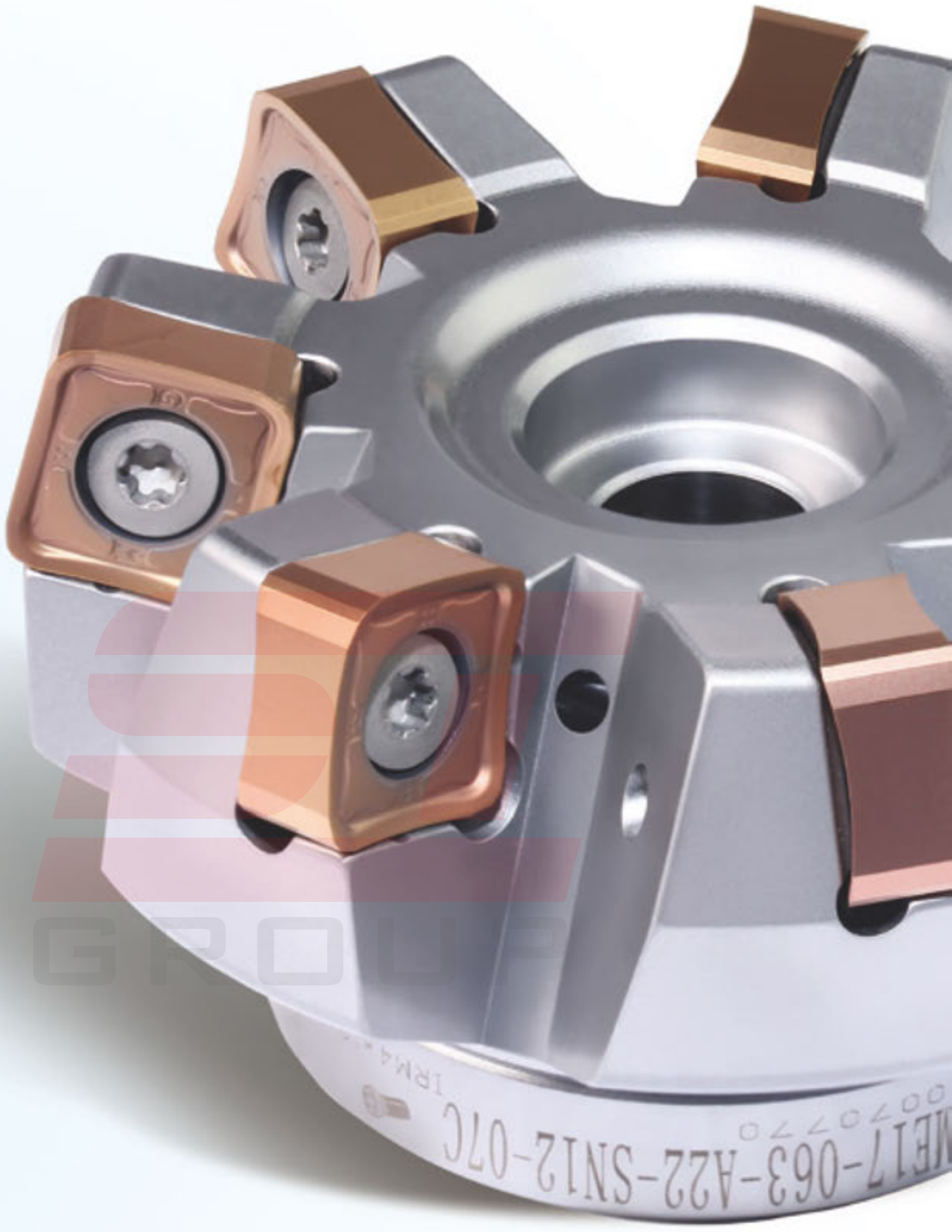

YBD152



Milling Tools

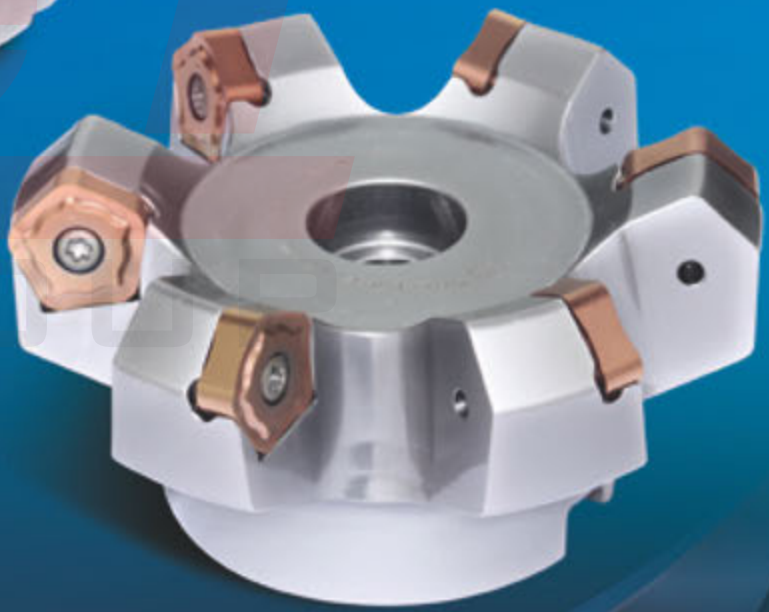
Indexable milling tools

FMA11 series

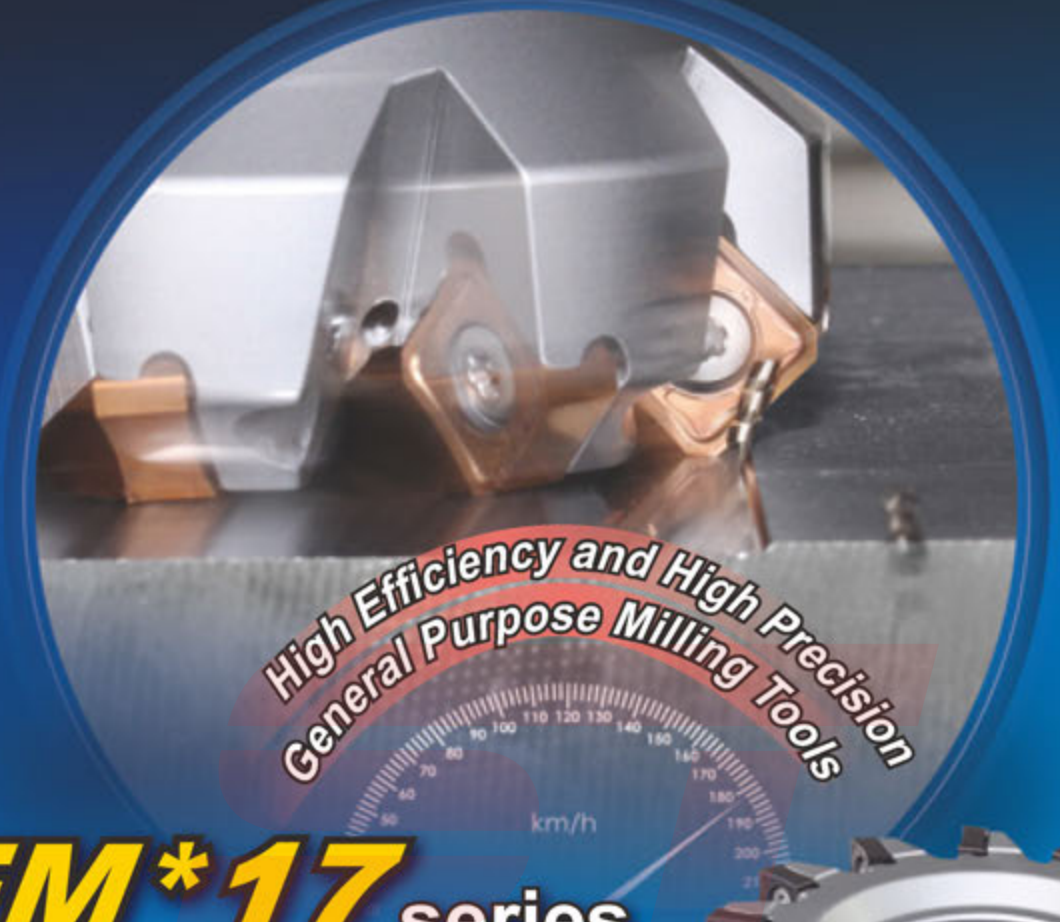
With Outstanding Economy and High Performance

FMA12 series

High Performance Face Milling with 16 Edges for Outstanding Economy Milling



FMA14 series


High Efficiency and High Precision
General Purpose Milling Tools

FM*17 series

New Generation of the Tangential Milling Tools

EMP09 series

EMP13 Series

Achieve High-quality 90° Square Shoulder Processing

Milling

B


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

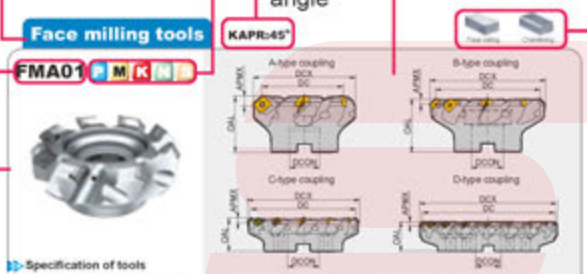
Type of machining

Workpiece materials

Approach angle

Structure and coupling size

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

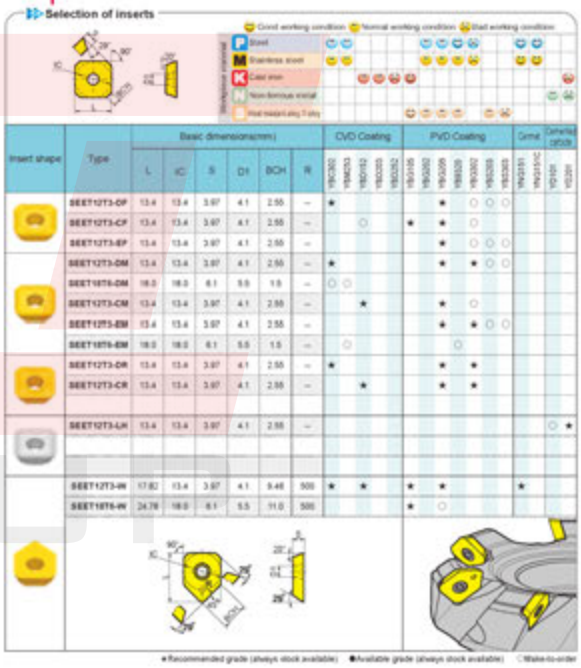


Specification of tools

Type		Stock R	Stock L	Basic dimensions(mm) DC	DCX	DCON	OAL	APMX	Number of teeth Z	Type of coupling	Weight (kg)
FMA01	-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	7.8
	-250-C60-SE12-10	▲	△	250	264	60	63	6	10	C	12.594
	-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

Selection of inserts



Insert shape	Type	Basic dimensions(mm) L	IC	S	D1	BCH	R	CVD Coating				PVD Coating				Grind	Cermet
	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	--	★				★	●	○	○		
	SEET1675-DM	16.0	16.0	6.1	5.5	1.5	--	○	○								
	SEET12T3-CM	13.4	13.4	3.97	4.1	2.55	--		★			★	○				
	SEET1275-EM	13.4	13.4	3.97	4.1	2.55	--					★	●	○	○		
	SEET1675-EM	16.0	16.0	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-IN	17.82	13.4	3.97	4.1	9.48	500	★	★			★	★			★	
	SEET1675-IN	24.78	16.0	6.1	5.5	11.0	500					★	○				

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

Spare parts

Diameter DC	Insert	Insert screw	Shim	Shim screw	Wrench	Wrench
Ø50-Ø315	SEET12D3-					
Ø100-Ø315	SEET18D3-					

Tools code key B26–B27 Grade selection guide B19–B25 Technical data B271–B276

Spare parts

Tools specification
Tool shape, dimensions, stock, etc

Assembly of tools and spare parts

Tool shape

Tools code key, reference to grade selection, technical data

How to choose indexable milling inserts

■ Detailed information for indexable milling inserts

Listed according to 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.

Insert shape and size

Insert shape

Insert grade

Insert shape	Type	Basic dimensions(mm)					CVD Coating				PVD Coating					Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD003	YBD052	YBG105	YBG202	YBG205	YBG302	YBG203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT11T304-APL	12.24	6.6	3.6	2.8	0.4								★					○		
	APKT11T308-APL	12.24	6.6	3.6	2.8	0.8	★	★	★					★			○				
	APKT160408-APL	17.877	9.33	5.76	4.4	0.8	★	★	★					★			○				
	APKT160420-APL	17.877	9.33	5.76	4.4	2.0								★							
	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								★							
	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	●							★		●	●				
	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														★	★

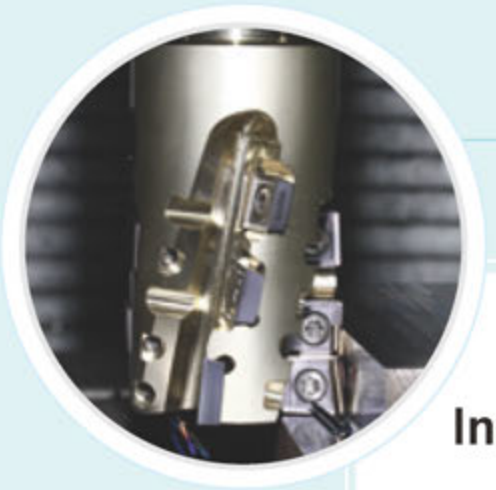
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Insert shape

Insert dimension

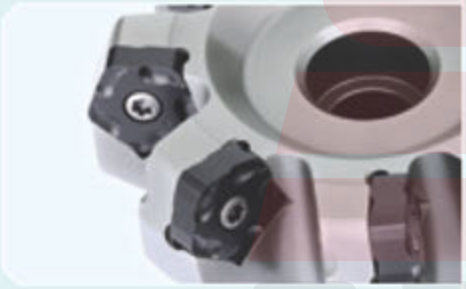
Stock condition

Insert type



MILLING B

Indexable Milling Tools



Indexable milling tools family

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3	FMA01	B33
4	FMA03	B38
5	FMA04(OFKT05□□)	B41
6	FMA04(ODH/MT06□□)	B44
7	FMA07	B47
8	FMA08	B51
9	FMA11	B54
10	FMA12	B59

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13	FMD02(PN11)	B68
14	FMD02(HN09)	B73
15	FMD03	B75
16	FME02	B77
17	FME03	B79
18	FME04	B83
19	FME17	B85
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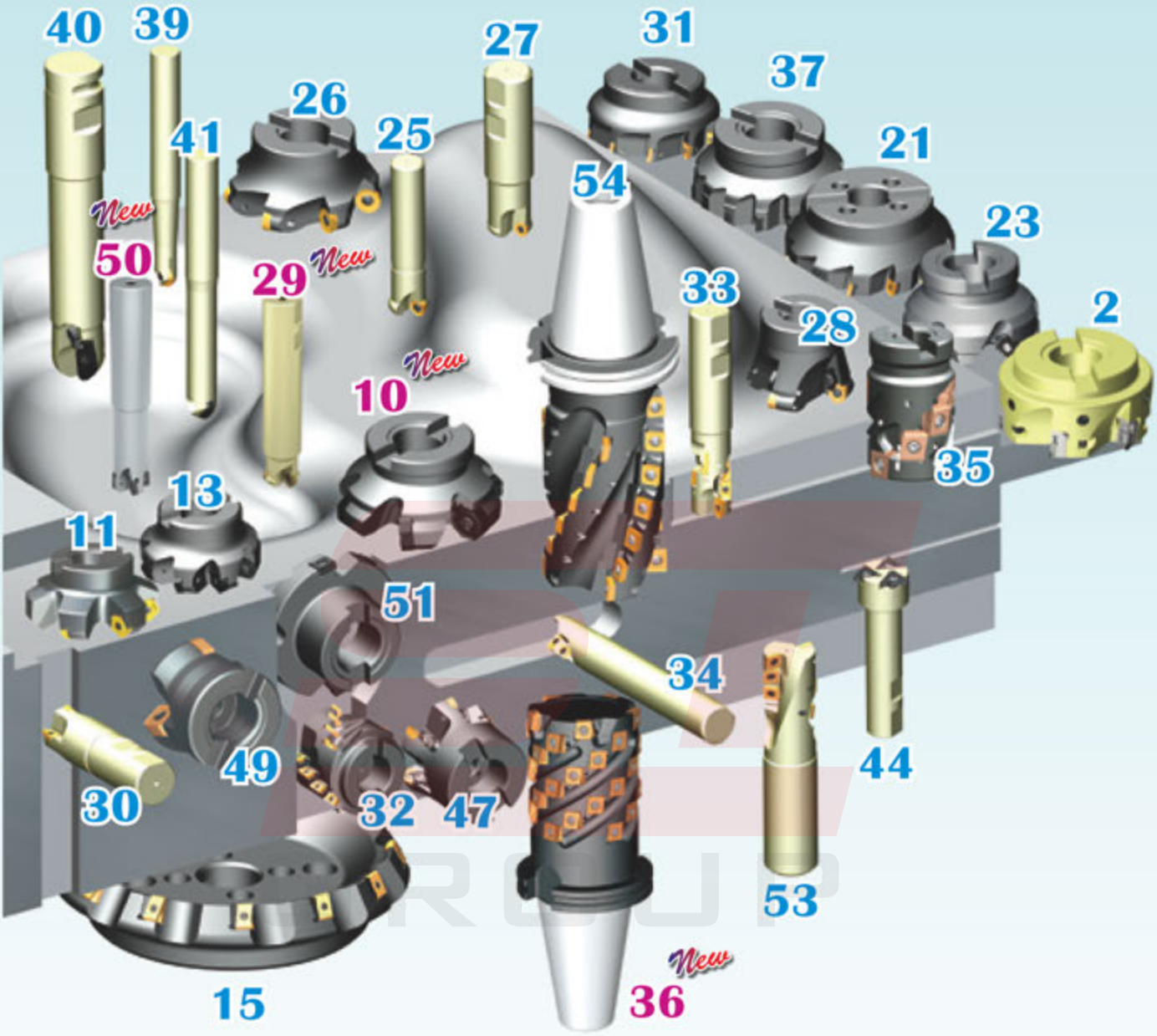
22	FMP03	B94
23	FMP12	B97
24	FMP17	B100
25	FMR01	B103
26	FMR02	B105
27	FMR03	B108
28	FMR04	B109
29	FMR11	B112
30	EMP01	B116



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32	EMP03	B120
33	EMP04	B121
34	EMP05	B127
35	EMP09	B135
36	EMP09 BT	B140
	EMP09 JT	B140
37	EMP13	B145
38	BMR01	B150
39	BMR02	B152

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41	BMR04	B167
42	SMP01	B175
43	SMP03	B178
44	SMP05	B182
45	SMP08	B184
46	SMP09	B189
47	XMR01(SDMT□□)	B194
48	XMR01(WPGT□□)	B198
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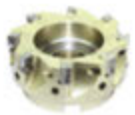
50	XMR12	B208
51	XMP01	B215
52	TMP01	B217
53	HMP01(Ø40-Ø50)	B219
54	HMP01(Ø50-Ø80)	B220
	HMP01 EC(Ø50-Ø80)	B221
55	CM□01	B224


Whirlwind
FMD02
Milling Tools Series

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
High-speed high-precision milling tools	**AMA01**  B29	KAPR=45° a_{pmax}=6.6	SEHT12T3AFFN-AL	High-speed, high-precision milling of aluminum alloy and cast iron	• Tool diameter Ø50-Ø500 • High-strength, lightweight aluminum alloy tool body • Unique tool clamping design • Elastic runout adjustment structure, high-pressure internal cooling, combined with high-precision cutting inserts, to achieve high-precision, efficient, and stable processing of various materials
		KAPR=45° a_{pmax}=2.0	SEHT12T308AFFN-CBN		
		KAPR=45° a_{pmax}=2.5	SEHT12T308AFFN-PCD		
	AMP01  B31	KAPR=90° a_{pmax}=12	APHT12T304PPFR-AL		
		KAPR=90° a_{pmax}=1.0	APHT12T304-W		
		KAPR=90° a_{pmax}=2.0	APHT12T304PPFR-CBN		
		KAPR=90° a_{pmax}=3.0	APHT12T304PPFR-PCD		
Face milling tools	**FMA01**  B33-34	KAPR=45° a_{pmax}=6.0	SEET12T3-DF/DM/DR SEET12T3-CF/CM/CR SEET12T3-EF/EM SEET12T3-LH/W	Face milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy, and high-temperature alloys	• Tool diameter Ø50-Ø315 • Large lead angle design for quicker cutting • Compatible with a variety of slot inserts, widely applicable • Compatible with wipers to improve surface quality
		KAPR=45° a_{pmax}=10.4	SEET18T6-DM/EM/W		
	FMA03  B38	KAPR=45° a_{pmax}=5.5	SE□□1203A□□□□	Face milling of steel, stainless steel, and cast iron	• Tool diameter Ø80-Ø315 • Large lead angle design for quicker cutting • Block compression structure, good vibration resistance
		KAPR=45° a_{pmax}=7.5	SE□□1504A□□□□		
	FMA04 New  B41	KAPR=45° a_{pmax}=3.5	OFKT05T3-DF/DM OFKT05T3-LH	Face milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy, and high-temperature alloys	• Tool diameter Ø50-Ø160 • 8-flute high-economic milling cutter • High precision with screw compression
	 B44	KAPR=45° a_{pmax}=4.0	ODHT060508-GL/GM/GH/LH ODMT060512-GM	Face milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy, and high-temperature alloys	• Tool diameter Ø50-Ø160 • 8-flute high-economic milling cutter • High precision with screw compression
	FMA07  B48	KAPR=45° a_{pmax}=4.0	ONHU060408-PF/PM/W	Common face milling of steel and cast iron	• Tool diameter Ø25-Ø50 • 16-flute high-economic milling cutter
	 B47	KAPR=45° a_{pmax}=5.0	ONHU08T508-PF/PM/W	Common face milling of steel and cast iron	• Tool diameter Ø50-Ø315 • 16-flute high-economic milling cutter

