MILLING TOOLS

INDEXABLE MILLING

WINTECH

Content

Indexable Milling — A

A

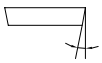
Indexable Milling

ISO Milling Indexable Inserts Identification System

Symbol	Shape	Comer Angle	Figure
H	Hexagon	120°	
O	Octagon	135°	
P	Pentagon	108°	
S	Square	90°	
T	Triangle	60°	
C	Rhombic	80°	
D		55°	
E		75°	
F		50°	
M		86°	
V		35°	
W	Trigon	80°	
L	Rectangle	90°	
A	Parellelogram	85°	
B		82°	
K		55°	
R	Round	——	

①Shape Symbol

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



②Relief Angle Symbol

Symbol	Tolerance (mm)			Tolerance(inch)		
	Corner Height (m)	Thickness (s)	I.C.Size (⊠d)	Corner Height (m)	Thickness (s)	I.C.Size (⊠d)
A	±0.005	±0.025	±0.025	±0.0002	±0.001	±0.001
F	±0.005	±0.025	±0.013	±0.0002	±0.001	±0.0005
C	±0.013	±0.025	±0.025	±0.0005	±0.001	±0.001
H	±0.013	±0.025	±0.013	±0.0005	±0.001	±0.0005
E	±0.025	±0.025	±0.025	±0.001	±0.001	±0.001
G	±0.025	±0.13	±0.025	±0.001	±0.005	±0.001
J	±0.005	±0.025	±0.05~ ±0.13	±0.0002	±0.001	±0.002~ ±0.005
K	±0.013	±0.025	±0.05~ ±0.13	±0.0005	±0.001	±0.002~ ±0.005
L	±0.025	±0.025	±0.05~ ±0.13	±0.001	±0.001	±0.002~ ±0.005
M	±0.08~ ±0.18	±0.13	±0.05~ ±0.13	±0.003~ ±0.007	±0.005	±0.002~ ±0.005
N	±0.08~ ±0.18	±0.025	±0.05~ ±0.13	±0.003~ ±0.007	±0.001	±0.002~ ±0.005
U	±0.13~ ±0.38	±0.13	±0.08~ ±0.25	±0.005~ ±0.015	±0.005	±0.003~ ±0.01

③Tolerance Symbol

①	②	③	④	⑤
S	N	E	U	12
R	D	E	T	12

④Chipbreaker /Hole Symbol				
Symbol	Hole	Hole Shape	Chipbreaker	Shape
N	Without	—	Without	
R			Single-sided	
F			Double-sided	
A	With	With Hole	Without	
M			Single-sided	
G			Double-sided	
W		With hole and one countersink 40° ~60°	Without	
T			Single-sided	
Q		With hole and two countersinks 40° ~60°	Without	
U			Double-sided	
B		With hole and one countersink 70° ~90°	Without	
H			Single-sided	
C		With hole and two countersinks 70° ~90°	Without	
J			Double-sided	
X	—	—	—	

⑤Cutting Edge Length Symbol(ISO)(mm)

R		S		C		W		T		D		V		K		I.C.Size (mm)
Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	
		03	3.97	03	4.0			06	6.9	4	4.8					3.97
		04	4.76	04	4.8			08	8.2	5	5.8					4.76
05	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5
		05	5.56	05	5.6	03	3.8	09	9.6	6	6.8					5.56
06	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6
		06	6.35	06	6.5	04	4.3	11	11	7	7.8	11	11.2			6.35
		07	7.94	08	8.1	05	5.4	13	13.8	9	9.7					7.94
08	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8
09	9.525	09	9.525	09	9.7	06	6.5	16	16.5	11	11.6	16	16.6	16	19.7	9.525
10	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10
12	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12
12	12.7	12	12.7	12	12.9	08	8.7	22	22	15	15.5	22	22.1			12.7
15	15.875	15	15.875	16	16.1	10	10.9	27	27.5	19	19.4					15.875
16	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16
19	19.05	19	19.05	19	19.3	13	13	33	33	23	23.3					19.05
20	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20
		22	22.225	22	22.6			38	38.5	27	27.1					22.225
25	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25
25	25.4	25	25.4	25	25.8			44	44	31	31					25.4
31	31.75	31	31.75	32	32.2			55	55	38	38.8					31.75
31	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	32

Insert Shape:H,O,P,S,T,C,E,M,W,R									
I.C.Size (mm)	Tolerance of I.C.Size(⊠d) (mm)		Tolerance of Corner Height(m)(mm)		I.C.Size (inch)	Tolerance of I.C.Size(⊠d) (mm)		Tolerance of Corner Height(m)(mm)	
	ClassJ,K, L,M,N	Class U	ClassJ,K, L,M,N	Class U		ClassJ,K, L,M,N	Class U	ClassJ,K, L,M,N	Class U
6.35	±0.05	±0.08	±0.08	±0.13	0.250	±0.002	±0.003	±0.003	±0.005
9.525					0.375				
12.7	±0.08	±0.13	±0.13	±0.2	0.500	±0.003	±0.005	±0.005	±0.008
15.875	±0.1	±0.18	±0.15	±0.27	0.625	±0.004	±0.007	±0.006	±0.011
19.05					0.750				
25.4	±0.13	±0.25	±0.18	±0.38	1.000	±0.005	±0.010	±0.007	±0.015
31.75	±0.15	±0.25	±0.2	±0.38	1.250	±0.006	±0.010	±0.008	±0.015
32					1.260				

Insert Shape: D					
Inscribed Circle Size		Tolerance of I.C.Size		Tolerance of Corner Height	
mm	in	mm	in	mm	in
6.35	0.250	±0.05	±0.002	±0.11	±0.004
9.525	0.375	±0.05	±0.002	±0.11	±0.004
12.7	0.500	±0.08	±0.003	±0.15	±0.006
15.875	0.625	±0.10	±0.004	±0.18	±0.007
19.05	0.750	±0.10	±0.004	±0.18	±0.007

Insert Shape: V					
Inscribed Circle Size		Tolerance of I.C.Size		Tolerance of Corner Height	
mm	in	mm	in	mm	in
6.35	0.250	±0.05	±0.002	±0.15	±0.006
9.525	0.375	±0.05	±0.002	±0.15	±0.006
12.7	0.500	±0.08	±0.003	±0.20	±0.008
15.875	0.625	±0.10	±0.004	±0.27	±0.011
19.05	0.750	±0.10	±0.004	±0.27	±0.011

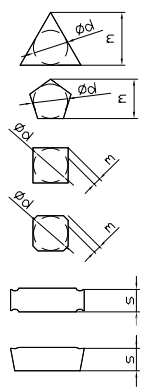
Symbol	Thickness (mm)
01	1.59
T1	1.98
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52
⑥Thickness Symbol	

⑥	⑦	⑧	⑨	⑩
06	AN	E	N -	GM
04	M0	T	-	MM

D.Theoretical diameter of inscribed circle

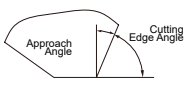
s. insert thickness

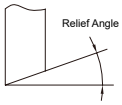
m.see Fig.



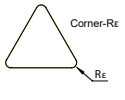
⑦Wiper Angle or Nose Radius

I





II



Symbol	Approach Angle	Cutting Edge Angle	Symbol	Relief Angle of Wiper	Symbol	Corner-R ε (mm)
A	45°	45°	D	15°	00	0.03
D	30°	60°	E	20°	02	0.2
E	15°	75°	F	25°	04	0.4
F	5°	85°	G	30°	08	0.8
P	0°	90°	P	11°	12	1.2
Z	Others		Z	Others	16	1.6
Wiper					20	2.0
					24	2.4
WA	Linear			A	28	2.8
WB	Largearc-shaped			B	32	3.2
WC	Convexarc-shaped			C	Nose Radius for Insert	
WZ	Others				00 Inch Size M0 Metric Size	

⑧Major cutting edge

Symbol	Description	Shape
F	Sharp Edge	
E	R-Honed	
T	Chamfer	
S	Chamfer and R-Honed	

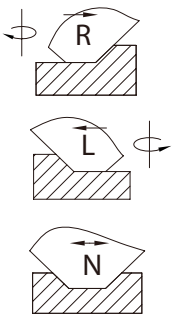
⑩Chipbreaker Symbol

Symbol	Machining Condition
PL	Light Cutting for Steel
PM	Medium Cutting for Steel
PR	Rough Cutting for Steel
KM	Medium Cutting for Cast Iron
KR	Rough Cutting for Cast Iron
MM	Medium Cutting for Stainless Steel

Detailed Reference : Designation System for Milling Chipbreaker

⑨Direction

Symbol	Hand
R	Right
L	Left
N	Neutral



Milling Toos Identification System

MF A 1 45 – 160 R

① ② ③ ④ ⑤ ⑥

①Milling Tool Type		
Face Milling	MF	General Face Milling
	MV	Tangential Face Milling
Shoulder Milling	ME	General Shoulder Milling
	MH	Helical Milling
Profile Milling	MP	Rough Profile Milling
	MB	Ball nose Milling
Slot Milling	MS	Side and Face Milling
Others	MK	High Feed Milling
	MC	Chamfer Milling
	MX	Special Milling

②Series Number

③Serial Number	
1	First
2	Second

④Lead Angle	
45	45 = 45°

⑤Cutting Diameters	
160	160 = 160mm

⑥Cutting Direction	
R	Right Hand
L	Left Hand

09 C 40 (T) S E 13 (M)

⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭

⑦No. of teeth	
09	9

⑧Type of Coupling	
A	A type
B	B type
C	C type
D	D type
M	Threaded Interface
P	Straight Shank
W	Weldon Shank
BT	BT type

⑨Coupling Size	
40	40 = 40mm

⑩Neck type	
T	Cone neck

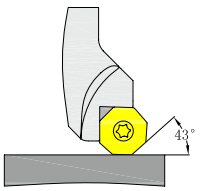
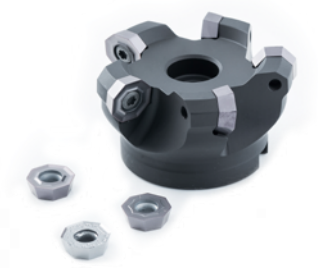
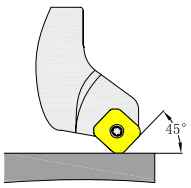
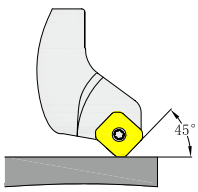
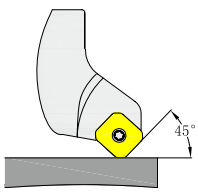
⑪ Insert Shape	
V	35° Rhombic
D	55° Rhombic
C	80° Rhombic
S	Square
T	Triangle
R	Round
L	Rectangle

⑫Insert Clearance Angle	
N	0°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°

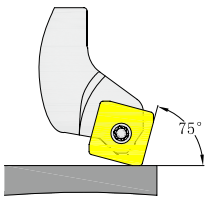
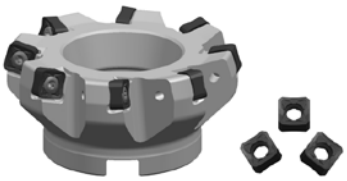
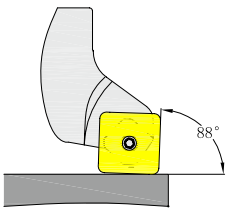
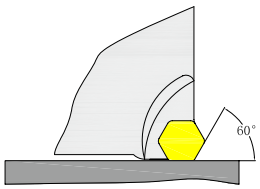
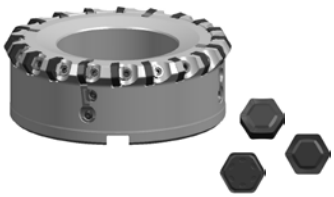
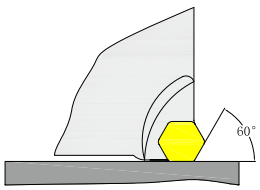
⑬Cutting Edge Length	
12	12 = 12mm

⑭Body Length	
S	Short
M	Normal
L	Long

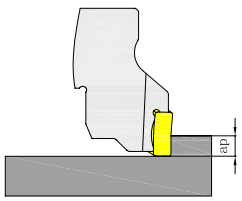
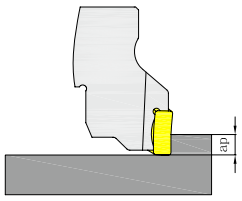
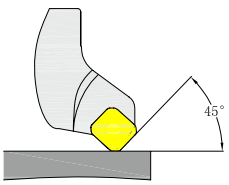
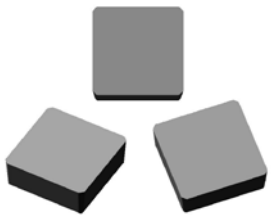
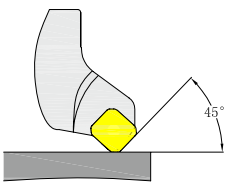
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
FACE MILLING	P M K N S  OD06:ap_{max}=4.0mm	OD*T P024	MFA143 (Φ40-Φ200)		Positive insert with max cutting edges. Variety of grades and chip breakers allow application on wide range of materials.
	P M K S  SE13:ap_{max}=4.0mm	SE*T P028	MFA145 (Φ50-Φ125)		Positive insert with 4 edges for reduced load. Variety of grades and chip breakers allow application on wide range of materials.
	P M K N S  SN12:ap_{max}=3.0mm	SN*U P033	MFB145 (Φ50-Φ315)		Negative insert combo with square shape provides high economy and ideal approach. Variety of grades and chip breakers allow application on wide range of materials. Availablity of a wiper geometry makes it a comrehensive series.
	P M K N S  SN12:ap_{max}=3.0mm		MFB245 (Φ50-Φ315)		

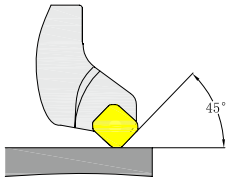
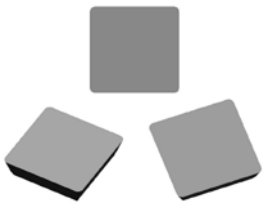
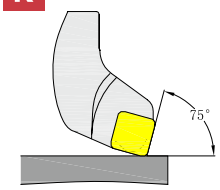
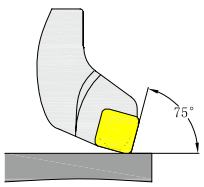
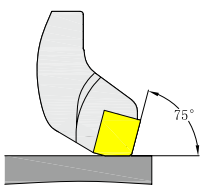
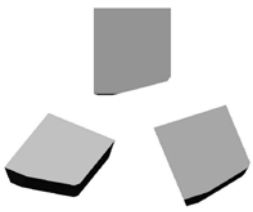
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
FACE MILLING	P M K S  SN12:ap_{max}=5.0mm	SN*U	MFB275 (Φ50-Φ315)		Negative insert combo with square shape provides high economy and ideal approach. Variety of grades and chip breakers allow application on wide range of materials. Availablity of a wiper geometry makes it a comrehensive series.
	P M K S  SN12:ap_{max}=7.0mm	P033	MFB288 (Φ50-Φ315)		
	K  HN09:ap_{max}=8.0mm	HN*X	MFB160 (Φ125-Φ315)		Negative insert with 12 edges with flat seating area for high contact area. Wedge clamp cutters provide high rigidity clamping for tough applications. Best suited for cast irons face milling.
	K  HN09:ap_{max}=8.0mm	P042	MFB260 (Φ80-Φ315)		

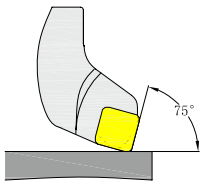
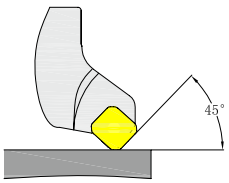
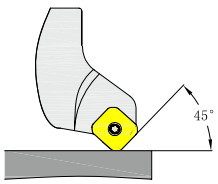
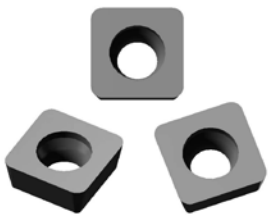
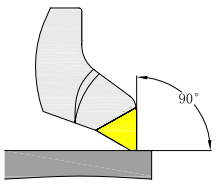
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
FACE MILLING	P M K S  LN11:ap_{max}=5.0mm LN15:ap_{max}=7.0mm	LN*T P046	MVA190 (Φ40-Φ315)		Tangential mounted inserts. High rigidity due to mounting plus high rake. Suitable on heavy load applications. Many grades allow application on a host of materials.
	P M K S  LN15:ap_{max}=7.0mm		MVA290 (Φ80-Φ250)		
	P K  SB12:ap_{max}=5.0mm	SBEX P054	-		ISO face milling inserts of convenional design. Used on low power machines with medium rigidity.
	P K  SE12:ap_{max}=5.0mm SE15:ap_{max}=6.5mm	SEEN SEMN SEEX P054	-		

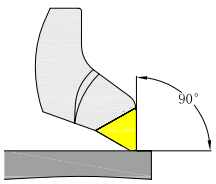
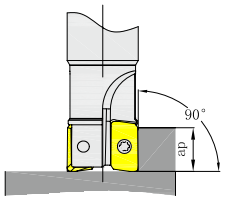
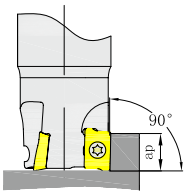
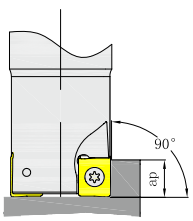
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
FACE MILLING	P K  SE12:ap_{max}=5.0mm	SEEN-R P055	-		ISO face milling inserts of convenional design. Used on low power machines with medium rigidity.
	P K  SP15:ap_{max}=6.5mm SP19:ap_{max}=8.0mm SP25:ap_{max}=10.0mm	SPEN P055	-		
	P K  SP12:ap_{max}=9.5mm SP15:ap_{max}=11.5mm SP19:ap_{max}=14.0mm	SPKN P056	-		
	P K  SP15:ap_{max}=11.5mm	SPEN-W P056	-		

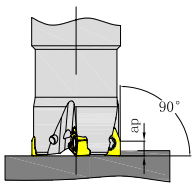
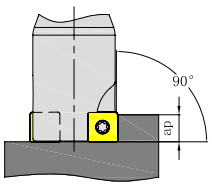
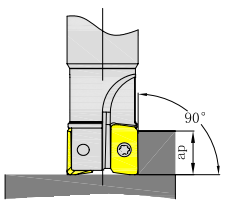
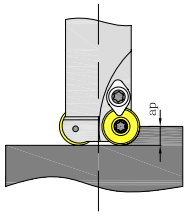
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
FACE MILLING	P  SP12:ap_{max}=9.5mm	SPER P057	-		ISO face milling inserts of convenional design. Used on low power machines with medium rigidity.
	P K  SP15:ap_{max}=6.5mm	SPNR P057	-		
	P K  SP09:ap_{max}=3.5mm SP12:ap_{max}=5.0mm SP15:ap_{max}=6.5mm	SPCW P058	-		
	P K  TP16:ap_{max}=22.0mm TP22:ap_{max}=30.0mm	TPER TPKR TPKN P059	-		

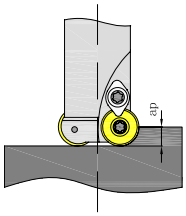
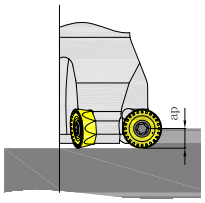
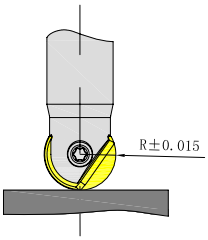
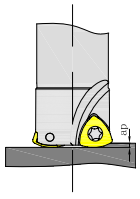
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
FACE MILLING	P  TP22:ap_{max}=30.0mm	TPNR P060	-		ISO face milling inserts of convenional design. Used on low power machines with medium rigidity.
SHOULDER MILLING	P M K N S H  AP11:ap_{max}=9.0mm AP16:ap_{max}=14.0mm	APM(G)T P061	MEA190 （Φ16-Φ250）		A cutting edge square shoulder milling with high positive rake. 1st choice for dieand mould applications. Wide variety grades host of materials.
	P M K N S H  AP11:ap_{max}=9.0mm AP16:ap_{max}=14.0mm	APK(E)T P064	MEB/MHB190 （Φ16-Φ200）		2 cutting square shoulder milling with high positive rake. True 90° with a range of corner radii. Wide variety grade-host of materials.
	P M K S H  AN12:ap_{max}=9.0mm AN16:ap_{max}=14.0mm	ANKX P069	MEC/MHC190 （Φ32-Φ200）		Double faced shoulder milling insert. True ° Strong edge design. Wide variety grade-wide application.

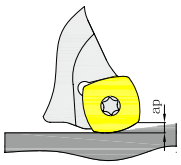
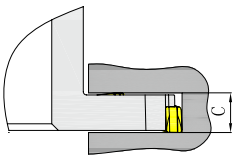
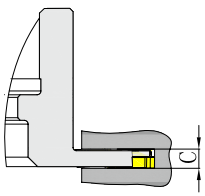
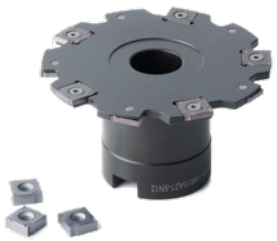
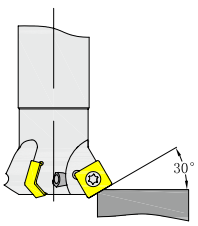
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
SHOULDER MILLING	P M K S  WNGU04:ap_{max}=4.0mm WNGU08:ap_{max}=7.5mm	WNGU P073	MEE190 (Φ20-Φ200)		Double side 6 cutting edge shoulder milling. Strong edge for heavy cutting. 2 Sizes of inserts make application easier.
	P M K S H  SD14:ap_{max}=9.0mm	SDKT P076	MES190 (Φ40-Φ315)		4 cutting edge positive rake insert. Reduced cutting load in shoulder milling. Wide grades variety and cutter diameters.
	K  XP16:ap_{max}=14.0mm	XPHT P079	-		2 cutting edge shoulder milling. High roughing capability. Especially suited to cast iron.
PROFILE MILLING	P M K S H  RD05:ap_{max}=2.5mm RD07:ap_{max}=3.5mm RD08:ap_{max}=4.0mm RD10:ap_{max}=5.0mm RD12:ap_{max}=6.0mm RD16:ap_{max}=8.0mm	RD P080	MPA100 (Φ10-Φ125)		Round insert series for profile milling. 1st choice for die and mould applications. Variety of grades-host of materials.

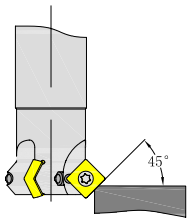
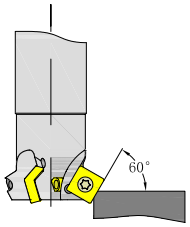
Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
PROFILE MILLING	P M K S H  RP08:ap_{max}=4.0mm RP10:ap_{max}=5.0mm RP12:ap_{max}=6.0mm RP16:ap_{max}=8.0mm	RP P083	MPB100 (Φ16-Φ125)		Round insert series for profile milling. designed for applications of aerospace. power generation and other heavy engineering.
	P M K S H  RC10:ap_{max}=5.0mm RC12:ap_{max}=6.0mm RC16:ap_{max}=8.0mm RC20:ap_{max}=10.0mm	RC P086	MPC100 (Φ20-Φ125)		
	P K H  	QTD P093	MBA100 (Φ12-Φ32)		Profile milling inserts designed with curved flute for finishing of profile parts and die & mould. Special grades for high hardness materials.
HIGH-FEED MILLING	P M K S  UD08:ap_{max}=1.0mm UD12:ap_{max}=1.5mm UP17:ap_{max}=2.0mm	UD/UP P097	MKA110 (Φ20-Φ100)		3 cutting edges with positive rake. Suited on a range of materials.

