

ACHTECK

**NEW
PRODUCT!**

AHM20-LN06

High Feed Milling Cutter



www.achtecktool.com

Achteck is launching a new high feed mini milling cutter, which is mounted negative, double sided four cutting edges insert. It provides a very good high feed milling solution.

The new cutter with a 20 degree kappa angle is ideal choice for high feed milling. Two kinds of geometry MM3, MM4 combined with Achteck's PVD coating technology provide exceptional performance. It can achieve excellent performance, good tool life and better surface finish quality. And can cover steel, stainless steel, cast iron, superalloy materials machining.

Product Features

- The insert has 4 cutting edges, gives a good economical solution.
- With optimized micro geometry edge, produced by selective production method, the MM3 geometry in combination with AP301U, AP401U grade, are suitable for stable condition, light cutting application and especially for more exotic materials. Predictable tool life and expected surface finish quality.
- The MM4 geometry has a strong cutting edge design for high efficiency machining.
- Max depth of cut 1.0mm.
- Approach angle 20 degree, brings ability for higher feed rates and more efficient machining processing.
- Introduced in a wide range of cutter diameters, from diameter 16mm to 63mm.
- The cutter design has a variety of interface forms: the screw modular type, the cylindrical type and the shell mill(Arbor) .
- Carbide shanks can be easily used for machining processing applications, such as large cutting depth and long overhanging. Smooth chip removal and minimal vibration.

Chip breaker Features

Chip breaker name	Edge Preparation	Feature
MM4		• For general machining • Can be used for 1st choice
MM3		• For better working conditions and finishing • Low cutting force (for low power machine)

Grade application

Grade	Coating	Material					
		P	M	K	S	N	H
AP301U	PVD	●	◐		○		
AP351U	PVD	●	◐		○		
AP401U	PVD		●		◐		

● Marked : 1st Choice ◐ Marked : 2nd Choice ○ Marked : Supplementary application

Case stories

Work piece: Die mould

Material: Alloy steel

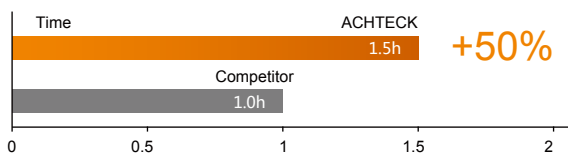
Hardness: HB280

Insert: LNMX 060410R-MM4 AP301U

Cutter description: AHM20-020-Z03-C20R-LN06-L130-C

Cutting parameters: $V_c=188\text{m/min}$, $f_z=0.56\text{mm/z}$

$a_p=0.8\text{mm}$, Dry cutting



Work piece: Die mould

Material: Alloy steel

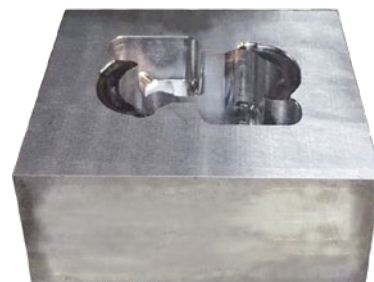
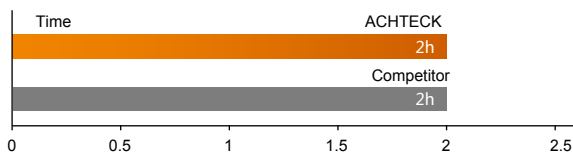
Hardness: HB280

Insert: LNMX 060410R-MM4 AP351U

Cutter description: AHM20-016-Z02-C16R-LN06-L100-C

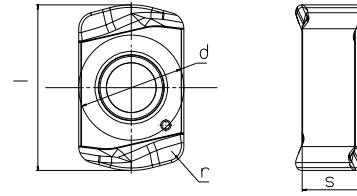
Cutting parameters: $V_c=160\text{m/min}$, $f_z=0.60\text{mm/z}$

$a_p=0.8\text{mm}$, Dry cutting



The same processing time, the cost per piece is reduced by 20%

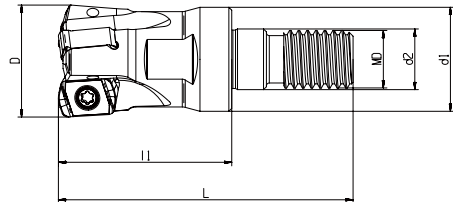
Insert stock item LNMX 06



Insert	Designation	Dimensions (mm)				Grades						
						CVD coated		PVD coated				Un- coated
		l	d	s	r	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K	AW100K
	LNMX 060410R-MM3	10	6.35	3.6	1.0			●	●	●		
	LNMX 060410R-MM4	10	6.35	3.6	1.0			●	●			

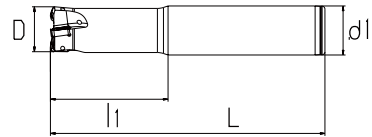
Remark: • represent for standard stock

Cutter stock item AHM20-LN06-C (Screw modular)



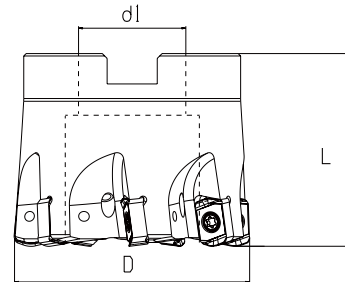
Designation	Dimension(mm)							Coolant	Z	Insert
	D	d1	d2	MD	L	l1	apmax			
AHM20-016-Z02-M08R-LN06-C	16	14.5	8.5	M08	42	25	1.0		2	LNMX 0604
AHM20-017-Z02-M08R-LN06-C	17	14.5	8.5	M08	42	25	1.0		2	
AHM20-020-Z03-M10R-LN06-C	20	18	10.5	M10	51	30	1.0		3	
AHM20-021-Z03-M10R-LN06-C	21	18	10.5	M10	51	30	1.0		3	
AHM20-025-Z04-M12R-LN06-C	25	23	12.5	M12	59	35	1.0		4	
AHM20-026-Z04-M12R-LN06-C	26	23	12.5	M12	59	35	1.0		4	
AHM20-032-Z05-M16R-LN06-C	32	29	17	M16	70	43	1.0		5	
AHM20-033-Z05-M16R-LN06-C	33	29	17	M16	70	43	1.0		5	
AHM20-035-Z05-M16R-LN06-C	35	29	17	M16	70	43	1.0		6	
AHM20-040-Z06-M16R-LN06-C	40	29	17	M16	70	43	1.0		6	

AHM20-LN06-C (Cylindrical type)



Designation	Dimension(mm)					Coolant	Z	Insert
	D	d1	L	l1	apmax			
AHM20-016-Z02-C16R-LN06-L100-C	16	16	100	30	1.0		2	LNMX 0604
AHM20-017-Z02-C16R-LN06-L150-C	17	16	150	25	1.0		2	
AHM20-020-Z03-C20R-LN06-L130-C	20	20	130	50	1.0		3	
AHM20-021-Z03-C20R-LN06-L160-C	21	20	160	30	1.0		3	
AHM20-025-Z03-C25R-LN06-L140-C	25	25	140	60	1.0		3	
AHM20-026-Z03-C25R-LN06-L180-C	26	25	180	35	1.0		3	
AHM20-032-Z04-C32R-LN06-L150-C	32	32	150	70	1.0		4	
AHM20-033-Z04-C32R-LN06-L200-C	33	32	200	35	1.0		4	
AHM20-035-Z05-C32R-LN06-L200-C	35	32	200	35	1.0		5	

AHM20-LN06-C (Shell mill)



Designation	Dimension(mm)					Coolant	Z	Insert
	D	d1	L	l1	apmax			
AHM20-040-Z06-A16R-LN06-C	40	16	40	-	1.0		6	LNMX 0604
AHM20-050-Z07-A22R-LN06-C	50	22	40	-	1.0		7	
AHM20-052-Z07-A22R-LN06-C	52	22	40	-	1.0		7	
AHM20-063-Z08-A22R-LN06-C	63	22	40	-	1.0		8	

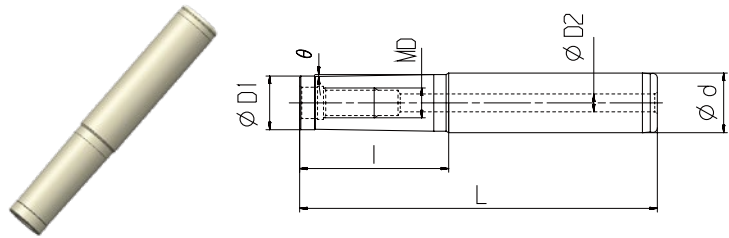
Dimension	Cutter spare parts		
Cutter diameter	Screw	Wrench	Torque
φ16-φ63	AST25064-50P	ADT-T08	1.0Nm

Application		
Face milling	Cavity milling	Ramp milling

Remark: represent for coolant
 represent for no coolant

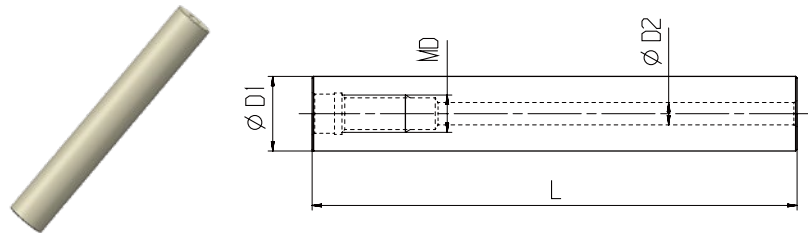
Shank stock item(used for screw modular type cutter)

1-Taper head shank



Designation	Dimension(mm)						Materials
	MD	φd	φD1	φD2	L	I	
AMS-M08-020-080-16T	M8	16	14.5	5	80	20	Steel
AMS-M08-040-100-16T	M8	16	14.5	5	100	40	Steel
AMC-M08-080-150-16T	M8	16	14.5	5	150	80	Carbide
AMC-M08-150-200-16T	M8	16	14.5	5	200	150	Carbide
AMS-M10-030-100-20T	M10	20	18	6	100	30	Steel
AMS-M10-050-120-20T	M10	20	18	6	120	50	Steel
AMC-M10-090-150-20T	M10	20	18	6	150	90	Carbide
AMC-M10-140-200-20T	M10	20	18	6	200	140	Carbide
AMS-M12-030-110-25T	M12	25	22.5	6	110	30	Steel
AMS-M12-050-130-25T	M12	25	22.5	6	130	50	Steel
AMC-M12-120-180-25T	M12	25	22.5	6	180	120	Carbide
AMC-M12-140-250-25T	M12	25	22.5	6	250	140	Carbide
AMS-M16-035-125-32T	M16	32	28.5	8	125	35	Carbide
AMS-M16-055-145-32T	M16	32	28.5	8	145	55	Steel
AMC-M16-120-200-32T	M16	32	28.5	8	200	120	Steel
AMC-M16-180-260-32T	M16	32	28.5	8	260	180	Carbide

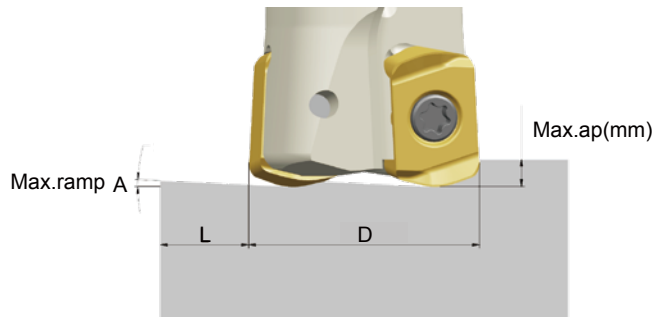
2-Straight shank



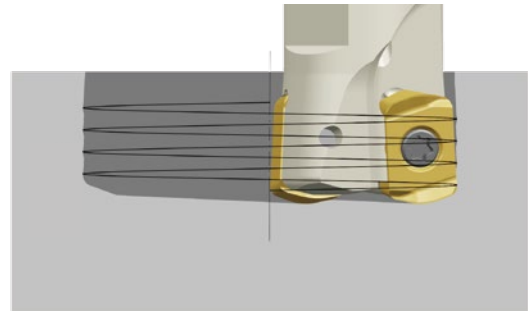
Designation	Dimension(mm)				Materials
	MD	φD1	φD2	L	
AMC-M08-105-16S	M8	16	5	105	Carbide
AMC-M08-160-16S	M8	16	5	160	Carbide
AMC-M10-130-20S	M10	20	6	130	Carbide
AMC-M10-250-20S	M10	20	6	250	Carbide
AMC-M12-145-25S	M12	25	6	145	Carbide
AMC-M12-285-25S	M12	25	6	285	Carbide
AMC-M16-157-32S	M16	32	8	157	Carbide
AMC-M16-287-32S	M16	32	8	287	Carbide

• Technical information

Straight Ramping

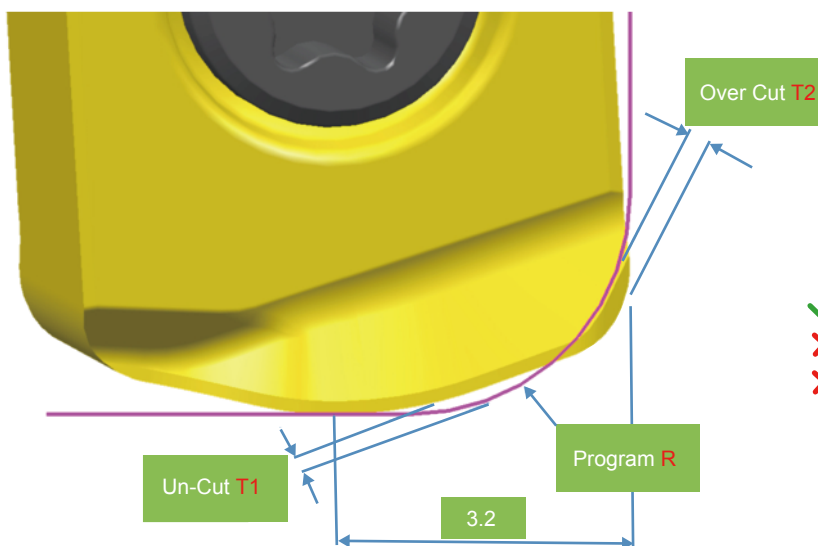


Helical Ramping



Cutter Dia(D)	Straight ramp down			Helical Ramping	
	Max.ramp-A	Max.ap(mm)	Min.length-L(mm)	Min.Dia.(mm)	Max.Dia(mm)
φ16	2.9°	0.7	13.8	23	32
φ17	2.6°	0.7	15.4	25	34
φ20	1.9°	1.0	30.1	31	40
φ21	1.8°	1.0	31.8	33	42
φ25	1.3°	1.0	44.0	41	50
φ26	1.3°	1.0	44.0	43	52
φ32	0.9°	1.0	63.6	55	64
φ33	0.9°	1.0	63.6	57	66
φ40	0.7°	1.0	81.8	71	80
φ50	0.5°	1.0	114.5	91	100
φ63	0.4°	1.0	143.2	117	126

NC Program Radius



Technical information for NC program

Program R	Un-Cut T1	Over-Cut T2
R1.5	0.43	0
R2.0	0.29	0.06
R2.5	0.15	0.24

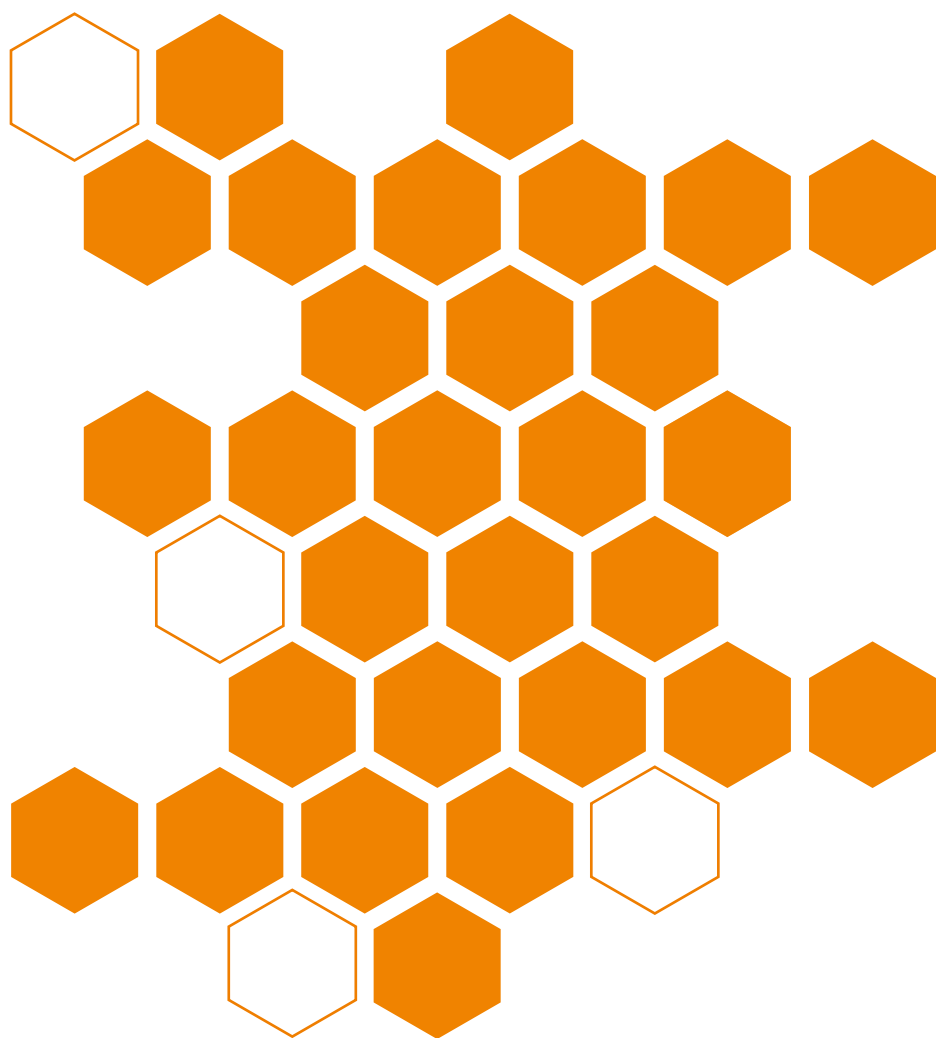
Note : select R1.5 as program R , without over-cut.

Recommended cutting speed by materials

Machined Materials			Achteck Milling Grades Application Ranges												Cutting depth and feed rate										
ISO	Material classification	Tensile strength (N/mm²)	Hardness (HB)	AP301U			AP351U			AP401U			LNMX 0604												
				PVD			PVD			PVD				Chip breaker											
				P15-35			P30-45			P20-40				MM3	MM4										
				M15-35			M30-45			M20-40															
				-			-			-															
				-			-			-															
				-			S30-45			S20-40															
				-			-			-															
				Feed rate(mm/z)																					
				Min	Med	Max	Min	Med	Max	Min	Med	Max	ap(mm)												
Cutting speed(m/min)												Min	-	Max	Min	-	Max	Min	-	Max	Min	-	Max		
P	Non-alloyed steel	<600	<180	450	340	290	230	205	170				0.1		-1.0	0.30	-	2.00	0.30	-	2.00				
		<950	<280	320	240	200	200	180	160																
	Alloyed steel	700-950	200-280	290	210	185	200	155	110																
		950-1200	280-355	280	210	200	180	130	90																
		1200-1400	355-415	210	170	110	140	105	70																
M	Duplex stainless steel	778	230	165	150	130	270	215	155	150	115	85				0.30	-	2.00	0.30	-	2.00				
	Austenitic stainless steel	675	200	270	185	90	260	180	90	185	140	105													
	Precipitation-hardening stainless steel	1013	300	300	225	165	170	150	110	125	95	70													
K	Grey cast iron	700	220																						
	Nodular Cast iron	880	260																						
	Malleable cast iron	800	250																						
S	Fe based alloy	943	280																						
	Co based alloy	1076	320																						
	Ni based alloy	1177	350																						
	Ti-alloy	1262	370																						
N	Aluminum	260	75																						
	Aluminum alloy	447	130																						
H	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, work piece clamping and cooants.

* When slotting , $ap=1/2ap_{max}$

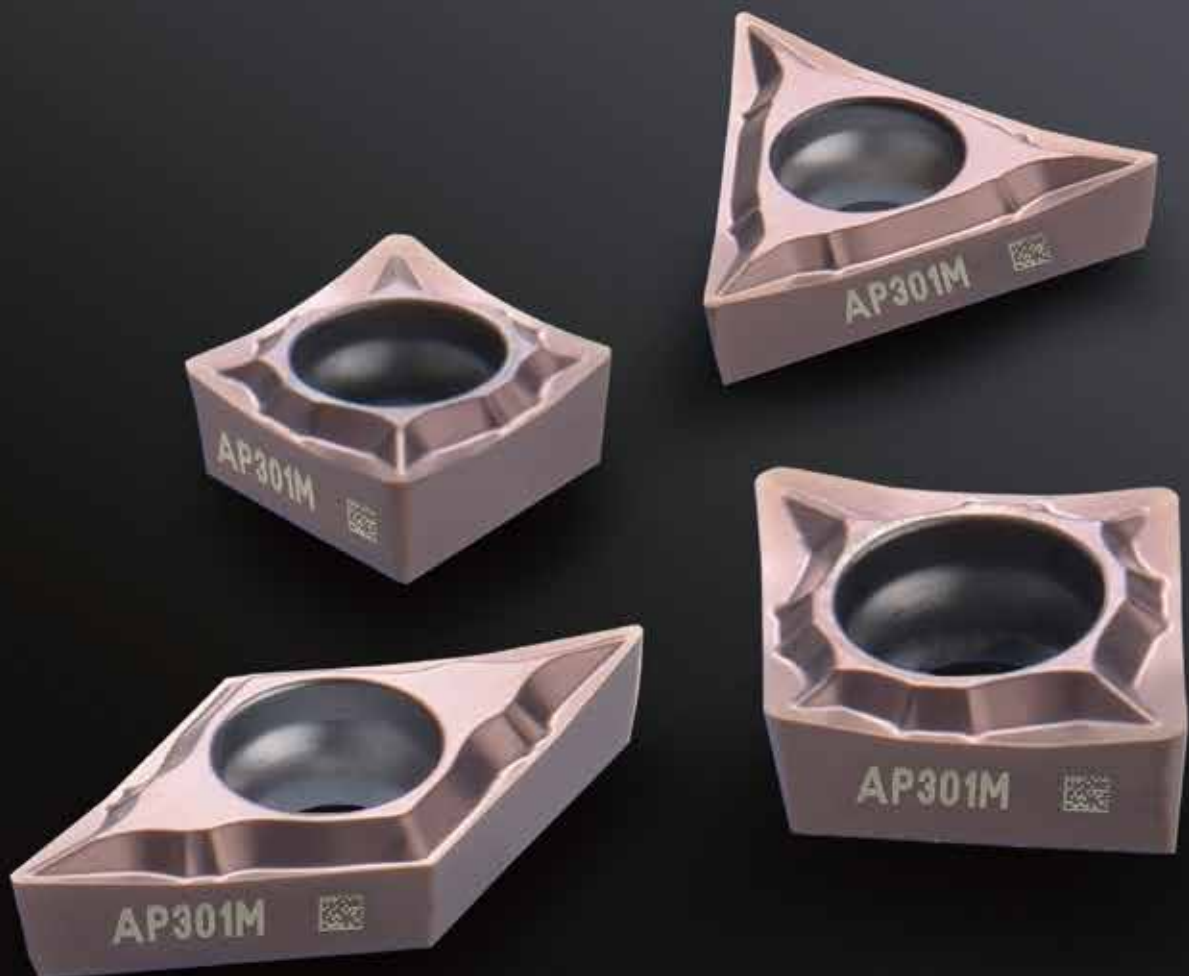


ACHTECK

**NEW
PRODUCT!**

PA1

New chip breaker PA1 with high precision tolerance insert



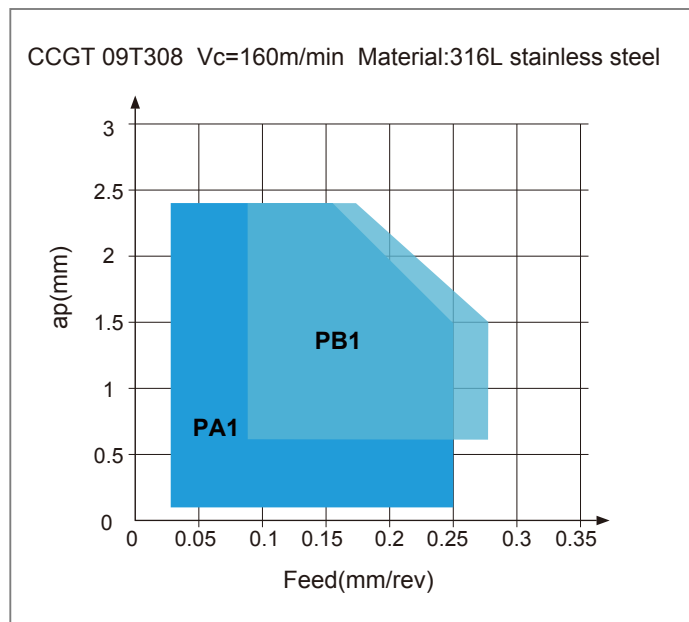
Achteck is launching a new chip breaker PA1 which is positive turning insert with precision tolerance.

PA1 chip breaker is suitable for super finishing to finishing with very excellent chip control at low feed rate and small depth of cut. The PA1 chip breaker has good combination with AP301M grade which supply excellent performance on stainless steel and super alloys.

◆ PA1 chip breaker features

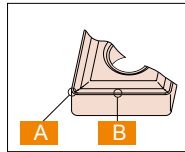
- ◆ For super finishing to finishing
- ◆ Excellent chip breaking at low feed rate and small depth of cut
- ◆ Periphery grinded insert with high precision tolerance
- ◆ Better surface finish and longer tool life
- ◆ For stainless steel and super alloys
- ◆ Insert radius supplied with 0.1mm,0.2mm,0.4mm and 0.8mm

◆ Chip breaker range



◆ Chip breaker features

Positive insert



Chip breaker	Edge preparation		Application
PA1		A 	- For super finishing to finishing - For stainless steel and super alloys
		B 	

◆ Grade application

Grade	Coating	Material					
		P	M	K	S	N	H
AP301M	PVD		●		●		

● Marked : 1st Choice ● Marked : 2nd Choice

◆ Recommended cutting speed by materials

Material	Material Type		Cutting speed (m/min)		
			Feed(low)	Feed(medium)	Feed(high)
Stainless steel	Austenite+ Ferrite	300 series	180	140	110
	Martensite	400 series	200	160	130
	Precipitated dispersion hardened stainless steel	P.H.	160	130	70
High temperature alloys	Iron base alloy	-	150	90	40
	Cobalt base alloy	Waspalloy	80	50	30
	Nickel base alloy	Inconel	80	50	30
	Titanium alloy	Ti6Al4V	160	90	35

Remark) The recommended cutting speed always refer to general conditons. These cutting speed should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants.(The feed rate refer corner radius)

Case stories

Component description: Conrod rod

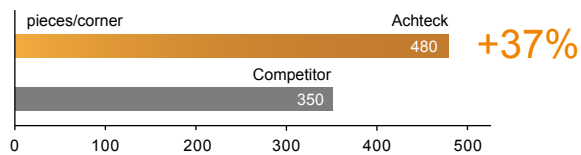
Material: Powder metallurgy

Insert: CCGT 060204E-PA1 AP301M

Competitor: CCGT 060204-MN2

Cutting Parameters: $V_c=220\text{m/min}$, $f=0.1\text{mm/r}$,
 $a_p=0.15\text{mm}$, wet cutting

Internal fine boring



Component description: Axis

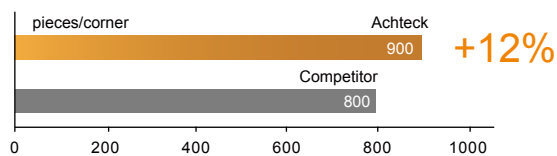
Material: 430F stainless steel

Insert: VBGT 110302E-PA1 AP301M

Competitor: VBGT 110302-SA

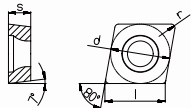
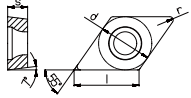
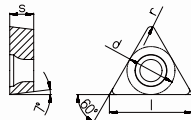
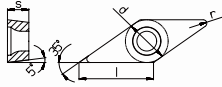
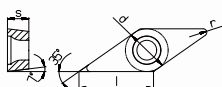
Cutting Parameters: $V_c=110\text{m/min}$, $f=0.05\text{mm/r}$,
 $a_p=0.1\text{mm}$, wet cutting

External finishing

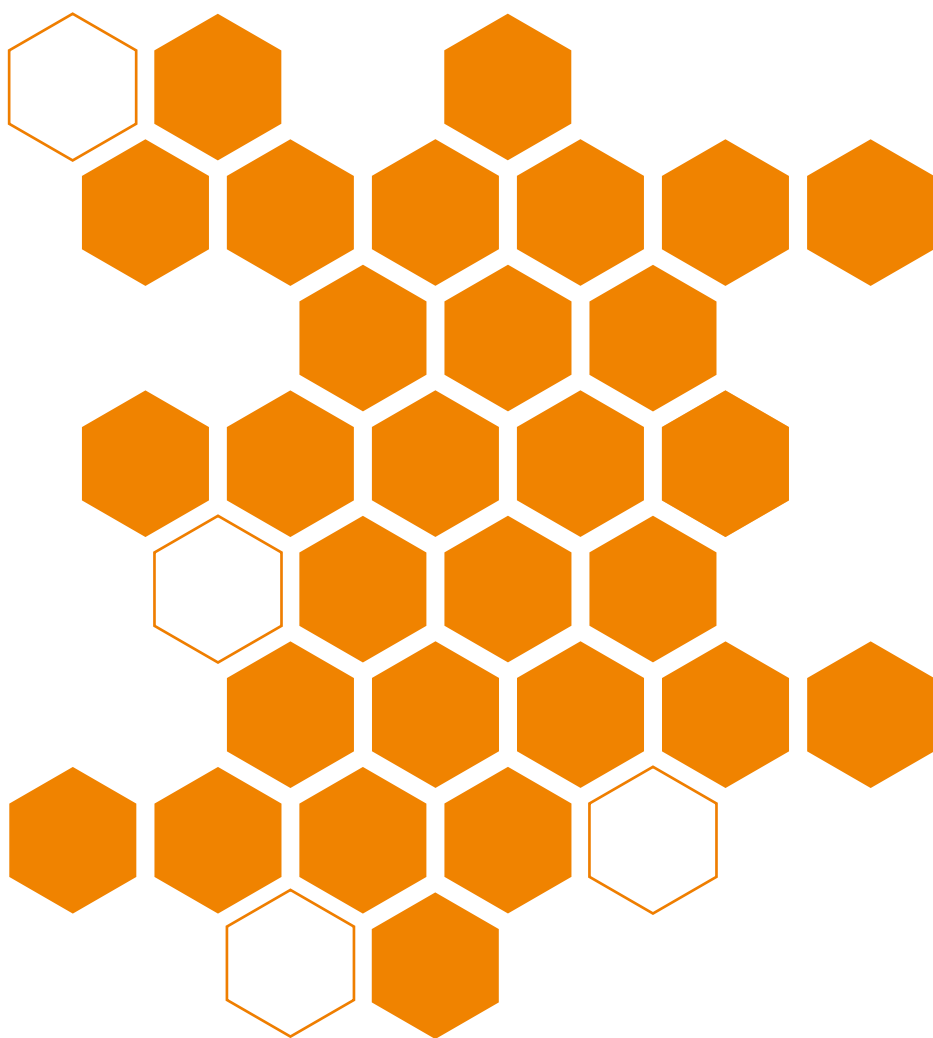


Stock items

Positive insert

Insert	Item designation	Dimension(mm)				Recommended cutting parameters		Grade (PVD)	Geometry
		d	l	s	r	Feed (mm/rev)	ap (mm)	AP301M	
	CCGT 060201E-PA1	6.35	6.45	2.38	0.1	0.02-0.15	0.10-1.4	●	
	CCGT 060202E-PA1	6.35	6.45	2.38	0.2	0.02-0.15	0.10-1.4	●	
	CCGT 060204E-PA1	6.35	6.45	2.38	0.4	0.03-0.20	0.10-1.4	●	
	CCGT 09T301E-PA1	9.53	9.67	3.97	0.1	0.02-0.15	0.10-2.4	●	
	CCGT 09T302E-PA1	9.53	9.67	3.97	0.2	0.02-0.15	0.10-2.4	●	
	CCGT 09T304E-PA1	9.53	9.67	3.97	0.4	0.03-0.20	0.10-2.4	●	
	CCGT 09T308E-PA1	9.53	9.67	3.97	0.8	0.03-0.25	0.10-2.4	●	
	DCGT 070201E-PA1	6.35	7.75	2.38	0.1	0.02-0.15	0.10-1.4	●	
	DCGT 070202E-PA1	6.35	7.75	2.38	0.2	0.02-0.15	0.10-1.4	●	
	DCGT 070204E-PA1	6.35	7.75	2.38	0.4	0.03-0.20	0.10-1.4	●	
	DCGT 11T301E-PA1	9.53	11.62	3.97	0.1	0.02-0.15	0.10-2.4	●	
	DCGT 11T302E-PA1	9.53	11.62	3.97	0.2	0.02-0.15	0.10-2.4	●	
	DCGT 11T304E-PA1	9.53	11.62	3.97	0.4	0.03-0.20	0.10-2.4	●	
	TCGT 110201E-PA1	6.35	11.00	2.38	0.1	0.02-0.15	0.10-2.4	●	
	TCGT 110202E-PA1	6.35	11.00	2.38	0.2	0.02-0.15	0.20-2.4	●	
	TCGT 110204E-PA1	6.35	11.00	2.38	0.4	0.03-0.20	0.20-2.4	●	
	TCGT 16T304E-PA1	9.53	16.50	3.97	0.4	0.03-0.20	0.20-2.4	●	
	VBGT 110301E-PA1	6.35	11.07	3.18	0.1	0.02-0.15	0.10-1.4	●	
	VBGT 110302E-PA1	6.35	11.07	3.18	0.2	0.02-0.15	0.20-1.4	●	
	VBGT 110304E-PA1	6.35	11.07	3.18	0.4	0.03-0.20	0.20-1.4	●	
	VBGT 160401E-PA1	9.53	16.61	4.76	0.1	0.02-0.15	0.10-1.4	●	
	VBGT 160402E-PA1	9.53	16.61	4.76	0.2	0.02-0.15	0.20-1.4	●	
	VCGT 110301E-PA1	6.35	11.07	3.18	0.1	0.02-0.15	0.10-1.4	●	
	VCGT 110302E-PA1	6.35	11.07	3.18	0.2	0.02-0.15	0.20-1.4	●	
	VCGT 110304E-PA1	6.35	11.07	3.18	0.4	0.03-0.20	0.20-1.4	●	

● Marked: represent for standard stock

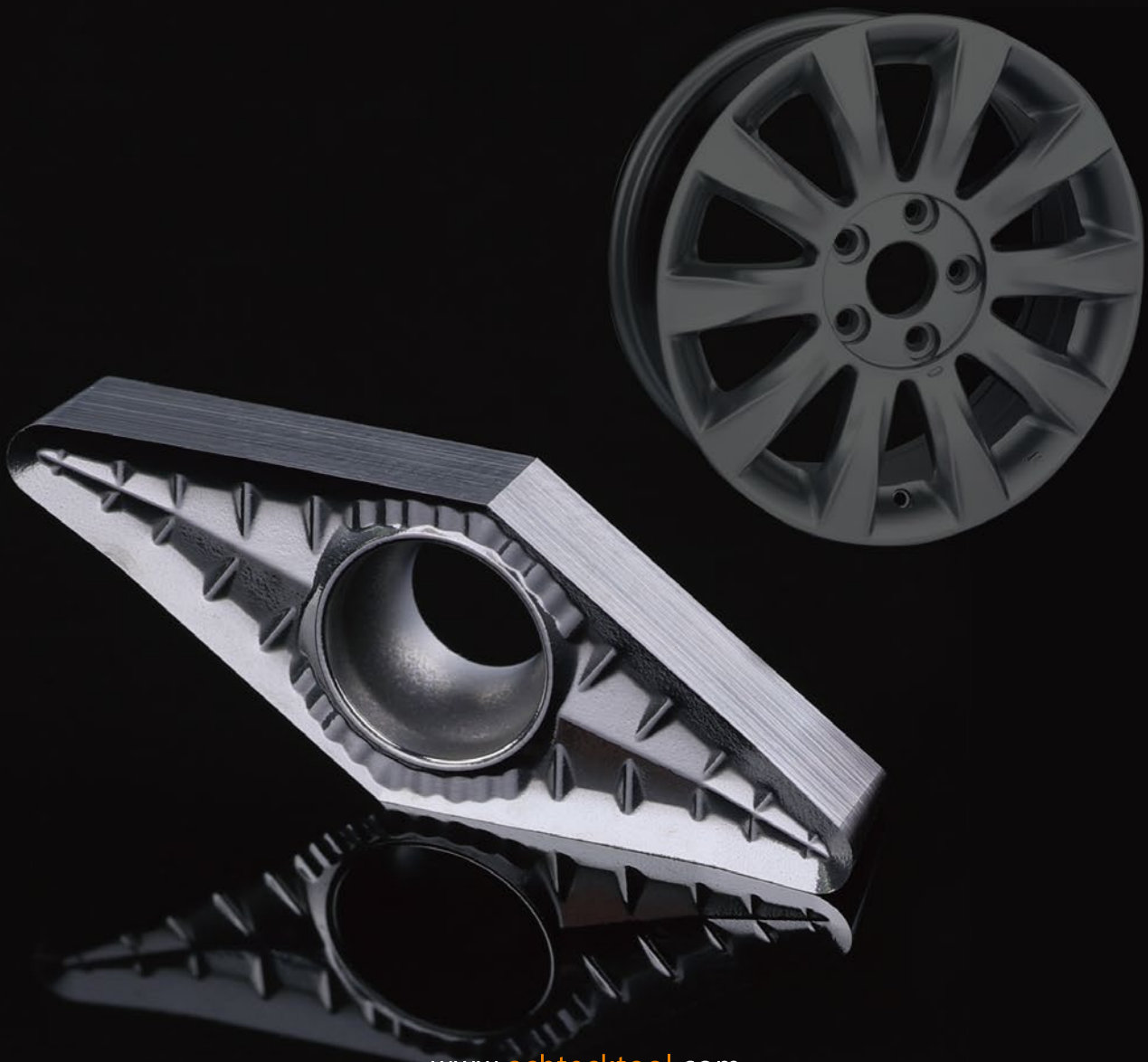


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NEW
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AW100K

Uncoated grade for non-ferrous material



www.achtecktool.com

Achteck is launching - a new uncoated carbide grade with a new chip breaker geometry. The new chip breaker which is called NC2 is a positive insert that is optimized chip breaker design for non-ferrous material. Especially it has a high positive rake angle applies minimized built up edge in machining on aluminum material and it can be very realized smooth cutting and low machining power.

In addition, the top surface of the insert is polished which can be increased longer tool life as well as less built up edge.

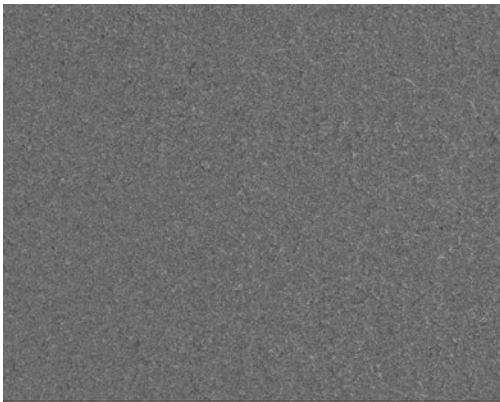
Inserts cutting edge has very sharp and it very suitable for small depth of cut and stable when high surface finish quality is required.

In case of new grade, it has developed to uncoated carbide grade which is called AW100K. It has high hardness and excellent wear resistance including toughness. AW100K grade is the best solution for aluminum material.

This grade is the best combination of NC2 chip breaker applies not only increases tool life but also improves surface finish and minimized burr on non-ferrous material, especially these products will be the best option to machine on aluminum material.

◆ **AW100K** Grade Feature

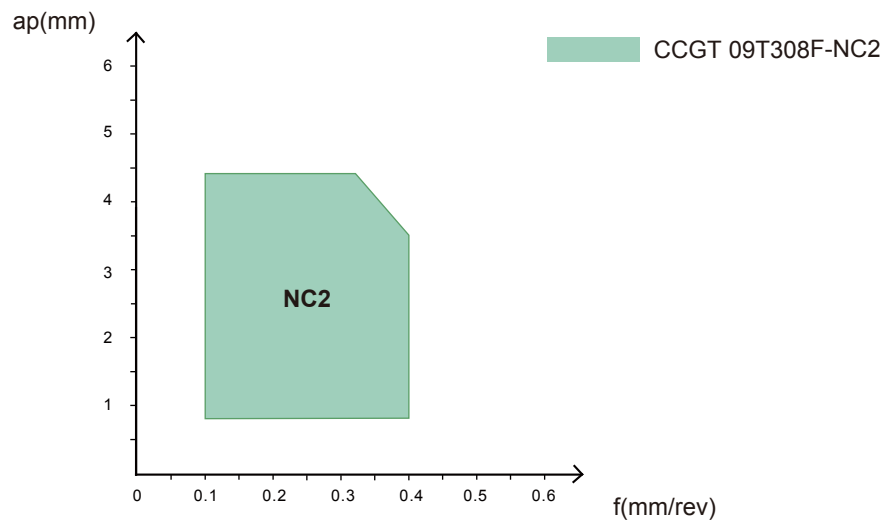
Uncoated grade
ISO range: N05-N15



<SEM micro structure>

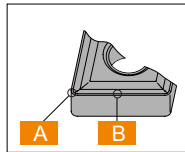
- ◆ High hardness and good toughness carbide uncoated grade
- ◆ General turning of non-ferrous materials such as aluminum and copper alloy
- ◆ Excellent wear resistance
- ◆ For high cutting speed on aluminum

• Chip breaker diagram



• Chip breaker Features

Positive insert



Chip breaker name	Edge preparation		Application
NC2			- Optimized chip breaker design for excellent chip controlling - Very sharp positive rake angle - Inclined cutting edge applies very smooth cutting and low cutting force - Polished surface can be minimized built up edge and better surface finish - Positive insert - For finishing to semi-finishing - First choice for aluminum machining

Recommended cutting speed by materials

Material	Silicon contents	Cutting speed(Vc: m/min)
Aluminum and aluminum alloys	<6%	200~950
Aluminum + Silicon	>6%	100~500

Note) The recommended cutting speed is for normal cutting conditions. The actual cutting speed could be adjusted based on real working condition by considering rigidity of the machine, fixation, and coolant.

Case stories

Component description: Wheel

Material: Aluminum alloy (A3567)

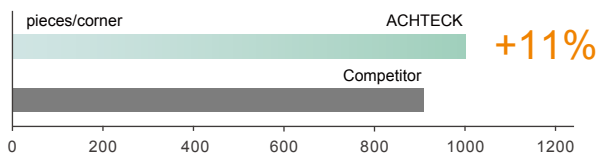
Insert: VCGT 160412F-NC2 AW100K

Competitor: VCGT 160412

Cutting Parameters: Vc=600m/min, f=0.25mm/r, ap=0.8mm

Wet cutting

Operations: External , Face turning



Component description: Conductor

Material: Aluminum alloy

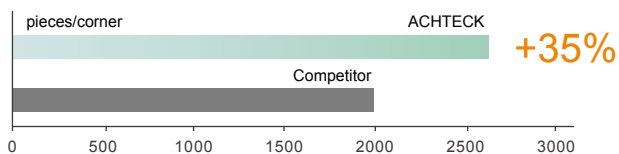
Insert: CCGT 09T304F-NC2 AW100K

Competitor: CCGX 09T304

Cutting Parameters: Vc=122m/min, f=0.25mm/r, ap=0.5mm

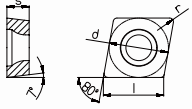
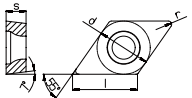
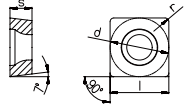
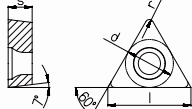
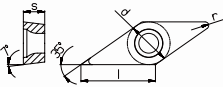
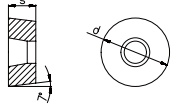
wet cutting

Operations: External turning, Continuous cut

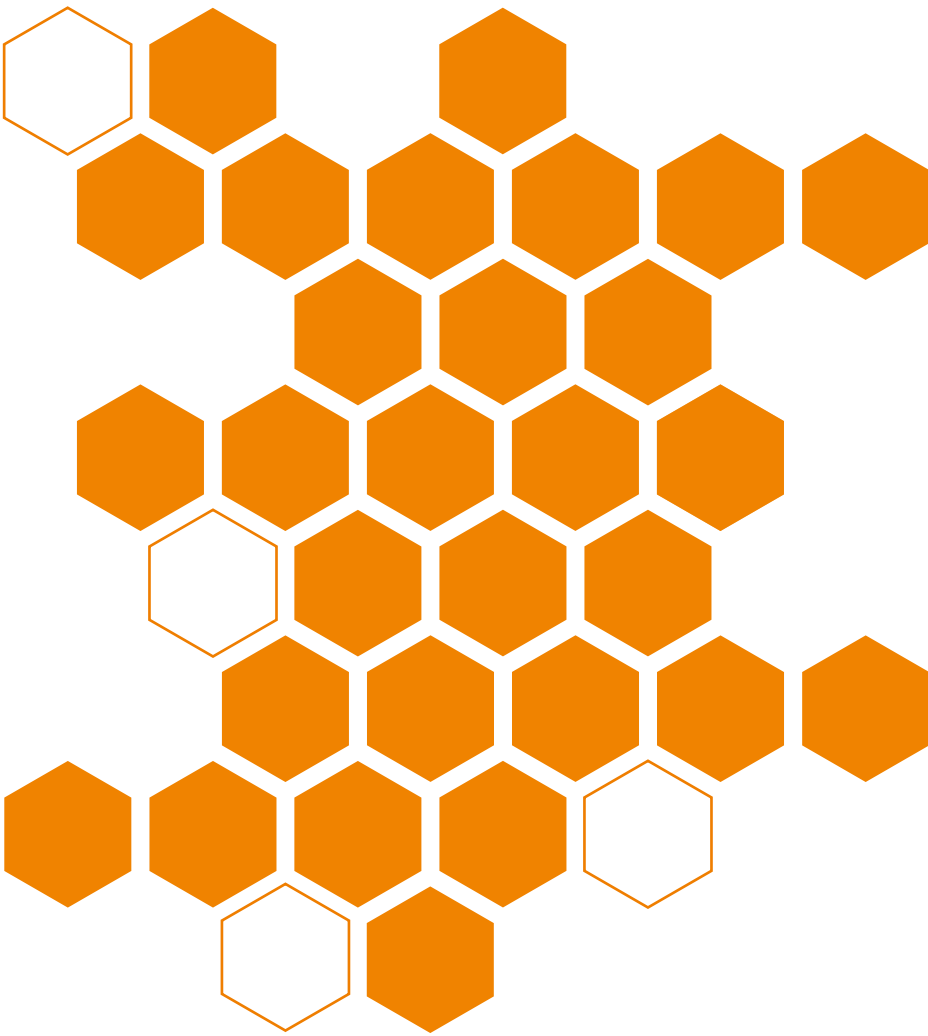


Stock items

Positive insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Uncoated	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AW100K	
	CCGT 060204F-NC2	0.05-0.20	0.32-2.9	6.35	6.45	2.38	0.4	●	
	09T302F-NC2	0.02-0.10	0.16-4.4	9.525	9.67	3.97	0.2	●	
	09T304F-NC2	0.05-0.20	0.32-4.4	9.525	9.67	3.97	0.4	●	
	09T308F-NC2	0.10-0.40	0.64-4.4	9.525	9.67	3.97	0.8	●	
	120404F-NC2	0.05-0.20	0.32-5.8	12.7	12.9	4.76	0.4	●	
	120408F-NC2	0.10-0.40	0.64-5.8	12.7	12.9	4.76	0.8	●	
	DCGT 070202F-NC2	0.02-0.10	0.16-3.5	6.35	7.75	2.38	0.2	●	
	070204F-NC2	0.05-0.20	0.32-3.5	6.35	7.75	2.38	0.4	●	
	11T302F-NC2	0.02-0.10	0.16-5.2	9.525	11.62	3.97	0.2	●	
	11T304F-NC2	0.05-0.20	0.32-5.2	9.525	11.62	3.97	0.4	●	
	11T308F-NC2	0.10-0.40	0.64-5.2	9.525	11.62	3.97	0.8	●	
	SCGT 09T308F-NC2	0.10-0.40	0.64-4.3	9.525	9.525	3.97	0.8	●	
	TCGT 110204F-NC2	0.05-0.20	0.32-5.0	6.35	11.0	2.38	0.4	●	
	16T304F-NC2	0.05-0.20	0.32-7.4	9.525	16.5	3.97	0.4	●	
	16T308F-NC2	0.10-0.40	0.64-7.4	9.525	16.5	3.97	0.8	●	
	VCGT 110302F-NC2	0.02-0.10	0.16-2.8	6.35	11.07	3.18	0.2	●	
	110304F-NC2	0.05-0.20	0.32-2.8	6.35	11.07	3.18	0.4	●	
	160404F-NC2	0.05-0.20	0.32-4.2	9.525	16.61	4.76	0.4	●	
	160408F-NC2	0.10-0.40	0.64-4.2	9.525	16.61	4.76	0.8	●	
	160412F-NC2	0.14-0.60	0.96-4.2	9.525	16.61	4.76	1.2	●	
	220530F-NC2	0.36-1.50	2.40-5.5	12.7	22.1	5.56	3.0	●	
	RCGT 0803MOF-NC2	0.10-1.00	0.70-3.3	8.0	-	3.18	4.0	○	
	1003MOF-NC2	0.20-1.30	0.90-4.0	10.0	-	3.18	5.0	○	
	10T3MOF-NC2	0.20-1.30	0.90-4.0	10.0	-	3.97	5.0	○	

Remark: ● represent for standard stock
○ represent for Make-To-Order



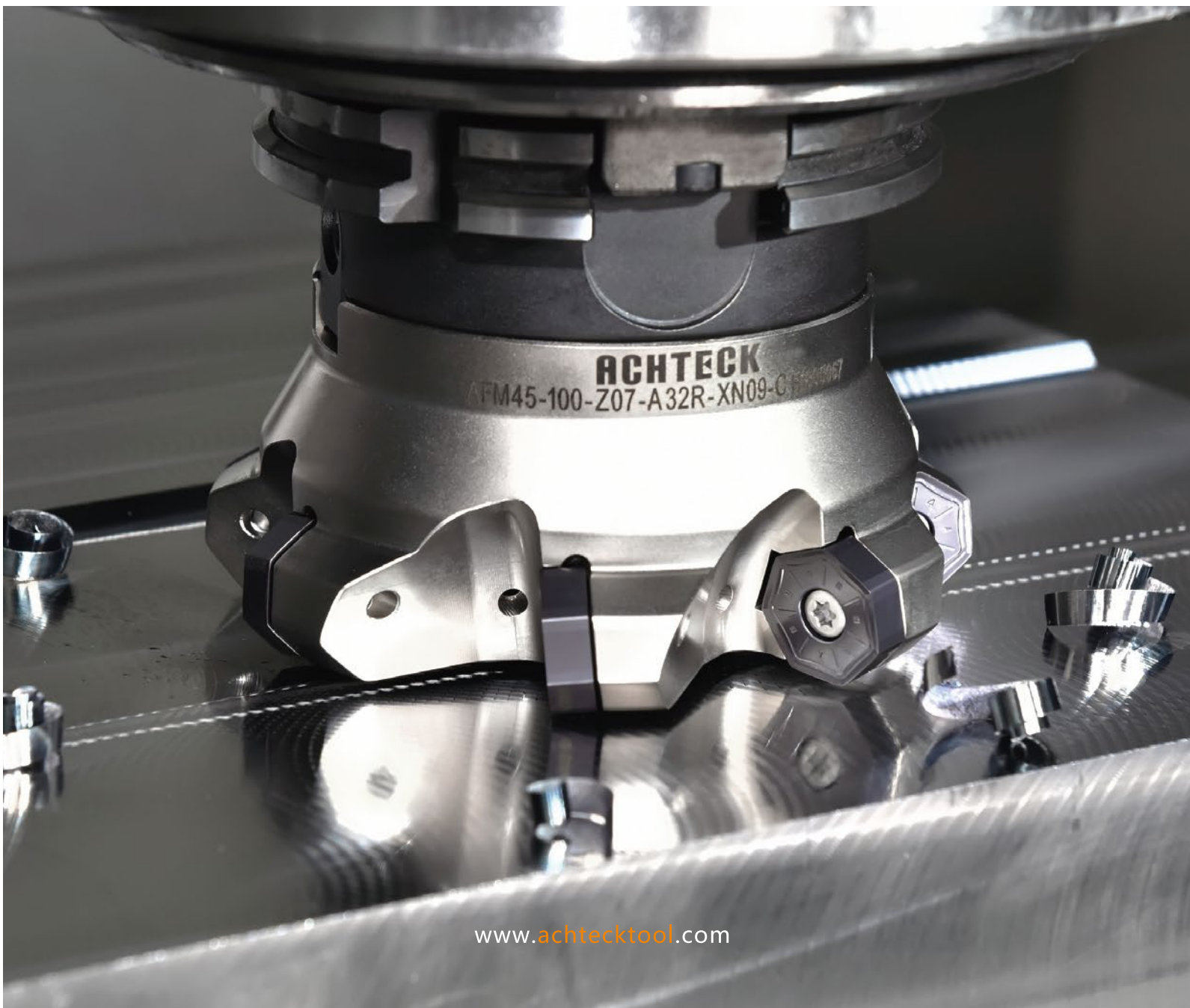
ACHTECK

NEW
PRODUCT!

