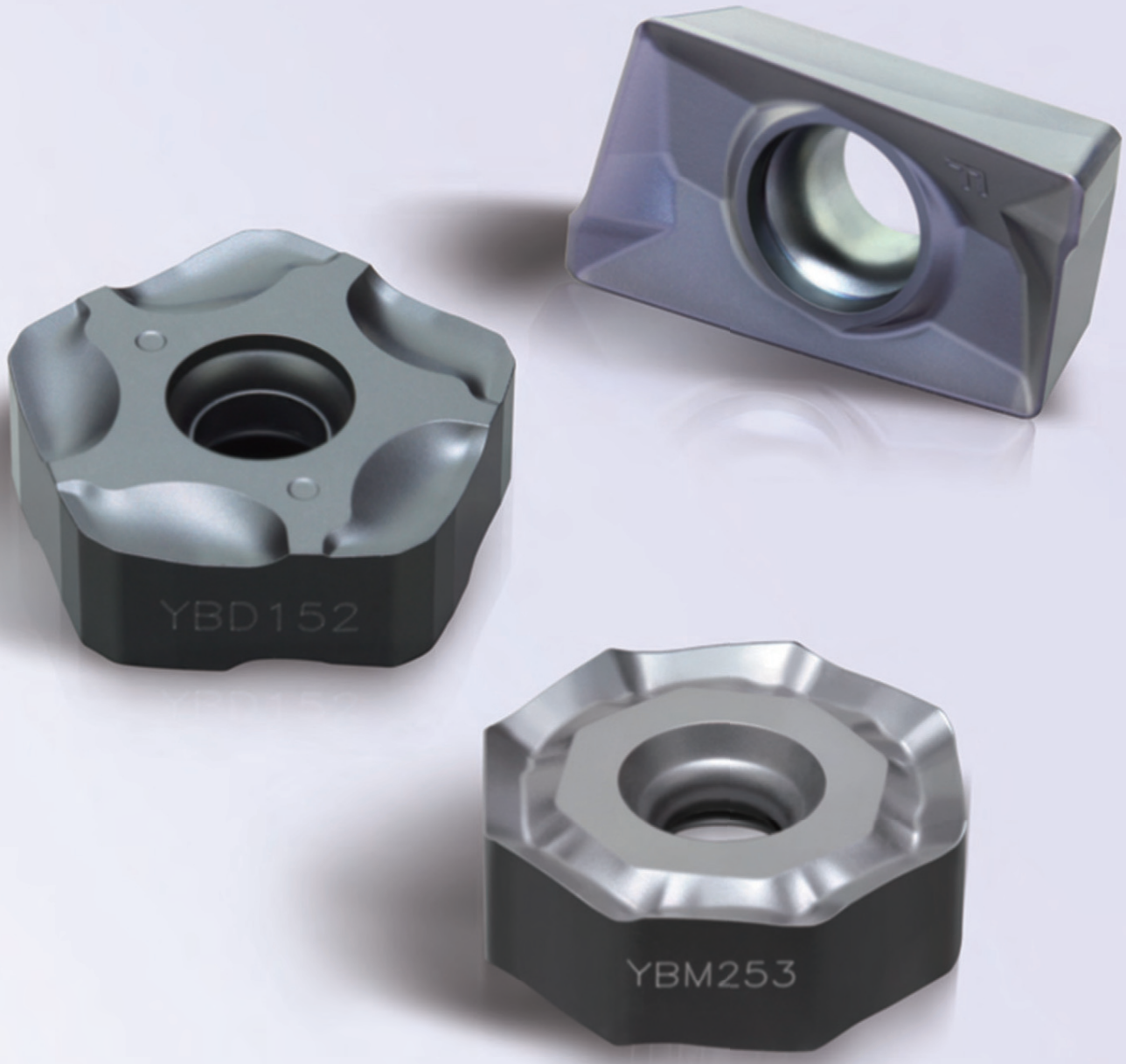
Milling Tools

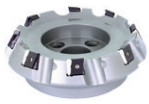



FMA11-100-B32-SN15-07
YBM253

Milling

MILLING TOOLS

Face milling tools

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.(inch)	Applicable insert	Application overview	Features
Face milling	**FMA01**  P198	Kr=45° a_{pmax}=0.236	SEET12T3-DF/DM/DR SEET12T3-CF/CM/CR SEET12T3-EF/EM SEET12T3-LH/W	General face milling the following material: Steel, alloy steel, stainless steel, cast iron, aluminium alloy, high temperature alloy	• Diameter range Ø2.00"~Ø10.00" • Large rake angle designed makes cutting more light and fast • Wide applications can achieve using available inserts with different chipbreaker • Adopting wiper inserts improve surface quality
		Kr=45° a_{pmax}=0.384	SEET18T6-DM		
	FMA02  P199	Kr=45° a_{pmax} =0.236	SEET12T3-DF/DM/DR SEET12T3-CF/CM/CR SEET12T3-EF/EM SEET12T3-LH/W	General face milling the following material: Steel, alloy steel, stainless steel, cast iron, aluminum alloy, high temperature alloy	• Diameter range Ø2.00"~Ø5.00" • Large rake angle designed makes cutting more light and fast • Wide applications can achieve using available inserts with different chipbreaker • Coarse and differential pitch, reduce vibration.
	FMA03  P202	Kr=45° a_{pmax}=0.217	SE□N1203AF□□ SE□R1203AF□□	General face milling steel, stainless steel, cast iron	• Diameter range Ø3.00"~Ø12.00" • Large rake angle makes cutting more light and fast • Top clamping achieves better reduces vibrations resistance
		Kr=45° a_{pmax}=0.295	SE□N1504AF□□ SE□R1504AF□□		
	FMA04  P205	Kr=45° a_{pmax}=0.138	OFKT05T3-DF/DM OFKT05T3-LH	Face milling steel, alloy steel, cast iron, aluminum alloy	• Diameter rangeØ2.00"~Ø6.00" • High economy milling tool with 8 cutting edges • Screw clamping, high precision