Indexable Milling Product Content

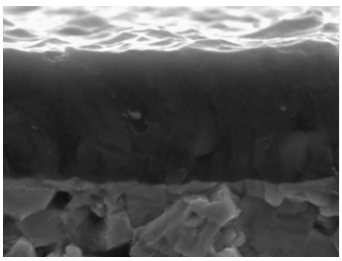
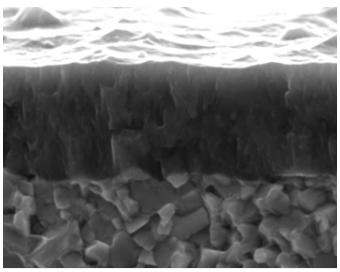
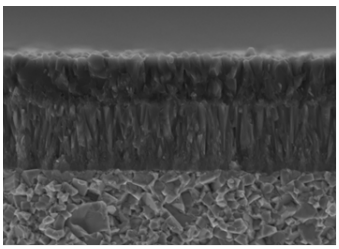
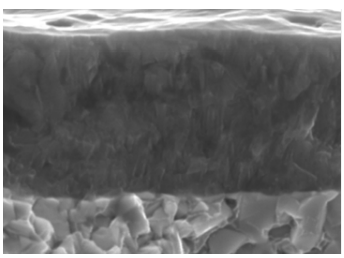
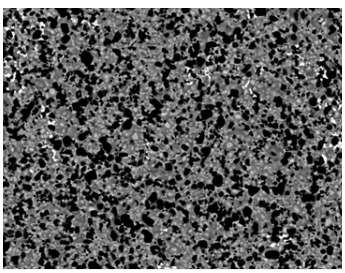
Type	Approach angle	Insert	Cutter	Shape	Profile
HIGH-FEED MILLING	P M K S  SD12:ap_{max}=2.0mm SD15:ap_{max}=3.0mm	SDMT P101	MKB113 (Φ32-Φ125)		4 cutting edges high feed with better economy and low load. 1st choice for high feed. Suited on a range of materials.
SLOT MILLING	P M K  C_{max}=13.0mm C_{min}=10.0mm	CNEU P105	MSA110-113 (Φ80-Φ160)		Suitable on steel and cast iron cases, mainly used on automotive solting
	P K  C_{max}=8.0mm C_{min}=4.0mm	SNEX P109	MSA104-108 (Φ100)		Suitable on steel and cast iron cases, and mainly used on automotive and aerospace sloting
CHAMFER MILLING	P M K S  SP09:ap_{max}=3.0mm SP12:ap_{max}=4.5mm	SPMT P111	MCA130 (Φ25-Φ32)		Suitable on chamfer, feicing and counter making for steels, stainless steel and cast iron applications.

Indexable Milling Product Content

Type	Approach angle	Insert	Cutter	Shape	Profile
CHAMFER MILLING	P M K S  SP09:ap_{max}=5.0mm SP12:ap_{max}=7.0mm	SPMT P111	MCA145 (Φ25-Φ32)		Suitable on chamfer, feicing and counter making for steels, stainless steel and cast iron applications.
	P M K S  SP09:ap_{max}=6.0mm SP12:ap_{max}=8.0mm		MCA160 (Φ25-Φ36)		

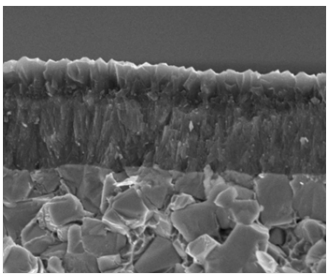
Milling Grade

Grade for **P**

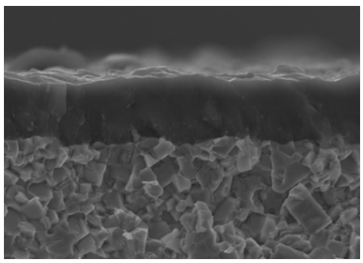
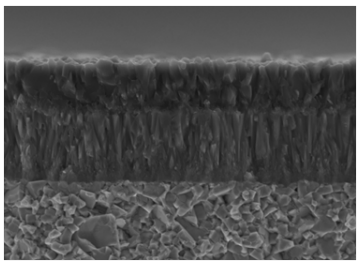
Grade	Application	Coating Structure	Advantages
A4230	Medium load general application		Upgraded TiAlN coating with good heat resisatnce and oxidation resistance, combined carbide substrate with high heat and wear resiatance, ensure stable processing
A4225	Medium load general application		Nano-structure AlCrN coating and micro carbide substarte, suiatable on steel and cast iron processing of in case of medium and low speed
P2115	Semi finishing		MT-TiCN+Al2O3 coating with micro carbide substrate, has good rigidity and wear resistance, ensure stable processing, suitable on high-speed steel processing from finishing to semi finihsing
P4225	Semi finishing, roughing		Upgraded AlCrN+TiN coating and micro carbide substrate, has good wear resistance, suitable on steel processing of finishing to light roughing
P01TM	Finishing, semi finishing		Uncoated cermet grade, has goog rigidity ,wear resisatnce and fracture resistance, suitable on various workpiece milling, first choice of steel milling

Milling Grade

Grade for M

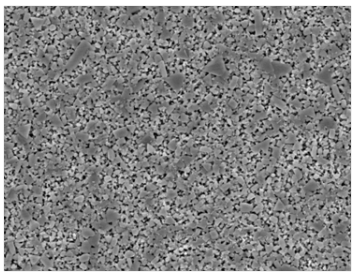
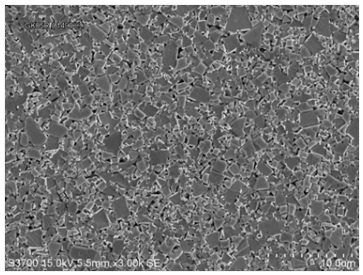
Grade	Application	Coating Structure	Advantages
M2140	Roughing		MT-TiCN+AL2O3 coating with high strength carbide substrate, has good wear resiatance, rigidity and heat stability, suitable for semi finishing to roughing of stainless and high temperature alloy

Grade for K

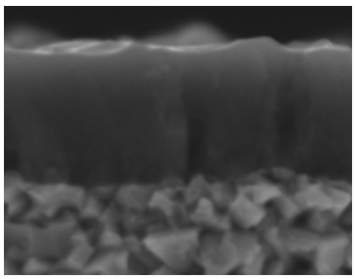
Grade	Application	Coating Structure	Advantages
K4125	Semi finishing, roughing		AiALN coating with micro carbide substarte, has good wear resiatnce and rigidity, suitable on medium to roughing of gray cast iron and nodular cast iron
K2115	Semi finishing		MT-TiCN+Al2O3 coating with micro carbide substarte, has good wear resiatnce and rigidity, ensure stable processing, suitable on medium and high speed cast iron processing in case of finishing to semi finishing

Milling Grade

Grade for N

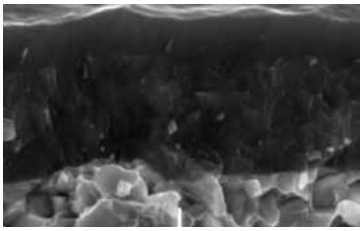
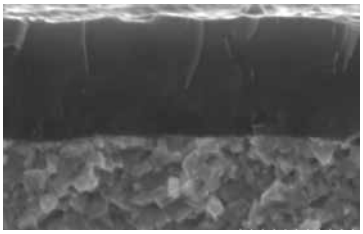
Grade	Application	Coating Structure	Advantages
A0115	Semi finishing		Uncoated grade with micro carbide substarte, suitable on Al processing with sharp edge and steel processing
N9125	Semi finishing, roughing		Uncoated grade with micro carbide substarte, good wear resistance and rigidity, suitable on semi finishing to roughing processing of copper and Aluminium

Grade for S

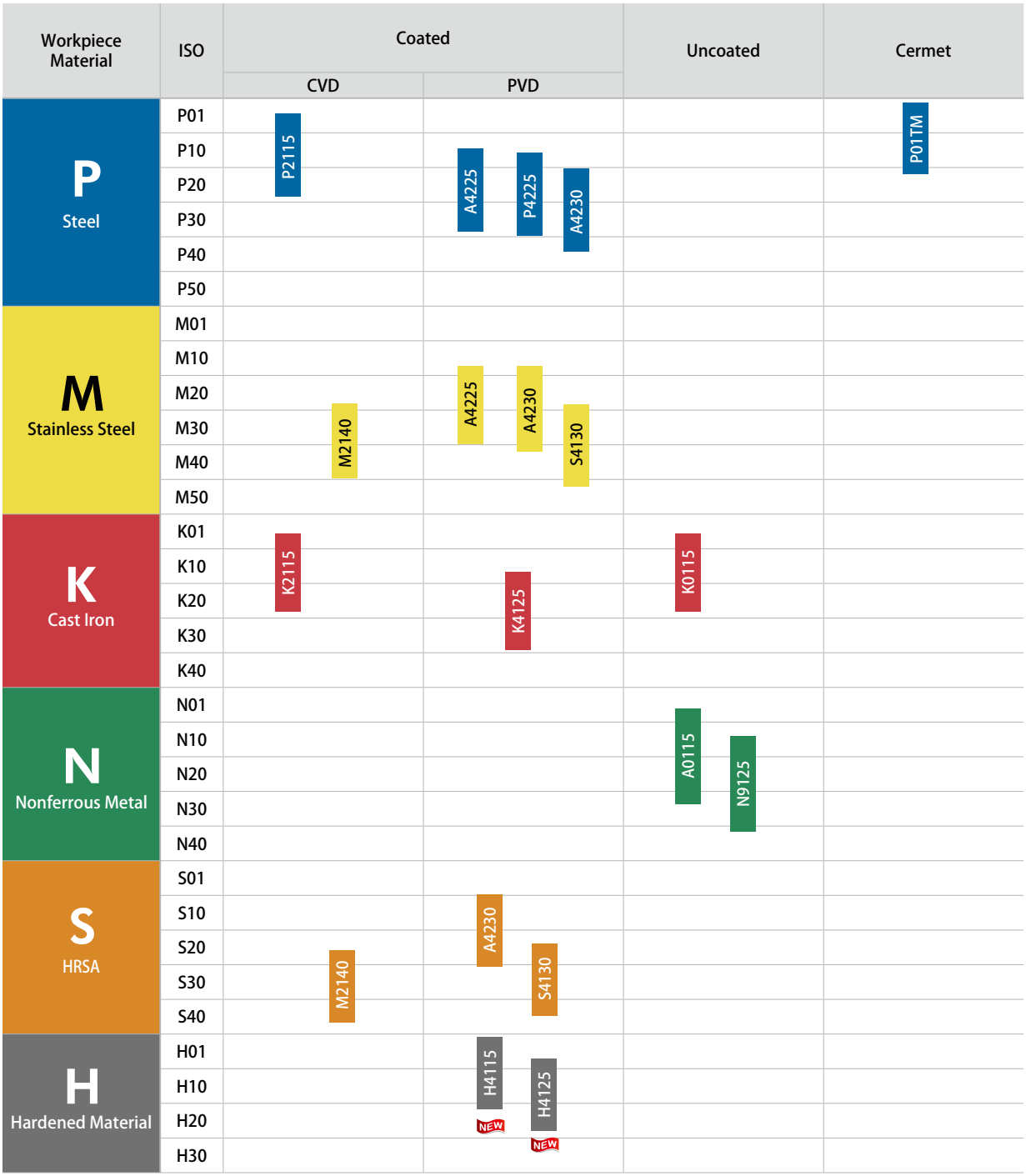
Grade	Application	Coating Structure	Advantages
S4130	Semi finishing, roughing		TiALN coating with micro carbide substarte, has good wear resiatnce and rigidity, suitable on semi finishing to roughing processing of Ti and high temperature alloy

Milling Grade

Grade for **H**

Grade	Application	Coating Structure	Advantages
H4125	Finishing, semi finishing		New TiAlCrSiNcoating with micro carbide substarte, has good oxidation resistane and hot hardness performance. Suitable on high harden processing from finishing to semi finishing
H4115	Finishing, semi finishing		New AlCrSiN coating with micro carbide substarte, has good wear resiatne and rigidity, suitable on finishing to semi finishing of common steel and mould steel

As for introduction of indexable milling frade



Pitch Type

- Choosing proper cutting tool teeth number is extremely important for balancing efficiency and precision in milling application.
- Under the same cutting speed (Vc) & feed per teeth (fz), increasing the number of cutting edges can effectively increases production efficiency, even though also increases the cutting force at the same time.
- Machine power plays an important influencing factor when selecting the number of teeth. Parameters remaining constant, higher teeth usually means more load.
- WINTECH provides three type pitch for different application.

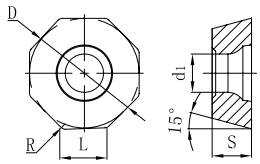
MFB145-080

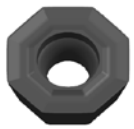
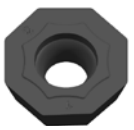
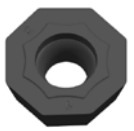
Shape			
	Coarse pitch	Close pitch	Extra Close pitch
NO. of Teeth	Z_c=5	Z_c=7	Z_c=8
Application	• The coarse-pitch cutter has higher rigidity and is suitable for unstable working conditions. • Mostly applicable in applications where chip size will be larger. The coarse-pitch facilitates a larger gullet. • Suitable for carbon steels and stainless steel.	• The close-pitch cutter has the best balance of rigidity and efficiency, most suitable for general purpose cutting of various material. • Most suitable for medium feed and medium cutting depth (ap). Medium size chip. • Also suitable for hardened steel and heat-resistance alloy.	• The extra close pitch cutter has the highest machining efficiency in stable warking conditions. • Provides better surface finish under medium feeds & cuts in comparison to other pitches. • Cuts cannot be large since higher number of teeth leads to smaller gullet size.

Face milling

OD*T

Common milling



Ordering Code		Dimension(mm)					Coated									Uncoated	Cermet
		L	D	S	d1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	ODKT060508-GL	6.5	15.875	5.56	5.56	0.8	○	●	○	○	○	○	○	○				
	ODKT060508-GM	6.5	15.875	5.56	5.56	0.8	○	●	○	○	○	●	●	○				
	ODMT060508-GM	6.5	15.875	5.56	5.56	0.8	○	●	○	○	○	○	○	○				
	ODKT060508-GH	6.5	15.875	5.56	5.56	0.8	●	○	○	○	○	○	○	○				
	ODMT060508-GH	6.5	15.875	5.56	5.56	0.8	○	○	○	○								
	ODKT060508-AL	6.5	15.875	5.56	5.56	0.8											●	
	ODKW060508-WB	6.5	15.875	5.56	5.56	0.8	○	○	○	○	○	○	○					

●Standard stock ○need reservation

OD*T Series Breaker

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting	Aluminium general processing	Wiped insert
				
GL	GM	GH	AL	WB
				
Big rake angle, narrow edge width, suitable on light processing with low cutting force	Big rake angle, light cutting, could reach high stability processing。	Big breaker width, high strength edge, good performance on roughing	Big rake angle, sharp edge, light cutting, good chipping, polishing treatment	Wiped edge design, improve surface quality

Face milling

MFA143

Arbor

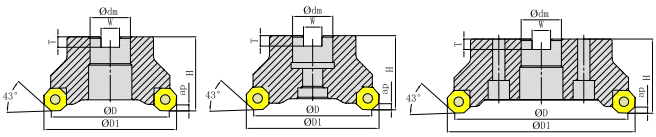
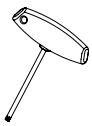


Fig1 Fig2 Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T					
MFA143040R03A16OD06	40	3	40	50	16	40	8.4	5.6	4	OD**0605		Fig1	●
MFA143050R04A22OD06	50	4	50	60	22	40	10.4	6.3	4	OD**0605		Fig1	●
MFA143063R05A22OD06	63	5	63	72	22	40	10.4	6.3	4	OD**0605		Fig1	●
MFA143080R06B27OD06	80	6	80	90	27	50	12.4	7	4	OD**0605		Fig2	●
MFA143100R07B32OD06	100	7	100	110	32	50	14.4	8	4	OD**0605		Fig2	●
MFA143125R08B40OD06	125	8	125	135	40	63	16.4	9	4	OD**0605		Fig2	●
MFA143160R10C40OD06	160	10	160	170	40	63	16.4	9	4	OD**0605		Fig3	●
MFA143200R12C60OD06	200	12	200	210	60	63	25.7	14	4	OD**0605		Fig3	●

●Standard stock ○need reservation

Spare Parts

Part name		Screw	Wrench
Shape / Common insert			
OD**0605	Specification	SI60M5X10.8-07209	TT20T
	Code	PSI60M050108-07209S	PTT20TQ

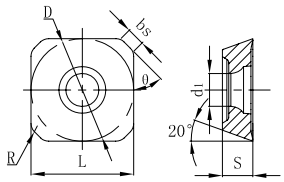
Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Feed/edge		
				Vc（m/min）	Light cutting (L)	Medium cutting（M）	Heavy cutting (H)
P	Common steel	⩽ HB180	A4225 A4230 P4225 P2115	220 (180-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)	0.3 (0.2-0.5)
	Carbon steel, alloy steel	HB180-280	A4225 A4230 P4225 P2115	200 (150-280)	0.2 (0.1-0.3)	0.25 (0.1-0.4)	0.3 (0.2-0.5)
	Carbon steel, alloy steel	HB280-350	A4225 A4230 P4225 P2115	150 (120-250)	0.2 (0.1-0.3)	0.25 (0.1-0.4)	0.3 (0.2-0.5)
M	Stainless(ferrite, martensite)	⩽ HB275	M2140	160 (100-250)	0.15 (0.1-0.3)	0.2 (0.1-0.3)	0.25 (0.2-0.4)
K	Cast iron, nodular cast iron	⩽ HB350	K4125 K2115	180 (120-250)	0.2 (0.1-0.3)	0.25 (0.1-0.4)	0.3 (0.2-0.5)
N	Non ferrous metal	HB60-210	N9125	⩾ 300	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.6)
S	Heat resistance, Ti alloy	HRC25-35	S4130	40 (30-60)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	-

Face milling

SE*T

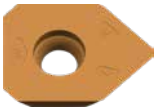
Common face milling



Ordering Code		Dimension(mm)						Coated									Uncoated	Cermet
		L	D	S	d_1	θ	bs	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SEET1204AFEN-PL	12.7	12.7	4.76	5.5	45°	2.5	●	●	○		●	○		○				●
	SEET13T3AGEN-PL	13.4	13.4	3.97	4.4	45°	1.7	●	●	○	○	●			○				
	SEET13T3AGEN-PM	13.4	13.4	3.97	4.4	45°	1.2	●	●	○	○	○	○		○				●
	SEMT13T3AGEN-PM	13.4	13.4	3.97	4.4	45°	1.2	●	○	○	○	○	○						
	SEET13T3AGSN-PH	13.4	13.4	3.97	4.4	45°	1.3	○	●	○	○	○	○		○				
	SEMT13T3AGSN-PH	13.4	13.4	3.97	4.4	45°	1.3	○	○	○	○	○	○						
	SEET13T3AGSN-KM	13.4	13.4	3.97	4.4	45°	1.3	●	○	○			●	○					
	SEET13T3AGSN-KH	13.4	13.4	3.97	4.4	45°	1.3	●	○	○			●	○					
	SEET13T3AGFN-AL	13.4	13.4	3.97	4.4	45°	2.2											○	
	SEET13T3AGEN-WB	13.4	13.4	4.76	3.97	45°	2.37	○	●	○		○	○	○	○				

●Standard stock ○need reservation

SE*T Series Breaker

General workpiece light cutting	General workpiece mediumt cutting	General workpiece heavy cutting	Cast iron medium cutting	Cast iron heavy cutting	Aluminium general cutting	Wiped insert
						
PL	PM	PH	KM	KH	AL	WB
						
Big rake angle and narrow width design, suitable on light cutting of low cutting force and low feed	Big rake angle design, light cutting, stable processing	High strength edge, good performanc e on continuous cutting and black surface removal processing	Cast iron grade, could satisfy most cast iron mesium cutting	Cast iron heavy load breaker, good performanc e on continuous cutting and black surface removal processing	B ig rake angle design, light cutting,polishing, good chipping	Bid radius wiped edge, improve surface quality

Face milling

MFA145

Arbor

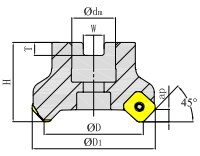


Fig1

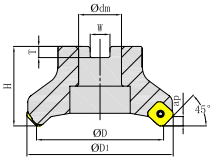


Fig2

COARSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFA145050R03A22SE13	50	3	50	63	22	40	10.4	6.3	4	SE*T13T3			Fig1	○
MFA145063R04A22SE13	63	4	63	76	22	40	10.4	6.3	4	SE*T13T3			Fig1	●

●Standard stock ○need reservation

CLOSE PITCH

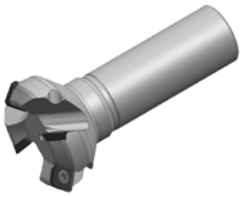
Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFA145050R04A22SE13	50	4	50	63	22	40	10.4	6.3	4	SE*T13T3			Fig1	●
MFA145063R05A22SE13	63	5	63	76	22	40	10.4	6.3	4	SE*T13T3			Fig1	●
MFA145080R06B27SE13	80	6	80	93	27	50	12.4	7	4	SE*T13T3	√		Fig2	●
MFA145100R07B32SE13	100	7	100	113	32	50	14.4	8.3	4	SE*T13T3	√		Fig2	●
MFA145125R08B40SE13	125	8	125	138	40	50	16.4	8.3	4	SE*T13T3	√		Fig2	●

●Standard stock ○need reservation

Face Milling

MFA145

Cylinder straight shank type



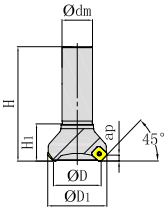


Fig3

COARSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	H1						
MFA145050R03P32SE13	50	3	50	63	32	120	39	4	SE*T13T3			Fig3	○
MFA145063R04P32SE13	63	4	63	76	32	120	39	4	SE*T13T3			Fig3	○

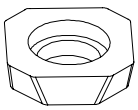
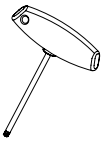
●Standard stock ○need reservation

CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	H1						
MFA145050R04P32SE13	50	4	50	63	32	120	39	4	SE*T13T3			Fig3	○
MFA145063R05P32SE13	63	5	63	76	32	120	39	4	SE*T13T3			Fig3	○

●Standard stock ○need reservation

Spare part chart

Name		Shim	Screw for shim	Shim screw Wrench	Insert shim	Insert screw wrench	
Insert \ Shape							
SE*T13T3	Specification	--	--	TH35L	SI60M3.5X8.0-05410	TT15P	TT15T
	Order code	--	--	PTH35LB	PSI60M035080-05410B	PTT15PB	PTT15TB
SE*T13T3	Specification	DSE1300S	SSAM5X7.0	TH35L	SI60M3.5X11.6-05410	TT15P	TT15T
	Order code	H0K30DSE1300S	PSSAM050070B	PTH35LB	PSI60M035116-05410B	PTT15PB	PTT15TB

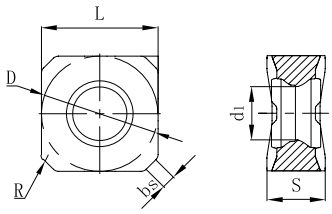
Recommended cutting data

Workpiece		Hardness	Grade	Cutting speed	Feed/Teeth		
				Vc（m/min）	Light cutting（L）	Medium cutting（M）	Heavy cutting（H）
P	Soft stee (SS400、S10C)	⩽ HB180	A4225 A4230 P4225 P2115	250 (210-350)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
P	Carbon stell, alloy steel (S45C、SCM440)	HB180-280	A4225 A4230 P4225 P2115	220 (170-270)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
P	Carbon stell, alloy steel (S45C、SCM440)	HB280-350	A4225 A4230 P4225 P2115	140 (100-180)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
M	Stainless（SUS304）	⩽ HB275	M2140	180 (130-250)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
K	Cast iron, nodular cast iron (FC250、FCD400)	⩽ HB350	K2115 K4125	180 (130-250)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
N	Aluminium	HB60-210	N9125	⩾ 300	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
S	Heat resiatance alloy	HRC25-35	S4130	40 (20-50)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	--

