0.004	0.002-0.008	0.014-0.118									●						DCGT 070201FP-LF		
		DCGT 2(1.5)05FP-LF	0.008	0.002-0.008	0.014-0.118									●						DCGT 070202FP-LF		
		DCGT 2(1.5)1FP-LF	1/64	0.002-0.008	0.014-0.118									●						DCGT 070204FP-LF		
		DCGT 3(2.5)03FP-LF	<0.004	0.002-0.008	0.014-0.118									●						DCGT 11T301FP-LF		
		DCGT 3(2.5)05FP-LF	0.008	0.002-0.008	0.014-0.118									●						DCGT 11T302FP-LF		
		DCGT 3(2.5)1FP-LF	1/64	0.002-0.008	0.014-0.118									●						DCGT 11T304FP-LF		
		DCGT 2(1.5)013FP-UF	<0.002	0.001-0.006	0.004-0.055									●						DCGT 0702005FP-UF		
		DCGT 2(1.5)03FP-UF	<0.004	0.001-0.006	0.004-0.055									●						DCGT 070201FP-UF		
		DCGT 2(1.5)05FP-UF	0.008	0.001-0.006	0.004-0.055									●						DCGT 070202FP-UF		
		DCGT 2(1.5)1FP-UF	1/64	0.001-0.008	0.004-0.055									●						DCGT 070204FP-UF		
		DCGT 3(2.5)03FP-UF	<0.004	0.001-0.006	0.004-0.055									●						DCGT 11T301FP-UF		
		DCGT 3(2.5)05FP-UF	0.008	0.001-0.006	0.004-0.055									●						DCGT 11T302FP-UF		
		DCGT 3(2.5)1FP-UF	1/64	0.001-0.008	0.004-0.055									●						DCGT 11T304FP-UF		
		DCGT 2(1.5)013F-UF	<0.002	0.001-0.006	0.004-0.055									●						DCGT 0702005F-UF		
		DCGT 2(1.5)03F-UF	0.004	0.001-0.006	0.004-0.055									●						DCGT 070201F-UF		
		DCGT 2(1.5)05F-UF	0.008	0.001-0.006	0.004-0.055									●						DCGT 070202F-UF		
		DCGT 2(1.5)1F-UF	1/64	0.001-0.008	0.004-0.055									●						DCGT 070204F-UF		
		DCGT 3(2.5)03F-UF	0.004	0.001-0.006	0.004-0.094									●						DCGT 11T301F-UF		
		DCGT 3(2.5)05F-UF	0.008	0.001-0.006	0.004-0.094									●						DCGT 11T302F-UF		
		DCGT 3(2.5)1F-UF	1/64	0.001-0.008	0.004-0.094									●						DCGT 11T304F-UF		
		DCGT 2(1.5)03-UF	0.004	0.001-0.006	0.004-0.055									●				●		DCGT 070201E-UF		
		DCGT 2(1.5)05-UF	0.008	0.001-0.006	0.004-0.055									●				●		DCGT 070202E-UF		
		DCGT 2(1.5)1-UF	1/64	0.001-0.008	0.004-0.055									●				●		DCGT 070204E-UF		
		DCGT 3(2.5)03-UF	0.004	0.001-0.006	0.004-0.094									●				●		DCGT 11T301E-UF		
		DCGT 3(2.5)05-UF	0.008	0.001-0.006	0.004-0.094									●				●		DCGT 11T302E-UF		
		DCGT 3(2.5)1-UF	1/64	0.001-0.008	0.004-0.094									●				●		DCGT 11T304E-UF		

●: Stock available

Positive 55° (D)

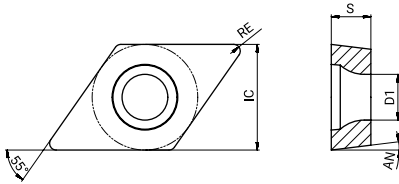


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
DC_2(1.5)_	1/4	3/32	0.110	7°
DC_3(2.5)_	3/8	5/32	0.173	7°

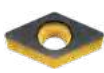
Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition												ISO	
						●	●	●	●	✖	●	●	●	●	●	✖	●		●
				Recommended parameters		P					M				K		N		S
f (in/rev)		ap (in)		AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S		
Semi-Finishing		DCGT 2(1.5)05F-NC2	0.008	0.001-0.004	0.006-0.138												●	DCGT 070202F-NC2	
		DCGT 2(1.5)1F-NC2	1/64	0.002-0.008	0.013-0.138												●	DCGT 070204F-NC2	
		DCGT 3(2.5)05F-NC2	0.008	0.001-0.004	0.006-0.205												●	DCGT 11T302F-NC2	
		DCGT 3(2.5)1F-NC2	1/64	0.002-0.008	0.013-0.205												●	DCGT 11T304F-NC2	
		DCGT 3(2.5)2F-NC2	1/32	0.004-0.016	0.025-0.205												●	DCGT 11T308F-NC2	
Finishing		DCMT 2(1.5)05-F1T	0.008	0.003-0.008	0.016-0.059	●												DCMT 070202-F1T	
		DCMT 2(1.5)1-F1T	1/64	0.003-0.008	0.016-0.059	●												DCMT 070204-F1T	
		DCMT 3(2.5)05-F1T	0.008	0.003-0.008	0.016-0.059	●												DCMT 11T302-F1T	
		DCMT 3(2.5)1-F1T	1/64	0.004-0.010	0.024-0.059	●												DCMT 11T304-F1T	
		DCMT 3(2.5)2-F1T	1/32	0.004-0.010	0.024-0.059	●												DCMT 11T308-F1T	
		DCMT 2(1.5)05-PB1	0.008	0.001-0.003	0.006-0.059	●		●	●		●	●	●						DCMT 070202E-PB1
		DCMT 2(1.5)1-PB1	1/64	0.002-0.006	0.012-0.059	●		●	●		●	●	●						DCMT 070204E-PB1
		DCMT 3(2.5)05-PB1	0.008	0.001-0.003	0.006-0.091	●		●	●		●	●	●						DCMT 11T302E-PB1
		DCMT 3(2.5)1-PB1	1/64	0.002-0.006	0.012-0.091	●		●	●		●	●	●						DCMT 11T304E-PB1
		DCMT 3(2.5)2-PB1	1/32	0.004-0.011	0.024-0.091	●		●	●		●	●	●						DCMT 11T308E-PB1
Semi-Finishing		DCMT 2(1.5)05-PC2	1/64	0.002-0.006	0.014-0.083	●		●	●		●	●	●					●	DCMT 070204E-PC2
		DCMT 2(1.5)1-PC2	1/32	0.004-0.013	0.028-0.083	●		●	●		●	●	●					●	DCMT 070208E-PC2
		DCMT 3(2.5)05-PC2	1/64	0.002-0.006	0.014-0.122	●	●	●	●		●	●	●					●	DCMT 11T304E-PC2
		DCMT 3(2.5)1-PC2	1/32	0.004-0.013	0.028-0.122	●	●	●	●		●	●	●					●	DCMT 11T308E-PC2
		DCMT 3(2.5)2-PC2	3/64	0.006-0.019	0.041-0.122	●		●	●		●	●	●					●	DCMT 11T312E-PC2
		DCMT 2(1.5)05-M2T	1/64	0.004-0.010	0.020-0.118	●													DCMT 11T304-M2T
		DCMT 2(1.5)1-M2T	1/32	0.004-0.010	0.020-0.118	●													DCMT 11T308-M2T
Medium		DCMT 2(1.5)05-KC2	1/64	0.002-0.007	0.016-0.091	●		●	●	●					●	●		DCMT 070204E-KC2	
		DCMT 2(1.5)1-KC2	1/32	0.005-0.014	0.031-0.091	●		●	●	●					●	●		DCMT 070208E-KC2	
		DCMT 3(2.5)05-KC2	1/64	0.002-0.007	0.016-0.138	●		●	●	●					●	●		DCMT 11T304E-KC2	
		DCMT 3(2.5)1-KC2	1/32	0.005-0.014	0.031-0.138	●	●	●	●	●					●	●	●	DCMT 11T308E-KC2	
		DCMT 3(2.5)2-KC2	3/64	0.007-0.021	0.047-0.138		●	●	●	●						●	●		DCMT 11T312E-KC2

●: Stock available

Positive 55° (D)

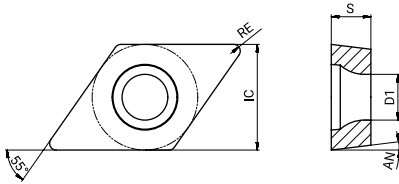


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
DC_2(1.5)_	1/4	3/32	0.110	7°
DC_3(2.5)_	3/8	5/32	0.173	7°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition														ISO
						● ● ● ● ● ● ● ● ● ● ● ● ● ● ●														
				Recommended parameters		P				M				K		N	S			
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	
Roughing		DCMW 2(1.5)05-KD5	1/64	0.002-0.007	0.016-0.154											●	●		DCMW 070204E-KD5	
		DCMW 2(1.5)1-KD5	1/32	0.005-0.014	0.031-0.154											●	●		DCMW 070208E-KD5	
		DCMW 3(2.5)05-KD5	1/64	0.002-0.007	0.016-0.228											●	●		DCMW 11T304E-KD5	
		DCMW 3(2.5)1-KD5	1/32	0.005-0.014	0.031-0.228											●	●		DCMW 11T308E-KD5	
Finishing		DCET 2(1.5)01FR-F	<0.001	0.001-0.007	0.004-0.016									●					DCET 0702003FR-F	
		DCET 2(1.5)01FL-F	<0.001	0.001-0.007	0.004-0.016									●					DCET 0702003FL-F	
		DCET 2(1.5)013FR-F	<0.002	0.001-0.007	0.004-0.016									●					DCET 0702005FR-F	
		DCET 2(1.5)013FL-F	<0.002	0.001-0.007	0.004-0.016									●					DCET 0702005FL-F	
		DCET 2(1.5)03FR-F	<0.004	0.001-0.007	0.004-0.016									●					DCET 070201FR-F	
		DCET 2(1.5)03FL-F	<0.004	0.001-0.007	0.004-0.016									●					DCET 070201FL-F	
		DCET 2(1.5)05FR-F	<0.008	0.001-0.007	0.004-0.016									●					DCET 070202FR-F	
		DCET 2(1.5)05FL-F	<0.008	0.001-0.007	0.004-0.016									●					DCET 070202FL-F	
		DCET 2(1.5)1FR-F	<1/64	0.001-0.007	0.004-0.016									●					DCET 070204FR-F	
		DCET 2(1.5)1FL-F	<1/64	0.001-0.007	0.004-0.016									●					DCET 070204FL-F	
		DCET 3(2.5)01FR-F	<0.001	0.001-0.008	0.004-0.016									●					DCET 11T3003FR-F	
		DCET 3(2.5)01FL-F	<0.001	0.001-0.008	0.004-0.016									●					DCET 11T3003FL-F	
		DCET 3(2.5)013FR-F	<0.002	0.001-0.008	0.004-0.016									●					DCET 11T3005FR-F	
		DCET 3(2.5)013FL-F	<0.002	0.001-0.008	0.004-0.016									●					DCET 11T3005FL-F	
		DCET 3(2.5)03FR-F	<0.004	0.001-0.008	0.004-0.016									●					DCET 11T301FR-F	
		DCET 3(2.5)03FL-F	<0.004	0.001-0.008	0.004-0.016									●					DCET 11T301FL-F	
		DCET 3(2.5)05FR-F	<0.008	0.001-0.008	0.004-0.016									●					DCET 11T302FR-F	
		DCET 3(2.5)05FL-F	<0.008	0.001-0.008	0.004-0.016									●					DCET 11T302FL-F	
		DCET 3(2.5)1FR-F	<1/64	0.001-0.008	0.004-0.016									●					DCET 11T304FR-F	
		DCET 3(2.5)1FL-F	<1/64	0.001-0.008	0.004-0.016									●					DCET 11T304FL-F	

●: Stock available

Positive 55° (D)

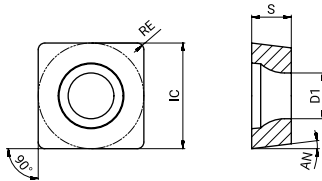


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
DC_2(1.5)_	1/4	3/32	0.110	7°
DC_3(2.5)_	3/8	5/32	0.173	7°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition												ISO	
						● ● ● ✖ ✖ ● ✖ ✖ ✖ ● ● ✖ ✖ ●													
				Recommended parameters		P				M				K		N	S		
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K		AC102K
Low feed		DCET 2(1.5)01FR-M	<0.001	0.0004-0.003	0.020-0.110									●					DCET 0702003FR-M
		DCET 2(1.5)01FL-M	<0.001	0.0004-0.003	0.020-0.110									●					DCET 0702003FL-M
		DCET 2(1.5)013FR-M	<0.002	0.0004-0.003	0.020-0.110									●					DCET 0702005FR-M
		DCET 2(1.5)013FL-M	<0.002	0.0004-0.003	0.020-0.110									●					DCET 0702005FL-M
		DCET 2(1.5)03FR-M	<0.004	0.0004-0.003	0.020-0.110									●					DCET 070201FR-M
		DCET 2(1.5)03FL-M	<0.004	0.0004-0.003	0.020-0.110									●					DCET 070201FL-M
		DCET 2(1.5)05FR-M	<0.008	0.0004-0.003	0.020-0.110									●					DCET 070202FR-M
		DCET 2(1.5)05FL-M	<0.008	0.0004-0.003	0.020-0.110									●					DCET 070202FL-M
		DCET 2(1.5)1FR-M	<1/64	0.0004-0.003	0.020-0.110									●					DCET 070204FR-M
		DCET 2(1.5)1FL-M	<1/64	0.0004-0.003	0.020-0.110									●					DCET 070204FL-M
		DCET 3(2.5)01FR-M	<0.001	0.0004-0.004	0.020-0.157									●					DCET 11T3003FR-M
		DCET 3(2.5)01FL-M	<0.001	0.0004-0.004	0.020-0.157									●					DCET 11T3003FL-M
		DCET 3(2.5)013FR-M	<0.002	0.0004-0.004	0.020-0.157									●					DCET 11T3005FR-M
		DCET 3(2.5)013FL-M	<0.002	0.0004-0.004	0.020-0.157									●					DCET 11T3005FL-M
		DCET 3(2.5)03FR-M	<0.004	0.0004-0.004	0.020-0.157									●					DCET 11T301FR-M
		DCET 3(2.5)03FL-M	<0.004	0.0004-0.004	0.020-0.157									●					DCET 11T301FL-M
		DCET 3(2.5)05FR-M	<0.008	0.0004-0.004	0.020-0.157									●					DCET 11T302FR-M
		DCET 3(2.5)05FL-M	<0.008	0.0004-0.004	0.020-0.157									●					DCET 11T302FL-M
		DCET 3(2.5)1FR-M	<1/64	0.0004-0.004	0.020-0.157									●					DCET 11T304FR-M
		DCET 3(2.5)1FL-M	<1/64	0.0004-0.004	0.020-0.157									●					DCET 11T304FL-M

●: Stock available

Positive 90° (S)

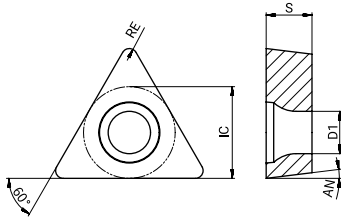


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
SC_3(2.5)_	3/8	5/32	0.173	7°
SC_43_	1/2	3/16	0.217	7°
SC_3809_	1½	3/8	0.386	7°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition												ISO	
						●	●	●	●	✖	●	●	●	●	●	✖	●		●
				Recommended parameters		P				M				K		N	S		
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K		AW100K
Semi-Finishing		SCGT 3(2.5)2F-NC2	1/32	0.004-0.016	0.025-0.169												●		SCGT 09T308F-NC2
Finishing		SCMT 3(2.5)1-PB1	1/64	0.002-0.006	0.012-0.094	●		●	●		●	●	●						SCMT 09T304E-PB1
		SCMT 3(2.5)2-PB1	1/32	0.004-0.011	0.024-0.094	●		●	●		●	●	●						SCMT 09T308E-PB1
		SCMT 431-PB1	1/64	0.002-0.006	0.012-0.126			●	●		●	●	●						SCMT 120404E-PB1
Semi-Finishing		SCMT 3(2.5)1-PC2	1/64	0.002-0.006	0.014-0.114	●		●	●		●	●	●					●	SCMT 09T304E-PC2
		SCMT 3(2.5)2-PC2	1/32	0.004-0.013	0.028-0.114	●		●	●		●	●	●					●	SCMT 09T308E-PC2
		SCMT 431-PC2	1/64	0.002-0.006	0.014-0.15	●		●	●		●	●	●					●	SCMT 120404E-PC2
		SCMT 432-PC2	1/32	0.004-0.013	0.028-0.15	●	●	●	●		●	●	●					●	SCMT 120408E-PC2
		SCMT 433-PC2	3/64	0.006-0.019	0.041-0.15		●	●	●		●	●	●					●	SCMT 120412E-PC2
		SCMT 3(2.5)1-M2T	1/64	0.004-0.010	0.028-0.138	●													SCMT 09T304-M2T
		SCMT 3(2.5)2-M2T	1/32	0.004-0.010	0.028-0.138	●													SCMT 09T308-M2T
Medium		SCMT 3(2.5)1-KC2	1/64	0.002-0.007	0.016-0.122	●		●	●	●					●	●			SCMT 09T304E-KC2
		SCMT 3(2.5)2-KC2	1/32	0.005-0.014	0.031-0.122	●		●	●	●					●	●			SCMT 09T308E-KC2
		SCMT 431-KC2	1/64	0.002-0.007	0.016-0.165	●		●	●	●					●	●			SCMT 120404E-KC2
		SCMT 432-KC2	1/32	0.005-0.014	0.031-0.165	●		●	●	●					●	●			SCMT 120408E-KC2
		SCMT 433-KC2	3/64	0.007-0.021	0.047-0.165			●	●	●					●	●			SCMT 120412E-KC2
		SCMW 3(2.5)1-KD5	1/64	0.004-0.009	0.016-0.189										●	●			SCMW 09T304E-KD5
		SCMW 3(2.5)2-KD5	1/32	0.008-0.017	0.031-0.189									●	●	●			SCMW 09T308E-KD5
		SCMW 431-KD5	1/64	0.004-0.009	0.016-0.252										●	●			SCMW 120404E-KD5
	SCMW 432-KD5	1/32	0.008-0.017	0.031-0.252										●	●			SCMW 120408E-KD5	
Roughing		-	1/8	0.028-0.055	0.157-0.709					●									SCMT 380932S-HT

●: Stock available

Positive 60° (T)

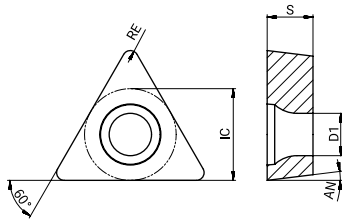


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
TC_2(1.5)_	1/4	3/32	0.110	7°
TC_3(2.5)_	3/8	5/32	0.173	7°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						● ● ● ● ✖ ● ● ✖ ✖ ● ● ✖ ✖ ●																
				Recommended parameters		P					M				K			N	S			
						f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Finishing		TCGT 2(1.5)03FP-LF	<0.004	0.002-0.008	0.014-0.118										●						TCGT 110201FP-LF	
		TCGT 2(1.5)05FP-LF	0.008	0.002-0.008	0.014-0.118										●							TCGT 110202FP-LF
		TCGT 2(1.5)1FP-LF	1/64	0.002-0.008	0.014-0.118										●							TCGT 110204FP-LF
		TCGT 3(2.5)1FP-LF	1/64	0.002-0.008	0.014-0.118										●							TCGT 16T304FP-LF
		TCGT 2(1.5)03FP-UF	<0.004	0.001-0.006	0.004-0.094										●							TCGT 110201FP-UF
		TCGT 2(1.5)05FP-UF	0.008	0.001-0.006	0.008-0.094										●							TCGT 110202FP-UF
		TCGT 2(1.5)1FP-UF	1/64	0.001-0.008	0.008-0.094										●							TCGT 110204FP-UF
		TCGT 3(2.5)1FP-UF	1/64	0.001-0.008	0.008-0.094										●							TCGT 16T304FP-UF
		TCGT 2(1.5)03F-UF	0.004	0.001-0.006	0.004-0.094										●							TCGT 110201F-UF
		TCGT 2(1.5)05F-UF	0.008	0.001-0.006	0.008-0.094										●							TCGT 110202F-UF
		TCGT 2(1.5)1F-UF	1/64	0.001-0.008	0.008-0.094										●							TCGT 110204F-UF
		TCGT 3(2.5)1F-UF	1/64	0.001-0.008	0.008-0.094										●							TCGT 16T304F-UF
		TCGT 2(1.5)03-UF	0.004	0.001-0.006	0.004-0.094										●					●		TCGT 110201E-UF
		TCGT 2(1.5)05-UF	0.008	0.001-0.006	0.008-0.094										●					●		TCGT 110202E-UF
		TCGT 2(1.5)1-UF	1/64	0.001-0.008	0.008-0.094										●					●		TCGT 110204E-UF
		TCGT 3(2.5)1-UF	1/64	0.001-0.008	0.008-0.094										●					●		TCGT 16T304E-UF
Semi-Finishing		TCGT 2(1.5)1-NC2	1/64	0.002-0.008	0.013-0.193													●			TCGT 110204F-NC2	
		TCGT 3(2.5)1-NC2	1/64	0.002-0.008	0.013-0.291													●				TCGT 16T304F-NC2
		TCGT 3(2.5)2-NC2	1/32	0.004-0.016	0.025-0.291													●				TCGT 16T308F-NC2

●: Stock available

Positive 60° (T)

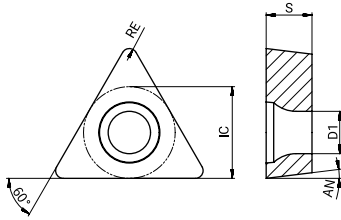


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
TCMT_1.8(1.5)_	0.219	0.094	0.098	7°
TC_2(1.5)_	1/4	3/32	0.110	7°
TC_3(2.5)_	3/8	5/32	0.173	7°
TPMT_1.8(1.5)_	0.219	0.094	0.098	11°
TPMT_22_	1/4	1/8	0.134	11°
TPMT_32_	3/8	1/8	0.173	11°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						●	●	●	●	✖	●	●	●	●	●	●	✖	●	●			
				Recommended parameters		P					M				K			N	S			
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S							
Finishing		TCMT 1.8(1.5)1-PB1	1/64	0.002-0.006	0.012-0.075	●		●	●		●	●	●				TCMT 090204E-PB1					
		TCMT 2(1.5)05-PB1	0.008	0.001-0.003	0.006-0.087	●		●	●		●	●	●				TCMT 110202E-PB1					
		TCMT 2(1.5)1-PB1	1/64	0.002-0.006	0.012-0.087	●		●	●		●	●	●				TCMT 110204E-PB1					
		TCMT 2(1.5)2-PB1	1/32	0.004-0.011	0.024-0.087	●		●	●		●	●	●				TCMT 110208E-PB1					
		TCMT 3(2.5)1-PB1	1/64	0.002-0.006	0.012-0.13	●		●	●		●	●	●				TCMT 16T304E-PB1					
		TCMT 3(2.5)2-PB1	1/32	0.004-0.011	0.024-0.13	●		●	●		●	●	●				TCMT 16T308E-PB1					
		TPMT 1.8(1.5)05-PB1	0.008	0.001-0.003	0.006-0.075	●											TPMT 090202E-PB1					
		TPMT 1.8(1.5)1-PB1	1/64	0.002-0.006	0.012-0.075	●											TPMT 090204E-PB1					
		TPMT 1.8(1.5)2-PB1	1/32	0.004-0.011	0.024-0.075	●											TPMT 090208E-PB1					
		TPMT 2(1.5)05-PB1	0.008	0.001-0.003	0.006-0.087	●											TPMT 110302E-PB1					
		TPMT 2(1.5)1-PB1	1/64	0.002-0.006	0.012-0.13	●											TPMT 110304E-PB1					
		TPMT 2(1.5)2-PB1	1/32	0.004-0.011	0.024-0.13	●											TPMT 110308E-PB1					
		TPMT 3(2.5)1-PB1	1/64	0.002-0.006	0.012-0.13	●											TPMT 160304E-PB1					
		TPMT 3(2.5)2-PB1	1/32	0.004-0.011	0.024-0.13	●											TPMT 160308E-PB1					
Semi-Finishing		TCMT 1.8(1.5)1-PC2	1/64	0.002-0.006	0.014-0.102	●										TCMT 090204E-PC2						
		TCMT 1.8(1.5)2-PC2	1/32	0.004-0.013	0.028-0.102	●											TCMT 090208E-PC2					
		TCMT 2(1.5)1-PC2	1/64	0.002-0.006	0.014-0.118	●											TCMT 110204E-PC2					
		TCMT 2(1.5)2-PC2	1/32	0.004-0.013	0.028-0.118	●											TCMT 110208E-PC2					
		TCMT 3(2.5)1-PC2	1/64	0.002-0.006	0.014-0.177	●											TCMT 16T304E-PC2					
		TCMT 3(2.5)2-PC2	1/32	0.004-0.013	0.028-0.177	●											TCMT 16T308E-PC2					
		TCMT 3(2.5)3-PC2	3/64	0.006-0.019	0.041-0.177												TCMT 16T312E-PC2					
		TPMT 1.8(1.5)1-PC2	1/64	0.002-0.006	0.014-0.102	●											TPMT 090204E-PC2					
		TPMT 1.8(1.5)2-PC2	1/32	0.004-0.013	0.028-0.102	●											TPMT 090208E-PC2					
		TPMT 221-PC2	1/64	0.002-0.006	0.014-0.118	●											TPMT 110304E-PC2					
		TPMT 222-PC2	1/32	0.004-0.013	0.028-0.118	●											TPMT 110308E-PC2					

●: Stock available

Positive 60° (T)

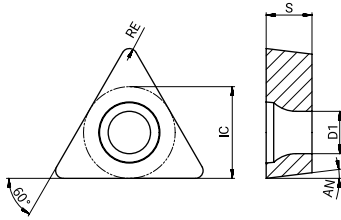


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
TBET_1.2(1)_	0.156	0.063	0.091	5°
TCMT_1.8(1.5)_	0.219	0.094	0.098	7°
TC_2(1.5)_	1/4	3/32	0.110	7°
TC_3(2.5)_	3/8	5/32	0.173	7°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition														ISO
				Recommended parameters		P				M			K		N	S				
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Semi-Finishing		TCMT 221-M2T	1/64	0.004-0.010	0.024-0.079	●														TCMT 110204-M2T
		TCMT 222-M2T	1/32	0.004-0.010	0.024-0.079	●														TCMT 110208-M2T
		TCMT 3(2.5)1-M2T	1/64	0.004-0.010	0.024-0.079	●														TCMT 16T304-M2T
		TCMT 3(2.5)2-M2T	1/32	0.004-0.010	0.024-0.079	●														TCMT 16T308-M2T
Medium		TCMT 1.8(1.5)1-KC2	1/64	0.002-0.007	0.016-0.114	●	●	●	●		●	●	●			●	●			TCMT 090204E-KC2
		TCMT 1.8(1.5)2-KC2	1/32	0.005-0.014	0.031-0.114	●	●	●	●		●	●	●			●	●			TCMT 090208E-KC2
		TCMT 2(1.5)1-KC2	1/64	0.002-0.007	0.016-0.13	●	●	●	●		●	●	●			●	●			TCMT 110204E-KC2
		TCMT 2(1.5)2-KC2	1/32	0.005-0.014	0.031-0.13	●	●	●	●		●	●	●			●	●			TCMT 110208E-KC2
		TCMT 3(2.5)1-KC2	1/64	0.002-0.007	0.016-0.193	●	●	●	●		●	●	●			●	●			TCMT 16T304E-KC2
		TCMT 3(2.5)2-KC2	1/32	0.005-0.014	0.031-0.193	●	●	●	●		●	●	●			●	●			TCMT 16T308E-KC2
		TCMT 3(2.5)3-KC2	3/64	0.007-0.021	0.047-0.193		●	●	●		●	●	●			●	●			TCMT 16T312E-KC2
Roughing		TCMW 2(1.5)1-KD5	1/64	0.002-0.007	0.016-0.217										●	●			TCMW 110204E-KD5	
		TCMW 2(1.5)2-KD5	1/32	0.005-0.014	0.031-0.217											●	●			TCMW 110208E-KD5
		TCMW 3(2.5)1-KD5	1/64	0.002-0.007	0.016-0.323											●	●			TCMW 16T304E-KD5
		TCMW 3(2.5)2-KD5	1/32	0.005-0.014	0.031-0.323											●	●			TCMW 16T308E-KD5
Finishing		TBET 1.2(1)01FR-F	<0.001	0.001-0.003	0.004-0.02								●							TBET 0601003FR-F
		TBET 1.2(1)01FL-F	<0.001	0.001-0.003	0.004-0.02								●							TBET 0601003FL-F
		TBET 1.2(1)013FR-F	<0.002	0.001-0.003	0.004-0.02								●							TBET 0601005FR-F
		TBET 1.2(1)013FL-F	<0.002	0.001-0.003	0.004-0.02								●							TBET 0601005FL-F
		TBET 1.2(1)03FR-F	<0.004	0.001-0.003	0.004-0.02								●							TBET 060101FR-F
		TBET 1.2(1)03FL-F	<0.004	0.001-0.003	0.004-0.02								●							TBET 060101FL-F
		TBET 1.2(1)05FR-F	<0.008	0.001-0.003	0.004-0.02								●							TBET 060102FR-F
		TBET 1.2(1)05FL-F	<0.008	0.001-0.003	0.004-0.02								●							TBET 060102FL-F
		TBET 1.2(1)1FR-F	<1/64	0.001-0.003	0.004-0.02								●							TBET 060104FR-F
		TBET 1.2(1)1FL-F	<1/64	0.001-0.003	0.004-0.02								●							TBET 060104FL-F

●: Stock available

Positive 60° (T)

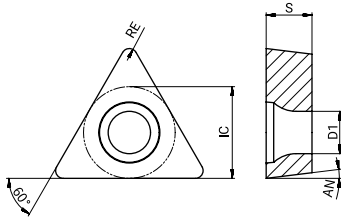


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
TPEH_1.5(1.5)_	0.187	0.094	0.091	11°
TPEH_1.8(1.5)_	0.219	0.094	0.118	11°
TCET_22_	1/4	0.125	0.11	7°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition														ISO
				Recommended parameters		P				M			K		N	S				
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Finishing		TCET 2(2)03FR-F	<0.004	0.001-0.003	0.004-0.031									●						TCET 110201FR-F
		TCET 2(2)03FL-F	<0.004	0.001-0.003	0.004-0.031									●						TCET 110201FL-F
		TCET 2(2)05FR-F	<0.008	0.001-0.003	0.004-0.031									●						TCET 110202FR-F
		TCET 2(2)05FL-F	<0.008	0.001-0.003	0.004-0.031									●						TCET 110202FL-F
		TCET 221FR-F	<1/64	0.001-0.003	0.004-0.031									●						TCET 110204FR-F
		TCET 221FL-F	<1/64	0.001-0.003	0.004-0.031									●						TCET 110204FL-F
		TCET 222FR-F	<1/32	0.001-0.003	0.004-0.031									●						TCET 110208FR-F
		TCET 222FL-F	<1/32	0.001-0.003	0.004-0.031									●						TCET 110208FL-F
		TPEH 1.5(1.5)03FR-F	<0.004	0.0004-0.004	0.004-0.031									●						TPEH 080201FR-F
		TPEH 1.5(1.5)03FL-F	<0.004	0.0004-0.004	0.004-0.031									●						TPEH 080201FL-F
		TPEH 1.5(1.5)05FR-F	<0.008	0.0004-0.004	0.004-0.031									●						TPEH 080202FR-F
		TPEH 1.5(1.5)05FL-F	<0.008	0.0004-0.004	0.004-0.031									●						TPEH 080202FL-F
		TPEH 1.5(1.5)1FR-F	<1/64	0.0004-0.004	0.004-0.031									●						TPEH 080204FR-F
		TPEH 1.5(1.5)1FL-F	<1/64	0.0004-0.004	0.004-0.031									●						TPEH 080204FL-F
		TPEH 1.8(1.5)03FR-F	<0.004	0.0004-0.004	0.004-0.031									●						TPEH 090201FR-F
		TPEH 1.8(1.5)03FL-F	<0.004	0.0004-0.004	0.004-0.031									●						TPEH 090201FL-F
		TPEH 1.8(1.5)05FR-F	<0.008	0.0004-0.004	0.004-0.031									●						TPEH 090202FR-F
		TPEH 1.8(1.5)05FL-F	<0.008	0.0004-0.004	0.004-0.031									●						TPEH 090202FL-F
		TPEH 1.8(1.5)1FR-F	<1/64	0.0004-0.004	0.004-0.031									●						TPEH 090204FR-F
		TPEH 1.8(1.5)1FL-F	<1/64	0.0004-0.004	0.004-0.031									●						TPEH 090204FL-F

● : Stock available

Positive 60° (T)

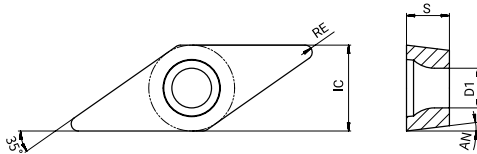


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
TCET_1.5(1.5)_	0.187	0.094	0.091	7°
TCET_22_	1/4	0.125	0.11	7°
TPEH_22_	1/4	0.125	0.130	11°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						● ● ● ◐ ✖ ● ◐ ◐ ◐ ● ● ✖ ◐ ●																
				Recommended parameters		P				M				K		N	S					
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S							
Finishing		TPEH 2(2)05FR-F	<0.008	0.0004-0.005	0.008-0.031									●					TPEH 110302FR-F			
		TPEH 2(2)05FL-F	<0.008	0.0004-0.005	0.008-0.031									●					TPEH 110302FL-F			
		TPEH 221FR-F	<1/64	0.0004-0.005	0.008-0.031									●					TPEH 110304FR-F			
		TPEH 221FL-F	<1/64	0.0004-0.005	0.008-0.031									●					TPEH 110304FL-F			
		TPEH 222FR-F	<1/32	0.0004-0.005	0.008-0.031									●					TPEH 110308FR-F			
		TPEH 222FL-F	<1/32	0.0004-0.005	0.008-0.031									●					TPEH 110308FL-F			
Low feed		TCET 1.5(1.5)01FR-M	<0.001	0.0004-0.003	0.02-0.098									●					TCET 0802003FR-M			
		TCET 1.5(1.5)01FL-M	<0.001	0.0004-0.003	0.02-0.098									●					TCET 0802003FL-M			
		TCET 1.5(1.5)03FR-M	<0.004	0.0004-0.003	0.02-0.098									●					TCET 080201FR-M			
		TCET 1.5(1.5)03FL-M	<0.004	0.0004-0.003	0.02-0.098									●					TCET 080201FL-M			
		TCET 1.5(1.5)05FR-M	<0.008	0.0004-0.003	0.02-0.098									●					TCET 080202FR-M			
		TCET 1.5(1.5)05FL-M	<0.008	0.0004-0.003	0.02-0.098									●					TCET 080202FL-M			
		TCET 2(2)01FR-M	<0.001	0.001-0.004	0.02-0.157									●					TCET 1103003FR-M			
		TCET 2(2)01FL-M	<0.001	0.001-0.004	0.02-0.157									●					TCET 1103003FL-M			
		TCET 2(2)03FR-M	<0.004	0.001-0.004	0.02-0.157									●					TCET 110301FR-M			
		TCET 2(2)03FL-M	<0.004	0.001-0.004	0.02-0.157									●					TCET 110301FL-M			
		TCET 2(2)05FR-M	<0.008	0.001-0.004	0.02-0.157									●					TCET 110302FR-M			
		TCET 2(2)05FL-M	<0.008	0.001-0.004	0.02-0.157									●					TCET 110302FL-M			
		TCET 221FR-M	<1/64	0.001-0.004	0.02-0.157									●					TCET 110304FR-M			
		TCET 221FL-M	<1/64	0.001-0.004	0.02-0.157									●					TCET 110304FL-M			

●: Stock available

Positive 35° (V)

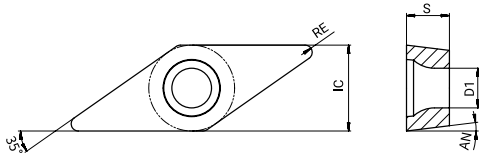


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
VB_22_	1/4	1/8	0.110	5°
VB_33_	3/8	3/16	0.173	5°
VC_22_	1/4	1/8	0.110	7°
VP_22_	1/4	1/8	0.110	11°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition												ISO	
						●	●	●	◐	✖	●	◐	◐	◐	●	●	✖		◐
				Recommended parameters		P				M				K		N	S		
f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S				
Finishing		VBGT 2(2)013FP-LF	<0.002	0.002-0.008	0.014-0.118									●					VBGT 1103005FP-LF
		VBGT 2(2)03FP-LF	<0.004	0.002-0.008	0.014-0.119									●					VBGT 110301FP-LF
		VBGT 2(2)05FP-LF	0.008	0.002-0.008	0.014-0.120									●					VBGT 110302FP-LF
		VBGT 221FP-LF	1/64	0.002-0.008	0.014-0.121									●					VBGT 110304FP-LF
		VBGT 3(3)03FP-LF	<0.004	0.002-0.008	0.014-0.122									●					VBGT 160401FP-LF
		VBGT 3(3)05FP-LF	0.008	0.002-0.008	0.014-0.123									●					VBGT 160402FP-LF
		VCGT 2(2)013FP-LF	<0.002	0.002-0.008	0.014-0.124									●					VCGT 1103005FP-LF
		VCGT 2(2)03FP-LF	<0.004	0.002-0.008	0.014-0.125									●					VCGT 110301FP-LF
		VCGT 2(2)05FP-LF	0.008	0.002-0.008	0.014-0.126									●					VCGT 110302FP-LF
		VCGT 221FP-LF	1/64	0.002-0.008	0.014-0.127									●					VCGT 110304FP-LF
		VPGT 2(2)013FP-LF	<0.002	0.002-0.008	0.014-0.128									●					VPGT 1103005FP-LF
		VPGT 2(2)03FP-LF	<0.004	0.002-0.008	0.014-0.129									●					VPGT 110301FP-LF
		VPGT 2(2)05FP-LF	0.008	0.002-0.008	0.014-0.130									●					VPGT 110302FP-LF
		VBGT 2(2)03FP-UF	0.004	0.001-0.006	0.004-0.055									●					VBGT 110301FP-UF
		VBGT 2(2)05FP-UF	0.008	0.001-0.006	0.008-0.055									●					VBGT 110302FP-UF
		VBGT 221FP-UF	1/64	0.001-0.008	0.008-0.055									●					VBGT 110304FP-UF
		VBGT 3(3)03FP-UF	0.004	0.001-0.006	0.004-0.055									●					VBGT 160401FP-UF
		VBGT 3(3)05FP-UF	0.008	0.001-0.006	0.008-0.055									●					VBGT 160402FP-UF
		VBGT 2(2)03F-UF	0.004	0.001-0.006	0.004-0.055									●					VBGT 110301F-UF
		VBGT 2(2)05F-UF	0.008	0.001-0.006	0.008-0.055									●					VBGT 110302F-UF
		VBGT 221F-UF	1/64	0.001-0.008	0.008-0.055									●					VBGT 110304F-UF
		VBGT 3(3)03F-UF	0.004	0.001-0.006	0.004-0.055									●					VBGT 160401F-UF
		VBGT 3(3)05F-UF	0.008	0.001-0.006	0.008-0.055									●					VBGT 160402F-UF
		VBGT 2(2)03-UF	0.004	0.001-0.006	0.004-0.055									●				●	VBGT 110301E-UF
		VBGT 2(2)05-UF	0.008	0.001-0.006	0.008-0.055									●				●	VBGT 110302E-UF
		VBGT 221-UF	1/64	0.001-0.008	0.008-0.055									●				●	VBGT 110304E-UF
		VBGT 3(3)03-UF	0.004	0.001-0.006	0.004-0.055									●				●	VBGT 160401E-UF
		VBGT 3(3)05-UF	0.008	0.001-0.006	0.008-0.055									●				●	VBGT 160402E-UF

●: Stock available

Positive 35° (V)

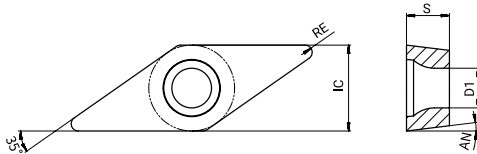


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
VB_22_	1/4	1/8	0.110	5°
VB_33_	3/8	3/16	0.173	5°
VC_22_	1/4	1/8	0.110	7°
VC_33_	3/8	3/16	0.173	7°
VC_4(3.5)_	1/2	0.219	0.217	7°
VP_22_	1/4	1/8	0.110	11°
VP_4(3.5)_	1/2	0.219	0.217	11°

Inserts		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition														ISO
						●	●	●	◐	✖	●	◐	◐	◐	●	●	✖	◐	●	
				Recommended parameters		P					M				K		N	S		
			f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S		
Finishing		VCMT 2(2)013FP-UF	<0.002	0.001-0.006	0.004-0.055									●					VCMT 1103005FP-UF	
		VCMT 2(2)03FP-UF	0.004	0.001-0.006	0.004-0.055									●					VCMT 110301FP-UF	
		VCMT 2(2)05FP-UF	0.008	0.001-0.006	0.008-0.055									●					VCMT 110302FP-UF	
		VCMT 221FP-UF	1/64	0.001-0.008	0.008-0.055									●					VCMT 110304FP-UF	
		VCMT 2(2)013-UF	<0.002	0.001-0.006	0.004-0.055									●					VCMT 1103005E-UF	
		VCMT 2(2)03F-UF	0.004	0.001-0.006	0.004-0.055									●					VCMT 110301F-UF	
		VCMT 2(2)05F-UF	0.008	0.001-0.006	0.008-0.055									●					VCMT 110302F-UF	
		VCMT 221F-UF	1/64	0.001-0.008	0.008-0.055									●					VCMT 110304F-UF	
		VCMT 2(2)03-UF	0.004	0.001-0.006	0.004-0.055									●					● VCMT 110301E-UF	
		VCMT 2(2)05-UF	0.008	0.001-0.006	0.008-0.055									●					● VCMT 110302E-UF	
		VCMT 221-UF	1/64	0.001-0.008	0.008-0.055									●					● VCMT 110304E-UF	
		VPGT 2(2)03FP-UF	0.004	0.001-0.006	0.004-0.055									●					VPGT 110301FP-UF	
VPGT 2(2)05FP-UF		0.008	0.001-0.006	0.008-0.055									●					VPGT 110302FP-UF		
		VPGT 2(2)03F-UF	0.004	0.001-0.006	0.004-0.055									●					VPGT 110301F-UF	
		VPGT 2(2)05F-UF	0.008	0.001-0.006	0.008-0.055									●					VPGT 110302F-UF	
Semi-Finishing		VCMT 2(2)05F-NC2	0.008	0.001-0.004	0.006-0.11												●		VCMT 110302F-NC2	
		VCMT 221F-NC2	1/64	0.002-0.008	0.013-0.11												●		VCMT 110304F-NC2	
		VCMT 331F-NC2	1/64	0.002-0.008	0.013-0.165												●		VCMT 160404F-NC2	
		VCMT 332F-NC2	1/32	0.004-0.016	0.025-0.165												●		VCMT 160408F-NC2	
		VCMT 333F-NC2	3/64	0.006-0.024	0.038-0.165												●		VCMT 160412F-NC2	
		-	3.0	0.014-0.059	0.094-0.217												●		VCMT 220530F-NC2	
		VPGT 4(3.5)5-NC2	5/64	0.009-0.039	0.063-0.217													●	VPGT 220520E-NC2	
		VPGT 4(3.5)5F-NC2	5/64	0.009-0.039	0.063-0.217													●	VPGT 220520F-NC2	
Profiling machining		VBMT 2(2)05-BS	0.008	0.002-0.006	0.012-0.051	●	●												VBMT 110302E-BS	
		VBMT 221-BS	1/64	0.002-0.006	0.012-0.051	●	●												VBMT 110304E-BS	
		VBMT 222-BS	1/32	0.002-0.008	0.012-0.051	●	●												VBMT 110308E-BS	
		VBMT 331-BS	1/64	0.002-0.006	0.012-0.059	●	●												VBMT 160404E-BS	
		VBMT 332-BS	1/32	0.002-0.006	0.012-0.059	●	●												VBMT 160408E-BS	
		VBMT 333-BS	3/64	0.002-0.009	0.012-0.059	●	●												VBMT 160412E-BS	

●: Stock available

Positive 35° (V)

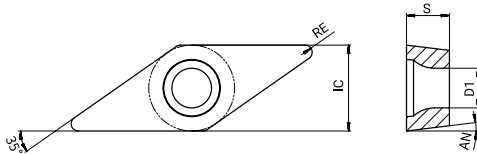


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
VB_22_	1/4	1/8	0.110	5°
VB_33_	3/8	3/16	0.173	5°
VC_22_	1/4	1/8	0.110	7°
VC_33_	3/8	3/16	0.173	7°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						●	●	●	◐	✖	●	◐	◐	◐	●	●	✖	◐	●			
				Recommended parameters		P					M				K		N	S				
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S			
Finishing		VBMT 221-PB1	1/64	0.002-0.006	0.012-0.055	●		●	●		●	●	●							VBMT 110304E-PB1		
		VBMT 222-PB1	1/32	0.004-0.011	0.024-0.055	●		●	●		●	●	●							VBMT 110308E-PB1		
		VBMT 3(3)05-PB1	0.008	0.001-0.003	0.006-0.083	●		●	●		●	●	●							VBMT 160402E-PB1		
		VBMT 331-PB1	1/64	0.002-0.006	0.012-0.083	●		●	●		●	●	●							VBMT 160404E-PB1		
		VBMT 332-PB1	1/32	0.004-0.011	0.024-0.083	●		●	●		●	●	●							VBMT 160408E-PB1		
		VCMT 331-PB1	1/64	0.002-0.006	0.012-0.083			●	●		●	●	●							VCMT 160404E-PB1		
		VCMT 332-PB1	1/32	0.004-0.011	0.024-0.083			●	●		●	●	●							VCMT 160408E-PB1		
Semi-Finishing		VBMT 221-PC2	1/64	0.002-0.006	0.014-0.083	●		●	●		●	●	●					●	VBMT 110304E-PC2			
		VBMT 222-PC2	1/32	0.004-0.013	0.028-0.083	●		●	●		●	●	●					●	VBMT 110308E-PC2			
		VBMT 331-PC2	1/64	0.002-0.006	0.014-0.122	●	●	●	●		●	●	●					●	VBMT 160404E-PC2			
		VBMT 332-PC2	1/32	0.004-0.013	0.028-0.122	●	●	●	●		●	●	●					●	VBMT 160408E-PC2			
		VBMT 333-PC2	3/64	0.006-0.019	0.041-0.122		●	●	●		●	●	●					●	VBMT 160412E-PC2			
		VCMT 221-PC2	1/64	0.002-0.006	0.014-0.083			●	●		●	●	●						VCMT 110304E-PC2			
		VCMT 222-PC2	1/32	0.004-0.013	0.028-0.083			●	●		●	●	●						VCMT 110308E-PC2			
		VCMT 331-PC2	1/64	0.002-0.006	0.014-0.122			●	●		●	●	●						VCMT 160404E-PC2			
VCMT 332-PC2	1/32	0.004-0.013	0.028-0.122			●	●		●	●	●						VCMT 160408E-PC2					
Medium		VBMT 331-KC2	1/64	0.002-0.007	0.016-0.13	●		●	●		●	●	●			●	●		VBMT 160404E-KC2			
		VBMT 332-KC2	1/32	0.005-0.014	0.031-0.13	●	●	●	●		●	●	●			●	●		VBMT 160408E-KC2			
		VBMT 333-KC2	3/64	0.007-0.021	0.047-0.13	●	●	●	●		●	●	●			●	●		VBMT 160412E-KC2			
Finishing		VBET 2(2)01FR-F	<0.001	0.0004-0.007	0.004-0.012									●					VBET 1103003FR-F			
		VBET 2(2)01FL-F	<0.001	0.0004-0.007	0.004-0.012									●					VBET 1103003FL-F			
		VBET 2(2)013FR-F	<0.002	0.0004-0.007	0.004-0.012									●					VBET 1103005FR-F			
		VBET 2(2)013FL-F	<0.002	0.0004-0.007	0.004-0.012									●					VBET 1103005FL-F			
		VBET 2(2)03FR-F	<0.004	0.0004-0.007	0.004-0.012									●					VBET 110301FR-F			
		VBET 2(2)03FL-F	<0.004	0.0004-0.007	0.004-0.012									●					VBET 110301FL-F			
		VBET 2(2)05FR-F	<0.008	0.0004-0.007	0.004-0.012									●					VBET 110302FR-F			
		VBET 2(2)05FL-F	<0.008	0.0004-0.007	0.004-0.012									●					VBET 110302FL-F			

●: Stock available

Positive 35° (V)

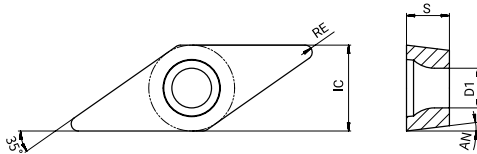


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
VB_22_	1/4	1/8	0.110	5°
VC_22_	1/4	1/8	0.110	7°
VP_1.5(1.5)_	0.187	0.094	0.091	11°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ◐ General condition ✖ Bad condition																ISO
						● ● ● ◐ ✖ ● ◐ ◐ ◐ ● ● ✖ ◐ ●																
				Recommended parameters		P					M			K			N	S				
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S			
Low feed		VBET 2(2)013FR-M	<0.002	0.0004-0.002	0.008-0.079									●					VBET 1103005FR-M			
		VBET 2(2)013FL-M	<0.002	0.0004-0.002	0.008-0.079									●					VBET 1103005FL-M			
		VBET 2(2)03FR-M	<0.004	0.0004-0.002	0.008-0.079									●					VBET 110301FR-M			
		VBET 2(2)03FL-M	<0.004	0.0004-0.002	0.008-0.079									●					VBET 110301FL-M			
		VBET 2(2)05FR-M	<0.008	0.0004-0.002	0.008-0.079									●					VBET 110302FR-M			
		VBET 2(2)05FL-M	<0.008	0.0004-0.002	0.008-0.079									●					VBET 110302FL-M			
		VBET 221FR-M	<1/64	0.0004-0.002	0.008-0.079									●					VBET 110304FR-M			
		VBET 221FL-M	<1/64	0.0004-0.002	0.008-0.079									●					VBET 110304FL-M			
Finishing		VCET 2(2)013FR-F	<0.002	0.0004-0.007	0.004-0.012									●					VCET 1103005FR-F			
		VCET 2(2)013FL-F	<0.002	0.0004-0.007	0.004-0.012									●					VCET 1103005FL-F			
		VCET 2(2)03FR-F	<0.004	0.0004-0.007	0.004-0.012									●					VCET 110301FR-F			
		VCET 2(2)03FL-F	<0.004	0.0004-0.007	0.004-0.012									●					VCET 110301FL-F			
		VCET 2(2)05FR-F	<0.008	0.0004-0.007	0.004-0.012									●					VCET 110302FR-F			
		VCET 2(2)05FL-F	<0.008	0.0004-0.007	0.004-0.012									●					VCET 110302FL-F			
		VCET 221FR-F	<1/64	0.0004-0.007	0.004-0.012									●					VCET 110304FR-F			
		VCET 221FL-F	<1/64	0.0004-0.007	0.004-0.012									●					VCET 110304FL-F			
		VPET 1.5(1.5)03FR-F	<0.004	0.001-0.006	0.002-0.008									●					VPET 080201FR-F			
		VPET 1.5(1.5)03FL-F	<0.004	0.001-0.006	0.002-0.008									●					VPET 080201FL-F			
		VPET 1.5(1.5)05FR-F	<0.008	0.001-0.006	0.002-0.008									●					VPET 080202FR-F			
		VPET 1.5(1.5)05FL-F	<0.008	0.001-0.006	0.002-0.008									●					VPET 080202FL-F			

●: Stock available

Positive 35° (V)

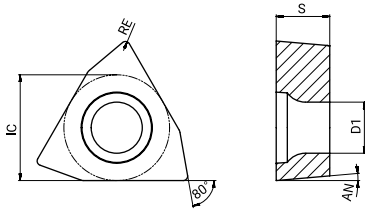


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
VB_22_	1/4	1/8	0.110	5°
VB_33_	3/8	3/16	0.173	5°
VP_1.5(1.5)_	0.187	0.094	0.091	11°
VP_22_	1/4	1/8	0.110	11°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition														ISO
						● ● ● ● ✖ ✖ ● ● ✖ ✖ ● ● ✖ ✖ ●														
				Recommended parameters		P				M				K		N	S			
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Low feed		VPET 1.5(1.5)03FR-M	<0.004	0.0004-0.002	0.008-0.059									●					VPET 080201FR-M	
		VPET 1.5(1.5)03FL-M	<0.004	0.0004-0.002	0.008-0.059									●					VPET 080201FL-M	
		VPET 1.5(1.5)05FR-M	<0.008	0.0004-0.002	0.008-0.059									●					VPET 080202FR-M	
		VPET 1.5(1.5)05FL-M	<0.008	0.0004-0.002	0.008-0.059									●					VPET 080202FL-M	
		VPET 2(2)03FR-M	<0.004	0.0004-0.002	0.008-0.079									●					VPET 110301FR-M	
		VPET 2(2)03FL-M	<0.004	0.0004-0.002	0.008-0.079									●					VPET 110301FL-M	
		VPET 2(2)05FR-M	<0.008	0.0004-0.002	0.008-0.079									●					VPET 110302FR-M	
		VPET 2(2)05FL-M	<0.008	0.0004-0.002	0.008-0.079									●					VPET 110302FL-M	
		VPET 221FR-M	<1/64	0.0004-0.002	0.008-0.079									●					VPET 110304FR-M	
		VPET 221FL-M	<1/64	0.0004-0.002	0.008-0.079									●					VPET 110304FL-M	
		VBET 2(2)01FR-Y	<0.001	0.003-0.009	0.02-0.071									●					VBET 1103003FR-Y	
		VBET 2(2)01FL-Y	<0.001	0.003-0.009	0.02-0.071									●					VBET 1103003FL-Y	
		VBET 2(2)013FR-Y	<0.002	0.003-0.009	0.02-0.071									●					VBET 1103005FR-Y	
		VBET 2(2)013FL-Y	<0.002	0.003-0.009	0.02-0.071									●					VBET 1103005FL-Y	
		VBET 2(2)03FR-Y	<0.004	0.003-0.009	0.02-0.071									●					VBET 110301FR-Y	
		VBET 2(2)03FL-Y	<0.004	0.003-0.009	0.02-0.071									●					VBET 110301FL-Y	
		VBET 2(2)05FR-Y	<0.008	0.003-0.009	0.02-0.071									●					VBET 110302FR-Y	
		VBET 2(2)05FL-Y	<0.008	0.003-0.009	0.02-0.071									●					VBET 110302FL-Y	
		VBET 221FR-Y	<1/64	0.003-0.009	0.02-0.071									●					VBET 110304FR-Y	
		VBET 221FL-Y	<1/64	0.003-0.009	0.02-0.071									●					VBET 110304FL-Y	
		VBET 3(3)05FR-Y	<0.008	0.004-0.01	0.031-0.079									●					VBET 160402FR-Y	
		VBET 3(3)05FL-Y	<0.008	0.004-0.01	0.031-0.079									●					VBET 160402FL-Y	
		VBET 331FR-Y	<1/64	0.004-0.01	0.031-0.079									●					VBET 160404FR-Y	
		VBET 331FL-Y	<1/64	0.004-0.01	0.031-0.079									●					VBET 160404FL-Y	
		VBET 332FR-Y	1/32	0.004-0.01	0.031-0.079									●					VBET 160408FR-Y	
		VBET 332FL-Y	1/32	0.004-0.01	0.031-0.079									●					VBET 160408FL-Y	

●: Stock available

Positive 80° (W)

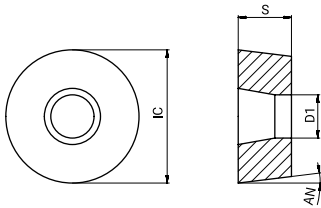


Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
WB_31_	0.156	0.139	0.063	5°
WB_4(1.5)_	0.187	0.188	0.094	5°

Inserts Left-hand shown where it's applicable		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition														ISO
						● ● ● ● ✖ ● ● ✖ ✖ ● ● ✖ ✖ ●														
				Recommended parameters		P				M				K		N	S			
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S	
Finishing		WBET 3(1)01FR-F	<0.001	0.002-0.003	0.004-0.031									●						WBET 0601003FR-F
		WBET 3(1)01FL-F	<0.001	0.002-0.003	0.004-0.031									●						WBET 0601003FL-F
		WBET 3(1)03FR-F	<0.004	0.002-0.003	0.004-0.031									●						WBET 060101FR-F
		WBET 3(1)03FL-F	<0.004	0.002-0.003	0.004-0.031									●						WBET 060101FL-F
		WBET 3(1)05FR-F	<0.008	0.002-0.003	0.004-0.031									●						WBET 060102FR-F
		WBET 3(1)05FL-F	<0.008	0.002-0.003	0.004-0.031									●						WBET 060102FL-F
		WBET 311FR-F	<1/64	0.002-0.003	0.004-0.031									●						WBET 060104FR-F
		WBET 311FL-F	<1/64	0.002-0.003	0.004-0.031									●						WBET 060104FL-F
		WBET 4(1.5)01FR-F	<0.001	0.002-0.003	0.004-0.031									●						WBET 0802003FR-F
		WBET 4(1.5)01FL-F	<0.001	0.002-0.003	0.004-0.031									●						WBET 0802003FL-F
		WBET 4(1.5)03FR-F	<0.004	0.002-0.003	0.004-0.031									●						WBET 080201FR-F
		WBET 4(1.5)03FL-F	<0.004	0.002-0.003	0.004-0.031									●						WBET 080201FL-F
		WBET 4(1.5)05FR-F	<0.008	0.002-0.003	0.004-0.031									●						WBET 080202FR-F
		WBET 4(1.5)05FL-F	<0.008	0.002-0.003	0.004-0.031									●						WBET 080202FL-F
		WBET 4(1.5)FR-F	<1/64	0.002-0.003	0.004-0.031									●						WBET 080204FR-F
		WBET 4(1.5)1FL-F	<1/64	0.002-0.003	0.004-0.031									●						WBET 080204FL-F

●: Stock available

Positive Round Insert



Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
RCGT_0803_	0.315	1/8	0.134	7°
RCGT_1003_	0.394	1/8	0.173	7°
RCGT_10T3_	0.394	5/32	0.173	7°
RCMX_1003_	0.394	1/8	0.142	7°
RCMX_1204_	0.472	3/16	0.165	7°

Dimension (in)				Clearance Angle(°)
Product code	IC	S	D1	AN
RCMX_1606_	0.630	1/4	0.205	7°
RCMX_2006_	0.787	1/4	0.256	7°
RCMX_2507_	0.984	5/16	0.283	7°
RCMX_3209_	1.260	3/8	0.378	7°

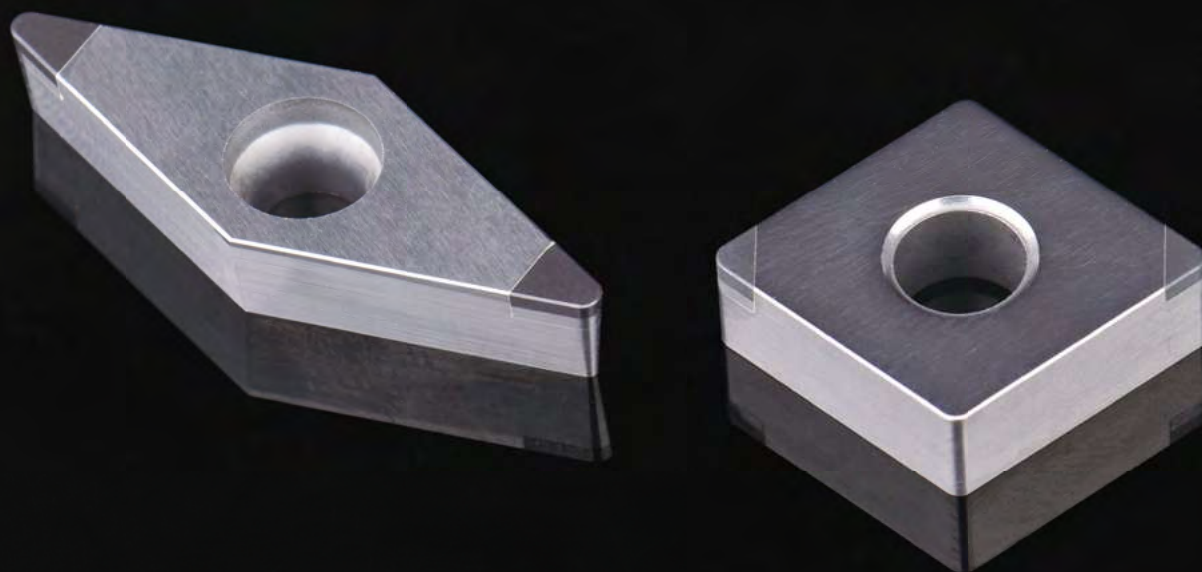
Inserts		ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition																ISO
						●	●	●	●	✖	●	●	●	●	●	●	✖	●	●			
				Recommended parameters		P					M				K			N	S			
				f (in/rev)	ap (in)	AT202	AC052P	AC150P	AC250P	AC350P	AC100M	AC200M	AP200U	AP301M	AC100K	AC102K	AC202K	AW100K	AP100S			
Semi-Finishing		-	-	0.004-0.039	0.028-0.13													●	RCGT 0803MOF-NC2			
		-	-	0.008-0.051	0.035-0.157													●	RCGT 1003MOF-NC2			
		-	-	0.008-0.051	0.035-0.157													●	RCGT 10T3MOF-NC2			
		-	-	0.019-0.035	0.138-0.354														RCMX 2006MOS-PD8			
		-	-	0.022-0.047	0.157-0.472														RCMX 2507MOS-PD8			
		-	-	0.026-0.059	0.197-0.591														RCMX 3209MOS-PD8			
Medium		-	-	0.01-0.02	0.059-0.157			●	●										RCMX 100300S			
		-	-	0.012-0.024	0.098-0.197	●	●	●											RCMX 120400S			
		-	-	0.016-0.03	0.118-0.276	●	●	●											RCMX 160600S			
		-	-	0.019-0.035	0.138-0.354	●	●	●											RCMX 200600S			
		-	-	0.022-0.047	0.157-0.472	●	●	●											RCMX 250700S			
		-	-	0.026-0.059	0.197-0.591	●	●	●											RCMX 320900S			

●: Stock available

ACHTECK

www.achtecktool.com/en

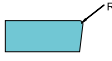
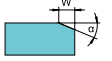
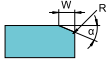
THE EXPERTS OF DIFFICULT MACHINING



PCD/PCBN Inserts

PCBN Insert Denomination System

CNGA 432	-	S	010	20	-	SL	-	1	-	CB	PB30
1		2	3	4		5		6		7	8

1-Standard ISO Denomination System	2-Cutting Edge Shape E--Honed  T-Land without honing  S---Land with honed  F---Sharp 	3-T-land Width (in) 005---0.002 010---0.004 015---0.006 020---0.008	4-T-land Angle 10---10° 15---15° 20---20° 25---25°
5-CBN Insert Structure FT-- Full face CBN  SD-- Solid CBN  SL-- Small size tipped CBN  NL-- Standard-tipped CBN (Regrindable) 	6-Number of Cutting Edge 1---One cutting edge 2---Two cutting edges 3---Three cutting edges	7-Cutting Edge Preparation CB---With chip breaker WG---With wiper edge "-" ---Without chip breaker	8-Grade PB30--- Low content CBN PB60---Medium content CBN PB90---High content CBN

PCBN Insert Grade Introduction

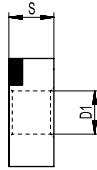
Grade	Feature	Application
PB30	Well balanced wear resistance and shock-resistance	Good versatility. Suitable for continuous and light interrupted cutting of hardened steel
PB60	Excellent toughness	Mainly applied in medium interrupted cutting of hardened steel, interrupted and continuous cutting of powder metal and cast iron cutting.
PB90	Good wear resistance, toughness, and shock-resistance	K-mainly applied in cast iron cutting H-heavy interrupted cutting of hardened steel and powder metal machining

PCBN Recommended Cutting Parameters

Grade	Material	Hardness	Cutting speed Vc(ft/min)	Feed fn(in/rev)	Cutting depth ap(in)	Recommended application
PB30	Hardened steel	HRC58-62	490-820	0.001-0.008	0.002-0.012	Continuous
PB60	Hardened steel	HRC55-60	160-490	0.001-0.008	0.002-0.02	Interrupted
	Cast iron	HB180-220	490-1470	0.001-0.012	0.012-0.02	Continuous / Interrupted
	Powder metal	-	650-1640	0.001-0.012	0.004-0.012	Continuous / Interrupted
PB90	Hardened steel	HRC55-60	100-390	0.001-0.008	0.002-0.02	Heavy interrupted
	Cast iron	HB180-220	490-1470	0.001-0.012	0.012-0.02	Continuous / Interrupted
	Powder metal	-	980-2620	0.001-0.012	0.004-0.012	Continuous / Interrupted

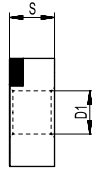
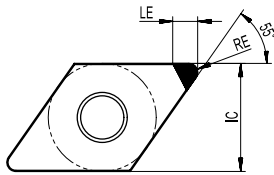
Grade Application Guide

PCBN grade applications						
Material Group	Materials	ISO	Uncoated			ISO
			PB30	PB60	PB90	
	unalloy steels / Alloyed steels	P01				P01
		P10				P10
		P20				P20
		P30				P30
		P40				P40
		P50				P50
	Stainless steels	M01				M01
		M10				M10
		M20				M20
		M30				M30
		M40				M40
	Cast iron	K01				K01
		K10				K10
		K20				K20
		K30				K30
		K40				K40
		K50				K50
	Aluminum/ Aluminum alloys	N01				N01
		N10				N10
		N20				N20
		N30				N30
	Heat resistant alloys	S01				S01
		S10				S10
		S20				S20
		S30				S30
		S40				S40
	Hardened steels/ Chilled cast iron	H01				H01
		H10				H10
		H20				H20
		H30				H30

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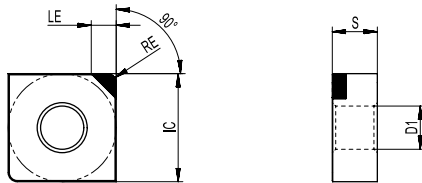
Negative 55° (D)



Dimension (in)				
Product code	IC	S	LE	D1
DN_43_	1/2	3/16	0.087	0.203
DN_44_	1/2	1/4	0.087	0.203

PCBN Inserts	ANSI	RE (in)	Machining conditions		● Good condition ⬤ General condition ✖ Bad condition			ISO
					●	⬤	✖	
			Recommended parameters		H		K	
			f (in/rev)	ap (in)	PB30	PB60	PB90	
	DNGA 431-S0420-SL-1	1/64	0.001-0.012	0.002-0.02	●	●	●	DNGA 150404-S01020-SL-1
	DNGA 432-S0420-SL-1	1/32	0.001-0.012	0.002-0.02	●	●	●	DNGA 150408-S01020-SL-1
	DNGA 433-S0420-SL-1	3/64	0.001-0.012	0.002-0.02	●	●	●	DNGA 150412-S01020-SL-1
	DNGA 431-S0420-SL-2	1/64	0.001-0.012	0.002-0.02	●	●	●	DNGA 150404-S01020-SL-2
	DNGA 432-S0420-SL-2	1/32	0.001-0.012	0.002-0.02	●	●	●	DNGA 150408-S01020-SL-2
	DNGA 433-S0420-SL-2	3/64	0.001-0.012	0.002-0.02	●	●	●	DNGA 150412-S01020-SL-2
	DNGA 441-S0420-SL-2	1/64	0.001-0.012	0.002-0.02	●	●	●	DNGA 150604-S01020-SL-2
	DNGA 442-S0420-SL-2	1/32	0.001-0.012	0.002-0.02	●	●	●	DNGA 150608-S01020-SL-2
	DNGA 443-S0420-SL-2	3/64	0.001-0.012	0.002-0.02	●	●	●	DNGA 150612-S01020-SL-2

Negative 90° (S)

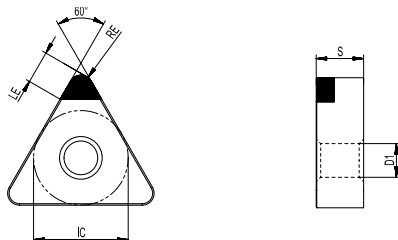


Dimension (in)				
Product code	IC	S	LE	D1
SN_43_	1/2	3/16	0.087	0.203

PCBN Inserts	ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition			ISO
			Recommended parameters		H		K	
			f (in/rev)	ap (in)	PB30	PB60	PB90	
	SNGA 432-S0420-SL-4	1/32	0.001-0.012	0.002-0.02	●	●	●	SNGA 120408-S01020-SL-4
	SNGA 433-S0420-SL-4	3/64	0.001-0.012	0.002-0.02	●	●	●	SNGA 120412-S01020-SL-4

Marked: ● stock available

Negative 60° (T)

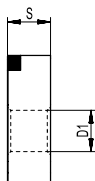
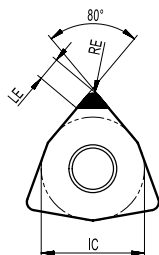


Dimension (in)				
Product code	IC	S	LE	D1
TN_33_	3/8	3/16	0.087	0.15

PCBN Inserts	ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition			ISO
			Recommended parameters		H		K	
			f (in/rev)	ap (in)	PB30	PB60	PB90	
	TNGA 331-S0420-SL-3	1/64	0.001-0.012	0.002-0.02	●	●	●	TNGA 160404-S01020-SL-3
	TNGA 332-S0420-SL-3	1/32	0.001-0.012	0.002-0.02	●	●	●	TNGA 160408-S01020-SL-3
	TNGA 333-S0420-SL-3	3/64	0.001-0.012	0.002-0.02	●	●	●	TNGA 160412-S01020-SL-3

Marked: ● stock available

Negative 80° (W)

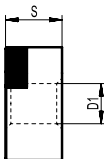
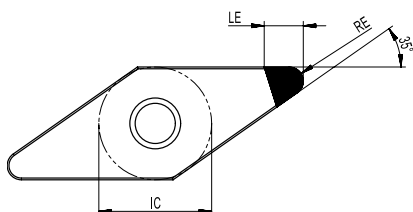


Dimension (in)				
Product code	IC	S	LE	D1
WN_43_	1/2	3/16	0.087	0.203

PCBN Inserts	ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition			ISO
					●	●	✖	
			Recommended parameters		H		K	
			f (in/rev)	ap (in)	PB30	PB60	PB90	
	WNGA 431-S0420-SL-3	1/64	0.001-0.012	0.002-0.02	●	●	●	WNGA 080404-S01020-SL-3
	WNGA 432-S0420-SL-3	1/32	0.001-0.012	0.002-0.02	●	●	●	WNGA 080408-S01020-SL-3
	WNGA 433-S0420-SL-3	3/64	0.001-0.012	0.002-0.02	●	●	●	WNGA 080412-S01020-SL-3

Marked: ● stock available

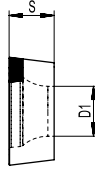
Negative 35° (V)



Dimension (in)				
Product code	IC	S	LE	D1
VN_33_	3/8	3/16	0.087	0.150

PCBN Inserts	ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition			ISO
					●	●	✖	
			Recommended parameters		H		K	
			f (in/rev)	ap (in)	PB30	PB60	PB90	
	VNGA 331-S0420-SL-2	1/64	0.001-0.012	0.002-0.02	●	●	●	VNGA 160404-S01020-SL-2
	VNGA 332-S0420-SL-2	1/32	0.001-0.012	0.002-0.02	●	●	●	VNGA 160408-S01020-SL-2
	VNGA 333-S0420-SL-2	3/64	0.001-0.012	0.002-0.02	●	●	●	VNGA 160412-S01020-SL-2

Marked: ● stock available

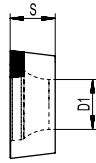
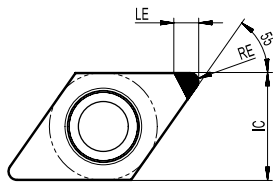


Dimension (in)				
Product code	IC	S	LE	D1
CC_2(1.5)_	1/4	3/32	0.087	0.110
CC_3(2.5)_	3/8	5/32	0.087	0.173
CC_43_	1/2	3/16	0.087	0.217

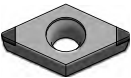
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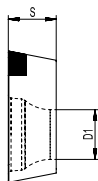
98

Positive 55° (D)



Dimension (in)				
Product code	IC	S	LE	D1
DC_2(1.5)_	1/4	3/32	0.087	0.110
DC_3(2.5)_	3/8	5/32	0.087	0.173

PCBN Inserts	ANSI	RE (in)	Machining conditions		● Good condition ● General condition ✖ Bad condition			ISO
					●	●	✖	
			Recommended parameters		H		K	
			f (in/rev)	ap (in)	PB30	PB60	PB90	
	DCGW 2(1.5)05-S0420-SL-2	0.008	0.001-0.012	0.002-0.02	●	●	●	DCGW 070202-S01020-SL-2
	DCGW 2(1.5)1-S0420-SL-2	1/64	0.001-0.012	0.002-0.02	●	●	●	DCGW 070204-S01020-SL-2
	DCGW 2(1.5)2-S0420-SL-2	1/32	0.001-0.012	0.002-0.02	●	●	●	DCGW 070208-S01020-SL-2
	DCGW 3(2.5)05-S0420-SL-2	0.008	0.001-0.012	0.002-0.02	●	●	●	DCGW 11T302-S01020-SL-2
	DCGW 3(2.5)1-S0420-SL-2	1/64	0.001-0.012	0.002-0.02	●	●	●	DCGW 11T304-S01020-SL-2
	DCGW 3(2.5)2-S0420-SL-2	1/32	0.001-0.012	0.002-0.02	●	●	●	DCGW 11T308-S01020-SL-2
	DCGW 3(2.5)3-S0420-SL-2	3/64	0.001-0.012	0.002-0.02	●	●	●	DCGW 11T312-S01020-SL-2



Dimension (in)				
Product code	IC	S	LE	D1
TP_1.5(1.5)_	3/16	3/32	0.087	0.094
TP_1.8(1.5)_	7/32	3/32	0.087	0.110
TP_22_	1/4	1/8	0.087	0.130
TP_33_	3/8	3/16	0.087	0.173

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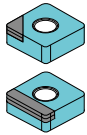
Dimension (in)				
Product code	IC	S	LE	D1
VB_22_	1/4	1/8	0.087	0.110
VC_22_	1/4	1/8	0.087	0.110
VB_33_	3/8	3/16	0.087	0.173
VC_33_	3/8	3/16	0.087	0.173

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PCBN inserts

PCD Insert Denomination System

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

1-Standard ISO Denomination system	2-Number of Cutting Edge 1--One cutting edge	3-PCD Insert Structure NL--Standard structure with tipped PCD LL-- Full edge tipped PCD 	4-Rake Angle 00--0° 05--5°
5-Cutting Edge Preparation CB-- With chip breaker WG--With wiper edge "-- Without chip breaker	6-Grade PD01---Fine grain PCD PD10---Medium grain PCD PD20---Coarse grain PCD		

PCD Insert Grade Introduction

Grade	Feature	Application
PD20	Universal grade, balanced wear resistance and toughness	1st choice for general machining of aluminum alloys

PCD Recommended Cutting Parameter

Grade	Material	Cutting speed Vc(ft/min)	Feed f(in/r)	Cutting depth ap(in)	Recommended application
PD20	Low-Si Aluminium Alloy (Si < 12%)	984-13123	0.001-0.008	0.002-0.020	Continuous/interrupted

Grade Application Guide

PCD insert applications				
Material Group	Materials	ISO	Uncoated	ISO
			PD20	
	unalloy steels / Alloyed steels	P01		P01
		P10		P10
		P20		P20
		P30		P30
		P40		P40
		P50		P50
	Stainless steels	M01		M01
		M10		M10
		M20		M20
		M30		M30
		M40		M40
	Cast iron	K01		K01
		K10		K10
		K20		K20
		K30		K30
		K40		K40
		K50		K50
	Aluminum/ Aluminum alloys	N01		N01
		N10		N10
		N20		N20
		N30		N30
	Heat resistant alloys	S01		S01
		S10		S10
		S20		S20
		S30		S30
		S40		S40
	Hardened steels/ Chilled cast iron	H01		H01
		H10		H10
		H20		H20
		H30		H30

Dimension (in)				
Product code	IC	S	LE	D1
CC_2(1.5)_	1/4	3/32	0.118	0.110
CC_3(2.5)_	3/8	5/32	0.118	0.173
CC_43_	1/2	3/16	0.118	0.217

[illegible]

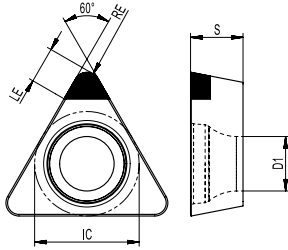
Marked: ● stock available

Dimension (in)				
Product code	IC	S	LE	D1
DC_2(1.5)_	1/4	3/32	0.118	0.110
DC_3(2.5)_	3/8	5/32	0.118	0.173

[illegible]

105 ▶

Positive 60° (T)



Dimension (in)				
Product code	IC	S	LE	D1
TC_22_	1/4	1/8	0.118	0.110
TC_3(2.5)_	3/8	5/32	0.118	0.173
TP_1.5(1.5)_	3/16	3/32	0.118	0.094
TP_33_	3/8	3/16	0.118	0.173

PCD Inserts	ANSI	RE (in)	Rake angle (°)	Machining conditions		● Good condition	ISO
						●	
				Recommended parameters		N	
				f (in/rev)	ap (in)	PD20	
	TCGW 2(2)05-1-NL-00	0.008	0°	0.001-0.008	0.002-0.020	●	TCGW 110302-1-NL-00
	TCGW 221-1-NL-00	1/64	0°	0.001-0.008	0.002-0.020	●	TCGW 110304-1-NL-00
	TCGW 222-1-NL-00	1/32	0°	0.001-0.008	0.002-0.020	●	TCGW 110308-1-NL-00
	TCGW 2(2)05-1-NL-05	0.008	5°	0.001-0.008	0.002-0.020	●	TCGW 110302-1-NL-05
	TCGW 221-1-NL-05	1/64	5°	0.001-0.008	0.002-0.020	●	TCGW 110304-1-NL-05
	TCGW 222-1-NL-05	1/32	5°	0.001-0.008	0.002-0.020	●	TCGW 110308-1-NL-05
	TCGW 3(2.5)05-1-NL-05	0.008	5°	0.001-0.008	0.002-0.020	●	TCGW 16T302-1-NL-05
	TCGW 3(2.5)1-1-NL-05	1/64	5°	0.001-0.008	0.002-0.020	●	TCGW 16T304-1-NL-05
	TCGW 3(2.5)2-1-NL-05	1/32	5°	0.001-0.008	0.002-0.020	●	TCGW 16T308-1-NL-05
	TPGW 1.5(1.5)05-1-NL-00	0.008	0°	0.001-0.008	0.002-0.020	●	TPGW 080202-1-NL-00
	TPGW 1.5(1.5)1-1-NL-00	1/64	0°	0.001-0.008	0.002-0.020	●	TPGW 080204-1-NL-00
	TPGW 1.5(1.5)05-1-NL-05	0.008	5°	0.001-0.008	0.002-0.020	●	TPGW 080202-1-NL-05
	TPGW 1.5(1.5)1-1-NL-05	1/64	5°	0.001-0.008	0.002-0.020	●	TPGW 080204-1-NL-05
	TPGW 3(3)051-NL-05	0.008	5°	0.001-0.008	0.002-0.020	●	TPGW 160402-1-NL-05
	TPGW 331-1-NL-05	1/64	5°	0.001-0.008	0.002-0.020	●	TPGW 160404-1-NL-05
	TPGW 332-1-NL-05	1/32	5°	0.001-0.008	0.002-0.020	●	TPGW 160408-1-NL-05

Marked: ● stock available

Dimension (in)				
Product code	IC	S	LE	D1
VB_22_	1/4	1/8	0.118	0.110
VB_33_	3/8	3/16	0.118	0.173
VC_22_	1/4	1/8	0.118	0.110
VC_33_	3/8	3/16	0.118	0.173

[illegible]

107 ▶

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THE EXPERTS OF DIFFICULT MACHINING



Small Tools

Turning Shank Denomination System

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

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

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

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

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

12

6

12

7

JX

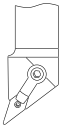
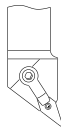
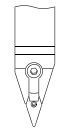
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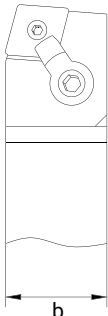
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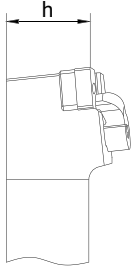
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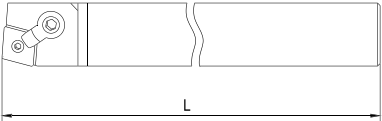
10

5-Hand of Tool	
L Left hand	
R Right hand	
N Neutral	

6 -Width of Shank (mm)	
	06=6
	08=8
	10=10
	12=12
	14=14
	16=16
	20=20
	25=25
	30=30
	40=40
	50=50

7 -Center Height of Tool (mm)	
	06=6
	08=8
	10=10
	12=12
	14=14
	16=16
	20=20
	25=25
	30=30
	40=40
	50=50

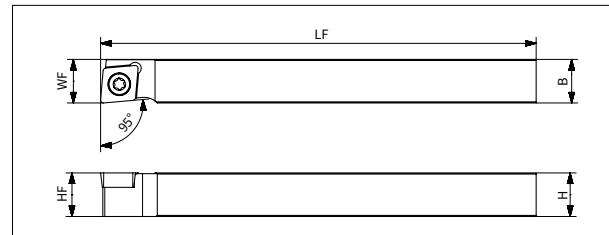
Small Tools

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

9 -Length of Cutting Edge			
C, D, E, M, V		H	O
			
R	S	T	W
			

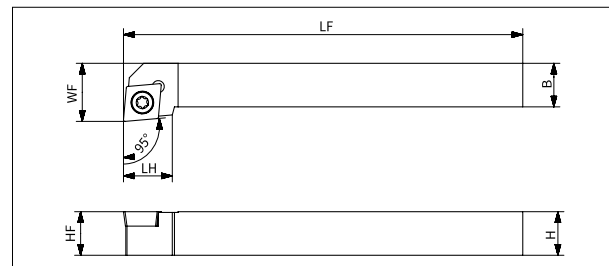
10 - Added Symbol	
F	Without Offset
J	With high pressure coolant

SCLC External Turning Shank - Without Offset



Product code	Dimension (mm)						Stock		Spare parts	
	H	B	HF	LF	LH	WF	R	L	Screw	Wrench
SCLCR/L 0808F-06F	8	8	8	80	-	8	●	●	SP025065	FT-TP08
SCLCR/L 1010JX-06F	10	10	10	120	-	10	●	●		
SCLCR/L 1010JX-09F	10	10	10	120	15	10	●	●	SP040090-X	FT-TP15
SCLCR/L 1212F-09F	12	12	12	80	-	12	●	●		
SCLCR/L 1212JX-09F	12	12	12	120	-	12	●	●		
SCLCR/L 1616JX-09F	16	16	16	120	-	16	●	●		

SCLC External Turning Shank - With Offset



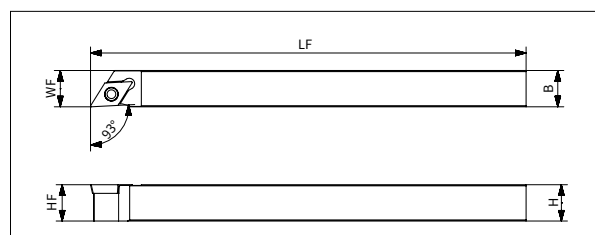
Product code	Dimension (mm)						Stock		Spare parts	
	H	B	HF	LF	LH	WF	R	L	Screw	Wrench
SCLCR/L 1010F-06	10	10	10	80	9	12	●	●	SP025065	FT-TP08
SCLCR/L 1010F-09	10	10	10	80	14	14	●	●		
SCLCR/L 1212H-09	12	12	12	100	14	16	●	●	SP040090-X	FT-TP15
SCLCR/L 1616H-09	16	16	16	100	15	20	●	●		

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Semi-finishing-Finishing
Insert Shape	F	M	LF	UF
Holder Type				
SCLCR/L----06/06F	CCET 0602	CCET 0602	CCGT 0602	CCGT 0602
SCLCR/L----09/09F	CCET 09T3	CCET 09T3	CCGT 09T3	CCGT 09T3
Reference page	P73	P73	P70	P70

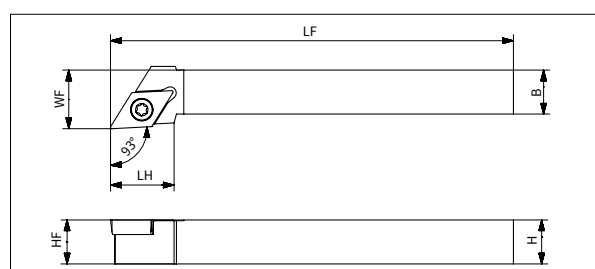
●: Stock available ▲: Stock available now but will be replaced in the future.

