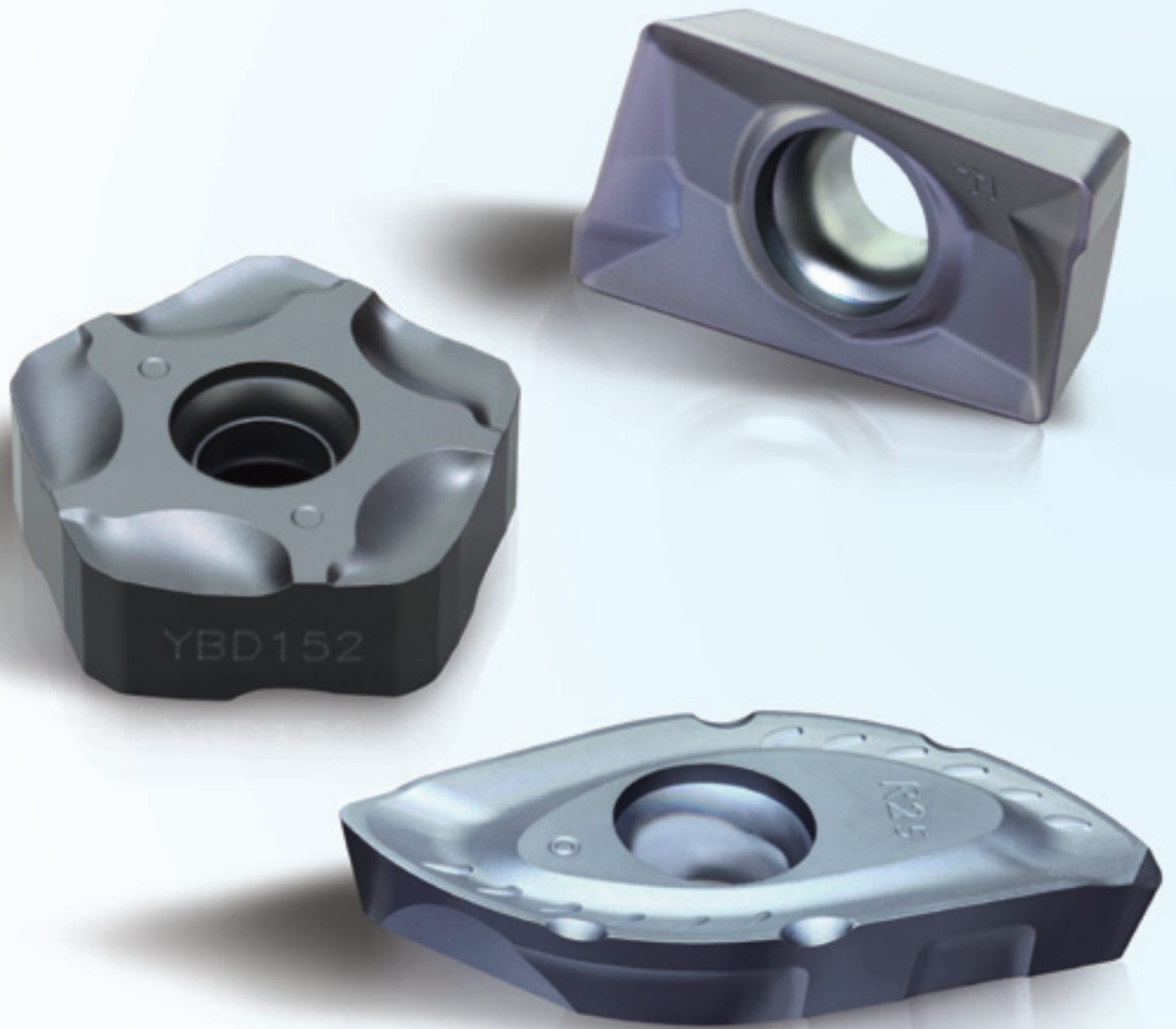
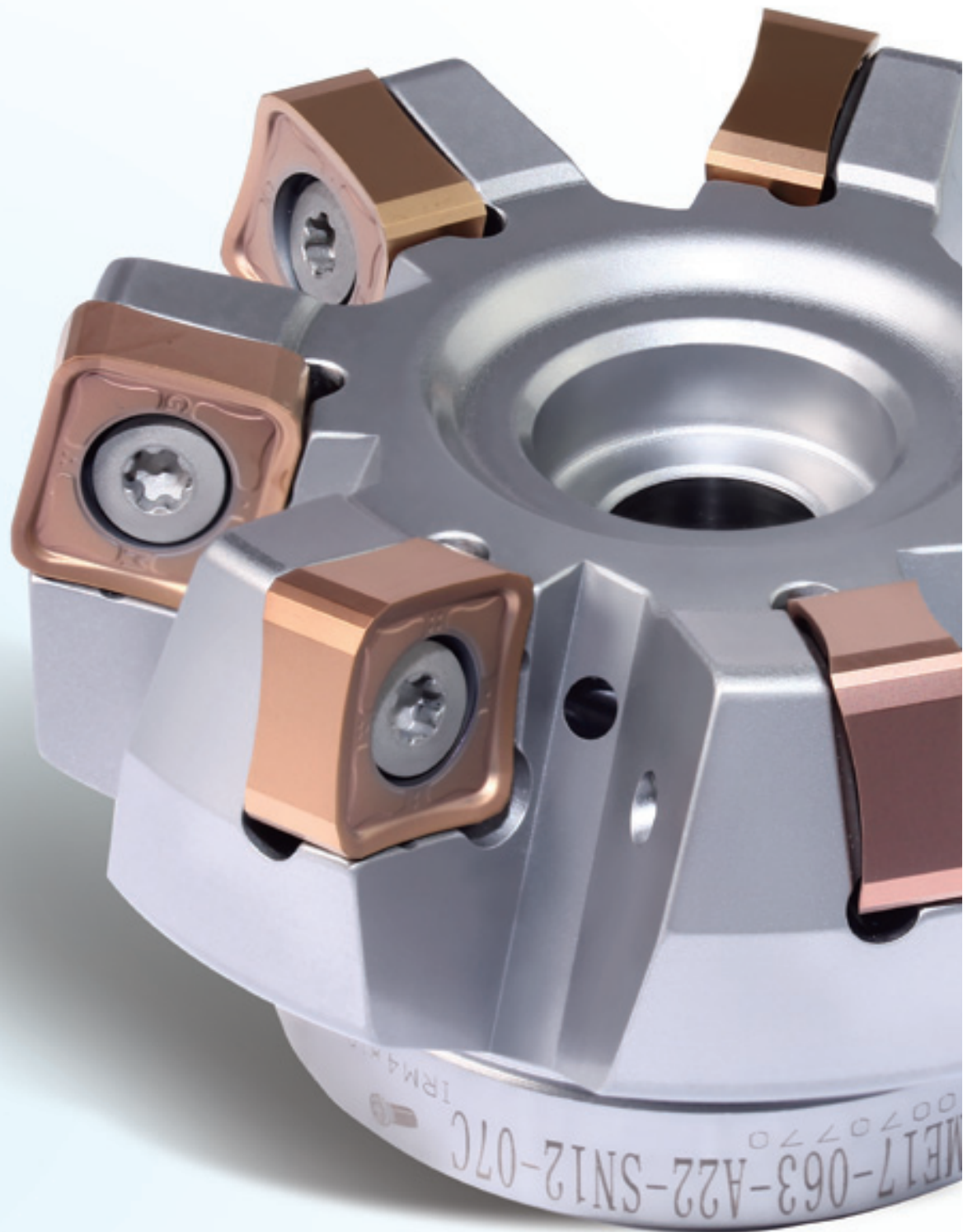






Milling Tools

Indexable milling tools

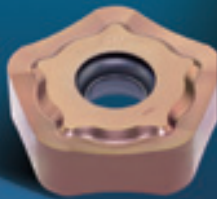
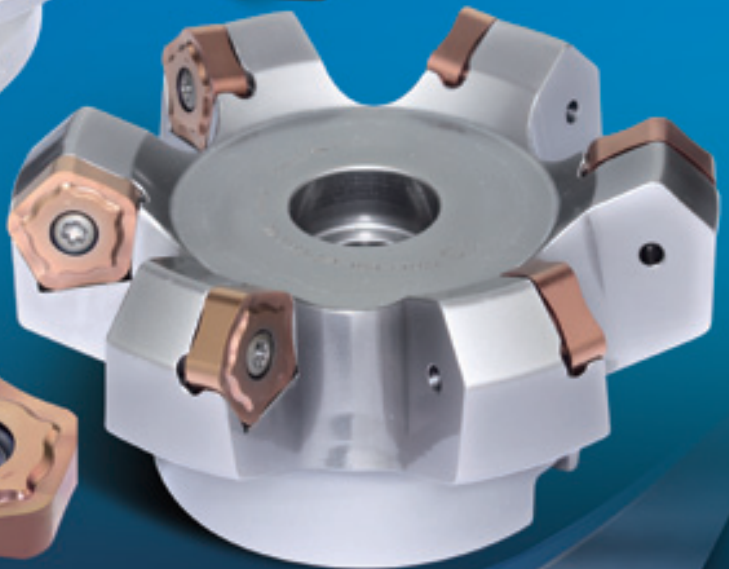
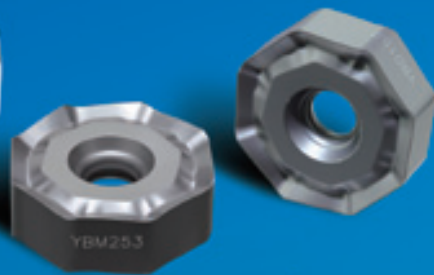
FMA11 series

With outstanding economy and high performance



FMA12 series

High Performance Face Milling
with 16 edges for outstanding
economy Milling



FMA14 series





*New generation of the
tangential milling cutter*
EMP09 series

Milling



Indexable Milling Tools

B1-B240

Indexable milling tools

B3-B201

Indexable milling inserts

B202-B233

Technical information

B234-B240

Solid Carbide End Mills

B241-B569

Solid carbide end mills

B241-B562

Technical information

B563-B569

Interchangeable modular
endmills

B570-B590



New Champion in Milling **YBC302**
Black Diamond Series grade



How to choose the right indexable milling tools

Classification of milling tools

According to types of machining operation

Applicable machining operations

For face milling, chamfering, shoulder milling etc.

Product series

Type of machining

Workpiece materials

Approach angle

Structure and coupling size

Inserts specification

Insert shape, type, dimensions, grade, stock, etc.

Face milling tools

FMA01 P M K N S



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)	
	R	L	GD	GD ₁	ed	L	ap _{max}				
FMA01 Coarse pitch	-050-A22-SE12-04	▲	△	50	61	22	40	6	4	A	0.3
	-063-A22-SE12-05	▲	△	63	74	22	40	6	5	A	0.5
	-080-A27-SE12-06	▲	△	80	91	27	50	6	6	A	1.2
	-100-B32-SE12-07	▲	△	100	107	32	50	6	7	B	1.52
	-125-B40-SE12-08	▲	△	125	136	40	63	6	8	B	2.6
	-160-B40-SE12-07	▲	△	160	174	40	63	6	7	B	4.548
	-160-B40-SE12-10	▲	△	160	170	40	63	6	10	B	4.94
	-200-C40-SE12-08	▲	△	200	214	40	63	6	8	C	6.175
	-200-C40-SE12-12	▲	△	200	210	60	63	6	12	C	7.6
	-250-C60-SE12-10	▲	△	250	264	60	63	6	10	C	12.998
	-250-C60-SE12-14	▲	△	250	260	60	63	6	14	C	13.5
	-315-D60-SE12-18	▲	△	315	325	60	70	6	18	D	20.8
	-100-B32-SE18-04	▲	△	100	120	32	63	10.4	4	B	2.22
	-125-B40-SE18-05	▲	△	125	145	40	63	10.4	5	B	3.15
	-160-B40-SE18-06	▲	△	160	180	40	63	10.4	6	B	5.01
	-200-C60-SE18-08	▲	△	200	220	60	63	10.4	8	C	6.9
-250-C60-SE18-10	▲	△	250	270	60	63	10.4	10	C	13.1	
-315-D60-SE18-12	▲	△	315	335	60	80	10.4	12	D	24.6	

▲ Stock available △ Make-to-order

Spare parts

Diameter OD	Insert	Insert screw	Shim	Shim screw	Wrench	Wrench
Ø50-Ø100	SEET120□□□	160M3.5×10	—	—	WT15S	WH35L
Ø50-Ø315	SEET120□□□	160M3.5×12	S13BS	SM5×7XA	WT15S	WH35L
Ø100-Ø315	SEET180□□□	160M5×17	S18BS	SM8×9XA	WT20T	WH50L

Tools code key: 024-025 Grade selection guide: 019-023 Technical data: 0234-0240

Spare parts

Tools specification
Tool shape, dimensions, stock, etc

Tool shape

Assembly of tools and spare parts

Tools code key, reference to grade selection, technical data

Selection of inserts

Insert shape	Type	Basic dimensions(mm)	CVD Coating	PVD Coating	Cement	Cemented carbide
L	Ø	L	S	pd	bs	R

SEET12T3-DF	13.4	13.4	3.97	4.1	2.55	—	●	★	★	—	—	—
SEET12T3-CF	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET12T3-EF	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET12T3-DM	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET12T3-CM	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET12T3-EM	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET18T6-DM	18.0	18.0	6.1	5.5	1.5	—	—	—	—	—	—	—
SEET18T6-EM	18.0	18.0	6.1	5.5	1.5	—	—	—	—	—	—	—
SEET12T3-DR	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET12T3-CR	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET12T3-LH	13.4	13.4	3.97	4.1	2.55	—	—	—	—	—	—	—
SEET12T3-W	17.82	13.4	3.97	4.1	9.46	500	—	—	—	—	—	—
SEET18T6-W	24.78	18.0	6.1	5.5	11.0	900	—	—	—	—	—	—

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Chipbreaker selection for FMA01 milling inserts

Classification	Function	For finishing	For semi-finishing	For roughing
P		-DF	-DM	-DR
M, S		-EF	-EM	
K		-CF	-CM	-CR
N			-LH	

Chipbreaker selection

MILLING

■ How to choose indexable milling inserts

How to choose indexable milling inserts

■ Detailed information for indexable milling inserts

Listed according to insert shape

Insert shape and size

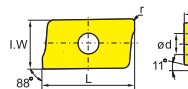
Insert shape

Select insert grade according to workpiece material and working condition.
Prior to selecting grade, please refer to the working condition suitable for the
workpiece material.

😊 Good working condition: machine works well and stably. There are high requirements for dimensional precision of components and quality surface.

😬 Normal working condition: machine works normally. There are certain requirements for dimensional precision of components and surface quality.

🙄 Bad working condition: machine works with bad stability. There are high requirements for high metal removal rate.

AP ☐ ☐

	😊 Good working condition	😐 Normal working condition	😞 Bad working condition
Workpiece material	P Steel K Stainless steel M Cast iron N Non-ferrous metal S Heat resistant alloy, Ti alloy		

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating			Cemtel	Cemented carbide										
		L	I.W	S	ød	r	YBG301	YBC302	YBN251	YBN253	YBN351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG192	YBG252	YBS303	PNG151	PNG11C	YC30S	YO051	YO101	YO201
	APKT070204-APF	7.32	4.34	2.38	2	0.4		●	●								★										
	APKT11T304-APF	12.24	6.6	3.6	2.8	0.4		●	●								★										
	APKT11T308-APF	12.24	6.6	3.6	2.8	0.8			●	●											●	●					
	APKT160408-APF	17.877	9.33	5.76	4.4	0.8		●										★				●	●				
	APKT070204-APM	7.32	4.34	2.38	2	0.4				●		●						★									
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4				●								★									
	APKT11T308-APM	12.24	6.6	3.6	2.8	0.8				●		●							★						●	●	
	APKT11T312-APM	12.24	6.6	3.6	2.8	1.2						●															
	APKT11T316-APM	12.24	6.6	3.6	2.8	1.6																					
	APKT11T320-APM	12.24	6.6	3.6	2.8	2.0			●									★									
	APKT160408-APM	17.877	9.33	5.76	4.4	0.8				●		●									●	●					
	APKT160416-APM	17.877	9.33	5.76	4.4	1.6				●		●						★				●					
	APKT160420-APM	17.877	9.33	5.76	4.4	2.0						●															
	APKT160424-APM	17.877	9.33	5.76	4.4	2.4												★									
	APKT160430-APM	17.877	9.33	5.76	4.4	3.0													★								
	APKT11T304-ALH	12.24	6.6	3.6	2.8	0.4																				★	★
	APKT11T308-ALH	12.24	6.6	3.6	2.8	0.8																				★	○
	APKT160408-ALH	17.877	9.33	5.76	4.4	0.8																				★	★

- Insert grade

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Stock condition

- Insert shape

- Insert dimension

Insert type



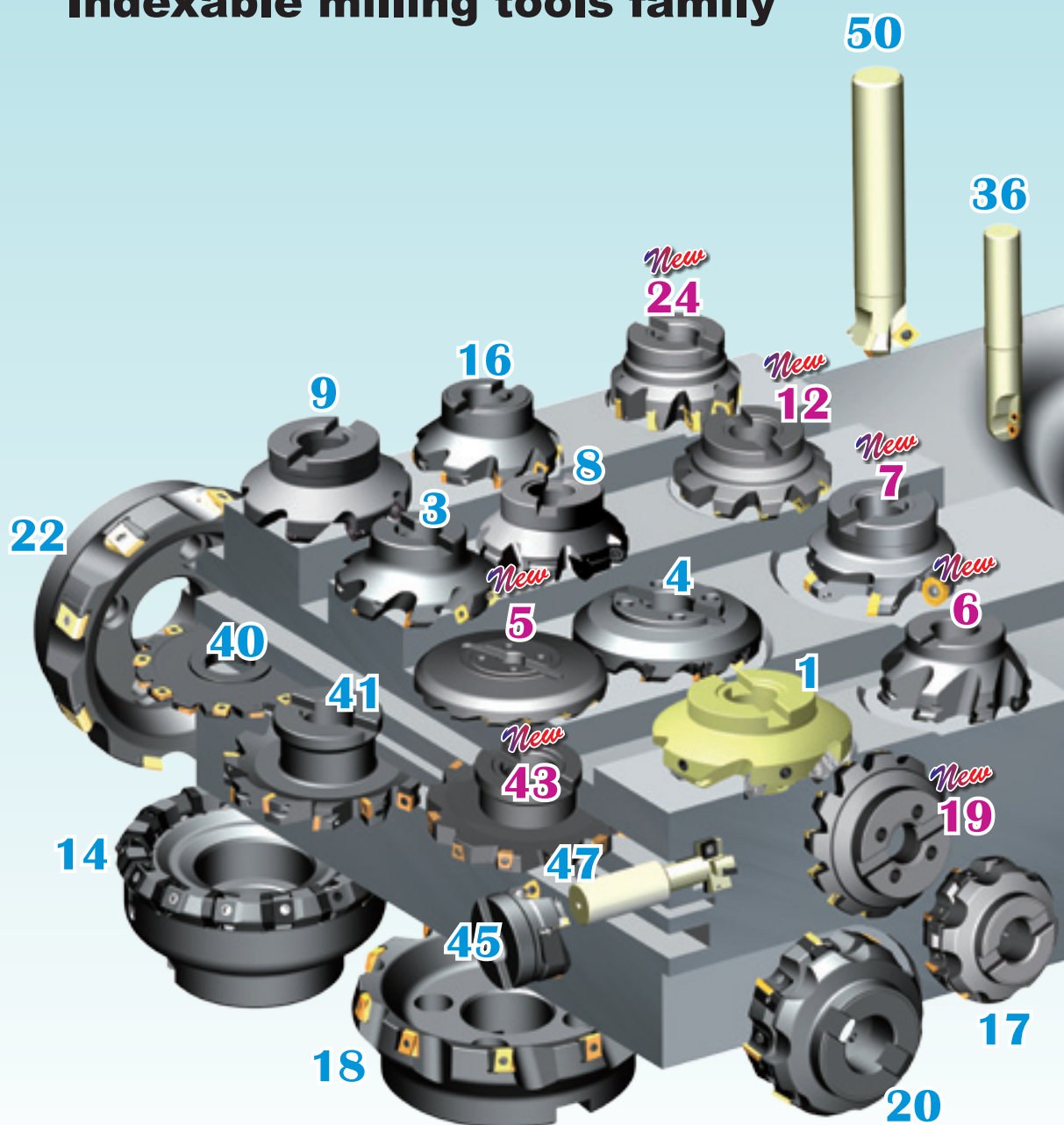
MILLING

Indexable Milling Tools >>>

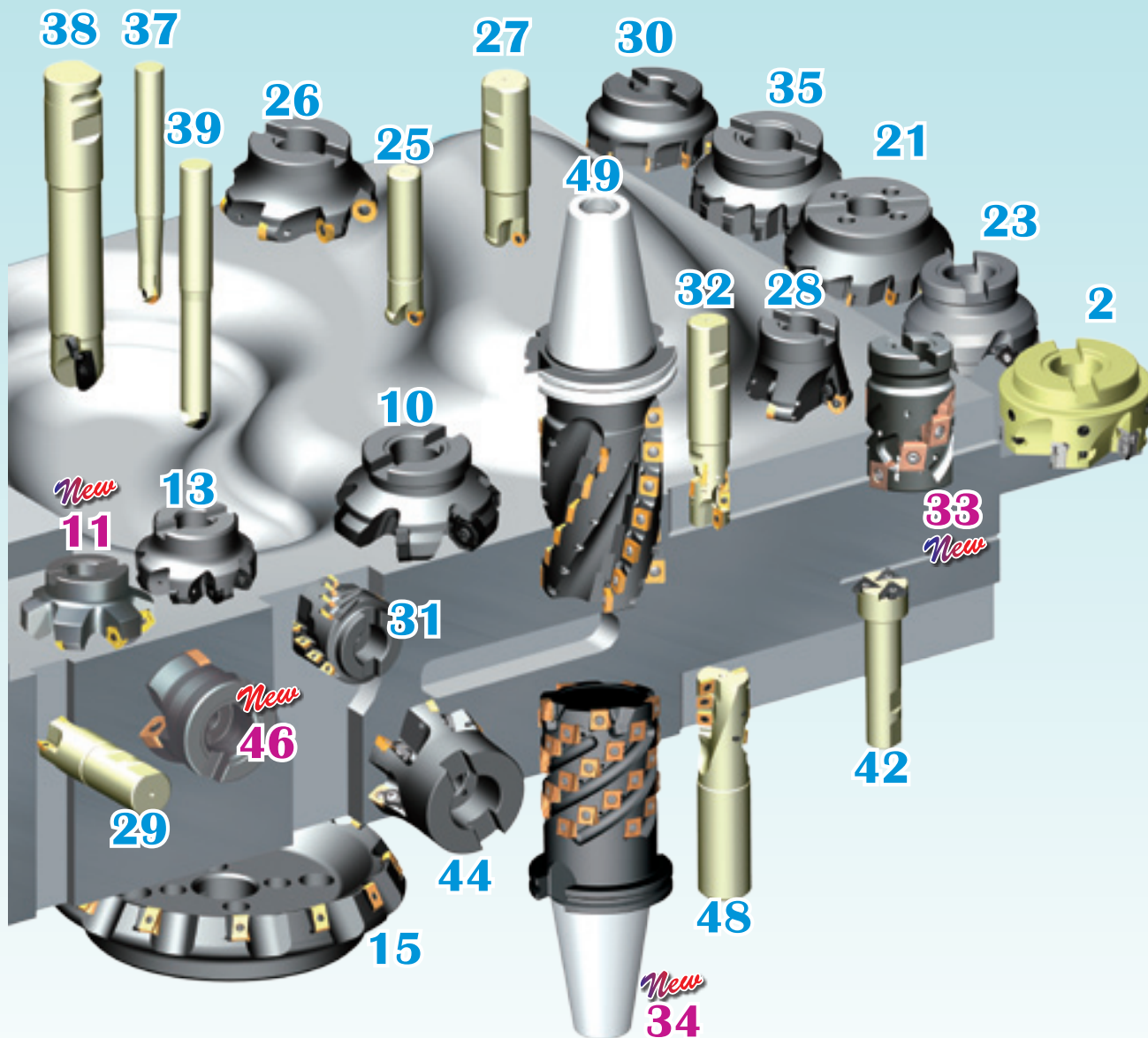


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Indexable milling tools family



Number	Tool category	Page	Number	Tool category	Page	Number	Tool category	Page
1	AMA01	B27	10	FMA12	B55	19	FME17	B81
2	AMP01	B29	11	FMA14	B59	20	FMP01	B83
3	FMA01	B31	12	FMA17	B61	21	FMP02	B85
4	FMA03	B36	13	FMD02(PN11)	B64	22	FMP03	B90
5	FMA03A	B37	14	FMD02(HN09)	B69	23	FMP12	B93
6	FMA04(OFKT05□□)	B40	15	FMD03	B71	24	FMP17	B96
7	FMA04(ODH/MT06□□)	B42	16	FME02	B73	25	FMR01	B99
8	FMA07	B46	17	FME03	B75	26	FMR02	B102
9	FMA11	B51	18	FME04	B79	27	FMR03	B106



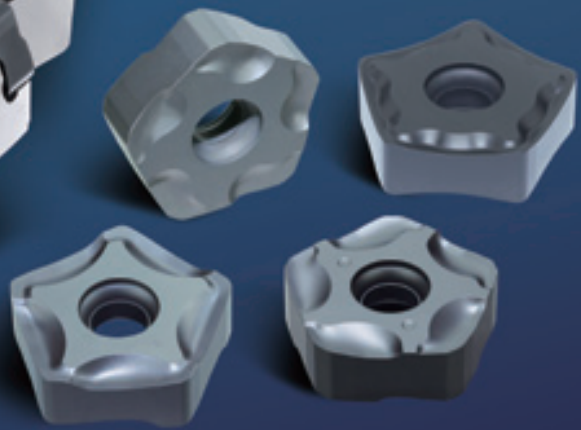
Number	Tool category	Page	Number	Tool category	Page	Number	Tool category	Page
28	FMR04	B109	36	BMR01	B141	45	XMR01(WPGT□□)	B181
29	EMP01	B112	37	BMR02	B143	46	XMR03	B189
30	EMP02	B118	38	BMR03	B145	47	TMP01	B191
31	EMP03	B121	39	BMR04	B157	48	HMP01(Ø40-Ø50)	B193
32	EMP04	B122	40	SMP01	B164	49	HMP01(Ø50-Ø80)	B194
33	EMP09	B126	41	SMP03	B167		HMP01 EC(Ø50-Ø80)	B195
34	EMP09 BT	B131	42	SMP05	B171	50	CM□01	B198
	EMP09 JT	B132	43	SMP09	B173			
35	EMP13	B136	44	XMR01(SDMT□□)	B178			



WHIRLWIND

FMD02

milling cutter series



Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
High-speed high-precision milling tools	AMA01  B27	Kr=45° a _{pmax} =6.6	SEHT12T3AFFN-AL	High-speed high-precision milling of Aluminum alloy, cast iron.	- Diameter range Ø50-Ø500 - Aluminum alloy body with high strength, light weight - Unique tool clamping design - Elastic runout adjustment structure, high pressure internal cooling, and high-precision cutting inserts enable high-quality, high-precision, high-efficiency, and high-stability machining of various materials.
		Kr=45° a _{pmax} =2.0	SEHT12T308AFFN-CBN		
		Kr=45° a _{pmax} =2.5	SEHT12T308AFFN-PCD		
	AMP01  B29	Kr=90° a _{pmax} =12	APHT12T304PPFR-AL		
		Kr=90° a _{pmax} =1.0	APHT12T304-W		
		Kr=90° a _{pmax} =2.0	APHT12T304PPFR-CBN		
		Kr=90° a _{pmax} =3.0	APHT12T304PPFR-PCD		
Face milling	FMA01  B31-32	Kr=45° a _{pmax} =6.0	SEET12T3-DF/DM/DR SEET12T3-CF/CM/CR SEET12T3-EF/EM SEET12T3-LH/W	General face milling of the following materials: steel, alloy steel, stainless steel, cast iron, aluminum alloy, high-temperature alloy	- Diameter range Ø50-Ø315. - Large rake angle makes cutting easier and faster. - Wide applications can be achieved by using available inserts with different chipbreakers. - Adopting inserts with wiper can improve surface quality.
		Kr=45° a _{pmax} =10.4	SEET18T6-DM/EM/W		
	FMA03  B36	Kr=45° a _{pmax} =5.5	SE□□1203A□□□□	General face milling of steel, stainless steel, cast iron	- Diameter range Ø80-Ø315. - large rake angle makes cutting easier and faster. - Top clamping achieves better vibration resistance.
		Kr=45° a _{pmax} =7.5	SE□□1504A□□□□		
	FMA03A <i>New</i>  B37	Kr=45° a _{pmax} =5.5	SE□□1203A□□□□		- Diameter range Ø80-Ø350. - Large rake angle makes cutting easier and faster. - Top clamping makes it easy to assemble and better vibration resistance. - Good rigidity of the tool system. The first choice for mold surface milling to achieve high surface quality.
		Kr=45° a _{pmax} =7.5	SE□□1504A□□□□		
	FMA04  B40 <i>New</i>  B42	Kr=45° a _{pmax} =3.5	OFKT05T3-DF/DM OFKT05T3-LH	Face milling of steel, alloy steel, cast iron, aluminum alloy	- Diameter range Ø50-Ø160. - High-economy milling tool with 8 cutting edges. - Screw clamping, high precision.
		Kr=45° a _{pmax} =4.0	ODHT060508-GL/GM/ GH/LH ODMT060512-GM	Face milling of steel, alloy steel, cast iron, aluminum alloy and high-temperature alloy	- Diameter range Ø50-Ø160. - High-economy milling tool with 8 cutting edges. - Top clamping makes it easy to assemble and disassemble.



B MILLING

Indexable Milling Tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Face milling	FMA07  B47	Kr=45° a _p max=4.0	ONHU060408-PF/PM	General face milling of steel and cast iron	- Diameter range Ø25-Ø50. - High-economy milling tool with 16 cutting edges.
	 B46	Kr=45° a _p max=5.0	ONHU08T508-PF/PM/W	General face milling of steel and cast iron	- Diameter range Ø50-Ø315. - High-economy milling tool with 16 cutting edges.
	FMA11  B51-52	Kr=45° a _p max=5.5	SNEG1205ANR-GM/HGR/W	General face milling of steel, cast iron and high-temperature alloy	- Diameter range Ø63- Ø315. - 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 _p max=7.0	SNEG1506ANR-GM/HGR/W		
		Kr=45° a _p max=9.0	SNEG1907ANR-HGR		
	FMA12   B55-56	Kr=45° a _p max=4.0	ONHU0604□□ANN-GL/GM/GH ONMU0604□□-GH/GM	General face milling of steel, cast iron and high-temperature alloy	- Diameter range Ø50-Ø400. - 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-dimensional edge.
		Kr=45° a _p max=5.5	ONMU09□□□□-GM/GH ONHU09□□□□ANN-GM/GH/GL		
	FMA14   B59	Kr=45° a _p max=5.5	PNEG110512-GL PNEG110530-GM PNEG110530-GH	General face milling of steel, stainless steel, cast iron	- Diameter range Ø50-Ø315. - High economy effect milling cutter with 10 cutting edges. - The balanced design with 45 clearance angle. - High anti-vibration ability which ensure the good surface quality.
	FMA17   B61	Kr=45° a _p max=6.5	SNGX1205ANN-GL/GM/GH SNMX1205ANN-GM SNMX120512-GL/GM/GH	General face milling of steel, cast iron and high-temperature alloy	- Diameter range Ø50-Ø400. - Double-sided chipbreaker milling insert has eight cutting edges and high economy; - Same inserts for right and left cutters. Coarse pitch and close pitch are available. - Diversified chipbreaker matching different coating for a wide range of application.
	FMD02  B64-65	Kr=67° a _p max=5.0	PNEG110512R/L-CF/CM/CR	General face milling of steel and cast iron	- Diameter range Ø50-Ø315. - High-economy milling tool with 10 cutting edges.
		Kr=67° a _p max=7.5	PNEG110512R/L-PF/PM/PR		
		Kr=67° a _p max=6.5	PNEG110512-KH/KM/KL	Face milling of cast iron	- Diameter range Ø80-Ø315. - High-economy milling tool with 12 cutting edges. - Top clamping makes it easy to assemble and disassemble.
	 B69	Kr=55° a _p max=6.0	HNEX090512-DF/DM HNEX090512-DR		

Indexable milling tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Face milling	FMD03  B71	Kr=60° a _p max=12.0	LNKT2007DN-ZR	Heavy-duty face milling of steel and alloy steel	- Diameter range Ø125-Ø400. - 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 _p max=17.0	LNKT2510-ZR		
	FME02  B73	Kr=75° a _p max=6.0	SPKW1204EDFR SPKW1204EDSR SPKT1204EDR	Face milling of steel, alloy steel and cast iron	- Diameter range Ø50-Ø125. - Kr 75°, general face milling. - Wide applications can be achieved by using inserts with different chipbreakers.
	FME03  B75	Kr=75° a _p max=6.0	SP□N1203(1504)ED□□ SP□R1203(1504)ED□□	Face milling of steel, alloy steel and cast iron	- Diameter range Ø80-Ø315. - Kr 75°, general face milling. - Top clamping makes it easy to assemble and disassemble.
		Kr=75° a _p max=8.0	SP□N1504ED□□ SP□R1504ED□□		
	FME04  B79	Kr=75° a _p max=12.0	LNKT1506EN-ZR	Heavy-duty face milling of steel and alloy steel	- Diameter range Ø125-Ø315. - 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.
	FME17   B81	Kr=75° a _p max=8.0	SNGX1205ENN-GL/GM/GH SNMX120512-GL/GM/GH	General face milling of steel, cast iron and high-temperature alloy	- Diameter range Ø50-Ø400. - Double-sided chipbreaker milling insert has eight cutting edges and high economy; - Same inserts for right and left cutters. Coarse pitch and close pitch are available. - Diversified chipbreaker matching different coating for a wide range of application.
	FMP01  B83	Kr=90° a _p max=18.0	TPKN2204PD□ TPKN2204PDF□ TPKN2204PDT□	Face milling of steel, alloy steel and cast iron	- Diameter range Ø80-Ø315. - Kr 90°, for square shoulder milling. - Top clamping makes it easy to assemble and disassemble.
	FMP02  B85	Kr=90° a _p max=6.7	SEET09T308PER-APF/ APM/APR	Face milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy	- Diameter range Ø40-Ø315. - Kr 90°, for square shoulder milling. - Different pitches: coarse pitch, close pitch and extra close pitch. - High precision insert, high work-piece surface quality. - Optimized chipbreaker and grade, suitable for finishing, semi-finishing and roughing.
		Kr=90° a _p max=10.8	SEET120308PER-APF/ APM/APR		
	FMP03  B90	Kr=90° a _p max=13.0	LNKT1506EN-ZR	Heavy-duty face milling of steel and alloy steel	- Diameter range Ø125-Ø315. - 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 _p max=17.0	LNKT2007DN-ZR		
		Kr=90° a _p max=22.0	LNKT2510-ZR		



B MILLING

Indexable Milling Tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Face milling	FMP12  B93	Kr=90° a _p max=5.7	WNHU0604□□PNR-GM WNMU060408PNN-GM	Steel, alloy steel, cast iron and aluminum alloy	- Diameter range Ø50-Ø315 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 _p max=7.7	WNHU0806□□PNR-GM WNMU080608PNN-GM WNHU080616PNR-LH		
	FMP12  B94	Kr=90° a _p max=5.7	WNHU0604□□PNR-GM		- Diameter range Ø25-Ø50 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.
	FMP17  B96-97	Kr=88° a _p max=10.5	SNGX1205PNN-GL/GM/GH SNMX120512-GL/GM/GH SNCU120420-W4	General face milling of steel, cast iron and high-temperature alloy	- Diameter range Ø50-Ø400. - Double-sided chipbreaker milling insert has eight cutting edges and high economy; - Same inserts for right and left cutters. Coarse pitch and close pitch are available. - Diversified chipbreaker matching different coating for a wide range of application.
	FMR01  B99	a _p max=5.0	RCKT10T3MO-DM	Cavity profile milling of steel, alloy steel, stainless steel and cast iron	- Diameter range Ø25-Ø50. - R-type inserts have extra-strong cutting edges. - Suitable for machining of curved surface of die. - Economical milling tools with screw clamping.
		a _p max=6.0	RCKT1204MO-DM/DR/ER/NM		
	FMR02  B102	a _p max=6.0	RCKT1204MO-DM/DR/ER/NM RCMW1204MOBS01225 RCMW1204MOAS01225	Face milling and cavity profile milling of steel, alloy steel, stainless steel and cast iron	- Diameter range Ø50-Ø160. - R-type inserts have extra-strong cutting edges. - Suitable for machining of curved surface of die. - Economical milling tools with screw clamping.
		a _p max=8.0	RCKT1606MO-DM/DR/ER/NM		
		a _p max=10.0	RCKT2006MO-DR/ER		
	FMR03  B106	a _p max=4.0	RDKW0803MO	Cavity profile milling of steel, alloy steel, stainless steel and cast iron	- Diameter range Ø16-Ø50. - R-type inserts have extra-strong cutting edges. - Suitable for machining of curved surface of die. - Economical milling tools with screw clamping.
		a _p max=5.0	RDKW10T3MO RDKT10T3MO-NM		
		a _p max=6.0	RDKW1204MO		
	FMR04  B109	a _p max=6.0	RDKW1204MO	Face milling and cavity profile milling of steel, alloy steel, stainless steel and cast iron	- Diameter range Ø50-Ø160. - R-type inserts have extra-strong cutting edges. - Suitable for machining of curved surface of die.
		a _p max=8.0	RDKW1605MO		
		a _p max=10.0	RDKW2006MO		
Square shoulder milling	EMP01  B112-114	Kr=90° a _p max=6.0	APKT070204-APF/APM	Multi-function milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy and high-temperature alloy	- Two mounting styles: Straight shank and Weldon shank, diameter range Ø10-Ø63. - Kr 90° , for square shoulder milling, slot milling, ramp milling, etc. - Inserts with wiper, also suitable for face milling. - Inserts with 3D helical cutting edge, less cutting force.
		Kr=90° a _p max=10.5	APKT11T3□□-APF/APM APKT11T3□□-ALH		
		Kr=90° a _p max=15.5	APKT160408-APF/APM APKT160408-ALH		

Indexable milling tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Square shoulder milling	EMP02  B118	Kr=90° a _{pmax} =11.5	APKT11T3□□-APF/APM APKT11T3□□-ALH	Face milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy and high-temperature alloy	- Diameter range Ø50-Ø160. - Kr 90° , for square shoulder milling, slot milling, ramp milling, etc. - Inserts with wiper, also suitable for face milling. - Inserts with 3D helical cutting edge, less cutting force.
		Kr=90° a _{pmax} =15.5	APKT160408-APF/APM APKT160408-ALH		
	EMP03  B121	Kr=90° a _{pmax} =39.0	APKT11T3□□-APF/APM APKT11T3□□-ALH	Milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy and high-temperature alloy at high cutting depth	- Diameter range Ø50-Ø100. - End mills with positive helical angle, good chip removal. - For side face milling and slot machining. - Close pitch, high machining efficiency.
	EMP04  B122	Kr=90° a _{pmax} =29.4~58.0	APKT11T3□□-APF/APM APKT11T3□□-ALH	Multi-function drilling and milling of steel alloy steel, stainless steel, cast iron and high-temperature alloy	- Diameter range Ø20-Ø40. - End mills with positive helical angle, good chip removal. - For side face milling and slot machining. - Close pitch, high machining efficiency.
	EMP09 <i>New</i>  B126	Kr=90° a _{pmax} =8.0	LNKT0804□□PNR-GM/GL LNMT080404PNR-GM	Multiple functional milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy	- Diameter range Ø20-Ø40. - Straight shank and tapered shank types. - The tangential inserts with 90-degree clearance angel can be used in square shoulder milling and slotting which can stand more cutting forces.
		Kr=90° a _{pmax} =11.5	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM		
	 B127-128	Kr=90° a _{pmax} =8.0	LNKT0804□□PNR-GM/GL LNMT080404PNR-GM	face milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy	- Diameter range Ø40-Ø160. - The tangential inserts with 90-degree clearance angel can be used in square shoulder milling and face milling with good rigidity..
		Kr=90° a _{pmax} =11.5	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM		
		Kr=90° a _{pmax} =15	LNKT1607□□PNR-GM/GL LNMT160708PNR-GM		
	 B129	Kr=90° a _{pmax} =33~63	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM		- Diameter range Ø32-Ø100. - Used in side milling and slotting.. - The helical cutting edge design lead to light cut.
		Kr=90° a _{pmax} =30~53	LNKT0804□□PNR-GM/GL LNMT080404PNR-GM LNKT1206□□PNR-GM/GL LNMT120608PNR-GM		- Diameter range Ø25-Ø50. - High strength on the cutting edge with sharp cutting edge. - Used in side milling and slotting. - The tangential inserts could stand more cutting forces.
	EMP09 BT <i>New</i>  B131	Kr=90° a _{pmax} =63~125	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM	large cutting depth milling of steel, alloy steel, stainless steel, cast iron and high-temperature alloy	- Diameter range Ø50-Ø80. - High strength on the cutting edge with sharp cutting edge. - Used in side milling and slotting. - The tangential inserts could stand more cutting forces.
	EMP09 JT <i>New</i>  B132	Kr=90° a _{pmax} =85~125			



MILLING

Indexable Milling Tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Square shoulder milling	EMP13  B136	Kr=90° a _p max=11.2	AN□X1105□□PNR-GM/LH	Multi-functional milling of steel, alloy steel, stainless steel, cast iron and aluminum alloy	- Diameter range Ø25-Ø160. - Designed with extra thick insert in combination with double negative tool body, achieving double positive cutting angle, reducing cutting force, as well as greatly improving impact resistance. - Properly designed cutting edge with high precision control can achieve high quality 90°square shoulder milling.
	 B137	Kr=90° a _p max=14.5	AN□X1506□□PNR-GM/LH		
	 B138	Kr=90° a _p max=43~64	AN□X1105□□PNR-GM/LH AN□X1506□□PNR-GM/LH		
	 B139	Kr=90° a _p max=43~53	AN□X1506□□PNR-GM/LH		
Profile milling	BMR01  B141	Cutting depth: see the detailed information about tool specifications	ZDET□□CYR□□ ZPNT2204CYR□□ SPMT060304 SDMT□□	Profile machining of steel, stainless steel and cast iron	- Diameter range Ø20-Ø63. - Very suitable for rough machining large mold. - Ball nose cutter with 3-cutting-edge inserts, perfect economical efficiency.
	BMR02  B143		ROHX□□	Profile machining of steel, stainless steel and cast iron	- Diameter range Ø12-Ø20. - For profile finish machining. - Stable assembly. - Insert with two cutting edges, perfect economical efficiency.
	BMR03  B145		XPHT□□R□□- GM	Profile machining of steel, stainless steel and cast iron	- Diameter range Ø16-Ø50. - For profile finish machining. - Stable assembly. - Insert with two cutting edges, perfect economical efficiency.
	 B146				
	 B147				
	 B148				

Indexable milling tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Profile milling	BMR04  B157 B158	cutting depth: see the detailed information about tool specifications	ZOHX□□	Profile machining of steel, stainless steel and cast iron	- Diameter range Ø12-Ø32. - High precision, for finish profile machining - Two types of chipbreaker, used in different machining conditions. - High assembling precision, good stability.
	SMP01  B164 B165		XSEQ12□□	Slot milling of steel, stainless steel and cast iron	- Diameter range Ø63-Ø250. - Two mounting styles: mounting by keyway and arbor mounting. - Groove width range : 8, 10, 12, 16, 18, 20mm.
Side and face milling	SMP03  B167 B168		MPHT□□	Slot milling of steel, stainless steel and cast iron	- Diameter range Ø80-Ø200. - Two mounting styles: mounting by keyway and arbor mounting. - Groove width range : 8, 10, 12, 16, 18, 20mm.
	SMP05  B171		QC16L□□ QC22L□□	Slot milling of steel, stainless steel and cast iron	Diameter range Ø25-Ø44
	SMP09   B173-174 B175-176		LNGX1005□□-GM LNGX1407□□-GM	Slot milling of steel, stainless steel and cast iron	- Diameter range Ø80-Ø250. - Optimized positioning structure of the cutter for reliable positioning. - Tangential milling cutter for excellent impact resistance. - Large rank angle makes cutting easier and faster. Tailor-made cutters and inserts are available for grooving of different width and nose radius. - Diameter range Ø80-Ø315. - Optimized positioning structure of the cutter for reliable positioning. - Tangential milling cutter for excellent impact resistance. - Large rank angle makes cutting easier and faster. Tailor-made cutters and inserts are available for grooving of different width and nose radius.



B MILLING

Indexable Milling Tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Special milling (high feed)	XMR01  B178	cutting depth: see the detailed information about tool specifications	SDMT□□-DM/PM/NM	Slot milling of steel, stainless steel and cast iron	• Diameter range Ø20-Ø160. • Two mounting types: straight shank and arbor mounting. • Cutting forces are resolved effectively, achieving cutting with high feed rate. • For plunge milling. • Double clamping, firm and reliable.
	 B179				
	 B181		WPGT□□ZSR WPGT□□ZSR-PM	Face and cavity profile milling of steel, stainless steel and cast iron in cavity applications	• Diameter range Ø20-Ø160. • Two mounting types: straight shank and arbor mounting. • Cutting forces are resolved effectively, achieving cutting with high feed rate. • Double clamping, firm and reliable.
	 B182				
	XMR03   B189		SNGU□□-GM	cavity milling, face milling of steel, alloy steel, stainless steel, and cast iron	• Diameter range Ø50-Ø125 • double-sided inserts with 8 cutting edges and great economical effect. • Large rake angle design leads to low cutting resistance with high generality. • The overall impact resistance of the tool is outstanding. • Great anti-vibration ability and stable machining.
T-slot milling	TMP01  B191	Kr=90° apmax=9~28	MPHT□□	Machining T slot in cast iron	• Diameter range Ø21-Ø60. • Machining T-slot with nominal size 12, 14, 18, 22, 28, 36. • 86° rhombic inserts with positive angle.
Helical end mills	HMP01  B193	Kr=90° apmax=55	APKT150412-PM/KM SPMT120408-PM/KM	Milling of steel, alloy steel and cast iron at high cutting depth.	• Diameter range Ø40、Ø80. • Coarse and differential pitch, less vibration. • Holistic structure with good rigidity, interchangeable heads achieve high economical efficiency.
	 B194	Kr=90° apmax=74~144			
	HMP01 EC  B195	Kr=90° apmax=74~144			

Indexable milling tools

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Chamfering	CMZ01  B198	Kr=30°	SPMT120408	Chamfer machining of steel, alloy steel, stainless steel and cast iron	- Diameter range Ø12, Ø25, Ø32, Ø36. - With the function of milling small surface.
	CMA01  B199	Kr=45°		Chamfer machining of steel, alloy steel, stainless steel and cast iron	- Diameter range Ø12, Ø25, Ø32, Ø36. - With the function of milling small surface.
	CMD01  B200	Kr=60°			



***Profile milling tools
series***

Milling insert grades overview

Workpiece material	ISO code	Coating		Cermet	Cemented carbide	PCBN and PCD material
		CVD	PVD			
P Steel	P01					
	P10		YBG202 YBG205 YB9320 YBG252	YNG151 YNG151C		
	P20	YBC301 YBC302 YBM251				
	P30	YBM351	YBG302		YC30S	
	P40					
M Stainless steel	M01					
	M10	YBM251 YBC302 YBM351 YBM253	YBG202 YBG205 YB9320 YBG252 YBG302	YNG151 YNG151C		
	M20					
	M30				YC30S	
	M40					
K Cast iron	K01					BK1021 BK1041
	K10	YBD152	YBG102	YNG151 YNG151C	YD051	
	K20	YBD252	YBG152		YD201	BK2531
	K30					
	K40					
N Non ferrous metal	N01					DN1021
	N10				YD101	
	N20				YD201	
	N30					
S Heat resistant alloy & Ti alloy	S01		YBG202 YBS203 YBS303			
	S10					
	S20					
	S30					
H Super hard material	H01					
	H10					
	H20					
	H30					

Indexable milling tools

Indexable milling tools overview



B MILLING

Indexable Milling Tools

Grade classification for milling inserts

Coated Cemented Carbide



Grade	Coating structure	Micro-structure	ISO applied range	Application field
YBC301	Combination of high-toughness, high-strength substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN		P15~35	Suitable for semi-finish and rough milling of P-type material
YBC302	Combination of high toughness, high strength substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN		P15~35 M10~30	Suitable for rough and semi-finish milling of P-type, M-type, whose hardness is below HRC45 and under
YBM251	Combination of high-toughness, high-strength substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN		P15~40 M10~30	Suitable for semi-finish and rough milling of P- and M-type material
YBM253	Combination of high-toughness gradient substrate and coating composed of TiCN and ultra fine Al ₂ O ₃		M10~30	Suitable for rough milling of M-type material
YBM351	Combination of high-toughness substrate and coating composed of TiCN, thin Al ₂ O ₃ and TiN		P25~40 M20~35	Suitable for rough milling of P- and M-type material
YBD152	Good combination of substrate with high wear-resistance and coating composed of TiCN and thick Al ₂ O 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 ₂ O ₃		K15~35	Suitable for rough and semi-finish milling of K-type material

Indexable
milling tools

Grade classification for milling inserts

Application case

Component shape



Machine and cooling

Vertical machining center, dry machining

Horizontal machining center, dry machining

Workpiece material and hardness

45# Forged steel HB240-270

HT250 HB220

Type of machining

Milling surface

Milling surface

Applicable tool

FMA01-125-B40-SE12-08

FMP02-100-B32-SE12-07

Applicable insert

YBM351/SEET12T3-DR

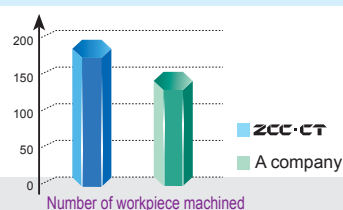
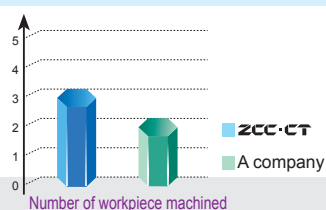
YBD252/SEET120308PER-APM

Cutting parameters

Vc=212m/min, fz=0.2mm/z, ap=3mm

Vc=160m/min, fz=0.2mm/z, ap=1.5mm

Application results



Coated Cemented Carbide PVD

Grade	Coating structure	ISO applied range	Application field
YBG102	fine carbide substrate + Nano coating	K05~K20	Suitable for finish and semi-finish milling of K-type material
YBG202	Substrate with excellent deformation resistance + Nano coating	P10~30	PVD grade with wide application, widely applied in semi-finish milling of P-, M- and S-type material
		M10~30	
		S05~20	
YBG205	Ultra fine carbide substrate + Nano coating	P10~30	Suitable for finishing and semi-finish milling of P- and M- material
		M10~30	
YBG302	Substrate with good toughness and strength + Nano coating	P25~40	Suitable for rough milling of P- and M-type material
		M25~40	
YBG152	Substrate with moderate hardness and strength + Nano coating	K20~35	Suitable for rough and semi-finish milling of K-type material
YB9320	Substrate with high toughness + TiAlN based multi Nano coating	P10~30	PVD grade with wide application, widely applied in finishing and semi-finish milling of P-, M- and S- material
		M10~30	
YBS203	The excellent resistance to deformation substrate+ Nano coating	S10~20	The general grade for S type machining, suitable for the milling of S type hard-to-cut materials.
YBS303	The great rigidity and strength substrate + Nano coating	S20~30	Suitable for milling of titanium alloy materials

Application case

Component shape



Machine and cooling

Machining center, dry cutting

Plane milling machine, dry cutting

Workpiece material and hardness

Nodular cast iron HB 220

7CrSiMoV HRC25

Type of machining

Milling surface

Cavity milling

Applicable tool

EMP02-050-A22-AP11-06

BMR03-050-MT5-M

Applicable insert

YB9320/APKT11T308-APM

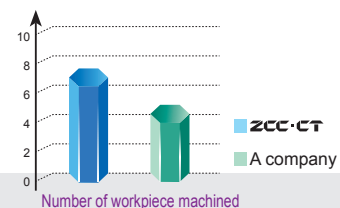
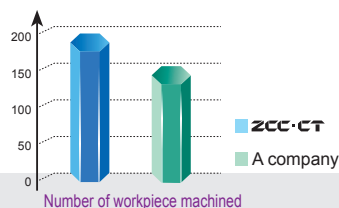
YBG302/XPHT50R2507- GM

Cutting parameters

Vc=235m/min, fz=0.15mm/z, ap=1~3mm

Vc=120m/min, fz=0.25mm/z, ap=8mm

Application results



Indexable milling tools

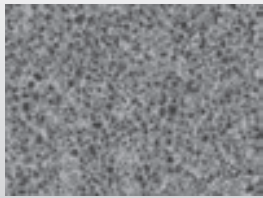
Grade classification for milling inserts



B MILLING / Indexable Milling Tools

Grade classification for milling inserts

Germet

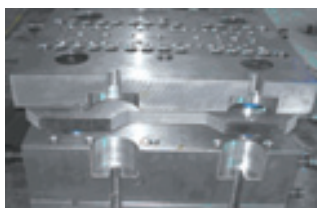
Grade	Coating structure	ISO applied range	Application field
YNG151		P05~20	Wide application in finish milling of P-, M-, and K-type material
		M05~20	
		K05~20	
YNG151C		P01~20	Wide application in finish milling of P-, M-, and K-type material
		M01~20	
		K01~20	

Indexable milling tools

Grade classification for milling inserts

Application case

Component shape



Machine and cooling

Machining center, dry cutting

Machining center, dry cutting

Workpiece material and hardness

45# HB 170~220

NAK80 HRC42~48

Type of machining

Finish milling surface

Finish milling surface

Applicable tool

FMA03-160-B40-SE12-08

FME03-160-B40-SP12-10

Applicable insert

YNG151/SEEN1203AFTN

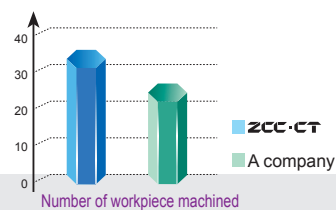
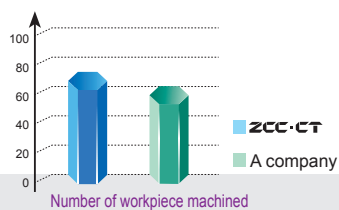
YNG151C/SPEN1203EDER

Cutting parameters

$V_c=400\text{m/min}$, $f_z=0.1\text{mm/z}$, $a_p=0.3\text{mm}$

$V_c=420\text{m/min}$, $f_z=0.12\text{mm/z}$, $a_p=0.35\text{mm}$

Application results



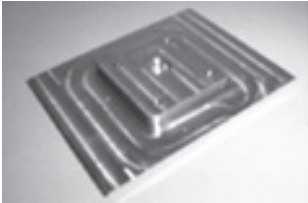
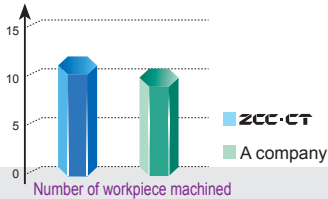
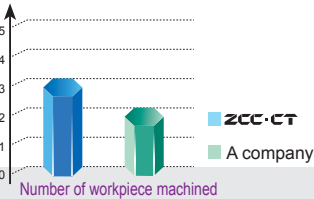
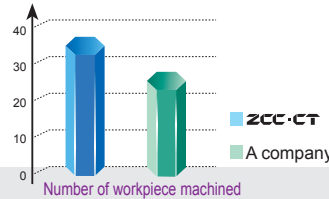
Cemented Carbide

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

Indexable milling tools

Grade classification for milling inserts

Application case

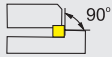
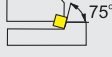
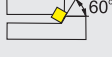
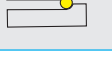
Component shape			
	Machine and cooling	Machine and cooling	Machine and cooling
	Vertical machining center, wet machining	Plane milling machine, wet machining	plane milling machine, dry cutting
Workpiece material and hardness	Aluminum alloy HB100	40CrMnMo HB240	HT250 HB220
Type of machining	Milling surface	Milling surface	Milling surface
Applicable tool	FMA01-100-B32-SE12-07	FMP01-100-B32-TP22-06	FME03-160-B40-SP15-10
Applicable insert	YD101/SEET12T3-LH	YC30S/TPKN2204PDR	YD201/SPKN1504EDTR
Cutting parameters	$V_c=300\sim350\text{m/min}$, $a_p=1\sim2\text{mm}$, $f_z=0.2\text{mm/z}$	$V_c=170\text{m/min}$, $a_p=5\sim7\text{mm}$, $f_z=0.3\text{mm/z}$	$V_c=100\sim130\text{m/min}$, $a_p=7\text{mm}$, $f_z=0.35\text{mm/z}$
Application results			
	Number of workpiece machined	Number of workpiece machined	Number of workpiece machined



MILLING

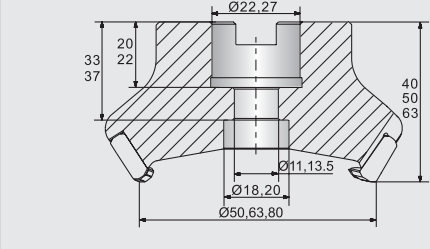
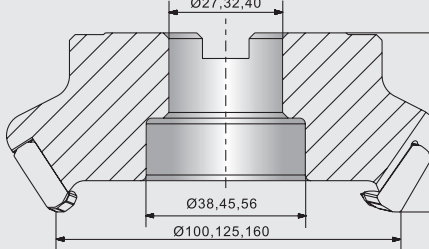
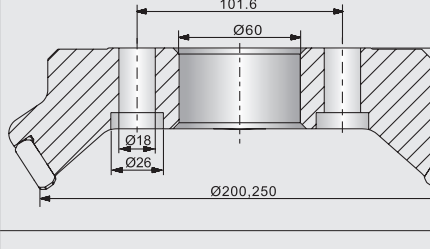
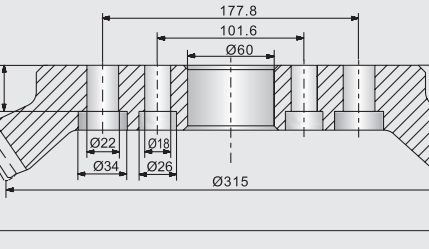
Indexable Milling Tools

Indexable milling tools code key

Cutter type		Approach angle		Series code	
FM	Face milling	P	90° 	Cutting diameter ØD Side and face milling tool : diameter X cutting edge width	
EM	Square shoulder milling	E	75° 	Coupling structure (see below)	
HM	Helical end milling	D	60° 	A	A-type coupling XP Weldon shank
SM	Side and face milling	A	45° 	B	B-type coupling G Straight shank
BM	Profile milling	R		C	C-type coupling MW Morse adapter with a conical hole and without a flat tail
CM	Chamfer milling			D	D-type coupling
XM	Special milling			Coupling size(mm) (see below)	
TM	T-slot milling				
AM	Aluminum alloy high speed milling				

FM	E	03	-	100	-	B	32
-----------	----------	-----------	----------	------------	----------	----------	-----------

Coupling structure of arbor

A-type coupling		B-type coupling	
	Ø50- Ø80 arbor face milling cutter as per GB5342-96		Ø100- Ø160 arbor face milling cutter as per GB5342-96
C-type coupling		D-type coupling	
	Ø200- Ø250 arbor face milling cutter as per GB5342-96		D≥Ø315 arbor face milling cutter as per GB5342-96

For coupling methods of Weldon shank, straight shank and Morse taper shank, etc., see technical information of tooling systems.