AFM45-XN07/09

Solution for Face Milling

New cutter with 14 cutting edges



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Achteck is launching a new milling cutter which is mounted HEPTAGONAL double side insert and it provides a good solution for face milling. The insert has 14 cutting edges provide an economical solution to reduce machining cost.

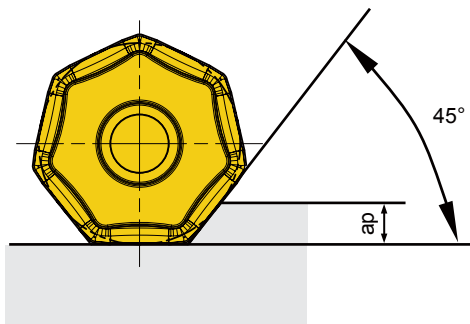
The new cutter with 45 degree entering angle is an ideal solution for face milling applications. The three geometry MM3, MM4 and MR6 are combined with Achteck's CVD and PVD coating technology provide exceptional performance, a better surface finish and can be covering to machining on steels, stainless steels, cast irons and super alloys.

The insert XN07..W has a wiper geometry provides a good surface finish and high productivity.

◆ Product Features

- ◆ With 45 degree entering angle with economical double side 14 cutting edges insert which are type of XN07/09 series.
- ◆ Provides high efficient, smooth machining and less cutting force due to high positive rake angle geometry in roughing
- ◆ The diameter of tool body up to 125mm have internal coolant through hole can be provided coolant to cutting edge exactly and reduce heat generating
- ◆ Two types of structure design of cutter: screw and wedge clamping. screw type for machining on steels, cast iron, stainless steels, super alloys and the wedge type for machining on cast irons.
- ◆ XN07 series inserts can be mounted with screw clamping and XN09 series inserts can be mounted with screw and wedge clamping.
- ◆ Ideal solution for rough machining of automotive components such as cylinder block, mainfolder, con-rod, knuckles, carriers and turbo charger.

◆ Recommended maximum depth of cut by insert



Insert	Ap(Max)
XN□U 0705ANN	3.6mm
XN□U 070508	4.4mm
XN□U 0906ANN	5.0mm
XN□U 090612	6.0mm

• Chip breaker Featrues

Chip breaker name	Edge preparation	Feature
MM3		- Sharp cutting edge and low cutting force - Very good for sticky material such as stainless steel, mild steels and super alloys
MM4		- For general machining - Can be used for 1st choice - Stable tool life
MR6		- Strong cutting edge - Good for roughing on steels and cast irons - Recommended to machine unstable work piece material

• Grade application

Grade	Coating	Material					
		P	M	K	S	N	H
AP301U	PVD	●	◐		○		
AP351U	PVD	●	◐		○		
AP401U	PVD		●		◐		
AC301P	CVD	●	◐	○			
AC301K	CVD			●			◐
AP351K	PVD			●			

● Marked: 1st choie ◐ Marked: 2nd Choice ○ Supplementary application

• Precautions when using wiper insert

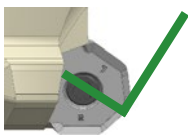


Fig.1(Right)



Fig.2(Wrong)



Fig.3(Wrong)

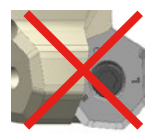


Fig.4(Wrong)

- The specification for these wiper inserts are two cutting edges right hand cutter body and two cutting edges left hand cutter body. Refer to Figure 1.
- A satisfactory surface finish can be achieved with one wiper insert. However, if the feed rate per revolution will be equal to or greater than the wiper of the edge, it's recommended to install second and more wiper inserts speaced evenly within the cutting body.
- The wiper insert XN 07..W is not able to use corner radius inserts(ie XN□U 0705ANN) together in the cutter.

Case stories

Work piece: Turbo Charger

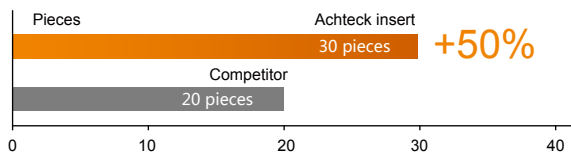
Material: Austenitic heat-resistant casting

Hardness: HRC32-34

Insert: XNMU 070508-MM4 AP351U

Cutter description: AFM45-125-Z10-32R-XN07-C

Cutting parameters: $V=110\text{m/min}$, $fz=0.15\text{mm/Z}$
 $ap=2.0$, Wet cutting



Work piece description: Cylinder head of diesel engine

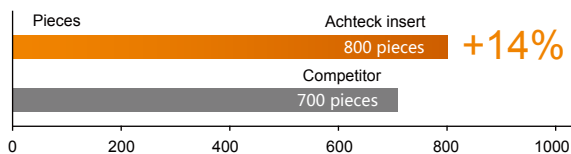
Material: Grey cast iron

Hardness: 180HB

Insert: XNMU090612-MR6 AC301K

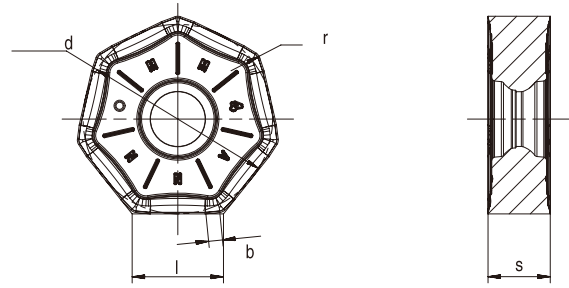
Cutter description: AFM45-160-Z20-A40R-XN09-W

Cutting parameters: $vc=226\text{ m/min}$, $fz=0.26\text{mm/Z}$
 $ap=2.5\sim4\text{mm}$, dry cutting



● Insert stock item

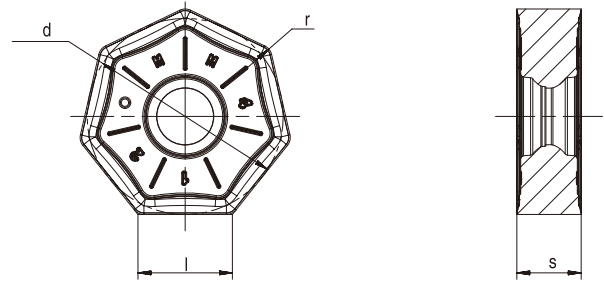
XN□U 07/09ANN



Insert	Designation	Dimensions (mm)					Grades					
							CVD coated		PVD coated			
		l	d	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	XNGU 0705ANN-MM3	7.0	14.5	5.4	0.8	1.1		●	●	●		
	XNGU 0705ANN-MM4	7.0	14.5	5.4	0.8	1.1		●	●			
	XNMU 0705ANN-MM4	7.0	14.5	5.4	0.8	1.1	●	●	●	●		●
	XNMU 0705ANN-MR6	7.0	14.5	5.4	0.8	1.1		●	●	●		●
	XNGU 0906ANN-MM3	9.2	19.0	6.25	0.8	1.4	●	●	●	●		
	XNGU 0906ANN-MM4	9.2	19.0	6.25	0.8	1.4	●	●	●	●		
	XNMU 0906ANN-MR6	9.2	19.0	6.25	0.8	1.4		●	●			●

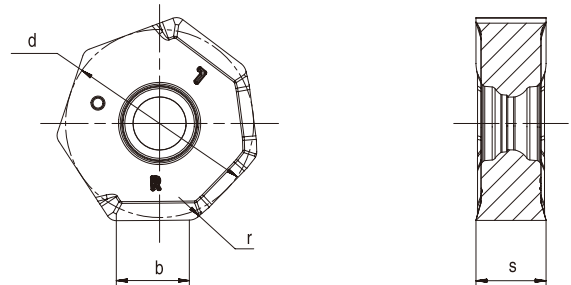
Remark: ● represent for standard stock

XN□U 07/09



Insert	Designation	Dimensions (mm)				Grades					
						CVD coated		PVD coated			
		l	d	s	r	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	XNMU 070508-MM4	7.0	14.5	5.4	0.8		●		●	●	●
	XNMU 090612-MM4	9.2	19.0	6.25	1.2		●	●	●	●	●

XNGX 0705ANN-W

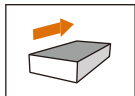


Insert	Designation	Dimensions (mm)					Grades					
							CVD coated		PVD coated			
		l	d	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	XNGX 0705ANN-W	-	15	5.4	1.0	6		●	●			

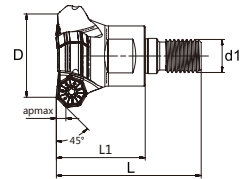
Remark: ● represent for standard stock

◆ Cutter stock item

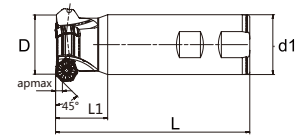
AFM45-XN07



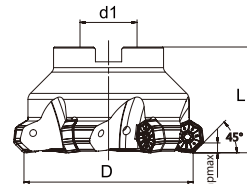
Facing



Designation	Dimension					Coolant	Z	Insert
	D	d1	L	l1	apmax			
AFM45-040-Z03-M16R-XN07-C	40	16	70	43	4.4		3	XN□U 0705..



Designation	Dimension					Coolant	Z	Insert
	D	d1	L	l1	apmax			
AFM45-040-Z03-W40R-XN07-C	40	40	130	35	4.4		3	XN□U 0705..

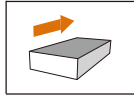


Designation	Dimension				Coolant	Z	Insert
	D	d1	L	apmax			
AFM45-040-Z03-A16R-XN07-C	40	16	40	4.4		3	XN□U 0705..
AFM45-050-Z04-A22R-XN07-C	50	22	40	4.4		4	
AFM45-050-Z05-A22R-XN07-C	50	22	40	4.4		5	
AFM45-063-Z05-A22R-XN07-C	63	22	40	4.4		5	
AFM45-063-Z06-A22R-XN07-C	63	22	40	4.4		6	
AFM45-080-Z06-A27R-XN07-C	80	27	50	4.4		6	
AFM45-080-Z07-A27R-XN07-C	80	27	50	4.4		7	
AFM45-100-Z07-A32R-XN07-C	100	32	50	4.4		7	
AFM45-100-Z08-A32R-XN07-C	100	32	50	4.4		8	
AFM45-125-Z08-A40R-XN07-C	125	40	63	4.4		8	
AFM45-125-Z10-A40R-XN07-C	125	40	63	4.4		10	
AFM45-160-Z09-A40R-XN07	160	40	63	4.4		9	
AFM45-160-Z12-A40R-XN07	160	40	63	4.4		12	

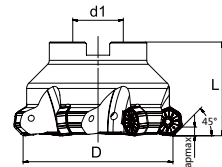
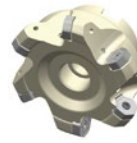
Dimensions		Cutter spare parts	
Cutter diameter	Screw	Wrench	Torque
φ40-80	AST35120-60M	AWT-T15	3.5Nm
φ100-160	AST35120-60M	ADT-T15	
		ADT-G16 BIT-T15	

Remark: represent for coolant
 represent for no coolant

AM45-XN09-C(Screw clamping)

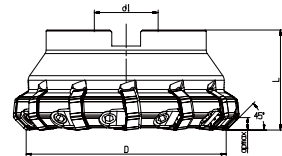


Facing



Designation	Dimension				Coolant	Z	Insert
	D	d1	L	apmax			
AFM45-063-Z05-A22R-XN09-C	63	22	40	6.0		5	XN□U0906..
AFM45-080-Z06-A27R-XN09-C	80	27	50	6.0		6	
AFM45-100-Z07-A32R-XN09-C	100	32	50	6.0		7	
AFM45-100-Z08-A32R-XN09-C	100	32	50	6.0		8	
AFM45-125-Z08-A40R-XN09-C	125	40	63	6.0		8	
AFM45-125-Z10-A40R-XN09-C	125	40	63	6.0		10	
AFM45-160-Z09-A40R-XN09	160	40	63	6.0		9	
AFM45-160-Z12-A40R-XN09	160	40	63	6.0		12	
AFM45-200-Z12-A60R-XN09	200	40	63	6.0		12	
AFM45-200-Z16-A60R-XN09	200	40	63	6.0		16	

Dimensions	Cutter spare parts		
Cutter diameter	Screw	Wrench	Torque
φ63-80	AST513-60	AWT-T20	5.0Nm
φ63-200	AST513-60	ADT-T20	
		ADT-G16 BIT-T20	



Designation	Dimension				Coolant	Z	Insert
	D	d1	L	apmax			
AFM45-080-Z09-A27R-XN09-W	80	27	50	6.0		9	XN□U0906..
AFM45-100-Z12-A32R-XN09-W	100	32	50	6.0		12	
AFM45-125-Z16-A40R-XN09-W	125	40	63	6.0		16	
AFM45-125-Z16-A40L-XN09-W	125	40	63	6.0		16	
AFM45-160-Z20-A40R-XN09-W	160	40	63	6.0		20	
AFM45-160-Z20-A40L-XN09-W	160	40	63	6.0		20	
AFM45-200-Z26-A60R-XN09-W	200	40	63	6.0		26	
AFM45-200-Z26-A60L-XN09-W	200	40	63	6.0		26	

Dimensions	Cutter spare parts		
Cutter diameter	Wedge	Screw	Wrench
φ80-200	AWG-8H	AWS830F	AWH4

Remark: represent for coolant
 represent for no coolant

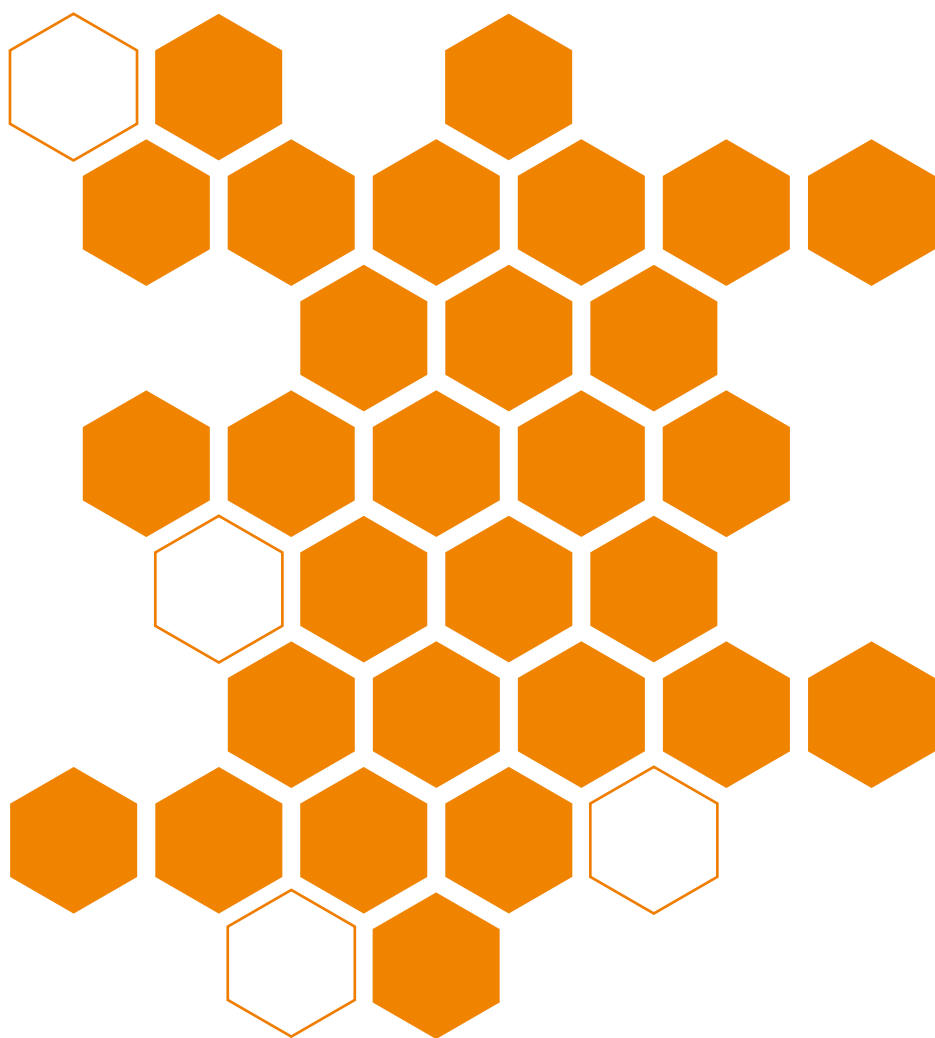
Recommended feed rate by chip breaker geometry

Insert	Recommended depth of cut/feed rate(fz)			
	Ap(mm)	MM3	MM4	MR6
XN□U 0705 ANN	0.6-3.6	0.1-0.38	0.12-0.45	0.15-0.50
XN MU 070608	0.6-4.4		0.15-0.45	
XN□U 0906ANN	0.8-5.0	0.15-0.42	0.17-0.50	0.23-0.65
XN MU 090612	0.8-6.0		0.17-0.50	

Recommended cutting speed by materials

Machined Materials				Achteck Milling Grades Application Ranges																		
ISO	Material classification	Tensile strength (N/mm²)	Hardness (HB)	AC301K	AP351K	AP301U	AC301P	AP351U	AP401U													
				CVD	PVD	PVD	CVD	PVD	PVD													
				-	-	P15-35	P25-40	P30-45	P20-40													
				-	-	M15-35	M25-40	M30-45	M20-40													
				K10-40	K15-40	-	-	-	-													
				-	-	-	-	S30-45	S20-40													
				-	-	-	-	-	-													
				-	-	-	-	-	-													
				Feed rate(mm/z)																		
				Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	
				Cutting speed(m/min)																		
P	Non-alloyed steel	<600	<180							450	340	290	430	230	120	230	205	170				
		<950	<280								320	240	200	380	220	120	200	180	160			
	Alloyed steel	700-950	200-280								290	210	185	340	240	120	200	155	110			
		950-1200	280-355								280	210	200	260	150	80	180	130	90			
		1200-1400	355-415								210	170	110	145	105	65	140	105	70			
M	Duplex stainless steel	778	230							165	150	130	225	180	125	270	215	155	150	115	85	
	Austenitic stainless steel	675	200							270	185	90	210	145	75	260	180	90	185	140	105	
	Precipitation-hardening stainless steel	1013	300							300	225	165	140	130	90	170	150	110	125	95	70	
K	Grey cast iron	700	220	480	310	140	390	280	130													
	Nodular cast iron	880	260	450	295	140	420	300	140													
	Malleable cast iron	800	250	500	365	230	430	290	230													
S	Fe based alloy	943	280													45	40	30				
	Co based alloy	1076	320													45	40	30				
	Ni based alloy	1177	350													45	40	30				
	Ti-alloy	1262	370													100	70	45				
N	Aluminum	260	75																			
	Aluminum alloy	447	130																			
H	Hardened steel	-	50-60HRC																			
	Chilled cast iron	-	55HRC																			

* this table shows general cutting conditons, it must be adjusted according to the rigidity of the machine, tooling, condition of the work-piece, material, coolantand so on (hm=average chip thickness)



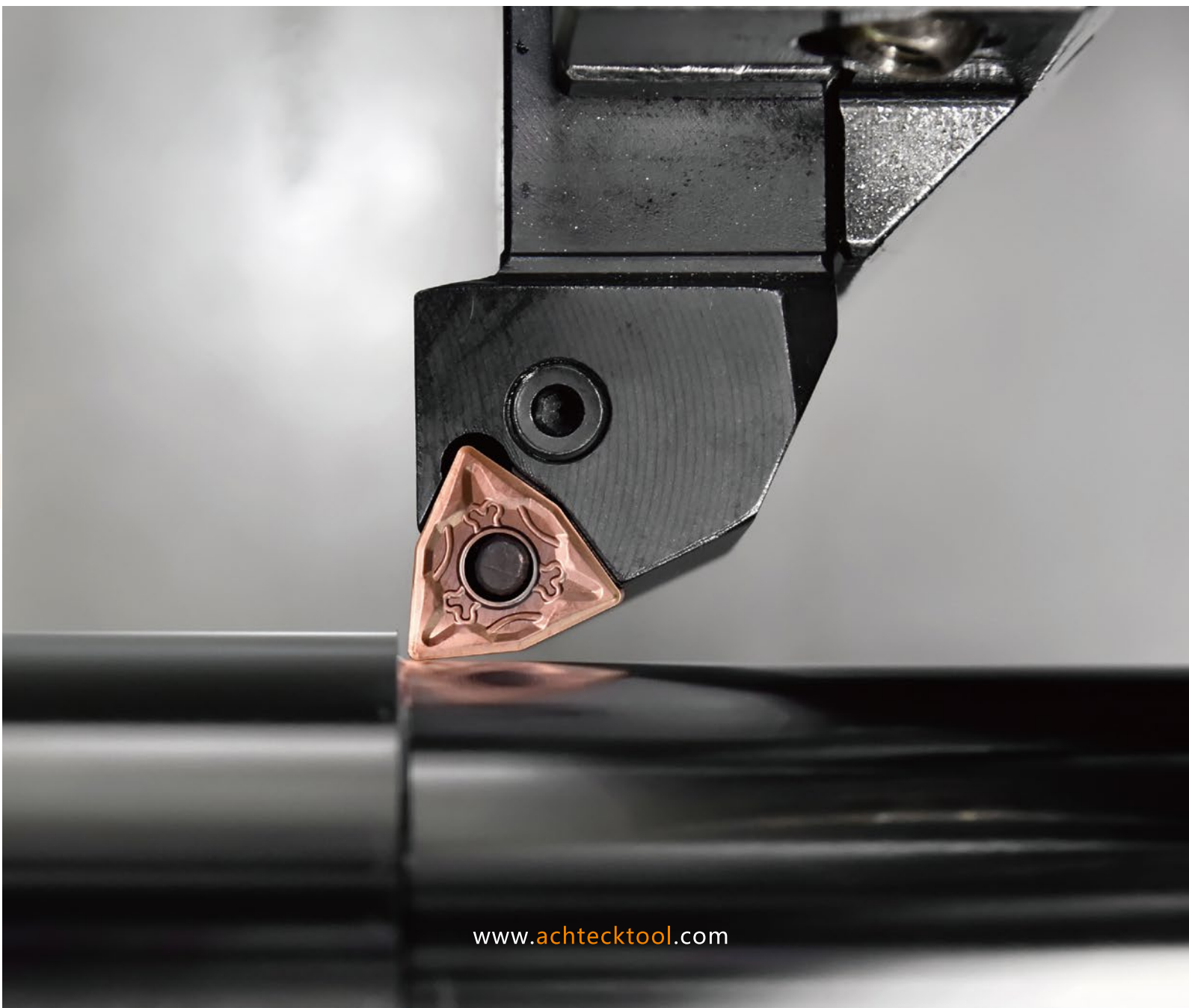
ACHTECK

NEW
PRODUCT!

AP301M

New Turning PVD coated grade for stainless steels

“Exceptional machining performance , minimized build-up edge
and better surface finish”



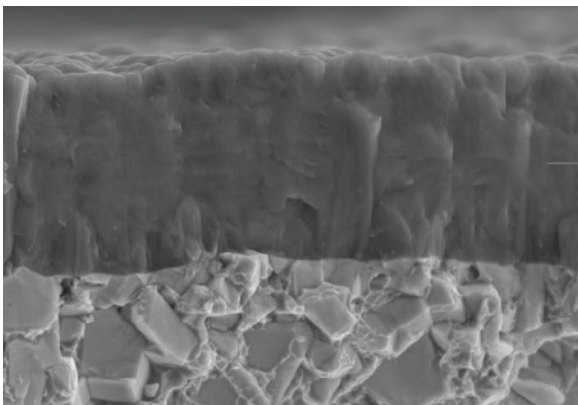
Achteck is launching a new turning PVD grade-the AP301M which provides excellent machining performance on stainless steels. This grade has sub-micron carbide substrate with Nano-layered PVD coating. Hardness, toughness and oxidation resistance are enhanced for higher cutting speed machining. Besides, with post surface treatment after coating, AP301M can provide better surface finish on the work piece.

The new grade is defined as a longer tool life and less build-up edge effect at higher cutting speed on stainless steels. Performance reliability has been enhanced and machining cost is remarkably reduced.

AP301M can be used for continuous cutting and interrupted cutting in stainless steel machining.

◆ AP301M Grade Futures

Kind of coating:PVD
ISO range:M15-M35



<SEM micro structure>

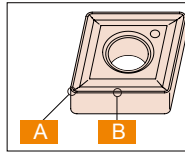
Nano layered PVD coating enhanced hardness and oxidation resistance

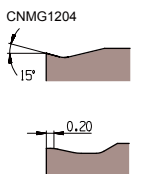
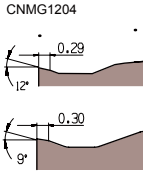
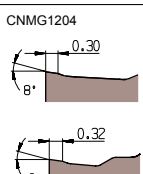
Submicron carbide substrate combined medium hardness and toughness

- ◆ Submicron carbide substrate based on Nano layered PVD coating
- ◆ Excellent wear resistance and chipping resistance.
- ◆ Very good smooth surface finish provides minimized build-up edge and longer tool life at higher cutting speed
- ◆ Enhanced machining performance reliability
- ◆ Can be used in continuous cut and interrupted cut
- ◆ For turning on stainless steel

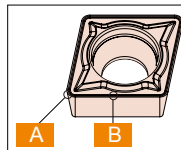
♦ Chip breaker Featrues

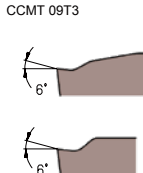
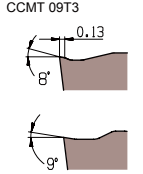
Negative insert



Chip breaker name	Edge preparation		Feature
MB2		CNMG1204 	- For finishing - Good chip breaking at lower feed and small depth of cut
MC3		CNMG1204 	- For medium - Stable for stainless steel
MC4		CNMG1204 	- For roughing - Low cutting force in roughing due to positive rake angle - Reliable performance in roughing

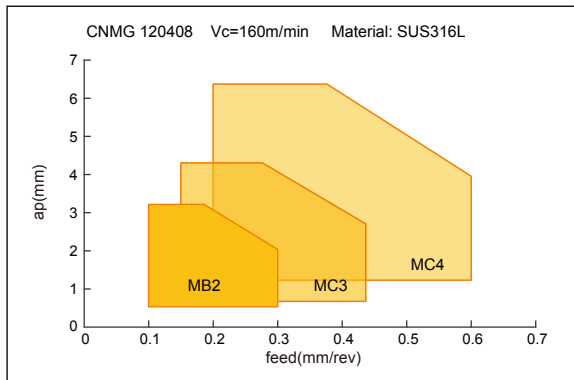
Positive insert



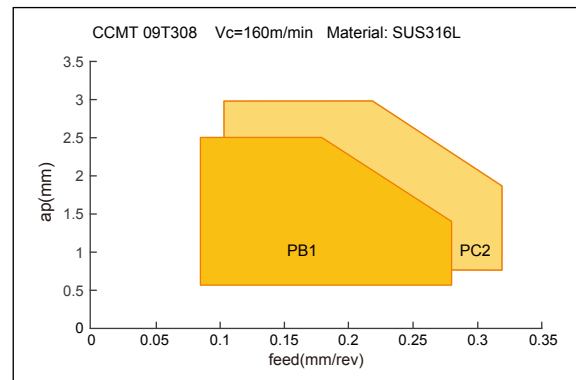
Chip breaker name	Edge preparation		Feature
PB1		CCMT 09T3 	- For finishing - Good chip controlling at lot feed and small depth of cut
PC2		CCMT 09T3 	- Wide range application - For semi finishing to medium turning - First choice chip breaker for positive insert

◆ Chip breaker diagram

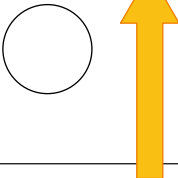
Negative insert



Positive insert



◆ Select the best insert for machining on stainless steel in AP301M

Cutting conditions	Machining areas	Select of Insert	
		Negative insert	Positive insert
 Stable machining	Finishing	MB2 	PB1 
 General machining	Medium	MC3 	PC2 
 Unstable machining	Roughing	MC4 	

Recommended cutting speed by materials

Material		Cutting speed (m/min)		
		Feed(min)	Feed(medium)	Feed(max)
Austenitic+Ferritic stainless steel	300 series	180	140	110
Martensitic stainless steel	400 series	300	210	150
Precipitation-hardening stainless steel	PH	160	130	70

Remark) The recommended cutting speed always refer to general conditons. These cutting speed should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants.(The feed rate refer corner radius)

Case stories

Component description: Annular

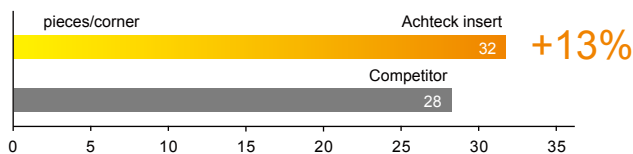
Material: 304 stainless steel

Insert: WNMG 080408E-MC3 AP301M

Competitor: WNMG 080408, PVD coated grade

Cutting Parameters: V=200m/min, f=0.26mm/rev,
ap=1.0mm, wet cutting

External turning, Continuous cut



Component description: Cylinder

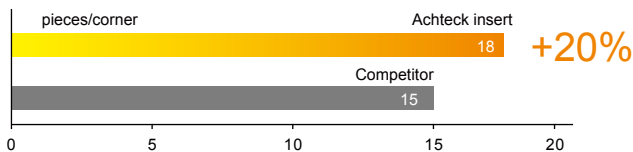
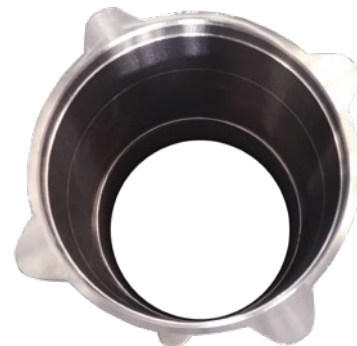
Material: 304 stainless steel

Insert: CNMG 120408E-MC3 AP301M

Competitor: CNMG 120408, PVD coated grade

Cutting Parameters: V=85~110m/min, f=0.15~0.2mm/rev,
ap=1.0~2.0mm, wet cutting

Internal turning, Continuous cut



Component description: Head

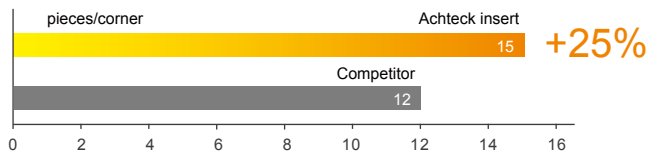
Material: 316 stainless steel

Insert: WNMG 080408E-MC3 AP301M

Competitor: WNMG 080408, PVD coated grade

Cutting Parameters: $V=75\text{m/min}$, $f=0.15\text{mm/rev}$,
 $a_p=0.8\text{mm}$, wet cutting

External turning, Continuous cut



Component description: Union Joint

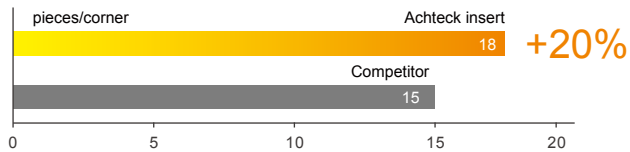
Material: 316 stainless steel

Insert: WNMG 080408E-MC3 AP301M

Competitor: WNMG 080408, PVD coated grade

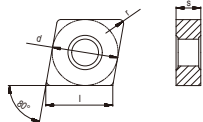
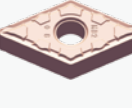
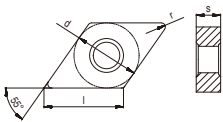
Cutting Parameters: $V=100\text{m/min}$, $f=0.15\text{mm/rev}$,
 $a_p=0.5\text{mm}$, wet cutting

External turning, Interrupted cut

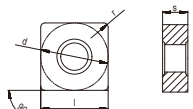
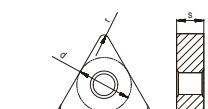
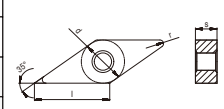


Stock items

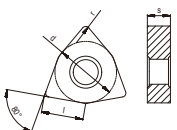
Negative insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	CNMG 120404E-MB2	0.05-0.15	0.26-3.2	9.52	9.67	4.76	0.4	●	
	120408E-MB2	0.10-0.30	0.52-3.2	9.52	9.67	4.76	0.8	●	
	CNMG 120404E-MC3	0.08-0.22	0.32-4.3	12.7	12.9	4.76	0.4	●	
	120408E-MC3	0.15-0.44	0.64-4.3	12.7	12.9	4.76	0.8	●	
	120412E-MC3	0.23-0.66	0.96-4.3	12.7	12.9	4.76	1.2	●	
	120416E-MC3	0.30-0.88	1.28-4.3	12.7	12.9	4.76	1.6	●	
	160608E-MC3	0.15-0.44	0.64-5.3	15.87	16.1	6.35	0.8	●	
	160612E-MC3	0.23-0.66	0.96-5.3	15.87	16.1	6.35	1.2	●	
	160616E-MC3	0.30-0.88	1.28-5.3	15.87	16.1	6.35	1.6	●	
	190608E-MC3	0.15-0.44	0.64-6.4	19.05	19.3	6.35	0.8	●	
	190612E-MC3	0.23-0.66	0.96-6.4	19.05	19.3	6.35	1.2	●	
	CNMG 120408E-MC4	0.20-0.60	1.2-6.4	12.70	12.9	4.76	0.8	●	
	120412E-MC4	0.30-0.90	1.8-6.4	12.70	12.9	4.76	1.2	●	
	160612E-MC4	0.30-0.90	1.8-8.1	15.87	16.1	6.35	1.2	●	
	190612E-MC4	0.30-0.90	1.8-9.7	19.05	19.3	6.35	1.2	●	
	190616E-MC4	0.40-1.20	2.4-9.7	19.05	19.3	6.35	1.6	●	
	DNMG 150404E-MB2	0.05-0.15	0.26-2.9	12.7	15.5	4.76	0.4	●	
	150408E-MB2	0.10-0.30	0.52-2.9	12.7	15.5	4.76	0.8	●	
	150604E-MB2	0.05-0.15	0.26-2.9	12.7	15.5	6.35	0.4	●	
	150608E-MB2	0.10-0.30	0.52-2.9	12.7	15.5	6.35	0.8	●	
	DNMG 150404E-MC3	0.08-0.22	0.32-3.9	12.7	15.5	4.76	0.4	●	
	150408E-MC3	0.15-0.44	0.64-3.9	12.7	15.5	4.76	0.8	●	
	150412E-MC3	0.23-0.66	0.96-3.9	12.7	15.5	4.76	1.2	●	
	150604E-MC3	0.08-0.22	0.32-3.9	12.7	15.5	6.35	0.4	●	
	150608E-MC3	0.15-0.44	0.64-3.9	12.7	15.5	6.35	0.8	●	
	150612E-MC3	0.23-0.66	0.96-3.9	12.7	15.5	6.35	1.2	●	
	DNMG 150408E-MC4	0.20-0.60	1.2-5.4	12.7	15.5	4.76	0.8	●	
	150412E-MC4	0.30-0.90	1.8-5.4	12.7	15.5	4.76	1.2	●	
	150608E-MC4	0.20-0.60	1.2-5.4	12.7	15.5	6.35	0.8	●	
	150612E-MC4	0.30-0.90	1.8-5.4	12.7	15.5	6.35	1.2	●	

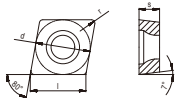
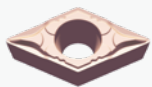
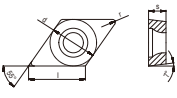
Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	SNMG 120404E-MB2	0.05-0.15	0.26-3.2	12.7	12.7	4.76	0.4	●	
	120408E-MB2	0.10-0.30	0.52-3.2	12.7	12.7	4.76	0.8	●	
	SNMG 120404E-MC3	0.08-0.22	0.32-4.2	12.7	12.7	4.76	0.4	●	
	120408E-MC3	0.15-0.44	0.64-4.2	12.7	12.7	4.76	0.8	●	
	120412E-MC3	0.23-0.66	0.96-4.2	12.7	12.7	4.76	1.2	●	
	SNMG 120408E-MC4	0.20-0.60	1.2-6.4	12.7	12.7	4.76	0.8	●	
	120412E-MC4	0.30-0.90	1.8-6.4	12.7	12.7	4.76	1.2	●	
	TNMG 160404E-MB2	0.05-0.15	0.26-3.1	9.52	16.5	4.76	0.4	●	
	160408E-MB2	0.10-0.30	0.52-3.1	9.52	16.5	4.76	0.8	●	
	TNMG 160404E-MC3	0.08-0.22	0.32-4.1	9.52	16.5	4.76	0.4	●	
	160408E-MC3	0.15-0.44	0.64-4.1	9.52	16.5	4.76	0.8	●	
	160412E-MC3	0.23-0.66	0.96-4.1	9.52	16.5	4.76	1.2	●	
	220408E-MC3	0.15-0.44	0.64-4.9	15.87	22	4.76	0.8	●	
	220412E-MC3	0.23-0.66	0.96-4.9	15.87	22	4.76	1.2	●	
	TNMG 160408E-MC4	0.20-0.60	1.2-5.8	9.52	16.5	4.76	0.8	●	
	160412E-MC4	0.30-0.90	1.8-5.8	9.52	16.5	4.76	1.2	●	
	VNMG 160404E-MB2	0.05-0.15	0.26-2.1	9.52	16.5	4.76	0.4	●	
	160408E-MB2	0.10-0.30	0.52-2.1	9.52	16.5	4.76	0.8	●	
	VNMG 160408E-MC3	0.15-0.44	0.64-3.3	9.52	16.5	4.76	0.8	●	
	160404E-MC3	0.08-0.22	0.32-3.3	9.52	16.5	4.76	0.4	●	

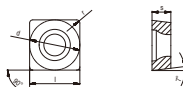
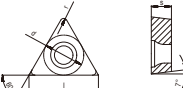
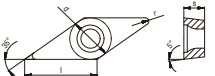
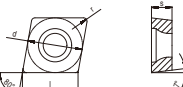
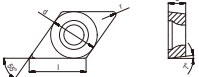
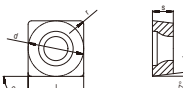
Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	WNGM 080404E-MB2	0.05-0.15	0.26-2.2	12.7	8.7	4.76	0.4	●	
	080408E-MB2	0.10-0.30	0.52-2.2	12.7	8.7	4.76	0.8	●	
	WNGM 060408E-MC3	0.15-0.44	0.64-2.1	9.52	6.52	4.76	0.8	●	
	060412E-MC3	0.23-0.66	0.96-2.1	9.52	6.52	4.76	1.2	●	
	080404E-MC3	0.08-0.22	0.32-2.9	12.7	8.7	4.76	0.4	●	
	080408E-MC3	0.15-0.44	0.64-2.9	12.7	8.7	4.76	0.8	●	
	080412E-MC3	0.23-0.66	0.96-2.9	12.7	8.7	4.76	1.2	●	
	WNGM 080408E-MC4	0.20-0.60	1.2-4.3	12.7	8.7	4.76	0.8	●	
	080412E-MC4	0.30-0.90	1.8-4.3	12.7	8.7	4.76	1.2	●	

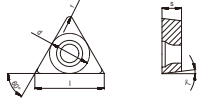
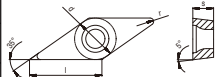
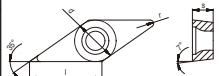
Positive insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	CCMT 060202E-PB1	0.09-0.28	0.15-1.6	6.35	6.45	2.38	0.2	●	
	060204E-PB1	0.02-0.07	0.30-1.6	6.35	6.45	2.38	0.4	●	
	060208E-PB1	0.04-0.14	0.60-1.6	6.35	6.45	2.38	0.8	●	
	09T302E-PB1	0.09-0.28	0.15-1.6	9.52	9.67	3.97	0.2	●	
	09T304E-PB1	0.02-0.07	0.30-2.4	9.52	9.67	3.97	0.4	●	
	09T308E-PB1	0.04-0.14	0.60-2.4	9.52	9.67	3.97	0.8	●	
	DCMT 070202E-PB1	0.09-0.28	0.15-1.5	6.35	7.75	2.38	0.2	●	
	070204E-PB1	0.04-0.14	0.30-1.5	6.35	7.75	2.38	0.4	●	
	11T302E-PB1	0.09-0.28	0.15-2.3	9.52	11.63	3.97	0.2	●	
	11T304E-PB1	0.02-0.07	0.30-2.3	9.52	11.63	3.97	0.4	●	
	11T308E-PB1	0.04-0.14	0.60-2.3	9.52	11.63	3.97	0.8	●	

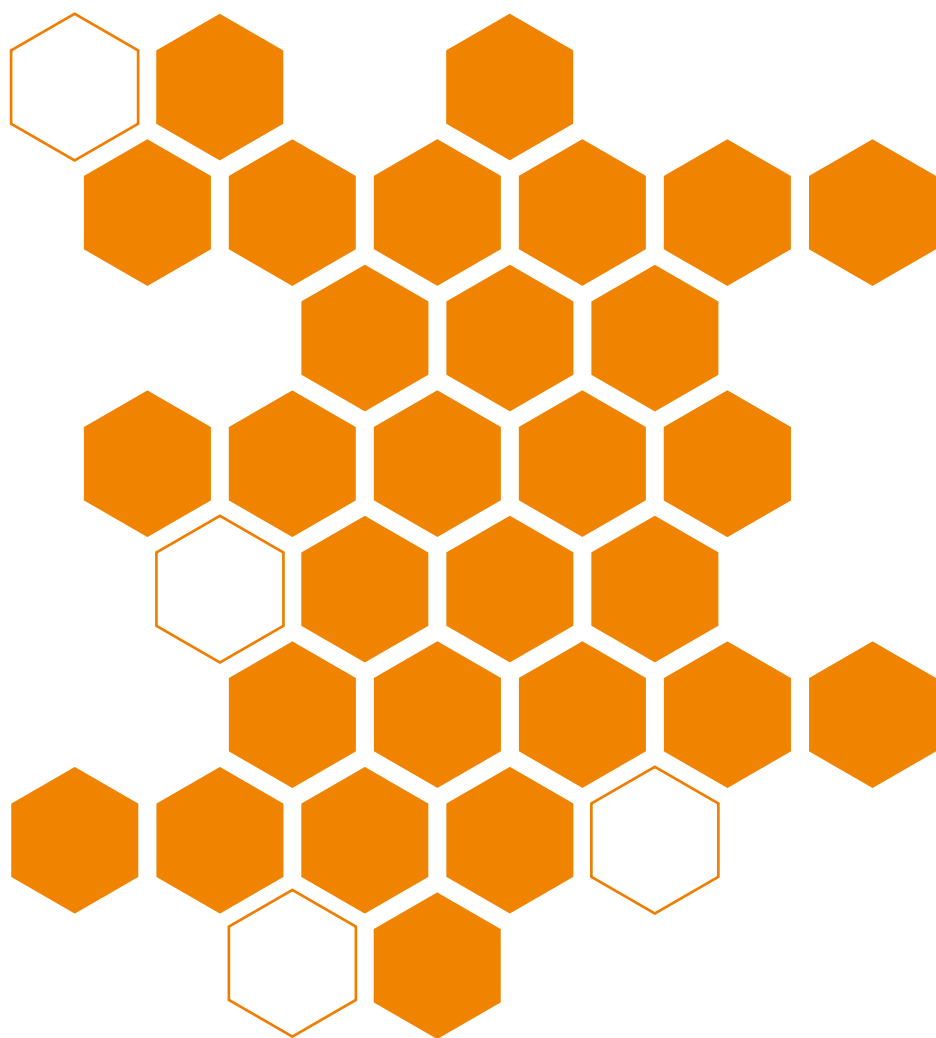
Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	SCMT 09T304E-PB1	0.09-0.28	0.30-2.4	9.52	9.52	3.97	0.4	●	
	09T308E-PB1	0.04-0.14	0.60-2.4	9.52	9.52	3.97	0.8	●	
	TCMT 090204E-PB1	0.09-0.28	0.30-1.5	5.56	9	2.38	0.4	●	
	110202E-PB1	0.09-0.28	0.15-2.2	6.35	11	2.38	0.2	●	
	110204E-PB1	0.02-0.07	0.30-2.2	6.35	11	2.38	0.4	●	
	16T304E-PB1	0.09-0.28	0.30-3.3	9.52	16.5	3.97	0.4	●	
	16T308E-PB1	0.04-0.14	0.60-3.3	9.52	16.5	3.97	0.8	●	
	VBMT 160404E-PB1	0.09-0.28	0.15-2.1	9.52	16.6	4.76	0.4	●	
	160408E-PB1	0.60-2.1	0.60-2.1	9.52	16.6	4.76	0.8	●	
	110304E-PB1	0.30-2.1	0.30-2.1	6.35	11	3.18	0.4	●	
	110308E-PB1	0.60-2.1	0.60-2.1	6.35	11	3.18	0.8	●	
	CCMT 060204E-PC2	0.06-0.17	0.25-2.5	6.35	6.45	2.38	0.4	●	
	060208E-PC2	0.08-0.23	0.4-2.4	6.35	6.45	2.38	0.8	●	
	09T304E-PC2	0.08-0.23	0.25-3.0	9.52	9.67	3.97	0.4	●	
	09T308E-PC2	0.10-0.30	0.5-3.0	9.52	9.67	3.97	0.8	●	
	120404E-PC2	0.09-0.27	0.3-3.6	12.7	12.9	4.76	0.4	●	
	120408E-PC2	0.12-0.35	0.6-3.6	12.7	12.9	4.76	0.8	●	
	120412E-PC2	0.14-0.42	0.72-3.6	12.7	12.89	4.76	1.2	●	
	DCMT 070204E-PC2	0.06-0.17	0.2-2.3	6.35	7.75	2.38	0.4	●	
	070208E-PC2	0.08-0.23	0.4-2.3	6.35	7.75	2.38	0.8	●	
	11T304E-PC2	0.08-0.23	0.25-3.0	9.52	11.63	3.97	0.4	●	
	11T308E-PC2	0.10-0.30	0.5-3.0	9.52	11.63	3.97	0.8	●	
	11T312E-PC2	0.12-0.35	0.6-3.0	9.52	11.63	3.97	1.2	●	
	SCMT 09T304E-PC2	0.08-0.23	0.25-3.0	9.52	9.52	3.97	0.4	●	
	09T308E-PC2	0.10-0.30	0.5-3.0	9.52	9.52	3.97	0.8	●	
	120404E-PC2	0.09-0.27	0.3-3.6	12.7	12.7	4.76	0.4	●	
	120408E-PC2	0.12-0.35	0.6-3.6	12.7	12.7	4.76	0.8	●	
	120412E-PC2	0.14-0.42	0.72-3.6	12.7	12.7	4.76	1.2	●	

Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	TCMT 090204E-PC2	0.06-0.17	0.2-2.3	5.56	9	2.38	0.4	●	
	090208E-PC2	0.08-0.23	0.4-2.3	5.56	9	2.38	0.8	●	
	110204E-PC2	0.06-0.19	0.21-2.5	6.35	11	2.38	0.4	●	
	110208E-PC2	0.09-0.36	0.42-2.5	6.35	11	2.38	0.8	●	
	16T304E-PC2	0.08-0.23	0.25-3.0	9.52	16.5	3.97	0.4	●	
	16T308E-PC2	0.10-0.30	0.5-3.0	9.52	16.5	3.97	0.8	●	
	16T312E-PC2	0.12-0.35	0.72-3.0	9.52	16.5	3.97	1.2	●	
	TPMT 090204E-PC2	0.06-0.17	0.2-2.3	5.56	9	2.38	0.4	●	
	090208E-PC2	0.08-0.23	0.4-2.3	5.56	9	2.38	0.8	●	
	110304E-PC2	0.06-0.19	0.21-2.5	6.35	11	2.38	0.4	●	
	110308E-PC2	0.09-0.36	0.42-2.5	6.35	11	2.38	0.8	●	
	VBMT 110304E-PC2	0.07-0.2	0.23-2.3	6.35	11	3.18	0.4	●	
	110308E-PC2	0.09-0.27	0.42-2.3	6.35	11	3.18	0.8	●	
	160404E-PC2	0.07-0.20	0.23-2.7	9.52	16.6	4.76	0.4	●	
	160408E-PC2	0.09-0.27	0.42-2.7	9.52	16.6	4.76	0.8	●	
	160412E-PC2	0.12-0.36	0.55-2.7	9.52	16.6	4.76	1.2	●	
	VCMT 110304E-PC2	0.07-0.2	0.23-2.3	6.35	11	3.18	0.4	●	
	110308E-PC2	0.09-0.27	0.42-2.0	6.35	11	3.18	0.8	●	
	160404E-PC2	0.07-0.20	0.23-2.7	9.52	16.6	4.76	0.4	●	
	160408E-PC2	0.09-0.27	0.42-2.7	9.52	16.6	4.76	0.8	●	

Remark: ● Represent for standard stock



ACHTECK

**NEW
PRODUCT!**

ASM90-LN13

Tangential Shoulder Milling Cutter

For facing , shouldering and slotting



www.achtecktool.com

Achteck is launching a new 90 degree big depth of cut shoulder milling cutter which is mounted tangential double sided four cutting edges insert. It provides a very good shoulder milling solution.