Face milling

SN*U

Common face milling insert



Ordering Code	Dimension(mm)						Coating grade									Uncoated	Cermet
	L	D	S	bs	d1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
 SNEU1206ANEN-GL	12.7	12.7	6.35	2.2	6.0	0.8	○	●	○	○	○	○	●	○				
SNEU1206ANFN-NL	12.7	12.7	6.35	2.2	6.0	0.8											●	
 SNEU1206ANEN-GM	12.7	12.7	6.35	2.2	6.0	0.8	●	●	○	○	○	●	●	●				
SNMU1206ANEN-GM	12.7	12.7	6.35	2.2	6.0	0.8	●	○	○	○	○	○	○	●				
 SNEU1206ANSN-GH	12.7	12.7	6.35	2.2	6.0	0.8	○	●	○	○	○	●	●					
SNMU1206ANSN-GH	12.7	12.7	6.35	2.2	6.0	0.8	○	●	○	○	○	○	○					
 SNEU1206ANEN-GW	12.7	12.7	6.35	5.6	6.0	0.8	○	○	○	○	○	○	○	○				
 SNEU1206ENEN-GM	12.7	12.7	6.35	1.4	6.0	0.8	○	●	○	○	○	●	○	○				
SNMU1206ENEN-GM	12.7	12.7	6.35	1.4	6.0	0.8		●				○						
 SNEU1206ZNEN-GM	12.7	12.7	6.35	1.1	6.0	0.8	○	●	○	○	○	●	●	○				
SNMU1206ZNEN-GM	12.7	12.7	6.35	1.1	6.0	0.8		●				○	○					
 SNEU120612-GM	12.7	12.7	6.35	--	6.0	1.2	○	●	○	○	○	●	○					
SNMU120612-GM	12.7	12.7	6.35	--	6.0	1.2	○	○	○	○	○	○	○					
SNMU120616-GM	12.7	12.7	6.35	--	6.0	1.6						○	○					
SNMU120620-GM	12.7	12.7	6.35	--	6.0	2.0						○						

●Standard stock ○need reservation

SN*U Series breaker

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting	Aluminium general cutting	Wiped edge
				
GL	GM	GH	NL	GW
				
Big rake angle and narrow width design, suitable for light processing of low cutting force and low efficiency	Big rake angle design, light cutting, could reach stable processing in most cases	High strength edge, good performance on continuous and black surface removal processing	Big rake angle,sharp edge, light cutting, polishing treatment, good chipping. Suitable for aluminium machining	Big radius wiped edge, inprove surface quality

Face milling

MFB145

Arbor(with Shim)

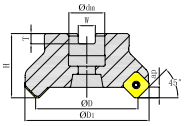


Fig1

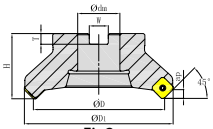


Fig2

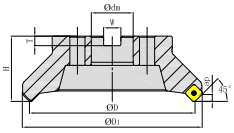


Fig3

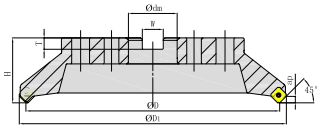


Fig4

COARSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB145050R03A22SN12	50	3	50	66	22	40	10.4	6.3	3	SN*U1206AN*N	√	√	Fig1	○
MFB145063R04A22SN12	63	4	63	79	22	40	10.4	6.3	3	SN*U1206AN*N	√	√	Fig1	●
MFB145080R05A27SN12	80	5	80	96	27	50	12.4	7.0	3	SN*U1206AN*N	√	√	Fig1	●
MFB145100R06B32SN12	100	6	100	116	32	50	14.4	8.0	3	SN*U1206AN*N	√		Fig2	●
MFB145125R07B40SN12	125	7	125	141	40	63	16.4	9.0	3	SN*U1206AN*N	√		Fig2	●
MFB145160R08C40SN12	160	8	160	176	40	63	16.4	9.0	3	SN*U1206AN*N	√		Fig3	●
MFB145200R10C60SN12	200	10	200	216	60	63	25.7	14	3	SN*U1206AN*N	√		Fig3	●
MFB145250R12C60SN12	250	12	250	266	60	63	25.7	14	3	SN*U1206AN*N	√		Fig3	○
MFB145315R15D60SN12	315	15	315	331	60	80	25.7	14	3	SN*U1206AN*N	√		Fig4	○

●Standard stock ○need reservation

CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Ap-max	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB145050R04A22SN12	50	4	50	66	22	40	10.4	6.3	3	SN*U1206AN*N	√	√	Fig1	●
MFB145063R05A22SN12	63	5	63	79	22	40	10.4	6.3	3	SN*U1206AN*N	√	√	Fig1	●
MFB145080R07A27SN12	80	7	80	96	27	50	12.4	7.0	3	SN*U1206AN*N	√	√	Fig1	●
MFB145100R08B32SN12	100	8	100	116	32	50	14.4	8.0	3	SN*U1206AN*N	√		Fig2	●
MFB145125R10B40SN12	125	10	125	141	40	63	16.4	9.0	3	SN*U1206AN*N	√		Fig2	●
MFB145160R12C40SN12	160	12	160	176	40	63	16.4	9.0	3	SN*U1206AN*N	√		Fig3	●
MFB145200R14C60SN12	200	14	200	216	60	63	25.7	14	3	SN*U1206AN*N	√		Fig3	○
MFB145250R16C60SN12	250	16	250	266	60	63	25.7	14	3	SN*U1206AN*N	√		Fig3	○
MFB145315R20D60SN12	315	20	315	331	60	80	25.7	14	3	SN*U1206AN*N	√		Fig4	○

●Standard stock ○need reservation

Face milling

MFB145

Arbor(with Shim)

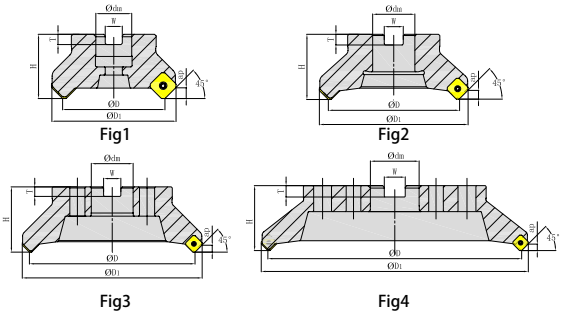


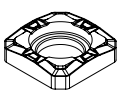
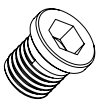
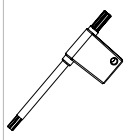
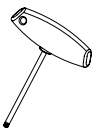
Fig1 Fig2 Fig3 Fig4

EXTRA CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB145050R05A22SN12	50	5	50	66	22	40	10.4	6.3	3	SN*U1206AN*N	√	√	Fig1	●
MFB145063R06A22SN12	63	6	63	79	22	40	10.4	6.3	3	SN*U1206AN*N	√	√	Fig1	●
MFB145080R08A27SN12	80	8	80	96	27	50	12.4	7.0	3	SN*U1206AN*N	√	√	Fig1	●
MFB145100R10B32SN12	100	10	100	116	32	50	14.4	8.0	3	SN*U1206AN*N	√		Fig2	●
MFB145125R12B40SN12	125	12	125	141	40	63	16.4	9.0	3	SN*U1206AN*N	√		Fig2	○
MFB145160R15C40SN12	160	15	160	176	40	63	16.4	9.0	3	SN*U1206AN*N	√		Fig3	○
MFB145200R18C60SN12	200	18	200	216	60	63	25.7	14	3	SN*U1206AN*N	√		Fig3	○
MFB145250R21C60SN12	250	21	250	266	60	63	25.7	14	3	SN*U1206AN*N	√		Fig3	○
MFB145315R24D60SN12	315	24	315	331	60	80	25.7	14	3	SN*U1206AN*N	√		Fig4	○

●Standard stock ○need reservation

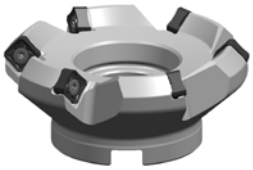
Spare part chart

Part Name		Shim	Screw for shim	Shim screw Wrench	Insert shim	Insert screw wrench	
Shape / Insert							
SN*U1206AN*N	Specifi-cation	DSN1206M	SSAM6X7.5	TH40L	SI60M4X15.8-07108	TT15P	TT15T
	Order code	H0K30SSN12	PSSAM060075B	PTH40LB	PSI60M040158-07108B	PTT15PB	PTT15TB

Face milling

MFB245

Arbor(without shim)



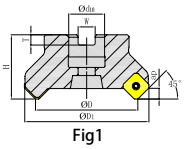


Fig1

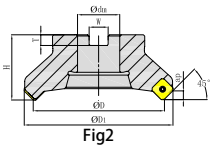


Fig2

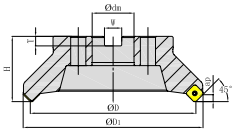


Fig3

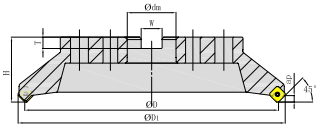


Fig4

COARSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB245050R03A22SN12	50	3	50	66	22	40	10.4	6.3	3	SN*U1206AN*N		√	Fig1	●
MFB245063R04A22SN12	63	4	63	79	22	40	10.4	6.3	3	SN*U1206AN*N		√	Fig1	●
MFB245080R05A27SN12	80	5	80	96	27	50	12.4	7.0	3	SN*U1206AN*N		√	Fig1	●
MFB245080L05A27SN12	80	5	80	96	27	50	12.4	7.0	3	SN*U1206AN*N		√	Fig1	●
MFB245100R06B32SN12	100	6	100	116	32	50	14.4	8.0	3	SN*U1206AN*N			Fig2	●
MFB245100L06B32SN12	100	6	100	116	32	50	14.4	8.0	3	SN*U1206AN*N			Fig2	●
MFB245125R07B40SN12	125	7	125	141	40	63	16.4	9.0	3	SN*U1206AN*N			Fig2	●
MFB245160R08C40SN12	160	8	160	176	40	63	16.4	9.0	3	SN*U1206AN*N			Fig3	●
MFB245200R10C60SN12	200	10	200	216	60	63	25.7	14	3	SN*U1206AN*N			Fig3	●
MFB245250R12C60SN12	250	12	250	266	60	63	25.7	14	3	SN*U1206AN*N			Fig3	●
MFB245315R15D60SN12	315	15	315	331	60	80	25.7	14	3	SN*U1206AN*N			Fig4	○

●Standard stock ○need reservation

CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB245050R04A22SN12	50	4	50	66	22	40	10.4	6.3	3	SN*U1206AN*N		√	Fig1	●
MFB245063R05A22SN12	63	5	63	79	22	40	10.4	6.3	3	SN*U1206AN*N		√	Fig1	●
MFB245080R07A27SN12	80	7	80	96	27	50	12.4	7.0	3	SN*U1206AN*N		√	Fig1	●
MFB245100R08B32SN12	100	8	100	116	32	50	14.4	8.0	3	SN*U1206AN*N			Fig2	●
MFB245100L08B32SN12	100	8	100	116	32	50	14.4	8.0	3	SN*U1206AN*N			Fig2	●
MFB245125R10B40SN12	125	10	125	141	40	63	16.4	9.0	3	SN*U1206AN*N			Fig2	●
MFB245125L10B40SN12	125	10	125	141	40	63	16.4	9.0	3	SN*U1206AN*N			Fig2	○
MFB245160R12C40SN12	160	12	160	176	40	63	16.4	9.0	3	SN*U1206AN*N			Fig3	●
MFB245200R14C60SN12	200	14	200	216	60	63	25.7	14	3	SN*U1206AN*N			Fig3	○
MFB245200L14C60SN12	200	14	200	216	60	63	25.7	14	3	SN*U1206AN*N			Fig3	○
MFB245250R16C60SN12	250	16	250	266	60	63	25.7	14	3	SN*U1206AN*N			Fig3	○
MFB245315R20D60SN12	315	20	315	331	60	80	25.7	14	3	SN*U1206AN*N			Fig4	○

●Standard stock ○need reservation

Face milling

MFB245

Arbor(without shim)

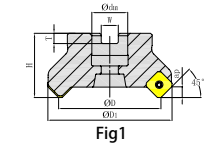


Fig1

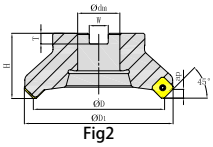


Fig2

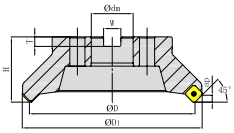


Fig3

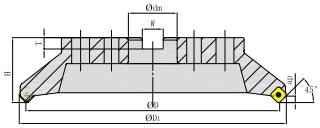


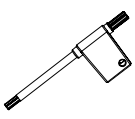
Fig4

EXTRA CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB245050R05A22SN12	50	5	50	66	22	40	10.4	6.3	3	SN*U1206AN*N		√	Fig1	●
MFB245063R06A22SN12	63	6	63	79	22	40	10.4	6.3	3	SN*U1206AN*N		√	Fig1	●
MFB245080R08A27SN12	80	8	80	96	27	50	12.4	7.0	3	SN*U1206AN*N		√	Fig1	●
MFB245100R10B32SN12	100	10	100	116	32	50	14.4	8.0	3	SN*U1206AN*N			Fig2	●
MFB245125R12B40SN12	125	12	125	141	40	63	16.4	9.0	3	SN*U1206AN*N			Fig2	●
MFB245160R15C40SN12	160	15	160	176	40	63	16.4	9.0	3	SN*U1206AN*N			Fig3	●
MFB245200R18C60SN12	200	18	200	216	60	63	25.7	14	3	SN*U1206AN*N			Fig3	○
MFB245250R21C60SN12	250	21	250	266	60	63	25.7	14	3	SN*U1206AN*N			Fig3	○
MFB245315R24D60SN12	315	24	315	331	60	80	25.7	14	3	SN*U1206AN*N			Fig4	○

●Standard stock ○need reservation

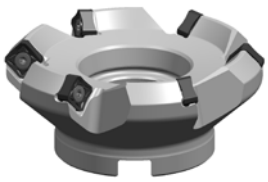
Spare Part Chart

Part name		Insert screw	Insert screw wrench	
Insert \ Shape				
SN*U1206AN*N	Specifi-cation	SI60M5X14-07010	TT20P	TT20T
	Order code	PSI60M050140-07010B	PTT20PB	PTT20TB

Face milling

MFB275

Arbor(without shim)



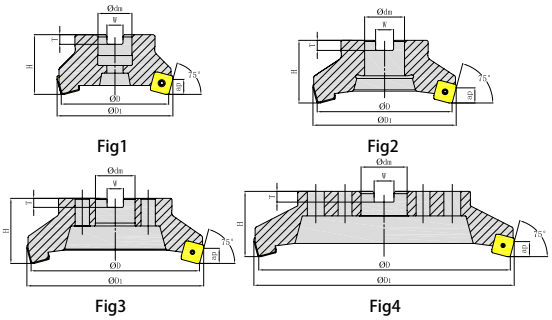


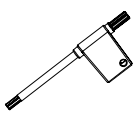
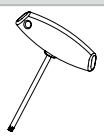
Fig1 Fig2 Fig3 Fig4

CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB275050R04A22SN12	50	4	50	66	22	40	10.4	6.3	5	SN*U1206ENEN		√	Fig1	●
MFB275063R05A22SN12	63	5	63	79	22	40	10.4	6.3	5	SN*U1206ENEN		√	Fig1	●
MFB275063R06A22SN12	63	6	63	79	22	40	10.4	6.3	5	SN*U1206ENEN		√	Fig1	○
MFB275080R07A27SN12	80	7	80	96	27	50	12.4	7.0	5	SN*U1206ENEN		√	Fig1	●
MFB275100R08B32SN12	100	8	100	116	32	50	14.4	8.0	5	SN*U1206ENEN			Fig2	○
MFB275125R10B40SN12	125	10	125	141	40	63	16.4	9.0	5	SN*U1206ENEN			Fig2	●
MFB275160R12C40SN12	160	12	160	176	40	63	16.4	9.0	5	SN*U1206ENEN			Fig3	○
MFB275200R14C60SN12	200	14	200	216	60	63	25.7	14	5	SN*U1206ENEN			Fig3	○
MFB275250R16C60SN12	250	16	250	266	60	63	25.7	14	5	SN*U1206ENEN			Fig3	○
MFB275315R20D60SN12	315	20	315	331	60	80	25.7	14	5	SN*U1206ENEN			Fig4	○

●Standard stock ○need reservation

Spare Part Chart

Part name		Insert screw	Insert screw wrench	
Insert \ Shape				
SN*U1206ENEN	Specifi-cation	SI60M5X14-07010	TT20P	TT20T
	Order code	PSI60M050140-07010B	PTT20PB	PTT20TB

Face milling

MFB288

Arbor(without shim)

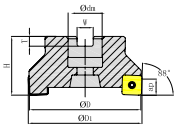


Fig1

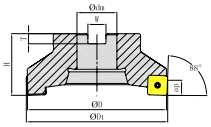


Fig2

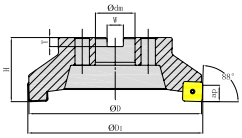


Fig3

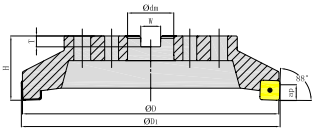


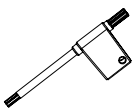
Fig4

CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB288050R04A22SN12	50	4	50	66	22	40	10.4	6.3	7	SN*U1206ZNEN		√	Fig1	●
MFB288063R05A22SN12	63	5	63	79	22	40	10.4	6.3	7	SN*U1206ZNEN		√	Fig1	●
MFB288063L05A22SN12	63	5	63	79	22	40	10.4	6.3	7	SN*U1206ZNEN		√	Fig1	●
MFB288080R07A27SN12	80	7	80	96	27	50	12.4	7.0	7	SN*U1206ZNEN		√	Fig1	●
MFB288080L07A27SN12	80	7	80	96	27	50	12.4	7.0	7	SN*U1206ZNEN		√	Fig1	●
MFB288100R08B32SN12	100	8	100	116	32	50	14.4	8.0	7	SN*U1206ZNEN			Fig2	●
MFB288125R10B40SN12	125	10	125	141	40	63	16.4	9.0	7	SN*U1206ZNEN			Fig2	●
MFB288160R12C40SN12	160	12	160	176	40	63	16.4	9.0	7	SN*U1206ZNEN			Fig3	●
MFB288200R14C60SN12	200	14	200	216	60	63	25.7	14	7	SN*U1206ZNEN			Fig3	●
MFB288250R16C60SN12	250	16	250	266	60	63	25.7	14	7	SN*U1206ZNEN			Fig3	○
MFB288315R20D60SN12	315	20	315	331	60	80	25.7	14	7	SN*U1206ZNEN			Fig4	○

●Standard stock ○need reservation

Spare Part Chart

Part name		Insert screw	Insert screw wrench	
Insert \ Shape				
SN*U1206ZNEN	Specifi-cation	SI60M5X14-07010	TT20P	TT20T
	Order code	PSI60M050140-07010B	PTT20PB	PTT20TB

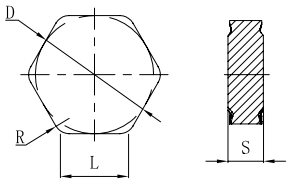
Recommended cutting data

Workpiece		Hardness	Grade	Cutting speed	Feed/Teeth		
				Vc（m/min）	Light cutting (L)	Medium cutting（M）	Heavy cutting (H)
P	Soft steel (SS400、S10C)	⩽ HB180	A4225 A4230 P4225 P2115	250 (210-350)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	Carbon stell, alloy steel (S45C、SCM440)	HB180-280	A4225 A4230 P4225 P2115	220 (170-270)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
		HB280-350	A4225 A4230 P4225 P2115	140 (100-180)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
M	Stainless (SUS304)	⩽ HB275	M2140	180 (130-250)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
K	Cast iron, nodular cast iron (FC250、FCD400)	⩽ HB350	K4125 K2115	180 (130-250)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
N	Aluminium	⩽ HB260	N9125	800 (300-1000)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	--
S	Heat resiatance alloy	⩽ HRC35	M2140 A4230 S4130	40 (20-50)	0.15 (0.1-0.2)	0.2 (0.05-0.15)	--

Face milling

HN*X

Common face milling insert



Ordering Code		Dimension(mm)					Coated										Uncoated	Cermet
		L	D	S	d_1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	HNEX090520-KF	9.5	16.2	5.56	-	2.0						●	●					
	HNEX090510-KF	9.5	16.2	5.56	-	1.0						●	●					
	HNEX090520-KM	9.5	16.2	5.56	-	2.0						●	●					
	HNMX090520-KM	9.5	16.2	5.56	-	2.0						○	○					
	HNEX090516-KR	9.5	16.2	5.56	-	1.6						●	●					
	HNMX090516-KR	9.5	16.2	5.56	-	1.6						○	○					
	HNEX090530-KR	9.5	16.2	5.56	-	3.0						●	●					
	HNEX090502-WC	9.5	15.875	5.56	-	0.2						●	●					

●Standard stock ○need reservation

HN*X series slot

Cast iron light cutting	Cast iron medium cutting	Cast iron heavy cutting	Wiper insert
			
KF	KM	KR	WC
			
Light cutting breaker, big rake angle, small breaker width	Medium cutting breaker, sector design,	Heavy load cutting breaker, big breaker width and unique rake face design	Specialized wiped insert, matching adjustable holder could reach high surface quality and stability

Face milling

MFB160

Arbor

(Adjustable Pocket)

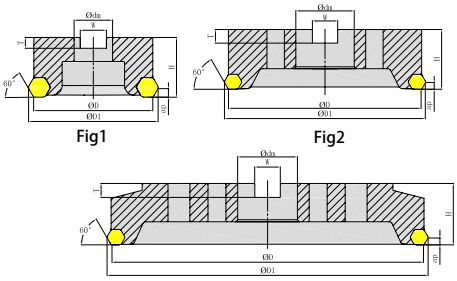


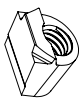
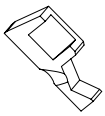
Fig1 Fig2 Fig3

EXTRA CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB160125R15B40HN09	125	15	125	135	40	63	16.4	9	8	HN*X0905		√	Fig1	●
MFB160160R20C40HN09	160	20	160	170	40	63	16.4	9	8	HN*X0905		√	Fig2	●
MFB160200R25C60HN09	200	25	200	210	60	63	25.7	14	8	HN*X0905		√	Fig2	●
MFB160250R30C60HN09	250	30	250	260	60	80	25.7	14	8	HN*X0905		√	Fig2	○
MFB160315R40D60HN09	315	40	315	325	60	80	25.7	14	8	HN*X0905		√	Fig3	○

●Standard stock ○need reservation

Spare Part Chart

Part name		Adjusted wedge	Clamp wedge	Clamp double head screw	Adjusted double head screw	Adjustable clamp	Wrench	Wrench
Shape / Insert								
HN*X0905	Specifi-cation	CWA1	CWA2	SDAM6X20	SDAM8X24.5	-	TH30L	TH40L
	Order code	PCWA01B	PCWA02B	PSDAM060200B	PSDAM080245B	PAMFB1601RAB	PTH30LB	PTH40LB

Face milling

MFB260

Arbor

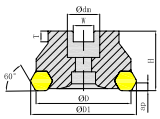


Fig1

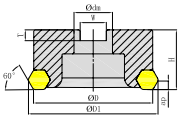


Fig2

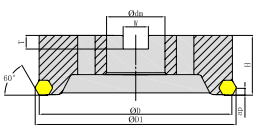


Fig3

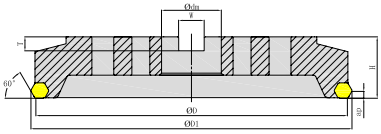


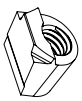
Fig4

EXTRA CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Apmax	Gauge Insert	shim	Coolant	Shape	Stock
			ΦD	ΦD1	Φdm	H	W	T						
MFB260080R08A27HN09	80	8	80	90	27	50	1.24	7	8	HN*X0905			Fig1	●
MFB260100R10B32HN09	100	10	100	110	32	50	14.4	8	8	HN*X0905			Fig2	●
MFB260125R15B40HN09	125	15	125	135	40	63	16.4	9	8	HN*X0905			Fig2	●
MFB260160R20C40HN09	160	20	160	170	40	63	16.4	9	8	HN*X0905			Fig3	○
MFB260200R25C60HN09	200	25	200	210	60	63	25.7	14	8	HN*X0905			Fig3	○
MFB260250R30C60HN09	250	30	250	260	60	80	25.7	14	8	HN*X0905			Fig3	○
MFB260315R40D60HN09	315	40	315	325	60	80	25.7	14	8	HN*X0905			Fig4	○