Insert shape	
 80° C	 55° D
 R	 S
 60° T	 L
 H	 O

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

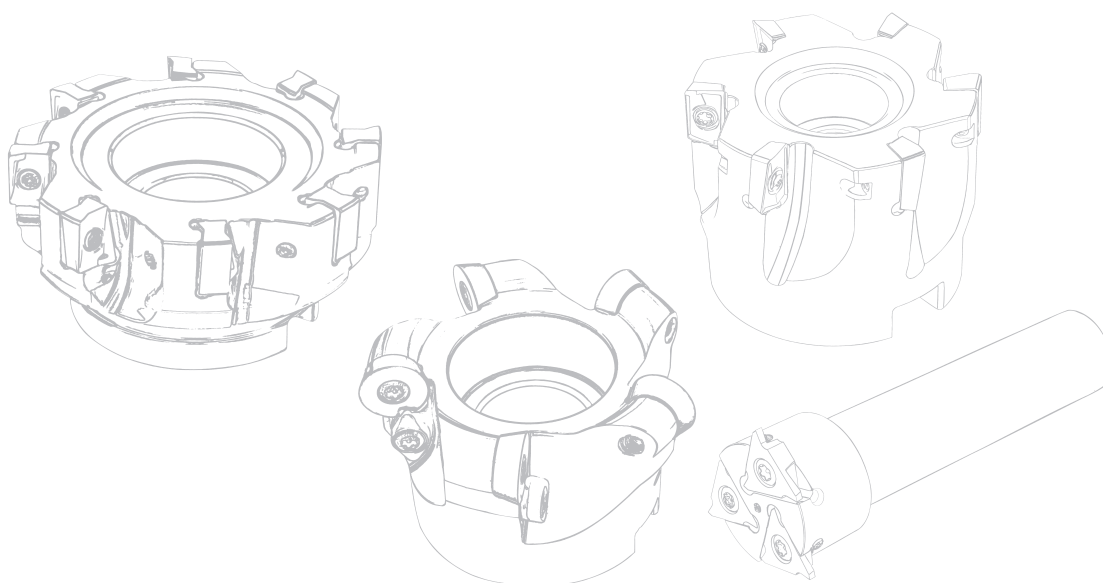
Diameter of insert's inscribed circle	Length of cutting edge					
	C	D	R	S	T	L
5.556	—	—	—	—	09	—
6.350	06	07	—	—	11	—
9.525	09	11	09	09	16	—
12.700	12	15	12	12	22	—
15.875	16	19	15	15	27	—
19.050	19	—	19	19	33	—
25.400	25	—	25	25	44	2

- S P 12 - 06 L C

Number of teeth
(number of flute in the case of helical end mills)

Cutting direction
(R: Right L: Left R style as the default)

Internal cooling structure



AMMA01 AMP01 Series

High-speed High-precision
milling tools

Machining case of AMP01 series high-speed high-precision milling tools

Area of machining: Bottom surface of cylinder
housing

Machine: Machining center

Coolant: Internal

Workpiece material: Aluminum alloy (HB 110)

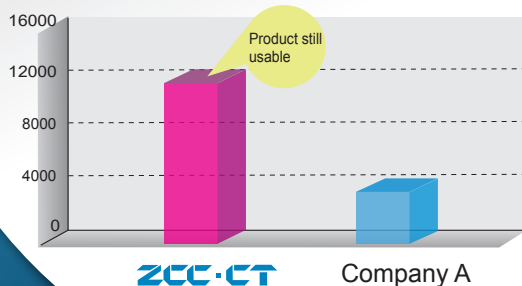
Operation: Face milling

Cutting data: $n=11141\text{r/min}$ $f_z=0.1\text{mm/z}$



● Comparison of tool life

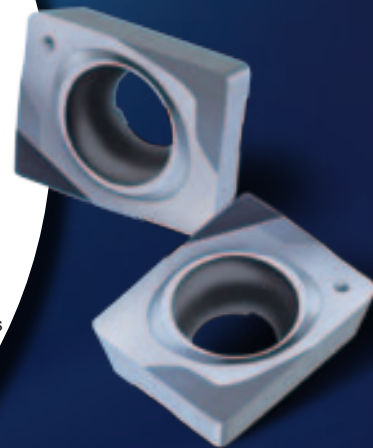
Number of workpiece machined(pieces)



Results:

ZCC-CT: 12000 pcs
(Still usable)

Product of company A: 3500 pcs



AMA01 Series High-speed High-precision milling tools

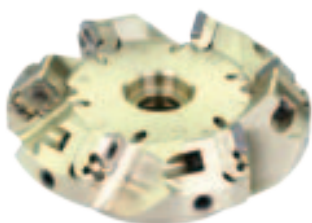
Kr:45°



Face milling



Chamfering

AMA01 **N** **K**

Specification of tools

Type	Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ØD ₁	ød	L			
AMA01 -050-A22-SE12-03C	▲	△	50	64	22	40	3	A	0.17
-063-A27-SE12-04C	▲	△	63	77	27	40	4	A	0.27
-080-A27-SE12-05C	▲	△	80	94	27	50	5	A	0.49
-100-A32-SE12-06C	▲	△	100	114	32	50	6	A	0.84
-125-B40-SE12-08C	▲	△	125	139	40	63	8	B	1.20
-160-B40-SE12-10C	▲	△	160	173	40	63	10	B	2.11
-160-C40-SE12-10C	▲	△	160	173	40	63	10	C	2.15
-200-C60-SE12-12C	▲	△	200	213	60	63	12	C	3.36
-250-C60-SE12-14C	▲	△	250	263	60	63	14	C	4.96
-315-D60-SE12-16	▲	△	315	328	60	80	16	D	8.68
-400-D60-SE12-18	▲	△	400	413	60	80	18	D	10.1
-500-D60-SE12-20	▲	△	500	513	60	80	20	D	14.3

▲Stock available △Make-to-order

Cutter with a diameter of 250mm or more have no internal cooling, and cutter with a diameter of 200mm or more have no dynamic balance. Type A and Type B connectors are equipped with internal cooling screws.

Spare parts

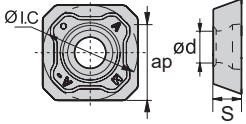
Diameter ØD	Locator screw	Balancing screw	Adjusting screw	Insert screw	Locator	Wrench	Wrench	
								
Ø50	M4×12-TP	M8×8(GB77-85)	I20M3×10X	I60M4×8.4	AMA0101	WT15IP	WT09P	
Ø63		M8×12(GB77-85)			AMA0102	WT15IS		
Ø80								
Ø100-Ø160								
Ø200								
Ø250-Ø500		--			AMA0103			

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

B MILLING Indexable Milling Tools

Selection of inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



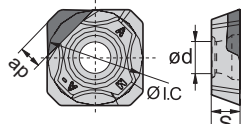
Workpiece material	Cast iron (K)	Non-ferrous metal (N)
Cast iron	😊	😞
Non-ferrous metal	😐	😊

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		ØI.C	S	ød	apmax			
	SEHT12T3AFFN-AL	12.7	3.97	4.4	6.6	DN1021	BK1021	YD201

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Selection of inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



Workpiece material	Cast iron (K)	Non-ferrous metal (N)
Cast iron	😊	😞
Non-ferrous metal	😐	😊

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		ØI.C	S	ød	apmax			
	SEHT12T308AFFN-PCD	12.7	3.97	4.4	2.5	★		
	SEHT12T308AFFN-CBN	12.7	3.97	4.4	2		○	

CBN insert edge can be treated as per machining requirements

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Recommended cutting parameters

	Workpiece material	Insert material	Cutting parameters	
			Vc(m/min)	fz(mm/z)
K	Cast iron	BK1021	800(500-1200)	0.2(0.1-0.5)
N	Aluminum alloy (Si content≤12%)	DN1021	1500(800-3000)	0.1(0.08-0.3)
		YD201	600(300-1000)	0.15(0.05-0.3)

AMA01 Series High-speed High-precision milling tools

Kr:90°



Face milling

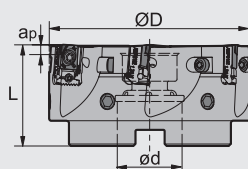


Step shoulder

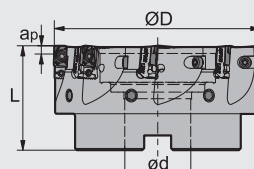
AMP01 N K

Close even pitch

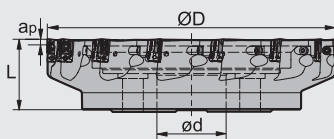
A-type coupling



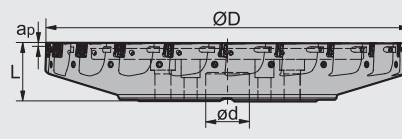
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type	Stock		Basic dimensions(mm)			Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ød	L			
AMP01 -050-A22-AP12-03C	▲	△	50	22	40	3	A	0.17
-063-A27-AP12-05C	▲	△	63	27	40	5	A	0.27
-080-A27-AP12-06C	▲	△	80	27	50	6	A	0.49
-100-A32-AP12-06C	▲	△	100	32	50	6	A	0.84
-125-B40-AP12-08C	▲	△	125	40	63	8	B	1.20
-160-B40-AP12-10C	▲	△	160	40	63	10	B	2.11
-160-C40-AP12-10C	▲	△	160	40	63	10	C	2.15
-200-C40-AP12-12C	▲	△	200	60	63	12	C	3.36
-250-C60-AP12-14C	▲	△	250	60	63	14	C	4.96
-315-D60-AP12-16	▲	△	315	60	80	16	D	8.68
-400-D60-AP12-18	▲	△	400	60	80	18	D	10.1
-500-D60-AP12-20	▲	△	500	60	80	20	D	14.3

▲Stock available

△Make-to-order

Cutter with a diameter of 250mm or more have no internal cooling, and cutter with a diameter of 200mm or more have no dynamic balance. Type A and Type B connectors are equipped with internal cooling screws.

Spare parts

Diameter ØD	Locator screw	Balancing screw	Adjusting screw	Insert screw	Locator	Wrench	Wrench	
								
Ø50-Ø63	M4×12-TP	M8×8(GB77-85)	I20M3×10X	I60M4×8.4	AMP0101	WT15IP	WT09P	
Ø80-Ø160		M8×12(GB77-85)			AMP0102	WT15IS		
Ø200		--			AMP0103			
Ø250-Ø500		--						

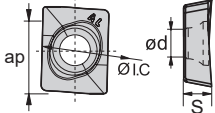
Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240Indexable
milling tools

High-speed High-precision milling tools

B MILLING Indexable Milling Tools

Selection of inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



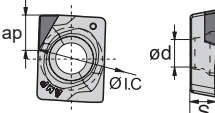
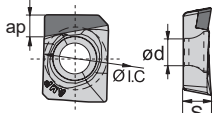
Workpiece material	Cast iron (K)	Non-ferrous metal (N)
Cast iron	😊	😞
Non-ferrous metal	😐	😊

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		Øl.c	S	Ød	apmax			
	APHT12T304PPFR-AL	12.7	3.97	4.4	12	DN1021	BK1021	YD201
								★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Selection of inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	Cast iron (K)	Non-ferrous metal (N)
Cast iron	😊	😞
Non-ferrous metal	😐	😊

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		Øl.c	S	Ød	apmax			
	APHT12T304PPFR-PCD	12.7	3.97	4.4	3	★	BK1021	YD201
	APHT12T304PPFR-CBN	12.7	3.97	4.4	2		○	
	APHT12T304-W	12.7	3.97	4.4	1	★	★	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

Workpiece material	Insert material	Cutting parameters	
		V _c (m/min)	f _z (mm/z)
K Cast iron	BK1021	800(500-1200)	0.2(0.1-0.5)
N Aluminum alloy (Si content≤12%)	DN1021	1500(800-3000)	0.1(0.08-0.3)
	YD201	600(300-1000)	0.15(0.05-0.3)

Face milling tools

Kr:45°

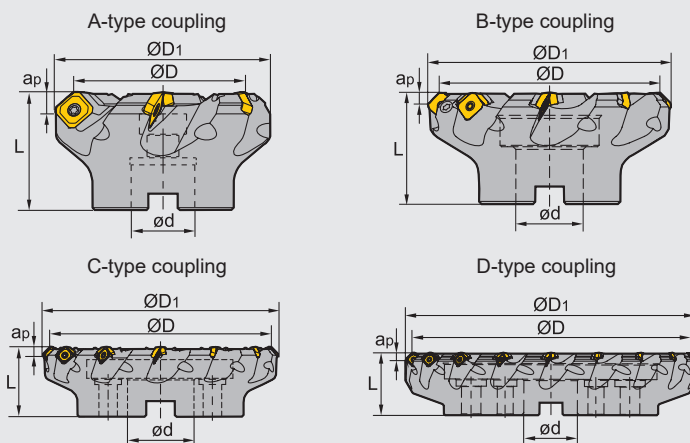


Face milling



Chamfering

FMA01 P M K N S



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	ØD	ØD ₁	ød	L	apmax			
FMA01 Coarse pitch	-050-A22-SE12-04	▲	△	50	61	22	40	6	4	A	0.3
	-063-A22-SE12-05	▲	△	63	74	22	40	6	5	A	0.5
	-080-A27-SE12-06	▲	△	80	91	27	50	6	6	A	1.2
	-100-B32-SE12-07	▲	△	100	107	32	50	6	7	B	1.52
	-125-B40-SE12-08	▲	△	125	136	40	63	6	8	B	2.6
	-160-B40-SE12-07	▲	△	160	174	40	63	6	7	B	4.548
	-160-B40-SE12-10	▲	△	160	170	40	63	6	10	B	4.92
	-200-C60-SE12-08	▲	△	200	214	60	63	6	8	C	6.175
	-200-C60-SE12-12	▲	△	200	210	60	63	6	12	C	7.6
	-250-C60-SE12-10	▲	△	250	264	60	63	6	10	C	12.596
	-250-C60-SE12-14	▲	△	250	260	60	63	6	14	C	13.5
	-315-D60-SE12-18	▲	△	315	325	60	70	6	18	D	20.8
	-100-B32-SE18-04	▲	△	100	120	32	63	10.4	4	B	2.22
	-125-B40-SE18-05	▲	△	125	145	40	63	10.4	5	B	3.15
	-160-B40-SE18-06	▲	△	160	180	40	63	10.4	6	B	5.01
	-200-C60-SE18-08	▲	△	200	220	60	63	10.4	8	C	6.9
-250-C60-SE18-10	▲	△	250	270	60	63	10.4	10	C	13.1	
-315-D60-SE18-12	▲	△	315	335	60	80	10.4	12	D	24.5	

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Insert	Insert screw	Shim	Shim screw	Wrench	Wrench
Ø50-Ø100	SEET12□□-□□	I60M3.5×10	--	--	WT15IS	--
Ø50-Ø315	SEET12□□-□□	I60M3.5×12	S13BS	SM5×7XA	WT15IS	WH35L
Ø100-Ø315	SEET18□□-□□	I60M5×17	S18BS	SM8×9XA	WT20IT	WH50L

Tools code key
B24-B25Grade selection guide
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B234-B240



B MILLING

Indexable Milling Tools

Face milling tools

Kr:45°



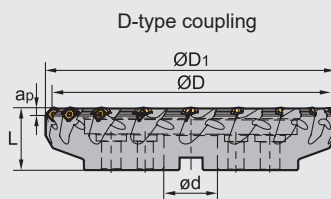
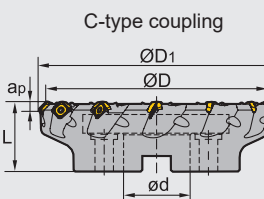
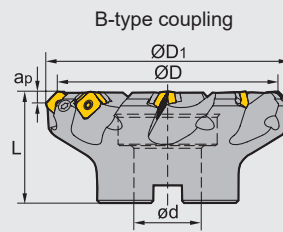
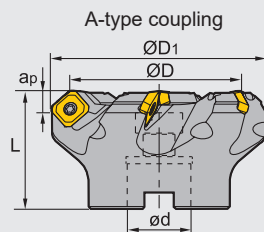
Face milling

Chamfering

FMA01 P M K N S



Close and equal pitch



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	ØD	ØD ₁	ød	L	a _p max			
FMA01 Close pitch	-050-A22-SE12-05	▲	△	50	63	22	40	6	5	A	0.427
	-063-A22-SE12-06	▲	△	63	74	22	40	6	6	A	0.53
	-080-A27-SE12-08	▲	△	80	93	27	50	6	8	A	1.37
	-100-B32-SE12-10	▲	△	100	114	32	50	6	10	B	1.755
	-125-B40-SE12-12	▲	△	125	136	40	63	6	12	B	3.06
	-160-B40-SE12-16	▲	△	160	174	40	63	6	16	B	5.21
	-200-C60-SE12-20	▲	△	200	214	60	63	6	20	C	9.32
	-250-C60-SE12-24	▲	△	250	264	60	63	6	24	C	15.892
	-100-B32-SE18-06	▲	△	100	114	32	63	10.4	6	B	2.98
	-125-B40-SE18-07	▲	△	125	144	40	63	10.4	7	B	3.803
	-200-C60-SE18-12	▲	△	200	220	60	63	10.4	12	C	7.191
	-250-C60-SE18-14	▲	△	250	265	60	63	10.4	14	C	14.9

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Insert	Insert screw	Shim	Shim screw	Wrench	Wrench	
Ø50-Ø100	SEET12□□-□□	I60M3.5×10	--	--	WT15IS	--	
Ø50-Ø315	SEET12□□-□□	I60M3.5×12	S13BS	SM5×7XA	WT15IS	WH35L	
Ø100-Ø315	SEET18□□-□□	I60M5×17	S18BS	SM8×9XA	WT20IT	WH50L	

Tools code key

B24-B25

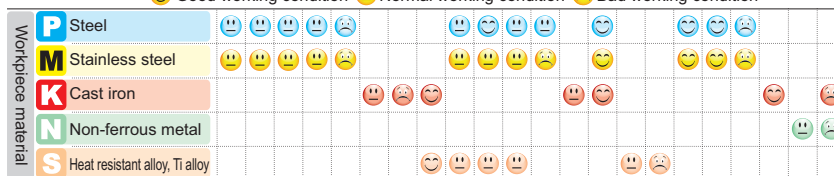
Grade selection guide

B19-B23

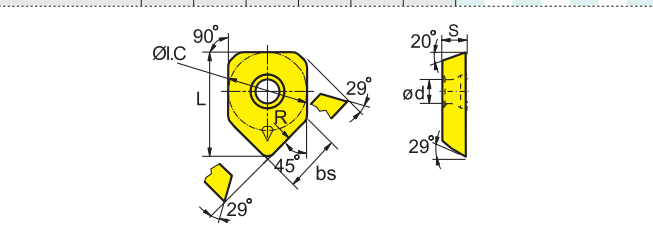
Technical data

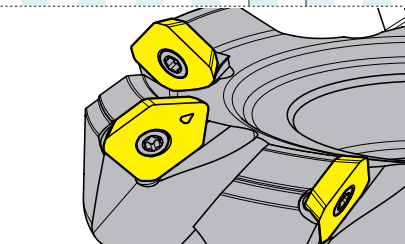
B234-B240

😊 Good working condition 😐 Normal working condition ☹ Bad working condition



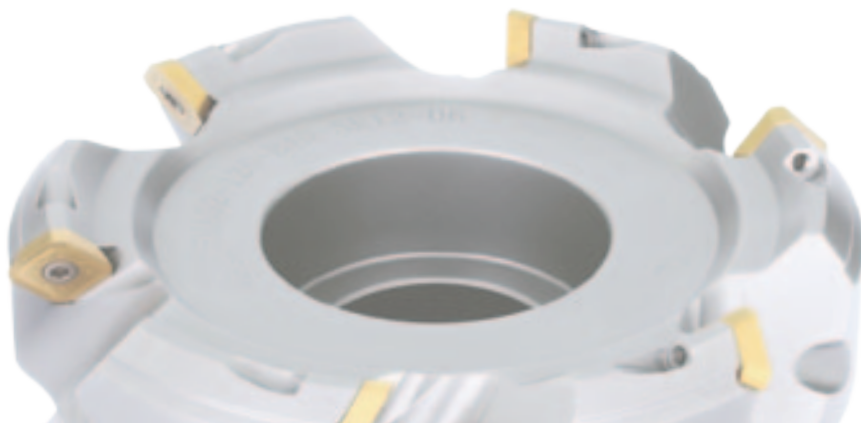
Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet		Cemented carbide							
		L	ØI.C	S	ød	bs	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SEET12T3-DF	13.4	13.4	3.97	4.1	2.55	--	●	★	●						★		○											
	SEET12T3-CF	13.4	13.4	3.97	4.1	2.55	--						○	★		★		○											
	SEET12T3-EF	13.4	13.4	3.97	4.1	2.55	--										★		○				●						
	SEET12T3-DM	13.4	13.4	3.97	4.1	2.55	--	●	★	●		○				★		★											
	SEET12T3-CM	13.4	13.4	3.97	4.1	2.55	--						★			★		○											
	SEET12T3-EM	13.4	13.4	3.97	4.1	2.55	--			●		●				★		★					●						
	SEET18T6-DM	18.0	18.0	6.1	5.5	1.5	--		○		○																		
	SEET18T6-EM	18.0	18.0	6.1	5.5	1.5	--				○							○											
	SEET12T3-DR	13.4	13.4	3.97	4.1	2.55	--	●	★			●				★		★											
	SEET12T3-CR	13.4	13.4	3.97	4.1	2.55	--	●					★			★		★											
	SEET12T3-LH	13.4	13.4	3.97	4.1	2.55	--																					○	★
	SEET12T3-W	17.82	13.4	3.97	4.1	9.46	500	★	●			★				★							★						
	SEET18T6-W	24.78	18.0	6.1	5.5	11.0	500										○												





★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Face milling tools





►► Chipbreaker selection for FMA01 milling inserts

Classification \ Function	For finishing	For semi-finishing	For roughing
P	-DF	-DM	-DR
M, S	-EF	-EM	
K	-CF	-CM	-CR
N	-LH		

►► Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V _c (m/min)	f _z (mm/z)		
					-DF	-DM	-DR
P	Low-carbon steel, Soft steel	≤180	YBM251 YBC301	270(220-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			YBG205 YB9320	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			YBG302 YBM253	230(170-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
	High-carbon steel, Alloy steel	180-280	YBM251 YBC302 YBC301	240 (200-320)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			YBG205 YB9320	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			YBG302 YBM253	220 (150-330)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
	Alloy tool steel	280-350	YBM251 YBM351 YBC301	220 (180-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			YBG205 YB9320	220 (170-340)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			YBG302 YBM253	190 (130-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
M					-EF	-EM	
	Stainless steel	≤270	YBM251	150 (120-240)	0.15(0.1-0.2)	0.2 (0.1-0.3)	
			YBG205 YB9320	160 (110-270)	0.15(0.1-0.2)	0.2 (0.1-0.3)	
			YBG302	140 (100-250)	0.15(0.1-0.2)	0.2 (0.1-0.3)	
K					-CF	-CM	-CR
	Cast iron	180-250	YBG102	210 (120-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			YBD152	240 (180-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
N					-LH		
	Al alloy steel	--	YD101	300-	0.25 (0.1-0.4)		
			YD201	300-			
S					-EF	-EM	
	High-temperature alloy	≤400	YBG102	50(20-60)	0.1 (0.1-0.2)	0.15 (0.1-0.3)	
			YBS303	100(60-120)	0.1 (0.1-0.2)	0.15 (0.1-0.25)	

Indexable
milling tools

Face milling tools

Case for FMA01

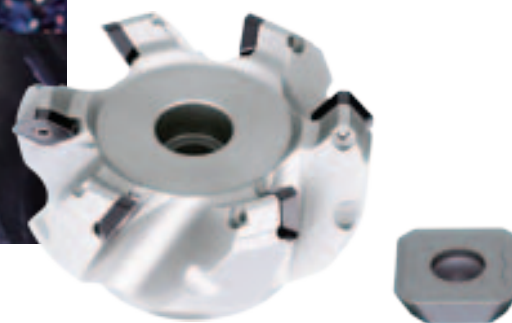


Workpiece material: 1Cr18Ni9Ti (HB180)
 Cooling system: Dry cutting
 Machine: Vertical machining center
 Cutting parameters:
 $V_c=160\text{m/min}$
 $a_p=1\text{mm}$
 $f_z=0.2\text{mm/z}$
 $a_e=60\text{mm}$

Surface roughness of workpiece:

ZCC-CT: Ra1.2

Similar overseas products:
 Ra1.6



Tool type: FMA01-080-A27-SE12-06

Insert type/grade: SEET12T3-EM/YBG302

Indexable
milling tools

Face milling tools

● Comparison of insert abrasion

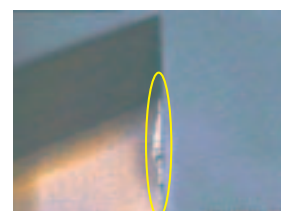
ZCC-CT

Similar overseas products

17'30"



29'30"



33'30"





B MILLING

Indexable Milling Tools

Face milling tools

Kr:45°



Face milling

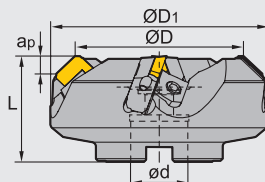


Chamfering

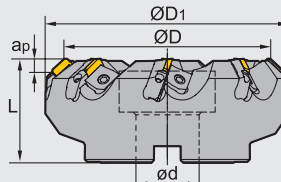
FMA03 P M K



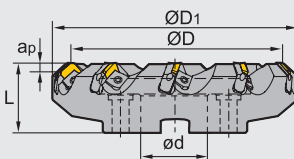
A-type coupling



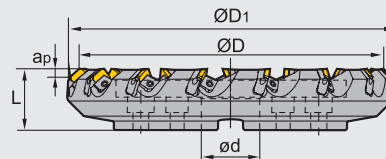
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ØD1	ød	L	apmax			
FMA03 -080-A27-SE12-04	▲	△	80	103	27	50	5.5	4	A	1.8
-100-B32-SE12-05	▲	△	100	122	32	50	5.5	5	B	2.4
-125-B40-SE12-06	▲	△	125	147	40	63	5.5	6	B	4.4
-160-B40-SE12-08	▲	△	160	181	40	63	5.5	8	B	6.4
-200-C60-SE12-10	▲	△	200	221	60	63	5.5	10	C	8.5
-250-C60-SE12-12	▲	△	250	270	60	63	5.5	12	C	14.1
-315-D60-SE12-15	▲	△	315	353	60	63	5.5	15	D	22.2
-080-A27-SE15-04	▲	△	80	103	27	50	7.5	4	A	1.7
-100-B32-SE15-05	▲	△	100	122	32	50	7.5	5	B	2.3
-125-B40-SE15-06	▲	△	125	147	40	63	7.5	6	B	4.2
-160-B40-SE15-08	▲	△	160	181	40	63	7.5	8	B	6.1
-200-C60-SE15-10	▲	△	200	221	60	63	7.5	10	C	8.3
-250-C60-SE15-12	▲	△	250	270	60	63	7.5	12	C	13.6
-315-D60-SE15-15	▲	△	315	353	60	63	7.5	15	D	21.8

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Inserts	Locator	Wedge	Wedge screw	Locator screw	Wrench
Ø80-Ø315	SE12	LSE12R/L	W05R/L	DM8×21X	LOM5×15.1	WT20T WH40T
Ø80-Ø315	SE15	LSE15R/L	W01R/L			

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

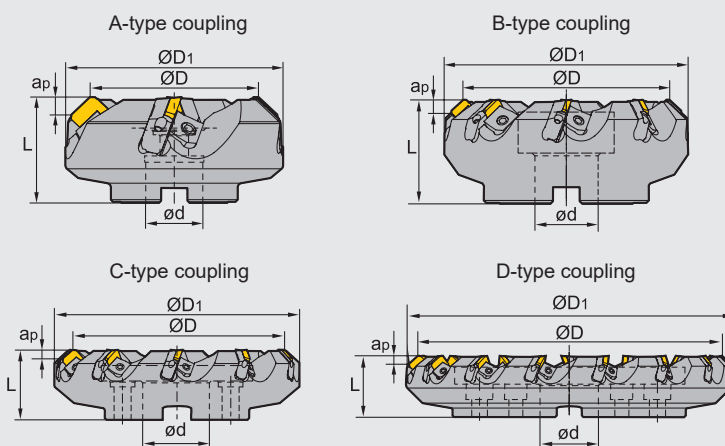
B234-B240

Face milling tools

Kr:45°



FMA03A P M K



Specification of tools

Type	Stock		Basic dimensions(mm)						Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ØD ₁	ød	L	ap _{max}				
FMA03A -160-B2.00"-SE12-08R/L	▲	△	160	177	2.00"	63	5.5	8	B	6.9	
-200-C1.875"-SE12-10R/L	▲	△	200	217	1.875"	63	5.5	10	C	9.1	
-250-C1.875"-SE12-12R/L	▲	△	250	267	1.875"	63	5.5	12	C	14.6	
-315-C1.875"-SE12-14R/L	▲	△	315	332	1.875"	63	5.5	14	C	22.7	
-350-C1.875"-SE12-16R/L	▲	△	350	367	1.875"	63	5.5	16	C	28.9	
-250-C1.875"-SE15-12R/L	▲	△	250	267	1.875"	63	7.5	12	C	7.3	
-315-C1.875"-SE15-14R/L	▲	△	315	340	1.875"	63	7.5	14	C	9.5	
-350-C1.875"-SE15-16R/L	▲	△	350	370	1.875"	63	7.5	16	C	15.1	

▲Stock available △Make-to-order

1.875"=47.625mm 2.00"=50.8mm

Cutter diameter Insert type Left cutter
FMA03A - 160 - B2.00" - SE12 - 08R/L
 Cutter type Coupling type Right cutter

Spare parts

Diameter ØD	Inserts	Shim	Wedge	Wedge screw	Insert screw	Wrench	
Ø160-Ø350	SE□□12□□□□ SE□□15□□□□	S15BSX	W27R/L	DM10X21X	M4X10-S12B	WH50T	

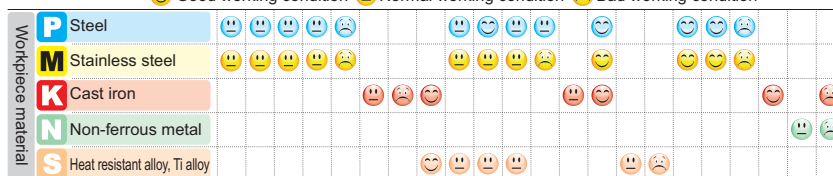
Tools code key Grade selection guide Technical data
 B24-B25 B19-B23 B234-B240

Indexable milling tools

Face milling tools

Indexable Milling Tools

😊 Good working condition 😐 Normal working condition ☹ Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

► Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V _c (m/min)	f _z (mm/z)
P	Low-carbon steel, Soft steel	≤ 180	YNG151	430 (340-500)	0.2 (0.1-0.4)
			YBM251 YBC301 YBG205	270 (220-350)	0.2 (0.1-0.4)
			YBM351	220 (180-300)	0.25 (0.15-0.3)
			YBG202 YBG302	270 (200-360)	0.2 (0.1-0.3)
			YC30S	140 (100-220)	0.27 (0.1-0.4)
	High-carbon steel, Alloy steel	180-280	YNG151	400 (320-480)	0.2 (0.1-0.4)
			YBM251 YBC301 YBG205	240 (200-320)	0.2 (0.1-0.4)
			YBM351	200 (160-280)	0.25 (0.15-0.3)
			YBG202 YBG302	240 (180-350)	0.2 (0.1-0.3)
			YC30S	120 (80-200)	0.27 (0.1-0.4)
	Alloy tool steel	280-350	YNG151	350 (300-450)	0.2 (0.1-0.4)
			YBM251 YBC301 YBG205	220 (180-300)	0.2 (0.1-0.4)
			YBM351	180 (150-250)	0.25 (0.15-0.3)
			YBG202 YBG302	220 (170-340)	0.2 (0.1-0.3)
			YC30S	100 (60-180)	0.27 (0.1-0.4)
M	Stainless steel	≤ 270	YNG151	220 (160-280)	0.2 (0.1-0.4)
			YBM251 YBG205	130 (100-220)	0.2 (0.1-0.4)
			YBM351	140 (100-240)	0.25 (0.15-0.3)
			YBG202 YBG302	140 (100-250)	0.2 (0.1-0.3)
K	Cast iron	180-250	YBG102	210 (120-300)	0.2 (0.1-0.3)
			YBD252	200 (150-250)	0.2 (0.1-0.4)
			YD201	100 (80-160)	0.25 (0.1-0.4)

Face milling tools

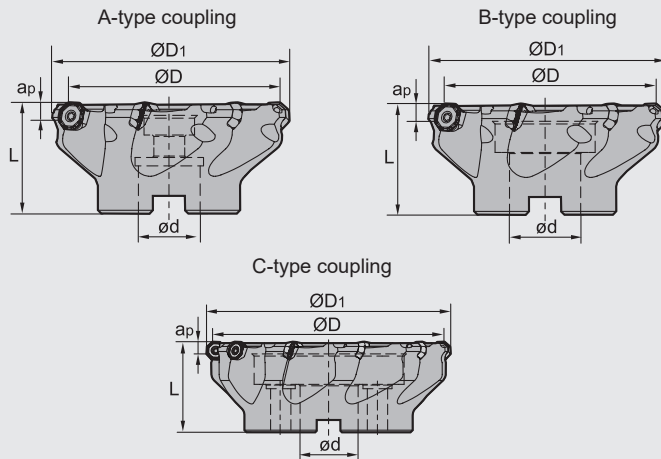
Kr:45°



FMA04 P M K N



Screw clamping



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ØD1	ød	L	apmax			
FMA04 -050-A22-OF05-04	▲	△	50	56	22	40	3.5	4	A	0.3
-050-A22-OF05-05	△	△	50	56	22	40	3.5	5	A	0.4
-063-A22-OF05-05	▲	△	63	69	22	40	3.5	5	A	0.5
-080-A27-OF05-06	▲	△	80	86	27	50	3.5	6	A	0.8
-100-B32-OF05-07	▲	△	100	106	32	50	3.5	7	B	1.2
-125-B40-OF05-08	▲	△	125	130	40	63	3.5	8	B	2.7
-160-B40-OF05-10	▲	△	160	165	40	63	3.5	10	B	5.1
-160-C40-OF05-10	△	△	160	165	40	63	3.5	10	C	4.1

▲Stock available △Make-to-order

Spare parts

Diameter ØD	Insert screw	Wrench	
			
Ø50- Ø63	I60M4×8.4	WT15IS	
Ø80 -Ø160	I60M4×10		

Tools code key

B24–B25

Grade selection guide

B19–B23

Technical data

B234–B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible][illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				Vc(m/min)	fz(mm/z)	
					-DF	-DM
P	Low-carbon steel、 Soft steel	≤ 180	YBM251	270 (220-350)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			YBG202	270 (200-360)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			YBG302 YB9320 YBG205	230 (170-350)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	High-carbon steel、 Alloy steel	180-280	YBM251	240 (200-320)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBG202	240 (180-350)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBG302 YB9320 YBG205	220 (150-330)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	Alloy tool steel	280-350	YBM251	220 (180-300)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBG202	220 (170-340)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBG302 YB9320	190 (130-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
M	Stainless steel	≤ 270	YBG202	160 (110-270)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBG302 YB9320 YBG205	140 (100-250)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBM251	150 (120-250)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
K	Cast iron	180-250	YBG102 YBD152 YBD252	210 (120-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
N					-LH	
	Al alloy steel	-	YD101	300-	0.15 (0.05-0.3)	



B MILLING

Indexable Milling Tools

Face milling tools

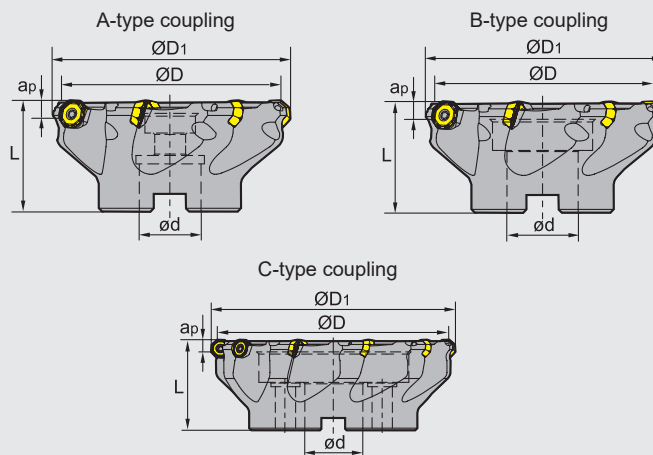
Kr:45°



FMA04 P M K N S



Screw clamping



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ØD1	ød	L	apmax			
FMA04 Coarse pitch	▲	△	50	60	22	40	4	4	A	0.284
	▲	△	63	73	22	40	4	5	A	0.409
	▲	△	80	90	27	50	4	6	A	1.017
	▲	△	100	110	32	50	4	7	A	1.536
	▲	△	125	135	40	63	4	8	B	2.931
	▲	△	160	170	40	63	4	10	C	3.838
Close pitch	▲	△	50	60	22	40	4	5	A	0.298
	▲	△	63	73	22	40	4	6	A	0.425
	▲	△	80	90	27	50	4	7	A	1.025
	▲	△	100	110	32	50	4	9	A	1.521
	▲	△	125	135	40	63	4	10	B	2.919
	▲	△	160	170	40	63	4	12	C	3.825

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Insert screw	Wrench	
Ø50-Ø160	I60M5×13	WT20IP WT20IS	

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

[illegible][illegible]

Indexable milling tools

Face milling tools

Function Classification	For finishing	For semi-finishing	Heavy-load machining
P	-GM	-GL	-GH
M	-GM	-GL	-GH
K	-GM	-GL	-GH
S	-GM	--	--
N	-LH		



► Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				V _c (m/min)	f _z (mm/z)		
					-GL	-GM	-GH
P	Low-carbon steel, Soft steel	≤ 180	YBM253	270(220-350)	0.15 (0.1-0.2)	0.25 (0.15-0.35)	0.3 (0.15-0.4)
			YBG205	270(200-360)			
			YB9320	270(200-360)			
	High-carbon steel, Alloy steel	180-280	YBM253	240(200-320)	0.15 (0.1-0.2)	0.15 (0.1-0.3)	0.25 (0.15-0.4)
			YBG205	240(180-350)			
			YB9320	240(180-350)			
	Alloy tool steel	280-350	YBM253	220(180-200)	0.15 (0.1-0.2)	0.15 (0.1-0.3)	0.25 (0.15-0.4)
			YBG205	220(170-340)			
			YB9320	220(170-340)			
M	Stainless steel	≤ 270	YBM253	230(180-300)	0.15 (0.1-0.2)	0.15 (0.1-0.3)	0.25 (0.15-0.4)
			YBG205	150(120-250)			
			YB9320	150(120-250)			
K	Cast iron	180-250	YBD152	200(150-250)	0.15 (0.1-0.2)	0.25 (0.15-0.35)	0.3 (0.15-0.4)
S	High-temperature alloy	≤ 400	YBS303	100(60-120)	--	0.15 (0.1-0.25)	--
N					-LH		
	Aluminium alloy	--	YD101	300-	0.15 (0.05-0.3)		
			YD201				

Indexable
milling tools

Face milling tools

HURRICANE

FMA07

milling cutter series

New generation of high economy
milling cutters

16 cutting edges
high economy

8×2=16 edges



- Double negative rake angle structure, both axial and radial direction, super thick insert with outstanding toughness.
- Has good wiper capability, especially under the high feed rate, the wiper effect is better in comparison with similar tools.
- The unique hole design makes the insert clamp more secured.
- Tool diameters from 25 to 315mm and 3 geometries available, -PF, -PM and -W (wiper).



B MILLING

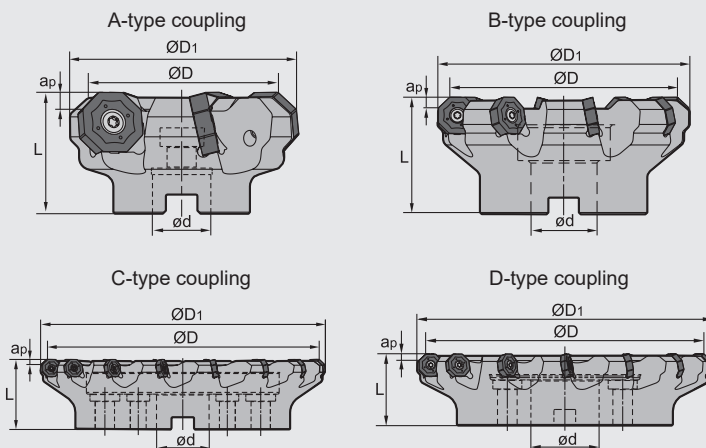
Indexable Milling Tools

Face milling tools

Kr:45°



FMA07 **P** **M** **K**



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
	R	L	ØD	ØD1	ød	L	apmax			
FMA07 -050-A22-ON06-05	▲	△	50	62	22	40	4	5	A	0.3
-063-A22-ON06-06	▲	△	63	75	22	40	4	6	A	0.5
-080-B27-ON06-07	▲	△	80	92	27	50	4	7	B	1.0
-100-B32-ON06-08	▲	△	100	112	32	63	4	8	B	1.9
-125-B40-ON06-09	▲	△	125	137	40	63	4	9	B	3.5
-160-C40-ON06-11	▲	△	160	172	40	63	4	11	C	4.3
-200-C60-ON06-13	▲	△	200	212	60	63	4	13	C	6.4
-250-C60-ON06-15	▲	△	250	262	60	63	4	15	C	13.4
-315-D60-ON06-17	▲	△	315	327	60	80	4	17	D	21.9
-063-A22-ON08-05	▲	△	63	78	22	40	5	5	A	0.5
-080-B27-ON08-06	▲	△	80	95	27	50	5	6	B	0.9
-100-B32-ON08-07	▲	△	100	115	32	63	5	7	B	1.8
-125-B40-ON08-08	▲	△	125	140	40	63	5	8	B	3.1
-160-C40-ON08-10	▲	△	160	175	40	63	5	10	C	4.1
-200-C60-ON08-12	▲	△	200	215	60	63	5	12	C	6.1
-250-C60-ON08-14	▲	△	250	265	60	63	5	14	C	12.0
-315-D60-ON08-16	▲	△	315	330	60	80	5	16	D	21.0

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Inserts	Insert screw	Wrench	
Ø50 -Ø315	ONHU06□□□□-PF/PM	I60M4×10	—	WT15IS
Ø63 -Ø315	ONHU08□□□□-PF/PM/W	I60M5×13	WT20IT	—

Tools code key

B24-B25

Grade selection guide

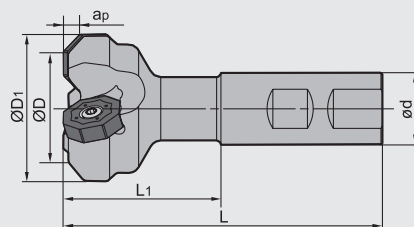
B19-B23

Technical data

B234-B240

Face milling tools

Kr:45°

**FMA07** **P** **M** **K**

Specification of tools

Type	Stock		Basic dimensions(mm)						Number of teeth Z	Weight (kg)
	R	L	ØD	ØD ₁	ød	L	L ₁	a _p max		
FMA07 -025-XP20-ON06-02	▲	△	25	37	20	95	45	4	2	0.2
-040-XP25-ON06-03	▲	△	40	52	25	106	50	4	3	0.4
-032-XP25-ON08-02	▲	△	32	47	25	111	55	5	2	0.4
-040-XP25-ON08-03	▲	△	40	55	25	111	55	5	3	0.5
-050-XP25-ON08-04	▲	△	50	65	25	111	55	5	4	0.6

▲ Stock available

△ Make-to-order

Indexable
milling tools

Face milling tools

Spare parts

Diameter ØD	Inserts	Insert screw	Wrench	
Ø25 - Ø40	ONHU06□□□□-PF/PM	I60M4×10	--	WT15IS
Ø32 - Ø50	ONHU08□□□□-PF/PM/W	I60M5×13	WT20IT	--

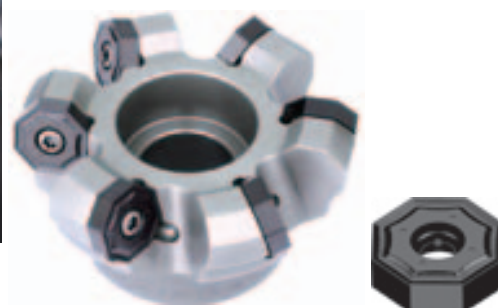
Tools code key
B24–B25Grade selection guide
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MILLING

Indexable Milling Tools

Case for FMA07



Tool type: FMA07-100-B32-ON08-07

Insert type/grade: ONHU08T508-PM/YBD152

Part: Gear pump body
Workpiece material: HT400
Hardness: HRC22
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters: $V_c=267\text{m/min}$
 $a_p=1.5\text{mm}$
 $f_z=0.42\text{mm/z}$
 $a_e=80\text{mm}$
Milling style: Down milling
Area of machining: End surface



● Comparison of insert abrasion

Abrasion on rake face

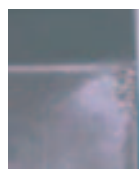


ZCC-CT



similar product of company A

Abrasion on clearance face



ZCC-CT



similar product of company A

Selection of inserts

Selection of inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	Steel	😊😊😊
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Indexable
milling tools

Face milling tools

Recommended cutting parameters

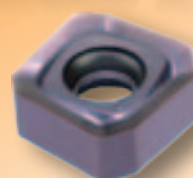
Workpiece material	Hardness HB	Insert grade	Cutting parameters		
			V _c (m/min)	f _z (mm/z)	a _p max(mm)
P	Low-carbon steel, Soft steel	YBG102 YBM253 YBG202 YBC302 YBG205 YB9320	270 (220-350)	0.2 (0.1-0.4)	4.0 (ONHU06) 5.0 (ONHU08)
	High-carbon steel, Alloy steel	YBG102 YBM253 YBG202 YBC302 YBG205 YB9320	260 (200-320)	0.2 (0.1-0.4)	
	Alloy tool steel	YBG102 YBM253 YBG202 YBC302 YBG205 YB9320	240 (180-300)	0.2 (0.1-0.4)	
M	Stainless steel	YBM253 YBG205 YB9320	230(180-300)	0.2(0.1-0.3)	
K	Cast iron	YBD152	270 (150-300)	0.4 (0.1-0.5)	

Note: The recommended feed rate per tooth for inserts with wiper f_z ≤ 0.25mm/z.

FMA11 Kr:45° Series

With outstanding economy and high performance

Cutter body with PVD coating for superior corrosion and heat resistance resulting in longer service life.



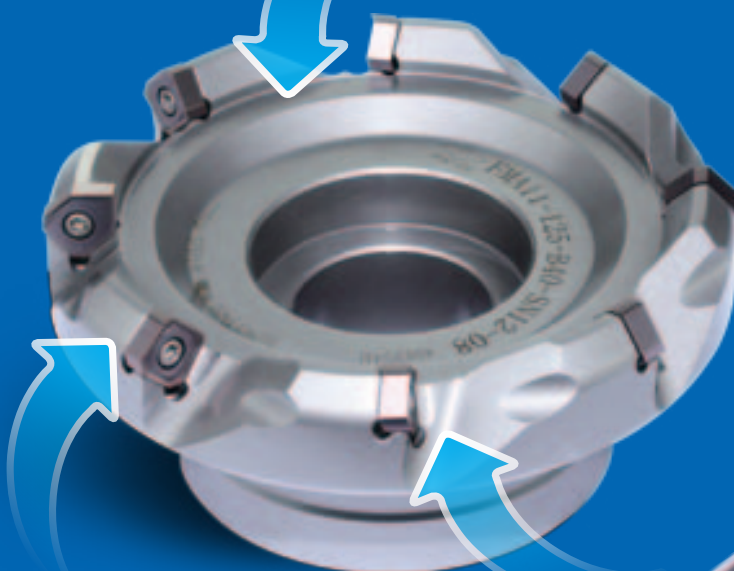
4 × 2=8 edge

Comprehensive upgrading of -GM geometry, good chip breaking performance, large rake angle, reduced cutting force.

New -HGR geometry, high edge strength, excellent breakage resistance.

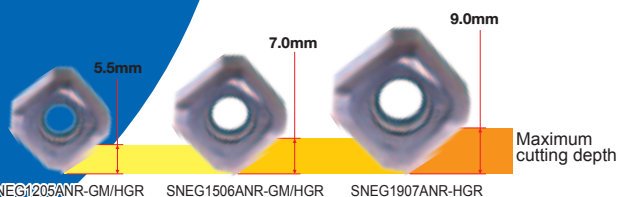
Insert with wiper, smoother surface roughness.

Complete range of insert specifications and geometries, for different cutting depths and different machining demands.



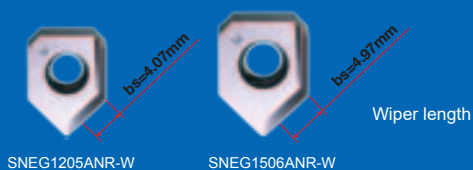
Double negative structure, excellent impact resistance.

Optimized design of pitch and chip pocket, for unobstructed chip flow, and higher cutting efficiency.



-W special wiper geometry, wiper designed with large arc to improve surface quality the workpiece;

Large effective wiper length, more suitable for semi-finishing/finishing of large-diameter cutter heads.

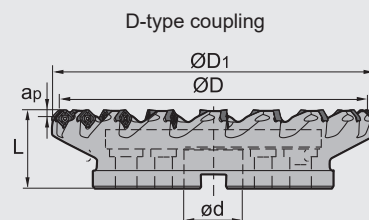
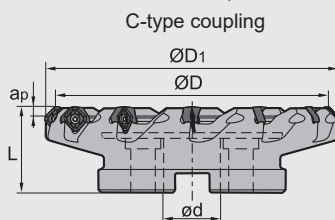
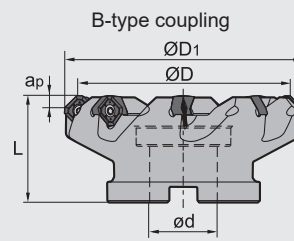
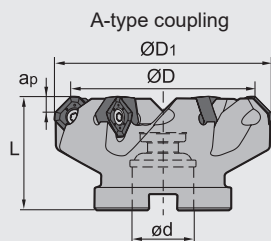


Face milling tools

Kr:45°



FMA11 P K M S



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Style of coupling	Weight (kg)
		R	ØD	ØD ₁	ød	L	apmax			
FMA11 Coarse pitch	-063-A22-SN12-05C	▲	63	75.2	22	40	5.5	5	A	0.55
	-080-A27-SN12-06C	▲	80	92.2	27	50	5.5	6	A	1.14
	-100-B32-SN12-07	▲	100	112.2	32	50	5.5	7	B	1.42
	-125-B40-SN12-08	▲	125	137.2	40	63	5.5	8	B	2.86
	-160-C40-SN12-10	▲	160	172.2	40	63	5.5	10	C	4.06
	-063-A22-SN15-05C	▲	63	78.4	22	40	7.0	5	A	0.56
	-080-A27-SN15-06C	▲	80	95.4	27	50	7.0	6	A	1.06
	-100-B32-SN15-07	▲	100	115.4	32	50	7.0	7	B	1.47
	-125-B40-SN15-08	▲	125	140.4	40	63	7.0	8	B	2.70
	-160-C40-SN15-10	▲	160	175.4	40	63	7.0	10	C	3.92
	-200-C60-SN15-12	▲	200	215.4	60	63	7.0	12	C	5.46
	-250-C60-SN15-14	▲	250	265.4	60	63	7.0	14	C	11.26
	-315-D60-SN15-18	▲	315	330.4	60	80	7.0	18	D	20.00
	-125-B40-SN19-07	▲	125	144.4	40	63	9.0	7	B	3.00
	-160-C40-SN19-09	▲	160	179.4	40	63	9.0	9	C	4.25
	-200-C60-SN19-11	▲	200	219.4	60	63	9.0	11	C	6.18
	-250-C60-SN19-13	▲	250	269.4	60	63	9.0	13	C	11.55
	-315-D60-SN19-16	▲	315	334.4	60	80	9.0	16	D	20.90

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Inserts	Insert screw	Wrench		
					
Ø63 - Ø160	SNEG1205ANR-GM/HGR/W	I60M3.5×10	--	WT15IS	
Ø63 - Ø315	SNEG1506ANR-GM/HGR/W	I60M5×13	WT20IT	--	
Ø125 - Ø315	SNEG1907ANR-HGR	I43M6×16	WT25IT	--	

Tools code key
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B MILLING

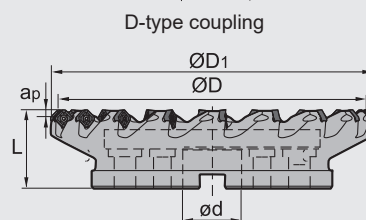
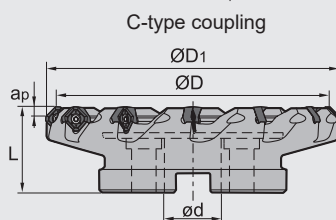
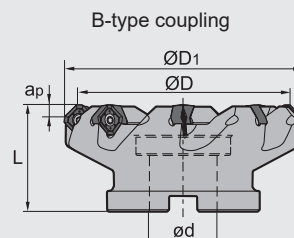
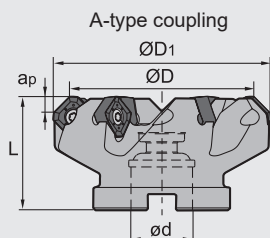
Indexable Milling Tools

Face milling tools

Kr:45°



FMA11 **P** **K** **M** **S**



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
		R	ØD	ØD1	ød	L			
FMA11									
Close pitch									
-063-A22-SN12-06C	▲		63	74.2	22	40	5.5	6	0.58
-080-A27-SN12-08C	▲		80	91.9	27	50	5.5	8	1.16
-100-B32-SN12-10C	▲		100	111.2	32	50	5.5	10	1.71
-125-B40-SN12-12C	▲		125	136.2	40	63	5.5	12	3.29
-160-C40-SN12-15	▲		160	171.6	40	63	5.5	15	4.40
-063-A22-SN15-06C	▲		63	78.3	22	40	7.0	6	0.56
-080-A27-SN15-07C	▲		80	95.3	27	50	7.0	7	1.05
-100-B32-SN15-08C	▲		100	115.3	32	50	7.0	8	1.67
-100-B32-SN15-09C	▲		100	115.3	32	50	7.0	9	1.67
-125-B40-SN15-10C	▲		125	140.3	40	63	7.0	10	3.10
-160-C40-SN15-12	▲		160	175.3	40	63	7.0	12	4.20
-160-C40-SN15-13	▲		160	175.3	40	63	7.0	13	4.14
-200-C60-SN15-15	▲		200	215.3	60	63	7.0	15	5.84
-250-C60-SN15-18	▲		250	265.3	60	63	7.0	18	11.68
-315-D60-SN15-22	▲		315	330.3	60	80	7.0	22	20.59

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Inserts	Insert screw	Wrench		
Ø63 -Ø160	SNEG1205ANR-GM/HGR/W	I60M3.5×10	--	WT15IS	
Ø63 -Ø315	SNEG1506ANR-GM/HGR/W	I60M5×13	WT20IT	--	
Ø125 -Ø315	SNEG1907ANR-HGR	I43M6×16	WT25IT	--	

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Selection of inserts

Selection of Inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
P	😊😊😊				

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				V _c (m/min)	f _z (mm/z)	a _{pmax} (mm)
P	Low-carbon steel、 Soft steel	≤ 180	YBM253 YBC302 YBG205 YB9320	270 (220-350)	0.2 (0.1-0.4)	5.5(SN12) 7.0(SN15) 9.0(SN19)
	High-carbon steel、 Alloy steel	180-280	YBM253 YBC302 YBG205 YB9320	260 (200-320)	0.2 (0.1-0.4)	
	Alloy tool steel	280-350	YBM253 YBC302 YBG205 YB9320	240 (180-300)	0.2 (0.1-0.4)	
K	Cast iron	180-250	YBD152	270 (150-300)	0.3(0.1-0.5)	
			YBD252	200 (150-250)	0.4 (0.2-0.6)	
M	Stainless steel	≤ 70	YBG205 YB9320	220 (160-250)	0.2 (0.1-0.4)	
			YBM253	230 (180-300)	0.25 (0.15-0.35)	
S	High-temperature alloy	≤ 400	YBS203 YBS303	100 (60-120)	0.15 (0.08-0.3)	

Case for FMA11

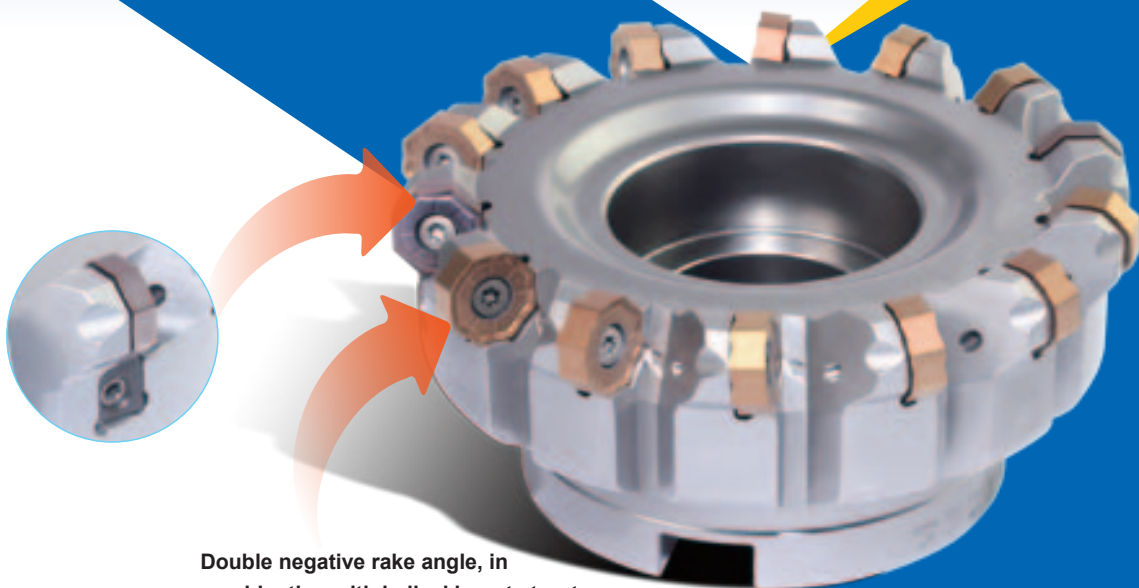
Workpiece material: NAK80
 Operation: Face milling
 Tool: FMA11-125-B40-SN12-08
 Insert: SNEG1205ANR-HGR/YBG205
 Cutting parameters: V_c=200m/min, f_z=0.2mm/z,
 A_p=2mm, A_e=50mm

Tool Life Comparison

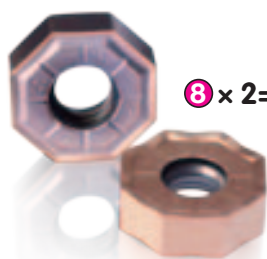
	Product of company A	-HGR / YBG205
Test Group 1		
Life	22 minutes	35 minutes wear 0.02mm
Test Group 1		
Life	27 minutes	35 minutes wear 0.01mm

FMA 12 Series ^{Kr:45°}

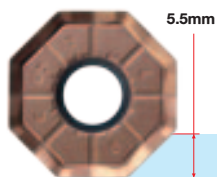
High Performance Face Mill with 16 edges for outstanding economy



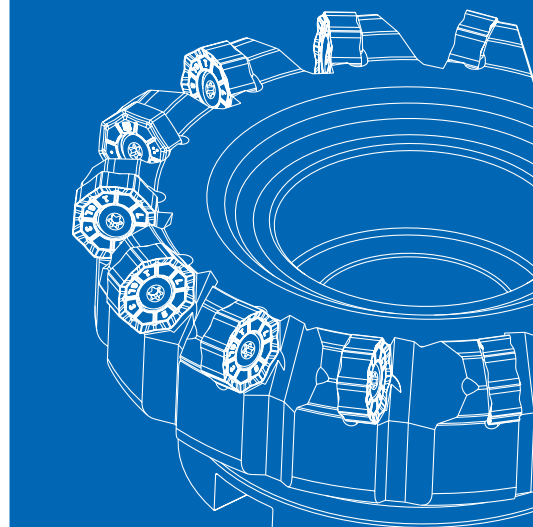
Double negative rake angle, in combination with helical insert structure, achieves double positive axial angle, which will help reduce cutting resistance and improve chip evacuation.