The new cutter with a 90 degree kappa angle is ideal choice for shoulder milling. The geometry MR2 combined with Achteck's CVD and PVD coating technology provide exceptional performance. It can achieve more excellent performance and better surface finish quality, and can cover steel, stainless steel, cast iron and superalloy materials machining.

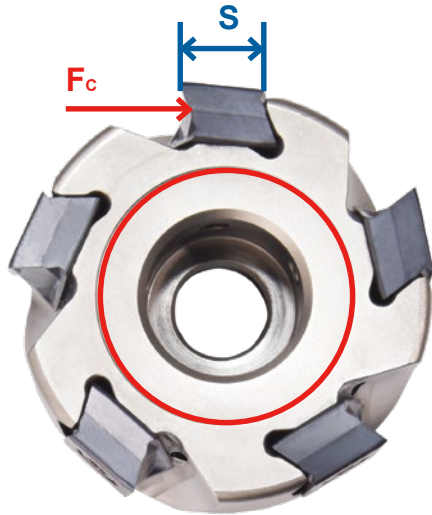
The insert LN13..W has a wiper geometry provides a good surface finish and high productivity.

● Product Features

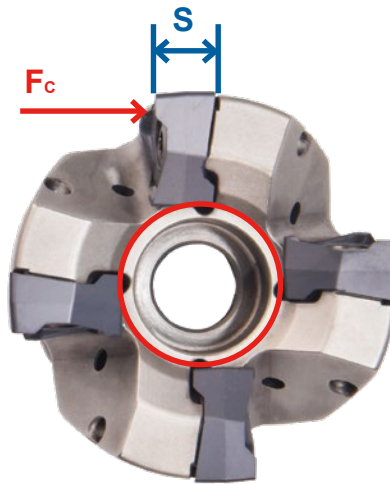
- The insert has 4 cutting edges, which is economical and strong cutting edge, and can be machined efficiently.
- General geometry MR2 has a short wiper. It has wide applicability and good surface roughness.
- Various corner radius range: R0.8, R1.2, R1.6, R2.0, R2.4, R3.1.
- High positive rake angle insert provides very smooth cutting and low cutting force.
- Series of products have 6 grades, wide application range;
- Precise 90 degree shoulder milling cutter, the diameter range: Ø 40-Ø160 mm;
- High-precision axial and radial runout;
- The insert is arranged tangentially, which makes it easier to install and lock the insert. The cutting edge is stronger, the body is stronger, and the number of teeth can be increased with the same diameter.
- Two kinds of pitch and sparse tooth design are mainly used for slot milling and shoulder milling, while close tooth design is mainly used for shoulder milling.
- The cutter design has a variety of interface forms: the screw modular type, the cylindrical type, the welden type and the shell mill (Arbor).
- Shining Nickel-plated cutter has well corrosion resistance and wear resistance.

• The advantages of the tangential design cutters:

- The core area increased greatly, and the rigidity of cutter body was strengthened.
- The direction of cutting force, insert thickness is large, can resist greater cutting force;



Tangential layout style



Conventional layout style

• Chip breaker Features

Chip breaker name	Edge Preparation	Feature
MR2 Universal geometry		• 35°rake angle; • Can used for most of materials; • For average machining conditions;

• Grade application

Grade	Coating	Material					
		P	M	K	S	N	H
AP301U	PVD	●	●		○		
AP351U	PVD	●	●		○		
AP401U	PVD		●		●		
AC301P	CVD	●	●	○			
AC301K	CVD			●			●
AP351K	PVD			●			

● Marked : 1st Choice ● Marked : 2nd Choice ○ Marked : Supplementary application

- When slotting or contouring with $a_e > 50\% \cdot D$, $a_p \leq 6\text{mm}$ recommended;
- When contouring with $a_e < 25\% \cdot D$, it is possible to use Max $a_p = 12\text{mm}$;

Case stories

Work piece: Break plate

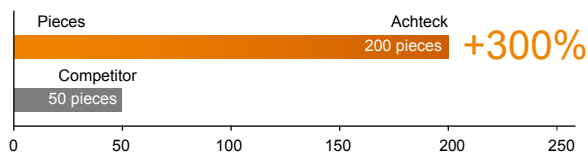
Material: Nodular cast iron

Hardness: HB200

Insert: LNHU 130608ER-MR2 AC301K

Cutter description: ASM90-080-Z07-A27R-LN13-C

Cutting parameters: $V_c=250\text{m/min}$, $f_z=0.16\text{mm/z}$
 $a_p=2.0\text{mm}$, Wet cutting



Work piece: Turbo Charger

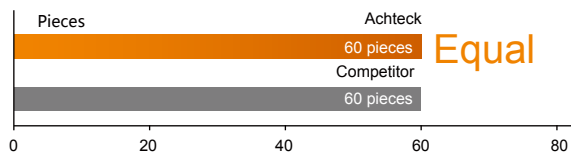
Material: Heat-resistant stainless steel

Hardness: HRC32-34

Insert: LNHU 130608ER-MR2 AP351U

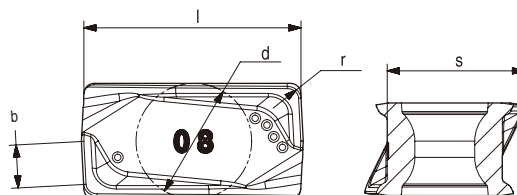
Cutter description: ASM90-050-Z05-A22R-LN13-C

Cutting parameters: $V_c=110\text{m/min}$, $f_z=0.12\text{mm/z}$
 $a_p=3.0\text{mm}$, Wet cutting

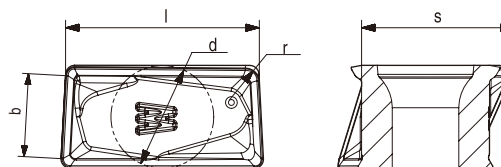


Same tool life, but CPP decreased to 40%;

Insert stock item LNHU 1306



Insert	Designation	Dimensions (mm)					Grades					
							CVD coated		PVD coated			
		l	d	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	LNHU 130608ER-MR2	13.2	6.8	10.15	0.8	2.7			●	●	●	●
	LNHU 130612ER-MR2	13.2	6.8	10.90	1.2	2.3					○	○
	LNHU 130616ER-MR2	13.2	6.8	10.05	1.6	1.9					○	○
	LNHU 130620ER-MR2	13.2	6.8	9.99	2.0	1.5					○	○
	LNHU 130624ER-MR2	13.2	6.8	9.92	2.4	1.0					○	○
	LNHU 130631ER-MR2	13.2	6.8	9.86	3.1	0.4					○	○
	LNHU 130608ER-MM3	13.2	6.8	10.12	0.8	2.7					●	

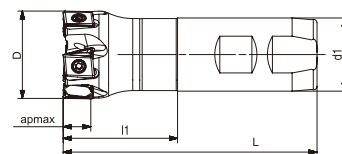


Insert	Designation	Dimensions (mm)					Grades					
							CVD coated		PVD coated			
		l	d	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	LNHU 1306PDER-W	13.39	6.8	10.02	0.8	5.6		●	●			

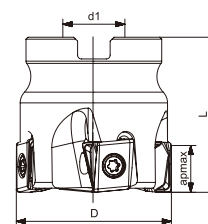
Remark: ● represent for standard stock
○ represent for Mark-To-Order

◆ Cutter stock item

ASM90-LN13



Designation	Dimension					Coolant	Z	Insert
	D	d1	L	l1	apmax			
ASM90-040-Z05-W32R-LN13-C	40	32	120	50	12.0		5	LNHU 1306



Designation	Dimension				Coolant	Z	Insert
	D	d1	L	apmax			
ASM90-040-Z04-A16R-LN13-C	40	16	40	12.0		4	LNHU 1306
ASM90-040-Z05-A16R-LN13-C	40	16	40	12.0		5	
ASM90-050-Z05-A22R-LN13-C	50	22	40	12.0		5	
ASM90-050-Z06-A22R-LN13-C	50	22	40	12.0		6	
ASM90-063-Z06-A22R-LN13-C	63	22	40	12.0		6	
ASM90-063-Z08-A22R-LN13-C	63	22	40	12.0		8	
ASM90-080-Z07-A27R-LN13-C	80	27	50	12.0		7	
ASM90-080-Z10-A27R-LN13-C	80	27	50	12.0		10	
ASM90-100-Z09-A32R-LN13-C	100	32	50	12.0		9	
ASM90-100-Z13-A32R-LN13-C	100	32	50	12.0		13	
ASM90-125-Z11-A40R-LN13-C	125	40	63	12.0		11	
ASM90-125-Z16-A40R-LN13-C	125	40	63	12.0		16	
ASM90-160-Z13-A40R-LN13	160	40	63	12.0		13	

Dimension	Cutter spare parts		
Cutter diameter	Screw	Wrench	Torque
φ40-160			3.5Nm
	AST4112-60	ADT-T15	

Application		
Facing	Shouldering	Slotting

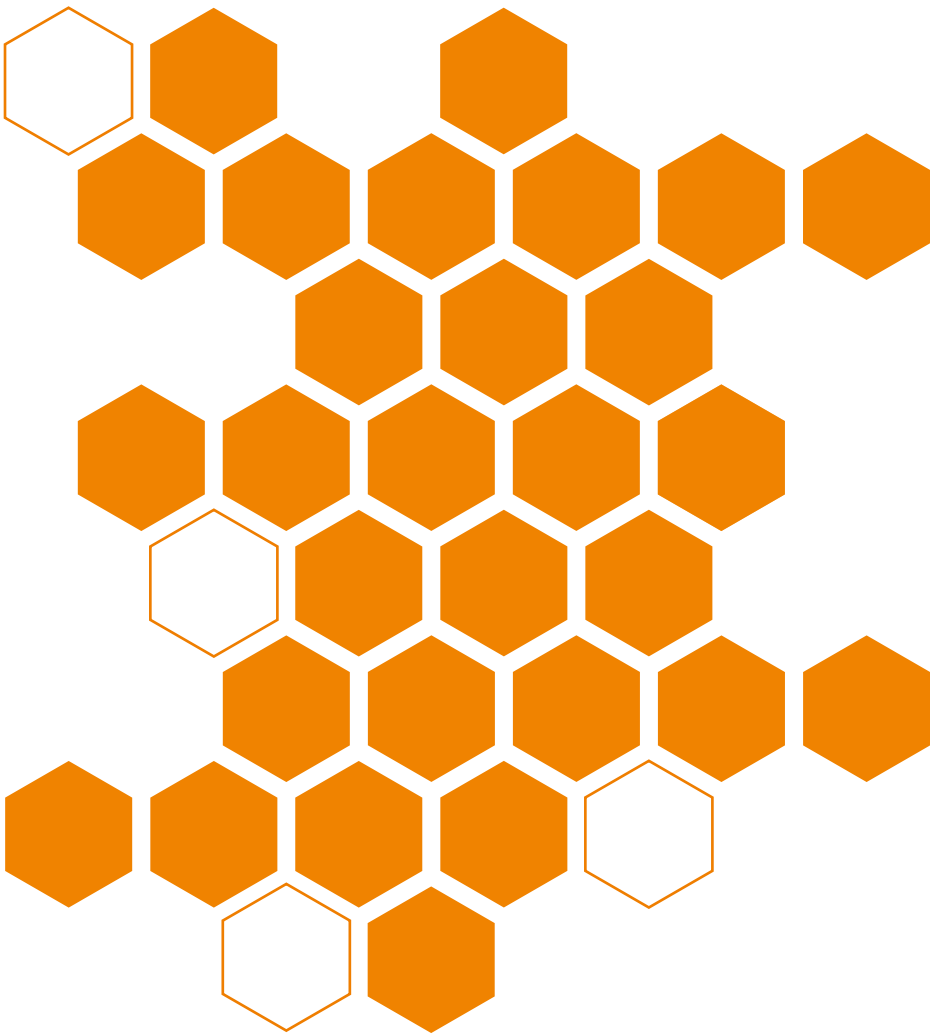
Remark: represent for coolant
 represent for no coolant

Recommended cutting speed by materials

Machined Materials			Achteck Milling Grades Application Ranges												Cutting depth and feed									
			AC301K	AP351K	AP301U	AC301P	AP351U	AP401U									LN13							
			CVD	PVD	PVD	CVD	PVD	PVD									Geometry							
			-	-	P15-35	P25-40	P30-45	P20-40																
ISO	Material classification	Tensile strength (N/mm²)	Hardness (HB)	Feed (mm/z)												ap (mm)	Feed (mm/z)							
				Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max									
				Cutting speed (m/min)																				
				Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max									
				P	Non-alloyed steel	<600	<180				450	340	290	430	230			120	230	205	170	0.12	-	0.24
						<950	<280				320	240	200	380	220			120	200	180	160	0.12	-	0.18
					Alloyed steel	700-950	200-280				290	210	185	340	240			120	200	155	110	0.12	-	0.18
						950-1200	280-355				280	210	200	260	150			80	180	130	90	0.12	-	0.14
				M	Duplex stainless steel	1200-1400	355-415				210	170	110	145	105			65	140	105	70	0.12	-	0.14
						778	230				165	150	130	225	180			125	270	215	155	150	115	85
Austenitic stainless steel	675	200					270	185	90	210	145	75	260	180	90	185	140	105						
	Precipitation-hardening stainless steel	1013	300					300	225	165	140	130	90	170	150	110	125	95	70					
K	Grey cast iron	700	220	480	310	140	390	280	130							0.6	-	12						
		880	260	450	295	140	420	300	140							0.12	-	0.24						
	Malleable cast iron	800	250	500	365	230	430	290	230							0.12	-	0.18						
		Fe based alloy	943	280										45	40	30	0.12	-	0.14					
S	Co based alloy	1076	320										45	40	30	0.12	-	0.14						
		1177	350										45	40	30	0.12	-	0.14						
	Ti-alloy	1262	370										100	70	45	0.12	-	0.14						
		Aluminum	260	75																				
N	Aluminum alloy	447	130																					
	Hardened steel	-	50-60HRC																					
H	Chilled cast iron	-	55HRC																					
		-	55HRC																					

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

* When slotting , ap=1/2apmax

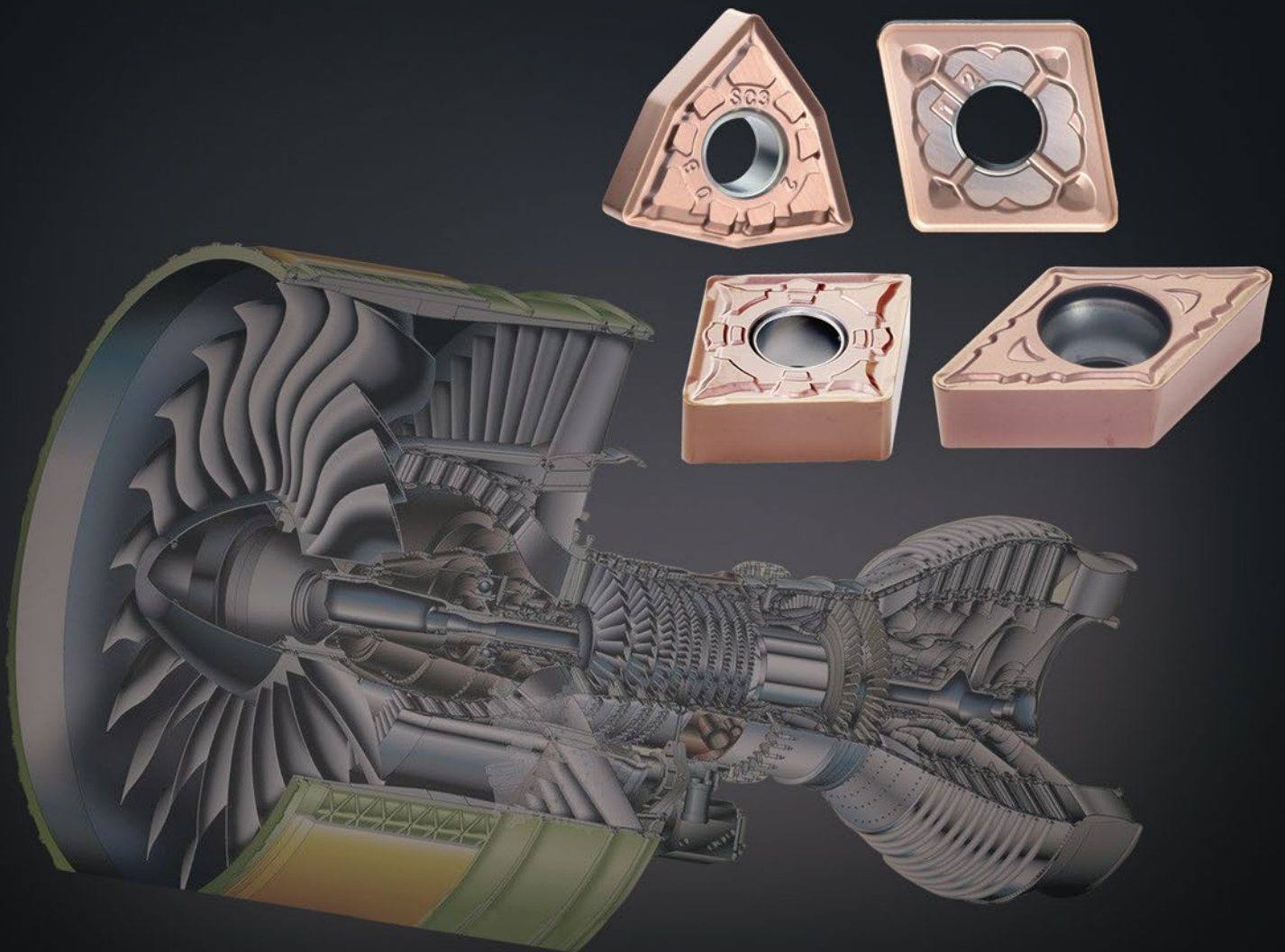


ACHTECK

NEW
PRODUCT!

AP100S

PVD coated grade for super alloys



Achteck is launching a new turning PVD coated grade-AP100S which provides excellent machining performance on super alloys and stainless steels. This grade has submicron carbide substrate combined with high hardness and Nano layered PVD coating enhanced hardness and oxidation resistance at higher cutting speed of machining. The new grade AP100S provides a better surface finish on work piece due to post surface treatment after coating.

The new grade is defined a longer tool life at higher cutting speed on super alloys and stainless steels and less built-up edge effect, enhanced performance reliability and remarkable reduction in machining cost.

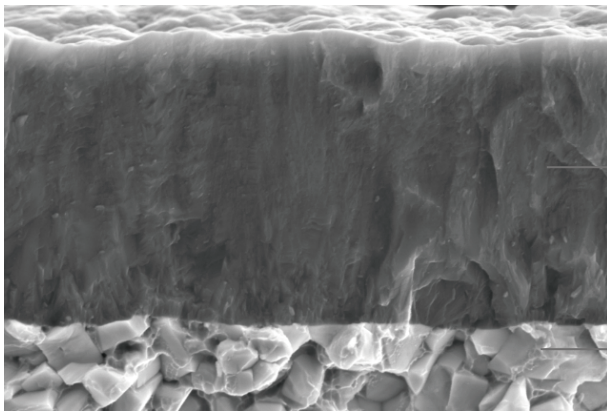
The AP100S grade can be used on high temperature super alloys and high cutting speed in finishing cut on stainless steels.

This grade and Achteck designed geometry as well production technology provide the best quality and the best solution.

◆ AP100S Grade Futures

Kind of coating:PVD

ISO range:S05-25 M05-25



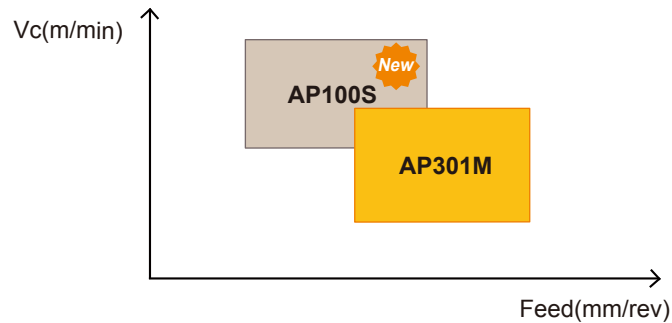
<SEM micro structure>

Nano layered PVD coating enhanced hardness and oxidation resistance

Submicron carbide substrate combined high hardness and toughness

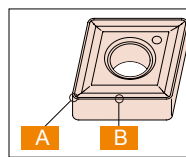
- Submicron carbide substrate based on Nano layered PVD coating
- Excellent wear resistance and good chipping resistance
- Very good smooth surface provides minimized built up edge and longer tool life at higher cutting speed
- Very good surface finish on work piece
- Enhanced machining performance reliability
- For turning on high temperature super alloys and high cutting speed in finishing cut on stainless steel

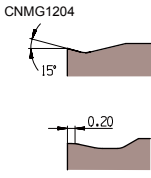
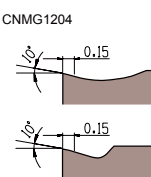
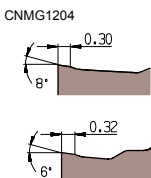
Comparison application range between AP100S and AP301M



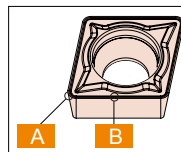
Chip breaker Features

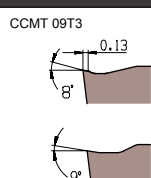
Negative insert



Chip breaker name	Edge preparation		Application
MB2			- For finishing - Good chip breaking at lower feed and small depth of cut
SC3			- For medium and semi-finishing on high temperature alloys and stainless steel - High positive rake angle supplies very smooth cutting and low cutting force
MC4			- For roughing - Low cutting force in roughing due to positive rake angle - Reliable performance in roughing

Positive insert



Chip breaker name	Edge preparation		Application
PC2			- Wide range application - For semi finishing to medium turning - First choice chip breaker

Recommended cutting speed by materials

Group	Material Type		Cutting speed(m/min)		
			Low feed	Medeium feed	High feed
High temperature alloys	Iron base alloy	-	180	110	40
	Cobalt base alloy	Waspalloy	100	65	30
	Nickel base alloy	Inconel	100	65	30
	Titanium alloy	Ti6Al4V	200	125	50
Stainless steel	Austenite+Ferrite	300 series	215	170	145
	Martensite	400 series	240	190	155
	Precipitated dispersion hardened stainless steel	P.H.	215	150	85

Note) The recommended cutting speed is for normal cutting conditions. The actual cutting speed could be adjusted based on real working condition by considering rigidity of the machine, fixation, and coolant.

Case stories

Component description: Working disk

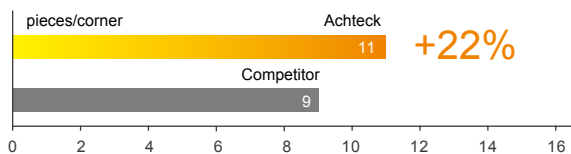
Material: Inconel X-750 (Ni > 75%)

Insert: CNMG 120408E-SC3 AP100S

Competitor: CNMG 120408, PVD coated grade

Cutting Parameters: $V_c=20-40\text{m/min}$, $f=0.15\text{mm/rev}$,
 $a_p=2.5-3\text{mm}$, wet cutting

External and face turning



Component description: Valve

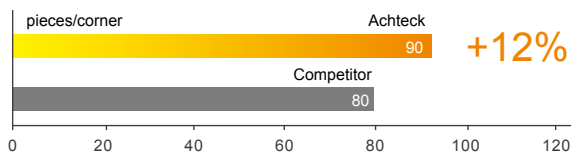
Material: Nickel-based alloys

Insert: WNMG 080408E-SC3 AP100S

Competitor: WNMG 080408, PVD coated grade

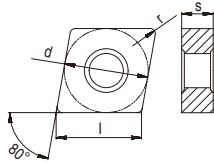
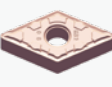
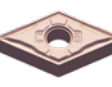
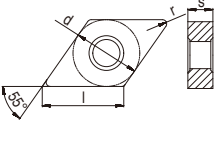
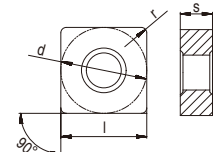
Cutting Parameters: $V_c=70\text{m/min}$, $f=0.2\text{mm/rev}$,
 $a_p=0.5\text{mm}$, wet cutting

External turning and profiling

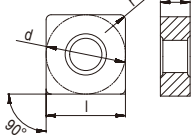
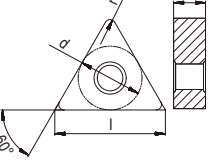
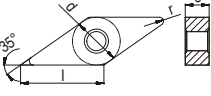
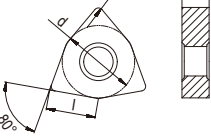


• Stock items

Negative insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r		
	CNMG 120404E-MB2	0.05-0.15	0.26-3.2	12.7	12.9	4.76	0.4	●	
	120408E-MB2	0.10-0.30	0.52-3.2	12.7	12.9	4.76	0.8	○	
	CNMG 120404E-SC3	0.08-0.22	0.40-4.3	12.7	12.9	4.76	0.4	●	
	120408E-SC3	0.15-0.44	0.80-4.3	12.7	12.9	4.76	0.8	●	
	120412E-SC3	0.23-0.66	1.20-4.3	12.7	12.9	4.76	1.2	○	
	160612E-SC3	0.23-0.66	1.20-5.3	15.875	16.11	6.35	1.2	○	
	160616E-SC3	0.30-0.88	1.60-5.3	15.875	16.11	6.35	1.6	○	
	190612E-SC3	0.23-0.66	1.20-6.4	19.05	19.3	6.35	1.2	○	
	190616E-SC3	0.30-0.88	1.60-6.4	19.05	19.3	6.35	1.6	○	
	CNMG 120408E-MC4	0.20-0.60	1.20-6.4	12.7	12.9	4.76	0.8	●	
	120412E-MC4	0.30-0.90	1.80-6.4	12.7	12.9	4.76	1.2	○	
	DNMG 150404E-MB2	0.05-0.15	0.26-2.9	12.7	15.5	4.76	0.4	●	
	150408E-MB2	0.10-0.30	0.52-2.9	12.7	15.5	4.76	0.8	○	
	150604E-MB2	0.05-0.15	0.26-2.9	12.7	15.5	6.35	0.4	●	
	150608E-MB2	0.10-0.30	0.52-2.9	12.7	15.5	6.35	0.8	●	
	DNMG 150404E-SC3	0.08-0.22	0.40-3.9	12.7	15.5	4.76	0.4	●	
	150408E-SC3	0.15-0.44	0.80-3.9	12.7	15.5	4.76	0.8	●	
	150412E-SC3	0.23-0.66	1.20-3.9	12.7	15.5	4.76	1.2	○	
	150604E-SC3	0.08-0.22	0.40-3.9	12.7	15.5	6.35	0.4	●	
	150608E-SC3	0.15-0.44	0.80-3.9	12.7	15.5	6.35	0.8	○	
	150612E-SC3	0.23-0.66	1.20-3.9	12.7	15.5	6.35	1.2	○	
	DNMG 150608E-MC4	0.20-0.60	1.20-5.4	12.7	15.5	6.35	0.8	○	
	150612E-MC4	0.30-0.90	1.80-5.4	12.7	15.5	6.35	1.2	○	
	SNMG 120404E-MB2	0.05-0.15	0.26-3.2	12.7	12.7	4.76	0.4	○	
	120408E-MB2	0.10-0.30	0.52-3.2	12.7	12.7	4.76	0.8	○	

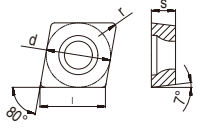
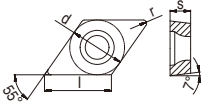
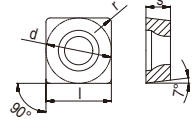
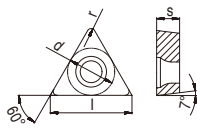
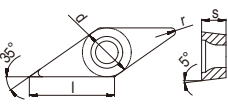
Remark: ● represent for standard stock
○ represent for Make-To-Order

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP100S	
	SNMG 120408E-SC3	0.15-0.44	0.80-4.2	12.7	12.7	4.76	0.8	●	
	120412E-SC3	0.23-0.66	1.20-4.2	12.7	12.7	4.76	1.2	○	
	150612E-SC3	0.23-0.66	1.20-5.2	15.875	15.875	6.35	1.2	○	
	150616E-SC3	0.30-0.88	1.60-5.2	15.875	15.875	6.35	1.6	○	
	190612E-SC3	0.23-0.66	1.20-6.3	19.05	19.05	6.35	1.2	○	
	SNMG 120408E-MC4	0.20-0.60	1.20-6.4	12.7	12.7	4.76	0.8	●	
	120412E-MC4	0.30-0.90	1.80-6.4	12.7	12.7	4.76	1.2	○	
	TNMG 160404E-MB2	0.05-0.15	0.26-3.1	9.525	16.5	4.76	0.4	●	
	160408E-MB2	0.10-0.30	0.52-3.1	9.525	16.5	4.76	0.8	○	
	TNMG 160408E-SC3	0.15-0.44	0.80-4.1	9.525	16.5	4.76	0.8	●	
	160412E-SC3	0.23-0.66	1.20-4.1	9.525	16.5	4.76	1.2	○	
	TNMG 160408E-MC4	0.20-0.60	1.20-5.8	9.525	16.5	4.76	0.8	●	
	160412E-MC4	0.30-0.90	1.80-5.8	9.525	16.5	4.76	1.2	○	
	VNMG 160404E-MB2	0.05-0.15	0.26-2.1	9.525	16.5	4.76	0.4	●	
	160408E-MB2	0.10-0.30	0.52-2.1	9.525	16.5	4.76	0.8	○	
	VNMG 160404E-SC3	0.08-0.22	0.40-3.3	9.525	16.5	4.76	0.4	●	
	160408E-SC3	0.15-0.44	0.80-3.3	9.525	16.5	4.76	0.8	●	
	160412E-SC3	0.23-0.66	1.20-3.3	9.525	16.5	4.76	1.2	○	
	WNMG 080404E-MB2	0.05-0.15	0.26-2.2	12.7	8.7	4.76	0.4	○	
	080408E-MB2	0.10-0.30	0.52-2.2	12.7	8.7	4.76	0.8	○	
	WNMG 080404E-SC3	0.08-0.22	0.40-2.9	12.7	8.7	4.76	0.4	●	
	080408E-SC3	0.15-0.44	0.80-2.9	12.7	8.7	4.76	0.8	●	
	080412E-SC3	0.23-0.66	1.20-2.9	12.7	8.7	4.76	1.2	○	
	WNMG 080408E-MC4	0.20-0.60	1.20-4.3	12.7	8.7	4.76	0.8	●	
	080412E-MC4	0.30-0.90	1.80-4.3	12.7	8.7	4.76	1.2	○	

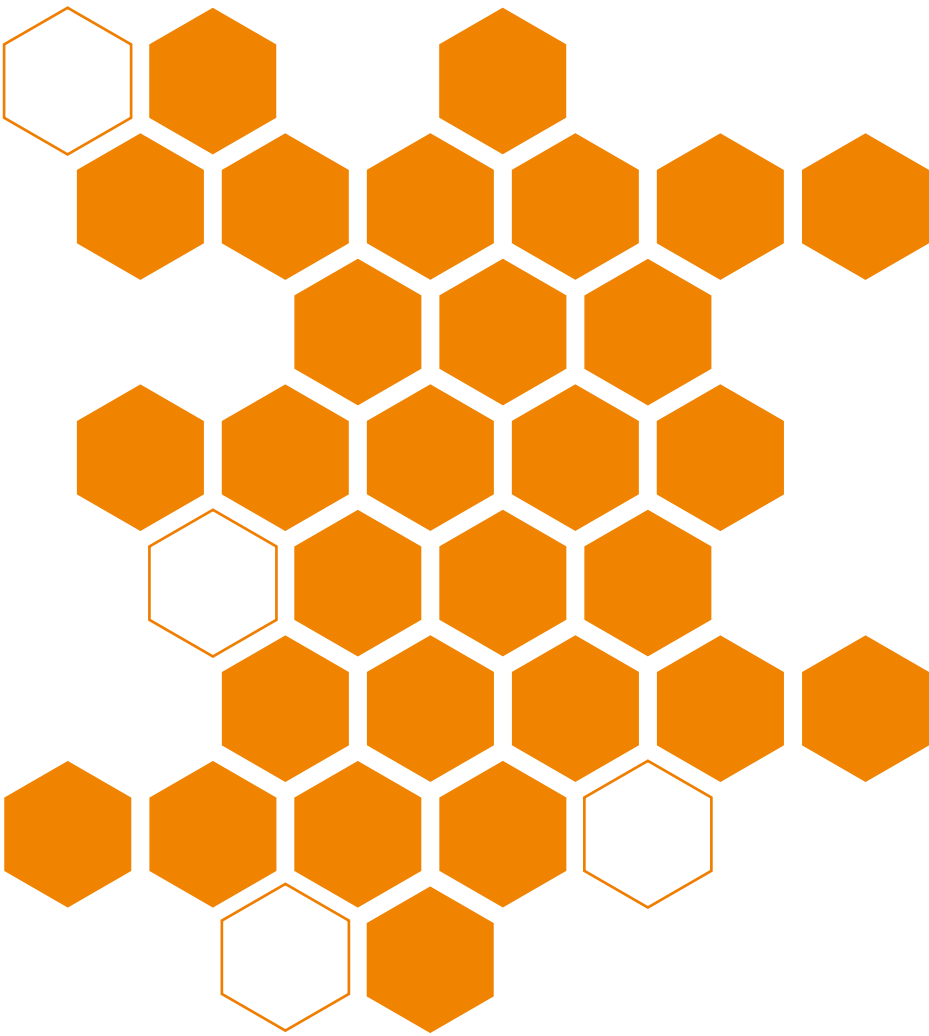
Remark: ● represent for standard stock

○ represent for Make-To-Order

Positive insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP100S	
	CCMT 060204E-PC2	0.05-0.16	0.35-1.9	6.35	6.45	2.38	0.4	●	
	060208E-PC2	0.10-0.32	0.70-1.9	6.35	6.45	2.38	0.8	○	
	09T304E-PC2	0.05-0.16	0.35-2.9	9.525	9.67	3.97	0.4	●	
	09T308E-PC2	0.10-0.32	0.70-2.9	9.525	9.67	3.97	0.8	●	
	120404E-PC2	0.05-0.16	0.35-3.9	12.7	12.9	4.76	0.4	●	
	120408E-PC2	0.10-0.32	0.70-3.9	12.7	12.9	4.76	0.8	●	
	120412E-PC2	0.16-0.48	1.05-3.9	12.7	12.89	4.76	1.2	○	
	DCMT 070204E-PC2	0.05-0.16	0.35-2.1	6.35	7.75	2.38	0.4	●	
	070208E-PC2	0.10-0.32	0.70-2.1	6.35	7.75	2.38	0.8	○	
	11T304E-PC2	0.05-0.16	0.35-3.1	9.525	11.62	3.97	0.4	●	
	11T308E-PC2	0.10-0.32	0.70-3.1	9.525	11.62	3.97	0.8	○	
	11T312E-PC2	0.16-0.48	1.05-3.1	9.525	11.62	3.97	1.2	○	
	SCMT 09T304E-PC2	0.05-0.16	0.35-2.9	9.525	9.525	3.97	0.4	●	
	09T308E-PC2	0.10-0.32	0.70-2.9	9.525	9.525	3.97	0.8	○	
	120404E-PC2	0.05-0.16	0.35-3.8	12.7	12.7	4.76	0.4	○	
	120408E-PC2	0.10-0.32	0.70-3.8	12.7	12.7	4.76	0.8	○	
	120412E-PC2	0.16-0.48	1.05-3.8	12.7	12.7	4.76	1.2	○	
	TCMT 090204E-PC2	0.05-0.16	0.35-2.6	5.56	9.63	2.38	0.4	○	
	090208E-PC2	0.10-0.32	0.70-2.6	5.56	9.63	2.38	0.8	○	
	110204E-PC2	0.05-0.16	0.35-3.0	6.35	11.0	2.38	0.4	●	
	110208E-PC2	0.10-0.32	0.70-3.0	6.35	11.0	2.38	0.8	○	
	16T304E-PC2	0.05-0.16	0.35-4.5	9.525	16.5	3.97	0.4	●	
	16T308E-PC2	0.10-0.32	0.70-4.5	9.525	16.5	3.97	0.8	○	
	16T312E-PC2	0.16-0.48	1.05-4.5	9.525	16.5	3.97	1.2	○	
	VBMT 110304E-PC2	0.05-0.16	0.35-2.1	6.35	11.07	3.18	0.4	○	
	110308E-PC2	0.10-0.32	0.70-2.1	6.35	11.07	3.18	0.8	○	
	160404E-PC2	0.05-0.16	0.35-3.1	9.525	16.6	4.76	0.4	●	
	160408E-PC2	0.10-0.32	0.70-3.1	9.525	16.6	4.76	0.8	●	
	160412E-PC2	0.16-0.48	1.05-3.1	9.525	16.6	4.76	1.2	○	

Remark: ● represent for standard stock
○ represent for Make-To-Order



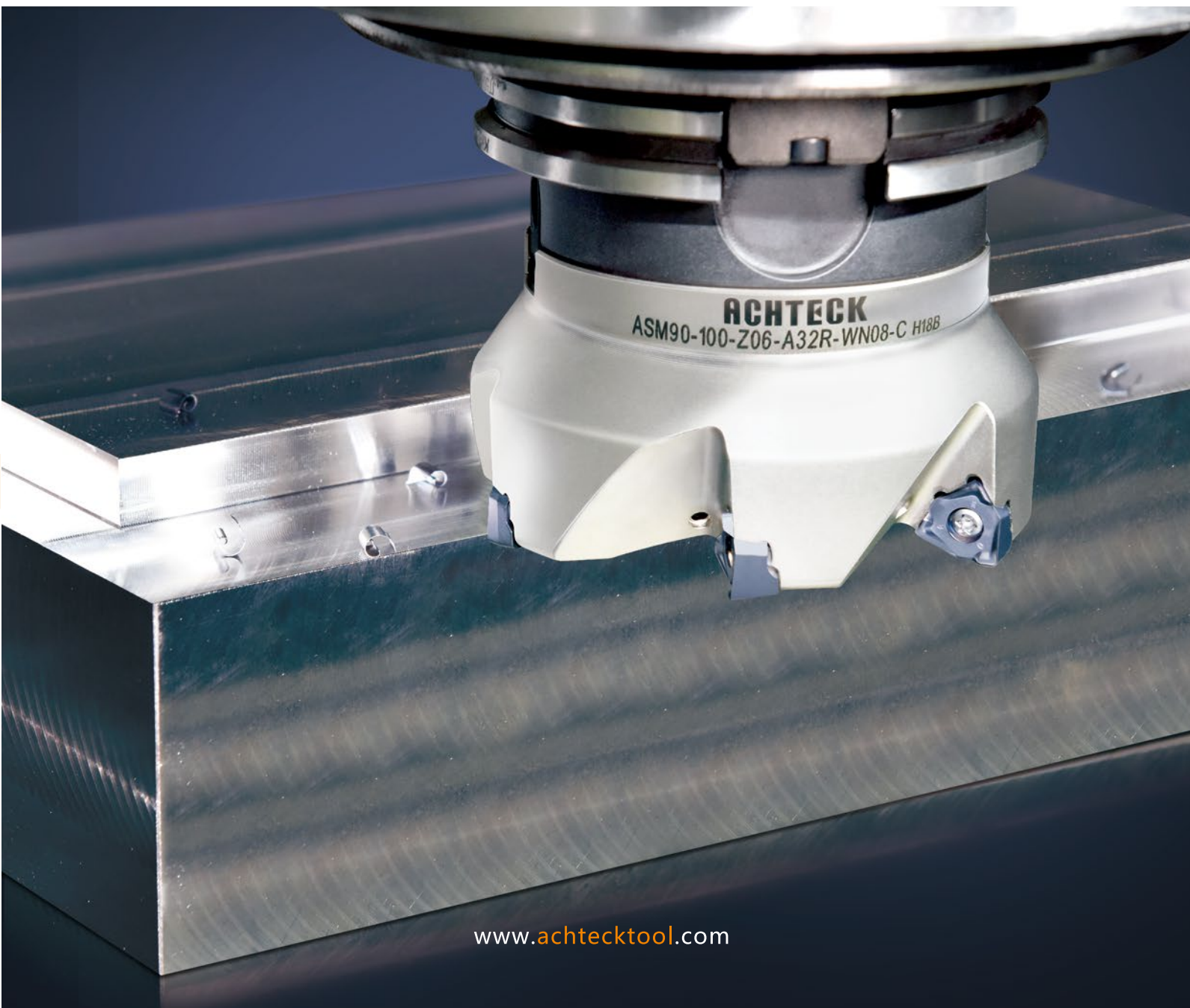
ACHTECK

**NEW
PRODUCT!**

ASM90-WN08

Shoulder Milling Cutter

With 6 cutting edges insert



Achteck is launching a 90 degree shoulder milling cutter ,mounted with a triangular double sided, six cutting edges insert, providing a very good shoulder milling solution. Six cutting edges insert provides an economical solution to reduce machining cost.

This new cutter with 90 degree kappa angle is ideal choice for shoulder milling. Three geometry MM3、 MM4 and MR2 combined with Achteck's CVD and PVD coating technology provides exceptional performance. ASM90-WN08 can achieve excellent performance, tool life, surface quality and minimal mismatch. Suitable to machining steel, stainless steel, cast iron,super alloy and other materials.

The insert WN08..W has a long wiper geometry provides a good surface finish and high productivity.

◆ Product Features

- Six cutting edges negative inserts,good economy, strong large rake angle geometry, thickness 7.88.
- Three kinds of geometry,MM3、 MM4、 MR2, all with short wiper cutting edge, will obtain better surface roughness;
- Mounted with long wiper insert, it can obtain good surface roughness and maching efficiency.
- Corner radius of insert are R0.4/0.8/1.2/1.6;
- Positive rake angle insert, reduce cutting force.
- 6 differnent grades which cover a wide application area. AP301U,AP351U,AP351K,AP401U,AC301P,AC301K;
- Precise 90 degree shoulder milling cutter, cutter body diameter range: Ø 40-Ø160 mm;
- Three kinds of pitch design, coarse design are mainly used for slot milling and shoulder milling,close tooth design are mainly used for shoulder milling, extra close tooth design is mainly used for short chip materials and finishing machining.
- Light cutting behavior, benifits from the positive rake angle design;
- High-precision axial and radial run-out;
- The cutter design has a variety of interface forms: screw modular type, cylindrical type, weldon type and shell mill (Arbor).
- Shining Nickel-plated cutter has good corrosion resistance and wear resistance.

◆ Chip breaker Features

Chip breaker name	Edge Preparation	Feature
MR2 Stable type		• Suitable for unstable cutting conditions • Best cutting edge stability; • High feedrate.
MM4 General type		• First choice • Medium cutting conditions • General machining
MM3 Sharp type		• Fine cutting conditions and finish operation; • Low cutting force (used for small power machine)

◆ Grade application

Grade	Coating	Material					
		P	M	K	S	N	H
AP301U	PVD	●	◐		○		
AP351U	PVD	●	◐		○		
AP401U	PVD		●		◐		
AC301P	CVD	●	◐	○			
AC301K	CVD			●			◐
AP351K	PVD			●			

● Marked : 1st Choice ◐ Marked : 2nd Choice ○ Marked : Supplementary application

Case stories

Work piece: Bearing housing

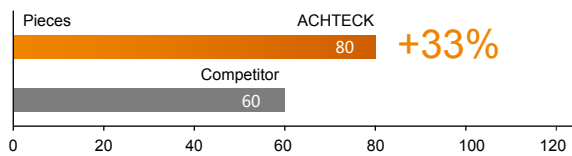
Material: Grey cast iron

Hardness: HB220

Insert: WNGU 080608R-MM4 AC301K

Cutter description: ASM90-063-Z07-A22R-WN08-C

Cutting parameters: $V_c=260\text{m/min}$, $f_z=0.12\text{mm/z}$
 $a_p=2.0\text{mm}$, Dry cutting



Tool life increase from 60pcs to 80pcs, 33% increase.