SDJC External Turning Shank - Without Offset



Product code	Dimension (mm)							Stock		Spare parts	
	H	B	HF	LF	LH	WF	HBKW	R	L	Screw	Wrench
SDJCR/L 0808F-07F	8	8	8	80	14	8	0.5	●	●	SP025065	FT-TP08
SDJCR/L 1010JX-07F	10	10	10	120	-	10	-	●	●		
SDJCR/L 1010JX-11F	10	10	10	120	20	10	3	●	●	SP040090-X	FT-TP15
SDJCR/L 1212F-11F	12	12	12	80	20	12	1	●	●		
SDJCR/L 1212JX-11F	12	12	12	120	20	12	1	●	●		
SDJCR/L 1616JX-11F	16	16	16	120	-	16	-	●	●		

SDJC External Turning Shank - With Offset



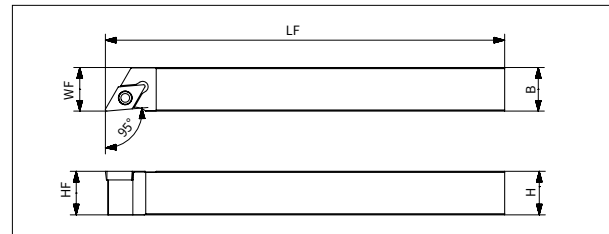
Product code	Dimension (mm)							Stock		Spare parts	
	H	B	HF	LF	LH	WF	HBKW	R	L	Screw	Wrench
SDJCR/L 1010F-07	10	10	10	80	12	12	-	●	●	SP025065	FT-TP08
SDJCR/L 1010F-11	10	10	10	80	18	12	3	●	●		
SDJCR/L 1212H-11	12	12	12	100	18	16	1	●	●	SP040090-X	FT-TP15
SDJCR/L 1616H-11	16	16	16	100	18	20	-	●	●		

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Semi-finishing-Finishing
Insert Shape	F	M	LF	UF
Holder Type				
SDJCR/L....07/07F	DCET 0702	DCET 0702	DCGT 0702	DCGT 0702
SDJCR/L....11/11F	DCET 11T3	DCET 11T3	DCGT 11T3	DCGT 11T3
Reference page	P76	P77	P74	P74

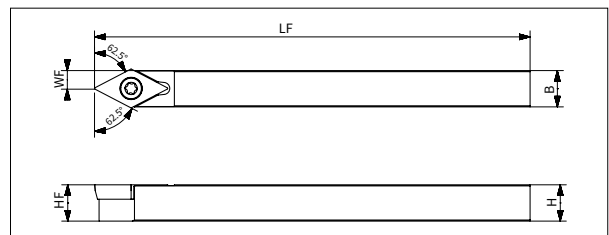
●: Stock available ▲: Stock available now but will be replaced in the future.

SDLC External Turning Shank - Without Offset



Product code	Dimension (mm)							Stock		Spare parts	
	H	B	HF	LF	LH	WF	HBKW	R	L	Screw	Wrench
SDLCR/L 1010JX-07F	10	10	10	120	-	10	-	●	●	SP025065	FT-TP08
SDLCR/L 1212F-07F	12	12	12	80	-	12	-	●	●		
SDLCR/L 1212JX-07F	12	12	12	120	-	12	-	●	●		
SDLCR/L 1616JX-07F	16	16	16	120	-	16	-	●	●		
SDLCR 1010F-11F	10	10	10	80	-	10	4	●	-	SP040090-X	FT-TP15
SDLCR/L 1010JX-11F	10	10	10	120	-	10	4	●	●		
SDLCR 1212F-11F	12	12	12	80	-	12	2	●	-		
SDLCR/L 1212JX-11F	12	12	12	120	-	12	2	●	●		
SDLCR 1616H-11F	16	16	16	100	-	16	-	●	-		
SDLCR/L 1616JX-11F	16	16	16	120	-	16	-	●	●		

SDNC External Turning Shank - Neutral



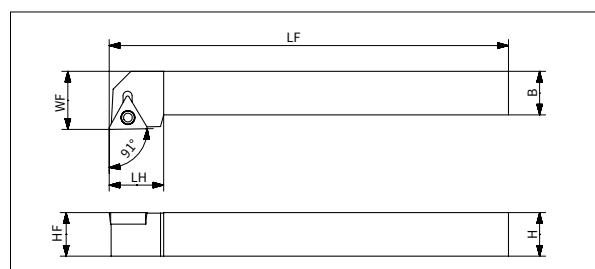
Product code	Dimension (mm)							Stock	Spare parts	
	H	B	HF	LF	LH	WF	HBKW	N	Screw	Wrench
SDNCN 0808F-07	8	8	8	80	-	4	-	●	SP025065	FT-TP08
SDNCN 1010JX-07	10	10	10	120	-	5	-	●		
SDNCN 1212JX-07	12	12	12	120	-	6	-	●		
SDNCN 1010F-11	10	10	10	80	-	5	-	●	SP040090-X	FT-TP15
SDNCN 1010JX-11	10	10	10	120	-	5	-	●		
SDNCN 1212F-11	12	12	12	80	-	6	-	●		
SDNCN 1212JX-11	12	12	12	120	-	6	-	●		
SDNCN 1616H-11	16	16	16	100	-	8	-	●		
SDNCN 1616JX-11	16	16	16	120	-	8	-	●		

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Semi-finishing-Finishing
Insert Shape	F	M	LF	UF
Holder Type				
SDLCR/L----07F SDNCN ----07	DCET 0702	DCET 0702	DCGT 0702	DCGT 0702
SDLCR/L----11F SDNCN ----11	DCET 11T3	DCET 11T3	DCGT 11T3	DCGT 11T3
Reference page	P76	P77	P74	P74

●: Stock available ▲: Stock available now but will be replaced in the future.

STGC/STGP External Turning Shank - With Offset

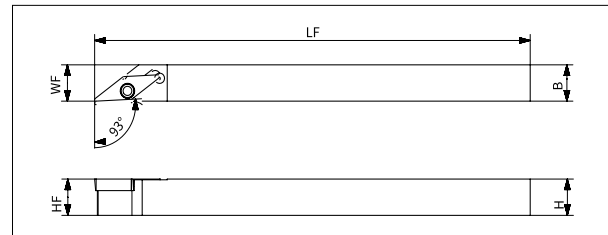


Product code	Dimension (mm)						Stock		Spare parts	
	H	B	HF	LF	LH	WF	R	L	Screw	Wrench
STGCR 0808F-08	8	8	8	80	12	10	●	-	SP020049	FT-TP06
STGCR/L 1010F-11	10	10	10	80	15	14	●	●	SP025065	FT-TP08
STGCR/L 1212H-11	12	12	12	100	15	16	●	●		
STGCR/L 1616H-11	16	16	16	100	15	20	●	●		
STGPR 0808F-08	8	8	8	80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

Applicable Insert

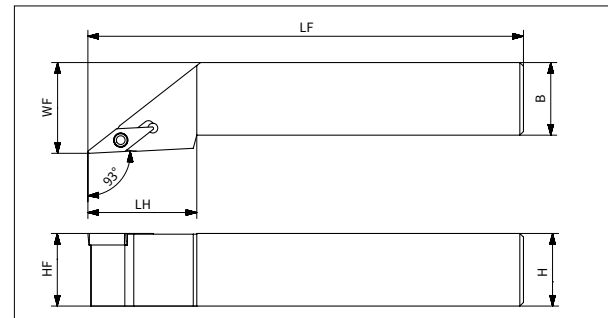
Applicaiton	Finishing	Finishing
Insert Shape Holder Type	F	M
STGCR 0808F-08	-	TCET 0802
STGPR 0808F-08	TPEH 0802	-
STGC... -11	-	TCET 1103
STGP... -11	TPEH 1103	-
Reference page	P82, 83	P83

SVJB External Turning Shank - Without Offset



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

SVJB External Turning Shank - With Offset



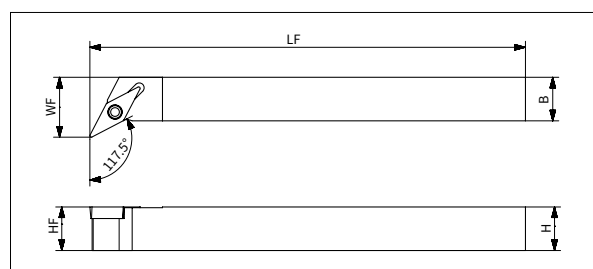
Product code	Dimension (mm)						Stock		Spare parts	
	H	B	HF	LF	LH	WF	R	L	Screw	Wrench
SVJBR/L 2020K-11	20	20	20	125	30	25	●	●	SP025065	FT-TP08
SVJBR/L 2020K-16	20	20	20	125	30	25	●	●	SP040090-X	FT-TP15
SVJBR/L 2525M-16	25	25	25	150	30	32	●	●		

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Finishing	Semi-finishing--Finishing
Insert Shape Holder Type	F	M	Y	LF	UF
					
SVJBR/L----11/11F	VBET 1103	VBET 1103	VBET 1103	VBGT 1103	VBGT 1103
SVJBR/L----16	VBET 1604	VBET 1604	VBET 1604	VBGT 1604	VBGT 1604
Reference page	P87	P88	P88	P84	P84, 85

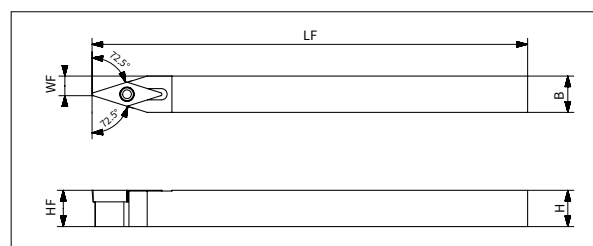
●: Stock available ▲: Stock available now but will be replaced in the future.

SVPB External Turning Shank - With Offset



Product code	Dimension (mm)					Stock		Spare parts	
	H	B	HF	LF	WF	R	L	Screw	Wrench
SVPBR/L 1010JX-11	10	10	10	120	14.5	●	●	SP025065	FT-TP08
SVPBR/L 1212JX-11	12	12	12	120	16.5	●	●		
SVPBR/L 1616JX-11	16	16	16	120	20.5	●	●		
SVPBR/L 2020K-11	20	20	20	125	25	●	●		
SVPBR/L 2020K-16	20	20	20	125	25	●	●	SP040090-X	FT-TP15
SVPBR/L 2525M-16	25	25	25	150	32	●	●		

SVVBN External Turning Shank - Neutral



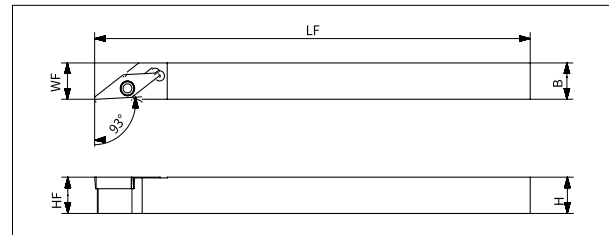
Product code	Dimension (mm)					Stock	Spare parts	
	H	B	HF	LF	WF	N	Screw	Wrench
SVVBN 1010JX-11	10	10	10	120	5	●	SP025065	FT-TP08
SVVBN 1212JX-11	12	12	12	120	6	●		
SVVBN 1616JX-11	16	16	16	120	8	●		
SVVBN 2020K-11	20	20	20	125	10	●		
SVVBN 2020K-16	20	20	20	125	10	●	SP040090-X	FT-TP15
SVVBN 2525M-16	25	25	25	150	12.5	●		

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Finishing	Semi-finishing--Finishing
Insert Shape	F	M	Y	LF	UF
Holder Type					
SVPBR/L.....11 SVVBN11	VBET 1103	VBET 1103	VBET 1103	VBGT 1103	VBGT 1103
SVPBR/L.....16 SVVBN16	VBET 1604	VBET 1604	VBET 1604	VBGT 1604	VBGT 1604
Reference page	P87	P88	P88	P84	P84, 85

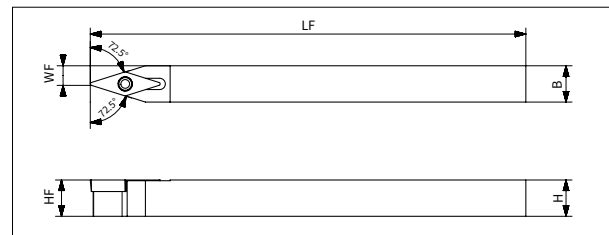
●: Stock available ▲: Stock available now but will be replaced in the future.

SVJC External Turning Shank - Without Offset



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

SVVCN External Turning Shank - Neutral



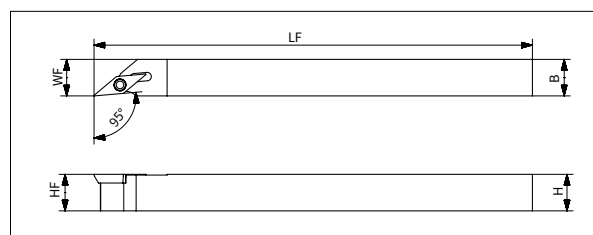
Product code	Dimension (mm)					Stock	Spare parts	
	H	B	HF	LF	WF	N	Screw	Wrench
SVVCN 1010JX-11	10	10	10	120	5	●	SP025065	FT-TP08
SVVCN 1212JX-11	12	12	12	120	6	●		
SVVCN 1616JX-11	16	16	16	120	8	●		

Applicable Insert

Applicaition	Finishing	Finishing	Finishing
Insert Shape	F	LF	UF
			
Holder Type			
SVJCR/L----11F SVVCN ----11	VCET 1103	VCGT 1103	VCGT 1103
Reference page	P87	P84	P84, 85

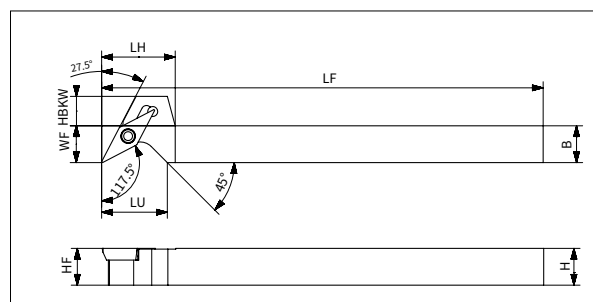
●: Stock available ▲: Stock available now but will be replaced in the future.

SVLP External Turning Shank - Without Offset



Product code	Dimension (mm)						Stock		Spare parts	
	H	B	HF	LF	LH	WF	R	L	Screw	Wrench
SVLPR/L 1010JX-08F	10	10	10	120	16	10	●	●	SP020049	FT-TP06
SVLPR/L 1212JX-08F	12	12	12	120	16	12	●	●		
SVLPR/L 1616JX-08F	16	16	16	120	20	16	●	●		
SVLPR/L 1212JX-11F	10	10	10	120	20	10	●	●	SP025065	FT-TP08
SVLPR/L 1616JX-11F	12	12	12	120	20	12	●	●		
SVLPR/L 2020K-11F	16	16	16	120	20	16	●	●		

SVPP External Turning Shank - Step Style



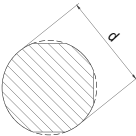
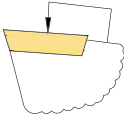
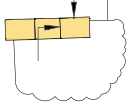
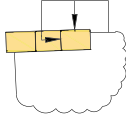
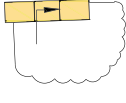
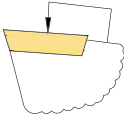
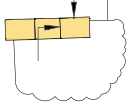
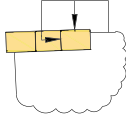
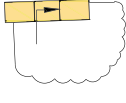
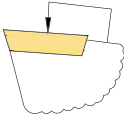
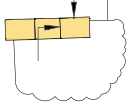
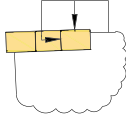
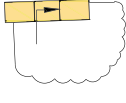
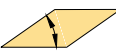
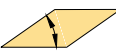
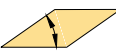
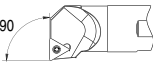
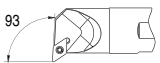
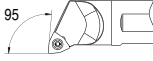
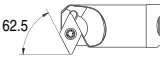
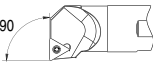
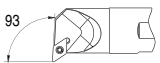
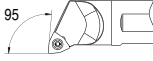
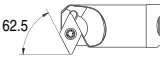
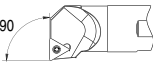
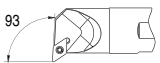
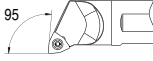
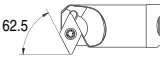
Product code	Dimension (mm)							Stock		Spare parts	
	H	B	HF	LF	LH	WF	HBKW	R	L	Screw	Wrench
SVPPR/L 1010JX-08F	10	10	10	120	16	10	4	●	●	SP020049	FT-TP06
SVPPR/L 1212JX-08F	12	12	12	120	16	12	2	●	●		
SVPPR/L 1616JX-08F	16	16	16	120	20	16	-	●	●		
SVPPR/L 1010JX-11F	10	10	10	120	20	10	8	●	●	SP025065	FT-TP08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

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Semi-finishing-Finishing
Insert Shape	F	M	LF	UF
Holder Type				
SVLPR/L....08F SVPPR/L....08F	VPET 0802	VPET 0802	-	-
SVLPR/L....11F SVPPR/L....11F	-	VPET 1103	VPGT 1103	VPGT 1103
Reference page	P87	P88	P84	P84, 85

●: Stock available ▲: Stock available now but will be replaced in the future.

External Sleeve Holder Denomination System

S 1	20 2	JX 3	S 4	C 5																						
1-Holder Structure <table><tr><td>A</td><td>Steel shank with internal coolant</td></tr><tr><td>C</td><td>Carbide</td></tr><tr><td>E</td><td>Carbide with internal coolant</td></tr><tr><td>S</td><td>Steel shank</td></tr></table>			A	Steel shank with internal coolant	C	Carbide	E	Carbide with internal coolant	S	Steel shank	3-Holder Length (mm)  <table><tr><td>E=70</td><td>K=125</td></tr><tr><td>F=80</td><td>L=140</td></tr><tr><td>FX=85</td><td>M=150</td></tr><tr><td>G=90</td><td>N=160</td></tr><tr><td>H=100</td><td>P=170</td></tr><tr><td>J=110</td><td>Q=180</td></tr><tr><td>JX=120</td><td>R=200</td></tr></table>		E=70	K=125	F=80	L=140	FX=85	M=150	G=90	N=160	H=100	P=170	J=110	Q=180	JX=120	R=200
A	Steel shank with internal coolant																									
C	Carbide																									
E	Carbide with internal coolant																									
S	Steel shank																									
E=70	K=125																									
F=80	L=140																									
FX=85	M=150																									
G=90	N=160																									
H=100	P=170																									
J=110	Q=180																									
JX=120	R=200																									
2 - Holder Diameter (mm)  <table><tr><td>06 = 6</td><td>20 = 20</td></tr><tr><td>08 = 8</td><td>25 = 25</td></tr><tr><td>10 = 10</td><td>32 = 32</td></tr><tr><td>12 = 12</td><td>40 = 40</td></tr><tr><td>16 = 16</td><td>50 = 50</td></tr></table>			06 = 6	20 = 20	08 = 8	25 = 25	10 = 10	32 = 32	12 = 12	40 = 40	16 = 16	50 = 50														
06 = 6	20 = 20																									
08 = 8	25 = 25																									
10 = 10	32 = 32																									
12 = 12	40 = 40																									
16 = 16	50 = 50																									
4-Clamping Type <table><tr><td> C:Top clamp  </td><td> M:Top wedge clamping  </td><td> D:Rigid clamping  </td><td> P:lever clamping  </td><td> S:Screw clamping  </td></tr></table>					C:Top clamp 	M:Top wedge clamping 	D:Rigid clamping 	P:lever clamping 	S:Screw clamping 																	
C:Top clamp 	M:Top wedge clamping 	D:Rigid clamping 	P:lever clamping 	S:Screw clamping 																						
5 - Insert Shape <table><tr><td> C  80° </td><td> D  55° </td><td> H  120° </td><td> K  55° </td><td> O  135° </td><td> R  360° </td><td> S  90° </td><td> T  60° </td><td> V  35° </td><td> W  80° </td></tr></table>					C  80°	D  55°	H  120°	K  55°	O  135°	R  360°	S  90°	T  60°	V  35°	W  80°												
C  80°	D  55°	H  120°	K  55°	O  135°	R  360°	S  90°	T  60°	V  35°	W  80°																	
6- Approaching Angle <table><tr><td> F  90 </td><td> S  45 </td><td> K  75° </td><td> U  93 </td></tr><tr><td> L  95 </td><td> W  62.5 </td><td> Y  85 </td><td> Q  107.5 </td></tr></table>					F  90	S  45	K  75°	U  93	L  95	W  62.5	Y  85	Q  107.5														
F  90	S  45	K  75°	U  93																							
L  95	W  62.5	Y  85	Q  107.5																							

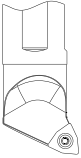
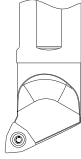
L
6

C
7

7 - Clearance Angle			
B	C	D	E
			
F	N	P	O
			Other clearance angle

L
8

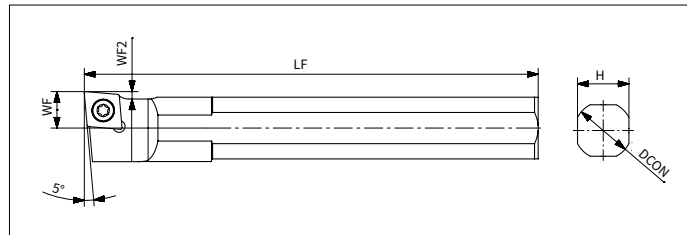
09
9

8-Hand of Tool	
R Right hand	
L Left hand	

9 - Length of Cutting Edge			
C, D, E, M, V		H	O
			
R	S	T	W
			

Small Tools

External Sleeve Holder - Suitable for C Type Insert



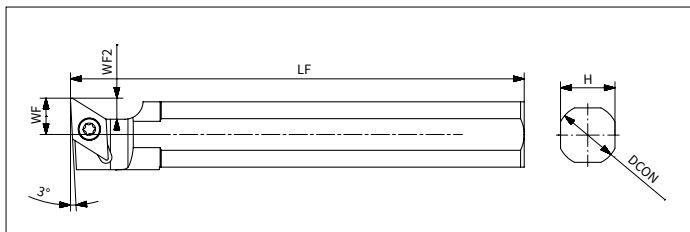
Product code	Dimension (mm)					Stock	Spare parts	
	DCON	LF	H	WF	WF2		Screw	Wrench
S12F-SCLCL06	12	80	11	6	1	●	SP025065	FT-TP08
S14H-SCLCL06	14	100	13	6	1	●		
S15.0H-SCLCL06	15.875	100	15	6	1	●		
S16H-SCLCL06	16	100	15	6	1	●		
S19.0JX-SCLCL06	19.05	120	17	6	1	●		
S20JX-SCLCL06	20	120	18	6	1	●		
S19.0JX-SCLCL09	19.05	120	17	10	2	●	SP040090-X	FT-TP15
S20JX-SCLCL09	20	120	18	10	2	●		
S22JX-SCLCL09	22	120	20	10	2	●		
S25JX-SCLCL09	25	120	23	10	2	●		
S25.0JX-SCLCL09	25.4	120	23	10	2	●		

Applicable Insert

Applicaiton	Finishing	Finishing	Finishing	Semi-finishing-Finishing
Insert Shape	F	M	LF	UF
Holder Type				
S-SCLC06	CCET 0602	CCET 0602	CCGT 0602	CCGT 0602
S-SCLC09	CCET 09T3	CCET 09T3	CCGT 09T3	CCGT 09T3
Reference page	P73	P73	P70	P70

●: Stock available ▲: Stock available now but will be replaced in the future.

External Sleeve Holder-Suitable for D Type Insert



Product code	Dimension (mm)					Stock	Spare parts	
	DCON	LF	H	WF	WF2	L	Screw	Wrench
S12F-SDUCL07	12	80	11	6	3.8	●	SP025065	FT-TP08
S14H-SDUCL07	14	100	13	6	3.8	●		
S15.0H-SDUCL07	15.875	100	15	6	3.8	●		
S16H-SDUCL07	16	100	15	6	3.8	●		
S19.0JX-SDUCL07	19.05	120	17	6	3.8	●		
S20JX-SDUCL07	20	120	18	6	3.8	●	SP040090-X	FT-TP15
S19.0JX-SDUCL11	19.05	120	17	10	5.8	●		
S20JX-SDUCL11	20	120	20	10	5.8	●		
S22JX-SDUCL11	22	120	20	10	5.8	●		
S25JX-SDUCL11	25	120	23	10	5.8	●		
S25.0JX-SDUCL11	25.4	120	23	10	5.8	●		

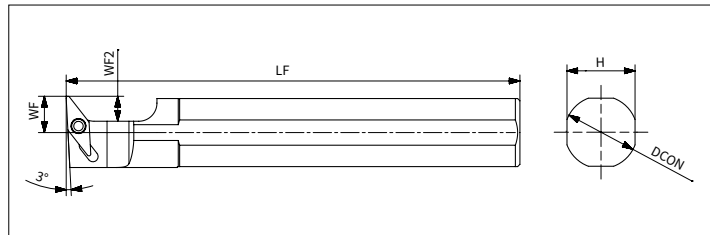
Small Tools

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Semi-finishing–Finishing
Insert Shape	F	M	LF	UF
Holder Type				
S-SDUCL07	DCET 0702	DCET 0702	DCGT 0702	DCGT 0702
S-SDUCL11	DCET 11T3	DCET 11T3	DCGT 11T3	DCGT 11T3
Reference page	P76	P77	P74	P74

●: Stock available ▲: Stock available now but will be replaced in the future.

External Sleeve Holder-Suitable for V Type Insert



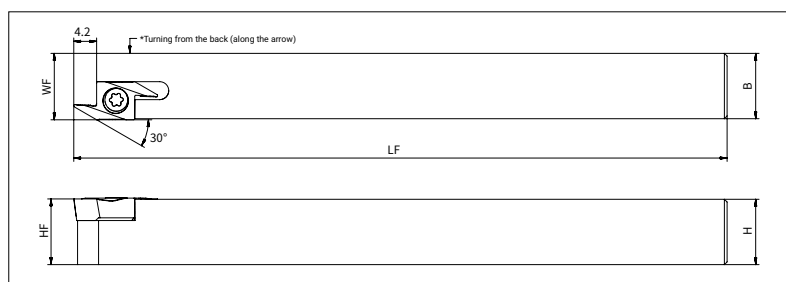
Product code	Dimension (mm)					Stock	Spare parts	
	DCON	LF	H	WF	WF2	L	Screw	Wrench
S12F-SVUPL08	12	80	11	7.5	5.5	●	SP020049	FT-TP06
S14H-SVUPL08	14	100	13	7.5	5.5	●		
S15.0H-SVUPL08	15.875	100	15	8	5.5	●		
S16H-SVUPL08	16	100	15	8	5.5	●		
S19.0JX-SVUBL11	19.05	120	17	10.5	8	●	SP025065	FT-TP08
S20JX-SVUBL11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

Applicable Insert

Applicaition	Finishing	Finishing	Finishing	Finishing	Semi-finishing--Finishing
Insert Shape Holder Type	F	M	Y	LF	UF
S-SVUPL08	VPET 0802	VPET 0802	-	-	-
S-SVUBL11	VBET 1103	VBET 1103	VBET 1103	VBGT 1103	VBGT 1103
Reference page	P87	P88	P88	P84	P84, 85

●: Stock available ▲: Stock available now but will be replaced in the future.

Small Tools



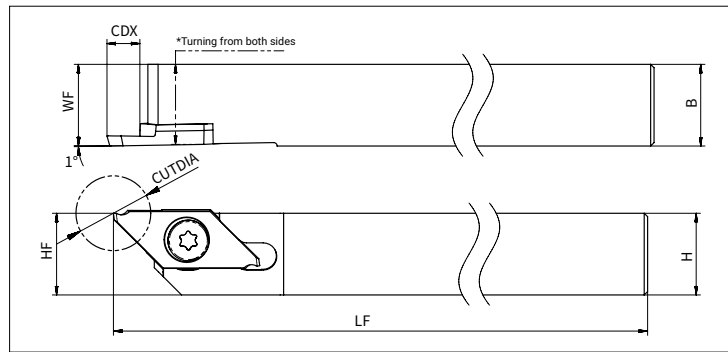
Product code	Dimension (mm)					Stock	Spare parts	
	H	B	HF	LF	WF	R	Screw	Wrench
ABFSR 1010-07	10	10	10	120	10.2	●	SP030082	FT-TP09
ABFSR 1212-07	12	12	12	120	12.2	●		
ABFSR 1616-07	16	16	16	120	16.2	●		

Small Tools

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

●: Stock available ▲: Stock available now but will be replaced in the future.

ASW Multifunctional Tool Holder



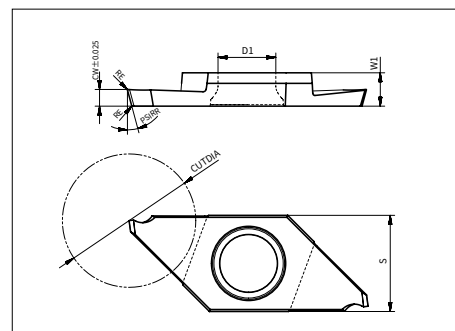
Product code	Dimension (mm)							Stock		Spare parts	
	H	HF	B	LF	LH	WF	CDX	R	L	Screw	Wrench
ASWSR/L 1010-09	10	10	10	120	15	10	6	●	●	SP04509357	FT-TP10
ASWSR/L 1212-09	12	12	12	120	-	12	6	●	●		
ASWSR/L 1616-09	16	16	16	120	-	16	6	●	●		
ASWSR/L 2020-09	20	20	20	120	-	20	6	●	●		
ASWSR/L 1010-10	10	10	10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

Applicable Insert

Applicaiton	Parting off	Backturning	Threading
Insert Shape			
Holder Type			
ASWSR/L----09	ASWP 09R/L	ASWB 09R/L	ASWT 09R/L
ASWSR/L----10	ASWP 10R/L	ASWB 10R/L	-
Reference page	P131, 132	P133	P133

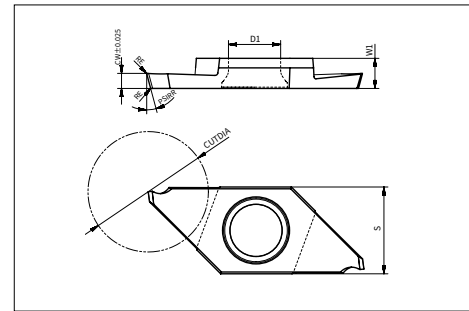
●: Stock available ▲: Stock available now but will be replaced in the future.

Parting off Insert



Product code	Dimension (mm)								Grade
	CW	CUTDIA	RE	PSIRR	GAN	W1	S	D1	AP301M
ASWP 09R/L050D05-F	0.5	5	0.03	0°	15°	3	8.7	5.2	●
ASWP 09R/L070D08-F	0.7	8	0.03	0°	15°	3	8.7	5.2	●
ASWP 09R/L100D12-F	1	12	0.03	0°	15°	3	8.7	5.2	●
ASWP 09R/L120D12-F	1.2	12	0.03	0°	15°	3	8.7	5.2	●
ASWP 09R/L150D12-F	1.5	12	0.03	0°	15°	3	8.7	5.2	●
ASWP 09R/L200D12-F	2	12	0.03	0°	15°	3	8.7	5.2	●
ASWP 09R/L050D05-F16R	0.5	5	0.03	16°	25°	3	8.7	5.2	●
ASWP 09R/L070D08-F16R	0.7	8	0.03	16°	25°	3	8.7	5.2	●
ASWP 09R/L100D12-F16R	1	12	0.03	16°	25°	3	8.7	5.2	●
ASWP 09R/L120D12-F16R	1.2	12	0.03	16°	25°	3	8.7	5.2	●
ASWP 09R/L150D12-F16R	1.5	12	0.03	16°	15°	3	8.7	5.2	●
ASWP 09R/L200D12-F16R	2	12	0.03	16°	15°	3	8.7	5.2	●
ASWP 09R/L100D12-M	1	12	0.08	0°	12°	3	8.7	5.2	●
ASWP 09R/L150D12-M	1.5	12	0.08	0°	12°	3	8.7	5.2	●
ASWP 09R/L200D12-M	2	12	0.08	0°	12°	3	8.7	5.2	●
ASWP 09R/L100D12-M16R	1	12	0.08	16°	12°	3	8.7	5.2	●
ASWP 09R/L150D12-M16R	1.5	12	0.08	16°	12°	3	8.7	5.2	●
ASWP 09R/L200D12-M16R	2	12	0.08	16°	12°	3	8.7	5.2	●

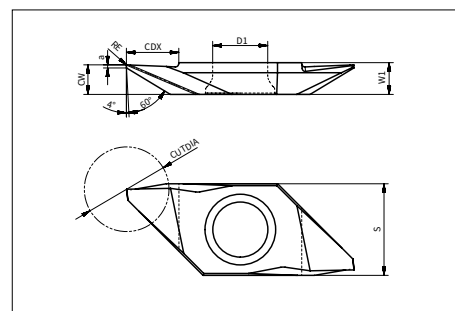
Parting off Insert



Product code	Dimension (mm)								Grade
	CW	CUTDIA	RE	PSIRR	GAN	W1	S	D1	AP301M
ASWP 09R/L050D05-T	0.5	5	0	0°	0°	3	8.7	5.2	●
ASWP 09R/L070D08-T	0.7	8	0	0°	0°	3	8.7	5.2	●
ASWP 09R/L100D12-T	1	12	0	0°	0°	3	8.7	5.2	●
ASWP 09R/L120D12-T	1.2	12	0	0°	0°	3	8.7	5.2	●
ASWP 09R/L150D12-T	1.5	12	0	0°	0°	3	8.7	5.2	●
ASWP 09R/L200D12-T	2	12	0	0°	0°	3	8.7	5.2	●
ASWP 09R/L050D05-T20R	0.5	5	0	20°	0°	3	8.7	5.2	●
ASWP 09R/L070D08-T20R	0.7	8	0	20°	0°	3	8.7	5.2	●
ASWP 09R/L100D12-T20R	1	12	0	20°	0°	3	8.7	5.2	●
ASWP 09R/L120D12-T20R	1.2	12	0	20°	0°	3	8.7	5.2	●
ASWP 09R/L150D12-T20R	1.5	12	0	20°	0°	3	8.7	5.2	●
ASWP 09R/L200D12-T20R	2	12	0	20°	0°	3	8.7	5.2	●
ASWP 10R/L150D16-F	1.5	16	0.05	0°	20°	4	9.5	5.2	●
ASWP 10R/L200D16-F	2	16	0.05	0°	20°	4	9.5	5.2	●
ASWP 10R/L150D16-F16R	1.5	16	0.05	16°	20°	4	9.5	5.2	●
ASWP 10R/L200D16-F16R	2	16	0.05	16°	20°	4	9.5	5.2	●
ASWP 10R/L150D16-M	1.5	16	0.08	0°	12°	4	9.5	5.2	●
ASWP 10R/L200D16-M	2	16	0.08	0°	12°	4	9.5	5.2	●
ASWP 10R/L150D16-M16R	1.5	16	0.08	16°	12°	4	9.5	5.2	●
ASWP 10R/L200D16-M16R	2	16	0.08	16°	12°	4	9.5	5.2	●
ASWP 10R/L150D16-T	1.5	16	0	0°	0°	4	9.5	5.2	●
ASWP 10R/L200D16-T	2	16	0	0°	0°	4	9.5	5.2	●
ASWP 10R/L150D16-T20R	1.5	16	0	20°	0°	4	9.5	5.2	●
ASWP 10R/L200D16-T20R	2	16	0	20°	0°	4	9.5	5.2	●

●: Stock available ▲: Stock available now but will be replaced in the future.

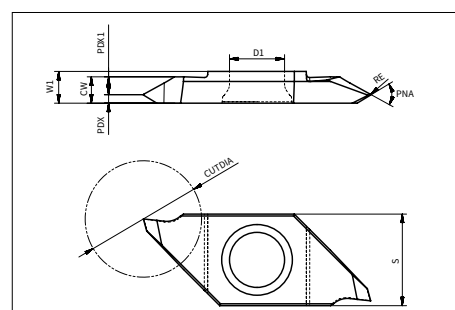
Backturning Insert



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

Small Tools

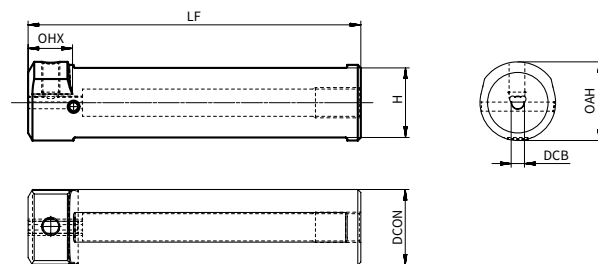
Threading Insert



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

●: Stock available ▲: Stock available now but will be replaced in the future.

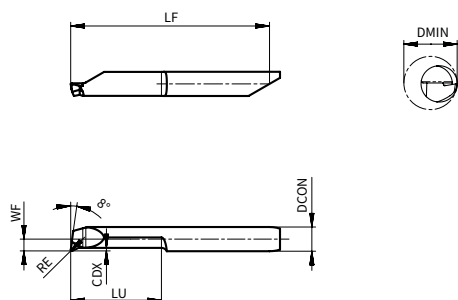
Solid carbide boring tool holder



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

●: Stock available ▲: Stock available now but will be replaced in the future.

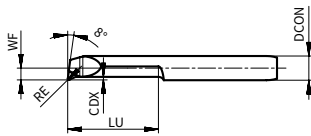
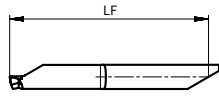
ASIB T Type-Small Dia. Boring Tool



Product code	Dimension (mm)							AP220U	
	DCON	RE	WF	LF	DMIN	LU	CDX	R	L
ASIBR/L 04T000-0301	4	0	0.1	27.3	0.3	1.2	0.1	●	●
ASIBR/L 04T000-0401	4	0	0.2	27.3	0.4	1.6	0.1	●	●
ASIBR/L 04T000-0502	4	0	0.2	27.3	0.5	2	0.1	●	●
ASIBR/L 04T000-0602	4	0	0.3	27.3	0.6	2.5	0.1	●	●
ASIBR/L 04T000-0703	4	0	0.3	27.3	0.7	3.5	0.1	●	●
ASIBR/L 04T000-0804	4	0	0.4	27.3	0.8	4	0.1	●	●
ASIBR/L 04T000-0905	4	0	0.4	27.3	0.9	5	0.1	●	●
ASIBR/L 04T005-1004	4	0.05	0.5	27.3	1	4	0.1	●	●
ASIBR/L 04T005-1006	4	0.05	0.5	27.3	1	6	0.1	●	●
ASIBR/L 04T010-1004	4	0.1	0.5	27.3	1	4	0.1	●	●
ASIBR/L 04T010-1006	4	0.1	0.5	27.3	1	6	0.1	●	●
ASIBR/L 04T005-1706	4	0.05	0.7	27.3	1.7	6	0.2	●	●
ASIBR/L 04T005-1709	4	0.05	0.7	27.3	1.7	9	0.2	●	●
ASIBR/L 04T010-1706	4	0.1	0.7	27.3	1.7	6	0.2	●	●
ASIBR/L 04T010-1709	4	0.1	0.7	27.3	1.7	9	0.2	●	●
ASIBR/L 04T005-2206	4	0.05	1	27.3	2.2	6	0.2	●	●
ASIBR/L 04T005-2209	4	0.05	1	27.3	2.2	9	0.2	●	●
ASIBR/L 04T010-2206	4	0.1	1	27.3	2.2	6	0.2	●	●
ASIBR/L 04T010-2209	4	0.1	1	27.3	2.2	9	0.2	●	●
ASIBR/L 04T010-2213	4	0.1	1	32.3	2.2	13	0.2	●	●
ASIBR/L 04T003-2710	4	0.03	1.2	27.3	2.7	10	0.2	●	●
ASIBR/L 04T005-2710	4	0.05	1.2	27.3	2.7	10	0.2	●	●
ASIBR/L 04T005-2715	4	0.05	1.2	32.3	2.7	15	0.2	●	●
ASIBR/L 04T015-2710	4	0.15	1.2	27.3	2.7	10	0.2	●	●
ASIBR/L 04T015-2715	4	0.15	1.2	32.3	2.7	15	0.2	●	●
ASIBR/L 04T003-3210	4	0.03	1.5	27.3	3.2	10	0.2	●	●
ASIBR/L 04T005-3215	4	0.05	1.5	32.3	3.2	15	0.2	●	●
ASIBR/L 04T005-3220	4	0.05	1.5	37.3	3.2	20	0.2	●	●
ASIBR/L 04T015-3210	4	0.15	1.5	27.3	3.2	10	0.2	●	●
ASIBR/L 04T015-3215	4	0.15	1.5	32.3	3.2	15	0.2	●	●
ASIBR/L 04T015-3220	4	0.15	1.5	37.3	3.2	20	0.2	●	●
ASIBR/L 04T003-4210	4	0.03	2	27.3	4.2	10	0.3	●	●
ASIBR/L 04T005-4215	4	0.05	2	32.3	4.2	15	0.3	●	●
ASIBR/L 04T005-4220	4	0.05	2	37.3	4.2	20	0.3	●	●
ASIBR/L 04T005-4225	4	0.05	2	42.3	4.2	25	0.3	●	●
ASIBR/L 04T015-4210	4	0.15	2	27.3	4.2	10	0.3	●	●

●: Stock available ▲: Stock available now but will be replaced in the future.

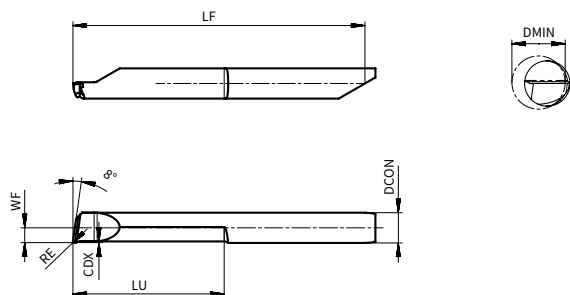
ASIB T Type-Small Dia. Boring Tool



Product code	Dimension (mm)							AP220U	
	DCON	RE	WF	LF	DMIN	LU	CDX	R	L
ASIBR/L 04T015-4215	4	0.15	2	32.3	4.2	15	0.3	●	●
ASIBR/L 04T015-4220	4	0.15	2	37.3	4.2	20	0.3	●	●
ASIBR/L 04T015-4225	4	0.15	2	42.3	4.2	25	0.3	●	●
ASIBR/L 05T005-5220	5	0.05	2.5	42.3	5.2	20	0.5	●	●
ASIBR/L 05T005-5230	5	0.05	2.5	52.3	5.2	30	0.5	●	●
ASIBR/L 05T020-5210	5	0.2	2.5	32.3	5.2	10	0.5	●	●
ASIBR/L 05T020-5220	5	0.2	2.5	42.3	5.2	20	0.5	●	●
ASIBR/L 05T020-5225	5	0.2	2.5	47.3	5.2	25	0.5	●	●
ASIBR/L 05T020-5230	5	0.2	2.5	52.3	5.2	30	0.5	●	●
ASIBR/L 05T020-5235	5	0.2	2.5	57.3	5.2	35	0.5	●	●
ASIBR/L 05T020-5240	5	0.2	2.5	62.3	5.2	40	0.5	●	●
ASIBR/L 06T005-6220	6	0.05	3	42.3	6.2	20	0.5	●	●
ASIBR/L 06T020-6215	6	0.2	3	37.3	6.2	15	0.5	●	●
ASIBR/L 06T020-6220	6	0.2	3	42.3	6.2	20	0.5	●	●
ASIBR/L 06T020-6225	6	0.2	3	47.3	6.2	25	0.5	●	●
ASIBR/L 06T020-6230	6	0.2	3	52.3	6.2	30	0.5	●	●
ASIBR/L 06T020-6235	6	0.2	3	57.3	6.2	35	0.5	●	●
ASIBR/L 06T020-6240	6	0.2	3	62.3	6.2	40	0.5	●	●

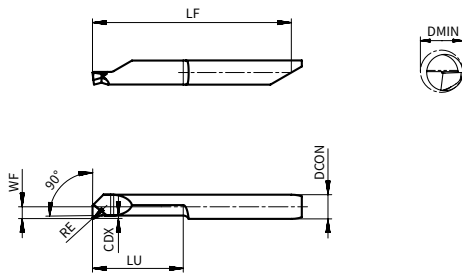
●: Stock available ▲: Stock available now but will be replaced in the future.

ASIB E Type-Small Dia. Boring Tool



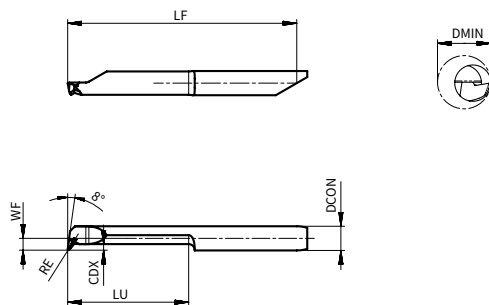
Product code	Dimension (mm)							AP220U	
	DCON	RE	WF	LF	DMIN	LU	CDX	R	L
ASIBR 04E008-4230	4	0.08	2	52.3	4.2	30	0.5	●	-
ASIBR/L 04E015-4210	4	0.15	2	27.3	4.2	10.3	0.5	●	●
ASIBR/L 04E015-4220	4	0.15	2	37.3	4.2	20.3	0.5	●	●
ASIBR/L 04E015-4225	4	0.15	2	42.3	4.2	25.3	0.5	●	●
ASIBR/L 04E020-4215	4	0.2	2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

ASIB S Type-Small Dia. Boring Tool



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

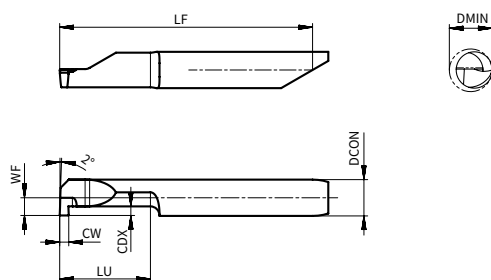
ASIB V Type-Small Dia. Boring Tool



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

●: Stock available ▲: Stock available now but will be replaced in the future.

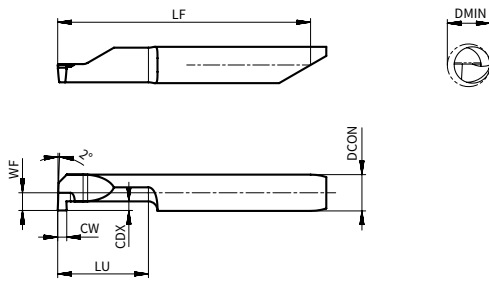
ASIG S Type-Small Dia. Internal Grooving Tool



Product code	Dimension (mm)							AP220U	
	DCON	CW	WF	LF	DMIN	LU	CDX	R	L
ASIGR/L 04S050-2006	4	0.5	2	23.3	2	6	0.4	●	●
ASIGR/L 04S050-2009	4	0.5	2	26.3	2	9	0.4	●	●
ASIGR/L 04S050-2012	4	0.5	2	29.3	2	12	0.4	●	●
ASIGR/L 04S070-3008	4	0.7	1.4	25.3	3	8	0.6	●	●
ASIGR/L 04S070-3012	4	0.7	1.4	29.3	3	12	0.6	●	●
ASIGR/L 04S070-3016	4	0.7	1.4	33.3	3	16	0.6	●	●
ASIGR/L 04S100-4210	4	1	2	27.3	4.2	10	0.8	●	●
ASIGR/L 04S100-4215	4	1	2	32.3	4.2	15	0.8	●	●
ASIGR/L 04S100-4220	4	1	2	37.3	4.2	20	0.8	●	●
ASIGR/L 05S100-5210	5	1	2.5	32.3	5.2	10	1	●	●
ASIGR/L 05S100-5215	5	1	2.5	37.3	5.2	15	1	●	●
ASIGR/L 05S100-5220	5	1	2.5	42.3	5.2	20	1	●	●
ASIGR/L 05S100-5225	5	1	2.5	47.3	5.2	25	1	●	●
ASIGR/L 05S100-5230	5	1	2.5	52.3	5.2	30	1	●	●
ASIGR/L 05S100-5235	5	1	2.5	57.3	5.2	35	1	●	●
ASIGR/L 05S150-5210	5	1.5	2.5	32.3	5.2	10	1	●	●
ASIGR/L 05S150-5215	5	1.5	2.5	37.3	5.2	15	1	●	●
ASIGR/L 05S150-5220	5	1.5	2.5	42.3	5.2	20	1	●	●
ASIGR/L 05S150-5225	5	1.5	2.5	47.3	5.2	25	1	●	●
ASIGR/L 05S150-5230	5	1.5	2.5	52.3	5.2	30	1	●	●
ASIGR/L 05S150-5235	5	1.5	2.5	57.3	5.2	35	1	●	●
ASIGR/L 05S200-5210	5	2	2.5	32.3	5.2	10	1	●	●
ASIGR/L 05S200-5215	5	2	2.5	37.3	5.2	15	1	●	●
ASIGR/L 05S200-5220	5	2	2.5	42.3	5.2	20	1	●	●
ASIGR/L 05S200-5225	5	2	2.5	47.3	5.2	25	1	●	●
ASIGR/L 05S200-5230	5	2	2.5	52.3	5.2	30	1	●	●
ASIGR/L 06S100-6210	6	1	3	32.3	6.2	10	1.8	●	●
ASIGR/L 06S100-6215	6	1	3	37.3	6.2	15	1.8	●	●
ASIGR/L 06S100-6220	6	1	3	42.3	6.2	20	1.8	●	●
ASIGR/L 06S100-6225	6	1	3	47.3	6.2	25	1.8	●	●
ASIGR/L 06S100-6230	6	1	3	52.3	6.2	30	1.8	●	●
ASIGR/L 06S100-6235	6	1	3	57.3	6.2	35	1.8	●	●
ASIGR/L 06S100-6240	6	1	3	62.3	6.2	40	1.8	●	●
ASIGR/L 06S150-6210	6	1.5	3	32.3	6.2	10	1.8	●	●
ASIGR/L 06S150-6215	6	1.5	3	37.3	6.2	15	1.8	●	●
ASIGR/L 06S150-6220	6	1.5	3	42.3	6.2	20	1.8	●	●

●: Stock available ▲: Stock available now but will be replaced in the future.

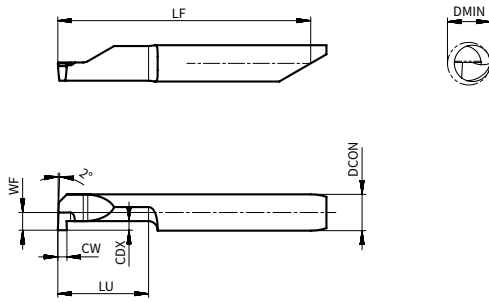
ASIG S Type-Small Dia. Internal Grooving Tool



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

●: Stock available ▲: Stock available now but will be replaced in the future.

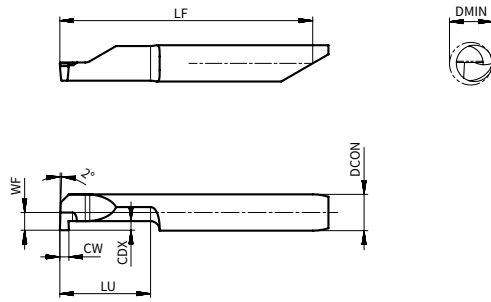
ASIG S Type-Small Dia. Internal Grooving Tool (For Circlip Groove)



Product code	Dimension (mm)							AP220U	
	DCON	CW	WF	LF	DMIN	LU	CDX	R	L
ASIGR/L 04S078-4210	4	0.78	2	27.3	4.2	10	0.8	●	●
ASIGR/L 04S078-4215	4	0.78	2	32.3	4.2	15	0.8	●	●
ASIGR/L 04S078-4220	4	0.78	2	37.3	4.2	20	0.8	●	●
ASIGR/L 04S078-4225	4	0.78	2	42.3	4.2	25	0.8	●	●
ASIGR/L 05S078-5210	5	0.78	2.5	32.3	5.2	10	1	●	●
ASIGR/L 05S078-5215	5	0.78	2.5	37.3	5.2	15	1	●	●
ASIGR/L 05S078-5220	5	0.78	2.5	42.3	5.2	20	1	●	●
ASIGR/L 05S078-5225	5	0.78	2.5	47.3	5.2	25	1	●	●
ASIGR/L 05S078-5230	5	0.78	2.5	52.3	5.2	30	1	●	●
ASIGR/L 05S078-5235	5	0.78	2.5	57.3	5.2	35	1	●	●
ASIGR/L 05S117-5210	5	1.17	2.5	32.3	5.2	10	1	●	●
ASIGR/L 05S117-5215	5	1.17	2.5	37.3	5.2	15	1	●	●
ASIGR/L 05S117-5220	5	1.17	2.5	42.3	5.2	20	1	●	●
ASIGR/L 05S117-5225	5	1.17	2.5	47.3	5.2	25	1	●	●
ASIGR/L 05S117-5230	5	1.17	2.5	52.3	5.2	30	1	●	●
ASIGR/L 05S117-5235	5	1.17	2.5	57.3	5.2	35	1	●	●
ASIGR/L 05S157-5210	5	1.57	2.5	32.3	5.2	10	1	●	●
ASIGR/L 05S157-5215	5	1.57	2.5	37.3	5.2	15	1	●	●
ASIGR/L 05S157-5220	5	1.57	2.5	42.3	5.2	20	1	●	●
ASIGR/L 05S157-5225	5	1.57	2.5	47.3	5.2	25	1	●	●
ASIGR/L 05S157-5230	5	1.57	2.5	52.3	5.2	30	1	●	●
ASIGR/L 05S198-5210	5	1.98	2.5	32.3	5.2	10	1	●	●
ASIGR/L 05S198-5215	5	1.98	2.5	37.3	5.2	15	1	●	●
ASIGR/L 05S198-5220	5	1.98	2.5	42.3	5.2	20	1	●	●
ASIGR/L 05S198-5225	5	1.98	2.5	47.3	5.2	25	1	●	●
ASIGR/L 05S198-5230	5	1.98	2.5	52.3	5.2	30	1	●	●
ASIGR/L 06S078-6210	6	0.78	3	32.3	6.2	10	1.8	●	●
ASIGR/L 06S078-6215	6	0.78	3	37.3	6.2	15	1.8	●	●
ASIGR/L 06S078-6220	6	0.78	3	42.3	6.2	20	1.8	●	●
ASIGR/L 06S078-6225	6	0.78	3	47.3	6.2	25	1.8	●	●
ASIGR/L 06S078-6230	6	0.78	3	52.3	6.2	30	1.8	●	●
ASIGR/L 06S078-6235	6	0.78	3	57.3	6.2	35	1.8	●	●
ASIGR/L 06S117-6210	6	1.17	3	32.3	6.2	10	1.8	●	●
ASIGR/L 06S117-6215	6	1.17	3	37.3	6.2	15	1.8	●	●
ASIGR/L 06S117-6220	6	1.17	3	42.3	6.2	20	1.8	●	●
ASIGR/L 06S117-6225	6	1.17	3	47.3	6.2	25	1.8	●	●

●: Stock available ▲: Stock available now but will be replaced in the future.

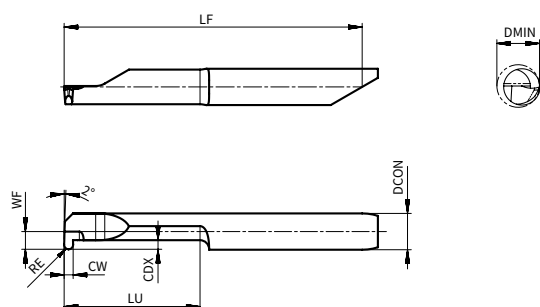
ASIG S Type-Small Dia. Internal Grooving Tool (For Circlip Groove)



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

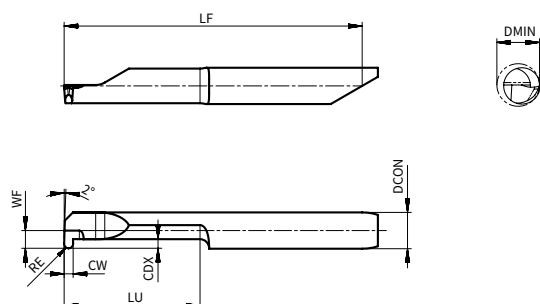
●: Stock available ▲: Stock available now but will be replaced in the future.

ASIG R Type-Small Dia. Internal Grooving Tool



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

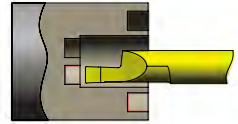
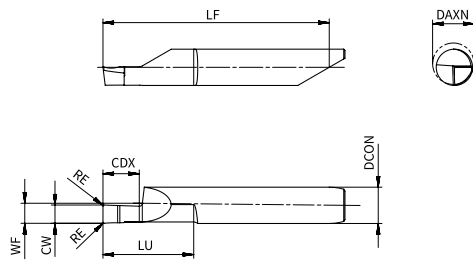
ASIG R Type-Small Dia. Internal Grooving Tool (For Circlip Groove)



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

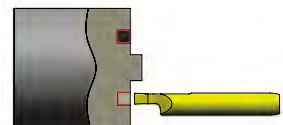
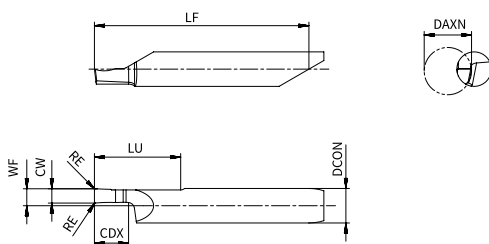
●: Stock available ▲: Stock available now but will be replaced in the future.

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



Product code	Dimension (mm)								AP220U	
	DCON	CW	WF	RE	LF	DAXN	LU	CDX	R	L
ASIFR/L 06A100-6215	6	1	3	0.15	37.3	6.2	15	2	●	●
ASIFR/L 06A150-6215	6	1.5	3	0.15	37.3	6.2	15	3	●	●
ASIFR/L 06A200-6215	6	2	3	0.15	37.3	6.2	15	4	●	●
ASIFR/L 06A250-6215	6	2.5	3	0.15	37.3	6.2	15	5	●	●
ASIFR/L 06A300-6215	6	3	3	0.15	37.3	6.2	15	6	●	●
ASIFR/L 08A200-8015	8	2	3	0.2	44.3	8	15	15	●	●
ASIFR/L 08A250-8010	8	2.5	3	0.2	39.3	8	10	10	●	●
ASIFR/L 08A300-8010	8	3	3	0.2	39.3	8	10	10	●	●
ASIFR/L 08A300-8015	8	3	3	0.2	44.3	8	15	15	●	●
ASIFR/L 08A400-8010	8	4	3	0.2	39.3	8	10	10	●	●
ASIFR/L 08A400-8015	8	4	3	0.2	44.3	8	15	15	●	●

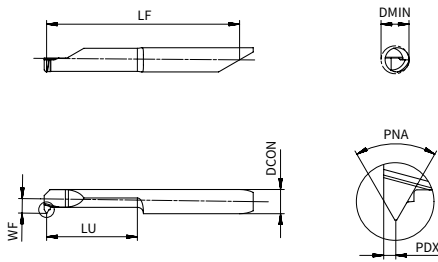
ASIF B Type - Small Dia. Internal Face Grooving (Outward Deviation)



Product code	Dimension (mm)								AP220U	
	DCON	CW	WF	RE	LF	DAXN	LU	CDX	R	L
ASIFR/L 06B100-6215	6	1	3	0.15	37.3	6.2	15	2	●	●
ASIFR/L 06B150-6215	6	1.5	3	0.15	37.3	6.2	15	3	●	●
ASIFR/L 06B200-6215	6	2	3	0.15	37.3	6.2	15	4	●	●
ASIFR/L 06B250-6215	6	2.5	3	0.15	37.3	6.2	15	5	●	●
ASIFR/L 06B300-6215	6	3	3	0.15	37.3	6.2	15	6	●	●

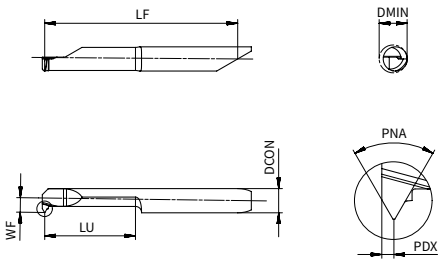
●: Stock available ▲: Stock available now but will be replaced in the future.

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



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

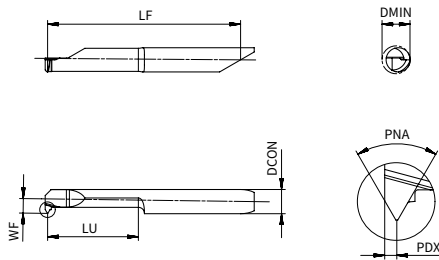
ASIT M Type - Small Dia. Internal ISO Threading Tool



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

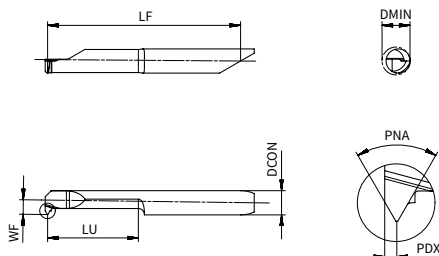
●: Stock available ▲: Stock available now but will be replaced in the future.

ASIT U Type - Small Dia. Internal UN Threading Tool



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

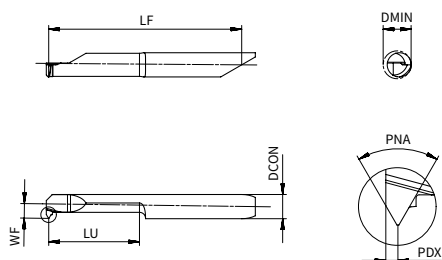
ASIT W Type - Small Dia. Internal Worth Threading Tool



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

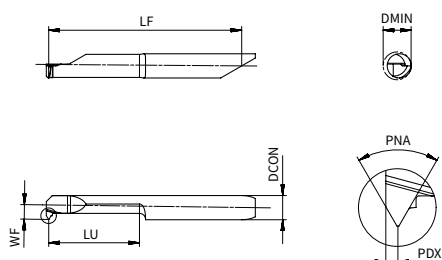
●: Stock available ▲: Stock available now but will be replaced in the future.

ASIT N Type - Small Dia. Internal NPT Threading Tool



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

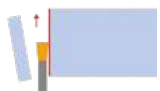
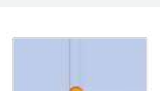
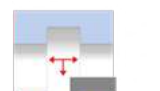
ASIT T Type - Small Dia. Internal TR Threading Tool



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

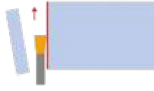
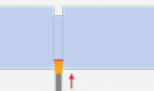
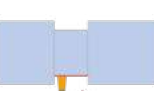
●: Stock available ▲: Stock available now but will be replaced in the future.

Overview of Grooving Holders

Holder Application			External grooving					
			ASGHR/L	S-ASGHL	ATGHR/L	ATSER/L	ATSER/L-D	ATSER/L-SW
								
Page			P147	P148	P149	P151	P153	P154
External grooving	Parting off					●	●	●
	Grooving		●	●	●	●	●	●
	Turning					●	●	●
	Profiling					●	●	
	Under cut							
Face grooving	Grooving							
	Turning							
Internal machining	Grooving							
	Turning							

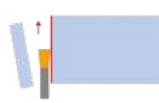
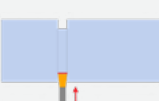
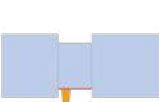
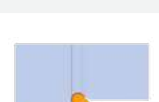
Marked: ● Best choice

Overview of Grooving Holders

Holder Application			External grooving	Face grooving					
			AGUER/L	ATSFR/L	ATSFR/L-OB	AGSFR/L	AGPFR/L	ATPFR/L	
									
Page			P155	P156	P157	P159	P160	P161	
External grooving	Parting off								
	Grooving					●	●		
	Turning					○	○		
	Profiling								
	Under cut		●						
Face grooving	Grooving			●	●	●	●	●	
	Turning			●	●	●	●	●	
Internal machining	Grooving								
	Turning								

Marked: ● Best choice

Overview of Grooving Holders

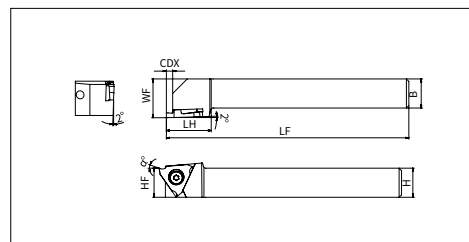
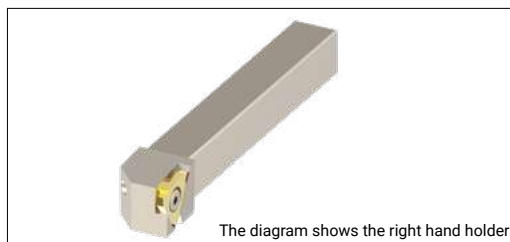
Holder Application			Internal machining				
			ATPIR/L	ATGIR/L	ATSIR/L	AGSIR/L	AGUIR/L
							
Page			P162	P163	P164	P165	P166
External grooving	Parting off						
	Grooving						
	Turning						
	Profiling						
	Under cut						●
Face grooving	Grooving				●	●	
	Turning				●	●	
Internal machining	Grooving		●	●			
	Turning		●				

Marked: ● Best choice

ASGH Grooving Holder Denomination System

A 1	S 2	G 3	H 4	R 5	20 6	20 7	JX 8	- -	32 9	F 10
1-Company Name		2-Matching Insert Type		3-Application		4-Holder Type		5-Hand of Tool		
ACHTECK		S	S: For swiss machine	G	Grooving	H	Holder	L	Left	
								R	Right	
6-Holder Height		7-Holder Width		8-Holder Length		9 -Matching Insert Size (IC)		10 -Shape of Holder Head		
20=20.0mm		20=20.0mm		JX=120mm		32=9.525mm		F: Without dimple		

ASGHR/L External shallow Grooving Holder for Swiss Lathe



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

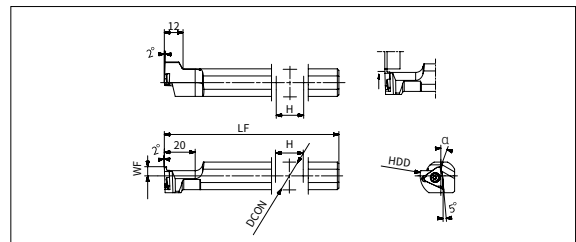
Applicable Insert

Application	Grooving
Insert shape	
Product code	
ASGHR/L**	ASG 32
Reference page	P172

S...ASGH Sleeve Tool Holder Denomination System

S 1	20 2	JX 3	- -	A 4	S 5	G 6	H 7	L 8	32 9
1-Holder Material S=Steel		2-Holder Shank Diameter 20=20mm		3-Holder Length JX=120mm		4-Company Name ACHTECK			
5-Matching Insert Type S Swiss		6-Application G Grooving		7-Holder Type H Holder		8-Hand of Tool L Left			
9-Matching Insert Size (IC) 32=9.525mm									

S....ASGH External Grooving Sleeve Holder for Swiss Lathe



Product code	Dimension (mm)					Spare parts	
	DCON	LF	WF	HDD	DMIN	Screw	Wrench
							
S12F-ASGHL32	12	80	6	11	27	SP040070	FT-TP08
S14H-ASGHL32	14	100		13			
S15.0H-ASGHL32	15.875			15.875			
S16H-ASGHL32	16			120			
S19.0JX-ASGHL32	19.05	18.6					
S20JX-ASGHL32	20	23.6					
S22JX-ASGHL32	22	120	10	23.6	37		
S25JX-ASGHL32	25	120					
S25.0JX-ASGHL32	25.4	120					

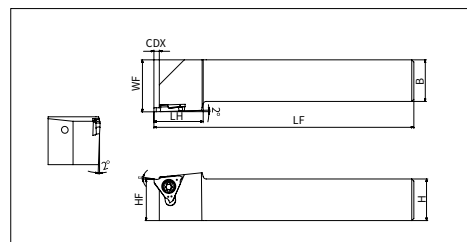
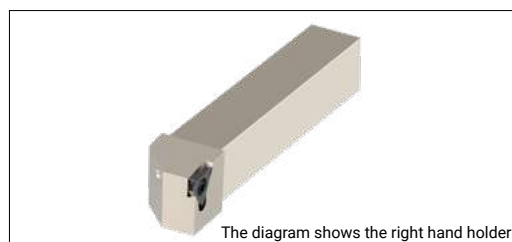
Applicable Insert

Application	Grooving
Insert shape	
Product code	
S....ASGHL**	ASG 32
Reference page	P172

ATGH Tool Holder Denomination System

A 1	T 2	G 3	H 4	R 5	25 6	25 7	M 8	43 9	- -	10 10	T25 11
1-Company Name ACHTECK			2-Matching Insert Type T Triangular			3-Application G Grooving			4-Holder Type H Holder		
5-Hand of Tool L Left R Right			6-Holder Height 20=20.0mm 25=25.0mm			7-Holder Width 20=20.0mm 25=25.0mm			8-Holder Length K=125mm M=150mm		
9-Matching Insert Size (IC) 32=9.525mm						10-Matching Insert Maximum Width 10=1.0mm			11-Maximum Ap T25=2.5mm		

ATGHR/L External Grooving Holder



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

Applicable Insert

Application	Grooving	Profiling
Insert shape		
Product code		
ATGHR/L** 32	ATG 32	ATG 32
ATGHR/L** 43	ATG 43	ATG 43
Reference page	P173	P174

Grooving Holder Denomination System

A	G	U	E	R	0750	-	4	T0315	-	40	-	80	-	SW
1	2	3	4	5	6	-	8	9	-	10	-	11	-	12
					16									
					7									

1-Company name
ACHTECK

2-Application
G Grooving
T Turning

3- Shape of holder head
S: Straight-180°
U: Under cut-45°
P: Perpendicular-90°

4-Machining type
E: External
I: Internal
F: Facing

5-Hand of tool
L Left hand
R Right hand

6-Holder diameter
0375=0.375
0750=0.750
1000=1.000

7-Holder Height/width
08=0.375
12=0.750
16=1.000

8-Insert width
2=0.079
3=0.118
4=0.157

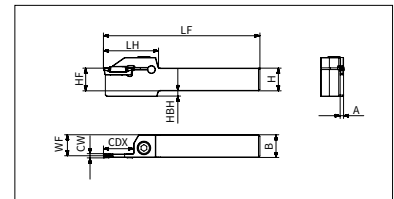
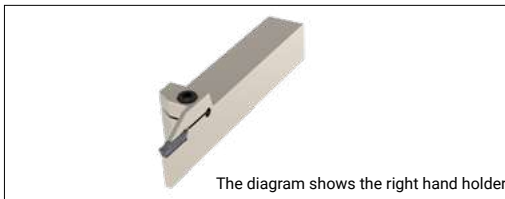
9-Ap
T0315=Max 0.315

10-Minimum cutting diameter
40=1.575

11-Maximum cutting diameter
80=3.150

12-Special code
SW: For swiss machine
OB: Outside bulge holders
C: With internal coolant
D: Reinforced holders

ATSER/L External Turning and Grooving



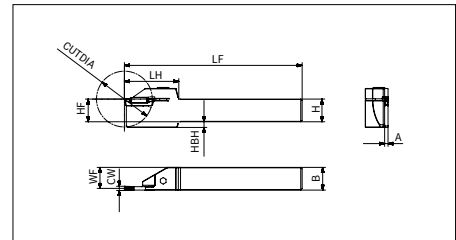
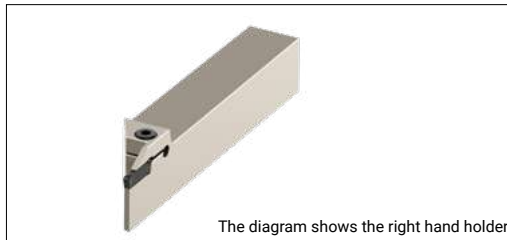
Product code		Dimension (inch)									Spare parts	
		H	B	HF	HBH	A	LF	LH	WF	CDX	Screw	Wrench
												
ATSER/L	10-2T0315	0.625	0.625	0.625	0.157	0.071	4.500	1.299	0.590	0.315	SH050160	LT-H4
	10-2T0472	0.625	0.625	0.625	0.157	0.071	4.500	1.260	0.590	0.472		
	10-2T0669	0.625	0.625	0.625	0.157	0.071	4.500	1.457	0.590	0.669		
	12-2T0315	0.750	0.750	0.750	0.000	0.071	5.000	1.299	0.715	0.315	SH050200	
	12-2T0472	0.750	0.750	0.750	0.000	0.071	5.000	1.260	0.715	0.472		
	12-2T0669	0.750	0.750	0.750	0.000	0.071	5.000	1.457	0.715	0.669		
	16-2T0315	1.000	1.000	1.000	0.000	0.071	6.000	1.299	0.965	0.315	SH050250	
	16-2T0472	1.000	1.000	1.000	0.000	0.071	6.000	1.260	0.965	0.472		
	16-2T0669	1.000	1.000	1.000	0.000	0.071	6.000	1.457	0.965	0.669		
	10-3T0354	0.625	0.625	0.625	0.157	0.094	4.500	1.260	0.578	0.354	SH050160	
	10-3T0472	0.625	0.625	0.625	0.157	0.094	4.500	1.260	0.578	0.472		
	10-3T0787	0.625	0.625	0.625	0.157	0.094	4.500	1.496	0.578	0.787		
	12-3T0354	0.750	0.750	0.750	0.000	0.094	5.000	1.260	0.703	0.354	SH050200	
	12-3T0472	0.750	0.750	0.750	0.000	0.094	5.000	1.260	0.703	0.472		
	12-3T0787	0.750	0.750	0.750	0.000	0.094	5.000	1.496	0.703	0.787		
	16-3T0354	1.000	1.000	1.000	0.000	0.094	6.000	1.260	0.953	0.354	SH050250	
	16-3T0472	1.000	1.000	1.000	0.000	0.094	6.000	1.260	0.953	0.472		
	16-3T0787	1.000	1.000	1.000	0.000	0.094	6.000	1.496	0.953	0.787		
	16-3T0984	1.000	1.000	1.000	0.000	0.094	6.000	1.772	0.953	0.984	LT-H5	
	10-4T0394	0.625	0.625	0.625	0.157	0.132	4.500	1.260	0.559	0.394		SH060160
	10-4T0591	0.625	0.625	0.625	0.157	0.132	4.500	1.299	0.559	0.591		
	10-4T0984	0.625	0.625	0.625	0.157	0.132	4.500	1.772	0.559	0.984		
	12-4T0984	0.750	0.750	0.750	0.000	0.132	5.000	1.260	0.684	0.394		SH060200
	12-4T0591	0.750	0.750	0.750	0.000	0.132	5.000	1.299	0.684	0.591		
	12-4T0984	0.750	0.750	0.750	0.000	0.132	5.000	1.772	0.684	0.984		
	16-4T0394	1.000	1.000	1.000	0.000	0.132	6.000	1.260	0.934	0.394		SH060250
	16-4T0591	1.000	1.000	1.000	0.000	0.132	6.000	1.299	0.934	0.591		
	16-4T0787	1.000	1.000	1.000	0.000	0.132	6.000	1.575	0.934	0.787		
	16-4T0984	1.000	1.000	1.000	0.000	0.132	6.000	1.772	0.934	0.984		SH060200
	12-5T0472	0.750	0.750	0.750	0.000	0.171	5.000	1.457	0.664	0.472		
	12-5T0787	0.750	0.750	0.750	0.000	0.171	5.000	1.457	0.664	0.787		
	16-5T0472	1.000	1.000	1.000	0.000	0.171	6.000	1.457	0.914	0.472		SH060250
	16-5T0787	1.000	1.000	1.000	0.000	0.171	6.000	1.457	0.914	0.787		
	16-5T1260	1.000	1.000	1.000	0.000	0.171	6.000	2.205	0.914	1.260		
	20-5T0472	1.250	1.250	1.250	0.000	0.171	7.000	1.457	1.164	0.472		
	20-5T0787	1.250	1.250	1.250	0.000	0.171	7.000	1.535	1.164	0.787		
	20-5T0984	1.250	1.250	1.250	0.000	0.171	7.000	1.811	1.164	0.984	SH060250	
	20-5T1260	1.250	1.250	1.250	0.000	0.171	7.000	2.205	1.164	1.260		
	12-6T0472	0.750	0.750	0.750	0.000	0.211	5.000	1.457	0.645	0.472	SH080200	LT-H6
	12-6T0787	0.750	0.750	0.750	0.000	0.211	5.000	1.614	0.645	0.787		
	16-6T0472	1.000	1.000	1.000	0.276	0.211	6.000	1.457	0.895	0.472	SH080250	
	16-6T0787	1.000	1.000	1.000	0.276	0.211	6.000	1.614	0.895	0.787		
16-6T1260	1.000	1.000	1.000	0.276	0.211	6.000	2.205	0.895	1.260			
20-6T0472	1.250	1.250	1.250	0.000	0.211	7.000	1.457	1.145	0.472			
20-6T0787	1.250	1.250	1.250	0.000	0.211	7.000	1.614	1.145	0.787			
20-6T0984	1.250	1.250	1.250	0.000	0.211	7.000	1.811	1.145	0.984			
20-6T1260	1.250	1.250	1.250	0.000	0.211	7.000	2.205	1.145	1.260			
16-8T0630	1.000	1.000	1.000	0.276	0.244	6.000	1.850	0.878	0.630			
16-8T0984	1.000	1.000	1.000	0.276	0.244	6.000	1.850	0.878	0.984			
16-8T1417	1.000	1.000	1.000	0.276	0.244	6.000	2.362	0.878	1.417			
20-8T0984	1.250	1.250	1.250	0.000	0.244	7.000	1.850	1.128	0.984			
20-8T1417	1.250	1.250	1.250	0.000	0.244	7.000	2.362	1.128	1.417			

Applicable Insert

Application		Low feed rate	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground Profiling	Ground
Insert shape	Insert Size (mm)	CS 	CM 	CH 	GS 	TS 	TM 	RM 	RA 	G 
Product code										
ATSER/L** 2T	2	ACD 202 ACD 302	ACD/ACS 202 ACD/ACS 603	ACD/ACS 202 ACD/ACS 603	ATD 300E ATD 714E	ATD 203 ATD 808	ATD 304 ATD 812	ATD 210 ATD 840	ATD 315 ATD 840	ATD 100E ATD 800E
ATSER/L** 3T	3									
ATSER/L** 4T	4									
ATSER/L** 5T	5									
ATSER/L** 6T	6									
ATSER/L** 8T	8									
Reference page		P175	P176	P177	P178	P179	P179	P180	P180	P182