8 × 2 = 16 edges



ONHU09T508ANN-GM



Face milling tools

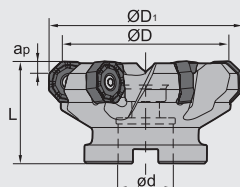
Kr:45°



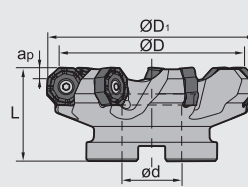
FMA12 P M K S



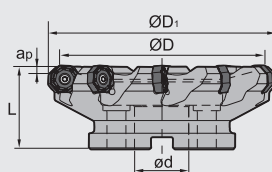
A-type coupling



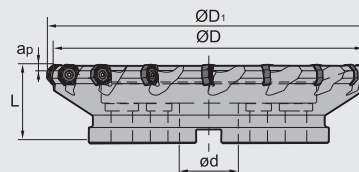
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
		ØD	ØD ₁	ød	L	ap _{max}			
FMA12 Coarse pitch	-050-A22-ON06-04C	△	50	59	22	40	4	A	0.309
	-063-A27-ON06-05C	△	63	72	27	50	4	A	0.645
	-080-A27-ON06-07C	△	80	90	27	50	4	A	1.071
	-100-A32-ON06-08C	△	100	110	32	50	4	A	1.599
	-125-B40-ON06-10	△	125	135	40	63	4	B	3.114
	-160-C40-ON06-12	△	160	170	40	63	4	C	4.504
	-200-C60-ON06-18	▲	200	210	60	63	4	C	6.35
	-250-C60-ON06-20	▲	250	260	60	63	4	C	12.47
	-315-D60-ON06-22	▲	315	325	60	80	4	D	21.25
	-400-D60-ON06-28	▲	400	410	60	80	4	D	39.78
	-063-A22-ON09-04C	▲	63	76	22	50	5.5	A	0.7
	-080-A27-ON09-05C	▲	80	93	27	50	5.5	A	1.1
	-100-A32-ON09-06C	▲	100	113	32	50	5.5	A	1.6
	-125-B40-ON09-08	△	125	138	40	63	5.5	B	3.1
	-160-C40-ON09-10	△	160	173	40	63	5.5	C	3.982
	-200-C60-ON09-12	△	200	303	60	63	5.5	C	4.987
	-250-C60-ON09-16	△	250	260	60	63	5.5	C	11.89
	-315-D60-ON09-20	△	315	325	60	80	5.5	D	20.97
	-400-D60-ON09-24	△	400	410	60	80	5.5	D	38.69

▲Stock available

△Make-to-order

Indexable
milling tools

Face milling tools



B MILLING

Indexable Milling Tools

Face milling tools

Kr:45°



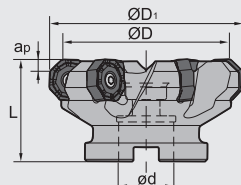
Face milling

Chamfering

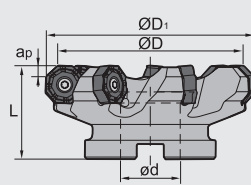
FMA12 P M K S



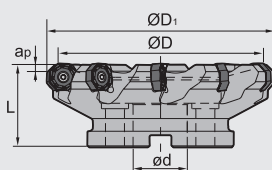
A-type coupling



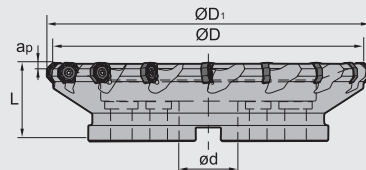
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
			ØD	ØD ₁	ød	L	a _p max			
FMA12 Coarse pitch	-050-A22-ON06-05C	△	50	59	22	40	4	5	A	0.352
	-063-A27-ON06-07C	△	63	72	27	50	4	7	A	0.695
	-080-A27-ON06-09C	△	80	90	27	50	4	9	A	1.098
	-100-A32-ON06-11C	△	100	110	32	50	4	11	A	1.616
	-125-B40-ON06-14	△	125	135	40	63	4	14	B	3.151
	-160-C40-ON06-18	△	160	170	40	63	4	18	C	4.568
	-063-A22-ON09-06C	▲	63	76	22	50	5.5	6	A	0.84
	-080-A27-ON09-07C	▲	80	93	27	50	5.5	7	A	1.24
	-100-A32-ON09-10C	▲	100	113	32	50	5.5	10	A	1.809
	-125-B40-ON09-12C	▲	125	138	40	63	5.5	12	B	3.648
	-160-C40-ON09-15	▲	160	173	40	63	5.5	15	C	4.303
	-200-C60-ON09-18	▲	200	303	60	63	5.5	18	C	5.754
	-125-B40-ON06-14W2	▲	125	138	40	63	4	12+2	B	3.626
	-160-B40-ON06-18W3	△	160	173	40	63	4	15+3	B	4.787
	-200-C60-ON06-24W4	△	200	303	60	63	4	20+4	C	6.231

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Inserts	Insert screw		Wrench		
Ø50-Ø63	ONMU06□□□□-GM/GH	IRM4X10		WT15IP		
Ø80-Ø125	ONHU06□□□□ANN-GM/GH/GL					
Ø160						
Ø63-Ø125	ONMU09□□□□-GM/GH	I60M5X13		WT20IS		
Ø160-Ø400	ONHU09□□□□ANN-GM/GH/GL					
		Insert screw	Adjustment block	Insert screw	Wrench	
Ø125	ONMU06□□□□-GM/GH	DM6X20A	ADJ-M6X1.0A	IRM4X10	WT15IS	
Ø160-Ø200	ONHU06□□□□ANN-GM/GH/GL					
	ONHU0604AN-W				WT15IT	

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Selection of inserts

Workpiece material	😊 Good working condition					😐 Normal working condition					😞 Bad working condition				
	P	M	K	N	S	P	M	K	N	S	P	M	K	N	S
Steel	😊	😊	😊	😊	😊						😊	😊	😊	😊	
Stainless steel	😊	😊	😊	😊	😊							😊	😊	😊	
Cast iron						😞	😞	😞	😞						
Non-ferrous metal															
Heat resistant alloy, Ti alloy										😊		😊	😊	😊	

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide									
		L	ØI.C	S	ød	r	bs	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG105	YBG202	YBG205	YBG320		YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	ONHU060404ANN-GL	6.15	15.875	5.54	6	0.4	1.2				●	●						●	●					●						
	ONHU09T508ANN-GL	8.0	20.2	5.8	7	0.8	1.2				●	●						●	●					●						
	ONHU060408ANN-GM	6.15	15.875	5.54	6	0.8	1				●	●						●	●					●						
	ONMU060408-GM	6.15	15.875	5.54	6	0.8	-				●	●						●	●											
	ONHU09T508ANN-GM	8.0	20.2	5.8	7	0.8	1.2				●	●						●	●					●						
	ONMU09T512-GM	8.0	20.2	5.8	7	1.2	-				●	●						●	●											
	ONMU060408-GH	6.15	15.875	5.54	6	0.8	-				●	●						●	●					●						
	ONHU060408ANN-GH	6.15	15.875	5.54	6	0.8	1				●	●						●	●					●						
	ONHU09T508ANN-GH	8.0	20.2	5.8	7	0.8	1.2				●	●						●	●					●						
	ONMU09T512-GH	8.0	20.2	5.8	7	1.2	-				●	●						●	●											
	ONHU0604AN-W	6.15	15.875	4.97	6	0.8	-											●												

● Inserts are suitable for both left and right cuts ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Face milling tools

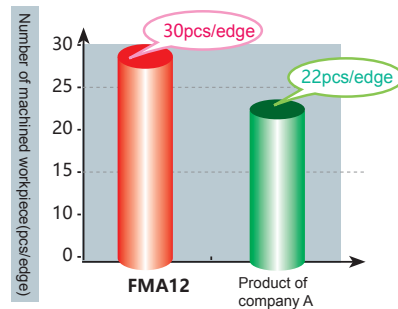
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade		Cutting parameters		
					V _c (m/min)	f _z (mm/z)	a _{pmax} (mm)
P	Low carbon steel	≤ 180	YBM253 YB9320	YBG205	270(220-350)	0.2(0.1-0.3)	4.0(ON06) 5.5(ON09)
	Alloy steel	180-350	YBM253 YB9320	YBG205	240(180-320)	0.15(0.1-0.3)	
M	Stainless steel	≤ 270	YBM253 YB9320	YBG205	230 (180-300) 160 (110-270)	0.15 (0.1-0.3)	
K	Cast iron	180-260	YBD152		270(150-300)	0.2(0.1-0.3)	
S	Hard-to-cut material	≤ 400	YBS303		100(60-120)	0.15 (0.08-0.3)	

Case for FMA12



Workpiece: Elevator brake
 Workpiece material: Alloy steel (HB190-240)
 Machining location: Panel
 Tool: FMA12-160-C40-ON09-10
 Insert: ONHU09T508ANN-GM/YB9320
 Cutting data: V_c=300m/min, f_z=0.25mm/z, a_p=3.5mm, a_e=120mm
 System of cooling: External

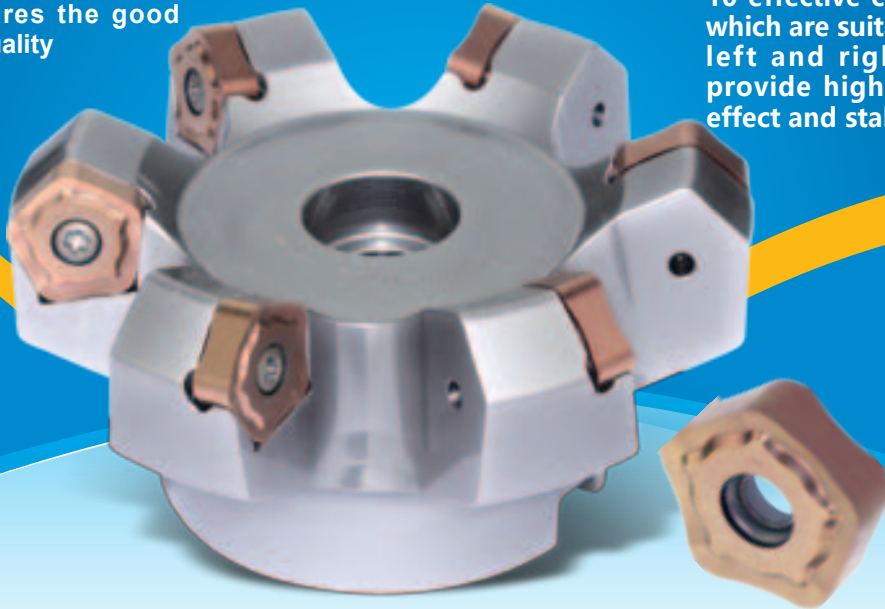


Tool Life comparison
 Being compared to the similar product of company A, our FMA12 has longer cutting tool life.

FMA 14

The general milling cutter with high-effective multiple cutting edges

- > The balanced design with 45 clearance angle to achieve low cutting resistance for high-effective machining
- > The upgraded new design of the chipbreaker which is suitable for different machining of steel and nodular cast iron
- > The great anti-vibration tool ensures the good surface quality
- > The pentagon design with 10 effective cutting edges which are suitable for both left and right cut, also provide high economical effect and stability



The helical cutting edge design could reduce cutting resistance to achieve light cut

The optimized chipbreaker design ensures the strength which significantly reduces the cutting edge breakage risk.

The abundant chipbreaker series could deal with different machining condition

-GL: Emphasis on stable machining

Suitable for low cutting forces and the insufficient machine load situation

-GM: First choice for P material machining

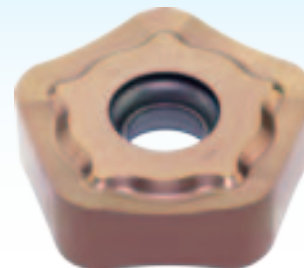
The large radius cutting edge with optimized cutting edge design

-GH: Emphasis on anti-breakage machining

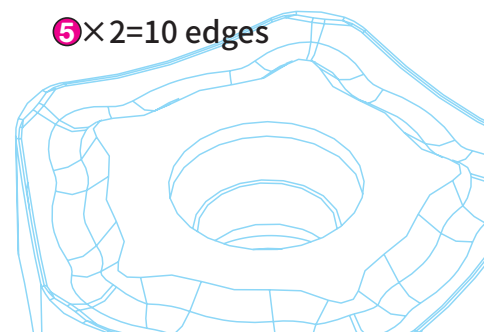
The high strength of the cutting edge significantly control the breakage risks

To combine with new grade YB9320 to achieve long tool life and stable machining

-GL/-GM/-GH



5×2=10 edges

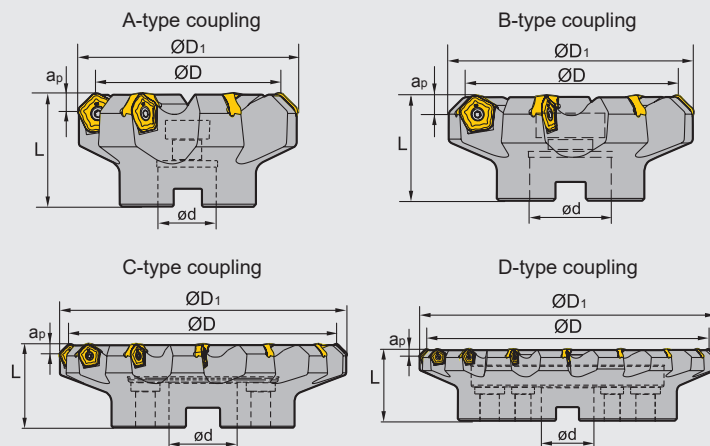


Face milling tools

Kr:45°



FMA14 P M K



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)	
		ØD	ØD ₁	L	ød	a _p max				
FMA14 Coarse pitch	-050-A22-PN11-04	▲	50	66.7	50	22	5.5	4	A	0.571
	-063-A22-PN11-05	▲	63	79.7	50	22	5.5	5	A	0.77
	-080-A27-PN11-06	▲	80	96.7	50	27	5.5	6	A	1.09
	-100-B32-PN11-07	▲	100	116.7	50	32	5.5	7	B	1.48
	-125-B40-PN11-08	▲	125	141.7	63	40	5.5	8	B	3.39
	-160-B40-PN11-10	▲	160	176.7	63	40	5.5	10	B	5.93
	-200-C60-PN11-12	▲	200	216.7	63	60	5.5	12	C	6.28
	-250-C60-PN11-14	▲	250	266.7	63	60	5.5	14	C	11.84
	-315-D60-PN11-16	▲	315	331.7	80	60	5.5	16	D	19.8
Close pitch	-050-A22-PN11-05	▲	50	66.7	50	22	5.5	5	A	0.6
	-063-A22-PN11-06	▲	63	79.7	50	22	5.5	6	A	0.9
	-080-A27-PN11-08	▲	80	96.7	50	27	5.5	8	A	1.2
	-100-B32-PN11-10	▲	100	116.7	50	32	5.5	10	B	1.9
	-125-B40-PN11-12	▲	125	141.7	63	40	5.5	12	B	3.5
	-160-B40-PN11-14	▲	160	176.7	63	40	5.5	14	B	6.4
	-200-C60-PN11-16	▲	200	216.7	63	60	5.5	16	C	8.5
	-250-C60-PN11-18	▲	250	266.7	63	60	5.5	18	C	18.0
	-315-D60-PN11-26	▲	315	331.7	80	60	5.5	26	D	24.5

▲ Stock available

△ Make-to-order

Spare parts

Inserts	Insert screw	Wrench	
	I60M4×10	WT15IS	
PNEG11□□□□-GL/GM/GH			

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

Indexable milling tools

Face milling tools

Indexable Milling Tools

Workpiece material	Good working condition					Normal working condition					Bad working condition				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron											😞	😞	😞		
N Non-ferrous metal															😞
S Heat resistant alloy, Ti alloy						😊	😊	😊	😊	😊	😞	😞			

● Inserts are suitable for both left and right cuts ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

ISO	Workpiece material	Hardness HB	Insert grade	Cutting parameters						ap(mm)
				-GL		-GM		-GH		
				V _c (m/min)	f _z (mm/z)	V _c (m/min)	f _z (mm/z)	V _c (m/min)	f _z (mm/z)	
P	Low-carbon steel	≤HB180	YB9320 YBG205 YBM253	170(100~250)	0.25(0.1~0.4)	170(100~250)	0.3(0.15~0.5)	160(100~230)	0.4(0.2~0.6)	5.5mm
	High-carbon steel	180~280	YB9320 YBG205 YBM253	160(100~230)	0.8(0.1~0.4)	160(100~230)	0.3(0.15~0.5)	160(100~230)	0.4(0.2~0.6)	
	Alloy steel	180~280	YB9320 YBG205 YBM253	150(100~220)	0.2(0.1~0.3)	150(100~220)	0.25(0.15~0.4)	150(100~220)	0.35(0.2~0.5)	
	Tool steel	280~350	YB9320 YBG205 YBM253	150(100~220)	0.2(0.1~0.3)	150(100~220)	0.3(0.15~0.5)	150(100~220)	0.35(0.2~0.5)	
M	Stainless steel	≤270	YB9320 YBG205 YBM253	130(90~180)	0.25(0.1~0.4)	130(90~180)	0.2(0.1~0.3)	130(90~180)	0.4(0.2~0.6)	
K	Cast iron, Ductile iron, High nickel cast iron	180~250	YB9320 YBG205	180(100~260)	0.2(0.1~0.3)	160(100~240)	0.25(0.15~0.4)	160(100~240)	0.35(0.2~0.5)	

Cooling system: Dry cutting

	<i>PNEG110530-GM</i>	similar product of company A
Time	135min	65min
Abrasion on clearance face		
Abrasion on rake face		

Result:Our FMA14 not only has obvious better tool life than the similar product from Company A, but also have better performance on anti-breakage and wear-resistance.

Face milling tools

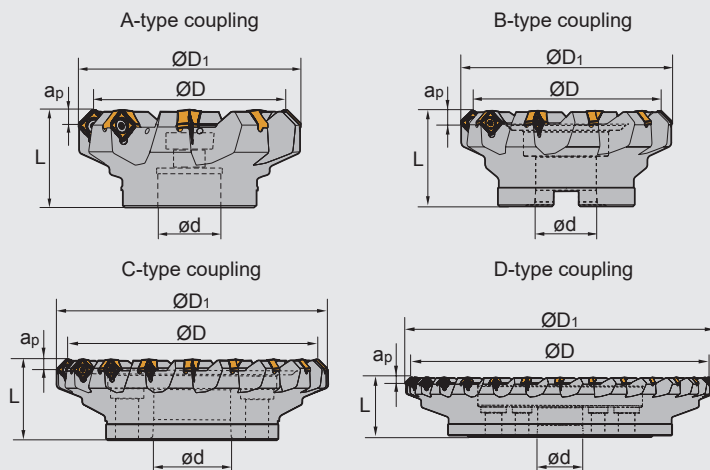
Kr:45°



FMA17 P M K S



Specification of tools



Type		Stock	Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
			ØD	ØD ₁	ød	L	a _{pmax}			
FMA17 Coarse pitch	-050-A22-SN12-04C	▲	50	65	22	40	6.5	4	A	0.384
	-063-A22-SN12-06C	▲	63	78	22	40	6.5	6	A	0.717
	-080-A27-SN12-07C	▲	80	95	27	50	6.5	7	A	1.085
	-100-A32-SN12-08	▲	100	115	32	50	6.5	8	A	1.558
	-125-B40-SN12-10	▲	125	140	40	63	6.5	10	B	3.012
	-160-C40-SN12-12	▲	160	175	40	63	6.5	12	C	4.358
	-200-C60-SN12-18	▲	200	215	60	63	6.5	18	C	6.337
	-250-C60-SN12-20	▲	250	265	60	63	6.5	20	C	12.360
	-315-D60-SN12-22	▲	315	330	60	80	6.5	22	D	21.224
	-400-D60-SN12-28	▲	400	415	60	80	6.5	28	D	39.535
Close pitch	-050-A22-SN12-06C	▲	50	65	22	40	6.5	6	A	0.381
	-063-A22-SN12-08C	▲	63	78	22	40	6.5	8	A	0.717
	-080-A27-SN12-10C	▲	80	95	27	50	6.5	10	A	1.105
	-100-A32-SN12-12C	▲	100	115	32	50	6.5	12	A	1.656
	-125-B40-SN12-16	▲	125	140	40	63	6.5	16	B	3.103
	-160-C40-SN12-20	▲	160	175	40	63	6.5	20	C	4.600
	-200-C60-SN12-24	▲	200	215	60	63	6.5	24	C	6.569

▲ Stock available

△ Make-to-order

Spare parts

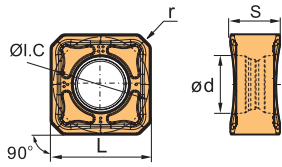
Diameter ØD	Insert screw	Wrench	
Ø50-Ø63	IRM4×10	WT15IP	
Ø80-Ø160		WT15IS	
Ø200-Ø400		WT15IT	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240Indexable
milling tools

Face milling tools

B MILLING Indexable Milling Tools

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊
K Cast iron	😊	😊	😊	😊	😊
N Non-ferrous metal	😊	😊	😊	😊	😊
S Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	ØI.C	S	ød	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGX1205ANN-GL	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★												
	SNMX120512-GL	12.7	12.7	6.5	5.9	1.2	6.5				●	●					★												
	SNGX1205ANN-GM	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★					●							
	SNMX1205ANN-GM	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★					●							
	SNMX120512-GM	12.7	12.7	6.5	5.9	1.2	6.5				●	●					★					●							
	SNGX1205ANN-GH	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★												
	SNMX120512-GH	12.7	12.7	6.5	5.9	1.2	6.5				●	●					★												

● Inserts are suitable for both left and right cuts ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

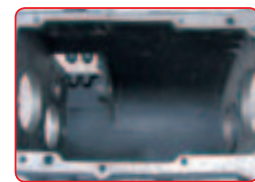
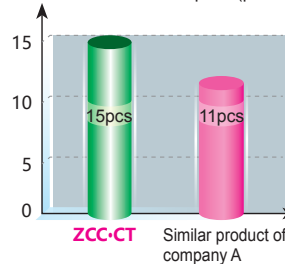
Recommended cutting parameters

ISO	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	fz(mm/z)		
					-GL	-GM	-GH
P	Low-carbon steel, Soft steel	≤ 180	YBM253 YB9320	270(220-350)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
	High-carbon steel, Alloy steel	180-280	YBM253 YB9320	260(220-320)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
	Alloy tool steel	280-350	YBM253 YB9320	240(180-300)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
M	Stainless steel	≤ 270	YBM253 YB9320	160(110-270)	0.1(0.08-0.2)	0.15(0.1-0.3)	0.2(0.1-0.3)
K	Cast iron, Ductile iron, High nickel cast iron	180-250	YBD152	270(150-300)	0.2(0.1-0.3)	0.3(0.1-0.4)	0.4(0.2-0.5)
S	Difficult-to-machine materials	≤ 400	YBS303	100(60-120)	--	0.15(0.1-0.25)	--

Case for FMA17

Workpiece: Gear box housing
 The material of workpiece: HT250(HB220)
 Tool: FMA17-160-C40-SN12-12
 Insert: SNGX1205ANN-GM/YBD152
 Cutting parameter: Vc=160m/min, fz=0.15mm/z,
 ap=2mm, ae=100mm
 Type of cooling: External cooling

Number of machined workpiece(pcs/edge)



WHIRLWIND

FMD02

milling cutter series

The optimized design of the acute angle clamping method has good self-locking performance and high clamping precision which provides enough resisting power to ensure the stability of the machining.

The open flute and large rake angle design could satisfy the machining requirement of different machine load.

The inserts with wiper design which helps to achieve the stable surface quality under different feed rate.

The good economical effect and abundant chipbreaker selections could satisfy multiple working conditions.

High strength screw clamping

67° approach angle

Wiper

Each insert has 10 cutting edges

New

New chipbreaker for cast iron

-KH -KM -KL

-KH

The optimized cutting edge design emphasis on anti-breakage machining

-KM

general machining chipbreaker. The first choice for cast iron machining

-KL

Emphasizing low cutting force machining to prevent vibration and control burrs to ensure the surface quality.

General face milling for steel and cast iron.

-CF -CM -CR

5×2=10 edges

General face milling for cast iron

-PF -PM -PR

5×2=10 edges

The helical cutting design with chamfered double-rake angle which can perfectly match different cutting depth requirement.

The high economical inserts with 10 cutting edges could be suitable for both left and right cuts with a high performance-to-cost ratio.

The optimized cutting edge design with high strength of cutting edges and outstanding wear resistance performance greatly increases the tool life.

The low cutting forces design could effectively control the vibration. The combination of the FMD02 could achieve high-performance cast iron machining.



Face milling tools

Kr:67°

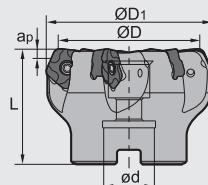


Face milling

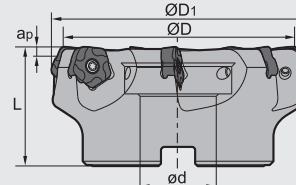
FMD02 P K



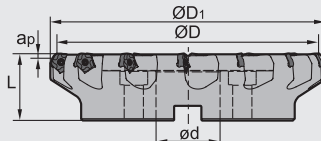
A-type coupling



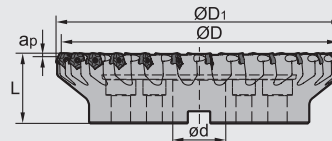
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
		R	L	ØD	ØD ₁	ød	L	a _{pmax}			
FMD02 Coarse pitch (unequal pitch)	-050-A22-PN11-04	▲	△	50	60.1	22	50	5/6.5/7.5	4	A	0.6
	-063-A22-PN11-05	▲	△	63	73.1	22	50	5/6.5/7.5	5	A	0.8
	-080-A27-PN11-06	▲	△	80	90.1	27	50	5/6.5/7.5	6	A	1.1
	-100-B32-PN11-07	▲	△	100	110.1	32	50	5/6.5/7.5	7	B	1.8
	-125-B40-PN11-08	▲	△	125	135.1	40	63	5/6.5/7.5	8	B	2.9
	-160-B40-PN11-10	▲	△	160	170.1	40	63	5/6.5/7.5	10	B	5.6
	-200-C60-PN11-12	▲	△	200	210.1	60	63	5/6.5/7.5	12	C	7.9
	-250-C60-PN11-14	▲	△	250	260.1	60	63	5/6.5/7.5	14	C	13.4
Close pitch	-050-A22-PN11-05	▲	△	50	60.1	22	50	5/6.5/7.5	5	A	0.6
	-063-A22-PN11-06	▲	△	63	73.1	22	50	5/6.5/7.5	6	A	0.9
	-080-A27-PN11-08	▲	△	80	90.1	27	50	5/6.5/7.5	8	A	1.2
	-100-B32-PN11-10	▲	△	100	110.1	32	50	5/6.5/7.5	10	B	1.9
	-125-B40-PN11-12	▲	△	125	135.1	40	63	5/6.5/7.5	12	B	3.2
	-160-B40-PN11-14	▲	△	160	170.1	40	63	5/6.5/7.5	14	B	6.4
	-200-C60-PN11-16	▲	△	200	210.1	60	63	5/6.5/7.5	16	C	8.5
	-250-C60-PN11-18	▲	△	250	260.1	60	63	5/6.5/7.5	18	C	18.0
	-315-D60-PN11-26	▲	△	315	325.1	60	80	5/6.5/7.5	26	D	24.5

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Insert screw	Wrench	
Ø50 -Ø315	I60M4×10	WT15IS	

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Face milling tools

Kr:67°

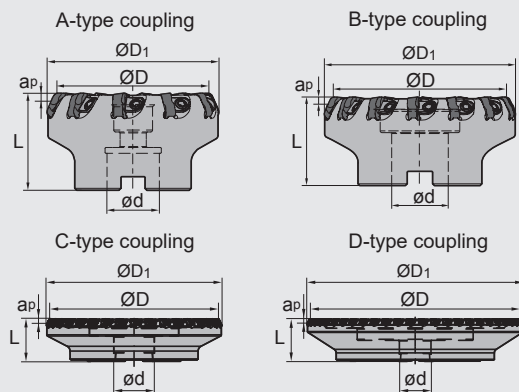


Face milling

FMD02 P K



Specification of tools



Type	Stock		Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
	R	L	ØD	ØD1	ød	L	apmax			
FMD02										
Extra close pitch										
-080-A27-PN11-10	▲	△	80	90.1	27	50	5/6.5/7.5	10	A	1.3
-100-B32-PN11-14	▲	△	100	110.1	32	50	5/6.5/7.5	14	B	1.6
-125-B40-PN11-18	▲	△	125	135.1	40	63	5/6.5/7.5	18	B	3.2
-160-B40-PN11-22	▲	△	160	170.1	40	63	5/6.5/7.5	22	B	5.8
-200-C60-PN11-28	▲	△	200	210.1	60	63	5/6.5/7.5	28	C	9.7
-250-C60-PN11-36	▲	△	250	260.1	60	63	5/6.5/7.5	36	C	19.8
-315-D60-PN11-44	▲	△	315	325.1	60	80	5/6.5/7.5	44	D	32.5

▲ Stock available

△ Make-to-order

Indexable milling tools

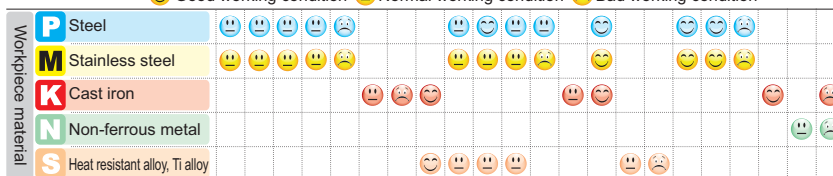
Face milling tools

Spare parts

Diameter ØD	Wedge	Screw	Wrench	
Ø80 - Ø125				
Ø160 - Ø315	W18N	DM6×20A	WT15IS	
			WT15IT	

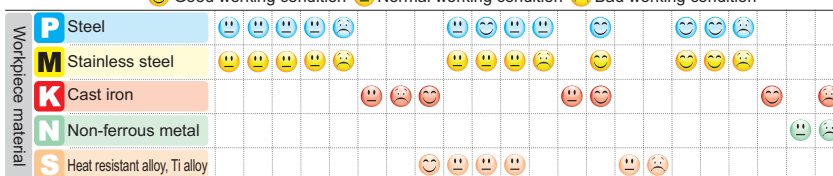
Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition ☹ Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

[illegible][illegible]

☐ Make-to-order

Indexable milling tools

Face milling tools

Workpiece material		Hardness HB	Insert grade	Cutting parameters				
				V _c (m/min)	f _z (mm/z)			a _{pmax} (mm)
					-PF	-PM	-PR	
P	Low-carbon steel、Soft steel	≤180	YBM253 YBC302	270 (220-350)	0.15 (0.1-0.2)	0.2(0.1-0.3)	0.3(0.2-0.4)	7.5
	High-carbon steel、Alloy steel	180-280	YBM253 YBC302	260 (200-320)	0.15 (0.1-0.2)	0.2(0.1-0.3)	0.3(0.2-0.4)	7.5
	Alloy tool steel	280-350	YBM253 YBC302	240 (180-300)	0.15 (0.1-0.2)	0.2(0.1-0.3)	0.3(0.2-0.4)	7.5
K	Cast iron	180-250			-CF	-CM	-CR	5.0
			YBD152	270 (150-300)	0.15(0.1-0.2)	0.2(0.1-0.3)	0.3(0.2-0.4)	
			YBD252	240 (150~280)	0.25(0.2~0.4)	0.3(0.2~0.5)	0.4(0.2~0.6)	
	Grey cast iron	180~250			-KL	-KM	-KH	6.5
			YBD152	270 (150~300)	0.25(0.1~0.4)	0.3(0.2~0.5)	0.4(0.2~0.6)	
YBD252			240 (150~280)	0.25(0.2~0.4)	0.3(0.2~0.5)	0.4(0.2~0.6)		

Case for FMD02

Application case

ZCC·CT

Cutting parameters:
 $D=100\text{mm}$, $a_p=3\sim 5\text{mm}$,
 $V_c=243\text{m/min}$, $f_z=0.15\text{mm/z}$,
 $T=145\sim 155$ piece

similar product of company A

Cutting parameters:
 $D=100\text{mm}$, $a_p=3\sim 5\text{mm}$,
 $V_c=243\text{m/min}$, $f_z=0.12\text{mm/z}$,
 $T=120\sim 133$ piece



Tool type: FMD02-100-B32-PN11-10

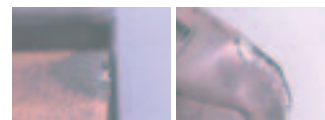
Insert type/grade: PNEG110512R-CR/YBD152

(The inserts without clearance angle to have a total of 10 cutting edges)

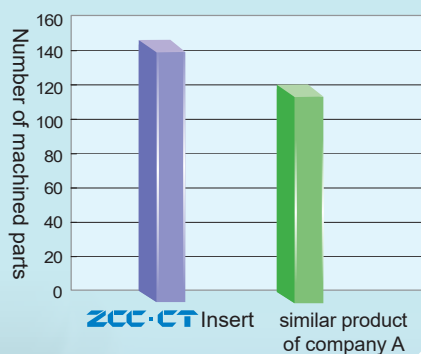
● Comparison of insert abrasion



ZCC·CT insert after 80 minutes machining

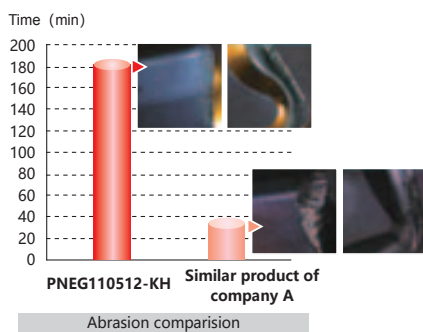


Insert of company A after 48 minutes machining

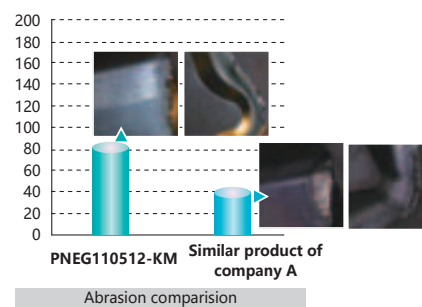


Application case

Workpiece material	Grey cast iron 250	Insert	PNEG110512-KM/YBD152 PNEG110512-KH/YBD252
Tool type	FMD02-125-B40-PN11-08	Cutting method	single pitch dry cut



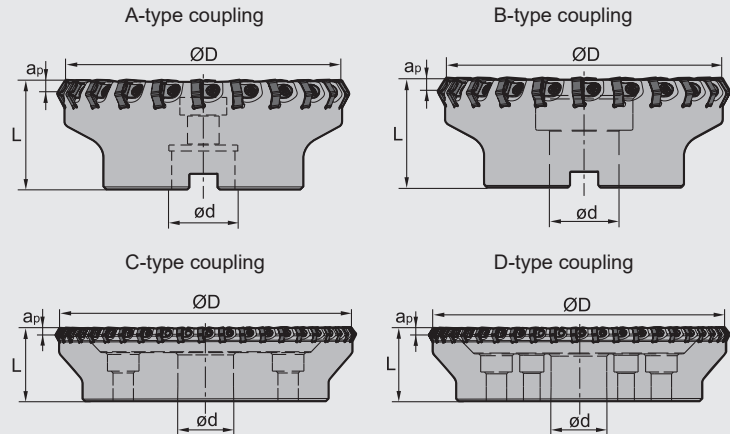
Cutting parameters: $V_c=240\text{m/min}$,
 $f_z=0.3\text{mm/z}$, $A_p=3\text{mm}$, $A_e=70\text{mm}$



Cutting parameters: $V_c=300\text{m/min}$,
 $f_z=0.2\text{mm/z}$, $A_p=2\text{mm}$, $A_e=70\text{mm}$

Face milling tools

Kr:55°

FMD02 

Specification of tools

Type	Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	d	L	apmax			
FMD02 -080-A27-HN09-10	▲	△	80	27	50	6	10	A	1.1
-100-B32-HN09-14	▲	△	100	32	63	6	14	B	2.6
-125-B40-HN09-18	▲	△	125	40	70	6	18	B	3.7
-160-B40-HN09-22	▲	△	160	40	63	6	22	B	5.6
-200-C60-HN09-28	▲	△	200	60	63	6	28	C	6.3
-250-C60-HN09-36	▲	△	250	60	63	6	36	C	10.3
-315-D60-HN09-44	▲	△	315	60	63	6	44	D	21.7

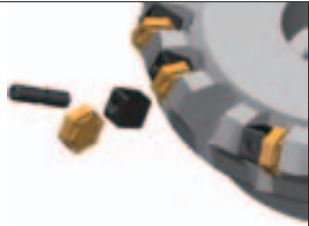
▲Stock available

△Make-to-order

Indexable milling tools

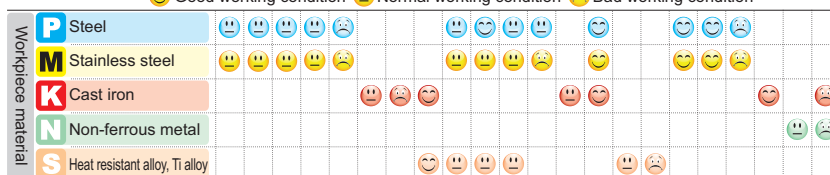
Face milling tools

Spare parts

Diameter ØD	Wedge	Wedge screw	Wrench	
Ø80-Ø315	W18N	DM6×20A	WT15IT	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

➤ **Chipbreaker selection for FMD02 milling inserts**

Classification \ Function	For finishing	For semi-finishing	For roughing
K	-DF	-DM	-DR

➤ Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V _c (m/min)	f _z (mm/z)		
					-DF	-DM	-DR
K	Cast iron	180-250	YBD152	180 (110-250)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.5)
			YBD252	130 (110-200)	0.2(0.1-0.2)	0.25 (0.1-0.3)	0.3(0.2-0.5)

Face milling tools

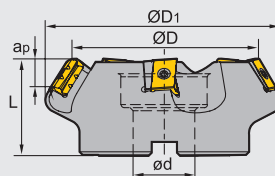
Kr:60°



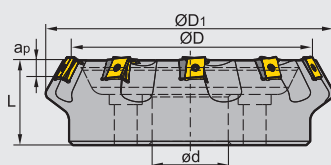
FMD03 P M K



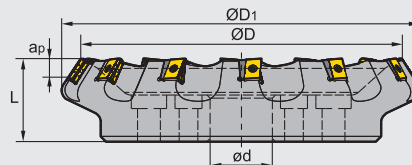
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
	R	L	ØD	ØD ₁	ød	L	ap _{max}			
FMD03 -125-B40-LN20-06	▲	△	125	153	40	63	12	6	B	4.5
-160-C40-LN20-08	▲	△	160	187	40	63	12	8	C	6.9
-200-C60-LN20-10	▲	△	200	227	60	70	12	10	C	10.5
-250-C60-LN20-12	▲	△	250	276	60	70	12	12	C	13.4
-315-D60-LN20-15	▲	△	315	339	60	80	12	15	D	26.2
-125-B40-LN25-05	▲	△	125	154	40	63	17	5	B	4.5
-160-C40-LN25-06	▲	△	160	189	40	63	17	6	C	6.9
-200-C60-LN25-08	▲	△	200	229	60	70	17	8	C	10.5
-250-C60-LN25-10	▲	△	250	278	60	70	17	10	C	16.7
-315-D60-LN25-12	▲	△	315	346	60	80	17	12	D	27.3
-400-D60-LN25-16	▲	△	400	427	60	80	17	16	D	47.1

▲ Stock available

△ Make-to-order

Indexable milling tools

Face milling tools

Spare parts

Inserts	Shim	Shim screw	Insert screw	Wrench	
LNKT2007DN-ZR	LLN20R-ZR	I60M3×7	I60M4×15	WT15IS	WT10IS
LNKT2510-ZR	LLN25R-ZR	I60M3.5×10.4	I60M5×17	WT20IT	WT15IS

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition ☹ Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel、 Soft steel	≤ 180	YBG302	180 (150-300)	0.5 (0.2-0.8)
			YBM351	180 (150-300)	0.5 (0.2-0.8)
	High-carbon steel、 Alloy steel	180-280	YBG302	150 (120-280)	0.5 (0.2-0.8)
			YBM351	140 (120-280)	0.5 (0.2-0.8)
	Alloy tool steel	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
			YBM351	100 (80-250)	0.45 (0.2-0.6)
M	Stainless steel	≤ 270	YBG302	120 (80-200)	0.45 (0.2-0.6)
			YBM351	100 (80-200)	0.45 (0.2-0.6)
K	Cast iron	180-250	YBD152	220 (150-300)	0.5 (0.2-0.8)
			YBD252	210 (150-300)	0.5 (0.2-0.8)
			YBG302	200 (150-300)	0.5 (0.2-0.8)

Note: Cutting parameters can be adjusted according to the Max. power of machine.

Product	Number of Cases
FMD03	30
Similar product of company A	20

Face milling tools

Kr:75°

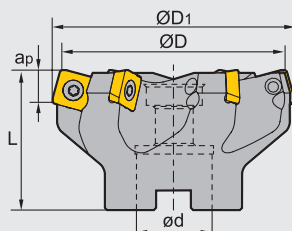


Face milling

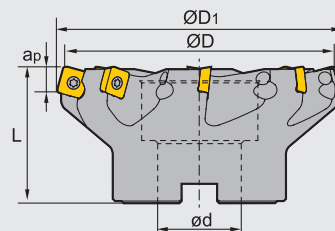
FME02 P M K



A-type coupling



B-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		$\varnothing D$	$\varnothing D_1$	$\varnothing d$	L	a_{pmax}			
FME02 -050-A22-SP12-04	△	50	54	22	40	6	4	A	0.3
-063-A22-SP12-05	△	63	66	22	50	6	5	A	0.6
-080-A27-SP12-06	△	80	83	27	50	6	6	A	0.9
-100-B32-SP12-07	△	100	103	32	50	6	7	B	1.4
-125-B40-SP12-08	△	125	128	40	63	6	8	B	2.5

▲ Stock available

△ Make-to-order

Indexable
milling tools

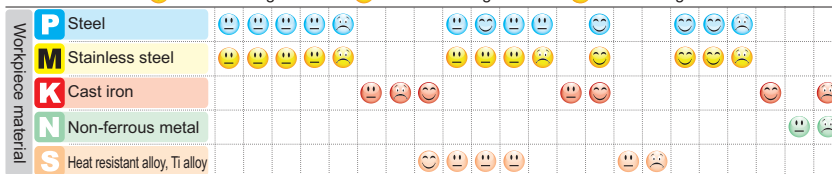
Face milling tools

Spare parts

Diameter $\varnothing D$	Insert screw	Wrench	
$\varnothing 50$ - $\varnothing 125$	I60M5×13.2	WT20IS	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition ☹ Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Classification \ Function	For finishing	For semi-finishing	For roughing
P	EDFR	EDR	EDSR
M	EDFR	EDR	
K	EDFR	EDR	

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel、 Soft steel	≤ 180	YBG202	270(200-360)	0.2 (0.1-0.3)
	High-carbon steel、 Alloy steel	180-280	YBG202	240 (180-350)	0.2 (0.1-0.3)
	Alloy tool steel	280-350	YBG202	220 (170-340)	0.2 (0.1-0.3)
M	Stainless steel	≤ 270	YBG202	160 (110-270)	0.2 (0.1-0.3)
K	Cast iron	180-250	YBG202	160 (120-200)	0.2 (0.1-0.3)

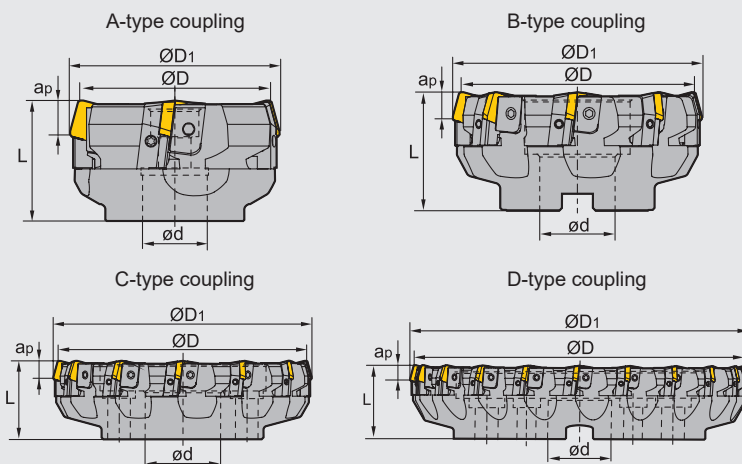
Face milling tools

Kr:75°



Face milling

FME03 P M K



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ØD1	ød	L	apmax			
FME03 -080-A27-SP12-04	▲	△	80	84	27	50	6	4	A	1.1
-100-B32-SP12-06	▲	△	100	104	32	50	6	6	B	1.9
-125-B40-SP12-08	▲	△	125	129	40	63	6	8	B	3.5
-160-B40-SP12-10	▲	△	160	164	40	63	6	10	B	5.7
-200-C60-SP12-12	▲	△	200	203	60	63	6	12	C	8.2
-250-C60-SP12-16	▲	△	250	253	60	63	6	16	C	13.8
-315-D60-SP12-20	▲	△	315	318	60	70	6	20	D	23.5
-080-A27-SP15-04	▲	△	80	84	27	50	8	4	A	1.0
-100-B27-SP15-06	▲	△	100	104	27	50	8	6	B	1.8
-125-B40-SP15-08	▲	▲	125	129	40	63	8	8	B	3.3
-160-B40-SP15-10	▲	▲	160	164	40	63	8	10	B	5.4
-200-C60-SP15-12	▲	▲	200	204	60	63	8	12	C	7.9
-250-C60-SP15-16	▲	▲	250	253	60	63	8	16	C	13.6
-315-D60-SP15-20	▲	▲	315	318	60	70	8	20	D	23.1

▲ Stock available

△ Make-to-order

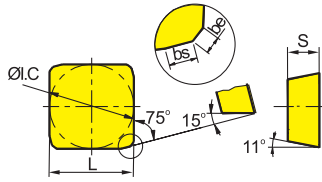
Spare parts

Diameter ØD	Inserts	Locator	Wedge	Wedge Screw	Locator screw	Wrench	
							
Ø80-Ø100	SP12	LSP12R/L	W04R/L	WM8×17	LOM5×15.1	WT20T WT25T	
Ø125-Ø315				WM8×22			
Ø80-Ø315	SP15	LSP15R/L	W04R/L	WM8×22			

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

B MILLING Indexable Milling Tools

Selection of inserts



😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
YBC301	😊	😊	😊	😊	😊
YBC302	😊	😊	😊	😊	😊
YBM251	😊	😊	😊	😊	😊
YBM253	😊	😊	😊	😊	😊
YBM351	😊	😊	😊	😊	😊
YBD152	😊	😊	😊	😊	😊
YBD252	😊	😊	😊	😊	😊
YBG102	😊	😊	😊	😊	😊
YBG202	😊	😊	😊	😊	😊
YBG205	😊	😊	😊	😊	😊
YBG320	😊	😊	😊	😊	😊
YBG302	😊	😊	😊	😊	😊
YBG152	😊	😊	😊	😊	😊
YBG252	😊	😊	😊	😊	😊
YBS203	😊	😊	😊	😊	😊
YBS303	😊	😊	😊	😊	😊
YNG151	😊	😊	😊	😊	😊
YNG151C	😊	😊	😊	😊	😊
YC30S	😊	😊	😊	😊	😊
YD051	😊	😊	😊	😊	😊
YD101	😊	😊	😊	😊	😊
YD201	😊	😊	😊	😊	😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	ØI.C	S	be	bs	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302		YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	SPKN1203EDER	12.7	12.7	3.18	1	1.4								○														
	SPKN1203EDEL	12.7	12.7	3.18	1	1.4								○														
	SPKN1203EDFR	12.7	12.7	3.18	1	1.4								★	○												●	
	SPKN1203EDFL	12.7	12.7	3.18	1	1.4								○	○												○	
	SPKN1203EDSKR	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDSKL	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDTKR	12.7	12.7	3.18	1	1.4	●				●			○			★								●		○	
	SPKN1203EDTKL	12.7	12.7	3.18	1	1.4									○		○								○		○	
	SPKN1203EDS31R	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDS31L	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDT31R	12.7	12.7	3.18	1	1.4	●				●			○			★								●		○	
	SPKN1203EDT31L	12.7	12.7	3.18	1	1.4									○		○								○		○	
	SPKR1203EDR-GM	12.7	12.7	3.18	1	1.4			●					★		★									●		●	
	SPKR1203EDL-GM	12.7	12.7	3.18	1	1.4			●					★		★									●		●	
	SPKN1504EDER	15.875	15.875	4.76	1	1.4								○														
	SPKN1504EDEL	15.875	15.875	4.76	1	1.4								○														
	SPKN1504EDFR	15.875	15.875	4.76	1	1.4								○	○												○	
	SPKN1504EDFL	15.875	15.875	4.76	1	1.4								○	○												○	
	SPKN1504EDSKR	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDSKL	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDTKR	15.875	15.875	4.76	1	1.4	●							★			○								●		●	
	SPKN1504EDTKL	15.875	15.875	4.76	1	1.4									○		○								○		●	
	SPKN1504EDS32R	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDS32L	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDT32R	15.875	15.875	4.76	1	1.4	●							★			○								●		●	
	SPKN1504EDT32L	15.875	15.875	4.76	1	1.4									○		○								○		●	
	SPKR1504EDR-GM	15.875	15.875	4.76	1	1.4			●					★		★									●		●	
	SPKR1504EDL-GM	15.875	15.875	4.76	1	1.4			●					★		★									●		●	

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Ordering guide: **SPKN1203EDT3 1 R** chamfering angle 20° , chamfering width 0.15mm. For other edge shapes, see inserts code key standard.

Selection of inserts

😊 Good working condition
 😐 Normal working condition
 😞 Bad working condition

P M K N S Steel Stainless steel Cast iron Non-ferrous metal Heat resistant alloy, Ti alloy	😊😊😊
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Cutting edge treatment selection for FME03 milling inserts

Treatment of cutting edge	Recommended selection
SP□□EDER/L	Honing edge is suitable for semi-finish and finish machining of steel and stainless steel.
SP□□EDFR/L	Sharp cutting edge is suitable for finish machining of cast iron materials.
SP□□EDSKR/L SP□□EDS□□R/L	After chamfering and honing, the edge has strong anti-breakage capability, suitable for rough machining of steel parts under poor working conditions.
SP□□EDTKR/L SP□□EDT□□R/L	The Chamfered edge is suitable for semi-finishing and finishing machining of steel, stainless steel and cast iron materials.
SP□□EDR/L-GM	3D chipbreaker can reduce cutting force, reinforce the capability of chip control, and improve insert life. It is widely applied in semi-finish machining of steel, stainless steel and cast iron materials.