	 P208	Kr=45° a_{pmax} =0.197	OFKR0704-DF/DM	Face milling steel, alloy steel and cast iron	• Diameter range Ø5.00"~Ø12.50" • High economy milling tool with 8 cutting edges • Top clamping is easy to assemble and disassemble
	FMA11  P212-213	Kr=45° a_{pmax} =0.216	SNEG1205ANR-GM/HGR/W	General face milling steel, stainless steel, cast iron	• Diameter range Ø2.00"- Ø12.00"; • Double-sided chipbreaker milling insert has eight cutting edges and high economy; • Large rake angle design and unique chip breaker structure of insert lead to low power consumption; • Double negative rake angle structure and super thick insert has higher safety and outstanding toughness, which can realize great depth cutting; • Insert has excellent machining performance with wiper edge.
		Kr=45° a_{pmax} =0.275	SNEG1506ANR-GM/HGR/W		
		Kr=45° a_{pmax} =0.354	SNEG1907ANR-HGR		
	FMA12  P217	Kr=45° a_{pmax} =0.197	ONHU08T624R-GM	General face milling steel, stainless steel, cast iron	• Diameter range Ø2.50"- Ø12.00"; • High Performance Face Mill with 16 edges for outstanding economy • Double negative rake angle, in combination with helical insert structure, achieves double positive axial angle, which will help reduce cutting resistance and improve chip evacuation. • Unique 3-dimentional edge
	FMD02  P220-221	Kr=67° a_{pmax}=0.197/0.276	PNEG110512R/L-CF/CM/CR PNEG110512R/L-PF/PM/PR	Face milling of cast iron and steel	• Diameter range Ø2.00"-Ø12.00" • High-economy milling tool with 10 cutting edges
	FMD03  P224	Kr=60° a_{pmax}=0.472	LNKT2007DN-ZR	Heavy-duty face milling of steel and alloy steel	• Diameter range Ø5.00"-Ø12.00". • Double positive rake angles can reduce cutting forces. • Inserts are mounted upright, suitable for heavy machining with high cutting depth. • Easy to assemble and clamp inserts.
		Kr=60° a_{pmax}=0.669	LNKT2510-ZR		

