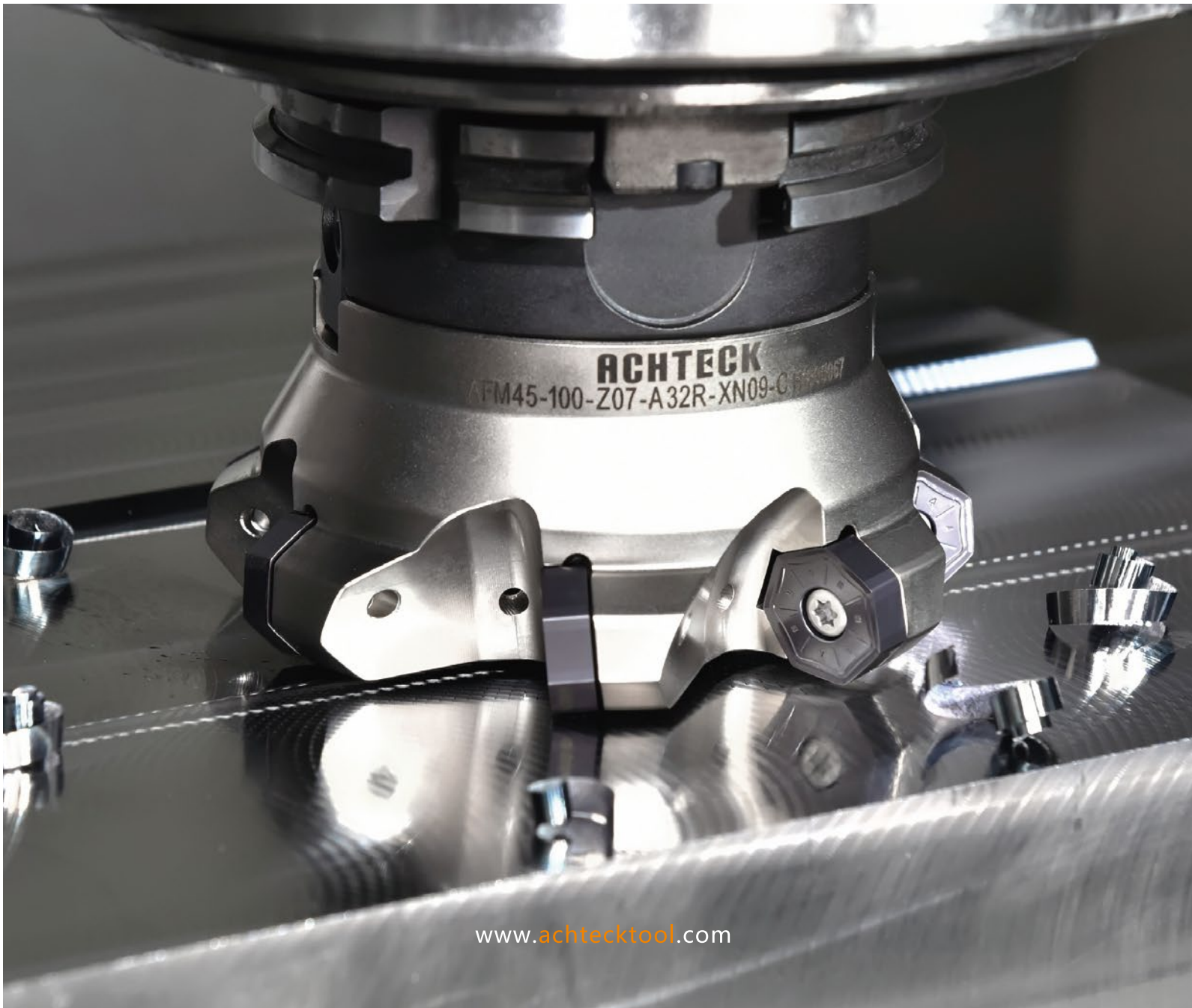
ACHTECK

NEW
PRODUCT!

AFM45-XN07/09

Solution for Face Milling

New cutter with 14 cutting edges



www.achtecktool.com

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.