MILLING

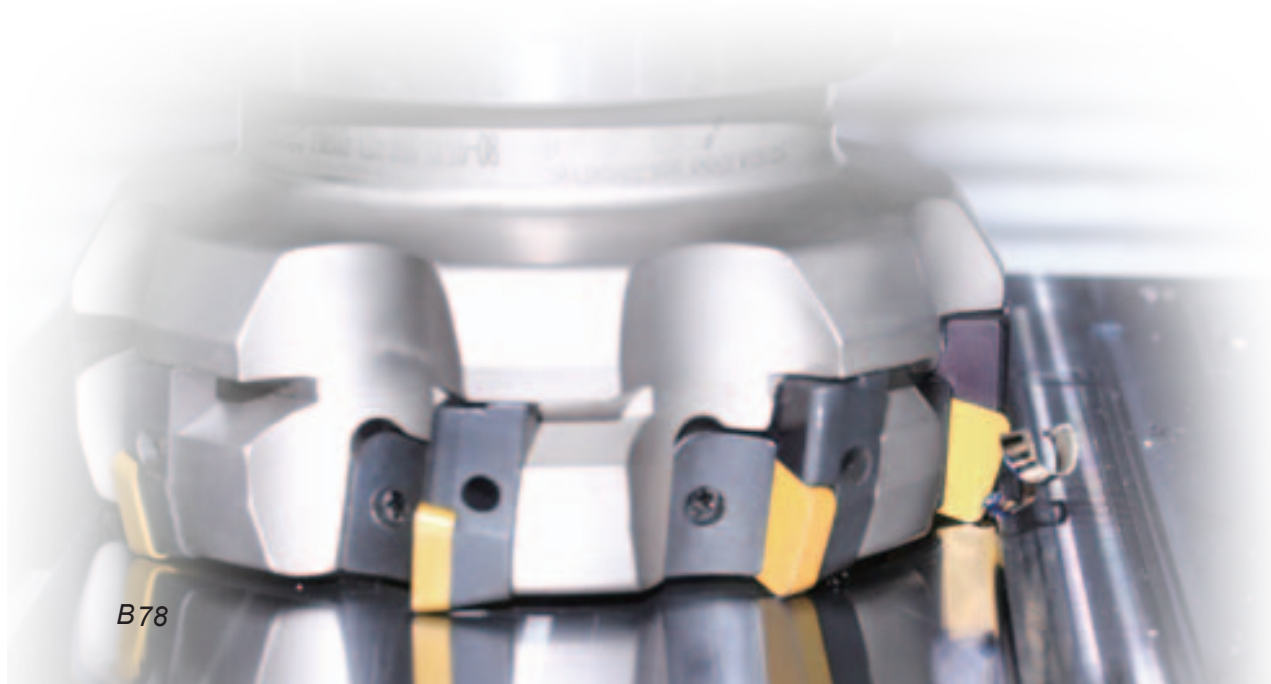
Indexable Milling Tools

► Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters	
				V _c (m/min)	f _z (mm/z)
P	Low-carbon steel, Soft steel	≤ 180	YBG202	270 (200-360)	0.2 (0.1-0.4)
			YBG302	230 (170-350)	0.24 (0.1-0.3)
			YBM251 YBC301	270(220-350)	0.2 (0.1-0.4)
			YBM351	220 (180-300)	0.25 (0.15-0.3)
			YC30S	140 (100-220)	0.22 (0.1-0.3)
	High-carbon steel, Alloy steel	180-280	YBG202	240 (180-350)	0.2 (0.1-0.3)
			YBG302	220 (150-330)	0.24 (0.1-0.3)
			YBM251 YBC301	240 (200-320)	0.2 (0.1-0.4)
			YBM351	200 (160-280)	0.25 (0.15-0.3)
			YC30S	120 (80-200)	0.22 (0.1-0.3)
	Alloy tool steel	280-350	YBG202	220 (170-340)	0.2 (0.1-0.3)
			YBG302	190 (130-300)	0.24 (0.1-0.3)
			YBM251 YBC301	220 (180-300)	0.2 (0.1-0.4)
			YBM351	180 (150-250)	0.25 (0.15-0.3)
			YC30S	100 (60-180)	0.22 (0.1-0.3)
M	Stainless steel	≤ 270	YBG202	160 (110-270)	0.2 (0.1-0.3)
			YBG302	140 (100-250)	0.24 (0.1-0.3)
			YBM251	150 (120-240)	0.2 (0.1-0.4)
			YBM351	140 (100-240)	0.25 (0.15-0.3)
K	Cast iron	180-250	YBG102	210 (120-300)	0.12 (0.08-0.3)
			YBG302	160 (120-200)	0.2 (0.1-0.3)
			YD201	100 (80-160)	0.24 (0.15-0.4)

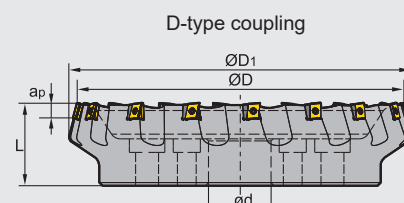
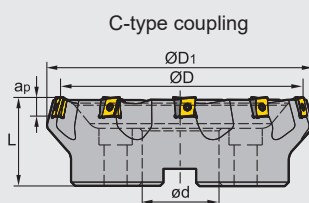
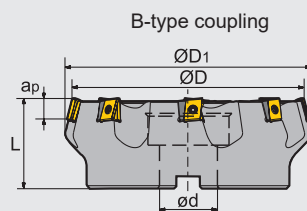
Indexable
milling tools

Face milling tools



Face milling tools

Kr:75°

**FME04** P M K

Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ØD ₁	ød	L	apmax			
FME04 -125-B40-LN15-06	▲	△	125	137	40	63	12	6	B	3.8
-160-B40-LN15-08	▲	△	160	170	40	63	12	8	B	6.6
-200-C60-LN15-10	▲	△	200	208	60	70	12	10	C	9.6
-250-C60-LN15-12	▲	△	250	257	60	70	12	12	C	13.4
-315-D60-LN15-16	▲	△	315	328	60	80	12	16	D	25.2

▲ Stock available

△ Make-to-order

Indexable
milling tools

Face milling tools

Spare parts

Diameter ØD	Shim	Shim screw	Insert screw	Wrench	
Ø125-Ø315	LLN15-ZR	I60M3×7	I60M4×12	WT15IS, WT09IS	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

Face milling tools

Kr:75°

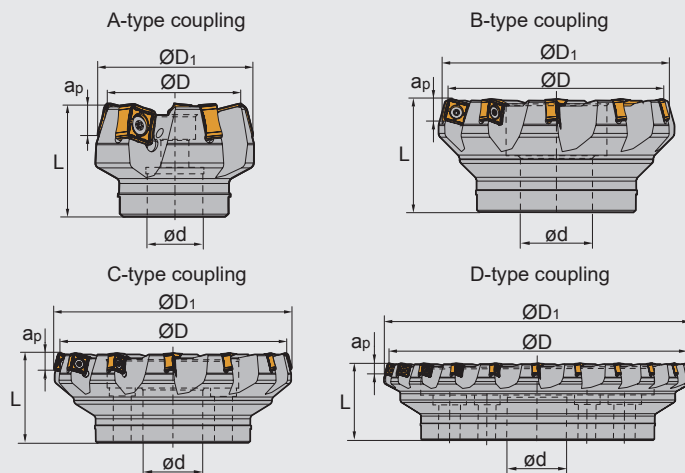


Face milling

FME17 P M K S



Specification of tools



Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			ØD	ØD ₁	ød	L	a _{pmax}			
FME17 Coarse pitch	-050-A22-SN12-04C	▲	50	60	22	40	8.0	4	A	0.361
	-063-A22-SN12-05C	▲	63	73	22	40	8.0	5	A	0.520
	-080-A27-SN12-06C	▲	80	90	27	50	8.0	6	A	1.101
	-100-A32-SN12-08C	▲	100	110	32	50	8.0	8	A	1.663
	-125-B40-SN12-10	▲	125	135	40	63	8.0	10	B	3.099
	-160-C40-SN12-12	▲	160	170	40	63	8.0	12	C	4.535
	-200-C60-SN12-14	▲	200	210	60	63	8.0	14	C	6.450
	-250-C60-SN12-18	▲	250	260	60	63	8.0	18	C	12.980
	-315-D60-SN12-22	▲	315	325	60	80	8.0	22	D	21.932
-400-D60-SN12-28	▲	400	410	60	80	8.0	28	D	41.555	
Close pitch	-050-A22-SN12-05C	▲	50	60	22	40	8.0	5	A	0.337
	-063-A22-SN12-07C	▲	63	73	22	40	8.0	7	A	0.530
	-080-A27-SN12-09C	▲	80	90	27	50	8.0	9	A	1.112
	-100-A32-SN12-11C	▲	100	110	32	50	8.0	11	A	1.577
	-125-B40-SN12-14	▲	125	135	40	63	8.0	14	B	3.145
	-160-C40-SN12-18	▲	160	170	40	63	8.0	18	C	4.647
	-200-C60-SN12-22	▲	200	210	60	63	8.0	22	C	6.552

▲ Stock available

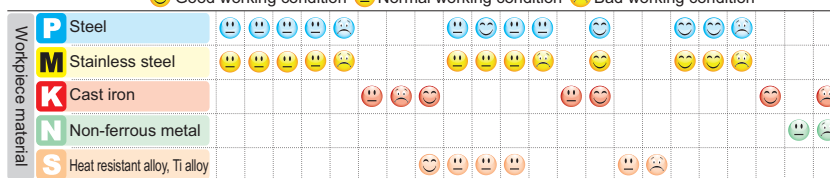
△ Make-to-order

Spare parts

Diameter ØD	Insert screw	Wrench	
Ø50-Ø63	IRM4×10	WT15IP	
Ø80 ~ Ø125		WT15IS	
Ø160 ~ Ø400		WT15IT	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition ☹ Bad working condition

[illegible]

☐ Make-to-order

ISO	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				V _c (m/min)	f _z (mm/z)		
					-GL	-GM	-GH
P	Low-carbon steel、Soft steel	≤ 180	YBM253 YB9320	270(220-350)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
	High-carbon steel、Alloy steel	180-280	YBM253 YB9320	260(220-320)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
	Alloy tool steel	280-350	YBM253 YB9320	240(180-300)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
M	Stainless steel	≤ 270	YBM253 YB9320	160(110-270)	0.1(0.08-0.2)	0.15(0.1-0.3)	0.2(0.1-0.3)
K	Cast iron、Ductile iron、High nickel cast iron	180-250	YBD152	270(150-300)	0.2(0.1-0.3)	0.3(0.1-0.4)	0.4(0.2-0.5)
S	Difficult-to-machine materials	≤ 400	YBS303	100(60-120)	--	0.15(0.1-0.25)	--

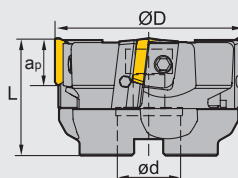
Product	Quantity (pcs)
ZCC-CT	473
Similar product of company A	428

Face milling tools

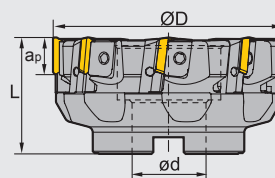
Kr:90°

**FMP01** P M K

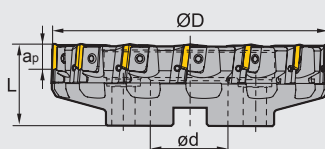
A-type coupling



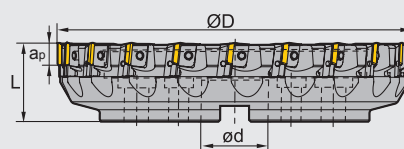
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type	Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ød	L	apmax			
FMP01 -080-A27-TP22-04	▲	△	80	27	50	18	4	A	1.2
-100-B32-TP22-06	▲	△	100	32	50	18	6	B	1.7
-125-B40-TP22-08	▲	△	125	40	63	18	8	B	3.2
-160-B40-TP22-10	▲	△	160	40	63	18	10	B	5.1
-200-C60-TP22-12	▲	△	200	60	63	18	12	C	7.4
-250-C60-TP22-16	▲	△	250	60	63	18	16	C	12.3
-315-D60-TP22-20	▲	△	315	60	70	18	20	D	21.9

▲Stock available

△Make-to-order

Indexable milling tools

Face milling tools

Spare parts

Diameter ØD	Locator	Wedge	Wedge Screw	Locator screw	Wrench
Ø80 Ø100	LTP4R1/L1	W04R/L	WM8×17	LOM5×15.1	WT20T
Ø125 ~ Ø315	LTP4R/L		WM8×22		WT25T

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Face milling tools

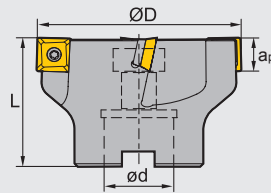
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V _c (m/min)	f _z (mm/z)
P	Low-carbon steel、 Soft steel	≤ 180	YBC301	270 (220-350)	0.2 (0.1-0.4)
			YBM351	220 (180-300)	0.2 (0.08-0.3)
			YBG202	270 (200-360)	0.2 (0.1-0.3)
			YC30S	140 (100-220)	0.22 (0.1-0.3)
	High-carbon steel、 Alloy steel	180—280	YBC301	240 (200-320)	0.2 (0.1-0.4)
			YBM351	200 (160-280)	0.2 (0.08-0.3)
			YBG202	240 (180-350)	0.2 (0.1-0.3)
			YC30S	120 (80-200)	0.22 (0.1-0.3)
	Alloy tool steel	280—350	YBC301	220 (180-300)	0.2 (0.1-0.4)
			YBM351	180 (150-250)	0.2 (0.08-0.3)
			YBG202	220 (170-340)	0.2 (0.1-0.3)
			YC30S	100 (60-180)	0.22 (0.1-0.3)
M	Stainless steel	≤ 270	YBM351	140 (100-240)	0.2 (0.08-0.3)
			YBG202	140 (100-250)	0.2 (0.1-0.3)
K	Cast iron	180—250	YBG102	210 (120-300)	0.2 (0.1-0.3)
			YBG302	160 (120-200)	0.35 (0.10-0.4)
			YD201	100 (80-160)	0.24 (0.15-0.4)

Face milling tools

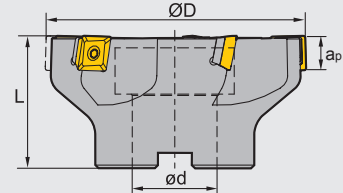
Kr:90°

**FMP02** P M K S

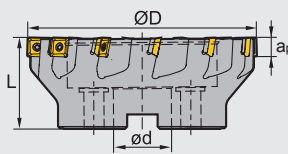
A-type coupling



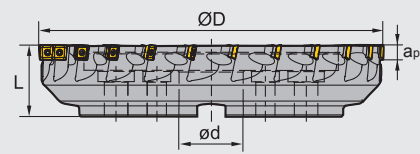
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		$\varnothing D$	$\varnothing d$	L	a_{pmax}			
FMP02 -040-A16-SE09-04	△	40	16	40	6.7	4	A	0.2
-040-A16-SE09-06	△	40	16	40	6.7	6	A	0.22
-050-A22-SE09-05	▲	50	22	40	6.7	5	A	0.3
-050-A22-SE09-07	△	50	22	40	6.7	7	A	0.313
-063-A22-SE09-06	▲	63	22	40	6.7	6	A	0.5
-063-A22-SE09-08	△	63	22	40	6.7	8	A	0.479
-080-A27-SE09-08	▲	80	27	50	6.7	8	A	0.9
-080-A27-SE09-10	△	80	27	50	6.7	10	A	1.079
-100-B32-SE09-08	▲	100	32	50	6.7	8	B	1.7
-100-B32-SE09-10	△	100	32	50	6.7	10	B	1.7
-125-B40-SE09-12	△	125	40	63	6.7	12	B	2.6

▲ Stock available

△ Make-to-order

Indexable
milling tools

Face milling tools



B MILLING

Indexable Milling Tools

Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	L	apmax			
FMP02 -050-A22-SE12-03	▲	50	22	40	10.8	3	A	0.3
-063-A22-SE12-04	▲	63	22	40	10.8	4	A	0.4
-080-A27-SE12-04	▲	80	27	50	10.8	4	A	0.9
-100-B32-SE12-05	▲	100	32	50	10.8	5	B	1.2
-125-B40-SE12-06	▲	125	40	63	10.8	6	B	3.1
-160-C40-SE12-08	▲	160	40	63	10.8	8	C	4.1
-200-C60-SE12-10	△	200	60	63	10.8	10	C	5.718
-250-C60-SE12-12	▲	250	60	63	10.8	12	C	11.1
-050-A22-SE12-04	▲	50	22	40	10.8	4	A	0.3
-063-A22-SE12-05	▲	63	22	40	10.8	5	A	0.4
-080-A27-SE12-06	▲	80	27	50	10.8	6	A	0.8
-100-B32-SE12-07	▲	100	32	50	10.8	7	B	1.2
-125-B40-SE12-08	▲	125	40	63	10.8	8	B	3.0
-160-C40-SE12-12	▲	160	40	63	10.8	12	C	3.9
-050-A22-SE12-05	▲	50	22	40	10.8	5	A	0.2
-063-A22-SE12-06	▲	63	22	40	10.8	6	A	0.4
-080-A27-SE12-08	▲	80	27	50	10.8	8	A	0.8
-100-B32-SE12-10	▲	100	32	50	10.8	10	B	1.2
-125-B40-SE12-12	▲	125	40	63	10.8	12	B	2.9
-160-C40-SE12-15	△	160	40	63	10.8	15	C	4.061
-200-C60-SE12-16	▲	200	60	63	10.8	16	C	6.1
-250-C60-SE12-18	▲	250	60	63	10.8	18	C	10.9
-315-D60-SE12-24	▲	315	60	63	10.8	24	D	21.6

▲ Stock available △ Make-to-order

Spare parts

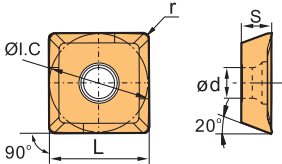
Diameter ØD	Inserts	Shim	Insert screw	Shim screw	Wrench	Wrench
Ø50 ~ Ø125	SE09	--	I60M3×7	--	WT09IS	--
Ø50	SE12	--	I60M3.5×10	--	WT15IS	--
Ø63 ~ Ø315		S12BSX	I60M3.5×12	SM5×7×A		WH35L

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts

		😊 Good working condition 😐 Normal working condition 😞 Bad working condition <table><tr><td rowspan="5">Workpiece 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material	P	Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	
		Workpiece material	P	Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊		😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊																												

Indexable milling tools

Face milling tools

Chipbreaker selection for FMP02 milling inserts

Classification	Function	For finishing	For semi-finishing	For roughing
P		-APF  	-APM  	-APR  
M				
K				
S				--



Features of

FMP02

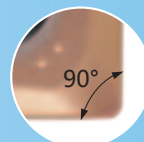
Series Milling Tools



Inserts designed with new geometries and coated grades for optimized high efficiency machining in different working conditions.



Unique geometric design resulting in true 90° square shoulder cutting.



Upgraded insert structure, greatly improves tool life.



Large positive rake angle resulting in easier cutting with less tool pressure.



Screw down clamping resulting in better chip evacuation.

► Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	fz(mm/z)		
					-APF	-APM	-APR
P	Low-carbon steel, Soft steel	≤ 180	YBG202	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YB9320	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	High-carbon steel, Alloy steel	180-280	YBM351	240 (200-320)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YBG202	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YB9320	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	Alloy tool steel	280-350	YBM351	220 (180-300)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YBG202	220 (170-340)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YB9320	220 (170-340)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
M	Stainless steel	≤ 270	YBM351	150 (120-240)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YBG202	160 (110-270)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YB9320	160 (110-270)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
K	Cast iron	180-250	YBG202	160 (120-200)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YBD152	270 (150-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
S	Difficult-to-machine materials	≤ 400	YBS303	100 (60-120)	0.1(0.08-0.2)	0.15 (0.1-0.25)	--

Case for FMP02

Workpiece material: 45#

Hardness: 175-190 (HB)

Cooling: Air cooling

Tool: FMP02-100-B32-SE12-10

Insert: SEET120308PER-APM (YB9320)

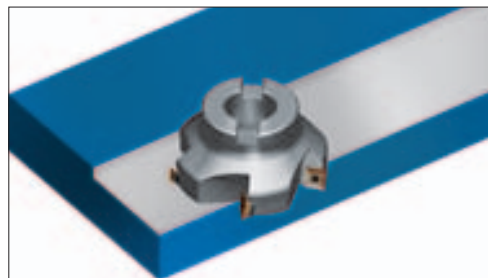
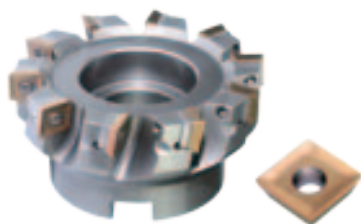
Data:

Data 1: Vc=200m/min, fz=0.15mm/z,

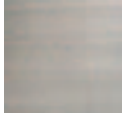
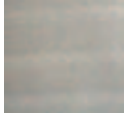
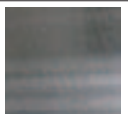
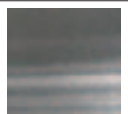
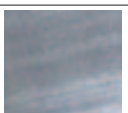
Ap=7mm, Ae=5mm

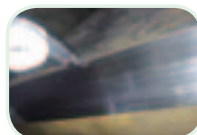
Data 2: Vc=200m/min, fz=0.25mm/z,

Ap=7mm, Ae=5mm

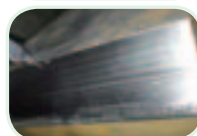


● SEET120308PER-APM inserts tests

Chipbreaker	Data 1: Vc=200m/min, fz=0.15mm/z Ap=7mm, Ae=5mm		Data 2: Vc=200m/min, fz=0.25mm/z Ap=7mm, Ae=5mm	
	Runout value	Surface machined	Runout value	Surface machined
-APM	0.006		0.006	
Products of company A	0.012		0.012	
Products of company B	0.013		0.015	



-APM



Product of company B

Results:

Comparing with competitors, SEET120308PER-APM inserts can get better surface quality and longer tool life.



MILLING

Indexable Milling Tools

Face milling tools

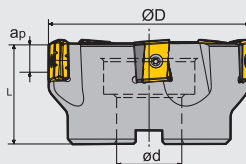
Kr:90°



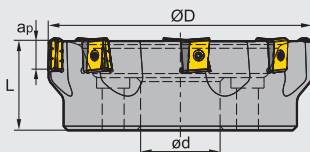
FMP03 **P** **M** **K**



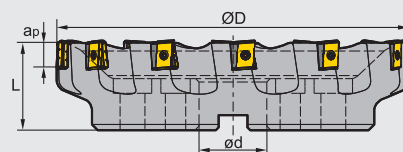
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type	Stock		ØD	ød	L	apmax	Number of teeth Z	Style of coupling	Weight (kg)
	R	L							
FMP03 -125-B40-LN15-06	▲	△	125	40	63	13	6	B	3.2
-160-C40-LN15-08	▲	△	160	40	63	13	8	C	5.1
-200-C60-LN15-10	▲	△	200	60	70	13	10	C	7.5
-250-C60-LN15-12	▲	△	250	60	70	13	12	C	12.2
-315-D60-LN15-16	▲	△	315	60	80	13	16	D	23.7
-125-B40-LN20-06	▲	△	125	40	63	17	6	B	3.3
-160-C40-LN20-08	▲	△	160	40	63	17	8	C	5.3
-200-C60-LN20-10	▲	△	200	60	70	17	10	C	8.8
-250-C60-LN20-12	▲	△	250	60	70	17	12	C	14.0
-315-D60-LN20-15	▲	△	315	60	80	17	15	D	23.9
-125-B40-LN25-05	▲	△	125	40	63	22	5	B	3.3
-160-C40-LN25-06	▲	△	160	40	63	22	6	C	5.1
-200-C60-LN25-08	▲	△	200	60	70	22	8	C	8.9
-250-C60-LN25-10	▲	△	250	60	70	22	10	C	12.0
-315-D60-LN25-12	▲	△	315	60	80	22	12	D	21.9

▲ Stock available

△ Make-to-order

Spare parts

Inserts	Shim	Shim screw	Insert screw	Wrench	
LNKT1506EN-ZR	LLN15-ZR	I60M3×7	I60M4×12	WT15IS	WT09IS
LNKT2007DN-ZR	LLN20R-ZR	I60M3×7	I60M4×15	WT15IS	WT09IS
LNKT2510-ZR	LLN25R-ZR	I60M3.5×10.4	I60M5×17	WT20IT	WT15IS

Tools code key

B26–B27

Grade selection guide

B19–B23

Technical data

B245–B250

Technical information

B234–B240

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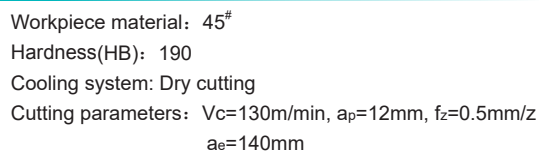
Insert shape	Type	Basic dimensions(mm)				CVD Coating				PVD Coating						Cermet	Cemented carbide		
		L	I.W	S	ød	YBC301 YBC302	YBM251 YBM253	YBM351 YBD152	YBD252	YBG102 YBG202	YBG205 YB9320	YBG302 YBG152	YBG252 YBS203	YBS303	YNG151 YNG151C	YC30S	YD051	YD101	YD201
	LNKT1506EN-ZR	15.875	14	6.35	4.6			○ ○				★							
	LNKT2007DN-ZR	20	17	7.94	4.6			○ ○				★							
	LNKT2510-ZR	25	18	9.525	5.5			○ ○				★							

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel, Soft steel	≤ 180	YBG302	180 (150-300)	0.5 (0.2-0.8)
			YBM351	180 (150-300)	0.5 (0.2-0.8)
	High-carbon steel, Alloy steel	180-280	YBG302	150 (120-280)	0.5 (0.2-0.8)
			YBM351	140 (120-280)	0.5 (0.2-0.8)
	Alloy tool steel	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
			YBM351	100 (80-250)	0.45 (0.2-0.6)
M	Stainless steel	≤ 270	YBG302	120 (80-200)	0.45 (0.2-0.6)
			YBM351	100 (80-200)	0.45 (0.2-0.6)
K	Cast iron	180-250	YBD152	220 (150-300)	0.5 (0.2-0.8)
			YBD252	210 (150-300)	0.5 (0.2-0.8)
			YBG302	200 (150-300)	0.5 (0.2-0.8)

Note: Cutting parameters can be adjusted according to the Max. power of machine.

Case for FMP03

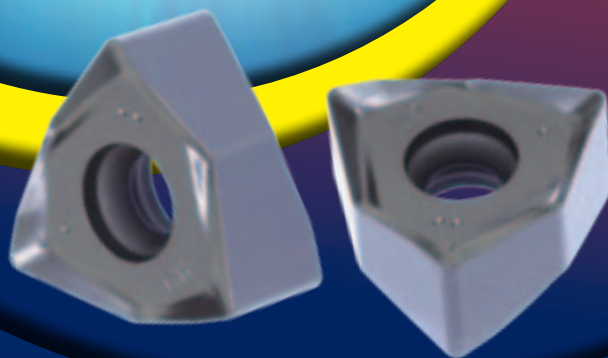


Insert type/grade: LNKT2510-ZR/YBG302

FMP12

Series Milling Tools

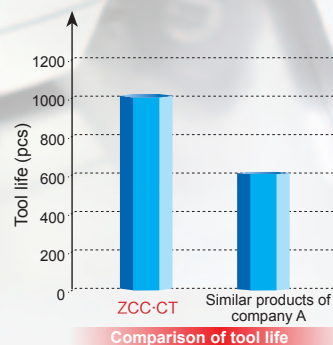
Kr:90°



- Double negative angle of the cutter, combined with unique insert structure, to achieve double positive tool angle, which is beneficial to reducing cutting force;
- 6-flute cutting double-sided slot milling inserts, enabling high-quality 90° square shoulder milling, face milling and slot milling;
- Insert with wiper enables large feed and better surface finish.

Application case

Tool specification: FMP12-080-A27-WN08-05C
 Insert specification/grade: WNHU080608PNR-GM/YBD152
 Part Name: Turbine Housing
 Workpiece material: QT450
 Hardness: HB230-280
 Cooling :Dry cutting
 Machine: Vertical machining center
 Cutting data: $V_c=260\text{m/min}$, $a_p=1.0\text{mm}$, $z=0.1\text{mm/z}$, $a_e=30\text{mm}$
 Milling style: Down milling Area of machining: End surface



Face milling tools

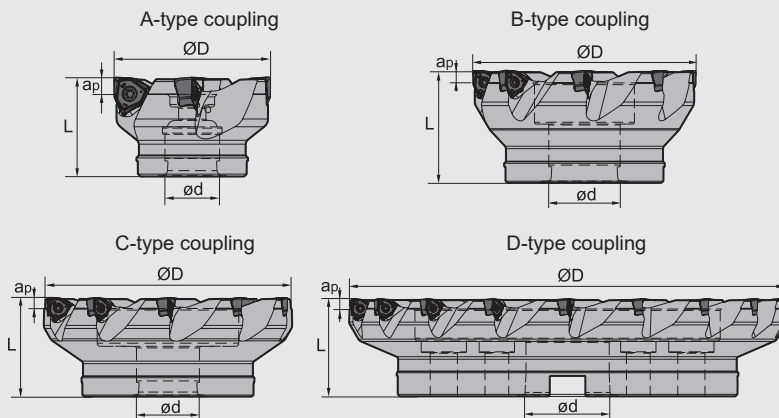
Kr:90°



FMP12 P K N



Specification of tools



Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling
		ØD	ød	L	apmax		
FMP12 -050-A22-WN06-05C	△	50	22	40	5.7	5	A
-063-A22-WN06-06C	△	63	22	40	5.7	6	A
-080-A27-WN06-07C	△	80	27	50	5.7	7	A
-100-B32-WN06-09	△	100	32	50	5.7	9	B
-125-B40-WN06-11	△	125	40	63	5.7	11	B
-160-C40-WN06-14	△	160	40	63	5.7	14	C
-063-A22-WN08-04C	△	63	22	40	7.7	4	A
-080-A27-WN08-05C	△	80	27	50	7.7	5	A
-100-B32-WN08-06	△	100	32	50	7.7	6	B
-125-B40-WN08-08	△	125	40	63	7.7	8	B
-160-C40-WN08-10	△	160	40	63	7.7	10	C
-200-C60-WN08-12	△	200	60	63	7.7	12	C
-250-C60-WN08-14	△	250	60	63	7.7	14	C
-315-D60-WN08-18	△	315	60	70	7.7	18	D

▲ Stock available

△ Make-to-order

Spare parts

Inserts	Insert screw	Wrench	
WNHU06	I60M3×9	WT09IS	
WNHU08	I60M4×10	WT15IS	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240Indexable
milling tools

Face milling tools



MILLING

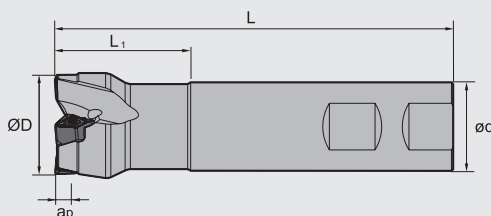
Indexable Milling Tools

Face milling tools

Kr:90°



FMP12 P K



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling
		ØD	ød	L	L ₁	ap _{max}		
FMP12 -025-XP25-WN06-02C	△	25	25	100	30	5.7	2	XP
-032-XP25-WN06-03C	△	32	25	120	40	5.7	3	XP
-040-XP32-WN06-04C	△	40	32	140	40	5.7	4	XP
-050-XP40-WN06-05C	△	50	40	169	40	5.7	5	XP

▲ Stock available

△ Make-to-order

Indexable
milling tools

Face milling tools

Spare parts

Inserts	Insert screw	Wrench	
WNHU06	I60M3×9	WT09IS	
WNHU08	I60M4×10	WT15IS	

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Selection of inserts

😊 Good working condition
😊 Normal working condition
😞 Bad working condition

Workpiece material	Steel					Stainless steel					Cast iron					Non-ferrous metal					Heat resistant alloy, Ti alloy				
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Indexable milling tools

Face milling tools

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				V _c (m/min)	f _z (mm/z)	a _p max(mm)
P	Low-carbon steel, Soft steel	≤180	YBM253 YBG205 YB9320	280(220-360)	0.2 (0.1-0.4)	5.7(WN06) 7.7(WN08)
	High-carbon steel, Alloy steel	180-280	YBM253 YBG205 YB9320	260 (200-340)	0.2 (0.1-0.4)	
	Alloy tool steel	280-350	YBM253 YBG205 YB9320	240 (180-320)	0.2(0.1-0.4)	
K	Cast iron	180-250	YBD152	280 (150-320)	0.2(0.1-0.4)	
N	Aluminium alloy	--	YD101	300-	0.25(0.1-0.4)	



MILLING

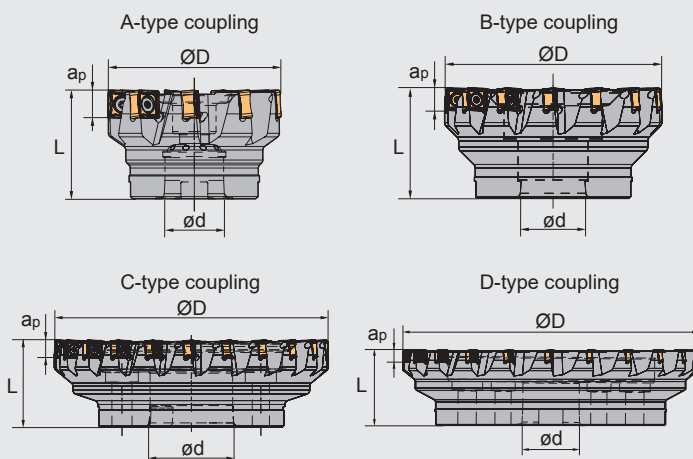
Indexable Milling Tools

Face milling tools

Kr:88°



FMP17 **P** **M** **K** **S**



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	L	apmax			
FMP17 Coarse pitch								
-050-A22-SN12-04C	▲	50	22	40	10.5	4	A	0.296
-063-A22-SN12-05C	▲	63	22	40	10.5	5	A	0.462
-080-A27-SN12-07C	▲	80	27	50	10.5	7	A	1.000
-100-A32-SN12-08	▲	100	32	50	10.5	8	A	1.577
-125-B40-SN12-10	▲	125	40	63	10.5	10	B	3.043
-160-C40-SN12-12	▲	160	40	63	10.5	12	C	4.344
-200-C60-SN12-14	▲	200	60	63	10.5	14	C	6.552
-200-C60-SN12-14	▲	250	60	63	10.5	18	C	13.025
-315-D60-SN12-22	▲	315	60	80	10.5	22	D	21.935
-400-D60-SN12-28	▲	400	60	80	10.5	28	D	41.661

▲ Stock available

△ Make-to-order

Indexable
milling tools

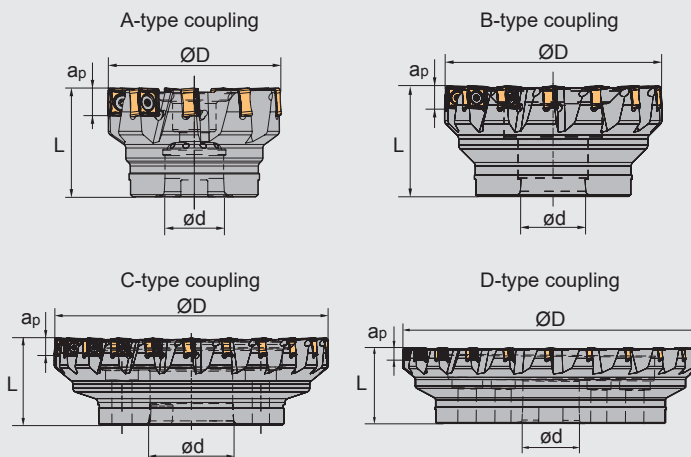
Face milling tools

Face milling tools

Kr:88°



FMP17 P M K S



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	L	apmax			
FME17								
Close pitch								
-050-A22-SN12-05C	▲	50	22	40	10.5	5	A	0.288
-063-A22-SN12-07C	▲	63	22	40	10.5	7	A	0.466
-080-A27-SN12-09C	▲	80	27	50	10.5	9	A	1.02
-100-A32-SN12-11C	▲	100	32	50	10.5	11	A	1.592
-125-B40-SN12-14	▲	125	40	63	10.5	14	B	3.033
-160-C40-SN12-18	▲	160	40	63	10.5	18	C	4.431
-200-C60-SN12-22	▲	200	60	63	10.5	22	C	6.711
-125-B40-SN12-14W2	▲	125	40	63	10.5	12+2	B	2.996
-160-C40-SN12-18W3	▲	160	40	63	10.5	15+3	C	4.667
-200-C60-SN12-24W4	▲	200	60	63	10.5	20+4	C	8.949

▲Stock available

△Make-to-order

Spare parts

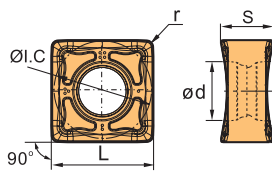
Diameter ØD	Insert	Insert screw	Wrench		
Ø50-Ø63	SNGX□□PNN-GH/GL/GM SNMX□□□-GH/GL/GM	IRM4×10	WT15IP		
Ø80-Ø125			WT15IS		
Ø160-Ø400			WT15IT		
Diameter ØD	Insert	Insert screw	Wedge screw	Adjustment block	Wrench
Ø125-Ø200	SNGX□□PNN-GH/GL/GM SNMX□□□-GH/GL/GM SNCU120420-W4	IRM4×10	DM6X20A	ADJ-M6X1.0A	WT15IT

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240Indexable
milling tools

Face milling tools

B MILLING Indexable Milling Tools

Selection of inserts



Workpiece material	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
	Good working condition	Normal working condition	Bad working condition		
P	Good	Normal	Bad		
M	Normal	Good	Bad		
K	Bad	Normal	Good		
N				Good	
S					Good

Insert shape	Type	Basic dimensions(mm)						CVD Coating				PVD Coating						Cermet	Cemented carbide											
		L	ØI.C	S	ød	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG105	YBG202		YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	SNGX1205PNN-GL	12.7	12.7	6.5	5.9	0.8	10.5				●	●							★											
	SNMX120512-GL	12.7	12.7	6.5	5.9	1.2	10.5				●	●							★											
	SNGX1205PNN-GM	12.7	12.7	6.5	5.9	0.8	10.5				●	●							★					●						
	SNMX120512-GM	12.7	12.7	6.5	5.9	1.2	10.5				●	●							★					●						
	SNGX1205PNN-GH	12.7	12.7	6.5	5.9	0.8	10.5				●	●							★											
	SNMX120512-GH	12.7	12.7	6.5	5.9	1.2	10.5				●	●							★											
	SNCU120420-W4	12.7	12.7	4.8	5.9	2	10.5								●															

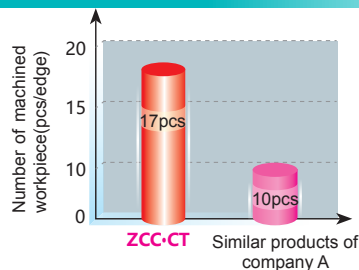
● Inserts are suitable for both left and right cuts ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Recommended cutting parameters

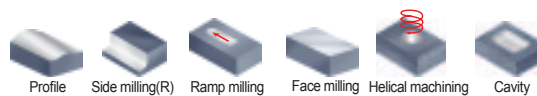
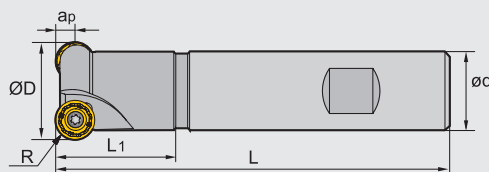
Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	fz(mm/z)		
					-GL	-GM	-GH
P	Low-carbon steel, Soft steel	≤ 180	YBM253 YB9320	270(220-350)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
	High-carbon steel, Alloy steel	180-280	YBM253 YB9320	260(220-320)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
	Alloy tool steel	280-350	YBM253 YB9320	240(180-300)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
M	Stainless steel	≤ 270	YBM253 YB9320	160(110-270)	0.1(0.08-0.2)	0.15(0.1-0.3)	0.2(0.1-0.3)
K	Cast iron, Ductile iron, High nickel cast iron	180-250	YBD152	270(150-300)	0.2(0.1-0.3)	0.3(0.1-0.4)	0.4(0.2-0.5)
S	hard-to-cut material	≤ 400	YBS303	100(60-120)	--	0.15(0.1-0.25)	--

Case for FMP17

Workpiece: Truck axle housing
 Workpiece material: QT600(HB250)
 Tool type: FMP17-100-A32-SN12-08C
 Insert: SNGX1205PNN-GM/YB9320
 Cutting parameters: Vc=267m/min, fz=0.18mm/z,
 ap=1.5mm, ae=90mm
 Cooling: External coolant



Face milling tools

**FMR01** **P** **M** **K** **S**

Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		ØD	ød	L	L1	R	apmax		
FMR01 -025-XP20-RC10-02	▲	25	20	100	30	5	5	2	0.2
-032-XP25-RC10-02	▲	32	25	120	35	5	5	2	0.5
-040-XP32-RC12-03	▲	40	32	120	40	6	6	3	0.7
-050-XP32-RC12-03	▲	50	32	120	40	6	6	3	0.8

▲ Stock available

△ Make-to-order

Indexable
milling tools

Face milling tools

Spare parts

Diameter ØD	Insert screw	Wrench	
Ø25 - Ø32	I60M4×8.4	WT15S	
Ø40 - Ø50	I60M3.5×10		

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

Indexable Milling Tools

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

	P	M	K	N	S	Average	Variance	Standard deviation	Coefficient of variation	Skewness	Kurtosis	Jenkinson's index
Workpiece material	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy	-0.9876	0.0001	0.01	0.01	0.01	0.01	0.01

Insert shape	Type	Basic dimensions(mm)			CVD Coating				PVD Coating						Cermet		Cemented carbide									
		ØI.C	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	RCKT10T3MO-DM	10.0	3.97	4.4	●							●	★													
	RCKT1204MO-DM	12.0	4.76	4.0	●		●		●	○		●	★		★											
	RCKT1204MO-DR	12.0	4.76	4.0	○		○		○			●	★													
	RCKT1204MO-ER	12.0	4.76	4.0			★																			
	RCKT1204MO-NM	12.0	4.76	4.0				○							○	○			○	○						

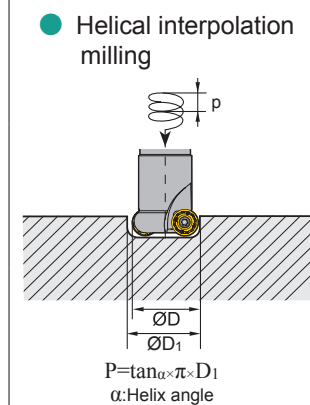
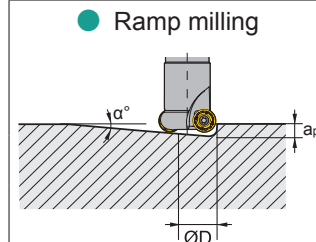
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

➤ Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V _c (m/min)	f _z (mm/z)		
					-DM	-DR	-NM
P	Low-carbon steel、 Soft steel	≤ 180	YBM251 YBC301	270 (220-350)	0.2(0.1-0.5)	0.3 (0.2-0.8)	
			YBM351 YBC302	220 (180-300)	0.25(0.1-0.5)	0.3 (0.2-0.8)	
			YBG202 YBG205 YB9320	270 (200-360)	0.2(0.1-0.5)	0.3 (0.2-0.8)	0.2 (0.1-0.5)
	High-carbon steel、 Alloy steel	180-280	YBM251 YBC301	240 (200-320)	0.2(0.1-0.5)	0.3 (0.2-0.8)	
			YBM351 YBG302	200 (160-280)	0.25(0.1-0.5)	0.3 (0.2-0.8)	0.2 (0.1-0.5)
			YBG202 YBG205 YB9320	240 (180-350)	0.2(0.1-0.5)	0.3 (0.2-0.8)	0.2 (0.1-0.5)
	Alloy tool steel	280-350	YBM251 YBC301	220 (180-300)	0.2(0.1-0.4)	0.3 (0.2-0.6)	
			YBM351 YBG302	180 (150-250)	0.2(0.1-0.5)	0.3 (0.2-0.8)	0.2 (0.1-0.4)
			YBG202 YBG205 YB9320	220 (170-340)	0.2(0.1-0.4)	0.3 (0.2-0.6)	0.2 (0.1-0.4)
	M	Stainless steel	≤ 270	YBM251	150 (120-240)	0.2(0.1-0.4)	0.3 (0.2-0.6)
YBM253 YBM351				150 (100-220)	0.2(0.1-0.4)	0.3 (0.2-0.6)	0.2 (0.1-0.4)
YBG202 YBG205 YB9320				160 (110-270)	0.2(0.1-0.4)	0.3 (0.2-0.6)	0.2 (0.1-0.4)
K	Cast iron	180-250	YBG302	210 (120-300)	0.2(0.1-0.5)	0.3 (0.2-0.8)	0.2 (0.1-0.5)
			YBD152	240 (180-300)	0.2(0.1-0.3)		
S	hard-to-cut material	≤400	YBS203 YBS303	100 (60-120)			0.15 (0.1-0.3)

➤ Ramp milling, helical interpolation milling

Insert	Diameter ØD(mm)	Ramp milling			Helical interpolation milling	
		Max. cutting depth	Max. cutting depth	Min. length	Min. diameter	Max. diameter
		a_p (mm)	α°	L_m (mm)	ØD ₁ (mm)	(mm)
RCKT10**	25	5	14.4	19.5	40	5
	32	5	8.4	34	54	5
RCKT12**	40	6	10.3	33.2	68	6
	50	6	7.1	48	88	6

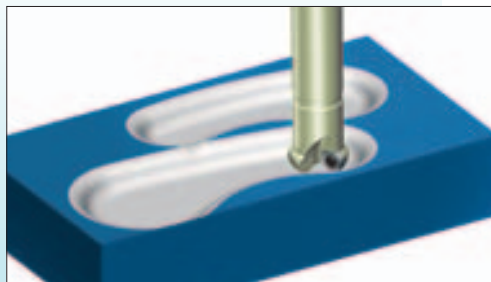


Reduce the feed rate when plunging and circular milling.
 Attention-drilling lead to long chips.

Indexable
milling tools

Face milling tools

Case for FMR01



Workpiece material: 42CrMo (HRC35)
 Cooling system: Dry cutting
 Machine: Vertical machining center
 Cutting parameters:
 $V_c = 200 \text{ m/min}$
 $a_p = 3 \text{ mm}$
 $f_z = 0.2 \text{ mm/z}$



Tool type: FMR01-025-XP20-RC10-02

Insert type/grade: RCKT10T3MO-DM/YBG202

● Comparison of insert abrasion

ZCC-CT



22minutes later

Similar overseas products



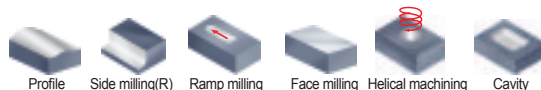
22minutes later



B MILLING

Indexable Milling Tools

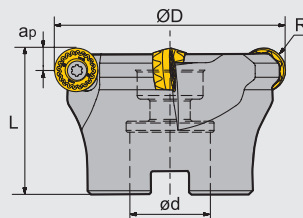
Face milling tools



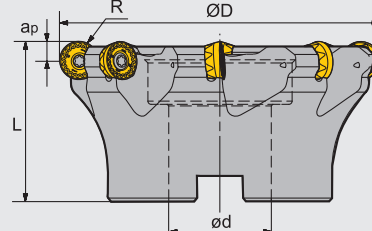
FMR02 P M K S



A-type coupling



B-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			ØD	ød	L	R	a _{pmax}			
FMR02 Coarse pitch	-050-A22-RC12-03	△	50	22	40	6	6	3	A	0.29
	-063-A22-RC12-04	▲	63	27	50	6	6	4	A	0.41
	-080-B27-RC12-05	▲	80	27	50	6	6	5	B	0.81
	-100-B32-RC12-06	△	100	32	50	6	6	6	B	1.25
	-063-A22-RC16-04	△	63	22	40	8	8	4	A	0.35
	-080-B27-RC16-05	△	80	27	50	8	8	5	B	0.74
	-100-B32-RC16-06	▲	100	32	50	8	8	6	B	1.18
	-125-B40-RC16-07	△	125	40	63	8	8	7	B	2.49
	-080-A27-RC20-04	△	80	27	50	10	10	4	A	0.77
	-100-B32-RC20-05	△	100	32	50	10	10	5	B	1.07
	-125-B40-RC20-06	△	125	40	63	10	10	6	B	2.42
	-160-B40-RC20-06	△	160	40	63	10	10	6	B	4.17
Close pitch	-050-A22-RC12-05	△	50	22	40	6	6	5	A	0.27
	-063-A22-RC12-06	△	63	27	50	6	6	6	A	0.38
	-080-B27-RC12-07	△	80	27	50	6	6	7	B	0.79
	-100-B32-RC12-08	△	100	32	50	6	6	8	B	1.23
	-063-A22-RC16-05	△	63	22	40	8	8	5	A	0.34
	-080-B27-RC16-07	△	80	27	50	8	8	7	B	0.72
	-100-B32-RC16-08	△	100	32	50	8	8	8	B	1.17
	-125-B40-RC16-09	△	125	40	63	8	8	9	B	2.47
	-080-A27-RC20-05	△	80	27	50	10	10	5	A	0.74
	-100-B32-RC20-06	△	100	32	50	10	10	6	B	1.07
	-125-B40-RC20-07	△	125	40	63	10	10	7	B	2.39
	-160-B40-RC20-08	△	160	40	63	10	10	8	B	4.06

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Insert	Insert screw	Wrench	
Ø50 - Ø100	RC□□1204MO-□□	I60M3.5×10	WT15IS	--
Ø63 - Ø125	RC□□1606MO-□□	I60M5×13	--	WT20IT
Ø125 - Ø160	RC□□2006MO-□□	I43M6×16	--	WT25IT

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Selection of inserts

😊 Good working condition 😊 Normal working condition 😞 Bad working condition

Workpiece material	Steel										Stainless steel										Cast iron										Non-ferrous metal										Heat resistant alloy, Ti alloy									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40										
Steel	😊	😊	😊	😊	😊						😊	😊	😊	😊	😊						😊	😊	😊	😊	😊						😊	😊	😊	😊	😊															
Stainless steel	😊	😊	😊	😊	😊						😊	😊	😊	😊	😊						😊	😊	😊	😊	😊						😊	😊	😊	😊	😊															
Cast iron																																																		
Non-ferrous metal																																																		
Heat resistant alloy, Ti alloy																																																		

Insert shape	Type	Basic dimensions(mm)			CVD Coating								PVD Coating								Cermet	Cemented carbide					
		ØI.C	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201	
	RCKT1204MO-DM	12.0	4.76	4.0	●		●		●	○			●	★		●											
	RCKT1606MO-DM	16.0	6.35	5.56	●											●											
	RCKT1204MO-DR	12.0	4.76	4.0	○		○		○				●	★													
	RCKT1606MO-DR	16.0	6.35	5.56	●				●	○			●	★													
	RCKT2006MO-DR	20.0	6.35	6.55	●				●	○		○	★		●												
	RCKT1204MO-ER	12.0	4.76	4.0				★																			
	RCKT1606MO-ER	16.0	6.35	5.56				★																			
	RCKT2006MO-ER	20.0	6.35	6.55				★																			
	RCKT1204MO-NM	12.0	4.76	4.0				○							○	○			○	○							
	RCKT1606MO-NM	16.0	6.35	5.56				○							○	○			○	○							

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable
milling tools

Face milling tools

Selection of inserts

😊 Good working condition 😊 Normal working condition 😞 Bad working condition

Insert shape	Type	Basic dimensions(mm)				PCBN		Cemented carbide		
		ØI.C	S	ød	apmax	BK1041	BK2531	YD051	YD101	YD201
	RCMW1204MOBS01225	12.0	4.76	4.1	2.7	○	○			
	RCMW1204MOAS01225	12.0	4.76	4.1	2.7	○	○			

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



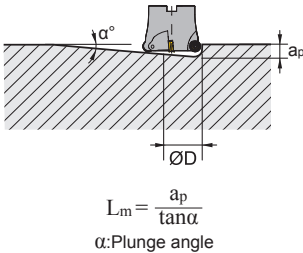
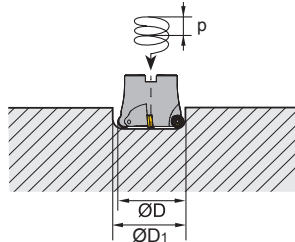
► Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters					
			V _c (m/min)	f _z (mm/z)				
				-DM	-DR	-ER	-PCBN	-NM
P	Low-carbon steel, Soft steel	≤ HB180	YBM251 YBC301	270 (220-350)	0.2(0.1-0.5)	0.3 (0.2-0.8)		
			YBM351 YBG302	220 (180-300)	0.25(0.1-0.5)	0.3 (0.2-0.8)		0.25 (0.1-0.5)
		HB180-280	YBG202 YBG205 YB9320	270 (200-360)	0.2(0.1-0.5)	0.3 (0.2-0.8)		0.2 (0.1-0.5)
			YBM251 YBC301	240 (200-320)	0.2(0.1-0.5)	0.3 (0.2-0.8)		
			YBM351 YBG302	200 (160-280)	0.25(0.1-0.5)	0.3 (0.2-0.8)		0.25 (0.1-0.5)
			YBG202 YBG205 YB9320	240 (180-350)	0.2(0.1-0.5)	0.3 (0.2-0.8)		0.2 (0.1-0.5)
	Alloy tool steel	HB280-350	YBM251 YBC301	220 (180-300)	0.2(0.1-0.4)	0.3 (0.2-0.6)		
			YBM351 YBG302	180 (150-250)	0.2(0.1-0.5)	0.3 (0.2-0.8)		0.2 (0.1-0.5)
			YBG202 YBG205 YB9320	220 (170-340)	0.2(0.1-0.4)	0.3 (0.2-0.6)		0.2 (0.1-0.4)
			YBM251	150 (120-240)	0.2(0.1-0.4)	0.3 (0.2-0.6)		
			YBM253	150 (100-220)	0.2(0.1-0.4)	0.3 (0.2-0.6)	0.3(0.2-0.6)	0.2 (0.1-0.4)
			YBM351	150 (100-220)	0.2(0.1-0.4)	0.3 (0.2-0.6)		
M	Stainless steel	≤ HB270	YBG202 YBG205 YB9320	160 (110-270)	0.2(0.1-0.4)	0.3 (0.2-0.6)		0.2 (0.1-0.4)
			YBG302	210 (120-300)	0.2(0.1-0.5)	0.3 (0.2-0.8)		0.2 (0.1-0.5)
			BK2531	150 (100-500)			0.15 (0.1-0.5)	
			BK1041	800 (500-1200)			0.2 (0.1-0.5)	
K	Quenching steel, Cast iron	HB180-250	YBD152	240 (180-300)	0.2(0.1-0.3)			
			YBD252	220 (180-300)		0.2 (0.1-0.3)		
			YBS203 YBS303	100 (60-120)				0.15 (0.1-0.3)
S	Difficult-to-machine materials	≤ 400						

Indexable
milling tools

Face milling tools

➤ Ramp milling, helical interpolation milling

● Ramp milling  $L_m = \frac{a_p}{\tan \alpha}$ α: Plunge angle	Insert	Diameter ØD(mm)	Ramp milling			Helical interpolation milling	
			Max. cutting depth	Max. cutting depth	Min. length	Min. diameter	Max. diameter
			ap(mm)	α°	Lm(mm)	ØD1(mm)	(mm)
● Helical interpolation milling  $P = \tan \alpha \times \pi \times D_1$ α: Helix angle	RCKT12**	50	6	7	48.9	88	6
		63	6	5.1	67.5	114	6
		80	6	3.7	94.1	148	6
		100	6	2.7	127.2	188	6
	RCKT16**	63	8	8	56.9	110	8
		80	8	5.6	81.6	144	8
		100	8	4.1	110.8	184	8
		125	8	3.4	136.7	234	8
	RCKT20**	80	10	8	71.2	140	10
		100	10	5.7	100.2	180	10
		125	10	4.2	136.2	230	10
		160	10	3	190.8	300	10

Reduce the feed rate when plunging and circular milling.
Attention-drilling lead to long chips.

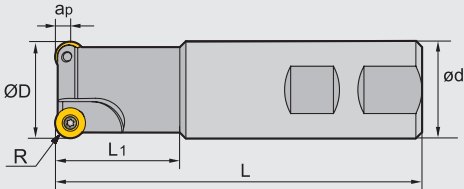
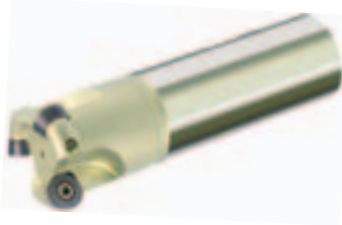
Indexable
milling tools

Face milling tools

Face milling tools



FMR03 P M K S



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		ØD	ød	L	L1	R	apmax		
FMR03 -016-XP16-RD08-02	▲	16	16	100	25	4	4	2	0.1
-025-XP25-RD08-02	▲	25	25	100	30	4	4	2	0.3
-032-XP32-RD10-02	▲	32	32	120	40	5	5	2	0.7
-040-XP32-RD12-03	▲	40	32	120	40	6	6	3	0.7
-050-XP32-RD12-04	▲	50	32	120	40	6	6	4	0.8

▲Stock available △Make-to-order

Spare parts

Diameter ØD	Insert screw	Wrench	
Ø16-Ø25	I60M3×7	WT09IP	
Ø32-Ø50	I60M4×10	WT15IP	

Tools code key

B24–B25

Grade selection guide

B19–B23

Technical data

B234–B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

P Steel				
M Stainless steel				
K Cast iron				
N Non-ferrous metal				
S Heat resistant alloy, Ti alloy				

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

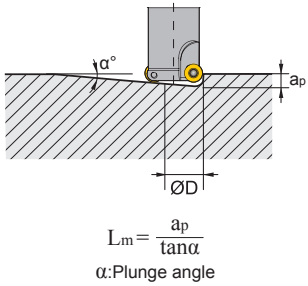
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V _c (m/min)	f _z (mm/z)
P	Low-carbon steel、Soft steel	≤180	YBM251 YBC301	270 (220-350)	0.2 (0.08-0.45)
			YBM351 YBG302	220 (180-300)	0.25 (0.15-0.45)
			YBG202 YBG205	270 (200-360)	0.2 (0.1-0.45)
	High-carbon steel、Alloy steel	180-280	YBM251 YBC301	240 (200-320)	0.2 (0.08-0.45)
			YBM351 YBG302	200 (160-280)	0.25 (0.15-0.45)
			YBG202 YBG205	240 (180-350)	0.2 (0.1-0.45)
	Alloy tool steel	280-350	YBM251 YBC301	220 (180-300)	0.2 (0.08-0.45)
			YBM351 YBG302	180 (150-250)	0.25 (0.15-0.45)
			YBG202 YBG205	220 (170-340)	0.2 (0.1-0.45)
M	Stainless steel	≤270	YBG205	150 (120-240)	0.2 (0.08-0.45)
			YBM251	150 (120-240)	0.2 (0.08-0.45)
			YBM351	150 (100-220)	0.25 (0.1-0.45)
			YBG202 YBG205	160 (110-270)	0.2 (0.1-0.45)
K	Cast iron	180-250	YBG302	210 (120-300)	0.2 (0.1-0.45)
S	Difficult-to-machine materials	≤400	YBS203 YBS303	100 (60-120)	0.15 (0.1-0.3)



MILLING

Indexable Milling Tools

➤ Ramp milling, helical interpolation milling

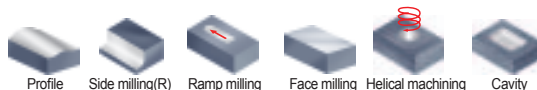
● Ramp milling 	Insert	Diameter ØD(mm)	Ramp milling			Helical interpolation milling	
			Max. cutting depth	Max. cutting depth	Min. length	Min. diameter	Max. diameter
			ap(mm)	α°	Lm(mm)	ØD1(mm)	(mm)
RD*08**		16	4	12.2	18.5	24	4
		25	4	8.8	25.8	42	4
RD*10**		32	5	8.4	34	54	5
RD*12**		40	6	10.3	33	68	6
		50	6	7.1	48	88	6

Reduce the feed rate when plunging and circular milling.
Attention-drilling lead to long chips.