●Standard stock ○need reservation

Spare Part Chart

Part name	Clamp wedge	Clamp double head screw	Wrench
Shape / Insert			
HN*X0905	CWA1	SDAM6X20	TH30L
	PCWA01B	PSDAM060200B	PTH30LB

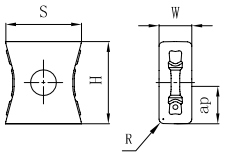
Recommend cutting data

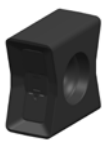
Workpiece		Hardness	Grade	Cutting speed	Feed/edge		
				Vc（m/min）	Light cutting (KF)	Medium cutting（KM）	Heavy cutting (KR)
K	Cast iron, nodular cast iron	⩽ HB350	K4125 K2115	280 (180-400)	0.15 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)

Face milling

LN*T

Vertical Heavy load Milling Insert



Ordering Code		Dimension(mm)					Coated									Uncoated	Cermet
		H	W	ap	S	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	LNET110608-GL	11.2	6	5	11	0.8		●	○	○	○	○	○					
	LNET150608-GL	15.0	6	7	13.9	0.8		●	●	○	○	●	●					
	LNMT110608-GM	11.2	6	5	11	0.8		●	●	○	○	●	●	○				
	LNMT150608-MM	15.0	6	7	13.9	0.8		●	●	○	○	●	●	○				
	LNMT110608-GH	11.2	6	5	11	0.8		●	○	○	○	○	○					
	LNMT150608-GH	15.0	6	7	13.9	0.8		●	●	○	○	●						
	LNET1106PNTN-W	11.3	6	5	11	-						●						
	LNET1506PNTN-W	15.2	6	7	13.9	-						●						

●Standard stock ○need reservation

LN*T series slot

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting	Wiper insert
			
GL	GM/MM	GH	W
			
Light cutting with low cutting force, better processing quality	High stability processing in most cases	High strength edge, continuous cutting, good performance on black surface removal case	High precision wiped insert, improve surface quality

Face Milling

MVA190

Arbor

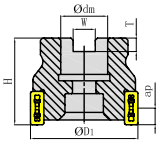


Fig1

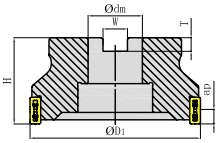


Fig2

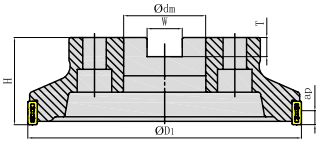


Fig3

CLOSE PITCH

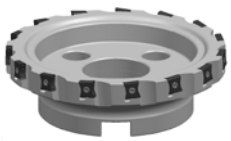
Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MVA190040R04A16LN11	40	4	40	16	40	8.4	5.6	5	LN*T1106		Fig1	●
MVA190040L04A16LN11	40	4	40	16	40	8.4	5.6	5	LN*T1106		Fig1	○
MVA190050R05A22LN11	50	5	50	22	40	10.4	6.3	5	LN*T1106		Fig1	●
MVA190050L05A22LN11	50	5	50	22	40	10.4	6.3	5	LN*T1106		Fig1	○
MVA190063R06A22LN11	63	6	63	22	40	10.4	6.3	5	LN*T1106		Fig1	○
MVA190063L06A22LN11	63	6	63	22	40	10.4	6.3	5	LN*T1106		Fig1	○
MVA190080R08B27LN11	80	8	80	27	50	12.4	7.0	5	LN*T1106		Fig2	○
MVA190080L08B27LN11	80	8	80	27	50	12.4	7.0	5	LN*T1106		Fig2	○
MVA190100R09B32LN11	100	9	100	32	50	14.4	8.0	5	LN*T1106		Fig2	○
MVA190100L09B32LN11	100	9	100	32	50	14.4	8.0	5	LN*T1106		Fig2	○
MVA190125R10B40LN11	125	10	125	40	63	16.4	9.0	5	LN*T1106		Fig2	○
MVA190125L10B40LN11	125	10	125	40	63	16.4	9.0	5	LN*T1106		Fig2	○
MVA190160R12C40LN11	160	12	160	40	63	16.4	9.0	5	LN*T1106		Fig3	○
MVA190160L12C40LN11	160	12	160	40	63	16.4	9.0	5	LN*T1106		Fig3	○
MVA190200R16C60LN11	200	16	200	60	63	25.7	14	5	LN*T1106		Fig3	○
MVA190200L16C60LN11	200	16	200	60	63	25.7	14	5	LN*T1106		Fig3	○

●Standard stock ○need reservation

Face Milling

MVA190

Arbor



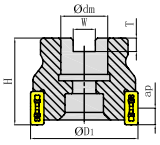


Fig1

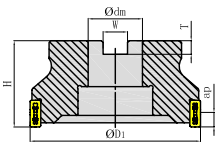


Fig2

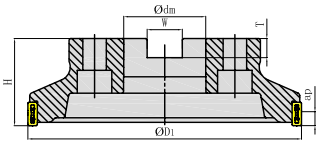


Fig3

EXTRA CLOSE PITCH

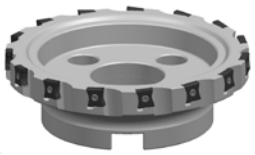
Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MVA190040R05A16LN11	40	5	40	16	40	8.4	5.6	5	LN*T1106		Fig1	○
MVA190040L05A16LN11	40	5	40	16	40	8.4	5.6	5	LN*T1106		Fig1	○
MVA190050R07A22LN11	50	7	50	22	40	10.4	6.3	5	LN*T1106		Fig1	○
MVA190050L07A22LN11	50	7	50	22	40	10.4	6.3	5	LN*T1106		Fig1	○
MVA190063R09A22LN11	63	9	63	22	40	10.4	6.3	5	LN*T1106		Fig1	○
MVA190063L09A22LN11	63	9	63	22	40	10.4	6.3	5	LN*T1106		Fig1	●
MVA190080R11B27LN11	80	11	80	27	50	12.4	7.0	5	LN*T1106		Fig2	○
MVA190080L11B27LN11	80	11	80	27	50	12.4	7.0	5	LN*T1106		Fig2	○
MVA190100R14B32LN11	100	14	100	32	50	14.4	8.0	5	LN*T1106		Fig2	○
MVA190100L14B32LN11	100	14	100	32	50	14.4	8.0	5	LN*T1106		Fig2	○
MVA190125R18B40LN11	125	18	125	40	63	16.4	9.0	5	LN*T1106		Fig2	○
MVA190125L18B40LN11	125	18	125	40	63	16.4	9.0	5	LN*T1106		Fig2	○
MVA190160R23C40LN11	160	23	160	40	63	16.4	9.0	5	LN*T1106		Fig3	○
MVA190160L23C40LN11	160	23	160	40	63	16.4	9.0	5	LN*T1106		Fig3	○
MVA190200R28C60LN11	200	28	200	60	63	25.7	14	5	LN*T1106		Fig3	○
MVA190200L28C60LN11	200	28	200	60	63	25.7	14	5	LN*T1106		Fig3	○

●Standard stock ○need reservation

Face Milling

MVA190

Arbor



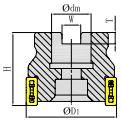


Fig1

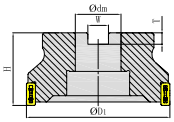


Fig2

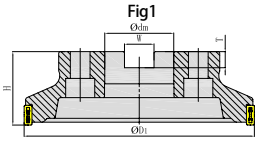


Fig3

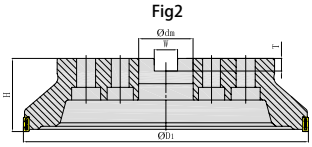


Fig4

CLOSE PITCH

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MVA190050R04A22LN15	50	4	50	22	40	10.4	6.3	7	LN*T1506		Fig1	○
MVA190050L04A22LN15	50	4	50	22	40	10.4	6.3	7	LN*T1506		Fig1	●
MVA190063R05A22LN15	63	5	63	22	40	10.4	6.3	7	LN*T1506		Fig1	●
MVA190063L05A22LN15	63	5	63	22	40	10.4	6.3	7	LN*T1506		Fig1	○
MVA190080R06B27LN15	80	6	80	27	50	12.4	7.0	7	LN*T1506		Fig2	○
MVA190080L06B27LN15	80	6	80	27	50	12.4	7.0	7	LN*T1506		Fig2	○
MVA190100R08B32LN15	100	8	100	32	50	14.4	8.0	7	LN*T1506		Fig2	●
MVA190100L08B32LN15	100	8	100	32	50	14.4	8.0	7	LN*T1506		Fig2	●
MVA190125R10B40LN15	125	10	125	40	63	16.4	9.0	7	LN*T1506		Fig2	●
MVA190125L10B40LN15	125	10	125	40	63	16.4	9.0	7	LN*T1506		Fig2	○
MVA190160R12C40LN15	160	12	160	40	63	16.4	9.0	7	LN*T1506		Fig3	●
MVA190160L12C40LN15	160	12	160	40	63	16.4	9.0	7	LN*T1506		Fig3	○
MVA190200R12C60LN15	200	12	200	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190200L12C60LN15	200	12	200	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190200R15C60LN15	200	15	200	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190200L15C60LN15	200	15	200	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190250R15C60LN15	250	15	250	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190250L15C60LN15	250	15	250	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190250R20C60LN15	250	20	250	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190250L20C60LN15	250	20	250	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190315R18D60LN15	315	18	315	60	80	25.7	14	7	LN*T1506		Fig4	○
MVA190315L18D60LN15	315	18	315	60	80	25.7	14	7	LN*T1506		Fig4	○
MVA190315R25D60LN15	315	25	315	60	80	25.7	14	7	LN*T1506		Fig4	○
MVA190315L25D60LN15	315	25	315	60	80	25.7	14	7	LN*T1506		Fig4	○

●Standard stock ○need reservation

Face Milling

MVA190

Arbor

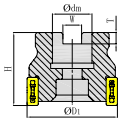


Fig1

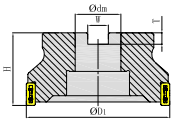


Fig2

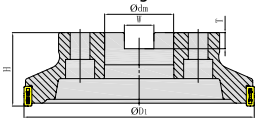


Fig3

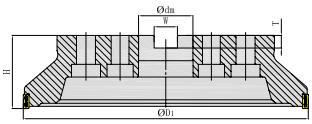


Fig4

EXTRA CLOSE PITCH

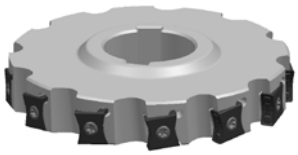
Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MVA190050R05A22LN15	50	5	50	22	40	10.4	6.3	7	LN*T1506		Fig1	○
MVA190050L05A22LN15	50	5	50	22	40	10.4	6.3	7	LN*T1506		Fig1	○
MVA190063R06A22LN15	63	6	63	22	40	10.4	6.3	7	LN*T1506		Fig1	●
MVA190063L06A22LN15	63	6	63	22	40	10.4	6.3	7	LN*T1506		Fig1	○
MVA190080R08B27LN15	80	8	80	27	50	12.4	7.0	7	LN*T1506		Fig2	●
MVA190080L08B27LN15	80	8	80	27	50	12.4	7.0	7	LN*T1506		Fig2	●
MVA190100R10B32LN15	100	10	100	32	50	14.4	8.0	7	LN*T1506		Fig2	●
MVA190100L10B32LN15	100	10	100	32	50	14.4	8.0	7	LN*T1506		Fig2	○
MVA190125R12B40LN15	125	12	125	40	63	16.4	9.0	7	LN*T1506		Fig2	○
MVA190125L12B40LN15	125	12	125	40	63	16.4	9.0	7	LN*T1506		Fig2	○
MVA190160R15C40LN15	160	15	160	40	63	16.4	9.0	7	LN*T1506		Fig3	○
MVA190160L15C40LN15	160	15	160	40	63	16.4	9.0	7	LN*T1506		Fig3	○
MVA190200R20C60LN15	200	20	200	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190200L20C60LN15	200	20	200	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190250R25C60LN15	250	25	250	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190250L25C60LN15	250	25	250	60	63	25.7	14	7	LN*T1506		Fig3	○
MVA190315R30D60LN15	315	30	315	60	80	25.7	14	7	LN*T1506		Fig4	○
MVA190315L30D60LN15	315	30	315	60	80	25.7	14	7	LN*T1506		Fig4	○

●Standard stock ○need reservation

Face Millling

MVA290

Disc



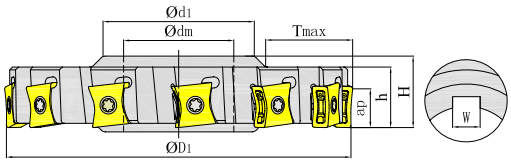
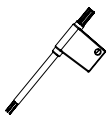


Fig5

Ordering Code	Dia-meter	Teeth	Dimension(mm)							Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Tmax	Φdm	Φd1	W	H	h					
MVA290080R08K27LN15	80	8	80	18	27	41	7	24	22	14	LN*T1506		Fig5	○
MVA290080L08K27LN15	80	8	80	18	27	41	7	24	22	14	LN*T1506		Fig5	○
MVA290100R10K32LN15	100	10	100	23	32	47	8	26	22	14	LN*T1506		Fig5	○
MVA290100L10K32LN15	100	10	100	23	32	47	8	26	22	14	LN*T1506		Fig5	○
MVA290125R12K40LN15	125	12	125	32	40	55	10	26	22	14	LN*T1506		Fig5	●
MVA290125L12K40LN15	125	12	125	32	40	55	10	26	22	14	LN*T1506		Fig5	●
MVA290160R15K40LN15	160	15	160	49	40	55	10	26	22	14	LN*T1506		Fig5	○
MVA290160L15K40LN15	160	15	160	49	40	55	10	26	22	14	LN*T1506		Fig5	○
MVA290200R20K50LN15	200	20	200	63	50	68	12	28	24	14	LN*T1506		Fig5	○
MVA290200L20K50LN15	200	20	200	63	50	68	12	28	24	14	LN*T1506		Fig5	○
MVA290250R25K60LN15	250	25	250	80	60	84	14	28	24	14	LN*T1506		Fig5	●
MVA290250L25K60LN15	250	25	250	80	60	84	14	28	24	14	LN*T1506		Fig5	○

● Standard stock ○ need reservation

Spare part chart

Partname		Insert screw	Insert screw wrench	
Insert \ Shape				
LN*T11	Specification	SI60M3.5X9.5-04809IB	TI10P	TI10T
	Order code	PSI60M035095-04809IB	PTI10PB	PTI10TB
LN*T15	Specification	SI60M4X11-05708IB	TI15P	TI15T
	Order code	PSI60M040110-05708IB	PTI15PB	PTI15TB

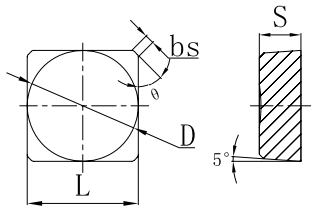
Recommended cutting data

Workpiece		Hardness	Grade	Cutting speed	feed/edge（fz）		
					Light cutting（L）	Medium cutting（M）	Heavy cutting（H）
				Vc（m/min）	(ap ⩽ 1.5mm)	(1.5mm ⩽ ap ⩽ 3mm)	(ap ⩾ 5mm)
P	Soft steel	⩽ HB180	A4225 A4230 P4225 P2115	220 (100-350)	0.3 (0.2-0.4)	0.2 (0.12-0.3)	0.15 (0.1-0.25)
	Carbon steel, alloy steel	HB180-280	A4225 A4230 P4225 P2115	180 (120-250)	0.3 (0.2-0.4)	0.2 (0.12-0.3)	0.15 (0.1-0.25)
		HB280-350	A4225 A4230 P4225 P2115	150 (100-230)	0.3 (0.2-0.4)	0.2 (0.12-0.3)	0.15 (0.1-0.25)
M	Stainless steel	⩽ HB275	M2140	180 (120-250)	0.3 (0.2-0.4)	0.2 (0.12-0.3)	0.15 (0.1-0.25)
K	Grey cast iron	HB160-250	K4125 K2115	220 (120-350)	0.3 (0.2-0.4)	0.2 (0.12-0.3)	0.15 (0.1-0.25)
	Nodular cast iron,vermicular graphite cast iron	HB180-260	K4125 K2115	150 (100-280)	0.3 (0.2-0.4)	0.2 (0.12-0.3)	0.15 (0.1-0.25)

Face Millling

SBEX

ISO Milling insert

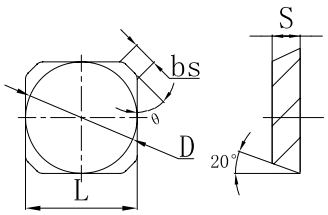


Ordering Code		Dimension(mm)					Coated										Uncoated	Cermet
		L	D	S	θ	bs	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SBEX1204ZZ-1	12.7	12.7	4.76	45°	0.8		○	○			○	○					

● Standard stock ○ need reservation

SEEN/SEMN/SEEX

ISO Milling insert



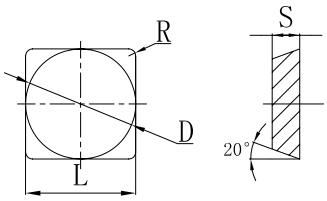
Ordering Code		Dimension(mm)					Coated										Uncoated	Cermet
		L	D	S	θ	bs	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SEEN1203AFTN	12.7	12.7	3.18	45°	2.3		○	○			○	○					○
	SEEN1204AFTN	12.7	12.7	4.76	45°	2.4		○	○			○	○					
	SEEN1504AFTN	15.875	15.875	4.76	45°	2.4		○	○			○	○					
	SEMN1204AFTN	12.7	12.7	4.76	45°	2.4		○	○			○	○					○
	SEEX1203AFTN	12.7	12.7	3.18	45°	3.0		○	○			○	○					

● Standard stock ○ need reservation

Face milling

SEEN-R

ISO Milling insert

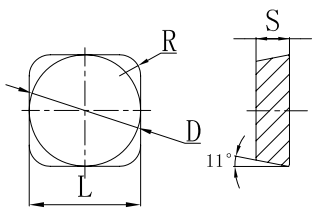


Ordering Code		Dimension(mm)				Coated									Uncoated	Cermet
		L	D	S	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SEEN120302	12.7	12.7	3.18	0.2		○	○			○	○					
	SEEN120304	12.7	12.7	3.18	0.4		○	○			○	○					
	SEEN120308	12.7	12.7	3.18	0.8		○	○			○	○					

● Standard stock ○ need reservation

SPEN

ISO Milling insert



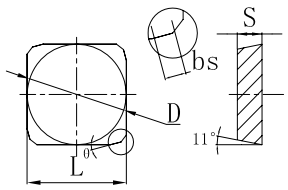
Ordering Code		Dimension(mm)				Coated									Uncoated	Cermet
		L	D	S	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SPEN150420T	15.875	15.875	4.76	2.0		○	○			○	○					
	SPEN150430T	15.875	15.875	4.76	3.0		○	○			○	○					
	SPEN190424T	19.05	19.05	4.76	2.4		○	○			○	○					
	SPEN250730T	25.4	25.4	7.94	3.0		○	○			○	○					
	SPEN250750T	25.4	25.4	7.94	5.0		○	○			○	○					
	SPEN250730-WC	25.4	25.4	7.94	3.0		○	○			○	○					
	SPEN190424-WC	19.05	19.05	4.76	2.4		○	○			○	○					

● Standard stock ○ need reservation

Face Millling

SPKN

ISO Milling insert

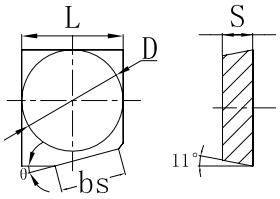


Ordering Code		Dimension(mm)					Coated										Uncoated	Cermet
		L	D	S	θ	bs	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SPKN1203EDL	12.7	12.7	3.18	15°	1.4		○	○			○	○					
	SPKN1203EDR	12.7	12.7	3.18	15°	1.4		○	○			○	○					
	SPKN1203EDTL	12.7	12.7	3.18	15°	1.4		○	○			○	○					
	SPKN1203EDTR	12.7	12.7	3.18	15°	1.4		○	○			○	○					
	SPKN1504EDL	15.875	15.875	4.76	15°	1.4		○	○			○	○					
	SPKN1504EDR	15.875	15.875	4.76	15°	1.4		○	○			○	○					
	SPKN1504EDTL	15.875	15.875	4.76	15°	1.4		○	○			○	○					
	SPKN1504EDTR	15.875	15.875	4.76	15°	1.4		○	○			○	○					
	SPKN1905EDL	19.05	19.05	5.56	15°	2.7		○	○			○	○					
	SPKN1905EDR	19.05	19.05	5.56	15°	2.7		○	○			○	○					
	SPKN1905EDTL	19.05	19.05	5.56	15°	2.7		○	○			○	○					
	SPKN1905EDTR	19.05	19.05	5.56	15°	2.7		○	○			○	○					

● Standard stock ○ need reservation

SPEN-W

ISO Milling insert



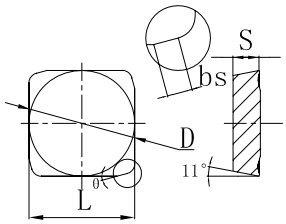
Ordering Code		Dimension(mm)					Coated										Uncoated	Cermet
		L	D	S	θ	bs	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SPEN1504EDL-W	15.875	15.875	4.76	15°	10.2		○	○			○	○					
	SPEN1504EDR-W	15.875	15.875	4.76	15°	10.2		○	○			○	○					

● Standard stock ○ need reservation

Face Millling

SPER

ISO Milling insert

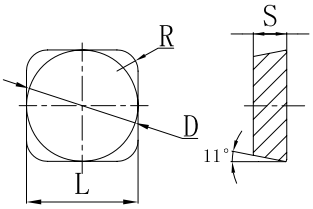


	Ordering Code	Dimension(mm)					Coated										Uncoated	Cermet
		L	D	S	θ	bs	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SPER1203EDTL-MR	12.7	12.7	3.18	15°	1.3		○	○									
	SPER1203EDTR-MR	12.7	12.7	3.18	15°	1.3		○	○									
	SPER1204EDTR-MR	12.7	12.7	4.76	15°	1.3		○	○									

● Standard stock ○ need reservation

SPNR

ISO Milling insert



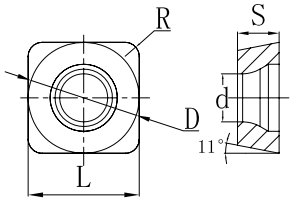
	Ordering Code	Dimension(mm)				Coated										Uncoated	Cermet
		L	D	S	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SPNR150424T	12.7	12.7	4.76	2.4		○	○			○	○					

● Standard stock ○ need reservation

Face Millling

SPCW

ISO Milling insert

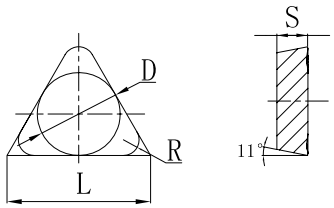


Ordering Code		Dimension (mm)					Coated										Uncoated	Cermet
		L	D	S	d	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SPCW090308	9.525	9.525	3.18	4.4	0.8		○	○			○	○					
	SPCW120412	12.7	12.7	4.76	5.5	1.2		○	○			○	○					
	SPCW120416	12.7	12.7	4.76	5.5	1.6		○	○			○	○					
	SPCW150516	15.875	15.875	5.56	5.5	1.6		○	○			○	○					

● Standard stock ○ need reservation

TPNR

ISO Milling insert



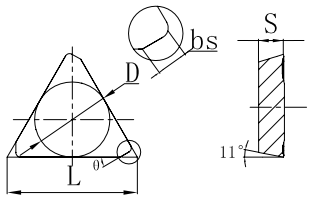
Ordering Code		Dimension(mm)				Coated										Uncoated	Cermet
		L	D	N9125	P01TM	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	TPNR220424T	22	12.7	4.76	2.4		○	○									