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

ATSER/L-D Reinforced External Turning and Grooving Holder



Product code		Dimension (inch)										Spare parts	
		H	B	HF	HBH	A	LF	LH	WF	CDX	CUTDIA	Screw	Wrench
ATSER/L	06-2T0591-D40	0.375	0.375	0.375	0.236	0.071	5.000	1.260	0.340	0.591	1.575	SH050160 SH050200 SH050250 SH050160 SH050200 SH050250	LT-H4
	08-2T0591-D40	0.500	0.500	0.500	0.157	0.071	5.000	1.260	0.465	0.591	1.575		
	10-2T0787-D45	0.625	0.625	0.625	0.157	0.071	5.000	1.496	0.590	0.787	1.772		
	12-2T0787-D45	0.750	0.750	0.750	0.000	0.071	5.000	1.496	0.715	0.787	1.772		
	16-2T0787-D45	1.000	1.000	1.000	0.000	0.071	6.000	1.496	0.965	0.787	1.772		
	08-3T0591-D40	0.500	0.500	0.500	0.157	0.094	5.000	1.260	0.453	0.591	1.575		
	10-3T0787-D45	0.625	0.625	0.625	0.157	0.094	5.000	1.496	0.578	0.787	1.772		
	12-3T0787-D45	0.750	0.750	0.750	0.000	0.094	5.000	1.496	0.703	0.787	1.772		
	16-3T0787-D45	1.000	1.000	1.000	0.000	0.094	6.000	1.496	0.953	0.787	1.772		
	16-3T0984-D60	1.000	1.000	1.000	0.276	0.094	6.000	1.693	0.953	0.984	2.362		

Grooving

Applicable Insert

Application	Insert Size (mm)	Low feed rate	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground Profiling	Ground
Insert shape		CS 	CM 	CH 	GS 	TS 	TM 	RM 	RA 	G 
Product code										
ATSER/L** 2T-D	2	ACD 202 ACD 302	ACD/ACS 202 ACD/ACS 302	ACD/ACS 202 ACD/ACS 302	ATD 300E ATD 318E	ATD 203 ATD 303	ATD 304 ATD 315	ATD 210 ATD 315	ATD 315	ATD 100E ATD 300E
ATSER/L** 3T-D	3									
Reference page		P175	P176	P177	P178	P179	P179	P180	P180	P182

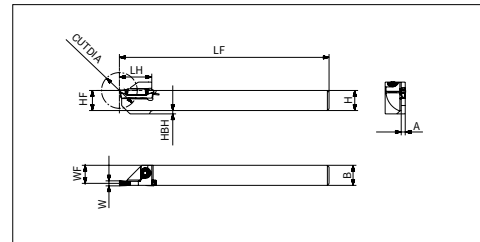
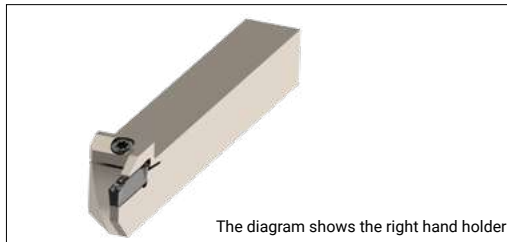
Inserts*: ACD/ACS series are only applicable to grooving and parting off machining

The max. cutting depth vs workpiece diameter

Product code		Workpiece diameter	CDX (inch)																
			≤0.314	0.354	0.394	0.433	0.472	0.512	0.551	0.591	0.669	0.709	0.748	0.787	0.827	0.866	0.906	0.945	0.984
ATSER/L	06-2T0591-D40	CUTDIA	∞	∞	∞	10.591	4.724	3.110	2.323	1.575	-	-	-	-	-	-	-	-	-
	08-2T0591-D40		∞	∞	∞	10.591	4.724	3.110	2.323	1.575	-	-	-	-	-	-	-	-	-
	10-2T0787-D45		∞	∞	∞	∞	∞	17.008	7.598	4.921	2.992	2.520	2.244	1.772	-	-	-	-	-
	12-2T0787-D45		∞	∞	∞	∞	∞	17.008	7.598	4.921	2.992	2.520	2.244	1.772	-	-	-	-	-
	16-2T0787-D45		∞	57.795	13.346	7.598	5.354	4.173	3.425	2.953	2.362	2.205	2.047	1.772	-	-	-	-	-
	08-3T0591-D40		∞	∞	∞	10.591	4.724	3.110	2.323	1.575	-	-	-	-	-	-	-	-	-
	10-3T0787-D45		∞	∞	∞	∞	∞	17.008	7.598	4.921	2.992	2.520	2.244	1.772	-	-	-	-	-
	12-3T0787-D45		∞	∞	∞	∞	∞	17.008	7.598	4.921	2.992	2.520	2.244	1.772	-	-	-	-	-
	16-3T0787-D45		∞	57.795	13.346	7.598	5.354	4.173	3.425	2.953	2.362	2.205	2.047	1.772	-	-	-	-	-
	16-3T0984-D60		∞	∞	∞	∞	∞	∞	∞	∞	16.457	9.331	6.575	5.118	4.213	3.583	3.189	2.874	2.362

"∞": The diameter is infinite

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

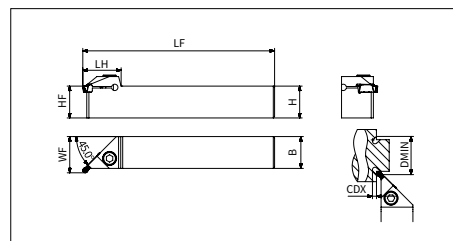
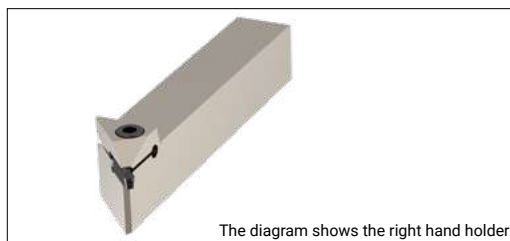


Product code		Dimension (inch)									Spare parts	
		H	B	HF	HBH	A	LF	LH	WF	CUTDIA	Screw	Wrench
ATSER/L	06-2D20-SW	0.375	0.375	0.375	0.079	0.071	5.000	0.748	0.340	0.787	SP040125	LT-TP15
	08-2D24-SW	0.500	0.500	0.500	0.079	0.071	5.000	0.748	0.465	0.945		
	10-2D32-SW	0.625	0.625	0.625	0.000	0.071	5.000	0.945	0.590	1.260		
	08-3D24-SW	0.500	0.500	0.500	0.079	0.094	5.000	0.748	0.453	0.945		
	10-3D32-SW	0.625	0.625	0.625	0.000	0.094	5.000	0.945	0.578	1.260		
	10-3D38-SW	0.625	0.625	0.625	0.000	0.094	5.000	1.063	0.578	1.496		
	12-3D45-SW	0.750	0.750	0.750	0.000	0.094	5.000	1.220	0.703	1.772		

Applicable Insert

Application		Low feed rate	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground Profiling	Ground
Insert shape	Insert Size (mm)	CS	CM	CH	GS	TS	TM	RM	RA	G
Product code										
ATSER/L** 2D-SW	2	ACD 202	ACD/ACS 202	ACD/ACS 202	ATD 300E	ATD 203	ATD 304	ATD 210	ATD 315	ATD 100E
ATSER/L** 3D-SW	3	ACD 302	ACD/ACS 302	ACD/ACS 302	ATD 318E	ATD 303		ATD 315		ATD 300E
Reference page		P175	P176	P177	P178	P179	P179	P180	P180	P182

AGUER/L External Undercutting Holder

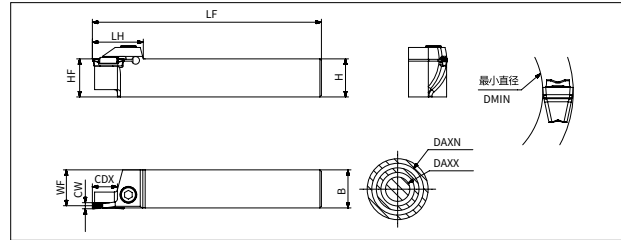
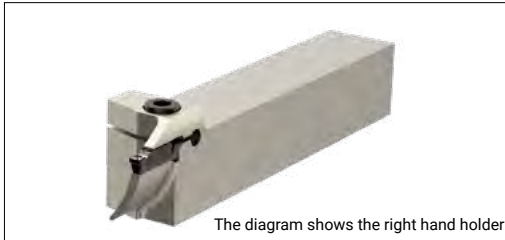
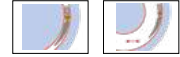


Product code		Insert Size (mm)	Dimension (inch)								Spare parts	
			H	B	HF	LF	LH	WF	CDX	DMIN	Screw	Wrench
AGUER/L	10-3	2, 3	0.625	0.625	0.625	4.500	1.189	0.767	0.118	2.362	SH050160	LT-H4
	10-4	4	0.625	0.625	0.625	4.500	1.189	0.775	0.118	2.165	SH060160	
	12-3	2, 3	0.750	0.750	0.750	5.000	1.189	0.892	0.118	2.362	SH050200	
	12-4	4	0.750	0.750	0.750	5.000	1.189	0.900	0.118	2.165	SH060200	LT-H5
	16-3	2, 3	1.000	1.000	1.000	6.000	1.189	1.142	0.118	2.362	SH050250	LT-H4
	16-4	4	1.000	1.000	1.000	6.000	1.189	1.150	0.118	2.165	SH060250	LT-H5
	16-6	5, 6	1.000	1.000	1.000	6.000	1.323	1.165	0.138	2.165		

Applicable Insert

Application	Profiling	Ground Profiling	Ground
Insert shape	RM	RA	G
Product code			
AGUER/L**	ATD 210 ATD 630	ATD 315 ATD 630	ATD 100E ATD 600E
Reference page	P180	P180	P182

ATSFR/L Face Grooving and Turning Holder



Product code		Dimension (inch)									Spare parts	
		H	B	HF	LF	LH	WF	CDX	DAXX	DAXN	Screw	Wrench
ATSFR/L	16-3T0394-35-45	1.000	1.000	1.000	6.000	1.260	0.959	0.394	1.378	1.772	SH050250	LT-H4
	16-3T0394-40-55	1.000	1.000	1.000	6.000	1.260	0.959	0.394	1.575	2.165		
	16-3T0591-45-65	1.000	1.000	1.000	6.000	1.260	0.959	0.591	1.772	2.559		
	16-3T0591-55-85	1.000	1.000	1.000	6.000	1.260	0.959	0.591	2.165	3.346		
	16-4T0591-35-50	1.000	1.000	1.000	6.000	1.260	0.943	0.591	1.378	1.969	SH060250	LT-H5
	16-4T0591-45-65	1.000	1.000	1.000	6.000	1.260	0.943	0.591	1.772	2.559		
	16-4T0591-55-85	1.000	1.000	1.000	6.000	1.260	0.943	0.591	2.165	3.346		
	16-5T0787-50-80	1.000	1.000	1.000	6.000	1.575	0.923	0.787	1.969	3.150	SH080250	LT-H6
	16-5T0787-70-110	1.000	1.000	1.000	6.000	1.575	0.923	0.787	2.756	4.331		
	16-5T0787-100-150	1.000	1.000	1.000	6.000	1.575	0.923	0.787	3.937	5.906		
	16-5T0787-140-200	1.000	1.000	1.000	6.000	1.575	0.923	0.787	5.512	7.874		
	16-6T0787-50-85	1.000	1.000	1.000	6.000	1.575	0.904	0.787	1.969	3.346		
	16-6T0787-75-150	1.000	1.000	1.000	6.000	1.575	0.904	0.787	2.953	5.906		
	16-6T0787-140-250	1.000	1.000	1.000	6.000	1.575	0.904	0.787	5.512	9.843		
	16-6T0787-200-000	1.000	1.000	1.000	6.000	1.575	0.904	0.787	7.874	∞		

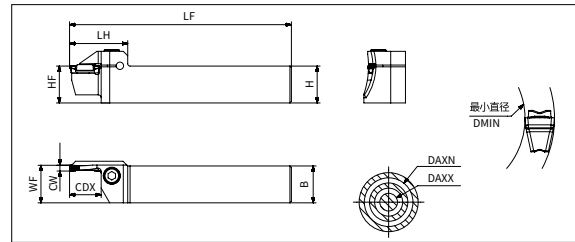
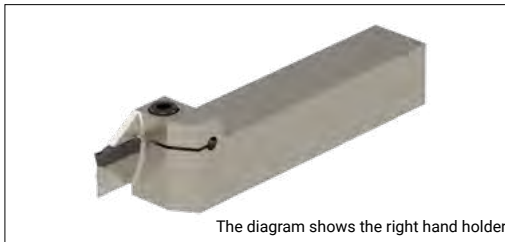
Applicable Insert

Application		Insert Size (mm)	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Product code	Insert shape		CM	CH	GS	TS	TM	RM	G
	Minimum machining diameter DMIN(inch)								
ATSFR/L 16-3T		3	3.110	3.110	2.323	1.378	1.378	2.323	2.323
ATSFR/L 16-4T		4	1.654	1.654	1.654	1.378	1.378	1.654	1.654
ATSFR/L 16-5T		5	1.969	1.969	1.969	1.969	1.969	1.969	1.969
ATSFR/L 16-6T		6	1.969	1.969	1.969	1.969	1.969	1.969	1.969
Reference page			P176	P177	P178	P179	P179	P180	P182

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

Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

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



Product code		Dimension (inch)									Spare parts	
		H	B	HF	LF	LH	WF	CDX	DAXX	DAXN	Screw	Wrench
ATSFR/L	12-3T0394-30-40-OB	0.750	0.750	0.750	5.500	1.220	0.671	0.394	1.181	1.575	SH060200	LT-H5
	12-3T0394-35-50-OB	0.750	0.750	0.750	5.500	1.220	0.671	0.394	1.378	1.969		
	12-3T0591-45-70-OB	0.750	0.750	0.750	5.500	1.378	0.671	0.591	1.772	2.756		
	12-3T0591-65-100-OB	0.750	0.750	0.750	5.500	1.378	0.671	0.591	2.559	3.937		
	12-4T0394-20-30-OB	0.750	0.750	0.750	5.500	1.220	0.656	0.394	0.787	1.181		
	12-4T0394-25-35-OB	0.750	0.750	0.750	5.500	1.220	0.656	0.394	0.984	1.378		
	12-4T0630-30-45-OB	0.750	0.750	0.750	5.500	1.417	0.656	0.630	1.181	1.772		
	12-4T0630-35-50-OB	0.750	0.750	0.750	5.500	1.417	0.656	0.630	1.378	1.969		
	12-4T0630-45-70-OB	0.750	0.750	0.750	5.500	1.417	0.656	0.630	1.772	2.756		
	12-4T0630-65-120-OB	0.750	0.750	0.750	5.500	1.417	0.656	0.630	2.559	4.724		
	12-4T0630-115-200-OB	0.750	0.750	0.750	5.500	1.417	0.656	0.630	4.528	7.874		
	16-3T0394-35-50-OB	1.000	1.000	1.000	6.000	1.496	0.974	0.394	1.378	1.969	SH060250	LT-H5
	16-3T0591-45-70-OB	1.000	1.000	1.000	6.000	1.496	0.974	0.591	1.772	2.756		
	16-3T0591-65-100-OB	1.000	1.000	1.000	6.000	1.496	0.974	0.591	2.559	3.937		
	16-4T0394-25-35-OB	1.000	1.000	1.000	6.000	1.535	0.959	0.394	0.984	1.378		
	16-4T0787-30-45-OB	1.000	1.000	1.000	6.000	1.535	0.959	0.787	1.181	1.772		
	16-4T0787-35-50-OB	1.000	1.000	1.000	6.000	1.535	0.959	0.787	1.378	1.969		
	16-4T0787-45-70-OB	1.000	1.000	1.000	6.000	1.535	0.959	0.787	1.772	2.756		
	16-4T0787-65-125-OB	1.000	1.000	1.000	6.000	1.535	0.959	0.787	2.559	4.921		
	16-4T0787-115-200-OB	1.000	1.000	1.000	6.000	1.535	0.959	0.787	4.528	7.874		
	16-4T0787-190-000-OB	1.000	1.000	1.000	6.000	1.535	0.959	0.787	7.480	∞		
	16-5T0984-50-80-OB	1.000	1.000	1.000	6.000	1.929	0.939	0.984	1.969	3.150	SH080250	LT-H6
	16-5T0591-50-80-OB	1.000	1.000	1.000	6.000	1.614	0.939	0.591	1.969	3.150		
	16-5T0984-70-110-OB	1.000	1.000	1.000	6.000	1.929	0.939	0.984	2.756	4.331		
	16-5T0591-70-110-OB	1.000	1.000	1.000	6.000	1.929	0.939	0.591	2.756	4.331		
	16-5T0984-100-150-OB	1.000	1.000	1.000	6.000	1.929	0.939	0.984	3.937	5.906		
	16-5T0984-140-200-OB	1.000	1.000	1.000	6.000	1.929	0.939	0.984	5.512	7.874		
	16-5T0984-190-000-OB	1.000	1.000	1.000	6.000	1.929	0.939	0.984	7.480	∞		
	16-6T0984-50-70-OB	1.000	1.000	1.000	6.000	1.929	0.919	0.984	1.969	2.756		
	16-6T0984-60-100-OB	1.000	1.000	1.000	6.000	1.929	0.919	0.984	2.362	3.937		
	16-6T0984-90-180-OB	1.000	1.000	1.000	6.000	1.929	0.919	0.984	3.543	7.087		
	16-6T0984-170-400-OB	1.000	1.000	1.000	6.000	1.929	0.919	0.984	6.693	15.748		
	16-6T0984-390-000-OB	1.000	1.000	1.000	6.000	1.929	0.919	0.984	15.354	∞		

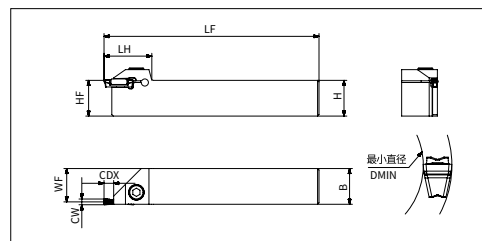
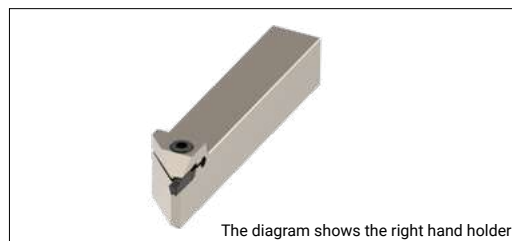
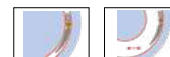
Applicable Insert

Application		Insert Size (mm)	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Insert shape			CM	CH	GS	TS	TM	RM	G
Product code	Minimum machining diameter DMIN (inch)								
ATSFR/L 12-3T...OB		3	3.110	3.110	2.323	1.181	1.181	2.323	2.323
ATSFR/L 12-4T...OB		4	1.654	1.654	1.654	0.866	0.866	1.654	1.654
ATSFR/L 16-3T...OB		3	3.110	3.110	2..323	1.378	1.378	2.323	2.323
ATSFR/L 16-4T...OB		4	1.654	1.654	1.654	0.984	0.984	1.654	1.654
ATSFR/L 16-5T...OB		5	1.969	1.969	1.969	1.969	1.969	1.969	1.969
ATSFR/L 16-6T...OB		6	1.969	1.969	1.969	1.969	1.969	1.969	1.969
Reference page			P176	P177	P178	P179	P179	P180	P182

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

2. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

AGSFR/L External & Face Grooving and Turning Holder



Product code		Insert Size (mm)	Dimension (inch)							Spare parts	
			H	B	HF	LF	LH	WF	CDX	Screw	Wrench
AGSFR/L	10-4	2,3,4	0.625	0.625	0.625	4.500	1.299	0.558	0.181	SH060160	LT-H5
	12-4	2,3,4	0.750	0.750	0.750	5.000	1.299	0.683	0.181	SH060200	
	12-6	5,6	0.750	0.750	0.750	5.000	1.457	0.644	0.181	SH060250	
	16-4	2,3,4	1.000	1.000	1.000	6.000	1.299	0.933	0.181	SH060250	
	16-6	5,6	1.000	1.000	1.000	6.000	1.457	0.894	0.181	SH060250	

Applicable Insert

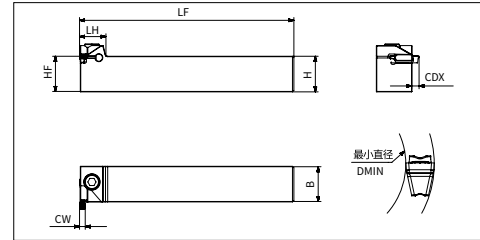
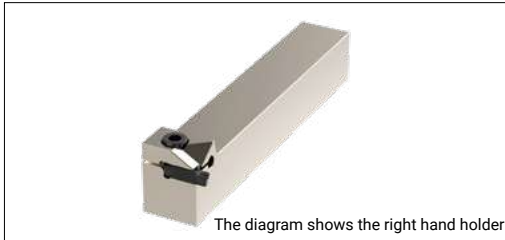
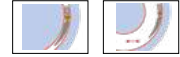
Application		Insert Size (mm)	Low feed rate	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Product code	Insert shape		CS	CM	CH	GS	TS	TM	RM	G
	Minimum machining diameter DMIN (inch)									
AGSFR/L**		2	7.717	7.717	7.717	3.937	7.717	-	7.717	3.937
		3	3.110	3.110	3.110	2.323	0.949	0.949	2.323	2.323
		4	-	1.654	1.654	1.654	0.866	0.866	1.654	1.654
		5	-	1.969	1.969	1.575	0.787	0.787	1.575	1.575
		6	-	1.890	1.890	1.496	0.709	0.709	1.496	1.496
Reference page			P175	P176	P177	P178	P179	P179	P180	P182

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

2. — : Indicates that the insert is not a choice

3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

AGPFR/L Face Grooving and Turning Holder



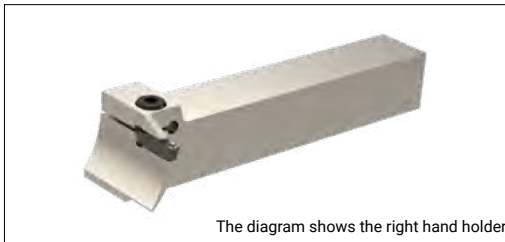
Product code		Insert Size (mm)	Dimension (inch)						Spare parts	
			H	B	HF	LF	LH	CDX	Screw	Wrench
AGPFR/L	12-4	2,3,4	0.750	0.750	0.750	5.000	0.709	0.181	SH060200	LT-H5
	16-4	2,3,4	1.000	1.000	1.000	6.000	0.709	0.181	SH060250	LT-H5
	16-6	5,6	1.000	1.000	1.000	6.000	0.866	0.181	SH060250	LT-H5

Applicable Insert

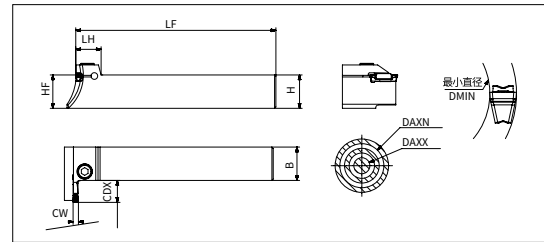
Application		Insert Size (mm)	Low feed rate	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Product code	Insert shape		CS	CM	CH	GS	TS	TM	RM	G
	Minimum machining diameter DMIN (inch)									
AGPFR/L**		2	7.717	7.717	7.717	3.937	7.717	-	7.717	3.937
		3	3.110	3.110	3.110	2.323	0.949	0.949	2.323	2.323
		4	-	1.654	1.654	1.654	0.866	0.866	1.654	1.654
		5	-	1.969	1.969	1.575	0.787	0.787	1.575	1.575
		6	-	1.890	1.890	1.496	0.709	0.709	1.496	1.496
Reference page			P175	P176	P177	P178	P179	P179	P180	P182

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

ATPFR/L Face Grooving and Turning Holder



The diagram shows the right hand holder



Product code		Insert Size (mm)	Dimension (inch)							Spare parts	
			H	B	LF	LH	CDX	DAXX	DAXN	Screw	Wrench
ATPFR/L	16-3T0394-30-40	3	1.000	1.000	6.000	0.709	0.394	1.181	1.575	SH050250	LT-H4
	16-3T0394-35-50	3	1.000	1.000	6.000	0.709	0.394	1.378	1.969		
	16-3T0591-45-60	3	1.000	1.000	6.000	0.709	0.591	1.772	2.362		
	16-3T0591-55-85	3	1.000	1.000	6.000	0.709	0.591	2.165	3.346		
	16-4T0472-25-40	4	1.000	1.000	6.000	0.728	0.472	0.984	1.575	SH060250	LT-H5
	16-4T0591-35-50	4	1.000	1.000	6.000	0.728	0.591	1.378	1.969		
	16-4T0591-45-60	4	1.000	1.000	6.000	0.728	0.591	1.772	2.362		
	16-4T0591-55-85	4	1.000	1.000	6.000	0.728	0.591	2.165	3.346		
	16-5T0787-50-80	5	1.000	1.000	6.000	0.866	0.787	1.969	3.150	SH080250	LT-H6
	16-5T0787-70-110	5	1.000	1.000	6.000	0.866	0.787	2.756	4.331		
	16-5T0787-100-150	5	1.000	1.000	6.000	0.866	0.787	3.937	5.906		
	16-5T0787-140-200	5	1.000	1.000	6.000	0.866	0.787	5.512	7.874		
	16-5T0787-190-000	5	1.000	1.000	6.000	0.866	0.787	7.480	∞		
	16-6T0787-50-85	6	1.000	1.000	6.000	0.866	0.787	1.969	3.346		
	16-6T0787-75-150	6	1.000	1.000	6.000	0.866	0.787	2.953	5.906		
	16-6T0787-140-250	6	1.000	1.000	6.000	0.866	0.787	5.512	9.843		
	16-6T0787-240-000	6	1.000	1.000	6.000	0.866	0.787	9.449	∞		

Grooving

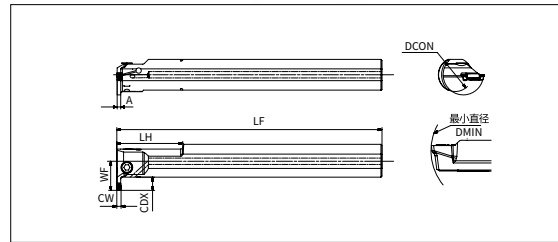
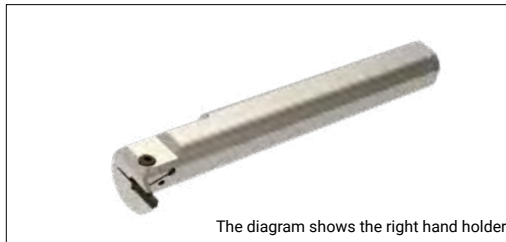
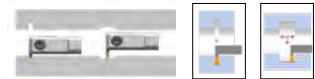
Applicable Insert

Application		Insert Size (mm)	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Product code	Insert shape		CM	CH	GS	TS	TM	RM	G
	Minimum machining diameter DMIN (inch)								
ATPFR/L 16-3T		3	3.110	3.110	2.323	1.378	1.378	2.323	2.323
ATPFR/L 16-4T		4	1.654	1.654	1.654	1.378	1.378	1.654	1.654
ATPFR/L 16-5T		5	1.969	1.969	1.969	1.969	1.969	1.969	1.969
ATPFR/L 16-6T		6	1.969	1.969	1.969	1.969	1.969	1.969	1.969
Reference page			P176	P177	P178	P179	P179	P180	P182

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

2. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

ATPIR/L Internal Turning, Grooving and Profiling Holder



Product code		Dimension (inch)							Spare parts	
		DCON	LF	LH	WF	A	CDX	DMIN	Screw	Wrench
ATPIR/L	0750-2T0236-25-C	0.750	6.500	1.575	0.622	0.071	0.236	0.984	SH050120	LT-H4
	1000-2T0197-25-C	1.000	8.000	1.575	0.689	0.071	0.197	0.984	SH050160	
	1250-2T0197-30-C	1.250	10.000	1.575	0.780	0.071	0.197	1.181		
	0750-3T0236-25-C	0.750	6.500	1.575	0.622	0.094	0.236	0.984	SH050120	
	1000-3T0197-25-C	1.000	8.000	1.575	0.689	0.094	0.197	0.984		
	1000-3T0315-32-C	1.000	8.000	1.575	0.846	0.094	0.315	1.260		
	1250-3T0197-30-C	1.250	10.000	2.362	0.780	0.094	0.197	1.181	SH050160	
	1250-3T0394-40-C	1.250	8.000	2.362	1.063	0.094	0.394	1.575		
	1500-3T0472-50-C	1.500	12.000	2.559	1.299	0.094	0.472	1.969		
	0750-4T0236-25-C	0.750	6.500	1.575	0.622	0.132	0.236	0.984	SH050120	
	1000-4T0197-25-C	1.000	8.000	1.575	0.689	0.132	0.197	0.984	SH050160	
	1000-4T0315-32-C	1.000	8.000	1.575	0.846	0.132	0.315	1.260		
	1250-4T0197-30-C	1.250	10.000	2.362	0.819	0.132	0.197	1.181	SH060160	LT-H5
	1250-4T0394-40-C	1.250	10.000	2.362	1.063	0.132	0.394	1.575		
	1500-4T0472-50-C	1.500	12.000	2.559	1.299	0.132	0.472	1.969		
	2000-4T0551-60-C	2.000	14.000	2.756	1.575	0.132	0.551	2.362	SH060200	
	1000-5T0197-31-C	1.000	8.000	1.575	0.681	0.171	0.197	1.220	SH060160	
	1250-5T0197-31-C	1.250	10.000	2.362	0.819	0.171	0.197	1.220	SH060200	
	1250-5T0394-40-C	1.250	10.000	2.362	1.063	0.171	0.394	1.575		
	1500-5T0472-50-C	1.500	12.000	2.559	1.299	0.171	0.472	1.969	SH060250	
	2000-5T0551-60-C	2.000	14.000	2.756	1.575	0.171	0.551	2.362		
	1250-6T0197-31-C	1.250	10.000	2.362	0.819	0.211	0.197	1.220	SH060200	
	1250-6T0394-40-C	1.250	10.000	2.362	1.063	0.211	0.394	1.575		
	1500-6T0472-50-C	1.500	12.000	2.559	1.299	0.211	0.472	1.969	SH060250	
	2000-6T0551-60-C	2.000	14.000	2.756	1.575	0.211	0.551	2.362		
	1250-8T0236-38-C	1.250	10.000	2.362	0.839	0.244	0.236	1.496	SH060200	
	1500-8T0236-42-C	1.500	12.000	2.559	1.016	0.244	0.236	1.654	SH060250	

Applicable Insert

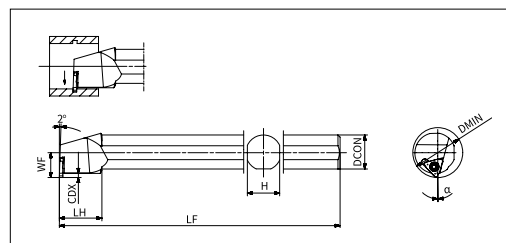
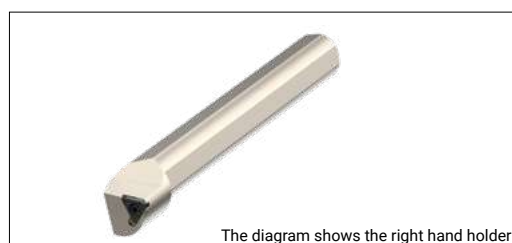
Application		Insert Size (mm)	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Insert shape			CM	CH	GS	TS	TM	RM	G
Product code	Minimum machining diameter DMIN(inch)								
ATPIR/L **-2T		2	-	-	0.984	0.984	0.984	-	0.984
ATPIR/L **-3T		3	1.969	1.969	0.984	0.984	0.984	0.984	0.984
ATPIR/L **-4T		4	1.969	1.969	0.984	0.984	0.984	0.984	0.984
ATPIR/L **-5T		5	1.969	1.969	1.221	1.221	1.221	1.221	1.221
ATPIR/L **-6T		6	1.969	1.969	1.221	1.221	1.221	1.221	1.221
ATPIR/L **-8T		8	-	-	-	1.496	1.496	1.496	1.496
Reference page			P176	P177	P178	P179	P179	P180	P182

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

ATGI Tool Holder Denomination System

A 1	T 2	G 3	I 4	R 5	1000 6	S 7	43 8	- -	40 9	T30 10
1-Company Name		2-Matching Insert Type		3-Application		4-Holder Type		5-Hand of Tool		
ACHTECK		T	Triangular	G	Grooving	I	Internal machining	L	Left	
								R	Right	
6-Holder Size		7-Holder Length		8-Matching Insert Size (IC)		9-Minimum Internal Machining Diameter		10-Maximum Ap		
25=0.984inch 32=1.260inch		R:8.661inch S:9.843inch		43=0.500inch		40=1.575inch		T30=0.118inch		

ATGIR/L Internal Grooving Holder



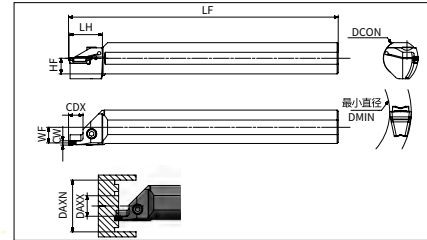
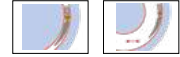
Grooving

Product code		Dimension (inch)						Spare parts	
		DMIN	DCON	LF	LH	WF	CDX	Screw	Wrench
ATGIR/L	1000R32-35T0110	1.378	1.000	8.661	1.181	0.689	0.110	SP040085	FT-TP15
	1250S43-40T0118	1.575	1.250	9.843	1.181	0.906	0.118	SP05008550	FT-TP20

Applicable Insert

Application	Grooving	Profiling
Insert shape		
Product code		
ATGIR/L** 32	ATG 32	ATG 32
ATGIR/L** 43	ATG 43	ATG 43
Reference page	P173	P174

ATSIR/L Internal Facing Grooving and Turning Holder



Product code		Dimension (inch)								Spare parts	
		DCON	LF	LH	WF	A	CDX	DMIN	DMAX	Screw	Wrench
ATSIR/L	1000-3T0472-35-45-C	1.000	8.000	1.220	0.453	0.453	0.472	1.378	1.772	SH050160	LT-H4
	1000-3T0472-40-60-C	1.000	8.000	1.220	0.453	0.453	0.472	1.575	2.362		
	1000-3T0472-55-90-C	1.000	8.000	1.220	0.453	0.453	0.472	2.165	3.543		
	1000-3T0472-80-150-C	1.000	8.000	1.220	0.453	0.453	0.472	3.150	5.906		
	1000-4T0472-20-35-C	1.000	8.000	1.220	0.433	0.453	0.472	0.787	1.378		
	1000-4T0472-28-45-C	1.000	8.000	1.220	0.433	0.453	0.472	1.102	1.772		
	1000-4T0472-35-55-C	1.000	8.000	1.220	0.433	0.453	0.472	1.378	2.165		
	1250-4T0472-45-70-C	1.250	10.000	1.220	0.571	0.591	0.472	1.772	2.756		
	1250-4T0472-60-100-C	1.250	10.000	1.220	0.571	0.591	0.472	2.362	3.937		
	1250-4T0472-90-180-C	1.250	10.000	1.220	0.571	0.591	0.472	3.543	7.087		

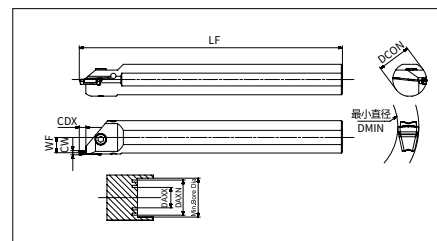
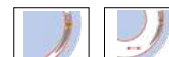
Applicable Insert

Application		Insert Size (mm)	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Product code	Insert shape Minimum machining diameter DMIN(inch)		CM	CH	GS	TS	TM	RM	G
									
ATSIR/L **3T		3	3.15	3.15	2.323	1.378	1.378	2.323	2.323
ATSIR/L **4T		4	1.654	1.654	1.654	0.866	0.866	1.654	1.654
Reference page			P176	P177	P175	P179	P179	P180	P182

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

2. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

AGSIR/L Internal Facing Grooving and Turning Holder



Product code		Insert Size(mm)	Dimension (inch)					Spare parts	
			DCON	LF	LH	WF	CDX	Screw	Wrench
AGSIR/L	1000-4T0228-C	2,3,4	1.000	8.000	0.484	0.429	0.228	SH060160	LT-H5
	1000-6T0228-C	5,6	1.000	8.000	0.484	0.406	0.228		
	1250-4T0228-C	2,3,4	1.250	10.000	0.622	0.571	0.228		
	1250-6T0228-C	5,6	1.250	10.000	0.622	0.543	0.228		

Applicable Insert

Application		Low feed rate	Low-Medium feed rate	Medium to high feed rate	Finishing	Low feed rate	Medium feed rate	Profiling	Ground
Insert shape	Insert Size (mm)	CS	CM	CH	GS	TS	TM	RM	G
Product code	Minimum machining diameter DMIN(inch)								
AGSIR/L**	2	7.717	7.717	7.717	3.937	7.717	-	7.717	3.937
	3	3.110	3.110	3.110	2.323	0.949	0.949	2.323	2.323
	4	-	1.654	1.654	1.654	0.866	0.866	1.654	1.654
	5	-	1.969	1.969	1.575	0.787	0.787	1.575	1.575
	6	-	1.890	1.890	1.496	0.709	0.709	1.496	1.496
Reference page		P175	P176	P177	P178	P179	P179	P180	P182

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

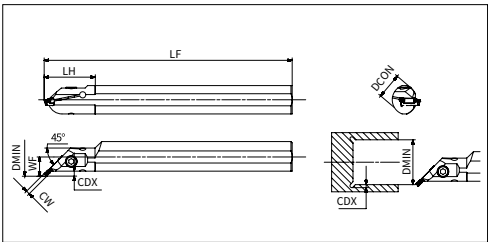
2. — : Indicates that the insert is not a choice

3. Having selected the range of tool holder, please check the minimum face grooving machining diameter of the selected insert

AGUIR/L Internal Undercutting holder



The diagram shows the right hand holder



Product code		Insert Size(mm)	Dimension (inch)						Spare parts	
			DCON	LF	LH	WF	CDX	DIMN	Screw	Wrench
										
AGUIR/L	0750-3T0118-45	3	0.750	6.000	1.575	0.484	0.118	1.772	SH050120	LT-H4
	0750-4T0118-45	4	0.750	6.000	1.575	0.484	0.118	1.772		
	0750-3T0118-45	3	1.000	8.000	1.575	0.567	0.118	1.772	SH050160	
	1000-4T0118-45	4	1.000	8.000	1.575	0.567	0.118	1.772		
	1000-6T0118-45	5,6	1.000	8.000	1.575	0.567	0.118	1.772	SH060160	LT-H5

Applicable Insert

Application	Profiling	Ground Profiling	Ground
Insert shape	RM	RA	G
Product code			
AGUER/L**	ATD 315 ATD 630	ATD 315 ATD 630	ATD 300E ATD 600E
Reference page	P180	P180	P182

Grooving Grade Description

Grade for Parting off and Grooving

P

Steel, cast steel, long chipping malleable cast iron.

Basic grade

AP301U P25(P15-P35)

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

AC230P P20(P10-P30)

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

Supplemental grade

AP330M P35(P25-P45)

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

M

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

Basic grade

AP330M M35(M25-M45)

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

Supplemental grade

AP301U M20(M15-M35)

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

N

Non-ferrous metal

Basic grade

AW100K N15 (N05-N25)

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

ACHTECK

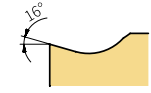
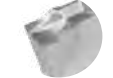
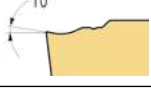
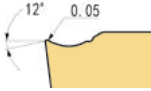
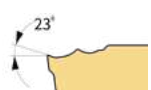
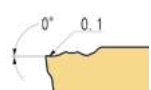
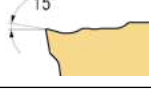
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THE EXPERTS OF DIFFICULT MACHINING



Grooving Inserts

Insert Geometry Introduction

Geometry	Insert	Shape of cutting edge	Description	Geometry Width (mm)								
				External Machining					Face grooving		Internal Machining	
				Grooving	Parting off	Turning	Profiling	Under cut	Grooving	Turning	Grooving	Turning
ATG			● Use precision insert ● Positive insert reduces the vibration ● 3 edge design, with good expansibility.	0.33	-	-	0.5	-	-	-	0.33	-
					-	-	1.0	-	-		-	
				4.8	-	-	1.5	-	-	4.8	-	
ASG			● Use precision insert ● Big rake angle and sharp edge design obtain good surface quality. ● 3 edge design	0.8	-	-	-	-	-	-	0.8	-
					-	-	-	-	-		-	
				2.5	-	-	-	-	-	2.5	-	
CS			● Used in parting off & grooving stainless steel, heat resistant alloy and low carbon steel ● For low feed rate application	2.0	2.0	-	-	-	3.0	-	3.0	-
						-	-	-	-	-	-	
				3.0	3.0	-	-	-	-	-	-	
CM			● Used in parting off & grooving low carbon steel and stainless steel ● For sticky material, pipe fitting, thin-walled part parting off, low cutting force ● For low to medium feed rate	2.0	2.0	-	-	-	3.0	-	3.0	-
				3.0	3.0	-	-	-	4.0	-	4.0	-
				4.0	4.0	-	-	-	5.0	-	5.0	-
CH			● Used in parting off and grooving steel, alloy steel and stainless steel with high hardness and toughness. ● Strong cutting edge ● For parting off and grooving at medium to high feed rate	2.0	2.0	-	-	-	3.0	-	3.0	-
				3.0	3.0	-	-	-	4.0	-	4.0	-
				4.0	4.0	-	-	-	5.0	-	5.0	-
GS			● Excellent chip breaking, suitable for grooving and finish turning. ● Geometry for finish machining, low cutting force, low feed, excellent surface quality. ● Ground insert, better precision control and positioning repeatability.	2.0	2.0	2.0	-	-	3.0	3.0	2.0	2.0
							-	-				
				7.14	7.14	7.14	-	-	6.0	6.0	7.14	7.14
TS			● Multifunctional insert for external, internal turning and grooving, parting off, face grooving and face turning ● Excellent chip control ● For low and medium feed rate.	2.0	2.0	2.0	-	-	3.0	3.0	2.0	2.0
				3.0	3.0	3.0	-	-	4.0	4.0	3.0	3.0
				4.0	4.0	4.0	-	-	5.0	5.0	4.0	4.0
TM			● Multifunctional insert for external, internal turning and grooving, parting off, face grooving and face turning ● Stronger cutting edge design ● For medium feed rate	2.0	2.0	2.0	-	-	3.0	3.0	2.0	2.0
				3.0	3.0	3.0	-	-	4.0	4.0	3.0	3.0
				4.0	4.0	4.0	-	-	5.0	5.0	4.0	4.0
RM			● External grooving, turning, profiling ● Medium feed rate	2.0	-	2.0	2.0	2.0	3.0	3.0	2.0	2.0
				3.0	-	3.0	3.0	3.0	4.0	4.0	3.0	3.0
				4.0	-	4.0	4.0	4.0	5.0	5.0	4.0	4.0
RA			● For turning and profiling aluminum alloy ● High positive rake angle and sharp cutting edge ● Ground inserts with high precision	2.0	-	2.0	2.0	2.0	3.0	3.0	2.0	2.0
				3.0	-	3.0	3.0	3.0	4.0	4.0	3.0	3.0
				4.0	-	4.0	4.0	4.0	5.0	5.0	4.0	4.0
Precision ground			● Ground insert with high precision, better precision control ● Complete product offering ● Good surface quality	1.0	-	2.22	3.0	3.0	3.0	2.22	2.22	
					-		4.0	4.0	4.0			
				8.0	-	8.0	4.8	4.8	4.8	8.0	8.0	

Grade Application Guide

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

- 1st choice
- ◐ 2nd choice
- Inapplicable

Triangular Shallow Grooving Insert Denomination System

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

1-Company Name
ACHTECK

2-Insert Type	
T	Triangular
S	Only applied to Swiss machine

3-Application	
G	Grooving

4-Insert IC Size
32=0.375 inch
43=0.5 inch

5-Hand of Tool	
L	Left
R	Right

6-Insert Width
050=0.020 inch

7-Max Ap
T12=0.047 inch

8-Insert Corner
R005=0.020 inch

ASG: Applied to external shallow grooving for Swiss machine

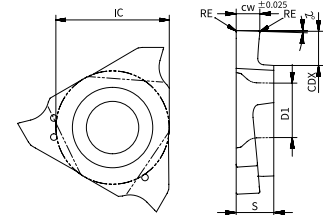
The diagram shows the right hand insert

●: Stock available ▲: Stock available now but will be replaced in the future.

Shallow Grooving Series

ATG: Applied to external and internal shallow grooving

Product code	IC	S	D1
ATG 32-	0.375	0.125	0.173
ATG 43-	0.500	0.187	0.217
ATG 43R/L480	0.500	0.197	0.217



The diagram shows the right hand insert

		Machining conditions				● Good condition ⚙ General condition ✖ Bad condition							
						⚙	●	✖	●	✖	⚙	●	●
		Inserts	Product code	Cutting parameter		Dimensions		P			M		K
Grooving	CDX			CW (mm)	RE	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
f (inch/rev)													
	*ATG 32R/L033T08-R005	0.001-0.003	0.031	0.33	0.002		●		●			●	
	ATG 32R/L050T12-R005	0.001-0.003	0.047	0.50	0.002		●		●			●	
	ATG 32R/L075T20-R005	0.001-0.003	0.079	0.75	0.002		●		●			●	
	ATG 32R/L095T20-R005	0.001-0.003	0.079	0.95	0.002		●		●			●	
	ATG 32R/L100T20-R005	0.001-0.003	0.079	1.00	0.002		●		●			●	
	ATG 32R/L110T20-R005	0.001-0.003	0.079	1.10	0.002		●		●			●	
	ATG 32R/L120T20-R005	0.001-0.003	0.079	1.20	0.002		●		●			●	
	ATG 32R/L125T20-R020	0.002-0.004	0.079	1.25	0.008		●		●			●	
	ATG 32R/L130T20-R020	0.002-0.004	0.079	1.30	0.008		●		●			●	
	ATG 32R/L140T25-R020	0.002-0.004	0.098	1.40	0.008		●		●			●	
	ATG 32R/L145T25-R020	0.002-0.004	0.098	1.45	0.008		●		●			●	
	ATG 32R/L150T25-R020	0.002-0.004	0.098	1.50	0.008		●		●			●	
	ATG 32R/L160T25-R020	0.002-0.004	0.098	1.60	0.008		●		●			●	
	ATG 32R/L170T25-R020	0.002-0.004	0.098	1.70	0.008		●		●			●	
	ATG 32R/L175T25-R020	0.002-0.004	0.098	1.75	0.008		●		●			●	
	ATG 32R/L200T25-R020	0.002-0.004	0.098	2.00	0.008		●		●			●	
	ATG 32R/L225T25-R020	0.002-0.004	0.098	2.25	0.008		●		●			●	
	ATG 32R/L250T25-R020	0.002-0.004	0.098	2.50	0.008		●		●			●	
	ATG 32R/L300T25-R020	0.002-0.004	0.098	3.00	0.008		●		●			●	
	ATG 43R/L100T20-R010	0.001-0.003	0.079	1.00	0.004		●		●			●	
	ATG 43R/L125T20-R010	0.002-0.004	0.079	1.25	0.004		●		●			●	
	ATG 43R/L125T20-R020	0.002-0.004	0.079	1.25	0.008		●		●			●	
	ATG 43R/L130T30-R010	0.002-0.004	0.118	1.30	0.004		●		●			●	
	ATG 43R/L130T30-R020	0.002-0.004	0.118	1.30	0.008		●		●			●	
	ATG 43R/L140T35-R020	0.002-0.004	0.138	1.40	0.008		●		●			●	
	ATG 43R/L145T35-R020	0.002-0.004	0.138	1.45	0.008		●		●			●	
	ATG 43R/L150T35-R010	0.002-0.004	0.138	1.50	0.004		●		●			●	
	ATG 43R/L150T35-R020	0.002-0.004	0.138	1.50	0.008		●		●			●	
	ATG 43R/L170T35-R020	0.002-0.004	0.138	1.70	0.008		●		●			●	
	ATG 43R/L175T35-R020	0.002-0.004	0.138	1.75	0.008		●		●			●	
	ATG 43R/L185T35-R020	0.002-0.004	0.138	1.85	0.008		●		●			●	
	ATG 43R/L195T35-R020	0.002-0.004	0.138	1.95	0.008		●		●			●	

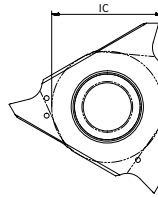
*ATG 32R/L033 Insert appearance is yellow

●: Stock available ▲: Stock available now but will be replaced in the future.

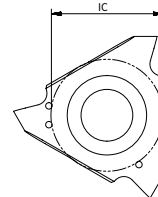
Shallow Grooving Series

ATG: Applied to external and internal shallow grooving

Product code	IC	S	D1
ATG 32-	0.375	0.125	0.173
ATG 43-	0.500	0.187	0.217
ATG 43R/L480	0.500	0.197	0.217



The diagram shows the right hand insert



The diagram shows the right hand insert

		Machining conditions				● Good condition ⚙ General condition ✖ Bad condition							
						⚙	●	✖	●	✖	⚙	●	●
		Inserts	Product code	Cutting parameter		Dimensions		P			M		K
Grooving	CDX			CW (mm)	RE	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
f (inch/rev)													
	ATG 43R/L200T35-R010	0.002-0.004	0.138	2.00	0.004		●		●			●	
	ATG 43R/L200T35-R020	0.002-0.004	0.138	2.00	0.008		●		●			●	
	ATG 43R/L225T35-R020	0.002-0.004	0.138	2.25	0.008		●		●			●	
	ATG 43R/L230T35-R020	0.002-0.004	0.138	2.30	0.008		●		●			●	
	ATG 43R/L250T50-R010	0.002-0.004	0.197	2.50	0.004		●		●			●	
	ATG 43R/L250T50-R030	0.002-0.004	0.197	2.50	0.012		●		●			●	
	ATG 43R/L265T50-R030	0.002-0.004	0.197	2.65	0.012		●		●			●	
	ATG 43R/L280T50-R030	0.002-0.004	0.197	2.80	0.012		●		●			●	
	ATG 43R/L300T50-R010	0.002-0.004	0.197	3.00	0.004		●		●			●	
	ATG 43R/L300T50-R030	0.002-0.004	0.197	3.00	0.012		●		●			●	
	ATG 43R/L325T50-R030	0.002-0.004	0.197	3.50	0.012		●		●			●	
	ATG 43R/L330T50-R030	0.002-0.005	0.197	3.30	0.012		●		●			●	
	ATG 43R/L350T50-R010	0.002-0.005	0.197	3.50	0.004		●		●			●	
	ATG 43R/L350T50-R030	0.002-0.005	0.197	3.50	0.012		●		●			●	
	ATG 43R/L400T50-R010	0.002-0.005	0.197	4.00	0.004		●		●			●	
	ATG 43R/L400T50-R040	0.002-0.005	0.197	4.00	0.016		●		●			●	
	ATG 43R/L430T50-R040	0.002-0.005	0.197	4.30	0.016		●		●			●	
	ATG 43R/L450T50-R040	0.002-0.005	0.197	4.50	0.016		●		●			●	
	ATG 43R/L480T50-R040	0.002-0.005	0.197	4.80	0.016		●		●			●	
	ATG 32R/L050T20-R025	0.001-0.003	0.047	0.50	0.010		●		●			●	
	ATG 32R/L100T20-R050	0.001-0.003	0.079	1.00	0.020		●		●			●	
	ATG 32R/L150T25-R075	0.002-0.004	0.098	1.50	0.030		●		●			●	
	ATG 32R/L200T25-R100	0.002-0.004	0.098	2.00	0.039		●		●			●	
	ATG 32R/L300T25-R150	0.002-0.004	0.098	3.00	0.059		●		●			●	
	ATG 43R/L100T20-R050	0.001-0.003	0.079	1.00	0.020		●		●			●	
	ATG 43R/L150T35-R075	0.002-0.004	0.138	1.50	0.030		●		●			●	
	ATG 43R/L200T35-R100	0.002-0.004	0.138	2.00	0.039		●		●			●	
	ATG 43R/L250T40-R125	0.002-0.004	0.197	2.50	0.049		●		●			●	
	ATG 43R/L300T40-R150	0.002-0.004	0.197	3.00	0.059		●		●			●	
	ATG 43R/L400T50-R200	0.002-0.005	0.197	4.00	0.079		●		●			●	

●: Stock available ▲: Stock available now but will be replaced in the future.

Insert Denomination System

A	C	D
1	2	3

4	0	3
4	5	

-
-

CM
6

-
-

6	R
7	8

1-Company nName
ACHTECK

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

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

4-Insert Width
2=0.079inch
3=0.118inch
4=0.158inch

5-Insert Corner
02=0.008inch
03=0.012inch
04=0.016inch

6-Geometry
CS
CM
CH
GS
TS
TM
RM
RA

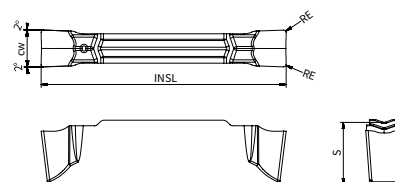
7-Cutting Edge Angle
6=6°
15=15°

8-Hand of Tool	
	L: Left
	R: Right

Grooving

Parting Off-Grooving Series

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

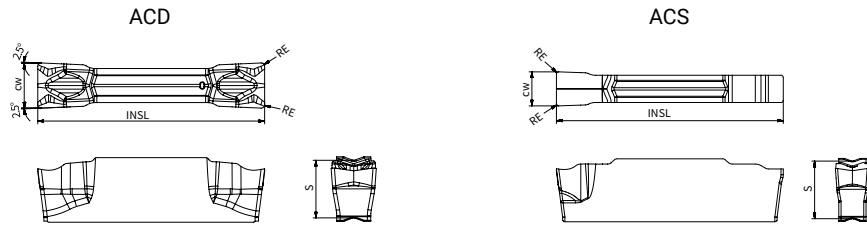


Inserts	Product code	Cutting parameter		Dimensions				Machining conditions							
								● Good condition ⬤ General condition ✖ Bad condition							
								P		M		K		N	
		CDX	f (inch/rev)	CW (mm)	RE	INSL	S	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
	ACD 202-CS	0.776	0.002-0.005	2	0.008	0.787	0.201		●	●	●	●		●	
	ACD 302-CS	0.776	0.002-0.006	3	0.008	0.787	0.201		●	●	●	●		●	

●: Stock available ▲: Stock available now but will be replaced in the future.

Parting Off-Grooving Series

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



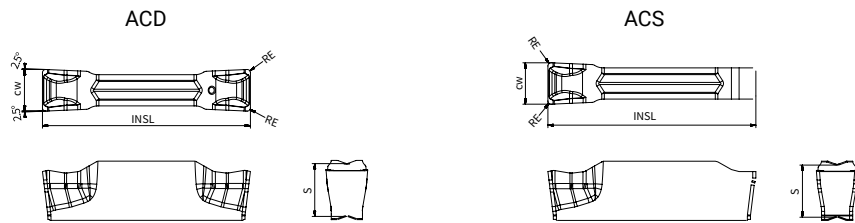
Inserts	Product code	Cutting parameter		Dimensions				Machining conditions							
								● Good condition ⚙ General condition ✖ Bad condition							
								P		M		K		N	
		CDX	f (inch/rev)	CW (mm)	RE	INSL	S	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
	ACD 202-CM	0.776	0.002-0.006	2	0.008	0.787	0.201		●	●	●	●		●	
	ACD 202-CM-6R	0.776	0.001-0.004	2	0.008	0.815	0.201		●	●	●	●		●	
	ACD 202-CM-6L	0.776	0.001-0.004	2	0.008	0.815	0.201		●		●			●	
	ACD 202-CM-15R	0.776	0.001-0.004	2	0.008	0.827	0.201		●	●	●	●		●	
	ACD 202-CM-15L	0.776	0.001-0.004	2	0.008	0.827	0.201		●		●			●	
	ACD 302-CM	0.776	0.002-0.006	3	0.008	0.787	0.201		●	●	●	●		●	
	ACD 302-CM-6R	0.776	0.002-0.006	3	0.008	0.815	0.201		●		●			●	
	ACD 302-CM-6L	0.776	0.002-0.006	3	0.008	0.815	0.201		●	●	●	●		●	
	ACD 302-CM-15R	0.776	0.002-0.006	3	0.008	0.827	0.201		●	●	●	●		●	
	ACD 302-CM-15L	0.776	0.002-0.006	3	0.008	0.827	0.201		●		●			●	
	ACD 403-CM	0.776	0.002-0.007	4	0.012	0.787	0.201		●	●	●	●		●	
	ACD 403-CM-4R	0.776	0.002-0.006	4	0.012	0.815	0.201		●	●	●	●		●	
	ACD 403-CM-4L	0.776	0.002-0.006	4	0.012	0.815	0.201		●	●	●	●		●	
	ACD 503-CM	0.972	0.002-0.008	5	0.012	0.984	0.197		●		●			●	
	ACD 503-CM-4R	0.972	0.002-0.007	5	0.012	1.012	0.197								
	ACD 503-CM-4L	0.972	0.002-0.007	5	0.012	1.012	0.197								
	ACD 603-CM	1.169	0.002-0.009	6	0.012	0.984	0.197		●		●			●	
	ACS 202-CM	-	0.002-0.006	2	0.008	0.787	0.201		●	●	●	●		●	
	ACS 302-CM	-	0.002-0.006	3	0.008	0.787	0.201		●		●			●	
	ACS 403-CM	-	0.002-0.007	4	0.012	0.787	0.201								
	ACS 503-CM	-	0.002-0.008	5	0.012	0.984	0.197								
	ACS 603-CM	-	0.002-0.009	6	0.012	0.984	0.197								

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

●: Stock available ▲: Stock available now but will be replaced in the future.

Parting Off-Grooving Series

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



Inserts	Product code	Cutting parameter		Dimensions				Machining conditions							
								● Good condition ⬤ General condition ✖ Bad condition							
								P		M		K		N	
		CDX	f (inch/rev)	CW (mm)	RE	INSL	S	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
	ACD 202-CH	0.776	0.002-0.008	2	0.008	0.787	0.201	●	●	●	●		●		
	ACD 202-CH-6R	0.776	0.002-0.006	2	0.008	0.815	0.201	●	●	●	●		●		
	ACD 202-CH-6L	0.776	0.002-0.006	2	0.008	0.815	0.201	●	●	●	●		●		
	ACD 202-CH-15R	0.776	0.002-0.006	2	0.008	0.827	0.201	●	●	●	●		●		
	ACD 202-CH-15L	0.776	0.002-0.006	2	0.008	0.827	0.201	●	●	●	●		●		
	ACD 302-CH	0.776	0.003-0.010	3	0.008	0.787	0.201	●	●	●	●		●		
	ACD 302-CH-6R	0.815	0.002-0.008	3	0.008	0.815	0.201	●	●	●	●		●		
	ACD 302-CH-6L	0.854	0.002-0.008	3	0.008	0.815	0.201	●	●	●	●		●		
	ACD 302-CH-15R	0.787	0.002-0.007	3	0.008	0.827	0.201	●	●	●	●		●		
	ACD 302-CH-15L	0.787	0.002-0.007	3	0.008	0.827	0.201	●	●	●	●		●		
	ACD 403-CH	0.748	0.003-0.012	4	0.012	0.787	0.201	●	●	●	●		●		
	ACD 403-CH-4R	0.776	0.002-0.010	4	0.012	0.815	0.201	●	●	●	●		●		
	ACD 403-CH-4L	0.776	0.002-0.010	4	0.012	0.815	0.201	●	●	●	●		●		
	ACD 503-CH	0.945	0.004-0.014	5	0.012	0.984	0.197	●	●	●	●		●		
	ACD 503-CH-4R	0.972	0.003-0.012	5	0.012	1.012	0.197	●	●	●	●		●		
	ACD 503-CH-4L	1.012	0.003-0.012	5	0.012	1.012	0.197	●	●	●	●		●		
	ACD 603-CH	0.945	0.005-0.016	6	0.012	0.984	0.197	●	●	●	●		●		
	ACD 804-CH	1.142	0.006-0.018	8	0.016	1.181	0.240	●	●	●	●		●		
	ACS 202-CH	-	0.002-0.008	2	0.008	0.787	0.201	●	●	●	●		●		
	ACS 302-CH	-	0.003-0.010	3	0.008	0.787	0.201	●	●	●	●		●		
	ACS 403-CH	-	0.003-0.012	4	0.012	0.787	0.201	●	●	●	●		●		
	ACS 503-CH	-	0.004-0.014	5	0.012	0.787	0.197	●	●	●	●		●		
	ACS 603-CH	-	0.005-0.016	6	0.012	0.984	0.197	●	●	●	●		●		

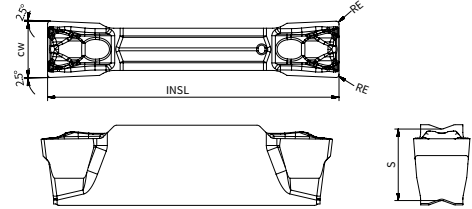
Remark: 1. if R/L style inserts are selected, the feed need to be reduced by 20-40%.

2. ACS single edged insert's Tmax is determined according to the tool holder.

●: Stock available ▲: Stock available now but will be replaced in the future.

Grooving-Turning Series

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

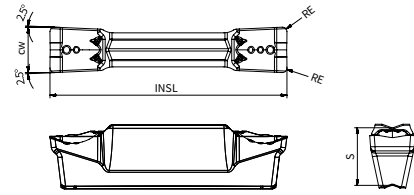


Inserts	Product code	Cutting parameter			Dimensions				Machining conditions							
									● Good condition ● General condition ✖ Bad condition							
									✖	●	✖	●	✖	●	●	●
		Grooving	Turning		CW (mm)	RE	INSL	S	P			M		K		N
		f (inch/rev)	f (inch/rev)	Ap (inch)					AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
	ATD 300E020-GS	0.002-0.008	0.002-0.008	0.012-0.079	3.00	0.008	0.815	0.201	●			●			●	
	ATD 300E040-GS	0.002-0.008	0.002-0.008	0.018-0.079	3.00	0.016	0.815	0.201	●			●			●	
	ATD 310E020-GS	0.002-0.008	0.002-0.008	0.010-0.079	3.10	0.008	0.815	0.201	●			●			●	
	ATD 318E020-GS	0.002-0.008	0.002-0.008	0.010-0.079	3.18	0.008	0.815	0.201	●			●			●	
	ATD 318E040-GS	0.002-0.008	0.002-0.008	0.018-0.079	3.18	0.016	0.815	0.201	●			●			●	
	ATD 318E080-GS	0.002-0.008	0.002-0.008	0.033-0.079	3.18	0.031	0.815	0.201	●			●			●	
	ATD 361E030-GS	0.002-0.008	0.002-0.009	0.014-0.079	3.61	0.012	0.815	0.201	●			●			●	
	ATD 396E020-GS	0.002-0.01	0.003-0.010	0.010-0.098	3.96	0.008	0.815	0.201	●			●			●	
	ATD 396E040-GS	0.002-0.01	0.003-0.010	0.018-0.098	3.96	0.016	0.815	0.201	●			●			●	
	ATD 396E080-GS	0.002-0.01	0.003-0.010	0.033-0.098	3.96	0.031	0.815	0.201	●			●			●	
	ATD 400E020-GS	0.002-0.01	0.003-0.010	0.010-0.098	4.00	0.008	0.815	0.201	●			●			●	
	ATD 400E040-GS	0.002-0.01	0.003-0.010	0.018-0.098	4.00	0.016	0.815	0.201	●			●			●	
	ATD 452E020-GS	0.002-0.011	0.004-0.012	0.010-0.118	4.52	0.008	1.012	0.197								
	ATD 470E050-GS	0.002-0.011	0.004-0.012	0.022-0.118	4.70	0.020	1.012	0.197								
	ATD 475E040-GS	0.002-0.011	0.004-0.012	0.018-0.118	4.75	0.016	1.012	0.197								
	ATD 475E080-GS	0.002-0.011	0.004-0.012	0.033-0.118	4.75	0.031	1.012	0.197								
	ATD 480E050-GS	0.002-0.011	0.004-0.012	0.022-0.118	4.80	0.020	1.012	0.197								
	ATD 500E020-GS	0.002-0.011	0.004-0.012	0.010-0.118	5.00	0.008	1.012	0.197								
	ATD 500E040-GS	0.002-0.011	0.004-0.012	0.018-0.118	5.00	0.016	1.012	0.197								
	ATD 600E020-GS	0.004-0.014	0.006-0.014	0.010-0.138	6.00	0.008	1.012	0.197								
	ATD 600E040-GS	0.004-0.014	0.006-0.014	0.018-0.138	6.00	0.016	1.012	0.197								
	ATD 635E040-GS	0.004-0.014	0.006-0.014	0.018-0.138	6.35	0.016	1.012	0.197								
	ATD 635E050-GS	0.004-0.014	0.006-0.014	0.022-0.138	6.35	0.020	1.012	0.197								
	ATD 635E080-GS	0.004-0.014	0.006-0.014	0.033-0.138	6.35	0.031	1.012	0.197								
	ATD 714E080-GS	0.004-0.014	0.007-0.016	0.033-0.138	7.14	0.031	1.012	0.197								

●: Stock available ▲: Stock available now but will be replaced in the future.

Grooving-Turning Series

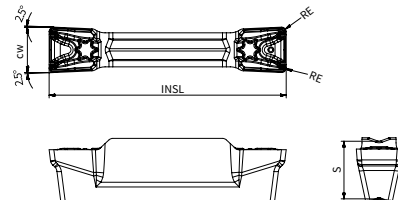
TS: Double-edged inserts applicable to external, internal and face turning, grooving and parting off



Inserts	Product code	Cutting parameter				Dimensions				Machining conditions							
										● Good condition ● General condition ✖ Bad condition							
		Grooving	CDX	Turning		CW (mm)	RE	INSL	S	P		M		K		N	
		f (inch/rev)		f (inch/rev)	Ap (inch)					AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
	ATD 203-TS	0.002-0.008	0.776	0.005-0.007	0.016-0.059	2	0.012	0.815	0.201	●	●		●		●	●	
	ATD 303-TS	0.002-0.010	0.776	0.006-0.009	0.018-0.079	3	0.012	0.815	0.201		●	●	●	●		●	
	ATD 404-TS	0.002-0.011	0.776	0.007-0.010	0.020-0.098	4	0.016	0.815	0.201		●	●	●	●		●	
	ATD 408-TS	0.002-0.011	0.776	0.007-0.010	0.039-0.098	4	0.031	0.815	0.201	●	●		●		●	●	
	ATD 504-TS	0.003-0.012	0.972	0.008-0.012	0.022-0.138	5	0.016	1.012	0.197		●	●	●	●		●	
	ATD 508-TS	0.003-0.012	0.972	0.008-0.012	0.039-0.138	5	0.031	1.012	0.197		●	●	●	●		●	
	ATD 604-TS	0.004-0.016	0.972	0.009-0.018	0.026-0.150	6	0.016	1.012	0.197		●		●		●	●	
	ATD 608-TS	0.004-0.016	0.972	0.009-0.018	0.039-0.150	6	0.031	1.012	0.197	●	●	●	●	●	●	●	
	ATD 808-TS	0.005-0.018	1.201	0.011-0.020	0.039-0.177	8	0.031	1.240	0.240		●		●		●		

Grooving-Turning Series

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

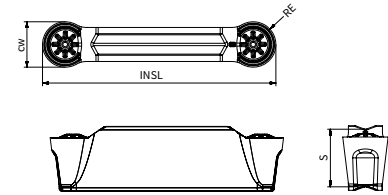


Inserts	Product code	Cutting parameter				Dimensions				Machining conditions							
										● Good condition ● General condition ✖ Bad condition							
		Grooving	CDX	Turning		CW (mm)	RE	INSL	S	P		M		K		N	
		f (inch/rev)		f (inch/rev)	Ap (inch)					AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
	ATD 304-TM	0.004-0.010	0.776	0.006-0.009	0.02-0.079	3	0.016	0.815	0.201		●		●				
	ATD 404-TM	0.006-0.012	0.776	0.007-0.011	0.02-0.098	4	0.016	0.815	0.201	●	●	●	●	●	●	●	
	ATD 408-TM	0.006-0.012	0.776	0.007-0.011	0.039-0.098	4	0.031	0.815	0.201	●	●	●	●	●	●	●	
	ATD 504-TM	0.007-0.014	0.972	0.008-0.014	0.022-0.138	5	0.016	1.012	0.197	●	●	●	●	●	●	●	
	ATD 508-TM	0.007-0.014	0.972	0.008-0.014	0.039-0.138	5	0.031	1.012	0.197		●	●	●	●		●	
	ATD 604-TM	0.008-0.018	0.972	0.009-0.018	0.026-0.157	6	0.016	1.012	0.197	●	●	●	●	●	●	●	
	ATD 608-TM	0.008-0.018	0.972	0.009-0.018	0.039-0.157	6	0.031	1.012	0.197	●	●	●	●	●	●	●	
	ATD 808-TM	0.009-0.020	1.201	0.011-0.020	0.039-0.197	8	0.031	1.240	0.240								
	ATD 812-TM	0.009-0.020	1.201	0.011-0.020	0.059-0.197	8	0.047	1.240	0.240		●		●				

●: Stock available ▲: Stock available now but will be replaced in the future.

Grooving-Turning Series

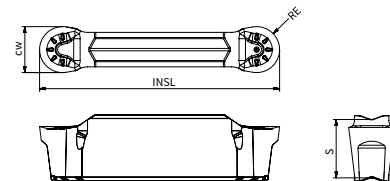
RM: Double-edged inserts applicable to external turning, grooving and profiling



					Machining conditions				● Good condition ⚙ General condition ✖ Bad condition							
									⚙	●	✖	●	✖	⚙	●	●
					Inserts	Product code	Cutting parameter			Dimensions				P		
Grooving	Turning		CW (mm)	RE			INSL	S	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
f (inch/rev)	f (inch/rev)	Ap (inch)														
	ATD 210-RM	0.002-0.006	0.005-0.010	0.016-0.039	2	0.039	0.815	0.201		●	●	●	●		●	
	ATD 315-RM	0.003-0.007	0.006-0.012	0.02-0.059	3	0.059	0.815	0.201	●	●	●	●	●	●	●	
	ATD 420-RM	0.004-0.008	0.007-0.014	0.024-0.079	4	0.079	0.815	0.201	●	●	●	●	●	●	●	
	ATD 525-RM	0.005-0.010	0.008-0.016	0.028-0.098	5	0.098	1.012	0.197	●	●	●	●	●	●	●	
	ATD 630-RM	0.006-0.012	0.01-0.020	0.035-0.118	6	0.118	1.012	0.197		●	●	●	●		●	
	ATD 840-RM	0.007-0.014	0.012-0.024	0.039-0.157	8	0.157	1.240	0.240		●		●			●	

Grooving-Turning Series

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



					Machining conditions				● Good condition ⚙ General condition ✖ Bad condition							
									⚙	●	✖	●	✖	⚙	●	●
Inserts	Product code	Cutting parameter			Dimensions				P			M		K		N
		Grooving	Turning		CW (mm)	RE	INSL	S	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
		f (inch/rev)	f (inch/rev)	Ap (inch)												
	ATD 315-RA	0.003-0.007	0.006-0.012	0.020-0.059	3	0.059	0.815	0.201								●
	ATD 420-RA	0.004-0.010	0.008-0.018	0.024-0.008	4	0.079	0.815	0.201								●
	ATD 525-RA	0.004-0.011	0.008-0.020	0.028-0.098	5	0.098	1.012	0.197								●
	ATD 630-RA	0.005-0.012	0.009-0.024	0.035-0.118	6	0.118	1.012	0.197								●
	ATD 840-RA	0.006-0.016	0.010-0.026	0.039-0.157	8	0.157	1.240	0.240								●

●: Stock available ▲: Stock available now but will be replaced in the future.

Insert Denomination System (Ground)

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

1-Company Name
ACHTECK

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

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

4-Insert Width
215=0.085inch
145=0.057inch

5-Application
E: External F: Facing I: Internal

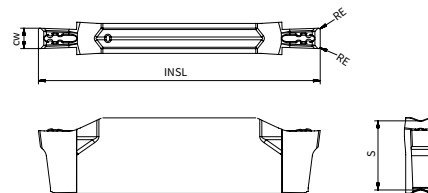
6-Insert Corner
010=0.004inch 020=0.008inch 200=0.079 inch

7-Application Limited	
G	only applicable to parting off

8-Hand of Tool	
	L: Left
	R: Right

Grooving - Turning Series

Ground inserts applicable to turning and grooving



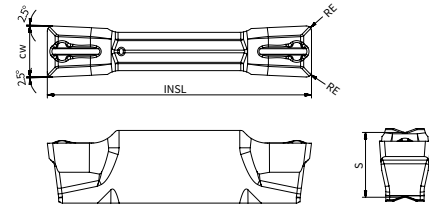
Inserts	Product code	Suitable tool holder	Cutting parameter Grooving f (inch/rev)	Machining conditions					● Good condition ● General condition ✖ Bad condition							
				Dimensions					P		M		K		N	
				CW (mm)	RE	CDX	S	INSL	AC230P	AP301U	AP330M	AP301U	AP330M	AC230P	AP301U	AW100K
	ATD 100E000G	0.079	0.001-0.002	1.00	0.000	0.079	0.201	0.815		●		●			●	
	ATD 100E050G	0.079	0.001-0.002	1.00	0.020	-	0.201	0.815		●		●			●	
	ATD 104E000G	0.079	0.001-0.002	1.04	0.000	0.079	0.201	0.815		●		●			●	
	ATD 115E000G	0.079	0.001-0.002	1.15	0.000	0.079	0.201	0.815		●		●			●	
	ATD 120E000G	0.079	0.001-0.002	1.20	0.000	0.079	0.201	0.815		●		●			●	
	ATD 125E010G	0.079	0.001-0.002	1.25	0.004	0.079	0.201	0.815		●		●			●	
	ATD 130E000G	0.079	0.001-0.002	1.30	0.000	0.079	0.201	0.815		●		●			●	
	ATD 135E000G	0.079	0.001-0.002	1.35	0.000	0.079	0.201	0.815		●		●			●	
	ATD 140E000G	0.079	0.001-0.002	1.40	0.000	0.079	0.201	0.815		●		●			●	
	ATD 140E070G	0.079	0.002-0.003	1.40	0.028	0.079	0.201	0.815		●		●			●	
	ATD 145E010G	0.079	0.001-0.002	1.45	0.004	0.079	0.201	0.815		●		●			●	
	ATD 147E000G	0.079	0.001-0.002	1.47	0.000	0.098	0.201	0.815		●		●			●	
	ATD 150E010G	0.079	0.001-0.002	1.50	0.004	0.098	0.201	0.815		●		●			●	
	ATD 157E015G	0.079	0.001-0.003	1.57	0.006	0.106	0.201	0.815		●		●			●	
	ATD 157E079G	0.079	0.002-0.003	1.57	0.031	0.106	0.201	0.815		●		●			●	
	ATD 165E010G	0.079	0.001-0.003	1.65	0.004	0.106	0.201	0.815		●		●			●	
	ATD 170E010G	0.079	0.001-0.003	1.70	0.004	0.118	0.201	0.815		●		●			●	
	ATD 178E018G	0.079	0.001-0.003	1.78	0.007	0.118	0.201	0.815		●		●			●	
	ATD 190E010G	0.079	0.002-0.004	1.90	0.004	0.118	0.201	0.815		●		●			●	
	ATD 196E015G	0.079	0.002-0.004	1.96	0.006	0.118	0.201	0.815		●		●			●	
	ATD 200E020G	0.079	0.002-0.004	2.00	0.008	0.118	0.201	0.815		●		●			●	
	ATD 200E100G	0.079	0.002-0.004	2.00	0.039	0.118	0.201	0.815		●		●			●	
	ATD 215E010G	0.079	0.002-0.004	2.15	0.004	0.118	0.201	0.815		●		●			●	
	ATD 222E015G	0.079	0.002-0.004	2.22	0.006	0.138	0.201	0.815		●		●			●	
	ATD 230E020G	0.079	0.002-0.004	2.30	0.008	-	0.201	0.815		●		●			●	
	ATD 239E120G	0.079	0.002-0.005	2.39	0.047	-	0.201	0.815		●		●			●	

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

●: Stock available ▲: Stock available now but will be replaced in the future.

Grooving - Turning Series

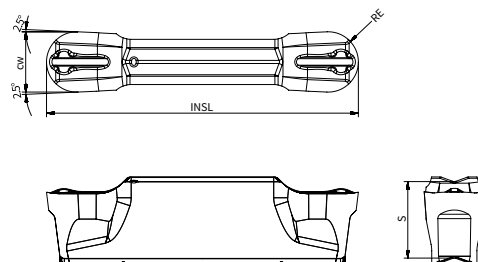
Ground inserts applicable to turning and grooving



Inserts	Product code	Suitable tool holder	Cutting parameter			Dimensions					Machining conditions				
											● Good condition ● General condition ✖ Bad condition				
			Turning		Grooving										
			f (inch/rev)	Ap (inch)	f (inch/rev)	CW (mm)	RE	CDX	S	INSL	P	M	K	N	
	ATD 265E015	0.118	0.004-0.007	0.008-0.071	0.002-0.005	2.65	0.006	-	0.201	0.815	●	●	●	●	
	ATD 300E020	0.118	0.004-0.008	0.012-0.079	0.002-0.006	3.00	0.008	-	0.201	0.815	●	●	●	●	
	ATD 300E040	0.118	0.006-0.009	0.020-0.087	0.002-0.006	3.00	0.016	-	0.201	0.815	●	●	●	●	
	ATD 400E040	0.157	0.006-0.012	0.020-0.098	0.003-0.007	4.00	0.016	-	0.201	0.815	●	●	●	●	
	ATD 400E080	0.157	0.006-0.012	0.039-0.098	0.003-0.007	4.00	0.031	-	0.201	0.815	●	●	●	●	
	ATD 415E015	0.157	0.006-0.012	0.008-0.098	0.003-0.007	4.15	0.006	-	0.201	0.815	●	●	●	●	
	ATD 478E055	0.197	0.008-0.014	0.024-0.102	0.004-0.008	4.78	0.022	-	0.197	1.012	●	●	●	●	
	ATD 500E040	0.197	0.008-0.014	0.020-0.102	0.004-0.008	5.00	0.016	-	0.197	1.012	●	●	●	●	
	ATD 500E080	0.197	0.009-0.014	0.039-0.118	0.004-0.008	5.00	0.031	-	0.197	1.012	●	●	●	●	
	ATD 515E015	0.197	0.009-0.014	0.008-0.118	0.004-0.009	5.15	0.006	-	0.197	1.012	●	●	●	●	
	ATD 555E055	0.236	0.009-0.016	0.024-0.118	0.005-0.011	5.55	0.022	-	0.197	1.012	●	●	●	●	
	ATD 600E080	0.236	0.01-0.0180	0.039-0.138	0.005-0.012	6.00	0.031	-	0.197	1.012	●	●	●	●	
	ATD 600E120	0.236	0.01-0.0180	0.051-0.138	0.005-0.012	6.00	0.047	-	0.197	1.012	●	●	●	●	
	ATD 635E080	0.236	0.01-0.0180	0.039-0.138	0.005-0.012	6.35	0.031	-	0.197	1.012	●	●	●	●	
	ATD 800E080	0.315	0.012-0.022	0.039-0.189	0.006-0.016	8.00	0.031	-	0.240	1.240	●	●	●	●	
	ATD 800E120	0.315	0.012-0.022	0.047-0.189	0.006-0.016	8.00	0.047	-	0.240	1.240	●	●	●	●	

Grooving

Ground inserts applicable to turning and grooving

[illegible][illegible]

Inserts	Product code	Suitable tool holder (mm)	Dimensions				P	M	K	N	S	H
			CW (mm)	RE	INSL	S						
	ATBD 2.6 M200	2	2.60	0.004	0.835	0.201	●	●	●	●	●	
	ATBD 3.5 M200	3	3.50	0.004	0.835	0.201	●	●	●	●	●	
	ATBD 4.5 M200	4	4.50	0.004	0.835	0.201	●	●	●	●	●	
	ATBD 5.5 M200	5	5.50	0.004	1.032	0.197	●	●	●	●	●	
	ATBD 6.5 M200	6	6.50	0.004	1.032	0.197	●	●	●	●	●	
	ATBD 8.5 M200	8	8.74	0.005	1.260	0.240	●	●	●	●	●	

●: Stock available ▲: Stock available now but will be replaced in the future.