Indexable
milling tools

Face milling tools

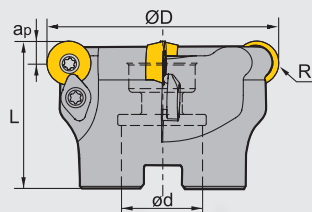
Face milling tools



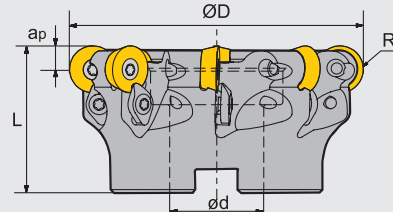
FMR04 P M K



A-type coupling



B-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			ØD	ød	L	R	a _p max			
FMR04 Coarse pitch	-050-A22-RD12-03	▲	50	22	40	6	6	3	A	0.25
	-063-A22-RD12-04	▲	63	22	40	6	6	4	A	0.37
	-080-B27-RD12-05	▲	80	27	50	6	6	5	B	0.77
	-063-A22-RD16-04	△	63	22	40	8	8	4	A	0.32
	-080-B27-RD16-05	△	80	27	50	8	8	5	B	0.67
	-100-B32-RD16-06	▲	100	32	50	8	8	6	B	1.18
	-125-B40-RD16-08	△	125	40	63	8	8	8	B	2.55
	-125-B40-RD20-06	▲	125	40	63	10	10	6	B	2.33
	-160-B40-RD20-07	▲	160	40	63	10	10	7	B	3.83
Close pitch	-050-A22-RD12-05	△	50	22	40	6	6	5	A	0.23
	-063-A22-RD12-06	△	63	22	40	6	6	6	A	0.48
	-080-B27-RD12-07	△	80	27	50	6	6	7	B	0.78
	-063-A22-RD16-05	△	63	22	40	8	8	5	A	0.3
	-080-B27-RD16-07	△	80	27	50	8	8	7	B	0.66
	-100-B32-RD16-08	△	100	32	50	8	8	8	B	1.18
	-125-B40-RD16-10	△	125	40	63	8	8	10	B	2.51
	-125-B40-RD20-08	△	125	40	63	10	10	8	B	2.45
	-160-B40-RD20-10	△	160	40	63	10	10	10	B	3.98

▲Stock available

△Make-to-order

Indexable
milling tools

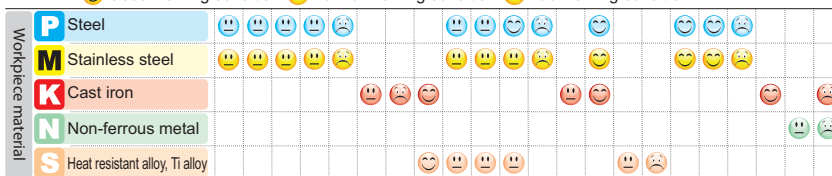
Face milling tools

Spare parts

Diameter ØD	Insert	Insert screw	Clamp	Clamp screw	Wrench	
Ø50-Ø80	RDKW1204MO	I60M3.5×10	WD-204	I60M4×10	WT15IP	--
Ø63-Ø125	RDKW1605MO	I60M5×13	WD-207	I60M5×13	--	WT20IT
Ø125-Ø160	RDKW2006MO	I43M6×16	--	--	--	WT25IT

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Face milling tools

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	f(mm/z)
P	Low-carbon steel、Soft steel	≤180	YBM251 YBC301	270 (220-350)	0.2 (0.08-0.45)
			YBM351 YBG302	220 (180-300)	0.25 (0.15-0.45)
			YBG202 YBG205	270 (200-360)	0.2 (0.1-0.45)
	High-carbon steel、Alloy steel	180-280	YBM251 YBC301	240 (200-320)	0.2 (0.08-0.45)
			YBM351 YBG302	200 (160-280)	0.25 (0.15-0.45)
			YBG202 YBG205	240 (180-350)	0.2 (0.1-0.45)
	Alloy tool steel	280-350	YBM251 YBC301	220 (180-300)	0.2 (0.08-0.45)
			YBM351 YBG302	180 (150-250)	0.25 (0.15-0.45)
			YBG202 YBG205	220 (170-340)	0.2 (0.1-0.45)
M	Stainless steel	≤270	YBG205	150 (120-240)	0.2 (0.08-0.45)
			YBM251	150 (120-240)	0.2 (0.08-0.45)
			YBM351 YBG302	150 (100-220)	0.25 (0.1-0.45)
			YBG202 YBG205	160 (110-270)	0.2 (0.1-0.45)
K	Cast iron	180-250	YBG302	210 (120-300)	0.2 (0.1-0.45)

➤ Ramp milling, helical interpolation milling

Insert	Diameter ØD(mm)	Ramp milling			Helical interpolation milling	
		Max. cutting depth	Max. cutting depth	Min. length	Min. diameter	Max. diameter
		a_p (mm)	α°	L_m (mm)	$\varnothing D_1$ (mm)	(mm)
RD*12**	50	6	7.1	48	88	6
	63	6	5.1	67	114	6
	80	6	3.6	93	148	6
RD*16**	63	8	8	56.5	110	8
	80	8	5.6	81.5	144	8
	100	8	4.1	110.5	184	8
	125	8	3.4	136.5	234	8
RD*120**	125	10	4.2	136.2	230	10
	160	10	3	190.5	300	10

Reduce the feed rate when plunging and circular milling.
Attention-drilling lead to long chips.

Case for FMR04



Workpiece material: 42CrMo (HRC35)
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters:
 $V_c=200\text{m/min}$
 $a_p=3\text{mm}$
 $f_z=0.3\text{mm/z}$



Tool type: FMR04-063-A22-RD12-04

Insert type/grade: RDKW1204MO/YBG202

● Abrasion comparison after 90 minutes cavity milling

ZCC-CT



Similar overseas products





B MILLING

Indexable Milling Tools

Square shoulder milling tools

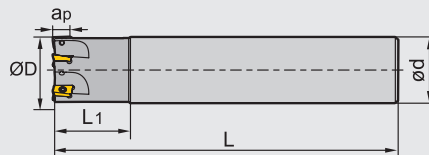
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EMP01 P M K S N



Straight shank



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
		ØD	ød	L	L ₁	ap _{max}		
EMP01								
Straight shank								
-010-G10-AP07-02C(25/85)	△	10	10	85	25	6.0	2	0.043
-010-G10-AP07-02C(25/120)	△	10	10	120	25	6.0	2	0.063
-012-G12-AP07-02C(25/85)	△	12	12	85	25	6.0	2	0.061
-012-G12-AP07-02C(25/120)	△	12	12	120	25	6.0	2	0.089
-014-G16-AP07-03C(25/85)	△	14	16	85	25	6.0	3	0.104
-014-G16-AP07-03C(25/120)	△	14	16	120	25	6.0	3	0.153
-016-G16-AP07-03C(25/85)	△	16	16	85	25	6.0	3	0.112
-016-G16-AP07-03C(25/120)	△	16	16	120	25	6.0	3	0.162
-012-G16-AP11-01	▲	12	16	85	25	10.5	1	0.1
-016-G16-AP11-02	▲	16	16	90	25	10.5	2	0.1
-016-G16-AP11-02C(25/85)	△	16	16	85	25	10.5	2	0.108
-016-G16-AP11-02C(25/120)	△	16	16	120	25	10.5	2	0.16
-016-G16-AP11-02C(25/180)	△	16	16	180	25	10.5	2	0.248
-020-G16-AP11-03C(25/85)	△	20	16	85	25	10.5	3	0.121
-020-G20-AP11-02	▲	20	20	100	30	10.5	2	0.2
-020-G20-AP11-02C(30/100)	△	20	20	100	30	10.5	2	0.18
-020-G20-AP11-02C(30/150)	△	20	20	150	30	10.5	2	0.312
-020-G20-AP11-02C(30/200)	△	20	20	200	30	10.5	2	0.401
-020-G20-AP11-03C(30/100)	△	20	20	100	30	10.5	3	0.2
-020-G20-AP11-03C(30/150)	△	20	20	150	30	10.5	3	0.357
-020-G20-AP11-03C(30/200)	△	20	20	200	30	10.5	3	0.424
-025-G25-AP11-03	▲	25	25	115	35	10.5	3	0.4
-025-G25-AP11-03C(35/115)	△	25	25	115	35	10.5	3	0.357
-025-G25-AP11-03C(35/170)	△	25	25	170	35	10.5	3	0.577
-025-G25-AP11-03C(35/220)	△	25	25	220	35	10.5	3	0.758
-025-G25-AP11-04C(35/115)	△	25	25	115	35	10.5	4	0.376
-025-G25-AP11-04C(35/170)	△	25	25	170	35	10.5	4	0.575
-025-G25-AP11-04C(35/220)	△	25	25	220	35	10.5	4	0.686

▲ Stock available △ Make-to-order

EMP01-010-G10-AP07-02C(25/85)

Effective cutting depth/Overall length

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Indexable
milling tools

Square shoulder milling tools

Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			ØD	ød	L	L ₁	apmax		
EMP01 Straight shank	-030-G25-AP11-04C(35/115)	△	30	25	115	35	10.5	4	0.411
	-030-G25-AP11-04C(35/170)	△	30	25	170	35	10.5	4	0.61
	-030-G25-AP11-04C(35/220)	△	30	25	220	35	10.5	4	0.791
	-032-G32-AP11-04	▲	32	32	125	40	10.5	4	0.7
	-032-G32-AP11-04C(45/125)	△	32	32	125	45	10.5	4	0.673
	-032-G32-AP11-04C(45/190)	△	32	32	190	45	10.5	4	1.057
	-032-G32-AP11-04C(45/260)	△	32	32	260	45	10.5	4	1.47
	-032-G32-AP11-05C(45/125)	△	32	32	125	45	10.5	5	0.71
	-032-G32-AP11-05C(45/190)	△	32	32	190	45	10.5	5	1.054
	-032-G32-AP11-05C(45/260)	△	32	32	260	45	10.5	5	1.53
	-025-G25-AP16-02	▲	25	25	115	35	15.5	2	0.4
	-025-G25-AP16-02C(35/115)	△	25	25	115	35	15.5	2	0.374
	-025-G25-AP16-02C(35/170)	△	25	25	170	35	15.5	2	0.496
	-025-G25-AP16-02C(35/220)	△	25	25	220	35	15.5	2	0.658
	-030-G25-AP16-02C(35/115)	△	30	25	115	35	15.5	2	0.521
	-030-G25-AP16-02C(35/170)	△	30	25	170	35	15.5	2	0.632
	-030-G25-AP16-02C(35/220)	△	30	25	220	35	15.5	2	0.78
	-032-G32-AP16-03	▲	32	32	125	40	15.5	3	0.7
	-032-G32-AP16-03C(45/125)	△	32	32	125	45	15.5	3	0.607
	-032-G32-AP16-03C(45/190)	△	32	32	190	45	15.5	3	0.976
	-032-G32-AP16-03C(45/260)	△	32	32	260	45	15.5	3	1.374
	-040-G32-AP16-04	▲	40	32	130	42	15.5	4	0.8
	-040-G32-AP16-04C(45/125)	△	40	32	125	45	15.5	4	0.716
	-040-G32-AP16-04C(45/190)	△	40	32	190	45	15.5	4	1.085
	-040-G32-AP16-04C(45/260)	△	40	32	260	45	15.5	4	1.483
	-050-G32-AP16-05	▲	50	32	135	45	15.5	5	1.0
	-050-G32-AP16-05C(45/125)	△	50	32	125	45	15.5	5	0.825
	-050-G32-AP16-05C(45/190)	△	50	32	190	45	15.5	5	1.195
	-050-G32-AP16-05C(45/260)	△	50	32	260	45	15.5	5	1.592
	-063-G32-AP16-06	▲	63	32	135	45	15.5	6	1.4

▲ Stock available △ Make-to-order

EMP01-010-G10-AP07-02C(25/85)

Effective cutting depth/Overall length

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
				
Ø10-Ø16	AP07	I60M1.8×4	WT05IP	--
Ø12-Ø32	AP11	I60M2.5×6.5T	WT08IP	--
Ø25-Ø63	AP16	I60M4×8.4	--	WT15IS

Tools code key
B24-B25

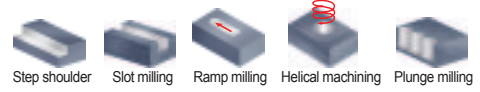
Grade selection guide
B19-B23

Technical data
B234-B240

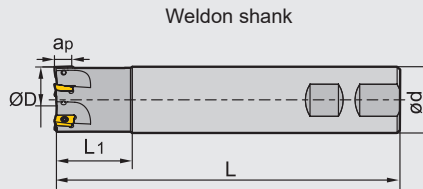
B MILLING Indexable Milling Tools

Square shoulder milling tools

Kr:90°



EMP01 P M K S N



Specification of tools

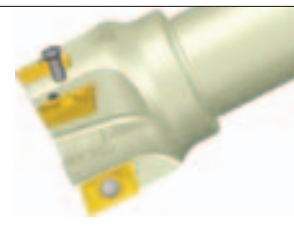
Type	Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
		ØD	ød	L	L1	apmax		
EMP01 Weldon shank	▲	12	16	85	25	10.5	1	0.1
	▲	16	16	90	25	10.5	2	0.1
	▲	20	20	100	30	10.5	2	0.2
	▲	25	25	115	35	10.5	3	0.4
	▲	32	32	125	40	10.5	4	0.7
	▲	25	25	115	35	15.5	2	0.4
	▲	32	32	125	40	15.5	3	0.7
	▲	40	32	130	42	15.5	4	0.8
	▲	50	32	135	45	15.5	5	1.0
	▲	63	32	135	45	15.5	6	1.4

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø12-Ø32	AP11	I60M2.5×6.5T	WT08IP	--
Ø25-Ø63	AP16	I60M4×8.4	--	WT15IS

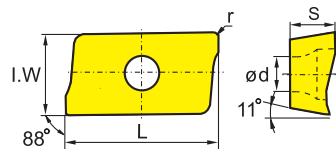


Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
YBC301	😊	😊	😊	😊	😊
YBC302	😊	😊	😊	😊	😊
YBM251	😊	😊	😊	😊	😊
YBM253	😊	😊	😊	😊	😊
YBM351	😊	😊	😊	😊	😊
YBD152	😊	😊	😊	😊	😊
YBD252	😊	😊	😊	😊	😊
YBG102	😊	😊	😊	😊	😊
YBG202	😊	😊	😊	😊	😊
YBG205	😊	😊	😊	😊	😊
YB9320	😊	😊	😊	😊	😊
YBG302	😊	😊	😊	😊	😊
YBG152	😊	😊	😊	😊	😊
YBG252	😊	😊	😊	😊	😊
YBS203	😊	😊	😊	😊	😊
YBS303	😊	😊	😊	😊	😊
YNG151	😊	😊	😊	😊	😊
YNG151C	😊	😊	😊	😊	😊
YC30S	😊	😊	😊	😊	😊
YD051	😊	😊	😊	😊	😊
YD101	😊	😊	😊	😊	😊
YD201	😊	😊	😊	😊	😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet	Cemented carbide									
		L	I.W	S	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201	
	APKT070204-APF	7.32	4.34	2.38	2	0.4		●	●							★													
	APKT11T304-APF	12.24	6.6	3.6	2.8	0.4		●	●							★													
	APKT11T308-APF	12.24	6.6	3.6	2.8	0.8		●	●							★					●	●							
	APKT160408-APF	17.877	9.33	5.76	4.4	0.8		●								★					●	●							
	APKT070204-APM	7.32	4.34	2.38	2	0.4			●	●						★													
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4			●							★													
	APKT11T308-APM	12.24	6.6	3.6	2.8	0.8			●	●						★					●	●							
	APKT11T312-APM	12.24	6.6	3.6	2.8	1.2					●					★													
	APKT11T316-APM	12.24	6.6	3.6	2.8	1.6										★													
	APKT11T320-APM	12.24	6.6	3.6	2.8	2.0			●							★													
	APKT160408-APM	17.877	9.33	5.76	4.4	0.8			●	●						★					●	●							
	APKT160416-APM	17.877	9.33	5.76	4.4	1.6			●	●						★					●								
	APKT160420-APM	17.877	9.33	5.76	4.4	2.0					●					★													
	APKT160424-APM	17.877	9.33	5.76	4.4	2.4										★													
	APKT160430-APM	17.877	9.33	5.76	4.4	3.0										★													
	APKT11T304-ALH	12.24	6.6	3.6	2.8	0.4																				★	★		
	APKT11T308-ALH	12.24	6.6	3.6	2.8	0.8																				★	○		
	APKT160408-ALH	17.877	9.33	5.76	4.4	0.8																				★	★		

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Chipbreaker selection

Classification	Application	For finishing	For semi-finishing
P		-APF	-APM
M		-APF	-APM
S		-APF	-APM
K		-APF	-APM
N		-ALH	

Indexable milling tools

Square shoulder milling tools

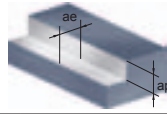


MILLING

Indexable Milling Tools

1 Square shoulder milling

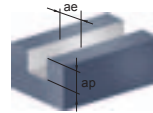
➤ Recommended cutting parameters (D: Diameter)



Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	fz(mm/z)		ae(mm)
					-APF	-APM	
P	Low-carbon steel、Soft steel	≤180	YBC302	320 (240-400)	0.1 (0.08-0.2)	--	≤0.5D
			YB9320	320 (200-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
			YBM253	300 (320-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
	High-carbon steel、Alloy steel	180-280	YBC302	280 (210-380)	0.1 (0.08-0.2)	--	≤0.5D
			YB9320	280 (180-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
			YBM253	260 (150-380)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
	Alloy tool steel	280-350	YBC302	260 (180-350)	0.1 (0.08-0.2)	--	≤0.5D
			YB9320	260 (160-330)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
			YBM253	220 (150-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
M	Stainless steel	≤270	YB9320	200 (110-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D
YBM253			180 (150-300)				
K	Cast iron	180-250	YB9320	180 (150-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D
			YBD152	200 (150-250)	--	0.2 (0.1-0.3)	
S	Difficult-to-machine materials	≤400	YBS203	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D
			YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D
N					-ALH		
	Aluminium alloy	--	YD101	300-	0.2 (0.08-0.4)		≤0.5D
			YD201	300-	0.2 (0.08-0.4)		≤0.5D

2 Slot milling

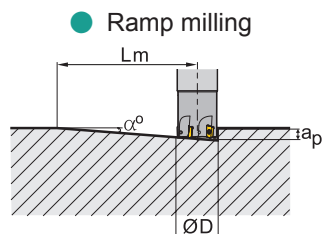
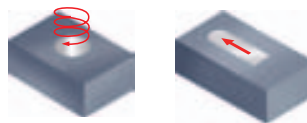
➤ Recommended cutting parameters (D: Diameter)



Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	fz(mm/z)		ae(mm)
					-APF	-APM	
P	Low-carbon steel, Soft steel	≤ 180	YBC302	190 (170-250)	0.1 (0.08-0.15)	--	D
			YB9320	190 (140-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
			YBM253	150 (130-210)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
	High-carbon steel, Alloy steel	180-280	YBC302	170 (150-220)	0.1 (0.08-0.15)	--	D
			YB9320	170 (130-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
			YBM253	140 (110-200)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
	Alloy tool steel	280-350	YBC302	150 (130-210)	0.1 (0.08-0.15)	--	D
			YB9320	150 (110-240)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
			YBM253	130 (110-180)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
M	Stainless steel	≤ 270	YB9320	120 (80-190)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
			YBM253	100 (80-170)			
K	Cast iron	180-250	YB9320	120 (80-180)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
			YBD152	120 (80-210)	--	0.15 (0.1-0.25)	
S	Difficult-to-machine materials	≤ 400	YBS203	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
			YBS303	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
N					-ALH		
	Aluminium alloy	--	YD101	300-	0.2 (0.08-0.3)		D
			YD201	300-	0.2 (0.08-0.3)		D

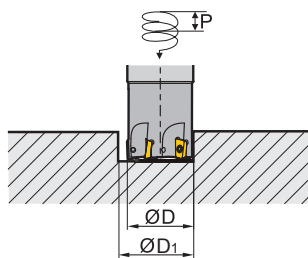
3 Ramp milling, helical interpolation milling

▶▶ Recommended cutting parameters (D: Diameter)



$$L_m = \frac{a_p}{\tan \alpha} \quad (\alpha: \text{Maximum ramp angle})$$

● Helical interpolation milling



$$\tan \alpha = \frac{P}{\pi D_1} \quad (\alpha: \text{Helical angle})$$

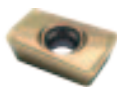
Diameter ØD(mm)	APKT Ramp milling, helical interpolation milling (Inserts-7)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth $a_p(\text{mm})$	Maximum ramp angle α°	Minimum length $L_m(\text{mm})$	Minimum diameter $\text{ØD}_1(\text{mm})$	Maximum pitch (mm)
10	6	6	57	12	2.0
12	6	4	85	15	2.0
14	6	3	114	18	2.0
16	6	2.5	137	21	2.0
Diameter ØD(mm)	APKT Ramp milling, helical interpolation milling (Inserts-11)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth $a_p(\text{mm})$	Maximum ramp angle α°	Minimum length $L_m(\text{mm})$	Minimum diameter $\text{ØD}_1(\text{mm})$	Maximum pitch (mm)
16	10.0	10.0	56.7	20.0	2.0
20	10.0	5.0	114.4	28.0	2.0
25	10.0	4.5	127.0	40.0	2.0
30	10.0	3.5	153.0	48.0	2.0
32	10.0	3.0	190.8	56.0	2.0
40	10.0	2.0	286.4	70.0	2.0
Diameter ØD(mm)	APKT Ramp milling, helical interpolation milling (Inserts-16)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth $a_p(\text{mm})$	Maximum ramp angle α°	Minimum length $L_m(\text{mm})$	Minimum diameter $\text{ØD}_1(\text{mm})$	Maximum pitch (mm)
25	15	6	142	32	2.0
30	15	5	171	40	2.0
32	15	4.5	214	45	2.0
40	15	2.5	343	60	2.0
50	15	1.5	572	80	2.0
63	15	1	859	105	2.0

Note: For cutting speed and feed rate per tooth, see square shoulder milling.

Case for EMP01



Machine: Vertical machining center
 Diameter: Ø40mm
 Operation: Interpolation milling
 Insert: APKT160408-APM/YB9320
 Workpiece material: P20(HRC 33-36)
 Cutting data:
 $V_c = 150 \text{ m/min}$
 $f = 0.2 \text{ mm/z}$



Insert specification/grade: APKT160408-APM/YB9320

Tools specification: EMP01-040-XP32-AP16-04

●Comprehensively improve mould cavity machining efficiency



Optimized structure in combination with brand-new "golden drill" coating technique, ZCC-CT products with APM chipbreaker is more suitable for mold cavity machining, greatly improve machining efficiency when compare with competitors similar products.



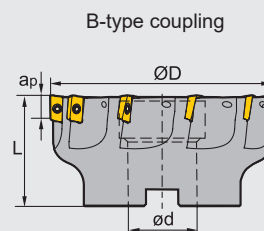
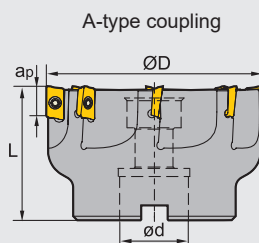
MILLING

Indexable Milling Tools

Square shoulder milling tools **Kr:90°**



EMP02 **P** **M** **K** **S** **N**



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	L	apmax			
EMP02 -050-A22-AP11-06	▲	50	22	40	10.5	6	A	0.3
-063-A22-AP11-08	▲	63	22	40	10.5	8	A	0.6
-080-A27-AP11-08	▲	80	27	50	10.5	8	A	1.2
-100-B32-AP11-10	▲	100	32	50	10.5	10	B	1.7
-050-A22-AP16-05	▲	50	22	40	15.5	5	A	0.3
-063-A22-AP16-06	▲	63	22	40	15.5	6	A	0.5
-080-A27-AP16-07	▲	80	27	50	15.5	7	A	1.1
-100-B32-AP16-08	▲	100	32	50	15.5	8	B	1.6
-125-B40-AP16-10	▲	125	40	63	15.5	10	B	3.2
-160-B40-AP16-10	▲	160	40	63	15.5	10	B	6.3

▲ Stock available △ Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench
Ø50-Ø100	AP11	I60M2.5×6.5T	WT08IS
Ø50-Ø160	AP16	I60M4×10	WT15IS



Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



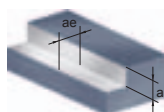
MILLING

Indexable Milling Tools

▶▶ Chipbreaker selection

Classification	Function	For finishing	For semi-finishing
P		-APF	-APM
M		-APF	-APM
S		-APF	-APM
K		-APF	-APM
N		-ALH	

1 Square shoulder milling



▶▶ Recommended cutting parameters (D: Diameter)

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	fz(mm/z)		ae(mm)
					-APF	-APM	
P	Low-carbon steel、Soft steel	≤ 180	YBC302	320 (240-400)	0.1 (0.08-0.2)	--	≤ 0.5D
			YB9320	320 (200-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
			YBM253	300 (320-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
	High-carbon steel、Alloy steel	180-280	YBC302	280 (210-380)	0.1 (0.08-0.2)	--	≤ 0.5D
			YB9320	280 (180-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
			YBM253	260 (150-380)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
	Alloy tool steel	280-350	YBC302	260 (180-350)	0.1 (0.08-0.2)	--	≤ 0.5D
			YB9320	260 (160-330)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
			YBM253	220 (150-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	
M	Stainless steel	≤ 270	YB9320	200 (110-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤ 0.5D
			YBM253	180 (150-300)			
K	Cast iron	180-250	YB9320	180 (150-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤ 0.5D
			YBD152	200 (150-250)	--	0.2 (0.1-0.3)	
S	Difficult-to-machine materials	≤ 400	YBS203	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤ 0.5D
			YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤ 0.5D
N					-ALH		
	Aluminium alloy	--	YD101	300-	0.2 (0.08-0.4)		≤ 0.5D
			YD201	300-	0.2 (0.08-0.4)		≤ 0.5D

Indexable milling tools

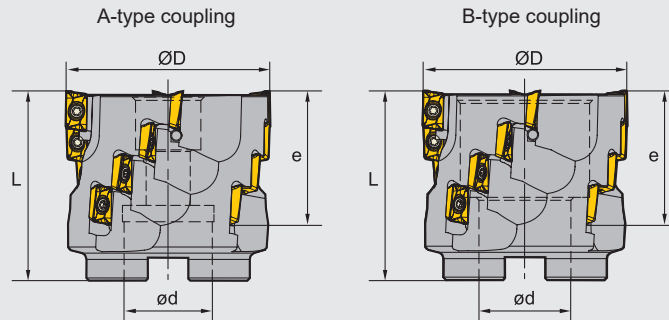
Square shoulder milling tools

Square shoulder milling tools

Kr:90°

**EMP03** P M K S N

Specification of tools



Type	Stock	Basic dimensions(mm)				Number of teeth z	Number of inserts	Type of coupling	Weight (kg)
		$\varnothing D$	$\varnothing d$	L	e				
EMP03 -050-A22-AP11-04	▲	50	22	58	39	4	16	A	0.5
-063-A27-AP11-04	▲	63	27	58	39	4	16	A	0.9
-080-B32-AP11-05	▲	80	32	63	39	5	20	B	1.3
-100-B40-AP11-06	▲	100	40	63	39	6	24	B	2.0

▲ Stock available

△ Make-to-order

Indexable
milling tools

Square shoulder milling tools

Spare parts

Diameter $\varnothing D$	Screw	Wrench	
$\varnothing 50\text{--}\varnothing 100$	I60M2.5×6.5T	WT08IS	

Tools code key
B24–B25Grade selection guide
B19–B23Technical data
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MILLING

Indexable Milling Tools

Square shoulder milling tools

Kr:90°



Step shoulder



Slot milling

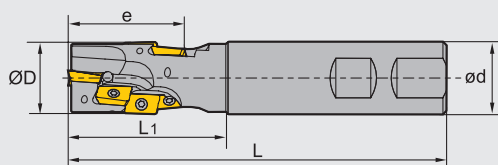


Side milling

EMP04 P M K S N



Weldon shank



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth z	Number of inserts	Weight (kg)
		ØD	ød	L	L1	e			
EMP04 -020-XP20-AP11-01	▲	20	20	120	45	29.4	1	3	0.3
-025-XP25-AP11-02	▲	25	25	130	55	38.9	2	8	0.4
-032-XP32-AP11-02	▲	32	32	140	65	48.5	2	10	0.7
-040-XP40-AP11-02	▲	40	40	150	75	58.0	2	14	1.3

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Screw	Wrench
Ø20-Ø40	I60M2.5×6.5T	WT08IS

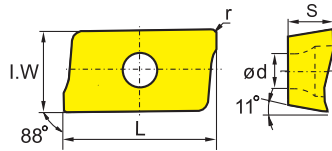


Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
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Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating					Cermet	Cemented carbide										
		L	I.W	S	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205		YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	APKT11T304-APF	12.24	6.6	3.6	2.8	0.4		●		●							★											
	APKT11T308-APF	12.24	6.6	3.6	2.8	0.8		●		●							★					●	●					
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4				●							★											
	APKT11T308-APM	12.24	6.6	3.6	2.8	0.8				●		●					★					●	●					
	APKT11T312-APM	12.24	6.6	3.6	2.8	1.2						●					★											
	APKT11T316-APM	12.24	6.6	3.6	2.8	1.6											★											
	APKT11T320-APM	12.24	6.6	3.6	2.8	2.0				●							★											
	APKT11T304-ALH	12.24	6.6	3.6	2.8	0.4																				★	★	
	APKT11T308-ALH	12.24	6.6	3.6	2.8	0.8																				★	○	

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Square shoulder milling tools

Chipbreaker selection

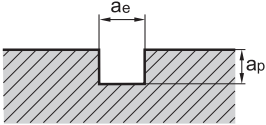
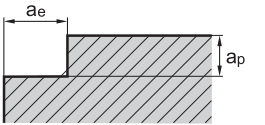
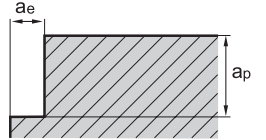
Classification	Application	For finishing	For semi-finishing
P		-APF	-APM
M		-APF	-APM
S		-APF	-APM
K		-APF	-APM
N		-ALH	



MILLING

Indexable Milling Tools

➤ Recommended cutting parameters

Slot milling	Square shoulder milling	Deep square shoulder milling
		
$a_e = D, a_p \leq 0.5D$	$a_e \leq 0.5D, a_p \leq 1.2D$	$a_e \leq 0.2D, a_p < \text{Cutting length of insert}$

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				Square shoulder milling		
				Vc(m/min)	fz(mm/z)	
	-APF	-APM				
P	Low-carbon steel、 Soft steel	≤ 180	YBC302	270 (240-350)	0.1 (0.08-0.2)	--
			YB9320	220 (200-360)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
			YBM253	270 (180-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
	High-carbon steel、 Alloy steel	180-280	YBC302	240 (210-320)	0.1 (0.08-0.2)	--
			YB9320	240 (180-360)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
			YBM253	200 (160-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
	Alloy tool steel	280-350	YBC302	220 (180-300)	0.1 (0.08-0.2)	--
			YB9320	220 (160-340)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
			YBM253	180 (150-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
M	Stainless steel	≤ 270	YB9320	150 (110-270)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
			YBM253	140 (100-250)		
K	Cast iron	180-250	YB9320	150 (100-200)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
			YBD152	180 (120-300)	--	0.2 (0.1-0.3)
S	Difficult-to-machine materials	≤ 400	YBS203	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
			YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)
N					-ALH	
	Aluminium alloy	--	YD101	300-	0.2 (0.08-0.4)	
			YD201	300-	0.2 (0.08-0.4)	

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				Slot milling、Deep square shoulder milling		
				Vc(m/min)	fz(mm/z)	
		-APF	-APM			
P	Low-carbon steel、 Soft steel	≤ 180	YBC302	270 (240-350)	0.1 (0.08-0.15)	--
			YB9320	270 (200-360)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
			YBM253	220 (180-300)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
	High-carbon steel、 Alloy steel	180-280	YBC302	240 (210-320)	0.1 (0.08-0.15)	--
			YB9320	240 (180-360)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
			YBM253	200 (160-280)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
	Alloy tool steel	280-350	YBC302	220 (180-300)	0.1 (0.08-0.15)	--
			YB9320	220 (160-340)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
YBM253			180 (150-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
M	Stainless steel	≤ 270	YB9320	150 (110-270)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
			YBM253	140 (100-250)		
K	Cast iron	180-250	YB9320	150 (100-200)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
			YBD152	180 (120-300)	--	0.15 (0.1-0.25)
S	Difficult-to-machine materials	≤ 400	YBS203	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
			YBS303	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)
N					-ALH	
	Aluminium alloy	--	YD101	300-	0.2 (0.08-0.3)	
			YD201	300-	0.2 (0.08-0.3)	

Indexable
milling tools

Square shoulder milling tools



4 available cutting edges and precise 90° square shoulder.

Double rake angle can effectively reduce cutting force.

High precision of cutting tool can achieve high quality and efficient roughing.

The Tangential assembling can change the cutting force of main direction to be borne by the thickness direction to realize the high rigidity of the cutting tool.

The optimized material of cutter body with high strength and special coating treatment achieves better wear-resistance and longer tool life.

Kr:90°

A New Generation of Tangential Milling Cutter **EMP09** Series

*To meet the diverse processing
needs and achieve efficient
rough machining.*

- High strength of tool nose, sharp cutting and good wear resistance.
- The spiral cutting edge stands for a lighter chipbreaker.
- Excellent universal coating materials, super smooth coating technology, no sticky chip and longer life.
- The vertical design makes the carbide has large volume along the direction of the cutting force, so that the feed per tooth is 30% higher than the flat load insert.





B MILLING

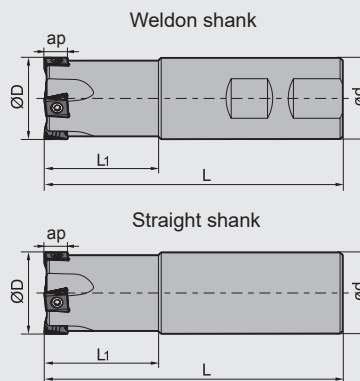
Indexable Milling Tools

Square shoulder milling tools

Kr:90°



EMP09 P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth z	Weight (kg)
			ØD	ød	L	L ₁	apmax		
EMP09 Weldon shank	-020-XP20-LN08-02C	▲	20	20	100	25	8.0	2	0.20
	-020-XP20-LN08-03C	▲	20	32	100	25	8.0	3	0.20
	-025-XP25-LN08-03C	▲	25	25	100	32	8.0	3	0.36
	-025-XP25-LN08-04C	▲	25	25	100	32	8.0	4	0.35
	-032-XP32-LN08-04C	▲	32	32	115	40	8.0	4	0.67
	-032-XP32-LN08-05C	▲	32	32	115	40	8.0	5	0.67
	-040-XP40-LN08-05C	▲	40	40	125	40	8.0	5	1.15
	-040-XP40-LN08-06C	▲	40	40	125	40	8.0	6	1.14
	-040-XP40-LN12-03C	▲	40	40	125	40	11.5	3	1.11
	-040-XP40-LN12-04C	▲	40	40	125	40	11.5	4	1.10
Straight shank	-020-G20-LN08-02C	▲	20	20	100	25	8.0	2	0.2
	-020-G20-LN08-03C	▲	20	20	100	25	8.0	3	0.2
	-025-G25-LN08-03C	▲	25	25	100	32	8.0	3	0.36
	-025-G25-LN08-04C	▲	25	25	100	32	8.0	4	0.35
	-032-G32-LN08-04C	▲	32	32	115	40	8.0	4	0.67
	-032-G32-LN08-05C	▲	32	32	115	40	8.0	5	0.67
	-040-G40-LN12-03C	▲	40	40	125	40	11.5	3	1.11
	-040-G40-LN12-04C	▲	40	40	125	40	11.5	4	1.10

▲ Stock available △ Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench
Ø20~Ø40	LN□T0804□□-GM/GL	I60M3×7	WT09IS
Ø32~Ø40	LN□T1206□□-GM/GL	I60M4×12	WT15IS



Tools code key
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Grade selection guide
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Technical data
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Square shoulder milling tools

Kr:90°



Face milling

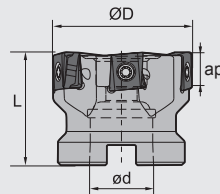


Step shoulder

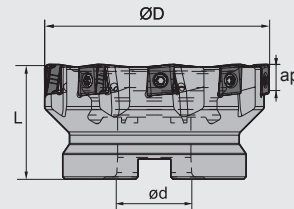
EMP09 P M K S



A-type coupling



B-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth z	Type of coupling	Weight (kg)
		ØD	ød	L	apmax			
EMP09 -040-A16-LN08-05C	▲	40	16	40	8	5	A	0.21
-040-A16-LN08-06C	▲	40	16	40	8	6	A	0.21
-050-A22-LN08-06C	▲	50	22	40	8	6	A	0.35
-050-A22-LN08-07C	▲	50	22	40	8	7	A	0.35
-063-A22-LN08-08C	▲	63	22	40	8	8	A	0.60
-063-A22-LN08-10C	▲	63	22	40	8	10	A	0.60
-080-A27-LN08-10C	▲	80	27	50	8	10	A	1.26
-080-A27-LN08-12C	▲	80	27	50	8	12	A	1.26
-040-A16-LN12-03C	▲	40	16	40	11.5	3	A	0.20
-040-A16-LN12-04C	▲	40	16	40	11.5	4	A	0.19
-050-A22-LN12-05C	▲	50	22	40	11.5	5	A	0.30
-050-A22-LN12-06C	▲	50	22	40	11.5	6	A	0.30
-063-A22-LN12-06C	▲	63	22	40	11.5	6	A	0.54
-063-A22-LN12-08C	▲	63	22	40	11.5	8	A	0.54
-080-A27-LN12-07C	▲	80	27	50	11.5	7	A	1.18
-080-A27-LN12-10C	▲	80	27	50	11.5	10	A	1.18
-100-B32-LN12-09C	▲	100	32	50	11.5	9	B	1.64
-100-B32-LN12-13C	▲	100	32	50	11.5	13	B	1.64
-125-B40-LN12-11C	▲	125	40	63	11.5	11	B	2.74
-125-B40-LN12-16C	▲	125	40	63	11.5	16	B	2.74

▲ Stock available

△ Make-to-order

Indexable
milling tools

Square shoulder milling tools

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B MILLING

Indexable Milling Tools

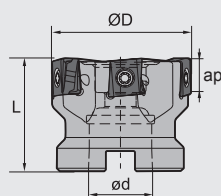
Square shoulder milling tools Kr:90°



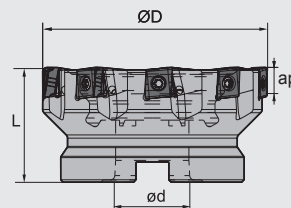
EMP09 P M K S



A-type coupling



B-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth z	Type of coupling	Weight (kg)
		ØD	ød	L	apmax			
EMP09 -050-A22-LN16-04C	▲	50	22	40	15	4	A	0.31
-050-A22-LN16-05C	▲	50	22	40	15	5	A	0.31
-063-A22-LN16-05C	▲	63	22	40	15	5	A	0.56
-063-A22-LN16-06C	▲	63	22	40	15	6	A	0.56
-080-A27-LN16-06C	▲	80	27	50	15	6	A	1.20
-080-A27-LN16-07C	▲	80	27	50	15	7	A	1.20
-100-B32-LN16-08C	▲	100	32	50	15	8	B	1.62
-100-B32-LN16-10C	▲	100	32	50	15	10	B	1.62
-125-B40-LN16-10C	▲	125	40	63	15	10	B	3.27
-125-B40-LN16-13C	▲	125	40	63	15	13	B	3.27
-160-B40-LN16-12C	▲	160	40	63	15	12	B	6.37
-160-B40-LN16-16C	▲	160	40	63	15	16	B	6.37

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø40~Ø80	LN□T0804□□-GM/GL	I60M3×7	WT09IS	
Ø40~Ø125	LN□T1206□□-GM/GL	I60M4×12	WT15IS	
Ø50~Ø160	LN□T1607□□-GM/GL	I60M5×13	WT20IS	

Tools code key
B24-B25

Grade selection guide
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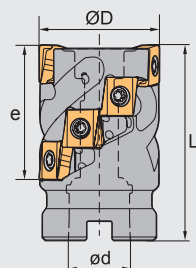
Technical data
B234-B240

Square shoulder milling tools

Kr:90°



EMP09 P M K S



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Number of inserts	Weight (kg)
		ØD	ød	L	e			
EMP09 -032×38-A16-LN08-03C	▲	32	16	55	38	3	15	0.15
-040×38-A16-LN08-04C	▲	40	16	55	38	4	20	0.3
-040×45-A16-LN08-04C	▲	40	16	65	45	4	24	0.4
-050×38-A22-LN08-05C	▲	50	22	55	38	5	25	0.5
-050×45-A22-LN08-05C	▲	50	22	65	45	5	30	0.6
-040×33-A16-LN12-02C	▲	40	16	55	33	2	6	0.3
-040×43-A16-LN12-02C	▲	40	16	65	43	2	8	0.34
-050×33-A16-LN12-03C	▲	50	16	55	33	3	9	0.5
-050×43-A22-LN12-03C	▲	50	22	70	43	3	12	0.62
-063×43-A27-LN12-04C	▲	63	27	70	43	4	16	1.03
-063×53-A27-LN12-04C	▲	63	27	80	53	4	20	1.2
-080×43-A27-LN12-05C	▲	80	27	70	43	5	20	1.91
-080×53-A27-LN12-05C	▲	80	27	80	53	5	25	2.1
-100×63-A27-LN12-06C	▲	100	27	90	63	6	36	3.3

▲ Stock available

△ Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø32×38-Ø50×45	LN□T0804□□-GM/GL	I60M3×7	WT09IP	
Ø40×33-Ø63×53	LN□T1206□□-GM/GL	I60M4×12	WT15IP	
Ø80×43-Ø100×63			WT15IS	

Tools code key
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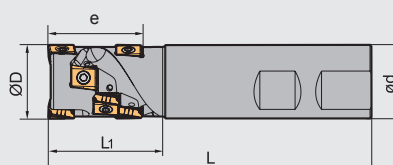
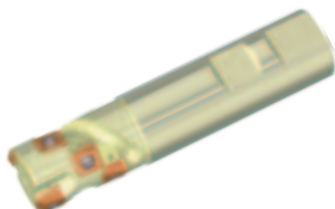


Square shoulder milling tools

Kr:90°



EMP09 P M K S



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Number of inserts	Weight (kg)
		ØD	ød	L	L1	e			
EMP09 -025×30-XP25-LN08-02C	▲	25	25	100	40	30	2	8	0.31
-032×38-XP32-LN08-03C	▲	32	32	115	45	38	3	15	0.62
-040×45-XP32-LN08-04C	▲	40	32	120	55	45	4	24	0.7
-040×33-XP32-LN12-02C	▲	40	32	115	45	33	2	6	0.7
-040×43-XP32-LN12-02C	▲	40	32	125	55	43	2	8	0.7
-050×43-XP40-LN12-03C	▲	50	40	135	55	43	3	12	1.4
-050×53-XP40-LN12-03C	▲	50	40	145	65	53	3	15	1.5

▲ Stock available

△ Make-to-order

Indexable
milling tools

Square shoulder milling tools

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø25×30-Ø32×38	LN□T0804□□-GM/GL	I60M3×7	WT09IS	
Ø40×33-Ø50×53	LN□T1206□□-GM/GL	I60M4×12	WT15IP	

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Square shoulder milling tools

Kr:90°



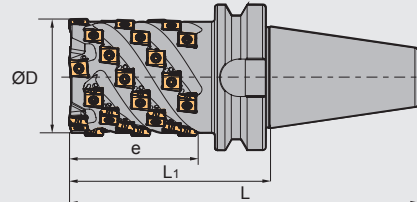
Step shoulder



Slot milling



Side milling

EMP09 P M K S

Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Shank type	Number of inserts	Weight (kg)
		ØD	e	L1	L				
EMP09 -050×63-BT50-LN12-03C	△	50	63	124	225.8	3	BT	18	4.34
-050×85-BT50-LN12-03C	△	50	85	146	246.8	3	BT	24	4.57
-050×103-BT50-LN12-03C	△	50	103	164	265.8	3	BT	30	4.89
-063×85-BT50-LN12-04C	△	63	85	146	246.8	4	BT	32	5.35
-063×115-BT50-LN12-04C	△	63	115	176	277.8	4	BT	44	6.07
-080×125-BT50-LN12-05C	△	80	125	186	287.8	5	BT	60	8.25

▲Stock available

△Make-to-order

Indexable
milling tools

Square shoulder milling tools

Spare parts

Diameter ØD	Inserts	Screw	Wrench
Ø50×63-Ø63×115	LN□T1206□□-GM/GL	I60M4×12	WT15IP
Ø80×125			WT15IS

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240



Square shoulder milling tools

Kr:90°



Step shoulder

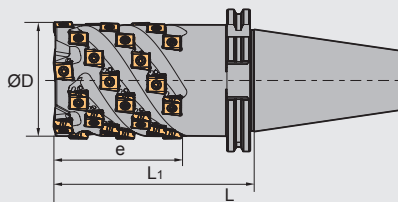


Slot milling



Side milling

EMP09 **P** **M** **K** **S**



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Shank type	Number of inserts	Weight (kg)
		ØD	e	L1	L				
EMP09 -050×103-JT50-LN12-03C	△	50	103	164	265.75	3	JT	30	5.11
-063×85-JT50-LN12-04C	△	63	85	146	246.75	4	JT	32	4.34
-063×115-JT50-LN12-04C	△	63	115	176	277.75	4	JT	44	5.46
-080×125-JT50-LN12-05C	△	80	125	186	287.75	5	JT	60	7.82

▲ Stock available

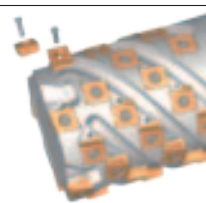
△ Make-to-order

Indexable
milling tools

Square shoulder milling tools

Spare parts

Diameter ØD	Inserts	Screw	Wrench
			
Ø50×63-Ø63×115	LN□T1206□□-GM/GL	I60M4×12	WT15IP
Ø80×125			WT15IS



Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

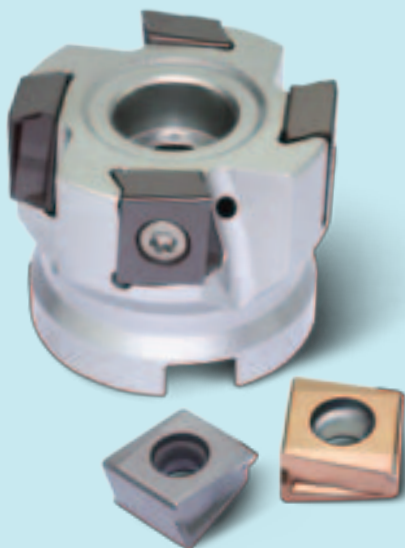
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible][illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel、 Soft steel	≤ 180	YBM253	260 (160-300)	0.3 (0.1-0.35)
			YB9320	260 (160-300)	0.3 (0.1-0.35)
	High-carbon steel、 Alloy steel	180-280	YBM253	240 (160-240)	0.25 (0.1-0.35)
			YB9320	240 (160-240)	0.25 (0.1-0.35)
	Alloy tool steel	280-350	YBM253	200 (120-240)	0.2 (0.1-0.35)
			YB9320	200 (120-240)	0.2 (0.1-0.35)
M	Stainless stee	≤ 270	YBM253	180 (100-230)	0.15 (0.1-0.3)
			YB9320	160 (100-230)	0.15 (0.1-0.3)
K	Cast iron	180-250	YBD152 YBD252	220 (140-250)	0.2 (0.1-0.3)
				220 (140-250)	0.2 (0.1-0.3)
				220 (140-250)	0.2 (0.1-0.3)
S	Difficult-to-machine materials	≤ 400	YBS303	100 (60-120)	0.15 (0.1-0.25)

Case for EMP09

Indexable
milling tools

Square shoulder milling tools

● Ultra-long working life

The material of workpiece: 45[#]

Hardness: 175-190 (HB)

Machine tool: Planer-type milling machine

Type of cooling: No cooling

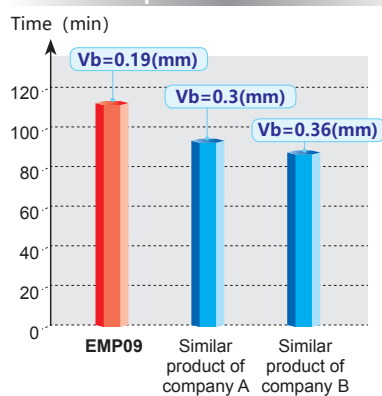
The machining type: Shoulder milling

Toolholder: EMP09-050-A22-LN12-05C

Insert: LNKT120608PNR-GM/YB9320

Cutting parameter: $V_c=260\text{m/min}$, $A_p=8\text{mm}$, $A_e=2\text{mm}$, $f_z=0.2\text{mm/z}$

Comparison of tool life



Result: The processing life of LNKT12 (YB9320) is approximately 1.3 times of the similar product of company A and 1.4 times of the similar product of company B, with excellent wear resistance and longer tool life.

● Better surface quality

The material of workpiece: NAK80

Hardness: HRC(33-37)

Machine tool: Planer-type milling machine

Type of cooling: No cooling

The machining type: Shoulder milling

Toolholder: EMP09-050-A22-LN12-05C

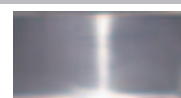
Insert: LNKT120608PNR-GM (YB9320)

Similar product of company A

Cutting parameter: $V_c=240\text{m/min}$, $A_p=8\text{mm}$

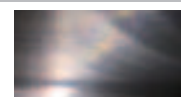
$A_e=2\text{mm}$, $f_z=0.2\text{mm/z}$

EMP09



No obvious gear mark

Similar product of company A



Slight step

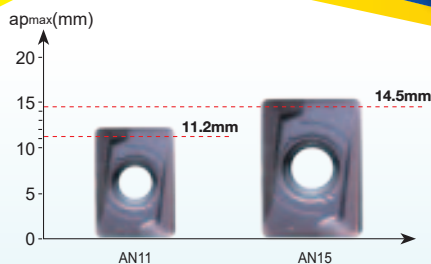
Result: EMP09 series of tangential milling cutter has higher precision and better surface quality, no obvious gear mark, and runout value, which is better than the similar product of company A.

Kr:90°

**Achieving high
quality 90° square
shoulder milling**

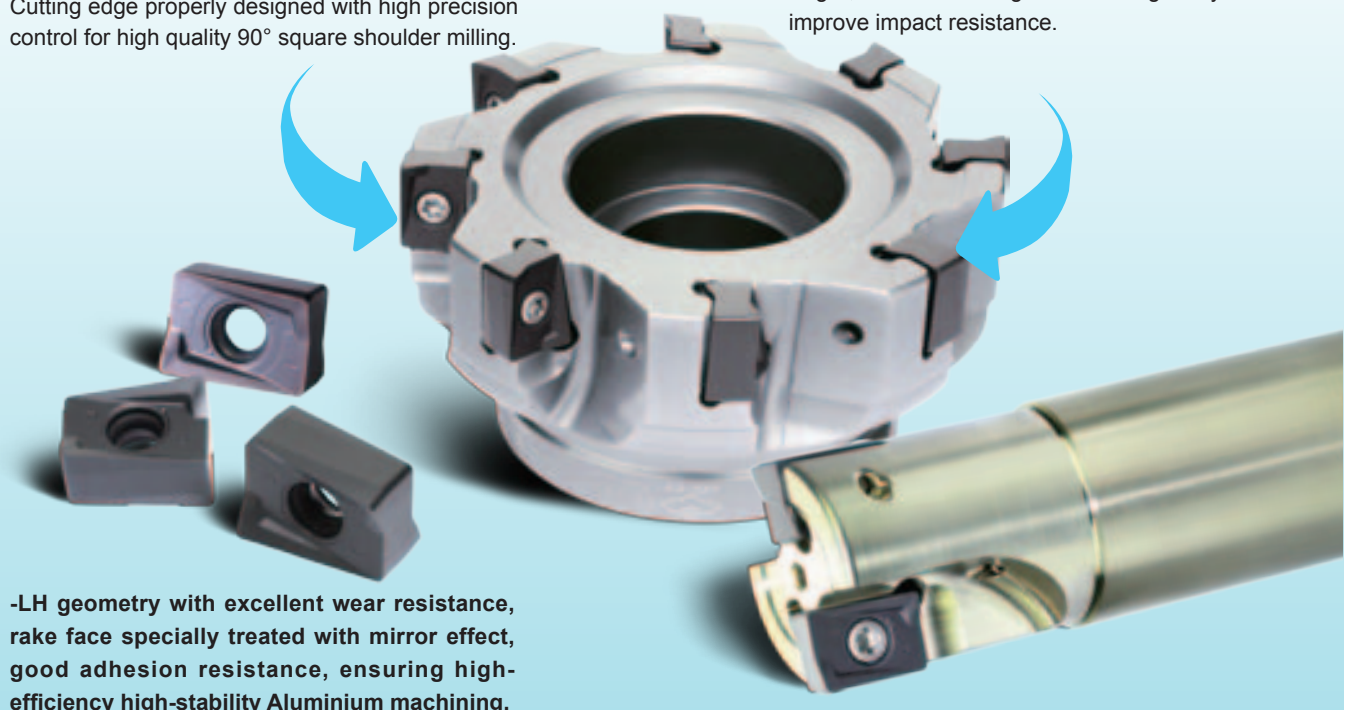
EMP13

**Series Square
Shoulder Milling Tools**



Cutting edge properly designed with high precision control for high quality 90° square shoulder milling.

Extra thick insert with double negative cutting angle, reduce cutting force and greatly improve impact resistance.



-LH geometry with excellent wear resistance, rake face specially treated with mirror effect, good adhesion resistance, ensuring high-efficiency high-stability Aluminium machining.



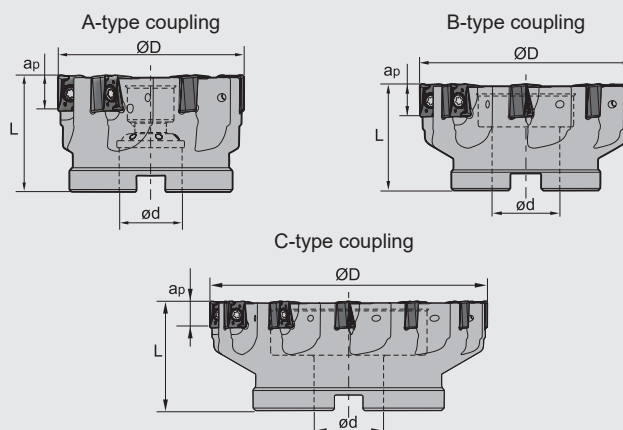
B MILLING

Indexable Milling Tools

Square shoulder milling tools Kr:90°



EMP13 P M K N S



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	L	apmax			
EMP13 -050-A22-AN11-06C	▲	50	22	40	11.2	6	A	0.30
-063-A22-AN11-07C	▲	63	22	40	11.2	7	A	0.49
-080-A27-AN11-09C	▲	80	27	50	11.2	9	A	1.18
-100-B32-AN11-12	▲	100	32	50	11.2	12	B	1.46
-125-B40-AN11-14	▲	125	40	63	11.2	14	B	2.92
-160-C40-AN11-16	▲	160	40	63	11.2	16	C	4.30
-050-A22-AN15-04C	▲	50	22	40	14.5	4	A	0.26
-063-A22-AN15-05C	▲	63	22	40	14.5	5	A	0.53
-080-A27-AN15-06C	▲	80	27	50	14.5	6	A	1.23
-100-B32-AN15-08	▲	100	32	50	14.5	8	B	1.52
-125-B40-AN15-10	▲	125	40	63	14.5	10	B	3.05
-160-C40-AN15-12	▲	160	40	63	14.5	12	C	4.46

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø50-Ø160	AN□X11□□□□-GM/LH	I60M3X9	WT09IS	
Ø50-Ø160	AN□X15□□□□-GM/LH	I60M4X12	WT15IS	

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Square shoulder milling tools

Kr:90°



Face milling

Step shoulder

Slot milling

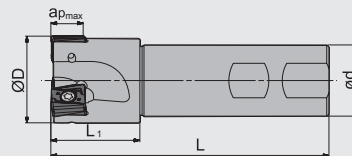
EMP13 P M K N S

Straight shank

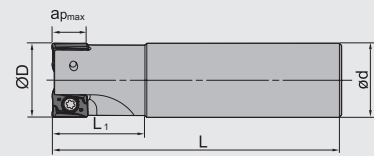


Weldon shank

Weldon shank



Straight shank



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of flute Z	Weight (kg)
			ØD	ød	L	L ₁	apmax		
EMP13 Weldon shank	-025-XP25-AN11-02C	▲	25	25	100	32	11.2	2	0.31
	-032-XP32-AN11-03C	▲	32	32	115	40	11.2	3	0.61
	-040-XP32-AN11-04C	▲	40	32	125	40	11.2	4	0.75
	-032-XP32-AN15-02C	▲	32	32	125	40	14.5	2	0.66
	-040-XP32-AN15-03C	▲	40	32	125	40	14.5	3	0.76
Straight shank	-025-G25-AN11-02C	▲	25	25	100	32	11.2	2	0.31
	-032-G32-AN11-03C	▲	32	32	115	40	11.2	3	0.61
	-040-G32-AN11-04C	▲	40	32	125	40	11.2	4	0.75
	-032-G32-AN15-02C	▲	32	32	125	40	14.5	2	0.66
	-040-G32-AN15-03C	▲	40	32	125	40	14.5	3	0.76

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø25-Ø40	AN□X11□□□□-GM/LH	I60M3X9	WT09IS	
Ø32-Ø40	AN□X15□□□□-GM/LH	I60M4X12	WT15IS	

Tools code key
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milling tools

Square shoulder milling tools



B MILLING

Indexable Milling Tools

Square shoulder milling tools

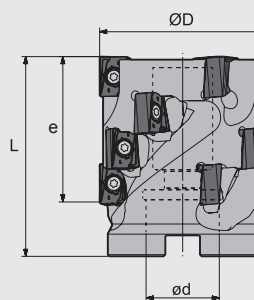
Kr:90°



EMP13 P M K N S



A-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Number of inserts	Type of coupling	Weight (kg)
		ØD	ød	L	e				
EMP13 -050×43-A22-AN11-03	▲	50	22	60	43	3	12	A	0.52
-063×65-A27-AN11-04	▲	63	27	80	64	4	24	A	1.15
-063×53-A27-AN15-03	▲	63	27	75	53	3	12	A	1.14
-080×56-A32-AN15-04	▲	80	32	75	53	4	16	A	1.82

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø50-Ø63	AN□X11□□□□-GM/LH	I60M3×9	WT09IS	
Ø63-Ø80	AN□X15□□□□-GM/LH	I60M4×12	WT15IS	

Tools code key
B24-B25

Grade selection guide
B19-B23

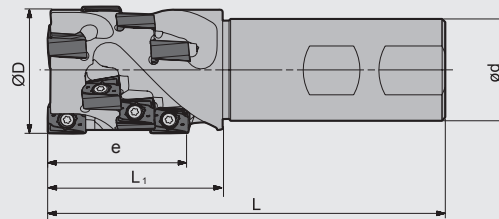
Technical data
B234-B240

Square shoulder milling tools

Kr:90°

**EMP13** P M K N S

Weldon shank



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Number of inserts	Weight (kg)
		ØD	ød	L	L ₁	e			
EMP13 -032×43-XP32-AN11-02	▲	32	32	115	48	43	2	8	0.61
-040×43-XP32-AN11-03	▲	40	32	125	55	43	3	12	0.79
-040×40-XP32-AN15-02	▲	40	32	115	55	40	2	6	0.79
-050×53-XP40-AN15-02	▲	50	40	145	70	53	2	8	1.53

▲Stock available

△Make-to-order

Indexable
milling tools

Square shoulder milling tools

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø32-Ø40	AN□X11□□□□-GM/LH	I60M3X9	WT09IS	
Ø40-Ø50	AN□X15□□□□-GM/LH	I60M4X12	WT15IS	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

		Steel working condition						Stainless steel working condition						Cast iron working condition						Non-ferrous metal working condition						Heat resistant alloy, Ti alloy working condition					
Workpieces material	P Steel	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️				
	M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊				
	K Cast iron							☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️				
	N Non-ferrous metal																									😊	😊				
	S Heat resistant alloy, Ti alloy							☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️	☹️				

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				Vc(m/min)	fz(mm/z)	apmax(mm)
P	Low carbon steel	≤ 180	YBM253 YBG205 YB9320	270(220-350)	0.25(0.1-0.4)	11.2(AN11) 14.5(AN15)
	Alloy steel	180-350	YBM253 YBG205 YB9320	240(180-320)	0.2(0.1-0.4)	
M	Stainless steel	≤ 270	YB9320 YBM253	200(110-300) 180(150-300)	0.2(0.1-0.3)	
K	Cast iron	180-260	YBD152 YBD252	270(150-300) 220(120-320)	0.25(0.1-0.4) 0.2(0.1-0.3)	
N	Aluminium alloy	--	YD101	-LH		
				300-	0.2(0.08-0.4)	
S	Difficult-to-machine materials	≤ 400	YBS303	100(60-120)	0.15(0.1-0.25)	

●Surface quality comparison

EMP13



Company A

Surface quality and perpendicularity of workpiece machined by EMP13 is obviously superior to that of company A.