● Standard stock ○ need reservation

Face Millling

TPER/TPKR/TPKN

ISO Milling insert



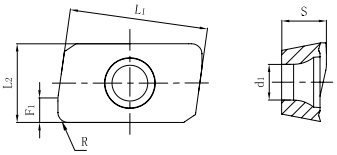
Ordering Code		Dimension(mm)					Coated									Uncoated	Cermet
		L	D	S	θ	bs	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	TPER1603PDTL-MR	16.5	9.525	3.18	30°	1.3		○	○									
	TPER1603PDTR-MR	16.5	9.525	3.18	30°	1.3		○	○									
	TPKR1603PPTR	16.5	9.525	3.18	30°	1.3		○	○									
	TPKN1603PDL	16	16	3.18	30°	1.3		○	○			○	○					
	TPKN1603PDR	16	16	3.18	30°	1.3		○	○			○	○					
	TPKN1603PDTL	16	16	3.18	30°	1.3		○	○			○	○					
	TPKN1603PDTR	16	16	3.18	30°	1.3		○	○			○	○					
	TPKN2204PDL	22	22	4.76	30°	1.4		○	○			○	○					
	TPKN2204PDR	22	22	4.76	30°	1.4		○	○			○	○					
	TPKN2204PDTL	22	22	4.76	30°	1.4		○	○			○	○					
	TPKN2204PDTR	22	22	4.76	30°	1.4		○	○			○	○					

● Standard stock ○ need reservation

Shoulder Milling

APMT/APGT

General application shoulder milling insert



Ordering Code		Dimension(mm)						Coated									Uncoated	Cermet
		L_1	L_2	S	F_1	d_1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	APMT1135PDER-PL	10.83	6.16	3.5	1.92	2.8	0.8	●	●	●		○	○		●				
	APMT1604PDER-PL	16.26	9.26	4.76	2	4.6	0.8	●	●	●			○		○				
	APMT1135PDER-PM	10.83	6.16	3.5	1.92	2.8	0.8	●	●	●	○	●	●	○	●		○		
	APMT1604PDER-PM	16.26	9.26	4.76	2	4.6	0.8	●	●	●	○	●	●	●	●		●		
	APMT113504R-PM	10.83	6.16	3.5	1.92	2.8	0.4		●										
	APMT160416R-PM	16.26	9.26	4.76	2	4.6	1.6		●										
	APMT113508-GM	10.83	6.16	3.5	1.92	2.8	0.8		○										
	APMT160410-GM	16.26	9.26	4.76	2	4.6	1.0		●				○						
	APMT1135PDER-PR	10.83	6.16	3.5	1.87	2.8	0.8	●	●	●	○	●	●		○		○		
	APMT1604PDER-PR	16.26	9.26	4.76	2.2	4.6	0.8	●	●	●	○	●	●	●	●		○		
	APGT1135PDFR-AL	10.83	6.16	3.5	1.92	2.8	0.8											●	
	APGT1604PDFR-AL	16.26	9.26	4.76	2.2	4.6	0.8											●	

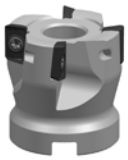
● Standard stock ○ need reservation

APMT/APGT Series Breaker

General workpiece light cutting	workpiece medium cutting	General workpiece heavy cutting	Aluminium General workpiece cutting
			
PL	PM	PR	AL
			
Light cutting of low cutting force, good processing quality	High stability in most cases	Suitable on roughing, good edge strength	Suitable on Aluminium processing, sharp edge with polishing

MEA190

Arbor



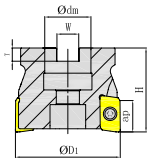


Fig1

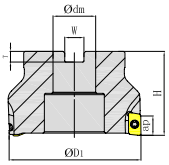


Fig2

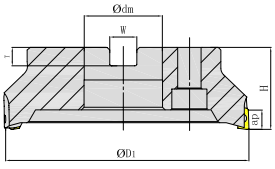


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MEA190040R05A16AP11	40	5	40	16	40	10.4	6.3	09	APMT1135		Fig1	●
MEA190050R06A22AP11	50	6	50	22	50	10.4	6.3	09	APMT1135		Fig1	●
MEA190050R04A22AP16	50	4	50	22	50	10.4	6.3	14	APMT1604		Fig1	●
MEA190063R05A22AP16	63	5	63	22	50	10.4	6.3	14	APMT1604		Fig1	●
MEA190080R06A27AP16	80	6	80	27	50	12.4	7	14	APMT1604		Fig1	●
MEA190100R07B32AP16	100	7	100	32	63	14.4	8	14	APMT1604		Fig2	●
MEA190125R08B40AP16	125	8	125	40	63	16.4	9	14	APMT1604		Fig2	○
MEA190160R10C40AP16	160	10	160	40	63	25.7	14	14	APMT1604		Fig3	○
MEA190200R12C60AP16	200	12	200	60	63	25.7	14	14	APMT1604		Fig3	○
MEA190250R14C60AP16	250	14	250	60	63	25.7	14	14	APMT1604		Fig3	○

● Standard stock ○ need reservation

Face Millling

MEA190

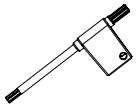
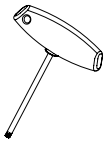
Straight shank

Fig4

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MEA190016R02P16AP11	16	2	16	16	120	40	9	APMT1135		Fig4	●
MEA190016R02P16AP11L	16	2	16	16	170	40	9	APMT1135		Fig4	●
MEA190020R02P20AP11	20	2	20	20	120	50	9	APMT1135		Fig4	●
MEA190020R03P20AP11	20	3	20	20	120	50	9	APMT1135		Fig4	●
MEA190025R03P25AP11	25	3	25	25	160	50	9	APMT1135		Fig4	●
MEA190025R04P25AP11	25	4	25	25	160	50	9	APMT1135		Fig4	●
MEA190025R02P25AP16	25	2	25	25	160	50	14	APMT1604		Fig4	●
MEA190032R04P32AP11	32	4	32	32	160	80	9	APMT1135		Fig4	●
MEA190032R03P32AP16	32	3	32	32	160	80	14	APMT1604		Fig4	●

● Standard stock ○ need reservation

Spare part chart

Partname		Insert screw	Insert screw wrench	
Shape / Insert				
APMT1135	Specification	SI60M2.5X6.5-03509	TT07P	TT07T
	Order code	PSI60M025065-03509S	PTT07PQ	PTT07TQ
APMT1604	Specification	SI60M4X8.9-05313	TT15P	TT15T
	Order code	PSI60M040089-05313S	PTT15PQ	PTT15TQ

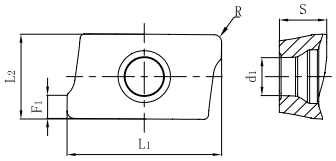
Recommended cutting data

Workpiece		Hardness	Grade	Cutting speed	feed/edge（fz）		
					Light cutting (L)	Medium cutting (M)	Heavy cutting (H)
				Vc（m/min）	PL/AL	PM/AL	PR/AL
P	Soft steel	⩽ HB180	A4225 A4230 P4225 P2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Carbon steel, alloy steel	HB180-350	A4225 A4230 P4225 P2115	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Pre-hardened steel	HRC35-45	A4225 A4230 P4225 P2115	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
M	Stainless (ferrite, martensite)	⩽ HB270	M2140 S4130	140 (100-160)	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
K	Grey cast iron	⩽ HB280	K4125 K2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Nodular cast iron,vermicular graphite cast iron	⩽ HB350	K4125 K2115	120 (100-180)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
N	Copper Alloys	⩽ HB260	N9125	500 (200-900)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
S	Heat resistance alloy, Ti alloy	HRC25-35	A4230 M2140 S4130	60 (50-100)	0.1 (0.05-0.15)	0.1 (0.05-0.15)	0.15 (0.1-0.2)
H	quenched steel	HRC48-55	H4115 H4125	80 (60-120)	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)

Shoulder Milling

APKT/APET

Single face curved shoulder milling



Ordering Code		Dimension(mm)						Coated										Uncoated	Cermet
		L_1	L_2	S	F_1	d_1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	APKT113504R-GL	11.31	7	3.5	2	3.21	0.4	●	●	○	○	●	○	○	○				
	APKT113508R-GL	11.31	7	3.5	2	3.21	0.8	●	●	○	○	●	○	○	○				
	APKT113504R-GM	11.31	7	3.5	2	3.21	0.4	●	●	○	○	●	●	●	○		○		
	APKT113508R-GM	11.31	7	3.5	2	3.21	0.8	●	●	○	○	●	●	●	●		○		
	APKT113532R-GM	10.16	7	3.44	3.6	3.21	3.2	○	●	○	○	○	○	○	○				
	APKT160408R-GM	16.96	9.4	5.2	2.57	4.21	0.8	●	●	○	○	●	●	●	●		○		
	APKT160412R-GM	16.96	9.4	5.2	2.57	4.21	1.2	○	●	○	○	○	○	○	○				
	APKT160416R-GM	16.96	9.4	5.2	2.57	4.21	1.6	○	○	○	○	○	○	○	○				
	APKT160432R-GM	15	9.4	5.2	2.57	4.21	3.2	○	●	○	○	○	○	○	○				
	APKT113516R-GH	11.31	7	3.5	2	3.21	1.6	○	●	○	○		●	○	○		○		
	APKT160416R-GH	16.96	9.4	5.2	2.57	4.21	1.6	○	●	○	○		●	○			○		
	APET113504R-NL	11.39	7	3.8	1.92	2	0.4											○	
	APET160408R-NL	15.41	9.44	4.92	2.64	4.21	0.8											○	

● Standard stock ○ need reservation

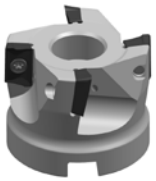
APKT/APET Series Breaker

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting	Genenal application for aluminium
			
GL	GM	GH	NL
			
Light cutting of low cutting force, good processing quality	High stability in most cases	Suitable on roughing, good edge strength	Suitable on Aluminium processing, sharp edge with polishing

Shoulder Milling

MEB190

Arbor



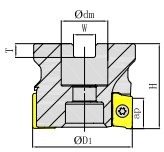


Fig1

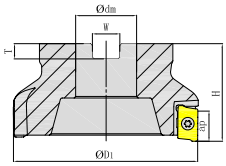


Fig2

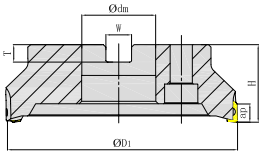


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MEB190040R05A16AP11	40	5	40	16	40	8.4	5.6	09	APKT1135		Fig1	●
MEB190050R07A22AP11	50	7	50	22	40	10.4	6.3	09	APKT1135	√	Fig1	●
MEB190100R11B32AP11	100	11	100	32	63	14.4	8	09	APKT1135	√	Fig1	○
MEB190125R11B40AP11	125	11	125	40	50	16.4	9	09	APKT1135	√	Fig1	○
MEB190050R04A22AP16	50	4	50	22	40	10.4	6.3	14	APKT1604	√	Fig1	●
MEB190063R05A22AP16	63	5	63	22	40	10.4	6.3	14	APKT1604	√	Fig1	●
MEB190080R07A27AP16	80	7	80	27	50	12.4	7	14	APKT1604	√	Fig1	●
MEB190100R08A32AP16	100	8	100	32	63	14.4	8	14	APKT1604	√	Fig1	●
MEB190125R06B40AP16	125	6	125	10	63	16.4	9	14	APKT1604		Fig2	●
MEB190125R09B40AP16	125	9	125	10	63	16.4	9	14	APKT1604		Fig2	●
MEB190160R10C40AP16	160	10	160	10	63	16.4	9	14	APKT1604		Fig3	○
MEB190200R12C60AP16	200	12	200	60	63	25.7	13	14	APKT1604		Fig3	○

● Standard stock ○ need reservation

MEB190

Side clamp type

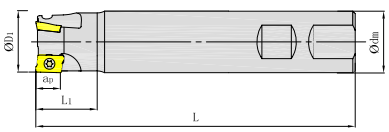


Fig4

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MEB190016R02W16AP11	16	2	16	16	130	25	9	APKT1135		Fig4	●
MEB190016R02W16AP11L	16	2	16	16	200	82	9	APKT1135		Fig4	●
MEB190020R02W20AP11	20	2	20	20	130	25	9	APKT1135		Fig4	●
MEB190020R03W20AP11	20	3	20	20	130	25	9	APKT1135	√	Fig4	●
MEB190020R03W20AP11L	20	3	20	20	200	82	9	APKT1135	√	Fig4	●
MEB190025R03W25AP11	25	3	25	25	130	30	9	APKT1135	√	Fig4	●
MEB190025R04W25AP11	25	4	25	25	130	30	9	APKT1135	√	Fig4	●
MEB190025R02W25AP16	25	2	25	25	130	45	14	APKT1604	√	Fig4	●
MEB190025R02W25AP16L	25	2	25	25	200	89	14	APKT1604	√	Fig4	●
MEB190032R04W32AP11	32	4	32	32	130	45	9	APKT1135	√	Fig4	●
MEB190032R04W32AP11L	32	4	32	32	200	45	9	APKT1135	√	Fig4	●
MEB190032R03W32AP16	32	3	32	32	130	45	14	APKT1604	√	Fig4	●
MEB190032R03W32AP16L	32	3	32	32	200	54	14	APKT1604	√	Fig4	●

● Standard stock ○ need reservation

Face Millling

MHB190

Corn milling cutter body— Side clamp type

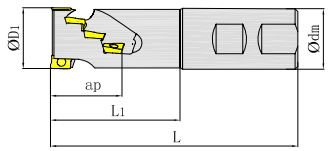


Fig5

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MHB190032R02W32AP11	32	2/8	32	32	130	65	39.9	APKT1135	√	Fig5	●
MHB190040R03W32AP11	40	3/12	40	32	130	66	39.9	APKT1135	√	Fig5	●

● Standard stock ○ need reservation

MHB190

Corn milling cutter body—Arbor

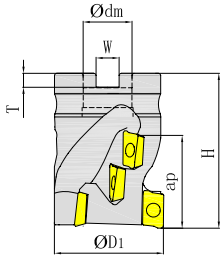
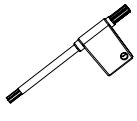
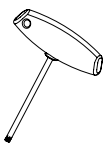


Fig6

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MHB190050R04A22AP11	50	4/16	50	22	70	10.4	6.3	39.9	APKT1135		Fig6	●
MHB190063R05A27AP11	63	5/20	63	27	70	12.4	6.3	39.9	APKT1135	√	Fig6	●
MHB190050R03A22AP16	50	3/9	50	22	70	10.4	6.3	43	APKT1604	√	Fig6	●
MHB190063R04A27AP16	63	4/16	63	27	85	12.4	6.3	57	APKT1604	√	Fig6	●
MHB190080R05A32AP16	80	5/20	80	32	85	14.4	7	57	APKT1604	√	Fig6	●

● Standard stock ○ need reservation

Spare part chart

Partname		Insert screw	Insert screw wrench	
Insert \ Shape				
APKT1135	Specification	SI60M3.0X7.2-04210	TT09P	--
	Order code	PSI60M030072-04210S	PTT09PQ	--
APKT1604	Specification	SI60M3.5X8-05314	TT15P	TT15T
	Order code	PSI60M035080-05314S	PTT15PQ	PTT15TQ

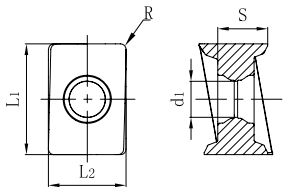
Recommended cutting data

Workpiece		Hardness	Grade	Cutting speed	feed/edge（fz）		
					Light cutting (L)	Medium cutting (M)	Heavy cutting (H)
				Vc（m/min）	GL/NL	GM/NL	GH/NL
P	Soft steel	≤ HB180	A4225 A4230 P4225 P2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Carbon steel, alloy steel	HB180-350	A4225 A4230 P4225 P2115	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Pre-hardened steel	HRC35-45	A4225 A4230 P4225 P2115	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
M	Stainless (ferrite, martensite)	≤ HB270	M2140 S4130	140 (100-160)	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
K	Grey cast iron	≤ HB280	K4125 K2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Nodular cast iron,vermicular graphite cast iron	≤ HB350	K4125 K2115	120 (100-180)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
N	Copper Alloys	≤ HB260	N9125	500 (200-900)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
S	Heat resistance alloy, Ti alloy	HRC25-35	A4230 M2140 S4130	60 (50-100)	0.1 (0.05-0.15)	0.1 (0.05-0.15)	0.15 (0.1-0.2)
H	Quenched steel	HRC48-55	H4115 H4125	80 (60-120)	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)

Shoulder Milling

ANKX

ANKX four curved edge shoulder Milling insert



Ordering Code		Dimension (mm)					Coated										Uncoated	Cermet
		L1	L2	S	d1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	ANKX120704R-GL	12	10	8	4.6	0.4	●	●	○	○	○	●	●	○				
	ANKX160708R-GL	16	11.2	7.9	5.2	0.8	●	●	○	○	○	●	●	○				
	ANKX120708R-GM	12	10	8	4.6	0.8	●	●	○	○	○	●	●	○		○		
	ANKX160708R-GM	16	11.2	7.9	5.2	0.8	●	●	○	○	○	●	●	○		○		
	ANKX160716R-GM	16	11.2	7.9	5.2	1.6	○	●	○	○	○	●	●	○		○		
	ANKX160716R-GH	16	11.2	7.9	5.2	1.6	○	●	○	○		●	●	○		○		

● Standard stock ○ need reservation

ANKX Series Breaker

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting
		
GL	GM	GH
		
Light cutting of low cutting force, good processing quality	High stability in most cases	Suitable on roughing, good edge strength

Shoulder Milling

MEC190

Arbor

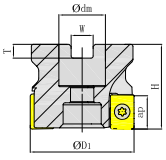


Fig1

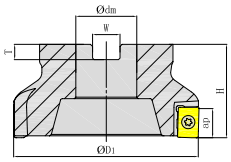


Fig2

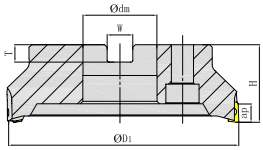


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MEC190050R04A22AN12	50	4	50	22	40	10.4	6.3	09	ANKX1207		Fig1	●
MEC190063R05A22AN12	63	5	63	22	40	10.4	6.3	09	ANKX1207	√	Fig1	●
MEC190050R04A22AN16	50	4	50	22	40	10.4	6.3	14	ANKX1607	√	Fig1	●
MEC190063R05A22AN16	63	5	63	22	40	10.4	6.3	14	ANKX1607	√	Fig1	●
MEC190080R05A27AN16	80	5	80	27	50	12.4	7	14	ANKX1607	√	Fig1	●
MEC190080R06A27AN16	80	6	80	27	50	12.4	7	14	ANKX1607	√	Fig1	●
MEC190100R07B32AN16	100	7	100	32	50	14.4	8	14	ANKX1607		Fig2	●
MEC190100R08B32AN16	100	8	100	32	50	14.4	8	14	ANKX1607		Fig2	●
MEC190125R10B40AN16	125	10	125	40	63	16.4	9	14	ANKX1607		Fig2	●
MEC190160R12C40AN16	160	12	160	40	63	16.4	9	14	ANKX1607		Fig3	○
MEC190200R14C60AN16	200	14	200	60	63	25.7	14	14	ANKX1607		Fig3	○

● Standard stock ○ need reservation

MEC190

Side clamp

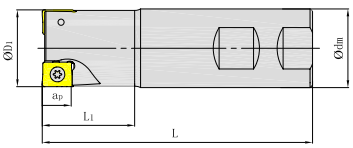


Fig4

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MEC190032R02W32AN12	32	2	32	32	130	40	9	ANKX1207		Fig4	●
MEC190040R03W32AN12	40	3	40	32	130	40	9	ANKX1207	√	Fig4	○
MEC190032R02W32AN16	32	2	32	32	130	40	14	ANKX1607		Fig4	●
MEC190032R02W32AN16L	32	2	32	32	200	50	14	ANKX1607		Fig4	●
MEC190032R03W32AN16	32	3	32	32	130	40	14	ANKX1607		Fig4	●
MEC190032R03W32AN16L	32	3	32	32	200	50	14	ANKX1607		Fig4	●
MEC190040R03W32AN16	40	3	40	32	130	50	14	ANKX1607	√	Fig4	●

● Standard stock ○ need reservation

Shoulder Milling

MHC190

Corn milling cutter body—Side clamp

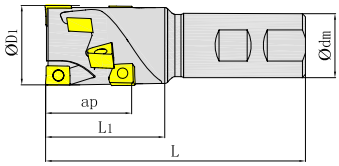


Fig5

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MHC190040R02W32AN12	40	2/8	40	32	130	66	43	ANKX1207	√	Fig5	●

● Standard stock ○ need reservation

MHC190

Corn milling cutter body—Arbor

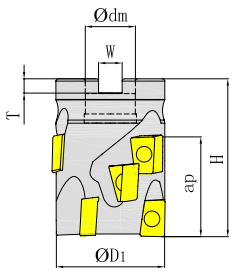
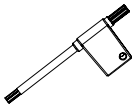
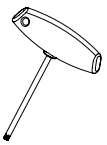


Fig6

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MHC190050R03A22AN12	50	3/12	50	22	70	10.4	6.3	43	ANKX1207	√	Fig6	●
MHC190063R04A27AN12	63	4/16	63	27	70	12.4	6.3	43	ANKX1207	√	Fig6	●
MHC190050R03A22AN16	50	3/9	50	22	70	10.4	6.3	43	ANKX1607	√	Fig6	●
MHC190063R04A27AN16	63	4/12	63	27	85	12.4	6.3	57	ANKX1607	√	Fig6	●
MHC190080R05A32AN16	80	5/15	80	32	85	14.4	7	57	ANKX1607	√	Fig6	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench	
Insert \ Shape				
ANKX1207	Specification	SI60M3.5X12-05314	TT15P	--
	Order code	PSI60M035120-05314S	PTT15PQ	--
ANKX1607	Specification	SI60M4.5X12-06412	TT20P	TT20T
	Order code	PSI60M045120-06412S	PTT20PQ	PTT20TQ

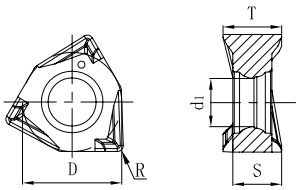
Recommended cutting data

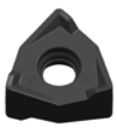
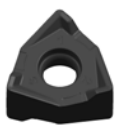
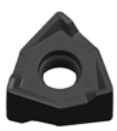
Workpiece		Hardness	Grade	Cutting speed	Feed/edge（fz）		
					Light cutting (L)	Medium cutting (M)	Heavy cutting (H)
				Vc（m/min）	GL	GM	GH
P	Soft Steel	⩽ HB180	A4225 A4230 P4225 P2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Carbon steel, alloy steel	HB180-350	A4225 A4230 P4225 P2115	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	Pre-hardened steel	HRC35-45	A4225 A4230 P4225 P2115	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
M	Stainless (ferrite, martensite)	⩽ HB270	M2140 S4130	140 (100-160)	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
	Stainless (Austenite, diphasic)	⩽ HB270	M2140	120 (100-160)	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
K	Grey cast iron	⩽ HB280	K4125 K2115	180 (150-220)	0.1 (0.05-0.15)	0.14 (0.1-0.2)	0.2 (0.1-0.25)
	Nodular cast iron,vermicular graphite cast iron	⩽ HB350	K4125 K2115	120 (100-180)	0.1 (0.05-0.15)	0.14 (0.1-0.2)	0.2 (0.1-0.25)
S	Heat resistance alloy, Ti alloy	HRC25-35	A4230 M2140 S4130	60 (50-100)	0.1 (0.05-0.15)	0.1 (0.05-0.15)	0.15 (0.1-0.2)
H	Quenched steel	HRC48-55	H4115 H4125	80 (60-120)	0.08 (0.05-0.15)	0.14 (0.1-0.2))	0.12 (0.08-0.20)

Shoulder Milling

WNGU

Double face six edge shoulder milling



Ordering Code		Dimension (mm)					Coated										Uncoated	Cermet
		D	d_1	S	T	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	WNGU040304-GM	6.7	3.25	3.3	3.96	0.4		●	●	○	○	●	●	○				
	WNGU040308-GM	6.7	3.25	3.3	3.96	0.8		●	●	○	○	●	●	○				
	WNGU080608-GM	12.48	4.6	6.45	7.9	0.8		●		○	○	●		○				
	WNGU080608-GH	12.48	4.6	6.45	7.9	0.8		●	●	○	○	●	●	○				