Cutting Data Recommendation Table

Materials						Cutting parameter recommended table of parting off and grooving application											
ISO	Workpiece material			Brinell hardness (HB/HRC)	Tensile strength Rm(N/mm²)	AP301U			AP330M			AC230P			AW100K		
						f (inch/rev)			f (inch/rev)			f (inch/rev)			f (inch/rev)		
						0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.2	0.4
P	Unalloyed steel	C≤0.25%	Annealed	125	428	180	145	130	160	130	100	220	180	160	-	-	-
		0.25<C≤0.55%	Annealed	190	639	145	130	115	120	100	90	160	130	115	-	-	-
		0.25<C≤0.55%	Heat-treated	210	708	130	115	100	120	100	90	130	115	100	-	-	-
		C>0.55%	Annealed	190	639	145	130	115	145	130	80	160	130	115	-	-	-
		C>0.55%	Heat-treated	300	1013	115	100	80	115	100	80	115	100	80	-	-	-
		Free cutting steel (short-chip)	Annealed	220	745	130	115	100	130	115	100	130	115	100	-	-	-
	Low-alloyed steel	Annealed		175	591	180	145	130	-	-	-	-	-	-	-	-	-
		Heat-treated		300	1013	115	100	80	-	-	-	-	-	-	-	-	-
		Heat-treated		380	1282	170	90	105	-	-	-	-	-	-	-	-	-
		Heat-treated		430	1477	-	-	-	-	-	-	-	-	-	-	-	-
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	-	-	-	-	-	-	-	-	-	-	-	-
		Hardened and tempered		300	1013	-	-	-	-	-	-	-	-	-	-	-	-
		Hardened and tempered		400	1361	-	-	-	-	-	-	-	-	-	-	-	-
	Stainless steel	Ferritic/martensitic, annealed		200	675	165	135	105	-	-	-	-	-	-	-	-	-
		Martensitic, heat-treated		330	1114	150	115	70	-	-	-	-	-	-	-	-	-
M	Stainless steel	Austenitic, quench hardened		200	675	165	135	105	-	-	-	-	-	-	-	-	-
		Austenitic, precipitation hardened (PH)		300	1013	155	120	80	-	-	-	-	-	-	-	-	-
		Austenitic/ferritic, duplex		230	778	135	110	85	-	-	-	-	-	-	-	-	-
K	Malleable cast iron	Ferritic		200	400	115	90	65	-	-	-	115	90	65	-	-	-
		Pearlitic		260	700	115	90	65	-	-	-	115	90	65	-	-	-
	Grey cast iron	Low tensile strength		180	200	185	140	95	-	-	-	200	160	120	-	-	-
		High tensile strength/austenitic		245	350	185	140	95	-	-	-	200	160	120	-	-	-
	Nodular cast iron	Ferritic		155	400	145	110	80	-	-	-	160	130	100	-	-	-
		Pearlitic		265	700	145	110	80	-	-	-	160	130	100	-	-	-
GGV(CGI)				230	400	-	-	-	-	-	-	-	-	-	-	-	-
N	Wrought aluminium alloys	Non-aging		30	-	-	-	-	-	-	-	-	-	-	-	-	-
		Aged		100	340	-	-	-	-	-	-	-	-	-	-	-	-
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	-	-	-	-	-	-	-	-	-	850	500	200
		≤ 12% Si, aged		90	310	-	-	-	-	-	-	-	-	-	-	-	-
		> 12% Si, non-aging		130	450	-	-	-	-	-	-	-	-	-	450	250	40
	Magnesium alloys		70	250	-	-	-	-	-	-	-	-	-	-	-	-	-
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340	-	-	-	-	-	-	-	-	-	-	-	-
		Brass, bronze, red brass		90	310	-	-	-	-	-	-	-	-	-	-	-	-
Cu alloys, short-chipping		110	380	-	-	-	-	-	-	-	-	-	-	-	-		
High-tensile, Ampco alloy		300	1010	-	-	-	-	-	-	-	-	-	-	-	-		
S	Heat-resistant alloys	Fe-based	Annealed	200	680	-	-	-	-	-	-	-	-	-	-	-	-
			Hardened	280	940	-	-	-	-	-	-	-	-	-	-	-	-
		Ni or Co based	Annealed	250	840	-	-	-	-	-	-	-	-	-	-	-	-
			Hardened	350	1180	-	-	-	-	-	-	-	-	-	-	-	-
			Cast	320	1080	-	-	-	-	-	-	-	-	-	-	-	-
	Titanium alloys	Pure titanium		200	680	-	-	-	-	-	-	-	-	-	-	-	-
		α and β alloys, hardened		375	1260	-	-	-	-	-	-	-	-	-	-	-	-
		β alloys		410	1400	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten alloys			300	1010	-	-	-	-	-	-	-	-	-	-	-	-	
Molybdenum alloys			300	1010	-	-	-	-	-	-	-	-	-	-	-	-	
H	Hardened steel	Hardened and tempered		50HRC	-	-	-	-	-	-	-	-	-	-	-	-	-
		Hardened and tempered		55HRC	-	-	-	-	-	-	-	-	-	-	-	-	-
		Hardened and tempered		60HRC	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chilled cast iron	Hardened and tempered		50HRC	-	-	-	-	-	-	-	-	-	-	-	-	-

The recommended cutting data always refer to general cutting conditions. The actual selection should be adjusted according to machine rigidity, tool body and workpiece conditions and coolant.



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AFM45-100-Z07-A32R-XN09-C

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THE EXPERTS OF DIFFICULT MACHINING

CUTTING TOOL CATALOG

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Milling Cutter Denomination System

A	FM	45	03000	Z07	A	0750	R	SN12	C
1	2	3	4	5	6	7	8	9	10

1. A--ACHTECK

2. Machining method	
Face milling	FM
Shoulder milling	SM
Profile milling	PM
High feed milling	HM
Side & face milling	DM
Thread milling	TM
Chamfer milling	CM

3. Approach angle (Kr)	
Figure	Angle
90	90°
88	88°
75	75°
60	60°
45	45°
42	42°
•	•
•	•
•	•
15	15
00	Round insert

4. Cutter dia.	
01000	1.000in
03000	3.000in
•	•
•	•
10000	10.000in

5. Number of teeth	
Z02	2 teeth
•	•
Z05	5 teeth
•	•
Z30	30 teeth

6. Connection	
A	Arbor
W	Weldon shank
C	Cylinder shank
N	Whistle notch shank
M	Screw clamped with modular head

7. Coupling Size
0750---Connection diameter 0.750in

8. Direction of tool	
R	Right
L	Left
N	Neutral

9. Insert info
SN12---SN12 series insert

10. Others	
C	Internal coolant
No mark	No coolant

Porcupine Cutter Denomination

A	PE	90	02500	Z04	A	1000	R	LN13	L2205	F	C
1	2	3	4	5	6	7	8	9	10	11	12

1. A--ACHTECK

2. Cutting method

Porcupine cutter	PE
Shoulder milling cutter	SM
Profile milling cutter	PM
High feed milling cutter	HM
Side and face Milling cutter	DM
Thread milling cutter	TM
Chamfer milling cutter	CM
Face milling cutter	FM

3. Approach angle (Kr)

Figure	Angle
90	90°
88	88°
75	75°
60	60°
45	45°
42	42°
•	•
•	•
•	•

4. Cutter dia.

01000	1.000in
02500	2.500in
03000	3.000in
•	•
10000	10.000in

5. Number of teeth

Z02	2 teeth
Z04	4 teeth
Z05	5 teeth
•	•
Z30	30 teeth

6. Coupling

A	Arbor
W	Weldon shank
C	Cylinder shank
N	Whistle notch shank
M	Screw clamped with modular head

7. Coupling size

1000--Connection diameter 1.000in

8. Direction of tool

R	Right
L	Left
N	Neutral

9. Insert information

LN13--LN13 series insert

10. Max. cutting depth

L1181	1.181in
L1772	1.772in
L2205	2.205in

11. Tool type

F	Full teeth
H	Half teeth

10. Others

C	With internal coolant
No indication	Without internal coolant

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Milling Cutters

Overview of Milling Products

Product family			AFM42-OD06	AFM40-ON05	AFM45-SN12	AFM75-SN12
Page			P196	P198	P200	P202
Approach angle			42°	40°	45°	75°
Max.ap (in)			0.177	0.138	0.256	0.315
Diameter range (in)			Ø 2.000-6.000	Ø 2.000-6.000	Ø 2.000-6.000	Ø 2.000-10.000
Insert type			OD..0605..	ON..0504..	SN..1206..	SN..1206..
Application	Face milling		●	●	●	●
	Square Shoulder milling					
	Slot milling					
	Ramping		●			
	Helical interpolate milling		●			
	Plunging					
	Profile milling					
	Chamfer milling					
	Pocket milling		●			

Remark: ● Recommended application

Overview of Milling Products

Product family			AFM88-SN12	AFM45-XN07	AFM45-XN09	AFM45-XN09(W)
Page			P204	P206	P208	P209
Approach angle			88°	45°	45°	45°
Max.ap (in)			0.394	0.173	0.236	0.236
Diameter range (in)			Ø2.000-6.000	Ø2.000-4.000	Ø2.500-8.000	Ø 3.000-8.000
Insert type			SN..1206..	XN..0705..	XN..0906..	XN..0906..
Application	Face milling		●	●	●	●
	Square Shoulder milling					
	Slot milling					
	Ramping					
	Helical interpolate milling					
	Plunging					
	Profile milling					
	Chamfer milling					
	Pocket milling					

Remark: ● Recommended application

Overview of Milling Products

Product family			ASM90-LN09	ASM90-LN13	ASM90-WN08-N	ASM90-AP17
Page			P211	P214	P216	P219
Approach angle			90°	90°	90°	90°
Max.ap (in)			0.314	0.472	0.275	0.630
Diameter range (in)			Ø 1.000-3.000	Ø 2.000-4.000	Ø 1.500-6.000	Ø 1.000-2.500
Insert type			LNHU 0904..	LNHU 1306..	WNMU 0806..	APKT 1705..
Application	Face milling		●	●	●	●
	Square Shoulder milling		●	●	●	●
	Slot milling		●	●	●	●
	Ramping					●
	Helical interpolate milling					●
	Plunging					
	Profile milling					
	Chamfer milling					
	Pocket milling					●

Remark: ● Recommended application

Overview of Milling Products

Product family			ASM90-TD15	ASM90-AO12	APE90-LN13	AHM20-LN06
Page			P221	P223	P225	P228
Approach angle			90°	90°	90°	20°
Max.ap (in)			0.433	0.433	1.339-2.520	0.026
Diameter range (in)			Ø 1.250-8.000	Ø 0.750-3.000	Ø 1.500-3.000	Ø 0.625-2.000
Insert type			TD.T 1505..	AOMT 1204..	LNHU 1306..	LN..0604..
Application	Face milling		●	●	●	●
	Square Shoulder milling		●	●	●	
	Slot milling		●	●		●
	Ramping		●	●		●
	Helical interpolate milling		●	●		●
	Plunging					●
	Profile milling					
	Chamfer milling					
	Pocket milling		●	●		●

Remark: ● Recommended application

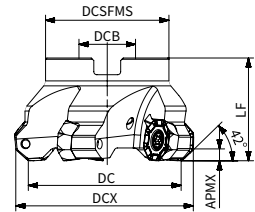
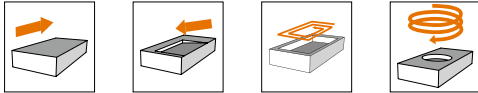
Overview of Milling Products

Product family			AHM25-LN10	APM00-RO10	APM00-RO12
Page			P230	P232	P234
Approach angle			25°	-	-
Max.ap (in)			0.047	0.197	0.236
Diameter range (in)			Ø 1.000-5.000	Ø 1.000-2.000	Ø 1.250-3.000
Insert type			LN..1005..	RO..10T3..	RO..1204..
Application	Face milling		●	●	●
	Square Shoulder milling				
	Slot milling		●		
	Ramping		●	●	●
	Helical interpolate milling		●	●	●
	Plunging		●		
	Profile milling			●	●
	Chamfer milling				
	Pocket milling		●	●	●

Remark: ● Recommended application

AFM42-OD06

42 °Approaching angle face milling cutter



Inch

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM42-02000-Z04-A0750R-OD06-C	2.000	2.409	0.750	1.654	1.575	0.177		4	OD..0605..
AFM42-02500-Z05-A1000R-OD06-C	2.500	2.909	1.000	2.165	1.969	0.177		5	
AFM42-03000-Z05-A1000R-OD06-C	3.000	3.409	1.000	2.165	1.969	0.177		5	
AFM42-03000-Z06-A1000R-OD06-C	3.000	3.409	1.000	2.165	1.969	0.177		6	
AFM42-04000-Z06-A1500R-OD06-C	4.000	4.409	1.500	3.740	2.480	0.177		6	
AFM42-04000-Z07-A1500R-OD06-C	4.000	4.409	1.500	3.740	2.480	0.177		7	
AFM42-05000-Z07-A1500R-OD06-C	5.000	5.409	1.500	3.740	2.480	0.177		7	
AFM42-05000-Z08-A1500R-OD06-C	5.000	5.409	1.500	3.740	2.480	0.177		8	
AFM42-06000-Z10-A2000R-OD06	6.000	6.409	2.000	4.724	2.480	0.177		10	

Metric

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM42-050-Z04-A16R-OD06-C	50	60.4	16	40	40	4.5		4	OD..0605..
AFM42-063-Z05-A22R-OD06-C	63	73.4	22	48	40	4.5		5	
AFM42-080-Z05-A27R-OD06-C	80	90.4	27	62	50	4.5		5	
AFM42-080-Z06-A27R-OD06-C	80	90.4	27	62	50	4.5		6	
AFM42-100-Z06-A32R-OD06-C	100	110.4	32	80	50	4.5		6	
AFM42-100-Z07-A32R-OD06-C	100	110.4	32	80	50	4.5		7	
AFM42-125-Z07-A40R-OD06-C	125	135.4	40	87	63	4.5		7	
AFM42-125-Z08-A40R-OD06-C	125	135.4	40	87	63	4.5		8	
AFM42-160-Z10-A40R-OD06	160	170.4	40	107	63	4.5		10	

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø2.000-6.000			44 in lbs
	SP04512043	DT-TP20	

Note: With internal coolant
 Without internal coolant

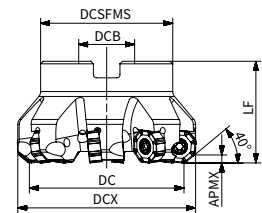
●: Stock available

Milling cutters

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AFM40-ON05

40° Approaching angle face milling cutter



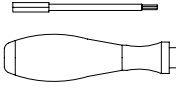
Inch

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM40-02000-Z04-A0750R-ON05-N-C	2.000	2.346	0.750	1.654	1.575	0.137		4	ON..0504..
AFM40-02000-Z06-A0750R-ON05-N-C	2.000	2.346	0.750	1.654	1.575	0.137		6	
AFM40-02500-Z05-A1000R-ON05-N-C	2.500	2.846	1.000	2.165	1.969	0.137		5	
AFM40-02500-Z06-A1000R-ON05-N-C	2.500	2.846	1.000	2.165	1.969	0.137		6	
AFM40-02500-Z08-A1000R-ON05-N-C	2.500	2.846	1.000	2.165	1.969	0.137		8	
AFM40-03000-Z06-A1000R-ON05-N-C	3.000	3.346	1.000	2.165	1.969	0.137		6	
AFM40-03000-Z08-A1000R-ON05-N-C	3.000	3.346	1.000	2.165	1.969	0.137		8	
AFM40-03000-Z09-A1000R-ON05-N-C	3.000	3.346	1.000	2.165	1.969	0.137		9	
AFM40-04000-Z07-A1500R-ON05-N-C	4.000	4.346	1.500	3.740	2.480	0.137		7	
AFM40-04000-Z09-A1500R-ON05-N-C	4.000	4.346	1.500	3.740	2.480	0.137		9	
AFM40-04000-Z11-A1500R-ON05-N-C	4.000	4.346	1.500	3.740	2.480	0.137		11	
AFM40-05000-Z07-A1500R-ON05-N-C	5.000	5.346	1.500	3.740	2.480	0.137		7	
AFM40-05000-Z09-A1500R-ON05-N-C	5.000	5.346	1.500	3.740	2.480	0.137		9	
AFM40-05000-Z14-A1500R-ON05-N-C	5.000	5.346	1.500	3.740	2.480	0.137		14	
AFM40-06000-Z10-A2000R-ON05-N	6.000	6.346	2.000	4.724	2.480	0.137		10	

Metric

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM40-050-Z04-A22R-ON05-N-C	50	58.8	22	47	40	3.5		4	ON..0504..
AFM40-050-Z06-A22R-ON05-N-C	50	58.8	22	47	40	3.5		6	
AFM40-063-Z05-A22R-ON05-N-C	63	71.8	22	52	40	3.5		5	
AFM40-063-Z06-A22R-ON05-N-C	63	71.8	22	52	40	3.5		6	
AFM40-063-Z08-A22R-ON05-N-C	63	71.8	22	52	40	3.5		8	
AFM40-080-Z06-A27R-ON05-N-C	80	88.8	27	62	50	3.5		6	
AFM40-080-Z08-A27R-ON05-N-C	80	88.8	27	62	50	3.5		8	
AFM40-080-Z09-A27R-ON05-N-C	80	88.8	27	62	50	3.5		9	
AFM40-100-Z07-A32R-ON05-N-C	100	108.8	32	77	50	3.5		7	
AFM40-100-Z09-A32R-ON05-N-C	100	108.8	32	77	50	3.5		9	
AFM40-100-Z11-A32R-ON05-N-C	100	108.8	32	77	50	3.5		11	
AFM40-125-Z07-A40R-ON05-N-C	125	133.8	40	90	63	3.5		7	
AFM40-125-Z09-A40R-ON05-N-C	125	133.8	40	90	63	3.5		9	
AFM40-125-Z14-A40R-ON05-N-C	125	133.8	40	90	63	3.5		14	
AFM40-160-Z10-A40R-ON05-N	160	168.8	40	107	63	3.5		10	

Note: With internal coolant
 Without internal coolant

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 2.000-6.000			35 in lbs
	SP040090	DT-TP15	

Product code	Dimension (in)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
ONHU 050408-MM3	0.031	-	●						
ONMU 050408-MM4	0.031	-	●	●			●	●	
ONHU 0504ZNR-MM3	0.031	0.055	●						

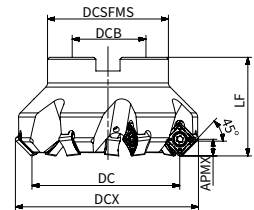
●: Stock available

Materials				Cutting depth and feed					
ISO	Material classification	Tensile strength (1bs/in²)	Hardness (HB)	ON..0504..					
				ap		Geometry			
						MM3		MM4	
						fz			
				(in)					
min	max	min	max	min	max				
	Unalloyed steel	<87,022	<180	0.008	0.138	0.004	0.010	0.006	0.014
		<137,785	<280						
	Alloyed steel	101,526-137,785	200-280						
		137,785-174,044	280-355						
		174,044-203,052	355-415						
	Duplex stainless steel	112,839	230			0.003	0.008	0.004	0.010
	Austenitic stainless steel	97,900	200						
	Precipitation-hardening stainless steel	146,923	300						
	Grey cast iron	101,526	220			0.004	0.010	0.006	0.014
	Nodular cast iron	127,633	260						
	Malleable cast iron	116,030	250						
	Aluminum	37,709	75			-	-	-	-
	Aluminum alloy	64,831	130						
	Fe-based alloy	136,770	280			-	-	-	-
	Co-based alloy	156,060	320						
	Ni-based alloy	170,709	350						
	Ti-alloy	183,037	370						
	Hardened steel	-	50-60HRC			-	-	-	-
	Chilled cast iron	-	55HRC						

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

AFM45-SN12

45° Approaching angle face milling cutter



Inch

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-02000-Z04-A0750R-SN12-C	2.000	2.548	0.750	1.654	1.575	0.255		4	SN..1206ANN.. SN..1206..
AFM45-02000-Z06-A0750R-SN12-C	2.000	2.548	0.750	1.654	1.575	0.255		6	
AFM45-02500-Z06-A1000R-SN12-C	2.500	3.048	1.000	2.165	1.969	0.255		6	
AFM45-03000-Z05-A1000R-SN12-C	3.000	3.548	1.000	2.165	1.969	0.255		5	
AFM45-03000-Z07-A1000R-SN12-C	3.000	3.548	1.000	2.165	1.969	0.255		7	
AFM45-04000-Z06-A1500R-SN12-C	4.000	4.548	1.500	3.740	2.480	0.255		6	
AFM45-04000-Z08-A1500R-SN12-C	4.000	4.548	1.500	3.740	2.480	0.255		8	
AFM45-05000-Z08-A1500R-SN12-C	5.000	5.548	1.500	3.740	2.480	0.255		8	
AFM45-05000-Z10-A1500R-SN12-C	5.000	5.548	1.500	3.740	2.480	0.255		10	
AFM45-06000-Z10-A2000R-SN12	6.000	6.548	2.000	4.724	2.480	0.255		10	
AFM45-06000-Z12-A2000R-SN12	6.000	6.548	2.000	4.724	2.480	0.255		12	

Metric

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-050-Z04-A22R-SN12-N-C	50	63.9	22	47	40	6.5		4	SN..1206ANN.. SN..1206..
AFM45-050-Z06-A22R-SN12-N-C	50	63.9	22	47	40	6.5		6	
AFM45-063-Z04-A22R-SN12-N-C	63	76.9	22	52	40	6.5		4	
AFM45-063-Z06-A22R-SN12-N-C	63	76.9	22	52	40	6.5		6	
AFM45-063-Z08-A22R-SN12-N-C	63	76.9	22	52	40	6.5		8	
AFM45-080-Z04-A27R-SN12-N-C	80	93.9	27	62	50	6.5		4	
AFM45-080-Z05-A27R-SN12-N-C	80	93.9	27	62	50	6.5		5	
AFM45-080-Z07-A27R-SN12-N-C	80	93.9	27	62	50	6.5		7	
AFM45-100-Z06-A32R-SN12-N-C	100	113.9	32	77	50	6.5		6	
AFM45-100-Z08-A32R-SN12-N-C	100	113.9	32	77	50	6.5		8	
AFM45-125-Z07-A40R-SN12-N-C	125	138.9	40	90	63	6.5		7	
AFM45-125-Z08-A40R-SN12-N-C	125	138.9	40	90	63	6.5		8	
AFM45-125-Z10-A40R-SN12-N-C	125	138.9	40	90	63	6.5		10	
AFM45-160-Z10-A40R-SN12-N	160	173.9	40	107	63	6.5		10	
AFM45-200-Z14-A60R-SN12-N	200	213.9	60	130	63	6.5		14	
AFM45-250-Z16-A60R-SN12-N	250	263.9	60	180	63	6.5		16	
AFM45-315-Z14-A60R-SN12-M	315	328.5	60	220	63	6.5		14	

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 2.000-6.000			31 in lbs
	SP050120	DT-TP20	

Note: With internal coolant
 Without internal coolant

Product code	Dimension (in)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SNGX 1206ANN-MM3	0.016	0.071	●	●	●		●	●	
SNGX 1206ANN-MM4	0.016	0.071	●	●	●	●	●	●	
SNGX 1206ANN-MR6	0.016	0.071	●	●	●		●	●	
SNGX 1206ANN-RR2	0.020	0.071	●	●	●		●	●	
SNGX 120608-MM4	0.031	-	●	●	●		●	●	
SNGX 120612-MM4	0.047	-	●						
SNMX 1206ANN-MM3	0.016	0.071	●	●	●		●	●	
SNMX 1206ANN-MM4	0.016	0.071	●	●	●	●	●	●	
SNMX 1206ANN-MR6	0.016	0.071	●	●	●		●	●	
SNMX 120608-MM4	0.031	-	●	●	●		●	●	
SNMX 120612-MM3	0.047	-	●	●	●		●	●	
SNMX 120612-MM4	0.047	-	●	●	●		●	●	
SNMX 120612R-MM4	0.047	-	●	●	●	●	●	●	
SNMX 120612-MR6	0.047	-	●	●	●		●	●	
SNMX 120612-RR2	0.047	-	●	●	●		●	●	
SNMX 120620-MM4	0.079	-	●	●	●		●	●	
SNMX 120620-RR2	0.079	-	●	●	●		●	●	
SNHX 1206ANN-FM2	0.020	0.071							●
SNHX 1206ANN-W	0.047	0.264	●				●		

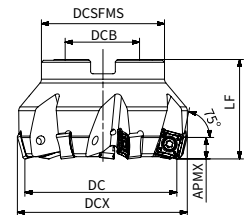
●: Stock available

Materials				Cutting depth and feed												
ISO	Material classification	Tensile strength (1bs/in ²)	Hardness (HB)	SN.. 1206..												
				ap	Geometry											
					MM3		MM4		MR6		RR2		FM2			
					fz											
				(in)												
min	max	min	max	min	max	min	max	min	max	min	max	min	max			
	Unalloyed steel	<87,022	<180	0.008	0.256	0.006	0.014	0.007	0.015	0.007	0.016	0.007	0.018	-	-	
		<137,785	<280													
	Alloyed steel	101,526-137,785	200-280			0.005	0.013	0.006	0.014	0.006	0.015	0.006	0.015	-	-	
		137,785-174,044	280-355													
		174,044-203,052	355-415													
	Duplex stainless steel	112,839	230													
	Austenitic stainless steel	97,900	200			0.005	0.012	0.005	0.013	-	-	-	-	-	-	
	Precipitation-hardening stainless steel	146,923	300													
	Grey cast iron	101,526	220													
	Nodular cast iron	127,633	260			0.006	0.014	0.007	0.015	0.007	0.016	0.007	0.018	-	-	
	Malleable cast iron	116,030	250													
	Aluminum	37,709	75			-	-	-	-	-	-	-	-	0.006	0.014	
	Aluminum alloy	64,831	130													
	Fe-based alloy	136,770	280													
	Co-based alloy	156,060	320			0.004	0.010	0.005	0.011	-	-	-	-	-	-	
	Ni-based alloy	170,709	350													
	Ti-alloy	183,037	370													
	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-	-	-	
	Chilled cast iron	-	55HRC													

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

AFM75-SN12

75° Approaching angle face milling cutter



Inch

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM75-02000-Z04-A0750R-SN12-C	2.000	2.252	0.750	1.654	1.575	0.315		4	SN..1206ENN.. SN..1206..
AFM75-02500-Z06-A1000R-SN12-C	2.500	2.752	1.000	2.165	1.969	0.315		6	
AFM75-03000-Z07-A1000R-SN12-C	3.000	3.252	1.000	2.165	1.969	0.315		7	
AFM75-04000-Z08-A1500R-SN12-C	4.000	4.252	1.500	3.740	2.480	0.315		8	
AFM75-05000-Z08-A1500R-SN12-C	5.000	5.252	1.500	3.740	2.480	0.315		8	
AFM75-05000-Z10-A1500R-SN12-C	5.000	5.252	1.500	3.740	2.480	0.315		10	
AFM75-06000-Z10-A2000R-SN12	6.000	6.252	2.000	4.724	2.480	0.315		10	
AFM75-08000-Z14-A2500R-SN12	8.000	8.252	2.500	5.118	2.480	0.315		14	
AFM75-10000-Z16-A2500R-SN12	10.000	10.252	2.500	6.299	2.480	0.315		16	

Metric

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM75-050-Z04-A22R-SN12-N-C	50	56.4	22	42	40	8		4	SN..1206ENN.. SN..1206..
AFM75-063-Z06-A22R-SN12-N-C	63	69.4	22	52	40	8		6	
AFM75-080-Z07-A27R-SN12-N-C	80	86.4	27	62	50	8		7	
AFM75-100-Z08-A32R-SN12-N-C	100	106.4	32	67	50	8		8	
AFM75-125-Z08-A40R-SN12-N-C	125	131.4	40	90	63	8		8	
AFM75-125-Z10-A40R-SN12-N-C	125	131.4	40	90	63	8		10	
AFM75-160-Z10-A40R-SN12-N	160	166.4	40	107	63	8		10	
AFM75-200-Z14-A60R-SN12-N	200	206.4	60	130	63	8		14	
AFM75-250-Z16-A60R-SN12-N	250	256.4	60	180	63	8		16	

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 2.000-10.000			31 in lbs
	SP050120	DT-TP20	

Note: With internal coolant
 Without internal coolant

Product code	Dimension (in)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SNGX 1206ENN-MM3	0.031	0.047	●	●	●		●	●	
SNGX 1206ENN-MM4	0.031	0.047	●	●	●		●	●	
SNGX 1206ENN-MR6	0.031	0.047	●	●	●		●	●	
SNGX 120608-MM4	0.031	-	●	●	●		●	●	
SNGX 120612-MM4	0.047	-	●						
SNMX 1206ENN-MM4	0.031	0.047			●			●	
SNMX 120608-MM4	0.031	-	●	●	●		●	●	
SNMX 120612-MM3	0.047	-	●	●	●		●	●	
SNMX 120612-MM4	0.047	-	●	●	●		●	●	
SNMX 120612R-MM4	0.047	-	●	●	●	●	●	●	
SNMX 120612-MR6	0.047	-	●	●	●		●	●	
SNMX 120612-RR2	0.047	-	●	●	●		●	●	
SNMX 120620-MM4	0.079	-	●	●	●		●	●	
SNMX 120620-RR2	0.079	-	●	●	●		●	●	
SNHX 1206ENN-W	0.024	0.189	●				●		

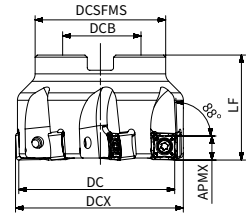
●: Stock available

Materials				Cutting depth and feed									
ISO	Material classification	Tensile strength (1bs/in²)	Hardness (HB)	SN..1206..									
				ap	Geometry								
					MM3		MM4		MR6		RR2		
					fz								
				(in)									
min	max	min	max	min	max	min	max	min	max				
	Unalloyed steel	<87,022	<180	0.008	0.315	0.005	0.013	0.007	0.014	0.006	0.015	0.007	0.016
		<137,785	<280										
	Alloyed steel	101,526-137,785	200-280			0.004	0.012	0.005	0.013	0.004	0.014	0.006	0.014
		137,785-174,044	280-355										
		174,044-203,052	355-415										
	Duplex stainless steel	112,839	230										
	Austenitic stainless steel	97,900	200			0.004	0.011	0.004	0.012	-	-	-	-
	Precipitation-hardening stainless steel	146,923	300										
	Grey cast iron	101,526	220										
	Nodular cast iron	127,633	260			0.005	0.013	0.006	0.014	0.005	0.014	0.007	0.016
	Malleable cast iron	116,030	250										
	Aluminum	37,709	75										
	Aluminum alloy	64,831	130			-	-	-	-	-	-	-	-
	Fe-based alloy	136,770	280										
	Co-based alloy	156,060	320										
	Ni-based alloy	170,709	350			0.004	0.009	0.004	0.010	-	-	-	-
	Ti-alloy	183,037	370										
	Hardened steel	-	50-60HRC										
	Chilled cast iron	-	55HRC			-	-	-	-	-	-	-	-

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

AFM88-SN12

88° Approaching angle face milling cutter



Inch

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM88-02000-Z04-A0750R-SN12-C	2.000	2.031	0.750	1.654	1.575	0.393		4	SN..1206ZNN.. SN..1206..
AFM88-02500-Z06-A1000R-SN12-C	2.500	2.531	1.000	2.165	1.969	0.393		6	
AFM88-03000-Z07-A1000R-SN12-C	3.000	3.031	1.000	2.165	1.969	0.393		7	
AFM88-04000-Z08-A1500R-SN12-C	4.000	4.037	1.500	3.740	2.480	0.393		8	
AFM88-04000-Z11-A1500R-SN12-C	4.000	4.037	1.500	3.740	2.480	0.393		11	
AFM88-05000-Z10-A1500R-SN12-C	5.000	5.037	1.500	3.740	2.480	0.393		10	
AFM88-05000-Z13-A1500R-SN12	5.000	5.037	1.500	3.740	2.480	0.393		13	
AFM88-06000-Z12-A2000R-SN12	6.000	6.030	2.000	4.724	2.480	0.393		12	

Metric

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM88-050-Z04-A22R-SN12-N-C	50	51.2	22	42	40	10		4	SN..1206ZNN.. SN..1206..
AFM88-063-Z04-A22R-SN12-N-C	63	64.2	22	52	40	10		4	
AFM88-063-Z06-A22R-SN12-N-C	63	64.2	22	62	40	10		6	
AFM88-080-Z04-A27R-SN12-N-C	80	81.2	27	62	50	10		4	
AFM88-080-Z07-A27R-SN12-N-C	80	81.2	27	62	50	10		7	
AFM88-100-Z08-A32R-SN12-N-C	100	101.2	32	77	50	10		8	
AFM88-100-Z11-A32R-SN12-N-C	100	101.2	32	77	50	10		11	
AFM88-125-Z10-A40R-SN12-N-C	125	126.2	40	90	63	10		10	
AFM88-125-Z13-A40R-SN12-N-C	125	126.2	40	90	63	10		13	
AFM88-160-Z12-A40R-SN12-N	160	161.2	40	108	63	10		12	
AFM88-200-Z14-A60R-SN12-N	200	201.2	60	130	63	10		14	
AFM88-250-Z12-A60R-SN12-M	250	250.9	60	180	63	10		12	
AFM88-315-Z14-A60R-SN12-M	315	315.9	60	220	63	10		14	

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 2.000-6.000			31 in lbs
	SP050120	DT-TP20	

Note: With internal coolant
 Without internal coolant

Product code	Dimension (in)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SNGX 1206ZNN-MM3	0.031	0.047	●	●	●		●	●	
SNGX 1206ZNN-MM4	0.031	0.047	●	●	●	●	●	●	
SNGX 1206ZNN-MR6	0.031	0.047	●	●	●		●	●	
SNGX 120608-MM4	0.031	-	●	●	●		●	●	
SNGX 120612-MM4	0.047	-	●						
SNMX 120608-MM4	0.031	-	●	●	●		●	●	
SNMX 120612-MM3	0.047	-	●	●	●		●	●	
SNMX 120612-MM4	0.047	-	●	●	●		●	●	
SNMX 120612R-MM4	0.047	-	●	●	●	●	●	●	
SNMX 120612-MR6	0.047	-	●	●	●		●	●	
SNMX 120612-RR2	0.047	-	●	●	●		●	●	
SNMX 120620-MM4	0.079	-	●	●	●		●	●	
SNMX 120620-RR2	0.079	-	●	●	●		●	●	
SNHX 1206ZNN-FM2	0.031	0.047							●
SNHX 1206ZNN-W	0.039	0.173	●				●		

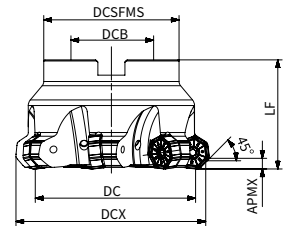
●: Stock available

Materials				Cutting depth and feed											
ISO	Material classification	Tensile strength (1bs/in²)	Hardness (HB)	SN.. 1206..											
				ap	Geometry										
					MM3	MM4	MR6	RR2	FM2						
										fz					
										(in)					
min	max	min	max	min	max	min	max	min	max	min	max				
	Unalloyed steel	<87,022	<180	0.008	0.394	0.005	0.013	0.007	0.014	0.006	0.015	0.007	0.016	-	-
		<137,785	<280												
	Alloyed steel	101,526-137,785	200-280			0.004	0.012	0.005	0.013	0.004	0.014	0.006	0.014	-	-
		137,785-174,044	280-355												
		174,044-203,052	355-415												
	Duplex stainless steel	112,839	230			0.004	0.011	0.004	0.012	-	-	-	-	-	-
	Austenitic stainless steel	97,900	200												
	Precipitation-hardening stainless steel	146,923	300												
	Grey cast iron	101,526	220			0.005	0.013	0.006	0.014	0.005	0.014	0.007	0.016	-	-
	Nodular cast iron	127,633	260												
	Malleable cast iron	116,030	250												
	Aluminum	37,709	75			-	-	-	-	-	-	-	-	0.005	0.013
	Aluminum alloy	64,831	130												
	Fe-based alloy	136,770	280			0.004	0.009	0.004	0.010	-	-	-	-	-	-
	Co-based alloy	156,060	320												
	Ni-based alloy	170,709	350												
	Ti-alloy	183,037	370												
	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC												

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

AFM45-XN07

45° Approaching angle face milling cutter



Inch

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-02000-Z04-A0750R-XN07-C	2.000	2.380	0.750	1.654	1.575	0.173		4	XN..0705..
AFM45-02000-Z05-A0750R-XN07-C	2.000	2.380	0.750	1.654	1.575	0.173		5	
AFM45-03000-Z06-A1000R-XN07-C	3.000	3.380	1.000	2.165	1.969	0.173		6	
AFM45-03000-Z07-A1000R-XN07-C	3.000	3.380	1.000	2.165	1.969	0.173		7	
AFM45-04000-Z07-A1500R-XN07-C	4.000	4.380	1.500	3.740	2.480	0.173		7	
AFM45-04000-Z08-A1500R-XN07-C	4.000	4.380	1.500	3.740	2.480	0.173		8	

Metric

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-040-Z03-A16R-XN07-C	40	49.7	16	35	40	4.4		3	XN..0705..
AFM45-050-Z04-A22R-XN07-C	50	59.7	22	42	40	4.4		4	
AFM45-050-Z05-A22R-XN07-C	50	59.7	22	42	40	4.4		5	
AFM45-063-Z05-A22R-XN07-C	63	72.7	22	48	40	4.4		5	
AFM45-063-Z06-A22R-XN07-C	63	72.7	22	48	40	4.4		6	
AFM45-080-Z06-A27R-XN07-C	80	89.7	27	62	50	4.4		6	
AFM45-080-Z07-A27R-XN07-C	80	89.7	27	62	50	4.4		7	
AFM45-100-Z07-A32R-XN07-C	100	109.7	32	77	50	4.4		7	
AFM45-100-Z08-A32R-XN07-C	100	109.7	32	77	50	4.4		8	
AFM45-125-Z08-A40R-XN07-C	125	134.7	40	87	63	4.4		8	
AFM45-125-Z10-A40R-XN07-C	125	134.7	40	87	63	4.4		10	
AFM45-160-Z09-A40R-XN07	160	169.7	40	107	63	4.4		9	
AFM45-160-Z12-A40R-XN07	160	169.7	40	107	63	4.4		12	
AFM45-200-Z14-A60R-XN07	200	209.3	60	130	63	4.4		14	
AFM45-250-Z14-A60R-XN07-S	250	259.6	60	180	63	4.4		14	

Note: With internal coolant

Without internal coolant

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 2.000-4.000			27 in lbs
	SP035120H	DT-TP15	

Product code	Dimension (in)		P			M	K		N
	corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
XNGU 0705ANN-MM3	0.031	0.043	●	●			●		
XNGU 0705ANN-MM4	0.031	0.043	●				●		
XNMU 0705ANN-MM4	0.031	0.043	●	●	●		●	●	
XNMU 0705ANN-MR6	0.031	0.043	●	●			●	●	
XNMU 070508-MM4	0.031	-	●	●		●	●	●	
XNGX 0705ANN-W	0.039	0.220	●				●		

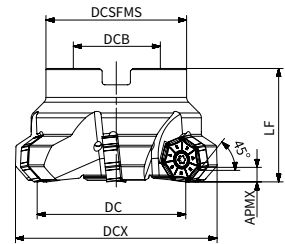
●: Stock available

Materials				Cutting depth and feed							
ISO	Material classification	Tensile strength (1bs/in²)	Hardness (HB)	XN.. 0705..							
				ap	Geometry						fz
					MM3		MM4		MR6		
					(in)						
				min	max	min	max	min	max	min	max
	Unalloyed steel	<87,022	<180	0.008	0.173	0.006	0.014	7.000	0.015	0.007	0.016
		<137,785	<280								
	Alloyed steel	101,526-137,785	200-280			0.005	0.013	0.006	0.014	0.006	0.015
		137,785-174,044	280-355								
	174,044-203,052	355-415									
	Duplex stainless steel	112,839	230								
	Austenitic stainless steel	97,900	200			0.005	0.012	0.005	0.013	-	-
	Precipitation-hardening stainless steel	146,923	300								
	Grey cast iron	101,526	220								
	Nodular cast iron	127,633	260			0.006	0.014	0.007	0.015	0.007	0.016
	Malleable cast iron	116,030	250								
	Aluminum	37,709	75			-	-	-	-	-	-
	Aluminum alloy	64,831	130								
	Fe-based alloy	136,770	280								
	Co-based alloy	156,060	320			0.004	0.010	0.005	0.011	-	-
	Ni-based alloy	170,709	350								
	Ti-alloy	183,037	370								
	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

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

AFM45-XN09

45° Approaching angle face milling cutter



Inch

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-02500-Z05-A1000R-XN09-C	2.500	2.980	1.000	2.165	1.969	0.236		5	XN..0906..
AFM45-03000-Z06-A1000R-XN09-C	3.000	3.480	1.000	2.165	1.969	0.236		6	
AFM45-04000-Z07-A1500R-XN09-C	4.000	4.480	1.500	3.740	2.480	0.236		7	
AFM45-04000-Z08-A1500R-XN09-C	4.000	4.480	1.500	3.740	2.480	0.236		8	
AFM45-05000-Z08-A1500R-XN09-C	5.000	5.480	1.500	3.740	2.480	0.236		8	
AFM45-05000-Z10-A1500R-XN09-C	5.000	5.480	1.500	3.740	2.480	0.236		10	
AFM45-06000-Z09-A2000R-XN09	6.000	6.480	2.000	4.724	2.480	0.236		9	
AFM45-06000-Z11-A2000R-XN09	6.000	6.480	2.000	4.724	2.480	0.236		11	
AFM45-08000-Z12-A2500R-XN09	8.000	8.480	2.500	5.118	2.480	0.236		12	

Metric

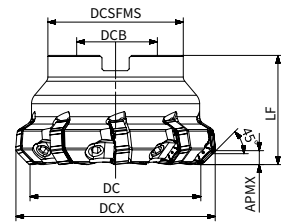
Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-063-Z05-A22R-XN09-C	63	75.2	22	48	40	6		5	XN..0906..
AFM45-080-Z06-A27R-XN09-C	80	92.2	27	62	50	6		6	
AFM45-100-Z07-A32R-XN09-C	100	112.2	32	80	50	6		7	
AFM45-100-Z08-A32R-XN09-C	100	112.2	32	80	50	6		8	
AFM45-125-Z08-A40R-XN09-C	125	137.2	40	87	63	6		8	
AFM45-125-Z10-A40R-XN09-C	125	137.2	40	87	63	6		10	
AFM45-160-Z09-A40R-XN09	160	172.2	40	107	63	6		9	
AFM45-160-Z11-A40R-XN09	160	172.2	40	107	63	6		11	
AFM45-200-Z12-A60R-XN09	200	212.2	60	130	63	6		12	
AFM45-250-Z12-A60R-XN09-S	250	262.8	60	180	63	6		12	
AFM45-315-Z14-A60R-XN09-S	315	328.2	60	240	63	6		14	

Note: With internal coolant
 Without internal coolant

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 2.500-8.000			44 in lbs
	SP050130	DT-TP20	

AFM45-XN09-W

45° Wedge clamping face milling cutter

**Inch**

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-03000-Z09-A1000R-XN09-W	3.000	3.502	1.000	2.165	1.969	0.236		9	XN..0906..
AFM45-04000-Z12-A1500R-XN09-W	4.000	4.502	1.500	3.740	2.480	0.236		12	
AFM45-05000-Z16-A1500R-XN09-W	5.000	5.502	1.500	3.740	2.480	0.236		16	
AFM45-05000-Z16-A1500L-XN09-W	5.000	5.502	1.500	3.740	2.480	0.236		16	
AFM45-06000-Z20-A2000R-XN09-W	6.000	6.502	2.000	4.724	2.480	0.236		20	
AFM45-06000-Z20-A2000L-XN09-W	6.000	6.502	2.000	4.724	2.480	0.236		20	
AFM45-08000-Z26-A2500R-XN09-W	8.000	8.502	2.500	5.118	2.480	0.236		26	
AFM45-08000-Z26-A2500L-XN09-W	8.000	8.502	2.500	5.118	2.480	0.236		26	

Metric

Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-080-Z09-A27R-XN09-W	80	92.7	27	62	50	6		9	XN..0906..
AFM45-100-Z12-A32R-XN09-W	100	112.7	32	80	50	6		12	
AFM45-125-Z16-A40R-XN09-W	125	137.7	40	87	63	6		16	
AFM45-125-Z16-A40L-XN09-W	125	137.7	40	87	63	6		16	
AFM45-160-Z20-A40R-XN09-W	160	172.7	40	107	63	6		20	
AFM45-160-Z20-A40L-XN09-W	160	172.7	40	107	63	6		20	
AFM45-200-Z26-A60R-XN09-W	200	212.7	60	130	63	6		26	
AFM45-200-Z26-A60L-XN09-W	200	212.7	60	130	63	6		26	
AFM45-250-Z30-A60R-XN09-W	250	262.7	60	170	63	6		30	
AFM45-315-Z39-A60R-XN09-W	315	327.7	60	250	63	6		39	

Note: With internal coolant

Without internal coolant

Dimension (in)	Spare parts			
Cutter diameter	Wedge	Screw	Wrench	Touque
Ø 3.000-8.000				62 in lbs
	AWG-8H	WD080320F	AWH4	

Product code	Dimension (in)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
XNGU 0906ANN-MM3	0.031	0.055	●	●	●		●		
XNGU 0906ANN-MM4	0.031	0.055	●	●	●		●		
XNMU 0906ANN-MR6	0.031	0.055	●				●	●	
XNMF 0906ANN-MR6	0.031	0.055					●	●	
XNMU 090612-MM4	0.047	-	●	●		●	●	●	
XNGX 0906ANN-W	0.039	0.295	●				●		

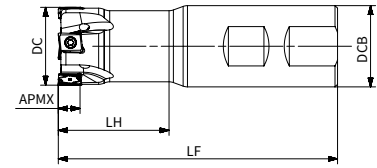
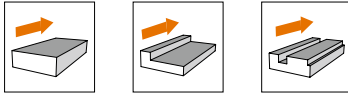
●: Stock available

Materials				Cutting depth and feed							
ISO	Material classification	Tensile strength (1bs/in²)	Hardness (HB)	XN..0906..							
				ap	Geometry						
					MM3		MM4		MR6		
					fz						
				(in)							
min	max	min	max	min	max	min	max				
	Unalloyed steel	<87,022	<180	0.008	0.236	0.006	0.014	0.007	0.015	0.007	0.016
		<137,785	<280								
	Alloyed steel	101,526-137,785	200-280			0.005	0.013	0.015	0.014	0.006	0.015
		137,785-174,044	280-355								
		174,044-203,052	355-415								
	Duplex stainless steel	112,839	230			0.005	0.012	0.005	0.013	-	-
	Austenitic stainless steel	97,900	200								
	Precipitation-hardening stainless steel	146,923	300								
	Grey cast iron	101,526	220			0.006	0.014	0.007	0.015	0.007	0.016
	Nodular cast iron	127,633	260								
	Malleable cast iron	116,030	250								
	Aluminum	37,709	75			-	-	-	-	-	-
	Aluminum alloy	64,831	130								
	Fe-based alloy	136,770	280			0.004	0.010	0.005	0.011	-	-
	Co-based alloy	156,060	320								
	Ni-based alloy	170,709	350								
	Ti-alloy	183,037	370								
	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

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

ASM90-LN09

Square shoulder milling cutter

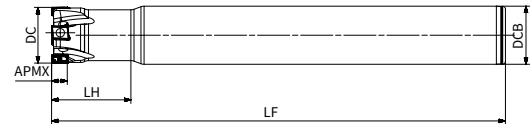


Inch

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-01000-Z03-W1000R-LN09-C	1.000	1.000	4.000	1.719	0.314		3	LNHU 0904..
ASM90-01000-Z04-W1000R-LN09-C	1.000	1.000	4.000	1.719	0.314		4	
ASM90-01250-Z04-W1250R-LN09-C	1.250	1.250	4.000	1.719	0.314		4	
ASM90-01250-Z05-W1250R-LN09-C	1.250	1.250	4.000	1.719	0.314		5	
ASM90-01500-Z04-W1500R-LN09-C	1.500	1.250	4.000	1.200	0.314		4	
ASM90-01500-Z06-W1500R-LN09-C	1.500	1.250	4.000	1.200	0.314		6	

Metric

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-025-Z03-W25R-LN09-C	25	25	100	39	8		3	LNHU 0904..
ASM90-025-Z04-W25R-LN09-C	25	25	100	39	8		4	
ASM90-032-Z04-W32R-LN09-C	32	32	110	44	8		4	
ASM90-032-Z05-W32R-LN09-C	32	32	110	44	8		5	
ASM90-040-Z04-W32R-LN09-C	40	32	110	25	8		4	
ASM90-040-Z06-W32R-LN09-C	40	32	110	25	8		6	



Inch

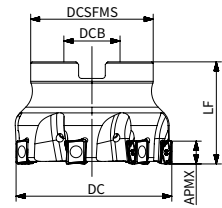
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-00750-Z02-C0750R-LN09-L4500	0.750	0.750	4.500	1.220	0.314		2	LNHU 0904..
ASM90-00750-Z03-C0750R-LN09-L4500	0.750	0.750	4.500	1.220	0.314		3	
ASM90-01000-Z03-C1000R-LN09-L8000-C	1.000	1.000	8.000	1.574	0.314		3	
ASM90-01000-Z04-C1000R-LN09-L8000-C	1.000	1.000	8.000	1.574	0.314		4	
ASM90-01250-Z04-C1250R-LN09-L10000-C	1.250	1.250	10.000	1.968	0.314		4	
ASM90-01250-Z05-C1250R-LN09-L10000-C	1.250	1.250	10.000	1.968	0.314		5	

Metric

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-020-Z02-C20R-LN09-L110	20	20	110	30	8		2	LNHU 0904..
ASM90-020-Z03-C20R-LN09-L110	20	20	110	30	8		3	
ASM90-021-Z02-C20R-LN09-L200	21	20	200	30	8		2	
ASM90-025-Z03-C25R-LN09-L200-C	25	25	200	34	8		3	
ASM90-025-Z04-C25R-LN09-L200-C	25	25	200	34	8		4	
ASM90-026-Z03-C25R-LN09-L200-C	26	25	200	34	8		3	
ASM90-028-Z03-C25R-LN09-L110-C	28	25	110	34	8		3	
ASM90-032-Z04-C32R-LN09-L250-C	32	32	250	45	8		4	
ASM90-032-Z05-C32R-LN09-L250-C	32	32	250	45	8		5	
ASM90-033-Z04-C32R-LN09-L250-C	33	32	250	45	8		4	

ASM90-LN09

Square shoulder milling cutter



Inch

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-01500-Z04-A0750R-LN09-C	1.500	0.750	1.575	1.378	0.314		4	LNHU 0904..
ASM90-01500-Z06-A0750R-LN09-C	1.500	0.750	1.575	1.378	0.314		6	
ASM90-02000-Z05-A0750R-LN09-C	2.000	0.750	1.575	1.654	0.314		5	
ASM90-02000-Z07-A0750R-LN09-C	2.000	0.750	1.575	1.654	0.314		7	
ASM90-02500-Z07-A1000R-LN09-C	2.500	1.000	1.969	2.165	0.314		7	
ASM90-02500-Z10-A1000R-LN09-C	2.500	1.000	1.969	2.165	0.314		10	
ASM90-03000-Z09-A1000R-LN09-C	3.000	1.000	1.969	2.165	0.314		9	
ASM90-03000-Z13-A1000R-LN09-C	3.000	1.000	1.969	2.165	0.314		13	

Metric

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-040-Z04-A16R-LN09-C	40	16	40	35	8		4	LNHU 0904..
ASM90-040-Z06-A16R-LN09-C	40	16	40	35	8		6	
ASM90-050-Z05-A22R-LN09-C	50	22	40	42	8		5	
ASM90-050-Z07-A22R-LN09-C	50	22	40	42	8		7	
ASM90-063-Z07-A22R-LN09-C	63	22	40	48	8		7	
ASM90-063-Z10-A22R-LN09-C	63	22	40	48	8		10	
ASM90-080-Z09-A27R-LN09-C	80	27	50	62	8		9	
ASM90-080-Z13-A27R-LN09-C	80	27	50	62	8		13	

Note: With internal coolant
 Without internal coolant

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 0.750-3.000			16 in lbs
	SP030083	DT-TP09	

Product code	Dimension (in)		P		M		K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 090404ER-FM2	0.016	0.073							●
LNHU 090404ER-MM3	0.016	0.073		●		●			
LNHU 090404ER-MR2	0.016	0.073	●	●		●	●	●	
LNHU 090408ER-MR2	0.031	0.051	●	●		●	●	●	
LNHU 090412ER-MR2	0.047	0.039	●			●	●		
LNHU 090416ER-MR2	0.063	0.026	●			●	●		
LNHU 090420ER-MR2	0.079	0.026	●			●	●		
LNHU 0904PDER-W	0.016	0.142	●				●		

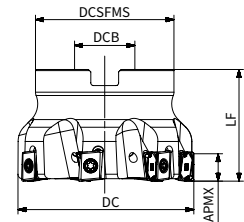
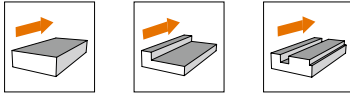
●: Stock available

Materials				Cutting depth and feed							
ISO	Material classification	Tensile strength (1bs/in²)	Hardness (HB)	LNHU 0904..							
				ap		Geometry					
						MR2		MM4		FM2	
						fz					
				(in)							
min	max	min	max	min	max	min	max				
	Unalloyed steel	<87,022	<180	0.008	0.314	0.003	0.011	0.003	0.010	-	-
		<137,785	<280								
	Alloyed steel	101,526-137,785	200-280			0.002	0.009	0.002	0.008	-	-
		137,785-174,044	280-355								
		174,044-203,052	355-415								
	Duplex stainless steel	112,839	230			0.002	0.009	0.002	0.008	-	-
	Austenitic stainless steel	97,900	200								
	Precipitation-hardening stainless steel	146,923	300								
	Grey cast iron	101,526	220			0.003	0.012	0.003	0.011	-	-
	Nodular cast iron	127,633	260								
	Malleable cast iron	116,030	250								
	Aluminum	37,709	75			-	-	-	-	0.002	0.010
	Aluminum alloy	64,831	130								
	Fe-based alloy	136,770	280					0.003	0.006	-	-
	Co-based alloy	156,060	320								
	Ni-based alloy	170,709	350								
	Ti-alloy	183,037	370								
	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

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

ASM90-LN13

Square shoulder milling cutter



Inch

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-02000-Z05-A0750R-LN13-C	2.000	0.750	1.575	1.654	0.472		5	LNHU 1306..
ASM90-02000-Z06-A0750R-LN13-C	2.000	0.750	1.575	1.654	0.472		6	
ASM90-03000-Z07-A1000R-LN13-C	3.000	1.000	1.969	2.165	0.472		7	
ASM90-03000-Z10-A1000R-LN13-C	3.000	1.000	1.969	2.165	0.472		10	
ASM90-04000-Z09-A1500R-LN13-C	4.000	1.500	2.480	3.740	0.472		9	
ASM90-04000-Z13-A1500R-LN13	4.000	1.500	2.480	3.740	0.472		13	

Metric

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-040-Z04-A16R-LN13-C	40	16	40	35	12		4	LNHU 1306..
ASM90-040-Z05-A16R-LN13-C	40	16	40	35	12		5	
ASM90-050-Z05-A22R-LN13-C	50	22	40	42	12		5	
ASM90-050-Z06-A22R-LN13-C	50	22	40	42	12		6	
ASM90-063-Z04-A22R-LN13-C	63	22	40	48	12		4	
ASM90-063-Z06-A22R-LN13-C	63	22	40	48	12		6	
ASM90-063-Z08-A22R-LN13-C	63	22	40	48	12		8	
ASM90-080-Z05-A27R-LN13-C	80	27	50	62	12		5	
ASM90-080-Z07-A27R-LN13-C	80	27	50	62	12		7	
ASM90-080-Z10-A27R-LN13-C	80	27	50	62	12		10	
ASM90-100-Z07-A32R-LN13-C	100	32	50	80	12		7	
ASM90-100-Z09-A32R-LN13-C	100	32	50	80	12		9	
ASM90-100-Z13-A32R-LN13-C	100	32	50	80	12		13	
ASM90-125-Z09-A40R-LN13-C	125	40	63	87	12		9	
ASM90-125-Z11-A40R-LN13-C	125	40	63	87	12		11	
ASM90-125-Z16-A40R-LN13-C	125	40	63	87	12		16	
ASM90-160-Z09-A40R-LN13	160	40	63	107	12		9	
ASM90-160-Z13-A40R-LN13	160	40	63	107	12		13	
ASM90-200-Z12-A60R-LN13	200	60	63	140	12		12	
ASM90-250-Z12-A60R-LN13-M	250	60	63	180	12		12	
ASM90-315-Z14-A60R-LN13-M	315	60	63	220	12		14	

Note: With internal coolant

Without internal coolant

Dimension (in)	Spare parts								
Cutter diameter	Screw	Wrench	Wedge	Wedge wrench	Wedge screw	Cartridge	Cartridge wrench	Cartridg escrew	Torque
Ø 2.000- 4.000									3.5Nm
	SP040115	DT-TP15	AWG-6H-6	LT-H3	AWCH624	C-LN1342-62-90	LT-H5	ACH622	

Product code	Dimension (in)		P		M		K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 130608ER-FM2	0.031	0.106							●
LNHU 130608ER-MM3	0.031	0.106		●		●			
LNHU 130608ER-MR2	0.031	0.106	●	●	●	●	●	●	
LNHU 130612ER-MR2	0.047	0.091	●	●	●	●	●		
LNHU 130616ER-MR2	0.063	0.075	●	●	●	●	●	●	
LNHU 130620ER-MR2	0.079	0.059	●	●	●	●			
LNHU 130624ER-MR2	0.094	0.039		●	●	●			
LNHU 130631ER-MR2	0.122	0.016		●	●	●	●		
LNHU 1306PDR-W	0.031	0.220	●				●		

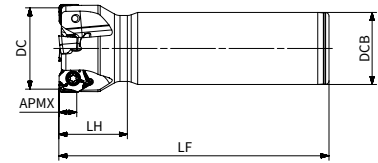
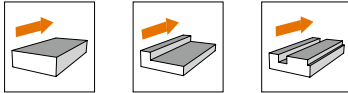
●: Stock available

Materials				Cutting depth and feed							
ISO	Material classification	Tensile strength (1bs/in ²)	Hardness (HB)	LNHU..1306..							
				ap	Geometry						
					MM3		MR2				
					fz						
				(in)							
min	max	min	max	min	max						
	Unalloyed steel	<87,022	<180	0.012	0.472	0.004	0.012	0.005	0.014		
		<137,785	<280								
	Alloyed steel	101,526-137,785	200-280								
		137,785-174,044	280-355								
		174,044-203,052	355-415								
	Duplex stainless steel	112,839	230								
	Austenitic stainless steel	97,900	200								
	Precipitation-hardening stainless steel	146,923	300								
	Grey cast iron	101,526	220					-	-	0.005	0.014
	Nodular cast iron	127,633	260								
	Malleable cast iron	116,030	250								
	Aluminum	37,709	75					-	-	-	-
	Aluminum alloy	64,831	130								
	Fe-based alloy	136,770	280					0.002	0.007	0.003	0.009
	Co-based alloy	156,060	320								
	Ni-based alloy	170,709	350								
	Ti-alloy	183,037	370								
	Hardened steel	-	50-60HRC					-	-	0.003	0.008
	Chilled cast iron	-	55HRC								

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

ASM90-WN08-N

Square shoulder milling cutter

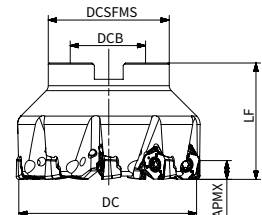


Inch

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-01500-Z03-W1250R-WN08-N-C	1.500	1.250	4.500	1.378	0.275		3	WNMU 0806..
ASM90-01500-Z04-W1250R-WN08-N-C	1.500	1.250	4.500	1.378	0.275		4	

Metric

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-040-Z03-W32R-WN08-N-C	40	32	120	30	7		3	WNMU 0806..
ASM90-040-Z04-W32R-WN08-N-C	40	32	120	30	7		4	



Inch

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-02000-Z04-A0750R-WN08-N-C	2.000	0.750	1.575	1.654	0.275		4	WNMU 0806..
ASM90-02000-Z05-A0750R-WN08-N-C	2.000	0.750	1.575	1.654	0.275		5	
ASM90-02500-Z04-A1000R-WN08-N-C	2.500	1.000	1.969	2.165	0.275		4	
ASM90-02500-Z06-A1000R-WN08-N-C	2.500	1.000	1.969	2.165	0.275		6	
ASM90-02500-Z07-A1000R-WN08-N-C	2.500	1.000	1.969	2.165	0.275		7	
ASM90-03000-Z05-A1000R-WN08-N-C	3.000	1.000	1.969	2.165	0.275		5	
ASM90-03000-Z07-A1000R-WN08-N-C	3.000	1.000	1.969	2.165	0.275		7	
ASM90-03000-Z09-A1000R-WN08-N-C	3.000	1.000	1.969	2.165	0.275		9	
ASM90-04000-Z06-A1500R-WN08-N-C	4.000	1.500	2.480	3.740	0.275		6	
ASM90-04000-Z08-A1500R-WN08-N-C	4.000	1.500	2.480	3.740	0.275		8	
ASM90-04000-Z11-A1500R-WN08-N	4.000	1.500	2.480	3.740	0.275		11	
ASM90-05000-Z07-A1500R-WN08-N-C	5.000	1.500	2.480	3.740	0.275		7	
ASM90-05000-Z11-A1500R-WN08-N-C	5.000	1.500	2.480	3.740	0.275		11	
ASM90-05000-Z13-A1500R-WN08-N	5.000	1.500	2.480	3.740	0.275		13	
ASM90-06000-Z08-A2000R-WN08-N	6.000	2.000	2.480	4.724	0.275		8	
ASM90-06000-Z12-A2000R-WN08-N	6.000	2.000	2.480	4.724	0.275		12	

Metric

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-050-Z04-A22R-WN08-N-C	50	22	40	42	7		4	WNMU 0806..
ASM90-050-Z05-A22R-WN08-N-C	50	22	40	42	7		5	
ASM90-063-Z04-A22R-WN08-N-C	63	22	40	48	7		4	
ASM90-063-Z06-A22R-WN08-N-C	63	22	40	48	7		6	
ASM90-063-Z07-A22R-WN08-N-C	63	22	40	48	7		7	
ASM90-080-Z05-A27R-WN08-N-C	80	27	50	62	7		5	
ASM90-080-Z07-A27R-WN08-N-C	80	27	50	62	7		7	
ASM90-080-Z09-A27R-WN08-N-C	80	27	50	62	7		9	
ASM90-100-Z06-A32R-WN08-N-C	100	32	50	80	7		6	
ASM90-100-Z08-A32R-WN08-N-C	100	32	50	80	7		8	
ASM90-100-Z11-A32R-WN08-N-C	100	32	50	80	7		11	
ASM90-125-Z07-A40R-WN08-N-C	125	40	63	87	7		7	
ASM90-125-Z11-A40R-WN08-N-C	125	40	63	87	7		11	
ASM90-125-Z13-A40R-WN08-N-C	125	40	63	87	7		13	
ASM90-160-Z08-A40R-WN08-N	160	40	63	107	7		8	
ASM90-160-Z12-A40R-WN08-N	160	40	63	107	7		12	
ASM90-200-Z14-A60R-WN08-N	200	60	63	140	7		14	
ASM90-250-Z16-A60R-WN08-N	250	60	63	180	7		16	

Note: With internal coolant
 Without internal coolant

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 1.500-6.000			3.5Nm
	SP040112	DT-TP15	

Product code	Dimension (in)		P	M		K	
	Corner radius	Wiper length	AP251U	AP351M	AP403M	AC301K	AP251K
WNMU 080608R-MR2	0.031	0.091	●	●	●	●	●
WNMU 080608R-MM4	0.031	0.091	●	●	●	●	●
WNMU 080608R-MM3	0.031	0.091	●	●	●	●	●
WNMU 080612R-MR2	0.047	0.047	●	●		●	●
WNMU 080612R-MM4	0.047	0.046	●	●	●		●
WNMU 080616R-MR2	0.063	0.032	●		●		
WNMU 080616R-MM4	0.063	0.031	●		●		

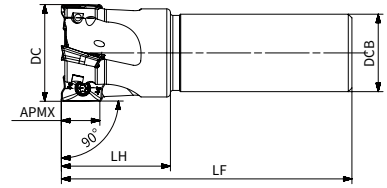
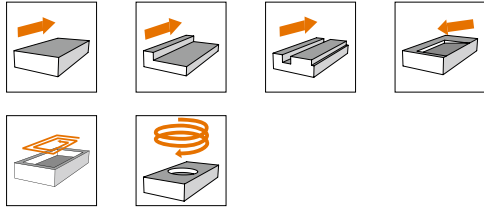
●: Stock available

Materials				Cutting depth and feed								
ISO	Material classification	Tensile strength (1bs/in ²)	Hardness (HB)	WNMU 0806..								
				ap								
					MM3		MM4		MR2			
					(in)							
				min	max	min	max	min	max	min	max	
	Unalloyed steel	<87,022	<180	0.023	0.275	0.005	0.010	0.005	0.011	0.005	0.012	
		<137,785	<280									
	Alloyed steel	101,526-137,785	200-280			0.004	0.008	0.004	0.010	0.004	0.011	
		137,785-174,044	280-355									
	174,044-203,052	355-415										
	Duplex stainless steel	112,839	230									
	Austenitic stainless steel	97,900	200			0.08	0.007	0.003	0.007	-	-	
	Precipitation-hardening stainless steel	146,923	300									
	Grey cast iron	101,526	220			0.003	0.008	0.004	0.011	0.006	0.012	
	Nodular cast iron	127,633	260									
	Malleable cast iron	116,030	250									
	Fe-based alloy	136,770	280			0.005	0.005	0.004	0.006	-	-	
	Co-based alloy	156,060	320									
	Ni-based alloy	170,709	350									
	Ti-alloy	183,037	370									
	Hardened steel	-	50-60HRC			-	-	-	-	-	-	
	Chilled cast iron	-	55HRC									

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

ASM90-AP17

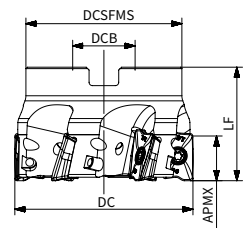
Square shoulder milling cutter

**Inch**

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-01000-Z02-C1000R-AP17-L4000-C	1.000	1.000	4.000	1.750	0.630		2	APKT 1705..
ASM90-01250-Z03-C1250R-AP17-L4500-C	1.250	1.250	4.500	2.250	0.630		3	
ASM90-01500-Z04-C1500R-AP17-L10000-C	1.500	1.500	10.000	2.250	0.630		4	

Metric

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-025-Z02-C25R-AP17-L100-C	25	25	100	39	16		2	APKT 1705..
ASM90-032-Z03-C32R-AP17-L110-C	32	32	110	40	16		3	
ASM90-032-Z03-C32R-AP17-L200-C	32	32	200	40	16		3	
ASM90-040-Z04-C32R-AP17-L120-C	40	32	120	45	16		4	

**Inch**

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-02000-Z05-A0750R-AP17-C	2.000	0.750	1.575	1.654	0.630		5	APKT 1705..
ASM90-02500-Z06-A1000R-AP17-C	2.500	1.000	1.969	2.165	0.630		6	

Metric

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-050-Z05-A22R-AP17-C	50	22	40	45	16		5	APKT 1705..
ASM90-063-Z06-A22R-AP17-C	63	22	40	55	16		6	
ASM90-080-Z06-A27R-AP17-C	80	27	50	62	16		6	
ASM90-100-Z08-A32R-AP17-C	100	32	50	78	16		8	

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 1.000	SP040084	DT-TP15	4.0Nm
Ø 1.250-2.500	SP040100H		

Note: With internal coolant
 Without internal coolant

●: Stock available

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

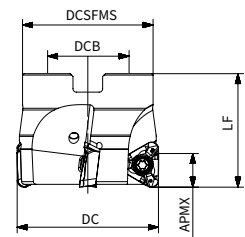
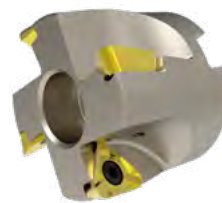
ASM90-TD15

Square shoulder milling cutter



Inch

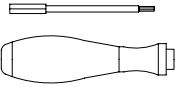
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-01250-Z02-C1250R-TD15-C	1.250	1.250	5.125	2.750	0.433		2	TD.T 1505..
ASM90-01250-Z02-C1250R-TD15-L8000-C	1.250	1.250	8.000	2.750	0.433		2	
ASM90-01500-Z03-C1250R-TD15-C	1.500	1.250	4.724	1.575	0.433		3	
ASM90-01500-Z03-C1250R-TD15-L8000-C	1.500	1.250	8.000	1.575	0.433		3	

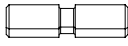
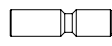


Inch

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-01500-Z04-A0750R-TD15-C	1.500	0.750	1.575	1.378	0.433		4	TD.T 1505..
ASM90-02000-Z04-A0750R-TD15-C	2.000	0.750	1.575	1.654	0.433		4	
ASM90-02000-Z05-A0750R-TD15-C	2.000	0.750	1.575	1.654	0.433		5	
ASM90-02500-Z04-A1000R-TD15-C	2.500	1.000	1.969	2.165	0.433		4	
ASM90-02500-Z05-A1000R-TD15-C	2.500	1.000	1.969	2.165	0.433		5	
ASM90-02500-Z06-A1000R-TD15-C	2.500	1.000	1.969	2.165	0.433		6	
ASM90-03000-Z05-A1000R-TD15-C	3.000	1.000	1.969	2.165	0.433		5	
ASM90-03000-Z06-A1000R-TD15-C	3.000	1.000	1.969	2.165	0.433		6	
ASM90-03000-Z07-A1000R-TD15-C	3.000	1.000	1.969	2.165	0.433		7	
ASM90-04000-Z06-A1500R-TD15-C	4.000	1.500	2.480	3.740	0.433		6	
ASM90-04000-Z08-A1500R-TD15-C	4.000	1.500	2.480	3.740	0.433		8	
ASM90-05000-Z07-A1500R-TD15-C	5.000	1.500	2.480	3.740	0.433		7	
ASM90-05000-Z09-A1500R-TD15-C	5.000	1.500	2.480	3.740	0.433		9	
ASM90-06000-Z08-A2000R-TD15	6.000	2.000	2.480	4.724	0.433		8	
ASM90-06000-Z10-A2000R-TD15	6.000	2.000	2.480	4.724	0.433		10	
ASM90-08000-Z09-A2500R-TD15	8.000	2.500	2.480	5.118	0.433		9	
ASM90-08000-Z11-A2500R-TD15	8.000	2.500	2.480	5.118	0.433		11	

Note: With internal coolant
 Without internal coolant

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 1.250-8.000			3.5Nm
	SP040100H	DT-TP15	
ASM90-01500-Z04-A0750R-TD15-C	WD080300	LT-H4	

Mounting bolt	Mounting bolt wrench	Cartridge screw	Cartridge screw wrench	Wedge	Wedge screw	Wedge screw wrench	Cartridge
							
WD080300	LT-H4	ACH622	LT-H5	AWG-6H-6	AWCH624	LT-H3	C-TD1540-62-90

Product code	Dimension (in)		P	M		K		N
	Corner radius	Wiper length	AP251U	AP351M	AP403M	AC301K	AP251K	AW100K
TDMT 150508R-MM4	0.031	0.059	●	●	●	●	●	
TDMT 150512R-MM4	0.047	0.039	●	●	●	●	●	
TDMT 150516R-MM4	0.063	0.037	●	●	●	●	●	
TDMT 150520R-MM4	0.079	0.028	●		●		●	
TDMT 150524R-MM4	0.094	0.023	●		●		●	
TDMT 150531R-MM4	0.122	0.016	●		●		●	
TDMT 150540R-MM4	0.157	0.016	●		●		●	
TDMT 150508R-MM3	0.031	0.059	●		●		●	
TDHT 150508R-MM4	0.031	0.059	●				●	

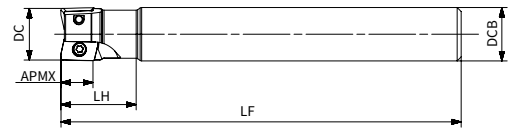
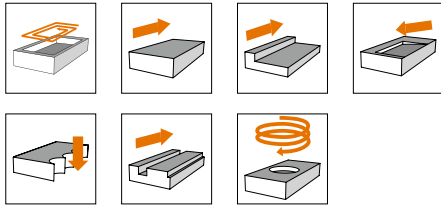
●: Stock available

Materials				Cutting depth and feed			
ISO	Material classification	Tensile strength (lbs/in ²)	Hardness (HB)	TD.T 1505..			
				ap		fz	
				(in)			
				min	max	min	max
	Unalloyed steel	<87,022	<180	0.004	0.433	0.003	0.010
		<137,785	<280				
	Alloyed steel	101,526-137,785	200-280			0.002	0.009
		137,785-174,044	280-355				
		174,044-203,052	355-415				
	Duplex stainless steel	112,839	230				
	Austenitic stainless steel	97,900	200			0.002	0.008
	Precipitation-hardening stainless steel	146,923	300				
	Grey cast iron	101.526	220			0.003	0.010
	Nodular cast iron	127.633	260				
	Malleable cast iron	116.030	250				
	Aluminum	37,709	75				
	Aluminum alloy	64,831	130	0.002	0.012		
	Fe-based alloy	136,77	280	0.002	0.007		
	Co-based alloy	156,060	320				
	Ni-based alloy	170,709	350				
	Ti-alloy	183,037	370				
	Hardened steel	-	50-60HRC				
	Chilled cast iron	-	55HRC	-	-		

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

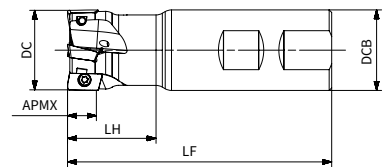
ASM90-A012

Square shoulder milling cutter



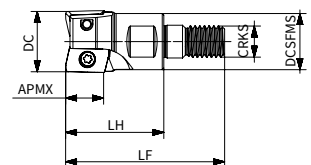
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Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-00750-Z02-C0750R-A012-L6000-C	0.750	0.750	6.000	1.102	0.433		2	AO.T 1204..
ASM90-01000-Z03-C1000R-A012-L6700-C	1.000	1.000	6.700	1.299	0.433		3	
ASM90-01250-Z04-C1250R-A012-L10000-C	1.250	1.250	10.000	1.378	0.433		4	



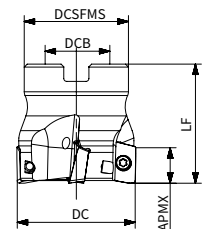
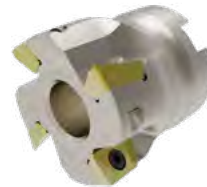
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Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-00750-Z02-W0750R-A012-C	0.750	0.750	3.346	1.181	0.433		2	AO.T 1204..
ASM90-01000-Z03-W0750R-A012-C	1.000	0.750	3.740	1.378	0.433		3	
ASM90-01250-Z04-W1250R-A012-C	1.250	1.250	4.134	1.575	0.433		4	
ASM90-01500-Z04-W1250R-A012-C	1.500	1.500	4.724	1.772	0.433		4	



Inch

Product code	DC	LF	LH	CRKS	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-00750-Z02-M10R-A012-C	0.750	2.008	1.220	M10	0.709	0.433		2	AO.T 1204..
ASM90-01000-Z03-M12R-A012-C	1.000	2.323	1.457	M12	0.906	0.433		3	
ASM90-01250-Z04-M16R-A012-C	1.250	2.835	1.890	M16	1.142	0.433		4	

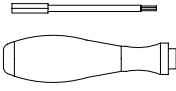


Inch

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-01500-Z04-A0750R-A012-C	1.500	0.750	1.575	1.378	0.433		4	AO.T 1204..
ASM90-02000-Z05-A0750R-A012-C	2.000	0.750	1.575	1.654	0.433		5	
ASM90-02000-Z07-A0750R-A012-C	2.000	0.750	1.575	1.654	0.433		7	
ASM90-02500-Z06-A1000R-A012-C	2.500	1.000	1.969	2.165	0.433		6	
ASM90-02500-Z08-A1000R-A012-C	2.500	1.000	1.969	2.165	0.433		8	
ASM90-03000-Z07-A1000R-A012-C	3.000	1.000	1.969	2.165	0.433		7	
ASM90-03000-Z10-A1000R-A012-C	3.000	1.000	1.969	2.165	0.433		10	

Note: With internal coolant

Without internal coolant

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 0.750-1.250	SP035078		4.0Nm
Ø 1.500-3.000	SP035086	DT-TP10	

Product code	Dimension (in)		P	M		K		S
	Corner radius	Wiper length	AP251U	AP351M	AP403M	AC301K	AP251K	AP403S
AOGU 120408ER-MM3	0.031	-	●	●	●			●
AOMT 120408ER-MM4	0.031	0.061	●	●	●		●	●
AOMT 120412ER-MM4	0.047	0.046		●	●			●
AOMT 120416ER-MM4	0.063	0.046		●	●			●
AOMT 120420ER-MM4	0.079	0.038	●	●	●			●
AOMT 120424ER-MM4	0.094	0.037	●	●	●			●
AOMT 120431ER-MM4	0.122	0.023		●	●			●
AOMT 120440ER-MM4	0.157	0.030		●	●			●

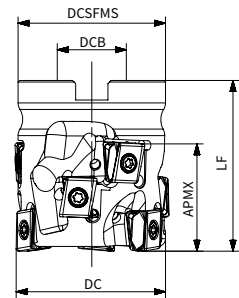
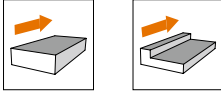
●: Stock available

Materials				Cutting depth and feed			
ISO	Material classification	Tensile strength (1bs/in²)	Hardness (HB)	A0.T 1204..			
				ap		fz	
				(in)			
				min	max	min	max
	Unalloyed steel	<87,022	<180	0.004	0.433	0.003	0.010
		<137,785	<280				
	Alloyed steel	101,526-137,785	200-280			0.002	0.009
		137,785-174,044	280-355				
		174,044-203,052	355-415				
	Duplex stainless steel	112839	230				
	Austenitic stainless steel	97900	200			0.002	0.008
	Precipitation-hardening stainless steel	146923	300				
	Grey cast iron	101,526	220			0.003	0.010
	Nodular cast iron	127,633	260				
	Malleable cast iron	116,030	250				
	Aluminum	37,709	75			0.002	0.012
	Aluminum alloy	64,831	130				
	Fe-based alloy	136,770	280			0.002	0.007
	Co-based alloy	156,060	320				
	Ni-based alloy	170,709	350				
	Ti-alloy	183,037	370				
	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

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

APE90-LN13

Square shoulder porcupine milling cutter

**Inch**

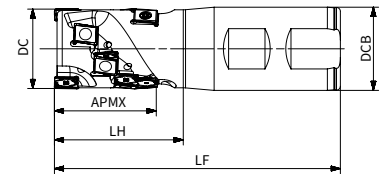
Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Clamping screw	Z	Row	Insert QTY	Inserts
APE90-01500-Z02-A0750R-LN13-L1339-F-C	1.500	0.750	2.165	1.535	1.339		SH100400	2	3	6	LNHU 1306..
APE90-01500-Z02-A0750R-LN13-L1772-F-C	1.500	0.750	2.559	1.535	1.772		SH100450	2	4	8	
APE90-02000-Z03-A0750R-LN13-L1339-F-C	2.000	0.750	2.165	1.870	1.339		SH100400	3	3	9	
APE90-02000-Z03-A0750R-LN13-L1772-F-C	2.000	0.750	2.559	1.870	1.772		SH100450	3	4	12	
APE90-02500-Z04-A1000R-LN13-L2205-F-C	2.500	1.000	3.150	2.343	2.205		SH120600	4	5	20	
APE90-02500-Z04-A1000R-LN13-L1772-F-C	2.500	1.000	2.756	2.343	1.772		SH120500	4	4	16	
APE90-03000-Z05-A1500R-LN13-L2205-F-C	3.000	1.500	3.346	2.976	2.205		SH160650	5	5	25	

Metric

Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Clamping screw	Z	Row	Insert QTY	Inserts
APE90-040-Z02-A16R-LN13-L34-F-C	40	16	55	39	34		SH100400	2	3	6	LNHU 1306..
APE90-040-Z02-A16R-LN13-L45-F-C	40	16	65	39	45		SH100450	2	4	8	
APE90-050-Z03-A22R-LN13-L34-F-C	50	22	55	47.5	34		SH100400	3	3	9	
APE90-050-Z03-A22R-LN13-L45-F-C	50	22	65	47.5	45		SH100450	3	4	12	
APE90-063-Z04-A27R-LN13-L56-F-C	63	27	80	59.5	56		SH120600	4	5	20	
APE90-063-Z04-A27R-LN13-L45-F-C	63	27	70	59.5	45		SH120500	4	4	16	
APE90-080-Z05-A32R-LN13-L56-F-C	80	32	85	75.6	56		SH160650	5	5	25	

APE90-LN13

Square shoulder porcupine milling cutter



Inch

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Row	Insert QTY	Inserts
APE90-01500-Z02-W1500R-LN13-L1339-F-C	1.500	1.500	4.724	2.126	1.339		2	3	6	LNHU 1306..
APE90-01500-Z02-W1500R-LN13-L1772-F-C	1.500	1.500	5.315	2.520	1.772		2	4	8	

Metric

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Row	Insert QTY	Inserts
APE90-040-Z02-W40R-LN13-L34-F-C	40	40	120	54	34		2	3	6	LNHU 1306..
APE90-040-Z02-W40R-LN13-L45-F-C	40	40	135	64	45		2	4	8	

Clamping screw	Product code	Screw type	Clamping torque
	SH080400	M8*40	41N-m
	SH080500	M8*50	41N-m
	SH100550	M10*55	81N-m
	SH100400	M10*40	81N-m
	SH100450	M10*45	81N-m
	SH120500	M12*50	142N-m
	SH120600	M12*60	142N-m
	SH160650	M16*65	350N-m

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 1.500-3.000			3.5Nm
	SP040115	DT-TP15	

Note: With internal coolant
 Without internal coolant

Product code	Dimension (in)		P		M		K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 130608ER-FM2	0.031	0.106							●
LNHU 130608ER-MM3	0.031	0.106		●		●			
LNHU 130608ER-MR2	0.031	0.106	●	●	●	●	●	●	
LNHU 130612ER-MR2	0.047	0.091	●	●	●	●	●	●	
LNHU 130616ER-MR2	0.063	0.075	●	●	●	●		●	
LNHU 130620ER-MR2	0.079	0.059		●	●	●	●		
LNHU 130624ER-MR2	0.094	0.039		●	●	●	●		
LNHU 130631ER-MR2	0.122	0.016		●	●	●	●		
LNHU 1306PDR-W	0.031	0.220	●					●	

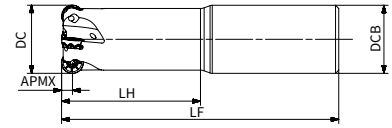
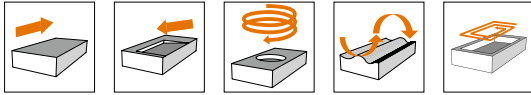
●: Stock available

Materials				Cutting depth and feed							
ISO	Material classification	Tensile strength (1bs/in ²)	Hardness (HB)	LNHU..1306..							
				ap		MM3		MR2			
						fz					
				(in)							
				min	max	min	max	min	max		
	Unalloyed steel	<87,022	<180	0.012	0.472	0.004	0.012	0.005	0.014		
		<137,785	<280								
	Alloyed steel	101,526-137,785	200-280			0.003	0.010	0.004	0.012		
		137,785-174,044	280-355								
	174,044-203,052	355-415									
	Duplex stainless steel	112839	230								
	Austenitic stainless steel	97900	200			0.002	0.008	0.003	0.010		
	Precipitation-hardening stainless steel	146923	300								
	Grey cast iron	101,526	220			-	-	0.005	0.014		
	Nodular cast iron	127,633	260								
	Malleable cast iron	116,030	250								
	Aluminum	37,709	75			-	-	-	-		
	Aluminum alloy	64,831	130								
	Fe-based alloy	136,770	280			0.002	0.007	0.003	0.009		
	Co-based alloy	156,060	320								
	Ni-based alloy	170,709	350								
	Ti-alloy	183,037	370								
	Hardened steel	-	50-60HRC			-	-	0.003	0.008		
	Chilled cast iron	-	55HRC								

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

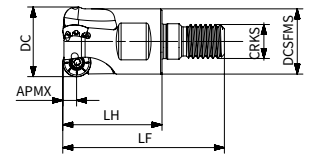
APM00-R010

Profile milling



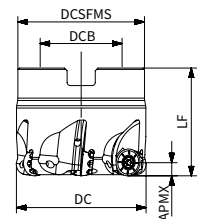
Inch

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-01000-Z03-C1000R-R010-L5125-C	1.000	1.000	5.125	2.200	0.197		3	R0..10T3..
APM00-01250-Z04-C1250R-R010-L5125-C	1.250	1.250	5.125	2.559	0.197		4	



Inch

Product code	DC	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-01000-Z03-M12R-R010-C	1.000	M12	0.906	2.244	1.378	0.197		3	R0..10T3..
APM00-01250-Z04-M16R-R010-C	1.250	M16	1.142	2.520	1.575	0.197		4	



Inch

Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
APM00-01500-Z05-A0750R-R010-C	1.500	0.750	1.378	1.575	0.197		5	R0..10T3..
APM00-02000-Z06-A0750R-R010-C	2.000	0.750	1.654	1.575	0.197		6	

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 1.000-2.000			18 in lbs
	SP030072H	DT-TP09	

Note: With internal coolant
 Without internal coolant

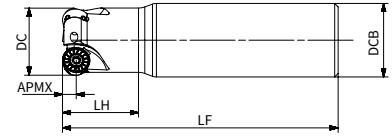
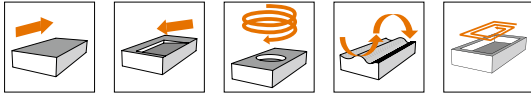
●: Stock available

Milling cutters

233 ▶

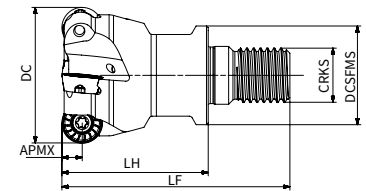
APM00-R012

Profile milling



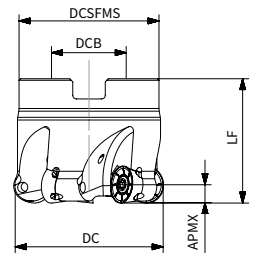
Inch

Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-01250-Z03-C1250R-R012-L6000-C	1.250	1.250	6.000	2.704	0.236		3	RO..1204..