MILLING

Indexable Milling Tools

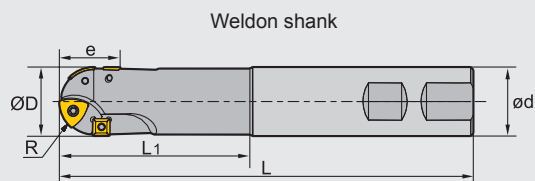
Indexable
milling tools

Profile milling tools

Profile milling tools



BMR01 P M K



Specification of tools

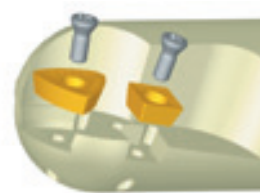
Type	Stock	Basic dimensions(mm)						Applicable inserts				Weight (kg)
		R	ØD	e	ød	L	L1	Type	Quantity	Type	Quantity	
BMR01 -020-XP20-S	▲	10	20	20	20	125	50	ZDET08T2CYR10	2	SPMT060304	2	0.3
-020-XP20-M	▲	10	20	20	20	150	75	ZDET08T2CYR10	2	SPMT060304	2	0.3
-020-XP20-L	▲	10	20	20	20	200	100	ZDET08T2CYR10	2	SPMT060304	2	0.4
-025-XP25-S	▲	12.5	25	23	25	150	70	ZDET1103CYR12.5	2	SPMT060304	2	0.5
-025-XP25-M	▲	12.5	25	23	25	175	95	ZDET1103CYR12.5	2	SPMT060304	2	0.6
-025-XP25-L	▲	12.5	25	23	25	200	100	ZDET1103CYR12.5	2	SPMT060304	2	0.7
-032-XP32-S	▲	16	32	31	32	175	85	ZDET13T3CYR16	2	SDMT090308	2	0.9
-032-XP32-M	▲	16	32	31	32	200	100	ZDET13T3CYR16	2	SDMT090308	2	1.1
-032-XP32-L	▲	16	32	31	32	250	150	ZDET13T3CYR16	2	SDMT090308	2	1.4
-040-XP40-S	▲	20	40	41	40	175	85	ZPNT2204CY(R20)	3	SPMT120408	2	1.4
-040-XP40-M	▲	20	40	41	40	200	100	ZPNT2204CY(R20)	3	SPMT120408	2	1.7
-040-XP40-L	▲	20	40	41	40	250	150	ZPNT2204CY(R20)	3	SPMT120408	2	2.1
-050-XP40-S	▲	25	50	45	40	200	100	ZPNT2204CY(R25)	3	SPMT120408	2	1.8
-050-XP40-M	▲	25	50	45	40	300	100	ZPNT2204CY(R25)	3	SPMT120408	2	2.8
-063-XP40-S	▲	31.5	63	52	40	200	100	ZPNT2204CY(R31)	4	SPMT120408	2	3.0
-063-XP40-M	▲	31.5	63	52	40	300	100	ZPNT2204CY(R31)	4	SPMT120408	2	3.5

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Screw	Wrench	
			
Ø20-Ø25	I43M2.5×5.7	WT07IP	--
Ø32	I43M4×8	--	WT15IS
Ø40-Ø63	I43M5×11	--	WT20IS

Tools code key
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milling tools

Profile milling tools

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Profile milling tools



Profile



Side milling(R)



Slot milling

BMR02 P M K

➤ Specification of tools

Type	Stock	Basic dimensions(mm)					Weight (kg)
		R	ØD	ød	L	L ₁	
BMR02 -012-G16-S	▲	6	12	16	110	40	0.1
-012-G16-M	▲	6	12	16	130	50	0.2
-012-G16-L	▲	6	12	16	160	50	0.2
-016-G20-S	▲	8	16	20	140	45	0.3
-016-G20-M	▲	8	16	20	170	65	0.3
-016-G20-L	▲	8	16	20	200	65	0.4
-020-G25-S	▲	10	20	25	160	60	0.5
-020-G25-M	▲	10	20	25	200	80	0.6
-020-G25-L	▲	10	20	25	240	80	0.8

▲Stock available

△Make-to-order

Indexable
milling tools

Profile milling tools

➤ Spare parts

Diameter ØD	Screw	Wrench	
Ø12	I70M4×10TT	WT15IS	
Ø16	I70M5×12TT	WT20IS	
Ø20	I70M5×16TT	WT20IS	

Tools code key
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😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Insert shape	Type	Basic dimensions(mm)				CVD Coating				PVD Coating				Cermet		Cemented carbide											
		ØI.C	L	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	ROHX1203	12	8.5	3	4														○								
	ROHX1604	16	11.3	4	5														○								
	ROHX2005	20	14.1	5	5															○							

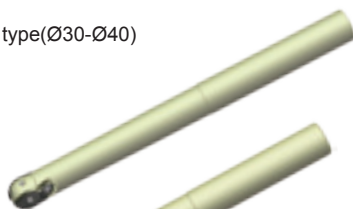
Profile milling tools

Workpiece material		Hardness HB	Insert grade	Cutting parameters	Diameter		
					Ø12	Ø16	Ø20
P	Carbon steel	HB≤180	YBG252	Vc(m/min)	100~200	100~200	100~200
				fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
				apmax(mm)	0.8	1.0	1.25
				aemax(mm)	0.8	1.0	1.25
	Alloy steel	HB180~280		Vc(m/min)	80~180	80~180	80~180
				fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
				apmax(mm)	0.8	1.0	1.25
				aemax(mm)	0.8	1.0	1.25
	Hardened steel	HRC55~65		Vc(m/min)	60~100	60~100	60~100
				fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
				apmax(mm)	0.4	0.5	0.6
				aemax(mm)	0.4	0.5	0.6
M	Stainless steel	HB≤270	Vc(m/min)	70~150	70~150	70~150	
			fz(mm/z)	0.1~0.2	0.1~0.25	0.1~0.25	
			apmax(mm)	0.6	0.8	1.0	
			aemax(mm)	0.6	0.8	1.0	
K	Cast iron	HB180-250	Vc(m/min)	160~300	160~300	160~300	
			fz(mm/z)	0.2~0.3	0.25~0.35	0.25~0.35	
			apmax(mm)	1.0	1.5	1.8	
			aemax(mm)	1.0	1.5	1.8	

Profile milling tools

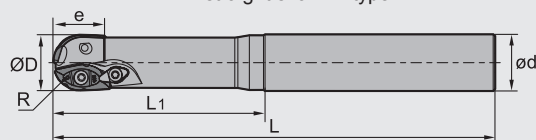
**BMR03** P M K

A type(Ø30-Ø40)

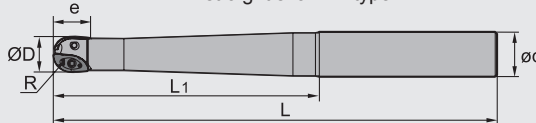


B type(Ø16-Ø25)

straight shank A type



straight shank B type



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Type	Clamp
		R	ØD	ød	L	L1	e				
BMR03 -016-G20-S	▲	8	16	20	150	70	16	2	0.3	B	—
-016-G20-M	▲	8	16	20	180	80	16	2	0.4	B	
-020-G25-S	▲	10	20	25	180	80	20	2	0.5	B	
-020-G25-M	▲	10	20	25	200	100	20	2	0.6	B	
-020-G25-L	▲	10	20	25	250	150	20	2	0.7	B	
-020-G25-XL	▲	10	20	25	300	110	20	2	1.0	B	
-025-G25-S	▲	12.5	25	25	180	80	25	2	0.6	B	
-025-G25-M	▲	12.5	25	25	200	100	25	2	0.7	B	
-025-G25-L	▲	12.5	25	25	250	110	25	2	0.8	B	
-025-G25-XL	▲	12.5	25	25	300	120	25	2	1.0	B	
-030-G32-S	△	15	30	32	200	120	30	2	1.0	A	WD-208
-030-G32-M	▲	15	30	32	250	150	30	2	1.3	A	
-030-G32-L	▲	15	30	32	300	200	30	2	1.6	A	
-030-G32-XL	△	15	30	32	350	200	30	2	1.9	A	
-032-G32-S	▲	16	32	32	200	120	32	2	1.1	A	
-032-G32-M	▲	16	32	32	250	150	32	2	1.4	A	
-032-G32-L	▲	16	32	32	300	200	32	2	1.6	A	
-032-G32-XL	△	16	32	32	350	200	32	2	2.0	A	CBH5R1
-040-G40-S	△	20	40	40	200	120	40	2	1.6	A	
-040-G40-M	▲	20	40	40	250	150	40	2	2.0	A	
-040-G40-L	▲	20	40	40	300	200	40	2	2.5	A	
-040-G40-XL	△	20	40	40	350	200	40	2	3.0	A	

▲Stock available

△Make-to-order

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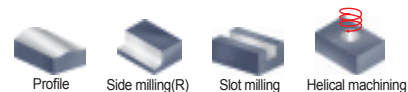
Profile milling tools



MILLING

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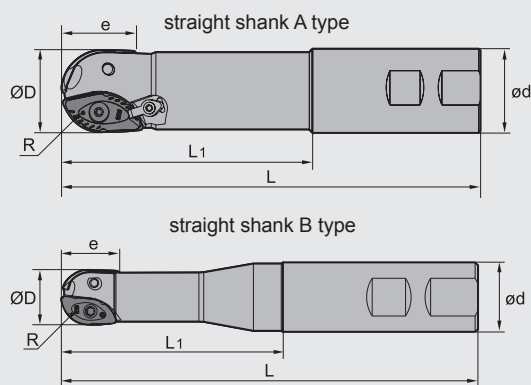


BMR03 P M K

A type(Ø30-Ø50)



B type(Ø16-Ø25)



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Type	Clamp
		R	ØD	ød	L	L1	e				
BMR03 -016-XP20-M	▲	8	16	20	111	60	16	2	0.2	B	--
-020-XP25-M	▲	10	20	25	127	70	20	2	0.3	B	
-020-XP25-L	▲	10	20	25	150	80	20	2	0.4	B	
-025-XP25-M	▲	12.5	25	25	137	80	25	2	0.4	B	
-025-XP25-L	▲	12.5	25	25	200	100	25	2	0.6	B	
-030-XP32-M	▲	15	30	32	161	100	30	2	0.8	A	WD-208
-030-XP32-L	▲	15	30	32	250	150	30	2	1.3	A	
-032-XP32-M	▲	16	32	32	161	100	32	2	0.8	A	
-032-XP32-L	▲	16	32	32	250	120	32	2	1.3	A	
-040-XP40-M	▲	20	40	40	175	100	40	2	1.3	A	CBH5R1
-040-XP40-L	▲	20	40	40	250	120	40	2	2.0	A	
-050-XP50-M	▲	25	50	50	200	100	50	2	2.5	A	
-050-XP50-L	▲	25	50	50	250	150	50	2	3.1	A	

▲ Stock available

△ Make-to-order

Tools code key
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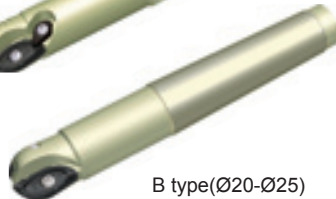
Profile milling tools

**BMR03** **P** **M** **K**

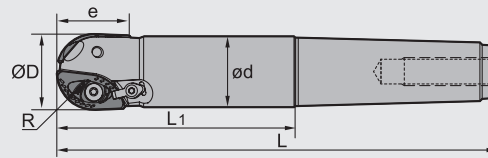
A type(Ø30-Ø50)



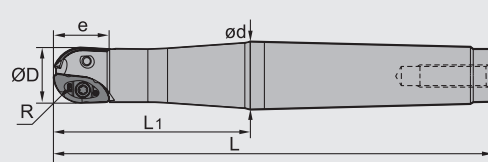
B type(Ø20-Ø25)



Morse taper shank A type



Morse taper shank B type



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Type	Clamp
		R	ØD	ød	L	L1	e				
BMR03 -020-MT3-M	▲	10	20	18.7	156	70	20	2	0.4	B	--
-020-MT3-L	△	10	20	18.7	186	100	20	2	0.4	B	
-025-MT3-M	▲	12.5	25	23.5	156	70	25	2	0.4	B	
-025-MT3-L	△	12.5	25	23.5	186	100	25	2	0.4	B	
-030-MT4-M	▲	15	30	28.2	189	70	30	2	0.8	A	WD-208
-030-MT4-L	△	15	30	28.2	229	120	30	2	1.0	A	
-032-MT4-M	▲	16	32	29.2	179	70	32	2	0.9	A	
-032-MT4-L	△	16	32	29.2	209	100	32	2	0.9	A	
-040-MT4-M	▲	20	40	36.9	199	100	40	2	1.0	A	CBH5R1
-040-MT5-L	▲	20	40	36.9	226	90	40	2	1.8	A	
-040-MT5-XL	▲	20	40	36.9	256	120	40	2	2.0	A	
-050-MT5-M	▲	25	50	46.8	236	100	50	2	2.2	A	
-050-MT5-L	▲	25	50	46.8	286	150	50	2	2.9	A	

▲ Stock available

△ Make-to-order

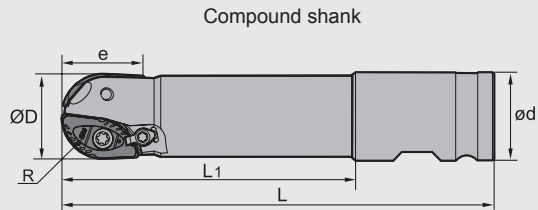
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BMR03 P M K



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Clamp
		R	ØD	ød	L	L1	e			
BMR03 -040-XPX-M	▲	20	40	50.8	250	170	40	2	1.3	CBH5R1
-040-XPX-L	▲	20	40	50.8	300	220	40	2	3.1	
-040-XPX-XL	▲	20	40	50.8	350	270	40	2	3.5	
-050-XPX-M	▲	25	50	50.8	250	170	50	2	3.1	
-050-XPX-L	▲	25	50	50.8	300	200	50	2	3.8	
-050-XPX-XL	▲	25	50	50.8	350	270	50	2	4.4	

▲Stock available △Make-to-order

Spare parts

Diameter ØD	Clamp	Screw	Wrench		
					
Ø16	--	I60M2.5×6.5	--	WT07P	
Ø20	--	I60M3.5×08TT		WT10IP	
Ø25	--	I60M4×10		WT15S	
Ø30	WD-208	I60M5×13	WT20IT	--	
Ø32	WD-208	I60M5×13			
Ø40	CBH5R1	I43M6×16	WT25IT		
Ø50	CBH5R1	I43M8×21	WT25IT		
		I43M6×16	WT30IT		

Tools code key

B24–B25

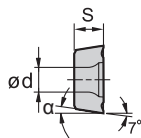
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A diagram of a quarter-elliptical cross-section. It features a central circular hole with a crosshair. The overall shape is a quarter-ellipse with a radius R and a length L . The cross-section is shaded gray.



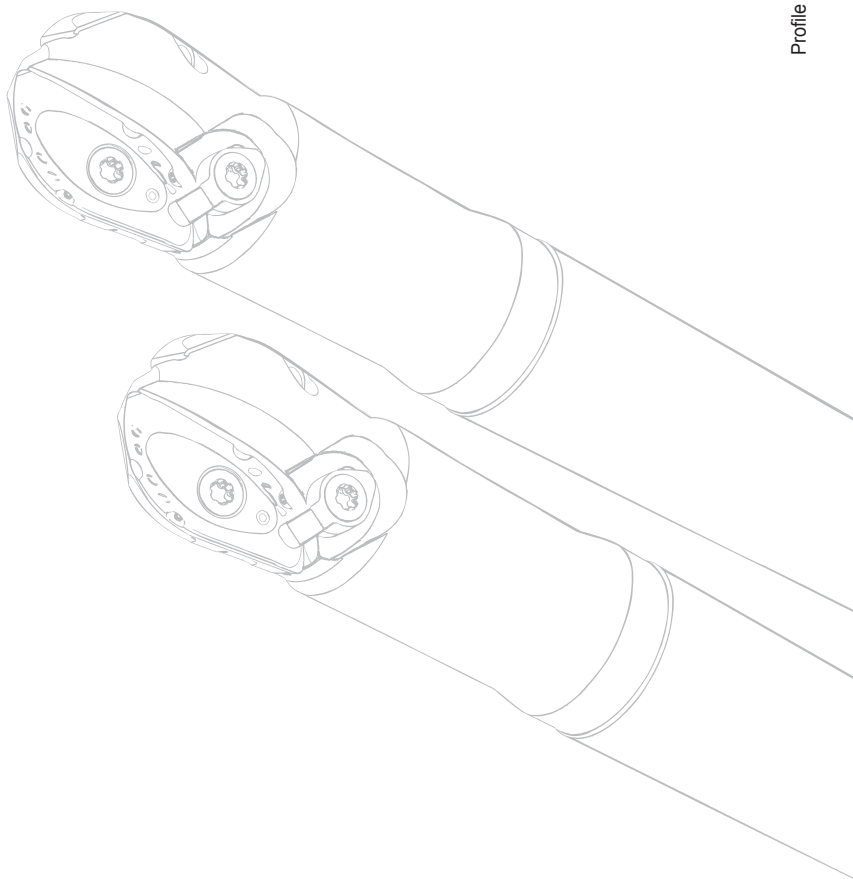
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
Workpiece material					

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

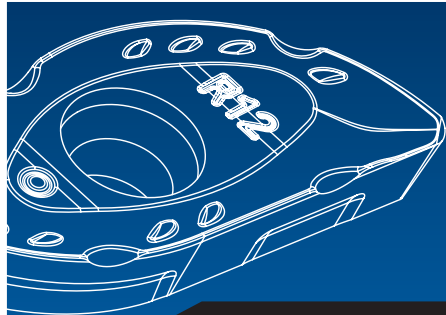
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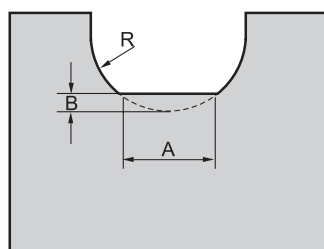
BMR03

series ball nose end milling tools

- The unique chipbreaker and big rake angle can effectively control the curling and flowing direction of chips and reduce the cutting force, improving workpiece surface quality and tool life.
- After precise grinding of periphery and locating surface, the insert can sufficiently ensure the shape accuracy of cutting edge and the precision of installation and location, improving installation security and workpiece precision after machining.
- The concave structure of the flank can effectively enhance the strength of cutting edge and prevent scraping between the clearance face and workpiece surface. Therefore, it improves the workpiece surface quality and prolongs the life of insert.
- The designs of cutting edge over center and a large negative rake angle make it possible to cut vertically, thus anti-breakage capability is enhanced.
- The rough ball nose milling cutters with large diameter adopt the top and hole clamping style, so insert clamping becomes more firm and stable. The machining is also highly efficient even under poor conditions such as long overhang and large vibration, etc.
- The adapter types include straight shank, Weldon shank, Morse taper shank and combination shank.



Slot shape after machining



R	A	B
08	1.7	0.09
10	2.2	0.12
12.5	3.0	0.18
15	3.9	0.20
16	3.5	0.22
20	3.6	0.24
25	3.8	0.26

Cautions:

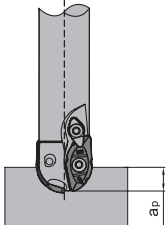
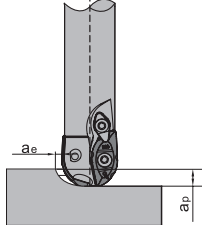
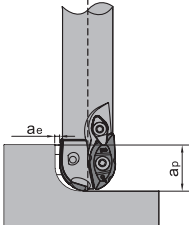
The insert edge should correspond to the locating face of insert pocket in the tool. Don't install the wrong side up.

Before screwing down the insert, confirm the good connection between insert and insert pocket.

Select and adjust the cutting parameters according to machine power and machining conditions.

If vibration occurs in the machining process, cutting speed should be reduced properly.

► Recommended cutting parameters **Diameter Ø16**

Operations						
Workpiece material	Cutting parameters	Machining of slot	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	Vc(m/min)	150~220	150~220	150~220	150~220	YBG302
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	ap(mm)	4	4	8	16	
	ae(mm)	--	3	4	1.5	
Alloy steel Hardness 150~280HB	Vc(m/min)	100~150	100~150	100~150	100~150	
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	ap(mm)	4	4	8	16	
	ae(mm)	--	3	4	1.5	
Die steel Hardness 150~255HB	Vc(m/min)	80~120	80~120	80~120	80~120	
	Fz(mm/z)	0.1~0.3	0.1~0.3	0.1~0.3	0.1~0.3	
	ap(mm)	4	4	8	16	
	ae(mm)	--	3	4	1.5	
Hardened steel Hardness 40~50HRC	Vc(m/min)	80~100	80~100	80~100	--	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	--	
	ap(mm)	4	4	8	--	
	ae(mm)	--	2	3	--	
Gray cast iron Hardness 160~260HB	Vc(m/min)	250~300	250~300	250~300	250~300	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	ap(mm)	4	4	8	16	
	ae(mm)	--	3	4	1.5	
Nodular cast iron Hardness 170~300HB	Vc(m/min)	200~250	200~250	200~250	200~250	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	ap(mm)	4	4	8	16	
	ae(mm)	--	3	4	1.5	

Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

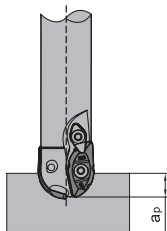
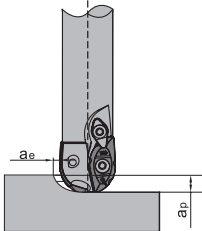
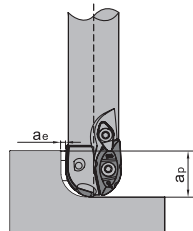
2. Wind cooling to be preferred.

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➤ Recommended cutting parameters Diameter Ø20

Operations						
Workpiece material	Cutting parameters	Machining of slot	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	Vc(m/min)	150~220	150~220	150~220	150~220	YBG302
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	ap(mm)	5	5	10	20	
	ae(mm)	--	4	5	2	
Alloy steel Hardness 150~280HB	Vc(m/min)	100~150	100~150	100~150	100~150	
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	ap(mm)	5	5	10	20	
	ae(mm)	--	4	5	2	
Die steel Hardness 150~255HB	Vc(m/min)	80~120	80~120	80~120	80~120	
	Fz(mm/z)	0.1~0.3	0.1~0.3	0.1~0.3	0.1~0.3	
	ap(mm)	5	5	10	20	
	ae(mm)	--	4	5	2	
Hardened steel Hardness 40~50HRC	Vc(m/min)	80~100	80~100	80~100	--	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	--	
	ap(mm)	5	5	10	--	
	ae(mm)	--	4	5	--	
Gray cast iron Hardness 160~260HB	Vc(m/min)	250~300	250~300	250~300	250~300	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	ap(mm)	5	5	10	20	
	ae(mm)	--	4	5	2	
Nodular cast iron Hardness 170~300HB	Vc(m/min)	200~250	200~250	200~250	200~250	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	ap(mm)	5	5	10	20	
	ae(mm)	--	4	5	2	

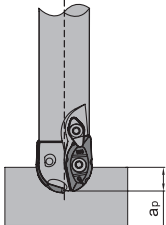
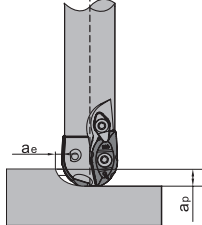
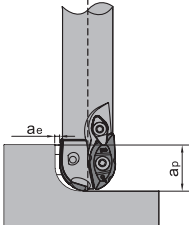
Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

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► Recommended cutting parameters **Diameter Ø25**

Operations						
Workpiece material	Cutting parameters	Machining of slot	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	Vc(m/min)	150~220	150~220	150~220	150~220	YBG302
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	a _p (mm)	6	6	12.5	25	
	a _e (mm)	--	5	6.5	3	
Alloy steel Hardness 150~280HB	Vc(m/min)	100~150	100~150	100~150	100~150	
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	a _p (mm)	6	6	12.5	25	
	a _e (mm)	--	5	6.5	3	
Die steel Hardness 150~255HB	Vc(m/min)	80~120	80~120	80~120	80~120	
	Fz(mm/z)	0.1~0.3	0.1~0.3	0.1~0.3	0.1~0.3	
	a _p (mm)	6	6	12.5	25	
	a _e (mm)	--	5	6.5	3	
Hardened steel Hardness 40~50HRC	Vc(m/min)	80~100	80~100	80~100	--	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	--	
	a _p (mm)	6	6	12.5	--	
	a _e (mm)	--	5	6.5	--	
Gray cast iron Hardness 160~260HB	Vc(m/min)	250~300	250~300	250~300	250~300	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	a _p (mm)	6	6	12.5	25	
	a _e (mm)	--	5	6.5	3	
Nodular cast iron Hardness 170~300HB	Vc(m/min)	200~250	200~250	200~250	200~250	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	a _p (mm)	6	6	12.5	25	
	a _e (mm)	--	5	6.5	3	

Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

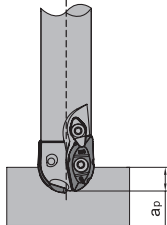
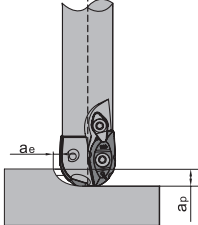
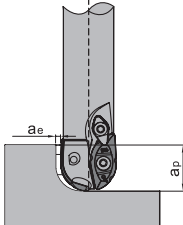
2. Wind cooling to be preferred.

Indexable
milling tools

Profile milling tools



➤ Recommended cutting parameters Diameter Ø30, Ø32

Operations						
Workpiece material	Cutting parameters	Machining of slot	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	Vc(m/min)	150~220	150~220	150~220	150~220	YBG302
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	a _p (mm)	10	10	16	28	
	a _e (mm)	--	6	9	6	
Alloy steel Hardness 150~280HB	Vc(m/min)	100~150	100~150	100~150	100~150	
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	a _p (mm)	10	10	16	28	
	a _e (mm)	--	6	9	6	
Die steel Hardness 150~255HB	Vc(m/min)	80~120	80~120	80~120	80~120	
	Fz(mm/z)	0.1~0.3	0.1~0.3	0.1~0.3	0.1~0.3	
	a _p (mm)	10	10	16	28	
	a _e (mm)	--	6	9	6	
Hardened steel Hardness 40~50HRC	Vc(m/min)	80~100	80~100	80~100	--	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	--	
	a _p (mm)	10	10	16	--	
	a _e (mm)	--	6	9	--	
Gray cast iron Hardness 160~260HB	Vc(m/min)	250~300	250~300	250~300	250~300	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	a _p (mm)	10	10	16	28	
	a _e (mm)	--	6	9	6	
Nodular cast iron Hardness 170~300HB	Vc(m/min)	200~250	200~250	200~250	200~250	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	a _p (mm)	10	10	16	28	
	a _e (mm)	--	6	9	6	

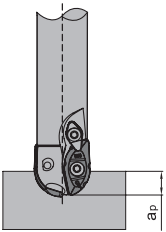
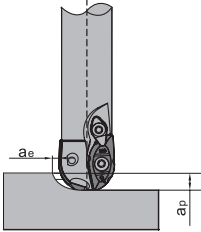
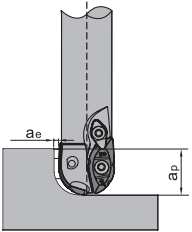
Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

Indexable
milling tools

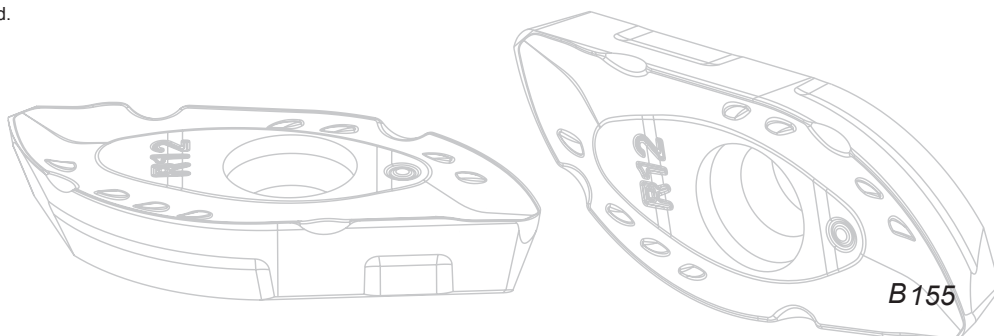
Profile milling tools

➤ Recommended cutting parameters **Diameter Ø40**

Operations					
Workpiece material	Cutting parameters	Machining of slot	Side milling (slight)		Side milling (deep)
Medium carbon steel Hardness 150~250HB	Vc(m/min)	150~220	150~220	150~220	150~220
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4
	a _p (mm)	12	10	20	35
	a _e (mm)	--	8	12	8
Alloy steel Hardness 150~280HB	Vc(m/min)	100~150	100~150	100~150	100~150
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4
	a _p (mm)	12	10	20	35
	a _e (mm)	--	8	12	8
Die steel Hardness 150~255HB	Vc(m/min)	80~120	80~120	80~120	80~120
	Fz(mm/z)	0.1~0.3	0.1~0.3	0.1~0.3	0.1~0.3
	a _p (mm)	12	10	20	35
	a _e (mm)	--	8	12	8
Hardened steel Hardness 40~50HRC	Vc(m/min)	80~100	80~100	80~100	--
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	--
	a _p (mm)	12	10	20	--
	a _e (mm)	--	8	12	--
Gray cast iron Hardness 160~260HB	Vc(m/min)	250~300	250~300	250~300	250~300
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15
	a _p (mm)	12	10	20	35
	a _e (mm)	--	8	12	8
Nodular cast iron Hardness 170~300HB	Vc(m/min)	200~250	200~250	200~250	200~250
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15
	a _p (mm)	12	10	20	35
	a _e (mm)	--	8	12	8
YBG302					

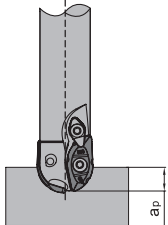
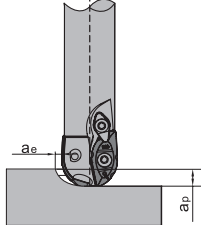
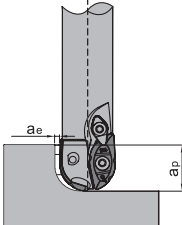
Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.





➤ Recommended cutting parameters Diameter Ø50

Operations						
Workpiece material	Cutting parameters	Machining of slot	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	Vc(m/min)	150~220	150~220	150~220	150~220	YBG302
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	a _p (mm)	15	10	25	40	
	a _e (mm)	--	10	15	10	
Alloy steel Hardness 150~280HB	Vc(m/min)	100~150	100~150	100~150	100~150	
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	a _p (mm)	15	10	25	40	
	a _e (mm)	--	10	15	10	
Die steel Hardness 150~255HB	Vc(m/min)	80~120	80~120	80~120	80~120	
	Fz(mm/z)	0.1~0.3	0.1~0.3	0.1~0.3	0.1~0.3	
	a _p (mm)	15	10	25	40	
	a _e (mm)	--	10	15	10	
Hardened steel Hardness 40~50HRC	Vc(m/min)	80~100	80~100	80~100	--	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	--	
	a _p (mm)	15	10	25	--	
	a _e (mm)	--	10	15	--	
Gray cast iron Hardness 160~260HB	Vc(m/min)	250~300	250~300	250~300	250~300	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	a _p (mm)	15	10	25	40	
	a _e (mm)	--	10	15	10	
Nodular cast iron Hardness 170~300HB	Vc(m/min)	200~250	200~250	200~250	200~250	
	Fz(mm/z)	0.08~0.15	0.08~0.15	0.08~0.15	0.08~0.15	
	a _p (mm)	15	10	25	40	
	a _e (mm)	--	10	15	10	

Note: 1. Parameters in the table shall be adjusted according to the rigidity of the machine or workpiece.

2. Wind cooling to be preferred.

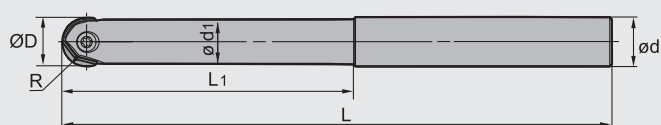
Indexable
milling tools

Profile milling tools

Profile milling tools

**BMR04** P M K

Straight shank with straight neck



➤ Specification of tools

Type	Stock	Basic dimensions(mm)						Weight (kg)
		R	ØD	Ød	Ød ₁	L ₁	L	
BMR04 -012-G12-M	▲	6	12	12	11	35	125	0.1
-012-G12-L	△	6	12	12	11	45	150	0.1
-016-G16-M	▲	8	16	16	14	40	150	0.2
-016-G16-L	△	8	16	16	14	55	180	0.3
-020-G20-M	▲	10	20	20	18	65	180	0.4
-020-G20-L	△	10	20	20	18	100	250	0.6
-025-G25-M	▲	12.5	25	25	23	70	200	0.7
-025-G25-L	△	12.5	25	25	23	100	250	0.9
-030-G32-M	▲	15	30	32	27	130	250	1.2
-030-G32-L	△	15	30	32	27	150	300	1.5
-032-G32-M	▲	16	32	32	29	80	250	1.4
-032-G32-L	△	16	32	32	29	109	300	1.7

▲ Stock available

△ Make-to-order

Indexable
milling tools

Profile milling tools

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240



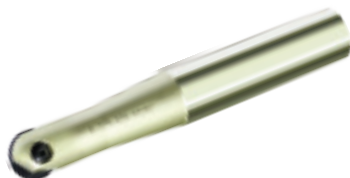
MILLING

Indexable Milling Tools

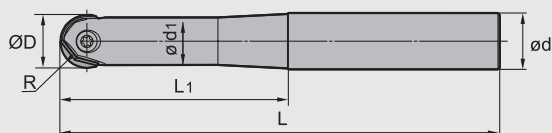
Profile milling tools



BMR04 P M K



Straight shank with taper neck



Specification of tools

Type	Stock	Basic dimensions(mm)						Weight (kg)
		R	ØD	Ød	Ød ₁	L ₁	L	
BMR04 -012-G16-M	▲	6	12	16	11	50	125	0.2
-012-G16-L	△	6	12	16	11	60	150	0.2
-016-G20-M	▲	8	16	20	14	60	150	0.3
-016-G20-L	△	8	16	20	14	80	180	0.3
-020-G25-M	▲	10	20	25	18	75	180	0.6
-020-G25-L	△	10	20	25	18	85	200	0.6
-025-G32-M	▲	12.5	25	32	23	90	200	1.0
-025-G32-L	△	12.5	25	32	23	110	250	1.3
-030-G40-M	▲	15	30	40	27	110	250	2.0
-030-G40-L	△	15	30	40	27	125	300	2.4
-032-G40-M	▲	16	32	40	29	110	250	2.0
-032-G40-L	△	16	32	40	29	125	300	2.4

▲ Stock available △ Make-to-order

Tools code key
B24-B25

Grade selection guide
B19-B23

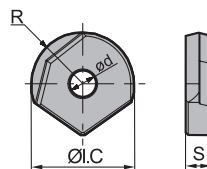
Technical data
B234-B240

Spare parts

Diameter	Screw	Wrench	
			
Ø12	I70M4×10TT	WT15IP	--
Ø16	I70M5×12TT	WT20IP	--
Ø20	I70M5×16TT	WT20IP	--
Ø25	I70M6×20TT	WT20IP	--
Ø30	I70M8×25TT	--	WT30IT
Ø32	I70M8×25TT	--	WT30IT



Selection of inserts

		😊 Good working condition 😐 Normal working condition 😞 Bad working condition																											
		Workpiece material P Steel M Stainless steel K Cast iron N Non-ferrous metal S Heat resistant alloy, Ti alloy																											
																													
Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		R	ØI.C	S	ød	Applicable insert ØD	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201	
	ZOHX1203-GF	6	12	3	4	Ø12														★									
	ZOHX1604-GF	8	16	4	5	Ø16														★									
	ZOHX2005-GF	10	20	5	5	Ø20														★									
	ZOHX2506-GF	12.5	25	6	6	Ø25														○									
	ZOHX3007-GF	15	30	7	8	Ø30														○									
	ZOHX3207-GF	16	32	7	8	Ø32														○									
	ZOHX1203-GM	6	12	3	4	Ø12														★									
	ZOHX1604-GM	8	16	4	5	Ø16														★									
	ZOHX2005-GM	10	20	5	5	Ø20														★									
	ZOHX2506-GM	12.5	25	6	6	Ø25														★									
	ZOHX3007-GM	15	30	7	8	Ø30														★									
	ZOHX3207-GM	16	32	7	8	Ø32														★									

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

Profile milling tools

BMR04

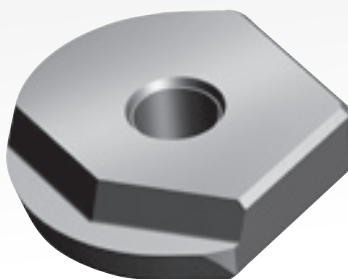
Series ball nose finishing end milling tools

-GF



- With positive rake angle and double clearance angle, the design of curved cutting edge combines sharpness and strength. The edge with high precision is applicable under stable machining conditions and in conditions requiring high workpiece profile precision.

-GM



- 0° rake angle, only one clearance angle, high edge strength, suitable for conditions requiring high cutting efficiency.

The inserts are a combination of ultra-fine cemented carbide substrate and nano coating grade YBG252. With excellent cutting performance, they are suitable for semi-finish to finish machining.

Calculation of cutting speed for BMR02/04 series ball nose end mills

1. When the tool axial line is vertical to the surface being machined,

$$N = \frac{1000 V_c}{\pi D c} (r/min)$$

$$Dc = 2\sqrt{a_p(D - a_p)}$$

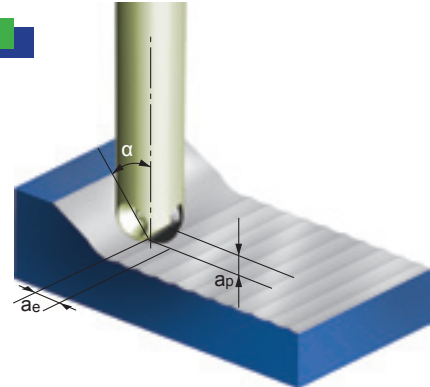
N: rotating speed

Vc: actual cutting speed

Dc: effective cutting diameter

D: tool nominal diameter

a_p: axial cutting depth



2. When there is an inclined angle between the tool axial line and the surface being machined, the recommended cutting speed should be multiplied by a factor in the table below to obtain the cutting speed used for programming.

Diameter(mm)		Ø12		Ø16		Ø20		Ø25		Ø30		Ø32	
Cutting depth a _p (mm)		0.2	0.5	0.2	0.5	0.5	1	0.5	1	0.5	1.5	0.5	1.5
Inclined angle α	15°	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.01	1.00	1.00	1.00	1.00
	30°	1.04	1.01	1.05	1.01	1.02	1.04	1.03	1.04	1.04	1.01	1.04	1.00
	45°	1.16	1.07	1.18	1.10	1.12	1.06	1.14	1.08	1.16	1.06	1.16	1.06
	60°	1.42	1.24	1.47	1.30	1.34	1.21	1.38	1.25	1.42	1.21	1.43	1.22
	75°	2.02	1.60	2.14	1.73	1.83	1.53	1.93	1.62	2.01	1.53	2.04	1.55
	90°	3.92	2.50	4.48	2.87	3.20	2.29	3.57	2.55	3.9	2.29	4.03	2.37

➤ Recommended cutting parameters

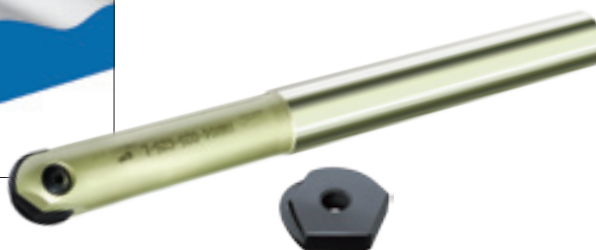
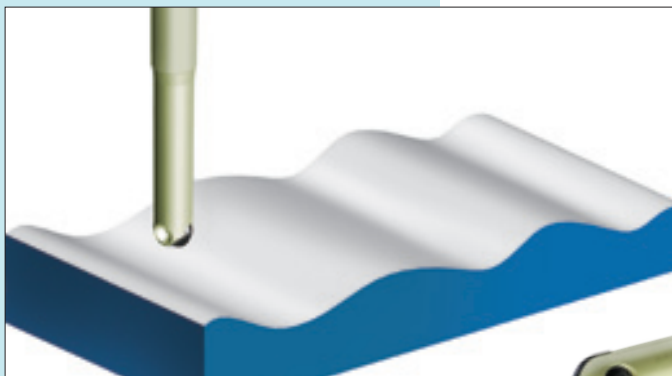
Workpiece material		Hardness HB	Insert grade	Cutting parameters	Tool specification					
					Ø12	Ø16	Ø20	Ø25	Ø30	Ø32
P	Carbon steel	HB ≤ 180	YBG252	Vc(m/min)	100~200	100~200	100~200	100~200	100~200	100~200
				fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3	0.25~0.35	0.25~0.35	0.25~0.35
				apmax(mm)	0.8	1.0	1.25	1.5	2.0	2.0
				ae max(mm)	0.8	1.0	1.25	1.5	2.0	2.0
	Alloy steel	HB180~280		Vc(m/min)	80~180	80~180	80~180	80~180	80~180	80~180
				fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3	0.25~0.35	0.25~0.35	0.25~0.35
				apmax(mm)	0.8	1.0	1.25	1.5	2.0	2.0
				ae max(mm)	0.8	1.0	1.25	1.5	2.0	2.0
	Hardened steel	HRC55~65		Vc(m/min)	60~100	60~100	60~100	60~100	60~100	60~100
				fz(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3	0.25~0.35	0.25~0.35	0.25~0.35
				apmax(mm)	0.4	0.5	0.6	0.8	1.0	1.0
				ae max(mm)	0.4	0.5	0.6	0.8	1.0	1.0
M	Stainless steel	HB ≤ 270	Vc(m/min)	70~150	70~150	70~150	70~150	70~150	70~150	
			fz(mm/z)	0.1~0.2	0.1~0.25	0.1~0.25	0.2~0.3	0.2~0.3	0.2~0.3	
			apmax(mm)	0.6	0.8	1.0	1.25	1.5	1.5	
			ae max(mm)	0.6	0.8	1.0	1.25	1.5	1.5	
K	Cast iron	HB180~250	Vc(m/min)	160~300	160~300	160~300	160~300	160~300	160~300	
			fz(mm/z)	0.2~0.3	0.25~0.35	0.25~0.35	0.3~0.4	0.3~0.4	0.3~0.4	
			apmax(mm)	1.0	1.5	1.8	2.0	2.5	2.5	
			ae max(mm)	1.0	1.5	1.8	2.0	2.5	2.5	



MILLING

Indexable Milling Tools

Case for BMR04



Workpiece material: 42CrMo (HRC35)
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters:
 $V_c=150\text{m/min}$
 $a_p=0.1\text{mm}$
 $f_z=0.2\text{mm/Z}$

Tool type: BMR04-020-G25-M

Insert type/grade: ZOHX2005-GM/YBG252

● Abrasion comparison of inserts after milling curved face

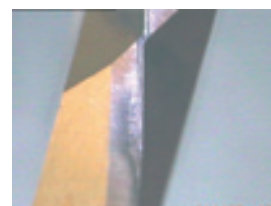
ZCC-CT

Other company product

After 60 minutes
of cutting



Abrasion on the
clearance face 0.08



Abrasion on the
clearance face 0.10

After 120 minutes
of cutting



Abrasion on the
clearance face 0.12



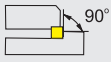
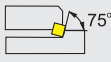
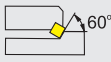
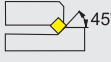
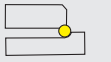
Abrasion on the
clearance face 0.16

Indexable
milling tools

Profile milling tools

Side and face milling tools code key

Cutter style	
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
TM	T-slot milling
AM	Aluminum alloy high speed milling

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

Sequence number of series

Cutting diameter ØD (mm)

Cutting width of milling tools

Coupling structure and demension

A	A type of coupling	D	D type of coupling
B	B type of coupling	K	Mounting by keyway
C	C type of coupling		

Indexable
milling tools

Side and face milling tools

SM P 03 - 160 × 16 - K40

- M P 12 - 12 L

Insert shape	
C	Diamond with 80°
D	Diamond with 55°
R	Round
S	Square
T	Regular triangle
V	Diamond with 35°
M	Diamond with 86°

Insert clearance angle	
N	0°
B	5°
C	7°
P	11°
D	15°
E	20°

Length of cutting edge						
Diameter of IC	Insert shape					
	C	D	R	S	T	V
5.556	—	—	—	—	09	—
6.350	06	07	—	—	11	—
9.525	09	11	09	09	16	16
12.700	12	15	12	12	22	22
15.875	16	19	15	15	27	—
19.050	19	—	19	19	33	—
25.400	25	—	25	25	44	—

Cutting direction

(R: Right L: Left)

Number of teeth



MILLING

Indexable Milling Tools

Side and face milling tools

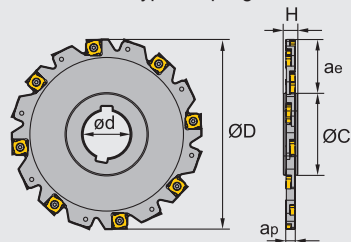


Machining of slot

SMP01 P M K



K-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
		ØD	Ød	Øc	H	ap	aemax				
SMP01											
Mounting by keyway											
-100×4-K27-SN12-10	△	100	27	45	12	4	25	XSEQ1202	10	K	0.2
-125×4-K40-SN12-12	△	125	40	56	12	4	32		12	K	0.3
-160×4-K40-SN12-16	△	160	40	67	12	4	44		16	K	0.5
-100×5-K27-SN12-10	△	100	27	45	12	5	25	XSEQ1203	10	K	0.2
-125×5-K40-SN12-12	△	125	40	56	12	5	32		12	K	0.3
-160×5-K40-SN12-16	△	160	40	67	12	5	44		16	K	0.6
-100×6-K27-SN12-10	△	100	27	45	12	6	25	XSEQ12T3	10	K	0.3
-125×6-K40-SN12-12	△	125	40	56	12	6	32		12	K	0.4
-160×6-K40-SN12-16	△	160	40	67	12	6	44		16	K	0.7
-200×6-K50-SN12-18	△	200	50	71	12	6	62	XSEQ1204	18	K	1.1
-250×6-K50-SN12-24	△	250	50	71	12	6	87		24	K	1.7
-100×7-K27-SN12-10	△	100	27	45	12	7	25		10	K	0.3
-125×7-K40-SN12-12	△	125	40	56	12	7	32	XSEQ1204	12	K	0.4
-160×7-K40-SN12-16	△	160	40	67	12	7	44		16	K	0.8
-200×7-K50-SN12-18	△	200	50	71	12	7	62		18	K	1.2
-250×7-K50-SN12-24	△	250	50	71	12	7	87	XSEQ12T4	24	K	1.9
-100×8-K27-SN12-10	△	100	27	45	12	8	25		10	K	0.3
-125×8-K40-SN12-12	△	125	40	56	12	8	32		12	K	0.5
-160×8-K40-SN12-16	△	160	40	67	12	8	44	XSEQ12T4	16	K	0.9
-200×8-K50-SN12-18	△	200	50	71	12	8	62		18	K	1.4
-250×8-K50-SN12-24	△	250	50	71	12	8	87		24	K	2.2

▲ Stock available △ Make-to-order

Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Side and face milling tools

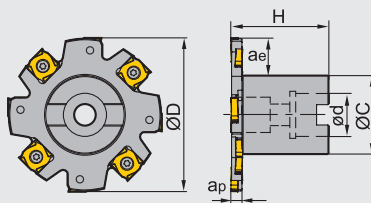


Machining of slot

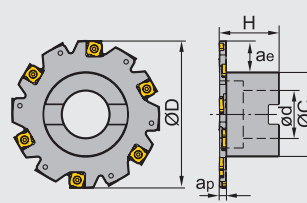
SMP01 P M K



A-type coupling



B-type coupling



Specification of tools

Type	Stock		Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	ød	øc	H	ap	ae _{max}				
SMP01 Arbor mounting	△	△	63	22	32	40	4	14	XSEQ1202	6	A	0.2
	△	△	80	22	40	50	4	18		8	A	0.4
	△	△	100	27	48	50	4	23		10	A	0.6
	△	△	63	22	32	40	5	14	XSEQ1203	6	A	0.2
	△	△	80	22	40	50	5	18		8	A	0.4
	△	△	100	27	48	50	5	23		10	A	0.7
	△	△	63	22	32	40	6	14	XSEQ12T3	6	A	0.2
	△	△	80	22	40	50	6	18		8	A	0.5
	△	△	100	27	48	50	6	23		10	A	0.7
	△	△	125	32	70	50	6	30		12	B	1.0
	△	△	160	40	70	50	6	41		16	B	1.3
	△	△	63	22	32	40	7	14	XSEQ1204	6	A	0.2
	△	△	80	22	40	50	7	18		8	A	0.5
	△	△	100	27	48	50	7	23		10	A	0.7
	△	△	125	32	70	50	7	30		12	B	1.1
	△	△	160	40	70	50	7	41		16	B	1.4
	△	△	63	22	32	40	8	14	XSEQ12T4	6	A	0.2
	△	△	80	22	40	50	8	18		8	A	0.5
	△	△	100	27	48	50	8	23		10	A	0.8
	△	△	125	32	70	50	8	30		12	B	1.1
	△	△	160	40	70	50	8	41		16	B	1.5

▲ Stock available

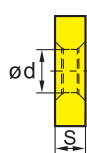
△ Make-to-order

Indexable
milling tools

Side and face milling tools

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

Selection of inserts



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible][illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Cutting parameters		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBG302	150 (100-200)	0.15(0.1-0.3)
	High-carbon steel, Alloy steel	180-280	YBG302	120 (80-200)	0.15(0.1-0.3)
	Alloy tool steel	280-350	YBG302	100 (80-200)	0.15(0.1-0.3)
M	Stainless steel	≤270	YBG302	100 (80-200)	0.08(0.05-0.15)
K	Cast iron	180-250	YBG302	150 (100-250)	0.08(0.05-0.15)

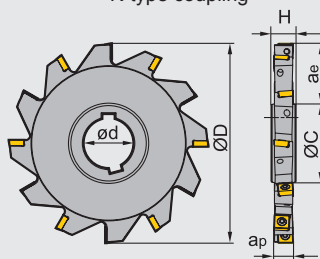
Side and face milling tools



SMP03 P M K



K-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
		ØD	øc	ød	aemax	ap	H				
SMP03											
-080×8-K27-MP06-10	△	80	43	27	17	8	12	MPHT060304-DM	10	K	0.2
-100×8-K32-MP06-14	△	100	47	32	25	8	12		14	K	0.3
-100×10-K32-MP06-14	△	100	47	32	25	10	14		14	K	0.4
-125×10-K40-MP06-16	△	125	55	40	34	10	14		16	K	0.6
-125×12-K40-MP08-12	△	125	55	40	34	12	16	MPHT080305-DM	12	K	0.7
-160×12-K40-MP08-14	△	160	62	40	47	12	16		14	K	1.3
-160×16-K40-MP12-12	△	160	62	40	49	16	20	MPHT120408-DM	12	K	1.6
-160×18-K40-MP12-12	△	160	62	40	49	18	24		12	K	1.9
-160×20-K40-MP12-12	△	160	62	40	49	20	26		12	K	2.1
-200×16-K50-MP12-14	△	200	72	50	62	16	20		14	K	2.5
-200×18-K50-MP12-14	△	200	72	50	62	18	24		14	K	2.9
-200×20-K50-MP12-14	△	200	72	50	62	20	26		14	K	3.3

▲ Stock available

△ Make-to-order

Indexable milling tools

Side and face milling tools

Spare parts

Diameter Ød	Inserts	Screw	Wrench	
				
Ø80-Ø125	MP06	I60M2.5x6.5	WT07IP	--
Ø125-Ø160	MP08	I60M3x7	WT09IP	--
Ø160-Ø200	MP12	I60M5x13	--	WT20IS

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

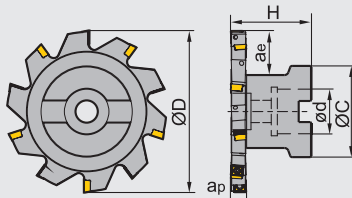
Side and face milling tools



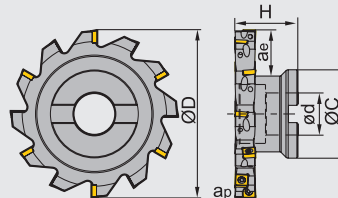
SMP03 P M K



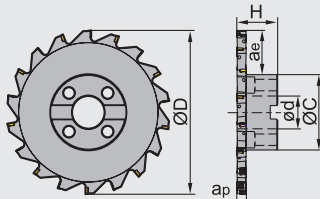
A-type coupling



B-type coupling



C-type coupling



Specification of tools

Type	Stock		Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
	R	L	ØD	øc	ød	a _e max	a _p	H				
SMP03 Arbor mounting	△	△	80	45	22	21	8	40	MPHT060304-DM	10	A	0.4
	△	△	100	55	27	24	8	40		14	B	0.6
	△	△	100	55	27	24	10	40		14	B	0.7
	△	△	125	65	32	33	10	45		16	B	1.1
	△	△	125	65	32	33	12	45	MPHT080305-DM	12	B	1.4
	△	△	160	80	40	45	12	50		14	B	1.9
	△	△	200	92	40	53	12	50		18	C	3.2
	△	△	125	65	32	33	16	50	MPHT120408-DM	10	B	2.3
	△	△	160	80	40	45	16	60		12	B	2.3
	△	△	160	80	40	45	18	60		12	B	2.4
	△	△	200	92	40	53	16	50		14	C	3.6
	△	△	200	92	40	53	18	50		14	C	3.9
	△	△	200	92	40	53	20	50		14	C	4.2

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Inserts	Screw	Wrench	
Ø80-Ø125	MP06	I60M2.5×6.5	WT07IP	--
Ø125-Ø200	MP08	I60M3×7	WT09IP	--
Ø125-Ø200	MP12	I60M5×13	--	WT20IS