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Face milling tools	**FMA08** New  B51	KAPR=45° a_{pmax}=1.0	ONHU060408-CM XEEC120904	Precision face milling of cast iron components	• Tool diameter Ø100-Ø315 • Precision face milling cutter with adjustable dedicated wipers for strong operability • Double-sided 16-flute inserts, economically efficient, compatible with FMA07 series • Preferred tool for broad surface precision machining of K-class materials
	FMA11  B54-55	KAPR=45° a_{pmax}=5.5	SNEG1205ANR-GM/HGR/GR/W	Face milling of steel, alloy steel, stainless steel, cast iron, and high-temperature alloys	• Tool diameter Ø63-Ø315 • Double-sided slot milling inserts with 8 cutting edges, economically efficient • Large lead angle design for inserts, unique chipbreaker structure, low power consumption during machining • Double-negative structure and ultra-thick inserts ensure higher tool safety and excellent impact resistance, suitable for deep cutting operations • Inserts have wiper edges, excellent machining performance
		KAPR=45° a_{pmax}=7.0	SNEG1506ANR-GM/HGR/GR/W		
		KAPR=45° a_{pmax}=9.0	SNEG1907ANR-HGR/GR		
	FMA12 New  B59-60	KAPR=45° a_{pmax}=4.0	ONHU0604□□ANN-GL/GM/GH ONMU0604□□-GH/GM	Face milling of steel, alloy steel, stainless steel, cast iron, and high-temperature alloys	• Tool diameter Ø50-Ø315 • Unique 3D spiral insert design with 16 cutting edges • Double-negative structure of the tool body, combined with the spiral insert design, achieves a positive axial lead angle, reducing cutting forces and aiding chip evacuation
		KAPR=45° a_{pmax}=5.5	ONMU09□□□□-GM/GH ONHU09□□□□ANN-GM/GH/GL		
	FMA14  B63	KAPR=45° a_{pmax}=5.5	PNEG110512-GL PNEG110530-GM PNEG110530-GH	Common face milling of steel, stainless steel, and cast iron	• Tool diameter Ø50-Ø315 • 10-flute high-economic milling cutter • 45° entering angle balance design • Strong vibration resistance ensures good machining surface quality
	FMA17 New  B65	KAPR=45° a_{pmax}=6.5	SNGX1205ANN-GL/GM/GH/LH/W SNMX1205ANN-GM SNMX120512-GL/GM/GH	Face milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy, and high-temperature alloys	• Tool diameter Ø50-Ø400 • Double-sided slot milling inserts with 8 cutting edges, economically efficient • Left and right use the same inserts, with the cutter divided into sparse and dense teeth. • Inserts have wiper edges, high machining surface quality • Various chipbreakers with different coating materials, widely applicable
	FMD02  B68-69	KAPR=67° a_{pmax}=5.0	PNEG110512R/L-CF/CM/CR	Common face milling of steel and cast iron	• Tool diameter Ø50-Ø315 • 10-flute high-economic milling cutter
		KAPR=67° a_{pmax}=7.5	PNEG110512R/L-PF/PM/PR		
		KAPR=67° a_{pmax}=6.5	PNEG110512-KH/KM/KL		
	 B73	KAPR=55° a_{pmax}=6.0	HNEX090512-DF/DM HNEX090512-DR	Common face milling of cast iron	• Tool diameter Ø80-Ø315 • 12-flute high-economic milling cutter • Block compression structure, convenient for tool insert installation and removal

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Face milling tools	**FMD03**  B75	KAPR=60° a_{pmax}=12.0	LNKT2007DN-ZR	Steel, alloy steel, stainless steel, cast iron heavy face milling	• Tool diameter Ø125-Ø400 • Double-positive lead angle design, effectively reduces cutting forces • Insert mounting, suitable for heavy-duty machining with large cutting depths • Simple and convenient clamping form
		KAPR=60° a_{pmax}=17.0	LNKT2510-ZR		
	FME02  B77	KAPR=75° a_{pmax}=6.0	SPKW1204EDFR SPKW1204EDSR SPKT1204EDR	Common face milling of steel, alloy steel, and cast iron	• Tool diameter Ø50-Ø125 • 75° entering angle general face milling cutter • Compatible with different chipbreaker inserts, widely applicable
	FME03  B79	KAPR=75° a_{pmax}=6.0	SP□N1203(1504)ED□□ SP□R1203(1504)ED□□ SPEX1203□□-1	Common face milling of steel, alloy steel, and cast iron	• Tool diameter Ø80-Ø315 • 75° entering angle general face milling cutter • Block compression structure, convenient for tool insert installation and removal
		KAPR=75° a_{pmax}=8.0	SP□N1504ED□□ SP□R1504ED□□ SPEX1504□□-1		
	FME04  B83	KAPR=75° a_{pmax}=12.0	LNKT1506EN-ZR	Steel, alloy steel heavy face milling	• Tool diameter Ø125-Ø315 • Double-positive lead angle design, effectively reduces cutting forces • Insert mounting, suitable for heavy-duty machining with large cutting depths • Simple and convenient clamping form
	FME17 New  B85	KAPR=75° a_{pmax}=8.0	SNGX1205ENN-GL/GM/GH/W SNMX120512-GL/GM/GH	Steel, alloy steel, stainless steel, cast iron, high-temperature alloy face milling	• Tool diameter Ø50-Ø400 • Double-sided slot milling inserts, 8 cutting edges, economically efficient • Left and right use the same inserts, with the cutter divided into sparse and dense teeth. • Inserts have wiper edges, high machining surface quality • Various chipbreakers with different coating materials • Widely applicable
	FMP01  B87	KAPR=90° a_{pmax}=18.0	TPKN2204PD□ TPKN2204PDF□ TPKN2204PDT□ TPMR2204PDS□	Face milling of steel, alloy steel, cast iron	• Tool diameter Ø80-Ø315 • 90° entering angle, suitable for square shoulder milling • Block structure for faster tool insert installation and removal
	FMP02  B89	KAPR=90° a_{pmax}=6.7	SEET09T308PER-APF/APM/APR	Face milling of steel, alloy steel, stainless steel, cast iron, aluminum alloy, and high-temperature alloy	• Tool diameter Ø40-Ø315 • 90° entering angle, suitable for square shoulder milling • Sparse teeth, dense teeth, ultra-dense teeth design • Edge precision ground inserts, high workpiece surface quality • Correct chipbreaker and grade matching, suitable for finishing, semi-finishing , and roughing
		KAPR=90° a_{pmax}=10.8	SEET120308PER-APF/APM/APR SEET120308-LH		
	FMP03  B94	KAPR=90° a_{pmax}=13.0	LNKT1506EN-ZR	Steel, alloy steel heavy face milling	• Tool diameter Ø125-Ø315 • Double-positive lead angle design, effectively reduces cutting forces • Insert mounting, suitable for heavy-duty machining with large cutting depths • Simple and convenient clamping form
		KAPR=90° a_{pmax}=17.0	LNKT2007DN-ZR		
		KAPR=90° a_{pmax}=22.0	LNKT2510-ZR		

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Face milling tools	**FMP12**  B97	KAPR=90° a_{pmax}=5.7	WNHU0604□□PNR-GM WNMU060408PNN-GM	Steel, alloy steel, stainless steel, cast iron, aluminum alloy, and high-temperature alloy face milling	• Tool diameter Ø50-Ø315 • 90° entering angle can be used for shoulder milling, face milling, slot milling, etc.; 6-flute double-sided groove milling cutter, equipped with wiper edge, suitable for high-feed processing; tool body with double negative angles, combined with unique insert structure to achieve double positive tool angle, reducing cutting force
		KAPR=90° a_{pmax}=7.7	WNHU0806□□PNR-GM WNMU080608PNN-GM WNHU080616PNR-LH		
	 B98	KAPR=90° a_{pmax}=5.7	WNHU0604□□PNR-GM		• Tool diameter Ø25-Ø50 • 90° entering angle can be used for shoulder milling, face milling, slot milling, etc.; 6-flute double-sided groove milling cutter, equipped with wiper edge, suitable for high-feed processing; tool body with double negative angles, combined with unique insert structure to achieve double positive tool angle, reducing cutting force
	FMP17 New  B100-101	KAPR=88° a_{pmax}=10.5	SNGX1205PNN-GL/GM/GH/W SNMX120512-GL/GM/GH SNCU120420-W4	Steel, alloy steel, stainless steel, cast iron, and high-temperature alloy face milling.	• Tool diameter Ø50-Ø400 • 88° entering angle, strong tool functionality • Double-sided groove milling cutter, 8 cutting edges, good economy • Left and right use the same inserts, with the cutter divided into sparse and dense teeth. • Multiple groove types combined with various coating materials, widely used
	FMR01  B103	a_{pmax}=5.0	RCKT10T3MO-DM	Steel, alloy steel, stainless steel, cast iron, and difficult-to-machine material type profile milling	• Tool diameter Ø25-Ø50 • R-type inserts have extremely strong cutting edges • Suitable for surface machining of molds • Economical milling cutter with screw clamping
		a_{pmax}=6.0	RCKT1204MO-DM/DR/ER/NM		
	FMR02  B105	a_{pmax}=6.0	RCKT1204MO-DM/DR/ER/NM	Steel, alloy steel, stainless steel, cast iron, hardened steel, and difficult-to-machine materials, profile milling, face milling	• Tool diameter Ø50-Ø160 • R-type inserts have extremely strong cutting edges • Suitable for surface machining of molds • Economical milling cutter with screw tightening
		a_{pmax}=8.0	RCKT1606MO-DM/DR/ER/NM		
		a_{pmax}=10.0	RCKT2006MO-DR/ER		
	FMR03  B108	a_{pmax}=4.0	RDKW0803MO	Steel, alloy steel, stainless steel, cast iron, and difficult-to-machine material type profile milling	• Tool diameter Ø16-Ø50 • R-type inserts have extremely strong cutting edges • Suitable for surface machining of molds • Economical milling cutter with screw tightening
		a_{pmax}=5.0	RDKW10T3MO		
		a_{pmax}=6.0	RDKW1204MO		
	FMR04  B109	a_{pmax}=6.0	RDKW1204MO	Steel, alloy steel, stainless steel, cast iron profile milling, face milling	• Tool diameter Ø50-Ø160 • R-type inserts have extremely strong cutting edges • Suitable for surface machining of molds
		a_{pmax}=8.0	RDKW1605MO		
		a_{pmax}=10.0	RDKW2006MO		
	FMR11 New  B112	a_{pmax}=5.0	R□MW10T3MO-H R□MT10T3MO-M R□MT10T3MO-MM	Steel, alloy steel, stainless steel, cast iron, hardened steel and difficult-to-machine materials, cavity copy milling, face milling	• Tool diameter Ø20-Ø40 • Insert anti-rotation structure designed for stable processing • A wide range of groove options to handle various material processing • Screw compression, can be indexed 8 times, excellent economy
		a_{pmax}=6.0	R□MW1204MO-H R□MT1204MO-M R□MT1204MO-MM		
	 B113	a_{pmax}=5.0	R□MW10T3MO-H R□MT10T3MO-M R□MT10T3MO-MM		• Tool diameter Ø40-Ø80 • Insert anti-rotation structure designed for stable processing • A wide range of groove options to handle various material processing • Screw compression, can be indexed 8 times, excellent economy
		a_{pmax}=6.0	R□MW1204MO-H R□MT1204MO-M R□MT1204MO-MM		

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Square shoulder milling tools	**EMP01**  B116-118	KAPR=90° a_{pmax}=6.0	APKT070204-APF/APM	Steel, alloy steel, stainless steel, difficult-to-machine materials, cast iron, aluminum alloy multi-functional milling	• Two interface forms of straight shank and end mill shank, tool diameter Ø10-Ø63 • 90° entering angle, suitable for shoulder milling, slot milling, ramp milling, etc • With wipers, also suitable for flat milling • The insert is a 3D helical edge, with low cutting resistance
		KAPR=90° a_{pmax}=10.5	APKT11T3□□-APF/APM APKT11T3□□-ALH		
		KAPR=90° a_{pmax}=15.5	APKT160408- APF/APM APKT160408-ALH		
	EMP02  B119	KAPR=90° a_{pmax}=11.5	APKT11T3□□-APF/APM/APL APKT11T3□□-ALH	Steel, alloy steel, stainless steel, difficult-to-machine materials, cast iron, and aluminum alloy face milling	• Tool diameter Ø50-Ø160 • 90° entering angle, suitable for shoulder milling • Equipped with wipers, also suitable for flat milling • The insert is a 3D helical edge, with low cutting resistance
		KAPR=90° a_{pmax}=15.5	APKT160408-APF/APM/APL APKT160408-ALH		
	EMP03  B120	KAPR=90° a_{pmax}=39.0	APKT11T3□□-APF/APM/APL APKT11T3□□-ALH	Steel, alloy steel, stainless steel, cast iron, aluminum alloy, difficult-to-machine materials, and deep milling processing	• Tool diameter Ø50-Ø100 • Spiral vertical milling cutter with positive spiral angle, good chip removal • Used for side milling and slotting • With dense teeth structure for high processing efficiency
			APKT16-APF/APM/APL		
	EMP04  B121	KAPR=90° a_{pmax}=29.4~58.0	APKT11T3□□-APF/APM APKT11T3□□-ALH	Steel, alloy steel, stainless steel, cast iron, aluminum alloy, difficult-to-machine materials, and deep milling processing	• Tool diameter Ø20-Ø40 • Spiral vertical milling cutter with positive spiral angle, good chip removal • Used for side milling and slotting • With dense teeth structure for high processing efficiency
	EMP05  B127  B128	KAPR=90° a_{pmax}=20~40	ADKT□□-GM	Drilling, milling, and multi-functional processing of steel, alloy steel, stainless steel, cast iron materials	• Tool diameter Ø16-Ø50 • Tool functions include drilling, slotting, shoulder milling • Slot milling, and ramp milling
	EMP09  B135	KAPR=90° a_{pmax}=8.0	LNKT0804□□PNR-GM/GL LNMT080404PNR-GM	Shoulder and face milling of steel, alloy steel, stainless steel, and cast iron	• Tool diameter Ø25-Ø40 • Two interface forms: straight shank and end mill shank • 90° entering angle, suitable for shoulder milling, slot milling, etc. Vertical installation of the insert, able to withstand greater cutting force
		KAPR=90° a_{pmax}=11.5	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM		
	 B136-137	KAPR=90° a_{pmax}=8.0	LNKT0804□□PNR-GM/GL LNMT080404PNR-GM	Face milling of steel, alloy steel, stainless steel, cast iron	• Tool diameter Ø40-Ø125 • 90° entering angle, suitable for shoulder milling, face milling vertical installation of the insert, good tool rigidity
		KAPR=90° a_{pmax}=11.5	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM		
		KAPR=90° a_{pmax}=15	LNKT1607□□PNR-GM/GL LNMT160708PNR-GM		
	 B138	KAPR=90° a_{pmax}=33~63	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM	Deep milling of steel, alloy steel, stainless steel, cast iron	• Tool diameter Ø40-Ø80 • Used for side milling and slotting • Spiral cutting edge design, swift cutting
	 B139	KAPR=90° a_{pmax}=30~53	LNKT0804□□PNR-GM/GL LNMT080404PNR-GM		• Tool diameter Ø25-Ø32 • High tip strength, sharp cutting • Used for side milling and slotting • Vertical installation of the insert, able to withstand greater cutting force
			LNKT1206□□PNR-GM/GL LNMT120608PNR-GM		

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Square shoulder milling tools	**EMP09 BT** New  B140	KAPR=90° a_{pmax}=63~125	LNKT1206□□PNR-GM/GL LNMT120608PNR-GM	Deep milling of steel, alloy steel, stainless steel, cast iron	• Tool diameter Ø50-Ø80 • 90° entering angle, suitable for shoulder milling, face milling, slot milling, etc • Spiral cutting edge design, large rake angle, quick and smooth chip removal • Vertical installation of the insert, good tool rigidity, more stable processing
	EMP09 JT New  B140	KAPR=90° a_{pmax}=85~125			
	EMP13  B145	KAPR=90° a_{pmax}=11.2	AN□X1105□□PNR-GM/LH	Steel, alloy steel, cast iron, aluminum alloy multifunctional processing	• Tool diameter Ø25-Ø160 • Thickened insert design, combined with a double negative structure body, greatly enhances impact resistance while achieving double positive cutting angles and reducing cutting resistance • Reasonably designed, high-precision controlled cutting edge, capable of achieving high-quality 90° shoulder processing
	 B146	KAPR=90° a_{pmax}=14.5	AN□X1506□□PNR-GM/LH		
	 B147	KAPR=90° a_{pmax}=43~64	AN□X1105□□PNR-GM/LH AN□X1506□□PNR-GM/LH		
	 B147	KAPR=90° a_{pmax}=43~53			
Profile milling tools	**BMR01**  B150	Refer to tool specifications for cutting depth details	ZDET□□CYR□□ ZPNT2204CYR□□ SPMT060304 SDMT□□	Steel, alloy steel, stainless steel, cast iron profile milling	• Tool diameter Ø20-Ø63 • Best suited for roughing of large molds • Arc edge with three-edge insert, economical
	BMR02  B152		ROHX□□	Steel, alloy steel, stainless steel, cast iron profile milling	• Tool diameter Ø12-Ø20 • Used for profile finishing • High precision and stable installation • Double-ended insert, economical
	BMR03  B154  B155  B156  B157		XPHT□□R□□- GM	Steel, alloy steel, stainless steel, cast iron profile milling	• Tool diameter Ø16-Ø50 • Best suited for roughing of molds • Utilizes 3D complex groove insert, high arc accuracy • High rigidity cutter body

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Profile milling tools	**BMR04**  B167  B168	Refer to tool specifications for cutting depth details	ZOHX□□	Steel, alloy steel, stainless steel, cast iron profile milling	• Tool diameter Ø12-Ø32 • High precision tool, used for profile finishing • Two groove types, suitable for different working conditions • High installation precision, good stability
Side and face milling tools	**SMP01**  B175  B176		XSEQ12□□	Steel, alloy steel, stainless steel, cast iron slot milling	• Tool diameter Ø63-Ø250 • Available in both key and core shaft connections • Slot width series: 4, 5, 6, 7, 8mm
	SMP03  B178  B179		MPHT□□	Steel, alloy steel, stainless steel, cast iron slot milling	• Tool diameter Ø80-Ø200 • Available in both key and core shaft connections • Slot width series: 8, 10, 12, 16, 18, 20mm
	SMP05  B182		QC16L□□ QC22L□□	Steel, alloy steel, stainless steel, cast iron grooving	• Tool diameter Ø25-Ø44
	SMP08 New  B184-185		LNET10□□□□-GM LNET12□□□□-GM	Steel, alloy steel, stainless steel, cast iron slot milling	• Tool diameter Ø63-Ø250 • The positioning structure of the cutter body is optimized and the positioning is reliable. The insert adopts a vertical mounting structure, which has excellent impact resistance and makes cutting faster • The size of the tool tip arc can be customized according to different cutting widths and diameters. The optimized design of the tool body is matched with a high-precision insert to process the groove bottom surface with good quality and high precision
	 B186-187				• Tool diameter Ø63-Ø250 • Optimized design of cutter body positioning structure, reliable positioning • The insert adopts a vertical structure, which has excellent impact resistance and makes cutting faster • The size of the tool tip arc can be customized according to different cutting widths and diameters • The optimized design of the cutter body is matched with a high-precision insert to process the groove bottom with good surface quality and high precision