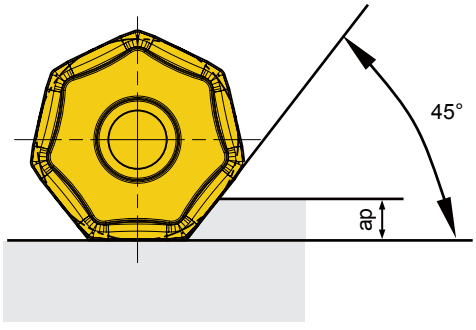
The new cutter with 45 degree entering angle is an ideal solution for face milling applications. The three geometry MM3, MM4 and MR6 are combined with Achteck's CVD and PVD coating technology provide exceptional performance, a better surface finish and can be covering to machining on steels, stainless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

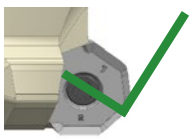


Fig.1(Right)


Fig.2(Wrong)

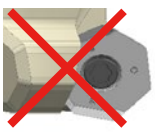


Fig.3(Wrong)

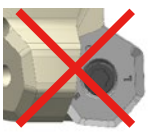
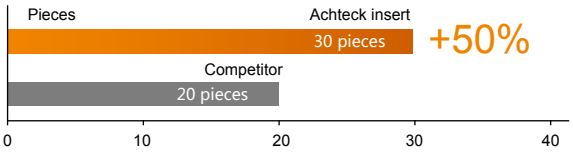


Fig.4(Wrong)

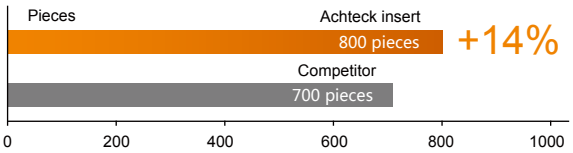
- The specification for these wiper inserts are two cutting edges right hand cutter body and two cutting edges left hand cutter body. Refer to Figure 1.
- A satisfactory surface finish can be achieved with one wiper insert. However, if the feed rate per revolution will be equal to or greater than the 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=110m/min, fz=0.15mm/Z
ap=2.0,Wet cutting

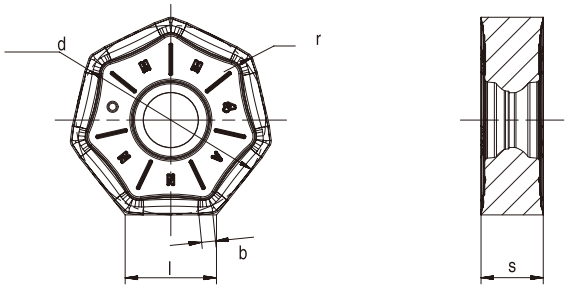


Work piece description: Cylinder head of diesel engine
Material: Grey cast iron
Hardness: 180HB
Insert: XNMU090612-MR6 AC301K
Cutter description: AFM45-160-Z20-A40R-XN09-W
Cutting parameters: vc =226 m/min,fz =0.26mm/Z
ap =2.5~4mm,dry cutting



Insert stock item

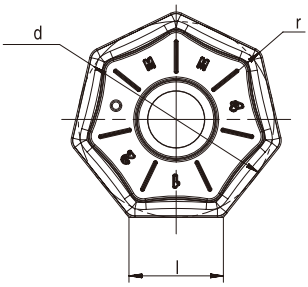
XN□U 07/09ANN

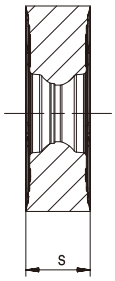


Insert	Designation	Dimensions (mm)					Grades					
							CVD coated		PVD coated			
		l	d	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	XNGU 0705ANN-MM3	7.0	14.5	5.4	0.8	1.1		●	●	●		
	XNGU 0705ANN-MM4	7.0	14.5	5.4	0.8	1.1		●	●			
	XNMU 0705ANN-MM4	7.0	14.5	5.4	0.8	1.1	●	●	●	●		●
	XNMU 0705ANN-MR6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