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Operating pattern	Series/Shape	Approach angle / Max. cutting depth. (inch)	Applicable insert	Application overview	Features
Face milling	**FMD04**  P226	Kr=67° a_{pmax}=0.472	PNGU170712R-GR	Rough milling of steel and cast iron	• Diameter range Ø5.00"-Ø12.00" • High-economy milling tool with 10 cutting edges • Double negative rake angle, in combination with helical insert structure, achieves double positive axial angle, which will help reduce cutting resistance and improve chip evacuation.
	FME04  P228	Kr=75° a_{pmax}=0.472	LNKT1506EN-ZR	Heavy-duty face milling of steel and alloy steel	• Diameter range Ø5.00"-Ø12.00". • Double positive rake angles can reduce the cutting force. • Inserts are mounted upright, suitable for heavy machining at high cutting depth. • Easy to assemble and clamp inserts.
	FMP01  P230	Kr=90° a_{pmax}=0.709	TP□N2204PD□ TPKN2204PDF□ TPKN2204PDT□	Face milling steel, alloy steel and cast iron	• Diameter range Ø3.00"~Ø12.00" • Kr 90° , square shoulder milling • Top clamping is easy to assemble and disassemble
	FMP02  P232	Kr=90° a_{pmax}=0.285	SEET09T308PER-APF/APM SEET120308PER-APR	Face milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø2.00"~Ø10.00" • Kr 90°, for square shoulder millin • Different pitch design: coarse pitch, close pitch and extra close pitch • High precision insert, high work-piece surface quality • Optimized chipbreaker and grade, for finish machining, semi-finish machining and rough machining.
		Kr=90° a_{pmax}=0.425	SEET120308PER-APF/APM SEET120308PER-APR		
	FMP03  P235	Kr=90° a_{pmax}=0.512	LNKT1506EN-ZR	Heavy-duty face milling of steel and alloy steel	• Diameter range Ø5.00"-Ø12.00". • Double positive rake angles can reduce the cutting force. • Inserts are mounted upright, suitable for heavy machining at high cutting depth. • Easy to assemble and clamp inserts.
		Kr=90° a_{pmax}=0.669	LNKT2007DN-ZR		
		Kr=90° a_{pmax}=0.866	LNKT2510-ZR		
	FMP12  P237	Kr=90° a_{pmax}=0.224	WNHU060404PNR-GM WNHU060408PNR-GM	Steel, alloy steel, cast iron	•Diameter range Ø2.00"-Ø6.00" •90° approach angle can be used for shoulder milling, face milling, groove milling, etc.; -Six-flute double-sided groove milling inserts with wiper for large feed machining; double negative angle of the tool body combined with unique insert structure to achieve double positive tool angle, reducing cutting forces.
		Kr=90° a_{pmax}=0.303	WNHU080608PNR-GM WNHU080616PNR-GM		
	FMP12  P238	Kr=90° a_{pmax}=0.224	WNHU060404PNR-GM WNHU060408PNR-GM		•Diameter range Ø1.00"-Ø2.00" •90° approach angle can be used for shoulder milling, face milling, groove milling, etc.; -six-flute double-sided groove milling inserts with wiper for large feed machining; •Double negative angle of cutter body combined with unique insert structure to achieve double positive tool angle, reducing cutting forces.
	FMR01  P240	a_{pmax}=0.197	RCKT10T3MO-DM	Cavity profile milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø1.00"~Ø2.00" • R-type inserts possess stronger cutting edges • Suitable for machining curved surface of mould • Economical milling cutters with screw clamping
		a_{pmax}=0.236	RCKT1204MO-DM/DR/ER		