Work piece: Plate

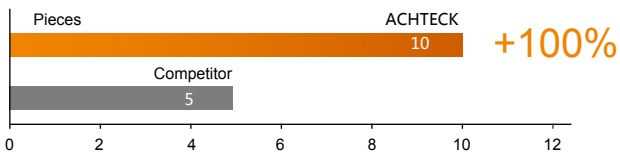
Material: HB400 wear resistance steel

Hardness: > 380HB

Insert: WNGU 080608R-MM4 AC301P

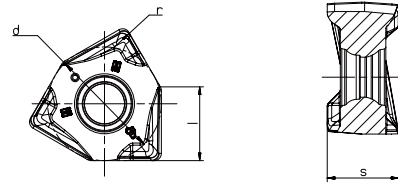
Cutter description: ASM90-080-Z07-A27R-WN08-C

Cutting parameters: $V_c=97\text{m/min}$, $f_z=0.10\text{mm/z}$
 $a_p=5.0\text{mm}$, Dry cutting



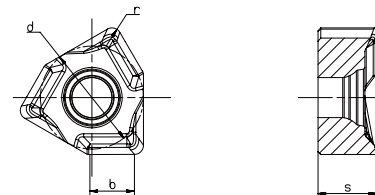
The tool life was increased from 5 to 10 pcs , 100% raise .

● Insert stock item WNGU 08



Insert	Designation	Dimensions (mm)				Grades					
						CVD coated		PVD coated			
		l	d	s	r	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	WNGU 080604R-MM3	8	12.5	7.88	0.4				●	●	
	WNGU 080608R-MM3	8	12.5	7.88	0.8			●	●	●	
	WNGU 080604R-MM4	8	12.5	7.88	0.4			●	●	●	●
	WNGU 080608R-MM4	8	12.5	7.88	0.8	●	●	●	●	●	●
	WNGU 080612R-MM4	8	12.5	7.88	1.2			●	●	●	
	WNGU 080616R-MM4	8	12.5	7.88	1.6			●	●	●	
	WNGU 080608R-MR2	8	12.5	7.88	0.8		●	●			●
	WNGU 080612R-MR2	8	12.5	7.88	1.2			●			●
	WNGU 080616R-MR2	8	12.5	7.88	1.6			●			●

WNHX 08

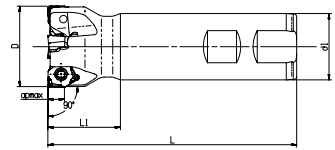


Insert	Designation	Dimensions (mm)				Grades					
						CVD coated		PVD coated			
		d	b	s	r	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	WNHX 0806ZZR-W	11.3	4.8	6.47	1.0		●	●			

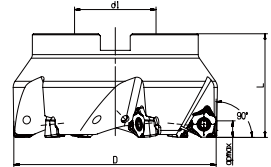
Remark: ● Represent for standard stock

◆ Cutter stock item

ASM90-WN08-C

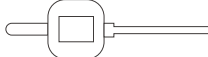


Designation	Dimension					Coolant	Z	Insert
	D	d1	L	l1	apmax			
ASM90-040-Z03-W32R-WN08-C	40	32	120	35	8.0		3	WNGU 0806
ASM90-040-Z04-W32R-WN08-C	40	32	120	35	8.0		4	



Designation	Dimension				Coolant	Z	Insert
	D	d1	L	apmax			
ASM90-050-Z04-A22R-WN08-C	50	22	40	8.0		4	WNGU 0806
ASM90-050-Z05-A22R-WN08-C	50	22	40	8.0		5	
ASM90-063-Z06-A22R-WN08-C	63	22	40	8.0		6	
ASM90-063-Z07-A22R-WN08-C	63	22	40	8.0		7	
ASM90-080-Z07-A27R-WN08-C	80	27	50	8.0		7	
ASM90-080-Z09-A27R-WN08-C	80	27	50	8.0		9	
ASM90-100-Z08-A32R-WN08-C	100	32	50	8.0		8	
ASM90-100-Z11-A32R-WN08-C	100	32	50	8.0		11	
ASM90-125-Z11-A40R-WN08-C	125	40	63	8.0		11	
ASM90-125-Z13-A40R-WN08-C	125	40	63	8.0		13	
ASM90-160-Z12-A40R-WN08	160	40	63	8.0		12	

Remark: represent for coolant
 represent for no coolant

Dimensions	Cutter spare parts		Torque	
Cutter diameter	Screw	Wrench		
φ40-80	AST4085-60	AWT-T15	3.5Nm	
				
φ100-160	AST4085-60	ADT-T15		
		ADT-G16		BIT-T15
				

Application			
Facing	Shouldering	Slotting	Plunging

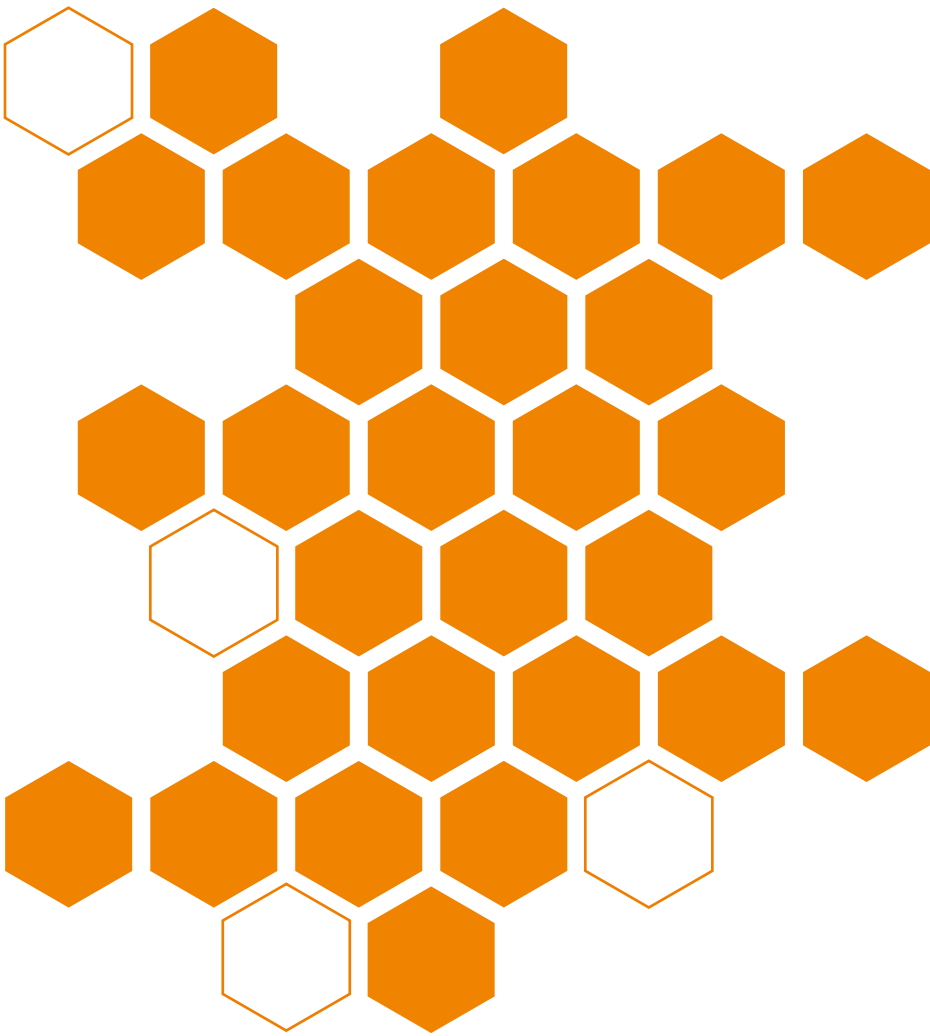
Recommended cutting speed by materials

Machined Materials				Achteck Milling Grades Application Ranges										Cutting speed and feed rate																		
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	AC301K	AP351K	AP301U	AC301P	AP351U	AP401U	WN08																						
				CVD	PVD	PVD	CVD	PVD	PVD	Geometry																						
P	Non-alloyed steel	<600	<180	P10-35	-	P15-35	P25-40	P30-45	P20-40	MM3						MM4						MR2										
				-	-	M15-35	M25-40	M30-45	M20-40																							
				K10-35	K15-40	-	-	-	-																							
				-	-	-	-	-	-																							
				-	-	-	-	-	-																							
	Alloyed steel	700-950	200-280	Feed rate(mm/z)																												
				Cutting speed(m/min)																												
				Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max																	
				450	340	290	430	230	120	230	205	170				0.12	-	0.22	0.10	-	0.28	0.15	-	0.30								
																0.12	-	0.22	0.10	-	0.26	0.15	-	0.30								
M	Duplex stainless steel	778	230	700-950		290	210	185	340	240	120	200	155	110				0.12	-	0.22	0.10	-	0.26	0.15	-	0.30						
				950-1200		280	210	200	260	150	80	180	130	90				0.12	-	0.18	0.10	-	0.20	0.15	-	0.26						
				1200-1400		210	170	110	145	105	65	140	105	70				0.12	-	0.18	0.10	-	0.20	0.15	-	0.22						
				Austenitic stainless steel		675		165	150	130	225	180	125	270	215	155	150	115	85	0.12	-	0.18	0.10	-	0.20	0.15	-	0.24				
				Precipitation-hardening stainless steel		1013		270	185	90	210	145	75	260	180	90	185	140	105	0.12	-	0.16	0.10	-	0.18	0.15	-	0.20				
K	Grey cast iron	700	220			300	225	165	140	130	90	170	150	110	125	95	70	0.12	-	0.12	0.10	-	0.13									
				480	310	140	390	280	130										0.12	-	0.20	0.10	-	0.28	0.15	-	0.30					
				880		450	295	140	420	300	140									0.12	-	0.20	0.10	-	0.28	0.15	-	0.30				
				Malleable cast iron		800		500	365	230	430	290	230							0.12	-	0.18	0.10	-	0.24	0.15	-	0.26				
				Fe based alloy		943															0.12	-	0.13	0.10	-	0.15						
S	Co based alloy	1076	320															0.12	-	0.12	0.10	-	0.13									
																				0.12	-	0.12	0.10	-	0.13							
				Ni based alloy		1177														0.12	-	0.12	0.10	-	0.13							
				Ti-alloy		1262															0.12	-	0.13	0.10	-	0.15						
				Aluminum		260																										
N	Aluminum alloy	447	130																													
H	Hardened steel	-	50-60HRC																													
H	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, work piece clamping and coants.

* When slotting , ap≤1/2apmax



ACHTECK

**NEW
PRODUCT!**

AC350P

New Turning CVD grade for steels

For heavy interrupted machining



Achteck is launching a new turning CVD grade-the AC350P which provides the exceptional machining performance at low cutting speed and interrupted cut on steels. The grade has very tough substrate combining Achteck's CVD coating enhanced chipping resistance and toughness. The new grade AC350P provides a better surface finish on work piece due to post surface treatment after coating.

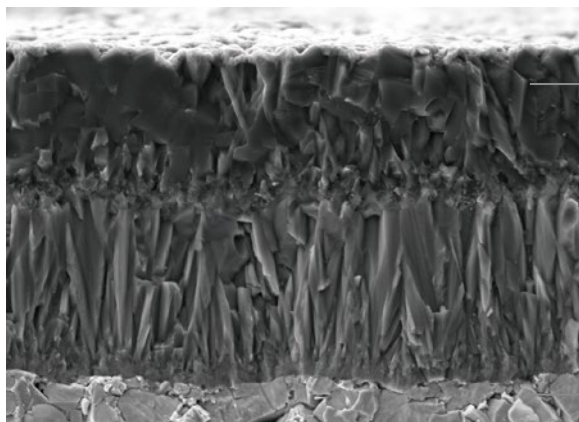
The new grade is defined a longer tool life at low cutting speed and heavy machining on steels

The AC350P grade can be used in continuous cut and interrupted cut on steels.

● AC350P Grade Features

Kind of coating: CVD

ISO range: P30-P45



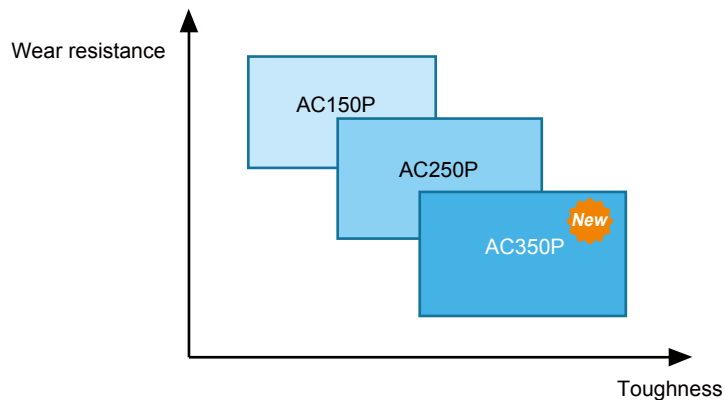
CVD coating

Very tough carbide substrate

<SEM micro structure>

- Very tough carbide substrate with on CVD coating
- Excellent toughness and chipping resistance.
- For a wide range medium to roughing application at low cutting speed on steels.
- Very good surface finish on work piece
- For heavy turning

Application range



Recommended cutting speed by materials

ISO	Material Classification	Tensile strength (N/mm ²)	Hardness (HB)	Cutting Speed(m/min)		
				Low feed rate	Medium feed rate	Max feed rate
P (P30-45)	Unalloyed steel	<600	<180	250	182	115
		<950	<280	160	117	75
	Alloy steel	700-950	200-280	148	109	70
		950-1200	280-355	135	100	65
		1200-1400	355-415	93	69	45

Remark) The recommended cutting speed always refer to general conditons. These cutting speed should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants.

Case stories

Component description: Container housing

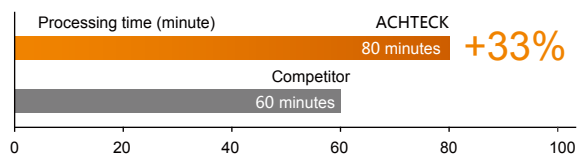
Material: Alloy steel

Insert: SNMM 250924S-PD9 AC350P

Competitor: SNMM 250924-TK CVD coated grade

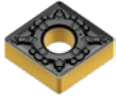
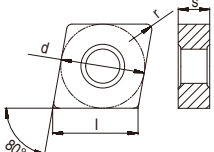
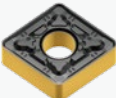
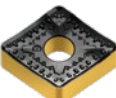
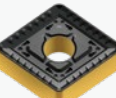
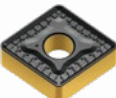
Cutting Parameters: $V_c=126\text{m/min}$, $f=1.0\text{mm/z}$

$a_p=8.0\text{mm}$, dry cutting

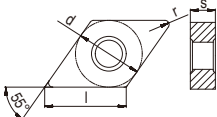
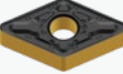
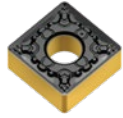
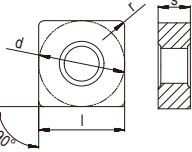
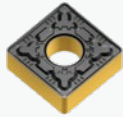
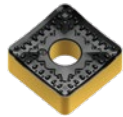
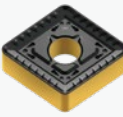
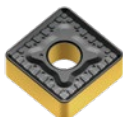


• Stock items

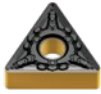
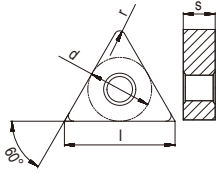
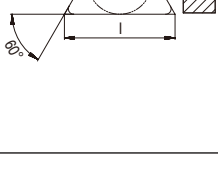
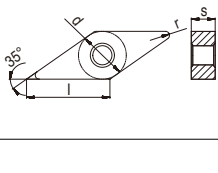
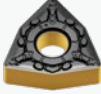
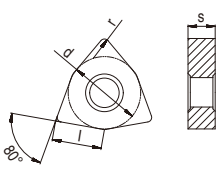
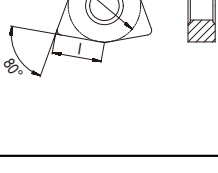
Negative insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (CVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AC350P	
	CNMG 120404E-PD3	0.08-0.22	0.40-4.30	12.70	12.9	4.76	0.4	○	
	120408E-PD3	0.15-0.44	0.80-4.30	12.70	12.9	4.76	0.8	●	
	120412E-PD3	0.23-0.66	1.20-4.30	12.70	12.9	4.76	1.2	●	
	160608E-PD3	0.15-0.44	0.80-5.30	15.87	16.1	6.35	0.8	○	
	190608E-PD3	0.15-0.44	0.80-6.40	19.05	19.3	6.35	0.8	○	
	CNMG 120408E-PD5	0.20-0.60	1.20-6.40	12.70	12.9	4.76	0.8	●	
	120412E-PD5	0.30-0.90	1.80-6.40	12.70	12.9	4.76	1.2	●	
	160612E-PD5	0.30-0.90	1.80-8.10	15.87	16.1	6.35	1.2	○	
	160616E-PD5	0.40-1.20	2.40-8.10	15.87	16.1	6.35	1.6	●	
	190612E-PD5	0.30-0.90	1.80-9.70	19.05	19.3	6.35	1.2	○	
	190616E-PD5	0.40-1.20	2.40-9.70	19.05	19.3	6.35	1.6	●	
	CNMM 120408E-PD8	0.16-0.32	1.44-5.20	12.70	12.9	4.76	0.8	●	
	120412E-PD8	0.24-0.48	2.16-5.20	12.70	12.9	4.76	1.2	●	
	160612E-PD8	0.24-0.48	2.16-6.40	15.87	16.1	6.35	1.2	○	
	160616E-PD8	0.32-0.64	2.88-6.40	15.87	16.1	6.35	1.6	○	
	160624E-PD8	0.48-0.96	4.32-6.40	15.87	16.1	6.35	2.4	○	
	190612E-PD8	0.24-0.48	2.16-7.70	19.05	19.3	6.35	1.2	○	
	190616E-PD8	0.32-0.64	2.88-7.70	19.05	19.3	6.35	1.6	●	
	190624E-PD8	0.48-0.96	4.32-7.70	19.05	19.3	6.35	2.4	●	
	250724E-PD8	0.48-0.96	4.32-10.3	25.40	25.8	7.94	2.4	○	
	250924E-PD8	0.48-0.96	4.32-10.3	25.40	25.8	9.52	2.4	●	
	CNMM 190612S-PC9	0.26-0.60	2.40-9.70	19.05	19.3	6.35	1.2	○	
	190616S-PC9	0.35-0.80	3.20-9.70	19.05	19.3	6.35	1.6	○	
	190624S-PC9	0.53-1.20	4.80-9.70	19.05	19.3	6.35	2.4	●	
	250724S-PC9	0.53-1.20	4.80-12.9	25.40	25.8	7.94	2.4	●	
	250924S-PC9	0.53-1.20	4.80-12.9	25.40	25.8	9.52	2.4	○	
	CNMM 190612S-PD9	0.30-0.72	2.64-11.6	19.05	19.3	6.35	1.2	○	
	190616S-PD9	0.40-0.96	3.52-11.6	19.05	19.3	6.35	1.6	○	
	190624S-PD9	0.60-1.44	5.28-11.6	19.05	19.3	6.35	2.4	●	
	250724S-PD9	0.60-1.44	5.28-15.5	25.40	25.8	7.94	2.4	○	
	250924S-PD9	0.60-1.44	5.28-15.5	25.40	25.8	9.52	2.4	●	

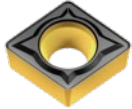
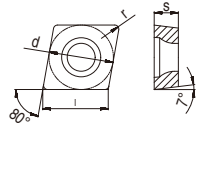
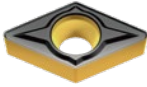
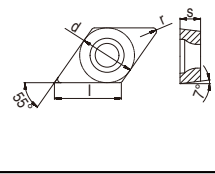
Remark: ● represent for standard stock
○ represent for Make-To-Order

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (CVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AC350P	
	DNMG 150408E-PD3	0.15-0.44	0.8-3.9	12.7	15.5	4.76	0.8	●	
	150412E-PD3	0.23-0.66	1.2-3.9	12.7	15.5	4.76	1.2	●	
	150608E-PD3	0.15-0.44	0.8-3.9	12.7	15.5	6.35	0.8	○	
	150612E-PD3	0.23-0.66	1.2-3.9	12.7	15.5	6.35	1.2	○	
	DNMG 150408E-PD5	0.20-0.60	1.2-5.4	12.7	15.5	4.76	0.8	●	
	150412E-PD5	0.30-0.90	1.8-5.4	12.7	15.5	4.76	1.2	●	
	150416E-PD5	0.40-1.20	2.4-5.4	12.7	15.5	4.76	1.6	●	
	150608E-PD5	0.20-0.60	1.2-5.4	12.7	15.5	6.35	0.8	●	
	150612E-PD5	0.30-0.90	1.8-5.4	12.7	15.5	6.35	1.2	○	
	150616E-PD5	0.40-1.20	2.4-5.4	12.7	15.5	6.35	1.6	○	
	SNMG 120404E-PD3	0.08-0.22	0.4-4.2	12.7	12.7	4.76	0.4	○	
	120408E-PD3	0.15-0.44	0.8-4.2	12.7	12.7	4.76	0.8	●	
	120412E-PD3	0.23-0.66	1.2-4.2	12.7	12.7	4.76	1.2	●	
	190608E-PD3	0.15-0.44	0.8-6.3	19.05	19.05	6.35	0.8	○	
	SNMG 150608E-PD5	0.20-0.60	1.2-7.9	15.87	15.87	6.35	0.8	●	
	150612E-PD5	0.30-0.90	1.8-7.9	15.87	15.87	6.35	1.2	●	
	150616E-PD5	0.40-1.20	2.4-7.9	15.87	15.87	6.35	1.6	○	
	190612E-PD5	0.30-0.90	1.8-9.5	19.05	19.05	6.35	1.2	○	
	190616E-PD5	0.40-1.20	2.4-9.5	19.05	19.05	6.35	1.6	○	
	SNMM 120408E-PD8	0.16-0.32	1.44-5.1	12.7	12.7	4.76	0.8	●	
	120412E-PD8	0.24-0.48	2.16-5.1	12.7	12.7	4.76	1.2	○	
	150612E-PD8	0.24-0.48	2.16-6.40	15.87	15.87	6.35	1.2	○	
	190616E-PD8	0.32-0.64	2.88-7.60	19.05	19.05	6.35	1.6	●	
	190624E-PD8	0.48-0.96	4.32-7.60	19.05	19.05	6.35	2.4	●	
	250724E-PD8	0.48-0.96	4.32-10.2	25.4	25.4	7.94	2.4	○	
	250924E-PD8	0.48-0.96	4.32-10.2	25.4	25.4	9.525	2.4	○	
	SNMM 190612S-PC9	0.26-0.60	2.4-9.5	19.05	19.05	6.35	1.2	○	
	190616S-PC9	0.35-0.80	3.20-9.50	19.05	19.05	6.35	1.6	○	
	190624S-PC9	0.53-1.20	4.80-9.50	19.05	19.05	6.35	2.4	●	
	250724S-PC9	0.53-1.20	4.80-12.7	25.4	25.4	7.94	2.4	○	
	250924S-PC9	0.53-1.20	4.80-12.7	25.4	25.4	9.525	2.4	○	
	SNMM 190612S-PD9	0.30-0.72	2.64-11.4	19.05	19.05	6.35	1.2	○	
	190616S-PD9	0.40-0.96	3.52-11.4	19.05	19.05	6.35	1.6	○	
	190624S-PD9	0.60-1.44	5.28-11.4	19.05	19.05	6.35	2.4	●	
	250724S-PD9	0.60-1.44	5.28-15.2	25.4	25.4	7.94	2.4	○	
	250924S-PD9	0.60-1.44	5.28-15.2	25.4	25.4	9.525	2.4	●	

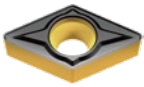
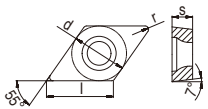
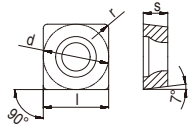
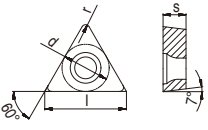
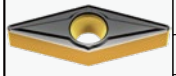
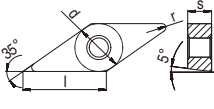
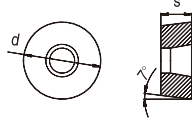
Remark: ● represent for standard stock
○ represent for Make-To-Order

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (CVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AC350P	
	TNMG 160404E-PD3	0.08-0.22	0.4-4.1	9.52	16.5	4.76	0.4	○	
	160408E-PD3	0.15-0.44	0.8-4.1	9.52	16.5	4.76	0.8	●	
	160412E-PD3	0.23-0.66	1.2-4.1	9.52	16.5	4.76	1.2	○	
	TNMG 160408E-PD5	0.20-0.60	1.2-5.8	9.52	16.5	4.76	0.8	●	
	160412E-PD5	0.30-0.90	1.8-5.8	9.52	16.5	4.76	1.2	●	
	220408E-PD5	0.20-0.60	1.2-7.7	12.7	22	4.76	0.8	●	
	220412E-PD5	0.30-0.90	1.8-7.7	12.7	22	4.76	1.2	●	
	220416E-PD5	0.40-1.20	2.4-7.7	12.7	22	4.76	1.6	●	
	VNMG 160404E-PD3	0.08-0.22	0.4-3.3	9.52	16.5	4.76	0.4	○	
	160408E-PD3	0.15-0.44	0.8-3.3	9.52	16.5	4.76	0.8	○	
	160412E-PD3	0.23-0.66	1.2-3.3	9.52	16.5	4.76	1.2	○	
	WNMG 080404E-PD3	0.08-0.22	0.4-2.9	12.7	8.7	4.76	0.4	○	
	080408E-PD3	0.15-0.44	0.8-2.9	12.7	8.7	4.76	0.8	●	
	080412E-PD3	0.23-0.66	1.2-2.9	12.7	8.7	4.76	1.2	●	
	WNMG 080408E-PD5	0.20-0.60	1.2-4.3	12.7	8.7	4.76	0.8	●	
	080412E-PD5	0.30-0.90	1.8-4.3	12.7	8.7	4.76	1.2	●	

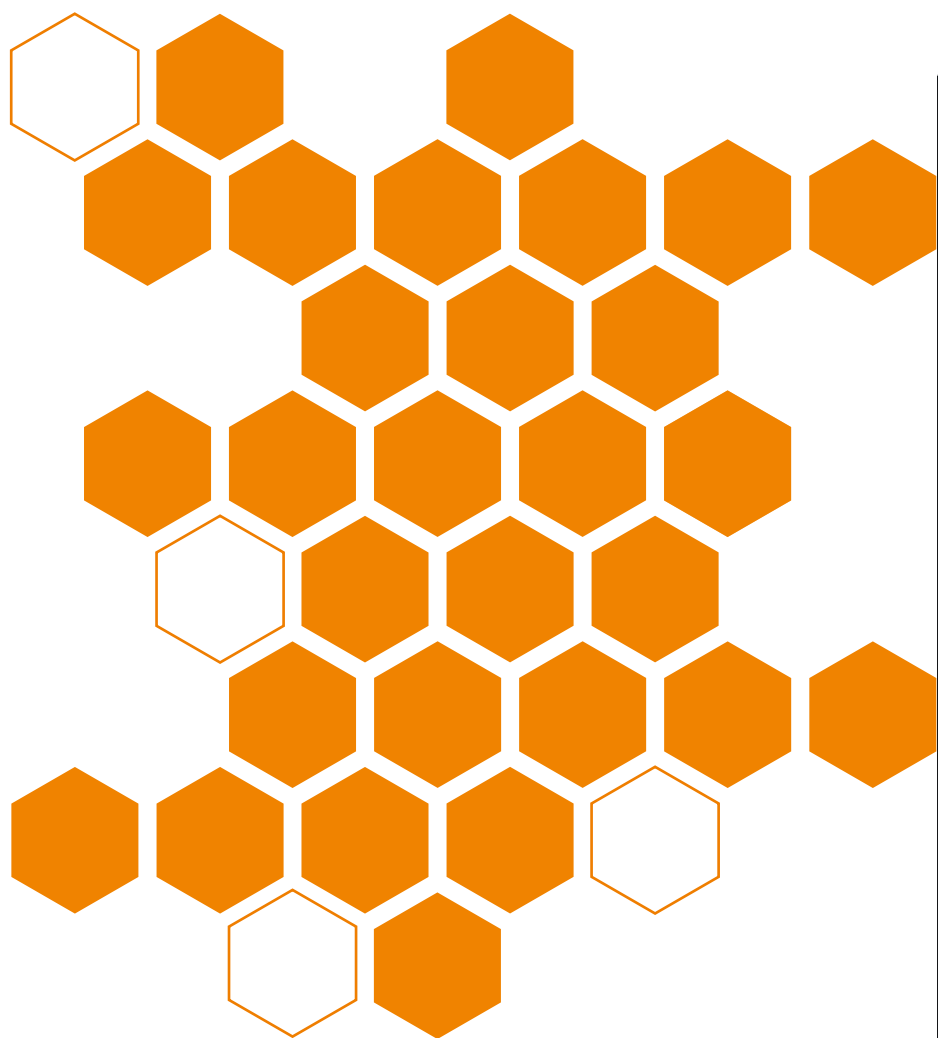
Positive inserts

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (CVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AC350P	
	CCMT 060204E-KC2	0.06-0.18	0.4-2.1	6.35	6.45	2.38	0.4	○	
	060208E-KC2	0.12-0.36	0.8-2.1	6.35	6.45	2.38	0.8	●	
	09T304E-KC2	0.06-0.18	0.4-3.2	9.52	9.67	3.97	0.4	○	
	09T308E-KC2	0.12-0.36	0.8-3.2	9.52	9.67	3.97	0.8	●	
	120404E-KC2	0.06-0.18	0.4-4.3	12.7	12.9	4.76	0.4	○	
	120408E-KC2	0.12-0.36	0.8-4.3	12.7	12.9	4.76	0.8	●	
	120412E-KC2	0.18-0.54	1.2-4.3	12.7	12.9	4.76	1.2	○	
	DCMT 070204E-KC2	0.06-0.18	0.4-2.3	6.35	7.75	2.38	0.4	○	
	070208E-KC2	0.12-0.36	0.8-2.3	6.35	7.75	2.38	0.8	●	
	11T304E-KC2	0.06-0.18	0.4-3.5	9.52	11.63	3.97	0.4	○	
	11T308E-KC2	0.12-0.36	0.8-3.5	9.52	11.63	3.97	0.8	●	
	11T312E-KC2	0.18-0.54	1.2-3.5	9.52	11.63	3.97	1.2	○	

Remark: ● represent for standard stock
○ represent for Make-To-Order

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (CVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AC350P	
	DCMT 070204E-KC2	0.06-0.18	0.4-2.3	6.35	7.75	2.38	0.4	○	
	070208E-KC2	0.12-0.36	0.8-2.3	6.35	7.75	2.38	0.8	○	
	11T304E-KC2	0.06-0.18	0.4-3.5	9.52	11.63	3.97	0.4	○	
	11T308E-KC2	0.12-0.36	0.8-3.5	9.52	11.63	3.97	0.8	●	
	11T312E-KC2	0.18-0.54	1.2-3.5	9.52	11.63	3.97	1.2	○	
	SCMT 09T304E-KC2	0.06-0.18	0.4-3.1	9.52	9.52	3.97	0.4	●	
	09T308E-KC2	0.12-0.36	0.8-3.1	9.52	9.52	3.97	0.8	●	
	120404E-KC2	0.06-0.18	0.4-4.2	12.7	12.7	4.76	0.4	○	
	120408E-KC2	0.12-0.36	0.8-4.2	12.7	12.7	4.76	0.8	●	
	120412E-KC2	0.18-0.54	1.2-4.2	12.7	12.7	4.76	1.2	○	
	TCMT 090204E-KC2	0.06-0.18	0.4-2.9	5.56	9	2.38	0.4	○	
	090208E-KC2	0.12-0.36	0.8-2.9	5.56	9	2.38	0.8	○	
	110204E-KC2	0.06-0.18	0.4-3.3	6.35	11	2.38	0.4	○	
	110208E-KC2	0.12-0.36	0.8-3.3	6.35	11	2.38	0.8	○	
	16T304E-KC2	0.06-0.18	0.4-4.9	9.52	16.5	3.97	0.4	○	
	16T308E-KC2	0.12-0.36	0.8-4.9	9.52	16.5	3.97	0.8	●	
	16T312E-KC2	0.18-0.54	1.2-4.9	9.52	16.5	3.97	1.2	○	
	VBMT 160404E-KC2	0.06-0.18	0.4-3.3	9.52	16.61	4.76	0.4	○	
	160408E-KC2	0.12-0.36	0.8-3.3	9.52	16.61	4.76	0.8	●	
	160412E-KC2	0.18-0.54	1.2-3.3	9.52	16.61	4.76	1.2	○	
	RCMX 100300S	0.25-0.50	1.5-4.0	10	-	3.18	5	○	
	120400S	0.30-0.60	2.5-5.0	12	-	4.76	6	●	
	160600S	0.40-0.75	3.0-7.0	16	-	6.35	8	○	
	200600S	0.48-0.90	3.5-9.0	20	-	6.35	10	○	
	250700S	0.55-1.20	4.0-12.0	25	-	7.94	12.5	●	
	320900S	0.65-1.50	5.0-15.0	32	-	9.52	16	○	

Remark: ● represent for standard stock
○ represent for Make-To-Order



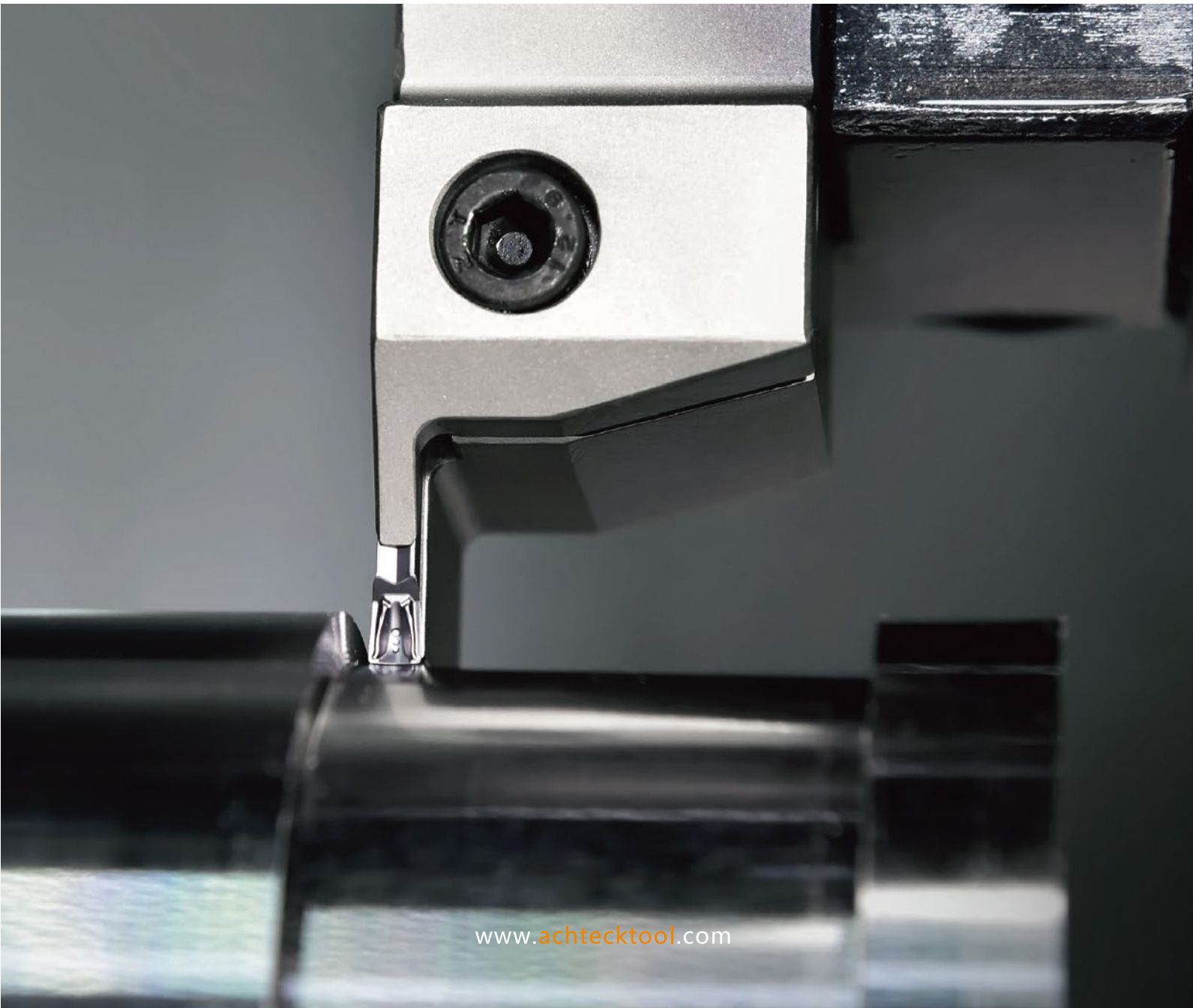
ACHTECK

NEW
PRODUCT!

TS

Grooving Series

Multifunctional machining insert
For parting off, grooving, turning-grooving and facing



Achteck is launching a new product-the TS type which is double ended insert. It is multifunctional machining insert such as external grooving, external turning, internal grooving, internal turning, face grooving, face turning and parting off. The insert designed optimal chip breaker and can be provided a wide chip breaker range.

The insert designed sharp cutting edge and provides a good surface finish on work piece.

TS insert has double clearance angle which can be machined smaller diameter without interference to work piece during a machining.

TS insert provides high accuracy insert positioning and reliable repeatability on the holder when insert cutting edge is changed.

The insert can be mounted on Achteck standard holders.

TS insert with Achteck excellent machining performance PVD grade AP301U is applied and provides higher performance, longer tool life and reduce machining cost.

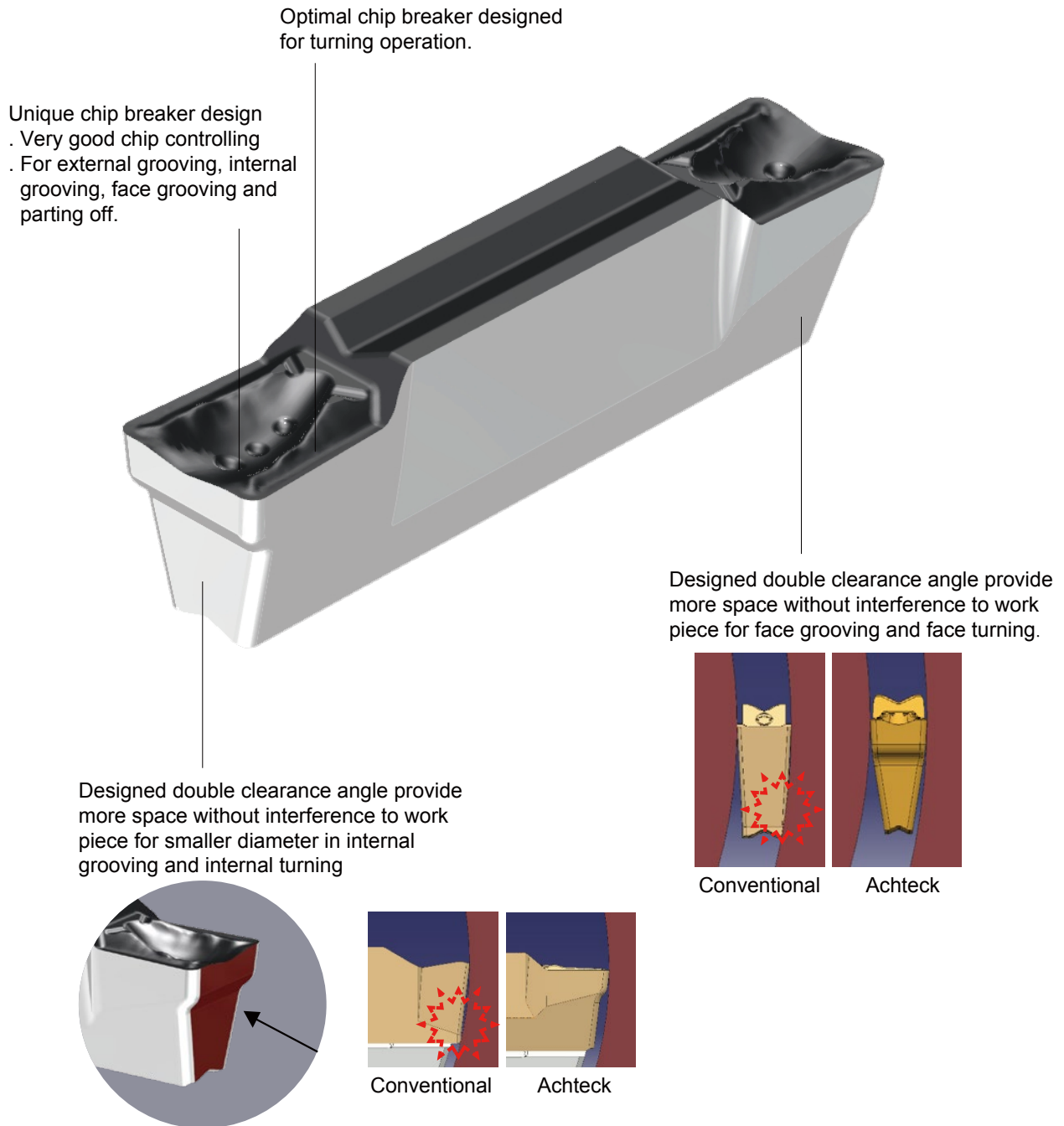
TS insert is the first time to be launched into market and provide insert designation system to give better understanding.

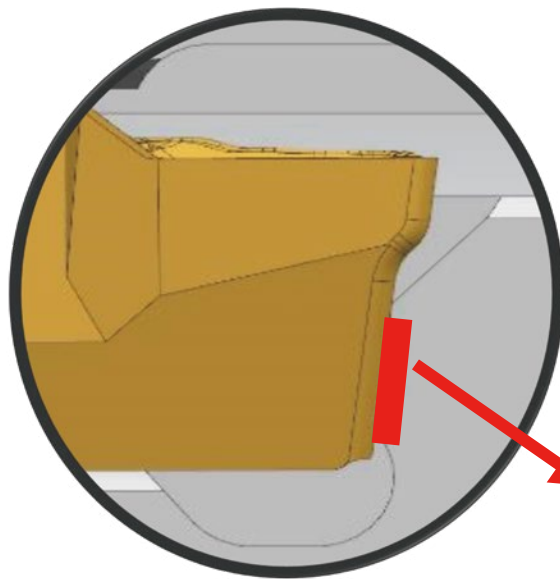
TS



Multifunctional applications: For grooving, parting off and turning

• Product features





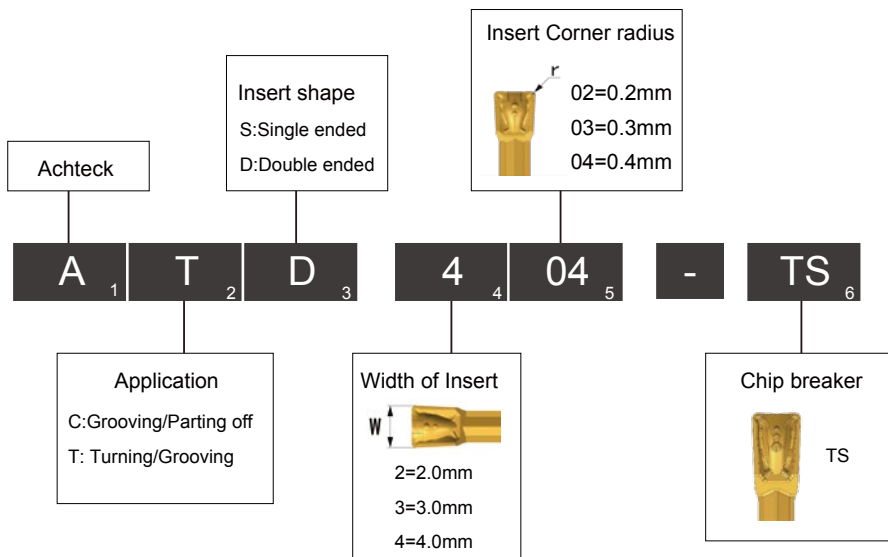
Insert contacting area is very accuracy to holder pocket

Excellent insert repeatability

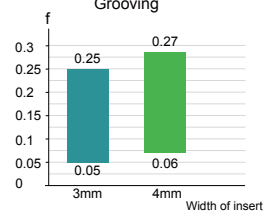
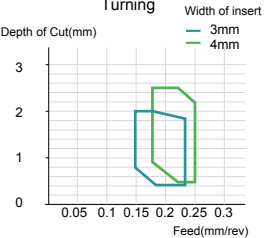
Contact area
Insert&Pocket

1. Double ended insert.
2. Multifunctional machining application such as external grooving, external turning, face grooving, face turning, internal turning, internal grooving and parting off.
3. Enhanced chip breaker provides thin and narrow chips in grooving application.
4. Sharp cutting edge reduce cutting force and excellent chip breaker design.
5. Application for steels, stainless steels and cast iron.
6. For low feed rate application.

Insert designation system



Chip breaker features

Geometry	Insert picture	Edge preparation	Recommended feed (mm/rev)	Features
TS			Grooving  Turning 	1.Double ended insert 2.Multifunctional machining application such as external grooving, external turning, face grooving, face turning, internal turning, internal grooving and parting off. 3.Enhanced chip breaker provides thin and narrow chips in grooving application. 4.Sharp cutting edge reduce cutting force and excellent chip breaker design. 5.Application for steels, stainless steels and cast iron. 6.For low feed rate application.