Inch

Product code	DC	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-01500-Z04-M16R-R012-C	1.500	M16	1.142	2.756	1.811	0.236		4	RO..1204..



Inch

Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
APM00-02000-Z05-A0750R-R012-C	2.000	0.750	1.654	1.575	0.236		5	RO..1204..
APM00-02500-Z06-A1000R-R012-C	2.500	1.000	2.165	1.969	0.236		6	
APM00-03000-Z07-A1000R-R012-C	3.000	1.000	2.165	1.969	0.236		7	

Dimension (in)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
Ø 1.250-3.000			36 in lbs
	SP040085H	DT-TP10	

Note: With internal coolant
 Without internal coolant

●: Stock available

Milling cutters

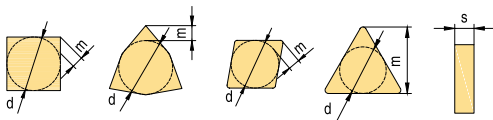
235 ▶

Milling Insert Denomination System

A 1	O 2	M 3	T 4	
1- Shape/Code		2- Clearance Angle		
A	H	M	O	R
				
85°	120°	86°	135°	360°
S	T	Z	X	
			Special	
90°	60°	86°		

C	D	E	F
			
7°	15°	20°	25°
G	N	P	O
			Other clearance angle
30°	0°	11°	

3- Tolerance



Class	Unit	In.Circle dimension d	Nose height m	Thickness s
A	in	± 0,0010	± 0,0002	± 0,0010
C	in	± 0,0010	± 0,0005	± 0,0010
E	in	± 0,0010	± 0,0010	± 0,0010
F	in	± 0,0005	± 0,0002	± 0,0010
G	in	± 0,0010	± 0,0010	± 0,0050
H	in	± 0,0005	± 0,0005	± 0,0250
J	in	*	± 0,0002	± 0,0010
K	in	*	± 0,0005	± 0,0010
L	in	*	± 0,0010	± 0,0010
M	in	*	*	± 0,0050
U	in	*	*	± 0,0050
N	in	*	*	± 0,0010

* For details refer to right and below tables

Shape: C, E, H, M, O, P, S, T, R, W				
IC	d		m	
	J,K,L,M,N	U	M, N	U
3/16	± 0,0020	± 0,0030	± 0,0030	± 0,0050
7/32	± 0,0020	± 0,0030	± 0,0030	± 0,0050
0.236	± 0,0020	± 0,0030	± 0,0030	± 0,0050
1/4	± 0,0020	± 0,0030	± 0,0030	± 0,0050
5/16	± 0,0020	± 0,0030	± 0,0030	± 0,0050
0.315	± 0,0020	± 0,0030	± 0,0030	± 0,0050
3/8	± 0,0020	± 0,0030	± 0,0030	± 0,0050
0.394	± 0,0020	± 0,0030	± 0,0030	± 0,0050
0.472	± 0,0030	± 0,0050	± 0,0050	± 0,0080
1/2	± 0,0030	± 0,0050	± 0,0050	± 0,0080
5/8	± 0,0040	± 0,0070	± 0,0060	± 0,0110
0.630	± 0,0040	± 0,0070	± 0,0060	± 0,0110
3/4	± 0,0040	± 0,0070	± 0,0060	± 0,0110
0.787	± 0,0040	± 0,0070	± 0,0060	± 0,0110
0.984	± 0,0050	± 0,0100	± 0,0070	± 0,0150
1	± 0,0050	± 0,0100	± 0,0070	± 0,0150
1 1/4	± 0,0060	± 0,0100	± 0,0080	± 0,0150
1.260	± 0,0060	± 0,0100	± 0,0080	± 0,0150

M&N shape	D shape		V shape	
IC	d	m	d	m
7/32	± 0,0020	± 0,0043		
1/4	± 0,0020	± 0,0043	± 0,0020	± 0,0060
5/16	± 0,0020	± 0,0043	± 0,0020	± 0,0060
3/8	± 0,0020	± 0,0043	± 0,0020	± 0,0060
1/2	± 0,0030	± 0,0060	± 0,0030	± 0,0080
5/8	± 0,0040	± 0,0070	± 0,0040	± 0,0110
3/4	± 0,0040	± 0,0070	± 0,0040	± 0,0110

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

12

5

04

6

08

7

E

8

R

9

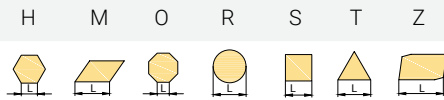
-

-

MM4

10

5- Cutting edge length

In. Circle
dimension
(mm)

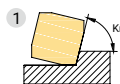
In. Circle dimension (mm)	H	M	O	R	S	T	Z
0.125						05	
0.157						06	
0.196				05			
7/32						09	
0.236				06			
1/4						11	
5/16						13	
0.315				08			
3/8				09	09	16	
0.394				10			
0.472				12			
1/2			04	12	12	22	
5/8				15	15	27	
0.630			06	16			
3/4				19	19	33	
0.787				20			
0.984				25	25		
1				25			
1 1/4				31			
1.260				32			

7-Corner radius and wiper edge



00 = sharp	24 = 0.093
01 = 0.004	28 = 0.109
02 = 0.008	32 = 0.125
04 = 0.015	40 = 0.157
08 = 0.031	48 = 0.188
12 = 0.047	56 = 0.220
16 = 0.062	64 = 0.251
20 = 0.078	X = others

Round insert:MO refers to metric dia. size



1 Approach angle(Entering angle)

(kr)

A = 45°

D = 60°

E = 75°

F = 85°

P = 90°

Z = Others

2 Clearance angle of wiper edge

(n)

A = 3°

B = 5°

C = 7°

D = 15°

E = 20°

F = 25°

G = 30°

N = 0°

P = 11°

Z = Others

6- Insert thickness



01=1/16in

T1=5/64in

02=3/32in

T2=0.109in

03=1/8in

T3=5/32in

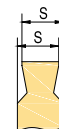
04=3/16in

05=7/32in

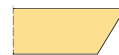
06=1/4in

07=5/16in

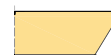
09=3/8in



8- Edge Preparation

F

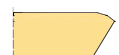
Sharp cutting edge

E

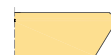
Honed cutting edge

T

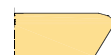
Negative land

K

Double negative land

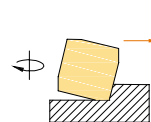
S

Negative land + honed

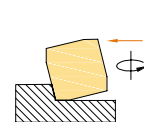
P

Double negative land + honed

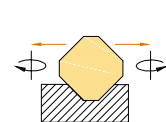
9-Hand of Tool

R

Right hand

L

Left hand

N

Neutral

10-Geometry Refers to Geometry Introduction

Marked: if it has corner radius, the information needs to put between thickness and wipers.

Example: APET 160408PDFR-FM2

ACHTECK

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THE EXPERTS OF DIFFICULT MACHINING



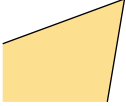
Milling Inserts

Geometry Application Guide

Materials				Milling geometry application table						
				FM2	MM3	MM4	MR2	MR6	RR2	HR2
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	Suitable for machining aluminium alloy	Light cutting	General purpose	Medium machining	Roughing	Heavy roughing	Roughing
P	Unalloyed steel	<600	<180	-	●	●	●	●	-	-
		<950	<280	-	●	●	●	●	-	-
	Alloyed steel	700-950	200-280	-	●	●	●	●	-	-
		950-1200	280-355	-	●	●	●	●	-	-
		1200-1400	355-415	-	●	●	●	●	-	-
M	Duplex stainless steel	778	230	-	●	●	●	-	-	-
	Austenitic stainless steel	675	200	-	●	●	●	-	-	-
	Precipitation-hardening stainless steel	1013	300	-	●	●	●	-	-	-
K	Grey cast iron	700	220	-	-	●	●	●	●	●
	Nodular cast iron	880	260	-	-	●	●	●	●	●
	Malleable cast iron	800	250	-	-	●	●	●	●	●
N	Aluminum	260	75	●	-	-	-	-	-	-
	Aluminum alloy	447	130	●	-	-	-	-	-	-
S	Fe-based alloy	943	280	-	●	●	●	-	-	-
	Co-based alloy	1076	320	-	●	●	●	-	-	-
	Ni-based alloy	1177	350	-	●	●	●	-	-	-
	Ti-alloy	1262	370	-	●	●	●	-	-	-
H	Hardened steel	-	50-60HRC	-	-	●	●	-	-	-
	Chilled cast iron	-	55HRC	-	-	●	●	-	-	-

- 1st choice
- ◐ 2nd choice
- Inapplicable

Milling Geometry Introduction

Insert geometry	Edge shape	Application
FM2		▪ Low cutting force, for weak machining condition ▪ Sharp geometry ▪ For aluminium material machining
MM3		▪ Low cutting force, for weak machining condition ▪ Sharp geometry ▪ For steel, stainless-steel and heat resistant alloy machining.
MM4		▪ For medium machining condition ▪ Universal geometry ▪ For machining most materials
MR2		▪ For medium or better machining condition ▪ Universal geometry ▪ For machining most materials
MR6		▪ For stable machining condition ▪ Roughing geometry ▪ For machining most materials
HR2		▪ For stable machining condition ▪ Roughing geometry ▪ Mainly for cast iron machining
RR2		▪ For stable machining condition ▪ Heavy roughing geometry ▪ Mainly for cast iron and steel machining
IT		▪ Sharp geometry, for specified product
DT		▪ Universal geometry, for specified product

Grade Application Guide

Milling grade ISO group														
Material Group	Materials	ISO	coated											ISO
			PVD	PVD	PVD	PVD	PVD	PVD	PVD	PVD	CVD	CVD	Uncoated	
P	unalloy steels / Alloyed steels	P01												P01
		P05												P05
		P10												P10
		P15												P15
		P20	AP251U											P20
		P25												P25
		P30	AP251U	AP351U	AP351M						AC301P			P30
		P35												P35
		P40		AP351U	AP351M									P40
		P45												P45
		P50												P50
M	Stainless steels	M01												M01
		M05												M05
		M10												M10
		M15	AP251U											M15
		M20												M20
		M25	AP251U											M25
		M30			AP351M									M30
		M35					AP403S	AP403M						M35
		M40			AP351M									M40
		M45												M45
		M50												M50
K	Cast iron	K01												K01
		K05												K05
		K10		AP151H										K10
		K15	AP251K								AC301K			K15
		K20		AP151H										K20
		K25	AP251K											K25
		K30												K30
		K35												K35
		K40												K40
		K45												K45
		K50												K50
N	Aluminum/ Aluminum alloys	N01												N01
		N05												N05
		N10											AW100K	N10
		N15												N15
		N20												N20
		N25												N25
		N30												N30
S	Heat resistant alloys	S01												S01
		S05												S05
		S10												S10
		S15												S15
		S20												S20
		S25		AP351M										S25
		S30												S30
		S35												S35
		S40			AP403S	AP403M								S40
		S45												S45
		S50												S50
H	Hardened steels/ Chilled cast iron	H01												H01
		H05												H05
		H10	AP151H											H10
		H15												H15
		H20												H20
		H25												H25
		H30												H30

Grade Application Guide

Materials				Milling grade application										
				PVD coated						CVD coated		PVD coated		Uncoated
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	AP251U	AP351U	AP351M	AP401U	AP403S	AP403M	AC301P	AC301K	AP251K	AP151H	AW100K
P	Unalloyed steel	<600	<180	●	●	●	●		●	●	●	-	-	-
		<950	<280	●	●	●	●		●	●	●	-	-	-
	Alloyed steel	700-950	200-280	●	●	●	●		●	●	●	-	-	-
		950-1200	280-355	●	●	●	●		●	●	●	-	-	-
		1200-1400	355-415	●	●	●	●		●	●	●	-	-	-
M	Duplex stainless steel	778	230	●	●	●	●	●	●	●	-	-	-	-
	Austenitic stainless steel	675	200	●	●	●	●	●	●	●	-	-	-	-
	Precipitation-hardening stainless steel	1013	300	●	●	●	●	●	●	●	-	-	-	-
K	Grey cast iron	700	220	-	-	-	-	-	-	-	●	●	●	-
	Nodular cast iron	880	260	-	-	-	-	-	-	-	●	●	●	-
	Malleable cast iron	800	250	-	-	-	-	-	-	-	●	●	●	-
N	Aluminum	260	75	-	-		-			-	-	-	-	●
	Aluminum alloy	447	130	-	-		-			-	-	-	-	●
S	Fe-based alloy	943	280	-	●	●	●	●	●	-	-	-	-	-
	Co-based alloy	1076	320	-	●	●	●	●	●	-	-	-	-	-
	Ni-based alloy	1177	350	-	●	●	●	●	●	-	-	-	-	-
	Ti-alloy	1262	370	-	●	●	●	●	●	-	-	-	-	●
H	Hardened steel	-	50-60HRC	-	-		-			-	-	-	●	-
	Chilled cast iron	-	55HRC	-	-		-			-	-	-	●	-

- 1st choice
- ◐ 2nd choice
- Inapplicable

Milling Grade Description

Grade for Normal Milling

P

Steel, alloyed steel, unalloyed steel

Basic grade

AP251U P25(P15-P35)

PVD-coated grade, suitable for most applications. First choice for steel machining. It is recommended to be used in rough to finish machining of steel under stable working conditions, good for dry and wet machining with small cutting width, complex tool path and sticky materials.

AC301P P35(P25-P40)

CVD coated grade is suitable for big cutting depth, medium to high speed milling of steel under bad machining conditions.

Supplemental grade

AP351M P35(P25-P45)

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high toughness is required.

AP351U P35(P30-P45)

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is required.

M

Stainless steel, austenite stainless steel, martensite stainless steel

Basic grade

AP351M M35(M25-M45)

PVD coated grade is used for milling stainless steel and steel at medium and low speed under bad machining conditions.

AP403M M35(M35-M50)

Ultra-thick PVD coated grade is the first choice for stainless steel milling. It is suitable for rough milling of stainless steel under bad machining conditions.

Supplemental grade

AP251U M25(M15-M35)

PVD coated grade is used in rough and finish milling of stainless steel under very stable machining conditions.

AP403S M15(M35-M50)

PVD coated grade, the substrate has both toughness and hot hardness characteristics, and is the first choice for titanium alloy machining, as well as the machining of heat resistant alloy under weak rigidity. It is applicable to the milling at low cutting speed and can get longer tool life.

AP351U M35(M30-M45)

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is requested. On the way to phase out.

K

Cast iron, grey cast iron, nodular cast iron

Basic grade

AC301K K25(K10-K35)

CVD coated grade, suitable for semi-finish milling and rough milling of grey cast iron at medium and high cutting speed, Recommended for dry cutting conditions, can achieve longer tool life.

AP251K K25(K15-K40)

PVD coated grade is suitable for semi-finish and rough milling of grey cast iron and nodular cast iron at medium and low cutting speed, and has good tool life under dry and wet conditions.

Supplemental grade

AP151H K15(K10-K20)

PVD coated grade is suitable for finish milling of grey cast iron and nodular cast iron, which can get constant surface quality and longer tool life.

N

Non-ferrous metals

Basic grade

AW100K N15 (N10-N20)

Uncoated grade, combined with sharp cutting edge, used in aluminum alloy milling.

S

Heat resistant alloy

Basic grade

AP403S S15(S35-S50)

PVD coated grade, the substrate has both toughness and red hardness characteristics, and is the first choice for titanium alloy machining, as well as the machining of heat resistant alloy under weak rigidity. It is applicable to the milling at low cutting speed and can get longer tool life.

Supplemental grade

AP351M S35(S25-S45)

PVD coated grade is suitable for semi-finishing to light rough machining of heat resistant alloy and titanium alloys.

AP403M S35(S35-S50)

The super-thick PVD coated grade is suitable for low-speed milling of heat resistant alloy and titanium alloys when high toughness is requested, especially in case of large cutting width.

H

Hard material, hardened steel

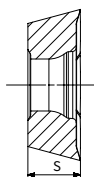
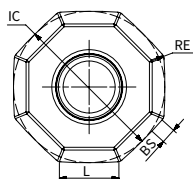
Basic grade

AP151H H15(H10-H20)

PVD coated grade, suitable for milling hardened steel, can be used in rough and finish milling, meeting the needs of most occasions.

OD..06

Positive octagonal milling inserts

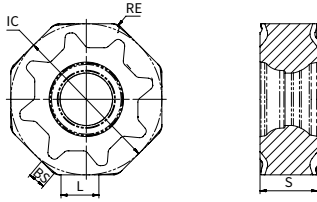


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition						
							●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	ODET 0605APFN-FM2	0.236	0.630	0.219	0.031	0.063							●
	ODMT 060508EN-MM3	0.236	0.630	0.219	0.031	-	●	●	●		●	●	
	ODMT 060512EN-MM3	0.236	0.630	0.219	0.047	-	●						
	ODHT 0605APEN-MM3	0.236	0.630	0.219	0.031	0.063	●	●			●	●	
	ODEW 0605APSR-HR2	0.236	0.630	0.219	-	0.063					●	●	
	ODMW 060512EN-HR2	0.236	0.630	0.219	0.047	-					●	●	

●: Stock available

ON..05

Negative octagonal milling inserts

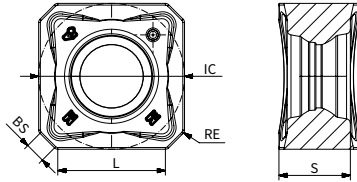


Inserts	Product code	Machining conditions						● Good condition ● General condition ✖ Bad condition						
								●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N	
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K	
	ONHU 050408-MM3	0.157	0.500	0.187	0.031	-	●							
	ONMU 050408-MM4	0.157	0.500	0.187	0.031	-	●	●			●	●		
	ONHU 0504ZNR-MM3	0.157	0.500	0.187	0.031	0.055	●							

●: Stock available

SN..12

Negative short wiper milling inserts(applicable to AFM45-SN12 milling cutter)

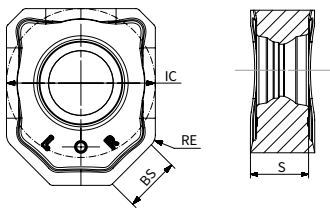


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition						
							●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ANN-FM2	0.366	0.500	0.246	0.020	0.071							●
	SNGX 1206ANN-MM3	0.370	0.500	0.246	0.016	0.071	●	●	●		●	●	
	SNGX 1206ANN-MM4	0.370	0.500	0.246	0.016	0.071	●	●	●	●	●	●	
	SNGX 1206ANN-MR6	0.370	0.500	0.246	0.016	0.071	●	●	●		●	●	
	SNGX 1206ANN-RR2	0.366	0.500	0.246	0.020	0.071	●	●	●		●	●	
	SNMX 1206ANN-MM3	0.370	0.500	0.246	0.016	0.071	●	●	●		●	●	
	SNMX 1206ANN-MM4	0.370	0.500	0.246	0.016	0.071	●	●	●	●	●	●	
	SNMX 1206ANN-MR6	0.370	0.500	0.246	0.016	0.071	●	●	●		●	●	

●: Stock available

SNHX12

Negative long wiper milling inserts(applicable to AFM45-SN12 milling cutter)

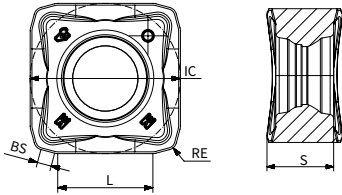


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition						
							●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ANN-W	-	0.500	0.246	0.047	0.263	●				●		

●: Stock available

SN..12

Negative short wiper milling inserts (applicable to AFM75-SN12 milling cutter)

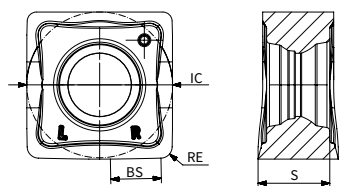


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition						
							●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNGX 1206ENN-MM3	0.319	0.500	0.250	0.032	0.047	●	●	●		●	●	
	SNGX 1206ENN-MM4	0.319	0.500	0.250	0.032	0.047	●	●	●		●	●	
	SNGX 1206ENN-MR6	0.319	0.500	0.250	0.032	0.047	●	●	●		●	●	
	SNMX 1206ENN-MM4	0.319	0.500	0.250	0.032	0.047			●			●	

●: Stock available

SNHX12

Negative long wiper milling inserts (applicable to AFM75-SN12 milling cutter)

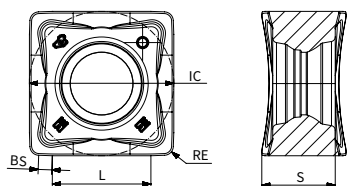


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition						
							●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ENN-W	-	0.500	0.246	0.024	0.047	●				●		

●: Stock available

SN..12

Negative short wiper milling inserts (applicable to AFM88-SN12 milling cutter)

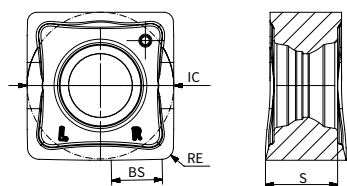


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition						
							●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ZNN-FM2	0.343	0.500	0.254	0.031	0.047							●
	SNGX 1206ZNN-MM4	0.343	0.500	0.254	0.031	0.047	●	●	●	●	●	●	
	SNGX 1206ZNN-MR6	0.343	0.500	0.254	0.031	0.047	●	●	●		●	●	
	SNGX 1206ZNN-MM3	0.343	0.500	0.254	0.031	0.047	●	●	●		●	●	
	SNMX 1206ZNN-MM4	0.343	0.500	0.254	0.031	0.047	●			●		●	

●: Stock available

SNHX12

Negative long wiper milling inserts (applicable to AFM88-SN12 milling cutter)

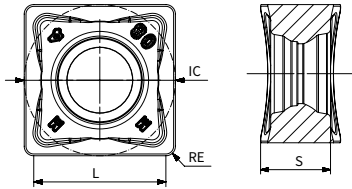


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition						
							●	●	●	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ZNN-W	-	0.500	0.246	0.039	0.173	●				●		

●: Stock available

SN..12

Negative square milling inserts with corner radius

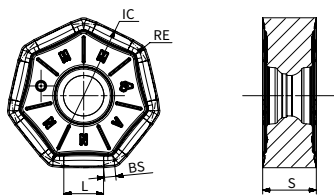


Inserts	Product code	Machining conditions					● Good condition ● General condition ✱ Bad condition						
							●	●	●	✱	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNGX 120608-MM4	0.437	0.500	0.252	0.031	-	●	●	●		●	●	
	SNGX 120612-MM4	0.406	0.500	0.252	0.047	-	●						
	SNMX 120608-MM4	0.437	0.500	0.252	0.031	-	●	●	●		●	●	
	SNMX 120612-MM3	0.406	0.500	0.252	0.047	-	●	●	●		●	●	
	SNMX 120612-MM4	0.406	0.500	0.252	0.047	-	●	●	●		●	●	
	SNMX 120612-MR6	0.406	0.500	0.252	0.047	-	●	●	●		●	●	
	SNMX 120612-RR2	0.406	0.500	0.252	0.047	-	●	●	●		●	●	
	SNMX 120620-MM4	0.343	0.500	0.252	0.079	-	●	●	●		●	●	
	SNMX 120620-RR2	0.343	0.500	0.252	0.079	-	●	●	●		●	●	
	SNMX 120612R-MM4	0.343	0.500	0.252	0.047	-	●	●	●	●	●	●	

●: Stock available

XN..07/09ANN

Negative heptagonal milling inserts with short wiper

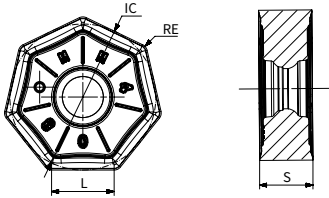


Inserts	Product code	Machining conditions					● Good condition ⬢ General condition ✖ Bad condition						
							●	⬢	⬢	✖	●	●	●
		Dimension (in)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	XNGU 0705ANN-MM3	0.276	0.571	0.197	0.031	0.043	●	●			●		
	XNGU 0705ANN-MM4	0.276	0.571	0.197	0.031	0.043	●				●		
	XNMU 0705ANN-MM4	0.276	0.571	0.197	0.031	0.043	●	●	●		●	●	
	XNMU 0705ANN-MR6	0.276	0.571	0.197	0.031	0.043	●	●			●	●	
	XNGU 0906ANN-MM3	0.362	0.748	0.231	0.031	0.055	●	●	●		●		
	XNGU 0906ANN-MM4	0.362	0.748	0.231	0.031	0.055	●	●	●		●		
	XNMU 0906ANN-MR6	0.362	0.748	0.231	0.031	0.055	●				●	●	

●: Stock available

XN..07/09

Negative heptagonal milling inserts with corner radius

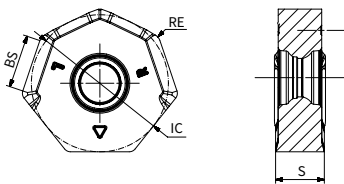


		Machining conditions					● Good condition ✖ Bad condition				⚙ General condition		
							●	⚙	⚙	✖	●	●	●
		Inserts	Product code	Dimension (in)					P			M	K
L	IC			S	RE	BS	AP25IU	AP35IU	AC30IP	AP403M	AC30IK	AP25IK	AW100K
	XNMU 070508-MM4	0.276	0.571	0.197	0.031	-	●	●		●	●	●	
	XNMU 090612-MM4	0.362	0.748	0.231	0.047	-	●	●		●	●	●	

●: Stock available

XNGX 07/09ANN-W

Negative milling inserts with long wiper

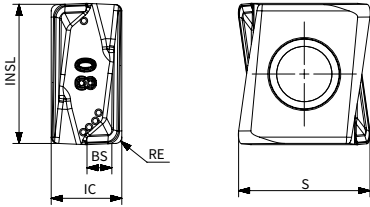


		Machining conditions					● Good condition ✖ Bad condition				⬢ General condition		
							●	⬢	⬢	✖	●	●	●
Inserts	Product code	Dimension (in)					P			M	K	N	
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	XNGX 0705ANN-W	0.236	0.591	0.197	0.039	0.043	●				●		
	XNGX 0906ANN-W	0.295	0.750	0.231	0.039	0.055	●				●		

●: Stock available

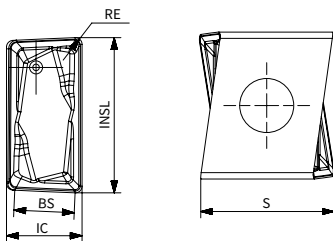
LNHU 0904..

Negative square shoulder milling inserts



		Machining conditions					● Good condition ⚙ General condition ✖ Bad condition						
							●	⚙	⚙	✖	●	●	●
		Inserts	Product code	Dimension (in)					P	M	K		N
INSL	IC			S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
	LNHU 090404ER-FM2	0.354	0.177	0.335	0.016	0.073							●
	LNHU 090404ER-MM3	0.354	0.177	0.335	0.016	0.073		●		●			
	LNHU 090404ER-MR2	0.354	0.177	0.335	0.016	0.073	●	●		●	●	●	
	LNHU 090408ER-MR2	0.354	0.177	0.331	0.031	0.038	●	●	●	●	●	●	
	LNHU 090412ER-MR2	0.354	0.177	0.327	0.047	0.039	●			●	●		
	LNHU 090416ER-MR2	0.354	0.177	0.324	0.063	0.025	●			●	●		
	LNHU 090420ER-MR2	0.354	0.177	0.320	0.079	0.025	●			●	●		

● : Stock available

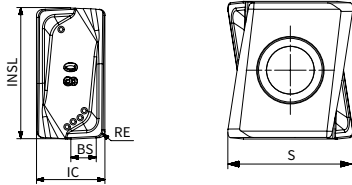


		Machining conditions					● Good condition ⚙ General condition ✖ Bad condition							
							●	⚙	⚙	✖	●	⚙	●	●
Inserts	Product code	Dimension (in)					P		M		K		N	
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP351K	AW100K
	LNHU 0904PDER-W	0.364	0.177	0.330	0.015	0.141	●				●			●

● : Stock available

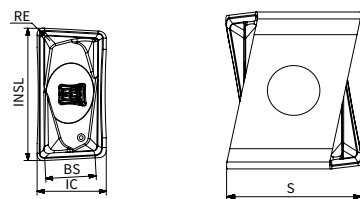
LNHU 1306..

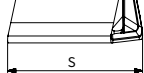
Negative square shoulder milling inserts



Inserts	Product code	Machining conditions					● Good condition ⬮ General condition ✖ Bad condition						
							●	⬮	⬮	✖	●	●	●
		Dimension (in)					P		M		K		N
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
	LNHU 130608ER-FM2	0.513	0.268	0.334	0.031	0.106							●
	LNHU 130608ER-MM3	0.513	0.268	0.467	0.031	0.106		●		●			
	LNHU 130608ER-MR2	0.513	0.268	0.467	0.031	0.106	●	●	●	●	●	●	
	LNHU 130612ER-MR2	0.513	0.268	0.462	0.047	0.051	●	●	●	●	●	●	
	LNHU 130616ER-MR2	0.513	0.268	0.457	0.063	0.075	●	●	●	●		●	
	LNHU 130620ER-MR2	0.513	0.268	0.454	0.079	0.059		●	●	●	●		
	LNHU 130624ER-MR2	0.513	0.268	0.449	0.094	0.039		●	●	●	●		
	LNHU 130631ER-MR2	0.513	0.268	0.442	0.122	0.016		●	●	●	●		

●: Stock available

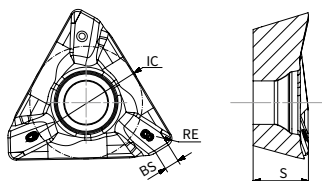


		Machining conditions					● Good condition ⚙ General condition ✖ Bad condition							
							●	⚙	⚙	✖	●	⚙	●	●
Inserts	Product code	Dimension (in)					P		M		K		N	
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP351K	AW100K
	LNHU 1306PDR-W	0.527	0.268	0.458	0.031	0.205	●						●	

●: Stock available

TDMT 1505..

Positive square shoulder triangle milling inserts

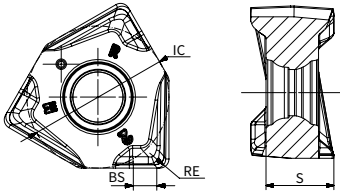


Inserts	Product code	Machining conditions				● Good condition ● General condition ✖ Bad condition						
						●	●	●	✖	●	●	●
		Dimension (in)				P		M		K		N
		IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
	TDMT 150508R-MM4	0.449	0.220	0.031	0.059	●		●	●	●	●	
	TDMT 150512R-MM4	0.449	0.220	0.047	0.039	●		●	●	●	●	
	TDMT 150516R-MM4	0.449	0.220	0.063	0.037	●		●	●	●	●	
	TDMT 150520R-MM4	0.449	0.220	0.079	0.028	●			●		●	
	TDMT 150524R-MM4	0.449	0.220	0.094	0.023	●			●		●	
	TDMT 150531R-MM4	0.449	0.219	0.122	0.016	●			●		●	
	TDMT 150540R-MM4	0.449	0.219	0.157	0.016	●			●		●	
	TDMT 150508R-MM3	0.449	0.219	0.031	0.059	●			●		●	
	TDHT 150508R-MM4	0.449	0.220	0.031	0.059	●					●	

●: Stock available

WNGU 0806..

Negative square shoulder milling inserts

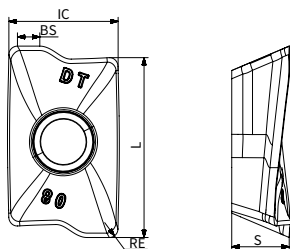


Inserts	Product code	Machining conditions				● Good condition ⚙ General condition ✖ Bad condition				
						●	⚙	✖	●	●
		Dimension (in)				P	M		K	
		IC	S	RE	BS	AP251U	AP401U	AP403M	AC301K	AP251K
	WNMU 080608R-MR2	0.492	0.260	0.031	0.091	●	●	●	●	●
	WNMU 080608R-MM4	0.492	0.259	0.031	0.091	●	●	●	●	●
	WNMU 080608R-MM3	0.492	0.259	0.031	0.091	●	●	●	●	●
	WNMU 080612R-MR2	0.492	0.255	0.047	0.047	●	●		●	●
	WNMU 080612R-MM4	0.492	0.255	0.047	0.046	●	●	●		●
	WNMU 080616R-MR2	0.492	0.256	0.063	0.032	●		●		
	WNMU 080616R-MM4	0.492	0.256	0.063	0.031	●		●		

●: Stock available

APKT 1705..-DT..

Positive square shoulder milling inserts

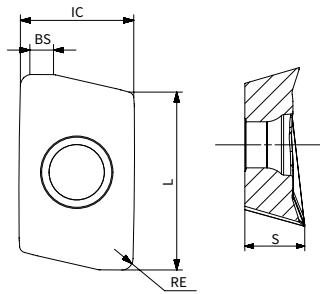


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition							
							●	●	●	✖	●	●	●	✖
		Dimension (in)					P		M		K		N	S
		L	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K	AP403S
	APKT 1705PER-DT	0.685	0.424	0.222	0.031	0.085	●	●		●		●	●	
	APKT 170516R-DT	0.685	0.423	0.222	0.063	0.068	●					●		
	APKT 170524R-DT	0.685	0.424	0.222	0.094	0.037	●		●	●		●		
	APKT 170530R-DT	0.685	0.424	0.222	0.118	0.058	●		●	●		●		
	APKT 170540R-DT	0.685	0.424	0.222	0.157	-	●		●	●				

●: Stock available

AOMT 1204..-MM4..

Positive square shoulder milling inserts

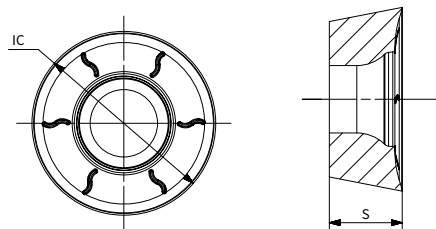


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition					
							●	●	●	✖	●	✖
		Dimension (in)					P		M		K	S
		L	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AP251K	AP403S
	AOMT 120408ER-MM4	0.504	0.321	0.200	0.031	0.061	●		●	●	●	●
	AOMT 120412ER-MM4	0.504	0.321	0.200	0.047	0.046			●	●		●
	AOMT 120416ER-MM4	0.504	0.321	0.200	0.063	0.047			●	●		●
	AOMT 120420ER-MM4	0.504	0.321	0.200	0.079	0.039	●		●	●		●
	AOMT 120424ER-MM4	0.504	0.321	0.200	0.094	0.035	●		●	●		●
	AOMT 120431ER-MM4	0.504	0.321	0.200	0.122	0.024			●	●		●
	AOMT 120440ER-MM4	0.504	0.321	0.200	0.157	0.031			●	●		●

●: Stock available

RO..T

Profile milling inserts



Inserts	Product code	Machining conditions		● Good condition ● General condition ✖ Bad condition							
				●	●	●	✖	●	●	✖	
		Dimension (in)		P			M	K		S	
		IC	S	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S	
	ROHT 10T3M8E-MM3	0.394	0.156				●			●	
	ROHT 1204M4E-MM3	0.472	0.187				●			●	
	ROHT 1204M6E-MM3	0.472	0.187				●			●	
	ROMT 10T3M4E-MR6	0.394	0.156				●			●	
	ROMT 1204M6E-MR6	0.472	0.187				●			●	

●: Stock available

Cutting Parameter Recommendation Table

Materials																							
ISO	Material classification				Brinell hardness (HB)	Tensile strength Rm (lbs/in ²)	AP251U			AC301P			AP351U			AP351M							
							PVD			CVD			PVD			PVD							
							P15-P35			P25-40			P30-P45			P20-P40							
							M15-M35			—			M25-M35			M20-M40							
							—			—			S25-S35			—							
							—			—			—			S20-S40							
							—			—			—			—							
							—			—			—			—							
							1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1		1/10	1/5	1/1	
P	Unalloyed steel	C ≤ 0.25%	Annealed	125	62000	1050	920	790	1250	980	850	920	790	660									
		0.25 < C ≤ 0.55%	Annealed	190	92700	950	790	660	1150	820	720	820	690	560									
		0.25 < C ≤ 0.55%	Heat-treated	210	103000	850	690	560	1020	720	620	750	590	460									
		C > 0.55%	Annealed	190	92700	950	790	660	1150	820	720	820	690	560									
		C > 0.55%	Heat-treated	300	147000	690	560	430	820	560	490	520	430	330									
		Free cutting steel (short-chip)	Annealed	220	108000	820	660	520	980	690	590	720	560	430									
	Low-alloyed steel	Annealed			175	85700	950	820	660	1120	980	820	890	750	590								
Heat-treated			285	146900	820	690	520	950	820	660	750	620	460										
Heat-treated			380	186000	750	620	460	820	690	520	690	560	390										
Heat-treated			430	214200	620	490	360	690	560	430	560	430	300										
High-alloyed steel and high-alloyed tool steel	Annealed			200	97900	720	620	520	790	690	590	660	560	460									
	Hardened and tempered			300	147000	560	460	360	620	520	430	490	430	300									
	Hardened and tempered			400	197000	490	390	300	520	430	330	430	330	230									
Stainless steel	Ferritic/martensitic, annealed			200	97900	620	520	430	660	560	460	520	460	360	590	490	390						
	Martensitic, heat-treated			330	162000	520	390	300	560	460	360	460	360	260	490	390	300						
M	Stainless steel	Austenitic, quench hardened			200	97900	590	490	390				560	460	360	560	490	390					
		Austenitic, precipitation hardened (PH)			300	147000	520	430	330				490	390	300	490	430	330					
		Austenitic/ferritic, duplex			230	113000	560	460	360				520	430	330	520	460	360					
K	Malleable cast iron	Ferritic			200	58000																	
		Pearlitic			260	101000																	
	Grey cast iron	Low tensile strength			180	29000																	
		High tensile strength/austenitic			245	50800																	
	Nodular cast iron	Ferritic			155	58000																	
		Pearlitic			265	101000																	
GGV(CGI)				230	58000																		
N	Wrought aluminium alloys	Non-aging			30	-																	
		Aged			100	49300																	
	Cast aluminium alloys	≤ 12% Si, non-aging			75	37700																	
		≤ 12% Si, aged			90	45000																	
		> 12% Si, non-aging			130	65300																	
	Magnesium alloys				70	36300																	
	Copper and copper alloys	Unalloyed, electrolytic copper			100	49300																	
Brass, bronze, red brass			90	45000																			
Cu alloys, short-chipping			110	55100																			
High-tensile, Ampco alloy			300	146500																			
S	Heat-resistant alloys	Fe-based	Annealed	200	98600							300	260	230	330	300	260						
			Hardened	280	136000							250	200	160	260	230	200						
		Ni or Co based	Annealed	250	122000							260	180	150	230	200	160						
			Hardened	350	171000							200	160	110	200	160	130						
			Cast	320	156600							200	180	130	210	180	150						
	Titanium alloys	Pure titanium			200	98600						360	300	260	390	330	300						
		α and β alloys, hardened			375	182700						160	130	100	180	150	110						
		β alloys			410	203000						160	130	100	180	150	110						
	Tungsten alloys				300	146500						210	200	160	230	210	180						
Molybdenum alloys				300	146500						210	200	160	230	210	180							
H	Hardened steel	Hardened and tempered			50HRC																		
		Hardened and tempered			55HRC																		
		Hardened and tempered			60HRC																		
	Chilled cast iron	Hardened and tempered <td>50HRC</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			50HRC																		

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

Milling grade application range																					
	AP403M			AP401U			AP403S			AC301K			AP251K			AP151H			AW100K		
	PVD			PVD			PVD			CVD			PVD			PVD			Uncoated		
	P30-P45			P20-P40			—			—			—			—			—		
	M30-M45			M20-M40			M30-M45			—			—			—			—		
	—			—			—			K10-K35			K15-K40			K15-K40			—		
	S30-S45			—			S30-S45			—			—			—			—		
	—			—			—			—			—			—			N05-N15		
	—			—			—			H15-H25			—			H15-H25			—		
Feed(mm/z)-according to the value of ae/Dc																					
	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1
Cutting speed (ft/min)																					
	560	460	360	520	460	360															
	460	360	260	460	360	260															
	520	460	360	520	460	360	620	520	460												
	460	390	300	490	430	300	560	460	390												
	490	430	330	490	430	330	520	430	360												
										790	690	590	720	620	520	590	490	390			
										720	620	520	660	560	460	520	430	330			
										920	820	720	850	750	660	690	590	490			
										790	690	590	690	620	520	590	490	390			
										850	750	660	790	690	590	620	520	430			
										620	520	430	560	460	360	490	390	300			
										660	560	460	590	490	390	520	430	330			
																			7220	7220	6560
																			5910	5910	5250
																			1970	1970	1640
																			1640	1640	1310
																			920	920	660
																			1310	1310	980
																			980	980	820
																			660	660	520
	310	280	250				360	330	300												
	260	210	180				300	260	230												
	280	200	160				260	230	200												
	210	180	110				250	210	160												
	210	200	150				250	210	180												
	390	310	280				390	330	300												
	160	130	100				200	160	130												
	160	130	100				200	160	130												
	230	200	160				230	210	200												
	230	200	160				230	210	200												
										230	200	160				210	180	150			
																200	160	130			
																200	160	130			

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THE EXPERTS OF DIFFICULT MACHINING



Solid End Mills

Solid Carbide End Mills

Series	Pictures	Category	Teeth	Helix angles	Application	Cutting edge tolerance (in)	Diameter (in)	Material	Information
M200-4ES		ECO line	Z=4	35°/38°		+0.00 -0.0028	0.125-1	Universal type	Used in carbon steel, tool steel, alloyed steel machining. 4 cutting edges can achieve better surface finishing. Differential helix and tooth distance eliminate vibration. The workpiece hardness is up to HRC45
M200-4RS		ECO line	Z=4	35°/38°		+0.00 -0.0028	0.125-1	Universal type	Used in carbon steel, tool steel, alloyed steel machining. The round corner can prevent edge breakage during high speed cutting. Differential helix and tooth distance eliminate vibration. With 4 cutting edge design. The workpiece hardness is up to HRC45
M200-2BS		ECO line	Z=2	30°		+0.00 -0.0028	0.125-1	Universal type	Used in carbon steel, tool steel, alloyed steel machining. For profile milling, good toughness. The workpiece hardness is up to HRC45
M245-2ES		ECO line	Z=2	45°		+0.00 -0.0028	0.125-1	Aluminium alloy	Design for vibration resistance. With special edge treatment. It can achieve better surface finish.

Icons Description

Icons	Description
	Slot milling and square shoulder milling
	Square shoulder rough milling
	Square shoulder finish milling
	High feed milling
	Dynamic milling cycloid milling
	Profile milling
	Chamfering and deburring

Icons	Description
	AlTiN Coating
	AlCrN Coating
	Uncoated
	30° Helix angle
	35° Helix angle
	35°/38° Helix angle
	45° Helix angle

Icons	Description
	Cylindrical shank
	Square
	Round corner
	Ball-nose
	Corner chamfer
	Chamfer
	Waved edge

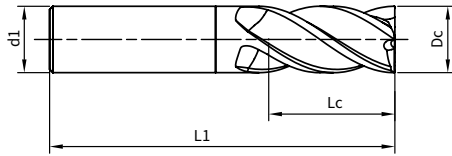
Solid Carbide end Mill Denomination

M	1	00	-	2	E	S	-	060	002	N
1	2	3	-	4	5	6	-	7	8	9
1-Tool category	2-Generations	3-Series				4-Number of teeth		5-Tool type		
M End mill	1	00-09 Universal end mills HRC45 10-19 Universal end mills HRC55 20-29 High performance end mills 30-39 Dedicated for steel 40-49 Dedicated for aluminium alloy 50-59 Dedicated for stainless steel 60-69 Dedicated for difficult machining material 70-79 Dedicated for hardened material 80-99 others				2,3,4,5,6.....		E Square B Ball nose R Round corner C Chamfer P With waved edges W Forming end mills T Taper end mill H High feed milling		
6-Length		7-Tool diameter		8-Chamfer / nose radius size			9-Structure type			
S Standard total length		0.125 in=1/8 in		R015=0.015 in			N Straight necking			
L Long version		0.188 in=3/16 in					C Conical necking			
XL Super long version							P Special shank			
XXL Extra long version							Default: No necking			
SN Short cutting edge										
SP Long cutting edge										

Solid Carbide End Mill M200

Eco line

Square shoulder mill with 4 cutting edges



Solid carbide end mill

Workpiece materials < HRC45

End Mill Tolerances			
Dc(in)	Tolerance(in)	d1	Tolerance
≤0.188	+0.00/-0.0008	all	h6
0.25-0.313	+0.00/-0.0011		
0.375-0.438	+0.00/-0.0019		
0.500-1.000	+0.00/-0.0028		

P	M	K	N	S	H	O
••	•	••				

•• 1st choice • 2nd choice

Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M200-4ES-0.125	1/8	0.125	3.175	1/8	0.125	0.500	2.250	4	●
M200-4ES-0.188	3/16	0.188	4.763	3/16	0.188	0.500	2.000	4	●
M200-4ES-0.250	1/4	0.250	6.350	1/4	0.250	0.750	2.500	4	●
M200-4ES-0.313	5/16	0.313	7.938	5/16	0.313	0.813	2.500	4	●
M200-4ES-0.375	3/8	0.375	9.525	3/8	0.375	1.125	3.000	4	●
M200-4ES-0.438	7/16	0.438	11.113	7/16	0.438	1.000	2.500	4	●
M200-4ES-0.500	1/2	0.500	12.700	1/2	0.500	1.000	3.000	4	●
M200-4ES-0.750	3/4	0.750	19.050	3/4	0.750	1.500	4.000	4	●
M200-4ES-1.000	1	1.000	25.400	1	1.000	2.000	4.000	4	●

Long version

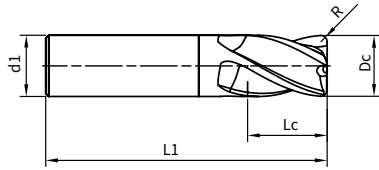
Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M200-4EL-0.313	5/16	0.313	7.938	5/16	0.313	1.125	3.000	4	●
M200-4EL-0.375	3/8	0.375	9.525	3/8	0.375	1.500	3.500	4	●
M200-4EL-0.500	1/2	0.500	12.700	1/2	0.500	2.000	4.000	4	●
M200-4EL-0.625	5/8	0.625	15.875	5/8	0.625	1.250	3.500	4	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide End Mill M200

Eco line

Round corner mill with 4 cutting edges



Solid carbide end mill

Workpiece materials < HRC45

End Mill Tolerances			
Dc(in)	Tolerance(in)	d1	Tolerance
≤0.188	+0.00/-0.0008	all	h6
0.25-0.313	+0.00/-0.0011		
0.375-0.438	+0.00/-0.0019		
0.500-1.000	+0.00/-0.0028		

P	M	K	N	S	H	O
●●	●	●●				

●● 1st choice ● 2nd choice

Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Re in Corner radius	Z	Stock
M200-4RS-0.125R015	1/8	0.125	3.175	1/8	0.125	0.500	2.250	0.015	4	●
M200-4RS-0.188R015	3/16	0.188	4.763	3/16	0.188	0.500	2.000	0.015	4	●
M200-4RS-0.250R015	1/4	0.250	6.350	1/4	0.250	0.750	2.500	0.015	4	●
M200-4RS-0.313R015	5/16	0.313	7.938	5/16	0.313	0.813	2.500	0.015	4	●
M200-4RS-0.375R015	3/8	0.375	9.525	3/8	0.375	1.125	3.000	0.015	4	●
M200-4RS-0.375R030	3/8	0.375	9.525	3/8	0.375	1.125	3.000	0.03	4	●
M200-4RS-0.438R015	7/16	0.438	11.113	7/16	0.438	1.000	2.500	0.015	4	●
M200-4RS-0.500R015	1/2	0.500	12.700	1/2	0.500	1.000	3.000	0.015	4	●
M200-4RS-0.500R030	1/2	0.500	12.700	1/2	0.500	1.000	3.000	0.03	4	●
M200-4RS-0.750R015	3/4	0.750	19.050	3/4	0.750	1.500	4.000	0.015	4	●
M200-4RS-0.750R030	3/4	0.750	19.050	3/4	0.750	1.500	4.000	0.03	4	●
M200-4RS-1.000R015	1	1.000	25.400	1	1.000	2.000	4.000	0.015	4	●
M200-4RS-1.000R030	1	1.000	25.400	1	1.000	2.000	4.000	0.03	4	●

Long version

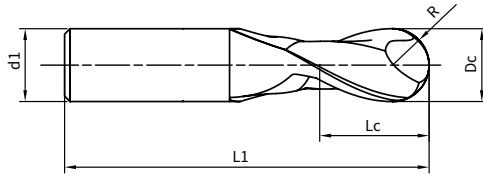
Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Re in Corner radius	Z	Stock
M200-4RL-0.313R015	5/16	0.313	7.938	5/16	0.313	1.125	3.000	0.015	4	●
M200-4RL-0.375R015	3/8	0.375	9.525	3/8	0.375	1.500	3.500	0.015	4	●
M200-4RL-0.375R030	3/8	0.375	9.525	3/8	0.375	1.500	3.500	0.03	4	●
M200-4RL-0.500R015	1/2	0.500	12.700	1/2	0.500	2.000	4.000	0.015	4	●
M200-4RL-0.500R030	1/2	0.500	12.700	1/2	0.500	2.000	4.000	0.03	4	●
M200-4RL-0.625R015	5/8	0.625	15.875	5/8	0.625	1.250	3.500	0.015	4	●
M200-4RL-0.625R030	5/8	0.625	15.875	5/8	0.625	1.250	3.500	0.03	4	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide End Mill M200

Eco line

Ball-nose mill with 2 cutting edges



Solid carbide end mill

Workpiece materials < HRC45

End Mill Tolerances			
Dc(in)	Tolerance(in)	d1	Tolerance
all	+0.00/-0.0008	all	h6

P	M	K	N	S	H	O
••	•	••				

•• 1st choice • 2nd choice

Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M200-2BS-0.125	1/8	0.125	3.175	1/8	0.125	0.500	2.250	2	●
M200-2BS-0.188	3/16	0.188	4.763	3/16	0.188	0.500	2.000	2	●
M200-2BS-0.250	1/4	0.250	6.350	1/4	0.250	0.750	2.500	2	●
M200-2BS-0.313	5/16	0.313	7.938	5/16	0.313	0.813	2.500	2	●
M200-2BS-0.375	3/8	0.375	9.525	3/8	0.375	1.125	3.000	2	●
M200-2BS-0.438	7/16	0.438	11.113	7/16	0.438	1.000	2.500	2	●
M200-2BS-0.500	1/2	0.500	12.700	1/2	0.500	1.000	3.000	2	●
M200-2BS-0.750	3/4	0.750	19.050	3/4	0.750	1.500	4.000	2	●
M200-2BS-1.000	1	1.000	25.400	1	1.000	2.000	4.000	2	●

Long version

Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M200-2BL-0.313	5/16	0.313	7.938	5/16	0.313	1.125	3.000	2	●
M200-2BL-0.375	3/8	0.375	9.525	3/8	0.375	1.500	3.500	2	●
M200-2BL-0.500	1/2	0.500	12.700	1/2	0.500	2.000	4.000	2	●
M200-2BL-0.625	5/8	0.625	15.875	5/8	0.625	1.250	3.500	2	●

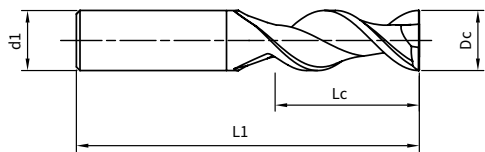
Marked: ● Stocked ○ Limited-stock

Solid Carbide End Mill M245

Solid carbide mill

Eco line

Square shoulder mill with 2 cutting edges dedicated for aluminum alloy



End Mill Tolerances			
Dc(in)	Tolerance(in)	d1	Tolerance
≤0.188	+0.00/-0.0008	all	h6
0.25-0.313	+0.00/-0.0011		
0.375-0.438	+0.00/-0.0019		
0.500-1.000	+0.00/-0.0028		

P	M	K	N	S	H	O
			●●			

●● 1st choice ● 2nd choice

Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M245-2ES-0.125	1/8	0.125	3.175	1/8	0.125	0.500	2.250	2	●
M245-2ES-0.188	3/16	0.188	4.763	3/16	0.188	0.500	2.000	2	●
M245-2ES-0.250	1/4	0.250	6.350	1/4	0.250	0.750	2.500	2	●
M245-2ES-0.313	5/16	0.313	7.938	5/16	0.313	0.813	2.500	2	●
M245-2ES-0.375	3/8	0.375	9.525	3/8	0.375	1.125	3.000	2	●
M245-2ES-0.438	7/16	0.438	11.113	7/16	0.438	1.000	2.500	2	●
M245-2ES-0.500	1/2	0.500	12.700	1/2	0.500	1.000	3.000	2	●
M245-2ES-0.625	5/8	0.625	15.875	5/8	0.625	1.250	3.500	2	●
M245-2ES-0.750	3/4	0.750	19.050	3/4	0.750	1.500	4.000	2	●
M245-2ES-1.000	1	1.000	25.400	1	1.000	2.000	4.000	2	●

Long version

Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M245-2EL-0.313	5/16	0.313	7.938	5/16	0.313	1.125	3.000	2	●
M245-2EL-0.375	3/8	0.375	9.525	3/8	0.375	1.500	3.500	2	●
M245-2EL-0.500	1/2	0.500	12.700	1/2	0.500	2.000	4.000	2	●

Solid Endmill

Marked: ● Stocked ○ Limited-stock

Solid Carbide End Mill Eco Line Cutting Parameters

Materials								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in²)	Cutting speed Vc(SFM)		
P	Unalloyed steel	C≤0.25%	Annealed	125	62000	150~260		
		0.25 < C≤0.55%	Annealed	190	92700	150~260		
		0.25 < C≤0.55%	Heat-treated	210	103000	150~260		
		C > 0.55%	Annealed	190	92700	150~260		
		C > 0.55%	Heat-treated	300	147000	130~200		
		Free cutting steel (short-chip)	Annealed	220	108000	150~210		
	Low-alloyed steel	Annealed			175	85700	150~250	
		Heat-treated			300	146900	130~200	
		Heat-treated			380	186000	130~200	
		Heat-treated			430	214200	100~130	
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900	150~250	
		Hardened and tempered			300	147000	130~200	
		Hardened and tempered			400	197000	130~200	
	Stainless steel	Ferritic/martensitic, annealed			200	97900	110~130	
		Martensitic, heat-treated			330	162000	100~110	
M	Stainless steel	Austenitic, quench hardened		200	97900	100~110		
		Austenitic, precipitation hardened (PH)		300	147000	100		
		Austenitic/ferritic, duplex		230	113000	100~110		
K	Malleable cast iron	Ferritic		200	58000	180~200		
		Pearlitic		260	101000	180~200		
	Grey cast iron	Low tensile strength		180	29000	180~200		
		High tensile strength/austenitic		245	50800	180~200		
	Nodular cast iron	Ferritic		155	58000	180~200		
		Pearlitic		265	101000	150~180		
	GGV(CGI)			230	58000	180~200		
N	Wrought aluminium alloys	Non-aging		30	-			
		Aged		100	49300			
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700			
		≤ 12% Si, aged		90	45000			
		> 12% Si, non-aging		130	65300			
	Magnesium alloys			70	36300			
	Copper and copper alloys	Unalloyed, electrolytic copper		100	49300			
		Brass, bronze, red brass		90	45000			
Cu alloys, short-chipping		110	55100					
High-tensile, Ampco alloy		300	146500					
S	Heat-resistant alloys	Fe-based	Annealed	200	98600			
			Hardened	280	136000			
		Ni or Co based	Annealed	250	122000			
			Hardened	350	171000			
			Cast	320	156600			
	Titanium alloys	Pure titanium		200	98600			
		α and β alloys, hardened		375	182700			
		β alloys		410	203000			
	Tungsten alloys			300	146500			
Molybdenum alloys			300	146500				
H	Hardened steel	Hardened and tempered		50HRC	-			
		Hardened and tempered		55HRC	-			
		Hardened and tempered		60HRC	-			
	Chilled cast iron	Hardened and tempered		50HRC	-			

The cutting data are average recommended values. For special applications, adjustment is needed.

[illegible]

Solid Carbide End Mill Eco Line Cutting Parameters

Materials								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in²)	Cutting speed Vc(SFM)		
P	Unalloyed steel	C≤0.25%	Annealed	125	62000	260~330		
		0.25 < C≤0.55%	Annealed	190	92700	250~300		
		0.25 < C≤0.55%	Heat-treated	210	103000	250~300		
		C > 0.55%	Annealed	190	92700	250~300		
		C > 0.55%	Heat-treated	300	147000	200~230		
		Free cutting steel (short-chip)	Annealed	220	108000	250~300		
	Low-alloyed steel	Annealed			175	85700	250~300	
		Heat-treated			300	146900	200~230	
		Heat-treated			380	186000	200~230	
		Heat-treated			430	214200	180~200	
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900	250~280	
		Hardened and tempered			300	147000	200~230	
		Hardened and tempered			400	197000	180~200	
	Stainless steel	Ferritic/martensitic, annealed			200	97900	160~230	
		Martensitic, heat-treated			330	162000	130~160	
M	Stainless steel	Austenitic, quench hardened		200	97900	130~160		
		Austenitic, precipitation hardened (PH)		300	147000	130		
		Austenitic/ferritic, duplex		230	113000	130~160		
K	Malleable cast iron	Ferritic		200	58000	230~260		
		Pearlitic		260	101000	230~260		
	Grey cast iron	Low tensile strength		180	29000	230~260		
		High tensile strength/austenitic		245	50800	230~260		
	Nodular cast iron	Ferritic		155	58000	230~260		
		Pearlitic		265	101000	220~250		
	GGV(CGI)			230	58000	230~260		
N	Wrought aluminium alloys	Non-aging		30	-			
		Aged		100	49300			
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700			
		≤ 12% Si, aged		90	45000			
		> 12% Si, non-aging		130	65300			
	Magnesium alloys			70	36300			
	Copper and copper alloys	Unalloyed, electrolytic copper		100	49300			
		Brass, bronze, red brass		90	45000			
Cu alloys, short-chipping		110	55100					
High-tensile, Ampco alloy		300	146500					
S	Heat-resistant alloys	Fe-based	Annealed	200	98600			
			Hardened	280	136000			
		Ni or Co based	Annealed	250	122000			
			Hardened	350	171000			
			Cast	320	156600			
	Titanium alloys	Pure titanium		200	98600			
		α and β alloys, hardened		375	182700			
		β alloys		410	203000			
	Tungsten alloys			300	146500			
Molybdenum alloys			300	146500				
H	Hardened steel	Hardened and tempered		50HRC	-			
		Hardened and tempered		55HRC	-			
		Hardened and tempered		60HRC	-			
	Chilled cast iron	Hardened and tempered		50HRC	-			

The cutting data are average recommended values. For special applications, adjustment is needed.

[illegible]

Solid Carbide End Mill Eco Line Cutting Parameters

Materials								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm((lbs/in²)	Cutting speed Vc(SFM)		
P	Unalloyed steel	C≤0.25%	Annealed	125	62000	300~330		
		0.25 < C≤0.55%	Annealed	190	92700	300~330		
		0.25 < C≤0.55%	Heat-treated	210	103000	300~330		
		C > 0.55%	Annealed	190	92700	300~330		
		C > 0.55%	Heat-treated	300	147000	260~300		
		Free cutting steel (short-chip)	Annealed	220	108000	300~330		
	Low-alloyed steel	Annealed			175	85700	300~330	
		Heat-treated			300	146900	260~300	
		Heat-treated			380	186000	260~300	
		Heat-treated			430	214200	260~300	
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900	300~330	
		Hardened and tempered			300	147000	260~300	
		Hardened and tempered			400	197000	260~300	
	Stainless steel	Ferritic/martensitic, annealed			200	97900	300~330	
		Martensitic, heat-treated			330	162000	260~300	
M	Stainless steel	Austenitic, quench hardened		200	97900	300~330		
		Austenitic, precipitation hardened (PH)		300	147000	260~300		
		Austenitic/ferritic, duplex		230	113000	260~300		
K	Malleable cast iron	Ferritic		200	58000	300~330		
		Pearlitic		260	101000	300~330		
	Grey cast iron	Low tensile strength		180	29000	300~330		
		High tensile strength/austenitic		245	50800	300~330		
	Nodular cast iron	Ferritic		155	58000	300~330		
		Pearlitic		265	101000	300~330		
	GGV(CGI)				230	58000	300~330	
N	Wrought aluminium alloys	Non-aging		30	-			
		Aged		100	49300			
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700			
		≤ 12% Si, aged		90	45000			
		> 12% Si, non-aging		130	65300			
	Magnesium alloys			70	36300			
	Copper and copper alloys	Unalloyed, electrolytic copper		100	49300			
		Brass, bronze, red brass		90	45000			
Cu alloys, short-chipping		110	55100					
High-tensile, Ampco alloy		300	146500					
S	Heat-resistant alloys	Fe-based	Annealed	200	98600			
			Hardened	280	136000			
		Ni or Co based	Annealed	250	122000			
			Hardened	350	171000			
			Cast	320	156600			
	Titanium alloys	Pure titanium		200	98600			
		α and β alloys, hardened		375	182700			
		β alloys		410	203000			
	Tungsten alloys			300	146500			
Molybdenum alloys			300	146500				
H	Hardened steel	Hardened and tempered		50HRC	-			
		Hardened and tempered		55HRC	-			
		Hardened and tempered		60HRC	-			
	Chilled cast iron	Hardened and tempered		50HRC	-			

The cutting data are average recommended values. For special applications, adjustment is needed.

[illegible]

Solid Carbide End Mill Eco Line Cutting Parameters

Materials								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in²)	Cutting speed Vc(SFM)		
P	Unalloyed steel	C≤0.25%	Annealed	125	62000			
		0.25 < C≤0.55%	Annealed	190	92700			
		0.25 < C≤0.55%	Heat-treated	210	103000			
		C > 0.55%	Annealed	190	92700			
		C > 0.55%	Heat-treated	300	147000			
		Free cutting steel (short-chip)	Annealed	220	108000			
	Low-alloyed steel	Annealed			175	85700		
		Heat-treated			300	146900		
		Heat-treated			380	186000		
		Heat-treated			430	214200		
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900		
		Hardened and tempered			300	147000		
		Hardened and tempered			400	197000		
	Stainless steel	Ferritic/martensitic, annealed			200	97900		
		Martensitic, heat-treated			330	162000		
M	Stainless steel	Austenitic, quench hardened		200	97900			
		Austenitic, precipitation hardened (PH)		300	147000			
		Austenitic/ferritic, duplex		230	113000			
K	Malleable cast iron	Ferritic		200	58000			
		Pearlitic		260	101000			
	Grey cast iron	Low tensile strength		180	29000			
		High tensile strength/austenitic		245	50800			
	Nodular cast iron	Ferritic		155	58000			
		Pearlitic		265	101000			
	GGV(CGI)			230	58000			
N	Wrought aluminium alloys	Non-aging		30	-	490~660		
		Aged		100	49300	390~490		
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700	490~660		
		≤ 12% Si, aged		90	45000	430~490		
		> 12% Si, non-aging		130	65300	390~430		
	Magnesium alloys			70	36300	490~660		
	Copper and copper alloys	Unalloyed, electrolytic copper		100	49300	390~490		
		Brass, bronze, red brass		90	45000	390~490		
		Cu alloys, short-chipping		110	55100	390~490		
High-tensile, Ampco alloy		300	146500					
S	Heat-resistant alloys	Fe-based	Annealed	200	98600			
			Hardened	280	136000			
		Ni or Co based	Annealed	250	122000			
			Hardened	350	171000			
			Cast	320	156600			
	Titanium alloys	Pure titanium		200	98600			
		α and β alloys, hardened		375	182700			
		β alloys		410	203000			
	Tungsten alloys			300	146500			
Molybdenum alloys			300	146500				
H	Hardened steel	Hardened and tempered		50HRC	-			
		Hardened and tempered		55HRC	-			
		Hardened and tempered		60HRC	-			
	Chilled cast iron	Hardened and tempered		50HRC	-			

The cutting data are average recommended values. For special applications, adjustment is needed.



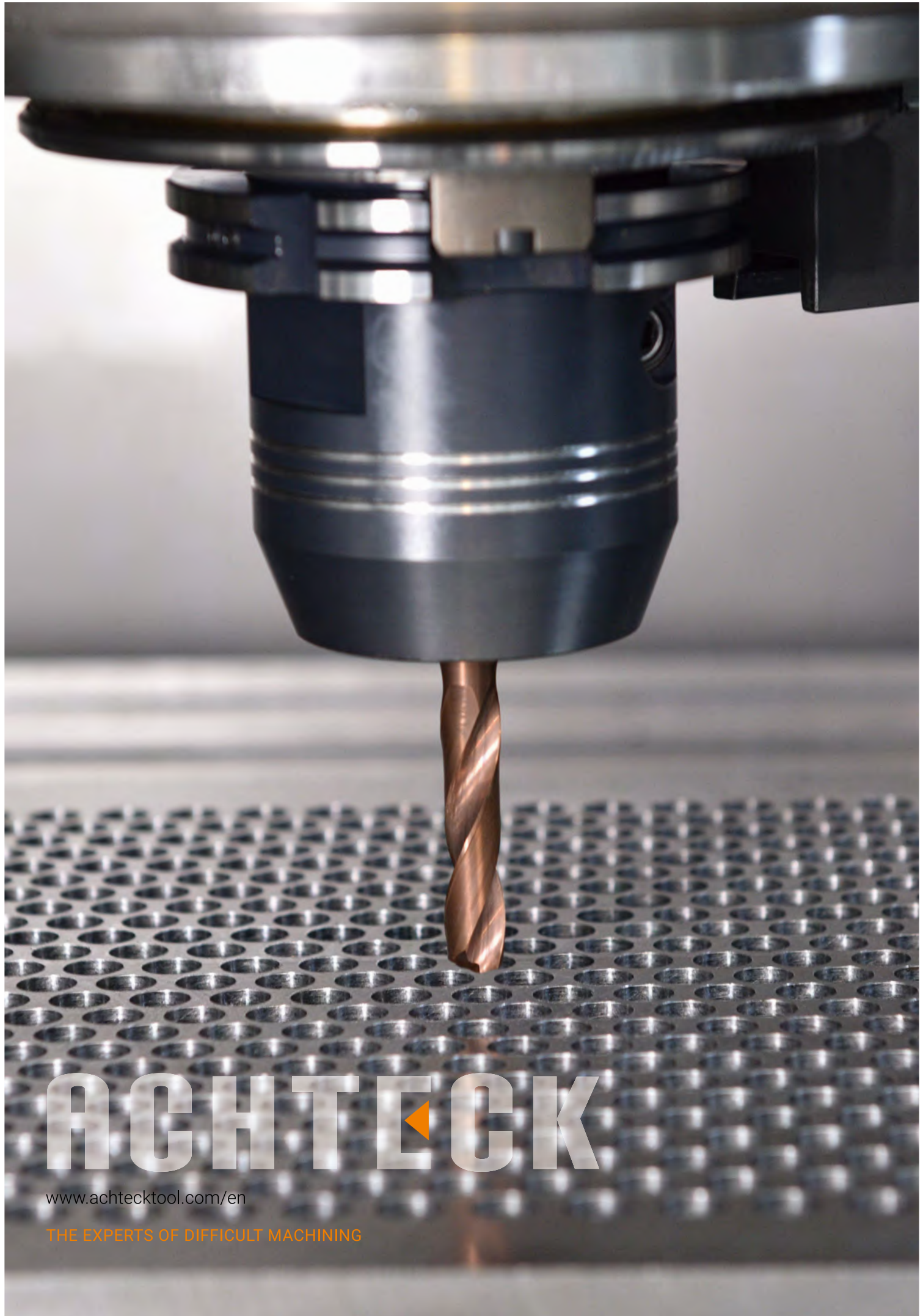
Solid Endmill

Solid Carbide End Mill Eco Line Cutting Parameters

Materials								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in²)	Cutting speed Vc(SFM)		
P	Unalloyed steel	C≤0.25%	Annealed	125	62000			
		0.25 < C≤0.55%	Annealed	190	92700			
		0.25 < C≤0.55%	Heat-treated	210	103000			
		C > 0.55%	Annealed	190	92700			
		C > 0.55%	Heat-treated	300	147000			
		Free cutting steel (short-chip)	Annealed	220	108000			
	Low-alloyed steel	Annealed			175	85700		
		Heat-treated			300	146900		
		Heat-treated			380	186000		
		Heat-treated			430	214200		
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900		
		Hardened and tempered			300	147000		
		Hardened and tempered			400	197000		
	Stainless steel	Ferritic/martensitic, annealed			200	97900		
		Martensitic, heat-treated			330	162000		
M	Stainless steel	Austenitic, quench hardened		200	97900			
		Austenitic, precipitation hardened (PH)		300	147000			
		Austenitic/ferritic, duplex		230	113000			
K	Malleable cast iron	Ferritic		200	58000			
		Pearlitic		260	101000			
	Grey cast iron	Low tensile strength		180	29000			
		High tensile strength/austenitic		245	50800			
	Nodular cast iron	Ferritic		155	58000			
		Pearlitic		265	101000			
GGV(CGI)				230	58000			
N	Wrought aluminium alloys	Non-aging		30	-	490~660		
		Aged		100	49300	390~490		
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700	490~660		
		≤ 12% Si, aged		90	45000	430~490		
		> 12% Si, non-aging		130	65300	390~430		
	Magnesium alloys			70	36300	490~660		
	Copper and copper alloys	Unalloyed, electrolytic copper		100	49300	390~490		
		Brass, bronze, red brass		90	45000	390~490		
Cu alloys, short-chipping		110	55100	390~490				
High-tensile, Ampco alloy		300	146500					
S	Heat-resistant alloys	Fe-based	Annealed	200	98600			
			Hardened	280	136000			
		Ni or Co based	Annealed	250	122000			
			Hardened	350	171000			
			Cast	320	156600			
	Titanium alloys	Pure titanium		200	98600			
		α and β alloys, hardened		375	182700			
		β alloys		410	203000			
Tungsten alloys			300	146500				
Molybdenum alloys			300	146500				
H	Hardened steel	Hardened and tempered		50HRC	-			
		Hardened and tempered		55HRC	-			
		Hardened and tempered		60HRC	-			
	Chilled cast iron	Hardened and tempered		50HRC	-			

The cutting data are average recommended values. For special applications, adjustment is needed.