Indexable milling tools overview

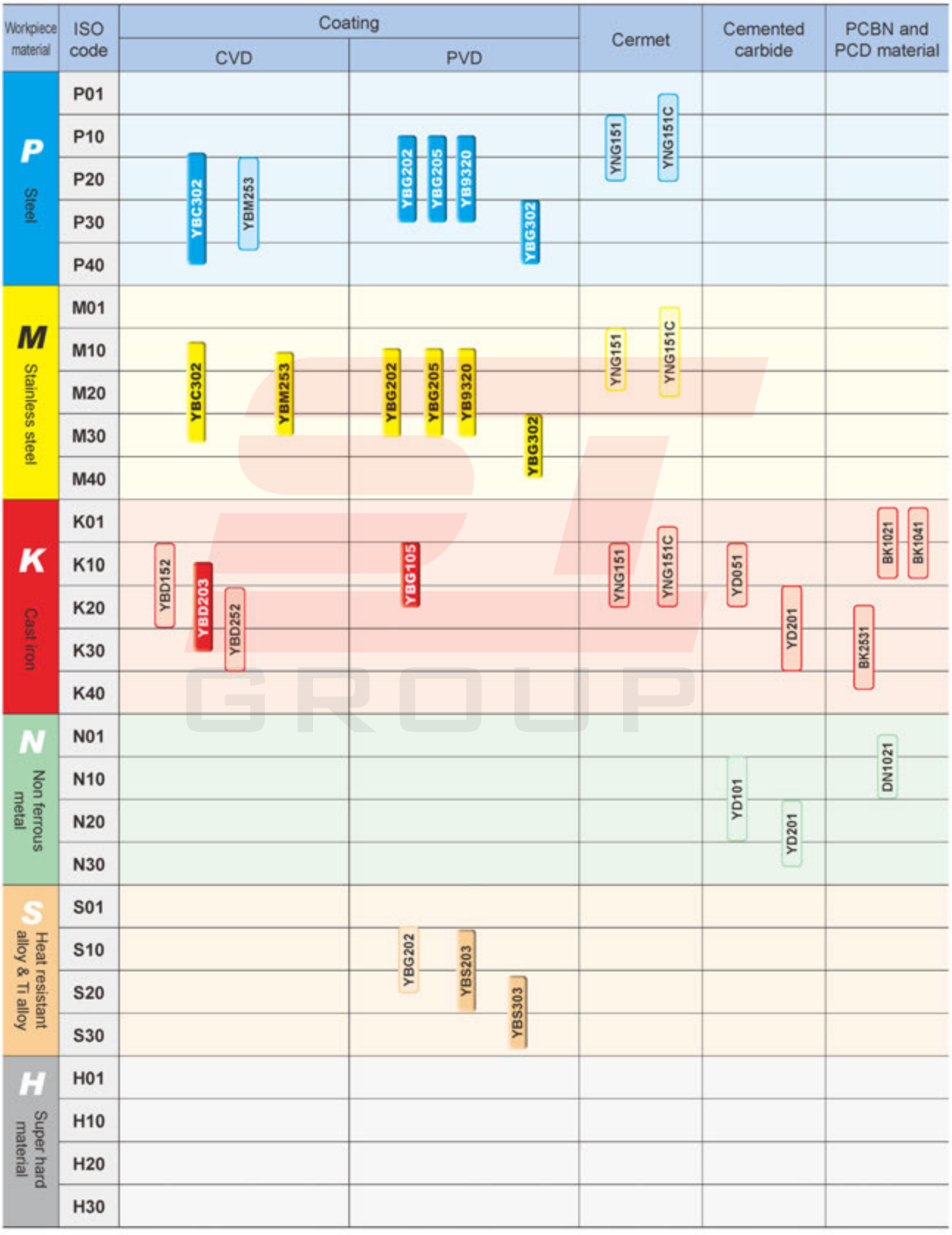
Operating pattern	Series/Shape	Approach angle / Max. cutting depth.	Applicable insert	Application overview	Features
Side and face milling tools	**SMP09** New  B189-190  B191-192	Refer to tool specifications for cutting depth details	LNGX1005□□-GM LNGX1407□□-GM	Steel, alloy steel, stainless steel, cast iron slot milling	• Tool diameter Ø80-Ø250 • Optimized design for tool body positioning, reliable positioning • Insert adopts vertical installation structure, excellent impact resistance, with a large front angle design, effectively reducing cutting forces, ensuring swift cutting • Tools and inserts can be customized to meet various width and arc size groove processing needs
					• Tool diameter Ø80-Ø315 • Optimized design for tool body positioning, reliable positioning • Insert adopts vertical installation structure, excellent impact resistance, with a large front angle design, effectively reducing cutting forces, ensuring swift cutting • Tools and inserts can be customized to meet various width and arc size groove processing needs
Special milling(high feed) tools	**XMR01**  B194  B195  B198  B199		SDMT□□-DM/PM/NM	profile milling and face milling for steel, alloy steel, stainless steel, cast iron, and difficult-to-machine materials	• Tool diameter Ø20-Ø160 • Available in straight shank and collet chuck interfaces • Effectively dissipates radial cutting forces, enabling high feed cutting • Suitable for plunge milling operations • Double clamping for secure and reliable operation
			WPGT□□ZSR WPGT□□ZSR-PM	profile milling and face milling for steel, alloy steel, stainless steel, and cast iron materials	• Tool diameter Ø20-Ø160 • Available in straight shank and collet chuck interfaces • Effectively dissipates radial cutting forces, enabling high feed cutting • Double clamping for secure and reliable operation
	XMR03  B206		SNGU□□-GM	Cavity milling and face milling for steel, alloy steel, and stainless steel materials	• Tool diameter Ø50-Ø125 • Eight cutting edges on both faces, offering good economy • Large lead angle design reduces cutting resistance, providing good versatility • Excellent overall impact resistance of the tool • Strong anti-vibration capability ensures stable machining
	XMR12 New  B208  B209		ENMX120608-GM ENMX1206XR-GM ENMX1206R□-GM	Cavity milling and face milling of steel and alloy steel materials	• Tool Diameter Ø16-Ø63 • Three interface forms: straight handle, sleeve type and interchangeable type • The type of the assembly insert determines the function of the tool, enabling square shoulders, large feeds, profiling, etc • The insert adopts double-sided chipbreaker design and is extremely economical

Indexable milling tools overview

Operating pattern	Series/Shape	Approach angle / Max. cutting depth	Applicable insert	Application overview	Features
Boring and milling tools	**XMP01**  B215	KAPR=90° a_{pmax}=18~36	CNE121006A/B	Flat milling, side milling, slot milling, and hole milling for steel, alloy steel, and cast iron	• Tool diameter Ø80-Ø400 • 90° entering angle, with insert vertical installation structure, axial and radial cutting widths adjustable as required. Open chip groove design ensures smooth chip removal. Large bottom insert width, strong ability for spiral interpolation milling. Both types of groove insert are interchangeable, suitable for different machining conditions
T-slot milling tools	**TMP01**  B217	KAPR=90° a_{pmax}=9~28	MPHT□□	T-slot machining on cast iron workbenches	• Tool diameter Ø21-Ø60 • Machining nominal sizes of T-slots 12, 14, 18, 22, 28, 36 • Uses 86° diamond-shaped positive angle insert
Helical end mills	**HMP01**  B219	KAPR=90° a_{pmax}=55	APKT150412-PM/KM SPMT120408-PM/KM	Deep milling for steel, alloy steel, and cast iron	• Tool diameter Ø40, Ø80 • Uneven teeth pitch structure reduces vibration • Integral structure provides good rigidity; interchangeable head structure offers good economy
	 B220	KAPR=90° a_{pmax}=74~144			
	HMP01 EC  B221	KAPR=90° a_{pmax}=74~144			
Chamfering tools	**CMZ01**  B224	KAPR=30°	SPMT120408	Chamfering for steel, alloy steel, stainless steel, and cast iron	• Tool diameters Ø12, Ø25, Ø32, Ø36 • Also capable of small flat milling operations
	CMA01  B225	KAPR=45°		Chamfering for steel, alloy steel, stainless steel, and cast iron	• Tool diameters Ø12, Ø25, Ø32, Ø36 • Also capable of small flat milling operations
	CMD01  B226	KAPR=60°			

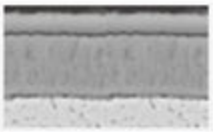
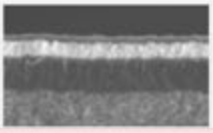

Profile Milling Tool
Series

Milling insert grades overview

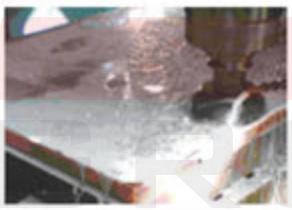


Grade classification for milling inserts

Coated Cemented Carbide CVD

Grade	Coating structure	Micro-structure	ISO applied range	Application field
YBC302	Combination of high toughness and high strength substrate with TiCN, thin Al_2O_3, and TiN coatings		P15~35 M10~30	Suitable for rough milling and semi-finish milling of P and M class materials with hardness up to HRC45
YBM253	Combination of high toughness gradient alloy substrate with TiCN and ultrafine Al_2O_3 coatings		M10~30	Suitable for semi-finish milling and rough milling of P and M class materials
YBD152	Excellent combination of high wear-resistant substrate with TiCN and thick Al_2O_3 coatings		K05~25	Suitable for semi-finish milling and finish milling of K class materials
YBD203	Substrate with good toughness and wear resistance combined with high toughness and high strength TiCN and Al_2O_3 coatings		K10~30	Suitable for general milling of K class materials such as ductile iron and malleable iron
YBD252	Substrate with high toughness combined with TiCN and thick Al_2O_3 coatings		K15~35	Suitable for rough milling and semi-finish milling of K class materials

Application case

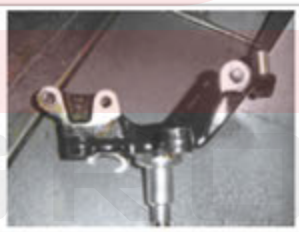
Component shape			
Machine and cooling	CNC gantry milling machine, wet processing	Vertical machining center, dry processing	Horizontal machining center, dry processing
Workpiece material and hardness	Cast stainless steel HB220-260	Forging steel No. 45 HB240-270	HT250 HB220
Type of machining	Milling flat surfaces	Milling flat surfaces	Milling flat surfaces
Applicable tool	FMA04-160-C40-OD06-10	FMA01-125-B40-SE12-08	FMP02-100-B32-SE12-07
Applicable insert	YBM253/ODHT060512-GM	YBC302/SEET12T3-DR	YBD252/SEET120308PER-APM
Cutting parameters	Vc=120m/min, fz=0.15mm/z, a_p=2mm	Vc=212m/min, fz=0.2mm/z, a_p=3mm	Vc=160m/min, fz=0.2mm/z, a_p=1.5mm
Application results			

Grade classification for milling inserts

Coated Cemented Carbide PVD

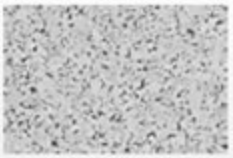
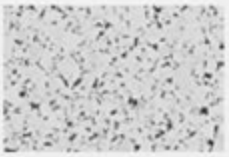
Grade	Coating structure	ISO applied range	Application field
YBG105	Fine-grain alloy substrate + nano coating	K05~K20	Suitable for precision milling and semi-finish milling of K class materials
YBG202	Substrate with excellent deformation resistance + nano coating	P10~30 M10~30 S05~20	A highly versatile PVD grade, widely applicable to semi-finish milling of P, M, and S class materials
YBG205	Ultrafine carbide substrate + nano coating	P10~30 M10~30	Suitable for precision milling and semi-finish milling of P and M class materials
YBG302	Substrate with good toughness and strength + nano coating	P25~40 M25~40	Suitable for rough milling of P and M class materials
YB9320	High-toughness substrate + TiAlN-based nano-multilayer coating	P10~30 M10~30	A highly versatile PVD grade, suitable for precision and semi-finish milling of P and M materials
YBS203	Substrate material with excellent deformation resistance + nano coating	S10~20	A general grade for S-class machining, suitable for milling S-class difficult-to-machine materials
YBS303	Substrate with good toughness and strength + nano coating	S20~30	Suitable for milling titanium alloy materials
YBH053	Ultrafine carbide substrate + TiAlN-based nano-multilayer coating	H05~20	Suitable for precision milling of H-class hardened materials

Application case

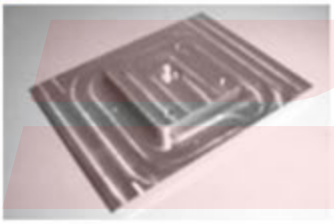
Component shape		
Machine and cooling	Machining center, dry cutting	Gantry milling machine, dry cutting
Workpiece material and hardness	Ductile cast iron HB 220	7CrSiMoV HRC25
Type of machining	Milling flat surfaces	Milling cavity
Applicable tool	EMP02-050-A22-AP11-06	BMR03-050-MT5-M
Applicable insert	YBG105/APKT11T308-APM	YBG302/XPHT50R2507- GM
Cutting parameters	Vc=235m/min, fz=0.15mm/z, a_p=1~3mm	Vc=120m/min, fz=0.25mm/z, a_p=8mm
Application results		

Grade classification for milling inserts

Cemented Carbide

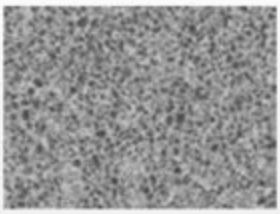
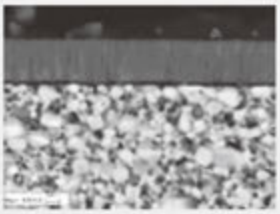
Grade	Coating structure	ISO applied range	Application field
YD101		N05~25	Suitable for finish milling and semi-finish milling of N-class materials
YD201		K15~35 N15~30	Suitable for semi-finish milling and rough milling of K-class materials, as well as rough milling of N-class materials

Application case

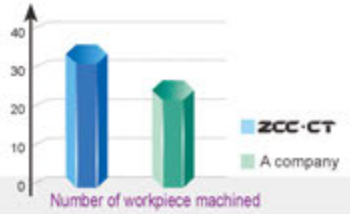
Component shape			
Machine and cooling	Vertical machining center, wet processing	Gantry milling machine, wet processing	Gantry milling machine, dry cutting
Workpiece material and hardness	Aluminum alloy HB100	40CrMnMo HB240	HT250 HB220
Type of machining	Milling flat surfaces	Milling flat surfaces	Milling flat surfaces
Applicable tool	FMA01-100-B32-SE12-07	FMP01-100-B32-TP22-06	FME03-160-B40-SP15-10
Applicable insert	YD101/SEET12T3-LH	YD201/TPKN2204PDR	YD201/SPKN1504EDTR
Cutting parameters	Vc=300-350m/min, a_p=1~2mm, fz=0.2mm/z	Vc=170m/min, a_p=5~7mm fz=0.3mm/z	Vc=100-130m/min, a_p=7mm, fz=0.35mm/z
Application results			

Grade classification for milling inserts

Cermet

Grade	Coating structure	ISO applied range	Application field
YNG151		P05~20 M05~20 K05~20	Widely used in finish milling of P, M, and K-class materials
YNG151C		P01~20 M01~20 K01~20	Widely used in finish milling of P, M, and K-class materials

Application case

Component shape		
Machine and cooling	Machining center, dry cutting	Machining center, dry cutting
Workpiece material and hardness	Grade 45 steel HB 170~220	NAK80 HRC42~48
Type of machining	Finish milling flat surfaces	Finish milling flat surfaces
Applicable tool	FMA03-160-B40-SE12-08	FME03-160-B40-SP12-10
Applicable insert	YNG151/SEEN1203AFTN	YNG151C/SPEN1203EDER
Cutting parameters	Vc=400m/min, fz=0.1mm/z, a_p=0.3mm	Vc=420m/min, fz=0.12mm/z, a_p=0.35mm
Application results		

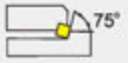
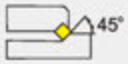

SMP05
Slot Milling Tools

Side and Face Milling Tools

SMP08
SMP09

Indexable milling tools code key

Cutter type	
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		

Series code

Cutting diameter ØD

Side and face milling tool: diameter X cutting edge width

Coupling structurebe (see below)

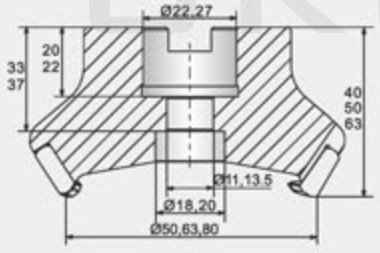
A	A-type coupling	XP	Weldon shank
B	B-type coupling	G	Straight shank
C	C-type coupling	MW	Morse adapter with a conical hole and without a flat tail
D	D-type coupling		

Coupling size(mm) (see below)

FM E 03 - 100 - B 32

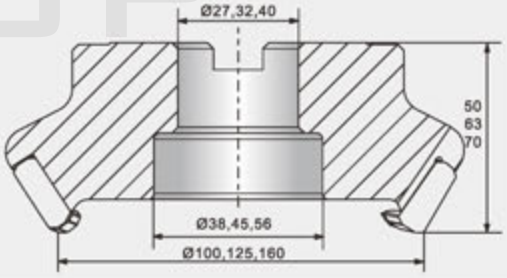
Coupling structure of arbor

A-type coupling



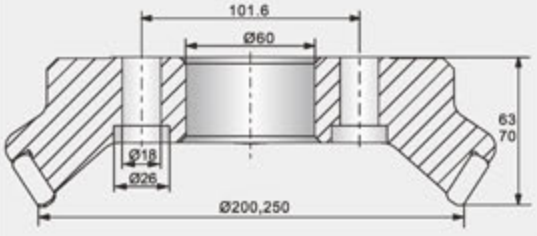
Ø50- Ø80 arbor face milling cutter as per GB5342-96

B-type coupling



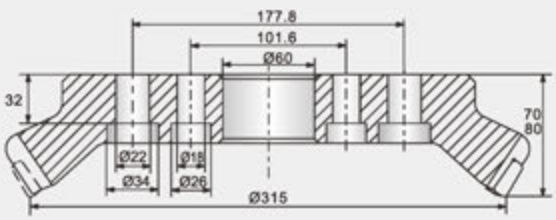
Ø100- Ø160 arbor face milling cutter as per GB5342-96

C-type coupling



Ø200- Ø250 arbor face milling cutter as per GB5342-96

D-type coupling



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.

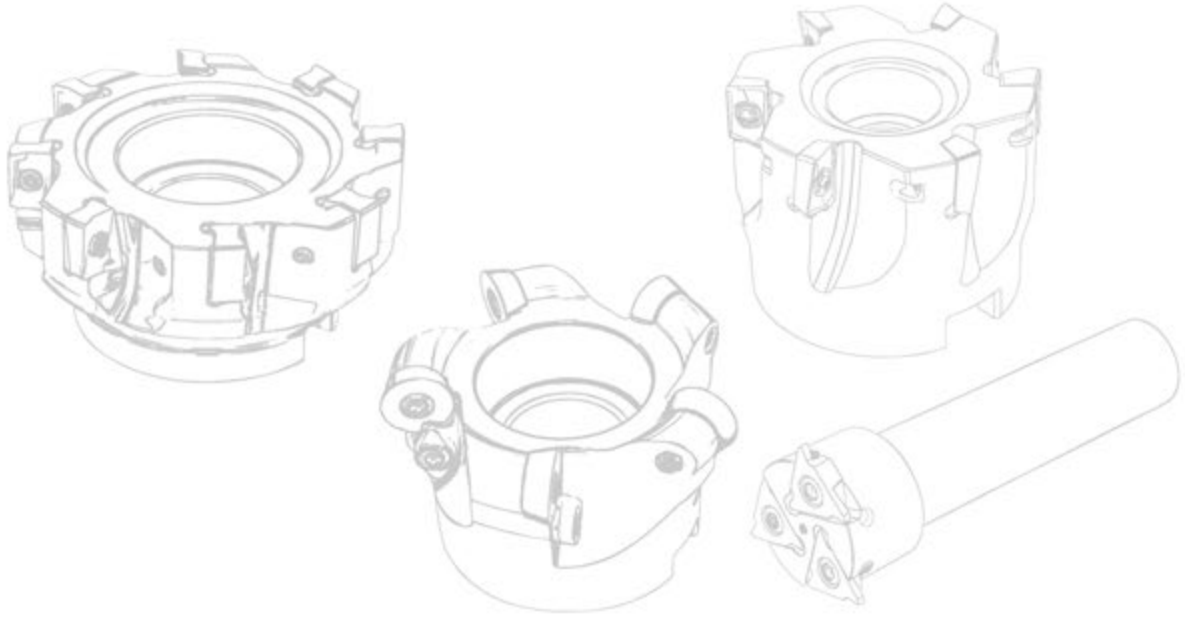
Insert shape	
80° C	55° D
R	S
60° T	L
H	O

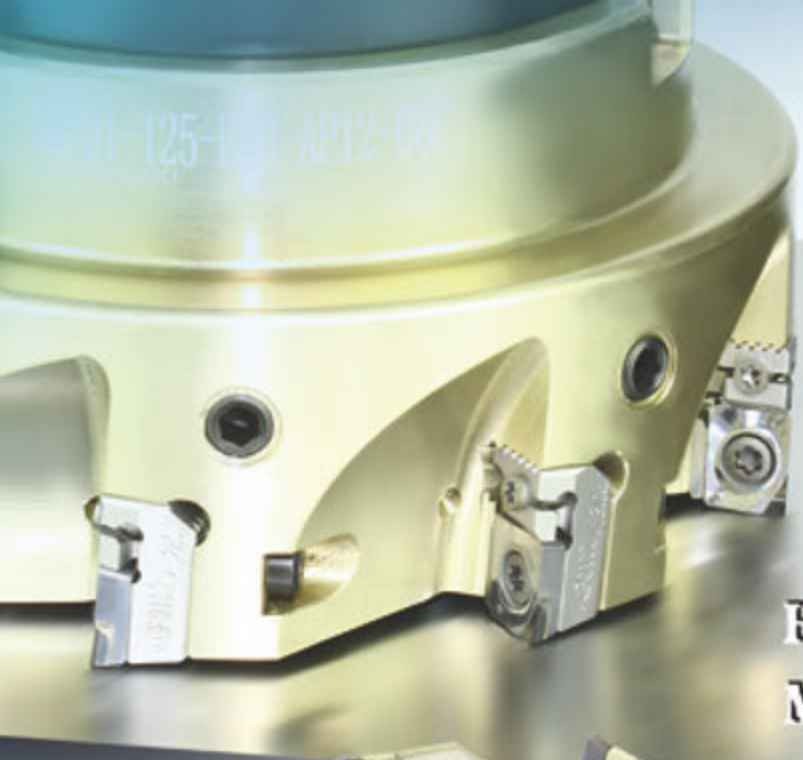
Insert clearance angle	
N	0°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°

Length of cutting edge						
Diameter of insert's inscribed circle	Insert shape					
	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

-SP12-06LC

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



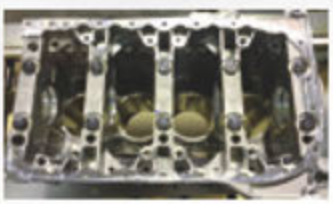


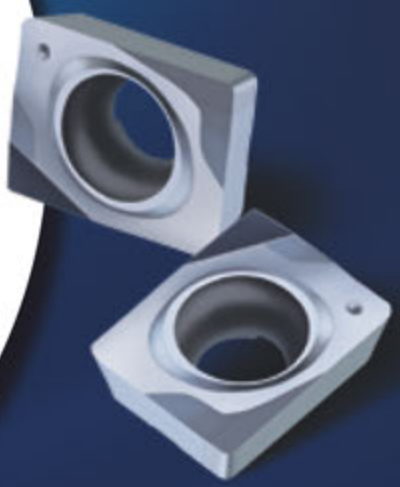
AMA01
AMP01 Series

High-speed and High-precision Miiling Tools

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

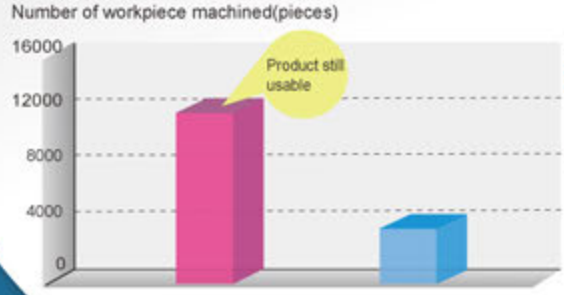
Area of machining: Bottom surface of cylinder housing
Machine: Machining center
Coolant: Internal
Workpiece material: Aluminum alloy (HB 110)
Operation: Face milling
Cutting data: n= 11141r/min, fz=0.1mm/z





●Comparison of tool life

Number of workpiece machined(pieces)



Results:

ZCC·CT: 12000 pcs (Still usable)

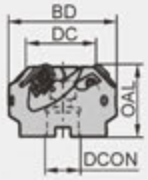
Product of company A: 3500 pcs

High-speed and high-precision miiling tools

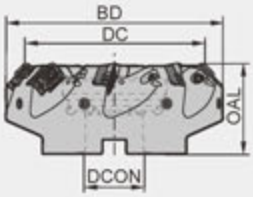
KAPR:45° Face milling Chamfering

AMA01 N K H

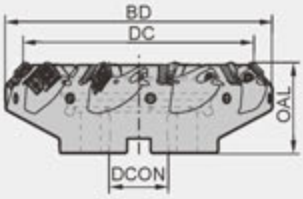
A-type coupling



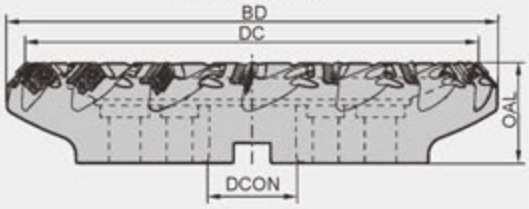
B-type coupling



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	DC	BD	DCON	OAL			
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

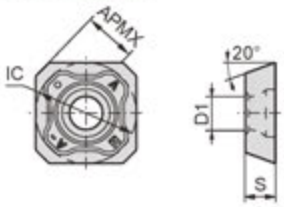
Cutter with a diameter of 250mm or more have no internal cooling, and cutter with a diameter of 200mm or more have no dynamic balance. Type A and Type B connectors are equipped with internal cooling screws.