Face milling tools

Operating pattern	Series/Shape	Approach angle / Max. cutting depth. (inch)	Applicable insert	Application overview	Features
Face milling	**FMR02**  P242	a_{pmax}=0.236	RCKT1204MO-DM/DR/ER/NM	Face milling and cavity profile milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø2.50"~Ø6.00" • R-type inserts possess stronger cutting edges • Suitable for machining curved surface of mould • Economical milling tools with screw clamping
		a_{pmax}=0.315	RCKT1606MO-DM/DR/ER/NM		
		a_{pmax}=0.394	RCKT2006MO-DR/ER/NM		
	FMR03  P244	a_{pmax}=0.157	RDKW0803MO	Cavity profile milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø1.00"~Ø2.00" • R-type inserts possess stronger cutting edges • Suitable for machining curved surface of mould • Economical milling tools with screw clamping
		a_{pmax}=0.197	RDKW10T3MO		
		a_{pmax}=0.236	RDKW1204MO		
	FMR04  P246	a_{pmax}=0.236	RDKW1204MO	Face milling and cavity profile milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø2.00"~Ø6.00" • R-type inserts possess stronger cutting edges • Suitable for machining curved surface of mould
		a_{pmax}=0.315	RDKW1605MO		
		a_{pmax}=0.394	RDKW2006MO		
	FMR05  P248	a_{pmax}=0.125	RPMW2T200	Cavity profile milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø0.625"~Ø1.75" • R-type inserts possess stronger cutting edges • Suitable for machining curved surface of mould • Economical milling cutters with screw clamping
		a_{pmax}=0.180	RPMW3T300		
		a_{pmax}=0.250	RPMW40400		
	 P249	a_{pmax}=0.250	RPMW40400	Face milling and cavity profile milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø2.00"~Ø8.00" • R-type inserts possess stronger cutting edges • Suitable for machining curved surface of mould • Economical milling tools with screw clamping
		a_{pmax}=0.315	RPMW50500		
		a_{pmax}=0.375	RPMW60600		

Square shoulder milling tools

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.(inch)	Applicable insert	Application overview	Features
Square shoulder milling	**EMP01**  P251-252	Kr=90° a_{pmax}=0.433	APKT11T3□□-APF/APM APKT11T3□□-ALH	Multi-function milling steel, alloy steel, stainless steel, cast iron and Al alloy	•Two mounting modes: Straight shank and Weldon shank, Diameter range Ø0.50"~Ø2.50" •Kr 90°, for square shoulder milling, slot milling, ramp milling etc. •Wiper inserts also suitable for face milling. •Inserts with 3D helical cutting edge, less cutting force
		Kr=90° a_{pmax}=0.630	APKT160408-APF/APM APKT160408-ALH		
	EMP02  P257	Kr=90° a_{pmax}=0.433	APKT11T3□□-APF/APM APKT11T3□□-ALH	Face milling steel, alloy steel, stainless steel, cast iron and Al alloy	•Diameter range Ø2.00"~Ø8.00" •Kr 90°, for square shoulder milling •Wiper inserts also suitable for face milling. •Inserts with 3D helical cutting edge, less cutting force
		Kr=90° a_{pmax}=0.630	APKT160408-APF/APM APKT160408-ALH		

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.(inch)	Applicable insert	Application overview	Features
Square shoulder milling	**EMP03**  P260	Kr=90° a_{pmax}=1.535	APKT11T3□□-APF/APM APKT11T3□□-ALH	Adopting large cutting depth, for milling steel, alloy steel, stainless steel, cast iron and Al alloy	• Diameter rangeØ2.00"~Ø4.00" • End milling tools with positive helical angle, good chip removal • For side face milling and slot machining • Close pitch, high machining efficiency.
	EMP04  P261	Kr=90° a_{pmax}=1.157~2.283	APKT11T3□□-APF/APM APKT11T3□□-ALH	Adopting large cutting depth, for milling steel, alloy steel, stainless steel, cast iron and Al alloy	• Diameter range Ø0.75"~Ø1.50" • End milling tools with positive helical angle, good chip removal • For side face milling and slot machining • Close pitch, high machining efficiency.
	EMP13  P265	Kr=90° a_{pmax}=0.441	ANGX1105□□PNR-GM/ LH	Face milling steel, alloy steel, stainless steel and cast iron	• Diameter range Ø2.00"~Ø6.00" • Kr 90°, for square shoulder milling • Double negative rake angle of the tool body in combination with extra thick insert achieves double positive tool angle, which will help reduce cutting resistance and greatly improve impact resistance. • Properly designed cutting edge with high precision control can achieve high quality 90osquare shoulder milling.
		Kr=90° a_{pmax}=0.571	ANGX1506□□PNR-GM/ LH		
	EMP13  P266	Kr=90° a_{pmax}=0.441	ANGX1105□□PNR-GM/ LH	Multi-function milling steel, alloy steel, stainless steel and cast iron	• Two mounting modes: Straight shank and Weldon shank, Diameter range Ø0.75"~Ø1.50" • Kr90°, for square shoulder milling, slot milling, ramp milling ect. • Double negative rake angle of the tool body in combination with extra thick insert achieves double positive tool angle, which will help reduce cutting resistance and greatly improve impact resistance. • Properly designed cutting edge with high precision control can achieve high quality 90osquare shoulder milling.
		Kr=90° a_{pmax}=0.571	ANGX1506□□PNR-GM/ LH		