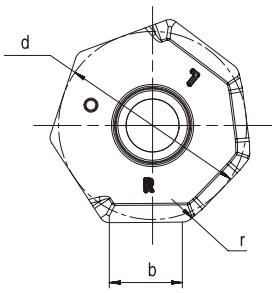
XN□U 07/09

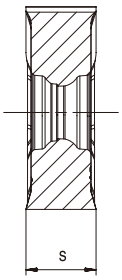


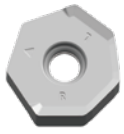


Insert	Designation	Dimensions (mm)				Grades					
						CVD coated		PVD coated			
		l	d	s	r	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	XNMU 070508-MM4	7.0	14.5	5.4	0.8		●		●	●	●
	XNMU 090612-MM4	9.2	19.0	6.25	1.2		●	●	●	●	●

XNGX 0705ANN-W



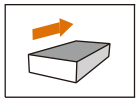


Insert	Designation	Dimensions (mm)					Grades					
							CVD coated		PVD coated			
		l	d	s	r	b	AC301P	AC301K	AP301U	AP351U	AP401U	AP351K
	XNGX 0705ANN-W	-	15	5.4	1.0	6		●	●			

Remark: ● represent for standard stock

Cutter stock item

AFM45-XN07



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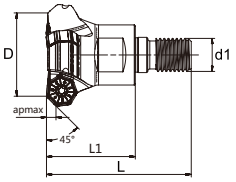
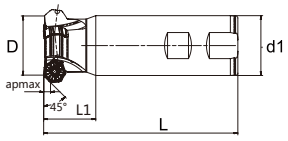
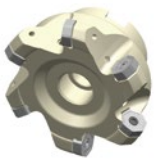
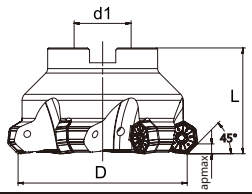


Designation	Dimension					Coolant	Z	Insert
	D	d1	L	l1	apmax			
AFM45-040-Z03-M16R-XN07-C	40	16	70	43	4.4		3	XN□U 0705..

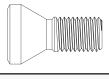
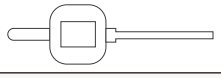
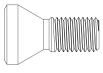
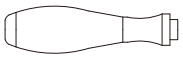


Designation	Dimension					Coolant	Z	Insert
	D	d1	L	l1	apmax			
AFM45-040-Z03-W40R-XN07-C	40	40	130	35	4.4		3	XN□U 0705..



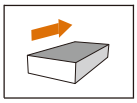


Designation	Dimension				Coolant	Z	Insert
	D	d1	L	apmax			
AFM45-040-Z03-A16R-XN07-C	40	16	40	4.4		3	□ XN U 0705..
AFM45-050-Z04-A22R-XN07-C	50	22	40	4.4		4	
AFM45-050-Z05-A22R-XN07-C	50	22	40	4.4		5	
AFM45-063-Z05-A22R-XN07-C	63	22	40	4.4		5	
AFM45-063-Z06-A22R-XN07-C	63	22	40	4.4		6	
AFM45-080-Z04-A27R-XN07-C New	80	27	50	4.4		4	
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-Z05-A32R-XN07-C New	100	32	50	4.4		5	
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-Z06-A40R-XN07-C New	125	40	63	4.4		6	
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-ϕ80	AST35120-60M	AWT-T15		3.5Nm
				
ϕ100-ϕ160	AST35120-60M	ADT-T15		
		ADT-G16	BIT-T15	
				

Remark: represent for coolant
represent for no coolant

AM45-XN09-C(Screw clamping)



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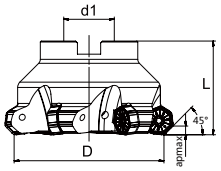
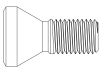
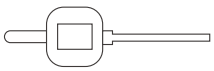
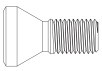
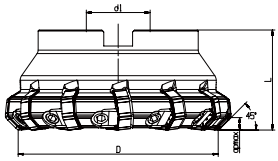
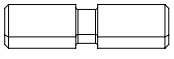