Spare parts

Diameter DC	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							
Ø80		M8×12(GB77-85)			AMA0102	WT15IS	
Ø100-Ø160							
Ø200		--					
Ø250-Ø500		--			AMA0103		

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Good working condition Normal working condition Bad working condition

Workpiece material					
H	High hardness materials			😐	
K	Cast iron		😊		☹
N	Non-ferrous metal	😐			😐

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	SEHT12T3AFFN-AL	12.7	3.97	4.4	6.6				★

★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					
H	High hardness materials			😐	
K	Cast iron		😊		☹
N	Non-ferrous metal	😐			😐

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	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

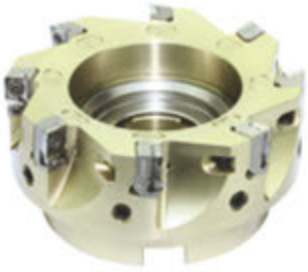
Recommended cutting parameters

Workpiece material		Insert material	Cutting parameters	
			V(m/min)	f_z(mm/z)
N	Aluminum alloy (Si content≤12%)	YCD011	1500(800-3000)	0.1(0.08-0.3)
		YD201	600(300-1000)	0.15(0.05-0.3)
K	Cast iron	YCB011	800(500-1200)	0.2(0.1-0.5)
H	Hardened steel	YCB012	150(100-500)	0.15(0.1-0.5)

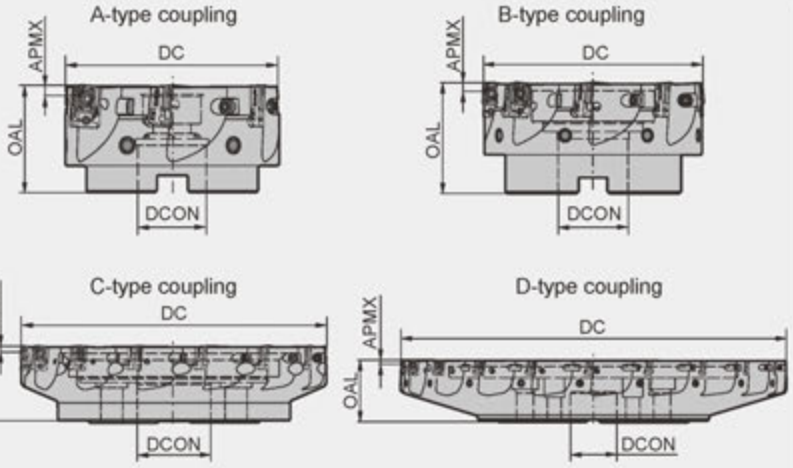
High-speed and high-precision miiling tools

KAPR:90°

AMP01 N K H



Close even pitch



Specification of tools

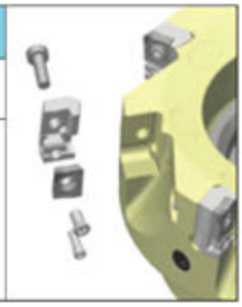
Type		Stock		Basic dimensions(mm)			Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCON	OAL			
AMP01	-050-A22-AP12-03C	▲	△	50	22	40	3	A	0.17
	-063-A27-AP12-05C	▲	△	63	27	40	5	A	0.27
	-080-A27-AP12-06C	▲	△	80	27	50	6	A	0.49
	-100-A32-AP12-06C	▲	△	100	32	50	6	A	0.84
	-125-B40-AP12-08C	▲	△	125	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.

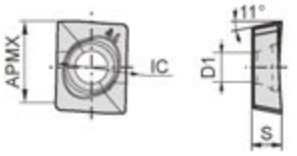
Spare parts

Diameter DC	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		--					
Ø250-Ø500		--			AMP0103		



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



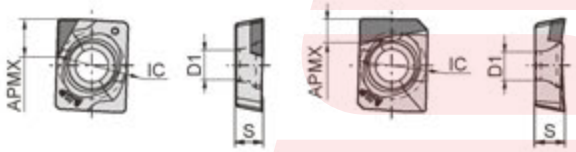
Good working condition Normal working condition Bad working condition

Workpiece material					
H	High hardness materials			😐	
K	Cast iron		😊		☹
N	Non-ferrous metal	😐			😐

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	APHT12T304PPFR-AL	12.7	3.97	4.4	12				★

★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					
H	High hardness materials			😐	
K	Cast iron		😊		☹
N	Non-ferrous metal	😐			😐

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	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

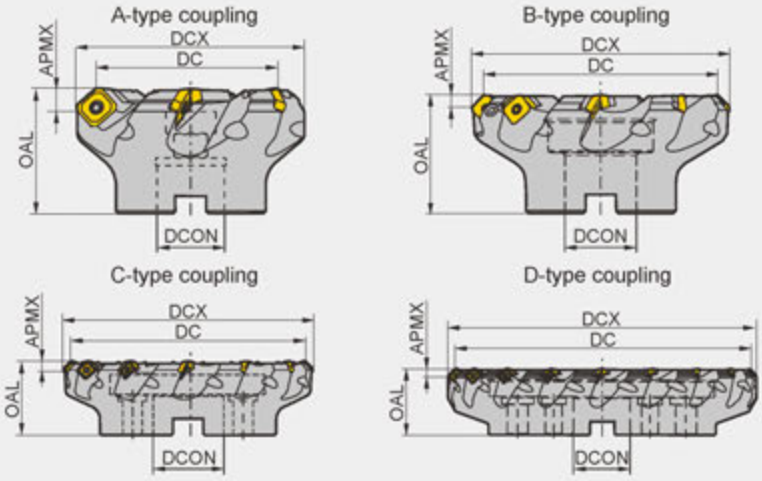
Recommended cutting parameters

Workpiece material		Insert material	Cutting parameters	
			V(m/min)	f_z(mm/z)
N	Aluminum alloy (Si content≤12%)	YCD011	1500(800-3000)	0.1(0.08-0.3)
		YD201	600(300-1000)	0.15(0.05-0.3)
K	Cast iron	YCB011	800(500-1200)	0.2(0.1-0.5)
H	Hardened steel	YCB012	150(100-500)	0.15(0.1-0.5)

Face milling tools

KAPR:45°

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	DC	DCX	DCON	OAL	APMX			
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

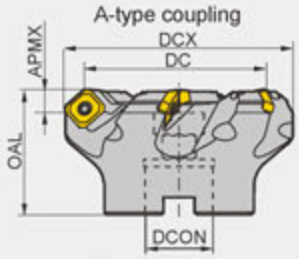
Diameter DC	Insert	Insert screw	Shim	Shim screw	Wrench	Wrench
						
Ø50-Ø315	SEET12□□-	I60M3.5×12	S13BS	SM5×7XA	WT15IS	WH35L
Ø100-Ø315	SEET18□□-	I60M5×17	S18BS	SM8×9XA	WT20IT	WH50L

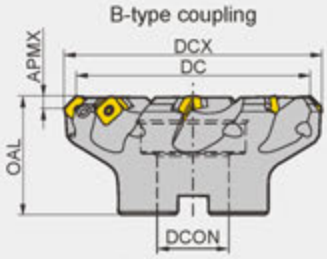
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

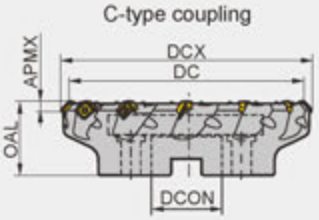
Face milling tools

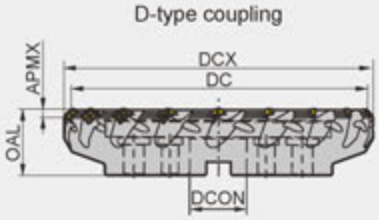
KAPR:45°

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	DC	DCX	DCON	OAL	APMX			
FMA01 Close pitch	**-050-A22-SE12-05**	▲	△	50	63	22	40	6.0	5	A	0.427
	-063-A22-SE12-06	▲	△	63	74	22	40	6.0	6	A	0.771
	-080-A27-SE12-08	▲	△	80	93	27	50	6.0	8	A	1.37
	-100-B32-SE12-10	▲	△	100	114	32	50	6.0	10	B	1.755
	-125-B40-SE12-12	▲	△	125	136	40	63	6.0	12	B	3.666
	-160-B40-SE12-16	▲	△	160	174	40	63	6.0	16	B	5.21
	-200-C60-SE12-20	▲	△	200	214	60	63	6.0	20	C	9.32
	-250-C60-SE12-24	▲	△	250	264	60	63	6.0	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

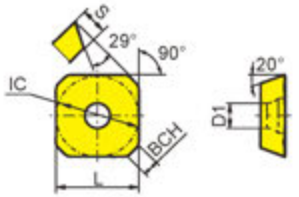
▲Stock available △Make-to-order

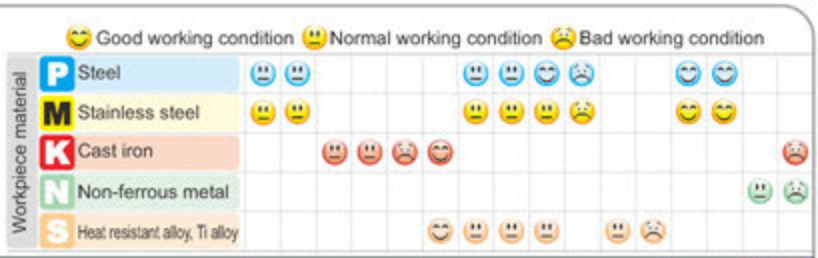
Spare parts

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

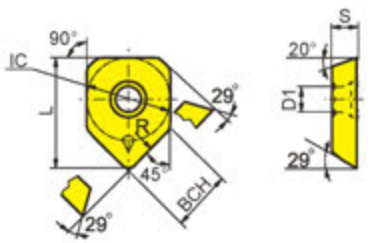
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

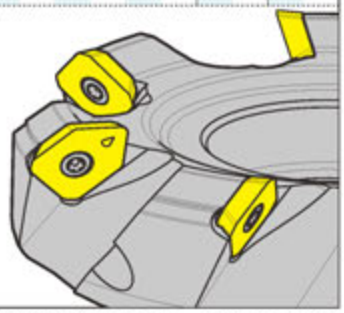
Selection of inserts





Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BCH	R	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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						★		○								



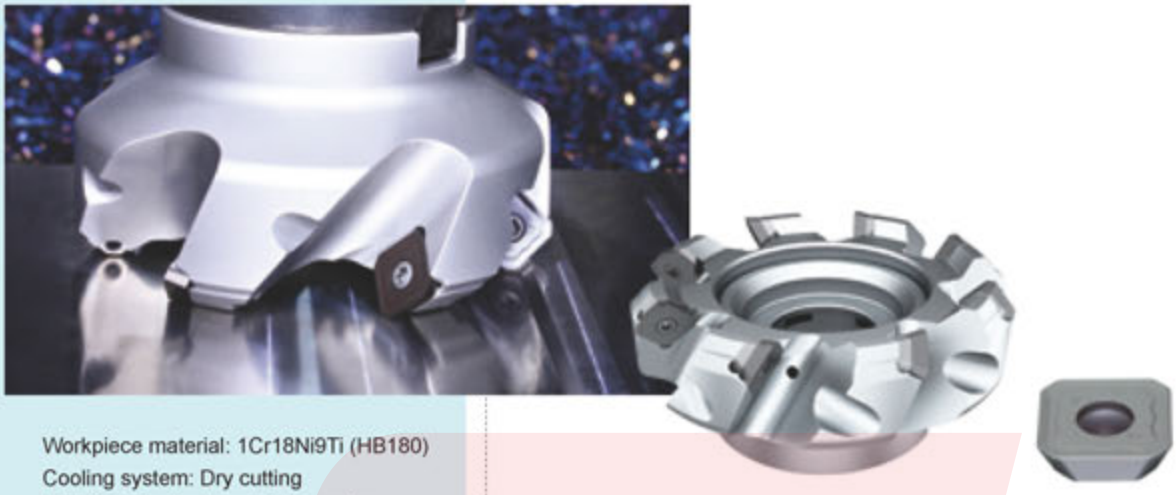


★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V(m/min)	f(mm/z)		
					-DF	-DM	-DR
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)
			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	YBM253 YBC302	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	YBM253 YBC302	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	YBM252	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	YBG105	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	YBG105	50(20-60)	0.1 (0.1-0.2)	0.15 (0.1-0.3)	

Case for FMA01



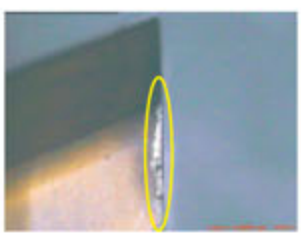
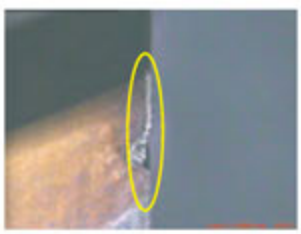
Workpiece material: 1Cr18Ni9Ti (HB180)
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters: Vc=160m/min
a_p=1mm
fz=0.2mm/z
a_e=60mm

Tool type: FMA01-080-A27-SE12-06
Insert type/grade: SEET12T3-EM/YBG302

Surface roughness of workpiece:

ZCC-CT: Ra1.2
Similar overseas products: Ra1.6

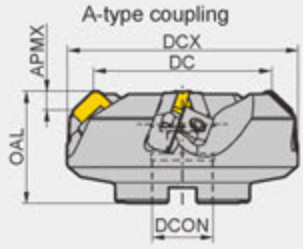
Comparison of insert abrasion

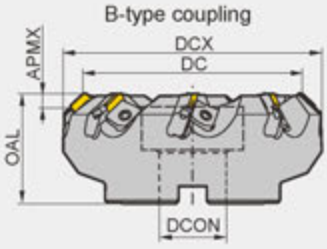
	ZCC-CT	Similar overseas products
17'30"		
29'30"		
33'30"		

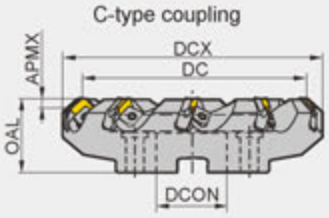
Face milling tools

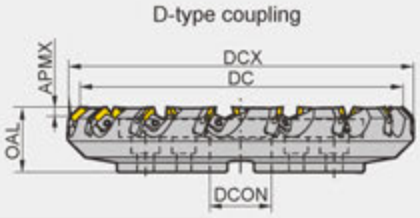
KAPR:45°

FMA03 P M K









Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
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

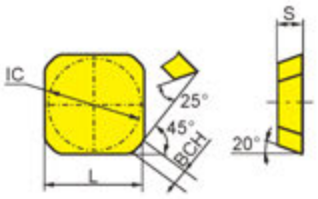
▲Stock available △Make-to-order

Spare parts

Diameter DC	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts

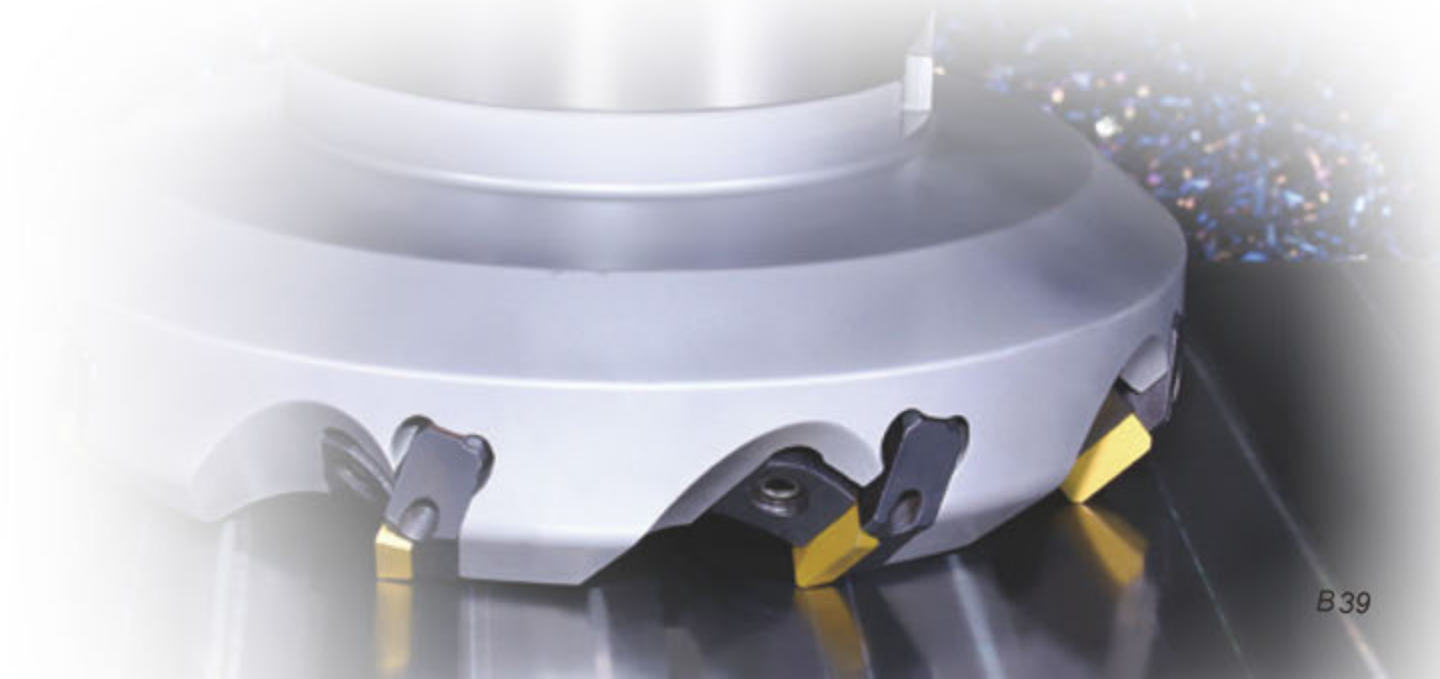


Good working condition Normal working condition Bad working condition

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	
		L	IC	S	BCH	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SEEN1203AFTN	12.7	12.7	3.18	1.8							○						●			
	SEKN1203AFFN	12.7	12.7	3.18	1.8						★										
	SEKN1203AFN	12.7	12.7	3.18	1.8	●						○									
	SEKN1203AFTN	12.7	12.7	3.18	1.8	★	★	●				★	★					●			
	SEMR1203AN-M	12.7	12.7	3.3	-								●								
	SEKR1203AN-M	12.7	12.7	3.3	-								●								
	SEKN1504AFN	15.875	15.875	4.76	1.6	●	●														
	SEKN1504AFTN	15.875	15.875	4.76	1.6	★	★							★	●						
	SEMR1504AN-M	15.875	15.875	4.9	-								●								
	SEKR1504AN-M	15.875	15.875	4.9	-								●								