Profile milling tools

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Profile milling	**BMR02**  P268	Cutting depth: see the detailed information about tool specifications	ROHX□□	Profile machining steel, stainless steel and cast iron	• Diameter range Ø0.472"~Ø0.787" • Applied for profile finish machining. • Good assembly stability. • Insert with two cutting edges, perfect economical efficiency.
	BMR04  P270		ZOHX□□	Profile machining steel, stainless steel and cast iron	• Diameter range Ø0.625"~Ø1.25" • High precision, for finish profile machining. • Two types of chipbreaker, used in different machining condition. • High assembling precision, good stability.

Special milling tools

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Special milling (high feed)	**XMR01**  P274  P275  P277  P278	Cutting depth: see the detailed information about tool specifications	SDMT□□-DM/PM/NM	Face and profile milling steel, stainless steel and cast iron in cavity applications	• Diameter rangeØ0.75"~Ø6.00" • Two mounting types: Straight shank and Arbor mounting • The cutting forces are decomposed effectively, realize cutting with high feed rate. • For plunge milling • Double clamping, firm and reliable.
			WPGT□□ZSR WPGT□□ZSR-PM	Face and profile milling steel, stainless steel and cast iron in cavity applications	•Diameter rangeØ0.75"~Ø4.00" •Two mounting types: Straight shank and Arbor mounting •The cutting forces are decomposed effectively, realize cutting with high feed rate. •Double clamping, firm and reliable.

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Chamfer milling tools

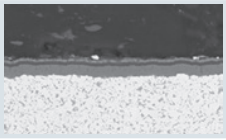
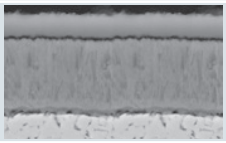
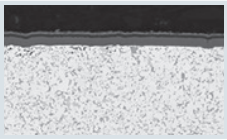
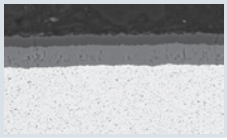
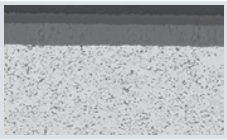
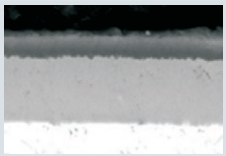
Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Chamfer machining	**CMA01**  P281	Kr=45°	SPMT120408	Chamfer machining steel, alloy steel, stainless steel and cast iron	• Diameter range Ø0.50"~Ø1.25" • With the function of milling small surface.
	CMD01  P282	Kr=60°			

Milling insert grades overview

ISO		Coated grade		Coated cermet	Cemented carbide	PCBN&PCD
		CVD	PVD			
P Steel	P01					
	P10		YBG202, YBG205, YB9320, YBG252	YNG151, YNG151C		
	P20	YBC302, YBM251, YBM351				
	P30		YBG302		YC30S	
	P40					
M Stainless steel	M01					
	M10	YBM251, YBM253, YBC302, YBM351	YBG202, YBG205, YB9320, YBG252	YNG151, YNG151C		
	M20					
	M30		YBG302		YC30S	
	M40					
K Cast iron	K01					YCB011
	K10	YBD151, YBD152	YBG102, YBG102, YBG252	YNG151, YNG151C	YD051	
	K20	YBD252	YBG152		YD201	
	K30					
	K40					
N Non-ferrous metal	N01					YCD011
	N10				YD101	
	N20				YD201	
	N30					
S Heat-resistant steel	S01					
	S10		YBG202			
	S20					
	S30					
H Hardened material	H01					YCB012
	H10					
	H20					
	H30					