● Standard stock ○ need reservation

WNGU Series Breaker

General workpiece medium cutting	General workpiece heavy cutting
	
GM	GH
	
High stability in most cases	Suitable on roughing, good edge strength

Shoulder Milling

MEE190

Arbor

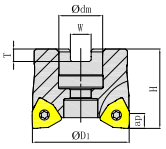


Fig1

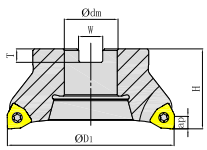


Fig2

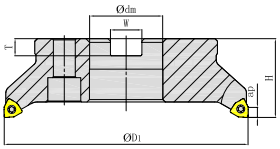


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MEE190050R04A22WN08	50	4	50	22	40	10.4	6.3	7.5	WNGU0806		Fig1	●
MEE190050R05A22WN08	50	5	50	22	40	10.4	6.3	7.5	WNGU0806		Fig1	●
MEE190063R06A22WN08	63	6	63	22	40	10.4	6.3	7.5	WNGU0806		Fig1	●
MEE190080R07A27WN08	80	7	80	27	50	12.4	7	7.5	WNGU0806		Fig1	●
MEE190100R08B32WN08	100	8	100	32	50	14.4	8	7.5	WNGU0806		Fig2	●
MEE190125R07B40WN08	125	7	125	40	63	16.4	9	7.5	WNGU0806		Fig2	●
MEE190125R11B40WN08	125	11	125	40	63	16.4	9	7.5	WNGU0806		Fig2	●
MEE190160R12C40WN08	160	12	160	40	63	16.4	9	7.5	WNGU0806		Fig3	●
MEE190200R16C60WN08	200	16	200	60	63	25.7	14	7.5	WNGU0806		Fig3	●

● Standard stock ○ need reservation

MEE190

Cylindrical straight shank

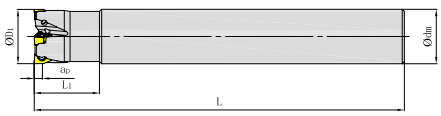
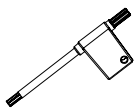
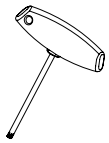


Fig4

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MEE190020R03P20WN04	20	3	20	20	150	30	4	WNGU0403	√	Fig4	●
MEE190025R04P25WN04	25	4	25	25	170	30	4	WNGU0403	√	Fig4	●
MEE190032R05P32WN04	32	5	32	32	195	30	4	WNGU0403	√	Fig4	●
MEE190035R05P32WN04	35	5	35	32	195	30	4	WNGU0403	√	Fig4	●
MEE190040R06P32WN04	40	6	40	32	195	30	4	WNGU0403	√	Fig4	●
MEE190040R03P32WN08	40	3	40	32	160	60	7.5	WNGU0806		Fig4	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench	
Insert \ Shape				
WNGU0403	Specification	SI60M2.5X6.5-03610I	TT08P	--
	Order code	PSI60M025065-03610IS	PTT08PB	--
WNGU0806	Specification	SI60M4.0X11-05510I	TT15P	TT15T
	Order code	PSI60M040110-05510IS	PTT15PB	PTT15TB

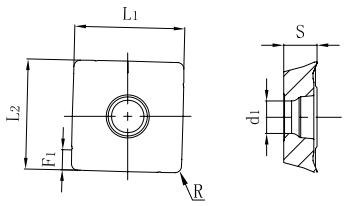
Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Feed/edge (fz)	
					Medium cutting (M)	Heavy cutting (H)
				Vc (m/min)	GM	GH
P	Soft Steel	≤ HB180	A4225 A4230 P4225 P2115	180 (150-220)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
P	Carbon steel, alloy steel	HB180-350	A4225 A4230 P4225 P2115	150 (120-200)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
P	Pre-hardened steel	HRC35-45	A4225 A4230 P4225 P2115	150 (120-200)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
M	Stainless (ferrite, martensite)	≤ HB270	A4225 A4230 M2140	140 (100-160)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
M	Stainless (Austenite, diphasic)	≤ HB270	A4225 A4230 M2140	120 (100-160)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
K	Grey cast iron	≤ HB280	A4230 K4125 K2115	180 (150-220)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
K	Nodular cast iron,vermicular graphite cast iron	≤ HB350	A4230 K4125 K2115	120 (100-180)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
S	Heat resistance alloy, Ti alloy	HRC25-35	A4230 M2140 S4130	60 (50-100)	0.1 (0.05-0.15)	0.1 (0.05-0.15)

Shoulder Milling

SDKT

Single face four edge shoulder milling



Order Code		Dimension(mm)						Coated										Uncoated	Cernet
		L1	L2	S	F1	d1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SDKT14T3PEER-GL	13.92	13.92	3.96	2.5	4.1	0.8	●	●	○	●	●	●	●	●		○		
	SDKT14T3PEER-GM	13.92	13.92	3.96	2.5	4.1	0.8		●	○	●	●		●	●		○		
	SDKT14T3PEER-GH	13.92	13.92	3.96	2.5	4.1	0.8		●	○	○	○	○	○	○		○		

● Standard stock ○ need reservation

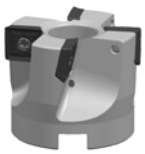
SDKT Series Breaker

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting
		
GL	GM	GH
		
Light cutting of low cutting force, good processing quality	High stability in most cases	Suitable on roughing, good edge strength

Shoulder Milling

MES190

Arbor



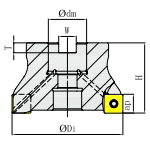


Fig1

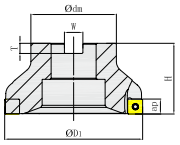


Fig2

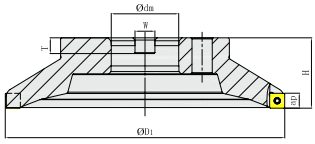


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MES190050R04A22SD14	50	4	50	22	40	10.4	6.3	10	SDKT14	√	Fig1	●
MES190050R05A22SD14	50	5	50	22	40	10.4	6.3	10	SDKT14	√	Fig1	●
MES190063R05A22SD14	63	5	63	22	40	10.4	6.3	10	SDKT14	√	Fig1	●
MES190063R06A22SD14	63	6	63	22	40	10.4	6.3	10	SDKT14	√	Fig1	●
MES190080R06A27SD14	80	6	80	27	50	12.4	7	10	SDKT14	√	Fig1	●
MES190080R08A27SD14	80	8	80	27	50	12.4	7	10	SDKT14	√	Fig1	●
MES190100R07B32SD14	100	7	100	32	50	14.4	8	10	SDKT14		Fig2	●
MES190100R08B32SD14	100	8	100	32	50	14.4	8	10	SDKT14		Fig2	●
MES190125R08B40SD14	125	8	125	40	63	16.4	9	10	SDKT14		Fig3	●
MES190125R10B40SD14	125	10	125	40	63	16.4	9	10	SDKT14		Fig3	●
MES190160R08C40SD14	160	8	160	40	63	16.4	9	10	SDKT14		Fig3	○
MES190160R12C40SD14	160	12	160	40	63	16.4	9	10	SDKT14		Fig3	●
MES190200R10C60SD14	200	10	200	60	63	25.7	14	10	SDKT14		Fig3	○
MES190200R16C60SD14	200	16	200	60	63	25.7	14	10	SDKT14		Fig3	●
MES190250R12C60SD14	250	12	250	60	63	25.7	14	10	SDKT14		Fig3	○
MES190250R18C60SD14	250	18	250	60	63	25.7	14	10	SDKT14		Fig3	○
MES190315R15D60SD14	315	15	315	60	80	25.7	14	10	SDKT14		Fig3	○
MES190315R24D60SD14	315	24	315	60	80	25.7	14	10	SDKT14		Fig3	○

● Standard stock ○ need reservation

MES190

Cylindrical straight shank /Side clamp

Fig4

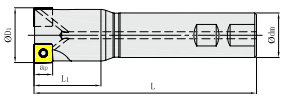
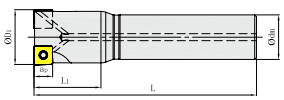


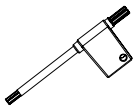
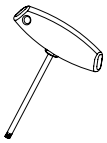
Fig5



Ordering Code	Dia	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MES190040R03P20SD14	40	03	40	20	120	40	10	SDKT14	√	Fig4	●
MES190040R03W32SD14	40	03	40	32	160	40	10	SDKT14	√	Fig5	●
MES190040R04W32SD14	40	04	40	32	120	40	10	SDKT14	√	Fig5	●
MES190050R04W32SD14	50	04	50	32	120	50	10	SDKT14	√	Fig5	●
MES190050R05W32SD14	50	05	50	32	160	50	10	SDKT14	√	Fig5	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench	
Insert \ Shape				
SDKT14*	Specification	SI60M3.5X10-05018I	TI15P	TI15T
	Order code	PSI60M035100-05018IS	TI15PB	TI15TB

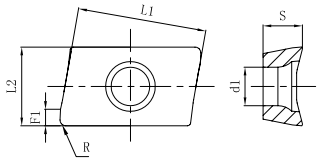
Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Feed/edge (fz)		
					Light cutting (L)	Medium cutting (M)	Heavy cutting (H)
				Vc (m/min)	GL	GM	GH
P	Soft Steel	≤ HB180	A4225 A4230 P4225	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
P	Carbon steel, alloy steel	HB180-350	A4225 A4230 P4225	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
P	Pre-hardened steel	HRC35-45	A4225 A4230 P4225	150 (120-200)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
M	Stainless (ferrite, martensite)	≤ HB270	A4225 A4230 M2140	140 (100-160)	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
M	Stainless (Austenite, diphasic)	≤ HB270	A4225 A4230 M2140	120 (100-160)	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
K	Grey cast iron	≤ HB280	A4230 K4125 K2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
K	Nodular cast iron,vermicular graphite cast iron	≤ HB350	A4230 K4125 K2115	120 (100-180)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
S	Heat resistance alloy, Ti alloy	HRC25-35	A4230 M2140 S4130	60 (50-100)	0.1 (0.05-0.15)	0.1 (0.05-0.15)	0.15 (0.1-0.2)
H	Quenched steel	HRC48-55	A4230	80 (60-120)	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)

Shoulder Milling

XPHT

General application shoulder milling insert



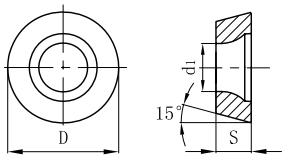
Ordering Code		Dimension(mm)						Coated										Uncoated	Cermet
		L_1	L_2	S	F_1	d_1	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	XPHT160808T	15.6	9.53	4.76	2	4.65	0.8						○						
	XPHT160412T	15.6	9.53	4.76	2	4.65	1.2						○						

● Standard stock ○ need reservation

Profile Milling

RD

Profile Milling Inserts



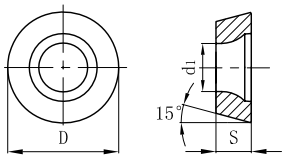
Ordering Code		Dimension(mm)			Coated										Uncoated	Cermet
		D	S	d1	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	RDET0803M0-BL	8	3.18	2.94	○	○	○					○				
	RDET10T3M0-BL	10	3.97	4.4	○	●	○					○				
	RDET1204M0-BL	12	4.76	4.4	○	●	○					○				
	RDET1604M0-BL	16	4.76	5.5	○	●	○					○				
	RDET0802M0-GM	8	2.38	2.94	●	○	○					○				
	RDET0803M0-GM	8	3.18	2.94	○	○	○					○				
	RDET10T3M0-GM	10	3.97	4.4	●	●	○		○			○				
	RDET1204M0-GM	12	4.76	4.4	●	●	○		○			○				
	RDET1604M0-GM	16	4.76	5.5	○	●	●					○				
	RDET1204M0T-MM	12	4.76	4.4	○	○	●					○				
	RDEW0501M0	5	1.51	2.2	●	●	○			○		○				
	RDEW0702M0	7	2.38	2.8	●	●	●					○				
	RDEW1003M0	10	3.18	4.4	○	○	○									
	RDEW0702M0T	7	2.38	2.8	○	●	○			○						
	RDEW0803M0T	8	3.18	2.94	●	○	●									
	RDEW10T3M0T	10	3.97	4.4	●	●	●									
	RDEW1204M0T	12	4.76	4.4	●	●	●			○	○					
	RDEW1604M0T	16	4.76	5	○	●	●			○	○					
	RDEW12T3M0T-BM	12	3.97	4.4	○	○	○									
	RDEW1204M0T-BM	12	4.76	4.4	○	●	○									

● Standard stock ○ need reservation

Profile Milling

RD

Profile Milling Inserts



Ordering Code		Dimension(mm)			Coated										Uncoated	Cermet
		D	S	d_1	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	RDMT10T3M0-GM	10	3.97	4.4	●	●	●	○	○	○	○	●		○		●
	RDMT1204M0-GM	12	4.76	4.4	●	●	●	●	○	●	○	○		●		●
	RDMW1204M0T-BM	12	4.76	4.4	●	●	●	●		○	○			○		●
	RDMW1605M0T-BM	16	5.56	5.5	●	●	●			○						
	RDMW10T3M0T	10	3.97	4.4	●	●	●	○		○	○			○		●
	RDMW1604M0T	16	4.76	5.5	●	●	○	○		○	○					●

● Standard stock ○ need reservation

RD Series Breaker

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting	
			
BL	GM	None	
			
Big rake angle design, sharp edge	Suitable edge width and rake angle design, has good strength and sharpness	Flat design, better edge strength	

Profile Milling

MPA100

Arbor

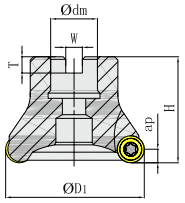


Fig1

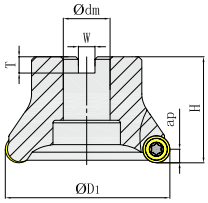


Fig2

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MPA100040R05A16RD08	40	5	40	16	40	8.4	6.3	4	RD**0803		Fig1	●
MPA100050R04A22RD10	50	4	50	22	50	10.4	6.3	5	RD**10T3		Fig1	●
MPA100050R04A22RD12	50	4	50	22	50	10.4	6.3	6	RD**1204		Fig1	●
MPA100050R05A22RD12	50	5	50	22	50	10.4	6.3	6	RD**1204		Fig1	●
MPA100063R05A22RD12	63	5	63	22	50	10.4	6.3	6	RD**1204		Fig1	●
MPA100063R04A22RD16	63	4	63	22	40	10.4	6.3	8	RD**1604		Fig1	●
MPA100080R05A27RD16	80	5	80	27	50	12.4	7	8	RD**1604		Fig1	●
MPA100100R06B32RD16	100	6	100	32	50	14.4	9	8	RD**1604		Fig2	●
MPA100125R07B40RD16	125	7	125	40	63	16.4	9	8	RD**1604		Fig2	○

● Standard stock ○ need reservation

MPA100

Cylindrical straight shank

Fig3

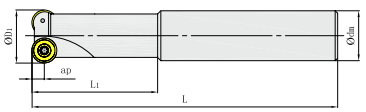
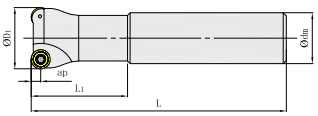


Fig4



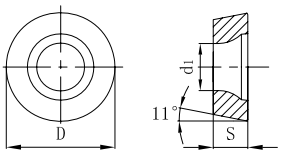
Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MPA100010R02P16RD05	10	2	10	16	120	40	2.5	RD**0501		Fig3	●
MPA100012R02P16RD05	12	2	12	16	120	40	2.5	RD**0501		Fig3	●
MPA100016R02P16RD07	16	2	16	16	160	60	3.5	RD**0702		Fig3	●
MPA100017R02P16RD08	17	2	17	16	160	60	4	RD**0803		Fig4	○
MPA100020R02P20RD08	20	2	20	20	160	60	4	RD**0803		Fig3	●
MPA100020R02P20RD10	20	2	20	20	160	50	5	RD**10T3		Fig3	●
MPA100025R02P20RD10	25	2	25	20	160	50	5	RD**10T3		Fig4	●
MPA100032R02P32RD12	32	2	32	32	200	80	6	RD**1204		Fig3	○
MPA100032R03P32RD12S	32	3	32	32	160	50	6	RD**1204		Fig3	○
MPA100032R02P32RD16	32	3	32	32	200	80	8	RD**1604		Fig3	○
MPA100035R02P32RD16	35	2	35	32	200	80	8	RD**1604		Fig4	○

● Standard stock ○ need reservation

Profile Milling

RP

Profile Milling Inserts



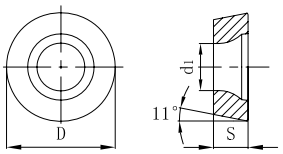
Ordering Code		Dimension(mm)			Coated									Uncoated	Cermet
		D	S	d1	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	RPET1003M0-GL	10	3.18	4.4	○	○	○					○				
	RPET1204M0-GL	12	4.76	4.4	○	○	○					○				
	RPET08T2M0-GM	8	2.78	2.94	●	○	●					○				
	RPET1003M0T-GM	10	3.18	4.4	○	○	○		○			○				
	RPET1204M0-GM	12	4.76	4.4	●	○	○		○			○				
	RPET1204M0T-GM	12	4.76	4.4	○	●	○		○	○		○				
	RPET1606M0T-GM	16	6.35	5.5	○	●	○					●				
	RPET1606M0-SM	16	6.35	5.5		○	○		○	○		○				
	RPET1606M0T-GH	16	6.35	5.5	○	●	○									
	RPEW08T2M0	8	2.78	2.94	○	○	○									
	RPEW1003M0	10	3.18	4.4	○	●	○									
	RPEW10T3M0	10	3.97	4.4	○		○									
	RPEW1003M0T	10	3.18	4.4	●	●	●									
	RPEW1204M0T	12	4.76	4.4	○	○	○									

● Standard stock ○ need reservation

Profile Milling

RP

Profile Milling Inserts



Ordering Code		Dimension(mm)			Coated										Uncoated	Cermet
		D	S	d1	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	RPMT10T3M0-GM	10	3.97	4.4	●	●	●					●				
	RPMT1003M0T-GM	10	3.18	4.4	●	●	○	●	●	○	○	●				●
	RPMT1204M0-GM	12	4.76	4.4	●	●	●	○	○	●	○	●	○	○		●
	RPMW1003M0T	10	3.18	4.4	●	●	●	○		○	○		○			●
	RPMW1204M0T	12	4.76	4.4	●	●	●	○		○			○			●

● Standard stock ○ need reservation

RP Series Breaker

General workpiece light cutting	General workpiece medium cutting	General workpiece heavy cutting	
			
GL	GM	GH	None
			
Big rake angle, sharp edge	Suitable edge width and rake design, has good strength and sharpness	Small rake angle, flat design, high edge strength	

Profile Milling

MPB100

Arbor

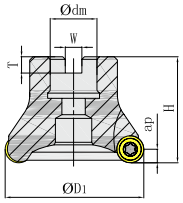


Fig1

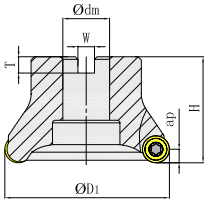


Fig2

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MPB100040R05A16RP08	40	5	40	16	40	8.4	6.3	4	RP**08T2		Fig1	○
MPB100040R04A16RP10	40	4	40	16	40	8.4	6.3	5	RP**1003		Fig1	○
MPB100050R04A22RP10	50	4	50	22	50	10.4	6.3	5	RP**1003		Fig1	○
MPB100050R04A22RP12	50	4	50	22	50	10.4	6.3	6	RP**1204		Fig1	●
MPB100063R05A22RP12	63	5	63	22	50	10.4	6.3	6	RP**1204		Fig1	●
MPB100063R04A22RP16	63	4	63	22	40	10.4	6.3	8	RP**1606		Fig1	○
MPB100080R06A27RP16	80	6	80	27	50	12.4	7	8	RP**1606		Fig2	○
MPB100100R07B32RP16	100	7	100	32	50	14.4	8	8	RP**1606		Fig2	●
MPB100125R08B40RP16	125	8	125	40	63	16.4	9	8	RP**1606		Fig2	●

● Standard stock ○ need reservation

MPB100

Cylindrical straight shank

Fig3

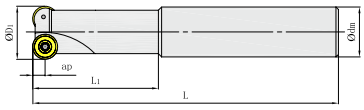
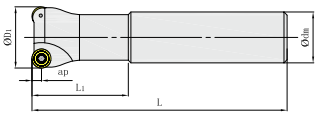


Fig4



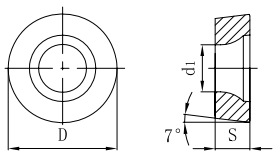
Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MPB100016R02P16RP08S	16	2	16	16	120	40	4	RP**08T2		Fig3	○
MPB100016R02P16RP08	16	2	16	16	160	60	4	RP**08T2		Fig3	○
MPB100020R02P20RP08	20	2	20	20	160	60	4	RP**08T2		Fig3	○
MPB100025R03P25RP08	25	3	25	25	160	60	4	RP**08T2		Fig3	○
MPB100020R02P20RP10	20	2	20	20	160	50	5	RP**1003		Fig3	○
MPB100025R02P20RP10	25	2	25	20	160	50	5	RP**1003		Fig4	●
MPB100025R02P20RP10L	25	2	25	20	200	50	5	RP**1003		Fig4	○
MPB100025R02P25RP12	25	2	25	25	160	50	6	RP**1204		Fig3	●
MPB100032R02P25RP12	32	2	32	25	160	50	6	RP**1204		Fig4	●
MPB100032R02P25RP12L	32	2	32	25	200	60	6	RP**1204		Fig4	●
MPB100032R03P25RP12	32	3	32	25	160	50	6	RP**1204		Fig4	○
MPB100040R02P32RP16	40	2	40	32	200	80	8	RP**1606		Fig.4	○

● Standard stock ○ need reservation

Profile Milling

RC

Profile Milling Inserts



Ordering Code		Dimension(mm)			Coated									Uncoated	Cermet
		D	S	d1	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	RCET10T3M0-EM	10	3.97	4.4	●	○		○			○	●				●
	RCET1204M0-EM	12	4.76	4	○	●			○		○	○				●
	RCET1606M0-EM	16	6.35	5.5	○	○		○	●	○	○	○				
	RCET2006M0-EM	20	6.35	6.5		●					○					
	RCET1204M0-MM	12	4.76	4	●	○			○	○		○				●
	RCET1204M0-KM	12	4.76	4	○											
	RCET1606M0-KM	16	6.35	5.5	○											
	RCET1204M0T-EH	12	4.76	4.4		○			○	○						
	RCET1606M0T-EH	16	6.35	5.5		●			●	●	○	○				
	RCET2006M0T-EH	20	6.35	6.5		○										
	RCET1606M0T-KH	16	6.35	5.5	○	○										

● Standard stock ○ need reservation

RC Series Breaker

General workpiece medium cutting		General workpiece heavy cutting	
			
EM	MM	EH	KH
			
Double rake angle design, has good strength and sharpness		Small rake angle and chamfer design, higher edge strength	