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

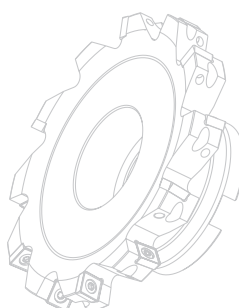
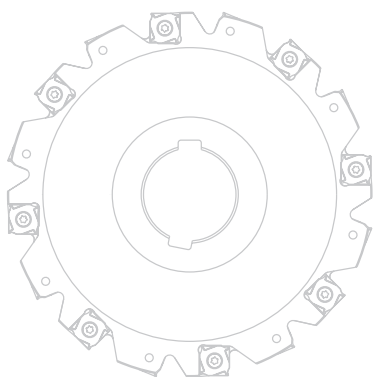
Selection of inserts

😊 Good working condition
😊 Normal working condition
😞 Bad working condition

Workpiece material	P	Steel	😊	😊	😊	😊	😊											😊	😊	😊	😊																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</
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Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel、 Soft steel	≤ 180	YBG302	150 (100-200)	0.15(0.1-0.3)
	High-carbon steel、 Alloy steel	180-280	YBG302	120 (80-200)	0.15(0.1-0.3)
	Alloy tool steel	280-350	YBG302	100 (80-200)	0.15(0.1-0.3)
M	Stainless steel	≤ 270	YBG302	100 (80-200)	0.08(0.05-0.15)
K	Cast iron	180-250	YBG302	150 (100-250)	0.08(0.05-0.15)



SMP05 Slot milling

Groove Widths 1.1~4.8mm.
Maximum cutting depth 5mm.
Multi-function milling holder: slot milling,plunge
milling, root cleaning

Slot milling specification code

Slot milling

Weldon shank

Insert

Teeth

SMP05 - 039×3.0 - XP 25 - QC 16- 03

Minimum machining diameter(mm)

Code	Diameter
25	25
39	39
44	44

Maximum cutting width(mm)

Code	Cutting width
3.0	3.0
4.8	4.8

Cutter diameter(mm)

Code	Diameter
25	25
32	32

Cutting edge length code

16
22

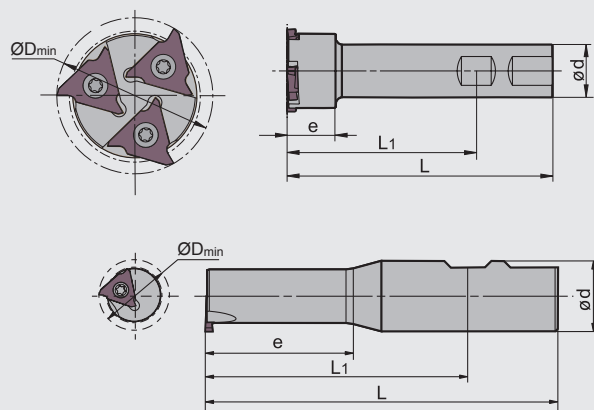
Inscribed circuler(mm)

9.525
12.70

Side and face milling tools



SMP05 P M K

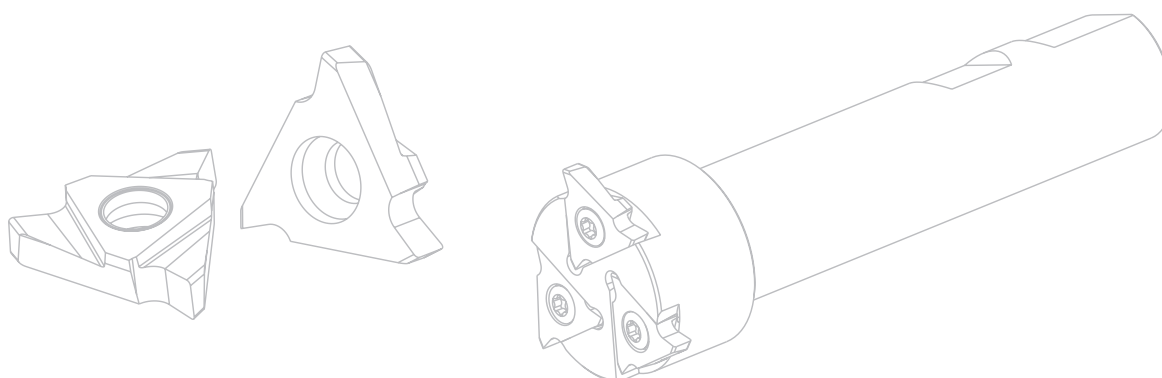


Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Applicable inserts	Width(mm)
		ØDmin	ød	e	L1	L			
SMP05 -025×3.0-XP25-QC16-01	△	25	25	40	89	125	1	QC16L 110~300	1.10-3.00
-039×3.0-XP25-QC16-03	△	39	25	23	89	125	3	QC16L 110~300	1.10-3.00
-044×4.8-XP25-QC22-03	△	44	25	23	89	125	3	QC22L 125~480	1.25-4.80

▲Stock available

△Make-to-order



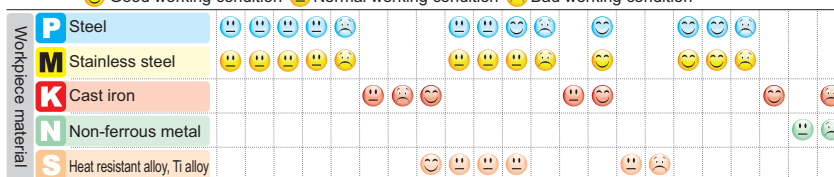
Spare parts

Diameter ØD	Screw	Wrench	
Ø25	I60M3.5×10	WT15IP	
Ø39	I60M3.5×10	WT15IP	
Ø44	I60M5×13	WT20IP	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240Indexable
milling tools

Side and face milling tools

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide									
		S±0.025	La _{max}	R/C	ØI.C	S ₁	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201	
	QC16L110-R01	1.10	2.00	R0.1	9.525	3.18	4.4								○	○														
	QC16L125-R02	1.25	2.00	R0.2	9.525	3.18	4.4								○	○														
	QC16L145-R02	1.45	2.00	R0.2	9.525	3.18	4.4								○	○														
	QC16L150-R02	1.50	2.00	R0.2	9.525	3.18	4.4								○	★														
	QC16L175-R02	1.75	2.00	R0.2	9.525	3.18	4.4								○	○														
	QC16L185-R02	1.85	2.50	R0.2	9.525	3.18	4.4								○	○														
	QC16L200-R02	2.00	2.50	R0.2	9.525	3.18	4.4								○	★														
	QC16L250-R02	2.50	2.50	R0.2	9.525	3.18	4.4								○	★														
	QC16L300-R02	3.00	3.00	R0.2	9.525	3.18	4.4								○	★														
	QC22L125-R02	1.25	2.00	R0.2	12.70	4.76	5.5								○	○														
	QC22L145-R02	1.45	2.00	R0.2	12.70	4.76	5.5								○	○														
	QC22L150-R02	1.50	3.50	R0.2	12.70	4.76	5.5								○	★														
	QC22L175-R02	1.75	3.50	R0.2	12.70	4.76	5.5								○	○														
	QC22L185-R02	1.85	3.50	R0.2	12.70	4.76	5.5								○	○														
	QC22L200-R02	2.00	3.50	R0.2	12.70	4.76	5.5								○	★														
	QC22L230-R02	2.30	3.50	R0.2	12.70	4.76	5.5								○	○														
	QC22L250-R03	2.50	4.00	R0.3	12.70	4.76	5.5								○	★														
	QC22L265-R03	2.65	4.00	R0.3	12.70	4.76	5.5								○	○														
	QC22L280-R03	2.80	4.00	R0.3	12.70	4.76	5.5								○	○														
	QC22L300-R03	3.00	4.00	R0.3	12.70	4.76	5.5								○	★														
	QC22L320-R03	3.20	4.00	R0.3	12.70	4.76	5.5								○	○														
	QC22L330-R03	3.30	4.00	R0.3	12.70	4.76	5.5								○	○														
	QC22L350-R03	3.50	5.00	R0.3	12.70	4.76	5.5								○	★														
	QC22L400-R04	4.00	5.00	R0.4	12.70	4.76	5.5								○	★														
	QC22L430-R04	4.30	5.00	R0.4	12.70	4.76	5.5								○	○														
	QC22L450-R04	4.50	5.00	R0.4	12.70	4.76	5.5								○	○														
	QC22L480-R04	4.80	5.00	R0.4	12.70	5.06	5.5								○	○														

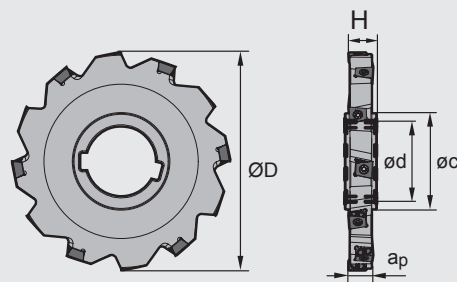
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Side and face milling tools



Machining of slot

SMP09 P M K



K-type coupling

Specification of tools

Type	Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	øc	H	ap	aemax				
SMP09 -080×10-K27-LN10-08	△	80	27	43	14	10	17	LNGX1005□□-GM	8	K	0.2
-100×10-K32-LN10-10	△	100	32	47	14	10	25		10	K	0.37
-125×10-K40-LN10-12	△	125	40	55	14	10	34		12	K	0.5
-160×10-K40-LN10-14	△	160	40	62	14	10	47		14	K	1
-200×10-K50-LN10-16	△	200	50	72	14	10	62		16	K	1.6
-100×12-K32-LN14-08	△	100	32	47	16	12	25	LNGX1407□□-GM	8	K	0.4
-125×12-K40-LN14-10	△	125	40	55	16	12	34		10	K	0.6
-160×12-K40-LN14-12	△	160	40	62	16	12	47		12	K	1.1
-200×12-K50-LN14-14	△	200	50	72	16	12	62		14	K	1.8
-100×14-K32-LN10-10	△	100	32	47	18	14	25	LNGX1005□□-GM	10	K	0.4
-125×14-K40-LN10-12	△	125	40	55	18	14	34		12	K	0.9
-160×14-K40-LN10-14	△	160	40	62	18	14	47		14	K	1.6
-200×14-K50-LN10-16	△	200	50	72	18	14	62		16	K	2.5
-125×16-K40-LN10-12	△	125	40	55	20	16	34	LNGX1005□□-GM	12	K	1
-160×16-K40-LN10-14	△	160	40	62	20	16	47		14	K	1.8
-200×16-K50-LN10-16	△	200	50	72	20	16	62		16	K	2.9

▲ Stock available

△ Make-to-order

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240Indexable
milling tools

Side and face milling tools



MILLING

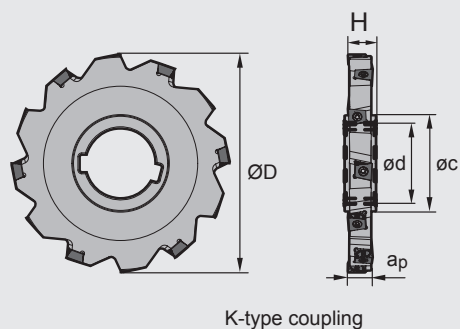
Indexable Milling Tools

Side and face milling tools



Machining of slot

SMP09 P M K



Specification of tools

Type	Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	øc	H	ap	ae max				
SMP09 -125×18-K40-LN10-12	△	125	40	55	24	18	34	LNGX1005□□-GM	12	K	1.2
-160×18-K40-LN10-14	△	160	40	62	24	18	47		14	K	2.1
-200×18-K50-LN10-16	△	200	50	72	24	18	62		16	K	3.4
-250×18-K50-LN10-18	△	250	50	80	24	18	83		18	K	5.5
-125×20-K40-LN14-10	△	125	40	55	26	20	34	LNGX1407□□-GM	10	K	1.2
-160×20-K40-LN14-12	△	160	40	62	26	20	47		12	K	2.1
-200×20-K50-LN14-14	△	200	50	72	26	20	62		14	K	3.5
-250×20-K50-LN14-16	△	250	50	80	26	20	83		16	K	5.8
-160×25-K40-LN14-12	△	160	40	62	30	25	47	LNGX1407□□-GM	12	K	2.8
-200×25-K50-LN14-14	△	200	50	72	30	25	62		14	K	4.5
-250×25-K50-LN14-16	△	250	50	80	30	25	83		16	K	7.5

▲ Stock available △ Make-to-order

Spare parts

Diameter ØD	Edge width ap	Inserts	Screw	Wrench	
Ø80-Ø200	10	LNGX1005□□-GM	I60M3.5×8TT	WP10IS	
Ø100-Ø200	12	LNGX1407□□-GM	I60M4×10	WP15IS	
Ø100-Ø250	14-18	LNGX1005□□-GM	I60M3.5×8TT	WP10IS	
Ø125-Ø315	20-25	LNGX1407□□-GM	I60M4×12	WP15IS	

Tools code key
B24-B25

Grade selection guide
B19-B23

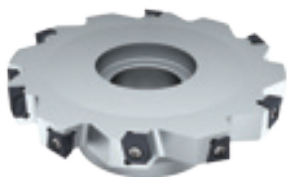
Technical data
B234-B240

Side and face milling tools

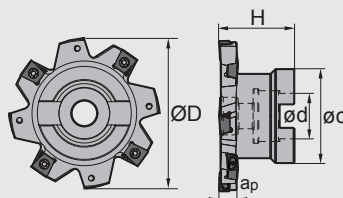


Machining of slot

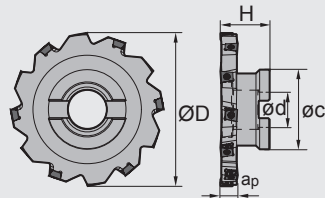
SMP09 P M K



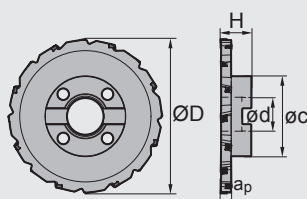
A-type coupling



B-type coupling



C-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	øc	H	ap	aemax				
SMP09 -080×10-A22-LN10-08	△	80	22	45	40	10	20	LNGX1005□□-GM	8	A	0.4
-100×10-B27-LN10-10	△	100	27	55	45	10	24		10	B	0.6
-125×10-B32-LN10-12	△	125	32	65	45	10	33		12	B	1
-160×10-B40-LN10-14	△	160	40	80	50	10	42		14	B	2
-200×10-C40-LN10-16	△	200	40	92	50	10	53		16	C	2.9
-100×12-B27-LN14-08	△	100	27	55	45	12	24	LNGX1407□□-GM	8	B	0.6
-125×12-B32-LN14-10	△	125	32	65	45	12	33		10	B	1
-160×12-B40-LN14-12	△	160	40	80	50	12	42		12	B	2.1
-200×12-C40-LN14-14	△	200	40	92	50	12	53		14	C	2.9
-100×14-B27-LN10-10	△	100	27	55	50	14	24	LNGX1005□□-G	10	B	0.7
-125×14-B32-LN10-12	△	125	32	65	50	14	33		12	B	1.2
-160×14-B40-LN10-14	△	160	40	80	50	14	42		14	B	2.4
-200×14-C40-LN10-16	△	200	40	92	50	14	53		16	C	3.6
-125×16-B32-LN10-12	△	125	32	65	50	16	33	LNGX1005□□-GM	12	B	1.4
-160×16-B40-LN10-14	△	160	40	80	50	16	42		14	B	2.6
-200×16-C40-LN10-16	△	200	40	92	50	16	53		16	C	4

▲Stock available

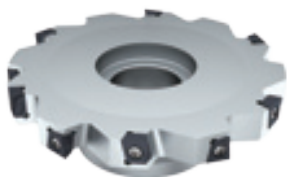
△Make-to-order



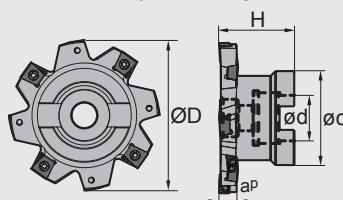
Side and face milling tools



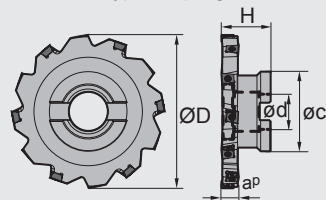
SMP09 P M K



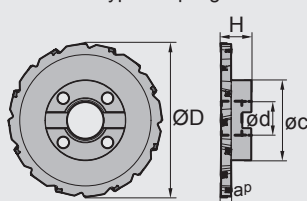
A-type coupling



B-type coupling



C-type coupling



Specification of tools

Type	Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ød	øc	H	ap	ae _{max}				
SMP09 -125×18-B32-LN10-12	△	125	32	65	50	18	33	LNGX1005□□-GM	12	B	1.5
-160×18-B40-LN10-14	△	160	40	80	50	18	42		14	B	2.9
-200×18-C40-LN10-16	△	200	40	92	50	18	53		16	C	4.3
-250×18-C60-LN10-18	△	250	60	132	50	18	58		18	C	7.2
-125×20-B32-LN14-10	△	125	32	65	50	20	33	LNGX1407□□-GM	10	B	1.6
-160×20-B40-LN14-12	△	160	40	80	50	20	42		12	B	2.7
-200×20-C40-LN14-14	△	200	40	92	50	20	53		14	C	4.6
-250×20-C60-LN14-16	△	250	60	132	50	20	58		16	C	7.4
-160×25-B40-LN14-12	△	160	40	80	50	25	42	LNGX1407□□-GM	12	B	3.2
-200×25-C40-LN14-14	△	200	40	92	50	25	53		14	C	5.2
-250×25-C60-LN14-16	△	250	60	132	50	25	58		16	C	8.6
-315×25-C60-LN14-20	△	315	60	132	50	25	90		20	C	13.2

▲Stock available

△Make-to-order

Spare parts

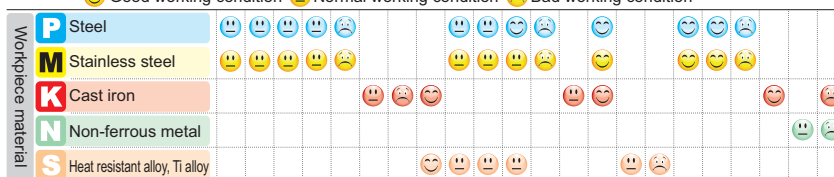
Diameter ØD	Edge width ap	Inserts	Screw	Wrench	
Ø80-Ø200	10	LNGX1005□□-GM	I60M3.5×8TT	WP10IS	
Ø100-Ø200	12	LNGX1407□□-GM	I60M4×10	WP15IS	
Ø100-Ø250	14-18	LNGX1005□□-GM	I60M3.5×8TT	WP10IS	
Ø125-Ø315	20-25	LNGX1407□□-GM	I60M4×12	WP15IS	

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel、Soft steel	≤ 180	YB9320 YBM253	150(100-200)	0.12(0.1-0.3)
	High-carbon steel、Alloy steel	180-280	YB9320 YBM253	120(80-200)	0.12(0.1-0.3)
	Alloy tool steel	280-350	YB9320 YBM253	100(80-200)	0.12(0.1-0.3)
M	Stainless steel	≤ 270	YB9320 YBM253	100(80-200)	0.08(0.05-0.15)
K	Cast iron、Ductile iron、 High nickel cast iron	180-250	YB9320 YBM253	150(100-250)	0.08(0.05-0.15)



B MILLING

Indexable Milling Tools

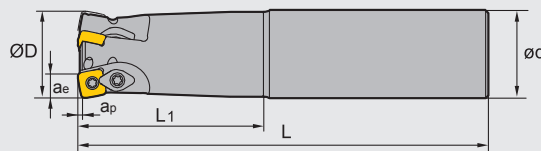
High feed milling cutters



XMR01 P M K S



S-type insert, straight shank



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		ØD	ap	ae	L1	L	ød		
XMR01 -020-G20-SD06-02	▲	20	0.8	4.45	50	130	20	2	0.26
-020-G20-SD06-02CL	△	20	0.8	4.45	100	180	20	2	0.364
-020-G20-SD06-02CXL	△	20	0.8	4.45	130	250	20	2	0.522
-025-G25-SD06-03	▲	25	0.8	4.45	60	140	25	3	0.46
-025-G25-SD06-03CL	△	25	0.8	4.45	120	200	25	3	0.670
-025-G25-SD06-03CXL	△	25	0.8	4.45	130	250	25	3	0.850
-025-G25-SD09-02	▲	25	1.4	6.88	60	140	25	2	0.5
-025-G25-SD09-02CL	△	25	1.4	6.88	120	200	25	2	0.636
-025-G25-SD09-02CXL	△	25	1.4	6.88	180	300	25	3	0.980
-032-G32-SD09-03	▲	32	1.4	6.88	90	150	32	3	0.8
-032-G32-SD09-03CL	△	32	1.4	6.88	120	200	32	3	1.006
-032-G32-SD09-03CXL	△	32	1.4	6.88	180	300	32	3	1.551
-035-G32-SD09-03	▲	35	1.4	6.88	70	150	32	3	0.8
-035-G32-SD09-03CL	△	35	1.4	6.88	120	200	32	3	1.037
-035-G32-SD09-03CXL	△	35	1.4	6.88	180	300	32	3	1.582
-032-G32-SD12-02	▲	32	1.8	8.77	90	150	32	2	0.8
-032-G32-SD12-02CL	△	32	1.8	8.77	120	200	32	2	1.002
-032-G32-SD12-02CXL	△	32	1.8	8.77	180	300	32	2	1.547
-040-G40-SD12-03	▲	40	1.8	8.77	70	150	40	3	1.3
-040-G40-SD12-03CL	△	40	1.8	8.77	70	250	40	3	2.118
-040-G40-SD12-03CXL	△	40	1.8	8.77	70	300	40	3	2.579
-040-G40-SD15-02	▲	40	2.2	11.7	70	200	40	2	1.6
-040-G40-SD15-02CL	△	40	2.2	11.7	70	250	40	2	2.061
-040-G40-SD15-02CXL	△	40	2.2	11.7	70	300	40	2	3.522

▲ Stock available △ Make-to-order

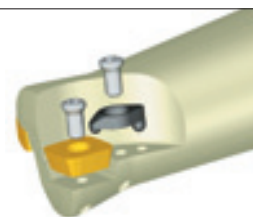
XMR01-020-G20-SD06QL-02CL/CXL

Standard toolholder sery — Long sery — Extended sery

Spare parts

Tool type	Screw	Clamp Screw	Clamp	Wrench	
					
XMR01□□-SD06□□	I60M2.2×5.5	--	--	WT07IP	--
XMR01□□-SD09□□	I60M3.5×08TT	I60M4×8.4	WD-204	WT10IP	WT15IP
XMR01□□-SD12□□	I60M4×8.4			WT15IP	
XMR01□□-SD15□□	I60M5×13		WD-208	WT20IP	--





Tools code key
B24-B25

Grade selection guide
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Technical data
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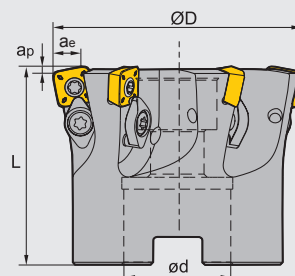
High feed milling cutters



XMR01 P M K S



S type insert milling cutter



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ap	ae	L	ød			
XMR01 -050-A22-SD06-07C	▲	50	0.8	5.8	40	22	7	A	0.36
-063-A22-SD06-10C	▲	63	0.8	5.8	40	22	10	A	0.53
-063-A27-SD06-10C	▲	63	0.8	5.8	50	27	10	A	0.57
-050-A22-SD09-04C	▲	50	1.4	8.8	40	22	4	A	0.3
-063-A22-SD09-06C	▲	63	1.4	8.8	40	22	6	A	0.5
-063-A27-SD09-06C	▲	63	1.4	8.8	50	27	6	A	0.6
-063-A22-SD12-05C	▲	63	1.8	11.7	40	22	5	A	0.5
-063-A27-SD12-05C	▲	63	1.8	11.7	50	27	5	A	0.6
-080-A27-SD12-05C	▲	80	1.8	11.7	50	27	5	A	0.9
-100-B32-SD12-06	▲	100	1.8	11.7	50	32	6	B	1.8
-080-A27-SD15-05C	▲	80	2.2	14	50	27	5	A	0.78
-080-A32-SD15-05	▲	80	2.2	14	50	32	5	A	0.72
-100-B32-SD15-07	▲	100	2.2	14	50	32	7	B	1.2
-125-B40-SD15-09	▲	125	2.2	14	63	40	9	B	2.9
-160-B40-SD15-12	▲	160	2.2	14	63	40	12	B	4.4

▲ Stock available

△ Make-to-order

Indexable milling tools

High feed milling cutters

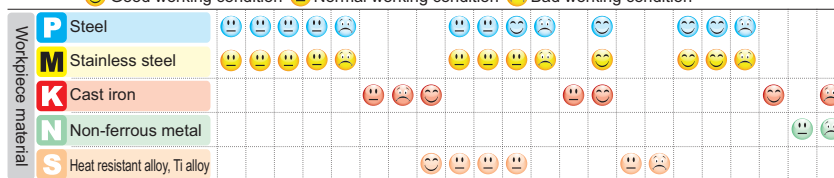
Spare parts

Tool type	Screw	Clamp Screw	Clamp	Wrench	
					
XMR01□□-SD06□□	I60M2.2×5.5	--	--	WT07IP	--
XMR01□□-SD09□□	I60M3.5×08TT	I60M4×8.4	WD-204	WT10IP	WT15IP
XMR01□□-SD12□□	I60M4×8.4			WT15IP	
XMR01□□-SD15□□	I60M5×13		WD-208	WT20IP	--



Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

😊 Good working condition 😐 Normal working condition ☹ Bad working condition



Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		ØI.C	L	r	S	ød	α	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SDMT06T208-DM	6.35	6.35	0.8	2.58	2.5	15°	★			★						●	○				●							
	SDMT09T312-DM	9.525	9.525	1.2	3.97	4.0	15°	★			★						●	○											
	SDMT120412-DM	12.7	12.7	1.2	4.76	4.4	15°	★			★					★	●	○											
	SDMT150520-DM	15.875	15.875	2.0	5.56	5.5	15°	★			★						●	●	○										
	SDMT06T208-PM	6.35	6.35	0.8	2.58	2.5	15°	★		○						●						●							
	SDMT09T312-PM	9.525	9.525	1.2	3.97	4.0	15°	★		●						●													
	SDMT120412-PM	12.7	12.7	1.2	4.76	4.4	15°	★		●						●													
	SDMT150520-PM	15.875	15.875	2.0	5.56	5.5	15°	★		●						●													
	SDMT06T208-NM	6.35	6.35	0.8	2.58	2.5	15°				●											●							
	SDMT09T312-NM	9.525	9.525	1.2	3.97	4.0	15°				○											○	○						
	SDMT120412-NM	12.7	12.7	1.2	4.76	4.4	15°				○						○					○	○						
	SDMT150520-NM	15.875	15.875	2.0	5.56	5.5	15°				●						●					●							

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

- DM chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron, etc.

High feed milling cutters

High feed milling cutters



XMR01 P M K



W-type insert, straight shank



Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		ØD	ap	ae	L1	L	ød		
XMR01 -020-G20-WP05-02-M	△	20	1.5	3.8	50	130	20	2	0.2
-020-G20-WP05-02-L	△	20	1.5	3.8	100	180	20	2	0.3
-020-G20-WP05-02-XL	△	20	1.5	3.8	130	250	20	2	0.8
-025-G25-WP06-02-M	△	25	1.5	4.35	60	140	25	2	0.4
-025-G25-WP06-02-L	△	25	1.5	4.35	120	200	25	2	0.6
-025-G25-WP06-02-XL	△	25	1.5	4.35	180	300	25	2	1.0
-032-G32-WP06-03-M	△	32	1.5	4.35	70	150	32	3	0.8
-032-G32-WP06-03-L	△	32	1.5	4.35	120	200	32	3	1.0
-032-G32-WP06-03-XL	△	32	1.5	4.35	180	300	32	3	1.6
-040-G32-WP06-03-M	△	40	1.5	4.35	50	150	32	3	0.9
-040-G32-WP06-03-L	△	40	1.5	4.35	50	250	32	3	1.5
-040-G32-WP06-03-XL	△	40	1.5	4.35	50	300	32	3	1.8
-040-G32-WP08-02-M	△	40	1.5	5.66	50	150	32	2	0.9
-040-G32-WP08-02-L	△	40	1.5	5.66	50	250	32	2	1.5
-040-G32-WP08-02-XL	△	40	1.5	5.66	50	300	32	2	1.9
-050-G32-WP09-02-M	△	50	3.0	6.8	50	150	32	2	1.9
-050-G32-WP09-02-L	△	50	3.0	6.8	50	250	32	2	2.5

▲ Stock available

△ Make-to-order

Indexable
milling tools

High feed milling cutters

Spare parts

Tool type	Clamp/Insert screw	Clamp	Wrench	
				
XMR01□□-WP05□□	I60M3.5×6.5	--	WT10P	--
XMR01□□-WP06□□	I60M4×8.4		WT15P	
XMR01□□-WP08□□	I60M5×13	WD-208	--	WT20IT
XMR01□□-WP09□□				



Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240



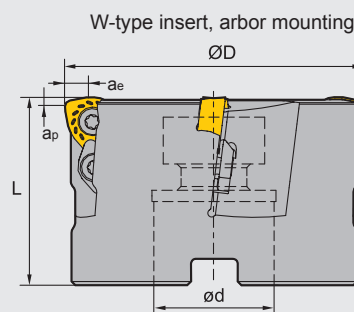
B MILLING

Indexable Milling Tools

High feed milling cutters



XMR01 P M K



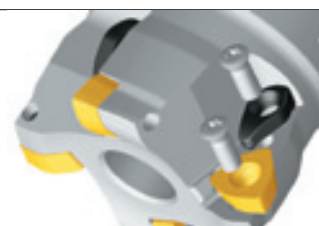
Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		ØD	ap	ae	L	ød			
XMR01 -050-A22-WP06-04	△	50	1.5	4.35	40	22	4	A	0.4
-050-A22-WP08-03	△	50	1.5	5.66	50	22	3	A	0.4
-063-A22-WP08-04C	△	63	1.5	5.66	50	22	4	A	0.7
-063-A27-WP08-04C	△	63	1.5	5.66	50	27	4	A	0.7
-080-A27-WP08-05C	△	80	1.5	5.66	63	27	5	A	1.5
-100-B32-WP08-06	△	100	1.5	5.66	63	32	6	B	2.2
-125-B40-WP08-07	△	125	1.5	5.66	63	40	7	B	3.5
-160-B40-WP08-08	△	160	1.5	5.66	63	40	8	B	6.0
-063-A22-WP09-03C	△	63	3.0	6.8	50	22	3	A	0.7
-080-A27-WP09-04C	△	80	3.0	6.8	63	27	4	A	1.4
-100-B32-WP09-05	△	100	3.0	6.8	63	32	5	B	2.1
-125-B40-WP09-06	△	125	3.0	6.8	63	40	6	B	3.7
-160-B40-WP09-07	△	160	3.0	6.8	63	40	7	B	6.3

▲Stock available △Make-to-order

Spare parts

Tool type	Clamp/Insert screw	Clamp	Wrench	
XMR01□□-WP06□□	I60M4×8.4	--	WT15S	--
XMR01□□-WP08□□	I60M5×13	WD-208	--	WT20IT
XMR01□□-WP09□□	I60M5×13	WD-208	--	



Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

The technical drawing shows a triangular plate with a central circular hole. The outer vertices of the triangle are labeled $\varnothing I.C$. The radius from the center of the hole to the vertices is labeled r . The diameter of the central hole is labeled $\varnothing d$. To the right, a cross-section view of the plate is shown, indicating a thickness S and a fillet radius α at the top edge.

	P	M	K	N	S
Steel	😊😊😊😊😞				
Stainless steel	😊😊😊😊😊	😊😊😊😊😞😊			
Cast iron			😞😞😊		
Non-ferrous metal					
Heat resistant alloy, Ti alloy					😊😊😊😊😞😞

[illegible]

General chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron, etc.

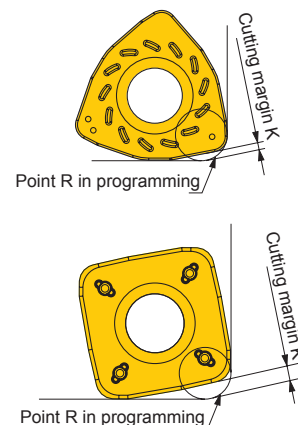


MILLING

Indexable Milling Tools

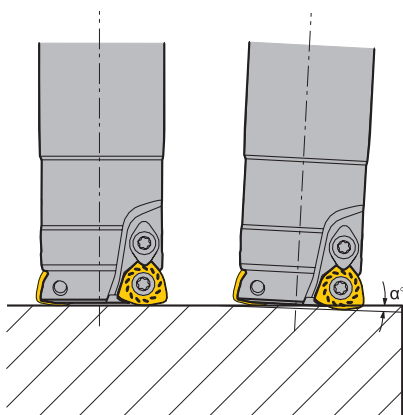
Approximate R in machining program

Applicable insert	Approximate R(mm)	Cutting margin K(mm)
WPGT050315ZSR/-PM	2	0.5
WPGT060415ZSR/-PM	2.5	0.7
WPGT080615ZSR/-PM	2.5	0.7
WPGT090725ZSR/-PM	4.5	1.2
SDMT06T208-DM/-PM/NM	1.6	0.5
SDMT09T312-DM/-PM/NM	2.5	0.87
SDMT120412-DM/-PM/NM	4.0	0.93
SDMT150520-DM/-PM/NM	4.0	1.38

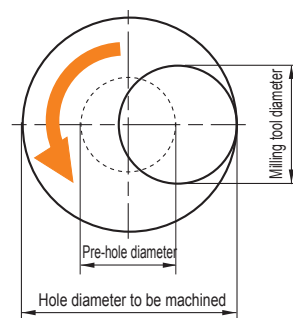


Different machining styles

■ Ramp machining



■ Helical interpolation milling



- Reduce the feed rate in ramp and helical machining operations.
- Set the axial feed rate below 0.2mm/rev in drilling operation.
- Be careful ! Long chips may fly off in drilling operation.
- The cutting depth of each rotation must not exceed the maximum cutting depth (a_p).
- The S-type insert can be used for plunge milling in addition to the machining operations mentioned above.

Selection guide for XMR01 series

XMR01 series tools (with SD□□ inserts) have perfect edge strength and good economical efficiency, advantageous in face milling.

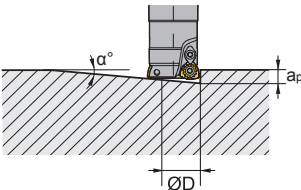
XMR01 series tools (with WP□□ inserts) has good capability of chip removal, proficient in cavity milling.

Indexable
milling tools

High feed milling cutters

Ramp milling, helical interpolation milling

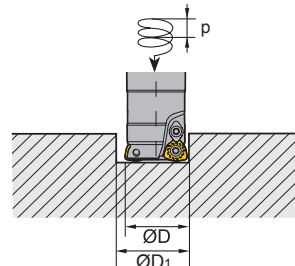
Ramp milling



$$L_m = \frac{a_p}{\tan \alpha}$$

α: Plunge angle

Helical interpolation milling



$$P = \tan \alpha \times \pi \times D_1$$

α: Helix angle

Insert	Diameter ØD(mm)	Ramp milling		Helical interpolationmilling	
		Max.cutting depth a _p (mm)	Max.plunge angle α°	Min.diameter ØD ₁ (mm)	Max.diameter (mm)
WP**05**	20	1.5	12	24	37
WP**06*	25	1.5	8.8	31	47
	32	1.5	5	45	61
	40	1.5	3.2	61	77
	50	1.5	2.8	81	97
WP**08*	40	1.5	9	52	77
	50	1.5	5.4	71	97
	63	1.5	4.3	97	123
	80	1.5	2.9	131	157
	100	1.5	2.1	171	197
	125	1.5	1.3	221	247
	160	1.5	1.1	291	317
WP**09*	50	3.0	7.2	70	96
	63	3.0	4.5	96	122
	80	3.0	2.8	130	156
	100	3.0	2.2	170	196
	125	3.0	1.6	220	246
	160	3.0	1.2	290	316

Reduce the feed rate when plunging and circular milling.
 For drilling operations (axial) set the feed rate under 0.2mm.
 "Attention"—drilling can produce long chips.

Indexable
milling tools

High feed milling cutters



MILLING

Indexable Milling Tools

Ramp milling, helical interpolation milling

	Insert	Diameter ØD(mm)	Ramp milling		Helical interpolationmilling	
			max.cutting depth a_p (mm)	max.cutting depth α°	min.diameter ØD ₁ (mm)	max. diameter(mm)
● Ramp milling $L_m = \frac{a_p}{\tan \alpha}$ α: Plunge angle	SD**06**	20	0.8	3.6	30	38
		25	0.8	2.8	40	48
		32	0.8	1.6	52	60
		40	0.8	1.1	70	78
		50	0.8	0.8	90	98
		63	0.8	0.7	114	122
	SD**09**	25	1.4	6.5	34	48
		32	1.4	4.5	48	62
		35	1.4	3.6	54	68
		50	1.4	1.8	84	98
		63	1.4	1.3	110	124
● Helical interpolation milling $P = \tan \alpha \times \pi \times D_1$ α: Helix angle	SD**12**	32	1.8	10.4	44	60
		40	1.8	5.7	60	76
		50	1.8	3.5	80	96
		63	1.8	2.5	106	122
		80	1.8	1.6	140	156
		100	1.8	1.2	180	196
	SD**15**	40	2.2	7.3	54	76
		80	2.2	1.4	134	156
		100	2.2	1.0	174	196
		125	2.2	0.9	234	246
		160	2.2	0.6	304	316

Reduce the feed rate when plunging and circular milling.
For drilling operations (axial) set the feed rate under 0.2mm.
"Attention"—drilling can produce long chips.

Indexable
milling tools

High feed milling cutters

➤ Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting speed (m/min)	Ø25		Ø30/32/35	
					Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth
P	Soft steel Carbon Steel	≤HB180 HB180-280	YBC302 YBM351 YBM253 YBG205 YB9320	170(120-220) 150(100-200)	0.6~1.5	0.6~1.2	0.6~1.2	0.5~1.4
	Alloy steel Alloy tool steel	HB280-350	YBC302 YBM351 YBM253 YBG205 YB9320	130(80-180)	0.4~1.2	0.6~1.2	0.4~1.0	0.5~1.4
	pre-hardened steel	≤HRC35	YBC302 YBM351 YBM253 YBG205 YB9320	120(80-160)	0.4~1.0	0.5~1.0	0.4~1.0	0.5~1.0
M	Stainless steel	≤HB270	YBM351 YBM253	120(80-160)	0.6~1.0	0.6~1.0	0.8~1.2	0.8~1.2
			YBG205 YB9320	120(80-190)				
K	Common cast iron	Tensile strength ≤350MPa	YBG302	150(100-200)	0.6~1.0	0.6~1.4	0.6~1.2	0.6~1.6
	Nodular cast iron	Tensile strength ≤800MPa	YBG302	120(80-160)	0.4~0.8	0.5~1.2	0.4~1.0	0.5~1.4
S	Difficult-to-machine materials	≤400	YBS203	80(60-120)	0.6~1.0	0.6~1.0	0.8~1.2	0.8~1.2
			YBS303	60(45-110)	0.4~0.8	0.4~0.8	0.4~1.0	0.4~0.8

Indexable
milling tools

High feed milling cutters

➤ Recommended cutting parameters

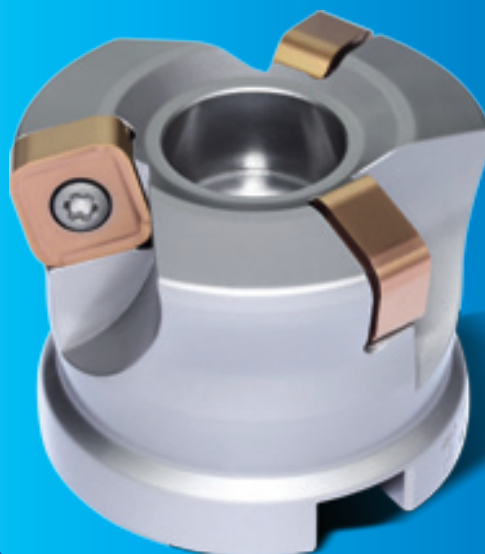
Workpiece material		Hardness HB	Insert grade	Cutting speed (m/min)	Ø40		Ø50/63		Ø80/100	
					Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth
P	Soft steel Carbon Steel	≤HB180 HB180-280	YBC302 YBM351 YBM253 YBG205 YB9320	170(120-220) 150(100-200)	0.6~1.5	0.8~1.5	0.6~1.5	0.8~1.5	0.6~1.5	0.5~1.5
	Alloy steel Alloy tool steel	HB280-350	YBC302 YBM351 YBM253 YBG205 YB9320	130(80-180)	0.4~1.2	0.6~1.5	0.4~1.3	0.6~1.5	0.4~1.3	0.5~1.5
	pre-hardened steel	≤HRC35	YBC302 YBM351 YBM253 YBG205 YB9320	120(80-160)	0.4~1.0	0.5~1.0	0.4~1.3	0.5~1.0	0.4~1.3	0.5~1.0
M	Stainless steel	≤HB270	YBM351 YBM253	120(80-160)	0.8~1.2	0.8~1.2	1.1~1.5	0.9~1.3	1.0~1.5	0.8~1.3
			YBG205 YB9320	120(80-190)						
K	Common cast iron	Tensile strength ≤350MPa	YBG302	150(100-200)	0.6~1.5	0.8~1.6	0.6~1.5	0.8~1.7	0.6~1.5	0.6~1.7
	Nodular cast iron	Tensile strength ≤800MPa	YBG302	120(80-160)	0.4~1.2	0.6~1.4	0.6~1.3	0.6~1.5	0.4~1.3	0.5~1.5
S	Difficult-to- machine materials	≤400	YBS203	80(60-120)	0.8~1.2	0.6~1.0	1.1~1.5	0.6~1.2	1.0~1.5	0.4~1.2
			YBS303	60(45-110)	0.4~1.0	0.4~1.0	0.6~1.2	0.6~1.0	0.4~1.0	0.4~0.8



After reasonable calculation and optimization, the axial and radial inclination angles effectively reduce the machining resistance of the tool. ▶

The whole cutting tool can realize stable processing with excellent impact resistance and strong vibration resistance. ▶

Screw clamping achieves high positioning accuracy and good economy. ▶



XMRO03 Series of High Feed Milling Cutter

8 cutting edges on both sides achieve economical and cost-effective machining.



Large rake angle design, low cutting resistance, special edge shape and tool combination achieve a large chip space, leading to excellent chip removal performance.

Due to the good versatility, it can be used for large-feed processing of various steels, as well as processing viscous materials such as stainless steel and titanium alloy.

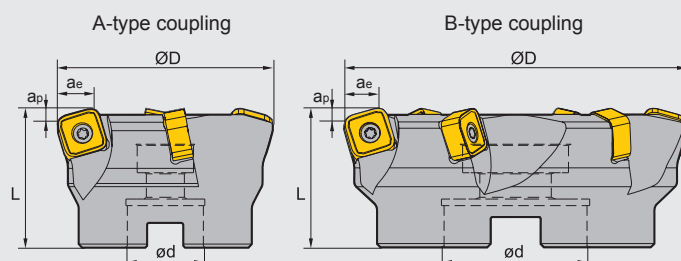
④×2=8 cutting edges



High feed milling cutters



XMR03 P M



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)	
		ØD	a _p max	a _e	L	ød				
XMR03 Coarse pitch	-050-A22-SN12-03	▲	50	1.8	9.8	40	22	3	A	0.289
	-063-A22-SN12-04	▲	63	1.8	9.8	40	22	4	A	0.482
	-080-A27-SN12-05	▲	80	1.8	9.8	50	27	5	A	1.014
	-100-B32-SN12-06	▲	100	1.8	9.8	50	32	6	B	1.45
	-125-B40-SN12-07	▲	125	1.8	9.8	63	40	7	B	2.7
Close pitch	-050-A22-SN12-04	△	50	1.8	9.8	40	22	4	A	0.319
	-063-A22-SN12-05	△	63	1.8	9.8	40	22	5	A	0.512
	-080-A27-SN12-06	△	80	1.8	9.8	50	27	6	A	1.044
	-100-B32-SN12-07	△	100	1.8	9.8	50	32	7	B	1.48
	-125-B40-SN12-08	△	125	1.8	9.8	63	40	8	B	2.73
Extra close pitch	-050-A22-SN12-05	△	50	1.8	9.8	40	22	5	A	0.354
	-063-A22-SN12-06	△	63	1.8	9.8	40	22	6	A	0.547
	-080-A27-SN12-07	△	80	1.8	9.8	50	27	7	A	1.079
	-100-B32-SN12-08	△	100	1.8	9.8	50	32	8	B	1.435
	-125-B40-SN12-09	△	125	1.8	9.8	63	40	9	B	2.765

▲Stock available

△Make-to-order

Indexable
milling tools

High feed milling cutters

Spare parts

Tool type	Insert screw	Wrench
		
XMR03□□-SD12□□	I60M4×10	WT15IP

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240

B MILLING Indexable Milling Tools

Selection of inserts

		Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet		Cemented carbide							
Insert shape	Type	L	ØI.C	r	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGU120620-GM	12.7	12.7	2.0	5.6	4.4			●							●	●											

ØI.C

r

L

ød

S



Steel

Stainless steel

Cast iron

Non-ferrous metal

Heat resistant alloy, Ti alloy

Good working condition

Normal working condition

Bad working condition

★ Recommended grade (always stock available)

● Available grade (always stock available)

○ Make-to-order

Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting speed (m/min)	Ø50/63		Ø80/125	
				Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth
P Soft steel, carbon steel	≤ HB180 HB180-280	YB9320	170(120-220) 150(100-200)	0.6~1.5	0.5~1.5	0.6~1.5	0.6~1.5
		YBM253					
		YBG205					
P Alloy steel, alloy tool steel	HB280-350	YB9320	130(80-180)	0.4~1.3	0.5~1.5	0.4~1.3	0.6~1.5
		YBM253					
		YBG205					
P Pre-hardened steel	≤ HRC35	YB9320	120(80-160)	0.4~1.3	0.5~1.0	0.4~1.3	0.5~1.0
		YBM253					
		YBG205					
M Stainless steel	≤ HB270	YBM253	120(80-160)	0.4~1.5	0.4~1.2	0.4~1.5	0.5~1.3
		YBG205					
		YB9320					

XMR03series milling cutter processing case

Workpiece: 718H(HRC 34)

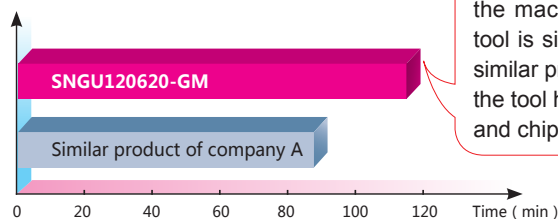
Toolholder: XMR03-050-A22-SN12-03

Insert: SNGU120620-GM/YB9320

Cutting parameter:

$V_c=142\text{m/min}$, $f_z=1.25\text{mm/z}$,

$a_p=0.8\text{mm}$



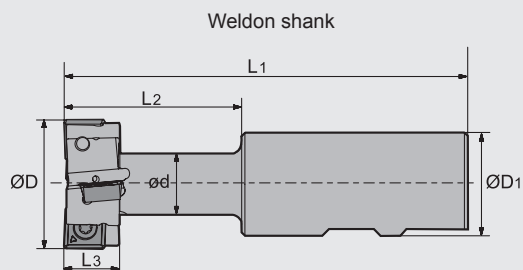
Under the same circumstances, the machining life of our XMR03 tool is significantly better than the similar product of company A, and the tool has better wear resistance and chipping resistance.

T-slot milling tools

Kr:90°



Machining T slot

TMP01 

Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Number of insert	T-slot specification
		ØD	ØD ₁	ød	L ₁	L ₂	L ₃			
TMP01 -021-XP25-MP06-01	▲	21	25	10	100	32	9	1	2	12
-025-XP25-MP06-01	▲	25	25	12	100	35	11	1	2	14
-032-XP32-MP08-02	▲	32	32	15	110	45	14	2	4	18
-040-XP32-MP12-02	▲	40	32	19	125	55	18	2	4	22
-050-XP40-MP12-02	▲	50	40	25	140	65	22	2	4	28
-060-XP50-MP12-02	▲	60	50	32	160	80	28	2	6	36

▲ Stock available

△ Make-to-order

Indexable
milling tools

T-slot milling tools

Spare parts

Tool type	Screw	Wrench	
			
TMP01-021-XP25-MP06-01	I60M2.5×5.5	WT07IP	--
TMP01-025-XP25-MP06-01	I60M2.5×5.5		
TMP01-032-XP32-MP08-02	I60M3×7	WT10IP	--
TMP01-040-XP32-MP12-02	I60M5×10		
TMP01-050-XP40-MP12-02	I60M5×10	--	WT20IT
TMP01-060-XP50-MP12-02	I60M5×10		

Caution: When installing inserts, make sure the insert nose marked with "DM" or "Δ" is pointing to the slot.

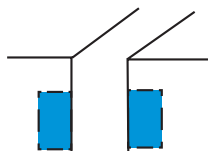
Tools code key
B24–B25Grade selection guide
B19–B23Technical data
B234–B240

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

T-slot milling tools



Workpiece material	Insert grade	Cutting parameters		
		Vc(m/min)	fz(mm/z)	Cooling
Grey cast iron	YBG302	80~160	0.05~0.2	Wet / Dry

Helical milling

Kr:90°



Side milling

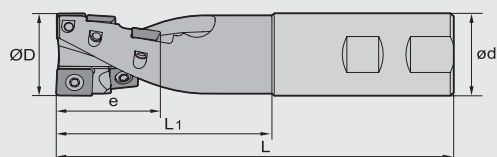


Slot milling

HMP01 P K



Weldon shank



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of flute Z	Number of inserts		Shank type
	R	L	ØD	ød	e	L1	L		APKT 150412-PM/KM	SPMT 120408-PM/KM	
HMP01 -040×55-XP40-SP12-02	△	△	40	40	55	95	175	2	1	5	Weldon shank
-050×55-XP40-SP12-04	△	△	50	40	55	95	175	4	2	10	Weldon shank

▲Stock available

△Make-to-order

Spare parts

Diameter ØD	Screw	Wrench	
Ø40	I60M5×10 	WT20T 	
Ø50	I60M5×13 	WT20T 	

Tools code key
B24–B25Grade selection guide
B19–B23Technical data
B234–B240Indexable
milling tools

Helical milling



Helical milling

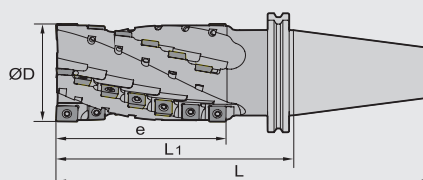
Kr:90°



HMP01 P K



JT shank/ BT shank (JT shank shown)



Specification of tools

Type	Stock		Basic dimensions(mm)				Teeth row	Number of inserts		Shank type
	R	L	ØD	e	L ₁	L		APKT 150412-PM/KM	SPMT 120408-PM/KM	
HMP01 -050×84-JT50-SP12-04	△	△	50	84	145	246.75	4	2	16	JT
-063×74-JT50-SP12-04	△	△	63	74	135	236.75	4	2	14	JT
-063×104-JT50-SP12-04	△	△	63	104	165	266.75	4	2	20	JT
-063×134-JT50-SP12-04	△	△	63	134	195	296.75	4	2	26	JT
-080×104-JT50-SP12-04	△	△	80	104	165	266.75	4	2	20	JT
-080×144-JT50-SP12-04	△	△	80	144	205	306.75	4	2	28	JT
-050×84-BT50-SP12-04	△	△	50	84	145	246.8	4	2	16	BT
-063×74-BT50-SP12-04	△	△	63	74	135	236.8	4	2	14	BT
-063×104-BT50-SP12-04	△	△	63	104	165	266.8	4	2	20	BT
-063×134-BT50-SP12-04	△	△	63	134	195	296.8	4	2	26	BT
-080×104-BT50-SP12-04	△	△	80	104	165	266.8	4	2	20	BT
-080×144-BT50-SP12-04	△	△	80	144	205	306.8	4	2	28	BT

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Screw	Wrench	
Ø50	I60M5×13	WT20IS	
Ø63	I60M5×13	WT20IS	
Ø80	I60M5×13	WT20IS	

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Helical milling

Kr:90°



Side milling

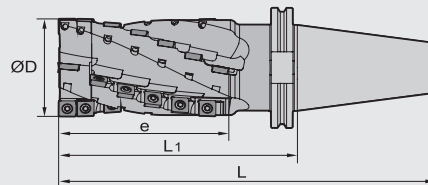


Slot milling

HMP01 EC P K



JT shank/ BT shank (JT shank shown)



Specification of tools

Type	Stock		Basic dimensions(mm)				Teeth row	Number of inserts		Shank type
	R	L	ØD	e	L1	L		APKT 150412-PM/KM	SPMT 120408-PM/KM	
HMP01 -050×84EC-JT50-SP12-04	△	△	50	84	145	246.75	4	2	16	JT
-063×74EC-JT50-SP12-04	△	△	63	74	135	236.75	4	2	14	JT
-063×104EC-JT50-SP12-04	△	△	63	104	165	266.75	4	2	20	JT
-063×134EC-JT50-SP12-04	△	△	63	134	195	296.75	4	2	26	JT
-080×104EC-JT50-SP12-04	△	△	80	104	165	266.75	4	2	20	JT
-080×144EC-JT50-SP12-04	△	△	80	144	205	306.75	4	2	28	JT
-050×84EC-BT50-SP12-04	△	△	50	84	145	246.8	4	2	16	BT
-063×74EC-BT50-SP12-04	△	△	63	74	135	236.8	4	2	14	BT
-063×104EC-BT50-SP12-04	△	△	63	104	165	266.8	4	2	20	BT
-063×134EC-BT50-SP12-04	△	△	63	134	195	296.8	4	2	26	BT
-080×104EC-BT50-SP12-04	△	△	80	104	165	266.8	4	2	20	BT
-080×144EC-BT50-SP12-04	△	△	80	144	205	306.8	4	2	28	BT

▲Stock available

△Make-to-order

Indexable
milling tools

Helical milling

Spare parts

Diameter ØD	Insert screw	Screw of interchangeable head	Wrench of insert screw	Wrench of interchangeable head	Interchangeable head
Ø50	I60M5×13	M10×50	WT20IS	WH80L	050EC
Ø63	I60M5×13	M10×50	WT20IS	WH80L	063EC
Ø80	I60M5×13	M12×55	WT20IS	WH100L	080EC

Tools code key
B24-B25Grade selection guide
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B MILLING Indexable Milling Tools

Selection of inserts

😊 Good working condition

😐 Normal working condition

😞 Bad working condition

Workpiece material	Basic dimensions(mm)						CVD Coating				PVD Coating				Cermet	Cemented carbide											
	L	I.W	S	ød	r		YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
N Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
S Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
APKT150412-PM	16.33	12.7	4.76	5.4	1.2					★							●										
APKT150412-KM	16.33	12.7	4.76	5.4	1.2												●	○									

★Recommended grade (always stock available)

●Available grade (always stock available)

○Make-to-order

Selection of inserts

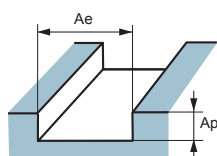
Workpiece material	Basic dimensions(mm)						CVD Coating				PVD Coating				Cermet	Cemented carbide											
	L	ØI.C	S	ød	r		YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
N Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
S Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
SPMT120408-PM	12.7	12.7	4.76	5.5	0.8					★							●										
SPMT120408-KM	12.7	12.7	4.76	5.5	0.8												●	○									

★Recommended grade (always stock available)
●Available grade (always stock available)
○Make-to-order

Chipbreaker selection for HMP01 milling inserts

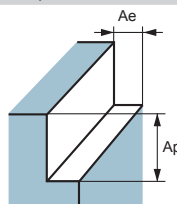
Classification	Function	For semi-finishing	For roughing
P		-PM	-PM
K		-KM	-KM

A Slot milling



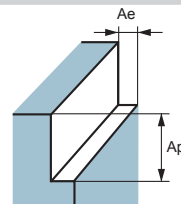
$A_e = D$
 $A_p = 0.5D$ (cast iron)
 Maximum 12mm (steel)

B Square shoulder milling



$A_e = 0.5D$
 $A_p = 1.5D$ (cast iron)
 $1.0D$ (steel)

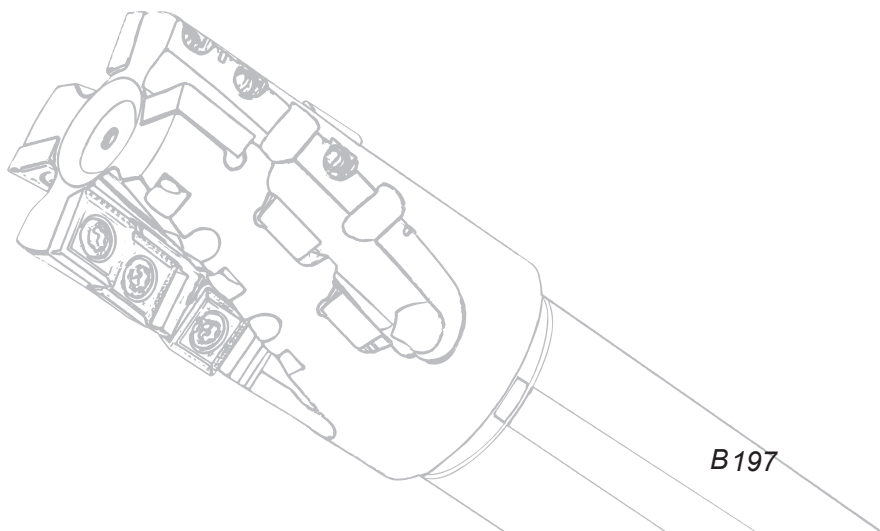
C Narrow shoulder milling



$A_e = 0.1D$
 $A_p \leq \text{Maximum cutting length}$

► Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters		Operation (figure)
				Cutting speed (m/min)	Feed speed (mm/z)	
P	Low-carbon steel, Soft steel	≤ 180	YBM253 YBG302	80(60-90)	0.25(0.1-0.35)	A
				90(70-120)	0.3(0.15-0.4)	B
				90(70-120)	0.3(0.15-0.4)	C
	High-carbon steel, Alloy steel	180-280	YBM253 YBG302	70(60-100)	0.2(0.1-0.35)	A
				80(60-120)	0.25(0.15-0.35)	B
				90(70-120)	0.25(0.15-0.35)	C
	Alloy tool steel	280-350	YBM253 YBG302	50(40-80)	0.15(0.08-0.25)	A
				60(50-100)	0.2(0.1-0.35)	B
				70(50-100)	0.2(0.1-0.35)	C
K	Cast iron	180-250	YBG152 YBG302	70(50-100)	0.2(0.1-0.35)	A
				80(60-120)	0.25(0.15-0.35)	B
				90(80-120)	0.25(0.15-0.35)	C