★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(m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤180	YNG151	430 (340-500)	0.2 (0.1-0.4)
			YBM253 YBC302	270 (220-350)	0.2 (0.1-0.4)
			YBM253	220 (180-300)	0.25 (0.15-0.3)
			YBG202 YBG302	270 (200-360)	0.2 (0.1-0.3)
	High-carbon steel, Alloy steel	180-280	YNG151	400 (320-480)	0.2 (0.1-0.4)
			YBM253 YBC302	240 (200-320)	0.2 (0.1-0.4)
			YBM253	200 (160-280)	0.25 (0.15-0.3)
			YBG202 YBG302	240 (180-350)	0.2 (0.1-0.3)
	Alloy tool steel	280-350	YNG151	350 (300-450)	0.2 (0.1-0.4)
			YBM253 YBC302	220 (180-300)	0.2 (0.1-0.4)
			YBM253	180 (150-250)	0.25 (0.15-0.3)
			YBG202 YBG302	220 (170-340)	0.2 (0.1-0.3)
M	Stainless steel	≤270	YNG151	220 (160-280)	0.2 (0.1-0.4)
			YBM253	130 (100-220)	0.2 (0.1-0.4)
			YBG202 YBG302	140 (100-250)	0.2 (0.1-0.3)
K	Cast iron	180-250	YBG105	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

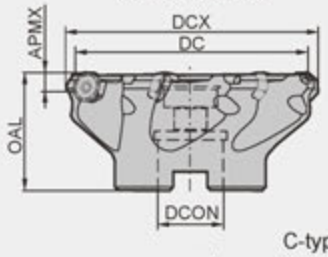
KAPR:45°

Face milling Chamfering

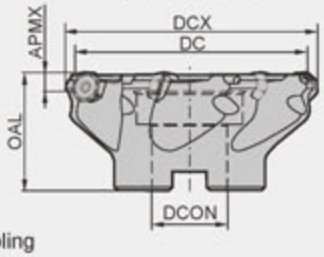
FMA04 P M K N

Screw clamping

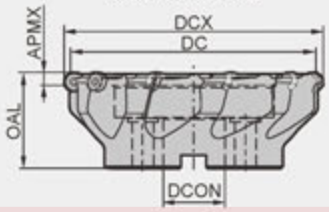
A-type coupling



B-type coupling



C-type coupling



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
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

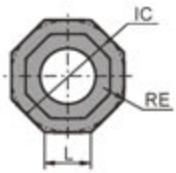
▲Stock available △Make-to-order

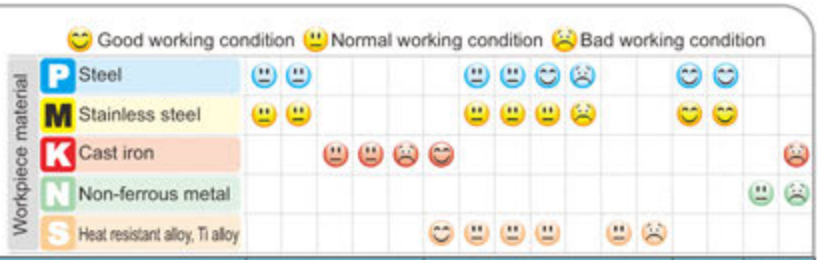
Spare parts

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

Tools code key B26–B27 Grade selection guide B19–B23 Technical data B271–B276

Selection of inserts





Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				V(m/min)	f(mm/z)	
					-DF	-DM
P	Low-carbon steel, Soft steel	≤180	YBM253	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	230 (170-350)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	High-carbon steel, Alloy steel	180-280	YBM253	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	220 (150-330)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	Alloy tool steel	280-350	YBM253	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	140 (100-250)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBM253	150 (120-250)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
K	Cast iron	180-250	YBG105	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)	

Case for FMA04

Workpiece material: 42CrMo (HB280)

Cooling system: Dry cutting

Cutting machine tools: vertical machining center

Tool: FMA04-100-B32-OF05-07

Insert: OFKT05T3-DM/YBG202

Cutting parameters: V_c=180m/min, a_p=1mm, fz=0.2mm/z, a_e=60mm

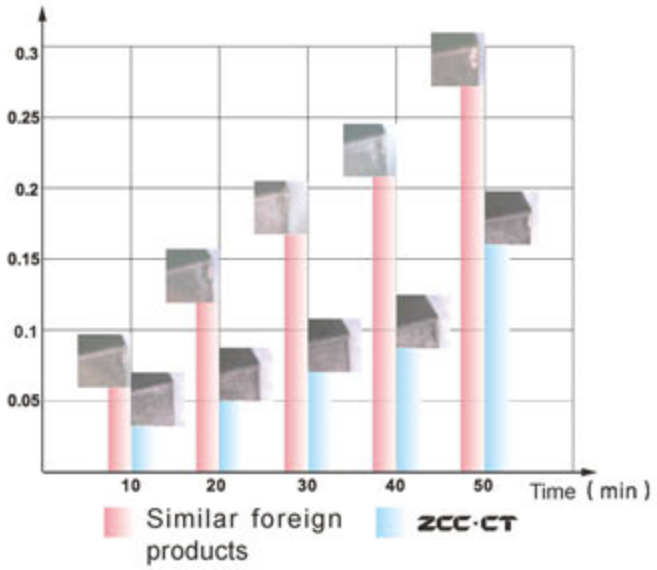
Surface roughness of workpiece being processed:

ZCC·CT: Ra1.2

Similar foreign products: Ra1.6

●Insert wear comparison

Flank wear VB(mm)



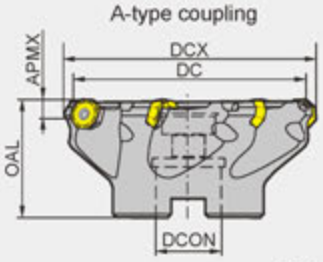
Face milling tools

KAPR:45°

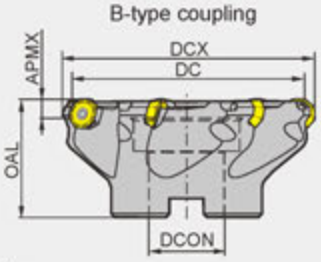
FMA04 P M K N S

Screw clamping

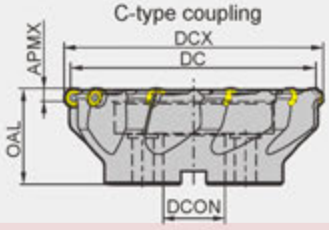
A-type coupling



B-type coupling



C-type coupling



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
FMA04 Coarse pitch	**-050-A22-OD06-04C**	▲	△	50	60	22	40	4	4	A	0.284
	-063-A22-OD06-05C	▲	△	63	73	22	40	4	5	A	0.409
	-080-A27-OD06-06C	▲	△	80	90	27	50	4	6	A	1.017
	-100-A32-OD06-07C	▲	△	100	110	32	50	4	7	A	1.536
	-125-B40-OD06-08	▲	△	125	135	40	63	4	8	B	2.931
	-160-C40-OD06-10	▲	△	160	170	40	63	4	10	C	3.838
Close pitch	**-050-A22-OD06-05C**	▲	△	50	60	22	40	4	5	A	0.298
	-063-A22-OD06-06C	▲	△	63	73	22	40	4	6	A	0.425
	-080-A27-OD06-07C	▲	△	80	90	27	50	4	7	A	1.025
	-100-A32-OD06-09C	▲	△	100	110	32	50	4	9	A	1.521
	-125-B40-OD06-10	▲	△	125	135	40	63	4	10	B	2.919
	-160-C40-OD06-12	▲	△	160	170	40	63	4	12	C	3.825

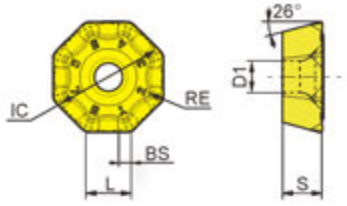
▲Stock available △Make-to-order

Spare parts

Diameter DC	Insert screw	Wrench
		
Ø50-Ø63	I60M5×13	WT20IP
Ø80-Ø125		WT20IS
Ø160		WT20IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		L	IC	S	D1	RE	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters V(m/min)	f(mm/z) -GL	f(mm/z) -GM	f(mm/z) -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)	--
					-LH		
N	Aluminium alloy	--	YD101	300-	0.15 (0.05-0.3)		
			YD201				

HURRICANE

FMA07 Millling Tool Series

New Generation of High Economy Milling Tools

16 cutting edges high economy

⑧×2=16 edges

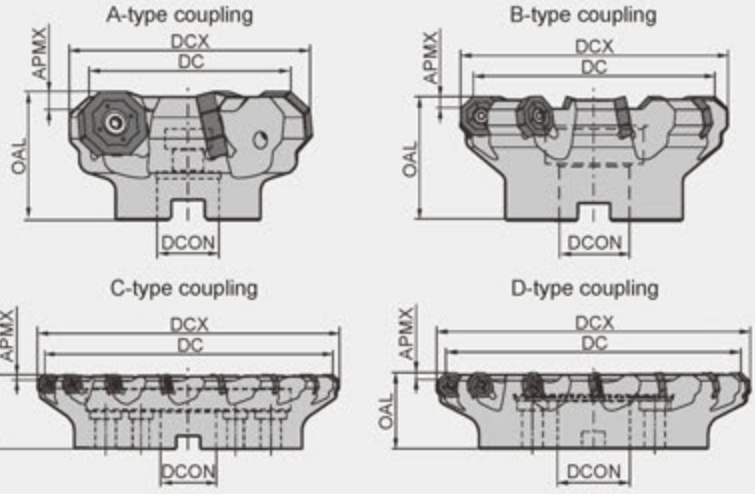
- Double negative rake angle structure, both axial and radial direction, super thick insert with outstanding toughness.
- Has good wiper capability, especially under the high feed rate, the wiper effect is better in comparison with similar tools.
- The unique hole design makes the insert clamp more secured.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

Face milling tools

KAPR:45°

Face milling

FMA07 P M K



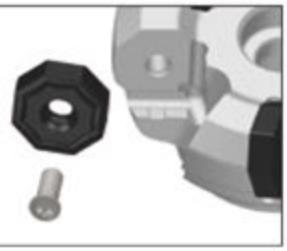
Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
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	50	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 DC	Inserts	Insert screw	Wrench	
				
Ø50 -Ø315	ONHU06□□□□-PF/PM	I60M4×10	--	WT15IS
Ø63 -Ø315	ONHU08□□□□-PF/PM/W	I60M5×13	WT20IT	--



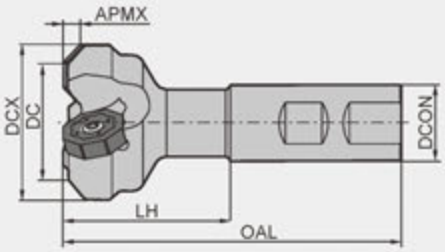
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Face milling tools

KAPR:45°

Face milling Chamfering

FMA07 P M K



Specification of tools

Type		Stock		Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		R	L	DC	DCX	DCON	OAL	LH	APMX		
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

Spare parts

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

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Case for FMA07

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

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

Insert type/grade: ONHU08T508-PM/YBD152

●Comparison of insert abrasion

Abrasion on rake face

ZCC·CT

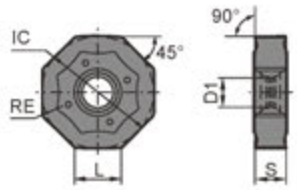
similar product of company A

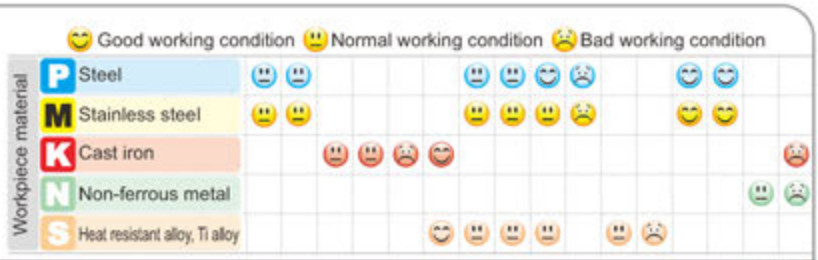
Abrasion on clearance face

ZCC·CT

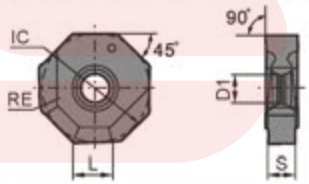
similar product of company A

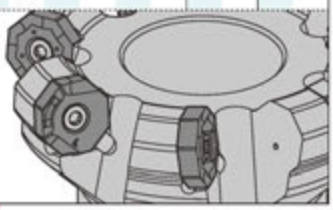
Selection of inserts





Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ONHU060408-PF	6.58	15.875	4.76	4.4	0.83	★		★				★									
	ONHU08T508-PF	8.37	20.2	5.77	5.3	0.83	★		★				★									
	ONHU060408-PM	6.58	15.875	4.76	4.4	0.83	★	★	★													
	ONHU08T508-PM	8.37	20.2	5.79	5.3	0.83	★	★	★													
	ONHU08T508-W	6.9	20.5	6.00	5.3	0.80						★		★								





★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)	a_{pmax}(mm)	
						ONHU06□□□□-PF/PM	ONHU08□□□□-PF/PM
P	Low-carbon steel, Soft steel	≤180	YBG105 YBM253 YBG202 YBC302 YBG205	270 (220-350)	0.2 (0.1-0.4)	4	5
P	High-carbon steel, Alloy steel	180-280	YBG105 YBM253 YBG202 YBC302 YBG205	260 (200-320)	0.2 (0.1-0.4)	4	5
P	Alloy tool steel	280-350	YBG105 YBM253 YBG202 YBC302 YBG205	240 (180-300)	0.2 (0.1-0.4)	4	5
M	Stainless steel	≤270	YBM253 YBG205	230(180-300)	0.2(0.1-0.3)	4	5
K	Cast iron	180-250	YBD152	270 (150-300)	0.4 (0.1-0.5)	4	5

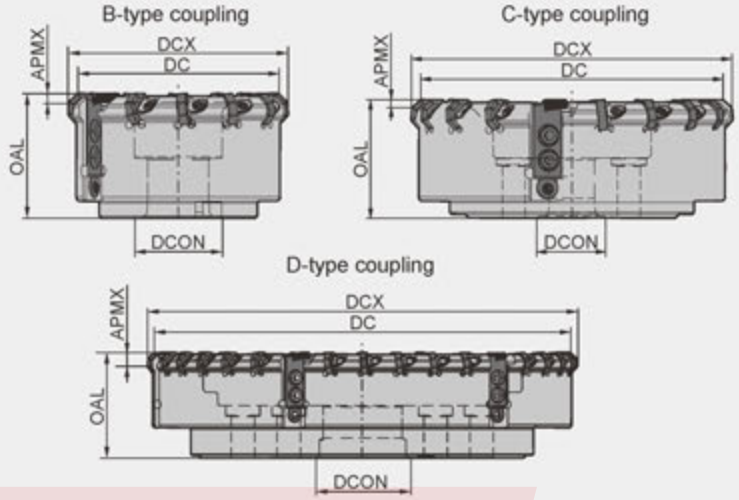
Note: The recommended feed rate per tooth for inserts with wiper fz≤0.25mm/z.

Face milling tools

KAPR:45°

Face milling

FMA08 K



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCX	DCON	OAL	APMX			
FMA08	-100-B32-ON06-12W2	▲	100	111.1	32	63	1.0	10+2	B	3
	-125-B40-ON06-15W3	▲	125	136.1	40	63	1.0	12+3	B	4.5
	-160-C40-ON06-18W3	▲	160	171.1	40	63	1.0	15+3	C	6.8
	-200-C60-ON06-24W4	▲	200	211.1	60	63	1.0	20+4	C	10.3
	-250-C60-ON06-30W5	▲	250	261.1	60	63	1.0	25+5	C	15.1
	-315-D60-ON06-36W6	▲	315	326.1	60	80	1.0	30+6	D	27.2

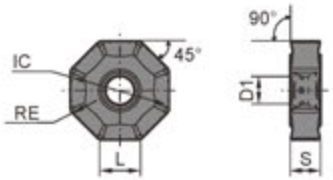
▲Stock available △Make-to-order

Spare parts

Diameter DC	Insert	Briquette	Screw	Wrench	Clamp	Clamp screw	Adjustment blocks	
								
Ø100-Ø315	ONHU060408-CM XEEC120904	W18N	DM6×20A	WT15IT WH50L	LOCATOR-XEEC12	M6×18(GB70-85)	ADJ01	

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

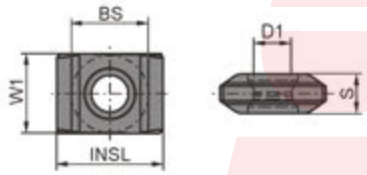
Selection of inserts

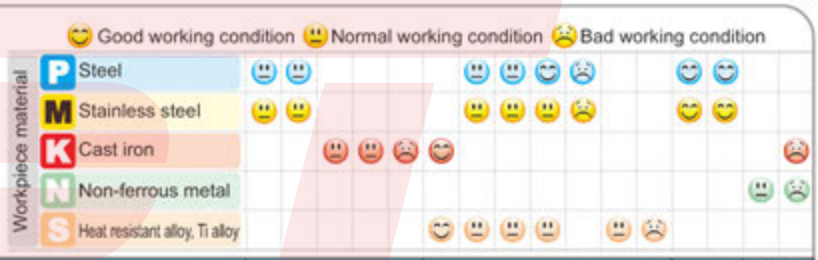


Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ONHU060408-CM	6.58	15.875	4.76	4.4	0.8			●			●			●							

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

Selection of inserts





Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	XEEC120904	12.7	9.525	4.76	4.4	7.3			●			●										

★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)
K	Cast iron	180-250	YBD152 YBG105	250 (150-300)	0.06-0.25

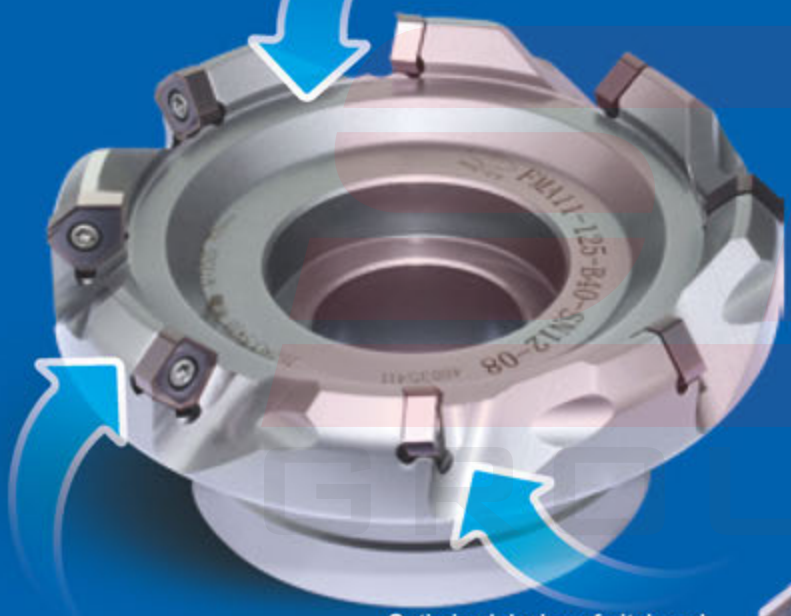
Note: The recommended feed per tooth of the Wiper insert is fz≤0.25mm/z.

FMA11 KAPR:45° Series

With Outstanding Economy and High Performance

4 × 2=8 edge

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

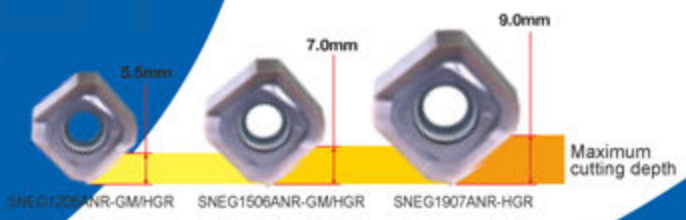


Comprehensive upgrading of -GM geometry, good chip breaking performance, large rake angle, reduced cutting force.

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.

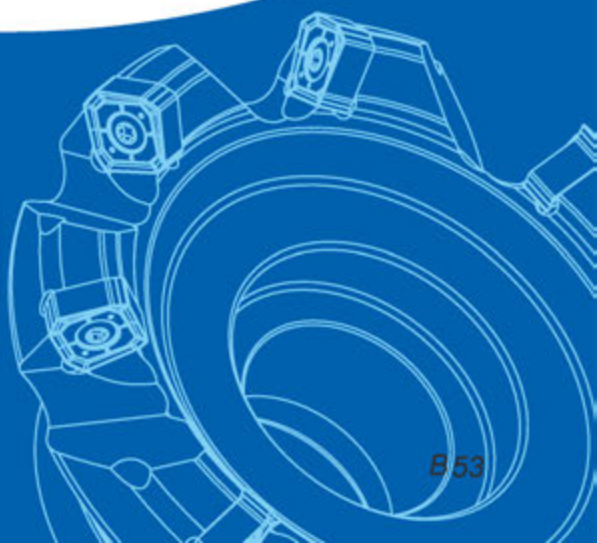


Double negative structure, excellent impact resistance.

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.

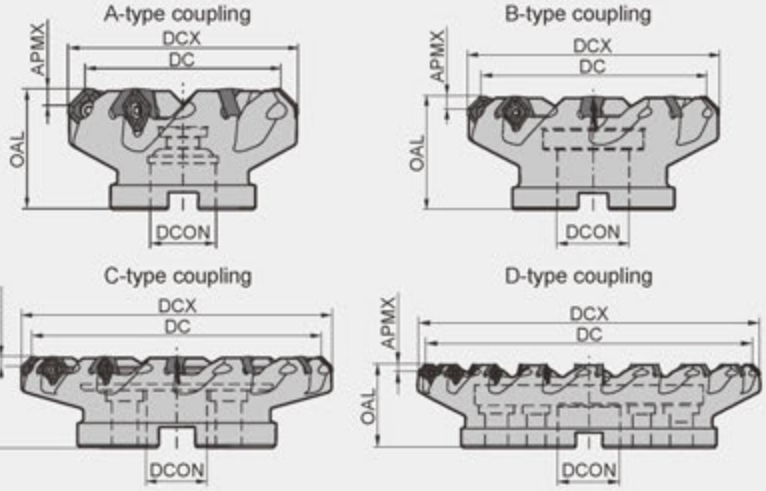
Large effective wiper length, more suitable for semi-finishing/finishing of large-diameter cutter heads.