D

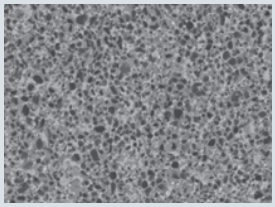
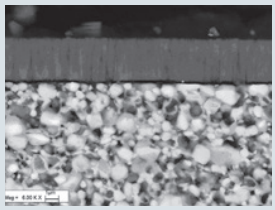
Coated Cemented Carbide CVD

Grade	Coating structure	Micro-structure	ISO applied range	Application field
YBM251	Combination of high toughness and strength substrate and the coating comprised of TiCN. thin Al_2O_3,TiN		P15~40 M10~30	Applicable for semi-finish and rough milling P, M type materials
YBM253	Combination of high-toughness gradient substrate and coating composed of TiCN and ultra fine Al_2O_3		M10~30	Suitable for rough milling of M-type material
YBM351	Combination of high toughness substrate and the coating composed of TiCN,thin Al_2O_3,TiN		P25~40 M20~35	Applicable for rough milling P, M type materials
YBD152	Good combination of substrate with high wear-resistance and coating composed of TiCN and thick Al_2O_3		K05~25	Suitable for finish and semi-finish milling of K-type material
YBD252	Good combination of substrate with high wear-resistance and coating composed of TiCN and thick Al_2O_3		K15~35	Suitable for rough and semi-finish milling of K-type material
YBC302	Combination of high toughness, high strength substrate and coating composed of TiCN, thin Al_2O_3 and TiN.		P15-35 M10-30	Suitable for rough and semifinish milling of P-type,M-type, whose hardness is below HRC45 and under.

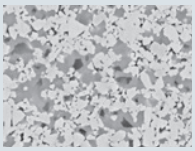
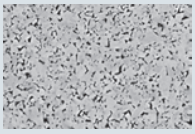
Coated Cemented Carbide PVD

Grade	Coating structure	ISO applied range	Application field
YBG102	Fine grain carbide substrate+Nano coating	K05~20	Applicable for finish and semi-finish milling K type material
YBG202	Carbide substrate with excellent deformation resistance +Nano coating	P10~30 M10~30 S05~20	PVD grade with wide application,widely applicable for semifinish milling type P,M,S materials
YBG205	Ultra fine carbide substrate + Nano coating	M10~30	Suitable for rough milling of M-type material
YBG302	Substrate with high toughness and strength + Nano-coating	P25~40 M25~40	Applicable for rough milling type P and M materials
YBG152	Substrate with reasonable hardness and strength + Nano coating	K20~35	Applicable for rough and semi-finish milling type K material
YB9320	Substrate with good toughness and strength +TiAlN Nano coating	P10~30 M10~30	PVD grade with wide application,widely applicable for semifinish milling type P,M materials

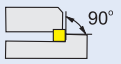
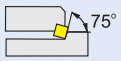
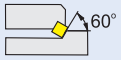
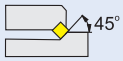
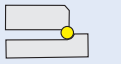
Cermet

Grade	Coating structure	ISO applied range	Application field
YNG151		P05~20 M05~20 K05~20	Wide application of finish milling P, M, K type materials
YNG151C		P01~20 M01~20 K01~20	Wide application of finish milling P, M, K type materials

Cemented Carbide

Grade	Coating structure	ISO applied range	Application field
YC30S		P25~40 M25~40	Applicable for roughing milling Code P, M type materials
YD051		K05~20	Applicable for finishing milling type K material
YD101		N05~25	Applicable for semi-finish and finish milling type N material
YD201		K15~35 N15~30	Applicable for rough and semi-finish type K material, and for rough milling type N material