Designation	Dimension				Coolant	Z	Insert
	D	d1	L	apmax			
AFM45-063-Z05-A22R-XN09-C	63	22	40	6.0		5	XN□U0906..
AFM45-080-Z06-A27R-XN09-C	80	27	50	6.0		6	
AFM45-100-Z07-A32R-XN09-C	100	32	50	6.0		7	
AFM45-100-Z08-A32R-XN09-C	100	32	50	6.0		8	
AFM45-125-Z08-A40R-XN09-C	125	40	63	6.0		8	
AFM45-125-Z10-A40R-XN09-C	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	Torque
φ80-200	AWG-8H	AWS830F	AWH4	7.0Nm
				

Remark: represent for coolant
represent for no coolant

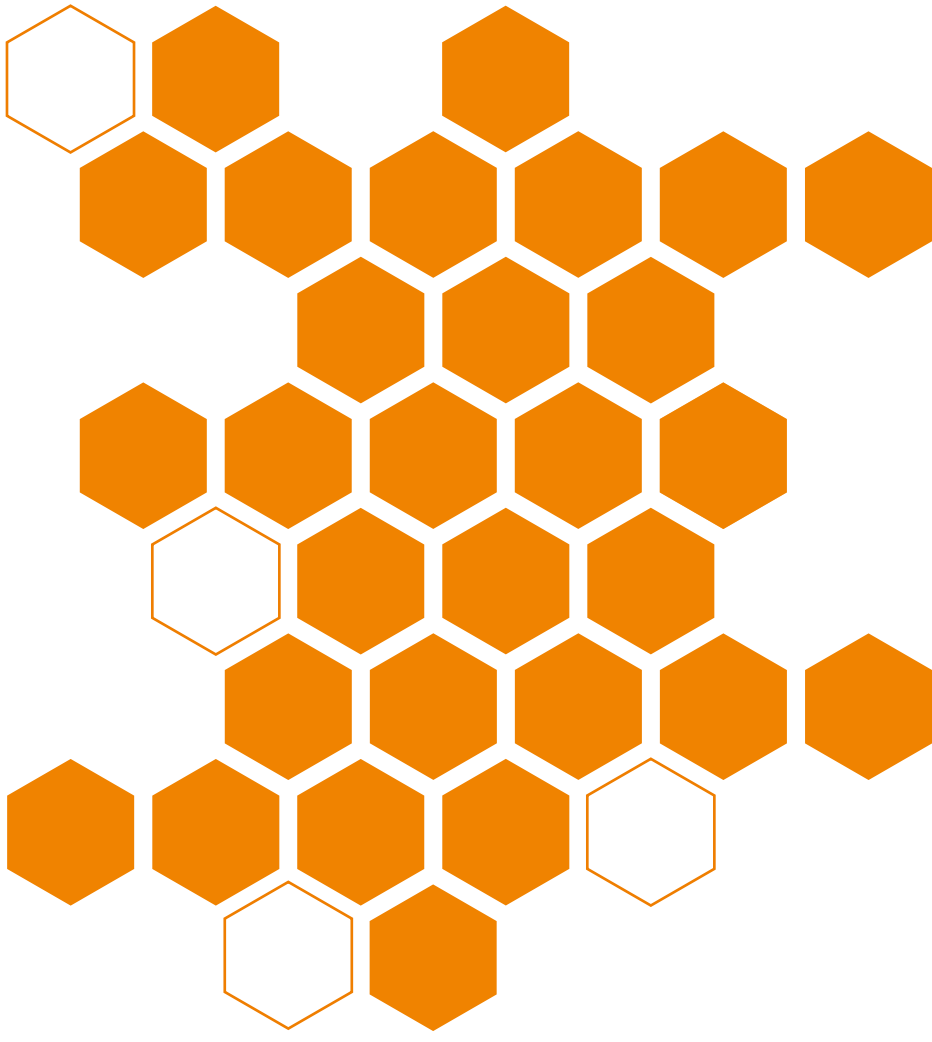
Recommended feed rate by chip breaker geometry

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
XNMU 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
XNMU 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）



GANZHOU ACHTECK TOOL TECHNOLOGY CO.,LTD.

Address:Ganzhou Economic Development Area,jiangxi,China
Tele:0086-797-8086879 Fax:0086-797-8166166 E-mail:export@achtecktool.com