Indexable
milling toolsHelical endmills with
interchangeable heads



MILLING

Indexable Milling Tools

Chamfer milling

Kr:30°



Chamfering



Face milling

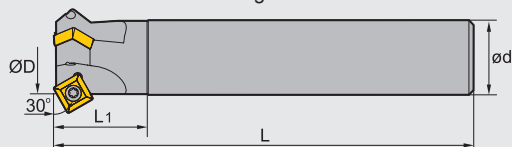


Hole stomata chamfer

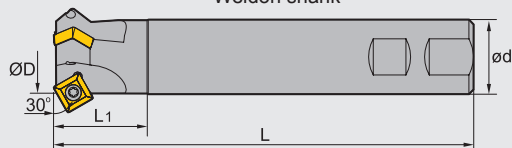
CMZ01 **P** **M** **K**



Straight shank



Weldon shank



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)	
		ØD	ød	L	L ₁			
CMZ01 Straight shank	-012-G20-SP12-01	△	12	20	100	40	1	0.2
	-025-G25-SP12-02	△	25	25	120	40	2	0.8
	-032-G32-SP12-03	△	32	32	180	40	3	1.1
Weldon shank	-012-XP20-SP12-01	△	12	20	100	40	1	0.2
	-025-XP25-SP12-02	△	25	25	120	40	2	0.6
	-032-XP32-SP12-03	△	32	32	180	40	3	1.0

▲ Stock available

△ Make-to-order

Indexable
milling tools

Chamfer milling

Spare parts

Diameter ØD	Screw	Wrench	
Ø12-Ø32	I43M5×11	WT20IS	

Tools code key
B24-B25

Grade selection guide
B19-B23

Technical data
B234-B240

Chamfer milling

Kr:45°



Chamfering



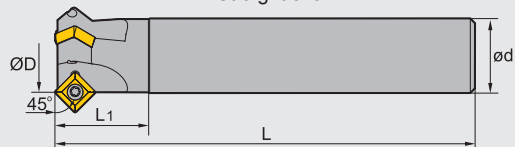
Face milling



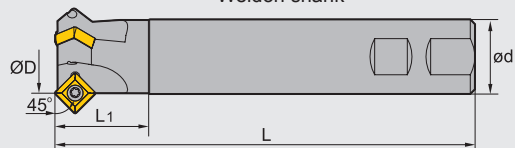
Hole stomata chamfer

CMA01 P M K

Straight shank



Weldon shank



Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)
		ØD	ød	L	L ₁		
CMA01 Straight shank	▲	12	20	100	40	1	0.2
	▲	25	25	120	40	2	0.8
	▲	32	32	180	40	3	1.1
Weldon shank	▲	12	20	100	40	1	0.2
	▲	25	25	120	40	2	0.6
	▲	32	32	180	40	3	1.0

▲Stock available

△Make-to-order

Indexable
milling tools

Chamfer milling

Spare parts

Diameter ØD	Screw	Wrench	
Ø12-Ø32	I43M5×11	WT20IS	

Tools code key
B24-B25Grade selection guide
B19-B23Technical data
B234-B240



MILLING

Indexable Milling Tools

Chamfer milling tools

Kr:60°



Chamfering



Face milling

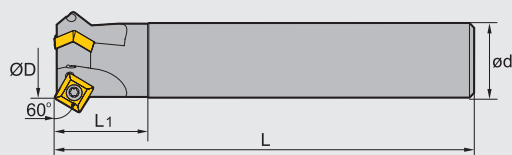


Hole stomata chamfer

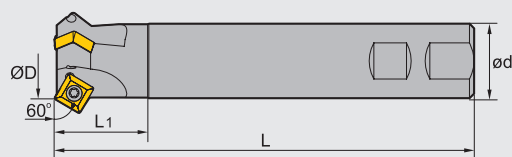
CMD01 **P** **M** **K**



Straight shank



Weldon shank



Specification of tools

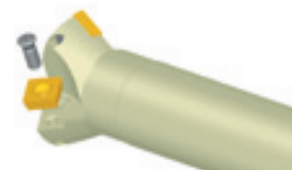
Type	Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)	
		ØD	ød	L	L ₁			
CMD01 Straight shank	-012-G20-SP12-01	▲	12	20	100	40	1	0.2
	-025-G25-SP12-02	▲	25	25	120	40	2	0.8
	-036-G32-SP12-03	▲	36	32	180	40	3	1.0
Straight shank	-012-XP20-SP12-01	▲	12	20	100	40	1	0.2
	-025-XP25-SP12-02	▲	25	25	120	40	2	0.6
	-036-XP32-SP12-03	▲	36	32	180	40	3	1.0

▲ Stock available

△ Make-to-order

Spare parts

Diameter ØD	Screw	Wrench
		
Ø12-Ø36	I43M5×11	WT20IS



Tools code key

B24-B25

Grade selection guide

B19-B23

Technical data

B234-B240

Selection of inserts

Selection of inserts

😊 Good working condition

😐 Normal working condition

😞 Bad working condition

Workpiece material	Basic dimensions(mm)						CVD Coating				PVD Coating				Cermet	Cemented carbide											
	ØI.C	L	r	S	ød		YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
N Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
S Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating				PVD Coating				Cermet	Cemented carbide											
		ØI.C	L	r	S	ød		YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SPMT120408	12.7	12.7	0.8	4.76	5.5	●	●	●									★							○			

★ Recommended grade (always stock available)

● Available grade (always stock available)

○ Make-to-order

Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters	
			Cutting speed(m/min)	Feed speed(mm/z)
P	Low-carbon steel, Soft steel	YBM251 YBC301	180(100-250)	0.25 (0.1-0.4)
		YBM351 YBG302	150(100-200)	0.3 (0.1-0.5)
		YC30S	120(80-150)	0.4 (0.1-0.5)
	High-carbon steel, Alloy steel	YBM251 YBC301	160(100-220)	0.3 (0.1-0.4)
		YBM351 YBG302	130(100-180)	0.3 (0.1-0.5)
		YC30S	100(60-150)	0.4 (0.1-0.5)
	Alloy tool steel	YBM251 YBC301	120(80-180)	0.3 (0.1-0.4)
		YBM351 YBG302	100(80-150)	0.3 (0.1-0.5)
		YC30S	80(60-120)	0.4 (0.1-0.5)
M	Stainless steel	YBM251 YBC301	120(80—180)	0.3 (0.1-0.4)
		YBM351 YBG302	100(80-150)	0.3 (0.1-0.5)
		YC30S	80(60-120)	0.4 (0.1-0.5)
K	Cast iron	YBG302	130(100-180)	0.4 (0.1-0.5)

PCD&PCBN inserts

APHT-PCD	APHT-W	APHT-CBN	SEHT-PCD	SEHT-CBN
Page B206	B206	B206	B224	B224

Inserts for face milling

SEET-CF	SEET-CM	SEET-CR	SEET-DF	SEET-DM	SEET-DR	SEET-EF	SEET-EM
Page B219	B219	B219	B219	B219	B219	B219	B219

SEET-LH	SEET-W	SEHT-AL	SEK(E)N	SEKR	SEMR-M	SEKR-M	SNG(M)X-GL
Page B219	B219	B224	B220	B220	B220	B220	B222

SNG(M)X-GM	SNG(M)X-GH	SNCU-W4	ODHT-GM	ODHT-GH	ODHT-GL	ODMT-GM	ODHT-LH
Page B222	B222	B223	B211	B211	B211	B211	B211

OFKT-DF	OFKT-DM	OFKT-LH	ONHU-PF	ONHU-PM	ONHU-W	ONHU-GM	ONHU-GH
Page B211	B211	B211	B212	B212	B212	B212	B212

ONHU-GL	ONHU-W	ONMU-GM	ONMU-GH	SNEG-GM	SNEG-HGR	SNEG-W	HNEX-DF
Page B212	B212	B212	B212	B221	B221	B221	B208

HNEX-DM	HNEX-DR	PNEG-GL	PNEG-GM	PNEG-GH	PNEG-CF/CM/CR	PNEG-PF/PM/PR	PNEG-KL/KM/KH
Page B208	B208	B213	B213	B213	B213	B214	B214

LNKT-ZR	LNKT-ZR	LNKT-ZR	SPKW	SPKT	SP□N	SPKR-GM	SPEX
Page B209	B209	B209	B226	B224	B225	B226	B227

SPMR	SP□N	TPKN	TPGN	TPUN	TPMR
Page B227	B228	B229	B229	B230	B230

Indexable milling tools

Milling inserts

Inserts for face milling

							
SEET□PER-APF	SEET□PER-APM	SEET□PER-APR	WNHU-GM	WNHU-LH	RCKT-DM	RCKT-DR	RCKT-ER
Page B221	B221	B221	B231	B231	B216	B216	B216

				
RCKT-NM	RCMW	RDKW□MO	RDKT□MO	RDKT□MO-NM
Page B216	B216	B217	B217	B217

Inserts for square shoulder milling

							
APHT-AL	APKT-APF	APKT-APM	APKT-ALH	ANGX□PNR-GM	ANMX□PNR-GM	ANGX□PNR-LH	LNKT-GM
Page B206	B207	B207	B207	B208	B208	B208	B210

	
LNKT-GL	LNMT-GM
Page B210	B210

Indexable
milling tools

Milling inserts

Inserts for profile milling

						
ZDET	ZPNT	SDMT/SPMT	ROHX	XPHT-GM	ZOHX-GF	ZOHX-GM
Page B232	B233	B218/B224	B217	B232	B233	B233

Inserts for side and face milling

			
LNGX-GM	XSEQ	MPHT	QC□□L
Page B209	B232	B210	B215

Inserts for high feed

					
SDMT-DM	SDMT-PM	SDMT-NM	WPGT	WPGT-PM	SNGU-GM
Page B218	B218	B218	B231	B231	B223

Inserts for T-slot milling


MPHT
Page B210

Inserts for helical milling

	
APKT-PM/KM	SPMT-PM/KM
Page B207	B224

Inserts for chamfer milling


SPMT
Page B224

B MILLING Indexable Milling Tools

Indexable
milling tools

Milling inserts

Indexable milling inserts code key

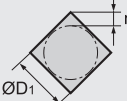
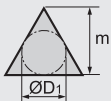
Insert Shape / Code		
 A	 B	 C
 D	 E	 H
 K	 L	 M
 O	 P	 R
 S	 T	 V
 W	Others Z	
Insert shape		

Metric							
Code	With/Without hole	With/Without chipbreaker	Section plane of Insert	Code	With/Without hole	With/Without chipbreaker	Section plane of Insert
B	With	Without		N	Without	Without	
H	With	Single-side		R	Without	Single-side	
C	With	Without		F	Without	Double-side	
J	With	Double-side		A	With	Without	
W	With	Without		M	With	Single-side	
T	With	Single-side		G	With	Double-side	
Q	With	Without		X	---	---	Special
U	With	Double-side					
Chipbreaker and clamping system							

S P K N

Clearance angle of main cutting edge			
Code	Clearance angle	Code	Clearance angle
A		B	
C		D	
E		F	
G		N	
P		O	Other clearance angle

Tolerance

Code	Nose height M Tolerance(mm)	Inscribed circle ØD1 Tolerance(mm)	Thickness S Tolerance(mm)	(Reference) details of M-class tolerance (identified by shape and size)						
● Nose height tolerance(mm)										
A	±0.005	±0.025	±0.025	Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
F	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
C	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
H	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---
E	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---
G	±0.025	±0.025	±0.13	19.05	±0.15	±0.15	±0.15	±0.18	---	---
J	±0.005	±0.05-±0.13	±0.025	25.4	---	±0.18	---	---	---	---
● Tolerance of Inscribed Circle ØD1(mm)										
K	±0.013	±0.05-±0.13	±0.025	Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
L	±0.025	±0.05-±0.13	±0.025	6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
M	±0.08-±0.18	±0.05-±0.13	±0.13	9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
N	±0.08-±0.18	±0.05-±0.13	±0.025	12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
U	±0.13-±0.38	±0.08-±0.25	±0.13	15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
				19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
				25.4	---	±0.13	---	---	---	±0.13

Diameter of IC	Insert shape						
	C	D	R	S	T	V	W
3.97					06		
5.0			05		09		
5.56			06				
6.0			06				
6.35	06	07			11	11	
8.0			08				
9.525	09	11	09	09	16	16	06
10.0			10				
12.0			12				
12.7	12	15	12	12	22	22	08
15.875	16		15	15	27		
16.0		19	16				
19.05	19		19	19	33		
20.0			20				
25.0	25	25	25				
25.4			25	25			
31.75			31				
32			32				

Length of cutting edge

Thickness is defined as the height from the bottom of insert to the highest part of cutting edge	
Code	Insert thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.96
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

Insert thickness

12 04 ED T21 R - DM

Wiper			
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	Others	F	25°
		G	30°
		N	0°
		P	11°
		Z	Others

Chamfer (mm)			
	0-5°	0-0.10	
	1-10°	1-0.15	
	2-15°	2-0.20	
	3-20°	3-0.25	
	4-25°	4-0.30	
	5-30°	5-0.35	
	6-0.40		
	7-0.45		No mark

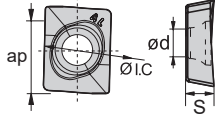
Chipbreaker code

Cutting direction

R	Right hand
L	Left hand
N	Neutral

B MILLING Indexable Milling Tools

AP



😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	K Cast iron		😊	☹️
	N Non ferrous metal	😊		😊

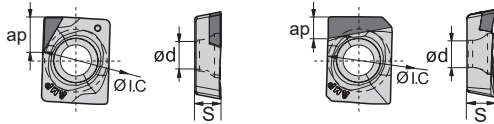
Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		ØI.C	S	ød	apmax	DN1021	BK1021	YD201
	APHT12T304PPFR-AL	12.7	3.97	4.4	12			★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable
milling tools

Milling inserts

AP



😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	K Cast iron		😊	☹️
	N Non ferrous metal	😊		😊

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		ØI.C	S	ød	apmax	DN1021	BK1021	YD201
	APHT12T304PPFR-PCD	12.7	3.97	4.4	3	★		
	APHT12T304PPFR-CBN	12.7	3.97	4.4	2		○	
	APHT12T304-W	12.7	3.97	4.4	1	★	★	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Workpiece material	Steel					Stainless steel					Cast iron					Non-ferrous metal					Heat resistant alloy, Ti alloy				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron											😞	😞	😞			😞	😞								😞
N Non-ferrous metal																									😊
S Heat resistant alloy, Ti alloy											😊	😊	😊	😊	😊		😞	😞							

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material	Steel				Stainless steel				Cast iron				Non-ferrous metal				Heat resistant alloy, Ti alloy			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron									😞	😞	😞									
N Non-ferrous metal																	😊	😊	😊	😊
S Heat resistant alloy, Ti alloy									😊	😊	😊	😊					😊	😊	😊	😊

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable Milling Tools

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Milling inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	Good working condition					Normal working condition					Bad working condition				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron											😞	😞			
N Non-ferrous metal															😞
S Heat resistant alloy, Ti alloy						😊	😊	😊	😊	😊	😞	😞			



★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Milling inserts

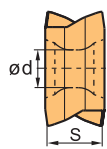
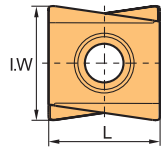
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

B MILLING Indexable Milling Tools

LN



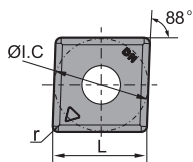
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
YBC301	😊	😊	😊	😊	😊
YBC302	😊	😊	😊	😊	😊
YBM251	😊	😊	😊	😊	😊
YBM253	😊	😊	😊	😊	😊
YBM351	😊	😊	😊	😊	😊
YBD152	😊	😊	😊	😊	😊
YBD252	😊	😊	😊	😊	😊
YBG102	😊	😊	😊	😊	😊
YBG202	😊	😊	😊	😊	😊
YBG205	😊	😊	😊	😊	😊
YBG302	😊	😊	😊	😊	😊
YBG152	😊	😊	😊	😊	😊
YBG252	😊	😊	😊	😊	😊
YBS203	😊	😊	😊	😊	😊
YBS303	😊	😊	😊	😊	😊
YNG151	😊	😊	😊	😊	😊
YNG151C	😊	😊	😊	😊	😊
YC30S	😊	😊	😊	😊	😊
YD051	😊	😊	😊	😊	😊
YD101	😊	😊	😊	😊	😊
YD201	😊	😊	😊	😊	😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	I.W	S	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	LNKT080404PNR-GM	8.75	8.5	4.45	3.4	0.4				★	●	●				★						●						
	LNKT080408PNR-GM	8.75	8.5	4.45	3.4	0.8				★	●	●				★												
	LNKT080412PNR-GM	8.75	8.5	4.45	3.4	1.2				★	●	●				★												
	LNKT120608PNR-GM	12.7	13	6.75	4.4	0.8				★	●	●				★						●						
	LNKT120612PNR-GM	12.7	13	6.75	4.4	1.2				★	●	●				★												
	LNKT120616PNR-GM	12.7	13	6.75	4.4	1.6				★	●	●				★												
	LNKT120620PNR-GM	12.7	13	6.75	4.4	2.0				★	●	●				★												
	LNKT120624PNR-GM	12.7	13	6.75	4.4	2.4				★	●	●				★												
	LNKT120632PNR-GM	12.7	13	6.75	4.4	3.2				★	●	●				★												
	LNKT160708PNR-GM	16.05	15	7.35	5.5	0.8				★	●	●				★						●						
	LNKT160712PNR-GM	16.05	15	7.35	5.5	1.2				★	●	●				★												
	LNKT160716PNR-GM	16.05	15	7.35	5.5	1.6				★	●	●				★												
	LNKT080404PNR-GL	8.75	8.5	4.45	3.4	0.4				★	●	●				★						●						
	LNKT120608PNR-GL	12.7	13	6.75	4.4	0.8				★	●	●				★						●						
	LNKT160708PNR-GL	16.05	15	7.35	5.5	0.8				★	●	●				★						●						
	LNMT080404PNR-GM	8.75	8.5	4.45	3.4	0.4				★	●	●				★												
	LNMT120608PNR-GM	12.7	13	6.75	4.4	0.8				★	●	●				★												
	LNMT160708PNR-GM	16.05	15	7.35	5.5	0.8				★	●	●				★												

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

MP



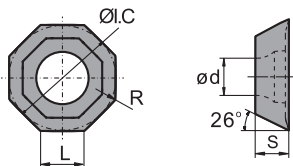
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
YBC301	😊	😊	😊	😊	😊
YBC302	😊	😊	😊	😊	😊
YBM251	😊	😊	😊	😊	😊
YBM253	😊	😊	😊	😊	😊
YBM351	😊	😊	😊	😊	😊
YBD152	😊	😊	😊	😊	😊
YBD252	😊	😊	😊	😊	😊
YBG102	😊	😊	😊	😊	😊
YBG202	😊	😊	😊	😊	😊
YBG205	😊	😊	😊	😊	😊
YBG302	😊	😊	😊	😊	😊
YBG152	😊	😊	😊	😊	😊
YBG252	😊	😊	😊	😊	😊
YBS203	😊	😊	😊	😊	😊
YBS303	😊	😊	😊	😊	😊
YNG151	😊	😊	😊	😊	😊
YNG151C	😊	😊	😊	😊	😊
YC30S	😊	😊	😊	😊	😊
YD051	😊	😊	😊	😊	😊
YD101	😊	😊	😊	😊	😊
YD201	😊	😊	😊	😊	😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet	Cemented carbide							
		ØI.C	L	s	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	MPHT060304-DM	6.35	6.35	3.18	2.8	0.4												★									
	MPHT080305-DM	8.3	8.3	3.18	3.4	0.5												★									
	MPHT120408-DM	12.7	12.7	4.76	5.56	0.8												★									

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

OF □ □



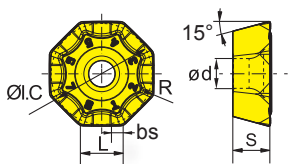
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
M Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
K Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
N Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
S Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet		Cemented carbide							
		L	ØI.C	S	ød	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	OFKT05T3-DF	5.26	12.7	3.97	4.4	0.5								○	★	★												
	OFKT05T3-DM	5.26	12.7	3.97	4.4	0.5			○			○	○	★	★	★	★	★										
	OFKT05T3-LH	5.26	12.7	3.97	4.4	0.5																				○		

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

OD □ □



😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
M Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
K Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
N Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
S Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet		Cemented carbide							
		L	ØI.C	S	ød	R	bs	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	ODHT060508-GL	6.5	15.875	5.56	5.4	0.8	1.6				●		●				●	●											
	ODHT060508-GM	6.5	15.875	5.56	5.4	0.8	1.6				●		●				●	●					●						
	ODMT060512-GM	6.5	15.875	5.56	5.4	1.2	--				●		●				●	●					●						
	ODHT060508-GH	6.5	15.875	5.56	5.4	0.8	1.6				●		●				●	●											
	ODHT060508-LH	6.5	15.875	5.56	5.4	0.8	1.6																					●	●

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition ☹ Bad working condition

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

[illegible][illegible]

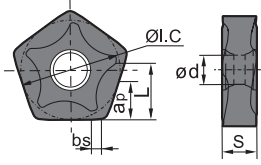
Milling inserts

[illegible][illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

B MILLING Indexable Milling Tools

PN



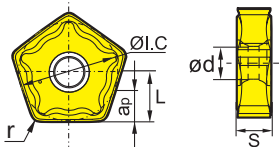
😊 Good working condition 😊 Normal working condition 😊 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
M Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
K Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
N Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
S Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating				PVD Coating				Cermet	Cemented carbide											
		L	ØI.C	S	ød	bs	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	PNEG110512R-PF	7.5	15.875	5.56	4.64	1.4	7.5	★	●																			
	PNEG110512L-PF	7.5	15.875	5.56	4.64	1.4	7.5	★	●																			
	PNEG110512R-PM	7.5	15.875	5.56	4.64	1.4	7.5	★	●																			
	PNEG110512L-PM	7.5	15.875	5.56	4.64	1.4	7.5	★	●																			
	PNEG110512R-PR	7.5	15.875	5.56	4.64	1.4	7.5	★	●																			
	PNEG110512L-PR	7.5	15.875	5.56	4.64	1.4	7.5	★	●																			

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

PN



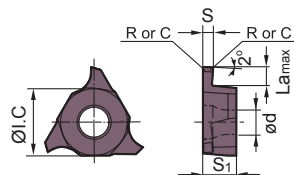
😊 Good working condition 😊 Normal working condition 😊 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
M Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
K Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
N Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
S Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating				PVD Coating						Cermet	Cemented carbide									
		L	ØI.C	S	ød	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	PNEG110512-KL	6.5	15.875	5.56	4.64	1.2	6.5						●	●														
	PNEG110512-KM	6.5	15.875	5.56	4.64	1.2	6.5						●	●														
	PNEG110512-KH	6.5	15.875	5.56	4.64	1.2	6.5						●	●														

● Inserts are suitable for both left and right cuts.

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	Good working condition					Normal working condition					Bad working condition				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
P Steel	😊	😊	😊	😊	😊						😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊						😊	😊	😊	😊	😊
K Cast iron						😞	😞	😞				😞	😞		😞
N Non-ferrous metal															😊
S Heat resistant alloy, Ti alloy						😞	😞	😞	😞			😞	😞		

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating							Cermet		Cemented carbide							
		S±0.025	Lamax	R/C	ØI.C	S _i	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201	
	QC16L110-R01	1.10	2.00	R0.1	9.525	3.18	4.4								○	○														
	QC16L125-R02	1.25	2.00	R0.2	9.525	3.18	4.4									○	○													
	QC16L145-R02	1.45	2.00	R0.2	9.525	3.18	4.4									○	○													
	QC16L150-R02	1.50	2.00	R0.2	9.525	3.18	4.4									○	★													
	QC16L175-R02	1.75	2.00	R0.2	9.525	3.18	4.4									○	○													
	QC16L185-R02	1.85	2.50	R0.2	9.525	3.18	4.4									○	○													
	QC16L200-R02	2.00	2.50	R0.2	9.525	3.18	4.4									○	★													
	QC16L250-R02	2.50	2.50	R0.2	9.525	3.18	4.4									○	★													
	QC16L300-R02	3.00	3.00	R0.2	9.525	3.18	4.4									○	★													
	QC22L125-R02	1.25	2.00	R0.2	12.70	4.76	5.5									○	○													
	QC22L145-R02	1.45	2.00	R0.2	12.70	4.76	5.5									○	○													
	QC22L150-R02	1.50	3.50	R0.2	12.70	4.76	5.5									○	★													
	QC22L175-R02	1.75	3.50	R0.2	12.70	4.76	5.5									○	○													
	QC22L185-R02	1.85	3.50	R0.2	12.70	4.76	5.5									○	○													
	QC22L200-R02	2.00	3.50	R0.2	12.70	4.76	5.5									○	★													
	QC22L230-R02	2.30	3.50	R0.2	12.70	4.76	5.5									○	○													
	QC22L250-R03	2.50	4.00	R0.3	12.70	4.76	5.5									○	★													
	QC22L265-R03	2.65	4.00	R0.3	12.70	4.76	5.5									○	○													
	QC22L280-R03	2.80	4.00	R0.3	12.70	4.76	5.5									○	○													
	QC22L300-R03	3.00	4.00	R0.3	12.70	4.76	5.5									○	★													
	QC22L320-R03	3.20	4.00	R0.3	12.70	4.76	5.5									○	○													
	QC22L330-R03	3.30	4.00	R0.3	12.70	4.76	5.5									○	○													
	QC22L350-R03	3.50	5.00	R0.3	12.70	4.76	5.5									○	★													
	QC22L400-R04	4.00	5.00	R0.4	12.70	4.76	5.5									○	★													
	QC22L430-R04	4.30	5.00	R0.4	12.70	4.76	5.5									○	○													
	QC22L450-R04	4.50	5.00	R0.4	12.70	4.76	5.5									○	○													
	QC22L480-R04	4.80	5.00	R0.4	12.70	5.06	5.5									○	○													

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material	Good working condition					Normal working condition					Bad working condition				
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	
K Cast iron															
N Non-ferrous metal															
S Heat resistant alloy, Ti alloy															

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

	Good working condition	Normal working condition	Bad working condition
Workpiece material			
H Super hard material		😐	
K Cast iron	😊	😊	😞
N Non-ferrous metal			😐

[illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Workpiece material	Steel				Stainless steel				Cast iron				Non-ferrous metal				Heat resistant alloy, Ti alloy			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron									😞	😞	😞									
N Non-ferrous metal																				
S Heat resistant alloy, Ti alloy									😊	😊	😊	😊					😊	😊	😊	😊

[illegible]

Milling inserts

Technical drawing of a yellow circular component. The front view shows a circle with a central hole of diameter $\varnothing 1, C$. A diagonal line across the circle is labeled L . The side view shows a rectangular cross-section with a central hole of diameter $\varnothing d$ and a width labeled S .

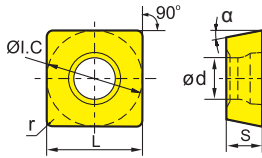
[illegible]

Insert shape	Type	Basic dimensions(mm)				CVD Coating						PVD Coating						Cermet		Cemented carbide							
		ØI.C	L	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YCS30S	YD051	YD101	YD201
	ROHX1203	12	8.5	3	4														○								
	ROHX1604	16	11.3	4	5														○								
	ROHX2005	20	14.1	5	5														○								

B217

B MILLING Indexable Milling Tools

SD



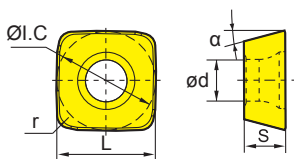
😊 Good working condition 😊 Normal working condition 😊 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		r	L	ØI.C	S	øD	α	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SDMT090308	0.8	9.525	9.525	3.18	4.4	15°			○									○										

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

SD



😊 Good working condition 😊 Normal working condition 😊 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

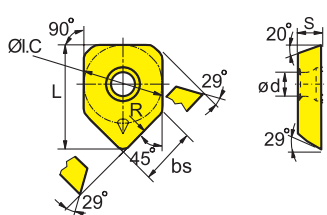
Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		ØI.C	L	r	S	ød	α	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SDMT06T208-DM	6.35	6.35	0.8	2.58	2.5	15°	★			★							●	○				●						
	SDMT09T312-DM	9.525	9.525	1.2	3.97	4.0	15°	★			★							●	○										
	SDMT120412-DM	12.7	12.7	2.0	4.76	4.4	15°	★			★						★	●	○										
	SDMT150520-DM	15.875	15.875	2.0	5.56	5.5	15°	★			★							●	●	○									
	SDMT06T208-PM	6.35	6.35	0.8	2.58	2.5	15°	★		○							●					●	●						
	SDMT09T312-PM	9.525	9.525	1.2	3.97	4.0	15°	★		●							●												
	SDMT120412-PM	12.7	12.7	2.0	4.76	4.4	15°	★		●							●												
	SDMT150520-PM	15.875	15.875	2.0	5.56	5.5	15°	★		●							●												
	SDMT06T208-NM	6.35	6.35	0.8	2.58	2.5	15°				●												●						
	SDMT09T312-NM	9.525	9.525	1.2	3.97	4.0	15°				○											○	○						
	SDMT120412-NM	12.7	12.7	1.2	4.76	4.4	15°				○							○				○	○						
	SDMT150520-NM	15.875	15.875	2.0	5.56	5.5	15°				●							●					●						

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Technical drawing of a square bar with a circular hole. The front view shows a square with side length L and a central circular hole with diameter $\varnothing C$. The top view shows the square with a corner chamfer of size S at a 29° angle, and a fillet radius bs at the corners. The side view shows the square with a height of 20° and a diameter $\varnothing d$.

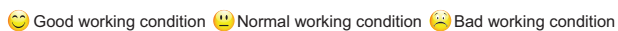
Workpiece material	Steel				Stainless steel				Cast iron				Non-ferrous metal				Heat resistant alloy, Ti alloy			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron									😞	😞	😞	😞					😞	😞	😞	😞
N Non-ferrous metal																	😞	😞	😞	😞
S Heat resistant alloy, Ti alloy									😊	😊	😊	😊					😊	😊	😊	😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet		Cemented carbide							
		L	ØI.C	S	ød	bs	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SEET12T3-DF	13.4	13.4	3.97	4.1	2.55	--	●	★	●						★		○											
	SEET12T3-CF	13.4	13.4	3.97	4.1	2.55	--						○	★		★		○											
	SEET12T3-EF	13.4	13.4	3.97	4.1	2.55	--										★		○										
	SEET12T3-DM	13.4	13.4	3.97	4.1	2.55	--	●	★	●		○				★		★											
	SEET18T6-DM	18.0	18.0	6.1	5.5	1.5	--		○		○																		
	SEET12T3-CM	13.4	13.4	3.97	4.1	2.55	--						★			★		○											
	SEET12T3-EM	13.4	13.4	3.97	4.1	2.55	--			●		●					★		★										
	SEET18T6-EM	18.0	18.0	6.1	5.5	1.5	--				○							○											
	SEET12T3-DR	13.4	13.4	3.97	4.1	2.55	--	●	★			●				★		★											
	SEET12T3-CR	13.4	13.4	3.97	4.1	2.55	--	●					★			★		★											
	SEET12T3-LH	13.4	13.4	3.97	4.1	2.55	--																				○	★	
	SEET12T3-W	17.82	13.4	3.97	4.1	9.46	500	★	●			★				★							★						
	SEET18T6-W	24.78	18.0	6.1	5.5	11.0	500										○												



★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable Milling Tools



		Good working condition	Normal working condition	Bad working condition
Workpiece material	P Steel			
	M Stainless steel			
	K Cast iron			
	N Non-ferrous metal			
	S Heat resistant alloy, Ti alloy			

[illegible]

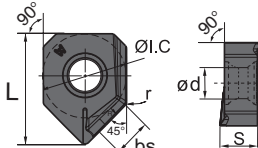
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

[illegible][illegible]

Milling inserts

	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
Workpiece material					

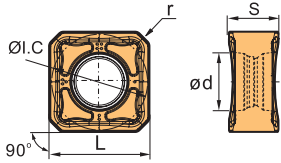
Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	ØI.C	S	bs	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNMG1205ANR-GM	7.6	12.0	4.76	1.05	4.6	0.8	★		★		★				★	★					○	○						
	SNMG1506ANR-GM	9.4	15.0	5.54	1.30	5.5	0.9	★		★		★				★	★					○							
	SNMG1205ANR-HGR	7.6	12.0	4.76	1.05	4.6	0.8	★		★			○			★	★												
	SNMG1506ANR-HGR	9.4	15.0	5.54	1.30	5.5	0.9	★		★			○			★	★												
	SNMG1907ANR-HGR	12.1	19.0	7.0	1.67	7.2	1.0	★		★			○			★	★												
	SNMG1205ANR-W	15.9	12.0	4.76	4.07	4.6	0.6									●													
	SNMG1506ANR-W	19.9	15.0	5.54	4.97	5.5	0.9									●													



★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

B MILLING Indexable Milling Tools

SN



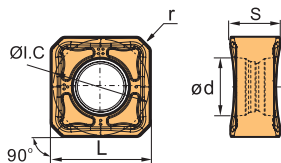
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
M Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
K Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
N Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
S Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cemet		Cemented carbide							
		L	ØI.C	S	øD	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGX1205ANN-GL	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★												
	SNMX120512-GL	12.7	12.7	6.5	5.9	1.2	6.5				●	●					★												
	SNGX1205ANN-GM	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★					●							
	SNMX1205ANN-GM	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★					●							
	SNMX120512-GM	12.7	12.7	6.5	5.9	1.2	6.5				●	●					★					●							
	SNGX1205ANN-GH	12.7	12.7	6.5	5.9	0.8	6.5				●	●					★												
	SNMX120512-GH	12.7	12.7	6.5	5.9	1.2	6.5				●	●					★												

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

SN



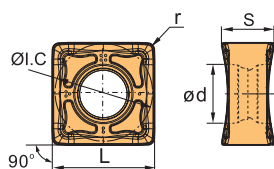
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
M Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
K Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
N Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
S Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	ØI.C	S	ød	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGX1205ENN-GL	12.7	12.7	6.5	5.9	0.8	8.0				●	●					★												
	SNMX120512-GL	12.7	12.7	6.5	5.9	1.2	8.0				●	●					★												
	SNGX1205ENN-GM	12.7	12.7	6.5	5.9	0.8	8.0				●	●					★						●						
	SNMX120512-GM	12.7	12.7	6.5	5.9	1.2	8.0				●	●					★						●						
	SNGX1205ENN-GH	12.7	12.7	6.5	5.9	0.8	8.0				●	●					★												
	SNMX120512-GH	12.7	12.7	6.5	5.9	1.2	8.0				●	●					★												

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

SN



😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet		Cemented carbide								
		L	ØI.C	S	ød	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG105	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGX1205PNN-GL	12.7	12.7	6.5	5.9	0.8	10.5				●		●					★												
	SNMX120512-GL	12.7	12.7	6.5	5.9	1.2	10.5				●		●					★												
	SNGX1205PNN-GM	12.7	12.7	6.5	5.9	0.8	10.5				●		●					★					●							
	SNMX120512-GM	12.7	12.7	6.5	5.9	1.2	10.5				●		●					★					●							
	SNGX1205PNN-GH	12.7	12.7	6.5	5.9	0.8	10.5				●		●					★												
	SNMX120512-GH	12.7	12.7	6.5	5.9	1.2	10.5				●		●					★												
	SNCU120420-W4	12.7	12.7	4.8	5.9	2	10.5								●															

● Inserts are suitable for both left and right cuts.

★ Recommended grade (always stock available)

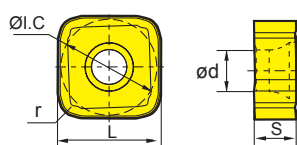
● Available grade (always stock available)

○ Make-to-order

Indexable milling tools

Milling inserts

SN



😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
Steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Stainless steel	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Cast iron	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Non-ferrous metal	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊
Heat resistant alloy, Ti alloy	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊	😊😊😊😊😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet		Cemented carbide							
		L	ØI.C	r	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGU120620-GM	12.7	12.7	2.0	5.6	4.4				●						●	●											

★ Recommended grade (always stock available)

● Available grade (always stock available)

○ Make-to-order

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

CBN insert edge can be treated as per machining requirements

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Technical drawing of a mechanical part. The main view shows a yellow rectangular block with a dashed circle of diameter $\varnothing 1.6$ and a length L . A circular detail view shows a cross-section with a radius of 0.8 and a width of 0.8 . A side view shows a yellow block with a height S and a width of 11° . The main view also shows a 75° angle and a 15° angle.

		Sad working condition	Normal working condition	Bad working condition
Workpiece material	P Steel			
	M Stainless steel			
	K Cast iron			
	N Non-ferrous metal			
	S Heat resistant alloy, Ti alloy			

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	ØI.C	S	be	bs	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302		YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	SPKN1203EDER	12.7	12.7	3.18	1	1.4								○														
	SPKN1203EDEL	12.7	12.7	3.18	1	1.4								○														
	SPKN1203EDFR	12.7	12.7	3.18	1	1.4							★	○													●	
	SPKN1203EDFL	12.7	12.7	3.18	1	1.4								○	○												○	
	SPKN1203EDSKR	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDSKL	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDTKR	12.7	12.7	3.18	1	1.4	●				●			○			★								●		○	
	SPKN1203EDTKL	12.7	12.7	3.18	1	1.4								○			○								○		○	
	SPKN1203EDS31R	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDS31L	12.7	12.7	3.18	1	1.4												○							○			
	SPKN1203EDT31R	12.7	12.7	3.18	1	1.4	●				●			○			★								●		○	
	SPKN1203EDT31L	12.7	12.7	3.18	1	1.4								○			○								○		○	
	SPKN1504EDER	15.875	15.875	4.76	1	1.4								○														
	SPKN1504EDEL	15.875	15.875	4.76	1	1.4								○														
	SPKN1504EDFR	15.875	15.875	4.76	1	1.4							○	○													○	
	SPKN1504EDFL	15.875	15.875	4.76	1	1.4							○	○													○	
	SPKN1504EDSKR	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDSKL	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDTKR	15.875	15.875	4.76	1	1.4	●						★			○									●		●	
	SPKN1504EDTKL	15.875	15.875	4.76	1	1.4								○			○								○		●	
	SPKN1504EDS32R	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDS32L	15.875	15.875	4.76	1	1.4												○							○			
	SPKN1504EDT32R	15.875	15.875	4.76	1	1.4	●							★			○								●		●	
	SPKN1504EDT32L	15.875	15.875	4.76	1	1.4								○			○								○			●

Ordering guide: **SPKN1203EDT3 1 R** chamfering angle 20°, chamfering width 0.15mm. For other edge shapes, see inserts code key standard.

Milling inserts

Indexable Milling Tools

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Milling inserts

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

[illegible][illegible]

Indexable milling tools

Milling inserts

[illegible][illegible]

B 227

B 228

Workpiece material	P Steel			
	M Stainless steel			
	K Cast iron			
	N Non-ferrous metal			
	S Heat resistant alloy, Ti alloy			

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Milling inserts

Workpiece material	Steel					Stainless steel					Cast iron					Non-ferrous metal					Heat resistant alloy, Ti alloy						
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5		
P Steel	😊	😊	😊	😊	😊						😊	😊	😊	😊	😊						😊	😊	😊	😊	😊		
M Stainless steel	😊	😊	😊	😊	😊						😊	😊	😊	😊	😊						😊	😊	😊	😊	😊		
K Cast iron											😊	😊	😊	😊	😊						😊	😊	😊	😊	😊		
N Non-ferrous metal																					😊	😊	😊	😊	😊		
S Heat resistant alloy, Ti alloy											😊	😊	😊	😊	😊						😊	😊	😊	😊	😊		

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

The technical drawing shows a triangular plate with a central circular hole. The plate has a thickness S . The outer edge is defined by a line with a radius r . The distance from the center of the hole to the outer edge is labeled L . The width of the plate at the base is labeled bs . The central hole has a diameter $\varnothing I.C$. A cross-section view on the right shows the thickness S and the outer diameter $\varnothing d$.

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible][illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

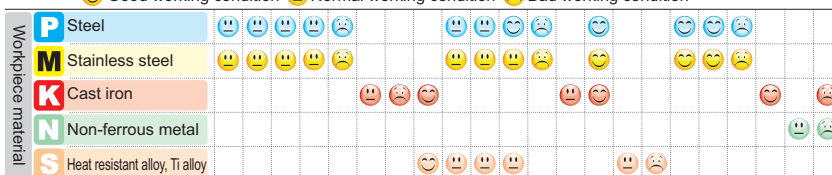
Milling inserts

😊 Good working condition 😐 Normal working condition 😞 Bad working condition

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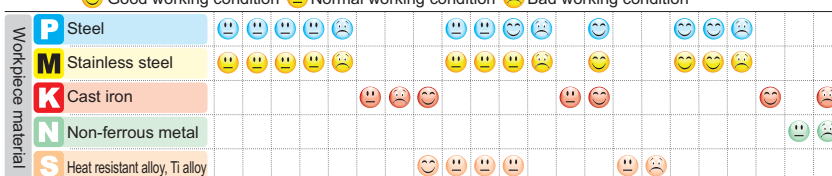
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



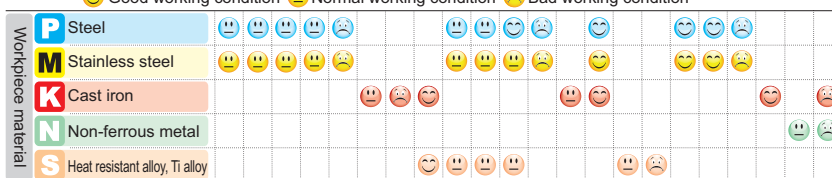
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

😊 Good working condition 😐 Normal working condition 😞 Bad working condition



★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

[illegible][illegible]

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Milling inserts

[illegible]

Insert shape	Type	Basic dimensions(mm)				CVD Coating						PVD Coating						Cermet		Cemented carbide							
		R	ØI.C	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	ZOHX1203-GF	6	12	3	4														●								
	ZOHX1604-GF	8	16	4	5														●								
	ZOHX2005-GF	10	20	5	5														●								
	ZOHX2506-GF	12.5	25	6	6														○								
	ZOHX3007-GF	15	30	7	8														○								
	ZOHX3207-GF	16	32	7	8														○								
	ZOHX1203-GM	6	12	3	4														●								
	ZOHX1604-GM	8	16	4	5														●								
	ZOHX2005-GM	10	20	5	5														●								
	ZOHX2506-GM	12.5	25	6	6														●								
	ZOHX3007-GM	15	30	7	8														●								
	ZOHX3207-GM	16	32	7	8														★								

★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



MILLING

Indexable Milling Tools

Technical information

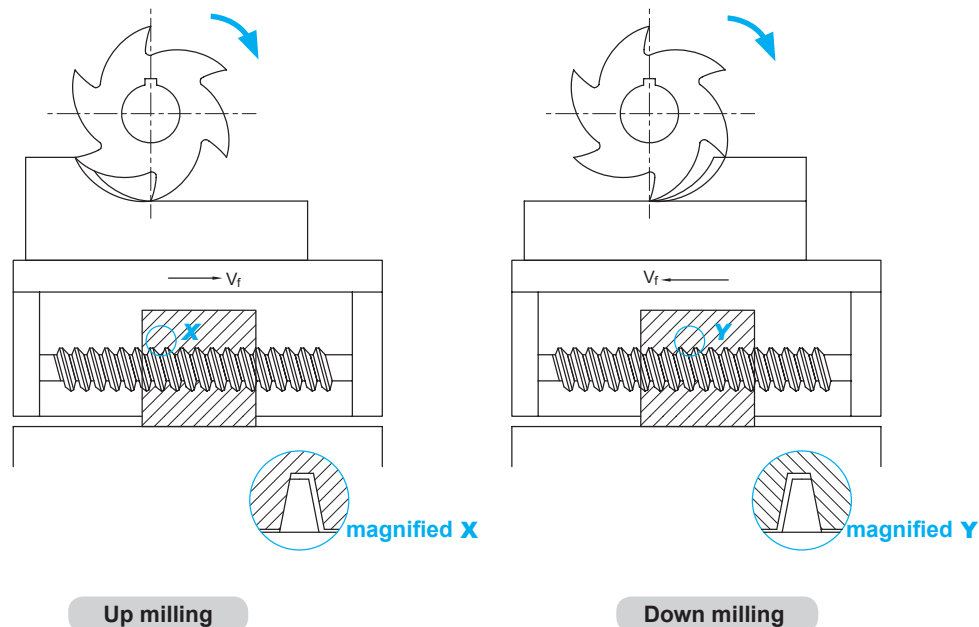
Common problems in milling and solutions

Main points of solution and inspection			Selection of tool material		Cutting condition					Tool shape								Machine clamping system		
			Material with higher hardness	Material with perfect toughness	Cutting speed	Feed rate	Cutting depth	Change the diameter and width of milling tools	Cutting liquid	Rake angle	Approach angle	Strength of cutting edge	Number of teeth	Increase the width of chip pocket	Examine the geometry shape of Minor cutting edge.	check the end face run-out	Improve the rigidity of tool	Clamping system of workpiece	Overhang of tool	Power, gap
Failure																				
Fracture of tool nose	severe abrasion on clearance face	Improper cutting condition			↓				✓											
		Unsuitable geometry shape of cutting edge	✓							↑		↓								
	severe abrasion on rake face	Improper cutting condition			↓	↓	↓		✓											
		Unsuitable geometry shape of cutting edge	✓							↑	↓	↓								
	Fracture of cutting edge	Improper cutting condition				↓	↓													
		Unsuitable geometry shape of cutting edge		✓							↓	↑			✓	✓	✓	✓	✓	
	Thermal cracking	Improper cutting condition			↓	↓	↓		✓											
		Unsuitable geometry shape of cutting edge								↑		↓								
	Build-up edge	Improper cutting condition			↑	↑			✓											
		Unsuitable geometry shape of cutting edge								↑		↓								
Machining precision	Bad surface roughness	Abrasion of tool Great vibration of milling tool	✓		↑	↓	↓		✓			↓			Wiper	✓				
		Unsuitable geometry shape of cutting edge			↓	↓	↓	✓												
	Burrs occurring	Improper geometry shape of cutting edge								↑	↑	↓			✓					
		Unsuitable geometry shape of cutting edge				↓	↓													
	Side collapse	Unsuitable geometry shape of cutting edge								↑	↓	↓	↑		✓		✓			
		Unsuitable geometry shape of cutting edge								↑	↓	↓			✓					
Planeness and parallelism deterioration	Improper geometry Improper technique				↓	↓			↑	↑		↓		✓	✓	✓	✓	✓		
Other	Vibration	Cutting condition Improper technology			↓	↓	↓	✓		↑	↑	↓				✓	✓	✓	✓	
	Chips twisting and jamming	Improper cutting condition			↑	↑↓		✓	✓				↓							
		Unsuitable geometry shape of cutting edge								↑			↓	✓						

Indexable milling tools

Technical information

Difference and selection between down milling and up milling



Climb milling (also called down milling): the feed direction of workpiece is the same as that of the milling rotation at the connecting position.

Conventional milling (also called up milling): the feed direction of workpiece is opposite to that of the milling rotation at the connecting position.

In down milling, the major force of cutting edge is the compressive stress, while in up milling is the tensile stress. The compressive strength of cemented carbide material is much larger than its tensile strength. In down milling, as chips become thin from thick gradually, cutting edge and workpiece press against each other. The friction between edge and workpiece is small, thus reducing the abrasion of edge, the hardening of workpiece surface and the surface roughness (R_a). In up milling, chips become thick from thin gradually. When the insert is cutting into the workpiece, it produces strong friction and more heat than in down milling, and make workpiece surface hardened.

In up milling, because horizontal direction of cutting force milling cutter conducting on workpiece is opposite to the feed direction of workpiece, the lead screw of worktable joints closely with one side of the screw nut. In down milling, the direction of cutting force is the same as the feed direction. When edge's radial force on workpiece is large enough, the worktable will bounce left and right, thus make the gap fall behind. The gap will return to the front side with the continuing rotation of lead screw. At this moment the worktable stops motion, however, it will bounce left and right again when the radial cutting force is large enough again. The periodical bounce of worktable will cause poor surface quality of workpiece and tool breakage.

When using end mills for down milling, the edges always starts cutting at the workpiece surface, therefore end mills are not suitable for machining workpiece with hardened surface.

Up milling is recommended for milling thin-wall components or square milling with high requirement for precision.



MILLING

Indexable Milling Tools

Technical information

Pitch selection

Pitch is the distance between one point on one cutting edge and the same point on the next edge. Milling cutters are mainly classified into coarse, close and extra close pitches.

optimized stability		
L (Low)	M (Medium)	H (High)
Coarse pitch Unequal pitch design 	Close pitch 	Extra close pitch 
When the milling width is equal to diameter of cutter, the machining system is stable and main power of machine is sufficient, the use of coarse pitch can achieve high productive efficiency.	Used in general milling and multiple mixed productions.	When the milling width is less than diameter of cutter, cutting by maximum edges can achieve high productive efficiency.

Selection of approach angle

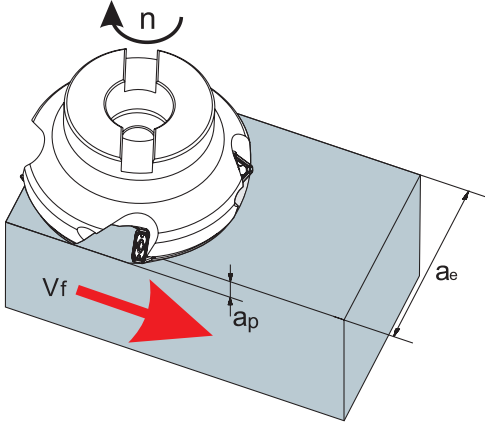
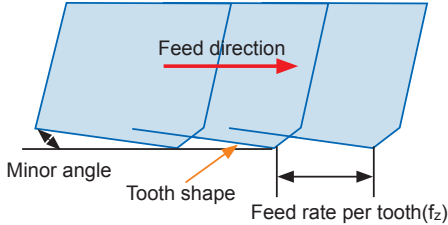
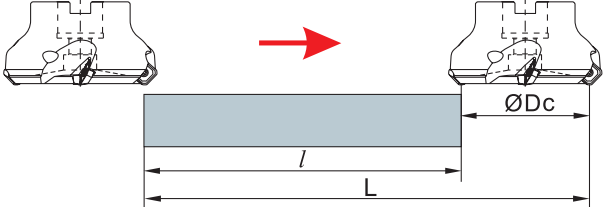
The approach angle is formed by insert and tool body. It affects chip thickness, cutting forces and tool-life. Decreasing the approach angle reduces chip thickness and expands the cutting area between cutting edge and workpiece at a given feed rate.

A smaller approach angle also ensures stable entry or exit, protecting the cutting edge and extending tool life. However, this will increase axial cutting forces on the workpiece, thus is not suitable for machining thin workpiece such as thin plate.

Approach angle	Feed rate per tooth	Real maximum cutting depth
90°	f_z	$h_{ex}=f_z \times \sin \kappa r$
75°	f_z	$h_{ex}=0.96 \times f_z$
60°	f_z	$h_{ex}=0.86 \times f_z$
45°	f_z	$h_{ex}=0.707 \times f_z$
Round insert	f_z	$h_{ex}=\frac{\sqrt{i C^2 \times (i C-2 a_p)^2}}{i C} \times f_z$

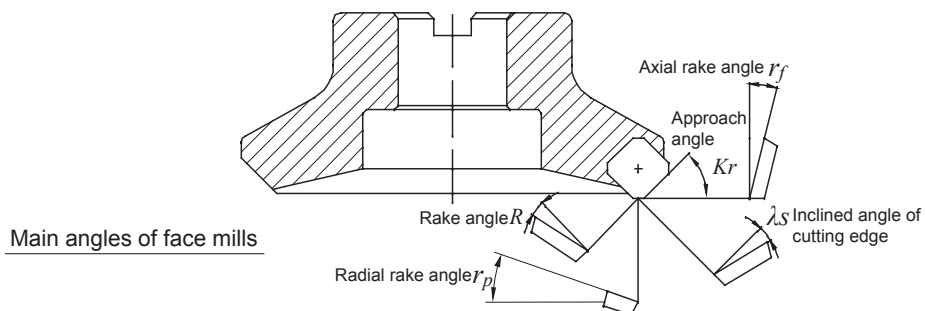


General formula

V_c : cutting speed(m/min) D_c : nominal diameter of milling tool(mm) n : spindle speed(rev/min) z_n : number of teeth Q : metal removal rate(cm^3/min) L : Actual working distance(mm)	V_f : feed rate of worktable (feed speed)(mm/min) f_z : feed rate per tooth(mm/z) π : circumference ratio ≈ 3.14 T_c : machining time(min) f_n : feed rate per revolution (mm/rev)
Cutting speed $V_c = \frac{\pi \times D_c \times n}{1000} \text{ (m/min)}$	  
Spindle speed $n = \frac{1000 \times V_c}{\pi \times D_c} \text{ (rev/min)}$	
Feed rate of worktable (feed speed) $V_f = f_z \times n \times z_n \text{ (mm/min)}$	
Feed rate per tooth $f_z = \frac{V_f}{n \times Z_n} \text{ (mm/z)}$	
Feed rate per revolution $f_n = \frac{V_f}{n} \text{ (mm/rev)}$	
Machining time $T_c = \frac{L}{V_f} \text{ (min)}$	
Metal removal rate $Q = \frac{a_p \times a_e \times V_f}{1000} \text{ (cm}^3/\text{min)}$	



Function of each part in face milling



Main angles of face mills

Main angles of face mills

Designation	Function	Effect		
Axial rake angle r_f	Determining the chip direction	Negative angle, excellent capability of chip removal		
Radial rake angle r_p	Determining whether the cutting is easy and fast or not	Positive angle: good cutting performance		
Approach angle Kr	Determining the chip thickness	$Kr \uparrow$, chip thickness $\uparrow$; $Kr \downarrow$, chip thickness $\downarrow$		
Rake angle R	Determining whether easy and fast the cutting is or not	Poor cutting performance, High-strength cutting edge	$(-)\leftarrow 0 \rightarrow (+)$	Good cutting performance, Low-strength cutting edge
Inclined angle of cutting edge λ_s	Determining the chip flow direction	Poor capability of chip removal, High-strength cutting edge	$(-)\leftarrow 0 \rightarrow (+)$	Good performance of chip removal, Low-strength cutting edge

■ Characteristics of different rake angles combined

		Double positive rake angle	Double negative rake angle	Positive and negative rake angle
Negative rake angle				
0° rake angle				
Positive rake angle				
Axial rake angle r_f		+	-	+
Radial rake angle r_p		+	-	-
Applicable material machined	P	✓		✓
	M	✓		✓
	K		✓	✓
	N	✓		
	S	✓		✓

■ Cutting performances of different approach angles

Approach angle	45°	75°	90°
Schematic diagram			
Instruction	Axial force is the largest. It will bend when machining thin-wall workpiece, reducing the precision of workpiece. It can help avoid fringe breakage of workpiece when machining cast iron.	The main force is radial cutting force. It is often used in general face milling.	The axial force is zero in theory, suitable for milling thin plate workpiece.

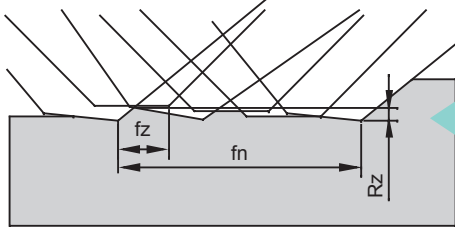


MILLING

Indexable Milling Tools

Technical information

Wiper insert

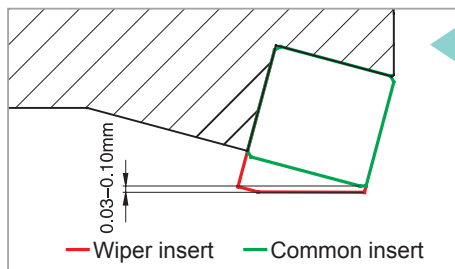


It has axial and radial run-out because tools and inserts have manufacturing tolerance. The axial run-out leads to poor surface roughness.

Solution

Mounting wiper inserts

usage

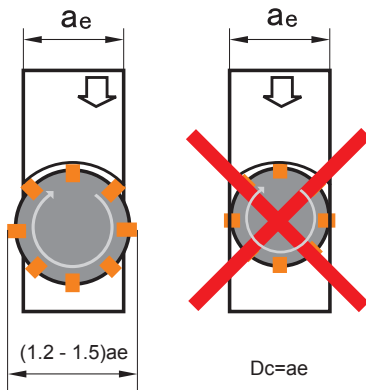


The wiper insert must protrude below the other inserts by 0.03-0.10 mm at axial direction, so that the wiping function can take effect. Generally speaking, a cutter just needs only one wiper insert. If the diameter of cutter is much larger or cutter's feed rate per revolution is higher than the length of wiper edge, 2 to 3 wiper inserts can be mounted.

Indexable
milling tools

Technical information

■ Selection of cutting width and tool cutting diameter in face milling



Dc: Tool cutting diameter
ae: Cutting width

Generally speaking, the relation between cutting width and tool cutting diameter is $Dc = (1.2 - 1.5) ae$.

In practical machining, same center line of tool center and work piece center should be avoided.