Profile Milling

MPC100

Arbor

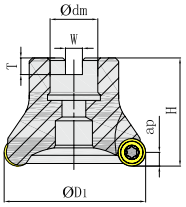


Fig1

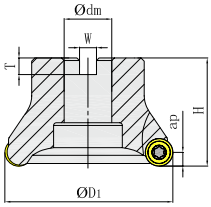


Fig2

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MPC100050R04A22RC12	50	4	50	22	50	10.4	6.3	6	RC**1204		Fig1	○
MPC100050R05A22RC12	50	5	50	22	50	10.4	6.3	6	RC**1204		Fig1	●
MPC100063R04A22RC12	63	4	63	22	50	10.4	6.3	6	RC**1204		Fig1	○
MPC100063R05A22RC12	63	5	63	22	50	10.4	6.3	6	RC**1204		Fig1	○
MPC100063R06A22RC12	63	6	63	22	50	10.4	6.3	6	RC**1204		Fig1	○
MPC100080R06A27RC12	80	6	80	27	50	12.4	7	6	RC**1204		Fig1	○
MPC100063R04A22RC16	63	4	63	22	50	10.4	6.3	8	RC**1606		Fig1	●
MPC100063R05A22RC16	63	5	63	22	50	10.4	6.3	8	RC**1606		Fig1	○
MPC100080R05A27RC16	80	5	80	27	50	12.4	7	8	RC**1606		Fig1	○
MPC100080R06A27RC16	80	6	80	27	50	12.4	7	8	RC**1606		Fig1	●
MPC100100R06B32RC16	100	6	100	32	50	14.4	8	8	RC**1606		Fig2	○
MPC100100R06B32RC20	100	6	100	32	50	14.4	8	10	RC**2006		Fig2	●
MPC100125R07B40RC20	125	7	125	40	63	14.4	8	10	RC**2006		Fig2	○
MPC100100R06B32RC20	100	6	100	32	50	14.4	8	10	RC**2006		Fig2	○
MPC100125R07B32RC20	125	7	125	32	63	14.4	8	10	RC**2006		Fig2	○
MPC100160R08B40RC20	160	8	160	40	63	14.4	8	10	RC**2006		Fig2	○

● Standard stock ○ need reservation

MPC100

Cylindrical straight shank

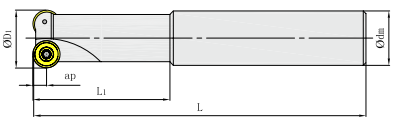
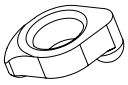
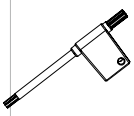
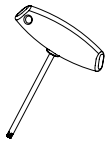


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MPC100020R02P20RC10	20	2	20	20	160	50	5	RC**10T3		Fig3	○
MPC100025R02P20RC10	25	2	25	20	160	50	5	RC**10T3		Fig3	○
MPC100032R02P25RC12	32	2	32	25	200	50	6	RC**1204		Fig3	○
MPC100040R03P32RC12	40	3	40	32	200	50	6	RC**1204		Fig3	●

● Standard stock ○ need reservation

Spare Part Chart

Part Name		Clamp Screw	Insert Clamp	Insert Screw	Screw Wrench	
Insert \ Shape						
RD**05	Specification	--	--	SI60M2X3.7-02806	TT06P	--
	Order code	--	--	PSI60M020037-02806S	PTT06PQ	--
RD**07	Specification	--	--	SI60M2.5X5-03509	TT08P	
	Order code	--	--	PSI60M025050-03509S	PTT08PQ	
RD**08 RP**08	Specification	--	--	SI60M2.5X6.5-03509	TT08P	--
	Order code	--	--	PSI60M025065-03509S	PTT08PQ	--
RD**10 RP**10	Specification	SI60M3.5X10-05510	CAX1	SI60M4X8.9-05313	TT15P	--
	Order code	PSI60M035100-05510S	PCAX01RQ	PSI60M040089-05313S	PTT15PQ	--
RC**10	Specification	--	--	SI60M4X8.9-05313	TT15P	--
	Order code	--	--	PSI60M040089-05313S	PTT15PQ	--
RD**12 RP**12	Specification	SI60M3.5X12-05314	CAX2	SI60M4X8.9-05313	TT15P	--
	Order code	PSI60M035120-05314S	PCAX02RQ	PSI60M040089-05313S	PTT15PQ	--
RC**12	Specification	--	--	SI60M3.5X8-05314	TT15P	--
	Order code	--	--	PSI60M035080-05314S	PTT15PQ	--
RD**16 RP**16/RC**16	Specification	--	--	SI60M5X10.8-07209	TT20P	TT20T
	Order code	--	--	PSI60M050108-07209S	PTT20PQ	PTT20TQ
RC**20	Specification	--	--	SI60M6X16-08509	--	TT25T
	Order code	--	--	PSI60M060160-08509S	--	PTT25TQ

Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Screw Specification (IC)	Feed/edge (fz)		
						Light cutting (L)	Medium cutting (M)	Heavy cutting (H)
				Vc (m/min)		GL/BL	GM/MM/EM	GH/KH/T
P	Soft Steel	≤ HB180	P2115 A4225 P4225 A4230	180 (150-220)	05	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)
					07 08	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.10-0.25)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.25 (0.15-0.35)	0.30 (0.20-0.45)
					20	0.20 (0.12-0.25)	0.30 (0.15-0.40)	0.35 (0.20-0.45)
	Carbon steel, alloy steel	HB180-350	P2115 A4225 P4225 A4230	160 (140-200)	05	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)
					07 08	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.10-0.25)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.25 (0.15-0.35)	0.30 (0.20-0.45)
					20	0.20 (0.12-0.25)	0.30 (0.15-0.40)	0.35 (0.20-0.45)
	Pre-hardened steel	HRC35-45	P2115 A4225 P4225 A4230	120 (100-160)	05	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)
					07 08	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.10-0.25)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.25 (0.15-0.35)	0.30 (0.20-0.45)
					20	0.20 (0.12-0.25)	0.30 (0.15-0.40)	0.35 (0.20-0.45)
M	Stainless (ferrite, martensite)	≤ HB270	M2140	140 (120-180)	05	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)
					07 08	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.10-0.25)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.25 (0.15-0.35)	0.35 (0.20-0.45)
					20	0.20 (0.12-0.25)	0.30 (0.15-0.40)	0.35 (0.20-0.45)
	Stainless (Austenite, diphasic)	≤ HB270	M2140	120 (100-160)	05	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)
					07 08	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.10-0.25)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.25 (0.15-0.35)	0.35 (0.20-0.45)
					20	0.20 (0.12-0.25)	0.30 (0.15-0.40)	0.35 (0.20-0.45)

Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Screw Specification (IC)	Feed/edge（fz）		
						Light cutting (L)	Medium cutting (M)	Heavy cutting (H)
				Vc（m/min）		GL/BL	GM/MM/EM	GH/KH/T
K	Grey cast iron	⩽ HB280	K2115 K4125	180 (150-220)	05	0.08 (0.05-0.15)	0.15 (0.08-0.15)	0.12 (0.08-0.20)
					07 08	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.10-0.25)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.25 (0.15-0.35)	0.30 (0.20-0.45)
					20	0.20 (0.12-0.25)	0.30 (0.15-0.40)	0.35 (0.20-0.45)
	Nodular cast iron,vermicular graphite cast iron	⩽ HB350	K2115 K4125	120 (100-180)	05	0.08 (0.05-0.15)	0.15 (0.08-0.15)	0.12 (0.08-0.20)
					07 08	0.08 (0.05-0.15)	0.12 (0.08-0.18)	0.15 (0.10-0.25)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.25 (0.15-0.35)	0.30 (0.20-0.45)
					20	0.20 (0.12-0.25)	0.30 (0.15-0.40)	0.35 (0.20-0.45)
H	Quenched steel	HRC48-55	H4125 H4115	80 (60-120)	08	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)
					10 12	0.15 (0.10-0.25)	0.20 (0.15-0.30)	0.25 (0.20-0.35)
					16	0.18 (0.10-0.25)	0.22 (0.15-0.35)	0.28 (0.20-0.40)
					20	0.20 (0.15-0.30)	0.25 (0.15-0.35)	0.30 (0.20-0.40)

- RPM(min-1)=(1000*cutting speed)/(3.14*cutter diameter)
- Machine feed(mm/min)=feed per tooth * flute No.* RPM

RD/RP/RC recommend cutting feed and cutting depth

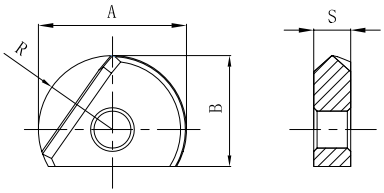
Screw Specification (IC)	Application	cutting depth（mm）							
		0.1	0.5	1	1.5	2	2.5	3	4
05	Medium cutting (M)	0.35 (0.22-0.63)	0.17 (0.08-0.26)	0.12 (0.06-0.21)	0.1 (0.05-0.17)	-	-	-	-
	Heavy cutting (H)	0.45 (0.29-0.95)	0.2 (0.12-0.38)	0.16 (0.09-0.28)	0.14 (0.07-0.25)	-	-	-	-
07 08	Medium cutting (M)	0.59 (0.23-0.90)	0.27 (0.10-0.41)	0.20 (0.08-0.30)	0.17 (0.06-0.26)	0.15 (0.03-0.23)	-	-	-
	Heavy cutting (H)	0.68 (0.32-1.13)	0.31 (0.14-0.52)	0.23 (0.11-0.38)	0.19 (0.09-0.32)	0.17 (0.08-0.29)	-	-	-
10	Light cutting (L)	0.75 (0.25-0.90)	0.34 (0.11-0.41)	0.25 (0.08-0.30)	0.21 (0.07-0.25)	0.19 (0.06-0.23)	0.17 (0.05-0.21)	-	-
	Medium cutting (M)	0.90 (0.25-1.26)	0.41 (0.11-0.57)	0.30 (0.08-0.42)	0.25 (0.07-0.35)	0.23 (0.06-0.31)	0.21 (0.05-0.28)	-	-
	Heavy cutting (H)	1.01 (0.35-1.51)	0.46 (0.16-0.69)	0.33 (0.12-0.50)	0.28 (0.10-0.42)	0.25 (0.09-0.38)	0.23 (0.08-0.35)	-	-
12	Light cutting (L)	0.83 (0.28-1.10)	0.38 (0.13-0.50)	0.27 (0.09-0.36)	0.23 (0.08-0.30)	0.20 (0.07-0.27)	0.18 (0.06-0.25)	0.17 (0.06-0.23)	-
	Medium cutting (M)	0.99 (0.28-1.38)	0.45 (0.13-0.63)	0.33 (0.09-0.45)	0.27 (0.08-0.38)	0.24 (0.07-0.34)	0.22 (0.06-0.31)	0.21 (0.06-0.29)	-
	Heavy cutting (H)	1.10 (0.39-1.65)	0.50 (0.18-0.75)	0.36 (0.13-0.54)	0.30 (0.11-0.45)	0.27 (0.09-0.40)	0.25 (0.08-0.37)	0.23 (0.08-0.35)	-
16	Light cutting (L)	1.14 (0.32-1.59)	0.52 (0.14-0.72)	0.37 (0.10-0.52)	0.31 (0.09-0.43)	0.27 (0.08-0.38)	0.25 (0.07-0.35)	0.23 (0.06-0.32)	0.21 (0.06-0.29)
	Medium cutting (M)	1.27 (0.32-1.90)	0.57 (0.14-0.86)	0.41 (0.10-0.62)	0.34 (0.09-0.51)	0.30 (0.08-0.45)	0.28 (0.07-0.41)	0.26 (0.06-0.38)	0.23 (0.06-0.35)
	Heavy cutting (H)	1.59 (0.44-2.54)	0.72 (0.20-1.15)	0.52 (0.14-0.83)	0.43 (0.12-0.69)	0.38 (0.11-0.60)	0.35 (0.10-0.54)	0.32 (0.09-0.51)	0.29 (0.08-0.46)

Remark: During round Insert application, in general, the Ap should be less than 25% of IC.

Profile Milling

QTD

Ballnose Milling insert

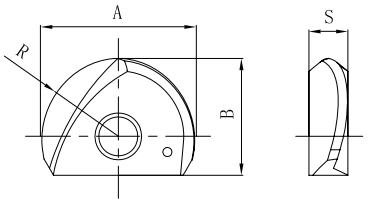


Ordering Code		Dimension(mm)				Coated										Uncoated	Cermet
		R	A	B	S	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	PD10TM
	QTD1203	6	12	10	3	●	○				○			●	●		
	QTD1604	8	16	12	4	●	○				●			●	●		
	QTD2005	10	20	15	5	●	○				●			●	●		
	QTD2506	12.5	25	18.5	6	●	○				○			●	●		
	QTD3007	15	30	22.5	7	●	○				○			●	●		
	QTD3207	16	32	23.5	7	●	○				○			●	●		

● Standard stock ○ need reservation

QTD-S-T

Curve Flute Ballnose Milling Insert



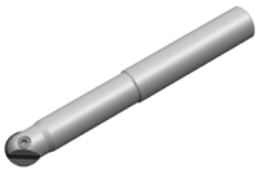
Ordering Code		Dimension(mm)				Coated										Uncoated	Cermet
		R	A	B	S	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	PD10TM
	QTD1203-S-T	6	12	10	3									●	○		
	QTD1604-S-T	8	16	12	4									●	○		
	QTD2005-S-T	10	20	15	5									●	○		
	QTD2506-S-T	12.5	25	18.5	6									●	○		
	QTD3007-S-T	15	30	22.5	7									●	○		
	QTD3207-S-T	16	32	23.5	7									●	○		

● Standard stock ○ need reservation

Profile Milling

MBA100

Straight shank



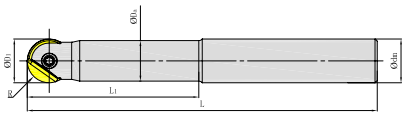


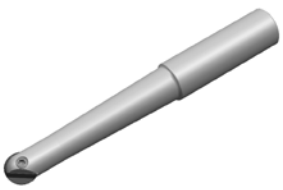
Fig1

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	ΦDa	L	L1	R				
MBA100012R01P12QT12S	12	1	12	12	10.5	90	30	6	QTD1203		Fig1	●
MBA100012R01P12QT12	12	1	12	12	10.5	120	60	6	QTD1203		Fig1	●
MBA100012R01P12QT12L	12	1	12	12	10.5	150	90	6	QTD1203	x	Fig1	●
MBA100016R01P16QT16S	16	1	16	16	14.5	100	35	8	QTD1604	x	Fig1	●
MBA100016R01P16QT16	16	1	16	16	14.5	135	70	8	QTD1604	x	Fig1	●
MBA100016R01P16QT16L	16	1	16	16	14.5	170	100	8	QTD1604	x	Fig1	●
MBA100020R01P20QT20S	20	1	20	20	18.5	110	45	10	QTD2005	x	Fig1	●
MBA100020R01P20QT20	20	1	20	20	18.5	160	80	10	QTD2005	x	Fig1	●
MBA100020R01P20QT20L	20	1	20	20	18.5	210	135	10	QTD2005	x	Fig1	●
MBA100025R01P25QT25S	25	1	25	25	23	125	50	12.5	QTD2506	x	Fig1	●
MBA100025R01P25QT25	25	1	25	25	23	180	100	12.5	QTD2506	x	Fig1	●
MBA100025R01P25QT25L	25	1	25	25	23	235	150	12.5	QTD2506	x	Fig1	●
MBA100030R01P32QT30S	30/32	1	30/32	32	28.5	150	60	15/16	QTD3007 QTD3207	x	Fig1	●
MBA100030R01P32QT30	30/32	1	30/32	32	28.5	200	120	15/16	QTD3007 QTD3207	x	Fig1	●
MBA100030R01P32QT30L	30/32	1	30/32	32	28.5	270	180	15/16	QTD3007 QTD3207	x	Fig1	●

● Standard stock ○ need reservation

MBA100

Cone Neck



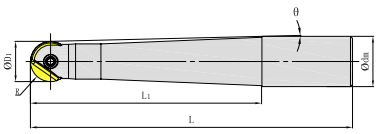


Fig2

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1	R	Θ				
MBA100012R01P16TQT12L	12	1	12	16	145	85	6	1.5°	QTD1203	x	Fig2	●
MBA100016R01P20TQT16L	16	1	16	20	166	100	8	1°	QTD1604	x	Fig2	●
MBA100020R01P25TQT20L	20	1	20	25	191	115	10	1.5°	QTD2005	x	Fig2	●
MBA100025R01P32TQT25L	25	1	25	32	215	135	12.5	1.5°	QTD2506	x	Fig2	●
MBA100030R01P32TQT30L	30/32	1	30/32	32	240	160	15/16	0.5°	QTD3007 QTD3207	x	Fig2	●

● Standard stock ○ need reservation

Profile Milling

MBA100

Indexable type

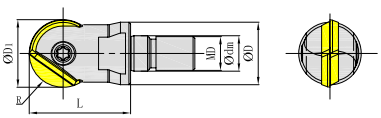
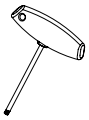


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Gauge Insert	Coolant	Shape	Stock
			ΦD1	ΦD	Φdm	L	R	MD				
MBA100012R01M06QT12	12	1	12	11.5	6.5	20	6	M6	QTD1203	x	Fig3	●
MBA100016R01M08QT16	16	1	16	15	8.5	23	8	M8	QTD1604	x	Fig3	●
MBA100020R01M10QT20	20	1	20	18.5	10.5	30	10	M10	QTD2005	x	Fig3	●
MBA100025R01M12QT25	25	1	25	24	12.5	35	12.5	M12	QTD2506	x	Fig3	●
MBA100030R01M16QT30	30/32	1	30/32	29	17	43	15/16	M16	QTD3007 QTD3207	x	Fig3	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench
Insert \ Shape			
QTD1203	Specification	SBM3.5X9.5	TT10T
	Order code	PSBM035095Q	PTT10TQ
QTD1604	Specification	SBM4.0X13.5	TT15T
	Order code	PSBM040135Q	PTT15TQ
QTD2005	Specification	SBM5.0X16.5	TT20T
	Order code	PSBM050165Q	PTT20TQ
QTD2506	Specification	SBM6.0X20	TT20T
	Order code	PSBM060200Q	PTT20TQ
QTD3007	Specification	SBM8.0X25	TT30T
	Order code	PSBM080250Q	PTT30TQ
QTD3207	Specification	SBM8.0X25	TT30T
	Order code	PSBM080250Q	PTT30TQ

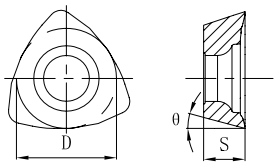
Recommended Cutting Data

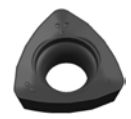
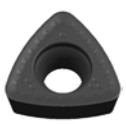
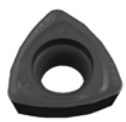
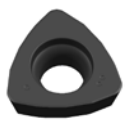
Workpiece		Hardness	Grade	Cutting speed	Feed/edge（fz）						Biggest cutting depth ap (mm)	ae (mm)
					Diameter：ΦD（mm）							
				Vc（m/min）	12	16	20	25	30	32		
P	Soft Steel	⩽ HB180	A4225 A4230	400 (350-450)	0.3-0.6	0.3-0.6	0.5-0.8	0.5-0.8	0.7-1.0	0.7-1.0	0.3-0.6	D/40
	Carbon steel, alloy steel	HB180-350	A4225 A4230	350 (300-400)	0.3-0.6	0.3-0.6	0.5-0.8	0.5-0.8	0.7-1.0	0.7-1.0	0.3-0.6	D/40
	Pre-hardened steel	HRC35-45	A4225 A4230	350 (300-400)	0.3-0.6	0.3-0.6	0.5-0.8	0.5-0.8	0.7-1.0	0.7-1.0	0.3-0.6	D/40
K	Grey cast iron	⩽ HB280	K4125 H4125 H4115	350 (300-400)	0.2-0.5	0.2-0.5	0.4-0.7	0.4-0.7	0.7-1.0	0.7-1.0	0.3-0.6	D/50
	Nodular cast iron, vermicular graphite cast iron	⩽ HB350	K4125 H4125 H4115	450 (400-500)	0.1-0.4	0.1-0.4	0.3-0.6	0.3-0.6	0.5-0.8	0.5-0.8	0.2-0.5	D/40
H	Quenched steel	HRC48-55	H4125 H4115	150 (100-200)	0.1-0.4	0.1-0.4	0.2-0.5	0.2-0.5	0.2-0.5	0.2-0.5	0.1-0.3	D/50

High Feed Milling

UD/UP

3 Edges High Feed Milling



Ordering Code		Dimension(mm)			Coated										Uncoated	Cermet
		D	S	θ	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	UDET080308-MM	6.8	3.18	15	●	●	○	○	●	○	○	○				
	UDET12T312-MM	9.6	3.97	15	●	●	○	○	○	○	○	○				
	UPET170520-PM	13	5.56	11	●	●	●	●	●	●	●	○				
	UDMT080308T-MH	6.8	3.18	15	●	●	○	●	○	○	○	○				
	UDMT12T312T-MH	9.6	3.97	15	●	●	○	○	○	○	○	○				
	UDMW12T312T	9.6	3.97	15	●	●	○	○	○	○	○	○				

● Standard stock ○ need reservation

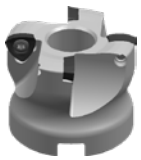
UD/UP Series Geometry

Medium Cutting for General Material		Rough Cutting for General Material	
			
MM	PM	MH	None
			
Bigger rake angle makes cutting edge more sharp	Chamfered cutting edge with rake angle,it is suitable for medium cutting	Smaller rake angle makes strong cutting edge	Flat insert design makes strongest cutting edge

High Feed Milling

MKA110

Arbor



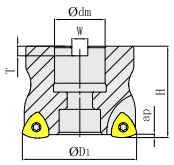


Fig1

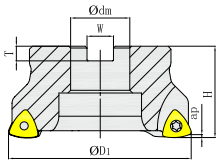


Fig2

Ordering Code	Dia-meter	Teeth	Dimension (mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MKA110040R05A16UD08	40	5	40	16	40	8.4	5.6	1	UD**0803	x	Fig1	●
MKA110050R06A22UD08	50	6	50	22	40	10.4	6.3	1	UD**0803	x	Fig1	●
MKA110050R04A22UD12	50	4	50	22	40	10.4	6.3	1.5	UD**12T3	x	Fig1	●
MKA110063R05A22UD12	63	5	63	22	40	10.4	6.3	1.5	UD**12T3	x	Fig1	●
MKA110063R04A22UP17	63	4	63	22	40	10.4	6.3	2	UP**1705	x	Fig1	●
MKA110063R05A22UP17	63	5	50	22	40	10.4	6.3	2	UP**1705	√	Fig1	●
MKA110080R05A27UP17	80	5	80	27	50	12.4	7	2	UP**1705	x	Fig1	●
MKA110080R06A27UP17	80	6	80	27	50	12.4	7	2	UP**1705	x	Fig1	●
MKA110100R06B32UP17	100	6	100	32	50	14.4	8	2	UP**1705	x	Fig2	●

● Standard stock ○ need reservation

MKA110

Cylindrical straight shank

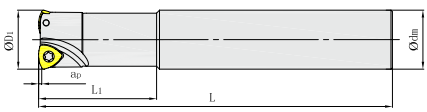


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MKA110020R02P20UD08S	20	2	20	20	120	40	1	UD**0803	x	Fig3	●
MKA110020R02P20UD08	20	2	20	20	160	50	1	UD**0803	x	Fig3	●
MKA110025R02P25UD08S	25	2	25	20	120	40	1	UD**0803	x	Fig3	●
MKA110025R02P25UD08	25	2	25	25	160	50	1	UD**0803	x	Fig3	●
MKA110025R03P25UD08	25	3	25	25	160	40	1	UD**0803	x	Fig3	●
MKA110035R05P32UD08	35	5	35	32	200	50	1	UD**0803	x	Fig3	●
MKA110025R02P25UD12	25	2	25	25	160	50	1.5	UD**12T3	x	Fig3	●
MKA110030R03P32UD12	30	3	30	32	200	50	1.5	UD**12T3	x	Fig3	●
MKA110032R03P32UD12	32	3	32	32	200	50	1.5	UD**12T3	x	Fig3	●
MKA110035R03P32UD12	35	3	35	32	200	50	1.5	UD**12T3	x	Fig3	●

● Standard stock ○ need reservation

High Feed Milling

MKA110

Replaceable Cutter

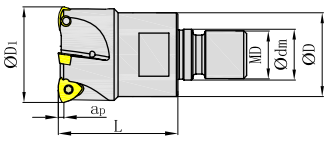
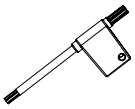
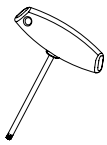