Cutter stype	
FM	Face milling
EM	Square shoulder milling
HM	Helical end milling
SM	Side and face milling
BM	Profile milling
CM	Chamfer milling
XM	Special milling

Approach angle		
P	90°	
E	75°	
D	60°	
A	45°	
R		

Sequence number of series

Cutting diameter ØD

Side and face milling tool:diameter
X cutting edge width

Arbor/spindle Mounting
(as follow figure)

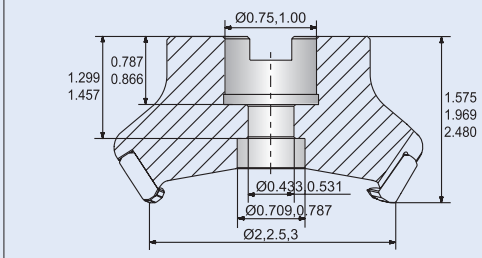
A	A type of mounting	XP	Weldon shank
B	B type of mounting	G	Straight shank
C	C type of mounting	MW	Morse adapter with a conical hole and without a flat end
D	D type of mounting		

FM A 02 - 2.00" - A

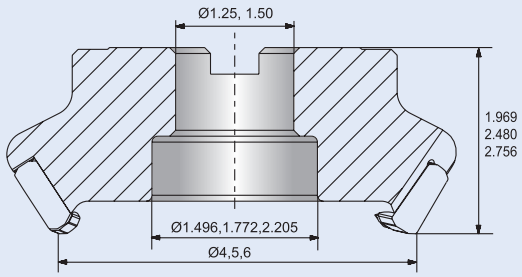
D

Arbor/spindle Mounting

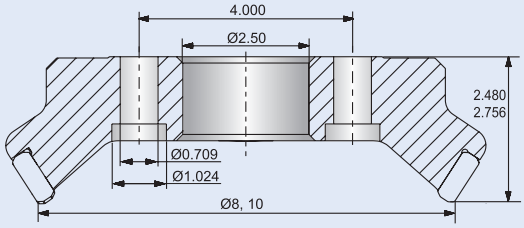
A



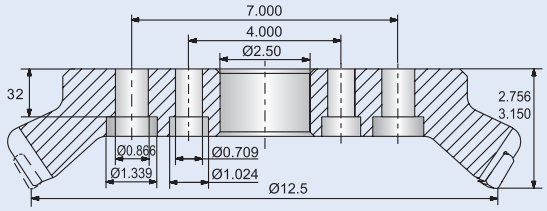
B



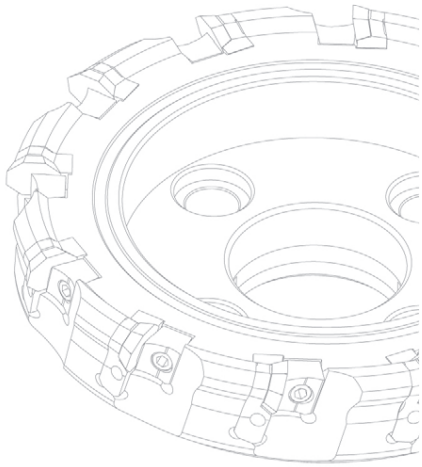
C



D



Arbor hole size(inch)
(as follow figure)



Insert shape

C	D	R	S
80°	55°		

T	L	H	O
60°			

Insert clearance angle

N	B	C	P	D	E	F
0°	5°	7°	11°	15°	20°	25°

0.75" - S E 12 - 04 [ ] C

D

Cutting edge length of insert

Inscribed circle	Insert shape					
	C	D	R	S	T	L
0.219	—	—	—	—	09	—
0.250	06	07	—	—	11	—
0.375	09	11	09	09	16	—
0.500	12	15	12	12	22	—
0.625	16	19	15	15	27	—
0.750	19	—	19	19	33	—
1.000	25	—	25	25	44	2

Number of teeth
(number of flute for corn-shaped milling tools)

Cutting direction
(Default:Right L:left)

Internal cooling structure