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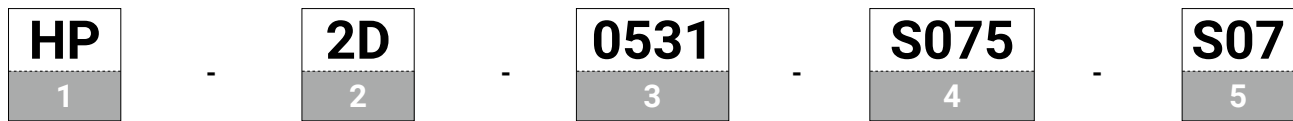
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THE EXPERTS OF DIFFICULT MACHINING



Drilling Holder

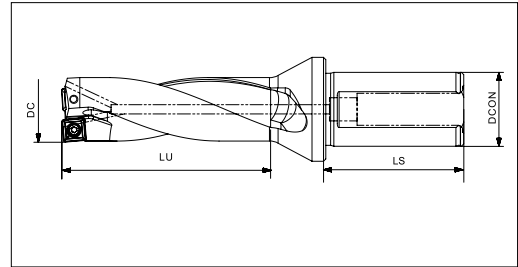
Drilling Holder Denomination System



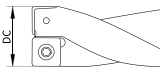
1	HP	Product series	HP: High productivity drilling body series
2	2D	Length-diameter ratio	2D, 3D, 4D,
3	0531	Tool diameter	Tool diameter 0.531(in)
4	S075	Shank diameter	Shank diameter 0.75(in)
5	S07	Insert shape and edge length	The insert shape is "S", the cutting edge length is 7mm

HP Series Drilling Holder

Length-diameter ratio: 2D

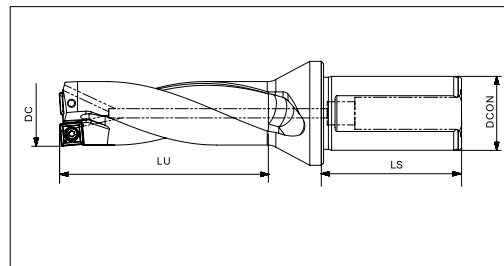


Product code	Dimension (in)				Inserts	Insert Screw	Torx Wrench
	DC	LU	DCON	LS			
HP-2D0531-S075-S05	0.531	1.06	0.75	2.00	SPMT 050204E-DP	ST020043	FT-T06
HP-2D0594-S075-S05	0.594	1.19	0.75	2.00			
HP-2D0625-S100-S06	0.625	1.24	1.00	2.25	SPMT 060204E-DP	ST022055	FT-T06
HP-2D0656-S100-S06	0.656	1.31	1.00	2.25			
HP-2D0688-S100-S06	0.688	1.38	1.00	2.25			
HP-2D0703-S100-S06	0.703	1.41	1.00	2.25			
HP-2D0734-S100-S06	0.734	1.47	1.00	2.25			
HP-2D0750-S100-S06	0.750	1.50	1.00	2.25			
HP-2D0781-S100-S06	0.781	1.56	1.00	2.25			
HP-2D0813-S100-S06	0.813	1.63	1.00	2.25			
HP-2D0844-S100-S06	0.844	1.69	1.00	2.25			
HP-2D0875-S125-S07	0.875	1.75	1.25	2.39	SPMT 07T308E-DP	ST025065	FT-T08
HP-2D0906-S125-S07	0.906	1.81	1.25	2.39			
HP-2D0938-S125-S07	0.938	1.88	1.25	2.39			
HP-2D0969-S125-S07	0.969	1.94	1.25	2.39			
HP-2D0984-S125-S07	0.984	1.97	1.25	2.39			
HP-2D1000-S125-S07	1.000	2.00	1.25	2.39			
HP-2D1031-S125-S07	1.031	2.06	1.25	2.39			
HP-2D1063-S125-S07	1.063	2.13	1.25	2.39			
HP-2D1094-S125-S07	1.094	2.19	1.25	2.39			

Dimension (in)	Spare parts	
Holder diameter	Screw	Wrench
		
0.512-0.594	ST020043	FT-T06
0.610-0.846	ST022055	FT-T06
0.866-1.094	ST025065	FT-T08

HP Series Drilling Holder

Length-diameter ratio: 2D

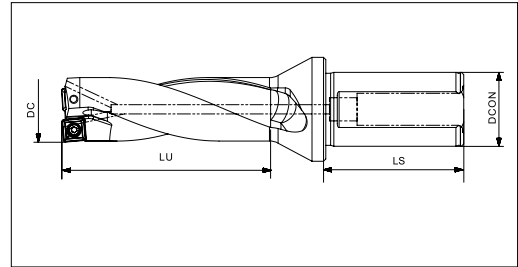


Product code	Dimension (in)				Inserts	Insert Screw	Torx Wrench
	DC	LU	DCON	LS			
HP-2D1125-S125-S09	1.125	2.25	1.25	2.39	SPMT 090408E-DP	ST035084X	FT-T15
HP-2D1156-S125-S09	1.156	2.31	1.25	2.39			
HP-2D1188-S125-S09	1.188	2.38	1.25	2.39			
HP-2D1219-S125-S09	1.219	2.44	1.25	2.39			
HP-2D1250-S125-S09	1.250	2.50	1.25	2.39			
HP-2D1313-S125-S09	1.313	2.63	1.25	2.39			
HP-2D1375-S150-S11	1.375	2.75	1.50	2.75	SPMT 110408E-DP	ST040100H	FT-T15
HP-2D1438-S150-S11	1.438	2.88	1.50	2.75			
HP-2D1469-S150-S11	1.469	2.94	1.50	2.75			
HP-2D1500-S150-S11	1.500	3.00	1.50	2.75			
HP-2D1563-S150-S11	1.563	3.13	1.50	2.75			
HP-2D1625-S150-S11	1.625	3.25	1.50	2.75			
HP-2D1688-S150-S14	1.688	3.38	1.50	2.75	SPMT 140512E-DP	ST050126	FT-T20
HP-2D1750-S150-S14	1.750	3.50	1.50	2.75			
HP-2D1813-S150-S14	1.813	3.63	1.50	2.75			
HP-2D1875-S150-S14	1.875	3.75	1.50	2.75			
HP-2D1938-S150-S14	1.938	3.88	1.50	2.75			

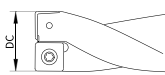
Dimension (in)	Spare parts	
Holder diameter	Screw	Wrench
1.102-1.313	ST035084X	FT-T15
1.339-1.625	ST040100H	FT-T15
1.653-1.968	ST050126	FT-T20

HP Series Drilling Holder

Length-diameter ratio: 3D

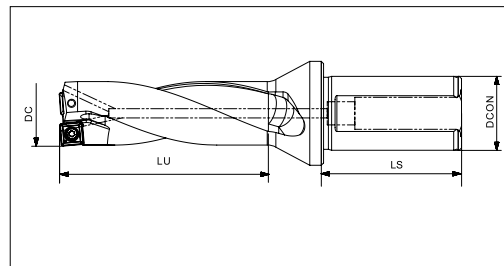


Product code	Dimension (in)				Inserts	Insert Screw	Torx Wrench
	DC	LU	DCON	LS			
HP-3D0531-S075-S05	0.531	1.59	0.75	2.00	SPMT 050204E-DP	ST020043	FT-T06
HP-3D0594-S075-S05	0.594	1.78	0.75	2.00			
HP-3D0625-S100-S06	0.625	1.88	1.00	2.25	SPMT 060204E-DP	ST022055	FT-T06
HP-3D0656-S100-S06	0.656	1.97	1.00	2.25			
HP-3D0688-S100-S06	0.688	2.06	1.00	2.25			
HP-3D0703-S100-S06	0.703	2.11	1.00	2.25			
HP-3D0734-S100-S06	0.734	2.20	1.00	2.25			
HP-3D0750-S100-S06	0.750	2.25	1.00	2.25			
HP-3D0781-S100-S06	0.781	2.34	1.00	2.25			
HP-3D0813-S100-S06	0.813	2.44	1.00	2.25			
HP-3D0844-S100-S06	0.844	2.53	1.00	2.25	SPMT 07T308E-DP	ST025065	FT-T08
HP-3D0875-S125-S07	0.875	2.63	1.25	2.39			
HP-3D0906-S125-S07	0.906	2.72	1.25	2.39			
HP-3D0938-S125-S07	0.938	2.81	1.25	2.39			
HP-3D0969-S125-S07	0.969	2.91	1.25	2.39			
HP-3D0984-S125-S07	0.984	2.95	1.25	2.39			
HP-3D1000-S125-S07	1.000	3.00	1.25	2.39			
HP-3D1031-S125-S07	1.031	3.09	1.25	2.39			
HP-3D1063-S125-S07	1.063	3.19	1.25	2.39			
HP-3D1094-S125-S07	1.094	3.28	1.25	2.39			

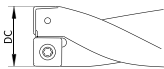
Dimension (in)	Spare parts	
Holder diameter	Screw	Wrench
		
0.512-0.594	ST020043	FT-T06
0.610-0.846	ST022055	FT-T06
0.866-1.094	ST025065	FT-T08

HP Series Drilling Holder

Length-diameter ratio: 3D

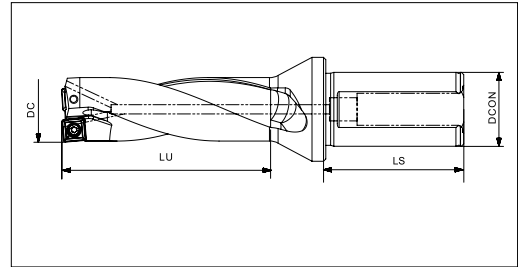


Product code	Dimension (in)				Inserts	Insert Screw	Torx Wrench
	DC	LU	DCON	LS			
HP-3D1125-S125-S09	1.125	3.38	1.25	2.39	SPMT 090408E-DP	ST035084X	FT-T15
HP-3D1156-S125-S09	1.156	3.47	1.25	2.39			
HP-3D1188-S125-S09	1.188	3.56	1.25	2.39			
HP-3D1219-S125-S09	1.219	3.66	1.25	2.39			
HP-3D1250-S125-S09	1.250	3.75	1.25	2.39			
HP-3D1313-S125-S09	1.313	3.94	1.25	2.39			
HP-3D1375-S150-S11	1.375	4.13	1.50	2.75	SPMT 110408E-DP	ST040100H	FT-T15
HP-3D1438-S150-S11	1.438	4.31	1.50	2.75			
HP-3D1469-S150-S11	1.469	4.41	1.50	2.75			
HP-3D1500-S150-S11	1.500	4.50	1.50	2.75			
HP-3D1563-S150-S11	1.563	4.69	1.50	2.75			
HP-3D1625-S150-S11	1.625	4.88	1.50	2.75			
HP-3D1688-S150-S14	1.688	5.06	1.50	2.75	SPMT 140512E-DP	ST050126	FT-T20
HP-3D1750-S150-S14	1.750	5.25	1.50	2.75			
HP-3D1813-S150-S14	1.813	5.44	1.50	2.75			
HP-3D1875-S150-S14	1.875	5.63	1.50	2.75			
HP-3D1938-S150-S14	1.938	5.81	1.50	2.75			

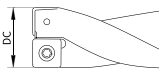
Dimension (in)	Spare parts	
Holder diameter	Screw	Wrench
		
1.102-1.313	ST035084X	FT-T15
1.339-1.625	ST040100H	FT-T15
1.653-1.968	ST050126	FT-T20

HP Series Drilling Holder

Length-diameter ratio: 4D

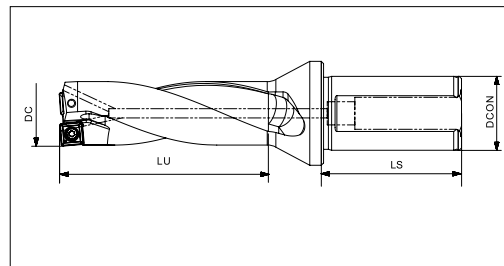


Product code	Dimension (in)				Inserts	Insert Screw	Torx Wrench
	DC	LU	DCON	LS			
HP-4D0531-S075-S05	0.531	2.12	0.75	2.00	SPMT 050204E-DP	ST020043	FT-T06
HP-4D0594-S075-S05	0.594	2.38	0.75	2.00			
HP-4D0625-S100-S06	0.625	2.50	1.00	2.25	SPMT 060204E-DP	ST022055	FT-T06
HP-4D0656-S100-S06	0.656	2.62	1.00	2.25			
HP-4D0688-S100-S06	0.688	2.75	1.00	2.25			
HP-4D0703-S100-S06	0.703	2.81	1.00	2.25			
HP-4D0734-S100-S06	0.734	2.94	1.00	2.25			
HP-4D0750-S100-S06	0.750	3.00	1.00	2.25			
HP-4D0781-S100-S06	0.781	3.12	1.00	2.25			
HP-4D0813-S100-S06	0.813	3.25	1.00	2.25			
HP-4D0844-S100-S06	0.844	3.38	1.00	2.25			
HP-4D0875-S125-S07	0.875	3.50	1.25	2.39	SPMT 07T308E-DP	ST025065	FT-T08
HP-4D0906-S125-S07	0.906	3.62	1.25	2.39			
HP-4D0938-S125-S07	0.938	3.75	1.25	2.39			
HP-4D0969-S125-S07	0.969	3.88	1.25	2.39			
HP-4D0984-S125-S07	0.984	3.94	1.25	2.39			
HP-4D1000-S125-S07	1.000	4.00	1.25	2.39			
HP-4D1031-S125-S07	1.031	4.12	1.25	2.39			
HP-4D1063-S125-S07	1.063	4.25	1.25	2.39			
HP-4D1094-S125-S07	1.094	4.38	1.25	2.39			

Dimension (in)	Spare parts	
Holder diameter	Screw	Wrench
		
0.512-0.594	ST020043	FT-T06
0.610-0.846	ST022055	FT-T06
0.866-1.094	ST025065	FT-T08

HP Series Drilling Holder

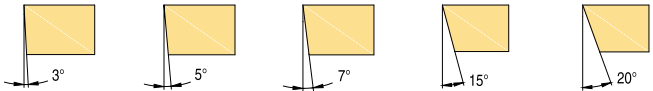
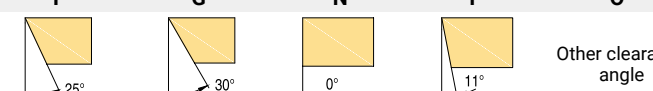
Length-diameter ratio: 4D



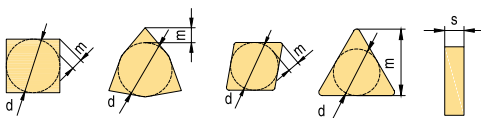
Product code	Dimension (in)				Inserts	Insert Screw	Torx Wrench
	DC	LU	DCON	LS			
HP-4D1125-S125-S09	1.125	4.50	1.25	2.39	SPMT 090408E-DP	ST035084X	FT-T15
HP-4D1156-S125-S09	1.156	4.62	1.25	2.39			
HP-4D1188-S125-S09	1.188	4.75	1.25	2.39			
HP-4D1219-S125-S09	1.219	4.88	1.25	2.39			
HP-4D1250-S125-S09	1.250	5.00	1.25	2.39			
HP-4D1313-S125-S09	1.313	5.25	1.25	2.39			
HP-4D1375-S150-S11	1.375	5.50	1.50	2.75	SPMT 110408E-DP	ST040100H	FT-T15
HP-4D1438-S150-S11	1.438	5.75	1.50	2.75			
HP-4D1469-S150-S11	1.469	5.88	1.50	2.75			
HP-4D1500-S150-S11	1.500	6.00	1.50	2.75			
HP-4D1563-S150-S11	1.563	6.25	1.50	2.75			
HP-4D1625-S150-S11	1.625	6.50	1.50	2.75			
HP-4D1688-S150-S14	1.688	6.75	1.50	2.75	SPMT 140512E-DP	ST050126	FT-T20
HP-4D1750-S150-S14	1.750	7.00	1.50	2.75			
HP-4D1813-S150-S14	1.813	7.25	1.50	2.75			
HP-4D1875-S150-S14	1.875	7.50	1.50	2.75			
HP-4D1938-S150-S14	1.938	7.75	1.50	2.75			

Dimension (in)	Spare parts	
Holder diameter	Screw	Wrench
1.102-1.313	ST035084X	FT-T15
1.339-1.625	ST040100H	FT-T15
1.653-1.968	ST050126	FT-T20

Drilling Insert Denomination System

S 1	P 2	M 3	T 4
1- Shape/Code		2- Clearance Angle	
S  W 		A B C D E  F G N P O  Other clearance angle	

3- Tolerance



Class	Unit	In.Circle dimension d	Nose height m	Thickness
A	mm	± 0,025	± 0,005	± 0,025
C	mm	± 0,025	± 0,013	± 0,025
E	mm	± 0,025	± 0,025	± 0,025
F	mm	± 0,013	± 0,005	± 0,025
G	mm	± 0,025	± 0,025	± 0,13
H	mm	± 0,013	± 0,013	± 0,025
J	mm	*	± 0,005	± 0,025
K	mm	*	± 0,013	± 0,025
L	mm	*	± 0,025	± 0,025
M	mm	*	*	± 0,127
U	mm	*	*	± 0,127
N	mm	*	*	± 0,025

* For details refer to right and below tables

Shape: C, E, H, M, O, P, S, T, R, W				
IC	d		m	
	J,K,L,M,N	U	M, N	U
4.76	± 0,05	± 0,08	± 0,08	± 0,13
5.56	± 0,05	± 0,08	± 0,08	± 0,13
6	± 0,05	± 0,08	± 0,08	± 0,13
6.35	± 0,05	± 0,08	± 0,08	± 0,13
7.94	± 0,05	± 0,08	± 0,08	± 0,13
8	± 0,05	± 0,08	± 0,08	± 0,13
9.525	± 0,05	± 0,08	± 0,08	± 0,13
10	± 0,05	± 0,08	± 0,08	± 0,13
12	± 0,08	± 0,13	± 0,13	± 0,2
12.7	± 0,08	± 0,13	± 0,13	± 0,2
15.875	± 0,1	± 0,18	± 0,15	± 0,27
16	± 0,1	± 0,18	± 0,15	± 0,27
19.05	± 0,1	± 0,18	± 0,15	± 0,27
20	± 0,1	± 0,18	± 0,15	± 0,27
25	± 0,13	± 0,25	± 0,18	± 0,38
25.4	± 0,13	± 0,25	± 0,18	± 0,38
31.75	± 0,15	± 0,25	± 0,2	± 0,38
32	± 0,15	± 0,25	± 0,2	± 0,38

M&N shape	D shape		V shape	
IC	d	m	d	m
5.56	± 0,05	± 0,11		
6.35	± 0,05	± 0,11	± 0,05	± 0,16
7.94	± 0,05	± 0,11	± 0,05	± 0,16
9.525	± 0,05	± 0,11	± 0,05	± 0,16
12.7	± 0,08	± 0,15	± 0,08	± 0,2
15.875	± 0,10	± 0,18	± 0,10	± 0,27
19.05	± 0,10	± 0,18	± 0,10	± 0,27

4- Clamping Type				
A	B	C	F	G
H	J	M	N	Q
R	T	U	W	Z
				Special

06

5

02

6

04

7

E

8

-

-

DP

9

5- Cutting Edge Length

In.Circle Dimension (mm)	S Code	 Length	W Code	 Length
5.56			03	3.8
6.35	06	6.35	04	4.3
7.94			05	5.4
8.0	08	8.0		
9.525	09	9.525	06	6.5
12.7	12	12.7	08	8.7

7- Corner Radius

Example

04	=	0.4mm
08	=	0.8mm
12	=	1.2mm

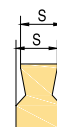
8- Cutting Edge Shape

Example	Description
E	Honed cutting edge
F	Sharp cutting edge
T	Negative land

6- Insert Thickness(mm)

Thickness description	Thickness mark	Example
		00 = 0.79
		T0 = 0.99
		01 = 1.59
		T1 = 1.98
		02 = 2.38
		T2 = 2.58
		03 = 3.18
		T3 = 3.97
		04 = 4.76
		T4 = 4.96
		05 = 5.56
		T5 = 5.95
		06 = 6.35
		07 = 7.94
		09 = 9.53
		11 = 11.11
		12 = 12.70
		14 = 14.29
		15 = 15.88

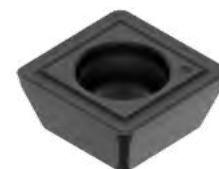
Insert thickness "S"
refers to the distance
between cutting edge
nose and bottom



9- Geometry Code

DP

1. DP geometry has high efficiency. Suitable for short hole high speed drilling.
2. Strong square insert with reinforced geometry offers excellent hole straightness.
3. Drilling holder with helical flute provides excellent chip evacuation and high hole precision.



DU/DG

1. Suitable cutting angle makes perfect balance for the cutting force.
2. General purpose geometry combined with two grades are suitable for P, M, K, S materials, especially good for the chip control in soft materials.
3. Obtains good surface finish.
4. Good versatility. It's suitable for rotating and non-rotating machining.



Drilling Grade Application Guide

Drilling insert grade ISO group													
Material Group	Materials	ISO	Coated										Uncoated
			PVD	PVD	PVD	PVD	PVD	PVD	PVD	PVD	CVD	CVD	
P	Unalloy steels / Alloyed steels	P01											
		P05											
		P10											
		P15											
		P20											
		P25											
		P30											
		P35											
		P40											
		P45											
		P50											
M	Stainless steels	M01											
		M05											
		M10											
		M15											
		M20											
		M25											
		M30											
		M35											
		M40											
		M45											
K	Cast iron	K01											
		K05											
		K10											
		K15											
		K20											
		K25											
		K30											
		K35											
		K40											
		K45											
		K50											
N	Aluminum/ Aluminum alloys	N01											
		N05											
		N10											
		N15											
		N20											
		N25											
		N30											
S	Heat resistant alloys	S01											
		S05											
		S10											
		S15											
		S20											
		S25											
		S30											
		S35											
		S40											
		S45											

Drilling Grade Description

P

Steel, cast steel, ferritic / martensitic stainless steel, malleable cast iron

Basic grade

AP301U(P15-P35)

Recommended grade for steel drilling.

High strength and wear resistance ultra fine carbide substrate with nanostructured PVD coating in controllable layers, high coating adhesion, wear-resistance and strength.

AP351M(P25-P40)

Recommended grade for drilling steel parts under unstable working conditions.

Good toughness and wear resistance ultrafine crystalline substrate combined with nanostructure PVD coating.

Good thermal cracking resistance, wear resistance and coating strength.

AP351U(P30-P45)

Recommended grade for drilling steel parts under complex working conditions. Very tough substrate with nanostructured PVD coating.

Good wear resistance and impact resistance.

M

Austenitic stainless steel, cast steel, manganese steel, alloyed cast iron, malleable cast iron, easy to cut steel

Basic grade

AP351M(M25-M40)

Recommended grade for stainless steel drilling.

Very tough and good wear resistance ultrafine crystalline substrate with nanostructured PVD coating.

Good thermal cracking resistance, wear resistance and coating strength.

S

Heat resistant alloy

Basic grade

AP351M(S25-S40)

Recommended grade for heat resistant alloy drilling.

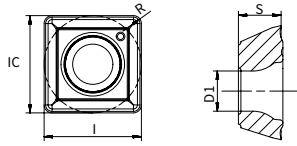
Good toughness and wear resistance ultrafine crystalline substrate combined with nanostructure PVD coating, good resistance to thermal cracking resistance, wear resistance and coating strength.

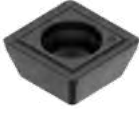
AP351U(S30-S45)

Recommended grade for heat resistant alloy drilling under unstable working conditions and low speed.

Very tough substrate with nanostructured PVD coating, good wear resistance and impact resistance.

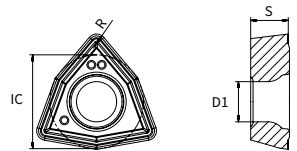
SPMT-DP Drilling Insert



Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition					
		Dimensions(in)					P			M	K	N
		I	IC	S	R	D1	AP301U	AP351U	AC301P	AP351M	AP301U	AW100K
	SPMT 050204E-DP	0.197	0.197	0.094	0.016	0.089	●	●	●	●	●	
	SPMT 060204E-DP	0.236	0.236	0.094	0.016	0.103	●	●	●	●	●	
	SPMT 07T308E-DP	0.313	0.313	0.156	0.031	0.112	●	●	●	●	●	
	SPMT 090408E-DP	0.386	0.386	0.169	0.031	0.159	●	●	●	●	●	
	SPMT 110408E-DP	0.453	0.453	0.189	0.031	0.175	●	●	●	●	●	
	SPMT 140512E-DP	0.563	0.563	0.205	0.047	0.226	●	●	●	●	●	

● Stocked ○ Unstocked

WCMT-DU Drilling Insert

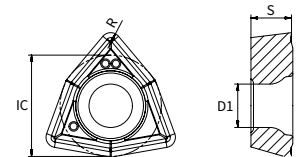


Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition					
		Dimensions(in)					P			M	K	N
		I	IC	S	R	D1	AP301U	AP351U	AC301P	AP351M	AP301U	AW100K
	WCMT 030208E-DU	0.150	0.219	0.094	0.031	0.110	●	●				
	WCMT 040208E-DU	0.169	0.250	0.094	0.031	0.118	●	●				
	WCMT 050308E-DU	0.213	0.313	0.125	0.031	0.134	●	●				
	WCMT 06T308E-DU	0.256	0.375	0.156	0.031	0.154	●	●				
	WCMT 080412E-DU	0.343	0.500	0.187	0.047	0.173	●	●				

Remark: DU series are universal inserts, no toolholder is provided.

● Stocked ○ Unstocked

WCMT-DG Drilling Insert



Inserts	Product code	Machining conditions					● Good condition ● General condition ✖ Bad condition					
		Dimensions(in)					P			M	K	N
		I	IC	S	R	D1	AP301U	AP351U	AC301P	AP351M	AP301U	AW100K
	WCMT 030204E-DG	0.150	0.219	0.094	0.016	0.098	▲	▲				
	WCMT 040204E-DG	0.169	0.250	0.094	0.016	0.110	▲	▲				
	WCMT 050308E-DG	0.213	0.313	0.125	0.031	0.134	▲	▲				
	WCMT 06T308E-DG	0.256	0.375	0.156	0.031	0.175	▲	▲				
	WCMT 080408E-DG	0.343	0.500	0.187	0.031	0.217	▲	▲				

● Stocked ○ Unstocked

[illegible]

Drilling holder

Cutting Parameter Recommendation

Materials				WC drilling insert series grade application range & cutting parameter recommendation																																																	
ISO	Material classification	Tensile strength (1bs/in ²)	Hardness (HB)	Grade										Feed (in/rev)																																							
				AP301U		AP351U		AC301P		CVD Coated		P25-40																																									
				PVD Coated		PVD Coated		P30-45		M30-45		-																																									
				-		-		-		-		-																																									
				-		-		-		-		-																																									
				Feed (in/rev)										Cutting speed (ft/min)																																							
				Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min																																
				WCMT 030204E-DU/DG										WCMT 040204E-DU/DG										WCMT 050308E-DU/DG										WCMT 06T308E-DU/DG										WCMT 080408E-DU/DG									
				Ø16mm ~Ø20 mm										Ø20.5mm ~Ø25mm										Ø25.5mm ~ Ø30 mm										Ø31mm ~Ø41 mm										Ø41mm ~Ø58 mm									
				WCMT 030204E-DU/DG										WCMT 040204E-DU/DG										WCMT 050308E-DU/DG										WCMT 06T308E-DU/DG										WCMT 080408E-DU/DG									
0.002-0.003										0.003-0.004										0.003-0.004										0.003-0.004										0.003-0.004													
0.002-0.003										0.004-0.004										0.003-0.004										0.003-0.004										0.004-0.005													
0.002-0.004										0.003-0.006										0.003-0.006										0.004-0.007										0.004-0.008													
0.002-0.003										0.003-0.004										0.003-0.006										0.004-0.006										0.004-0.007													
0.002-0.003										0.002-0.035										0.003-0.004										0.003-0.005										0.004-0.005													
0.002-0.003										0.003-0.004										0.003-0.006										0.003-0.004										0.004-0.005													
0.002-0.003										0.003-0.004										0.003-0.005										0.003-0.004										0.003-0.004													
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*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant.

Deep-hole Drilling Product Introduction

Achteck has general-purpose deep-hole drilling inserts, which offer high productivity for many industries: energy, engineering machinery, injection molding, aircraft, shipbuilding, military, etc. It can achieve good hole straightness in deep hole drilling and good surface finish. Existing geometries and grades cover steel, stainless steel and heat resistant alloy drilling.

Product application and features

- The inserts can be mounted on the deep-hole drilling head.
- AP301U(N) is the first choice for drilling steel and stainless steel
- All geometries offer good chip-breaking result
- Increased efficiency due to high feed rate
- Reduces the cost per hole

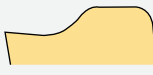
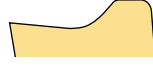
Grade	Coating	Workpiece material					
		P	M	K	N	S	H
AP301U(N)	PVD	●	●			○	

● Marked: 1st Choice ○ Marked: Supplemental application

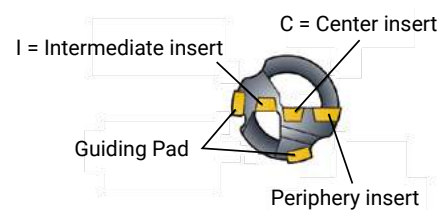
ISO P : (P15-P35) General-purpose PVD coating with excellent wear-resistance and toughness.

ISO M : (M15-M35) General-purpose grade for ISO-M applications, PVD coating with excellent toughness and resistance to built-up edges.

Geometry Types and Features

Geometry	Edge shape	Application
DH		• For general purpose. • Suitable for high cutting speed and feed. • Good chip control in most of materials.
DL		• Suitable for long chip materials (such as low carbon alloyed steel and duplex stainless steel). • Obtain a reliable production process in drilling materials where chip jamming can be a problem.
LH		• With open geometry; • Suitable for high cutting speed and feed.

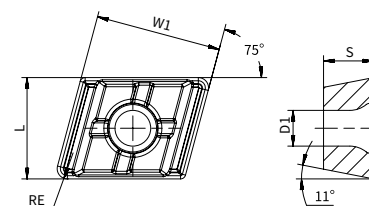
Ejector Drill Matching Table



Hole diameter range (mm)	Center insert	Hole diameter range (mm)	Intermediate insert	Hole diameter range (mm)	Periphery insert	Hole diameter range (mm)	Guiding pad
26.00-28.70	EPMT 050308C	26.00-31.00	EPMT 050308I	26.00-31.00	APHT 060308P	26.00-31.00	GPAD-06A
28.71-33.99	EPMT 06T308C	31.01-34.99	EPMT 06T308I	31.01-38.99	APHT 08T308P	31.01-39.60	GPAD-07A
34.00-43.00	EPMT 08T308C	35.00-54.99	EPMT 08T308I	39.00-49.99	APHT 09T308P	39.61-47.00	GPAD-08A
43.01-47.00	EPMT 10T308C	55.00-65.00	EPMT 12T308I	50.00-65.00	APHT 11T308P	47.01-54.99	GPAD-10A
47.01-49.99	EPMT 12T308C	-	-	-	-	55.00-65.00	GPAD-12A
50.00-57.99	EPMT 10T308C	-	-	-	-	-	-
58.00-65.00	EPMT 12T308C	-	-	-	-	-	-

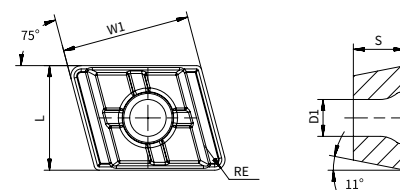
Deep-Hole Drilling Inserts

DH geometry



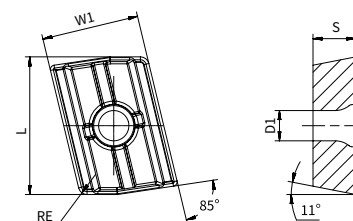
Center insert	Product code	Dimensions (in)					Stock
		L	W1	S	RE	D1	
	EPMT 050308C-DH AP301U(N)	0.219	0.315	0.125	0.031	0.098	●
	EPMT 06T308C-DH AP301U(N)	0.250	0.389	0.156	0.031	0.110	●
	EPMT 08T308C-DH AP301U(N)	0.313	0.389	0.156	0.031	0.110	●
	EPMT 10T308C-DH AP301U(N)	0.375	0.389	0.156	0.031	0.110	●
	EPMT 12T308C-DH AP301U(N)	0.500	0.389	0.156	0.031	0.110	●

● Stock available



Intermediate insert	Product code	Dimensions (in)					Stock
		L	W1	S	RE	D1	
	EPMT 050308I-DH AP301U(N)	0.219	0.315	0.125	0.031	0.098	●
	EPMT 06T308I-DH AP301U(N)	0.250	0.389	0.156	0.031	0.110	●
	EPMT 08T308I-DH AP301U(N)	0.313	0.389	0.156	0.031	0.110	●
	EPMT 12T308I-DH AP301U(N)	0.500	0.389	0.156	0.031	0.110	●

● Stock available

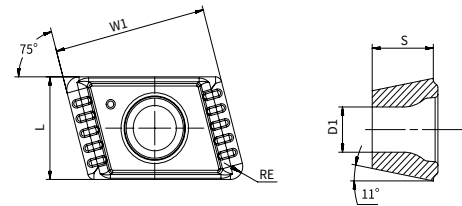


Periphery insert	Product code	Dimensions (in)					Stock
		L	W1	S	RE	D1	
	APHT 060308P-DH AP301U(N)	0.256	0.315	0.125	0.031	0.098	●
	APHT 08T308P-DH AP301U(N)	0.335	0.354	0.156	0.031	0.110	●
	APHT 09T308P-DH AP301U(N)	0.380	0.354	0.156	0.031	0.110	●
	APHT 11T308P-DH AP301U(N)	0.502	0.354	0.156	0.031	0.110	●

● Stock available

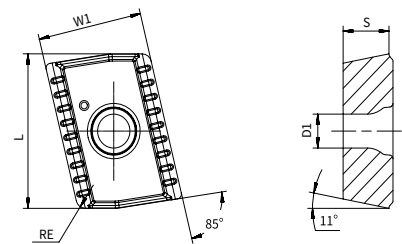
Deep-Hole Drilling Inserts

DL geometry



Intermediate insert	Product code	Dimensions (in)					Stock
		L	W1	S	RE	D1	
	EPMT 050308I-DL AP301U(N)	0.219	0.315	0.125	0.031	0.098	●
	EPMT 06T308I-DL AP301U(N)	0.250	0.389	0.156	0.031	0.110	●
	EPMT 08T308I-DL AP301U(N)	0.313	0.389	0.156	0.031	0.110	●
	EPMT 12T308I-DL AP301U(N)	0.500	0.389	0.156	0.031	0.110	●

● Stock available

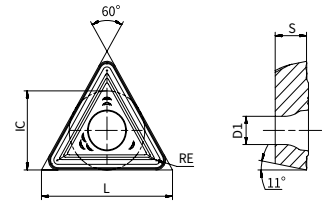


Periphery insert	Product code	Dimensions (in)					Stock
		L	W1	S	RE	D1	
	APHT 060308P-DL AP301U(N)	0.256	0.315	0.125	0.031	0.098	●
	APHT 08T308P-DL AP301U(N)	0.335	0.354	0.156	0.031	0.110	●
	APHT 09T308P-DL AP301U(N)	0.380	0.354	0.156	0.031	0.110	●
	APHT 11T308P-DL AP301U(N)	0.502	0.354	0.156	0.031	0.110	●

● Stock available

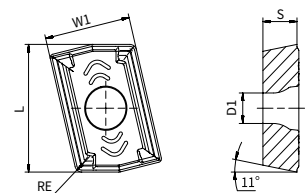
Deep-Hole Drilling Inserts

DH geometry



Center/Intermediate insert	Product code	Dimensions (in)					Stock
		L	IC	S	RE	D1	
	TPMT 16T312R-DH AP301U(N)	0.650	0.375	0.156	0.047	0.134	●
	TPMT 220612R-DH AP301U(N)	0.866	0.500	0.250	0.047	0.173	●

● Stock available

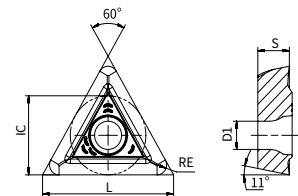


Periphery insert	Product code	Dimensions (in)					Stock
		L	W1	S	RE	D1	
	APMT 13T308-DH AP301U(N)	0.575	0.394	0.156	0.031	0.134	●
	APMT 180608-DH AP301U(N)	0.811	0.453	0.250	0.031	0.173	●

● Stock available

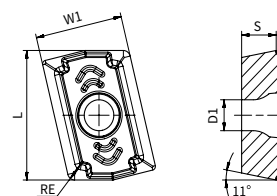
Deep-Hole Drilling Inserts

LH geometry



Center/Intermediate insert	Product code	Dimensions (in)					Stock
		L	IC	S	RE	D1	
	TPMT 16T312R-LH AP301U(N)	0.650	0.375	0.156	0.047	0.134	●
	TPMT 220612R-LH AP301U(N)	0.866	0.500	0.250	0.047	0.173	●

● Stock available

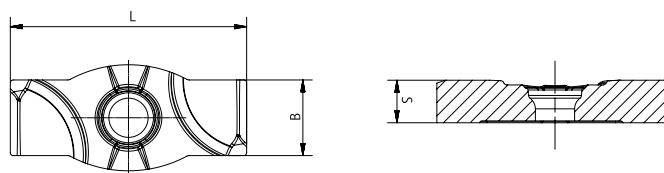


Periphery insert	Product code	Dimensions (in)					Stock
		L	W1	S	RE	D1	
	APMT 13T308-LH AP301U(N)	0.575	0.394	0.156	0.031	0.134	●
	APMT 180608-LH AP301U(N)	0.811	0.453	0.250	0.031	0.173	●

● Stock available

Deep-Hole Drilling Inserts

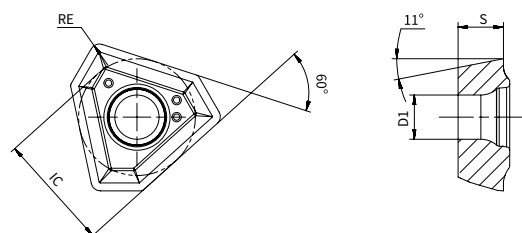
Guiding pad



Guiding pad	Product code	Dimensions (in)			Stock
		B	L	S	
	GPAD-07A AC301K	0.272	0.787	0.138	●
	GPAD-08A AC301K	0.315	0.984	0.177	●
	GPAD-10A AC301K	0.394	1.181	0.177	●

● Stock available

TPMX Series



Sharp	Product code	Dimensions (in)				Stock
		S	IC	RE	D1	
	TPMX 1403R-DH AP301U(N)	0.138	0.333	0.031	0.113	●
	TPMX 1704R-DH AP301U(N)	0.157	0.406	0.031	0.154	●
	TPMX 2405R-DH AP301U(N)	0.217	0.559	0.047	0.173	●
	TPMX 2405L-DH AP301U(N)	0.217	0.559	0.047	0.173	●
	TPMX 2807R-DH AP301U(N)	0.295	0.669	0.063	0.217	●

● Stock available

Recommended Cutting Speed for Materials(Dia 0.98-2.56in)

Workpiece material			Brinell hardness (HB)	Grade			Cutting speed Vc ft/min	Feed fn in/rev	
				Insert				Drilling dia in	
				P	I	C		0.985-1.692	1.693-2.559
P	Unalloyed steel	C=0.05-0.10%	125	AP301U(N)			230-426	0.004-0.016	0.006-0.018
		C=0.10-0.25%	125				230-426	0.004-0.016	0.006-0.018
		C=0.25-0.55%	150				230-426	0.004-0.016	0.006-0.018
		C=0.55-0.80%	170				230-426	0.004-0.016	0.006-0.018
	High carbon steel	Carbon tool steel	210	AP301U(N)			230-394	0.004-0.016	0.008-0.018
	Low-alloyed steel	Non-Hardened	180	AP301U(N)			180-361	0.004-0.016	0.008-0.018
		Tempered	275				230-394	0.004-0.016	0.008-0.018
		Tempered	350				230-394	0.004-0.016	0.008-0.018
	High-alloyed steel	Annealed	200	AP301U(N)			180-361	0.004-0.015	0.008-0.016
		Hardened tool steel	325				180-361	0.008-0.015	0.008-0.016
Cast steel	Non-alloyed steel	180	AP301U(N)			180-361	0.004-0.016	0.008-0.018	
	Low-alloy (alloy<5%)	200				180-361	0.004-0.016	0.008-0.018	
M	Stainless steel	Non-Hardened/Ferritic/martensitic	200	AP301U(N)			131-361	0.004-0.016	0.008-0.018
		Austenitic	200				131-361	0.004-0.016	0.008-0.018
		Austenitic, precipitation hardened (PH)	300				131-361	0.004-0.013	0.008-0.014
		Austenitic/ferritic, duplex	230				131-262	0.004-0.013	0.008-0.014
K	Malleable cast iron	Ferritic	200	AP301U(N)			262-394	0.004-0.015	0.009-0.016
		Pearlitic	260				262-394	0.004-0.015	0.009-0.016
	Grey cast iron	Low tensile strength	180	AP301U(N)			197-361	0.004-0.015	0.009-0.016
		High tensile strength	245				197-361	0.004-0.015	0.009-0.016
	Nodular cast iron	Ferritic	160	AP301U(N)			164-361	0.004-0.015	0.009-0.016
		Pearlitic	250				164-361	0.004-0.015	0.009-0.016
GGV (CGI)		230							
N	Wrought aluminium alloys	non-aging	30	AP301U(N)			213-492	0.004-0.013	0.009-0.016
		aged	100				213-492	0.004-0.013	0.008-0.013
	Cast aluminium alloys	≤ 12% Si, non-aging	75	AP301U(N)			213-492	0.004-0.013	0.008-0.013
		≤ 12% Si, aged	90				213-492	0.004-0.013	0.008-0.013
		> 12% Si, non-aging	130				213-492	0.004-0.013	0.008-0.013
	Magnesium alloy		70						
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper	100	AP301U(N)			213-492	0.004-0.013	0.008-0.013
		Brass, bronze, red brass	90	AP301U(N)			213-492	0.004-0.013	0.008-0.013
Cu alloys, short-chip		110	213-492				0.004-0.013	0.008-0.013	
High tensile, Ampco alloy		300	213-492				0.004-0.013	0.008-0.013	
S	Heat-resistant alloys	Fe-based annealed	200	AP301U(N)			33-180	0.004-0.012	0.008-0.013
		Fe-based hardened	280				33-180	0.004-0.012	0.008-0.013
		Ni or Co-based annealed	250				33-180	0.004-0.012	0.008-0.013
		Ni or Co-based hardened	350				33-180	0.004-0.012	0.008-0.013
		Ni or Co-based cast	320				33-180	0.004-0.012	0.008-0.013
	Titanium alloys	Pure titanium	200	AP301U(N)			98-197	0.004-0.012	0.008-0.013
		α alloys	375				98-197	0.004-0.012	0.008-0.013
		α and β alloys	375				98-197	0.004-0.012	0.008-0.013
β alloys		410	98-197				0.004-0.012	0.008-0.013	
H	Hardened steel	Hardened and tempered	43-47 HRC						
	Chilled cast iron		47-60 HRC						

*) Insert position-P, I, C

P=peripheral insert, I=intermediate insert, C=center insert

Recommended Cutting Speed for Materials(Dia ≥2.50in)

Workpiece material			Brinell hardness (HB)	Grade			Cutting speed Vc ft/min	Feed fn in/rev
				Insert				Drilling dia in
				P	I	C		≥2.5
P	Unalloyed steel	C=0.05-0.10%	125	AP301U(N)			262-328	0.007-0.014
		C=0.10-0.25%	125				262-328	0.007-0.014
		C=0.25-0.55%	150				262-328	0.007-0.014
		C=0.55-0.80%	170				262-328	0.007-0.014
	High carbon steel	Carbon tool steel	210	AP301U(N)			230-328	0.007-0.012
	Low-alloyed steel	Non-Hardened	180	AP301U(N)			197-328	0.006-0.014
		Tempered	275				230-328	0.007-0.012
		Tempered	350				230-328	0.007-0.012
	High-alloyed steel	Annealed	200	AP301U(N)			197-328	0.006-0.012
		Hardened tool steel	325				197-328	0.006-0.012
Cast steel	Non-alloyed steel	180	AP301U(N)			164-328	0.006-0.012	
	Low-alloy (alloy<5%)	200				164-328	0.006-0.012	
M	Stainless steel	Non-Hardened/Ferritic/martensitic	200	AP301U(N)			164-295	0.006-0.014
		Austenitic	200				164-295	0.006-0.014
		Austenitic, precipitation hardened (PH)	300					
		Austenitic/ferritic, duplex	230					
K	Malleable cast iron	Ferritic	200	AP301U(N)				
		Pearlitic	260					
	Grey cast iron	Low tensile strength	180	AP301U(N)				
		High tensile strength	245					
	Nodular cast iron	Ferritic	160	AP301U(N)				
		Pearlitic	250					
GGV (CGI)		230						
N	Wrought aluminium alloys	non-aging	30	AP301U(N)			213-426	0.004-0.012
		aged	100				213-426	0.004-0.012
	Cast aluminium alloys	≤ 12% Si, non-aging	75	AP301U(N)			213-426	0.004-0.012
		≤ 12% Si, aged	90				213-426	0.004-0.012
		> 12% Si, non-aging	130				213-426	0.004-0.012
	Magnesium alloy		70					
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper	100	AP301U(N)			213-426	0.004-0.012
		Brass, bronze, red brass	90	AP301U(N)			213-426	0.004-0.012
		Cu alloys, short-chip	110				213-426	0.004-0.012
High tensile, Ampco alloy		300	213-426				0.004-0.012	
S	Heat-resistant alloys	Fe-based annealed	200	AP301U(N)			66-213	0.006-0.012
		Fe-based hardened	280				66-213	0.006-0.012
		Ni or Co-based annealed	250				66-213	0.006-0.012
		Ni or Co-based hardened	350				66-213	0.006-0.012
		Ni or Co-based cast	320					
	Titanium alloys	Pure titanium	200	AP301U(N)			98-328	0.006-0.012
		α alloys	375				98-328	0.006-0.012
		α and β alloys	375				98-328	0.006-0.012
		β alloys	410				98-328	0.006-0.014
H	Hardened steel	Hardened and tempered	43-47 HRC					
	Chilled cast iron		47-60 HRC					

*) Insert position-P, I, C
P=peripheral insert, I=intermediate insert, C=center insert

ACHTECK

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THE EXPERTS OF DIFFICULT MACHINING



Solid Carbide Drill

Drilling Tool Denomination System

D	1	06	-	03	-	03000	A	1	AP30P1	U
1	2	3	-	4	-	5	6	7	8	9

1-Tool Group	
D	Drilling

2-Generation
1

3-Tool Type	
06	Universal
08	Universal

4-Drilling Depth	
03	~3xDc in accordance with DIN 6537K
05	~5xDc in accordance with DIN 6537L
08	~8xDc in accordance with Achteck standard

5-Cutting Diameter		
03000	0.1181 in	3.0mm
12000	0.4720 in	12.0 mm

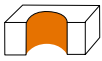
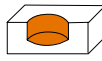
6-Shank Type	
A	DIN 6535 HA cylindrical shank

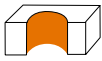
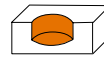
7-Coolant	
0	External coolant
1	Internal coolant

8-Grade
AP30P1
Without Mark: grade is not clarified

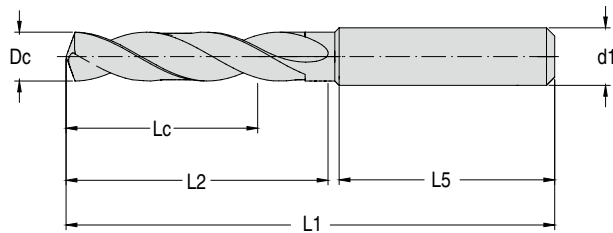
9-Application Range	
U	Universal machining P. K. N

Product Overview

External coolant		
Machining application		
	① Through hole	② Blind hole
Drilling depth	3xDc	5xDc
Series	D106	D106
Standard	DIN 6537 K	DIN 6537 L
Dia. Range(in)	0.1181 ~0.7874	0.1181 ~0.7874
Stock list	P309	P313
		

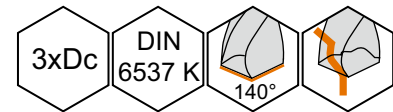
Internal coolant			
Machining application			
	① Through hole	② Blind hole	
Drilling depth	3xDc	5xDc	8xDc
Series	D106	D106	D108
Standard	DIN 6537 K	DIN 6537 L	Achteck
Dia. Range(in)	0.1181 ~0.6300	0.1181 ~0.6300	0.1181 ~0.6300
Stock list	P317	P321	P325
			

Solid Carbide Drill D106 with External Coolant 3xDc



P	M	K	N	S	H
••		••	••		

•• 1st choice • 2nd choice

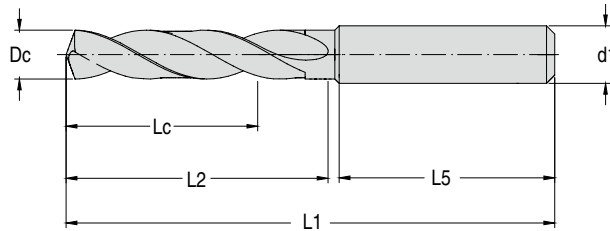


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-03000A0 AP30P1U	3.000	0.1181		0.551	2.441	0.787	1.417	0.157	●
D106-03-03100A0 AP30P1U	3.100	0.1220		0.551	2.441	0.787	1.417	0.157	●
D106-03-03175A0 AP30P1U	3.175	0.1250	1/8"	0.551	2.441	0.787	1.417	0.157	●
D106-03-03200A0 AP30P1U	3.200	0.1260		0.551	2.441	0.787	1.417	0.157	●
D106-03-03250A0 AP30P1U	3.250	0.1280		0.551	2.441	0.787	1.417	0.157	○
D106-03-03300A0 AP30P1U	3.300	0.1299		0.551	2.441	0.787	1.417	0.157	●
D106-03-03400A0 AP30P1U	3.400	0.1339		0.551	2.441	0.787	1.417	0.157	○
D106-03-03500A0 AP30P1U	3.500	0.1378		0.551	2.441	0.787	1.417	0.157	●
D106-03-03572A0 AP30P1U	3.572	0.1406	9/64"	0.551	2.441	0.787	1.417	0.157	○
D106-03-03600A0 AP30P1U	3.600	0.1417		0.551	2.441	0.787	1.417	0.157	●
D106-03-03650A0 AP30P1U	3.650	0.1437		0.551	2.441	0.787	1.417	0.157	○
D106-03-03700A0 AP30P1U	3.700	0.1457		0.551	2.441	0.787	1.417	0.157	●
D106-03-03800A0 AP30P1U	3.800	0.1496		0.669	2.598	0.945	1.417	0.157	○
D106-03-03900A0 AP30P1U	3.900	0.1535		0.669	2.598	0.945	1.417	0.157	●
D106-03-03969A0 AP30P1U	3.969	0.1563	5/32"	0.669	2.598	0.945	1.417	0.157	●
D106-03-04000A0 AP30P1U	4.000	0.1575		0.669	2.598	0.945	1.417	0.157	●
D106-03-04100A0 AP30P1U	4.100	0.1614		0.669	2.598	0.945	1.417	0.236	○
D106-03-04200A0 AP30P1U	4.200	0.1654		0.669	2.598	0.945	1.417	0.236	●
D106-03-04300A0 AP30P1U	4.300	0.1693		0.669	2.598	0.945	1.417	0.236	○
D106-03-04366A0 AP30P1U	4.366	0.1719	11/64"	0.669	2.598	0.945	1.417	0.236	○
D106-03-04400A0 AP30P1U	4.400	0.1732		0.669	2.598	0.945	1.417	0.236	○
D106-03-04500A0 AP30P1U	4.500	0.1772		0.669	2.598	0.945	1.417	0.236	●
D106-03-04600A0 AP30P1U	4.600	0.1811		0.669	2.598	0.945	1.417	0.236	○
D106-03-04650A0 AP30P1U	4.650	0.1831		0.669	2.598	0.945	1.417	0.236	○
D106-03-04700A0 AP30P1U	4.700	0.1850		0.669	2.598	0.945	1.417	0.236	○
D106-03-04763A0 AP30P1U	4.763	0.1875	3/16"	0.787	2.598	1.102	1.417	0.236	○
D106-03-04800A0 AP30P1U	4.800	0.1890		0.787	2.598	1.102	1.417	0.236	●
D106-03-04900A0 AP30P1U	4.900	0.1929		0.787	2.598	1.102	1.417	0.236	●
D106-03-05000A0 AP30P1U	5.000	0.1969		0.787	2.598	1.102	1.417	0.236	●
D106-03-05100A0 AP30P1U	5.100	0.2008		0.787	2.598	1.102	1.417	0.236	●
D106-03-05159A0 AP30P1U	5.159	0.2031	13/64"	0.787	2.598	1.102	1.417	0.236	○
D106-03-05200A0 AP30P1U	5.200	0.2047		0.787	2.598	1.102	1.417	0.236	●
D106-03-05300A0 AP30P1U	5.300	0.2087		0.787	2.598	1.102	1.417	0.236	○
D106-03-05400A0 AP30P1U	5.400	0.2126		0.787	2.598	1.102	1.417	0.236	○
D106-03-05500A0 AP30P1U	5.500	0.2165		0.787	2.598	1.102	1.417	0.236	●
D106-03-05550A0 AP30P1U	5.550	0.2185		0.787	2.598	1.102	1.417	0.236	○
D106-03-05556A0 AP30P1U	5.556	0.2187	7/32"	0.787	2.598	1.102	1.417	0.236	○
D106-03-05600A0 AP30P1U	5.600	0.2205		0.787	2.598	1.102	1.417	0.236	○
D106-03-05700A0 AP30P1U	5.700	0.2244		0.787	2.598	1.102	1.417	0.236	○
D106-03-05750A0 AP30P1U	5.750	0.2264		0.787	2.598	1.102	1.417	0.236	○
D106-03-05800A0 AP30P1U	5.800	0.2283		0.787	2.598	1.102	1.417	0.236	●
D106-03-05900A0 AP30P1U	5.900	0.2323		0.787	2.598	1.102	1.417	0.236	●
D106-03-05953A0 AP30P1U	5.953	0.2344	15/64"	0.787	2.598	1.102	1.417	0.236	●
D106-03-06000A0 AP30P1U	6.000	0.2362		0.787	2.598	1.102	1.417	0.236	●

Special product can be ordered

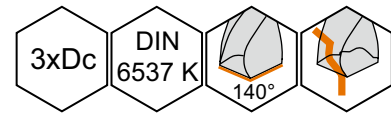
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with External Coolant 3xDc



P	M	K	N	S	H
..		..	..		

● 1st choice ● 2nd choice

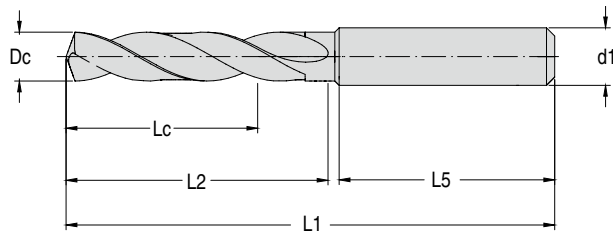


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-06100A0 AP30P1U	6.100	0.2402		0.945	3.110	1.614	1.417	0.315	○
D106-03-06200A0 AP30P1U	6.200	0.2441		0.945	3.110	1.614	1.417	0.315	○
D106-03-06300A0 AP30P1U	6.300	0.2480		0.945	3.110	1.614	1.417	0.315	○
D106-03-06350A0 AP30P1U	6.350	0.2500	1/4"	0.945	3.110	1.614	1.417	0.315	○
D106-03-06400A0 AP30P1U	6.400	0.2520		0.945	3.110	1.614	1.417	0.315	○
D106-03-06500A0 AP30P1U	6.500	0.2559		0.945	3.110	1.614	1.417	0.315	●
D106-03-06600A0 AP30P1U	6.600	0.2598		0.945	3.110	1.614	1.417	0.315	○
D106-03-06700A0 AP30P1U	6.700	0.2638		0.945	3.110	1.614	1.417	0.315	○
D106-03-06747A0 AP30P1U	6.747	0.2656	17/64"	0.945	3.110	1.614	1.417	0.315	○
D106-03-06800A0 AP30P1U	6.800	0.2677		0.945	3.110	1.614	1.417	0.315	●
D106-03-06900A0 AP30P1U	6.900	0.2717		0.945	3.110	1.614	1.417	0.315	●
D106-03-07000A0 AP30P1U	7.000	0.2756		0.945	3.110	1.614	1.417	0.315	●
D106-03-07100A0 AP30P1U	7.100	0.2795		1.142	3.110	1.614	1.417	0.315	○
D106-03-07144A0 AP30P1U	7.144	0.2813	9/32"	1.142	3.110	1.614	1.417	0.315	○
D106-03-07200A0 AP30P1U	7.200	0.2835		1.142	3.110	1.614	1.417	0.315	○
D106-03-07250A0 AP30P1U	7.250	0.2854		1.142	3.110	1.614	1.417	0.315	○
D106-03-07300A0 AP30P1U	7.300	0.2874		1.142	3.110	1.614	1.417	0.315	○
D106-03-07400A0 AP30P1U	7.400	0.2913		1.142	3.110	1.614	1.417	0.315	●
D106-03-07450A0 AP30P1U	7.450	0.2933		1.142	3.110	1.614	1.417	0.315	○
D106-03-07500A0 AP30P1U	7.500	0.2953		1.142	3.110	1.614	1.417	0.315	●
D106-03-07541A0 AP30P1U	7.541	0.2969	19/64"	1.142	3.110	1.614	1.417	0.315	○
D106-03-07550A0 AP30P1U	7.550	0.2972		1.142	3.110	1.614	1.417	0.315	○
D106-03-07600A0 AP30P1U	7.600	0.2992		1.142	3.110	1.614	1.417	0.315	○
D106-03-07700A0 AP30P1U	7.700	0.3031		1.142	3.110	1.614	1.417	0.315	○
D106-03-07800A0 AP30P1U	7.800	0.3071		1.142	3.110	1.614	1.417	0.315	●
D106-03-07900A0 AP30P1U	7.900	0.3110		1.142	3.110	1.614	1.417	0.315	●
D106-03-07938A0 AP30P1U	7.938	0.3125	5/16"	1.142	3.110	1.614	1.417	0.315	○
D106-03-08000A0 AP30P1U	8.000	0.3150		1.142	3.110	1.614	1.417	0.315	●
D106-03-08100A0 AP30P1U	8.100	0.3189		1.378	3.504	1.850	1.575	0.394	○
D106-03-08200A0 AP30P1U	8.200	0.3228		1.378	3.504	1.850	1.575	0.394	○
D106-03-08300A0 AP30P1U	8.300	0.3268		1.378	3.504	1.850	1.575	0.394	○
D106-03-08334A0 AP30P1U	8.334	0.3281	21/64"	1.378	3.504	1.850	1.575	0.394	○
D106-03-08400A0 AP30P1U	8.400	0.3307		1.378	3.504	1.850	1.575	0.394	○
D106-03-08500A0 AP30P1U	8.500	0.3346		1.378	3.504	1.850	1.575	0.394	●
D106-03-08600A0 AP30P1U	8.600	0.3386		1.378	3.504	1.850	1.575	0.394	●
D106-03-08700A0 AP30P1U	8.700	0.3425		1.378	3.504	1.850	1.575	0.394	○
D106-03-08731A0 AP30P1U	8.731	0.3437	11/32"	1.378	3.504	1.850	1.575	0.394	○
D106-03-08750A0 AP30P1U	8.750	0.3445		1.378	3.504	1.850	1.575	0.394	○
D106-03-08800A0 AP30P1U	8.800	0.3465		1.378	3.504	1.850	1.575	0.394	●
D106-03-08900A0 AP30P1U	8.900	0.3504		1.378	3.504	1.850	1.575	0.394	●
D106-03-09000A0 AP30P1U	9.000	0.3543		1.378	3.504	1.850	1.575	0.394	●
D106-03-09100A0 AP30P1U	9.100	0.3583		1.378	3.504	1.850	1.575	0.394	○
D106-03-09128A0 AP30P1U	9.128	0.3594	23/64"	1.378	3.504	1.850	1.575	0.394	○
D106-03-09200A0 AP30P1U	9.200	0.3622		1.378	3.504	1.850	1.575	0.394	○
D106-03-09300A0 AP30P1U	9.300	0.3661		1.378	3.504	1.850	1.575	0.394	●
D106-03-09400A0 AP30P1U	9.400	0.3701		1.378	3.504	1.850	1.575	0.394	○
D106-03-09500A0 AP30P1U	9.500	0.3740		1.378	3.504	1.850	1.575	0.394	○
D106-03-09525A0 AP30P1U	9.525	0.3750	3/8"	1.378	3.504	1.850	1.575	0.394	○

Special product can be ordered

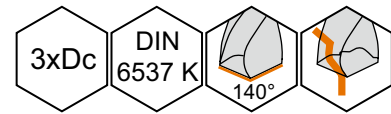
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with External Coolant 3xDc



P	M	K	N	S	H
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•• 1st choice • 2nd choice

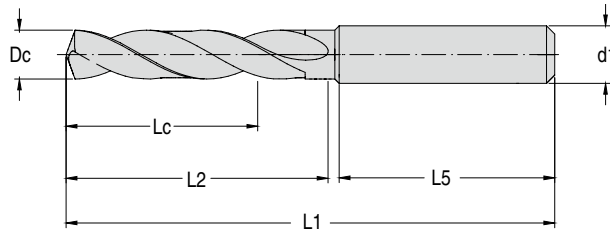


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-09550A0 AP30P1U	9.550	0.3760		1.378	3.504	1.850	1.575	0.394	○
D106-03-09600A0 AP30P1U	9.600	0.3780		1.378	3.504	1.850	1.575	0.394	○
D106-03-09700A0 AP30P1U	9.700	0.3819		1.378	3.504	1.850	1.575	0.394	○
D106-03-09800A0 AP30P1U	9.800	0.3858		1.378	3.504	1.850	1.575	0.394	●
D106-03-09900A0 AP30P1U	9.900	0.3898		1.378	3.504	1.850	1.575	0.394	●
D106-03-09922A0 AP30P1U	9.922	0.3906	25/64"	1.378	3.504	1.850	1.575	0.394	○
D106-03-10000A0 AP30P1U	10.000	0.3937		1.378	3.504	1.850	1.575	0.394	●
D106-03-10100A0 AP30P1U	10.100	0.3976		1.575	4.016	2.165	1.772	0.472	●
D106-03-10200A0 AP30P1U	10.200	0.4016		1.575	4.016	2.165	1.772	0.472	●
D106-03-10300A0 AP30P1U	10.300	0.4055		1.575	4.016	2.165	1.772	0.472	●
D106-03-10319A0 AP30P1U	10.319	0.4063	13/32"	1.575	4.016	2.165	1.772	0.472	●
D106-03-10400A0 AP30P1U	10.400	0.4094		1.575	4.016	2.165	1.772	0.472	○
D106-03-10500A0 AP30P1U	10.500	0.4134		1.575	4.016	2.165	1.772	0.472	●
D106-03-10600A0 AP30P1U	10.600	0.4173		1.575	4.016	2.165	1.772	0.472	●
D106-03-10700A0 AP30P1U	10.700	0.4213		1.575	4.016	2.165	1.772	0.472	○
D106-03-10716A0 AP30P1U	10.716	0.4219	27/64"	1.575	4.016	2.165	1.772	0.472	○
D106-03-10800A0 AP30P1U	10.800	0.4252		1.575	4.016	2.165	1.772	0.472	●
D106-03-10900A0 AP30P1U	10.900	0.4291		1.575	4.016	2.165	1.772	0.472	○
D106-03-11000A0 AP30P1U	11.000	0.4331		1.575	4.016	2.165	1.772	0.472	●
D106-03-11100A0 AP30P1U	11.100	0.4370		1.575	4.016	2.165	1.772	0.472	○
D106-03-11113A0 AP30P1U	11.113	0.4375	7/16"	1.575	4.016	2.165	1.772	0.472	○
D106-03-11200A0 AP30P1U	11.200	0.4409		1.575	4.016	2.165	1.772	0.472	○
D106-03-11300A0 AP30P1U	11.300	0.4449		1.575	4.016	2.165	1.772	0.472	○
D106-03-11400A0 AP30P1U	11.400	0.4488		1.575	4.016	2.165	1.772	0.472	○
D106-03-11500A0 AP30P1U	11.500	0.4528		1.575	4.016	2.165	1.772	0.472	○
D106-03-11509A0 AP30P1U	11.509	0.4531	29/64"	1.575	4.016	2.165	1.772	0.472	○
D106-03-11550A0 AP30P1U	11.550	0.4547		1.575	4.016	2.165	1.772	0.472	○
D106-03-11600A0 AP30P1U	11.600	0.4567		1.575	4.016	2.165	1.772	0.472	○
D106-03-11700A0 AP30P1U	11.700	0.4606		1.575	4.016	2.165	1.772	0.472	○
D106-03-11800A0 AP30P1U	11.800	0.4646		1.575	4.016	2.165	1.772	0.472	●
D106-03-11900A0 AP30P1U	11.900	0.4685		1.575	4.016	2.165	1.772	0.472	○
D106-03-11906A0 AP30P1U	11.906	0.4687	15/32"	1.575	4.016	2.165	1.772	0.472	○
D106-03-12000A0 AP30P1U	12.000	0.4724		1.575	4.016	2.165	1.772	0.472	●
D106-03-12100A0 AP30P1U	12.100	0.4764		1.693	4.213	2.362	1.772	0.551	○
D106-03-12200A0 AP30P1U	12.200	0.4803		1.693	4.213	2.362	1.772	0.551	○
D106-03-12250A0 AP30P1U	12.250	0.4823		1.693	4.213	2.362	1.772	0.551	○
D106-03-12300A0 AP30P1U	12.300	0.4843		1.693	4.213	2.362	1.772	0.551	○
D106-03-12303A0 AP30P1U	12.303	0.4844	31/64"	1.693	4.213	2.362	1.772	0.551	○
D106-03-12400A0 AP30P1U	12.400	0.4882		1.693	4.213	2.362	1.772	0.551	○
D106-03-12500A0 AP30P1U	12.500	0.4921		1.693	4.213	2.362	1.772	0.551	●
D106-03-12600A0 AP30P1U	12.600	0.4961		1.693	4.213	2.362	1.772	0.551	○
D106-03-12700A0 AP30P1U	12.700	0.5000	1/2"	1.693	4.213	2.362	1.772	0.551	●
D106-03-12750A0 AP30P1U	12.750	0.5020		1.693	4.213	2.362	1.772	0.551	○
D106-03-12800A0 AP30P1U	12.800	0.5039		1.693	4.213	2.362	1.772	0.551	○

Special product can be ordered

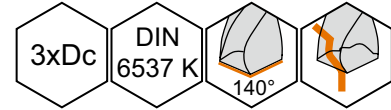
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with External Coolant 3xDc



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● 1st choice ● 2nd choice

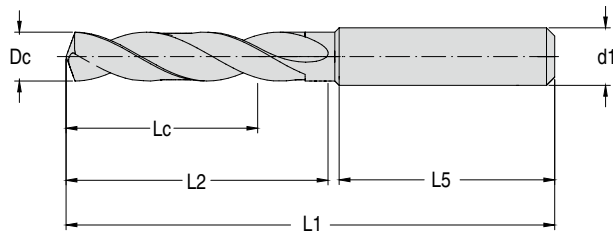


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-12900A0 AP30P1U	12.900	0.5079		1.693	4.213	2.362	1.772	0.551	○
D106-03-13000A0 AP30P1U	13.000	0.5118		1.693	4.213	2.362	1.772	0.551	●
D106-03-13100A0 AP30P1U	13.100	0.5157		1.693	4.213	2.362	1.772	0.551	○
D106-03-13200A0 AP30P1U	13.200	0.5197		1.693	4.213	2.362	1.772	0.551	●
D106-03-13300A0 AP30P1U	13.300	0.5236		1.693	4.213	2.362	1.772	0.551	○
D106-03-13400A0 AP30P1U	13.400	0.5276		1.693	4.213	2.362	1.772	0.551	○
D106-03-13494A0 AP30P1U	13.494	0.5313	17/32"	1.693	4.213	2.362	1.772	0.551	○
D106-03-13500A0 AP30P1U	13.500	0.5315		1.693	4.213	2.362	1.772	0.551	○
D106-03-13600A0 AP30P1U	13.600	0.5354		1.693	4.213	2.362	1.772	0.551	○
D106-03-13700A0 AP30P1U	13.700	0.5394		1.693	4.213	2.362	1.772	0.551	○
D106-03-13800A0 AP30P1U	13.800	0.5433		1.693	4.213	2.362	1.772	0.551	○
D106-03-13900A0 AP30P1U	13.900	0.5472		1.693	4.213	2.362	1.772	0.551	○
D106-03-14000A0 AP30P1U	14.000	0.5512		1.693	4.213	2.362	1.772	0.551	●
D106-03-14100A0 AP30P1U	14.100	0.5551		1.772	4.528	2.559	1.890	0.630	●
D106-03-14200A0 AP30P1U	14.200	0.5591		1.772	4.528	2.559	1.890	0.630	●
D106-03-14288A0 AP30P1U	14.288	0.5625	9/16"	1.772	4.528	2.559	1.890	0.630	○
D106-03-14300A0 AP30P1U	14.300	0.5630		1.772	4.528	2.559	1.890	0.630	○
D106-03-14400A0 AP30P1U	14.400	0.5669		1.772	4.528	2.559	1.890	0.630	○
D106-03-14500A0 AP30P1U	14.500	0.5709		1.772	4.528	2.559	1.890	0.630	●
D106-03-14600A0 AP30P1U	14.600	0.5748		1.772	4.528	2.559	1.890	0.630	●
D106-03-14700A0 AP30P1U	14.700	0.5787		1.772	4.528	2.559	1.890	0.630	●
D106-03-14750A0 AP30P1U	14.750	0.5807		1.772	4.528	2.559	1.890	0.630	○
D106-03-14800A0 AP30P1U	14.800	0.5827		1.772	4.528	2.559	1.890	0.630	○
D106-03-15000A0 AP30P1U	15.000	0.5906		1.772	4.528	2.559	1.890	0.630	●
D106-03-15100A0 AP30P1U	15.100	0.5945		1.772	4.528	2.559	1.890	0.630	○
D106-03-15200A0 AP30P1U	15.200	0.5984		1.772	4.528	2.559	1.890	0.630	○
D106-03-15300A0 AP30P1U	15.300	0.6024		1.772	4.528	2.559	1.890	0.630	○
D106-03-15500A0 AP30P1U	15.500	0.6102		1.772	4.528	2.559	1.890	0.630	●
D106-03-15600A0 AP30P1U	15.600	0.6142		1.772	4.528	2.559	1.890	0.630	○
D106-03-15700A0 AP30P1U	15.700	0.6181		1.772	4.528	2.559	1.890	0.630	●
D106-03-15800A0 AP30P1U	15.800	0.6220		1.772	4.528	2.559	1.890	0.630	●
D106-03-15875A0 AP30P1U	15.875	0.6250	5/8"	1.772	4.528	2.559	1.890	0.630	●
D106-03-15900A0 AP30P1U	15.900	0.6260		1.772	4.528	2.559	1.890	0.630	○
D106-03-16000A0 AP30P1U	16.000	0.6299		1.772	4.528	2.559	1.890	0.630	●
D106-03-16500A0 AP30P1U	16.500	0.6496		2.008	4.843	2.874	1.890	0.709	●
D106-03-17000A0 AP30P1U	17.000	0.6693		2.008	4.843	2.874	1.890	0.709	●
D106-03-17500A0 AP30P1U	17.500	0.6890		2.008	4.843	2.874	1.890	0.709	●
D106-03-18000A0 AP30P1U	18.000	0.7087		2.008	4.843	2.874	1.890	0.709	●
D106-03-18500A0 AP30P1U	18.500	0.7283		2.165	5.157	3.110	1.969	0.787	●
D106-03-19000A0 AP30P1U	19.000	0.7480		2.165	5.157	3.110	1.969	0.787	●
D106-03-20000A0 AP30P1U	20.000	0.7874		2.165	5.157	3.110	1.969	0.787	●

Special product can be ordered

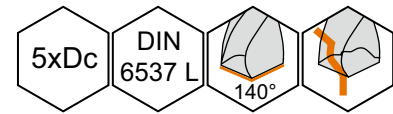
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with External Coolant 5xDc



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•• 1st choice • 2nd choice

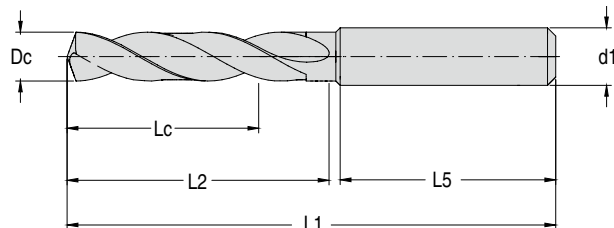


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-03000A0 AP30P1U	3.000	0.1181		0.906	2.598	1.102	1.417	0.157	●
D106-05-03100A0 AP30P1U	3.100	0.1220		0.906	2.598	1.102	1.417	0.157	●
D106-05-03175A0 AP30P1U	3.175	0.1250	1/8"	0.906	2.598	1.102	1.417	0.157	○
D106-05-03200A0 AP30P1U	3.200	0.1260		0.906	2.598	1.102	1.417	0.157	●
D106-05-03250A0 AP30P1U	3.250	0.1280		0.906	2.598	1.102	1.417	0.157	○
D106-05-03300A0 AP30P1U	3.300	0.1299		0.906	2.598	1.102	1.417	0.157	●
D106-05-03400A0 AP30P1U	3.400	0.1339		0.906	2.598	1.102	1.417	0.157	○
D106-05-03500A0 AP30P1U	3.500	0.1378		0.906	2.598	1.102	1.417	0.157	●
D106-05-03572A0 AP30P1U	3.572	0.1406	9/64"	0.906	2.598	1.102	1.417	0.157	●
D106-05-03600A0 AP30P1U	3.600	0.1417		0.906	2.598	1.102	1.417	0.157	●
D106-05-03650A0 AP30P1U	3.650	0.1437		0.906	2.598	1.102	1.417	0.157	○
D106-05-03700A0 AP30P1U	3.700	0.1457		0.906	2.598	1.102	1.417	0.157	●
D106-05-03800A0 AP30P1U	3.800	0.1496		1.142	2.913	1.417	1.417	0.157	○
D106-05-03900A0 AP30P1U	3.900	0.1535		1.142	2.913	1.417	1.417	0.157	●
D106-05-03969A0 AP30P1U	3.969	0.1563	5/32"	1.142	2.913	1.417	1.417	0.157	●
D106-05-04000A0 AP30P1U	4.000	0.1575		1.142	2.913	1.417	1.417	0.157	●
D106-05-04100A0 AP30P1U	4.100	0.1614		1.142	2.913	1.417	1.417	0.236	○
D106-05-04200A0 AP30P1U	4.200	0.1654		1.142	2.913	1.417	1.417	0.236	●
D106-05-04300A0 AP30P1U	4.300	0.1693		1.142	2.913	1.417	1.417	0.236	○
D106-05-04366A0 AP30P1U	4.366	0.1719	11/64"	1.142	2.913	1.417	1.417	0.236	●
D106-05-04400A0 AP30P1U	4.400	0.1732		1.142	2.913	1.417	1.417	0.236	○
D106-05-04500A0 AP30P1U	4.500	0.1772		1.142	2.913	1.417	1.417	0.236	●
D106-05-04600A0 AP30P1U	4.600	0.1811		1.142	2.913	1.417	1.417	0.236	○
D106-05-04650A0 AP30P1U	4.650	0.1831		1.142	2.913	1.417	1.417	0.236	○
D106-05-04700A0 AP30P1U	4.700	0.1850		1.142	2.913	1.417	1.417	0.236	○
D106-05-04763A0 AP30P1U	4.763	0.1875	3/16"	1.378	3.228	1.732	1.417	0.236	●
D106-05-04800A0 AP30P1U	4.800	0.1890		1.378	3.228	1.732	1.417	0.236	●
D106-05-04900A0 AP30P1U	4.900	0.1929		1.378	3.228	1.732	1.417	0.236	●
D106-05-05000A0 AP30P1U	5.000	0.1969		1.378	3.228	1.732	1.417	0.236	●
D106-05-05100A0 AP30P1U	5.100	0.2008		1.378	3.228	1.732	1.417	0.236	●
D106-05-05159A0 AP30P1U	5.159	0.2031	13/64"	1.378	3.228	1.732	1.417	0.236	●
D106-05-05200A0 AP30P1U	5.200	0.2047		1.378	3.228	1.732	1.417	0.236	●
D106-05-05300A0 AP30P1U	5.300	0.2087		1.378	3.228	1.732	1.417	0.236	○
D106-05-05400A0 AP30P1U	5.400	0.2126		1.378	3.228	1.732	1.417	0.236	○
D106-05-05500A0 AP30P1U	5.500	0.2165		1.378	3.228	1.732	1.417	0.236	●
D106-05-05550A0 AP30P1U	5.550	0.2185		1.378	3.228	1.732	1.417	0.236	○
D106-05-05556A0 AP30P1U	5.556	0.2187	7/32"	1.378	3.228	1.732	1.417	0.236	●
D106-05-05600A0 AP30P1U	5.600	0.2205		1.378	3.228	1.732	1.417	0.236	○
D106-05-05700A0 AP30P1U	5.700	0.2244		1.378	3.228	1.732	1.417	0.236	○
D106-05-05800A0 AP30P1U	5.800	0.2283		1.378	3.228	1.732	1.417	0.236	●
D106-05-05900A0 AP30P1U	5.900	0.2323		1.378	3.228	1.732	1.417	0.236	●
D106-05-05953A0 AP30P1U	5.953	0.2344	15/64"	1.378	3.228	1.732	1.417	0.236	●
D106-05-06000A0 AP30P1U	6.000	0.2362		1.378	3.228	1.732	1.417	0.236	●
D106-05-06100A0 AP30P1U	6.100	0.240		1.693	3.583	2.087	1.417	0.315	○

Special product can be ordered

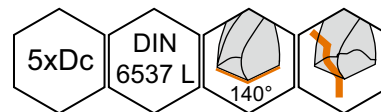
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with External Coolant 5xDc



P	M	K	N	S	H
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•• 1st choice • 2nd choice

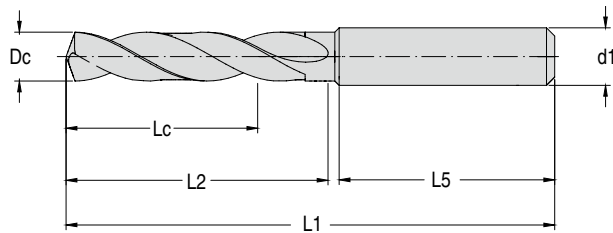


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-06200A0 AP30P1U	6.200	0.2402		1.693	3.583	2.087	1.417	0.315	○
D106-05-06300A0 AP30P1U	6.300	0.2441		1.693	3.583	2.087	1.417	0.315	○
D106-05-06350A0 AP30P1U	6.350	0.2480	1/4"	1.693	3.583	2.087	1.417	0.315	●
D106-05-06400A0 AP30P1U	6.400	0.2500		1.693	3.583	2.087	1.417	0.315	○
D106-05-06500A0 AP30P1U	6.500	0.2520		1.693	3.583	2.087	1.417	0.315	●
D106-05-06600A0 AP30P1U	6.600	0.2559		1.693	3.583	2.087	1.417	0.315	○
D106-05-06700A0 AP30P1U	6.700	0.2598		1.693	3.583	2.087	1.417	0.315	○
D106-05-06747A0 AP30P1U	6.747	0.2638	17/64"	1.693	3.583	2.087	1.417	0.315	●
D106-05-06800A0 AP30P1U	6.800	0.2656		1.693	3.583	2.087	1.417	0.315	●
D106-05-06900A0 AP30P1U	6.900	0.2677		1.693	3.583	2.087	1.417	0.315	●
D106-05-07000A0 AP30P1U	7.000	0.2717		1.693	3.583	2.087	1.417	0.315	●
D106-05-07100A0 AP30P1U	7.100	0.2756		1.693	3.583	2.087	1.417	0.315	○
D106-05-07144A0 AP30P1U	7.144	0.2795	9/32"	1.693	3.583	2.087	1.417	0.315	●
D106-05-07200A0 AP30P1U	7.200	0.2813		1.693	3.583	2.087	1.417	0.315	○
D106-05-07300A0 AP30P1U	7.300	0.2835		1.693	3.583	2.087	1.417	0.315	○
D106-05-07400A0 AP30P1U	7.400	0.2874		1.693	3.583	2.087	1.417	0.315	●
D106-05-07500A0 AP30P1U	7.500	0.2913		1.693	3.583	2.087	1.417	0.315	●
D106-05-07541A0 AP30P1U	7.541	0.2953	19/64"	1.693	3.583	2.087	1.417	0.315	●
D106-05-07550A0 AP30P1U	7.550	0.2969		1.693	3.583	2.087	1.417	0.315	○
D106-05-07600A0 AP30P1U	7.600	0.2972		1.693	3.583	2.087	1.417	0.315	○
D106-05-07700A0 AP30P1U	7.700	0.2992		1.693	3.583	2.087	1.417	0.315	○
D106-05-07800A0 AP30P1U	7.800	0.3031		1.693	3.583	2.087	1.417	0.315	●
D106-05-07900A0 AP30P1U	7.900	0.3071		1.693	3.583	2.087	1.417	0.315	●
D106-05-07938A0 AP30P1U	7.938	0.3110	5/16"	1.693	3.583	2.087	1.417	0.315	●
D106-05-08000A0 AP30P1U	8.000	0.3125		1.693	3.583	2.087	1.417	0.315	●
D106-05-08100A0 AP30P1U	8.100	0.3150		1.929	4.055	2.402	1.575	0.394	○
D106-05-08200A0 AP30P1U	8.200	0.3189		1.929	4.055	2.402	1.575	0.394	○
D106-05-08300A0 AP30P1U	8.300	0.3228		1.929	4.055	2.402	1.575	0.394	○
D106-05-08334A0 AP30P1U	8.334	0.3268	21/64"	1.929	4.055	2.402	1.575	0.394	●
D106-05-08400A0 AP30P1U	8.400	0.3281		1.929	4.055	2.402	1.575	0.394	○
D106-05-08500A0 AP30P1U	8.500	0.3307		1.929	4.055	2.402	1.575	0.394	●
D106-05-08600A0 AP30P1U	8.600	0.3346		1.929	4.055	2.402	1.575	0.394	●
D106-05-08700A0 AP30P1U	8.700	0.3386		1.929	4.055	2.402	1.575	0.394	○
D106-05-08731A0 AP30P1U	8.731	0.3425	11/32"	1.929	4.055	2.402	1.575	0.394	●
D106-05-08800A0 AP30P1U	8.800	0.3437		1.929	4.055	2.402	1.575	0.394	●
D106-05-08900A0 AP30P1U	8.900	0.3465		1.929	4.055	2.402	1.575	0.394	●
D106-05-09000A0 AP30P1U	9.000	0.3504		1.929	4.055	2.402	1.575	0.394	●
D106-05-09100A0 AP30P1U	9.100	0.3543		1.929	4.055	2.402	1.575	0.394	○
D106-05-09128A0 AP30P1U	9.128	0.3583	23/64"	1.929	4.055	2.402	1.575	0.394	●
D106-05-09200A0 AP30P1U	9.200	0.3594		1.929	4.055	2.402	1.575	0.394	○
D106-05-09300A0 AP30P1U	9.300	0.3622		1.929	4.055	2.402	1.575	0.394	●
D106-05-09400A0 AP30P1U	9.400	0.3661		1.929	4.055	2.402	1.575	0.394	○
D106-05-09500A0 AP30P1U	9.500	0.3701		1.929	4.055	2.402	1.575	0.394	○
D106-05-09525A0 AP30P1U	9.525	0.3740	3/8"	1.929	4.055	2.402	1.575	0.394	●

Special product can be ordered

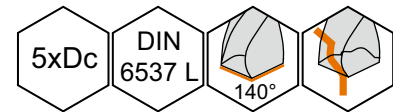
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with External Coolant 5xDc



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•• 1st choice • 2nd choice

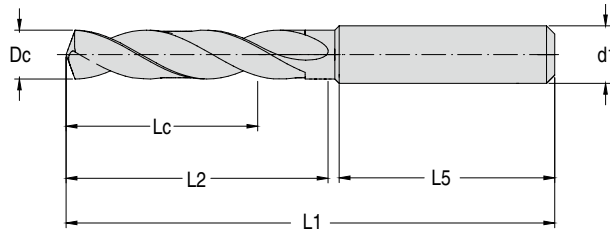


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-09550A0 AP30P1U	9.550	0.3760		1.929	4.055	2.402	1.575	0.394	○
D106-05-09600A0 AP30P1U	9.600	0.3780		1.929	4.055	2.402	1.575	0.394	○
D106-05-09700A0 AP30P1U	9.700	0.3819		1.929	4.055	2.402	1.575	0.394	○
D106-05-09800A0 AP30P1U	9.800	0.3858		1.929	4.055	2.402	1.575	0.394	●
D106-05-09900A0 AP30P1U	9.900	0.3898		1.929	4.055	2.402	1.575	0.394	●
D106-05-09922A0 AP30P1U	9.922	0.3906	25/64"	1.929	4.055	2.402	1.575	0.394	●
D106-05-10000A0 AP30P1U	10.000	0.3937		1.929	4.055	2.402	1.575	0.394	●
D106-05-10100A0 AP30P1U	10.100	0.3976		2.205	4.646	2.795	1.772	0.472	●
D106-05-10200A0 AP30P1U	10.200	0.4016		2.205	4.646	2.795	1.772	0.472	●
D106-05-10300A0 AP30P1U	10.300	0.4055		2.205	4.646	2.795	1.772	0.472	●
D106-05-10319A0 AP30P1U	10.319	0.4063	13/32"	2.205	4.646	2.795	1.772	0.472	○
D106-05-10400A0 AP30P1U	10.400	0.4094		2.205	4.646	2.795	1.772	0.472	○
D106-05-10500A0 AP30P1U	10.500	0.4134		2.205	4.646	2.795	1.772	0.472	●
D106-05-10600A0 AP30P1U	10.600	0.4173		2.205	4.646	2.795	1.772	0.472	●
D106-05-10700A0 AP30P1U	10.700	0.4213		2.205	4.646	2.795	1.772	0.472	○
D106-05-10716A0 AP30P1U	10.716	0.4219	27/64"	2.205	4.646	2.795	1.772	0.472	●
D106-05-10800A0 AP30P1U	10.800	0.4252		2.205	4.646	2.795	1.772	0.472	●
D106-05-10900A0 AP30P1U	10.900	0.4291		2.205	4.646	2.795	1.772	0.472	○
D106-05-11000A0 AP30P1U	11.000	0.4331		2.205	4.646	2.795	1.772	0.472	●
D106-05-11100A0 AP30P1U	11.100	0.4370		2.205	4.646	2.795	1.772	0.472	○
D106-05-11113A0 AP30P1U	11.113	0.4375	7/16"	2.205	4.646	2.795	1.772	0.472	○
D106-05-11200A0 AP30P1U	11.200	0.4409		2.205	4.646	2.795	1.772	0.472	○
D106-05-11300A0 AP30P1U	11.300	0.4449		2.205	4.646	2.795	1.772	0.472	○
D106-05-11400A0 AP30P1U	11.400	0.4488		2.205	4.646	2.795	1.772	0.472	○
D106-05-11500A0 AP30P1U	11.500	0.4528		2.205	4.646	2.795	1.772	0.472	○
D106-05-11509A0 AP30P1U	11.509	0.4531	29/64"	2.205	4.646	2.795	1.772	0.472	○
D106-05-11550A0 AP30P1U	11.550	0.4547		2.205	4.646	2.795	1.772	0.472	○
D106-05-11600A0 AP30P1U	11.600	0.4567		2.205	4.646	2.795	1.772	0.472	○
D106-05-11700A0 AP30P1U	11.700	0.4606		2.205	4.646	2.795	1.772	0.472	○
D106-05-11800A0 AP30P1U	11.800	0.4646		2.205	4.646	2.795	1.772	0.472	●
D106-05-11900A0 AP30P1U	11.900	0.4685		2.205	4.646	2.795	1.772	0.472	○
D106-05-11906A0 AP30P1U	11.906	0.4687	15/32"	2.205	4.646	2.795	1.772	0.472	○
D106-05-12000A0 AP30P1U	12.000	0.4724		2.205	4.646	2.795	1.772	0.472	●
D106-05-12100A0 AP30P1U	12.100	0.4764		2.362	4.882	3.031	1.772	0.551	○
D106-05-12200A0 AP30P1U	12.200	0.4803		2.362	4.882	3.031	1.772	0.551	○
D106-05-12250A0 AP30P1U	12.250	0.4823		2.362	4.882	3.031	1.772	0.551	○
D106-05-12300A0 AP30P1U	12.300	0.4843		2.362	4.882	3.031	1.772	0.551	○
D106-05-12303A0 AP30P1U	12.303	0.4844	31/64"	2.362	4.882	3.031	1.772	0.551	○
D106-05-12400A0 AP30P1U	12.400	0.4882		2.362	4.882	3.031	1.772	0.551	○
D106-05-12500A0 AP30P1U	12.500	0.4921		2.362	4.882	3.031	1.772	0.551	●
D106-05-12600A0 AP30P1U	12.600	0.4961		2.362	4.882	3.031	1.772	0.551	○
D106-05-12700A0 AP30P1U	12.700	0.5000	1/2"	2.362	4.882	3.031	1.772	0.551	●
D106-05-12750A0 AP30P1U	12.750	0.5020		2.362	4.882	3.031	1.772	0.551	○
D106-05-12800A0 AP30P1U	12.800	0.5039		2.362	4.882	3.031	1.772	0.551	○

Special product can be ordered

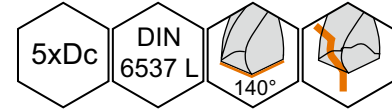
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with External Coolant 5xDc