Face milling tools

KAPR:45°

FMA11 P K S



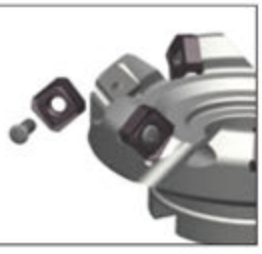
Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCX	DCON	OAL	APMX			
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 DC	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

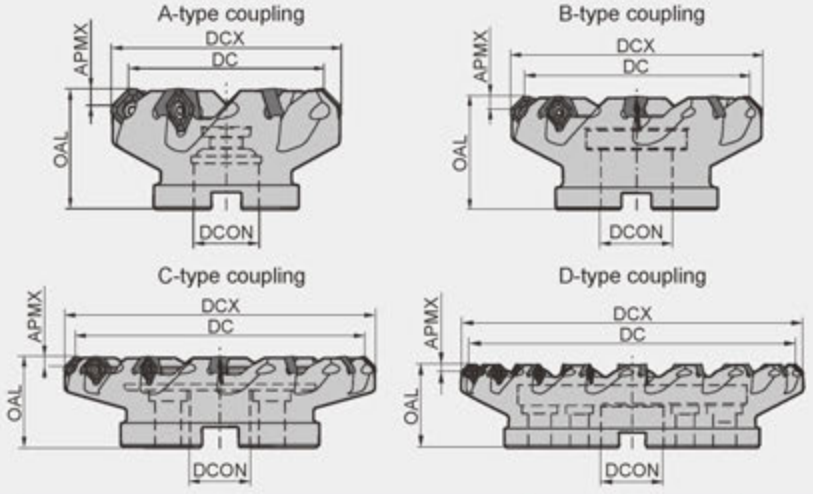
Face milling tools

KAPR:45°


Face milling


Chamfering

FMA11 P K S



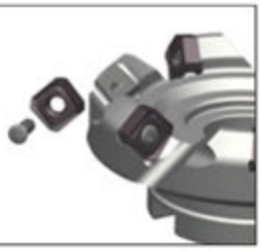
Specification of tools

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

▲Stock available △Make-to-order

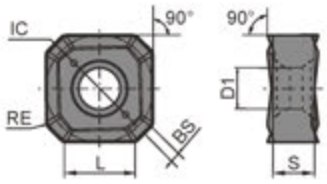
Spare parts

Diameter DC	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

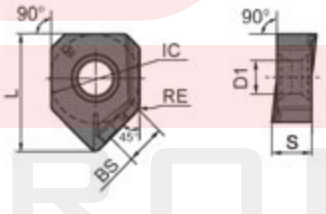
Selection of inserts

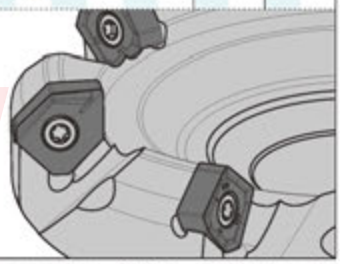


Good working condition Normal working condition Bad working condition

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	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNEG1205ANR-GM	7.6	12.0	4.76	1.05	4.6	0.6	★	★	★	○				★	★		○	○				
	SNEG1506ANR-GM	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★	○				★	★		○	○				
	SNEG1205ANR-GR	7.6	12.0	4.76	1.05	4.6	0.6	★	★	★					★				●				
	SNEG1506ANR-GR	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★					★				●				
	SNEG1907ANR-GR	12.1	19.0	7.0	1.67	7.2	1.0	★	★	★		★			★								
	SNEG1205ANR-HGR	7.6	12.0	4.76	1.05	4.6	0.8	★	★	★	○	○			★	★							
	SNEG1506ANR-HGR	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★	○	○			★	★							
	SNEG1907ANR-HGR	12.1	19.0	7.0	1.67	7.2	1.0	★	★	★		○			★	★							
	SNEG1205ANR-W	15.9	12.0	4.76	4.07	4.6	0.6								●								
	SNEG1506ANR-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

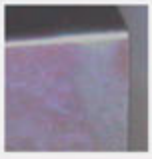
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				V(m/min)	f(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)
P	High-carbon steel, Alloy steel	180-280	YBM253 YBC302 YBG205 YB9320	260 (200-320)	0.2 (0.1-0.4)	
P	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)	
K			YBD252	200 (150-250)	0.4 (0.2-0.6)	
S	Hard-to-cut material	≤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: Vc=200m/min, fz=0.2mm/z, Ap=2mm, Ae=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

FMA12 KAPR:45° Series

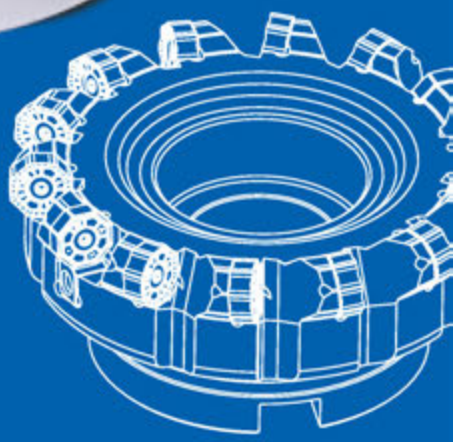
High Performance Face Milling with 16 Edges for Outstanding Economy

Adjustment screw of wiper insert

The wiper insert of the finishing cutter can be finely adjusted in the axial direction and is used in processing situations with high surface quality requirements.

Unique 3-dimentional edge

The double negative structure of the cutter body, with the spiral insert cutting edge, realizes the positive axial forward angle, reduces the cutting force and is conducive to chip removal.

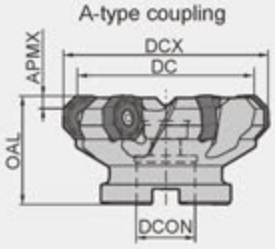


Face milling tools

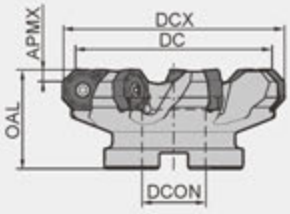
KAPR:45°

FMA12 P M K S

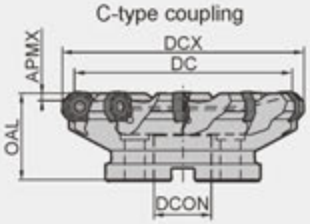
A-type coupling



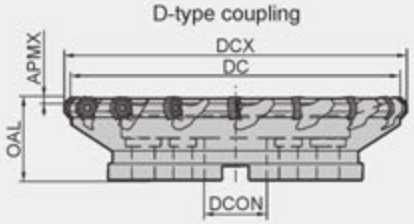
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCX	DCON	OAL	APMX			
FMA12 Coarse pitch	**-050-A22-ON06-04C**	▲	50	59	22	40	4	4	A	0.309
	-063-A27-ON06-05C	▲	63	72	27	50	4	5	A	0.645
	-080-A27-ON06-07C	▲	80	90	27	50	4	7	A	1.071
	-100-A32-ON06-08C	▲	100	110	32	50	4	8	A	1.599
	-125-B40-ON06-10	▲	125	135	40	63	4	10	B	3.114
	-160-C40-ON06-12	▲	160	170	40	63	4	12	C	4.504
	-200-C60-ON06-18	▲	200	210	60	63	4	18	C	6.35
	-250-C60-ON06-20	▲	250	260	60	63	4	20	C	12.47
	-315-D60-ON06-22	▲	315	325	60	80	4	22	D	21.25
	-400-D60-ON06-28	△	400	410	60	80	4	28	D	39.78
	-063-A22-ON09-04C	▲	63	76	22	50	5.5	4	A	0.7
	-080-A27-ON09-05C	▲	80	93	27	50	5.5	5	A	1.1
	-100-A32-ON09-06C	▲	100	113	32	50	5.5	6	A	1.6
	-125-B40-ON09-08	▲	125	138	40	63	5.5	8	B	3.1
	-160-C40-ON09-10	▲	160	173	40	63	5.5	10	C	3.982
	-200-C60-ON09-12	▲	200	303	60	63	5.5	12	C	4.987
	-250-C60-ON09-16	▲	250	260	60	63	5.5	16	C	11.89
	-315-D60-ON09-20	▲	315	325	60	80	5.5	20	D	20.97
	-400-D60-ON09-24	△	400	410	60	80	5.5	24	D	38.69

▲Stock available △Make-to-order

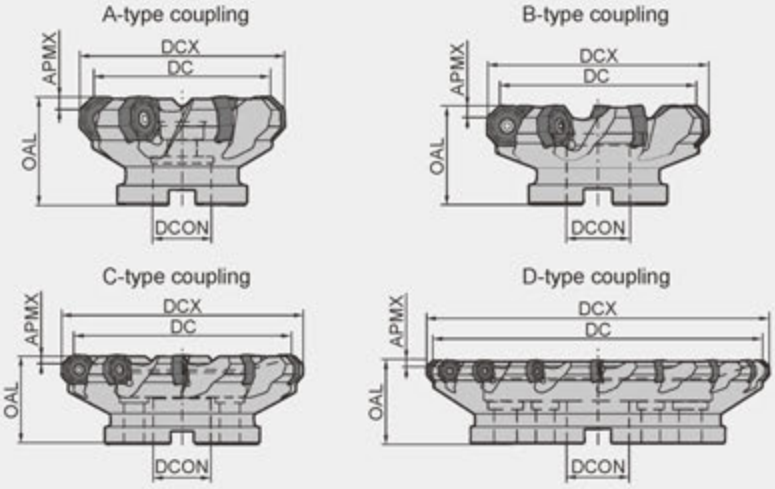
Face milling tools

KAPR:45°


Face milling


Chamfering

FMA12 P M K S



Specification of tools

Type		Stock R	Stock L	DC	DCX	DCON	OAL	APMX	Number of teeth Z	Type of coupling	Weight (kg)
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
Finishing	-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

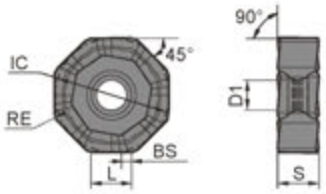
Spare parts

Diameter DC	Insert	Insert screw	Wrench
Ø50-Ø63	ONMU06□□□□-GM/GH ONHU06□□□□ANN-GM/GH/GL	IRM4×10	WT15IP
Ø80-Ø125			WT15IS
Ø160			WT15IT
Ø63-Ø125	ONMU09□□□□-GM/GH ONHU09□□□□ANN-GM/GH/GL	IRM5×13	WT20IS
Ø160-Ø400			WT20IT

Finishing cutterhead diameter DC	Insert	Insert screw	Adjustment block	Insert screw	Wrench
Ø125	ONMU06□□□□-GM/GH ONHU06□□□□ANN-GM/GH/GL ONHU0604AN-W	DM6×20A	ADJ-M6×1.0A	IRM4×10	WT15IS
Ø160-Ø200					WT15IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		L	IC	S	D1	RE	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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	-						●										

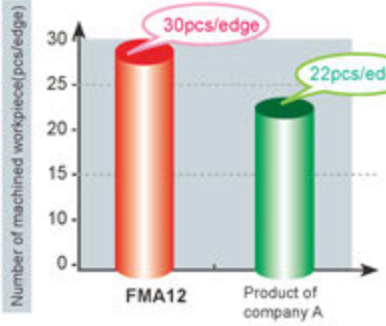
●Inserts are suitable for both left and right cuts ★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters						
				-GL		-GM		-GH		a_{pmax}(mm)
				Vc(m/min)	f_z(mm/z)	Vc(m/min)	f_z(mm/z)	Vc(m/min)	f_z(mm/z)	
P	Low carbon steel	≤180	YBM253 YBG205 YB9320	270(220-350)	0.2(0.1-0.3)	270(220-350)	0.2(0.1-0.4)	270(220-350)	0.3(0.2-0.5)	4.0(0N06) 5.5(0N09)
P	Alloy steel	180-350	YBM253 YBG205 YB9320	240(180-320)	0.15(0.1-0.3)	240(180-300)	0.2(0.1-0.4)	240(180-300)	0.3(0.2-0.5)	
M	Stainless steel	≤270	YBM253 YBG205 YB9320	230 (180-300) 160 (110-270)	0.15 (0.1-0.3)	160(110-270)	0.15(0.1-0.3)	160(110-270)	0.2(0.1-0.3)	
K	Cast iron	180-260	YBD152	270(150-300)	0.2(0.1-0.3)	270(150-300)	0.3(0.1-0.4)	270(150-300)	0.4(0.2-0.5)	
S	Hard-to-cut material	≤400	YBS303	100(60-120)	0.15 (0.08-0.3)	100(60-120)	0.15(0.1-0.25)	100(60-120)	--	

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

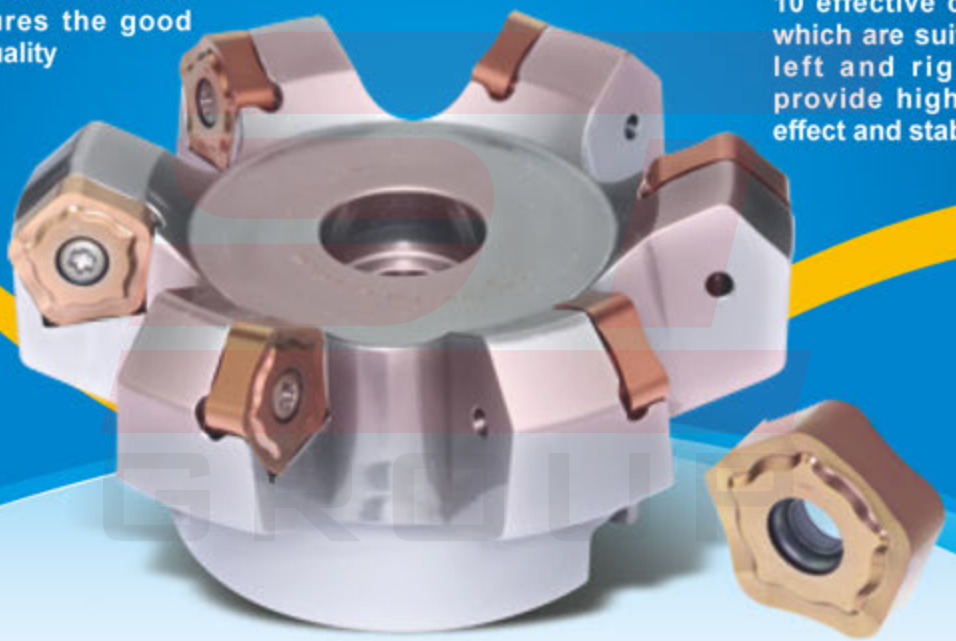


Tool Life comparison
Being compared to the similar product of company A, our FMA12 has longer cutting tool life.

FMA14

The General Milling Tool with High-efficiency 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



-GH/-GM/-GL

5×2=10edge

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

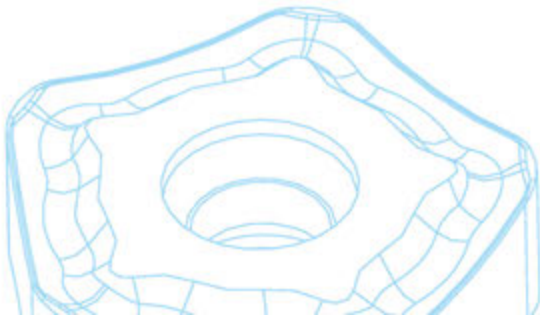
-GM: First choice for P material machining

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



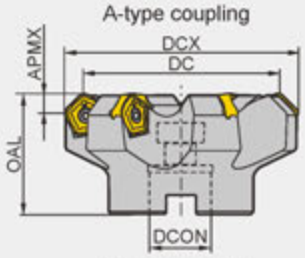
Face milling tools

KAPR:45°

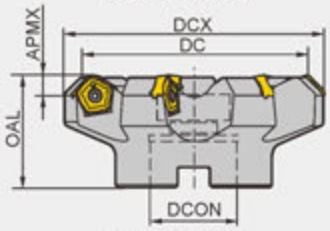
Face milling Chamfering

FMA14 P M K

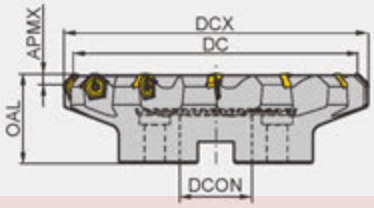
A-type coupling



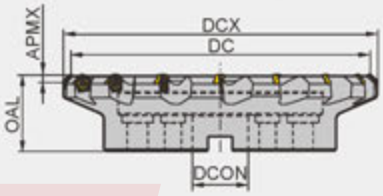
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCX	OAL	DCON	APMX			
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

Diameter DC	Insert	Insert screw	Wrench
			
Ø50-Ø63	PNEG1105□□-GL/GM/GH	I60M4×10	WT15IP
Ø80-Ø125			WT15IS
Ø160-Ø315			WT15IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	PNEG110512-GL	7.5	15.875	5.56	4.64	1.2		●						●	★							
	PNEG110530-GM	7.5	15.875	5.56	4.64	3.0		●						●	★							
	PNEG110530-GH	7.5	15.875	5.56	4.64	3.0		●						●	★							

•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						ap_{max}
				-GL		-GM		-GH		
				V(m/min)	Fz(mm/z)	V(m/min)	Fz(mm/z)	V(m/min)	Fz(mm/z)	
P	Low-carbon steel	≤HB180	YB9320 YBG205 YBM253	100~250	0.1~0.4	100~250	0.15~0.5	100~230	0.2~0.6	5.5mm
	High-carbon steel	180-280	YB9320 YBG205 YBM253	100~230	0.1~0.4	100~230	0.15~0.5	100~230	0.2~0.6	5.5mm
	Alloy steel	180-280	YB9320 YBG205 YBM253	100~220	0.1~0.3	100~220	0.15~0.4	100~220	0.2~0.5	5.5mm
	Tool steel	280-350	YB9320 YBG205 YBM253	100~220	0.1~0.3	100~220	0.15~0.5	100~220	0.2~0.5	5.5mm
M	Stainless steel	≤270	YB9320 YBG205 YBM253	90~180	0.1~0.4	90-180	0.1~0.3	90~180	0.2~0.6	5.5mm
K	Cast iron, Ductile iron, High nickel cast iron	180-250	YB9320 YBG205	100~260	0.1~0.3	100-240	0.15~0.4	100-240	0.2~0.5	5.5mm

Case for FMA14

Workpiece material: 42CrMo
Tool: FMA14-125-B40-PN11-08
Insert: PNEG110530-GM/YB9320
Cutting data: Vc=140m/min, fz=0.4mm/z, ap=2mm, ae=72mm
Machine: 3-axis machining center
Cooling system: Dry cutting

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.