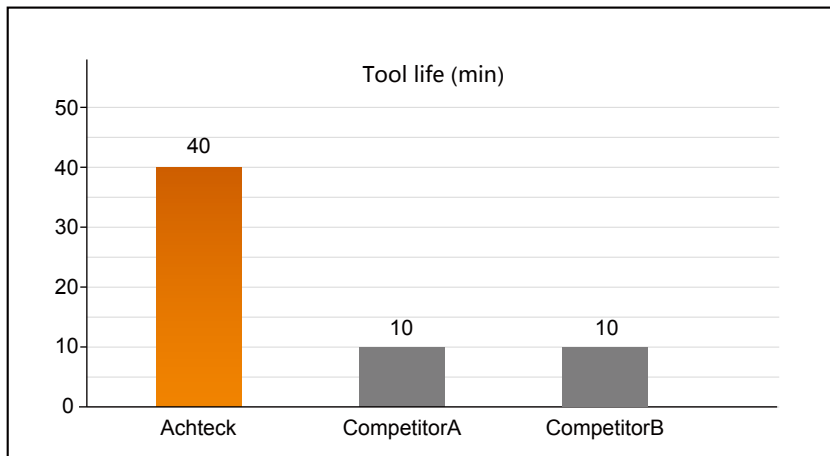
• Comparison internal tool life test result

Test 1

Cutting conditions

Material	Operation	Cutting parameters			
		Vc(m/min)	f(mm/rev)	ap(mm)	Coolant
Alloy steel	Grooving	200	0.2	10	Yes

Test result



Insert: ATD 303-TS AP301U

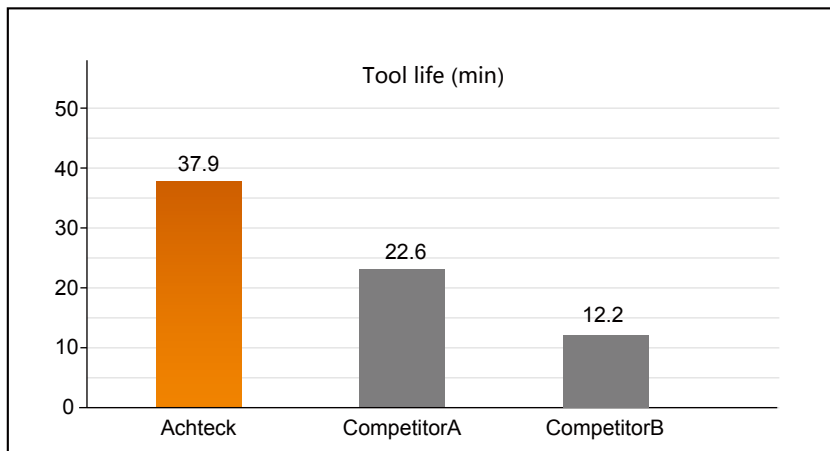
Holder: ATSEL 2525-3T12

Test 2

Cutting conditions

Material	Operation	Cutting parameters			
		Vc(m/min)	f(mm/rev)	ap(mm)	Coolant
316L stainless steel	Grooving	120	0.2	10	Yes

Test result



Insert: ATD 303-TS AP301U

Holder: ATSEL 2525-3T12

Case stories

Component description: Valve parts

Material: 304 stainless steel

Material hardness: HB 180

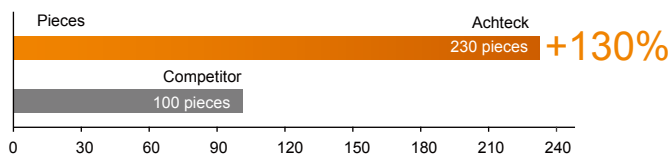
Insert: ATD 303-TS AP301U

Holder: ATSER 2525-3T12

Machining operation: External groove

Cutting parameters: $V_c=120\text{m/min}$, $f=0.15\text{mm}$, $a_p=3\text{mm}$

Wet machining



Component description: Cylinder guide sleeve

Material: Carbon steel

Material hardness: HB180

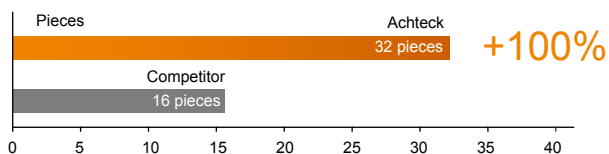
Insert: ATD 303-TS AP301U

Holder: ATSER 2525-3T12

Machining operation: External groove

Cutting parameters: $V_c=200\text{m/min}$, $f=0.15\text{mm}$, $a_p=1\text{mm}$

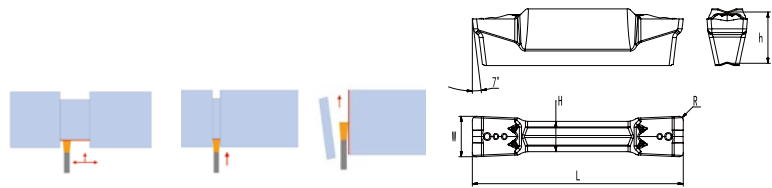
Wet machining



● Insert stock item

- TS

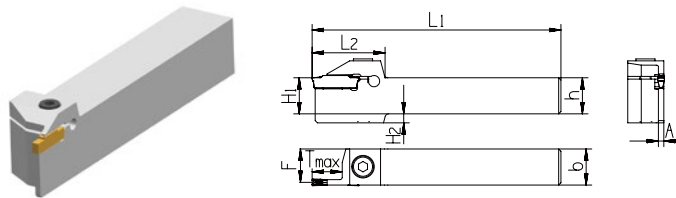
For turning, grooving and parting off



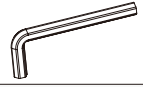
Insert	Type	Dimension					Grooving		Turning		Grade
		W	R	L	H	h	f	T _{max}	f	ap	AP301U
	ATD 303-TS	3	0.3	20.7	2.2	5.1	0.05-0.25	19.7	0.15-0.23	0.45-2.0	●
	ATD 404-TS	4	0.4	20.7	3.0	5.1	0.06-0.27	19.7	0.18-0.25	0.50-2.50	●

Remark: ● represent for standard stock

● Holders stock item



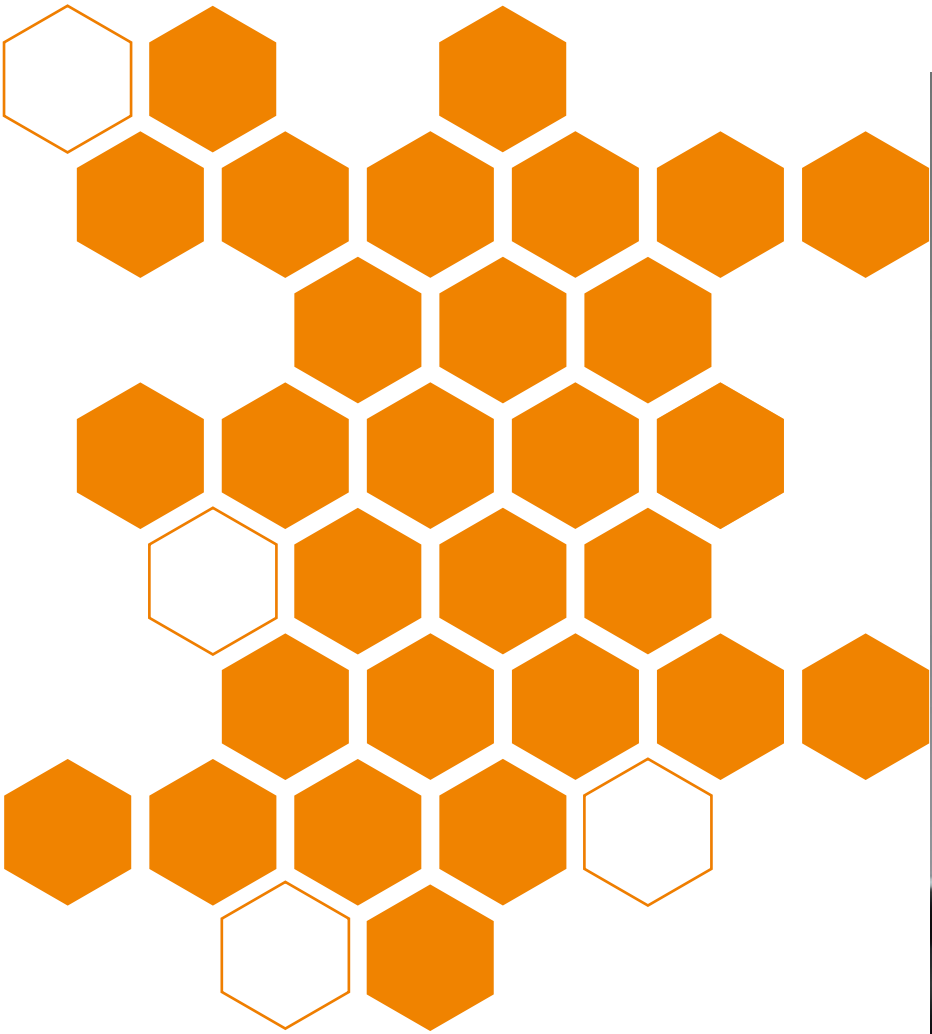
Holder type		holder dimension									Insert
		h	b	H ₁	H ₂	A	L ₁	L ₂	F	T _{max}	
ATSER/L	1616-3T12	16	16	16	4	2.4	110	32	14.8	12	ATD 3
	1616-3T20	16	16	16	4	2.4	110	38	14.8	20	
	2020-3T09	20	20	20	0	2.4	125	32	18.8	9	
	2020-3T12	20	20	20	0	2.4	125	32	18.8	12	
	2020-3T20	20	20	20	0	2.4	125	38	18.8	20	
	2525-3T09	25	25	25	0	2.4	150	32	23.8	9	
	2525-3T12	25	25	25	0	2.4	150	32	23.8	12	
ATSER/L	2525-3T20	25	25	25	0	2.4	150	38	23.8	20	ATD 4
	2020-4T15	20	20	20	0	3	125	32	18.5	15	
	2020-4T25	20	20	20	0	3	125	45	18.5	25	
	2525-4T15	25	25	25	0	3	150	32	23.5	15	

Holder type	Spare part	
	Screw	Wrench
		
ATSER/L 1616-3	ASH M5x0.8x16	AWH4
ATSER/L 2020-3	ASH M5x0.8x20	AWH4
ATSER/L 2525-3	ASH M5x0.8x25	AWH4
ATSER/L 1616-4	ASH M6x1.0x16	AWH5
ATSER/L 2020-4	ASH M6x1.0x20	AWH5
ATSER/L 2525-4	ASH M6x1.0x25	AWH5

Recommended cutting speed by materials

Machined Materials				Achteck Grooving Grades Application Ranges					
ISO	Material classification	Tensile strength (N/mm²)	Hardness (HB)	Turning&Grooving			Parting off&Grooving		
				AP301U			AP301U		
				PVD			PVD		
				P15-35			P15-35		
				M15-35			M15-35		
				K15-35			K15-35		
				-			-		
				-			-		
				-			-		
				Feed rate (mm/rev)					
				Min	Medium	Max	Min	Medium	Max
				Cutting speed (m/min)					
P	Non-alloyed steel	<600	<180	200	180	160	180	145	130
		<950	<280	180	160	140	145	130	115
	Alloyed steel	700-950	200-280	160	140	120	130	115	100
		950-1200	280-355	140	120	100	115	100	80
		1200-1400	355-415	130	110	90	105	90	170
M	Duplex stainless steel	778	230	170	140	110	135	110	85
	Austenitic stainless steel	675	200	205	170	130	165	135	105
	Precipitation-hardening stainless steel	1013	300	195	150	100	155	120	80
K	Grey cast iron	700	220	230	195	120	185	140	95
	Nodular Cast iron	880	260	180	140	95	145	110	80
	Malleable cast iron	800	250	145	110	80	115	90	65
S	Fe based alloy	943	280						
	Co based alloy	1076	320						
	Ni based alloy	1177	350						
	Ti-alloy	1262	370						
N	Aluminum	260	75						
	Aluminum alloy	447	130						
H	Hardened steel	-	50-60HRC						
	Chilled cast iron	-	55HRC						

* This table shows general cutting conditons, it must be adjusted according to the rigidity of the machine, tooling, condition of the work-piece, material, coolant and so on.



ACHTECK • DRILL

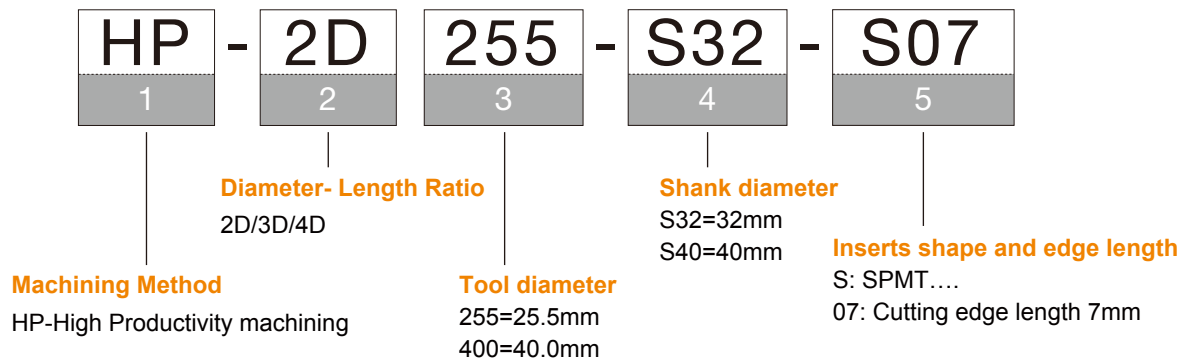
DP Series

Indexable Drills



www.achtecktool.com

Indexable Drilling Holder Designation System



ACHTECK new product

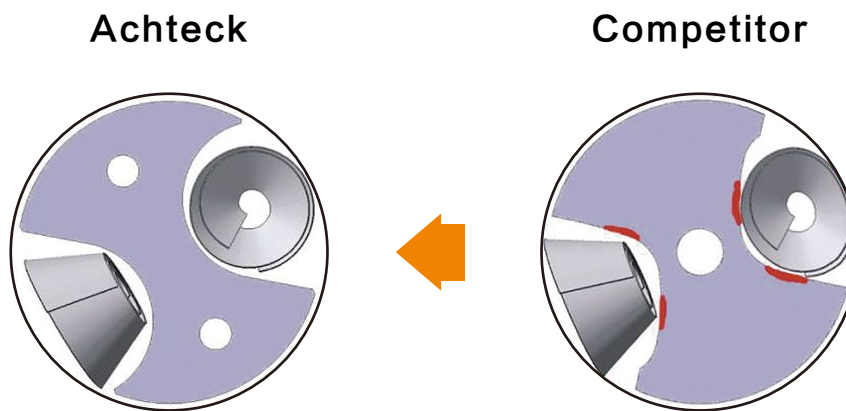
Drilling tool DP series

Achieving high efficiency for shallow hole machining

◆ Drilling Body Advantages



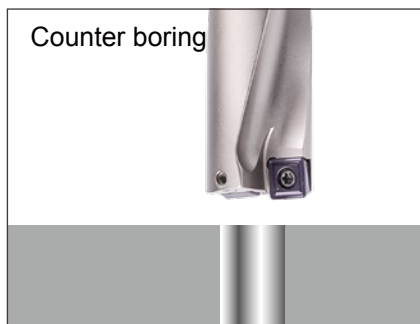
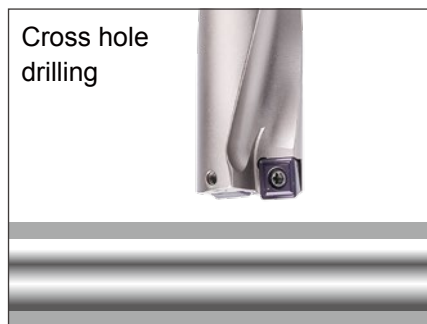
- ① Installed indexable insert with 4 cutting edge; the balancing cutting force from exactly layout of peripheral insert and center insert.
- ② Optimized chip flute has bigger space and smooth chip evacuation merits, which ensures the holder stability.
- ③ Nickel-plated body improves wear resistance and corrosion resistance, and more attractive as well.
- ④ Weldon shank ensures holder tightly installed on the machine by well location and fasten clamping.



- Double coolant holes make sure efficient cutting lubrication and chip evacuation
- Low cutting force and high hole accuracy
- High productivity by high cutting parameter

◆ Machining Diagram

Machining Diagram



Work piece profile view



Work piece with good surface finishing and straightness. It can also drill on ramp or uneven conditions.

◆ Material Introduction

AP301U

Coating type:PVD coating

High strength ultra-fine crystal carbide substrate deposited with TiALN PVD coating gets good combination property and chip evacuation; suitable for steel, stainless steel, high temperature alloy and cast iron machining.

AP351U

Coating type:PVD coating

High toughness grade with TiALN coating is suitable for steel, stainless steel and high temperature alloy machining. Recommended for harsh conditions or chipping of AP301U.

◆ Insert Chip Breaker Introduction

New Chip Breaker-DP

DP series is high efficiency drill with four cutting edges, and is suitable for shallow hole high speed drilling.

- Square insert with strong cutting edge gets excellent straightness.
- Optimized chip flute provides excellent chip breaking and evacuation.
- DP series is suitable for steels and cast iron machining.



◆ Chips comparison graph

Drilling holder designation: HP-3D250-032-S06

Insert designation: SPMT 060204E-DP AP301U

Material: 4340

Coolant type: Inner coolant



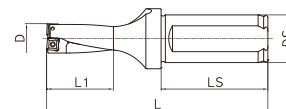
Vc=170m/min	fr=0.10mm/r	fr=0.12mm/r	fr=0.14mm/r
Achteck			
Competitor			

◆ Application Range

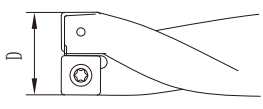
It's available for construction machinery industry, general machinery industry, power industry and Automotive industry.



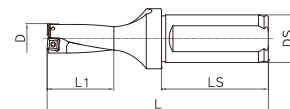
Diameter- Length Ratio : 2D
2D holder



Designation	Dimensions(mm)					Insert
	D	L1	L	Ds	Ls	
HP-2D130-S20-S05	13.0	29	99	20	50	SPMT 050204E-DP
HP-2D135-S20-S05	13.5	30	100	20	50	
HP-2D140-S20-S05	14.0	31	101	20	50	
HP-2D145-S20-S05	14.5	32	102	20	50	
HP-2D150-S20-S05	15.0	33	103	20	50	
HP-2D155-S25-S06	15.5	34	115	25	56	SPMT 060204E-DP
HP-2D160-S25-S06	16.0	35	116	25	56	
HP-2D165-S25-S06	16.5	36	117	25	56	
HP-2D170-S25-S06	17.0	37	118	25	56	
HP-2D175-S25-S06	17.5	38	119	25	56	
HP-2D180-S25-S06	18.0	39	120	25	56	
HP-2D185-S25-S06	18.5	40	121	25	56	
HP-2D190-S25-S06	19.0	41	122	25	56	
HP-2D195-S25-S06	19.5	42	123	25	56	
HP-2D200-S25-S06	20.0	43	124	25	56	
HP-2D205-S25-S06	20.5	44	125	25	56	
HP-2D210-S25-S06	21.0	45	126	25	56	
HP-2D215-S25-S06	21.5	46	127	25	56	
HP-2D220-S32-S07	22.0	47	137	32	60	SPMT 07T308E-DP
HP-2D225-S32-S07	22.5	48	138	32	60	
HP-2D230-S32-S07	23.0	49	139	32	60	
HP-2D235-S32-S07	23.5	50	140	32	60	
HP-2D240-S32-S07	24.0	51	141	32	60	
HP-2D245-S32-S07	24.5	52	142	32	60	
HP-2D250-S32-S07	25.0	53	143	32	60	
HP-2D255-S32-S07	25.5	54	144	32	60	
HP-2D260-S32-S07	26.0	55	145	32	60	
HP-2D265-S32-S07	26.5	56	146	32	60	
HP-2D270-S32-S07	27.0	57	147	32	60	
HP-2D275-S32-S07	27.5	58	148	32	60	

Dimensions (mm)	Spare parts	
Body diameter	Screw	Wrench
		
13-15	AST2043-60	AWF-T06
15.5-21.5	AST2255-60	AWF-T06
22-27.5	AST25065-60S	AWF-T08

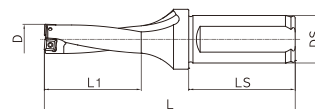
Diameter- Length Ratio : 2D
2D holder



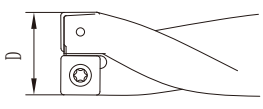
Designation	Dimensions(mm)					Insert
	D	L1	L	Ds	LS	
HP-2D280-S32-S09	28.0	59	149	32	60	SPMT 090408E-DP
HP-2D285-S32-S09	28.5	60	150	32	60	
HP-2D290-S32-S09	29.0	61	151	32	60	
HP-2D295-S32-S09	29.5	63	153	32	60	
HP-2D300-S32-S09	30.0	65	155	32	60	
HP-2D310-S32-S09	31.0	67	157	32	60	
HP-2D320-S32-S09	32.0	69	159	32	60	
HP-2D330-S32-S09	33.0	71	161	32	60	
HP-2D340-S40-S11	34.0	73	178	40	70	SPMT 110408E-DP
HP-2D350-S40-S11	35.0	75	180	40	70	
HP-2D360-S40-S11	36.0	77	182	40	70	
HP-2D370-S40-S11	37.0	79	184	40	70	
HP-2D380-S40-S11	38.0	81	186	40	70	
HP-2D390-S40-S11	39.0	83	188	40	70	
HP-2D400-S40-S11	40.0	85	190	40	70	
HP-2D410-S40-S11	41.0	87	192	40	70	
HP-2D420-S40-S14	42.0	89	194	40	70	SPMT 140512E-DP
HP-2D430-S40-S14	43.0	91	196	40	70	
HP-2D440-S40-S14	44.0	93	198	40	70	
HP-2D450-S40-S14	45.0	95	200	40	70	
HP-2D460-S40-S14	46.0	97	202	40	70	
HP-2D470-S40-S14	47.0	99	204	40	70	
HP-2D480-S40-S14	48.0	101	206	40	70	
HP-2D490-S40-S14	49.0	103	208	40	70	
HP-2D500-S40-S14	50.0	105	210	40	70	

Dimensions (mm)	Spare parts	
Body diameter	Screw	Wrench
28-33	AST35084-60H	AWF-T15
34-41	AST410-60H	AWF-T15
42-50	AST5126-60	AWF-T20

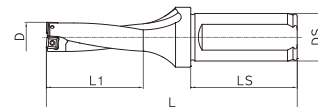
Diameter- Length Ratio : 3D
3D holder



Designation	Dimensions(mm)					Insert
	D	L1	L	Ds	Ls	
HP-3D130-S20-S05	13.0	42	112	20	50	SPMT 050204E-DP
HP-3D135-S20-S05	13.5	44	114	20	50	
HP-3D140-S20-S05	14.0	45	115	20	50	
HP-3D145-S20-S05	14.5	47	117	20	50	
HP-3D150-S20-S05	15.0	48	118	20	50	
HP-3D155-S25-S06	15.5	50	131	25	56	SPMT 060204E-DP
HP-3D160-S25-S06	16.0	51	132	25	56	
HP-3D165-S25-S06	16.5	53	134	25	56	
HP-3D170-S25-S06	17.0	54	135	25	56	
HP-3D175-S25-S06	17.5	56	137	25	56	
HP-3D180-S25-S06	18.0	57	138	25	56	
HP-3D185-S25-S06	18.5	59	140	25	56	
HP-3D190-S25-S06	19.0	60	141	25	56	
HP-3D195-S25-S06	19.5	62	143	25	56	
HP-3D200-S25-S06	20.0	63	144	25	56	
HP-3D205-S25-S06	20.5	65	146	25	56	
HP-3D210-S25-S06	21.0	66	147	25	56	
HP-3D215-S25-S06	21.5	68	149	25	56	
HP-3D220-S32-S07	22.0	69	159	32	60	SPMT 07T308E-DP
HP-3D225-S32-S07	22.5	71	161	32	60	
HP-3D230-S32-S07	23.0	72	162	32	60	
HP-3D235-S32-S07	23.5	74	164	32	60	
HP-3D240-S32-S07	24.0	75	165	32	60	
HP-3D245-S32-S07	24.5	77	167	32	60	
HP-3D250-S32-S07	25.0	78	168	32	60	
HP-3D255-S32-S07	25.5	80	170	32	60	
HP-3D260-S32-S07	26.0	81	171	32	60	
HP-3D265-S32-S07	26.5	83	173	32	60	
HP-3D270-S32-S07	27.0	84	174	32	60	
HP-3D275-S32-S07	27.5	86	176	32	60	

Dimensions (mm)	Spare parts	
Body diameter	Screw	Wrench
		
13-15	AST2043-60	AWF-T06
15.5-21.5	AST2255-60	AWF-T06
22-27.5	AST25065-60S	AWF-T08

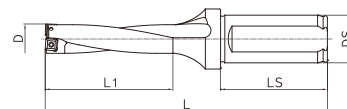
Diameter- Length Ratio : 3D
3D holder



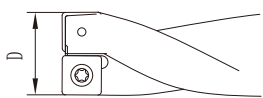
Designation	Dimensions(mm)					Insert
	D	L1	L	Ds	Ls	
HP-3D280-S32-S09	28.0	87	177	32	60	SPMT 090408E-DP
HP-3D285-S32-S09	28.5	89	179	32	60	
HP-3D290-S32-S09	29.0	90	180	32	60	
HP-3D295-S32-S09	29.5	93	183	32	60	
HP-3D300-S32-S09	30.0	95	185	32	60	
HP-3D310-S32-S09	31.0	98	188	32	60	
HP-3D320-S32-S09	32.0	101	191	32	60	
HP-3D330-S32-S09	33.0	104	194	32	60	
HP-3D340-S40-S11	34.0	107	212	40	70	SPMT 110408E-DP
HP-3D350-S40-S11	35.0	110	215	40	70	
HP-3D360-S40-S11	36.0	113	218	40	70	
HP-3D370-S40-S11	37.0	116	221	40	70	
HP-3D380-S40-S11	38.0	119	224	40	70	
HP-3D390-S40-S11	39.0	122	227	40	70	
HP-3D400-S40-S11	40.0	125	230	40	70	
HP-3D410-S40-S11	41.0	128	233	40	70	
HP-3D420-S40-S14	42.0	131	236	40	70	SPMT 140512E-DP
HP-3D430-S40-S14	43.0	134	239	40	70	
HP-3D440-S40-S14	44.0	137	242	40	70	
HP-3D450-S40-S14	45.0	140	245	40	70	
HP-3D460-S40-S14	46.0	143	248	40	70	
HP-3D470-S40-S14	47.0	146	251	40	70	
HP-3D480-S40-S14	48.0	149	254	40	70	
HP-3D490-S40-S14	49.0	152	257	40	70	
HP-3D500-S40-S14	50.0	155	260	40	70	

Dimensions (mm)	Spare parts	
Body diameter	Screw	Wrench
28-33	AST35084-60H	AWF-T15
34-41	AST410-60H	AWF-T15
42-50	AST5126-60	AWF-T20

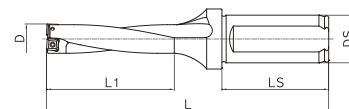
Diameter- Length Ratio : 4D
4D holder



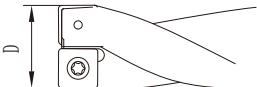
Designation	Dimensions(mm)					Insert
	D	L1	L	Ds	Ls	
HP-4D130-S20-S05	13.0	55	125	20	50	SPMT 050204E-DP
HP-4D135-S20-S05	13.5	57	127	20	50	
HP-4D140-S20-S05	14.0	59	129	20	50	
HP-4D145-S20-S05	14.5	61	131	20	50	
HP-4D150-S20-S05	15.0	63	133	20	50	
HP-4D155-S25-S06	15.5	65	146	25	56	SPMT 060204E-DP
HP-4D160-S25-S06	16.0	67	148	25	56	
HP-4D165-S25-S06	16.5	69	150	25	56	
HP-4D170-S25-S06	17.0	71	152	25	56	
HP-4D175-S25-S06	17.5	73	154	25	56	
HP-4D180-S25-S06	18.0	75	156	25	56	
HP-4D185-S25-S06	18.5	77	158	25	56	
HP-4D190-S25-S06	19.0	79	160	25	56	
HP-4D195-S25-S06	19.5	81	162	25	56	
HP-4D200-S25-S06	20.0	83	164	25	56	
HP-4D205-S25-S06	20.5	85	166	25	56	
HP-4D210-S25-S06	21.0	87	168	25	56	
HP-4D215-S25-S06	21.5	89	170	25	56	
HP-4D220-S32-S07	22.0	91	181	32	60	SPMT 07T308E-DP
HP-4D225-S32-S07	22.5	93	183	32	60	
HP-4D230-S32-S07	23.0	95	185	32	60	
HP-4D235-S32-S07	23.5	97	187	32	60	
HP-4D240-S32-S07	24.0	99	189	32	60	
HP-4D245-S32-S07	24.5	101	191	32	60	
HP-4D250-S32-S07	25.0	103	193	32	60	
HP-4D255-S32-S07	25.5	105	195	32	60	
HP-4D260-S32-S07	26.0	107	197	32	60	
HP-4D265-S32-S07	26.5	109	199	32	60	
HP-4D270-S32-S07	27.0	111	201	32	60	
HP-4D275-S32-S07	27.5	113	203	32	60	

Dimensions (mm)	Spare parts	
Body diameter	Screw	Wrench
		
13-15	AST2043-60	AWF-T06
15.5-21.5	AST2255-60	AWF-T06
22-27.5	AST25065-60S	AWF-T08

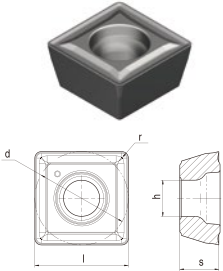
Diameter- Length Ratio : 4D
4D holder



Designation	Dimensions(mm)					Insert
	D	L1	L	Ds	Ls	
HP-4D280-S32-S09	28.0	115	205	32	60	SPMT 090408E-DP
HP-4D285-S32-S09	28.5	117	207	32	60	
HP-4D290-S32-S09	29.0	120	210	32	60	
HP-4D295-S32-S09	29.5	123	213	32	60	
HP-4D300-S32-S09	30.0	125	215	32	60	
HP-4D310-S32-S09	31.0	129	219	32	60	
HP-4D320-S32-S09	32.0	133	223	32	60	
HP-4D330-S32-S09	33.0	137	227	32	60	
HP-4D340-S40-S11	34.0	141	246	40	70	SPMT 110408E-DP
HP-4D350-S40-S11	35.0	145	250	40	70	
HP-4D360-S40-S11	36.0	149	254	40	70	
HP-4D370-S40-S11	37.0	153	258	40	70	
HP-4D380-S40-S11	38.0	157	262	40	70	
HP-4D390-S40-S11	39.0	161	266	40	70	
HP-4D400-S40-S11	40.0	165	270	40	70	
HP-4D410-S40-S11	41.0	169	274	40	70	
HP-4D420-S40-S14	42.0	173	278	40	70	SPMT 140512E-DP
HP-4D430-S40-S14	43.0	177	282	40	70	
HP-4D440-S40-S14	44.0	181	286	40	70	
HP-4D450-S40-S14	45.0	185	290	40	70	
HP-4D460-S40-S14	46.0	189	294	40	70	
HP-4D470-S40-S14	47.0	193	298	40	70	
HP-4D480-S40-S14	48.0	197	302	40	70	
HP-4D490-S40-S14	49.0	201	306	40	70	
HP-4D500-S40-S14	50.0	205	310	40	70	

Dimensions (mm)	Spare parts	
Body diameter	Screw	Wrench
		
28-33	AST35084-60H	AWF-T15
34-41	AST410-60H	AWF-T15
42-50	AST5126-60	AWF-T20

Insert Stock

Insert	Designation	Recommended parameter		Grade		
		Feed (mm/r)	Cutting speed (m/min)	CVD coated	PVD coated	
				AC301P	AP301U	AP351U
	SPMT 050204E-DP	0.06-0.12	130-250	●	●	●
	SPMT 060204E-DP	0.08-0.15	130-250	●	●	●
	SPMT 07T308E-DP	0.10-0.20	130-250	●	●	●
	SPMT 090408E-DP	0.12-0.25	130-250	●	●	●
	SPMT 110408E-DP	0.14-0.28	130-250	●	●	●
	SPMT 140512E-DP	0.15-0.30	130-250	●	●	●

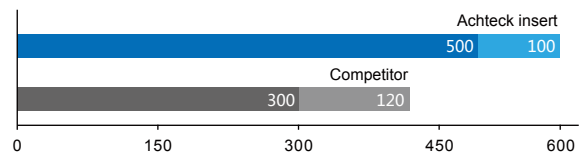
Remark: ● Represent for standard stock

Machining case

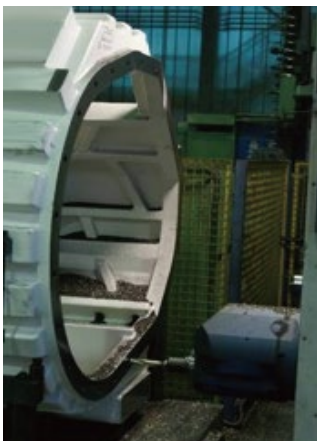
Material: Alloy steel Hardness: HB280-320
 Work piece: Steels plate Cutting depth: 65mm
 Cutting diameter: $\varnothing 25$ Coolant type: Inner coolant
 Tool designation: HP-3D250-S32-S07
 Insert designation: SPMT 07T308E-DP AP301U
 (center&peripheral insert)
 Cutting parameter: $V_c=160\text{m/min}$ $f_n=0.12\text{mm/r}$



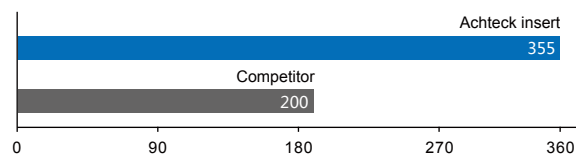
Tool life comparison				
Hole number/length	SPMT 07T308E-DP		Competitor maker	
	Periphery	Center	Periphery	Center
300PCS/19.5m				
420PCS/27.3m				
500PCS/32.5m				
600PCS/39m				



After drilled 600 holes, Achteck changed the edge cause of wear; however, competitor appeared wear when drilled 300 holes and chipped when drilled 420 holes. Achteck's tool life is 43% higher than competitor maker.



Material: Gray cast iron Hardness: HB180-240
 Work piece: Gear box casing Cutting depth: 100mm
 Cutting diameter: $\varnothing 26.5$ Coolant type: Inner coolant
 Tool designation: HP-4D265-S32-S07
 Insert designation: SPMT 07T308E-DP AP301U (center&peripheral insert)
 Cutting parameter: $V_c=170\text{m/min}$ $f_n=0.22\text{mm/r}$



Test result: Achteck's tool life is 78% higher than competitor maker.

Application Chart

Machined Materials				AP301U	AP351U	AC301P
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	PVD coated	PVD coated	CVD coated
P	Non-alloyed steel	<600	<180	●	●	●
		<950	<280	●	●	●
		700-950	200-280	●	●	●
	Alloyed steel	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	-	-	-
S	Fe based alloy	943	280	-	◐	-
	Co based alloy	1076	320	-	◐	-
	Ni based alloy	1177	350	-	◐	-
	Ti-alloy	1262	370	-	◐	-
N	Aluminum	260	75	-	-	-
	Aluminum alloy	447	130	-	-	-
H	Hardened steel	-	50-60HRC	-	-	-
	Chilled cast iron	-	55HRC	-	-	-

- : Best choice
- ◐ : 2nd choice
- : Inapplicable

Achteck Drilling DP Series- Recommended Cutting Parameter

Machined Materials										Achteck Drilling Grades Application Ranges									
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	Feed (mm/r)										Feed (mm/r)					
				Cutting speed (m/min)										Cutting speed (m/min)					
				Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min
				260	240	224	220	185	150	200	175	150	SPMT 060204E-DP	SPMT 060204E-DP	SPMT 060204E-DP	SPMT 070208E-DP	SPMT 090308E-DP	SPMT 110408E-DP	SPMT 140512E-DP
P	Non-alloyed steel	<600	<180	260	240	224	220	185	150	200	175	150	0.05-0.08	0.06-0.10	0.06-0.12	0.06-0.12	0.07-0.13	0.08-0.15	0.08-0.16
			<280	250	210	170	200	170	140	190	162.5	135	0.06-0.12	0.08-0.15	0.10-0.18	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25
	Alloyed steel	700-950	200-280	240	200	160	190	160	130	180	150	120	0.06-0.10	0.08-0.14	0.10-0.18	0.10-0.18	0.12-0.22	0.12-0.23	0.13-0.24
			280-355	210	170	130	170	130	90	160	130	100	0.06-0.12	0.08-0.15	0.10-0.18	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25
			1200-1400	170	140	110	160	120	80	140	110	80	0.06-0.10	0.08-0.14	0.10-0.18	0.10-0.18	0.12-0.22	0.12-0.23	0.13-0.24
M	Duplex stainless steel	778	230	260	200	140	180	135	90				0.05-0.10	0.06-0.12	0.08-0.15	0.09-0.16	0.10-0.17	0.11-0.18	
	Austenitic stainless steel	675	200	220	170	120	120	65	60				0.05-0.10	0.06-0.12	0.08-0.15	0.09-0.16	0.10-0.17	0.11-0.18	
	Precipitation-hardening stainless steel	1013	300	180	140	100	90	65	40										
K	Grey cast iron	700	220																
	Nodular Cast iron	880	260																
	Malleable cast iron	800	250																
	Fe based alloy	943	280				40	30	20										
S	Co based alloy	1076	320				35	25	15										
	Ni based alloy	1177	350				35	25	15										
	Ti-alloy	1262	370				40	30	20				0.05-0.10	0.06-0.14	0.08-0.18	0.10-0.22	0.14-0.23	0.15-0.24	
	Aluminum	260	75																
N	Aluminum alloy	447	130																
	Hardened steel	-	50-60HRC																
H	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 coolants.

Technical Requirements

Hole accuracy range

Diameter (mm)	2D	3D	4D
φ13~φ21.5	-0.1mm~+0.15mm	-0.1mm~+0.15mm	-0.15mm~+0.2mm
φ22~φ50	-0.1mm~+0.15mm	-0.12mm~+0.2mm	-0.15mm~+0.25mm

Coolant supply

1. Make sure at least 5kg/cm² coolant pressure for 2D and 3D drill.
2. Suggest at least 8kg/cm² coolant pressure for 4D drill.

Low pressure leads to vibration, bad chip removal and short tool life.

Questions and Answers

Failure phenomenon			Cause	Solution
Insert abnormal wear	Central edge	Bottom	Unsuitable cutting conditions	Increase standard cutting speed 10% Reduce feed rate 10%
	Peripheral edge	Bottom	Unsuitable cutting conditions	Increase standard cutting speed 10% Excessive higher or less feed rate; adjust to standard conditions
	General	Bottom	Cutting fluid type and supply	Ensure fluid above 7L Cutting fluid concentration above 5% Using fine lubricating cutting fluid Outer coolant condition change to inner coolant type
			Vibration during drilling	Use higher rigidity machine Change to higher rigidity chuck Change installing method of the drill
			Unsuitable grade	Change to higher wear-resistance grade
			Insert locking screw loose	Locked the screws well
		Crater wear	High cutting heat	Outer coolant condition change to inner coolant type Increase cutting fluid supply (recommended 10L above) Reduce standard feed rate 20% Reduce standard cutting speed 20%
			Serious cutting scratch	Reduce standard feed rate 20% Reduce standard cutting speed 20%
		Chip breaking	Bad chip control and blocked	Increase standard cutting speed 20%, reduce feed rate 20% Improve coolant pressure(recommend above 1.5MPa)

Attention

For through-hole drilling, it would produce disc during tool pass through the work piece.

If the drill is fixed and the work piece is rotating, the disc would be threw away by centrifugal force.

Please DO PRECAUTION for the person on the spot.

Drilling General Formula

Vc: Cutting speed (m/min)

fz: Feed per tooth (mm/z)

Z: Number of teeth

f: Feed rate per rev. (mm/rev)

Kc: Unit cutting force(N/mm²)

Mc: Torque

Vf: Feed (mm/min)

n: Spindle speed (rev/min)

Q: Metal removal rate(cm³/min)

hm: Chip thickness

η: Machine efficiency coefficient (0.7-0.95)

mc: Kc Clinographic curve

Dc: Diameter of Drill(mm)

A: Chip sectional area

Ff: Feed force

Pmot: Cutting power(KW)

kr: Approaching angle (°)

Hp: Horse power

Cutting speed

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

Spindle speed

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

Feed speed

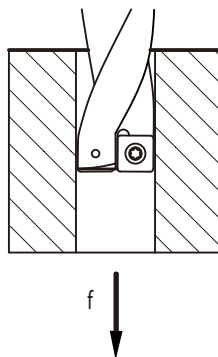
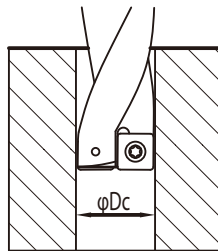
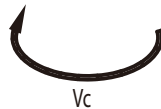
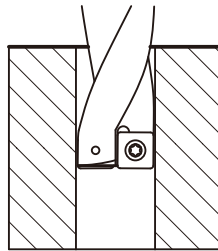
$$V_f = f_z * n * Z \text{ (mm/min)}$$

Feed per tooth

$$f_z = \frac{V_f}{n * Z} \text{ (mm/z)}$$

Feed rate per rev.

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



Power demand

$$P_{mot} = \frac{Q * K_c}{60000 * \eta} \text{ (KW)}$$

Torque

$$M_c = \frac{D_c^2 * K_c * f}{8000} \text{ (N*m)}$$

Feed force

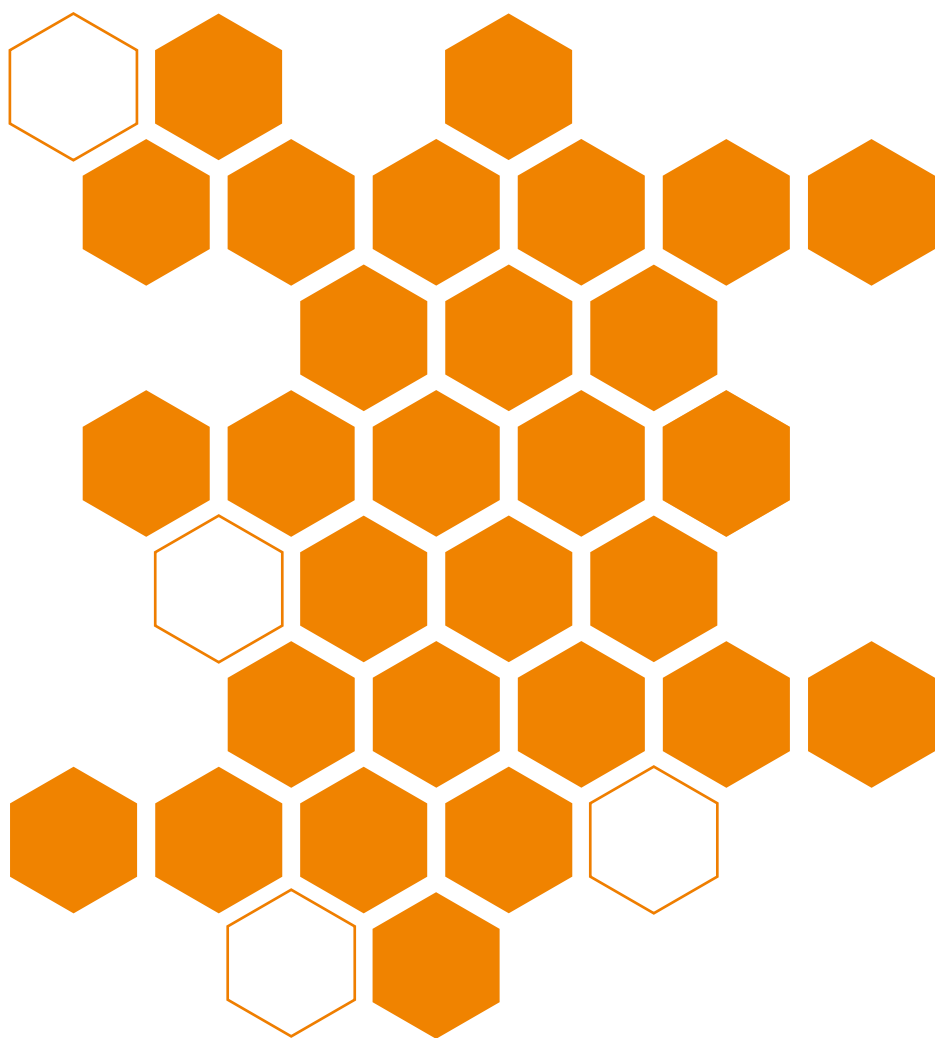
$$F_f = 0.63 * \frac{f * D_c * K_c}{2} \text{ (N)}$$

Chip thickness

$$h = f_z * \sin \kappa \text{ (mm)}$$

Metal removal rate

$$Q = \frac{V_f * \pi * D_c^2}{4 * 1000} \text{ (cm}^3\text{/min)}$$



ACHTECK•MILL

OD Series

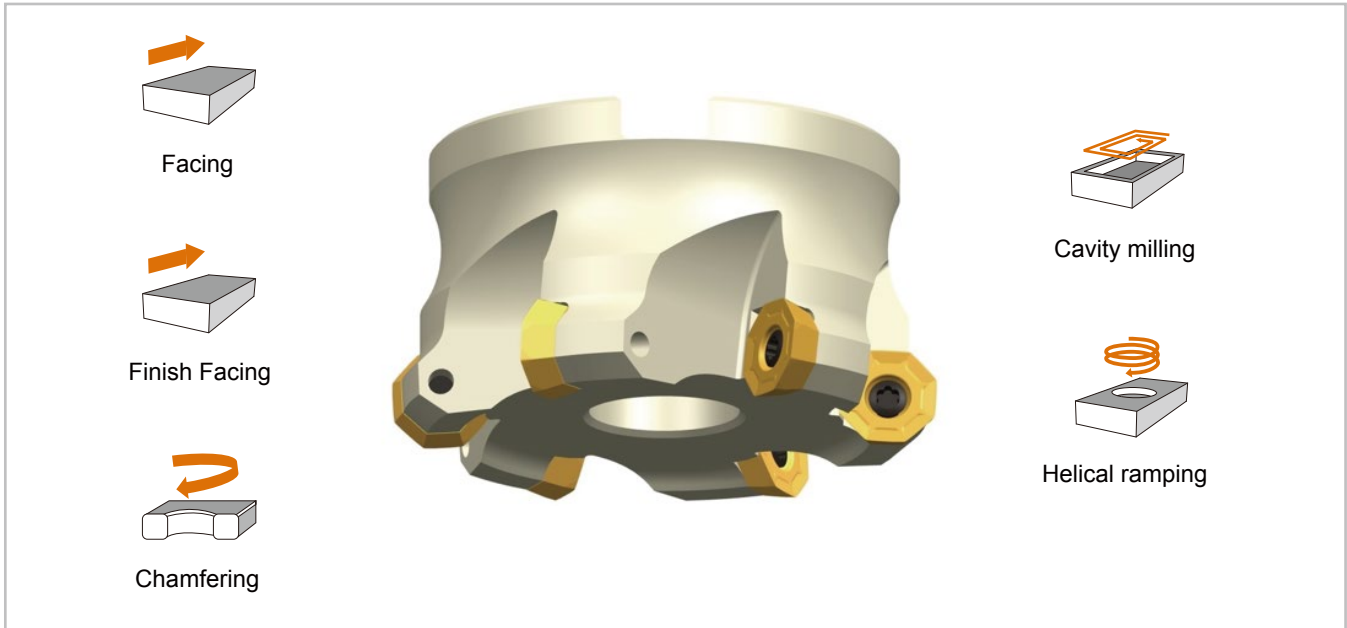
Multi Function Mill



www.achtecktool.com

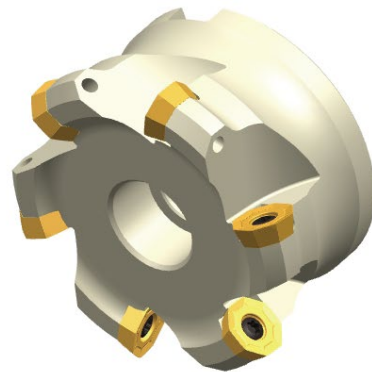
OD Cutter Introduction

AFM42-OD Face cutter — Light, economic, multi-function



◆ Cutter Structure Features

- Double rake angles make cutting gently and slightly
- High Economy: 8 cutting edges
- work piece material: P、K、M、S
- Shining Nickel-plated cutter has well corrosion resistance and wear resistance
- Cutter dia. Range from $\phi 40$ to $\phi 160$, under $\phi 125$ (include 125) are coolant type
- OD04/OD06 two size of insert available



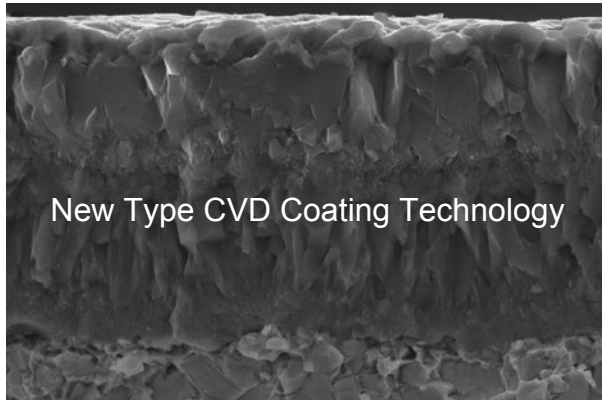
◆ Insert Features

Positive, economic one side insert with 8 cutting edges.

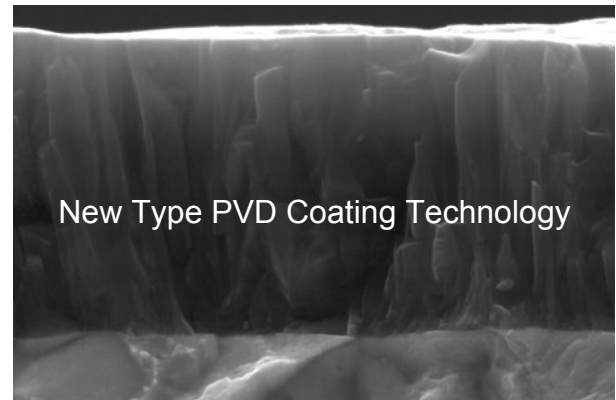
Sharp cutting makes cutting lightly.

It has extensive facing application range for steels and cast iron roughing, semi-finishing and finishing.

◆ Coating Introduction



Multi-layer coating structure with perfect toughness;
Good wear resistance and high temperature oxidation resistance
Smooth coating surface enhances work piece surface finish;
Well combination between coating layer and substrate extended tool life.



Alternate soft and hard nano-coating layer structure has high hardness and good toughness;
Good high temperature resistance and oxidation resistance
Smooth coating surface enhances work piece surface finish;
Well combination between coating layer and substrate extended tool life.

◆ Insert Chip Breaker Introduction

HR2 → Stability Type

Suitable for bad cutting condition with stable cutting edge. High feed rate.



MM3 → Free-cutting Type

Apply for semi-finishing and finishing under fine cutting conditions with low cutting force and medium feed.