Fig4

Order Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	ΦD	Φdm	L	MD					
MKA110020R02M10UD08	20	2	20	18	10.5	30	M10	1	UD**0803	√	Fig4	●
MKA110025R03M12UD08	25	3	25	23	12.5	35	M12	1	UD**0803	√	Fig4	●
MKA110032R03M16UD08	32	3	32	28	17	40	M16	1	UD**0803	√	Fig4	○
MKA110032R04M16UD08	32	4	32	28	17	40	M16	1	UD**0803	√	Fig4	●
MKA110035R05M16UD08	35	5	35	29	17	40	M16	1	UD**0803	√	Fig4	●
MKA110025R02M12UD12	25	2	25	23	12.5	35	M12	1.5	UD**12T3	√	Fig4	●
MKA110032R03M16UD12	32	3	32	28	17	40	M16	1.5	UD**12T3	√	Fig4	●
MKA110035R03M16UD12	35	3	35	29	17	40	M16	1.5	UD**12T3	√	Fig4	●

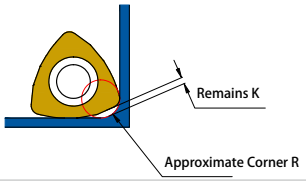
● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench	
Insert \ Shape				
UD*T0803	Specification	SI60M2.5X6.3-03510	TT08P	--
	Order code	PSI60M025063-03510B	PTT08PB	--
UD*T12T3	Specification	SI60M4X11-05609	TT15P	TT15T
	Order code	PSI60M040110-05609B	PTT15PB	PTT15TB
UPET1705	Specification	SI60M5X10.8-07214	TT20P	TT20T
	Order code	PSI60M050108-07214B	PTT20PQ	PTT20TB

Parameters for Programing Calculations

Insert	Approximate Corner R(mm)	Remains K(mm)
UD**0803	1.8	0.58
UD**12T3	2.8	0.86
UP**1705	3.5	1.02



Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Feed/edge（fz）	
				Vc（m/min）	Medium cutting (M)	Heavy cutting (H)
P	Mild Steel	≤ HB200	A4225 P4225 A4230	180 (150-200)	1.2 (0.8-1.5)	1.5 (1.0-2.0)
	Carbon steel, alloy steel	≤ HRC35	A4225 A4230 P2115	150 (120-180)	1.2 (0.8-1.5)	1.5 (1.0-2.0)
	Carbon Steel ,Alloy Steel	HRC35-45	A4230	120 (90-140)	1.0 (0.6-1.2)	1.2 (0.8-1.5)
M	Stainless（ferrite, martensite）	≤ HRC35	M2140 A4230	120 (90-140)	0.8 (0.6-1.0)	1.0 (0.8-1.2)
K	Cast Iron ,Nodular Cast Iron	≤ HB350	K2115 K4125	180 (150-200)	1.2 (0.8-1.5)	1.5 (1.0-2.0)
S	Heat resistance alloy, Ti alloy	≤ HRC35	M2140 A4230 S4130	40 (30-60)	0.3 (0.15-0.4)	0.4 (0.2-0.6)

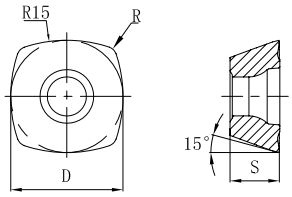
The Relationship of Recommended Feed and Depth of UD/UP inserts

Insert Size	ap（mm）					
	0.5	1	1.5	2	2.5	3
08	0.8 (0.6-1.2)	0.5 (0.4-0.8)	-	-	-	-
12	1.5 (1.0-2.0)	1.2 (0.8-1.5)	0.8 (0.6-1.2)	-	-	-
17	2 (1.8-2.5)	1.5 (1.0-2.0)	1.2 (0.8-1.5)	0.8 (0.6-1.2)	-	-

High Feed Milling

SDMT

4 Edges High Feed Milling



Ordering Code		Dimension（mm）			Coated										Uncoated	Cermet
		D	S	R	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SDMT120512-GM	12.7	5.56	1.2	●	●	○	○	●	●	●	●				
	SDMT150512-GM	15.875	5.56	1.2	●	●	○	○	○	○		○				
	SDMT120512-GH	12.7	5.56	1.2	●	●	○	○	○	●		○				
	SDMT150512-GH	15.875	5.56	1.2	●	●	○	○	○	○		○				

● Standard stock ○ need reservation

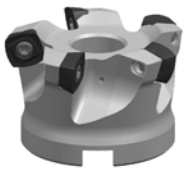
SDMT Series Geometry

Medium Cutting for General Material	Rough Cutting for General Material
	
GM	GH
	
Chamfered cutting edge with rake angle,it is suitable for medium cutting	Cutting force with special rake angle,it is suitable for heavy cutting

High Feed Milling

MKB113

Arbor



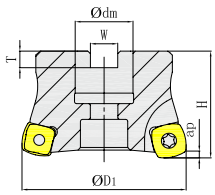


Fig1

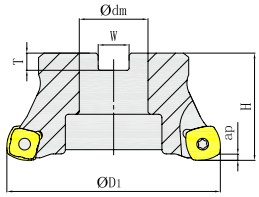


Fig2

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	H	W	T					
MKB113050R04A22SD12	50	4	50	22	40	10.4	6.3	2	SDMT1205		Fig1	●
MKB113052R05A22SD12	52	5	52	22	40	10.4	6.3	2	SDMT1205		Fig1	○
MKB113063R04A22SD12	63	4	63	22	40	10.4	6.3	2	SDMT1205		Fig1	●
MKB113063R05A22SD12	63	5	63	22	40	10.4	6.3	2	SDMT1205	√	Fig1	●
MKB113063R04A22SD15	63	4	63	22	40	10.4	6.3	3	SDMT1505		Fig1	●
MKB113080R06A27SD12	80	6	80	27	50	12.4	7	2	SDMT1205	√	Fig1	●
MKB113080R05A27SD15	80	5	80	27	50	12.4	7	3	SDMT1505		Fig1	●
MKB113100R06A32SD15	100	6	100	32	50	14.4	8	3	SDMT1505	√	Fig1	○
MKB113100R06B32SD12	100	6	100	32	50	14.4	8	2	SDMT1205		Fig2	●
MKB113100R07B32SD12	100	7	100	32	50	14.4	8	2	SDMT1205		Fig2	●
MKB113100R06B32SD15	100	6	100	32	50	14.4	8	3	SDMT1505		Fig2	●
MKB113125R07B40SD15	125	7	125	40	63	16.4	9	3	SDMT1505		Fig2	●

● Standard stock ○ need reservation

MKB113

Cylindrical straight shank

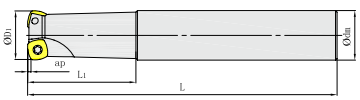


Fig3

Ordering Code	Dia-meter	Teeth	Dimension(mm)				Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	Φdm	L	L1					
MKB113032R02P32SD12S	32	2	32	32	160	70	2	SDMT1205		Fig3	●
MKB113032R02P32SD12	32	2	32	32	200	70	2	SDMT1205	√	Fig3	●
MKB113035R03P32SD12	35	3	35	32	200	70	2	SDMT1205		Fig3	●
MKB113040R03P32SD12	40	3	40	32	200	70	2	SDMT1205	√	Fig3	●

● Standard stock ○ need reservation

High Feed Milling

MKB113

Replaceable Cutter

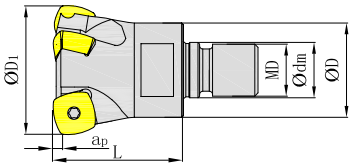
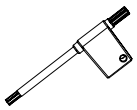
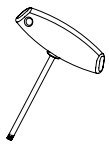


Fig4

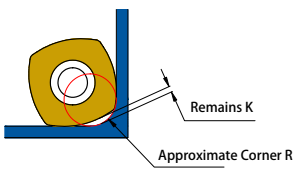
Ordering Code	Dia-meter	Teeth	Dimension(mm)					Apmax	Gauge Insert	Coolant	Shape	Stock
			ΦD1	ΦD	Φdm	L	MD					
MKB113032R02M16SD12	32	2	32	28	17	40	M16	2	SDMT1205	√	Fig4	●
MKB113032R03M16SD12	32	3	32	28	17	40	M16	2	SDMT1205	√	Fig4	○
MKB113035R03M16SD12	35	3	35	29	17	40	M16	2	SDMT1205	√	Fig4	●
MKB113040R03M16SD12	40	3	40	29	17	43	M16	2	SDMT1205	√	Fig4	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench	
Insert \ Shape				
SDMT120512	Specification	SI60M4X11.1-05520I	TI15P	TI15T
	Order code	PSI60M040111-05520IQ	PTI15PQ	PTI15TQ
SDMT150512	Specification	SI60M5X10.8-07222I	TI20P	TI20T
	Order code	PSI60M050108-07222IQ	PTI20PQ	PTI20TQ

Parameters for Programing Calculations

Insert	Approximate Corner R(mm)	Remains K(mm)	
SD**1205	4.0	0.85	
SD**1505	5.0	1.05	

Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Feed/edge（fz）	
				Vc（m/min）	Medium cutting (M)	Heavy cutting (H)
P	Mild Steel	≤ HB200	A4225 P4225 A4230	180 (150-200)	1.2 (0.8-1.5)	1.5 (1.0-2.0)
	Carbon steel, alloy steel	≤ HRC35	A4225 A4230 P2115	150 (120-180)	1.2 (0.8-1.5)	1.5 (1.0-2.0)
	Carbon steel, alloy steel	HRC35-45	A4230	120 (90-140)	1.0 (0.6-1.2)	1.2 (0.8-1.5)
M	Stainless（ferrite, martensite）	≤ HRC35	M2140 A4230	120 (90-140)	0.8 (0.6-1.0)	1.0 (0.8-1.2)
K	Cast Iron ,Nodular Cast Iron	≤ HB350	K2115 K4125	180 (150-200)	1.2 (0.8-1.5)	1.5 (1.0-2.0)
S	Heat resistance alloy, Ti alloy	≤ HRC35	M2140 S4130 A4230	40 (30-60)	0.3 (0.15-0.4)	0.4 (0.2-0.6)

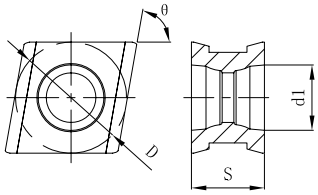
The Relationship of Recommended Feed and Depth of SDMT inserts

Insert	ap（mm）					
	0.5	1	1.5	2	2.5	3
12	1.8 (1.5-2.0)	1.5 (1.0-1.8)	1.0 (0.6-1.5)	0.8 (0.4-1.0)	-	-
15	2.0 (1.8-3.0)	1.8 (1.5-2.0)	1.5 (1.0-1.8)	1.0 (0.6-1.5)	0.8 (0.4-1.0)	0.6 (0.4-0.8)

Side and Face Milling

CNEU

Medium Slot Width Side and Face Milling Inserts



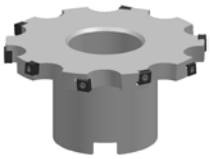
Ordering Code		Dimension(mm)				Coated										Uncoated	Cermet
		D	θ	S	d_1	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	CNEU070508-PM	7.6	80	5	3.4	○	○	○		○	●						
	CNEU070508-KM	7.6	80	5	3.4	○	●	○		○	●	○					

● Standard stock ○ need reservation

Side and Face Milling

MSA(110~113)

Arbor



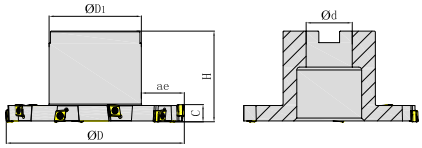


Fig1

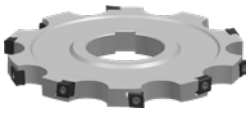
Ordering Code	Dia-meter	Teeth	Dimension(mm)						Gauge Insert	Coolant	Shape	Stock
			ΦD	C	Φd	ae	H	ΦD1				
MSA110080R06B27CN07	80	6	80	10	27	14	50	48	CNEU0705	x	Fig1	●
MSA110100R08B32CN07	100	8	100	10	32	19	50	58	CNEU0705	x	Fig1	●
MSA110125R10B32CN07	125	10	125	10	32	29.5	63	64	CNEU0705	x	Fig1	●
MSA110160R12B40CN07	160	12	160	10	40	43	63	70	CNEU0705	x	Fig1	●
MSA111080R06B27CN07	80	6	80	11	27	14	50	48	CNEU0705	x	Fig1	○
MSA111100R08B32CN07	100	8	100	11	32	19	50	58	CNEU0705	x	Fig1	○
MSA111125R10B32CN07	125	10	125	11	32	29.5	63	64	CNEU0705	x	Fig1	●
MSA111160R12B40CN07	160	12	160	11	40	43	63	70	CNEU0705	x	Fig1	○
MSA112080R06B27CN07	80	6	80	12	27	14	50	48	CNEU0705	x	Fig1	●
MSA112100R08B32CN07	100	8	100	12	32	19	50	58	CNEU0705	x	Fig1	○
MSA112125R10B32CN07	125	10	125	12	32	29.5	63	64	CNEU0705	x	Fig1	●
MSA112160R12B40CN07	160	12	160	12	40	43	63	70	CNEU0705	x	Fig1	●
MSA113080R06B27CN07	80	6	80	13	27	14	50	48	CNEU0705	x	Fig1	●
MSA113100R08B32CN07	100	8	100	13	32	19	50	58	CNEU0705	x	Fig1	●
MSA113125R10B32CN07	125	10	125	13	32	29.5	63	64	CNEU0705	x	Fig1	●
MSA113160R12B40CN07	160	12	160	13	40	43	63	70	CNEU0705	x	Fig1	●

● Standard stock ○ need reservation

Side and Face Milling

MSA(110~113)

Shell



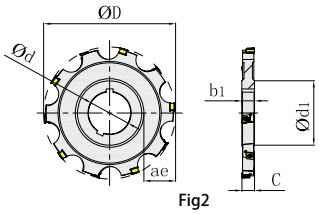
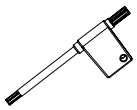


Fig2

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Gauge Insert	Coolant	Shape	Stock
			ΦD	C	Φd	ae	b_1	$Φd_1$				
MSA110080R06K27CN07	80	6	80	10	27	19	10	40	CNEU0705	x	Fig2	○
MSA110100R08K27CN07	100	8	100	10	27	26	10	46	CNEU0705	x	Fig2	●
MSA110125R10K40CN07	125	10	125	10	40	34	10	55	CNEU0705	x	Fig2	●
MSA110160R12K40CN07	160	12	160	10	40	51	10	55	CNEU0705	x	Fig2	○
MSA111080R06K27CN07	80	6	80	11	27	19	11	40	CNEU0705	x	Fig2	○
MSA111100R08K27CN07	100	8	100	11	27	26	11	46	CNEU0705	x	Fig2	○
MSA111125R10K40CN07	125	10	125	11	40	34	11	55	CNEU0705	x	Fig2	○
MSA111160R12K40CN07	160	12	160	11	40	51	11	55	CNEU0705	x	Fig2	●
MSA112080R06K27CN07	80	6	80	12	27	19	12	40	CNEU0705	x	Fig2	○
MSA112100R08K27CN07	100	8	100	12	27	26	12	46	CNEU0705	x	Fig2	●
MSA112125R10K40CN07	125	10	125	12	40	34	12	55	CNEU0705	x	Fig2	●
MSA112160R12K40CN07	160	12	160	12	40	51	12	55	CNEU0705	x	Fig2	○
MSA113080R06K27CN07	80	6	80	13	27	19	13	40	CNEU0705	x	Fig2	○
MSA113100R08K27CN07	100	8	100	13	27	26	13	46	CNEU0705	x	Fig2	○
MSA113125R10K40CN07	125	10	125	13	40	34	13	55	CNEU0705	x	Fig2	●
MSA113160R12K40CN07	160	12	160	13	40	51	13	55	CNEU0705	x	Fig2	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench
Insert \ Shape			
CN*U0705	Specification	SI60M3X9-04205	TT09P
	Order code	PSI60M030090-04205S	PTT09PQ

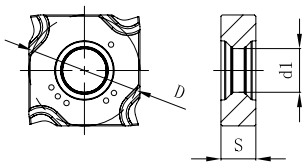
Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed Vc（m/min）	Feed/edge（fz） Medium cutting（M）
P	Mild Steel	≤ HB200	A4225 A4230 P4225	180 (200-220)	0.1 (0.05-0.15)
P	Carbon steel, alloy steel	≤ HRC35	A4225 A4230 P4225	160 (140-180)	0.08 (0.05-0.12)
P	Carbon steel, alloy steel	HRC35-45	A4225 A4230 P4225	140 (120-160)	0.08 (0.05-0.12)
M	Stainless（ferrite, martensite）	≤ HRC35	A4230 M2140	120 (90-140)	0.06 (0.08-0.10)
K	Cast Iron ,Nodular Cast Iron	≤ HB350	K4125 K2115	200 (180-220)	0.1 (0.02-0.15)

Side and Face Milling

SNEX

Narrow Slot Width Side and Face Milling Inserts

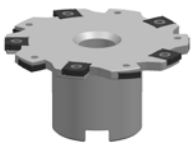


Ordering Code		Dimension(mm)			Coated										Uncoated	Cermet
		D	S	d1	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SNEX1202-GM	12.7	2.3	5.2	○	●	○			○						
	SNEX1203-GM	12.7	3	5.2	○	●	○			○						
	SNEX12T3-GM	12.7	3.5	5	○	●	○			○						
	SNEX1204-GM	12.7	4	5	○	●	○			●						
	SNEX12T4-GM	12.7	4.5	5	○	●	○			●						

● Standard stock ○ need reservation

MSA(104~108)

Arbor



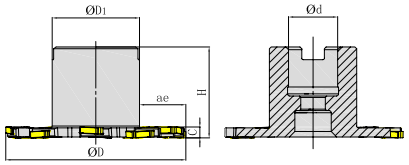
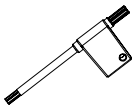


Fig1

Ordering Code	Dia-meter	Teeth	Dimension(mm)						Gauge Insert	Coolant	Shape	Stock
			ΦD	C	Φd	ae	H	ΦD1				
MSA104100R10A27SN12	100	10	100	4	27	23	50	48	SNEX1202	x	Fig1	●
MSA105100R10A27SN12	100	10	100	5	27	23	50	48	SNEX1203	x	Fig1	●
MSA106100R10A27SN12	100	10	100	6	27	23	50	48	SNEX12T3	x	Fig1	●
MSA107100R10A27SN12	100	10	100	7	27	23	50	48	SNEX1204	x	Fig1	○
MSA108100R10A27SN12	100	10	100	8	27	23	50	48	SNEX12T4	x	Fig1	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench
Insert / Shape			
SNEX1202	Specification	SI90M4X3.2-06003I	TI08P
	Order code	PSI90M040032-06003IQ	PTI08PQ
SNEX1203	Specification	SI90M4X4.2-06003I	TI08P
	Order code	PSI90M040042-06003IQ	PTI08PQ
SNEX12T3	Specification	SI90M4X5.1-06003I	TI08P
	Order code	PSI90M040051-06003IQ	PTI08PQ
SNEX1204	Specification	SI90M4X6.1-06003I	TI08P
	Order code	PSI90M040061-06003IQ	PTI08PQ
SNEX12T4	Specification	SI90M4X7.1-06003I	TI08P
	Order code	PSI90M040071-06003IQ	PTI08PQ

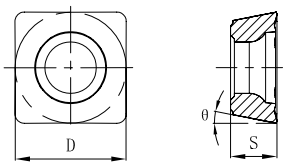
Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed	Feed/edge(fz)
				Vc（m/min）	Medium cutting（M）
P	Mild Steel	⩽ HB200	A4225 A4230 P4225	180 （100-250）	0.1 （0.08-0.25）
P	Carbon steel, alloy steel	⩽ HRC35	A4225 A4230 P4225	150 （80-250）	0.1 （0.08-0.25）
P	Carbon steel, alloy steel	HRC35-45	A4225 A4230 P4225	120 （80-250）	0.1 （0.08-0.25）
M	Stainless（ferrite, martensite）	⩽ HRC35	A4230	120 （80-250）	0.1 （0.05-0.15）
K	Cast Iron ,Nodular Cast Iron	⩽ HB350	K4125	140 (80-250)	0.1 （0.05-0.15）

Chamfer Milling

SPMT

Chamfer Milling Inserts



Ordering Code		Dimension（mm）			Coated										Uncoated	Cermet
		D	S	θ	A4225	A4230	P4225	P2115	M2140	K4125	K2115	S4130	H4115	H4125	N9125	P01TM
	SPMT09T308-CM	9.53	3.97	11	●	●	○	○	○	●		○				
	SPMT120408-CM	12.7	4.76	11	●	●	○	○	○	●						

● Standard stock ○ need reservation

Chamfer Milling

MCA130

Side clamp

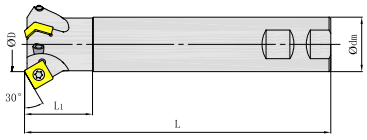


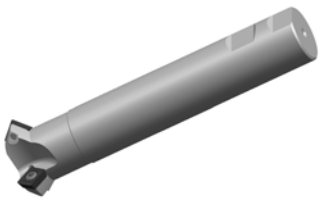
Fig1

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Ap	Gauge Insert	Coolant	Shape	Stock
			ΦD	Φdm	CH	L	L_1					
MCA130025R02W25SP09	25	2	25	25	30	120	40	3	SPMT09T308-CM	x	Fig1	●
MCA130032R03W32SP12	32	3	32	32	30	180	40	4.5	SPMT120408-CM	x	Fig1	●

● Standard stock ○ need reservation

MCA145

Side clamp



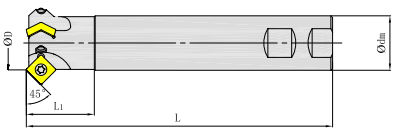


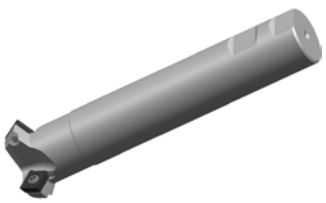
Fig2

Ordering Code	Dia-meter	Teeth	Dimension(mm)					Ap	Gauge Insert	Coolant	Shape	Stock
			ΦD	Φdm	CH	L	L_1					
MCA145025R02W25SP09	25	2	25	25	45	120	40	5	SPMT09T308-CM	x	Fig2	●
MCA145032R03W32SP12	32	3	32	32	45	180	40	7	SPMT120408-CM	x	Fig2	●

● Standard stock ○ need reservation

MCA160

Side clamp



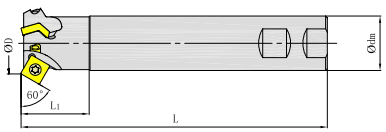
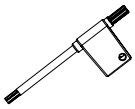


Fig3

Ordering Code	Dia	Teeth	Dimension(mm)					Ap	Gauge Insert	Coolant	Shape	Stock
			ΦD	Φdm	CH	L	L_1					
MCA160025R02W25SP09	25	2	25	25	60	120	40	6	SPMT09T308-CM	x	Fig3	●
MCA160036R03W32SP12	36	3	36	32	60	180	40	8	SPMT120408-CM	x	Fig3	●

● Standard stock ○ need reservation

Spare Part Chart

Partname		Insert Screw	Insert Screw Wrench
Insert / Shape			
SPMT09T3	Specification	SI60M4X8.9-05313	TT20P
	Order code	PSI60M040089-05313S	PTT20PQ
SPMT1204	Specification	SI60M5X10.8-07209	TT20P
	Order code	PSI60M050108-07209S	PTT20PQ

Recommended Cutting Data

Workpiece		Hardness	Grade	Cutting speed Vc（m/min）	Feed/edge（fz） Medium cutting (M)
P	Mild Steel	⩽ HB200	A4225 A4230	180 (150-200)	0.25 (0.1-0.4)
P	Carbon steel, alloy steel	⩽ HRC35	A4225 A4230	150 (120-180)	0.3 (0.1-0.4)
P	Carbon steel, alloy steel	HRC35-45	A4225 A4230	120 (80-150)	0.3 (0.1-0.4)
M	Stainless（ferrite, martensite）	⩽ HRC35	M2140	120 (80-160)	0.3 (0.1-0.4)
K	Cast Iron ,Nodular Cast Iron	⩽ HB350	K4125	130 (90-160)	0.3 (0.1-0.4)