Comparison of insert abrasion

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

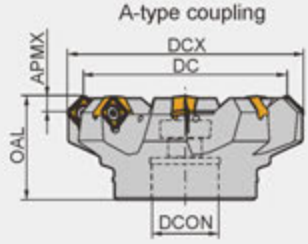
Face milling tools

KAPR:45°

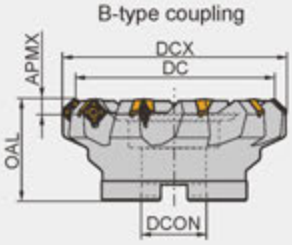
Face milling Chamfering

FMA17 K S

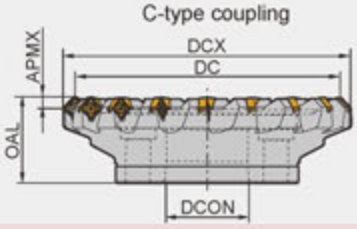
A-type coupling



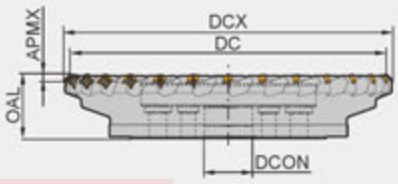
B-type coupling



C-type coupling



D-type coupling



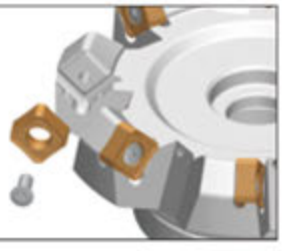
Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	OAL	DCON	APMX			
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

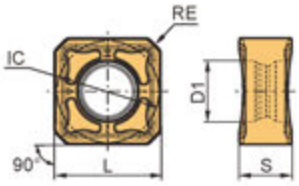
Spare parts

Diameter DC	Insert	Insert screw	Wrench
Ø50-Ø63	SNGX1205□□□□-GL/GM/GH/LH/W	IRM4×10	WT15IP
Ø80-Ø160			WT15IS
Ø200-Ø400			WT15IT



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

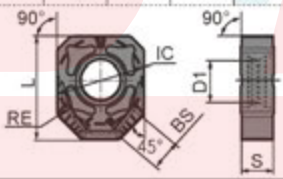
Selection of inserts

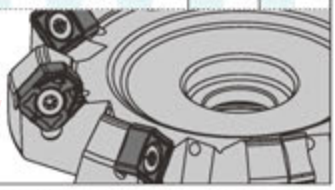


Good working condition Normal working condition Bad working condition

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	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205ANN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ANN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX1205ANN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						★			●				
	SNGX1205ANN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ANN-LH	12.7	12.7	6.5	-	5.9	0.8																●
	SNGX1205ANN-W	15	12.7	4.8	4.32	5.9	1.2						●										





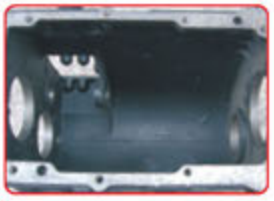
●Inserts are suitable for both left and right cuts ★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

ISO	Workpiece material	Hardness HB	Insert grade	Cutting parameters				
				Vc(m/min)	f_z(mm/z)			
					-GM	-GL	-GH	-LH
P	Low-carbon steel, Soft steel	≤180	YBM253 YB9320	270(220-350)	0.2(0.1-0.4)	0.15(0.1-0.3)	0.3(0.2-0.5)	--
P	High-carbon steel, Alloy steel	180-280	YBM253 YB9320	260(220-320)	0.2(0.1-0.4)	0.15(0.1-0.3)	0.3(0.2-0.5)	--
P	Alloy tool steel	280-350	YBM253 YB9320	240(180-300)	0.2(0.1-0.4)	0.15(0.1-0.3)	0.3(0.2-0.5)	--
M	Stainless steel	≤270	YBM253 YB9320	160(110-270)	0.15(0.1-0.3)	0.1(0.08-0.2)	0.2(0.1-0.3)	--
K	Cast iron, Ductile iron, High nickel cast iron	180-250	YBD152	270(150-300)	0.3(0.1-0.4)	0.2(0.1-0.3)	0.4(0.2-0.5)	--
S	Difficult-to-machine materials	≤400	YBS303	100(60-120)	0.15(0.1-0.25)	--	--	--
N	Aluminium alloy	--	YD201	300-				0.15 (0.05-0.3)

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



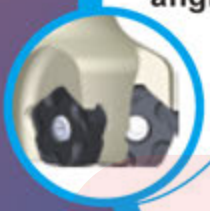
Whirlwind FMD02 Milling Tools Series

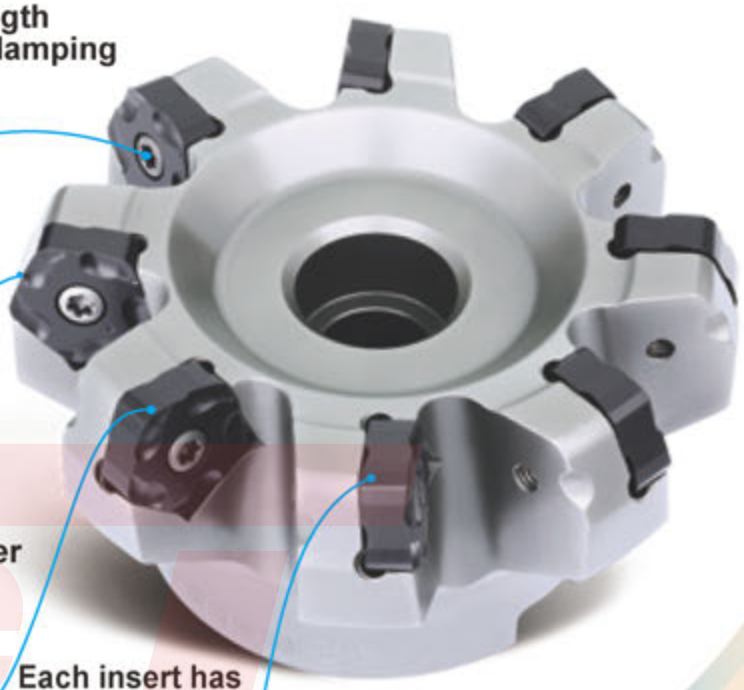
The optimized design of the acute angle clamping method has good self-locking performance and high clamping precision which provides enough resisting power to ensure the stability of the machining.

High strength screw clamping

67° approach angle

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

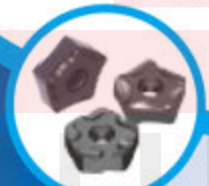




Wiper

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

Each insert has 10 cutting edges



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

General face milling for steel and cast iron.
-CF -CM -CR
5×2=10edge

General face milling for cast iron
-PF -PM -PR
5×2=10edge

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.

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.

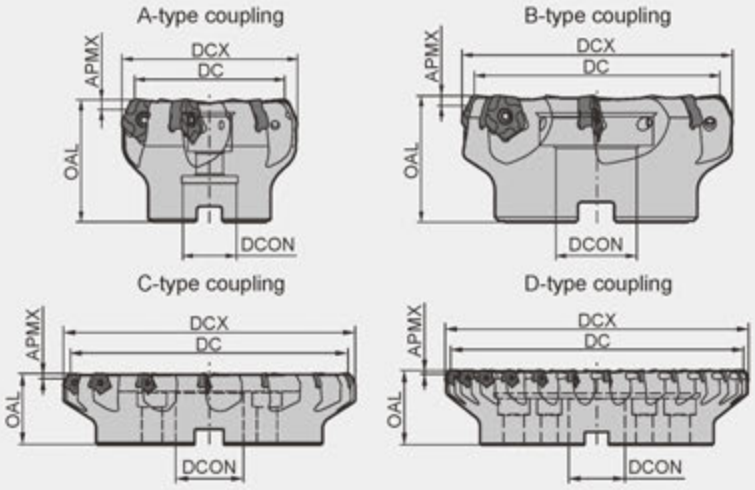
The low cutting forces design could effectively control the vibration. The combination of the FMD02 could achieve high-performance cast iron machining.

Face milling tools

KAPR:67°

Face milling

FMD02 P K



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
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 DC	Inserts	Insert screw	Wrench
			
Ø50 -Ø315	PNEG110512□-CF/CM/CR	I60M4×10	WT15IS

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

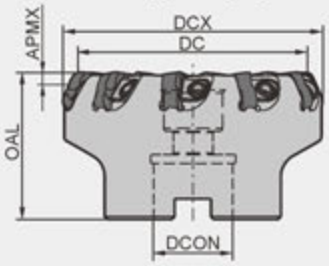
Face milling tools

KAPR:67°

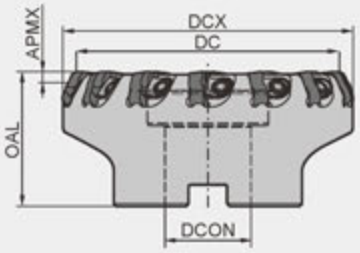
Face milling

FMD02 P K

A-type coupling



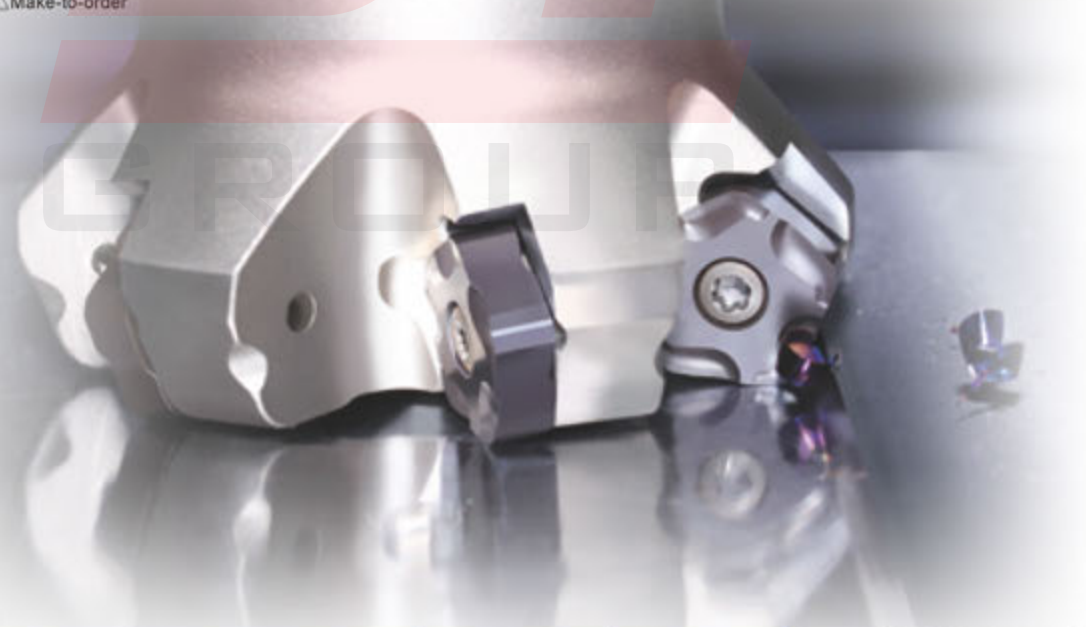
B-type coupling



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
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

▲Stock available △Make-to-order

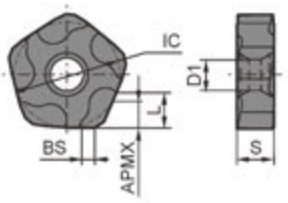


Spare parts

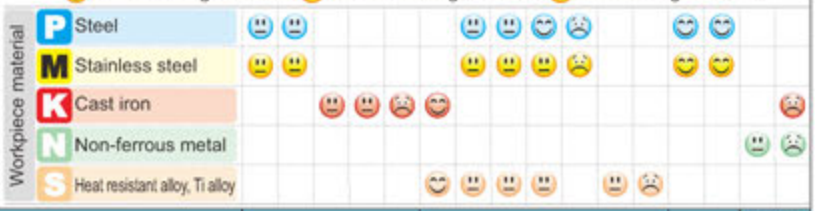
Diameter DC	Inserts	Wedge	Screw	Wrench
				
Ø80 -Ø160	PNEG110512□-PF/PM/PR	W18N	DM6×20A	WT15IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



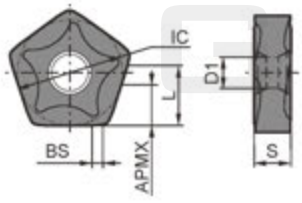
Good working condition Normal working condition Bad working condition



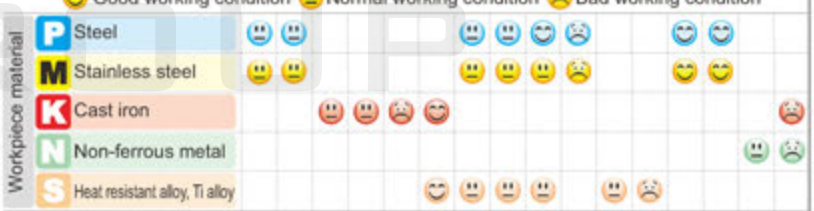
Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BS	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	PNEG110512R-CF	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CF	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512R-CM	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CM	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512R-CR	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CR	5.4	15.875	5.56	4.64	1.6	5			●													

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

Selection of inserts



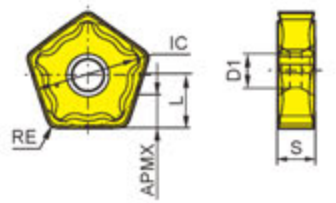
Good working condition Normal working condition Bad working condition



Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BS	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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

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	
		L	IC	S	D1	RE	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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

Recommended cutting parameters

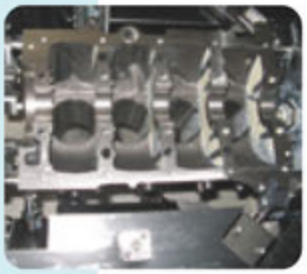
Workpiece material		Hardness HB	Insert grade	Cutting parameters				
				V(m/min)	f_z(mm/z)			a_{pmax}(mm)
					-PF	-PM	-PR	
P	Low-carbon steel, Soft steel	≤180	YBM253 YBC302	270 (220-350)	0.15 (0.1-0.2)	0.2(0.1-0.3)	0.3(0.2-0.4)	7.5
P	High-carbon steel, Alloy steel	180-280	YBM253 YBC302	260 (200-320)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

Case for FMD02

Application case

ZCC·CT

Cutting parameters:
D=100mm, a_p=3~5mm,
Vc=243m/min, f_z=0.15mm/z,
T=145~155 piece



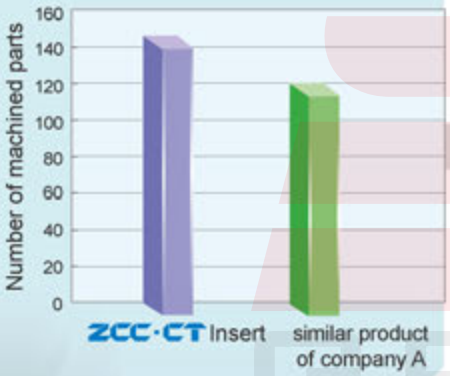
similar product of company A

Cutting parameters:
D=100mm, a_p=3~5mm,
Vc=243m/min, f_z=0.12mm/z,
T=120~133 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)



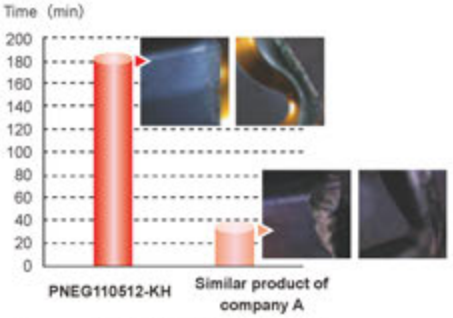
● Comparison of insert abrasion

ZCC·CT insert after 80 minutes machining

Insert of company A after 48 minutes machining

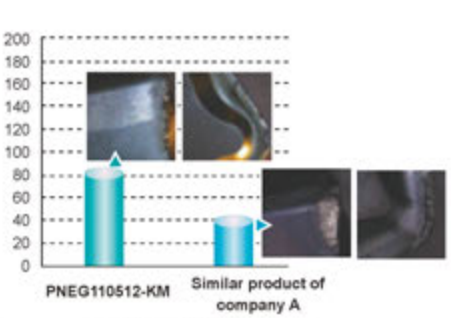
Application case

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



Abrasion comparision

Cutting parameters: Vc=240m/min, fz=0.3mm/z, Ap=3mm, Ae=70mm



Abrasion comparision

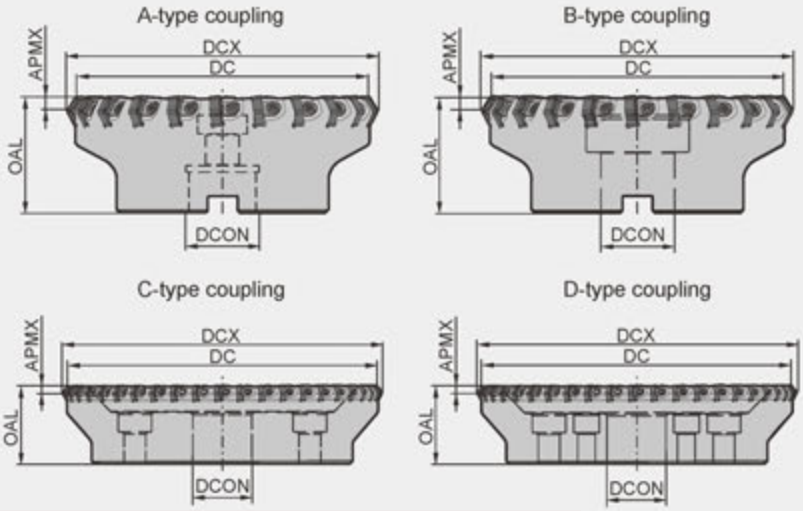
Cutting parameters: Vc=300m/min, fz=0.2mm/z, Ap=2mm, Ae=70mm

Face milling tools

KAPR:55°

Face milling

FMD02 K



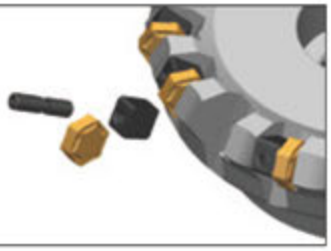
Specification of tools

Type		Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCON	OAL	APMX			
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

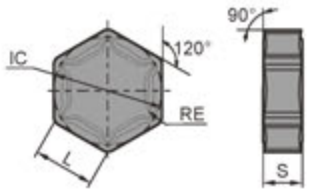
Spare parts

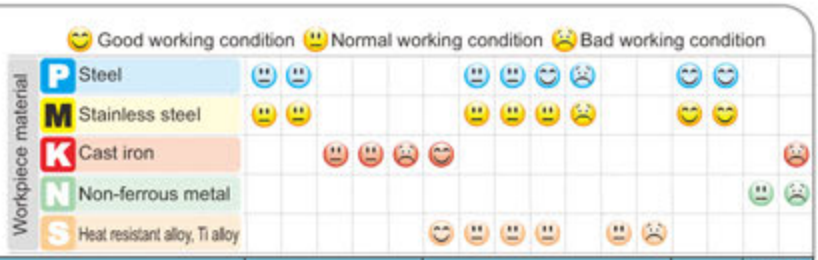
Diameter DC	Wedge	Wedge screw	Wrench
Ø80-Ø315	W18N	DM6×20A	WT15IT



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts





Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	HNEX090512-DF	9.16	15.875	5.56	1.2			★													
	HNEX090512-DM	9.16	15.875	5.56	1.2			★													
	HNEX090512-DR	9.16	15.875	5.56	1.2			○		★											

★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

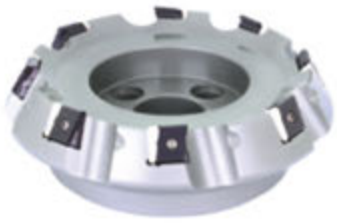
Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V(m/min)	f(mm/z)		
					-DF	-DM	-DR
K	Cast iron	180-250	YBD152	180 (110-250)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.5)
			YBD252	130 (110-200)	0.2(0.1-0.2)	0.25 (0.1-0.3)	0.3(0.2-0.5)

Face milling tools

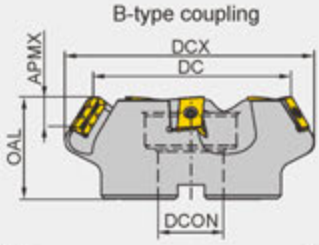
KAPR:60°

Face milling

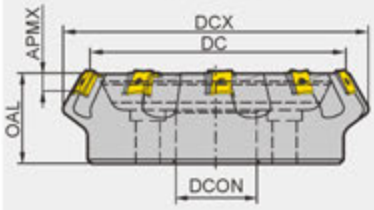
FMD03 P M K



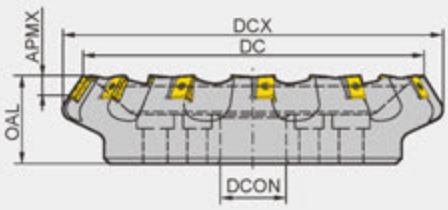
B-type coupling



C-type coupling



D-type coupling



Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
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

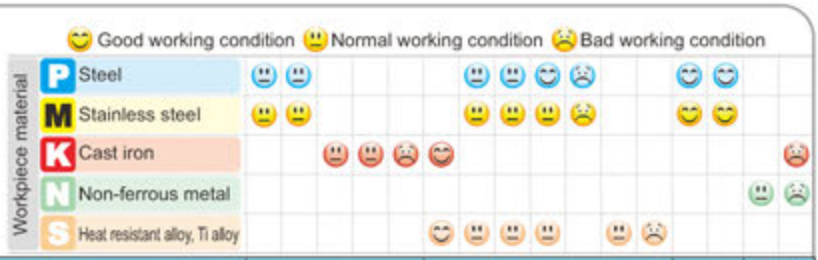
▲Stock available △Make-to-order

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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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

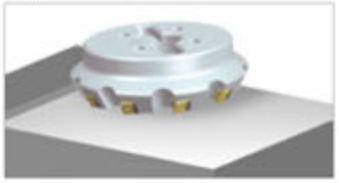
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBG302	180 (150-300)	0.5 (0.2-0.8)
			YBM253	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)
			YBM253	140 (120-280)	0.5 (0.2-0.8)
	Alloy tool steel	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
			YBM253	100 (80-250)	0.45 (0.2-0.6)
M	Stainless steel	≤270	YBG302	120 (80-200)	0.45 (0.2-0.6)
			YBM253	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.