FM2 → Sharp Type

Specialized geometry design for aluminum machining with low cutting force and sharp edge



◆ Machining Case

Work piece: Turbine housing

Material: Heat resistant steel

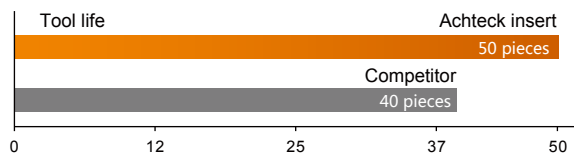
Hardness: HB180-220

Coolant type: Emulsion

Cutter designation: AFM42-063-Z05-A22R-OD06-C

Insert designation: ODMT 0404APEN-MM3 AP351U

Cutting Parameter: $V_c=90\text{m/min}$ $f_z=0.20\text{mm/z}$
 $a_p=1.5\text{mm}$



Comparison Result: Achteck tool life is 25% higher than competitor

Work piece: Exhaust manifold

Material: High Si-Mo cast iron

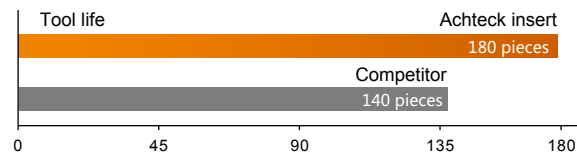
Hardness: HB220

Coolant type: Emulsion

Cutter designation: AFM42-100-Z07-A32R-OD04-C

Insert designation: ODMT 060508EN-MM3 AC301K

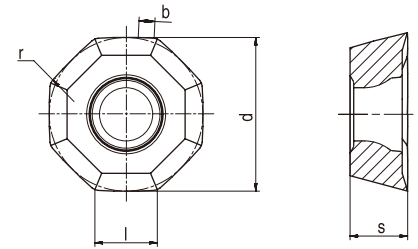
Cutting Parameter: $V_c=175\text{m/min}$ $f_z=0.25\text{mm/z}$
 $a_p=1.8\text{mm}$ $a_e=50\text{mm}$

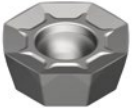
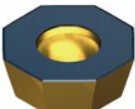


Comparison Result: Achteck tool life is 29% higher than competitor

Insert stock

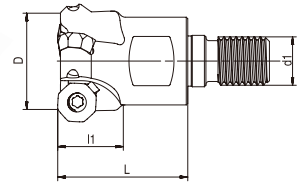
OD..04/06



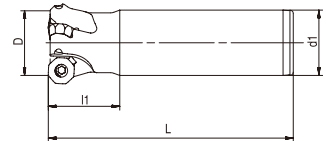
Insert	Designation	Dimensions (mm)					Grades						
		l	d	s	r	b	CVD coated		PVD coated			Uncoated	
							AC301P	AC301K	AP301U	AP351U	AP401U	AP351K	AW100K
	ODET 0404APFN-FM2	4	12.7	4.76	-	1.2							•
	ODET 0605APFN-FM2	6	16	5.56	-	1.6							•
	ODHT 0404APEN-MM3	4	12.7	4.76	-	1.2		•	•	•	•		
	ODMT 040408EN-MM3	4	12.7	4.76	0.8	-		•		•	•		
	ODMT 060508EN-MM3	6	16	5.56	0.8	-	•	•	•	•	•	•	
	ODMT 060512EN-MM3	6	16	5.56	1.2	-			•				
	ODHT 0605APEN-MM3	6	16	5.56	-	1.6		•	•	•	•		
	ODEW 0404APSR-HR2	4	12.7	4.76	-	1.2		•	•			•	
	ODEW 0605APSR-HR2	6	16	5.56	-	1.6		•				•	
	ODEW 0605APSRN-HR2	6	16	5.56	-	1.6		•				•	
	ODMW 040408EN-HR2	4	12.7	4.76	0.8	-		•				•	
	ODMW 060512EN-HR2	6	16	5.56	1.2	-		•				•	

Remark: • represent for standard stock

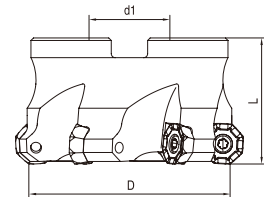
AFM42-OD04



Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM42-032-Z03-M16R-OD04-C	32	M16	43	3.5		3	OD..0404



Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM42-032-Z03-W32R-OD04-C	32	32	120	3.5		3	OD..0404



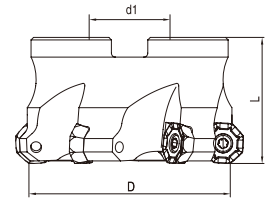
Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM42-040-Z04-A16R-OD04-C	40	16	40	3.5		4	OD..0404
AFM42-050-Z05-A16R-OD04-C	50	16	40	3.5		5	
AFM42-063-Z05-A22R-OD04-C	63	22	40	3.5		5	
AFM42-063-Z06-A22R-OD04-C	63	22	40	3.5		6	
AFM42-080-Z06-A27R-OD04-C	80	27	50	3.5		6	
AFM42-080-Z08-A27R-OD04-C	80	27	50	3.5		8	
AFM42-100-Z07-A32R-OD04-C	100	32	50	3.5		7	
AFM42-100-Z08-A32R-OD04-C	100	32	50	3.5		8	
AFM42-125-Z08-A40R-OD04-C	125	40	63	3.5		8	
AFM42-125-Z10-A40R-OD04-C	125	40	63	3.5		10	

Remark: represent for coolant
 represent for no coolant

Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ35-125			
	AST4112-60	ADT-T15	3.5Nm

Machining method					
Facing	Finish Facing	Chamfering	Ramping	Cavity milling	Helical ramping

AFM42-OD06



Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM42-050-Z04-A16R-OD06-C	50	16	40	4.5		4	OD..0605
AFM42-063-Z05-A22R-OD06-C	63	22	40	4.5		5	
AFM42-080-Z05-A27R-OD06-C	80	27	50	4.5		5	
AFM42-080-Z06-A27R-OD06-C	80	27	50	4.5		6	
AFM42-100-Z06-A32R-OD06-C	100	32	50	4.5		6	
AFM42-100-Z07-A32R-OD06-C	100	32	50	4.5		7	
AFM42-125-Z07-A40R-OD06-C	125	40	63	4.5		7	
AFM42-125-Z08-A40R-OD06-C	125	40	63	4.5		8	
AFM42-160-Z10-A40R-OD06	160	40	63	4.5		10	

Remark: represent for coolant
 represent for no coolant

Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ50-160			
	AST4512-43	ADT-T20	5.0Nm

Machining method					
Facing	Finish Facing	Chamfering	Ramping	Cavity milling	Helical ramping

AFM42-OD04 Recommended Cutting Conditions

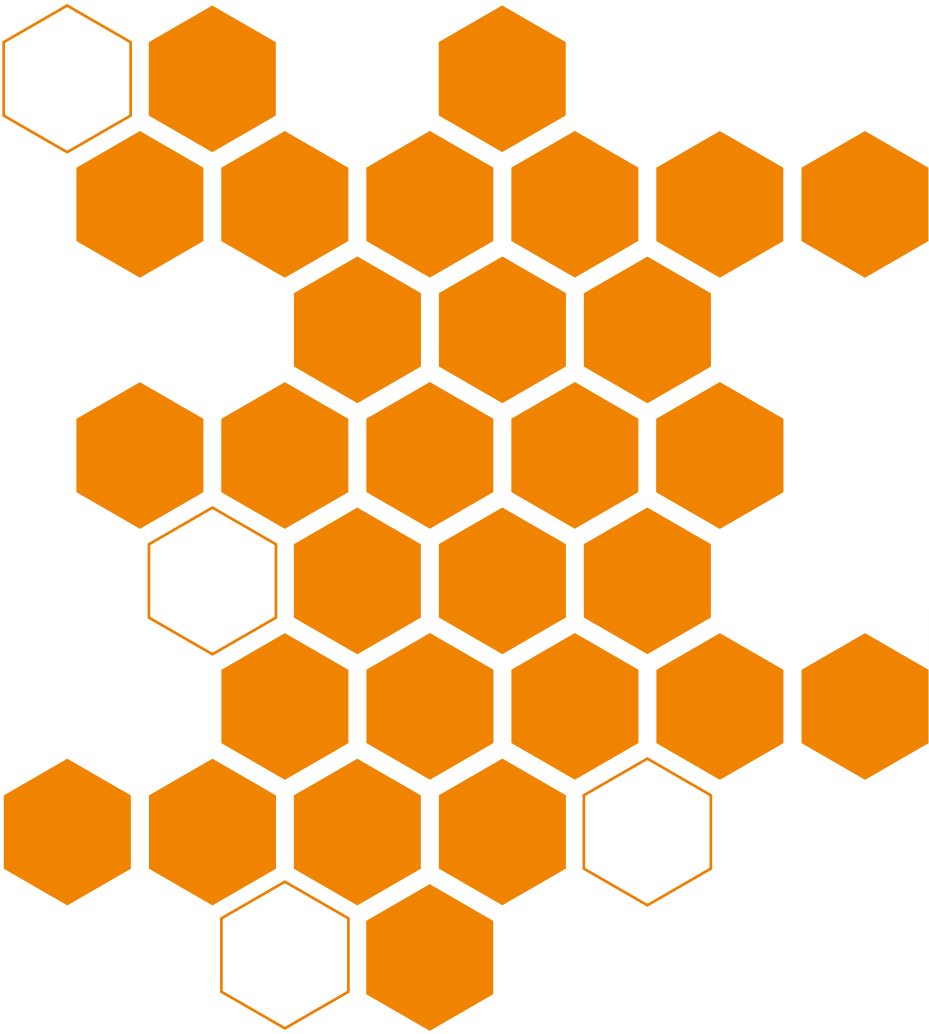
Machined Materials			Achteck Milling Grades Application Ranges														Cutting depth and feed rate										
ISO	Material classification	Tensile strength Hardness (N/mm ²) (HB)	AP301U	AP351U	AP401U	AC301P	AC301K	AP351K	AW100K	OD.0404						Geometry											
			PVD	PVD	PVD	CVD	CVD	PVD	Uncoated																		
			P15-35	P30-45	P20-40	P25-40	-	-	-	-																	
			M15-35	M30-45	M20-40	M25-40	-	-	-	-																	
			-	-	-	-	-	-	-	-	K10-35	K15-40	-	-	-	-	HR2	MM3	FM2								
			Feed rate(mm/z)														ap(mm)										
Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Max							Min	Max			
			Cutting speed(m/min)																								
			Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Med	Max	Min	Max	Min	Max	Min	Max				
P	Non-alloyed steel	<600	<180	450	340	290	230	205	170		430	230	120					0.30	-	0.50	0.20	-	0.35	0.10	-	0.15	
		<950		320	240	200	200	180	160		380	220	120					0.30	-	0.50	0.20	-	0.35	0.10	-	0.15	
		700-950	200-280	290	210	185	200	155	110		340	240	120					0.27	-	0.40	0.20	-	0.30	0.10	-	0.15	
		950-1200	280-355	280	210	200	180	130	90		260	150	80					0.27	-	0.40	0.20	-	0.30	0.10	-	0.15	
M	Alloyed steel	1200-1400	355-415	210	170	110	140	105	70		145	105	65					0.27	-	0.40	0.20	-	0.30	0.10	-	0.15	
		778	230	165	150	130	270	215	155	150	115	85	225	180	125			0.20	-	0.35	0.15	-	0.25	0.05	-	0.15	
		675	200	270	185	90	260	180	90	185	140	105	210	145	75			0.20	-	0.35	0.15	-	0.25	0.05	-	0.15	
		1013	300	300	225	165	170	150	110	125	95	70	140	130	90			0.15	-	0.25	0.10	-	0.20	0.15	-	0.10	
K	Grey cast iron	700	220								480	310	140	390	280	130		0.30	-	0.35	0.15	-	0.25				
		880	260									450	295	140	420	300	140		0.30	-	0.35	0.15	-	0.25			
		800	250									500	365	230	430	290	230		0.30	-	0.35	0.15	-	0.25			
		Fe based alloy	943	280			45	40	30									0.15	-	0.25	0.10	-	0.20	0.05	-	0.10	
S	Co based alloy	1076	320			45	40	30									0.15	-	0.25	0.10	-	0.20	0.05	-	0.10		
		Ni based alloy	1177	350			45	40	30									0.15	-	0.25	0.10	-	0.20	0.05	-	0.10	
		Ti-alloy	1262	370			100	70	45									0.15	-	0.25	0.10	-	0.20	0.05	-	0.10	
		Aluminum	260	75																				0.10	-	0.30	
N	Aluminum alloy	447	130																					0.10	-	0.30	
H	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, work piece clamping and coolants. Average chip thickness=hm(hm=fz×Sin KappaR)

AFM42-OD06 Recommended Cutting Conditions

Machined Materials				Achteck Milling Grades Application Ranges												Cutting depth and feed rate																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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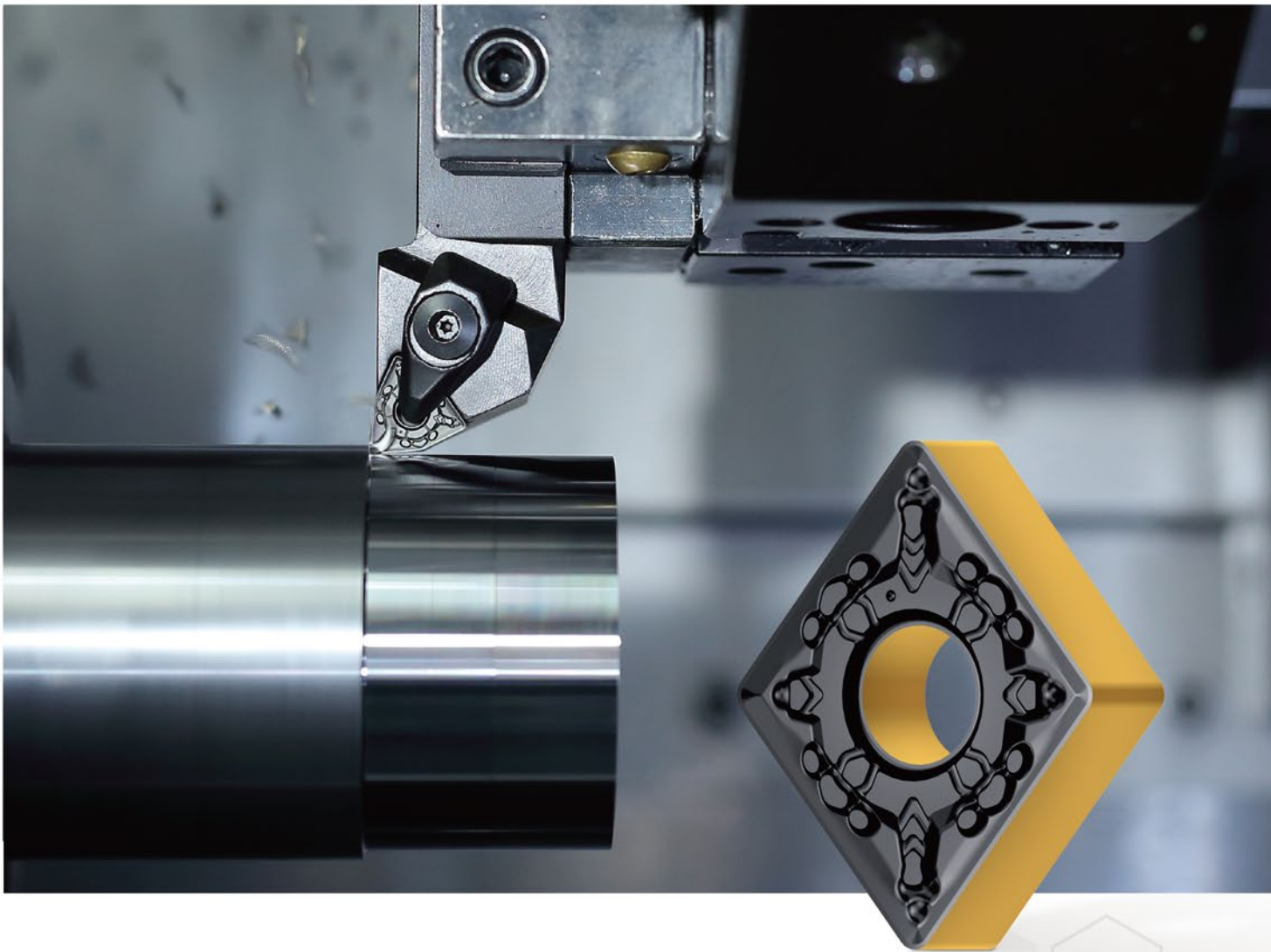
The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants. Average chip thickness=hm(hm=fzxsIn KappaR)



ACHTECK•TURN

New Chip Breaker **PD3**

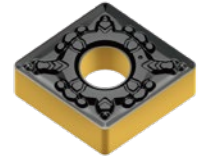
for Steel Machining



www.achtecktool.com

PD3 Medium- Semi Finishing

First choice for steels machining and achieves high efficiency and stable machining.



Grade Application

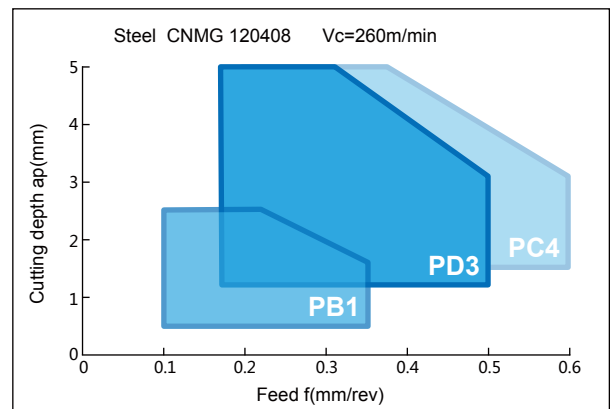
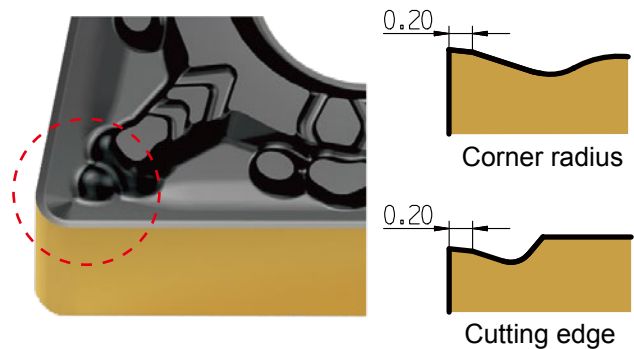
Application Range											
PD3	01	5	10	15	20	25	30	35	40	45	50
P			AC150P								
					AC250P						
							AC350P				

Chip Breaker Features

3 dimensional chip breaker design leads to extensive range of chipbreak.

Strong cutting edge geometry enhances its strength and toughness.

Positive rake angle design reduces cutting force.



● Machining Case

Work piece: Wheel hub

Material: Alloy steel

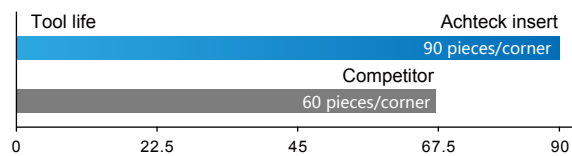
Insert: WNMG 080412E-PD3 AC250P

Other Company: WNMG 080412 AXX P25

Machining Type: External turning, End face turning

Cutting Parameter: $V_c=320\text{m/min}$ $a_p=1.5\text{mm}$
 $f=0.26\text{mm/rev}$

Condition: Dry cutting



Comparison Result: Achteck tool life is 33% higher than competitor

Work piece: Central Shaft

Material: Medium carbon steel

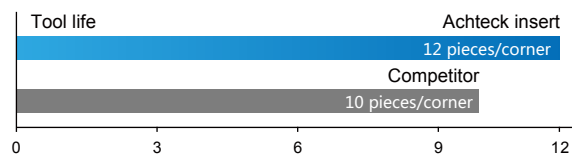
Insert: TNMG 160412E-PD3 AC250P

Other Company: TNMG 160412 AXX P25

Machining Type: External turning

Cutting Parameter: $V_c=260\text{m/min}$ $a_p=2.5\text{mm}$
 $f=0.28\text{mm/rev}$

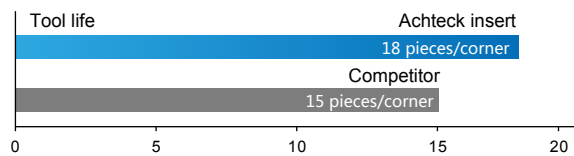
Condition: Wet cutting



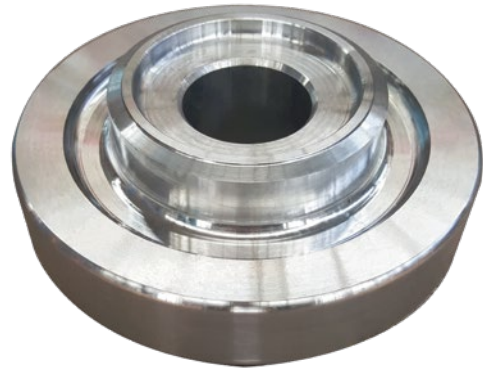
Comparison Result: Achteck tool life is 20% higher than competitor

Work piece: wheel
 Material: Alloy steel
 Insert: CNMG 120412E-PD3 AC150P
 Other Company: CNMG 120412 AXX P15
 Machining Type: External turning, End face turning
 Cutting Parameter: $V_c=260\text{m/min}$ $a_p=2.0\text{mm}$
 $f=0.30\text{mm/rev}$

Condition: Wet cutting

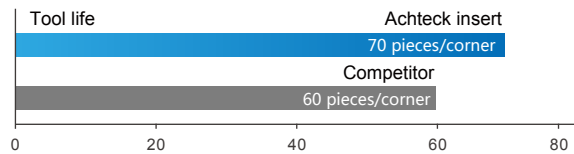


Comparison Result: Achteck tool life is 20% higher than competitor



Work piece: Hub bearing
 Material: High carbon steel
 Insert: WNMG 080408E-PD3 AC250P
 Other Company: WNMG 080408 AXX P25
 Machining Type: End face turning, External turning
 Cutting Parameter: $V_c=280\text{m/min}$ $a_p=1.6\text{mm}$
 $f=0.24\text{mm/rev}$

Condition: Dry cutting

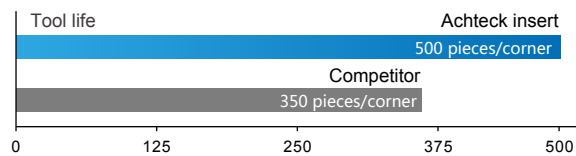


Comparison Result: Achteck tool life is 20% higher than competitor



Work piece: Bearing
 Material: Bearing steel
 Insert: WNMG 080412E-PD3 AC150P
 Other Company: WNMG 080412 AXX P15
 Machining Type: End face turning, internal turning
 Cutting Parameter: $V_c=180\text{m/min}$ $a_p=1.0\text{mm}$
 $f=0.30\text{-}0.45\text{mm/rev}$

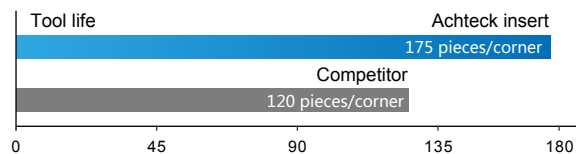
Condition: Dry cutting



Comparison Result: Achteck tool life is 30% higher than competitor

Work piece: Bell housing
 Material: Medium carbon steel
 Insert: TNMG 160408E-PD3 AC150P
 Other Company: TNMG 160408 AXX P15
 Machining Type: External turning, End face turning
 Cutting Parameter: $V_c=220\text{m/min}$ $a_p=1.5\text{mm}$
 $f=0.35\text{mm/rev}$

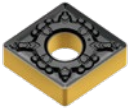
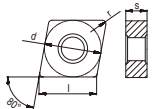
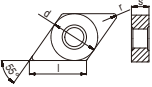
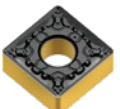
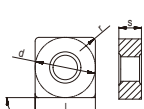
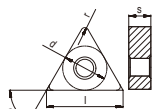
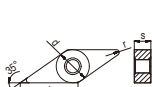
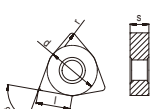
Condition: Dry cutting



Comparison Result: Achteck tool life is 42% higher than competitor

Insert Stocks

Negative insert

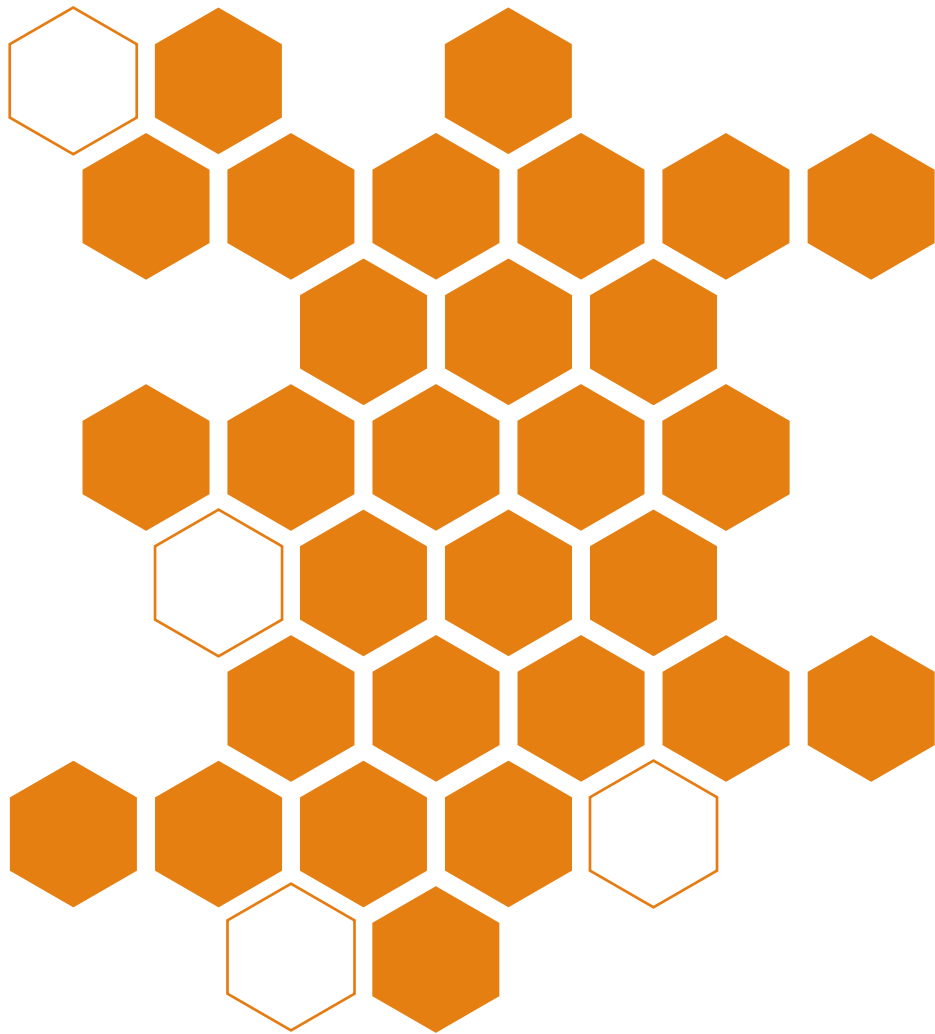
Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (CVD)			Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AC150P	AC250P	AC350P	
	CNMG 120404E-PD3	0.08-0.22	0.40-4.3	12.7	12.9	4.76	0.4	●	●	○	
	120408E-PD3	0.15-0.44	0.80-4.3	12.7	12.9	4.76	0.8	●	●	●	
	120412E-PD3	0.23-0.66	1.20-4.3	12.7	12.9	4.76	1.2	●	●	●	
	160608E-PD3	0.15-0.44	0.80-5.3	15.875	16.1	6.35	0.8	●	●	○	
	190608E-PD3	0.15-0.44	0.80-6.4	19.05	19.3	6.35	0.8	●	●	○	
	DNMG 110404E-PD3	0.08-0.22	0.40-2.9	9.525	11.62	4.76	0.4	●	●		
	110408E-PD3	0.15-0.44	0.80-2.9	9.525	11.62	4.76	0.8	●	●		
	110412E-PD3	0.23-0.66	1.20-2.9	9.525	11.62	4.76	1.2	○	○		
	150404E-PD3	0.08-0.22	0.40-3.9	12.7	15.5	4.76	0.4	●	●		
	150408E-PD3	0.15-0.44	0.80-3.9	12.7	15.5	4.76	0.8	●	●	○	
	150412E-PD3	0.23-0.66	1.20-3.9	12.7	15.5	4.76	1.2	●	●	○	
	150604E-PD3	0.08-0.22	0.40-3.9	12.7	15.5	6.35	0.4	●	●		
	150608E-PD3	0.15-0.44	0.80-3.9	12.7	15.5	6.35	0.8	●	●	●	
	150612E-PD3	0.23-0.66	1.20-3.9	12.7	15.5	6.35	1.2	●	●	●	
	SNMG 120404E-PD3	0.08-0.22	0.40-4.2	12.7	12.7	4.76	0.4	●	●	○	
	120408E-PD3	0.15-0.44	0.80-4.2	12.7	12.7	4.76	0.8	●	●	●	
	120412E-PD3	0.23-0.66	1.20-4.2	12.7	12.7	4.76	1.2	●	●	●	
	190608E-PD3	0.15-0.44	0.80-6.3	19.05	19.05	6.35	0.8	●	●	○	
	TNMG 160404E-PD3	0.08-0.22	0.40-4.1	9.525	16.5	4.76	0.4	●	●	○	
	160408E-PD3	0.15-0.44	0.80-4.1	9.525	16.5	4.76	0.8	●	●	●	
	160412E-PD3	0.23-0.66	1.20-4.1	9.525	16.5	4.76	1.2	●	●	○	
	VNMG 160404E-PD3	0.08-0.22	0.40-3.3	9.525	16.5	4.76	0.4	●	●		
	160408E-PD3	0.15-0.44	0.80-3.3	9.525	16.5	4.76	0.8	●	●		
	160412E-PD3	0.23-0.66	1.20-3.3	9.525	16.5	4.76	1.2	●	●		
	WNMG 060408E-PD3	0.15-0.44	0.80-2.1	9.525	6.52	4.76	0.8	●	●	○	
	080404E-PD3	0.08-0.22	0.40-2.9	12.7	8.7	4.76	0.4	●	●	●	
	080408E-PD3	0.15-0.44	0.80-2.9	12.7	8.7	4.76	0.8	●	●	●	
	080412E-PD3	0.23-0.66	1.20-2.9	12.7	8.7	4.76	1.2	●	●	●	

Remark: ● represent for standard stock
○ represent for Make-To-Order

Recommended Cutting Parameters

Cutting Materials				Achteck turning insert grade application range								
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	AC150P			AC250P			AC350P		
				P10-25			P20-35			P30-45		
				CVD			CVD			CVD		
				f(mm/rev)			f(mm/rev)			f(mm/rev)		
				Min	Med	Max	Min	Med	Max	Min	Med	Max
P	Non-alloy steels	<600	<180	485	378	270	380	260	160	250	182	115
		<950	<280	335	243	150	240	162	100	160	117	75
	Alloyed steels	700-950	200-280	230	168	120	215	155	90	148	109	70
		950-1200	280-355	210	150	90	180	137	75	135	100	65
		1200-1400	355-415	175	110	70	135	92	55	93	69	45

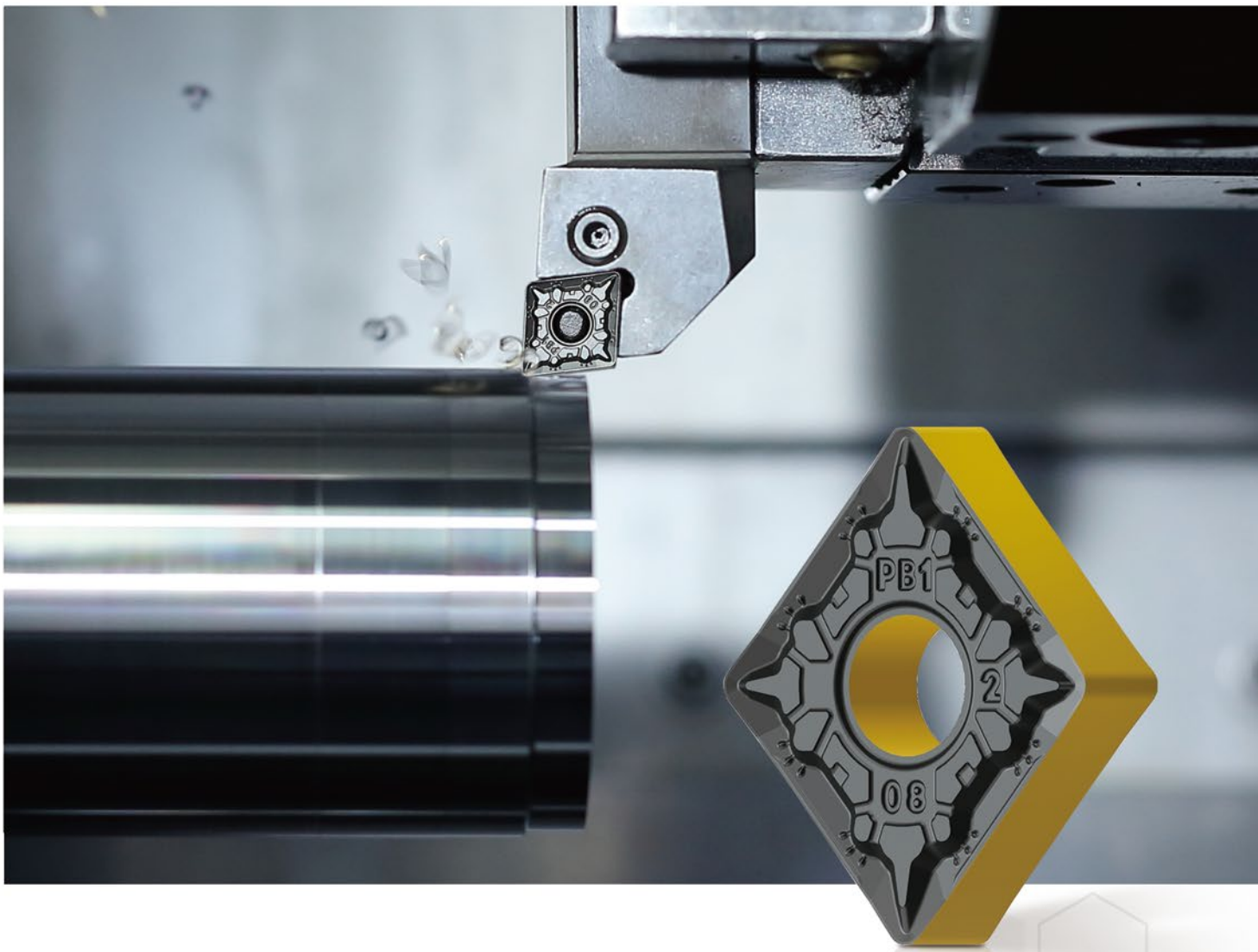
* The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants. (f=mm/rpm needs to adjust according to corner radius)



ACHTECK•TURN

New Chip Breaker **PB1**

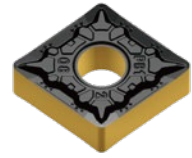
for Steel Machining



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PB1 Finishing- Semi Finishing

Excellent chip breaking and removal under small cutting depth and high feed conditions.



Grade Application

Application Range											
ISO	01	5	10	15	20	25	30	35	40	45	50
P			AC150P								
					AC250P						

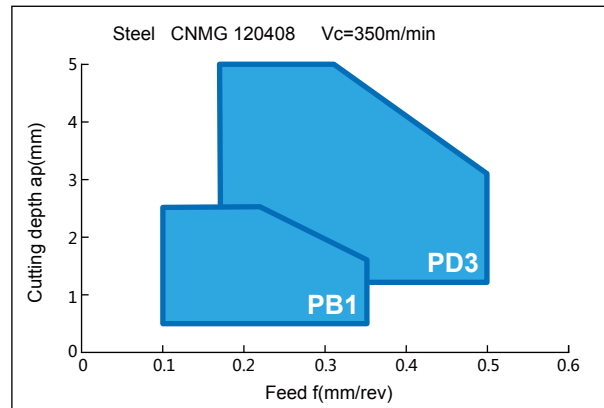
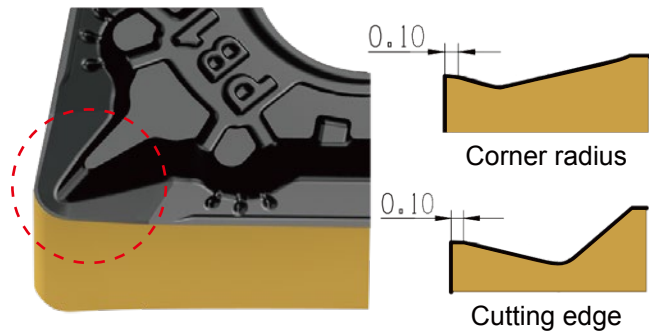
Chip Breaker Features

Outstanding machining control is based on tough chip breaker.

Unique chip breaking point design obtains superior chip breaking and removal effect.

By adopting sloping and sharp cutting edge, it ensures machining stability.

By adopting double color coating design, it clearly estimates flank wear.
Recommended grade: AC150P/AC250P



● Machining Case

Work piece: Driving gear

Material: Alloy steel

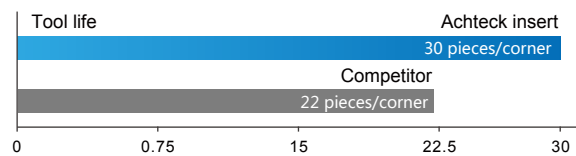
Insert: TNMG 160408E-PB1 AC150P

Other Company: TNMG 160408 A XX P15

Machining Type: External turning, End face turning

Cutting Parameter: $V_c=320\text{m/min}$ $a_p=0.5\text{mm}$
 $f=0.18\text{mm/rev}$

Condition: Dry cutting



Comparison Result: Achteck tool life is 36% higher than competitor



Work piece: Driving gear

Material: Alloy steel

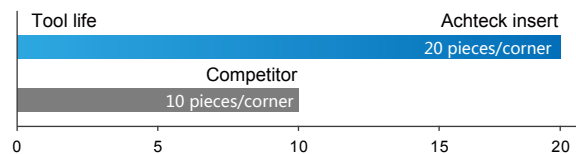
Insert: WNMG 080408E-PB1 AC250P

Other Company: WNMG 080408 A XX P25

Machining Type: End face turning

Cutting Parameter: $V_c=260\text{m/min}$ $a_p=0.5\text{mm}$
 $f=0.16\text{mm/rev}$

Condition: Dry cutting



Comparison Result: Achteck tool life is 100% higher than competitor



Work piece: Gear shaft

Material: Low carbon alloy steel

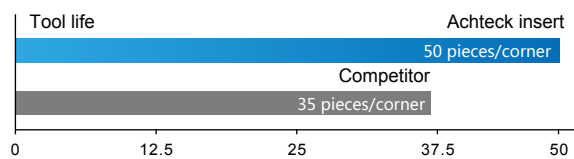
Insert: CNMG 120408E-PB1 AC150P

Other Company: CNMG 120408 A XX P15

Machining Type: External, Internal turning

Cutting Parameter: $V_c=290\text{m/min}$ $a_p=1.0\text{mm}$
 $f=0.20\text{-}0.25\text{mm/rev}$

Condition: Wet cutting



Comparison Result: Achteck tool life is 30% higher than competitor



Work piece: Wheel hub

Material: Medium carbon steel

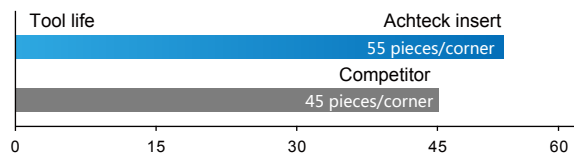
Insert: WNMG 080408E-PB1 AC250P

Other Company: WNMG 080408 A XX P15

Machining Type: External turning, End face turning

Cutting Parameter: $V_c=320\text{m/min}$ $a_p=1.0\text{mm}$
 $f=0.20\text{mm/rev}$

Condition: Dry cutting

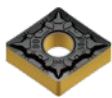
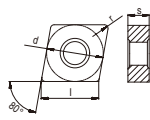
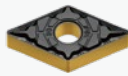
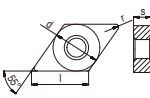
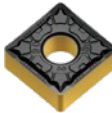
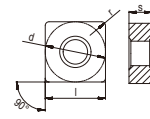
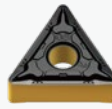
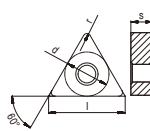
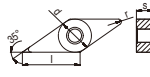
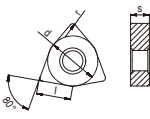


Comparison Result: Achteck tool life is 20% higher than competitor



◆ Insert Stock

Negative insert

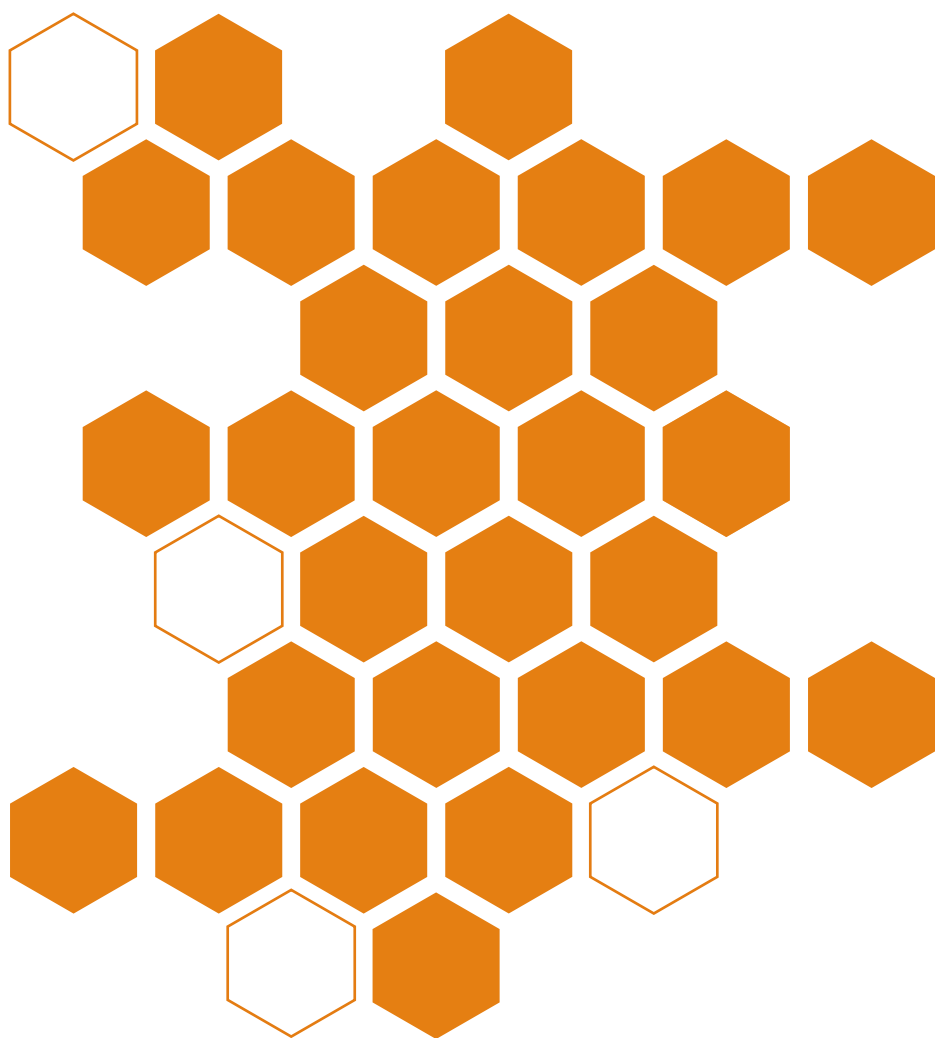
Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (CVD)		Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AC150P	AC250P	
	CNMG 120404E-PB1	0.05-0.15	0.26-3.2	12.7	12.9	4.76	0.4	●	●	
	120408E-PB1	0.10-0.30	0.52-3.2	12.7	12.9	4.76	0.8	●	●	
	120412E-PB1	0.15-0.45	0.78-3.2	12.7	12.9	4.76	1.2	○	○	
	DNMG 110404E-PB1	0.05-0.15	0.26-2.3	9.525	11.62	4.76	0.4	○	●	
	150404E-PB1	0.05-0.15	0.26-3.1	12.7	15.5	4.76	0.4	●	●	
	150408E-PB1	0.10-0.30	0.52-3.1	12.7	15.5	4.76	0.8	●	●	
	150412E-PB1	0.15-0.45	0.78-3.1	12.7	15.5	4.76	1.2	○	○	
	150604E-PB1	0.05-0.15	0.26-3.1	12.7	15.5	6.35	0.4	●	●	
	150608E-PB1	0.10-0.30	0.52-3.1	12.7	15.5	6.35	0.8	●	●	
	150612E-PB1	0.15-0.45	0.78-3.1	12.7	15.5	4.76	1.2	○	○	
	SNMG 120404E-PB1	0.05-0.15	0.26-3.2	12.7	12.7	4.76	0.4	●	●	
	120408E-PB1	0.10-0.30	0.52-3.2	12.7	12.7	4.76	0.8	●	●	
	120412E-PB1	0.15-0.45	0.78-3.2	12.7	12.7	4.76	1.2	○	○	
	TNMG 160404E-PB1	0.05-0.15	0.26-3.1	9.525	16.5	4.76	0.4	●	●	
	160408E-PB1	0.10-0.30	0.52-3.1	9.525	16.5	4.76	0.8	●	●	
	160412E-PB1	0.15-0.45	0.78-3.1	9.525	16.5	4.76	1.2	●	●	
	VNMG 160404E-PB1	0.05-0.15	0.26-2.1	9.525	16.5	4.76	0.4	●	●	
	160408E-PB1	0.10-0.30	0.52-2.1	9.525	16.5	4.76	0.8	●	●	
	160412E-PB1	0.15-0.45	0.78-2.1	9.525	16.5	4.76	1.2	○	○	
	WNMG 080404E-PB1	0.05-0.15	0.26-2.2	12.7	8.7	4.76	0.4	●	●	
	080408E-PB1	0.10-0.30	0.52-2.2	12.7	8.7	4.76	0.8	●	●	
	080412E-PB1	0.15-0.45	0.78-2.2	12.7	8.7	4.76	1.2	●	●	

Remark: ● represent for standard stock
○ represent for Make-To-Order

Recommended Cutting Parameters

Cutting Materials				Achteck turning insert grade application range					
ISO	Material group	Tensile strength (N/mm ²)	Hardness (HB)	AC150P			AC250P		
				P10-25			P20-35		
				CVD			CVD		
				f(mm/rev)			f(mm/rev)		
				0.08	0.2	0.35	0.08	0.2	0.35
P	Non-alloy steels	<600	<180	485	378	270	380	260	160
		<950	<280	335	243	150	240	162	100
	Alloyed steels	700-950	200-280	315	168	120	230	155	90
		950-1200	280-355	285	150	90	180	137	75
		1200-1400	355-415	235	110	70	135	92	55

* The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants. (f=mm/rpm needs to adjust according to corner radius)



ACHTECK•MILL

XD Series

High feed Milling

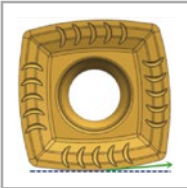


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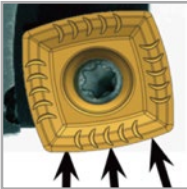
XDLT Product Overview

XDLT launched by Achteck is a new type high feed milling insert for aerospace field and automotive field. It's suitable for steels, stainless steels, High temperature alloys, gray cast iron and nodular cast iron milling with cutting applications of facing, ramping, plunging, helical ramping and slotting.

◆ Product Advantages



High feed milling gets high efficiency by over 5 times of normal milling feedrate.



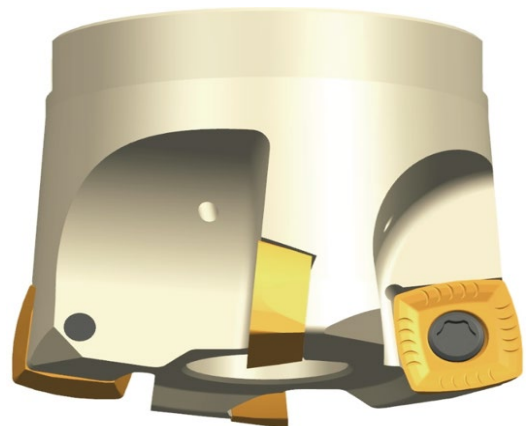
Axis force leading with great arc edge makes machining stably and lightly



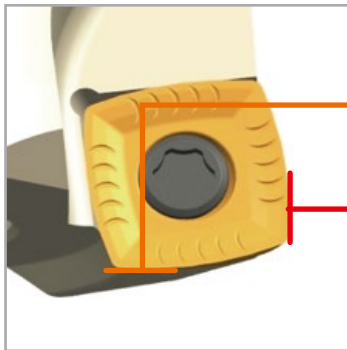
Strong "S" shape geometry design ensures perfect plunging performance.

◆ Cutter Structure Features

- Double rake angles make cutting gently and slightly.
- High Economy: 4 cutting edges.
- work piece material: P、K、M、S
- Shining Nickel-plated cutter has well corrosion resistance and wear resistance.
- Cutter dia. Range from $\phi 32$ to $\phi 125$ (including 125) with coolant.
- XDLT09/12 two size of inserts available.



◆ Insert Features



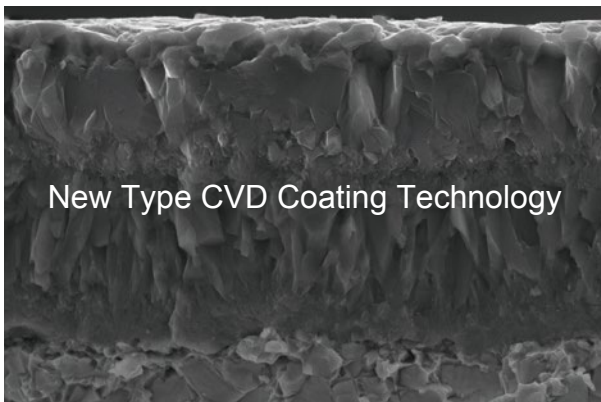
Two stage design cutting edge obtains perfect surface finishing under high speed face milling.