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● 1st choice ● 2nd choice

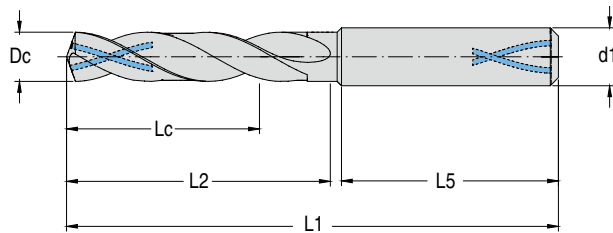


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-12900A0 AP30P1U	12.900	0.5079		2.362	4.882	3.031	1.772	0.551	○
D106-05-13000A0 AP30P1U	13.000	0.5118		2.362	4.882	3.031	1.772	0.551	●
D106-05-13100A0 AP30P1U	13.100	0.5157		2.362	4.882	3.031	1.772	0.551	○
D106-05-13200A0 AP30P1U	13.200	0.5197		2.362	4.882	3.031	1.772	0.551	●
D106-05-13300A0 AP30P1U	13.300	0.5236		2.362	4.882	3.031	1.772	0.551	○
D106-05-13400A0 AP30P1U	13.400	0.5276		2.362	4.882	3.031	1.772	0.551	○
D106-05-13494A0 AP30P1U	13.494	0.5313	17/32"	2.362	4.882	3.031	1.772	0.551	○
D106-05-13500A0 AP30P1U	13.500	0.5315		2.362	4.882	3.031	1.772	0.551	○
D106-05-13600A0 AP30P1U	13.600	0.5354		2.362	4.882	3.031	1.772	0.551	○
D106-05-13700A0 AP30P1U	13.700	0.5394		2.362	4.882	3.031	1.772	0.551	●
D106-05-13800A0 AP30P1U	13.800	0.5433		2.362	4.882	3.031	1.772	0.551	○
D106-05-13900A0 AP30P1U	13.900	0.5472		2.362	4.882	3.031	1.772	0.551	○
D106-05-14000A0 AP30P1U	14.000	0.5512		2.362	4.882	3.031	1.772	0.551	●
D106-05-14100A0 AP30P1U	14.100	0.5551		2.480	5.236	3.268	1.890	0.630	●
D106-05-14200A0 AP30P1U	14.200	0.5591		2.480	5.236	3.268	1.890	0.630	●
D106-05-14288A0 AP30P1U	14.288	0.5625	9/16"	2.480	5.236	3.268	1.890	0.630	○
D106-05-14300A0 AP30P1U	14.300	0.5630		2.480	5.236	3.268	1.890	0.630	○
D106-05-14400A0 AP30P1U	14.400	0.5669		2.480	5.236	3.268	1.890	0.630	○
D106-05-14500A0 AP30P1U	14.500	0.5709		2.480	5.236	3.268	1.890	0.630	●
D106-05-14600A0 AP30P1U	14.600	0.5748		2.480	5.236	3.268	1.890	0.630	●
D106-05-14700A0 AP30P1U	14.700	0.5787		2.480	5.236	3.268	1.890	0.630	●
D106-05-14750A0 AP30P1U	14.750	0.5807		2.480	5.236	3.268	1.890	0.630	○
D106-05-14800A0 AP30P1U	14.800	0.5827		2.480	5.236	3.268	1.890	0.630	○
D106-05-15000A0 AP30P1U	15.000	0.5906		2.480	5.236	3.268	1.890	0.630	●
D106-05-15100A0 AP30P1U	15.100	0.5945		2.480	5.236	3.268	1.890	0.630	○
D106-05-15200A0 AP30P1U	15.200	0.5984		2.480	5.236	3.268	1.890	0.630	○
D106-05-15300A0 AP30P1U	15.300	0.6024		2.480	5.236	3.268	1.890	0.630	○
D106-05-15500A0 AP30P1U	15.500	0.6102		2.480	5.236	3.268	1.890	0.630	●
D106-05-15600A0 AP30P1U	15.600	0.6142		2.480	5.236	3.268	1.890	0.630	○
D106-05-15700A0 AP30P1U	15.700	0.6181		2.480	5.236	3.268	1.890	0.630	●
D106-05-15800A0 AP30P1U	15.800	0.6220		2.480	5.236	3.268	1.890	0.630	●
D106-05-15875A0 AP30P1U	15.875	0.6250	5/8"	2.480	5.236	3.268	1.890	0.630	●
D106-05-15900A0 AP30P1U	15.900	0.6260		2.480	5.236	3.268	1.890	0.630	○
D106-05-16000A0 AP30P1U	16.000	0.6299		2.480	5.236	3.268	1.890	0.630	●
D106-05-16500A0 AP30P1U	16.500	0.6496		2.795	5.630	3.661	1.890	0.709	●
D106-05-17000A0 AP30P1U	17.000	0.6693		2.795	5.630	3.661	1.890	0.709	●
D106-05-17500A0 AP30P1U	17.500	0.6890		2.795	5.630	3.661	1.890	0.709	●
D106-05-18000A0 AP30P1U	18.000	0.7087		2.795	5.630	3.661	1.890	0.709	●
D106-05-18500A0 AP30P1U	18.500	0.7283		3.031	6.024	3.976	1.969	0.787	●
D106-05-19000A0 AP30P1U	19.000	0.7480		3.031	6.024	3.976	1.969	0.787	●
D106-05-20000A0 AP30P1U	20.000	0.7874		3.031	6.024	3.976	1.969	0.787	●

Special product can be ordered

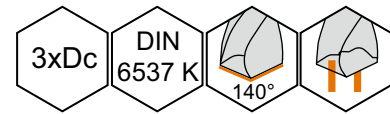
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 3xDc



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•• 1st choice • 2nd choice

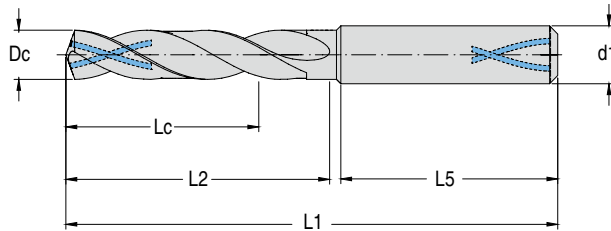


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-03000A1 AP30P1U	3.000	0.1181		0.551	2.441	0.787	1.417	0.157	●
D106-03-03100A1 AP30P1U	3.100	0.1220		0.551	2.441	0.787	1.417	0.157	●
D106-03-03175A1 AP30P1U	3.175	0.1250	1/8"	0.551	2.441	0.787	1.417	0.157	○
D106-03-03200A1 AP30P1U	3.200	0.1260		0.551	2.441	0.787	1.417	0.157	●
D106-03-03250A1 AP30P1U	3.250	0.1280		0.551	2.441	0.787	1.417	0.157	○
D106-03-03300A1 AP30P1U	3.300	0.1299		0.551	2.441	0.787	1.417	0.157	●
D106-03-03400A1 AP30P1U	3.400	0.1339		0.551	2.441	0.787	1.417	0.157	○
D106-03-03500A1 AP30P1U	3.500	0.1378		0.551	2.441	0.787	1.417	0.157	●
D106-03-03572A1 AP30P1U	3.572	0.1406	9/64"	0.551	2.441	0.787	1.417	0.157	○
D106-03-03600A1 AP30P1U	3.600	0.1417		0.551	2.441	0.787	1.417	0.157	●
D106-03-03650A1 AP30P1U	3.650	0.1437		0.551	2.441	0.787	1.417	0.157	○
D106-03-03700A1 AP30P1U	3.700	0.1457		0.551	2.441	0.787	1.417	0.157	●
D106-03-03800A1 AP30P1U	3.800	0.1496		0.669	2.598	0.945	1.417	0.157	○
D106-03-03900A1 AP30P1U	3.900	0.1535		0.669	2.598	0.945	1.417	0.157	●
D106-03-03969A1 AP30P1U	3.969	0.1563	5/32"	0.669	2.598	0.945	1.417	0.157	○
D106-03-04000A1 AP30P1U	4.000	0.1575		0.669	2.598	0.945	1.417	0.157	●
D106-03-04100A1 AP30P1U	4.100	0.1614		0.669	2.598	0.945	1.417	0.236	○
D106-03-04200A1 AP30P1U	4.200	0.1654		0.669	2.598	0.945	1.417	0.236	●
D106-03-04300A1 AP30P1U	4.300	0.1693		0.669	2.598	0.945	1.417	0.236	○
D106-03-04366A1 AP30P1U	4.366	0.1719	11/64"	0.669	2.598	0.945	1.417	0.236	○
D106-03-04400A1 AP30P1U	4.400	0.1732		0.669	2.598	0.945	1.417	0.236	○
D106-03-04500A1 AP30P1U	4.500	0.1772		0.669	2.598	0.945	1.417	0.236	●
D106-03-04600A1 AP30P1U	4.600	0.1811		0.669	2.598	0.945	1.417	0.236	○
D106-03-04650A1 AP30P1U	4.650	0.1831		0.669	2.598	0.945	1.417	0.236	○
D106-03-04700A1 AP30P1U	4.700	0.1850		0.669	2.598	0.945	1.417	0.236	○
D106-03-04763A1 AP30P1U	4.763	0.1875	3/16"	0.787	2.598	1.102	1.417	0.236	○
D106-03-04800A1 AP30P1U	4.800	0.1890		0.787	2.598	1.102	1.417	0.236	●
D106-03-04900A1 AP30P1U	4.900	0.1929		0.787	2.598	1.102	1.417	0.236	●
D106-03-05000A1 AP30P1U	5.000	0.1969		0.787	2.598	1.102	1.417	0.236	●
D106-03-05100A1 AP30P1U	5.100	0.2008		0.787	2.598	1.102	1.417	0.236	●
D106-03-05159A1 AP30P1U	5.159	0.2031	13/64"	0.787	2.598	1.102	1.417	0.236	○
D106-03-05200A1 AP30P1U	5.200	0.2047		0.787	2.598	1.102	1.417	0.236	●
D106-03-05300A1 AP30P1U	5.300	0.2087		0.787	2.598	1.102	1.417	0.236	○
D106-03-05400A1 AP30P1U	5.400	0.2126		0.787	2.598	1.102	1.417	0.236	○
D106-03-05500A1 AP30P1U	5.500	0.2165		0.787	2.598	1.102	1.417	0.236	●
D106-03-05550A1 AP30P1U	5.550	0.2185		0.787	2.598	1.102	1.417	0.236	○

Special product can be ordered

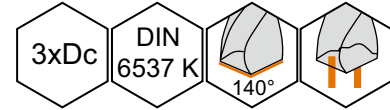
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 3xDc



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•• 1st choice • 2nd choice

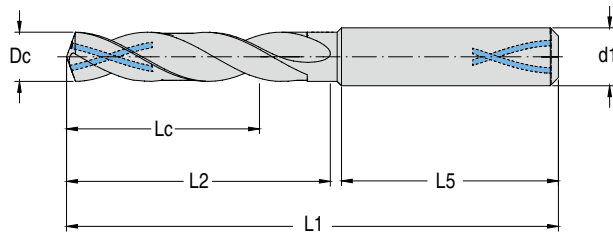


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-05556A1 AP30P1U	5.556	0.2187	7/32"	0.787	2.598	1.102	1.417	0.236	○
D106-03-05600A1 AP30P1U	5.600	0.2205		0.787	2.598	1.102	1.417	0.236	○
D106-03-05700A1 AP30P1U	5.700	0.2244		0.787	2.598	1.102	1.417	0.236	○
D106-03-05750A1 AP30P1U	5.750	0.2264		0.787	2.598	1.102	1.417	0.236	○
D106-03-05800A1 AP30P1U	5.800	0.2283		0.787	2.598	1.102	1.417	0.236	●
D106-03-05900A1 AP30P1U	5.900	0.2323		0.787	2.598	1.102	1.417	0.236	●
D106-03-05953A1 AP30P1U	5.953	0.2344	15/64"	0.787	2.598	1.102	1.417	0.236	○
D106-03-06000A1 AP30P1U	6.000	0.2362		0.787	2.598	1.102	1.417	0.236	●
D106-03-06100A1 AP30P1U	6.100	0.2402		0.945	3.110	1.614	1.417	0.315	○
D106-03-06200A1 AP30P1U	6.200	0.2441		0.945	3.110	1.614	1.417	0.315	○
D106-03-06300A1 AP30P1U	6.300	0.2480		0.945	3.110	1.614	1.417	0.315	○
D106-03-06350A1 AP30P1U	6.350	0.2500	1/4"	0.945	3.110	1.614	1.417	0.315	○
D106-03-06400A1 AP30P1U	6.400	0.2520		0.945	3.110	1.614	1.417	0.315	○
D106-03-06500A1 AP30P1U	6.500	0.2559		0.945	3.110	1.614	1.417	0.315	●
D106-03-06600A1 AP30P1U	6.600	0.2598		0.945	3.110	1.614	1.417	0.315	○
D106-03-06700A1 AP30P1U	6.700	0.2638		0.945	3.110	1.614	1.417	0.315	○
D106-03-06747A1 AP30P1U	6.747	0.2656	17/64"	0.945	3.110	1.614	1.417	0.315	○
D106-03-06800A1 AP30P1U	6.800	0.2677		0.945	3.110	1.614	1.417	0.315	●
D106-03-06900A1 AP30P1U	6.900	0.2717		0.945	3.110	1.614	1.417	0.315	●
D106-03-07000A1 AP30P1U	7.000	0.2756		0.945	3.110	1.614	1.417	0.315	●
D106-03-07100A1 AP30P1U	7.100	0.2795		1.142	3.110	1.614	1.417	0.315	○
D106-03-07144A1 AP30P1U	7.144	0.2813	9/32"	1.142	3.110	1.614	1.417	0.315	○
D106-03-07200A1 AP30P1U	7.200	0.2835		1.142	3.110	1.614	1.417	0.315	○
D106-03-07250A1 AP30P1U	7.250	0.2854		1.142	3.110	1.614	1.417	0.315	○
D106-03-07300A1 AP30P1U	7.300	0.2874		1.142	3.110	1.614	1.417	0.315	○
D106-03-07400A1 AP30P1U	7.400	0.2913		1.142	3.110	1.614	1.417	0.315	●
D106-03-07450A1 AP30P1U	7.450	0.2933		1.142	3.110	1.614	1.417	0.315	○
D106-03-07500A1 AP30P1U	7.500	0.2953		1.142	3.110	1.614	1.417	0.315	●
D106-03-07541A1 AP30P1U	7.541	0.2969	19/64"	1.142	3.110	1.614	1.417	0.315	○
D106-03-07550A1 AP30P1U	7.550	0.2972		1.142	3.110	1.614	1.417	0.315	○
D106-03-07600A1 AP30P1U	7.600	0.2992		1.142	3.110	1.614	1.417	0.315	○
D106-03-07700A1 AP30P1U	7.700	0.3031		1.142	3.110	1.614	1.417	0.315	○
D106-03-07800A1 AP30P1U	7.800	0.3071		1.142	3.110	1.614	1.417	0.315	●
D106-03-07900A1 AP30P1U	7.900	0.3110		1.142	3.110	1.614	1.417	0.315	●
D106-03-07938A1 AP30P1U	7.938	0.3125	5/16"	1.142	3.110	1.614	1.417	0.315	○
D106-03-08000A1 AP30P1U	8.000	0.3150		1.142	3.110	1.614	1.417	0.315	●
D106-03-08100A1 AP30P1U	8.100	0.3189		1.378	3.504	1.850	1.575	0.394	○
D106-03-08200A1 AP30P1U	8.200	0.3228		1.378	3.504	1.850	1.575	0.394	○
D106-03-08300A1 AP30P1U	8.300	0.3268		1.378	3.504	1.850	1.575	0.394	○
D106-03-08334A1 AP30P1U	8.334	0.3281	21/64"	1.378	3.504	1.850	1.575	0.394	○
D106-03-08400A1 AP30P1U	8.400	0.3307		1.378	3.504	1.850	1.575	0.394	○
D106-03-08500A1 AP30P1U	8.500	0.3346		1.378	3.504	1.850	1.575	0.394	●
D106-03-08600A1 AP30P1U	8.600	0.3386		1.378	3.504	1.850	1.575	0.394	●
D106-03-08700A1 AP30P1U	8.700	0.3425		1.378	3.504	1.850	1.575	0.394	○
D106-03-08731A1 AP30P1U	8.731	0.3437	11/32"	1.378	3.504	1.850	1.575	0.394	○
D106-03-08750A1 AP30P1U	8.750	0.3445		1.378	3.504	1.850	1.575	0.394	○
D106-03-08800A1 AP30P1U	8.800	0.3465		1.378	3.504	1.850	1.575	0.394	●
D106-03-08900A1 AP30P1U	8.900	0.3504		1.378	3.504	1.850	1.575	0.394	●

Special product can be ordered

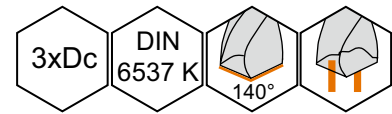
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 3xDc



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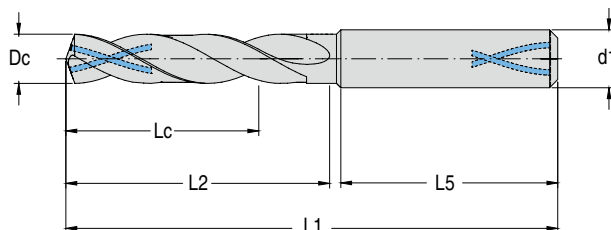
•• 1st choice • 2nd choice



Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-09000A1 AP30P1U	9.000	0.3543		1.378	3.504	1.850	1.575	0.394	●
D106-03-09100A1 AP30P1U	9.100	0.3583		1.378	3.504	1.850	1.575	0.394	○
D106-03-09128A1 AP30P1U	9.128	0.3594	23/64"	1.378	3.504	1.850	1.575	0.394	○
D106-03-09200A1 AP30P1U	9.200	0.3622		1.378	3.504	1.850	1.575	0.394	○
D106-03-09300A1 AP30P1U	9.300	0.3661		1.378	3.504	1.850	1.575	0.394	●
D106-03-09400A1 AP30P1U	9.400	0.3701		1.378	3.504	1.850	1.575	0.394	○
D106-03-09500A1 AP30P1U	9.500	0.3740		1.378	3.504	1.850	1.575	0.394	○
D106-03-09525A1 AP30P1U	9.525	0.3750	3/8"	1.378	3.504	1.850	1.575	0.394	○
D106-03-09550A1 AP30P1U	9.550	0.3760		1.378	3.504	1.850	1.575	0.394	○
D106-03-09600A1 AP30P1U	9.600	0.3780		1.378	3.504	1.850	1.575	0.394	○
D106-03-09700A1 AP30P1U	9.700	0.3819		1.378	3.504	1.850	1.575	0.394	○
D106-03-09800A1 AP30P1U	9.800	0.3858		1.378	3.504	1.850	1.575	0.394	●
D106-03-09900A1 AP30P1U	9.900	0.3898		1.378	3.504	1.850	1.575	0.394	●
D106-03-09922A1 AP30P1U	9.922	0.3906	25/64"	1.378	3.504	1.850	1.575	0.394	○
D106-03-10000A1 AP30P1U	10.000	0.3937		1.378	3.504	1.850	1.575	0.394	●
D106-03-10100A1 AP30P1U	10.100	0.3976		1.575	4.016	2.165	1.772	0.472	●
D106-03-10200A1 AP30P1U	10.200	0.4016		1.575	4.016	2.165	1.772	0.472	●
D106-03-10300A1 AP30P1U	10.300	0.4055		1.575	4.016	2.165	1.772	0.472	●
D106-03-10319A1 AP30P1U	10.319	0.4063	13/32"	1.575	4.016	2.165	1.772	0.472	○
D106-03-10400A1 AP30P1U	10.400	0.4094		1.575	4.016	2.165	1.772	0.472	○
D106-03-10500A1 AP30P1U	10.500	0.4134		1.575	4.016	2.165	1.772	0.472	●
D106-03-10600A1 AP30P1U	10.600	0.4173		1.575	4.016	2.165	1.772	0.472	●
D106-03-10700A1 AP30P1U	10.700	0.4213		1.575	4.016	2.165	1.772	0.472	○
D106-03-10716A1 AP30P1U	10.716	0.4219	27/64"	1.575	4.016	2.165	1.772	0.472	○
D106-03-10800A1 AP30P1U	10.800	0.4252		1.575	4.016	2.165	1.772	0.472	●
D106-03-10900A1 AP30P1U	10.900	0.4291		1.575	4.016	2.165	1.772	0.472	○
D106-03-11000A1 AP30P1U	11.000	0.4331		1.575	4.016	2.165	1.772	0.472	●
D106-03-11100A1 AP30P1U	11.100	0.4370		1.575	4.016	2.165	1.772	0.472	○
D106-03-11113A1 AP30P1U	11.113	0.4375	7/16"	1.575	4.016	2.165	1.772	0.472	○
D106-03-11200A1 AP30P1U	11.200	0.4409		1.575	4.016	2.165	1.772	0.472	○
D106-03-11300A1 AP30P1U	11.300	0.4449		1.575	4.016	2.165	1.772	0.472	○
D106-03-11400A1 AP30P1U	11.400	0.4488		1.575	4.016	2.165	1.772	0.472	○
D106-03-11500A1 AP30P1U	11.500	0.4528		1.575	4.016	2.165	1.772	0.472	○
D106-03-11509A1 AP30P1U	11.509	0.4531	29/64"	1.575	4.016	2.165	1.772	0.472	○
D106-03-11550A1 AP30P1U	11.550	0.4547		1.575	4.016	2.165	1.772	0.472	○
D106-03-11600A1 AP30P1U	11.600	0.4567		1.575	4.016	2.165	1.772	0.472	○
D106-03-11700A1 AP30P1U	11.700	0.4606		1.575	4.016	2.165	1.772	0.472	○
D106-03-11800A1 AP30P1U	11.800	0.4646		1.575	4.016	2.165	1.772	0.472	●
D106-03-11900A1 AP30P1U	11.900	0.4685		1.575	4.016	2.165	1.772	0.472	○
D106-03-11906A1 AP30P1U	11.906	0.4687	15/32"	1.575	4.016	2.165	1.772	0.472	○
D106-03-12000A1 AP30P1U	12.000	0.4724		1.575	4.016	2.165	1.772	0.472	●
D106-03-12100A1 AP30P1U	12.100	0.4764		1.693	4.213	2.362	1.772	0.551	○
D106-03-12200A1 AP30P1U	12.200	0.4803		1.693	4.213	2.362	1.772	0.551	○
D106-03-12250A1 AP30P1U	12.250	0.4823		1.693	4.213	2.362	1.772	0.551	○

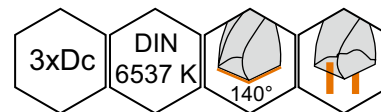
Special product can be ordered

Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 3xDc


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•• 1st choice • 2nd choice

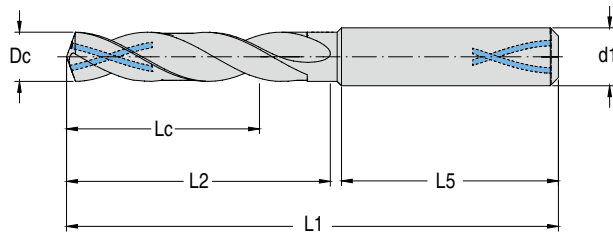


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-03-12300A1 AP30P1U	12.300	0.4843		1.693	4.213	2.362	1.772	0.551	○
D106-03-12303A1 AP30P1U	12.303	0.4844	31/64"	1.693	4.213	2.362	1.772	0.551	○
D106-03-12400A1 AP30P1U	12.400	0.4882		1.693	4.213	2.362	1.772	0.551	○
D106-03-12500A1 AP30P1U	12.500	0.4921		1.693	4.213	2.362	1.772	0.551	●
D106-03-12600A1 AP30P1U	12.600	0.4961		1.693	4.213	2.362	1.772	0.551	○
D106-03-12700A1 AP30P1U	12.700	0.5000	1/2"	1.693	4.213	2.362	1.772	0.551	○
D106-03-12750A1 AP30P1U	12.750	0.5020		1.693	4.213	2.362	1.772	0.551	○
D106-03-12800A1 AP30P1U	12.800	0.5039		1.693	4.213	2.362	1.772	0.551	○
D106-03-12900A1 AP30P1U	12.900	0.5079		1.693	4.213	2.362	1.772	0.551	○
D106-03-13000A1 AP30P1U	13.000	0.5118		1.693	4.213	2.362	1.772	0.551	●
D106-03-13100A1 AP30P1U	13.100	0.5157		1.693	4.213	2.362	1.772	0.551	○
D106-03-13200A1 AP30P1U	13.200	0.5197		1.693	4.213	2.362	1.772	0.551	●
D106-03-13300A1 AP30P1U	13.300	0.5236		1.693	4.213	2.362	1.772	0.551	○
D106-03-13400A1 AP30P1U	13.400	0.5276		1.693	4.213	2.362	1.772	0.551	○
D106-03-13494A1 AP30P1U	13.494	0.5313	17/32"	1.693	4.213	2.362	1.772	0.551	○
D106-03-13500A1 AP30P1U	13.500	0.5315		1.693	4.213	2.362	1.772	0.551	○
D106-03-13600A1 AP30P1U	13.600	0.5354		1.693	4.213	2.362	1.772	0.551	○
D106-03-13700A1 AP30P1U	13.700	0.5394		1.693	4.213	2.362	1.772	0.551	○
D106-03-13800A1 AP30P1U	13.800	0.5433		1.693	4.213	2.362	1.772	0.551	○
D106-03-13900A1 AP30P1U	13.900	0.5472		1.693	4.213	2.362	1.772	0.551	○
D106-03-14000A1 AP30P1U	14.000	0.5512		1.693	4.213	2.362	1.772	0.551	●
D106-03-14100A1 AP30P1U	14.100	0.5551		1.772	4.528	2.559	1.890	0.630	●
D106-03-14200A1 AP30P1U	14.200	0.5591		1.772	4.528	2.559	1.890	0.630	●
D106-03-14288A1 AP30P1U	14.288	0.5625	9/16"	1.772	4.528	2.559	1.890	0.630	○
D106-03-14300A1 AP30P1U	14.300	0.5630		1.772	4.528	2.559	1.890	0.630	○
D106-03-14400A1 AP30P1U	14.400	0.5669		1.772	4.528	2.559	1.890	0.630	○
D106-03-14500A1 AP30P1U	14.500	0.5709		1.772	4.528	2.559	1.890	0.630	●
D106-03-14600A1 AP30P1U	14.600	0.5748		1.772	4.528	2.559	1.890	0.630	●
D106-03-14700A1 AP30P1U	14.700	0.5787		1.772	4.528	2.559	1.890	0.630	●
D106-03-14750A1 AP30P1U	14.750	0.5807		1.772	4.528	2.559	1.890	0.630	○
D106-03-14800A1 AP30P1U	14.800	0.5827		1.772	4.528	2.559	1.890	0.630	○
D106-03-15000A1 AP30P1U	15.000	0.5906		1.772	4.528	2.559	1.890	0.630	●
D106-03-15100A1 AP30P1U	15.100	0.5945		1.772	4.528	2.559	1.890	0.630	○
D106-03-15200A1 AP30P1U	15.200	0.5984		1.772	4.528	2.559	1.890	0.630	○
D106-03-15300A1 AP30P1U	15.300	0.6024		1.772	4.528	2.559	1.890	0.630	○
D106-03-15500A1 AP30P1U	15.500	0.6102		1.772	4.528	2.559	1.890	0.630	●
D106-03-15600A1 AP30P1U	15.600	0.6142		1.772	4.528	2.559	1.890	0.630	○
D106-03-15700A1 AP30P1U	15.700	0.6181		1.772	4.528	2.559	1.890	0.630	●
D106-03-15800A1 AP30P1U	15.800	0.6220		1.772	4.528	2.559	1.890	0.630	●
D106-03-15875A1 AP30P1U	15.875	0.6250	5/8"	1.772	4.528	2.559	1.890	0.630	○
D106-03-15900A1 AP30P1U	15.900	0.6260		1.772	4.528	2.559	1.890	0.630	○
D106-03-16000A1 AP30P1U	16.000	0.6299		1.772	4.528	2.559	1.890	0.630	●

Special product can be ordered

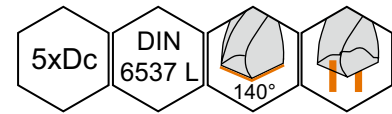
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 5xDc



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•• 1st choice • 2nd choice

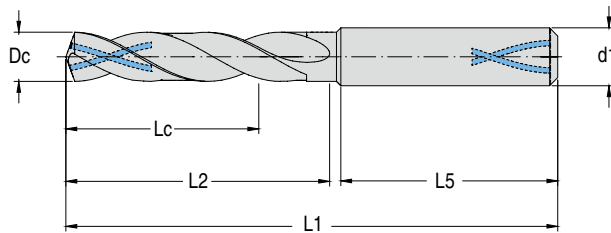


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-03000A1 AP30P1U	3.000	0.1181		0.906	2.598	1.102	1.417	0.157	●
D106-05-03100A1 AP30P1U	3.100	0.1220		0.906	2.598	1.102	1.417	0.157	●
D106-05-03175A1 AP30P1U	3.175	0.1250	1/8"	0.906	2.598	1.102	1.417	0.157	●
D106-05-03200A1 AP30P1U	3.200	0.1260		0.906	2.598	1.102	1.417	0.157	●
D106-05-03250A1 AP30P1U	3.250	0.1280		0.906	2.598	1.102	1.417	0.157	○
D106-05-03300A1 AP30P1U	3.300	0.1299		0.906	2.598	1.102	1.417	0.157	●
D106-05-03400A1 AP30P1U	3.400	0.1339		0.906	2.598	1.102	1.417	0.157	○
D106-05-03500A1 AP30P1U	3.500	0.1378		0.906	2.598	1.102	1.417	0.157	●
D106-05-03572A1 AP30P1U	3.572	0.1406	9/64"	0.906	2.598	1.102	1.417	0.157	●
D106-05-03600A1 AP30P1U	3.600	0.1417		0.906	2.598	1.102	1.417	0.157	●
D106-05-03650A1 AP30P1U	3.650	0.1437		0.906	2.598	1.102	1.417	0.157	○
D106-05-03700A1 AP30P1U	3.700	0.1457		0.906	2.598	1.102	1.417	0.157	●
D106-05-03800A1 AP30P1U	3.800	0.1496		1.142	2.913	1.417	1.417	0.157	○
D106-05-03900A1 AP30P1U	3.900	0.1535		1.142	2.913	1.417	1.417	0.157	●
D106-05-03969A1 AP30P1U	3.969	0.1563	5/32"	1.142	2.913	1.417	1.417	0.157	●
D106-05-04000A1 AP30P1U	4.000	0.1575		1.142	2.913	1.417	1.417	0.157	●
D106-05-04100A1 AP30P1U	4.100	0.1614		1.142	2.913	1.417	1.417	0.236	○
D106-05-04200A1 AP30P1U	4.200	0.1654		1.142	2.913	1.417	1.417	0.236	●
D106-05-04300A1 AP30P1U	4.300	0.1693		1.142	2.913	1.417	1.417	0.236	○
D106-05-04366A1 AP30P1U	4.366	0.1719	11/64"	1.142	2.913	1.417	1.417	0.236	●
D106-05-04400A1 AP30P1U	4.400	0.1732		1.142	2.913	1.417	1.417	0.236	○
D106-05-04500A1 AP30P1U	4.500	0.1772		1.142	2.913	1.417	1.417	0.236	●
D106-05-04600A1 AP30P1U	4.600	0.1811		1.142	2.913	1.417	1.417	0.236	○
D106-05-04650A1 AP30P1U	4.650	0.1831		1.142	2.913	1.417	1.417	0.236	○
D106-05-04700A1 AP30P1U	4.700	0.1850		1.142	2.913	1.417	1.417	0.236	○
D106-05-04763A1 AP30P1U	4.763	0.1875	3/16"	1.378	3.228	1.732	1.417	0.236	●
D106-05-04800A1 AP30P1U	4.800	0.1890		1.378	3.228	1.732	1.417	0.236	●
D106-05-04900A1 AP30P1U	4.900	0.1929		1.378	3.228	1.732	1.417	0.236	●
D106-05-05000A1 AP30P1U	5.000	0.1969		1.378	3.228	1.732	1.417	0.236	●
D106-05-05100A1 AP30P1U	5.100	0.2008		1.378	3.228	1.732	1.417	0.236	●
D106-05-05159A1 AP30P1U	5.159	0.2031	13/64"	1.378	3.228	1.732	1.417	0.236	○
D106-05-05200A1 AP30P1U	5.200	0.2047		1.378	3.228	1.732	1.417	0.236	●
D106-05-05300A1 AP30P1U	5.300	0.2087		1.378	3.228	1.732	1.417	0.236	○
D106-05-05400A1 AP30P1U	5.400	0.2126		1.378	3.228	1.732	1.417	0.236	○
D106-05-05500A1 AP30P1U	5.500	0.2165		1.378	3.228	1.732	1.417	0.236	●
D106-05-05550A1 AP30P1U	5.550	0.2185		1.378	3.228	1.732	1.417	0.236	○

Special product can be ordered

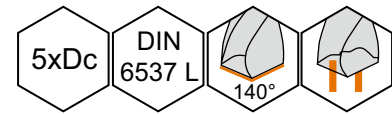
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 5xDc



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•• 1st choice • 2nd choice

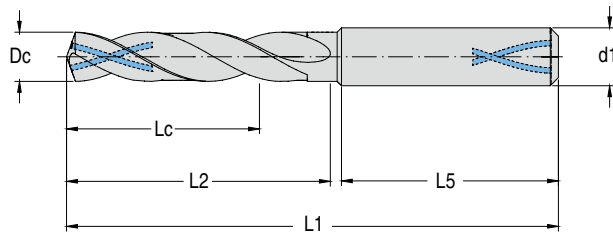


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-05556A1 AP30P1U	5.556	0.2187	7/32"	1.378	3.228	1.732	1.417	0.236	●
D106-05-05600A1 AP30P1U	5.600	0.2205		1.378	3.228	1.732	1.417	0.236	○
D106-05-05700A1 AP30P1U	5.700	0.2244		1.378	3.228	1.732	1.417	0.236	○
D106-05-05750A1 AP30P1U	5.750	0.2264		1.378	3.228	1.732	1.417	0.236	○
D106-05-05800A1 AP30P1U	5.800	0.2283		1.378	3.228	1.732	1.417	0.236	●
D106-05-05900A1 AP30P1U	5.900	0.2323		1.378	3.228	1.732	1.417	0.236	●
D106-05-05953A1 AP30P1U	5.953	0.2344	15/64"	1.378	3.228	1.732	1.417	0.236	●
D106-05-06000A1 AP30P1U	6.000	0.2362		1.378	3.228	1.732	1.417	0.236	●
D106-05-06100A1 AP30P1U	6.100	0.2402		1.693	3.583	2.087	1.417	0.315	○
D106-05-06200A1 AP30P1U	6.200	0.2441		1.693	3.583	2.087	1.417	0.315	○
D106-05-06300A1 AP30P1U	6.300	0.2480		1.693	3.583	2.087	1.417	0.315	○
D106-05-06350A1 AP30P1U	6.350	0.2500	1/4"	1.693	3.583	2.087	1.417	0.315	●
D106-05-06400A1 AP30P1U	6.400	0.2520		1.693	3.583	2.087	1.417	0.315	○
D106-05-06500A1 AP30P1U	6.500	0.2559		1.693	3.583	2.087	1.417	0.315	●
D106-05-06600A1 AP30P1U	6.600	0.2598		1.693	3.583	2.087	1.417	0.315	○
D106-05-06700A1 AP30P1U	6.700	0.2638		1.693	3.583	2.087	1.417	0.315	○
D106-05-06747A1 AP30P1U	6.747	0.2656	17/64"	1.693	3.583	2.087	1.417	0.315	●
D106-05-06800A1 AP30P1U	6.800	0.2677		1.693	3.583	2.087	1.417	0.315	●
D106-05-06900A1 AP30P1U	6.900	0.2717		1.693	3.583	2.087	1.417	0.315	●
D106-05-07000A1 AP30P1U	7.000	0.2756		1.693	3.583	2.087	1.417	0.315	●
D106-05-07100A1 AP30P1U	7.100	0.2795		1.693	3.583	2.087	1.417	0.315	○
D106-05-07144A1 AP30P1U	7.144	0.2813	9/32"	1.693	3.583	2.087	1.417	0.315	●
D106-05-07200A1 AP30P1U	7.200	0.2835		1.693	3.583	2.087	1.417	0.315	○
D106-05-07250A1 AP30P1U	7.250	0.2854		1.693	3.583	2.087	1.417	0.315	
D106-05-07300A1 AP30P1U	7.300	0.2874		1.693	3.583	2.087	1.417	0.315	○
D106-05-07400A1 AP30P1U	7.400	0.2913		1.693	3.583	2.087	1.417	0.315	●
D106-05-07450A1 AP30P1U	7.450	0.2933		1.693	3.583	2.087	1.417	0.315	
D106-05-07500A1 AP30P1U	7.500	0.2953		1.693	3.583	2.087	1.417	0.315	●
D106-05-07541A1 AP30P1U	7.541	0.2969	19/64"	1.693	3.583	2.087	1.417	0.315	○
D106-05-07550A1 AP30P1U	7.550	0.2972		1.693	3.583	2.087	1.417	0.315	○
D106-05-07600A1 AP30P1U	7.600	0.2992		1.693	3.583	2.087	1.417	0.315	○
D106-05-07700A1 AP30P1U	7.700	0.3031		1.693	3.583	2.087	1.417	0.315	○
D106-05-07800A1 AP30P1U	7.800	0.3071		1.693	3.583	2.087	1.417	0.315	●
D106-05-07900A1 AP30P1U	7.900	0.3110		1.693	3.583	2.087	1.417	0.315	●
D106-05-07938A1 AP30P1U	7.938	0.3125	5/16"	1.693	3.583	2.087	1.417	0.315	●
D106-05-08000A1 AP30P1U	8.000	0.3150		1.693	3.583	2.087	1.417	0.315	●
D106-05-08100A1 AP30P1U	8.100	0.3189		1.929	4.055	2.402	1.575	0.394	○
D106-05-08200A1 AP30P1U	8.200	0.3228		1.929	4.055	2.402	1.575	0.394	○
D106-05-08300A1 AP30P1U	8.300	0.3268		1.929	4.055	2.402	1.575	0.394	○
D106-05-08334A1 AP30P1U	8.334	0.3281	21/64"	1.929	4.055	2.402	1.575	0.394	○
D106-05-08400A1 AP30P1U	8.400	0.3307		1.929	4.055	2.402	1.575	0.394	○
D106-05-08500A1 AP30P1U	8.500	0.3346		1.929	4.055	2.402	1.575	0.394	●
D106-05-08600A1 AP30P1U	8.600	0.3386		1.929	4.055	2.402	1.575	0.394	●
D106-05-08700A1 AP30P1U	8.700	0.3425		1.929	4.055	2.402	1.575	0.394	○
D106-05-08731A1 AP30P1U	8.731	0.3437	11/32"	1.929	4.055	2.402	1.575	0.394	●
D106-05-08750A1 AP30P1U	8.750	0.3445		1.929	4.055	2.402	1.575	0.394	○
D106-05-08800A1 AP30P1U	8.800	0.3465		1.929	4.055	2.402	1.575	0.394	●
D106-05-08900A1 AP30P1U	8.900	0.3504		1.929	4.055	2.402	1.575	0.394	●

Special product can be ordered

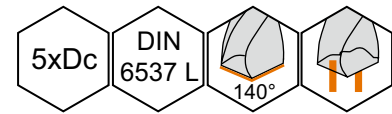
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 5xDc



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•• 1st choice • 2nd choice

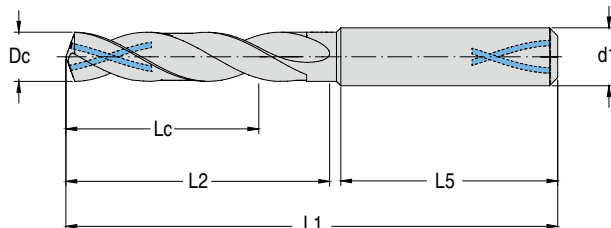


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-09000A1 AP30P1U	9.000	0.3543		1.929	4.055	2.402	1.575	0.394	●
D106-05-09100A1 AP30P1U	9.100	0.3583		1.929	4.055	2.402	1.575	0.394	○
D106-05-09128A1 AP30P1U	9.128	0.3594	23/64"	1.929	4.055	2.402	1.575	0.394	●
D106-05-09200A1 AP30P1U	9.200	0.3622		1.929	4.055	2.402	1.575	0.394	○
D106-05-09300A1 AP30P1U	9.300	0.3661		1.929	4.055	2.402	1.575	0.394	●
D106-05-09400A1 AP30P1U	9.400	0.3701		1.929	4.055	2.402	1.575	0.394	○
D106-05-09500A1 AP30P1U	9.500	0.3740		1.929	4.055	2.402	1.575	0.394	○
D106-05-09525A1 AP30P1U	9.525	0.3750	3/8"	1.929	4.055	2.402	1.575	0.394	●
D106-05-09550A1 AP30P1U	9.550	0.3760		1.929	4.055	2.402	1.575	0.394	○
D106-05-09600A1 AP30P1U	9.600	0.3780		1.929	4.055	2.402	1.575	0.394	○
D106-05-09700A1 AP30P1U	9.700	0.3819		1.929	4.055	2.402	1.575	0.394	○
D106-05-09800A1 AP30P1U	9.800	0.3858		1.929	4.055	2.402	1.575	0.394	●
D106-05-09900A1 AP30P1U	9.900	0.3898		1.929	4.055	2.402	1.575	0.394	●
D106-05-09922A1 AP30P1U	9.922	0.3906	25/64"	1.929	4.055	2.402	1.575	0.394	●
D106-05-10000A1 AP30P1U	10.000	0.3937		1.929	4.055	2.402	1.575	0.394	●
D106-05-10100A1 AP30P1U	10.100	0.3976		2.205	4.646	2.795	1.772	0.472	●
D106-05-10200A1 AP30P1U	10.200	0.4016		2.205	4.646	2.795	1.772	0.472	●
D106-05-10300A1 AP30P1U	10.300	0.4055		2.205	4.646	2.795	1.772	0.472	●
D106-05-10319A1 AP30P1U	10.319	0.4063	13/32"	2.205	4.646	2.795	1.772	0.472	●
D106-05-10400A1 AP30P1U	10.400	0.4094		2.205	4.646	2.795	1.772	0.472	○
D106-05-10500A1 AP30P1U	10.500	0.4134		2.205	4.646	2.795	1.772	0.472	●
D106-05-10600A1 AP30P1U	10.600	0.4173		2.205	4.646	2.795	1.772	0.472	●
D106-05-10700A1 AP30P1U	10.700	0.4213		2.205	4.646	2.795	1.772	0.472	○
D106-05-10716A1 AP30P1U	10.716	0.4219	27/64"	2.205	4.646	2.795	1.772	0.472	●
D106-05-10800A1 AP30P1U	10.800	0.4252		2.205	4.646	2.795	1.772	0.472	●
D106-05-10900A1 AP30P1U	10.900	0.4291		2.205	4.646	2.795	1.772	0.472	○
D106-05-11000A1 AP30P1U	11.000	0.4331		2.205	4.646	2.795	1.772	0.472	●
D106-05-11100A1 AP30P1U	11.100	0.4370		2.205	4.646	2.795	1.772	0.472	○
D106-05-11113A1 AP30P1U	11.113	0.4375	7/16"	2.205	4.646	2.795	1.772	0.472	○
D106-05-11200A1 AP30P1U	11.200	0.4409		2.205	4.646	2.795	1.772	0.472	○
D106-05-11300A1 AP30P1U	11.300	0.4449		2.205	4.646	2.795	1.772	0.472	○
D106-05-11400A1 AP30P1U	11.400	0.4488		2.205	4.646	2.795	1.772	0.472	○
D106-05-11500A1 AP30P1U	11.500	0.4528		2.205	4.646	2.795	1.772	0.472	○
D106-05-11509A1 AP30P1U	11.509	0.4531	29/64"	2.205	4.646	2.795	1.772	0.472	●
D106-05-11550A1 AP30P1U	11.550	0.4547		2.205	4.646	2.795	1.772	0.472	○
D106-05-11600A1 AP30P1U	11.600	0.4567		2.205	4.646	2.795	1.772	0.472	○
D106-05-11700A1 AP30P1U	11.700	0.4606		2.205	4.646	2.795	1.772	0.472	○
D106-05-11800A1 AP30P1U	11.800	0.4646		2.205	4.646	2.795	1.772	0.472	●
D106-05-11900A1 AP30P1U	11.900	0.4685		2.205	4.646	2.795	1.772	0.472	○
D106-05-11906A1 AP30P1U	11.906	0.4687	15/32"	2.205	4.646	2.795	1.772	0.472	●
D106-05-12000A1 AP30P1U	12.000	0.4724		2.205	4.646	2.795	1.772	0.472	●
D106-05-12100A1 AP30P1U	12.100	0.4764		2.362	4.882	3.031	1.772	0.551	○
D106-05-12200A1 AP30P1U	12.200	0.4803		2.362	4.882	3.031	1.772	0.551	○
D106-05-12250A1 AP30P1U	12.250	0.4823		2.362	4.882	3.031	1.772	0.551	○

Special product can be ordered

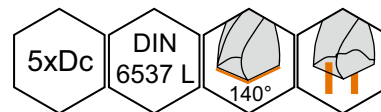
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D106 with Internal Coolant 5xDc



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•• 1st choice • 2nd choice

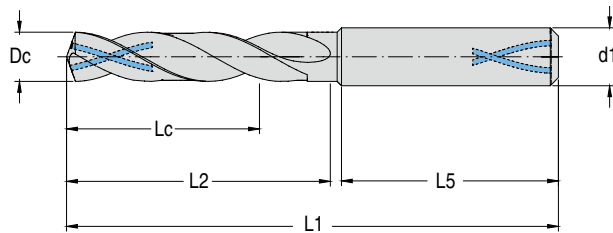


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D106-05-12300A1 AP30P1U	12.300	0.4843		2.362	4.882	3.031	1.772	0.551	○
D106-05-12303A1 AP30P1U	12.303	0.4844	31/64"	2.362	4.882	3.031	1.772	0.551	○
D106-05-12400A1 AP30P1U	12.400	0.4882		2.362	4.882	3.031	1.772	0.551	○
D106-05-12500A1 AP30P1U	12.500	0.4921		2.362	4.882	3.031	1.772	0.551	●
D106-05-12600A1 AP30P1U	12.600	0.4961		2.362	4.882	3.031	1.772	0.551	○
D106-05-12700A1 AP30P1U	12.700	0.5000	1/2"	2.362	4.882	3.031	1.772	0.551	●
D106-05-12750A1 AP30P1U	12.750	0.5020		2.362	4.882	3.031	1.772	0.551	○
D106-05-12800A1 AP30P1U	12.800	0.5039		2.362	4.882	3.031	1.772	0.551	○
D106-05-12900A1 AP30P1U	12.900	0.5079		2.362	4.882	3.031	1.772	0.551	○
D106-05-13000A1 AP30P1U	13.000	0.5118		2.362	4.882	3.031	1.772	0.551	●
D106-05-13100A1 AP30P1U	13.100	0.5157		2.362	4.882	3.031	1.772	0.551	○
D106-05-13200A1 AP30P1U	13.200	0.5197		2.362	4.882	3.031	1.772	0.551	●
D106-05-13300A1 AP30P1U	13.300	0.5236		2.362	4.882	3.031	1.772	0.551	○
D106-05-13400A1 AP30P1U	13.400	0.5276		2.362	4.882	3.031	1.772	0.551	○
D106-05-13494A1 AP30P1U	13.494	0.5313	17/32"	2.362	4.882	3.031	1.772	0.551	○
D106-05-13500A1 AP30P1U	13.500	0.5315		2.362	4.882	3.031	1.772	0.551	○
D106-05-13600A1 AP30P1U	13.600	0.5354		2.362	4.882	3.031	1.772	0.551	○
D106-05-13700A1 AP30P1U	13.700	0.5394		2.362	4.882	3.031	1.772	0.551	●
D106-05-13800A1 AP30P1U	13.800	0.5433		2.362	4.882	3.031	1.772	0.551	○
D106-05-13900A1 AP30P1U	13.900	0.5472		2.362	4.882	3.031	1.772	0.551	○
D106-05-14000A1 AP30P1U	14.000	0.5512		2.362	4.882	3.031	1.772	0.551	●
D106-05-14100A1 AP30P1U	14.100	0.5551		2.480	5.236	3.268	1.890	0.630	●
D106-05-14200A1 AP30P1U	14.200	0.5591		2.480	5.236	3.268	1.890	0.630	●
D106-05-14288A1 AP30P1U	14.288	0.5625	9/16"	2.480	5.236	3.268	1.890	0.630	○
D106-05-14300A1 AP30P1U	14.300	0.5630		2.480	5.236	3.268	1.890	0.630	○
D106-05-14400A1 AP30P1U	14.400	0.5669		2.480	5.236	3.268	1.890	0.630	○
D106-05-14500A1 AP30P1U	14.500	0.5709		2.480	5.236	3.268	1.890	0.630	●
D106-05-14600A1 AP30P1U	14.600	0.5748		2.480	5.236	3.268	1.890	0.630	●
D106-05-14700A1 AP30P1U	14.700	0.5787		2.480	5.236	3.268	1.890	0.630	●
D106-05-14750A1 AP30P1U	14.750	0.5807		2.480	5.236	3.268	1.890	0.630	○
D106-05-14800A1 AP30P1U	14.800	0.5827		2.480	5.236	3.268	1.890	0.630	○
D106-05-15000A1 AP30P1U	15.000	0.5906		2.480	5.236	3.268	1.890	0.630	●
D106-05-15100A1 AP30P1U	15.100	0.5945		2.480	5.236	3.268	1.890	0.630	○
D106-05-15200A1 AP30P1U	15.200	0.5984		2.480	5.236	3.268	1.890	0.630	○
D106-05-15300A1 AP30P1U	15.300	0.6024		2.480	5.236	3.268	1.890	0.630	○
D106-05-15500A1 AP30P1U	15.500	0.6102		2.480	5.236	3.268	1.890	0.630	●
D106-05-15600A1 AP30P1U	15.600	0.6142		2.480	5.236	3.268	1.890	0.630	○
D106-05-15700A1 AP30P1U	15.700	0.6181		2.480	5.236	3.268	1.890	0.630	●
D106-05-15800A1 AP30P1U	15.800	0.6220		2.480	5.236	3.268	1.890	0.630	●
D106-05-15875A1 AP30P1U	15.875	0.6250	5/8"	2.480	5.236	3.268	1.890	0.630	●
D106-05-15900A1 AP30P1U	15.900	0.6260		2.480	5.236	3.268	1.890	0.630	○
D106-05-16000A1 AP30P1U	16.000	0.6299		2.480	5.236	3.268	1.890	0.630	●

Special product can be ordered

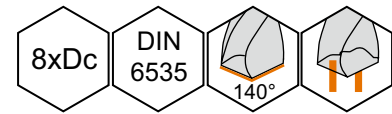
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D108 with Internal Coolant 8xDc



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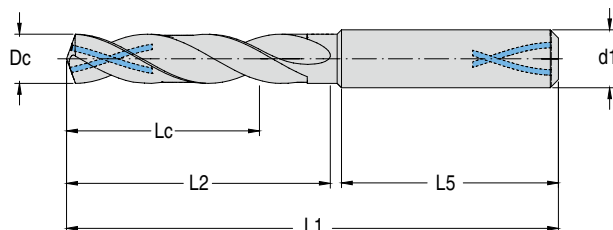
•• 1st choice • 2nd choice



Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D108-08-03000A1	3.000	0.1181		1.102	2.913	1.339	1.417	0.157	●
D108-08-03100A1	3.100	0.1220		1.102	2.913	1.339	1.417	0.157	●
D108-08-03175A1	3.175	0.1250	1/8"	1.102	2.913	1.339	1.417	0.157	○
D108-08-03200A1	3.200	0.1260		1.102	2.913	1.339	1.417	0.157	●
D108-08-03300A1	3.300	0.1299		1.102	2.913	1.339	1.417	0.157	●
D108-08-03400A1	3.400	0.1339		1.102	2.913	1.339	1.417	0.157	●
D108-08-03500A1	3.500	0.1378		1.102	2.913	1.339	1.417	0.157	●
D108-08-03572A1	3.572	0.1406	9/64"	1.102	2.913	1.339	1.417	0.157	○
D108-08-03600A1	3.600	0.1417		1.102	2.913	1.339	1.417	0.157	●
D108-08-03700A1	3.700	0.1457		1.102	2.913	1.339	1.417	0.157	●
D108-08-03800A1	3.800	0.1496		1.378	3.189	1.654	1.417	0.157	●
D108-08-03900A1	3.900	0.1535		1.378	3.189	1.654	1.417	0.157	●
D108-08-03969A1	3.969	0.1563	5/32"	1.378	3.189	1.654	1.417	0.157	○
D108-08-04000A1	4.000	0.1575		1.378	3.189	1.654	1.417	0.157	●
D108-08-04100A1	4.100	0.1614		1.378	3.189	1.654	1.417	0.236	●
D108-08-04200A1	4.200	0.1654		1.378	3.189	1.654	1.417	0.236	●
D108-08-04300A1	4.300	0.1693		1.457	3.189	1.732	1.417	0.236	●
D108-08-04366A1	4.366	0.1719	11/64"	1.457	3.189	1.732	1.417	0.236	○
D108-08-04400A1	4.400	0.1732		1.457	3.189	1.732	1.417	0.236	●
D108-08-04500A1	4.500	0.1772		1.457	3.189	1.732	1.417	0.236	●
D108-08-04600A1	4.600	0.1811		1.457	3.189	1.732	1.417	0.236	●
D108-08-04700A1	4.700	0.1850		1.457	3.189	1.732	1.417	0.236	●
D108-08-04763A1	4.763	0.1875	3/16"	1.693	3.819	2.047	1.417	0.236	○
D108-08-04800A1	4.800	0.1890		1.693	3.819	2.047	1.417	0.236	●
D108-08-04900A1	4.900	0.1929		1.693	3.819	2.047	1.417	0.236	●
D108-08-05000A1	5.000	0.1969		1.772	3.819	2.165	1.417	0.236	●
D108-08-05100A1	5.100	0.2008		1.772	3.819	2.165	1.417	0.236	●
D108-08-05159A1	5.159	0.2031	13/64"	1.772	3.819	2.165	1.417	0.236	○
D108-08-05200A1	5.200	0.2047		1.772	3.819	2.165	1.417	0.236	●
D108-08-05300A1	5.300	0.2087		1.772	3.819	2.165	1.417	0.236	●
D108-08-05400A1	5.400	0.2126		1.890	3.819	2.244	1.417	0.236	●
D108-08-05500A1	5.500	0.2165		1.890	3.819	2.244	1.417	0.236	●
D108-08-05556A1	5.556	0.2187	7/32"	1.890	3.819	2.244	1.417	0.236	●
D108-08-05600A1	5.600	0.2205		1.890	3.819	2.244	1.417	0.236	●
D108-08-05700A1	5.700	0.2244		1.890	3.819	2.244	1.417	0.236	●
D108-08-05800A1	5.800	0.2283		1.890	3.819	2.244	1.417	0.236	●
D108-08-05900A1	5.900	0.2323		1.890	3.819	2.244	1.417	0.236	●
D108-08-05953A1	5.953	0.2344	15/64"	1.890	3.819	2.244	1.417	0.236	○
D108-08-06000A1	6.000	0.2362		1.890	3.819	2.244	1.417	0.236	●
D108-08-06100A1	6.100	0.2402		2.087	4.173	2.520	1.417	0.315	●
D108-08-06200A1	6.200	0.2441		2.087	4.173	2.520	1.417	0.315	●

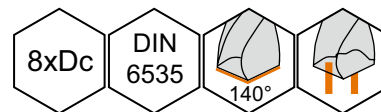
Special product can be ordered

Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D108 with Internal Coolant 8xDc


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•• 1st choice • 2nd choice

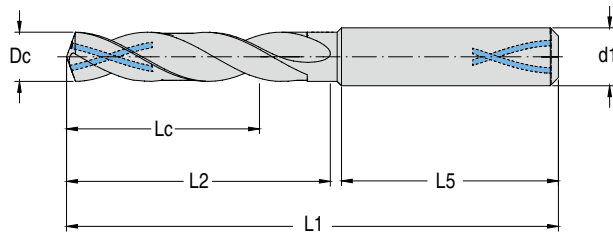


Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D108-08-06300A1	6.300	0.2480		2.087	4.173	2.520	1.417	0.315	●
D108-08-06350A1	6.350	0.2500	1/4"	2.1260	4.173	2.598	1.417	0.315	●
D108-08-06400A1	6.400	0.2520		2.1260	4.173	2.598	1.417	0.315	●
D108-08-06500A1	6.500	0.2559		2.1654	4.173	2.598	1.417	0.315	●
D108-08-06600A1	6.600	0.2598		2.1654	4.173	2.598	1.417	0.315	●
D108-08-06700A1	6.700	0.2638		2.1654	4.173	2.598	1.417	0.315	●
D108-08-06747A1	6.747	0.2656	17/64"	2.1654	4.173	2.598	1.417	0.315	○
D108-08-06800A1	6.800	0.2677		2.1654	4.173	2.598	1.417	0.315	●
D108-08-06900A1	6.900	0.2717		2.1654	4.173	2.598	1.417	0.315	●
D108-08-07000A1	7.000	0.2756		2.1654	4.173	2.598	1.417	0.315	●
D108-08-07100A1	7.100	0.2795		2.3622	4.567	2.913	1.417	0.315	●
D108-08-07144A1	7.144	0.2813	9/32"	2.3622	4.567	2.913	1.417	0.315	○
D108-08-07200A1	7.200	0.2835		2.4409	4.567	2.913	1.417	0.315	●
D108-08-07300A1	7.300	0.2874		2.4409	4.567	2.913	1.417	0.315	●
D108-08-07400A1	7.400	0.2913		2.4409	4.567	2.913	1.417	0.315	●
D108-08-07500A1	7.500	0.2953		2.5197	4.567	2.992	1.417	0.315	●
D108-08-07541A1	7.541	0.2969	19/64"	2.5197	4.567	2.992	1.417	0.315	○
D108-08-07600A1	7.600	0.2992		2.5197	4.567	2.992	1.417	0.315	●
D108-08-07700A1	7.700	0.3031		2.5197	4.567	2.992	1.417	0.315	●
D108-08-07800A1	7.800	0.3071		2.5197	4.567	2.992	1.417	0.315	●
D108-08-07900A1	7.900	0.3110		2.5197	4.567	2.992	1.417	0.315	●
D108-08-07938A1	7.938	0.3125	5/16"	2.5197	4.567	2.992	1.417	0.315	○
D108-08-08000A1	8.000	0.3150		2.5197	4.567	2.992	1.417	0.315	●
D108-08-08100A1	8.100	0.3189		2.7559	5.472	3.465	1.575	0.394	●
D108-08-08200A1	8.200	0.3228		2.7559	5.472	3.465	1.575	0.394	●
D108-08-08300A1	8.300	0.3268		2.8346	5.472	3.465	1.575	0.394	●
D108-08-08334A1	8.334	0.3281	21/64"	2.8346	5.472	3.465	1.575	0.394	○
D108-08-08400A1	8.400	0.3307		2.8346	5.472	3.465	1.575	0.394	●
D108-08-08500A1	8.500	0.3346		2.8346	5.472	3.465	1.575	0.394	●
D108-08-08600A1	8.600	0.3386		2.8346	5.472	3.465	1.575	0.394	●
D108-08-08700A1	8.700	0.3425		2.9134	5.472	3.543	1.575	0.394	●
D108-08-08731A1	8.731	0.3437	11/32"	2.9134	5.472	3.543	1.575	0.394	○
D108-08-08800A1	8.800	0.3465		2.9134	5.472	3.543	1.575	0.394	●
D108-08-08900A1	8.900	0.3504		2.9921	5.472	3.622	1.575	0.394	●
D108-08-09000A1	9.000	0.3543		2.9921	5.472	3.622	1.575	0.394	●
D108-08-09100A1	9.100	0.3583		3.0709	5.472	3.740	1.575	0.394	●
D108-08-09128A1	9.128	0.3594	23/64"	3.0709	5.472	3.740	1.575	0.394	○
D108-08-09200A1	9.200	0.3622		3.1496	5.472	3.740	1.575	0.394	●
D108-08-09300A1	9.300	0.3661		3.1496	5.472	3.740	1.575	0.394	●

Special product can be ordered

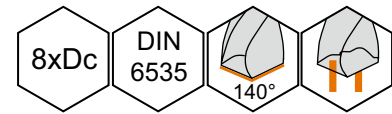
Marked: ● Stocked ○ Limited-stock

Solid Carbide Drill D108 with Internal Coolant 8xDc



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•• 1st choice • 2nd choice



Product code	Dc(m7) mm	Dc in	Dc inch/No.	Lc in	L1 in	L2 in	L5 in	d1(h6) in	stock
D108-08-09400A1	9.400	0.3701		3.1496	5.472	3.740	1.575	0.394	●
D108-08-09500A1	9.500	0.3740		3.1496	5.472	3.740	1.575	0.394	●
D108-08-09525A1	9.525	0.3750	3/8"	3.1496	5.472	3.740	1.575	0.394	●
D108-08-09600A1	9.600	0.3780		3.15	5.47	3.74	1.57	0.39	●
D108-08-09700A1	9.700	0.3819		3.15	5.47	3.74	1.57	0.39	●
D108-08-09800A1	9.800	0.3858		3.15	5.47	3.74	1.57	0.39	●
D108-08-09900A1	9.900	0.3898		3.15	5.47	3.74	1.57	0.39	●
D108-08-09922A1	9.922	0.3906	25/64"	3.15	5.47	3.74	1.57	0.39	○
D108-08-10000A1	10.000	0.3937		3.15	5.47	3.74	1.57	0.39	●
D108-08-10100A1	10.100	0.3976		3.46	6.42	4.25	1.77	0.47	●
D108-08-10200A1	10.200	0.4016		3.46	6.42	4.25	1.77	0.47	●
D108-08-10300A1	10.300	0.4055		3.46	6.42	4.25	1.77	0.47	●
D108-08-10319A1	10.319	0.4063	13/32"	3.46	6.42	4.25	1.77	0.47	○
D108-08-10400A1	10.400	0.4094		3.54	6.42	4.33	1.77	0.47	●
D108-08-10500A1	10.500	0.4134		3.54	6.42	4.33	1.77	0.47	●
D108-08-10700A1	10.700	0.4213		3.54	6.42	4.33	1.77	0.47	●
D108-08-10716A1	10.716	0.4219	27/64"	3.62	6.42	4.33	1.77	0.47	○
D108-08-10800A1	10.800	0.4252		3.62	6.42	4.33	1.77	0.47	●
D108-08-10900A1	10.900	0.4291		3.70	6.42	4.41	1.77	0.47	●
D108-08-11000A1	11.000	0.4331		3.70	6.42	4.41	1.77	0.47	●
D108-08-11100A1	11.100	0.4370		3.70	6.42	4.41	1.77	0.47	●
D108-08-11113A1	11.113	0.4375	7/16"	3.70	6.42	4.41	1.77	0.47	○
D108-08-11200A1	11.200	0.4409		3.78	6.42	4.49	1.77	0.47	●
D108-08-11300A1	11.300	0.4449		3.78	6.42	4.49	1.77	0.47	●
D108-08-11500A1	11.500	0.4528		3.78	6.42	4.49	1.77	0.47	●
D108-08-11600A1	11.600	0.4567		3.78	6.42	4.49	1.77	0.47	●
D108-08-11700A1	11.700	0.4606		3.78	6.42	4.49	1.77	0.47	●
D108-08-11800A1	11.800	0.4646		3.78	6.42	4.49	1.77	0.47	●
D108-08-11900A1	11.900	0.4685		3.78	6.42	4.49	1.77	0.47	●
D108-08-11906A1	11.906	0.4687	15/32"	3.78	6.42	4.49	1.77	0.47	○
D108-08-12000A1	12.000	0.4724		3.78	6.42	4.49	1.77	0.47	●
D108-08-12303A1	12.303	0.4844	31/64"	4.17	7.17	4.92	1.77	0.55	○
D108-08-12500A1	12.500	0.4921		4.17	7.17	4.92	1.77	0.55	●
D108-08-12700A1	12.700	0.5000	1/2"	4.17	7.17	4.92	1.77	0.55	○
D108-08-13000A1	13.000	0.5118		4.33	7.17	5.12	1.77	0.55	●
D108-08-13494A1	13.494	0.5313	17/32"	4.53	7.17	5.24	1.77	0.55	○
D108-08-13500A1	13.500	0.5315		4.53	7.17	5.24	1.77	0.55	●
D108-08-14000A1	14.000	0.5512		4.69	7.17	5.24	1.77	0.55	●
D108-08-14288A1	14.288	0.5625	9/16"	4.80	8.03	5.51	1.89	0.63	○
D108-08-14500A1	14.500	0.5709		4.88	8.03	5.51	1.89	0.63	●
D108-08-15000A1	15.000	0.5906		5.04	8.03	5.63	1.89	0.63	●
D108-08-15500A1	15.500	0.6102		5.20	8.03	5.91	1.89	0.63	●
D108-08-15875A1	15.875	0.6250	5/8"	5.28	8.03	5.91	1.89	0.63	○
D108-08-16000A1	16.000	0.6299		5.35	8.03	5.98	1.89	0.63	●

Special product can be ordered

Marked: ● Stocked ○ Limited-stock

Cutting Data for D106 Solid Carbide Drill Family

Vc=Cutting speed (sfm) Feed code = feed reference table see page 329				Drilling depth		3xDc				5xDc				8xDc		
																
				Product family		D106		D106		D106		D106		D108		
				Dia. Range(in)		0.118 ~0.788		0.118 ~ 0.630		0.118 ~0.788		0.118 ~ 0.630		0.118 ~ 0.630		
				Coolant		External coolant		Internal coolant		External coolant		Internal coolant		Internal coolant		
Workpiece material				Brinell hardness (HB)	Tensile strength Rm (PSI x1000)	Vc	Feed code	Vc	Feed code	Vc	Feed code	Vc	Feed code	Vc	Feed code	
P	Unalloyed steel	C≤0.25%	Annealed	125	62	260-330	F	300-380	F	260-330	F	300-380	F	300-380	F	
		0.25<C≤0.55%	Annealed	190	93	230-300	E	260-330	E	230-300	E	260-330	E	260-330	E	
		0.25<C≤0.55%	Heat-treated	210	103	230-300	E	260-330	E	230-300	E	260-330	E	260-330	E	
		C>0.55%	Annealed	190	93	230-300	E	260-330	E	230-300	E	260-330	E	260-330	E	
		C>0.55%	Heat-treated	300	147	170-230	D	170-230	D	170-230	D	170-230	D	170-230	D	
		Free cutting steel (short-chipping)	Annealed	220	108	260-330	F	300-380	F	260-330	F	300-380	F	300-380	F	
	Low-alloyed steel	Annealed		175	86	230-300	E	260-360	E	230-300	E	260-360	E	260-360	E	
		Heat-treated		300	147	170-230	D	200-230	D	170-230	D	200-230	D	200-230	D	
		Heat-treated		380	186	120-150	C	130-170	C	120-150	C	130-170	C	130-170	C	
		Heat-treated		430	214	100-130	B	100-130	B	100-130	B	100-130	B	100-130	B	
	High-alloyed steel and high-alloyed tool steel	Annealed		200	98	180-210	D	200-260	D	180-210	D	200-260	D	200-260	D	
		Hardened and tempered		300	147	130-170	C	130-200	C	130-170	C	130-200	C	130-200	C	
		Hardened and tempered		400	197	100-130	C	150-170	C	100-130	C	150-170	C	150-170	C	
	Stainless steel	Ferritic/martensitic, annealed		200	98	170-230	D	200-260	D	170-230	D	200-260	D	200-260	D	
		Martensitic, heat-treated		330	162	130-170	C	130-170	C	130-170	C	130-170	C	130-170	C	
M	Stainless steel	Austenitic, quench hardened		200	98			130-170	C			130-170	C	130-170	C	
		Austenitic, precipitation hardened (PH)		300	147	120-150	C	130-170	C	120-150	C	130-170	C	130-170	C	
		Austenitic/ferritic, duplex		230	113			80-120	B			80-120	B	80-120	B	
K	Malleable cast iron	Ferritic		200	98	230-300	G	230-300	G	230-300	G	230-300	G	230-300	G	
		Pearlitic		260	126	200-260	G	200-260	G	200-260	G	200-260	G	200-260	G	
	Grey cast iron	Low tensile strength		180	87	260-330	H	260-360	H	260-330	H	260-360	H	260-360	H	
		High tensile strength/austenitic		245	120	230-300	G	230-300	G	230-300	G	230-300	G	230-300	G	
	Cast iron with spheroidal graphite	Ferritic		155	75	260-330	G	260-360	H	260-330	G	260-360	H	260-360	H	
		Pearlitic		265	128	200-260	F	200-260	F	200-260	F	200-260	F	200-260	F	
GGV(CGI)				230	98	200-260	F	200-260	F	200-260	F	200-260	F	200-260	F	
N	Wrought aluminium alloys	non-aging		30	-	70-980	G	100-1310	G	70-980	G	100-1310	G	100-1310	G	
		aged		100	50	70-980	G	100-1310	G	70-980	G	100-1310	G	100-1310	G	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	38	50-720	H	60-790	H	50-720	H	60-790	H	60-790	H	
		≤ 12% Si, aged		90	46	50-660	H	60-660	H	50-660	H	60-660	H	60-660	H	
		> 12% Si, non-aging		130	65	40-530	G	50-590	G	40-530	G	50-590	G	50-590	G	
	Magnesium alloys			70	36											
		Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	50	40-530	C	50-560	D	40-530	C	50-560	D	50-560	D
			Brass, bronze, red brass		90	46	40-460	E	40-460	E	40-460	E	40-460	E	40-460	E
Cu alloys, short-chip			110	55	40-500	F	50-590	F	40-500	F	50-590	F	50-590	F		
High tensile, Ampco alloy			300	147	150-200	B	150-200	B	150-200	B	150-200	B	150-200	B		
S	Heat-resistant alloys	Fe-based	Annealed	200	98			100-130	B			100-130	B	100-130	B	
			Hardened	280	137			70-80	A			70-80	A	70-80	A	
		Ni or Co based	Annealed	250	122			70-80	B			70-100	B	70-100	B	
			Hardened	350	171			30-50	A			30-50	A	30-50	A	
			Cast	320	156			50-80	A			50-80	A	50-80	A	
	Titanium alloys	Pure titanium		200	98	100-130	B	130-170	C	100-130	B	130-170	C	130-170	C	
		α and β alloys, hardened		375	183	70-100	A	80-120	B	70-100	A	80-120	B	80-120	B	
		β alloys		410	202			30-50	A			30-50	A	30-50	A	
	Tungsten alloys			300	147			30-50	A			30-50	A	30-50	A	
Molybdenum alloys			300	147			30-50	A			30-50	A	30-50	A		
H	Hardened steel	Hardened and tempered		50HRC	-	70-120	A	70-120	A	70-120	A	70-120	A	70-120	A	
		Hardened and tempered		55HRC	-											
		Hardened and tempered		60HRC	-											
	Chilled cast iron			50HRC	-											

The specified cutting data are average recommended values. For special applications, adjustment is needed.

Feed Reference Table

Feed rate f (in/rev)									
Dia. in		A	B	C	D	E	F	G	H
	0.118	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003
	0.158	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003
	0.197	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.004
	0.236	0.001	0.001	0.002	0.002	0.002	0.003	0.004	0.004
	0.315	0.001	0.002	0.002	0.002	0.003	0.004	0.004	0.005
	0.394	0.002	0.002	0.002	0.003	0.004	0.004	0.005	0.006
	0.473	0.002	0.002	0.003	0.004	0.004	0.005	0.006	0.006
	0.551	0.002	0.003	0.004	0.004	0.005	0.006	0.006	0.007
	0.630	0.002	0.003	0.004	0.004	0.005	0.006	0.007	0.007
	0.787	0.003	0.003	0.004	0.005	0.006	0.007	0.007	0.008

Thread Pilot Hole Diameters Before Tapping

M Metric ISO coarse pitch thread DIN 13 and DIN ISO 965-1			
D	D1		
Diameter	Min (in)	Max (in) 5H/6H	Diameter (in)
M4	0.1276	0.1347	0.1299
M4.5	0.1452	0.1527	0.1457
M5	0.1628	0.1706	0.1654
M6	0.1936	0.2029	0.1969
M8	0.2617	0.2721	0.2677
M9	0.3011	0.3115	0.3071
M10	0.3298	0.3416	0.3346
M11	0.3691	0.3809	0.3740
M12	0.3979	0.4111	0.4016
M14	0.4659	0.4807	0.4724
M16	0.5447	0.5594	0.5512
M18	0.6021	0.6198	0.6102
M20	0.6809	0.6986	0.6890
M22	0.7596	0.7773	0.7677

UNC Coarse thread ASME B1.1 standard			
D	D1		
Diameter P Gg/1"	Min (in) 2B/3B	Max (in) 2B	Diameter (in)
8-32 UNC	0.1300	0.1390	0.1378
10-24 UNC	0.1450	0.1560	0.1535
12-24 UNC	0.1710	0.1810	0.1772
1/4-20 UNC	0.1959	0.2074	0.2008
5/16-18 UNC	0.2524	0.2651	0.2598
3/8-16 UNC	0.3073	0.3214	0.3150
7/16-14 UNC	0.3602	0.3760	0.3701
1/2-13 UNC	0.4167	0.4336	0.4047
9/16-12 UNC	0.4723	0.4904	0.4803
5/8-11 UNC	0.5266	0.5460	0.5315
3/4-10 UNC	0.6417	0.6627	0.6496
7/8-9 UNC	0.7547	0.7775	0.7677

UNF Fine thread ASME B1.1 standard			
D	D1		
Diameter P Gg/1"	Min (in) 2B/3B	Max (in) 2B	Diameter (in)
8-36 UNF	0.1340	0.1420	0.1378
10-32 UNF	0.1560	0.1640	0.1614
12-28 UNF	0.1770	0.1860	0.1811
1/4-28 UNF	0.2113	0.2197	0.2165
5/16-24 UNF	0.2674	0.2771	0.2717
3/8-24 UNF	0.3299	0.3396	0.3346
7/16-20 UNF	0.3834	0.3949	0.3898
1/2-20 UNF	0.4459	0.4574	0.4528
9/16-18 UNF	0.5024	0.5151	0.5079
5/8-18 UNF	0.5649	0.5776	0.5709
3/4-16 UNF	0.6823	0.6964	0.6890

MF Metric ISO fine pitch thread DIN 13 and DIN ISO 965-1		
D	D1	
Diameter x P	Max (in) 5H/6H	Diameter (in)
M3.5x0.35	0.1268	0.1240
M4x0.35	0.1465	0.1437
M4x0.5	0.1417	0.1378
M4.5x0.5	0.1614	0.1575
M5x0.35	0.1859	0.1831
M5x0.5	0.1811	0.1772
M5x0.75	0.1724	0.1654
M5x0.5	0.2204	0.2165
M6x0.75	0.2117	0.2067
M7x0.5	0.2598	0.2559
M7x0.75	0.2511	0.2461
M8x0.5	0.2992	0.2953
M8x0.75	0.2905	0.2854
M8x1	0.2816	0.2756
M9x0.75	0.3298	0.3248
M9x1	0.3210	0.3150
M10x0.5	0.3779	0.3740
M10x0.75	0.3692	0.3642
M10x1	0.3604	0.3543
M10x1.25	0.3509	0.3445
M11x1	0.3997	0.3937
M12x0.5	0.4567	0.4528
M12x1	0.4391	0.4331
M12x1.25	0.4296	0.4232
M12x1.5	0.4203	0.4134
M13x1	0.4785	0.4724
M14x0.75	0.5267	0.5197
M14x1	0.5178	0.5118
M14x1.25	0.5083	0.5020
M14x1.5	0.4991	0.4921
M15x1	0.5572	0.5512
M15x1.5	0.5384	0.5315
M16x0.75	0.6054	0.5984
M16x1	0.5966	0.5906
M16x1.25	0.5871	0.5827
M16x1.5	0.5778	0.5709
M17x1	0.6359	0.6299
M18x1	0.6753	0.6693
M18x1.5	0.6565	0.6496
M18x2	0.6382	0.6299
M20x1	0.7541	0.7480
M20x1.5	0.7353	0.7283
M20x2	0.7169	0.7087

Thread Pilot Hole Diameters Before Forming

M	Metric ISO coarse pitch thread DIN 13 and DIN ISO 965-1
D	
Diameter	Diameter (in)
M3.5	0.1280
M4	0.1457
M5	0.1831
M6	0.2185
M8	0.2913
M10	0.3661
M12	0.4409
M14	0.5157
M16	0.5945
M18	0.6654
M20	0.7441

MF	Metric ISO fine pitch thread DIN 13 and DIN ISO 965-1
D	
Diameter x P	Diameter (in)
M4x0.5	0.1496
M5x0.5	0.1890
M6-0.5	0.2283
M6-0.75	0.2224
M7-0.75	0.2618
M8-0.75	0.3012
M8-1	0.2972
M10-0.75	0.3799
M10-1	0.3760
M10-1.25	0.3701
M12-1	0.4547
M12-1.25	0.4488
M12-1.5	0.4449
M14-1	0.5335
M14-1.5	0.5236
M16-1	0.6122
M16-1.5	0.6024
M18-1	0.6909
M18-1.5	0.6811
M20-1.5	0.7598
M20-2	0.7520
M22-1.5	0.8386

UNC	Coarse thread ASME B1.1 standard
D	
Diameter	Diameter (in)
6-32 UNC	0.1240
8-32 UNC	0.1496
10-24 UNC	0.1693
12-24 UNC	0.1969
1/4-20 UNC	0.2264
5/16-18 UNC	0.2854
3/8-16 UNC	0.3445
7/16-14 UNC	0.4055
1/2-13 UNC	0.4646
9/16-12 UNC	0.5236
5/8-11 UNC	0.5827
3/4-10 UNC	0.7047

UNF	Fine thread ASME B1.1 standard
D	
Diameter	Diameter (in)
6-40 UNF	0.1260
8-36 UNF	0.1516
10-32 UNF	0.1752
12-28 UNF	0.1988
1/4-28 UNF	0.2323
5/16-24 UNF	0.2933
3/8-24 UNF	0.3543
7/16-20 UNF	0.4134
1/2-20 UNF	0.4764
9/16-18 UNF	0.5394
5/8-18 UNF	0.6004
3/4-16 UNF	0.7244

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CUTTING TOOL CATALOG

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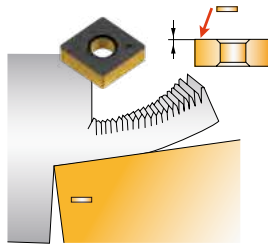
Turning Insert Common Failure Mode & Solutions

Failures	Picture	Analysis	Solution
Flank wear		• Tool material is too soft • Excessive cutting speed • Too small clearance angle • Too low feed rate • Insufficient cooling	• Choose high wear-resistant insert grade • Reduce cutting speed • Enlarge clearance angle • Increase feed rate
Crater wear		• Tool material is too soft • Excessive cutting speed • Excessive feed rate	• Choose high wear-resistant insert grade • Reduce cutting speed • Reduce feed rate • Increase the flow of coolant
Chipping		• Tool material is too hard • Too low cutting edge strength	• Choose tougher grade • Enhance cutting edge strength
Plastic deformation		• Tool material is too soft • Too fast cutting speed • Excessive cutting depth & feed rate • Insufficient cooling	• Choose high wear-resistant insert grade • Reduce cutting speed • Reduce cutting depth & feed rate • Choose good thermal conductivity grade • Increase the flow of coolant
Built-up edge		• Too low cutting speed • Cutting edge not sharp • Unsuitable grade • Insufficient cooling	• Increase cutting speed • Choose sharp geometry • Choose less adhesion grade • Increase the flow of coolant
Mechanical wear		• Excessive feed rate and cutting depth • Vibration	• Choose tougher grade • Choose a smaller approach angle • Choose bigger corner radius • Change to high rigidity holder
Thermal cracking		• Excessive cutting heat change on edge	• Choose dry cutting or adequate cooling • Choose tougher grade
Notch wear		• Excessive feed rate & cutting speed • Tool material is too soft	• Choose high wear-resistance grade • Select a small entering angle • Reduce cutting speed
Coating peeling		• Sticky chip on the cutting edge • Chip evacuation failure	• Enlarge rake angle for a sharp edge • Use chip breaker with bigger chip space

Negative and Positive Insert Comparison

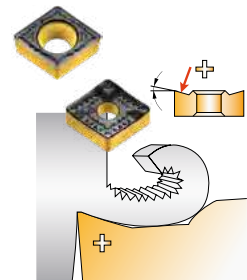
Negative insert

- Double/single sided
- High strength edge
- Zero clearance angle
- First choice for external turning
- For heavy cutting conditions



Positive insert

- Single sided
- Low cutting forces
- With clearance angle
- 1st choice for boring and turning on slender parts

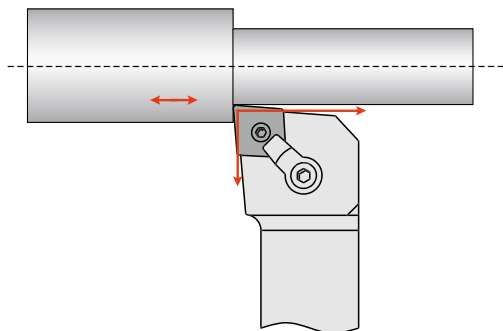


Effects of Approach Angle

Approach angle K_r is the angle between cutting edge and feed direction. It's an important angle in turning that will affect:

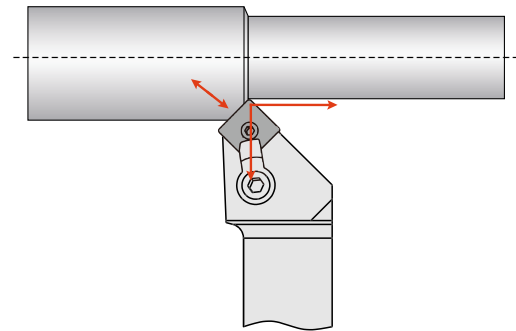
- Chip formation
- Cutting force direction
- Cutting edge length

Large Approach Angle



- Cutting forces along with axis, less tendency for vibration.
- Can turn against the shoulder
- Higher cutting forces at the entrance and exit of cut
- It is easy to get notch wear in heat resistant alloy and hard materials

Small Approach Angle



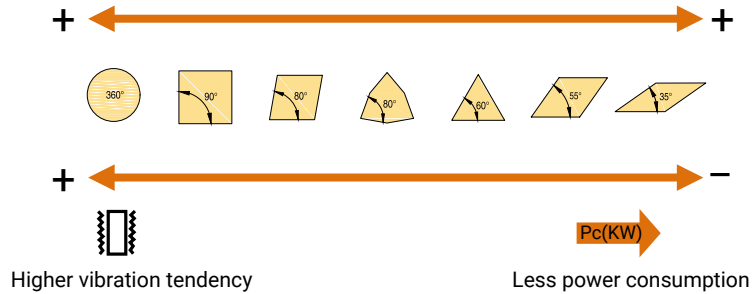
- Reduced the load on the cutting edge.
- Produced a thinner chip, higher feed rate can be used
- Reduced notch wear
- Cannot turn against a shoulder.
- Forces are directed to both axial and radial-vibration tendencies.

Insert Shape

Insert shape should be selected according to the approach angle accessibility of the tool. The largest point angle should be applied to get insert strength and reliability.

Larger point angle and higher cutting edge strength to the left.

Higher edge accessibility and operational versatility to the right.



Factors affecting insert shape selection

Insert shape	R 360°	S 90°	C 80°	W 80°	T 60°	D 55°	V 35°
Roughing (strength)	●	●	●	▲	▲		
Light roughing/semi finishing (number of cutting edges)		▲	●	●	●	●	
Finishing (number of cutting edges)			▲	▲	●	●	●
Vibration tendency				▲	●	●	●
Longitudinal turning (feed direction)			●	▲	▲	●	●
Profiling (accessibility)			▲	▲	▲	●	●
Facing (feed direction)	▲	●	●	●	▲	▲	
Operational versatility	▲		●	▲	▲	●	▲
Limited machine power			▲	▲	●	●	●
Hard material	●	●					
Interrupted machining	●	●	▲	▲	▲		
Large approach angle			●	●	●	●	
Small approach angle	●	●		●	●		

Marked: ● Most suitable ▲ Suitable

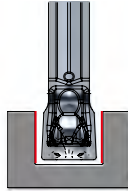
C-style 80° inserts are frequently used as it's suitable for the most applications.