Meanwhile, the inner wall gets superior surface finishing on helical ramping.



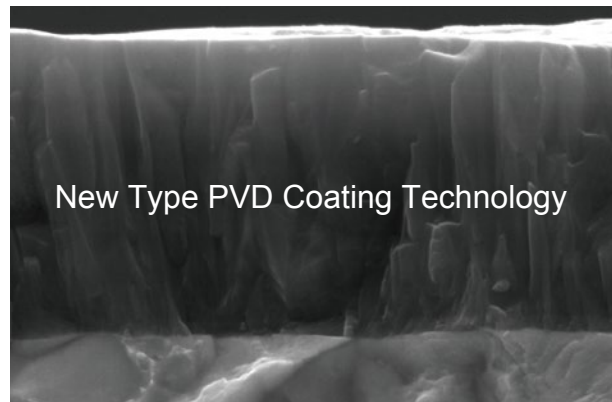
Fine grinding locating surface gets more reliable location.

◆ Coating Introduction



New Type CVD Coating Technology

Multi-layer coating structure with perfect toughness;
Good wear resistance and high temperature oxidation resistance.
Smooth coating surface enhances work piece surface finish;
Well combination between coating layer and substrate extended tool life.



New Type PVD Coating Technology

Alternate soft and hard nano-coating layer structure has high hardness and good toughness;
Good high temperature resistance and oxidation resistance.
Smooth coating surface enhances work piece surface finish;
Well combination between coating layer and substrate extended tool life.

◆ Insert Chip Breaker Introduction

HR2 → Stable type

For unfavourable machining conditions maximum cutting edge stability high feed rates.
Recommended for steel and cast iron;



MM3 → Universal type

For medium machining conditions universal application for most materials.
For good machining conditions with Low cutting forces and medium feed rates.



◆ Machining Case

Work piece: Aeroplane landing gear

Material: Ti5553

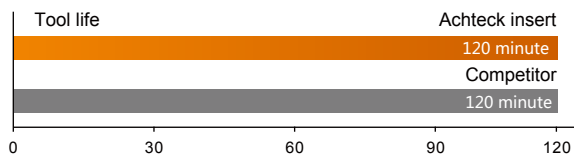
Hardness: HRC38

Coolant type: Emulsion

Cutter designation: AHM15-063-Z04-A22R-XD12-C

Insert designation: XDLT 120508ER-MM3 AP301U

Cutting Parameter: $V_c=35\text{m/min}$ $f_z=0.5\text{mm/z}$
 $a_p=1.0\text{mm}$



Comparison Result: Achteck tool life is same as competitor

Work piece: Plastic mold

Material: Carbon steel

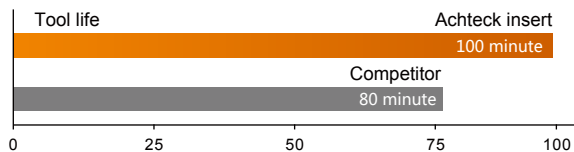
Hardness: HB240

Coolant type: Emulsion

Cutter designation: AHM15-052-Z04-A22R-XD12-C

Insert designation: XDLT 120508ER-MM3 AP351U

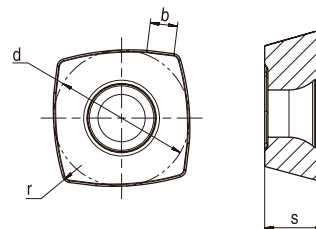
Cutting Parameter: $V_c=200\text{m/min}$ $f_z=1.2\text{mm/z}$
 $a_p=1.0\text{mm}$



Comparison Result: Achteck tool life is 25% higher than competitor

Insert stock

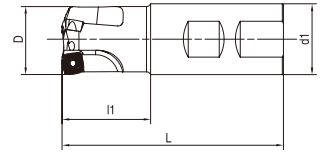
XD..09/12



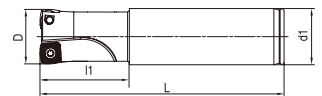
Insert	Designation	Dimensions (mm)				Grades						
						CVD coated		PVD coated			Uncoated	
		l	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K	AW100K
	XDLT 090408ER-MM3	9.525	4.76	0.8	1.3			•				
	XDLT 120508ER-MM3	12.7	5.56	0.8	2.2	•	•	•	•		•	
	XDLT 120512ER-MM3	12.7	5.56	1.2	2.2	•	•	•	•		•	
	XDMW 090408ER-HR2	9.525	4.76	0.8	1.3		•					
	XDMW 120508ER-HR2	12.7	5.56	0.8	2.2		•	•				

Remark: • Represent for standard stock

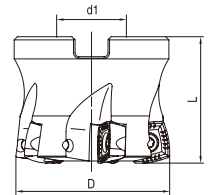
AHM15-XD09



Designation	D	d1	L	l1	apmax	Coolant	Z	Insert
AHM15-025-Z02-W25R-XD09-C	25	25	96	40	1.5		2	XD..0904
AHM15-032-Z03-W25R-XD09-C	32	32	100	40	1.5		3	



Designation	D	d1	L	l1	apmax	Coolant	Z	Insert
AHM15-025-Z02-C25R-XD09-C	25	25	200	50	1.5		2	XD..0904
AHM15-032-Z03-C32R-XD09-C	32	32	250	70	1.5		3	



Designation	D	d1	L	apmax	Coolant	Z	Insert
AHM15-040-Z03-A16R-XD09-C	40	16	32	1.5		3	XD..0904
AHM15-040-Z04-A16R-XD09-C	40	16	32	1.5		4	
AHM15-040-Z05-A16R-XD09-C	40	16	32	1.5		5	
AHM15-050-Z05-A22R-XD09-C	50	22	40	1.5		5	
AHM15-050-Z06-A22R-XD09-C	50	22	40	1.5		6	

Remark: represent for coolant
 represent for no coolant

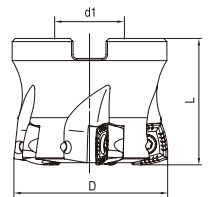
Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ25-50			
	AST35084-60	ADT-T10	3.0Nm

Machining application				
Facing	Ramping	Plunging	Helical ramping	Slotting

AHM15-XD12



Designation	D	d1	L	l1	apmax	Coolant	Z	Insert
AHM15-032-Z02-C25R-XD12-C	32	32	250	70	2.5		2	XD..1205



Designation	D	d1	L	apmax	Coolant	Z	Insert
AHM15-052-Z03-A22R-XD12-C	52	22	40	2.5		3	XD..1205
AHM15-052-Z04-A22R-XD12-C	52	22	40	2.5		4	
AHM15-052-Z05-A22R-XD12-C	52	22	40	2.5		5	
AHM15-063-Z04-60A22R-XD12-C	63	22	40	2.5		4	
AHM15-063-Z05-60A22R-XD12-C	63	22	40	2.5		5	
AHM15-066-Z04-63A27R-XD12-C	66	27	45	2.5		4	
AHM15-066-Z05-63A27R-XD12-C	66	27	45	2.5		5	
AHM15-080-Z05-76A27R-XD12-C	80	27	50	2.5		5	
AHM15-080-Z08-76A27R-XD12-C	80	27	50	2.5		8	
AHM15-100-Z06-96A32R-XD12-C	100	32	50	2.5		6	
AHM15-100-Z09-96A32R-XD12-C	100	32	50	2.5		9	
AHM15-125-Z08-100A40R-XD12-C	125	40	63	2.5		8	
AHM15-125-Z11-100A40R-XD12-C	125	40	63	2.5		11	

Remark: represent for coolant
 represent for no coolant

Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ32-125			
	AST4112-60	ADT-T15	3.0Nm

Machining application				
Facing	Ramping	Plunging	Helical ramping	Slotting

AHM15-XD09 Recommended Cutting Conditions

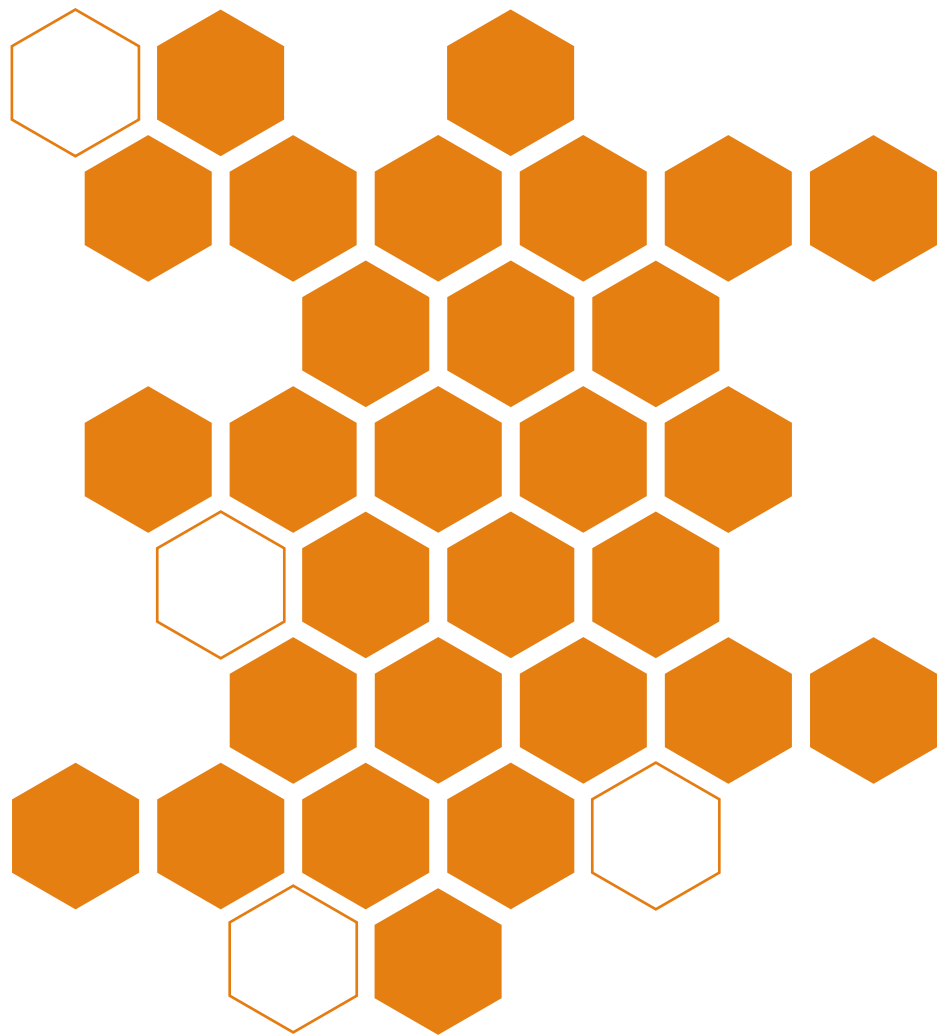
ISO		Material classification	Tensile strength (N/mm²)	Hardness (HB)	Achteck Milling Grades Application Ranges																Cutting depth and feed rate																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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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, work piece clamping and coolants. Average chip thickness=hm(hm=fzXSin KappaR)

AHM15-XD12 Recommended Cutting Conditions

Machined Materials		Achteck Milling Grades Application Ranges																Cutting depth and feed rate											
		XD..1204																											
		AP301U	AP351U	AP401U	AC301P	AC301K	AP351K	AW100K																					
ISO	Material classification	Tensile strength (N/mm²)	Hardness (HB)	PVD	PVD	PVD	CVD	CVD	PVD	PVD	CVD	CVD	PVD	PVD	PVD	Uncoated	Profiling	Shouldering	Plunging										
				P15-35	P30-45	P20-40	P25-40	-	-	-	-	-	-	-	-	-				-	-								
				M15-35	M30-45	M20-40	M25-40	-	-	-	-	-	-	-	-	-				-	-								
				-	-	-	-	-	-	-	-	-	-	-	-	-				-	-								
				-	S30-45	S20-40	-	-	-	-	-	-	-	-	-	-				-	-								
				-	-	-	-	-	-	-	-	-	-	-	-	-				-	-								
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				-	-	-	-	-	-	-	-	-	-	-	-	-				-	-								
				Feed (mm/z)																									
				Cutting speed (m/min)																									
				0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	ap (mm)	Feed (mm/z)	ap (mm)	Feed (mm/z)	ap (mm)	Feed (mm/z)					
P	Non-alloyed steel			<600	<180	450	340	290	230	205	170																		
				<950	<280	320	240	200	200	180	160																		
				700-950	200-280	290	210	185	200	155	110																		
				950-1200	280-355	280	210	200	180	130	90																		
				1200-1400	355-415	210	170	110	140	105	70																		
M	Duplex stainless steel	778	230	165	150	130	270	215	155	150	115	85	225	180	125														
	Austenitic stainless steel	675	200	270	185	90	260	180	90	185	140	105	210	145	75														
	Precipitation-hardening stainless steel	1013	300	300	225	165	170	150	110	125	95	70	140	130	90														
K	Grey cast iron	700	220																										
	Nodular Cast iron	880	260																										
	Malleable cast iron	800	250																										
S	Fe based alloy	943	280				45	40	30																				
	Co based alloy	1076	320				45	40	30																				
	NI based alloy	1177	350				45	40	30																				
	Ti-alloy	1262	370				100	70	45																				
	Aluminum	260	75																										
N	Aluminum alloy	447	130																										
H	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, work piece clamping and coolants. Average chip thickness=hm/(hm=fxSin KappaR)



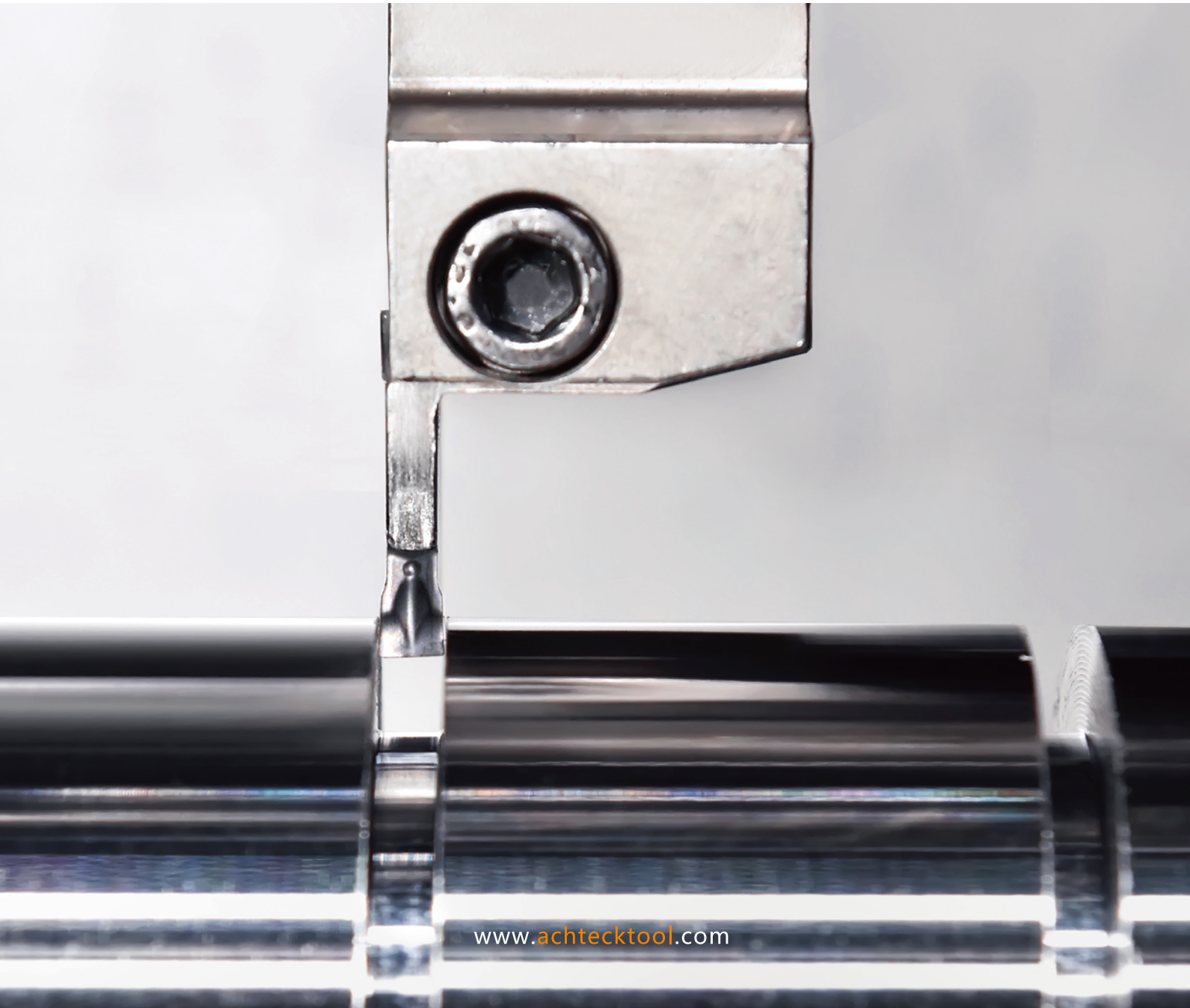
ACHTECK

NEW
PRODUCT!

CS/CM/CH

Grooving Series

Parting off and grooving



www.achtecktool.com

Achteck is launching a new grooving products - the three different chip breaker geometry CS, CM and CH which provide the exceptional machining performance for grooving application.

The CS type has a sharp cutting edge and it is recommended to use on super alloys and stainless steels at low feed rate.

The CM type is recommended to use on super alloys and stainless steels at medium feed rate.

The CH type is recommended to use on steels, stainless steels and cast irons at medium to high feed rate.

These three types are for external grooving application.

These are designed have a good chip controlling and provide for good surface finish quality. Also, the holders have a high accuracy, excellent repeatability and good durability.

These products can be machined on grooving and parting off. The maximum depth of cut is 19.7mm.

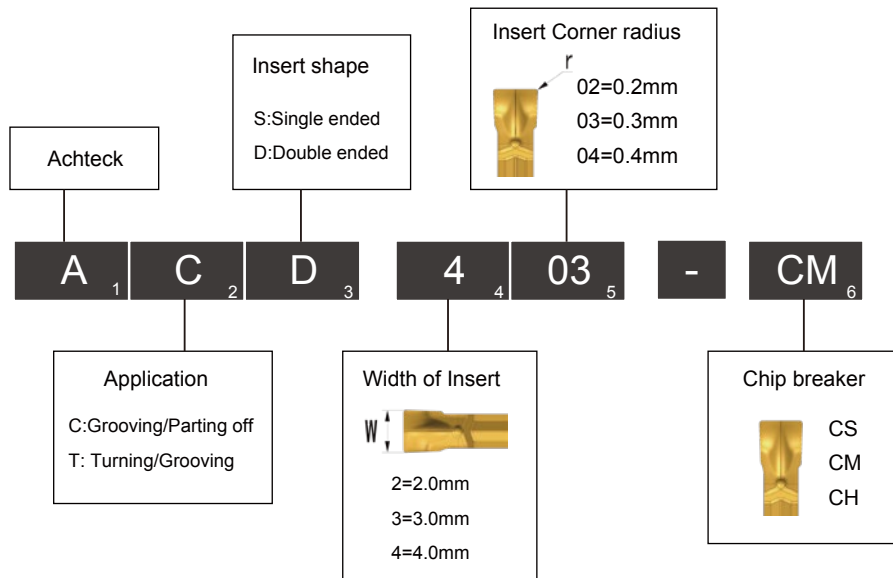
PVD grade AP301U is a good combination with three types chip breakers provide a longer tool life, and very stable machining. AP301U grade is defined a longer tool life at higher cutting speed for steels, stainless steels and super alloys and minimized built up edge. It enhanced performance reliability and remarkable reduction in machining cost.

Achteck grooving products assortment, expanding the range continuously and will be announced, case by case when products are completed.

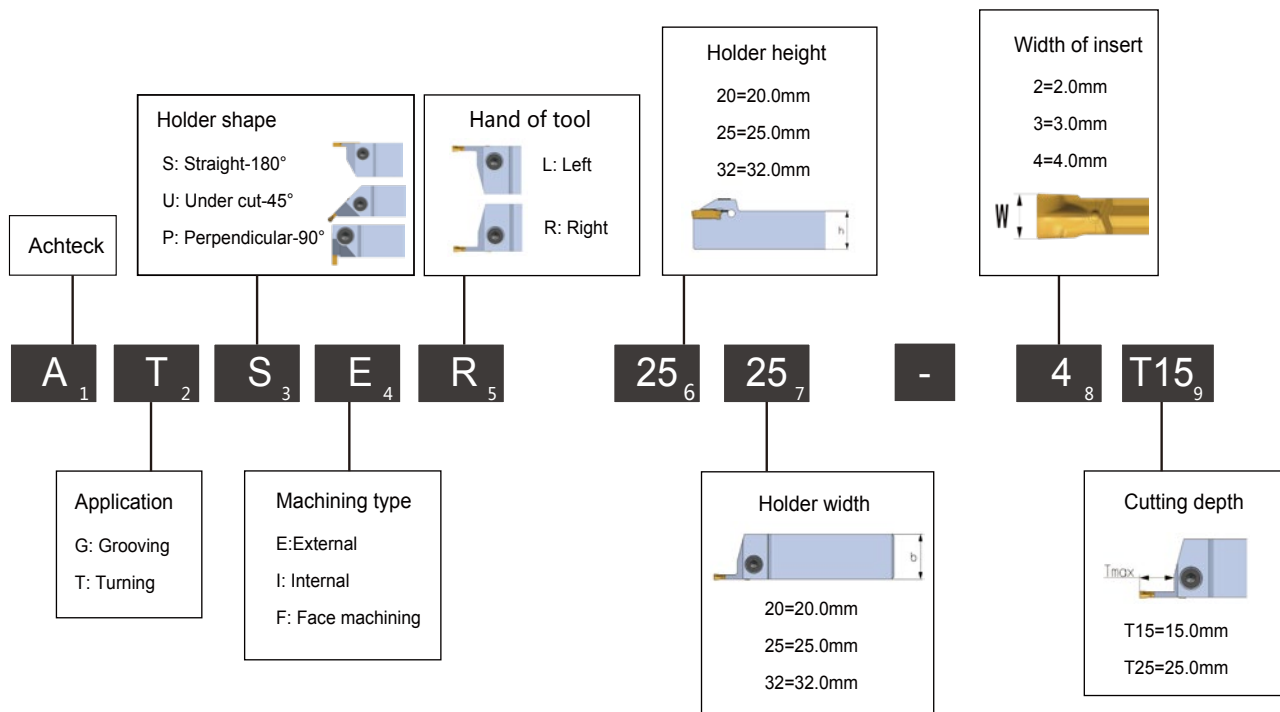
Grooving Inserts are the first time to be launched into market and provide product designation system both insert and holder to better understanding.



Insert designation system



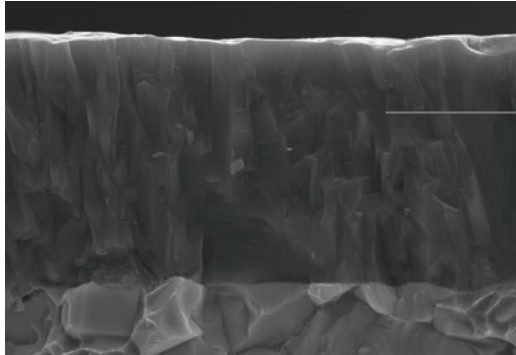
Holder designation system



◆ AP301U Grade Feature

Kind of coating: PVD

ISO range: P15-P35, M15-M35



TiAlN PVD coating

- ◆ Excellent high-temperature oxidation resistance and wear resistance.
- ◆ Very smooth coating surface.
- ◆ Good adhesion between substrate and coating for longer tool life.

◆ Grade application

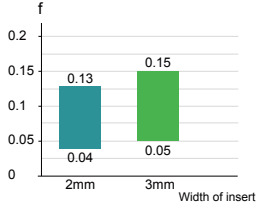
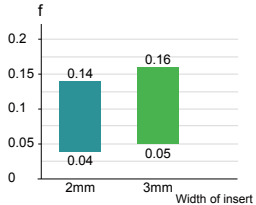
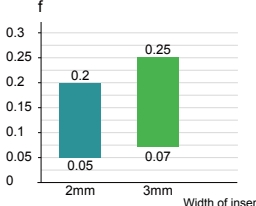
Grade	Coating	Material					
		P	M	K	S	N	H
AP301U	PVD	●	●	◐	◐		

● Marked : 1st Choice ◐ Marked : 2nd Choice

◆ Recommended cutting speed

Material	Steel	Stainless steel	Cast iron	Super alloy
Cutting speed Vc(m/min)	60-250	60-180	30-200	20-150

Chip breaker features

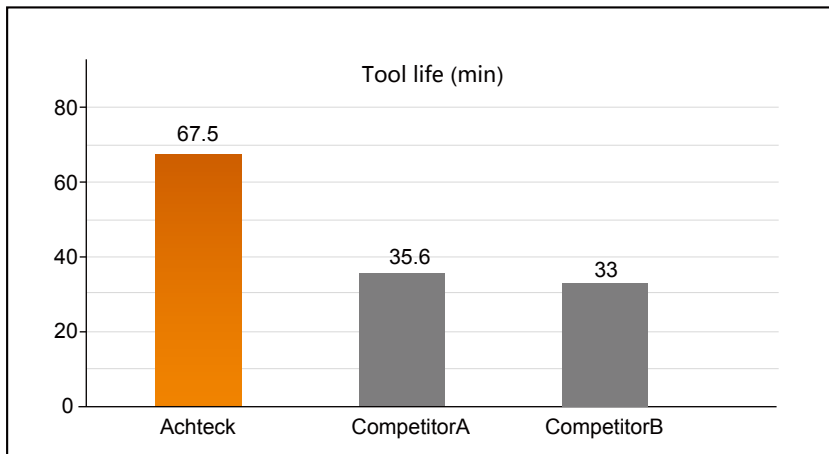
Geometry	Insert picture	Edge preparation	Recommended feed (mm/rev)	Application
CS				1. Suitable for parting off and grooving on stainless steel, super alloys and mild steel 2. Low feed rate
CM				1. Suitable for parting off, grooving on stainless steel, and mild steel 2. For soft materials such as tubes, small diameters and thin walled parts 3. For low cutting force 4. Low to medium feed rate
CH				1. Suitable for parting off, grooving on steels, and cast irons 2. Strong cutting edge 3. High feed rate 4. Can be used on stainless steels. 5. First choice

Comparison internal tool life test result

Cutting conditions

Material	Operation	Cutting parameters			
		Vc(m/min)	f(mm/rev)	ap(mm)	Coolant
Alloy steel	Grooving	160	0.2	10	Yes

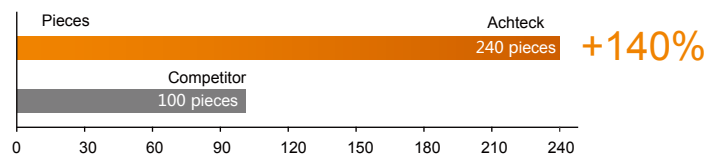
Test result



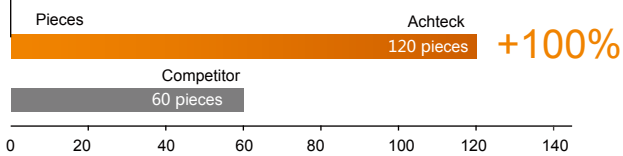
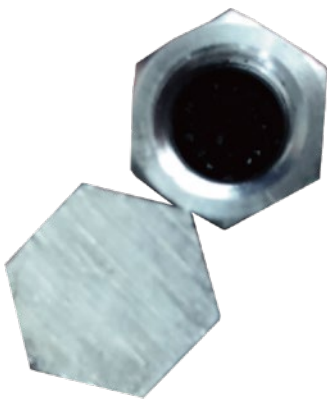
Insert: ACD 302-CH AP301U
Holder: ATSEL 2525-3T12

Case stories

Component description: Solid bar
Material: Tool steel
Material hardness: HRC35-40
Insert: **ACD 302-CH AP301U**
Holder: ATSER 2020 3T20
Machining operation: Parting off
Cutting parameters: Vc=60m/min, f=0.1mm, ap=10.5mm
Wet machining

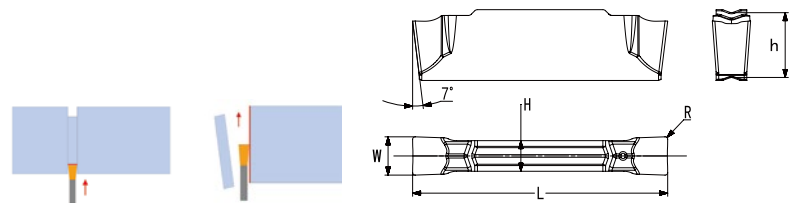


Component description: Hexagonal bar
Material: 304 stainless steel
Material hardness: HR180
Insert: **ACD 302-CM AP301U**
Holder: ATSER 2020 3T09
Machining operation: Parting off
Cutting parameters: Vc=45m/min, f=0.05mm, ap=6mm
Wet machining



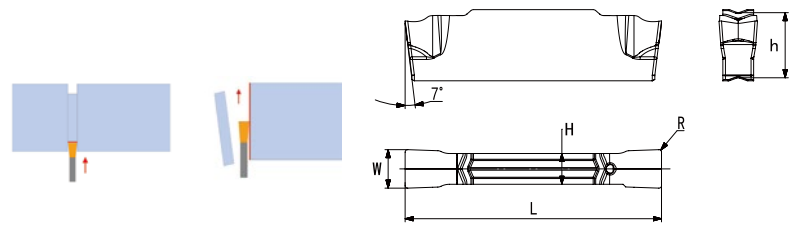
Inserts stock item

- CS
For parting off and grooving



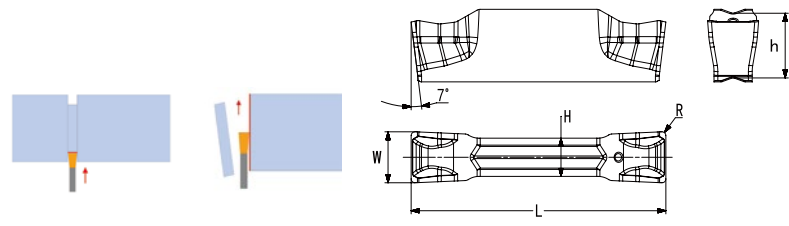
Insert	Type	Dimension					T _{max}	Feed	Grade
		W	R	L	H	h			AP301U
	ACD 202-CS	2	0.2	20	1.7	5.1	19.7	0.04-0.13	●
	ACD 302-CS	3	0.2	20	2.4	5.1	19.7	0.05-0.15	●

- CM
For parting off and grooving



Insert	Type	Dimension					T _{max}	Feed	Grade
		W	R	L	H	h			AP301U
	ACD 202-CM	2	0.2	20	1.7	5.1	19.7	0.04-0.15	●
	ACD 302-CM	3	0.2	20	2.4	5.1	19.7	0.05-0.16	●

- CH
For parting off and grooving



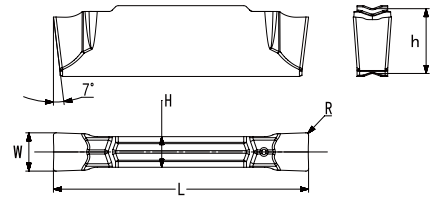
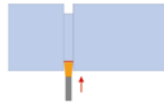
Insert	Type	Dimension					T _{max}	Feed	Grade
		W	R	L	H	h			AP301U
	ACD 202-CH	2	0.2	20	1.7	5.1	19.7	0.05-0.20	●
	ACD 302-CH	3	0.2	20	2.4	5.1	19.7	0.07-0.25	●

Remark: ● represent for standard stock

Inserts stock item

- CS

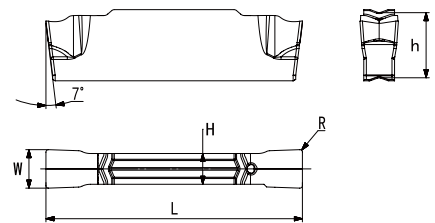
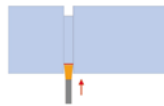
For parting off and grooving



Insert	Type	Dimension					T _{max}	Feed	Grade
		W	R	L	H	h			AP301U
	ACD 202-CS	2	0.2	20	1.7	5.1	19.7	0.04-0.13	●
	ACD 302-CS	3	0.2	20	2.4	5.1	19.7	0.05-0.15	●

- CM

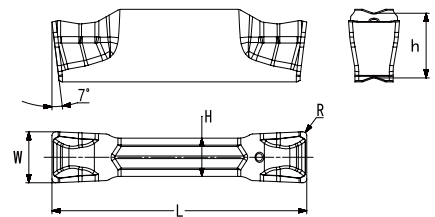
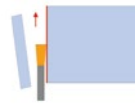
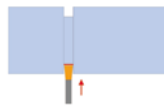
For parting off and grooving



Insert	Type	Dimension					T _{max}	Feed	Grade
		W	R	L	H	h			AP301U
	ACD 202-CM	2	0.2	20	1.7	5.1	19.7	0.04-0.15	●
	ACD 302-CM	3	0.2	20	2.4	5.1	19.7	0.05-0.16	●

- CH

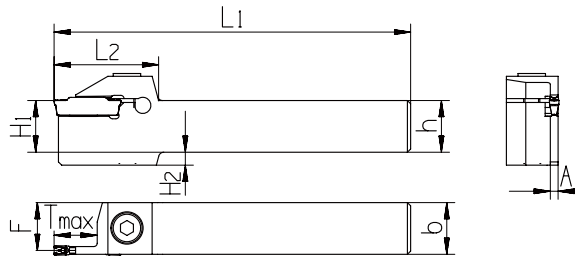
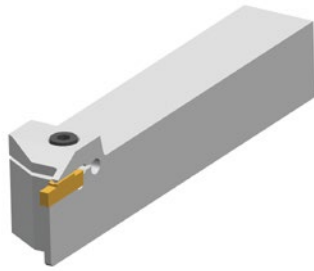
For parting off and grooving



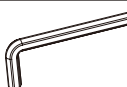
Insert	Type	Dimension					T _{max}	Feed	Grade
		W	R	L	H	h			AP301U
	ACD 202-CH	2	0.2	20	1.7	5.1	19.7	0.05-0.20	●
	ACD 302-CH	3	0.2	20	2.4	5.1	19.7	0.07-0.25	●

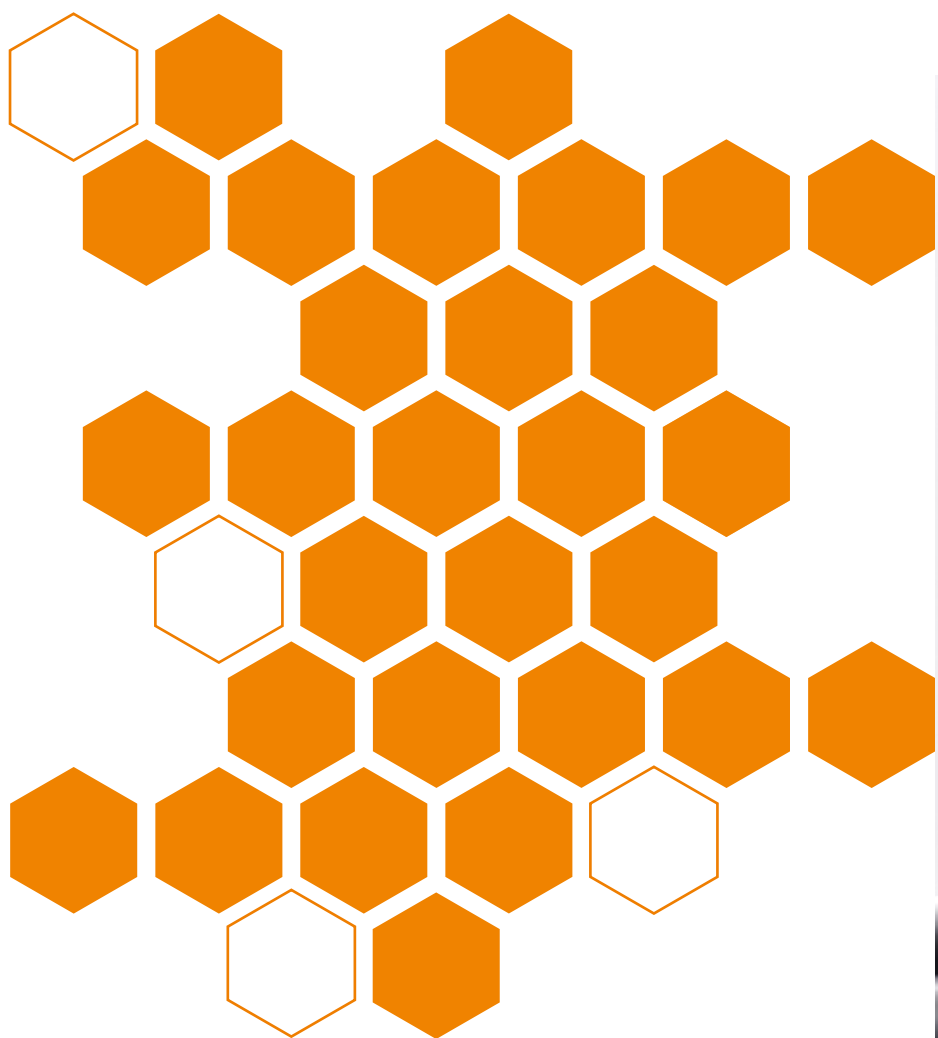
Remark: ● represent for standard stock

• Holder stock item



Holder type		holder dimension									Insert
		h	b	H ₁	H ₂	A	L ₁	L ₂	F	T _{max}	
ATSER/L	1616-2T12	16	16	16	4	1.8	110	32	15.1	12	ACD 2
	1616-2T17	16	16	16	4	1.8	110	38	15.1	17	
	2020-2T08	20	20	20	0	1.8	125	32	19.1	8	
	2020-2T12	20	20	20	0	1.8	125	32	19.1	12	
	2020-2T17	20	20	20	0	1.8	125	38	19.1	17	
	2525-2T08	25	25	25	0	1.8	150	32	24.1	8	
	2525-2T12	25	25	25	0	1.8	150	32	24.1	12	
ATSER/L	1616-3T12	16	16	16	4	2.4	110	32	14.8	12	ACD 3
	1616-3T20	16	16	16	4	2.4	110	38	14.8	20	
	2020-3T09	20	20	20	0	2.4	125	32	18.8	9	
	2020-3T12	20	20	20	0	2.4	125	32	18.8	12	
	2020-3T20	20	20	20	0	2.4	125	38	18.8	20	
	2525-3T09	25	25	25	0	2.4	150	32	23.8	9	
	2525-3T12	25	25	25	0	2.4	150	32	23.8	12	
	2525-3T20	25	25	25	0	2.4	150	38	23.8	20	

Holder type	Spare part	
	Screw	Wrench
		
ATSER/L 1616-2/3	ASH M5x0.8x16	AWH4
ATSER/L 2020-2/3	ASH M5x0.8x20	AWH4
ATSER/L 2525-2/3	ASH M5x0.8x25	AWH4



ACHTECK•MILL

SD Series

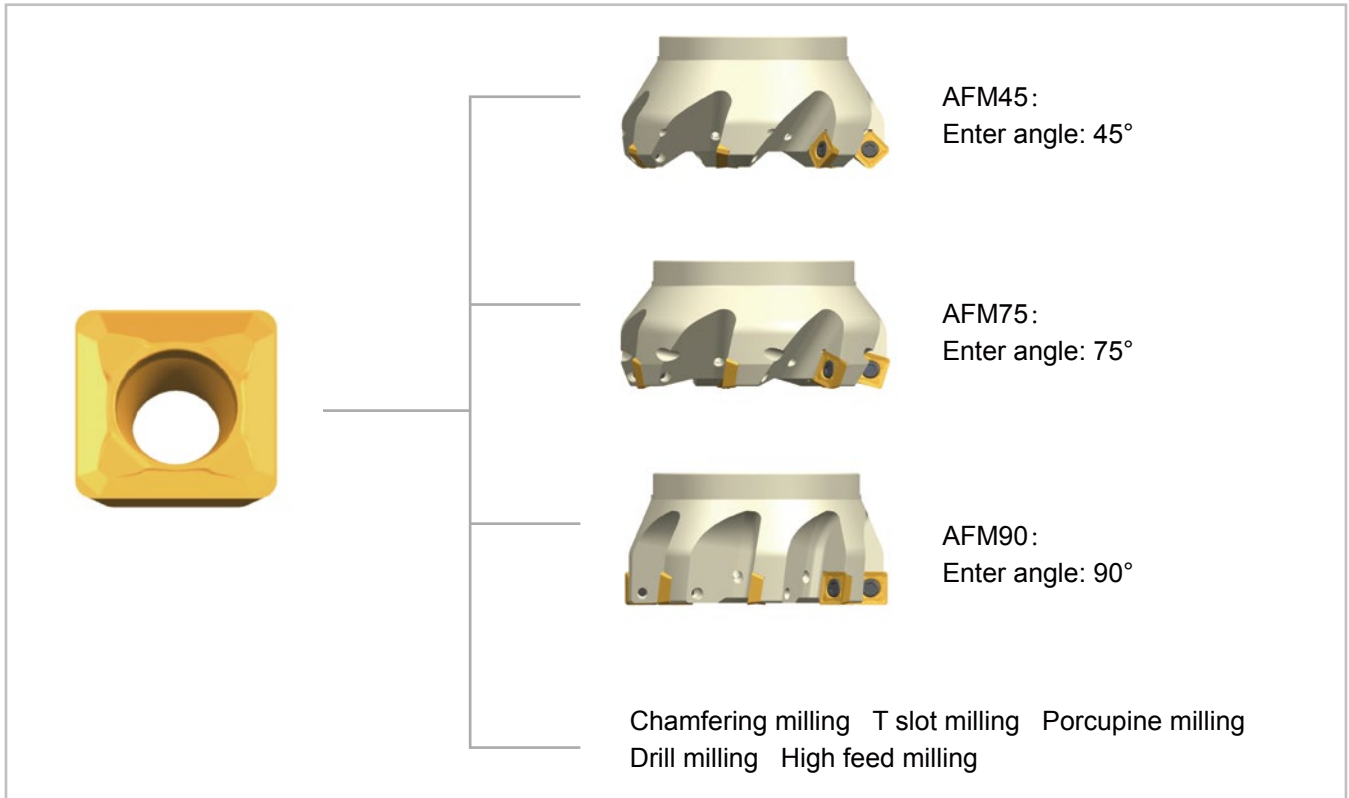
Economical Milling



www.achtecktool.com

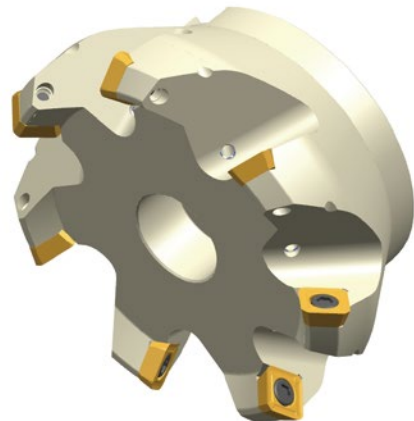
SD Cutter Features

AFM45/75/90 -SD Series Milling-Light, Economic, Multi-function



◆ Cutter Structure Features

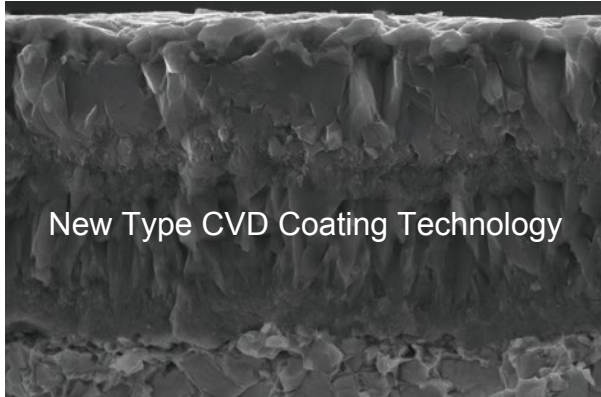
- Cutting gently and slightly
- Same insert can be used for 45°, 75° and 90° enter angle, which largely reduced stock items.
- Dia. Range from D16 to D125
- SD12/09 two size of insert available
- work piece material: P、K、M、S
- Shining Nickel-plated cutter has well corrosion resistance and wear resistance
- Coolant type for all



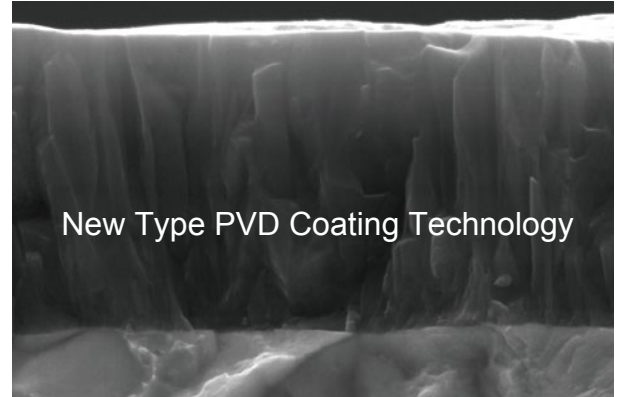
◆ Insert Features

Positive insert with single side 4 cutting edges; sharp cutting edge make cutting gently and lightly
Extensive application for facing, slotting, chamfering, helical ramping, plunging and ramping.

◆ Coating Introduction



Multi-layer coating structure with perfect toughness.
Good wear resistance and high temperature oxidation resistance
Smooth coating surface enhances work piece surface finish;
Well combination between coating layer and substrate extended tool life.



Alternate soft and hard nano-coating layer structure has high hardness and good toughness;
Good high temperature resistance and oxidation resistance
Smooth coating surface enhances work piece surface finish;
Well combination between coating layer and substrate extended tool life.

◆ Cutter Structure Features

HR2 → Stable Type

Suitable for bad cutting condition with stable cutting edge. High feed rate.