Application Tips for Parting off and Grooving

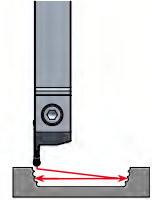
Single grooving

- Single grooving is the most economical and productive method for machining grooves.
- GS chip breaker has width tolerance of ± 0.0008 inch, and works well at low feed.



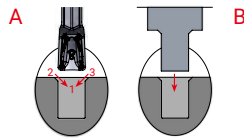
Ramping style grooving

- Ramping style grooving avoids vibration and minimizes radial force. This method can achieve best chip control and reduce notch wear during machining heat resistant alloys
- Higher feed rate can be applied to profiling RM or RA geometry to achieve higher stability and productivity.
- Note: Ramping style grooving doubled the number of passes



Chamfered corners

- In case of producing high quality grooves, usually the corners on the insert can be used for chamfering. For example, a finish grooving insert is used to chamfer; as per illustration A
- A better way to make grooves with chamfer in mass production is to order a Tailor Made insert with the exact chamfer form as per illustration B.



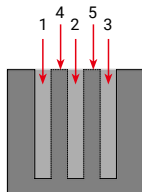
Flatness of the groove bottom

- In case of machining radial grooves, sometimes the flatness of the groove bottom is required.
- Generally, GS, TM, G chip breakers are used to machine completely flat bottom grooves.



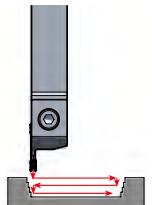
Multiple grooving

- It's the best method for rough grooving when groove depth is bigger than groove width.
- Multiple grooving will improve chip flow and increase tool life.
- Ring's width is generally 0.6-0.8 times insert's width.



Plunge turning

- TS and TM chip breaker can be used for plunge turning and ramping, as the insert design is suitable for axial and radial feed.
- In case of turning axially, depth should not exceed $0.75 \times$ insert width.



CITIZEN

Cincom product series

product	Tool size (Gang-Type)	No	Tool size(Turret-Type)	No	Guide-bushing D(in)	Max.Machining Dia.D(in)
A12	0.394×0.394×3.937	5			0.75/0.787	0.472
A16	0.394×0.394×3.937	5			0.75/0.787	0.63
A20	0.472×0.472×4.724	5-7			1.0	0.787
A25	0.472×0.472×4.724	5-6			1.0	0.984
A32	0.63×0.63×5.906				1.0	1.26
B12/B12E	0.394×0.394×3.937	5			0.75/0.787	0.472
B16E	0.394×0.394×3.937	5			0.75/0.787	0.63
B20	0.472×0.472×4.724	6			0.75/0.787	0.787
BL12	0.394×0.394×2.362-4.724	5			0.787	0.472
BL20	0.472×0.472×4.724	7			0.787	0.787
BL25	0.472×0.472×4.724	7			0.787	0.984
C12	0.394×0.394×3.937	6			0.75	0.472
C16	0.394×0.394×3.937	6			0.75	0.63
C32	0.63×0.63×5.118	5			1.0	1.26
E32			0.63×0.63×3.543	20	1.0	1.26
F10			0.394×0.394×2.362	10	0.75	0.394
F12			0.394×0.394×2.362	10	0.75	0.472
F16			0.394×0.394×2.362	10	0.75	0.63
F20			0.63×0.63×3.543	10	1.0	0.787
F25			0.63×0.63×3.543	10	1.0	0.984
FL25			0.63×0.63×3.543	12	0.63	0.984
FL42			0.63×0.63×3.543	12	0.63	1.654
G10			0.394×0.394×2.362	8		0.394
G16			0.394×0.394×2.362	8		0.63
G32			0.63×0.63×3.543	10		1.26
K12/K12E	0.394×0.394×3.937	7			0.787	0.472
L16/K16E	0.472×0.472×4.724	6			0.787	0.63
L10	0.315×0.315×3.937-5.118	5			0.625	0.394
L16/L16E	0.472×0.472×5.118	7			0.75	0.63
L20/L20E	0.472×0.472×5.118	7			0.75	0.787
L25	0.63×0.63×5.118	5			1.0	0.984
L32	0.63×0.63×5.118	5			1.0	1.26
M12	0.394×0.394×4.724	5	0.394×0.394×2.362	10	0.75	0.472
M16	0.394×0.394×4.724	5	0.394×0.394×2.362	10	0.75	0.63
M20	0.472×0.472×5.118	5	0.63×0.63×3.543	10	1.0	0.787
M32	0.63×0.63×5.118	5	0.63×0.63×3.543	10	1.0	1.26
MSL12	0.394×0.394×4.724		0.394×0.394×2.362	10		0.472
R04	0.315×0.315×4.724	7			0.625	0.157
R07	0.315×0.315×4.724	5			0.625	0.276
RL02	0.63×0.63×2.362-5.906	6			0.63/0.787	0.984
RL21	0.394×0.394×3.543				0.75	1.378

Miyano product series

Technical Information

STAR

product	Tool size (Gang-Type)	No	Tool size(Turret-Type)	No	Guide-bushing(D)	Max.Machining Dia.(D)
ECAS-12	0.394×0.394×3.74-5.906	6			0.866	0.512
ECAS-20	0.472×0.472×3.15-5.669	6			0.866	0.787
ECAS-20T			0.472×0.053×3.15	8 St.×3	0.866	0.787
ECAS-32T	0.63×0.63×3.15-4.724	4	0.63×0.071×2.362-3.071	10 St.×2	0.866/1.26	1.26
JNC-10			0.315×0.035×2.559	6	-	0.394
JNC-16			0.394×0.044×3.15	6	-	0.63
JNC-25/32			0.63×0.071×3.071-4.724	10 St.	0.866	0.984/1.26
KJR-16B/25B			0.63×0.071×3.071-4.724	12 St./6 St.	0.866	0.63/0.984
KNC-16/20			0.63×0.071×2.677	16 St.	0.866	0.63/0.787
KNC-25II/32II			0.63×0.071×3.071	20 St.	0.866/1.26	0.984/1.26
RNC-10/16	0.394×0.394×3.15-4.724	5			0.866	0.394/0.63
RNC-16II/16BII	0.394×0.394×3.15-4.724	5			0.866	0.63
SA-16R	0.394×0.394×3.74-4.724	6			0.866	0.63
SB-12II/16II	0.472×0.472×3.74-5.118	6			0.866	0.472/0.63
SB-16	0.472×0.472×3.74-5.118	6			0.866	0.63
SB-20	0.472×0.472×3.74-5.118	6			0.866	0.787
SR-20J	0.472×0.472×3.937-5.315	6			0.866	0.787
SC-20	0.472×0.472×3.74-5.118	6			0.866	0.787
SE-12/16	0.394×0.394×3.74-4.724	5			0.866	0.512/0.63
SF-25			0.63×0.071×2.874-3.858	10 St.×2	0.866/1.26	0.984
SG-42			0.63×0.071×3.307-3.465	10 St.×2	0.866/1.26	1.654
SH-7	0.315×0.315×3.74-4.724	5			0.866	0.276
SH-12/16	0.394×0.394×3.74-4.724	5			0.866	0.512/0.63
SI-12/12C	0.394×0.394×3.15-5.118	6			0.866	0.512
SR-16/20	0.472×0.472×3.74-4.724	5			0.866	0.63/0.787
SR-32	0.63×0.63×3.937-5.315	6			0.866	1.26
SR-20R	0.472×0.472×3.937-5.315	6			0.866	0.787
SR-10J	0.315×0.315×2.52-4.331	6			0.866	0.394
SR-25J/32J	0.63×0.63×3.74-6.102	6			0.866/1.26	0.984/1.26
SST-16	0.472×0.472×3.74-4.528	5			0.866	0.63
ST-38			0.63×0.071×3.346	8 St.×3	0.866/1.26	1.496
SV-12	0.472×0.472×3.74-5.315	4	0.472×0.053×2.756-3.071	8 St.×3	0.866	0.512
SV-20	0.63×0.63×3.74-5.315	5	0.63×0.071×2.559-2.756	8 St.	0.866	0.787
SV-32	0.63×0.63×3.74-5.315	4	0.63×0.071×3.15-3.465	10 St.×2	0.866/1.26	1.26
SV-32J/32JII	0.63×0.63×3.74-5.315	4	0.63×0.071×2.559-2.756	8 St.	0.866/1.26	1.26
SW-7	0.315×0.315×3.15-4.724	6			0.866	0.276
SW-20	0.472×0.472×3.15-5.669	6			0.866	0.787

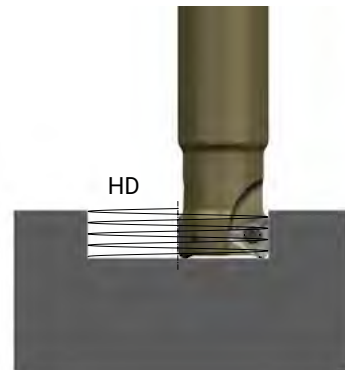
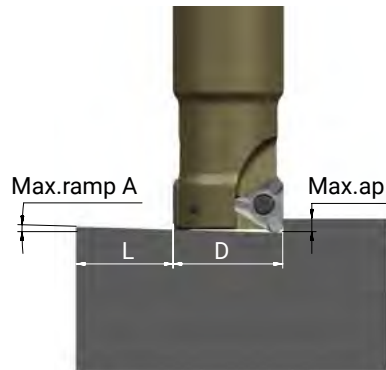
TSUGAMI

product	Tool size (Gang-Type)	No	Tool size(Turret-Type)	No	Guide-bushing(D)	Max.Machining Dia.(D)
P013H/P014H	0.315×0.315×3.937-4.724	6			0.63	0.039
P033H/P04H	0.315×0.315×3.937-4.724	6			0.63	0.118
B007-III	0.315×0.315×3.346	8			0.984	0.276
B074/B07-V	0.315×0.315×3.346	9			0.787	0.276
B0123/B0124/B0125	0.472×0.472×3.346	9			0.787	0.472
B012F/B012-V/BE12-V	0.472×0.472×3.346	9			0.787	0.472
B016MF	0.472×0.472×3.346	9			0.787	0.63
B018-III	0.472×0.472×3.346	9			0.787	0.709
B0203/B0204/B0205	0.472×0.472×3.346	9			0.787	0.787
B020F/B020-V/BE20-V	0.472×0.472×3.346	9			0.787	0.787
B026-V	0.472×0.472×3.346	6			0.984	1.024
B0385/B0385L	0.63×0.63×4.921	8			1.26	1.496
BA20-III	0.472×0.472×3.346	6			0.984	0.787
BA26-III	0.472×0.472×3.346	6			0.984	1.024
BC18	0.472×0.472×3.346	10			0.984	0.709
BC25	0.472×0.472×3.346	10			0.394/0.984	0.984
BE18	0.472×0.472×3.346	9			0.787	0.709
BH20/BH20Z	0.472×0.472×3.346	4	0.472×0.472×3.346	12 St.	0.984/1.26	0.787
BH38	0.63×0.63×4.921	7	0.787×0.787×4.921	12 St.	0.984/1.26	1.496
BM07	0.315×0.315×3.346	9			0.787	0.276
BM163/BM164/BM165	0.472×0.472×3.346	9			0.787	0.63
BM20-V	0.472×0.472×3.346	9			0.787	0.787
BN12-III	0.472×0.472×3.346	7			0.787	0.472
BN20-III	0.472×0.472×3.346	7			0.787	0.787
BS12-V	0.472×0.472×3.346	8/12			0.787/0.984	0.63
BS18-III	0.472×0.472×3.346	7/10			0.551/0.984	0.709
BS20-V	0.472×0.472×3.346	8/12			0.787/0.984	0.787
BS26(ABC)-V	0.63×0.63×3.937	7/10			0.63/0.984	1.024
BS32C-V	0.63×0.63×3.937	6			0.63/0.984	1.26
BU12	0.472×0.472×3.346	4	0.472×0.472×3.15	8 St.	0.787	2.008
BU20	0.472×0.472×3.346	4	0.472×0.472×3.15	8 St.	0.787	0.787
BU26	0.63×0.63×3.937	7	0.787×0.787×3.15	8 St.	0.787/1.26	1.024
BU38	0.63×0.63×3.937	7	0.787×0.787×3.15	8 St.	0.787/1.26	1.496
BW07-III	0.472×0.472×3.346	7			0.787	0.276
BW12-III	0.472×0.472×3.346	7			0.787	0.472
BW20-III	0.472×0.472×3.346	7			0.787	0.787
C004-III	0.512×0.512×2.362-3.937	6-8			0.394	4.724
C150	0.394×0.394×2.362-3.937	4-6			0.315	3.15
C180	0.472×0.472×2.362-3.937	4-6			0.394	4.724
C220	0.512×0.512×2.362-3.937	6-8			0.394	4.724
C300-III	0.63×0.63×3.937-5.118	6-10			0.551	6.693

TSUGAMI

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TD15 Milling Cutter Series



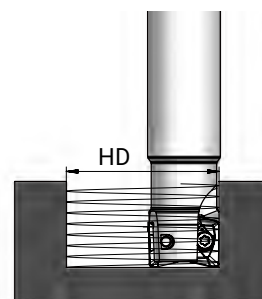
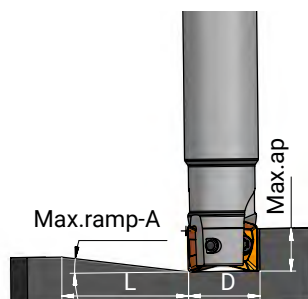
Cutter Dia D(in)	Straight Ramping			Circular interpolate milling		
	Max.ramp-A(°)	Min.length- L(in)	Max.ap (in)	Min.Dia.HD (in)	Max.Dia.HD (in)	Max.pitch (in/rev)
1.25	1.4°	18.858	0.453	2.106		0.055
					2.520	0.083
1.5	1.0°	24.921	0.453	2.760		0.059
					3.150	0.051
2.0	0.8°	32.441	0.453	3.547		0.059
					3.937	0.075
2.5	0.6°	42.244	0.453	4.571		0.059
					4.961	0.071
3.0	0.5°	55.079	0.453	5.917		0.059
					6.299	0.071
4.0	0.3°	84.409	0.453	7.500		0.051
					7.874	0.055
5.0	0.3°	89.055	0.453	9.461		0.063
					9.843	0.067
6.0	0.2°	115.472	0.453	12.217		0.063
					12.598	0.067
8.0	0.2°	145.354	0.453	15.366		0.063
					15.748	0.067

AP17 Milling Cutter Series



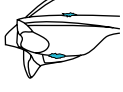
Cutter Dia(D)	Straight Ramping			Circular interpolate milling		
	Max.ramp-A(°)	Min.length- L(in)	Max.ap (in)	Min.Dia.HD (in)	Max.Dia.HD (in)	Max.pitch (in/rev)
1.0	5.0°	7.244	0.634	1.205		0.051
					1.969	0.228
1.25	9.0°	4.016	0.634	1.756		0.209
					2.520	0.531
1.5	5.0°	7.244	0.634	1.598		0.189
					3.150	0.366
2.0	4.4°	8.228	0.634	3.173		0.248
					3.937	0.406
2.5	3.2°	11.339	0.634	4.197		0.256
					4.961	0.370
3.0	2.3°	15.787	0.634	5.535		0.256
					6.299	0.339
4.0	1.8°	20.197	0.634	7.110		0.268
					7.874	0.331

A012 Milling Cutter Series



Cutter Dia(D)	Straight Ramping			Circular interpolate milling		
	Max.ramp-A(°)	Min.length- L(in)	Max.ap (in)	Min.Dia.HD(in)	Max.Dia.HD(in)	Max.pitch (in/rev)
0.625	8.1°	3.031	0.433	0.669		0.016
					1.260	0.240
0.75	5.3°	4.709	0.433	0.984		0.047
					1.575	0.193
1.0	3.6°	6.913	0.433	1.378		0.067
					1.969	0.165
1.25	1.7°	14.882	0.433	1.929		0.051
					2.520	0.098
1.388	1.5°	16.713	0.433	2.165		0.055
					2.756	0.094
1.5	1.3°	18.461	0.433	2.559		0.063
					3.150	0.098
2.0	1.3°	19.744	0.433	3.346		0.079
					3.937	0.114
2.5	0.9°	27.898	0.433	4.370		0.079
					4.961	0.102
3.0	0.7°	34.457	0.433	5.709		0.087
					6.299	0.106

Solid Carbide Endmill Failure Mode and Solutions

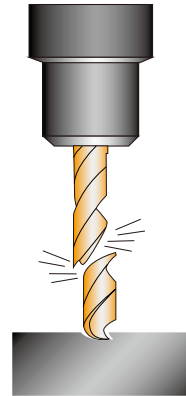
Failure	Picture	Analysis	Solution
Flank wear 		• Abrasion between the work piece and the flank surface leads to flank wear.	• Reduce cutting speed • Use a more wear-resistant cutting tool material • Increase feed • Raise coolant flow (e.g. raise coolant pressure)
Built-up edge 		• The work piece material sticks on the cutting edge leads to built-up edge.	• Raise cutting speed • Use more positive geometry, use a tool with a sharper cutting edge • Reduce the feed rate • Increase the amount of grease in the coolant (e.g. 8% oil content in coolant) • Use uncoated grade with polished geometry (e.g. for non-ferrous metals)
Fractures 		• Perpendicular cracks along the edge lead to fractures. • Vibration causes fractures.	• Use a tougher cutting tool material • Reduce cutting speed • Change to dry machining • Adjust feed rate
Plastic deformation 		• High heat and mechanical stress cause plastic deformation.	• Reduce cutting speed • Reduce feed rate • Use a more wear-resistant cutting tool material • Use a less sharp tool • Optimize the coolant towards to the cutting edge
Thermal cracks 		• Fluctuating temperature (thermal shock) causes thermal cracks.	• Reduce cutting speed • Reduce feed rate • Dry machining or use adequate coolant • Use a PVD-coated (tougher) indexable insert grade
Notch wear 		• Notch wear often occurs during machining work pieces with a hard surface (forged, casted or cold work hardened).	• Change depth of cut • Use a tougher cutting tool material • Use a smaller approach angle • Use a stronger geometry (with chamfer)

Solid Carbide Drill Failure Mode and Solutions

Failures	Picture	Analysis	Solution
Flank wear 		• Abrasion between the work piece and the flank surface leads to flank wear.	• Reduce cutting speed • Raise feed rate • Raise coolant flow (e.g. raise coolant pressure)
Built-up edge 		• The work piece material sticks on the cutting edge leads to built-up edge.	• Raise cutting speed • Raise coolant flow (e.g. raise coolant pressure)
Fracture 		• Perpendicular cracks along the edges, chip eroding, vibration and extremely high wear resistance lead to fractures.	• Replace and recondition the tool sooner • Improve stability (work piece/tool)
Plastic deformation 		• High heat and mechanical stress cause plastic deformation.	• Reduce cutting speed • Raise coolant flow (e.g. raise coolant pressure)
Crater wear 		• Tool Material is too soft. • Too high cutting speed. • Too high feed rate.	• Choose more wear resistant grade • Reduce cutting speed • Reduce feed • Raise coolant pressure

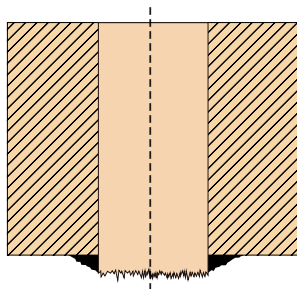
Drill Breakage Analysis

1. Check the tip geometry
2. Check the flute lengths is at least longer than drilling depth $+1.5XD$
3. Recondition promptly
4. Add pilot hole drilling
5. Improve system rigidity (Work piece / tool)



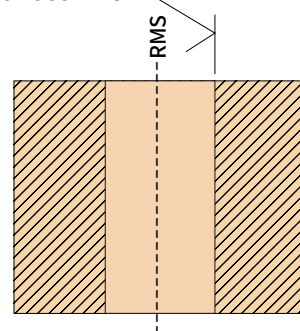
Drilling Wear and Trouble Shooting

Burr on the hole exit



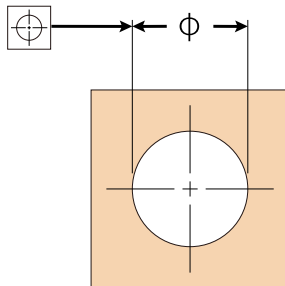
- Blunt cutting edge
- Drill tip outer corner chipped or worn

Bad surface finish



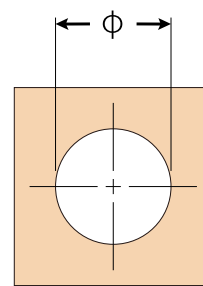
- Check edge wear
- Overcoated

Entry position out of tolerance



- Check edge geometry
- Check tool's cutting edge & chisel edge

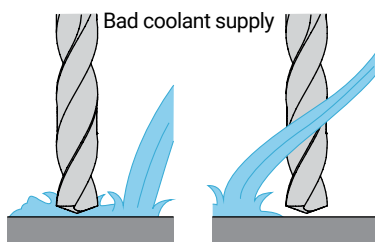
Oversized holes



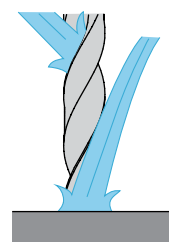
- Check edge geometry
- Overcoated
- Check tool's chisel edge

Check Coolant Supply

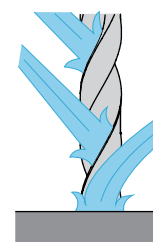
For solid carbide drills, internal coolant is always recommended. When the drill length is over $5xD_c$, internal coolant is essential. Ensure the coolant is with sufficient pressure and aiming to the correct position.



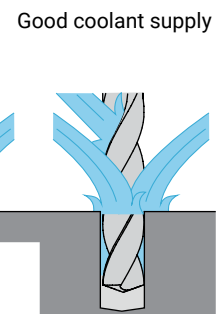
Bad coolant supply



Good



Better



Good coolant supply

Three coolant pipes should be directly towards the drill tip when it's possible.

Installation and Adjustment Method for Cast Iron Finishing Milling Cutter

1. Clean wiper cartridge (7), completely release adjusting screw(6).
2. Clean each insert pocket, cartridge pocket, clean inserts and cartridges.
3. Install roughing inserts(1), wiper cartridges(7) and use finger to push them to the locating surface and lock the screws.
4. Install wiper inserts (5).
5. Measure the axial run out of each roughing and wiper insert.
6. Adjusting wiper inserts height through adjusting screw(6).
7. Wiper inserts Max. run out should be higher than roughing inserts by 0.001-0.002 inch.

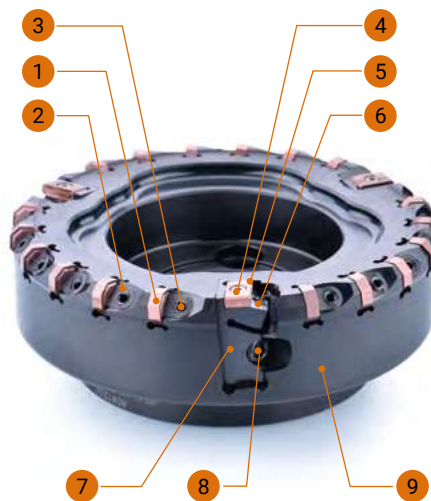
1. Roughing inserts(ON..05..)

2. Locking wedge

3. Double-headed wedge Locking screws

4. Wiper insert clamping screw

5. Wiper insert (LN12/15)



6. Adjusting screw

7. Wiper insert cartridge

8. Locking screw for wiper cartridge

9. Cutter

Grade Comparison Table for Turning

CVD coating grade

Classification		Achteck	SANDVIK	KENAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	MITSUBISHI	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT	PRAMET	GESAC
P	P01	AC052P	GC4305 GC4205	KCP05B KCP05 KC9105	TP0501 TP0500	WPP05S WPP05	IC8005 IC428	TT8105	UE6005 UE6105	T9005 T9105	AC810P	CA510 CA5505	NC3010		T9310	GP1105
	P10	AC150P	GC4415 GC4315	KCP10B KCP10 KC9110	TP1501 TP1500	WPP10S WPP10	IC9150 IC9015 IC8150	TT8115	UE6110 MC6015 MY5015	T9115 T9215	AC810P AC700G	CA515 CA5515	NC3215	YBC152 YBC151	T9315	GP1115
	P20	AC250P	GC4425 GC4325	KCP25B KC9125	TP2501 TP2500	WPP20S WPP20	IC8250 IC9025 IC9250	TT8125 TT5100	UE6020 MC6025	T9225 T9125	AC8025P AC820P AC2000	CA025P CA525 CA5525	NC3220 NC3225 NC3120	YBC251 YBC252	T9325	GP1125
	P30	AC350P	GC4335	KCP40B KCP40 KC9240	TP300 TP3500	WPP30S WPP30	IC8350 IC9350	TT8135 TT7100	MC6035 UE6035 UH6400	T9135 T9035	AC830P AC630M	CA530 CA5535	NC3030 NC500H NC5330	YBC351 YBC352	T9335	GP1135
M	M10	AC100M	GC2015 GC1515	KCM15 KCM15M			IC6015	TT9215	MC7015 US7020	T6120 T6020	AC610M AC6020M	CA6515	NC9020	YBM151 YBM153		GM1115
	M20	AC200M	GC2025	KCM25	TM2000	WMP20S	IC6025	TT9225	MC7025	T6130	AC630M AC6020M	CA6525	NC9025	YBM251 YBM253	T7325	GM1125
	M30			KCM35 KC9045 KC9245	TM4000			TT9235	MC7035 US735					YBM253		
K	K05	AC100K AC102K	GC3205 GC3210	KCK05 KCK05B	TK0501 TK1001 TK1000	WKK10S WAK10	IC5005 IC9007	TT7005	MC5005 UC5105	T505 T5105	AC405K AC410K	CA310 CA4505	NC6205	YBD052 YBD102	T5305	GK1115
	K20	AC202K ACK15A	GC3215	KCK15 KCK20 KC9315 KC9320	TK2001 TK2000	WKK20S WAK20	IC5010	TT7310 TT7015	MC5015 UC5115	T515 T5115 T5125	AC415K AC420K AC700G	CA315 CA320 CA4515	NC6210 NC6215	YBD152C YBD152	T5315	GK1120 GK1125

Grade Comparison Table for Turning

PVD coating grade

Classification		Achteck	SANDVIK	KENAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	MITSUBISHI	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT	PRAMET	GESAC
P	P10	AP100S	GC1025	KC5010 KC5510 KU10T	CP200	WSM10S WSM10	IC507 IC807 IC907		MS6015 VP10MF	AH710	ACZ150 ACZ310	PR930 PR1115 PR1215	PC8110 PC230	YBG102	T6130 T8310 T8315	
	P20	AP200U AP301M	GC1020 GC1025 GC1125 GC4125	KC5025 KC5525 KC7215 KC7315 KU25T	CP250	WSM20S WSM20	IC507 IC807 IC907	TT5030	VP15TF VP20MF VP20RT UP20M	AH7025 AH725 SH725	ACZ330 AC520U	PR1225 PR1625 PR1725	PC8115 PC5300	YBG202	6630	GA4230
	P30		GC1145 GC2145	KC7235 KC7140 KC7040	CP500	WSM30S WSM30	IC328 IC928 IC3028		VP15TF VP20MF UP20M	GH330 AH740 AH9030	AC530U ACZ350	PR1535	PC3545		6640 T8330 T8030"	
M	M10	AP100S	GC1105 GC1115 GC15	KC5510 KC5010	TS2000 TH1000 CP200	WSM10 WSM10S	IC520 IC907 IC808	TT5080	VP10RT VP10MF	AH710	AC510U ACZ150	PR1215 PR1225	PC8110		T6310 T8310 T8315	GS3115
	M20	AP200U AP301M	GC1125 GC4125 GC1025 GC30	KC5025 KC5525 KC7215 KC7315	CP500	WSM20 WSM20S	IC308 IC908 IC3028 IC830	TT9080	VP15TF VP20RT VP20MF	AH725 AH630 GH330 GH730 SH725 SH730	AC520U ACZ310 AC1030U	PR930 PR1215 RP1225 PR1725 PR1525	PC8115 PC5300	YBG202 YBG205	T8330	GS3125
	M30		GC2035 GC2030	KC7030 KC7225	CP600	WSM30 WSM30S	IC228 IC328 IC928	TT9020 TT8020	MP7035	AH130* AH645*	AC6040 AC530U ACZ330 ACZ350	PR1535	PC9030 PC5400		T8345	GM3225
K	K05		GC1010	KC5010 KC7210	TS2000 CP200		IC807 IC910 IC507 IC908"		VP05RT	GH110 AH110	EH10Z EH510Z AC510U	PR905 PR1215			T8310	
	K20		GC1020 GC1120	KC5025 KC5525 KC7215 KC7315	TS2500 CP200 CP250		IC508 IC908	TT5030	VP10RT VP15TF VP20RT	AH120 AH725	ACZ310 AC520U AC530U AC1030U	PR905 PR1215	PC5300		T8315	GA4230
	K30		GC1030	KC7225	CP500		IC508 IC908"		VP15TF VP20RT		ACZ310				T8330	
S	S10	AP100S	GC1105 GC1115	KC5510 KC5010	CP200 TH1000 TS2000	WSM01 WSM10S	IC808 IC807 IC907	TT5080	VP05RT VP10RT MP9005	AH110 AH905 AH8005	AC510U AC5015S	PR005S PR1305 PR1310	PC8105	YBG102	T6310	GS3115
	S20	AP200U AP301M	GC1025 GC1125	KC5525 KC5025	CP500 TS2500	WSM20 WSM20S	IC808 IC908	TT9080	VP15TF VP20RT MP9015	AH120 AH8015 AH725	AC520U AC5025S	PR015S PR1325 PR1535	PC8115	YBG105 YBG202	6630	GS3125
	S30		GC1125			WSM30 WSM30S	IC328	TT9080 TT8020	MP9025	AH725	AC520U	PR1535	PC5400	YBG212	6640	

Grade Comparison Table for Turning

Uncoated grade

Classification		Achtech	SANDVIK	KENAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	MITSUBISHI	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT	PRAMET	GESAC
N	N10	AW100K	H10	K313	H15	WK1	IC20	K10	HTI10	TH10	EH10	KW10 GW05	H01	YD101		GN9115

Cermet

Classification		Achtech	SANDVIK	KENAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	MITSUBISHI	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT	PRAMET	GESAC
P	P10	AT202	CT5015 CT525 GC1525*	KT175 HT2 KTP10*	TP1020 CM CMP	WTA43* WTA41*	IC20N IC520N	CT3000 PV3010*	NX2525 AP25N* VP25N*	NS9530 NS520 GT9530* GT530*	T1200A T1500Z*	TN60 TN620 TN6020 PV720*	CN2000 CN20 CC1500* CN1500*	NG151 YNG151C*		GP91TM GT31TM*
K	K10	AT202	CT5015	HTX KT315* KTP10*				CT3000	NX2525 AP25N* VP25N*	NS530 GT530*	T1200A T2000Z*	TN610 PV710* PV7005*	CN1500*	YNG151 YNG151C*		GP91TM GT31TM*

Grade Comparison Table for Turning

CBN

Classification		Achtek	SANDVIK	KENAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	mitsubishi	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT	PRAMET	GESAC
K	K10	PB90			CBN20 CBN600				MB4120 MBS140	BX950 BX90S	BN7000 BNS800		DBN350			
	H10	PB30	CB7105 CB7050"	KBH10 KB1615 KB5610	CBN150 CBN060K CBN200	WCB30	IB50	TB610	MB8025 MB825	BXA40 BC330 BX360						
H	H20	PB60	CB7025 CB7525	KBH20 KB1340	CBN350 CBN500	WCB50	IB55	TB650	MB8025	BX380						
	H30		CB7525	KB5630			IB55	TB670	MB835	BX380						

PCD

Classification		Achtek	SANDVIK	KENAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	mitsubishi	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT	PRAMET	GESAC
N	N20	PD20		KD1425	PCD30 PCD30M	WDN10			MD230	DX110 DX120	DA1000 DA2200	KPD001 KPD010 KPD230 KPD250				DNN130P

Grade Comparison for Milling Grade

Classification		Achteck	SANDVIK	KENNAMETAL	SECO	WALTER	ISCAR	TAEGUTECH	MITSUBISHI	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT
P	P10		GC1025 GC1010	KC715M		WXM15			F7010		ACP100	PR1225	PC33525	YBG252
	P20	AP251U	GC1130 GC1030 GC4220 GC4020 GC4030	KC522M KC525M KCPM20	MP1500 T250M T25M T20M	WKP25S	IC330 IC250 IC950 IC520M	TT7080 TT7030	MC7020 MP6120 MV1020 UP20M F7030	T313W AH725	ACP200 ACP2000 ACP2500	PR1525 PR1225 PR1230	PC3535 PC3500	YBC301 YBC302 YBM251 YBG202 YBG252
	P30	AP351U AP351M AC301P	GC1130 GC4040 GC4230 GC4330	KC994M KC725M KC792M KC530M	MP2500 T250M T25M F25M F30M	WSM35S WSM36 WKP35S WKP35G	IC330 IC328 IC830 IC908	TT9080 TT9030 TT7080	MP6130 VP15TF VP30RT F7030	T3130 GH330 AH120 AH330 AH730	AC230 ACP300	PR1230 PR1535	PC5300 PC9530 PC3600	YBM351 YBM251 YBM301 YBG302
	P40	AP403M	GC4040 GC4240 GC4340	KC735M	MP300 T350M T60M T25M	WKP45S WSP46	IC635 IC928 IC4050	TT9030	VP30RT	AH140	AC230 ACZ330 ACZ350		PC9530	YBC302 YBG302 YBG351
M	M10		GC1025 GC1030	KC522M				TT9300	F7010	T6120 T6020	ACM100 ACM200	PR1225	NC5330	YBG252
	M20	AP251U	GC2030 GC2334 GC2044 S30T	KC730M KC525M	MS2050 MP2500 T250M T25M F20M	WXM15	IC380 IC908 IC928	TT9300	MC7020 VP15TF VP20RT MP7030 MP7130	T6130	ACM200 ACP200 ACU2500	PR1525 PR1225	PC5300 PC3545 PC9530	YBM251 YBM253 YBC302 YBG205 YBG252
	M30	AP351U AP351M	GC1040 GC2040 S40T	KC994M KC725M KCPK30	T350M T250M F40M	WSM35S WSM36	IC380 IC328 IC330	TT9080 TT8020	F7030 VP30RT MO7140		ACM300 ACP300 ACZ350	CA6535 PR1535	PC3545 PC5300	YBC302 YBG351 YBG302
	M40	AP403M			MM4500	WKP45S WSP46	IC830	TT8080 TT8020 TT9300	VP30RT		ACZ350		PC9530	YBG302
K	K01				MH1000		IC5100 IC4100			T505 T5105	ACK100			
	K10		GC1010 GC3220 K15W	KCK15 KC915M	MK1500 T150M F15M	WXM15 WAK15 WSN10	IC5100 IC4010 IC910 IC810	K10	MP8010 MC5020 MV1020 VP10RT	T515 T5115 T5125	ACK2000 ACK200 AC211	PR1500 PR1210 PR905	PC215K	YBD152 YBG102 YBG252
	K20	AP251K AP351K AC301K	GC1020 GC3020 GC3330 GC3334	KCC520M KC920M KC925M	MP1500 T250M MK2000 MK2050	WKP25S WKK25S	IC810 IC910 IC928	TT6080 TT7515	VP15TF VP20RT	AH120 AH725 T1215	EH20Z ACZ310 ACK300 ACK3000	CA420M PR1210 CA415D PR905	PC6510 PC5300	YBD152 YBD252 YBG152
	K30		GC3040 GC4040	KC930M	MK3000 T250M	WKP35S	IC928	TT7515		GH130				YBD252 YBG152
S	S10		GC1030 GC1025 GC1010	KC510M	MS2050		IC903 IC807 IC808 IC908	K10	MP9120 VP15TF		ACM100 ACM200	CA6535 PR1535 PR1210		YBG202 YBS203
	S20		GC1030 GC2030 GC1130	KC525M	MP2050	WSM35S WSM36	IC903 IC807 IC808 IC908 IC830	TT9080 TT9030 TT5525	MP9120 VP15TF MP9130 MP9030		ACU2500 ACM200	CA6535 PR1535 PR1210		YBS203 YBS303
	S30	AP403S	GC2040 S40T	KC725M KCSMN40	F40M	WSP45S WSP46 WSM42X WMP45G	IC328 IC330	TT8080 TT8020 TT9300	MP9140		ACM300	PR1535		YBS303

Chip Breaker Comparison Table for Negative Turning Insert

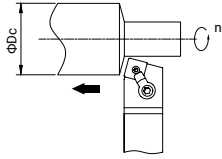
ISO Classification	Application	Achteck	SANDVIK	KENNAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	MITSUBISHI	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT
P	Finishing	PB1	QF	FF	FF1 MF2 FF2	NF3 FP5	SF F3P	FS FA FLP FG FC	FP FH FY FS	TF	FA FB FL SU	GP PP XP XF	VG VL VF	SF DF
	Semi finishing	PB3 PC3	PF LC	FN	MF5	NS6	NF	MLP	C SA SH	TSF	LU SX NSE	CQ XQ HQ	VC HC	NM
	Medium	PL5	K		UX			V FS	ES 2G	S	GX HM	LD ST	SH	
		PD3	PM PMC QM	MN CT	M3	NM4 MP5	M3P TF PP	MT MC MP MGP	MA MP MV MH	TM ZM AM NM	GU UX UG UP	GS PS PG	VM LP MP	PM DM
		PC4			M4			MG-	Standard	Standard	UZ	Standard	B25	
	Roughing	PD5	PR	RN RP RW	M5 M6 MR7	NM6 NM9 RP5 RP7	NR R3P	RT RGP	RP GH	TH	MU, MX	PT GT	HR GR	DR ER
	Heavy roughing	PD8 PC8	PR QR	RM	R4 R5	NR6 NRF	MH	RX RH	HZ HL	TRS	HG MP		GH	DR
		PC9	HR	RP	R7 R8	NR8		HT HD	HX HR	TU TUS	HF		VT	HDR
		PD9		RH	RR9	NRR	HR	HY HZ	HV		HU HW		VH	HPR
M	Finishing	SC1 MB2	MF	FF LF FP	MF2	NF NF4 FM5	NF F3M	FG EA SF	LS FS SA	SS TF SF HRF	SU EF	MQ	VP1	EF
	Semi finishing	SL3		MS	MF1	MS3	PP	ML	MJ	28	UP	TK	HA	
		MC3	MM MMC	MP UP	MF4 MF3	NM NM4	M3M	EM MP	MS GM MM MA	HRM SM SA	EX GU	MS MU SU	HS	EM
	Roughing	MC4	MR MMR	RP	M5 MR7	NR4 RM5	R3M MR	ET	RM GH	TU SH	MU	HU	VM	ER
K	Medium	PC4	KM	UN CT	M4	MK5 NM5 NM6	NR	Standard	MK GK Standard	CM Standard	UZ MU	KG Standard	B25	Standard
	Roughing	KC4 KD5	KR	RP- NMA	MR7 Plane	RK5 RK7 Plane	Plane	KT RT Plane	GH RK Plane	CH Plane	GZ	ZS GC KH PH Plane	GR VR VK- Plane	DR
N	Semi finishing		QM 23	MS MP			PP	ML	MJ	P	UP GX AG	A3 AH	HA	
S	Finishing	SC1 MB2	MF SF	FS	MF2	NF4	NF	EA SF*	FS LS	TF	SU	MQ SQ	VP1	EF
	Medium	SL3		MS	MF1	MS3	PP	ML	MJ	28	UP	TK	HA	
		SC3	SM SMC	UP	MR3	NMS NMT	TF	MP SU MK	MS	HMM SA HRM	EG EX	MS MU	VP3	NM
	Roughing	MC4	SR SMR	RP	MR4	NRS NRT	NR		GJ RS		MU	SG	VM	SNR

Chip Breaker Comparison Table for Positive Turning Insert

ISO Classification	Application	Achteck	SANDVIK	KENNAMETAL	SECO	WALTER	ISCAR	TAEGUTEC	MITSUBISHI	TUNGALOY	SUMITOMO	KYOCERA	KORLOY	ZCC.CT
P	Finishing	LF										CK		
		UF PB1 BS	UF PF	11 UF	FF1 MF2	PF4 FP4	PF	FA FG FX	FV FP	PF	FP LU	GP VF	VL	HF
	Semi finishing	PC2	PM UM	LF MF	F2 M5	FP6 PS5 MP4	SM 14	PC	MP MV	PM 23 24	SU SC	HQ XQ GK	HMP	HM
	Roughing	KC2	PR			PM5 RP4	17 19	MT	no code		MU		C25	
M	Finishing	PB1	MF UF	11 UF	FF1 MF2	PF4 FM4	PF	FA FG	FM FV LM	PF	LU	MQ	VL	EF
	Semi finishing	PC2	MM UM	LF MF	F2 M5	PS5 MM4	SM 14	FM	MV MM	PS PM	SC SU	MS	MP	EM
	Roughing	KC2	MR UR			PM5 RM4	17	MT			MU	MU	C25	HR
K	Semi finishing	KC2	KM	MF	F2 M3	MK4	14	MT PMR	MK	CM	MU		C25	HM
	Roughing	KD5	KR		M5	RK4 RK6 Plane		CMX		Plane				HR
N	Semi finishing	NC2	AL	HP	AL	PM2	AF, AS	FL	AZ	AL	AW, AG	AH	AK, AR	LH
S	Finishing	UF PB1	MF	HP	F1	PF5 PF4	PF	FA	FJ		LU	MQ	VP1 VL	NF NGF
	Medium	PC2	MM UM	LF	F2	PS5 PM5	SM	FG	MS	PS	SU	HQ	MP	
	Roughing													SNR

Turning Machining Formula

● Cutting speed



$$V_c = \frac{\pi * D_c * n}{12} \text{ (ft/min)}$$

V_c: Cutting speed(ft/min) π: ≈3.14
D_c: Workpiece diameter(in) n: Spindle speed(rev/min)

● Feed speed

$$V_f = f * n \text{ (in/min)}$$

V_f: Feed Speed(in/min) f: Feed rate(in/rev)
n: Spindle speed(rev/min)

● Chip thickness

$$h = f * \sin \kappa \text{ (in)}$$

h: Chip thickness(in) f: Feed rate(in/rev)
κ: Entering angle

● Chip width

$$b = \frac{a_p}{\sin \kappa} \text{ (in)}$$

b: Chip width(in) a_p: Axial depth of cut (in)
κ: Entering angle

● Chip area

$$A = h * b = a_p * f \text{ (in}^2\text{)}$$

A: Chip area(in²) a_p: Axial depth of cut (in)
f: Feed rate(in/rev)

● Cutting power

$$P_{mot} = \frac{K_c * V_c * D_c * f}{132,000 * \eta} \text{ (HP)}$$

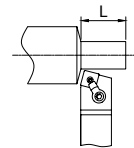
P_{mot}: Cutting power(HP) K_c: Unit cutting force(lbs/in²)
V_c: Cutting speed(ft/min) D_c: Workpiece diameter(in)
f: Feed rate(in/rev) η: Mechanical efficiency

● Chip removal

$$Q = a_p * f * V_c * 12 \text{ (in}^3\text{/min)}$$

Q: Chip removal(in³/min) a_p: Axial depth of cut (in)
f: Feed rate(in/rev) V_c: Cutting speed(ft/min)

● Work time



$$T_c = \frac{L}{f * n} \text{ (min)}$$

T_c: Work time f: Feed rate(in/rev)
n: Spindle speed(rev/min) L: Working length(in)

Milling General Formula

● Cutting speed

$$V_c = \frac{\pi * D_c * n}{12} \text{ (ft/min)}$$

V_c:Cutting speed(ft/min) π: ≈3.14
D_c:Cutter diameter(in) n:Spindle speed(rev/min)

● Spindle speed

$$n = \frac{12 * V_c}{\pi * D_c} \text{ (rev/min)}$$

V_c:Cutting speed(ft/min) π: ≈3.14
D_c:Cutter diameter(in) n:Spindle speed(rev/min)

● Feed speed

$$V_f = f_z * n * Z \text{ (in/min)}$$

V_f:Feed speed(in/min) f_z:Feed per tooth(in/z)
n:Spindle speed(rev/min) Z:Number of teeth

● Feed rate per rev.

$$f_z = \frac{V_f}{n * Z} \text{ (in)}$$

f_z:Feed rate per rev.(in) V_f:Feed speed(in/min)
n:Spindle speed(rev/min) Z:Number of teeth

● Feed rate per rev.

$$f = \frac{V_f}{n} \text{ (in/rev)}$$

f:Feed rate per rev.(in/rev) V_f:Feed speed(ft/min)
n:Spindle speed(rev/min)

● Time of cut

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

T_c:Time of cut(min) L:Length of feed(in)
V_f:Feed speed(in/min)

● Power demand

$$P_{mot} = \frac{a_p * a_e * V_f * K_c}{396000 * \eta} \text{ (HP)}$$

P_{mot}:Cutting power(HP) a_p:Cutting depth a_e:Cutting width
K_c:Unit cutting force(lbs/in²) η:Machine efficiency coefficient(0.7-0.95)

● Average chip thickness

$$h_m = f_z * \sqrt{\frac{a_e}{D_c}} \text{ (in)}$$

h_m:Average chip thickness f_z:Feed per tooth(in/z)
a_e:Cutting width D_c:Cutter diameter(in)

● Feed force

Cutter in the center site

$$\psi_s = 2 * \arcsin \left(\frac{a_e}{D_c} \right) [^\circ]$$

Cutter in excentric site

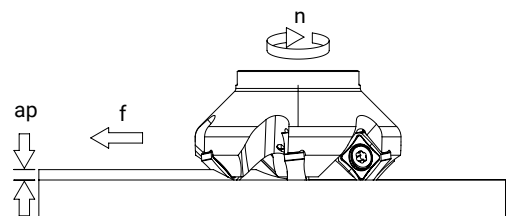
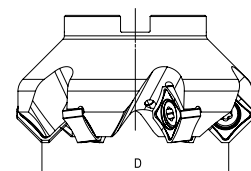
$$\psi_s = 90^\circ + \arcsin \frac{a_e - (D_c/2)}{(D_c/2)} [^\circ]$$

ψ_s:Pressure angle a_e:Cutting width
D_c:Cutter diameter(in)

● Chip removal

$$Q = a_p * a_e * V_f * 12 \text{ (in}^3\text{/min)}$$

Q:Chip removal(in³/min) a_p:Cutting depth
a_e:Cutting width V_f:Feed speed(ft/min)



Drilling General Recommendation

● Cutting speed

$$V_c = \frac{\pi * D_c * n}{12} \text{ (ft/min)}$$

V_c:Cutting speed(ft/min) π:≈3.14
D_c:Drill diameter(in) n:Spindle speed(rev/min)

● Spindle speed

$$n = \frac{12 * V_c}{\pi * D_c} \text{ (rev/min)}$$

V_c:Cutting speed(ft/min) π:≈3.14
D_c:Drill diameter(in) n:Spindle speed(rev/min)

● Feed speed

$$V_f = f_z * n * Z \text{ (in/min)}$$

V_f:Feed speed(in/min) f_z:Feed per tooth(in/z)
n:Spindle speed(rev/min) Z:Number of teeth

● Feed rate per rev.

$$f_z = \frac{V_f}{n * Z} \text{ (in)}$$

f_z:Feed rate per rev.(in) V_f:Feed speed(in/min)
n:Spindle speed(rev/min) Z:Number of teeth

● Feed rate per rev.

$$f = \frac{V_f}{n} \text{ (in/rev)}$$

f:Feed rate per rev.(in/rev) V_f:Feed speed(in/min)
n:Spindle speed(rev/min)

● Chip removal

$$Q = \frac{V_f * \pi * D_c^2}{4} \text{ (in}^3\text{/min)}$$

Q:Chip removal(in³/min) V_f:Feed speed(in/min)
π:≈3.14 D_c:Drill diameter(in)

● Horse power

$$H_p = \frac{P_{mot}}{0.75}$$

H_p:Horsepower P_{mot}:Cutting power(KW)

● Power demand

$$P_{mot} = \frac{K_c * V_c * D_c * f}{132,000 * \eta} \text{ (HP)}$$

P_{mot}:Cutting power(HP) K_c:Unit cutting force(lbs/in²)
V_c:Cutting speed(ft/min) D_c:Workpiece diameter(in)
f:Feed rate(in/rev) η:Mechanical efficiency

● Torque

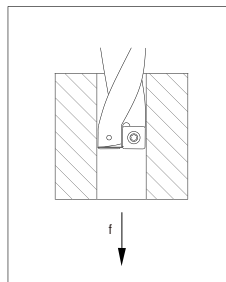
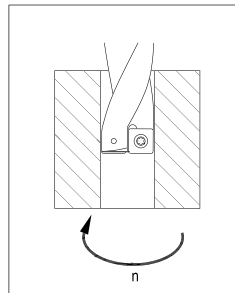
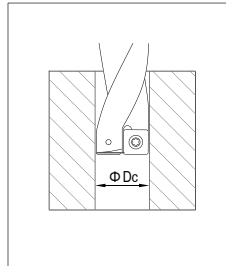
$$M_c = \frac{D_c^2 * K_c * f_z}{8} \text{ (in*lbs)}$$

M_c:Torque D_c:Drill diameter(in)
K_c:Unit cutting force(lbs/in²) f_z:Feed rate per rev.(in/rev)

● Cutting thickness

$$h = f_z * \sin \alpha \text{ (in)}$$

h:Cutting thickness(in) f_z:Feed rate(in/rev)



Hardness Conversion Table

Brinell Hardness 10 ball load 3000Kg		Micro Vickers Hardness HV	Rockwell Hardness				Shore's Hardness	Tensile Strength (approximate) kgf/mm
Master ball	WC ball HB		A scale 60kgf diamond brale HRA	B scale 100kgf 1/16in ball HRB	C scale 150kgf diamond brale HRC	D scale 100kgf diamond brale HRD		
-	-	1865	92.0	-	80	-	-	-
-	-	1787	91.5	-	79	-	-	-
-	-	1710	91.0	-	78	-	-	-
-	-	1633	90.5	-	77	-	-	-
-	-	1556	90.0	-	76	-	-	-
-	-	1478	89.5	-	75	-	-	-
-	-	1400	89.0	-	74	-	-	-
-	-	1323	88.5	-	73	-	-	-
-	-	1245	88.0	-	72	-	-	-
-	-	1160	87.0	-	71	-	-	-
-	-	1076	86.5	-	70	-	-	-
-	-	1004	86.0	-	69	-	-	-
-	-	940	85.6	-	68.0	76.9	97	-
-	-	920	85.3	-	67.5	76.5	96	-
-	-	900	85.0	-	67.0	76.1	95	-
-	767	880	84.7	-	66.4	75.7	93	-
-	757	860	84.4	-	65.9	75.3	92	-
-	745	840	84.1	-	65.3	74.8	91	-
-	733	820	83.8	-	64.7	74.3	90	-
-	722	800	93.4	-	64.0	73.8	88	-
-	712	-	-	-	-	-	-	-
-	710	780	83.0	-	63.3	73.3	87	-
-	698	760	82.6	-	62.5	72.6	86	-
-	684	740	82.2	-	61.8	72.1	-	-
-	682	737	82.2	-	61.7	72.0	84	-
-	670	720	81.8	-	61.0	71.5	83	-
-	656	700	81.3	-	60.1	70.8	-	-
-	653	697	81.2	-	60.0	70.7	81	-
-	647	690	81.1	-	59.7	70.5	-	-
-	638	680	80.8	-	59.2	70.1	80	-
-	630	670	80.6	-	58.8	69.8	-	-
-	627	667	80.5	-	58.7	69.7	79	-
-	601	640	79.8	-	57.3	68.7	77	-
-	578	615	79.1	-	56.0	67.7	75	-
-	555	591	78.4	-	54.7	66.7	73	210
-	534	569	77.8	-	53.5	65.8	71	202
-	514	547	76.9	-	52.1	64.7	70	193
-	495	528	76.3	-	51.0	63.8	68	186
-	477	508	75.6	-	49.6	62.7	66	177
-	461	491	74.9	-	48.5	61.7	65	170
-	444	472	74.2	-	47.1	60.8	63	162
429	429	455	73.4	-	45.7	59.7	61	154
415	415	440	72.8	-	44.5	58.8	59	149
401	401	425	72.0	-	43.1	57.8	58	142
388	388	410	71.4	-	41.8	56.8	56	136
375	375	396	70.6	-	40.4	55.7	54	129
363	363	383	70.0	-	39.1	54.6	52	124
352	352	372	69.3	(110.0)	37.9	53.8	51	120
341	341	360	68.7	(109.0)	36.6	52.8	50	115
331	331	350	68.1	(108.5)	36.6	51.9	48	112
321	321	339	67.5	(108.0)	34.3	51.0	47	108
311	311	328	66.9	(107.5)	33.1	50.0	46	105
302	302	319	66.3	(107.0)	32.1	49.3	45	103
293	293	309	65.7	(106.0)	30.9	48.3	43	99
285	285	301	65.3	(105.5)	29.9	47.6	-	97
277	277	292	64.6	(104.5)	28.8	46.7	41	94

[illegible]

Material Conversion Table

ISO	Country and standard										
	China	International	Germany	U.S.A.	U.K.		France	Sweden	Italy	Spain	Japan
	GB	DIN	W.-nr	AISI/SAE	BS	EN	AFNOR	SS	UNI	UNE	JIS
P	Structural steel										
	15	C15	1.0401	1015	080M15	-	CC12	1350	C15C16	F.111	-
	20	C22	1.0402	1020	050A20	2C	CC20	1450	C20C21	F.112	-
	35	C35	1.0501	1035	060A35	-	CC35	1550	C35	F.113	-
	45	C45	1.0503	1045	080M40	-	CC45	1650	C45	F.114	-
	55	C55	1.0535	1055	070M55	-	-	1655	C55	-	-
	60	C60	1.0601	1060	080A62	43D	CC55	-	C60	-	-
	Y15	9SMn28	1.0715	1213	230M07	-	S250	1912	CF9SMn28	11SMn28	SUM22
	-	9SMnPb28	1.0718	12L13	-	-	S250Pb	1914	CF9MnPb28	11SMnPb28	SUM22L
	-	10SPb20	1.0722	-	-	-	10PbF2	-	CF10Pb20	10SPb20	-
	-	35S20	1.0726	1140	212M36	8M	35MF4	1957	-	F210G	-
	Y13	9SMn36	1.0736	1215	240M07	1B	S300	-	CF9SMn36	12SMn35	-
	-	9SMnPb36	1.0737	12L14	-	-	S300Pb	1926	CF9SMnPb36	12SMnP35	-
	55Si2Mn	55Si9	1.0904	9255	250A53	45	55S7	2085	55Si8	56Si7	-
	-	60SiCr7	1.0961	9262	-	-	60SC7	-	60SiCr8	60SiCr8	-
	15	Ck15	1.1141	1015	080M15	32C	XC12	1370	C16	C15K	S15C
	40Mn	40Mn4	1.1157	1039	150M36	15	35M5	-	-	-	-
	25	Ck25	1.1158	1025	-	-	-	-	-	-	S25C
	35Mn2	36Mn5	1.1167	1335	-	-	40Mn5	2120	-	36Mn5	SMn438(H)
	30Mn	28Mn6	1.117	1330	150M28	14A	20M5	-	C28Mn	-	SCMn1
	35Mn	Cf35	1.1183	1035	060A35	-	XS38TS	1572	C36	-	S35C
	Ck45	45	1.1191	1045	080M46	-	XC42	1672	C45	C45K	S45C
	55	Ck55	1.1203	1055	070M55	-	XC45	-	C50	C55K	S55C
	50	Cf53	1.1213	1050	060A52	-	XC48TS	1674	C53	-	S50C
	60Mn	Ck60	1.1221	1060	080A62	43D	XC60	1678	C60	-	S58C
	-	Ck101	1.1274	1095	060A96	-	-	1870	-	-	SUP4
	-	X120Mn12	1.3401	-	Z120M12	-	X120M12	-	XG120Mn12	X120Mn12	SCMnH/1
	GCr15	100Cr6	1.3505	52100	534A99	31	100C6	2258	100Cr6	F.131	SUJ2
	-	15Mo3	1.5415	ASTM A204Gr.A	1501-240	-	15D3	2912	16Mo3KW	16Mo3	-
	-	16Mo5	1.5426	4520	1503-245-420	-	-	-	16Mo5	16Mo5	-
	-	14Ni6	1.5622	ASTM A350LF5	-	-	16N6	-	14Ni6	15Ni6	-
	-	X8Ni9	1.5662	ASTM A353	1501-509; 510	-	-	-	X10Ni9	XBNI09	-

Material Conversion Table

ISO	Country and standard										
	China	International	Germany	U.S.A.	U.K.		France	Sweden	Italy	Spain	Japan
	GB	DIN	W.-nr	AISI/SAE	BS	EN	AFNOR	SS	UNI	UNE	JIS
P	Structural steel										
	-	12Ni19	1.5680	2515	-	-	Z18N5	-	-	-	-
	-	36NiCr6	1.5710	3135	640A35	111A	35NC6	-	-	-	SNC236
	-	14NiCr10	1.5732	3415	-	-	14NC11	-	16NiCr11	15NiCr11	SNC415 (H)
	-	14NiCr14	1.5752	34153310	655M13655A12	36A	12NC15	-	-	-	SNC815 (H)
	-	36CrNiMo4	1.6511	9840	816M40	110	40NCD3	-	38CrNiMo4 (KB)	35CrNiMo4	-
	-	21NiCrMo2	1.6523	8620	850M20	362	20NCD2	2503	20NiCrMo2	20NiCrMo2	SNCCM220 (H)
	-	40NiCrMo2	1.6546	8740	311-Type7	-	-	-	40NiCrMo2 (KB)	40NiCrMo2	SNC240
	40CrNiMoA	34CrNiMo6	1.6582	4340	817M40	24	35NCD6	2541	35CrNiMo6 (KB)	-	-
	-	17CrNiMo6	1.6587	-	820A16	-	18NCD6	-	-	14CrNiMo1	-
	15Cr	15Cr3	1.7015	5015	523M15	-	12C3	-	-	-	SCr415(H)
	35Cr	34Cr4	1.7033	5132	530A32	18B	32C4	-	34Cr4(KB)	35Cr4	SCr430(H)
	40Cr	41Cr4	1.7035	5140	530M40	18	42C4	-	41Cr4	42Cr4	SCr440(H)
	40Cr	42Cr4	1.7045	5140	-	-	-	2245	-	42Cr4	SCr440
	18CrMn	16MnCr15	1.7131	5115	(527M20)	-	16MC5	2511	16MnCr15	16MnCr15	-
	20CrMn	55Cr3	1.7176	5155	527A60	48	55C3	-	-	-	SUP9(A)
	30CrMo	25CrMo4	1.7218	4130	1717CDS110	-	25CD4	2225	25CrMo4 (KB)	55Cr3	SCM420; SCM430
	35CrMo	34CrMo4	1.7220	4137;4135	708A37	19B	35CD4	2234	35CrMo4	34CrMo4	SCM432; SCRRM3
	40CrMoA	41CrMo4	1.7223	4140;4142	708M40	19A	42CD4TS	2244	41CrMo4	41CrMo4	SCM440
	42CrMo 42CrMnMo	42CrMo4	1.7225	4140	708M40	19A	42CD4	2244	42CrMo4	42CrMo4	SCM440(H)
	-	15CrMo5	1.7262	-	-	-	12CD4	2216	-	12CrMo4	SCM415(H)
	-	13CrMo44	1.7335	ASTMA182F11; F12	1501-620Gr.27	-	15CD3.5; 15CD4.5	-	14CrMo44	14CrMo45	-
	-	32CrMo12	1.7361	-	722M24	40B	30CD12	2240	32CrMo12	F.124.A	-
	-	10CrMo910	1.7380	ASTMA182F.22	1501-622Gr.31;45	-	12CD9;10	2218	12CrMo9,10	TU.H	-
	-	14MoV63	1.7715	-	1503-660-440	-	-	-	-	13MoCrV6	-
	50CrVA	50CrV4	1.8159	6150	735A50	47	50CV4	2230	50CrV4	51CrV4	SUP10
	-	41CrAlMo7	1.8509	-	905M39	41B	40CAD6,12	2940	41CrAlMo7	41CrAlMo7	-
	-	39CrMoV139	1.8523	-	897M39	40C	-	-	36CrMoV12	-	-

Material Conversion Table

ISO	Country and standard										
	China	International	Germany	U.S.A.	U.K.		France	Sweden	Italy	Spain	Japan
	GB	DIN	W.-nr	AISI/SAE	BS	EN	AFNOR	SS	UNI	UNE	JIS
P	Tool steel										
	T10	C105W1	1.1545	W.110	-	-	Y1105	1880	C98KU C100KU	F.515 F.516	-
	T12A	C125W	1.1663	W.112	-	-	Y2120	-	C120KU	(C120)	SK20
	GCr15	100Cr6	1.2067	L3	BL3	-	Y100C6	-	-	100Cr6	-
	Cr12	X210Cr12	1.2080	D3	BD3	-	Z200Cr12	-	X210Cr13KU X250Cr12KU	X210Cr12	SKD1
	4Cr5MoVSi	X40CrMoV5 1	1.2344	H13	BH13	-	Z40CDV5	2242	X35CrMoV05KU X40CrMoV51KU	X40CrMoV5	SKD61
	Cr6WV	X100CrMoV5 1	1.2363	A2	BA2	-	Z100CDV5	2260	X100CrMoV51KU	X100CrMoV5	SKD12
	CrWMo	105WCr6	1.2419	-	-	-	105WC13	2140	10WCr6 107WCr5KU	105WCr5	SKS31 SKS2 SKS3
	Cr12W	X210CrW12	1.2436	-	-	-	-	2312	X215CrW12 1KU	X210CrW12	SKD2
	5CrNiMo	45WCrV7	1.2542	S1	BS1	-	-	2710	45WCrV8KU	45WCrSi8	-
	3Cr2W8V	X30WCrV93 X30WCrV93KU	1.2581	H21	BH21	-	Z30WCV9	-	X28W09KU X30WCrV9 3KU	X30WCrV9	SKD5
	Cr12MoV	X165CrMoV 12	1.2601	-	-	-	-	2310	X165CrMoW12KU	X160CrMoV12	SKD11
	5CrNiMo	55NiCrMoV6	1.2713	L6	-	-	55NCDV7	-	-	F.250.S	SKT4
	V	100V1	1.2833	W210	BW2	-	Y1105V	-	-	-	SKS43
	W6Mo5Cr4V2Co5	S6-5-2-5	1.3243	-	-	-	Z85WDCV 10-05-04-01	2723	HS6-5-2-5	HS6-5-2-5	SKH55
	W18Cr4VCo5	S18-1-2-5	1.3255	T4	BT4	-	Z80WKC 10-05-04-01	-	X78WCo1805KU	HS18-1-1-5	SKH3
	W6Mo5Cr4V2	S6-5-2	1.3343	M2	BM2	-	Z85WDCV 06-05-04-02	2722	X82WMo0605KU	HS6-5-2	SKH9
	-	S2-9-2	1.3348	M7	-	- Z -	Z100WCWV 09-02-04-02	2782	HS2-9-2	HS2-9-2	-
	W18Cr4V	S18-0-1	1.3355	T1	BT1	-	Z80WCV 18-04-01	-	X75W18KU	HS18-0-1	SKH2
	W6Mo5Cr4V3	S6-5-3	-	M3	-	-	-	-	-	-	SKH52
	-	-	-	M42	BM42	-	-	-	-	-	SKH59

Material Conversion Table

ISO	Country and standard										
	China	International	Germany	U.S.A.	U.K.		France	Sweden	Italy	Spain	Japan
	GB	DIN	W.-nr	AISI/SAE	BS	EN	AFNOR	SS	UNI	UNE	JIS
M	Stainless steel										
	0Cr13; 1Cr12	403	1.4000	403	403S17	-	Z6C13	2301	X6Cr13	F.3110	SUS403
	-	-	1.4001	-	-	-	-	-	-	F.8401	-
	1Cr13	410	1.4006	410	410S21	56A	X12Cr13	2302	X12Cr13	F.3401	SUS410
	1Cr17	430	1.4016	430	430S15	60	X8Cr17	220	X8Cr17	F.3113	SUS430
	2Cr13	410	1.4021	40	S62	56B;56C	X20C13	-	X20C13	F.3401	SUS410
	-	-	1.4027	-	420C29	56B	-	-	-	-	SCS2
	4Cr13	-	1.4034	-	420S45	56D	X40Cr14	2304	X40Cr14	F.3405	SUS420J2
	1Cr17Ni2	431	1.4057	431	431S29	57	X16CrNi16	2321	X16CrNi16	F.3427	SUS431
	Y1Cr17	430F	1.4104	430F	-	-	X10CrS17	2383	X10CrS17	F.3117	SUS430F
	1Cr17Mo	434	1.4113	434	434S17	-	X8CrMo17	2325	X8CrMo17	-	SUS434
	-	-	1.4313	-	425C11	-	-	-	-	-	SCS5
	-	-	1.4408	-	316C16	-	-	-	-	F.8414	SCS14
	4Cr9Si2	HW3	1.4718	HW3	401S45	52	X45CrSi8	-	X45CrSi8	F.322	SUH1
	0Cr13Al	405	1.4724	405	403S17	-	X10CrAl12	-	X10CrAl12	F.311	SUS405
	Cr17	430	1.4742	430	430S15	60	X8Cr17	-	X8Cr17	F.3113	SUS430
	8Cr20Si2Ni	HNV6	1.4757	HNV6	443S65	59	X80CrSiNi20	-	X80CrSiNi20	F.320V	SUH4
	2Cr25N	446	1.4762	446	-	-	X16Cr26	2322	X16Cr26	-	SUH446
	Austenitic stainless steel										
	0Cr18Ni9	X5CrNi1810	1.4301	304	304S15	58E	Z6CN18.09	2332	X5CrNi1810	F.3551 F.3541; F.3504	SUS304
	1Cr18Ni9MoZr	X10CrNiS189	1.4305	303	303S21	58M	Z10CNF18.09	2346	X10CrNiS18.09	F.3508	SUS303
	0Cr19Ni10	X2CrNi1911	1.4306	304L	304S12	-	Z2CN18.10	2352	X2CrNi18.11	F.3503	SCS19
	-	G-X6CrNi189	1.4308	-	304C15	-	Z6CN18.10M	-	-	-	SCS13
	Cr17Ni17	X12CrNi177	1.4310	301	-	-	Z12CN17.07	2331	X12CrNi1707	F.3517	SUS301
	-	X2CrNi1810	1.4311	304LN	304S62	-	Z2CN18.10	2371	-	-	SUS304LN
	0Cr19Ni9	X5CrNi189	1.4350	304	304S31	58E	Z6CN18.09	-	X5CrNi1810	-	SUS304
	0Cr17Ni11Mo2	X5CrNi Mo1712	1.4401	316	316S16	Z6CND 17.11	1.4401	2347	X5CrNiMo1712	F.3543	SUS316
	00Cr17Ni13Mo2	X2CrNi MoN17133	1.4429	316LN	-	-	Z2CND17.13	2375	-	-	SUS316LN
	0Cr27Ni12Mo3	X2CrNi Mo18143	1.4435	316L	316S12	-	Z2CDN17.13	2353	X2CrNiMo1713	-	SCS16
	00Cr19Ni13Mo3	X2CrNi Mo17133	1.4438	317L	317S12	-	Z2CND19.15	2367	X2CrNiMo18.16	-	SUS317L
	-	X8CrNiMo275	1.4460	329L	-	-	-	2324	-	-	SUS329L; SCH11; SCS11

Material Conversion Table

ISO	Country and standard										
	China	International	Germany	U.S.A.	U.K.		France	Sweden	Italy	Spain	Japan
	GB	DIN	W.-nr	AISI/SAE	BS	EN	AFNOR	SS	UNI	UNE	JIS
M	Austenitic stainless steel										
	1Cr18Ni9Ti	X6CrNiTi1810	1.4541	321	2337	321S12	Z6CNT18.10	58B	X6CrNiTi1811	F.3553	SUS321
	1Cr18Ni11Nb	X6CrNiNb1810	1.4550	347	347S17	58F	Z6CNNb18.1	2338	X6CrNiTi1811	F.3552	SUS347
	Cr18Ni12Mo2Ti	X6CrNiMoTi17122	1.4571	316Ti	320S17	58J	Z6NDT17.12	2350	X6CrNiMoTi17	F.3535	-
	-	G-X5CrNiMoNb1810	1.4581	-	318C7	-	Z4CNDNb1812M	-	XG8CrNiMo18	-	SCS22
	Cr17Ni12Mo3Nb	X10CrNiMoNb1812	1.4583	318	-	-	Z6CNDNb1713B	-	X6CrNiMoTiNb17	-	-
	1Cr23Ni13	X15CrNiSi2012	1.4828	309	309S24	-	Z15CNS20.1	-	-	-	SUH309
	0Cr25Ni20	X12CrNi2521	1.4845	310S	310S24	-	Z12CN2520	2361	X6CrNi2520	F.331	SUH310
	Cr15Ni36W3Ti	X12NiCrSi3616	1.4864	330	-	-	Z12CNS35.1	-	-	-	SUH330
	-	G-X40NiCrSi3818	1.4865	-	330C11	-	-	-	XG50NiCr3919	-	SCH15
	5Cr2Mn9Ni4N	X53CrMnNiN219	1.4871	EV8	349S54; 321S12	- 58B	Z52CMN21.0	-	X53CrMnNiN219	-	SUH35
	1Cr18Ni9Ti	X12CrNiTi189	1.4878	321	321S320	58C	Z6CNT18.12	-	X6CrNiTi1811	F.3523	SU321

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

Material Conversion Table

ISO	Country and standard									
	China	International	Germany	U.S.A.	U.K.	France	Sweden	Italy	Spain	Japan
	GB	DIN	W.-nr	AISI/SAE	BS	AFNOR	SS	UNI	UNE	JIS
N	Al-based alloy									
	ZAISi7Mg	Al-Si7Mg(Fe)	~AlSi7Mg	356	LM25	A-S7G	4244	3599	-	AC4C
	ZAISi7MgA	Al-Si7Mg	AlSi7Mg	A356.0	2L99	A-S7G03	-	8024	-	AC4C
	ZAISi12	Al-Si12	AlSi12	413;B413.0	LM6	A-S13	4261	4514	-	AC3A
	ZAISi9Mg	~Al-Si10Mg	AlSi9Mg	360	LM9	A-S9G;A-S10G	4253	3051	-	AC4A
	-	Al-Si5	AlSi5Mg	A 443.0	-	-	-	5077	-	-
	-	Al-Si5Fe	-	B443.0	-	-	-	GD-AlSi5Fe	-	-
	-	(AlSi7Fe)	-	A444.0	-	-	-	-	-	-
	-	Al-Si12Fe	-	413	LM20	~A-S12	4260	5079	-	ADC1

ISO	Country and standard									
	China	International	Germany	U.S.A.	U.K.	France	Sweden	Italy	Spain	Japan
	GB	DIN	W.-nr	AISI/SAE	BS	AFNOR	SS	UNI	UNE	JIS
S	Ni-based alloy									
	-	S-NiCr13A16MoNb	LW2 4670	5391	mar - 46	NC12AD	-	-	-	-
	-	NiCo15Cr10MoAlTi	LW2 4674	AMS 5397	-	-	-	-	-	-
	-	NiFe35Cr14MoTi	LW2.4662	5660	-	ZSNCDT42	-	-	-	-
	-	NiCr19Fe19NbMo	LW2.4668	5383	HR8	NC19eNB	-	-	-	-
	-	NiCr20TiAk	2.4631	-	Hr401.601	NC20TA	-	-	-	-
	-	NiCr19Co11MoTi	2.4973	AMS 5399	-	NC19KDT	-	-	-	-
	-	NiCr19Fe19NbMo	LW2.4668	AMS 5544	-	NC20K14	-	-	-	-
	-	-	2.4603	5390A	-	NC22FeD	-	-	-	-
	-	NiCr22Mo9Nb	2.4856	5666	-	NC22FeDNB	-	-	-	-
	-	NiCr20Ti	2.4630	-	HR5.203-4	NC20T	-	-	-	-
	-	NiCu30AL3Ti	2.4375	4676	3072-76	-	-	-	-	-
	Co-based alloy									
	-	CoCr20W15Ni	-	5537C,AMS	-	KC20WN	-	-	-	-
	-	CoCr22W14Ni	LW2.4964	5772	-	KC22WN	-	-	-	-
	Ti-alloy									
	-	TiAl5Sn2.5	3.7115.1	UNS R54520	TA14/17	T-A5E	-	-	-	-
	-	-	-	-	-	UNS R56400	-	-	-	-
	-	TiAl6V4	3.7165.1	-	TA10-13/ TA28	UNS R56401	-	T-A6V	-	-
	-	TiAl5V5Mo5Cr3	-	-	-	-	-	-	-	-
	-	TiAl4Mo4Sn4Si0.5	3.7185	-	-	-	-	-	-	-

Product	Page	Product	Page	Product	Page	Product	Page
A		ATG 43	174	CPMT-PC2	71	G	
ABF	125	ATGHR/L	149	D		GPAD	304
ACD - CH	177	ATGIR/L	163	D			
ACD - CM	176	ATPFR/L	161	D106-03A0	309	H	
ACD - CS	175	ATPIR/L	162	D106-03A1	317	HP-2D(SPMT)	286
AFM40-ON05	198	ATSER/L	151	D106-05A0	313	HP-3D(SPMT)	288
AFM42-OD06	196	ATSER/L-D	153	D106-05A1	321	HP-4D(SPMT)	290
AFM45-SN12	200	ATSER/L-SW	154	D108-08A1	325		
AFM45-XN07	206	ATSFR/L	156	DCET-FL-F	76		
AFM45-XN09	208	ATSFR/L-OB	157	DCET-FL-M	77		
AFM75-SN12	202	ATSIR/L	164	DCET-FR-F	76	L	
AFM88-SN12	204	C		DCET-FR-M	77	LNHU 0904	253
AGPFR/L	160	CCET-FL-F	72	DCGT-E-UF	74	LNHU 1306	254
AGSFR/L	159	CCET-FL-M	73	DCGT-FP-LF	74	LNMX 06	259
AGSIR/L	165	CCET-FR-F	72	DCGT-FP-UF	74	LNMX 10	260
AGUER/L	155	CCET-FR-M	73	DCGT-F-UF	74	LNMX-AM	69
AGUIR/L	166	CCGT-E-UF	70	DCGT-NC2	75	LNMX-AR	69
AHM20-LN06	228	CCGT-FP-LF	70	DCGW-1-NL-00	105	LNMX-AS	69
AHM25-LN10	230	CCGT-FP-UF	70	DCGW-1-NL-05	105	LNMX-HE	68
AOMT 1204	258	CCGT-F-UF	70	DCGW-SL-2	99	M	
APE90-LN13	225	CCGT-NC2	71	DCMT-F1T	75	M200-4ES	268
APHT-P-DH	301	CCGW-1-NL-00	104	DCMT-KC2	75	M200-4EL	268
APHT-P-DL	302	CCGW-1-NL-05	104	DCMT-PB1	75	M200-4RS	269
APKT 1705	257	CCGW-SL-2	98	DCMT-PC2	75	M200-4RL	269
APM00-RO10	232	CCMT-F1T	71	DCMW-KD5	76	M200-2BS	270
APM00-RO12	234	CCMT-KC2	72	DNGA-SL-1	95	M200-2BL	270
APMT-DH	303	CCMT-M2T	72	DNGA-SL-2	95	M245-2ES	271
ASG 32	172	CCMT-PB1	71	DNGA-SL-4	95	M245-2EL	271
ASGHR/L	147	CCMT-PC2	71	DNMA-KD5	56	O	
ASI	130	CCMW-KD5	72	DNMG-BS	54	OD..06	246
ASIBR/L	131	CNGA-SL-1	94	DNMG-KC4	56	ON..05	
ASIFR/L	140	CNGA-SL-2	94	DNMG-M1T	54	R	
ASIGR/L	135	CNGA-SL-4	94	DNMG-MB2	54	RCGT-NC2	90
ASITR/L	141	CNMA-KD5	52	DNMG-MC3	55	RCMX	90
ASM90-AO12	223	CNMG-KC4	52	DNMG-MC4	56	RCMX-PD8	261
ASM90-AP17	219	CNMG-MB2	50	DNMG-PB1	54	ROHT	261
ASM90-LN09	211	CNMG-MB3	50	DNMG-PB3	54		
ASM90-LN13	214	CNMG-MC3	50	DNMG-PC3	55		
ASM90-TD15	221	CNMG-MC4	51	DNMG-PC4	56		
ASM90-WN08-N	216	CNMG-PB1	50	DNMG-PD3	55		
ASWB	129	CNMG-PB3	50	DNMG-PD5	56		
ASWP	127	CNMG-PC3	50	DNMG-PL5	55	S	
ASWSR/L	126	CNMG-PC4	51	DNMG-SC1	54	S□□□-ASGHL	122
ASWT	129	CNMG-PD3	50	DNMG-SC3	55	S□□□-SCLCL	123
ATBD	184	CNMG-PD5	52	DNMG-SL3	54	S□□□-SDUCL	124
ATD - E	183	CNMG-SC1	50	E		S□□□-SVUBL	124
ATD - E-G	182	CNMG-SC3	51	EPMT-C-DH	301	S□□□-SVUPL	78
ATD - E-GS	178	CNMG-SL3	50	EPMT-I-DH	301	SCGT-NC2	112
ATD - RA	180	CNMM-PC8	53	EPMT-I-DL	302	SCLCR/L	78
ATD - RM	180	CNMM-PC9	53			SCMT-HT	78
ATD - TM	179	CNMM-PD8	53			SCMT-KC2	78
ATD - TS	179	CNMM-PD9	53			SCMT-M2T	
ATG 32	173	CPMT-PB1	71				

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SCMT-PC2	78	TCMW-KD5	81	VBMT-KC2	86	WNMG-PC3	65
SCMW-KD5	78	TDHT 1505	255	VBMT-PB1	86	WNMG-PC4	66
SDJCR/L	113	TDMT 1505	255	VBMT-PC2	86	WNMG-PD3	66
SDLCR/L	114	TNGA -SL-3	96	VCET-FL-F	87	WNMG-PD5	67
SDNCN	114	TNGG-FL-F	62	VCET-FR-F	87	WNMG-PL5	66
SNGA-SL-4	96	TNGG-FP-UF	62	VCGT-E-UF	85	WNMG-SC1	65
SN..12/19	247	TNGG-FR-F	62	VCGT-FP-LF	84	WNMG-SC3	66
SNMA-KD5	59	TNGG-L-H	62	VCGT-FP-UF	85	WNMG-SL3	65
SNMG-KC4	58	TNGG-R-H	62	VCGT-F-UF	85	WNMU 0806	256
SNMG-M3T	57	TNMA-KD5	62	VCGT-NC2	85		
SNMG-MB2	57	TNMG-KC4	61	VCGW -SL-2	101		
SNMG-MC3	57	TNMG-M1T	60	VCGW-1-NL-05	107	X	
SNMG-MC4	58	TNMG-M2T	60	VCMT-PB1	86	XN..07/09	251
SNMG-PB1	57	TNMG-MB2	60	VCMT-PC2	86		
SNMG-PC3	57	TNMG-MC3	61	VNGA -SL-2	97		
SNMG-PC4	58	TNMG-MC4	61	VNGG-FP-UF	64		
SNMG-PD3	57	TNMG-PB1	60	VNMG-BS	63		
SNMG-PD5	58	TNMG-PB3	60	VNMG-KC4	64		
SNMG-SC3	57	TNMG-PC3	60	VNMG-M3T	64		
SNMG-SL3	57	TNMG-PC4	61	VNMG-MB2	63		
SNMM-PC9	59	TNMG-PD3	60	VNMG-MC3	64		
SNMM-PD8	59	TNMG-PD5	61	VNMG-PB1	63		
SNMM-PD9	59	TNMG-PL5	60	VNMG-PB3	63		
SNMX-PD9	59	TNMG-SC1	60	VNMG-PC3	63		
SPMT-DP	296	TNMG-SC3	61	VNMG-PC4	64		
STGCR/L	115	TNMG-SL3	60	VNMG-PD3	64		
STGPR/L	115	TNMM-PD8	62	VNMG-SC1	63		
SVJBR/L	116	TPMT-DH	303	VNMG-SC3	64		
SVJCR/L	118	TPMX-DH	304	VNMG-SL3	63		
SVLPR/L	119	TPMT-LH	303	VPET-FL-F	87		
SVPBR/L	117	TPEH-FL-F	82	VPET-FL-M	88		
SVPPR/L	119	TPEH-FR-F	82	VPET-FR-F	87		
SVVBN	117	TPGW-1-NL-00	106	VPET-FR-M	88		
SVVCN	118	TPGW-1-NL-05	106	VPGT-FP-LF	84		
		TPGW-SL-3	100	VPGT-FP-UF	85		
T		TPMT-PB1	80	VPGT-F-UF	85		
TBET-FL-F	81	TPMT-PC2	80	VPGT-NC2	85		
TBET-FR-F	81						
TCET-FL-F	82						
TCET-FL-M	83	V		W			
TCET-FR-F	82	VBET-FL-F	86	WBET-FL-F	89		
TCET-FR-M	83	VBET-FL-M	87	WBET-FR-F	89		
TCGT-E-UF	79	VBET-FL-Y	88	WCMT(DU)	296		
TCGT-FP-LF	79	VBET-FR-F	86	WNGA -SL-3	97		
TCGT-FP-UF	79	VBET-FR-M	87	WNMA-KD5	67		
TCGT-F-UF	79	VBET-FR-Y	88	WNMG-F1T	65		
TCGT-NC2	79	VBGT-E-UF	84	WNMG-KC4	67		
TCGW-1-NL-00	106	VBGT-FP-LF	84	WNMG-M3T	66		
TCGW-1-NL-05	106	VBGT-FP-UF	84	WNMG-MB2	65		
TCMT-KC2	81	VBGT-F-UF	84	WNMG-MC3	66		
TCMT-M2T	81	VBGW -SL-2	101	WNMG-MC4	67		
TCMT-PB1	80	VBGW-1-NL-05	107	WNMG-PB1	65		

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