MR6 → Stable Type

Suitable for unstable cutting conditions with best cutting edge stability; high feedrate



MR2 → General Type

Apply for medium cutting conditions for most types of materials machining



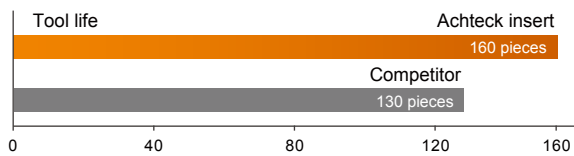
MM3 → Free-cutting Type

Apply for semi-finishing and finishing under fine cutting conditions with low cutting force; medium feedrate



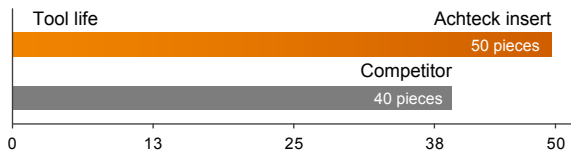
◆ Machining Case

Work piece: knuckle
 Material: Nodular cast iron
 Hardness: HB260
 Coolant type: Emulsion
 Cutter designation: AFM90-040-Z04-A16R-SD09-C
 Insert designation: SDMT 09T308EN-MM3 AC301K
 Cutting Parameter: $V_c=160\text{m/min}$ $f_z=0.15\text{mm/z}$
 $a_p=1.5\text{mm}$



Comparison Result: Achteck tool life is 23% higher than competitor

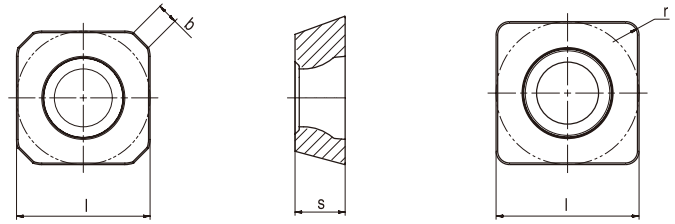
Work piece: Truck brake bracket
 Material: Nodular cast iron
 Hardness: HB220
 Coolant type: Emulsion
 Cutter designation: AFM75-063-Z05-A22R-SD12-C
 Insert designation: SDMT 120412EN-MM3 AP351K
 Cutting Parameter: $V_c=180\text{m/min}$ $a_p=1.8\text{mm}$
 $f=1.5\text{mm/rev}$

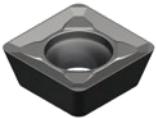
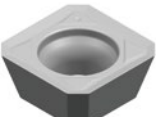
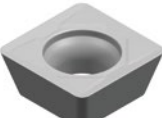
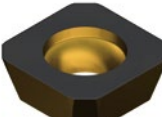


Comparison Result: Achteck tool life is 25% higher than competitor

● Insert stock

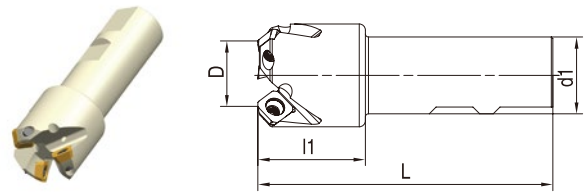
SD..09/12



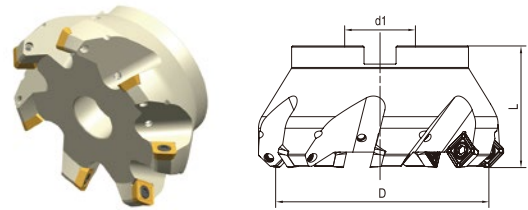
Insert	Designation	Dimensions				Grades					
						CVD coated		PVD coated			
		l	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	SDMT 09T304EN-MM3	9.525	3.97	0.4	-	●	●	●	●		
	SDMT 09T308EN-MM3	9.525	3.97	0.8	-	●	●	●	●		
	SDMT 09T320-MM4	9.525	3.97	2.0	-					●	
	SDMT 120408EN-MM4	12.7	4.76	0.8	-		●	●	●		●
	SDMT 120412EN-MM3	12.7	4.76	1.2	-	●	●	●	●		
	SDGT 09T3AEEN-MM4	9.525	3.97	-	1.5		●	●	●		●
	SDKT 1204AEEN-MR2	12.7	4.76	-	2.0	●	●	●	●		●
	SDGT 09T3PDER-MR6	9.525	3.97	0.8	1.2		●	●	●		●
	SDGT 1204PDER-MR6	12.7	4.76	0.8	1.6		●	●	●		●
	SDHT 1204AEEN-MR6	12.7	4.76	0.8	2.0		●	●	●		●
	SDMW 09T308EN-HR2	9.525	3.97	0.8	-		●	●			
	SDHW 09T3AESN-HR2	9.525	3.97	-	1.5		●	●			●
	SDMW 120412EN-HR2	12.7	4.76	1.2	-		●	●			●
	SDHW 1204AESN-HR2	12.7	4.76	-	2.0		●	●			●

Remark: ● Represent for standard stock

AFM45-SD09



Designation	D	d1	L	l1	apmax	Coolant	Z	Insert
AFM45-016-Z02-W16R-SD09-C	16	16	90	25	5		2	SD..09T3
AFM45-020-Z02-W20R-SD09-C	20	20	110	30	5		2	
AFM45-025-Z03-W25R-SD09-C	25	25	120	30	5		3	
AFM45-032-Z03-W32R-SD09-C	32	32	120	35	5		3	



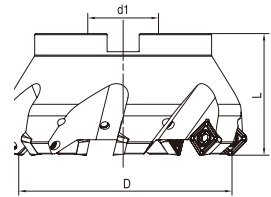
Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM45-032-Z04-A13R-SD09-C	32	10	40	5		4	SD..09T3
AFM45-040-Z05-A16R-SD09-C	40	16	40	5		5	
AFM45-050-Z05-A22R-SD09-C	50	22	40	5		5	
AFM45-050-Z06-A22R-SD09-C	50	22	40	5		6	
AFM45-063-Z05-A22R-SD09-C	63	22	40	5		5	
AFM45-063-Z07-A22R-SD09-C	63	22	40	5		7	
AFM45-080-Z06-A27R-SD09-C	80	27	50	5		6	
AFM45-080-Z09-A27R-SD09-C	80	27	50	5		9	
AFM45-100-Z07-A32R-SD09-C	100	32	50	5		7	
AFM45-100-Z11-A32R-SD09-C	100	32	50	5		11	
AFM45-125-Z08-A40R-SD09-C	125	40	63	5		8	

Remark: represent for coolant
 represent for no coolant

Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ16-φ32			3.5Nm
	AST4075-60	ADT-T15	
φ40-φ125	AST409-60	ADT-T15	

Machining method		
Facing	Chamfering	Ramping

AFM45-SD12



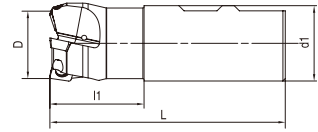
Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM45-050-Z04-A22R-SD12-C	50	22	40	7		4	SD..1204
AFM45-063-Z05-A22R-SD12-C	63	22	40	7		5	
AFM45-080-Z06-A27R-SD12-C	80	27	50	7		6	
AFM45-100-Z07-A32R-SD12-C	100	32	50	7		7	
AFM45-125-Z08-A40R-SD12-C	125	40	63	7		8	

Remark: represent for coolant
 represent for no coolant

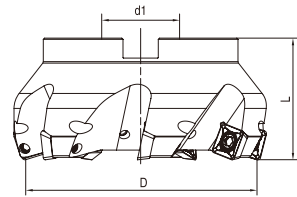
Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
$\phi 50-\phi 125$			5.0Nm
	AST45115-55	ADT-T20	

Machining method		
Facing	Chamfering	Ramping

AFM75-SD09



Designation	D	d1	L	l1	apmax	Coolant	Z	Insert
AFM75-025-Z02-W25R-SD09-C	25	25	96	40	6		2	SD..09T3
AFM75-032-Z03-W32R-SD09-C	32	32	100	40	6		3	



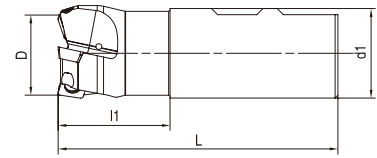
Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM75-040-Z04-A16R-SD09-C	40	16	32	6		4	SD..09T3
AFM75-050-Z05-A22R-SD09-C	50	22	40	6		5	
AFM75-063-Z06-A22R-SD09-C	63	22	40	6		6	
AFM75-080-Z08-A27R-SD09-C	80	27	50	6		8	
AFM75-100-Z10-A32R-SD09-C	100	32	50	6		10	

Remark: represent for coolant
 represent for no coolant

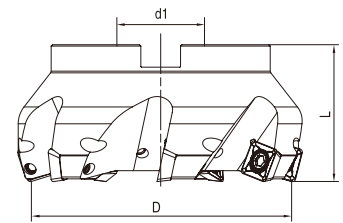
Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ25-φ32			3.5Nm
	AST4075-60	ADT-T15	
φ40-φ100	AST409-60	ADT-T15	

Machining method
 Facing Ramping

AFM75-SD12



Designation	D	d1	L	l1	apmax	Coolant	Z	Insert
AFM75-032-Z02-W22R-SD12-C	32	32	114	49	8		2	SD..1204
AFM75-040-Z03-W32R-SD12-C	40	32	114	49	8		3	



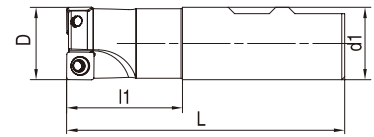
Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM75-050-Z04-A22R-SD12-C	50	22	40	8		4	SD..1204
AFM75-063-Z05-A22R-SD12-C	63	22	40	8		5	
AFM75-080-Z06-A27R-SD12-C	80	27	50	8		6	
AFM75-100-Z07-A32R-SD12-C	100	32	50	8		7	
AFM75-125-Z08-A40R-SD12-C	125	40	63	8		8	

Remark: represent for coolant
 represent for no coolant

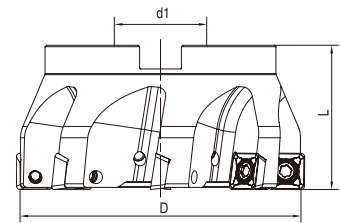
Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ50-φ125			5.0Nm
	AST45115-55	ADT-T20	

Machining method
 Facing Ramping

AFM90-SD09



Designation	D	L	l1	apmax	Coolant	Z	Insert
AFM90-025-Z02-W25R-SD09-C	25	120	30	6		2	SD..09T3
AFM90-032-Z03-W32R-SD09-C	32	120	35	6		3	



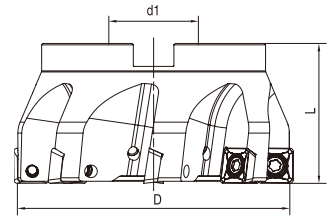
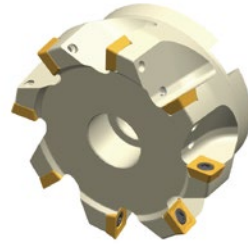
Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM90-040-Z04-A16R-SD09-C	40	16	40	6		4	SD..09T3
AFM90-050-Z05-A22R-SD09-C	50	22	40	6		5	
AFM90-063-Z06-A22R-SD09-C	63	22	40	6		6	
AFM90-080-Z08-A27R-SD09-C	80	27	50	6		8	
AFM90-100-Z10-A32R-SD09-C	100	32	50	6		10	

Remark: represent for coolant
 represent for no coolant

Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ25-φ32			3.5Nm
	AST4075-60	ADT-T15	
φ40-φ100	AST409-60	ADT-T15	

Machining method				
Slotting	Facing	Helical ramping	Plunging	Ramping

AFM90-SD12



Designation	D	d1	L	apmax	Coolant	Z	Insert
AFM90-050-Z04-A22R-SD12-C	50	22	40	9		4	SD..1204
AFM90-063-Z05-A22R-SD12-C	63	22	40	9		5	
AFM90-080-Z06-A27R-SD12-C	80	27	50	9		6	
AFM90-100-Z08-A32R-SD12-C	100	32	50	9		8	
AFM90-125-Z10-A40R-SD12-C	125	40	63	9		10	

Remark: represent for coolant
 represent for no coolant

Dimensions	Spare parts		
Cutter diameter	Screw	Wrench	Torque
φ50-φ125			5.0Nm
	AST45115-55	ADT-T20	

Machining method				
Slotting	Facing	Helical ramping	Plunging	Ramping

AFM45-SD09 Recommended Cutting Conditions

Machined Materials				Achteck Milling Grades Application Ranges											Cutting depth and feed rate							
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	AP301U	AP351U	AP401U	AC301P	AC301K	AP351K	AW100K	SD..0903..											
				PVD	PVD	PVD	CVD	CVD	PVD	Uncoated												
				P15-35	P30-45	P20-40	P25-40	-	-	-												
				M15-35	M30-45	M20-40	M25-40	-	-	-												
P	Non-alloyed steel	<600	<180	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
M	Alloyed steel	700-950	200-280	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
K	Duplex stainless steel	1200-1400	355-415	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
S	Austenitic stainless steel	778	230	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
N	Precipitation-hardening stainless steel	1013	300	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Grey cast iron	700	220	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Nodular Cast iron	880	260	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Malleable cast iron	800	250	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Fe based alloy	943	280	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Co based alloy	1076	320	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Ni based alloy	1177	350	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Ti-alloy	1262	370	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Aluminum	260	75	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Aluminum alloy	447	130	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	Hardened steel	-	50-60HRC	-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
				-	-	-	-	-	-	-												
H	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, work piece clamping and coolants. Average chip thickness=hm/(nm=fzxsSin KappaR)

AFM45-SD12 Recommended Cutting Conditions

Machined Materials				Achteck Milling Grades Application Ranges													Cutting depth and feed rate										
ISO	Material classification	Tensile strength (N/mm²)	Hardness (HB)	AP301U	AP351U	AP401U	AC301P	AC301K	AP351K	AW100K	SD..1204..																
				PVD	PVD	PVD	CVD	CVD	PVD	Uncoated																	
				P15-35	P30-45	P20-40	P25-40	-	-	-																	
				M15-35	M30-45	M20-40	M25-40	-	-	-																	
	Material classification	Tensile strength (N/mm²)	Hardness (HB)	-	-	-	-	K10-35	K15-40	-	MR2																
				-	S30-45	S20-40	-	-	-	N05-15																	
				-	-	-	-	-	-	-																	
				-	-	-	-	-	-	-																	
Feed rate(mm/z)																ap(mm)				Feed(mm/z)				Feed(mm/z)			
0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	Min	-	Max	Min	-	Max	Min	-	Max	
Cutting speed(m/min)																											
P	Non-alloyed steel	<600	<180	450	340	290	230	205	170																		
		<950		320	240	200	200	180	160																		
		700-950	200-280	290	210	185	200	155	110																		
		950-1200	280-355	280	210	200	180	130	90																		
M	Alloyed steel	1200-1400	355-415	210	170	110	140	105	70																		
		778	230	165	150	130	270	215	155	150	115	85	225	180	125												
		675	200	270	185	90	260	180	90	185	140	105	210	145	75												
		1013	300	300	225	165	170	150	110	125	95	70	140	130	90												
K	Grey cast iron	700	220																								
		880	260																								
		800	250																								
		943	280																								
S	Fe based alloy	1076	320																								
		1177	350																								
		1262	370																								
		260	75																								
N	Aluminum alloy	447	130																								
H	Hardened steel	-	50-60HRC																								
		-	55HRC																								

The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants. Average chip thickness=hm(hm=fxSin KappaR)

AFM75-SD09 Recommended Cutting Conditions

Machined Materials				Achteck Milling Grades Application Ranges													Cutting depth and feed rate																						
ISO	Material classification	Tensile strength (N/mm²)	Hardness (HB)	AP301U	AP351U	AP401U	AC301P	AC301K	AP351K	AW100K	SD..09T3..																												
				PVD	PVD	PVD	CVD	CVD	PVD	Uncoated																													
				P15-35	P30-45	P20-40	P25-40	-	-	-																													
				M15-35	M30-45	M20-40	M25-40	-	-	-																													
				-	-	-	-	K10-35	K15-40	-																													
				-	S30-45	S20-40	-	-	-	-																													
				-	-	-	-	-	-	N05-15																													
				-	-	-	-	-	-	-																													
				Feed rate(mm/z)																																			
				0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5																					
Cutting speed(m/min)																																							
Min -																Max	Min	-	Max	Min	-	Max																	
																0.10	-	0.24							0.10	-	0.20												
																						0.10	-	0.20							0.10	-	0.16						
																						0.10	-	0.18							0.10	-	0.16						
																												0.10	-	0.15									
																												1.0	-	3.0									
																												0.10	-	0.20									

The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants. Average chip thickness=hm(hm=fzxSin KappaR)

AFM75-SD12 Recommended Cutting Conditions

Machined Materials			Achteck Milling Grades Application Ranges														Cutting depth and feed rate							
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	AP301U	AP351U	AP401U	AC301P	AC301K	AP351K	AW100K	SD..1204..													
				PVD	PVD	PVD	CVD	CVD	PVD	Uncoated														
				P15-35	P30-45	P20-40	P25-40	-	-	-														
P	Non-alloyed steel	<600	<280	M15-35	M30-45	M20-40	M25-40	-	K10-35	K15-40	HR2													
				-	-	-	-	-	-	-	MR2													
				-	S30-45	S20-40	-	-	-	-														
M	Alloyed steel	700-950	280-355	-	-	-	-	-	-	N05-15														
				-	-	-	-	-	-	-														
				-	-	-	-	-	-	-														
K	Precipitation-hardening stainless steel	1200-1400	355-415	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3				
				450	340	290	230	205	170		430	230	120											
				320	240	200	200	180	160		380	220	120											
S	Duplex stainless steel	778	230	290	210	185	200	155	110		340	240	120											
				280	210	200	180	130	90		260	150	80											
				210	170	110	140	105	70		145	105	65											
N	Aluminum	260	75	165	150	130	270	215	155	150	115	85	225	180	125									
				270	185	90	280	180	90	185	140	105	210	145	75									
				300	225	165	170	150	110	125	95	70	140	130	90									
H	Aluminum alloy	447	130								480	310	140	390	280	130								
											450	295	140	420	300	140								
											500	365	230	430	290	230								
H	Ti-alloy	1262	370																					
H	Fe based alloy	943	280																					
H	Co based alloy	1076	320																					
H	Ni based alloy	1177	350																					
H	Aluminum	260	75																					
H	Aluminum alloy	447	130																					
H	Hardened steel	-	50-60HRC																					
H	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, work piece clamping and coolants. Average chip thickness=hm(hm=fzxsSin KappaR)

AFM90-SD09 Recommended Cutting Conditions

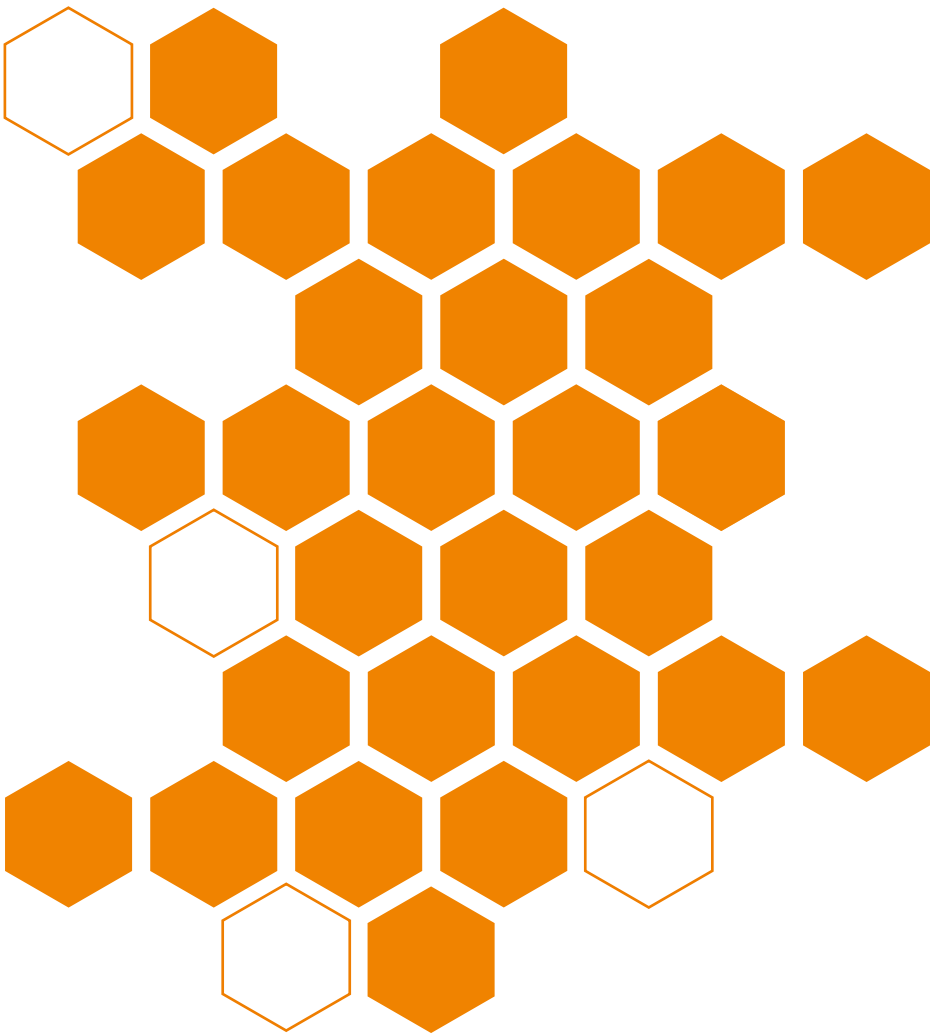
Machined Materials				Achteck Milling Grades Application Ranges											Cutting depth and feed rate					
ISO	Material classification	Tensile strength (N/mm ²)	Hardness (HB)	AP301U	AP351U	AP401U	AC301P	AC301K	AP351K	AW100K	SD..09T3..									
				PVD	PVD	PVD	CVD	CVD	PVD	Uncoated										
				P15-35	P30-45	P20-40	P25-40	-	-	-										
				M15-35	M30-45	M20-40	M25-40	-	-	-										
				-	-	-	-	-	K10-35	K15-40	MR2									
				-	S30-45	S20-40	-	-	-	-										
				-	-	-	-	-	-	-	N05-15									
				-	-	-	-	-	-	-										
				Feed rate(mm/z)																
				0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5	0.1	0.3	0.5		
Cutting speed(m/min)																				
Min - Max Min - Max Min - Max																				
P	Non-alloyed steel	<600	<180	450	340	290	230	205	170											
		<950	<280	320	240	200	200	180	160											
		700-950	200-280	290	210	185	200	155	110											
		950-1200	280-355	280	210	200	180	130	90											
	1200-1400	355-415	210	170	110	140	105	70												
M	Duplex stainless steel	778	230	165	150	130	270	215	155	150	115	85	225	180	125					
	Austenitic stainless steel	675	200	270	185	90	260	180	90	185	140	105	210	145	75					
	Precipitation-hardening stainless steel	1013	300	300	225	165	170	150	110	125	95	70	140	130	90					
		Grey cast iron	700	220							480	310	140	390	280	130				
K	Nodular Cast iron	880	260							450	295	140	420	300	140					
	Malleable cast iron	800	250							500	365	230	430	290	230					
	Fe based alloy	943	280			45	40	30												
	Co based alloy	1076	320			45	40	30												
	Ni based alloy	1177	350			45	40	30												
S	Ti-alloy	1262	370			100	70	45												
	Aluminum	260	75																	
	Aluminum alloy	447	130																	
H	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, work piece clamping and coolants. Average chip thickness=hm/(hm=fxSin KappaR)

AFM90-SD12 Recommended Cutting Conditions

Machined Materials				Achteck Milling Grades Application Ranges												Cutting depth and feed rate																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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K	Precipitation-hardening stainless steel			450	340	290	230	205	170		430	230	120																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants. Average chip thickness=hm(hm=fxzSin KappaR)

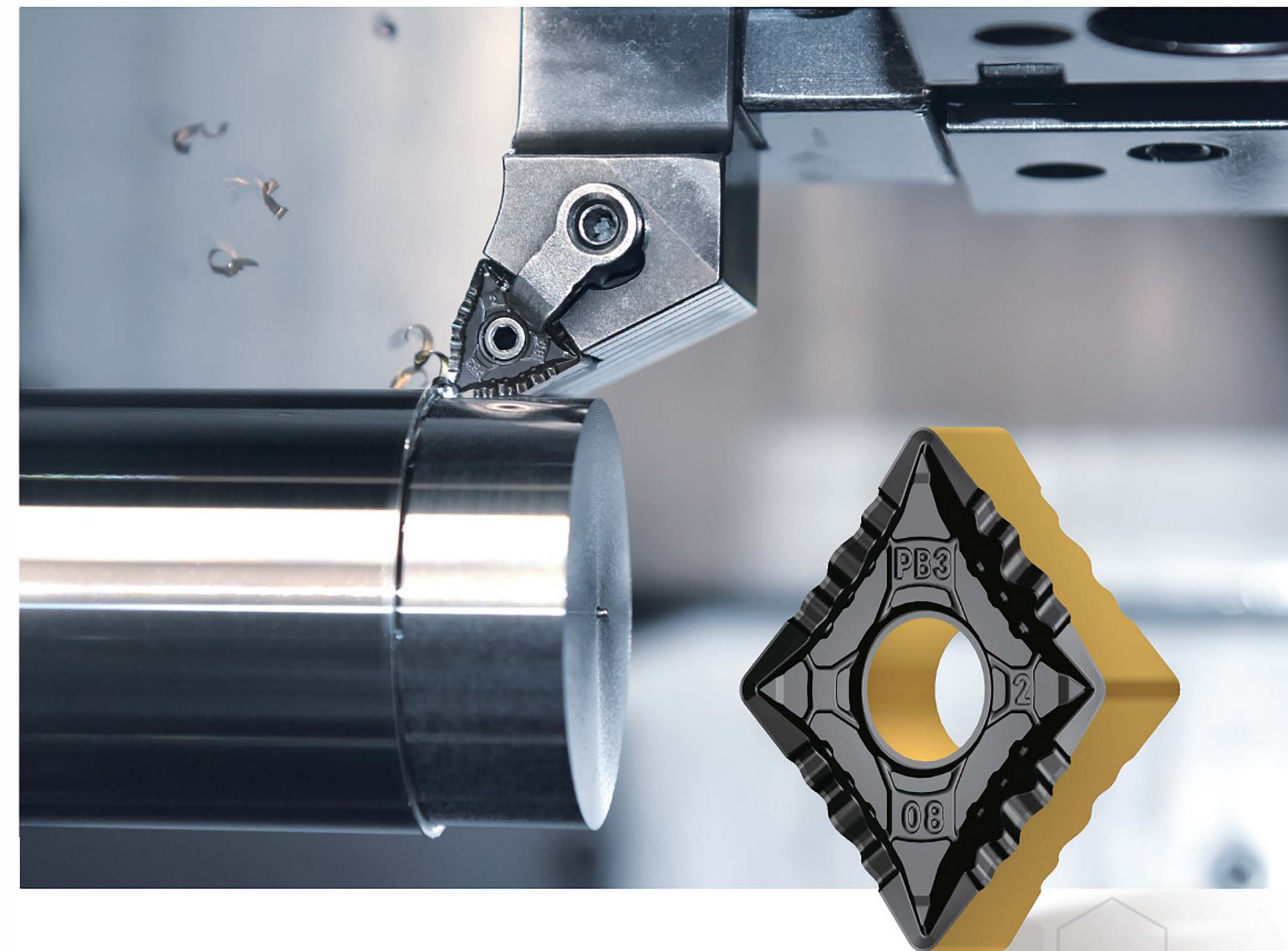


ACHTECK•TURN

NEW
PRODUCT!

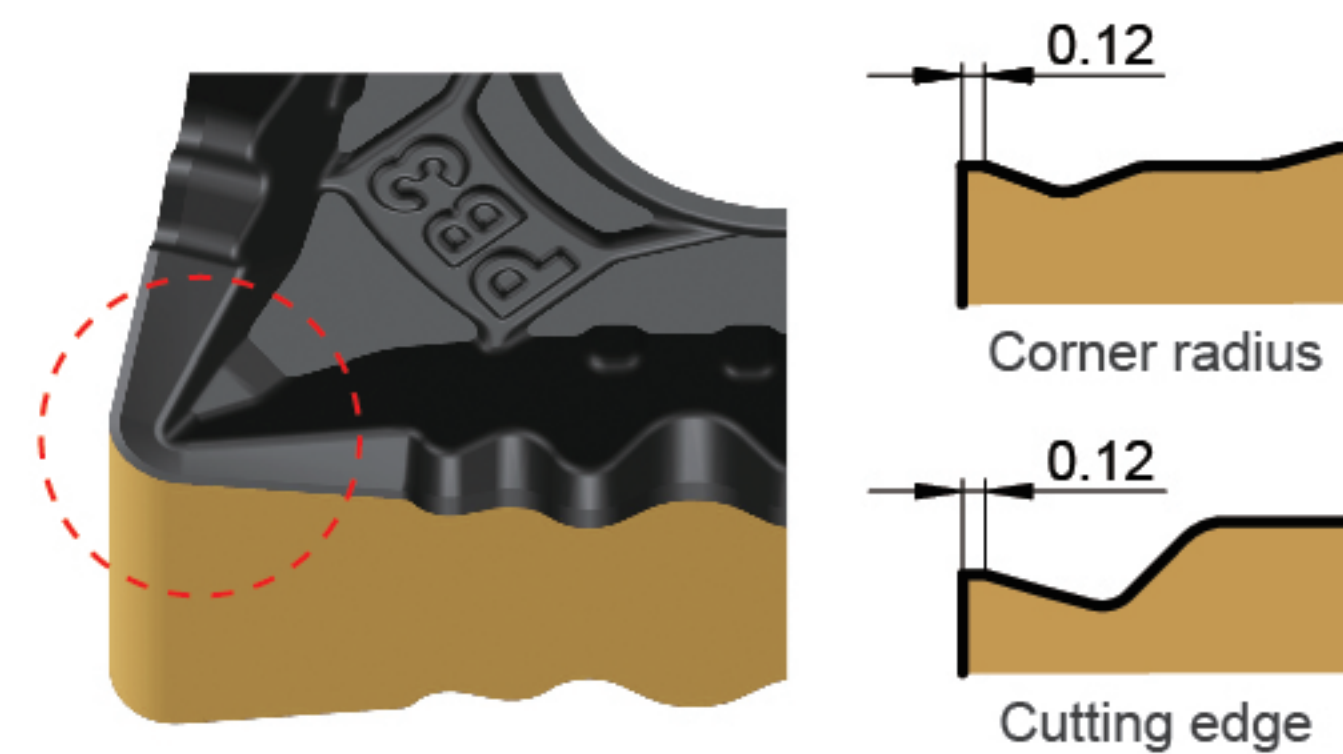
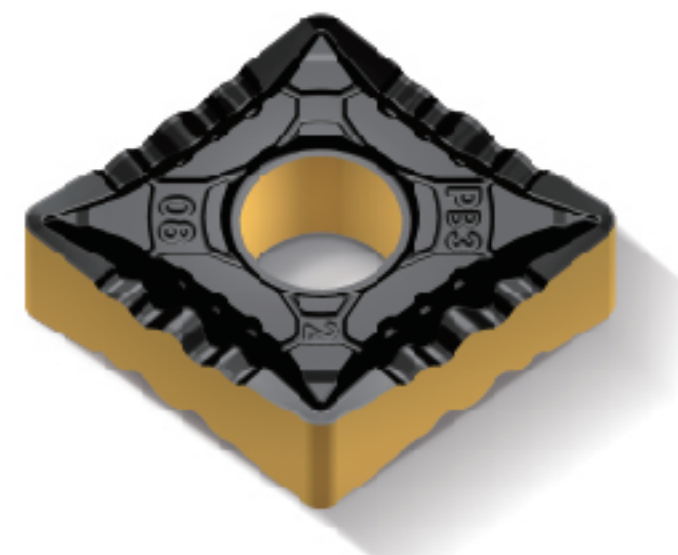
New Chip Breaker **PB3**

for semi-finishing on Steels



Grade Application

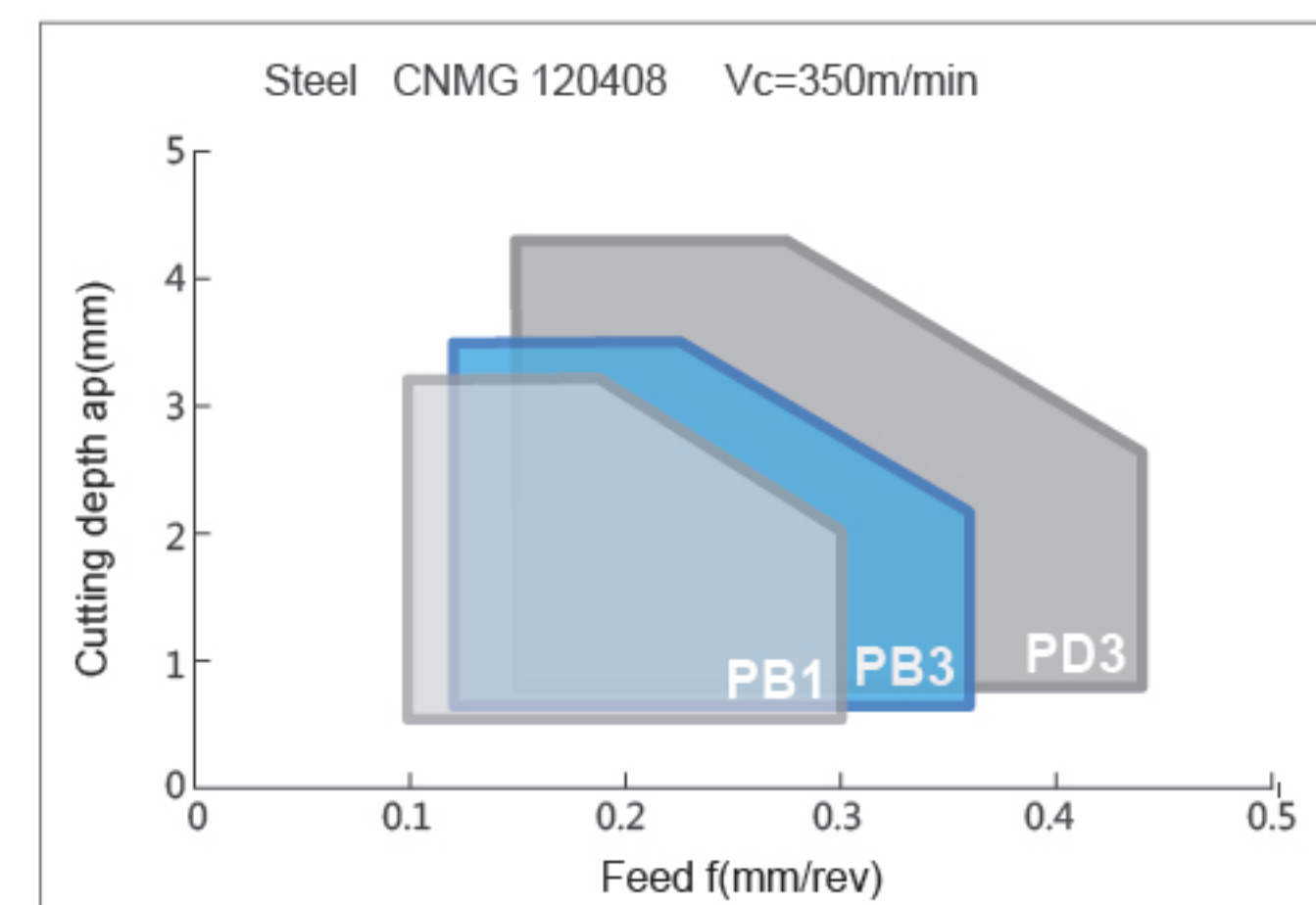
Application Range												Cutting Speed	
												m/min	
ISO	01	5	10	15	20	25	30	35	40	45	50	Vcmin	Vcmax
P			AC150P									160	458
					AC250P							120	380



Chip Breaker Features

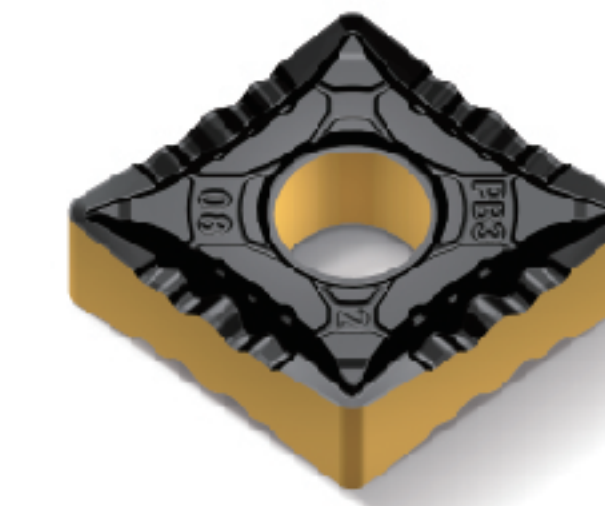
Excellent performance on small cutting depth with big feed rate, widely application range.

Superior effort on chip breaking during the spare parts machining of bearing.



Result of Chip Breaking

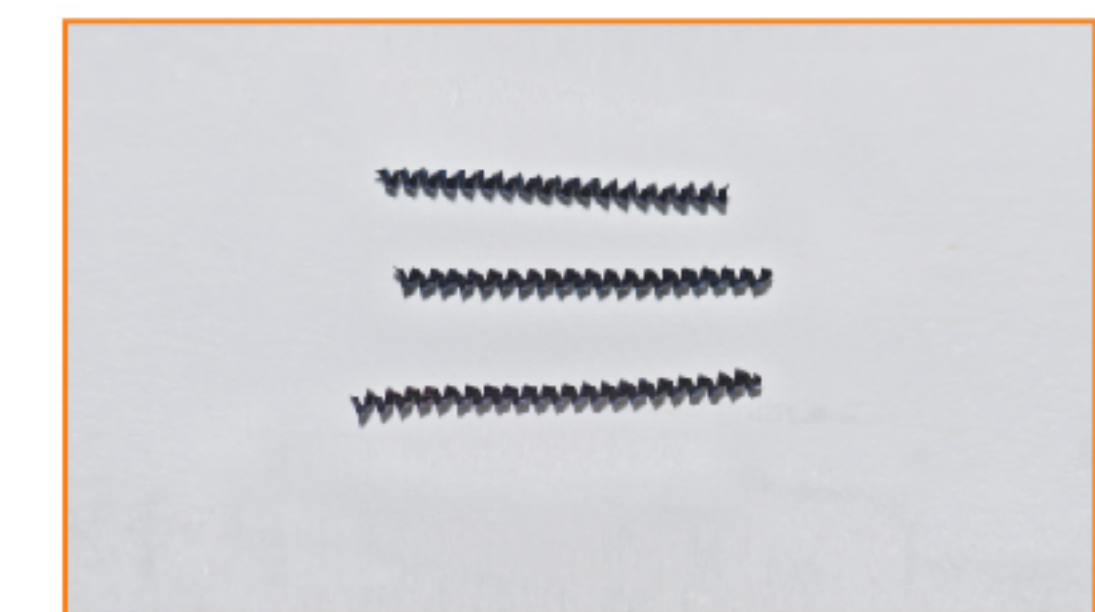
Cutting Conditions
Machined Materials: 20CrNiMo
Insert: CNMG 120408
Cutting Speed: 220m/min
Cutting Feed: 0.18mm/rev
Cutting Depth: 0.6mm
Condition: Dry cutting



Other company



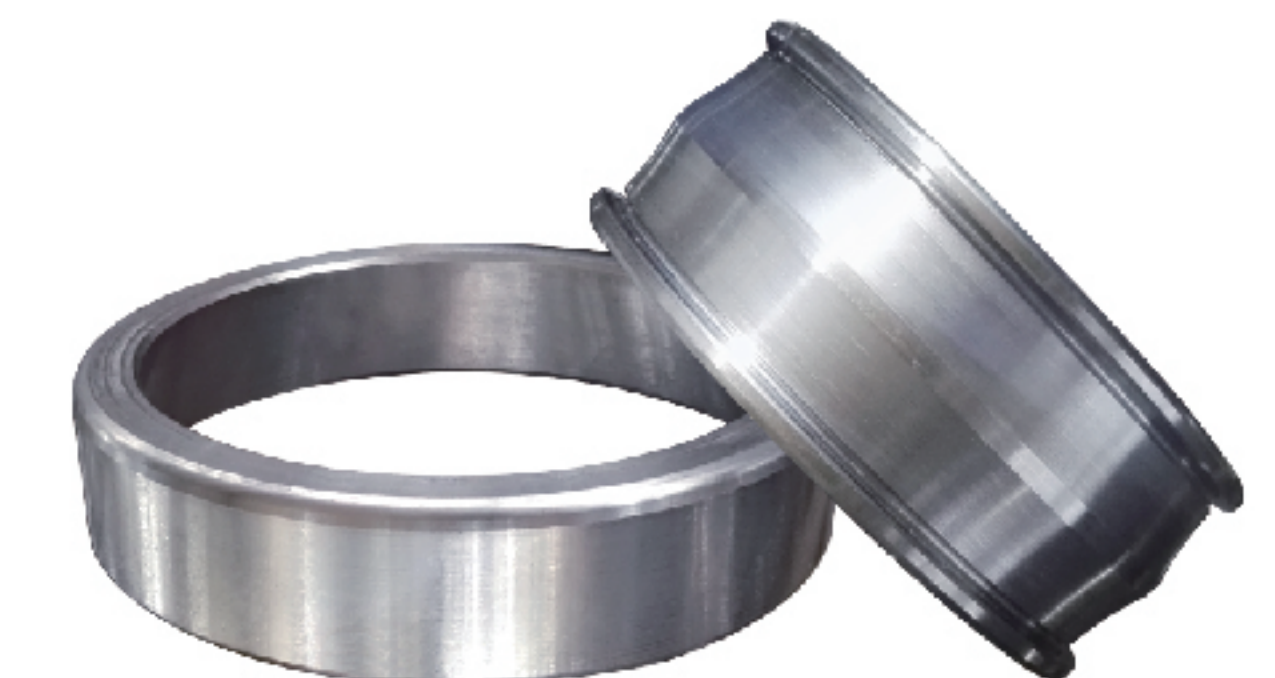
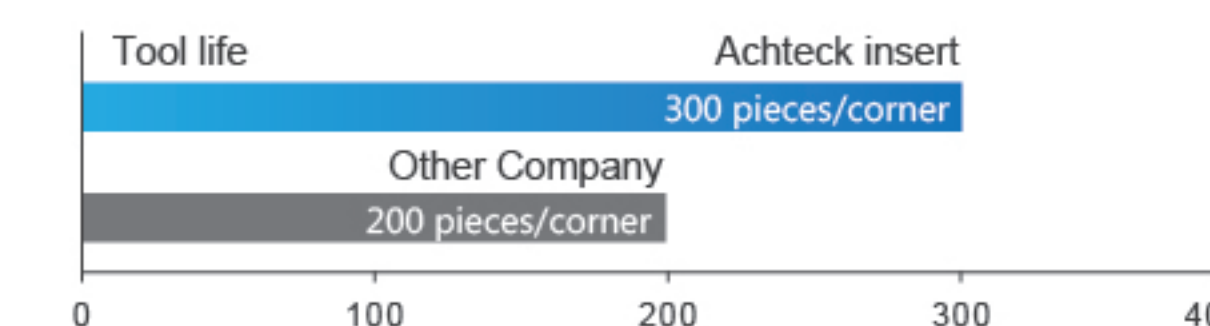
Chip breaker PB3



Machining Case

Work piece: Bearing
Material: Gr15
Insert: VNMG 160412E-PB3 AC250P
Other Company: VNMG 160412 A XX P15
Machining Type: External turning
Cutting Parameter: Vc=260m/min ap=1mm
f=0.20mm/rev

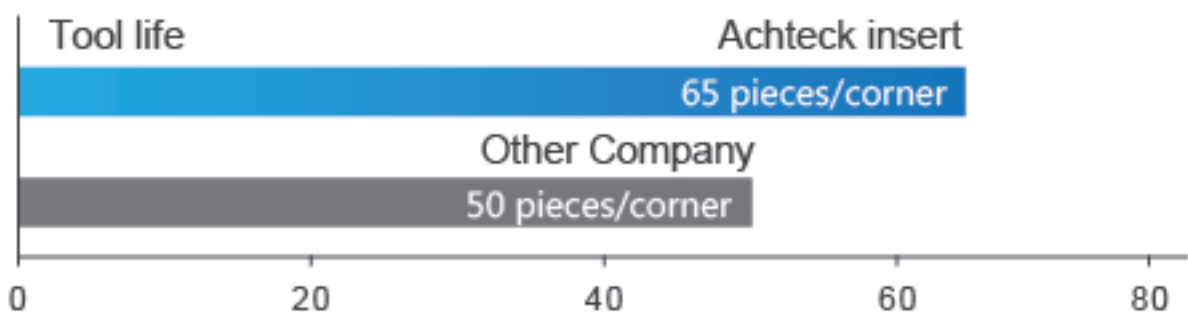
Condition: Dry cutting



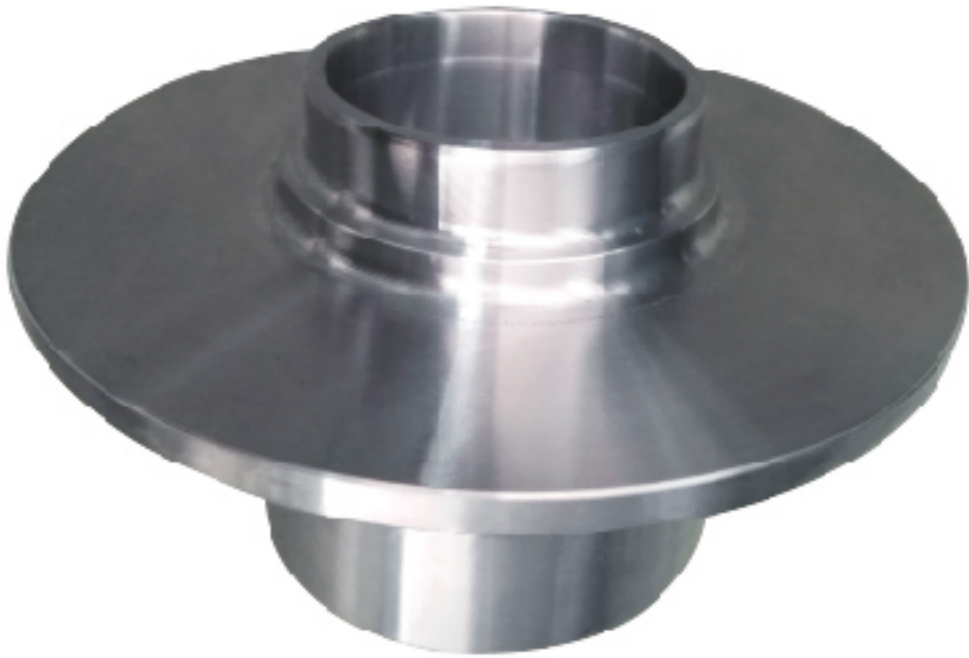
Comparison Result: Achteck tool life is 33% higher than competitor

Work piece: Joint CV Joint
Material: 65Mn
Insert: TNMG 160408E-PB3 AC150P
Other Company: TNMG 160408 B XX P15
Machining Type: End face turning
Cutting Parameter: $V_c=220\text{m/min}$ $a_p=0.7\text{-}1.0\text{mm}$
 $f=0.22\text{mm/rev}$

Condition: Wet cutting

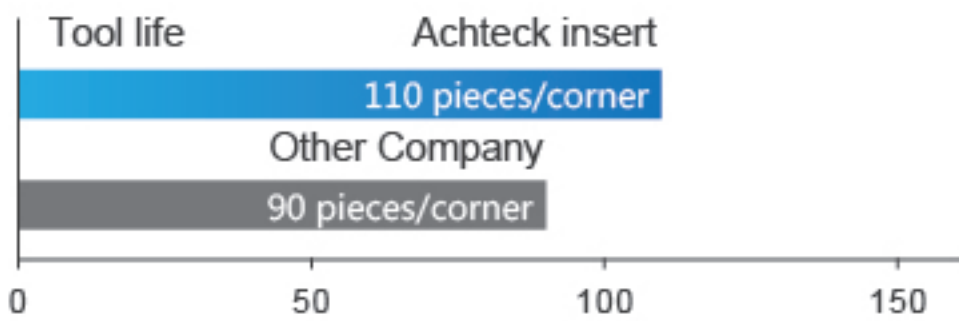


Comparison Result: Achteck tool life is 30% higher than competitor



Work piece: Wheel hub
Material: 65Mn
Insert: WNMG 080408E-PB3 AC150P
Other Company: WNMG 080408 B XX P15
Machining Type: End face turning
Cutting Parameter: $V_c=320\text{-}220\text{m/min}$ $a_p=0.8\text{mm}$
 $f=0.20\text{mm/rev}$

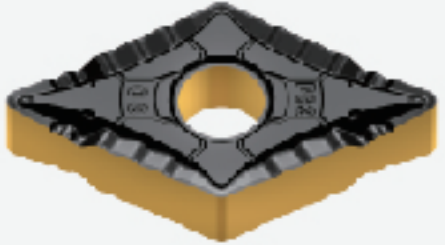
Condition: Wet cutting



Comparison Result: Achteck tool life is 30% higher than competitor



Insert Stock

Insert picture	Designation	Application parameters		Grades	
				CVD coating	
		f (mm/rev)	ap (mm)	AC150P	AC250P
	CNMG 120404E-PB3	0.06-0.18	0.3-3.5	●	●
	CNMG 120408E-PB3	0.12-0.36	0.6-3.5	●	●
	CNMG 120412E-PB3	0.18-0.54	0.9-3.5	●	●
	DNMG 150404E-PB3	0.06-0.18	0.3-3.1	●	●
	DNMG 150408E-PB3	0.12-0.36	0.6-3.1	●	●
	DNMG 150412E-PB3	0.18-0.54	0.9-3.1	●	●
	DNGM 150604E-PB3	0.06-0.18	0.3-3.1	●	●
	DNMG 150608E-PB3	0.12-0.36	0.6-3.1	●	●
	DNMG 150612E-PB3	0.18-0.54	0.9-3.1	●	●
	TNMG 160404E-PB3	0.06-0.18	0.3-3.3	●	●
	TNMG 160408E-PB3	0.12-0.36	0.6-3.3	●	●
	TNMG 160412E-PB3	0.18-0.54	0.9-3.3	●	●
	VNMG 160404E-PB3	0.06-0.18	0.3-3.1	●	●
	VNMG 160408E-PB3	0.12-0.36	0.6-3.1	●	●
	VNMG 160412E-PB3	0.18-0.54	0.9-3.1	●	●
	WNMG 080404E-PB3	0.06-0.18	0.3-2.3	●	●
	WNMG 080408E-PB3	0.12-0.36	0.6-2.3	●	●
	WNMG 080412E-PB3	0.18-0.54	0.9-2.3	●	●

● Represent for standard stock

Recommended Cutting Parameters

Cutting Materials					Achteck turning insert grade application range					
ISO	Class	Material group	Hardness/strength		AC150P			AC250P		
					P10-25			P20-35		
					CVD			CVD		
					f(mm/rev)			f(mm/rev)		
					0.08	0.2	0.35	0.08	0.2	0.35
P	A	Non-alloy steels	<600 N/mm ²	<180HBN	485	378	270	380	260	160
	B		<950 N/mm ²	<280HBN	335	243	150	240	162	100
	C	Alloyed steels	700-950 N/mm ²	200-280 HBN	315	168	120	230	155	90
	D		950-1200 N/mm ²	280-355 HBN	285	150	90	180	137	75
	E		1200-1400 N/mm ²	355-415 HBN	235	110	70	135	92	55

* The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants. (f=mm/rpm needs to adjust according to corner radius)

ACHTECK