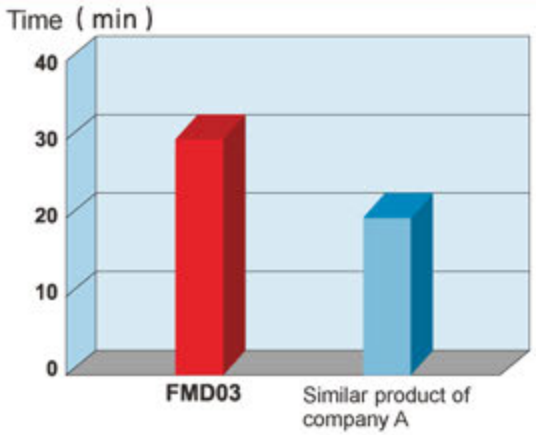
Case for FMD03

Workpiece material: ASTM A743 CA-6NM(HB200)
Cooling system: Dry cutting
Machine: NC floor type boring and milling machine,
spindle power≥30KW
Cutting parameters:
Vc=120m/min
a_p=12mm
f_z=0.55mm/z
a_e=230mm



Tool type: FMD03-315-D60-LN25-12
Insert type/grade: LNKT2510-ZR/YBG302

● Comparison of machining time



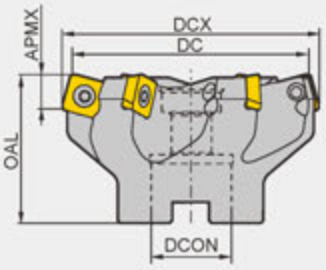
Face milling tools

KAPR:75°

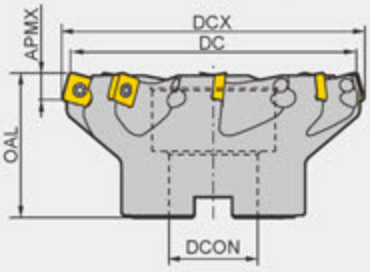
Face milling

FME02 P M K

A-type coupling



B-type coupling



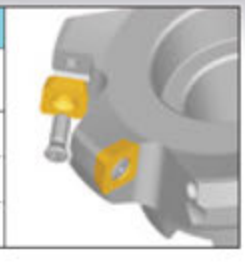
Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCX	DCON	OAL	APMX			
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

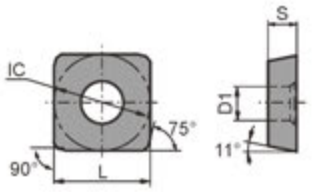
Spare parts

Diameter DC	Insert screw	Wrench
		
Ø50-Ø125	I60M5×13.2	WT20IS



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		L	IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPKW1204EDFR	12.7	12.7	4.76	5.56							○									
	SPKW1204EDSR	12.7	12.7	4.76	5.56							○									
	SPKT1204EDR	12.7	12.7	4.76	5.56							★									

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

Cutting edge treatment selection for FME02 milling inserts

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

Recommended cutting parameters

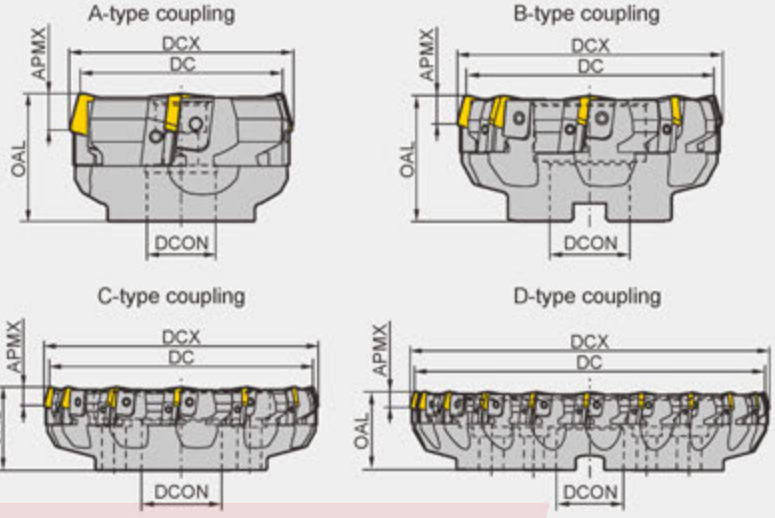
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBG202	270(200-360)	0.2 (0.1-0.3)
P	High-carbon steel, Alloy steel	180-280	YBG202	240 (180-350)	0.2 (0.1-0.3)
P	Alloy tool steel	280-350	YBG202	220 (170-340)	0.2 (0.1-0.3)
M	Stainless 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

KAPR:75°

Face milling

FME03 P M K

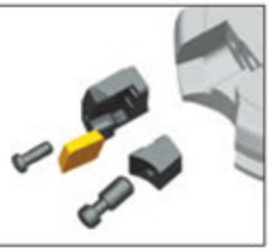


Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	DCON	OAL	APMX			
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

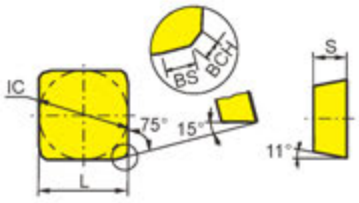
▲Stock available △Make-to-order

Spare parts

Diameter DC	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



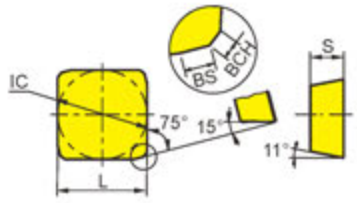
Good working condition Normal working condition Bad working condition

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	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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							★			★						●
	SPMR1203EDSR-M	12.7	12.7	3.18	-	1.3	●	★	●													
	SPMR1203EDSL-M	12.7	12.7	3.18	-	1.3	●	★	●													
	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.

Selection of inserts



Good working condition Normal working condition Bad working condition

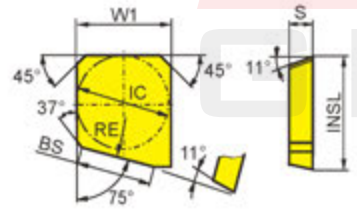
Workpiece material

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	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPKR1504EDR-GM	15.875	15.875	4.76	1	1.4							★			★						●
	SPKR1504EDL-GM	15.875	15.875	4.76	1	1.4							★			★						●
	SPMR1504ESR-M	15.875	15.875	4.76	-	1.2	●	★	●													
	SPMR1504ESL-M	15.875	15.875	4.76	-	1.2	●	★	●													

★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

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	
		INSL	IC	W1	S	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
inserts with wiper 	SPEX1203EDL-1	15	12.7	12.7	3.18	10	500																●
	SPEX1203EDR-1	15	12.7	12.7	3.18	10	500																●
	SPEX1504EDL-1	18.2	15.875	15.875	4.76	10	500																●
	SPEX1504EDR-1	18.2	15.875	15.875	4.76	10	500																●

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

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.

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(m/min)	f(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)
			YBM253 YBC302	270(220-350)	0.2 (0.1-0.4)
			YBM253	220 (180-300)	0.25 (0.15-0.3)
	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)
			YBM253 YBC302	240 (200-320)	0.2 (0.1-0.4)
			YBM253	200 (160-280)	0.25 (0.15-0.3)
	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)
			YBM253 YBC302	220 (180-300)	0.2 (0.1-0.4)
			YBM253	180 (150-250)	0.25 (0.15-0.3)
M	Stainless steel	≤270	YBG202	160 (110-270)	0.2 (0.1-0.3)
			YBG302	140 (100-250)	0.24 (0.1-0.3)
			YBM253	140 (100-240)	0.25 (0.15-0.3)
K	Cast iron	180-250	YBG105	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)

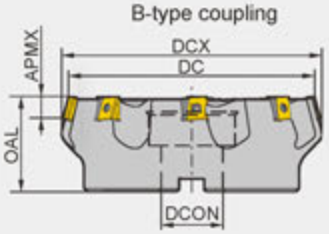
Face milling tools

KAPR:75°

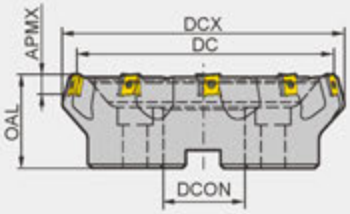
Face milling

FME04 P M K

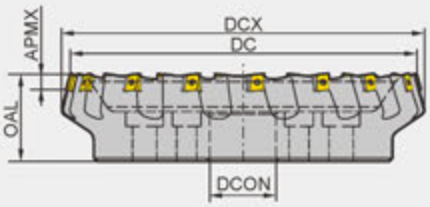
B-type coupling



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	DC	DCX	DCON	OAL	APMX			
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

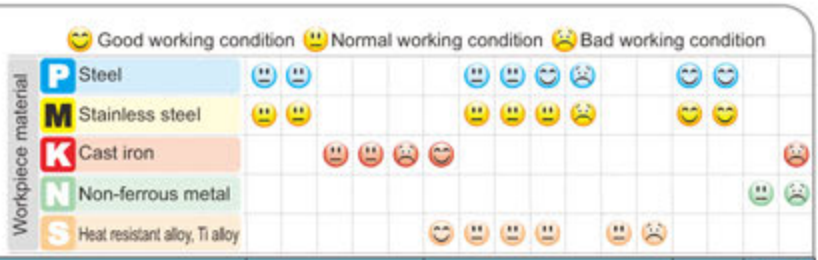
▲Stock available △Make-to-order

Spare parts

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

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



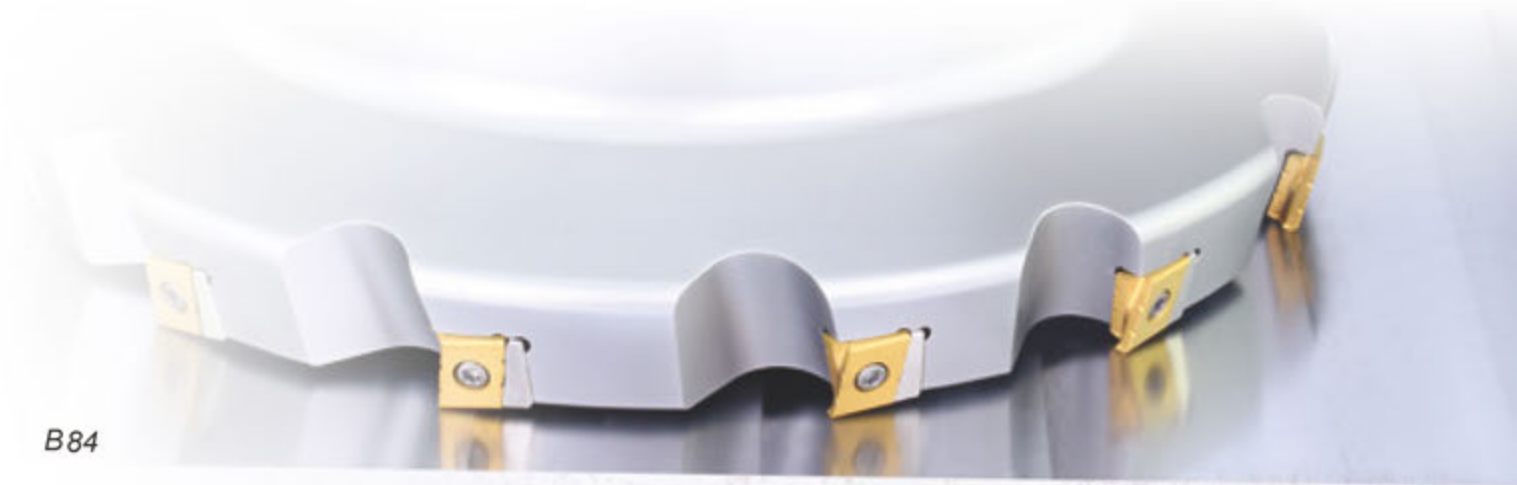
Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INLS	W1	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNKT1506EN-ZR	15.875	14	6.35	4.6		○	○							★						

★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	YBG302	180 (150-300)	0.5 (0.2-0.8)
			YBM253	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)
			YBM253	140 (120-280)	0.5 (0.2-0.8)
	Alloy tool steel	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
			YBM253	100 (80-250)	0.45 (0.2-0.6)
M	Stainless steel	≤270	YBG302	120 (80-200)	0.45 (0.2-0.6)
			YBM253	100 (80-200)	0.45 (0.2-0.6)
K	Cast iron	180-250	YBD152	220 (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.

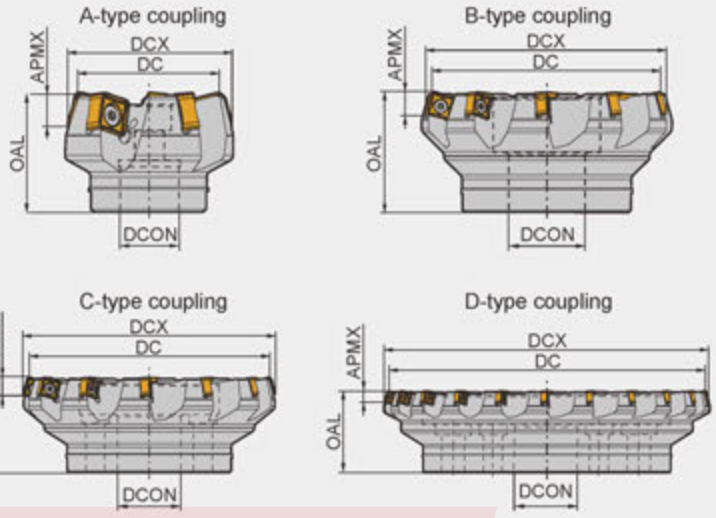


Face milling tools

KAPR:75°

Face milling

FME17 P M K S



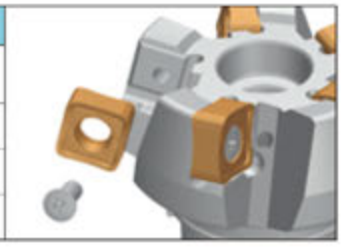
Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	OAL	DCON	APMX			
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

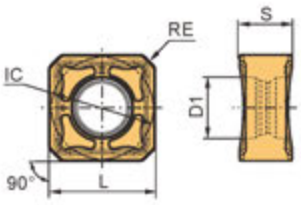
Spare parts

Diameter DC	Insert	Insert screw	Wrench
Ø50-Ø63	SN□X1205□□□-GL/GM/GH/W	IRM4×10	WT15IP
Ø80-Ø125			WT15IS
Ø160-Ø400			WT15IT



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

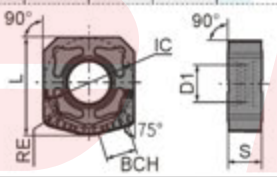
Selection of inserts



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	
		L	IC	S	BCH	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205ENN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ENN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						★			●				
	SNGX1205ENN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ENN-W	13.7	12.7	4.8	4.69	5.9	1.2						●										



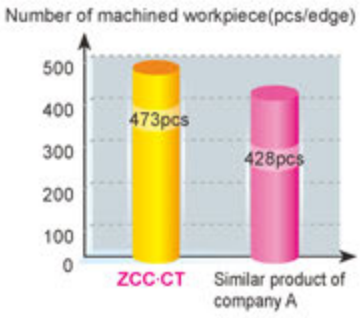
●Inserts are suitable for both left and right cuts ★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

ISO	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	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)
P	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)
P	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 FME17

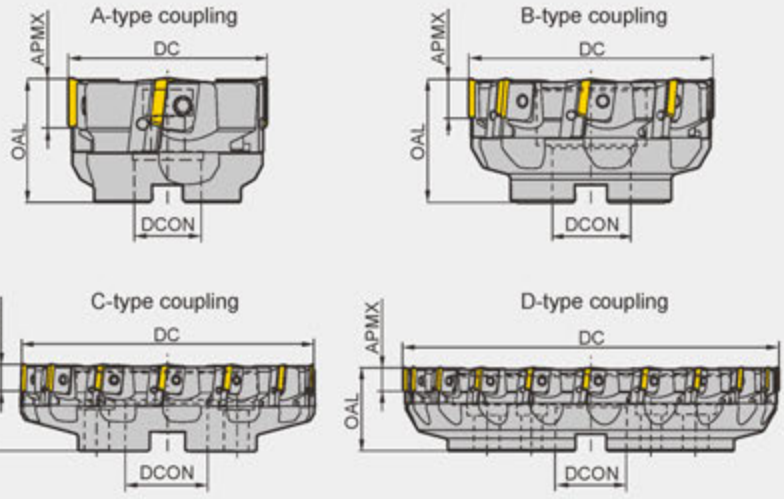
Workpiece: Transmission
The material of workpiece: 40Cr(HRC25-40)
Processing part: Upper face
Tool: FME17-125-B40-SN12-10
Insert: SNGX1205ENN-GM/YB9320
Cutting parameter: Vc=255m/min, fz=0.08mm/z, ap=5mm, ae=75mm
Type of cooling: External cooling



Face milling tools

KAPR:90°

FMP01 P M K



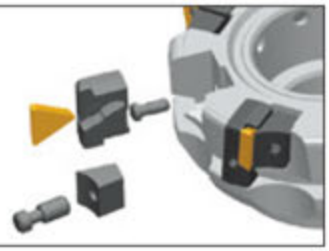
Specification of tools

Type		Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCX	OAL	APMX			
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

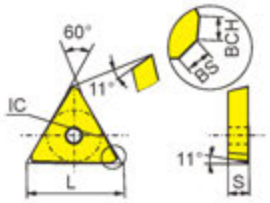
Spare parts

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

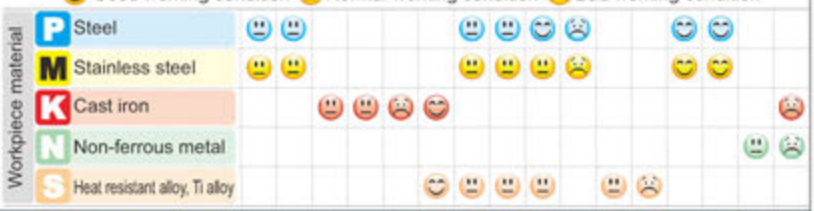


Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Good working condition Normal working condition Bad working condition



Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	TPKN2204PDFR	22	12.7	4.76	1.4	0.7						●										
	TPKN2204PDFL	22	12.7	4.76	1.4	0.7						●										
	TPKN2204PDR	22	12.7	4.76	1.4	0.7	●	●				●	★	●		●						
	TPKN2204PDL	22	12.7	4.76	1.4	0.7	●							●								
	TPKN2204PDTR	22	12.7	4.76	1.4	0.7	●															
	TPKN2204PDTL	22	12.7	4.76	1.4	0.7	●															
	TPMR2204PDSL	22	12.7	4.76	1.4	0.7	○	○														
	TPMR2204PDSR	22	12.7	4.76	1.4	0.7	○	○														

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

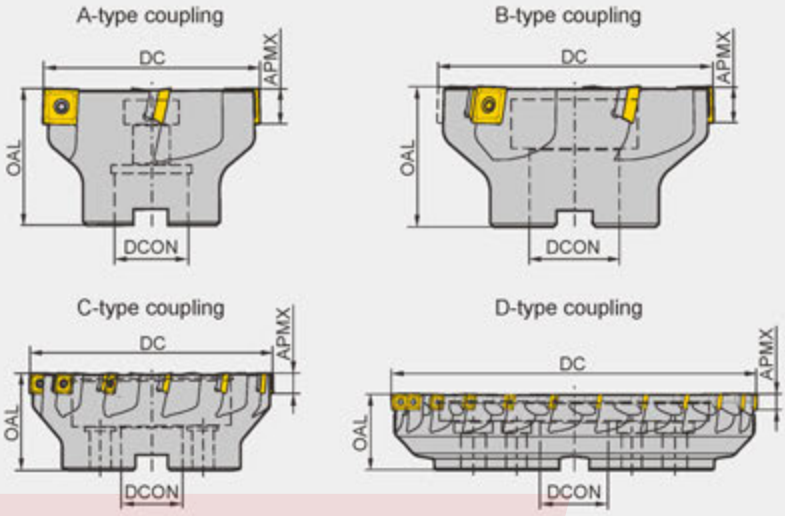
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBC302	270 (220-350)	0.2 (0.1-0.4)
			YBM253	220 (180-300)	0.2 (0.08-0.3)
			YBG202	270 (200-360)	0.2 (0.1-0.3)
	High-carbon steel, Alloy steel	180—280	YBC302	240 (200-320)	0.2 (0.1-0.4)
			YBM253	200 (160-280)	0.2 (0.08-0.3)
			YBG202	240 (180-350)	0.2 (0.1-0.3)
	Alloy tool steel	280—350	YBC302	220 (180-300)	0.2 (0.1-0.4)
			YBM253	180 (150-250)	0.2 (0.08-0.3)
			YBG202	220 (170-340)	0.2 (0.1-0.3)
M	Stainless steel	≤270	YBM253	140 (100-240)	0.2 (0.08-0.3)
			YBG202	140 (100-250)	0.2 (0.1-0.3)
K	Cast iron	180—250	YBG105	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

KAPR:90°

FMP02 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCON	OAL	APMX			
FMP02 Coarse pitch	**-040-A16-SE09-04**	▲	40	16	40	6.7	4	A	0.2
	-050-A22-SE09-05	▲	50	22	40	6.7	5	A	0.3
	-063-A22-SE09-06	▲	63	22	40	6.7	6	A	0.5
	-080-A27-SE09-08	▲	80	27	50	6.7	8	A	0.9
	-100-B32-SE09-08	▲	100	32	50	6.7	8	B	1.7
	-125-B40-SE09-12	▲	125	40	63	6.7	12	B	2.6
	-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

▲Stock available △Make-to-order

Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCON	OAL	APMX			
FMP02 Close pitch	**-040-A16-SE09-06**	▲	40	16	40	6.7	6	A	0.22
	-050-A22-SE09-07	▲	50	22	40	6.7	7	A	0.313
	-063-A22-SE09-08	▲	63	22	40	6.7	8	A	0.479
	-080-A27-SE09-10	▲	80	27	50	6.7	10	A	1.079
	-100-B32-SE09-10	▲	100	32	50	6.7	10	B	1.7
	-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
Extra close pitch	**-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

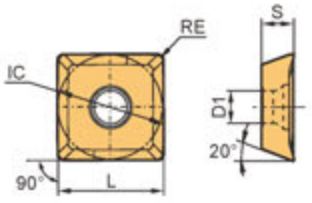
▲Stock available △Make-to-order

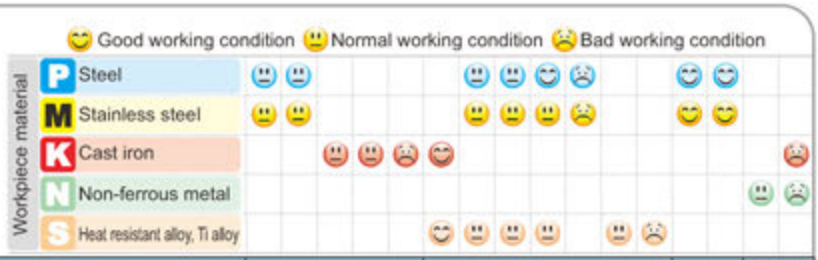
Spare parts

Diameter DC	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts





Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SEET09T308PER-APF	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APF	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET09T308PER-APM	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APM	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET09T308PER-APR	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APR	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET120308-LH	13.3	13.3	4.05	4.1	0.8															★	

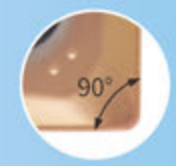
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Chipbreaker selection for FMP02 milling inserts

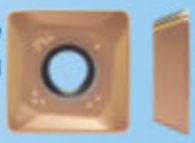
Function / Classification	For finishing	For semi-finishing	For roughing
P	-APF 	-APM 	-APR 
M			
K			
N	Non-ferrous metals		
	-LH 		

Features of FMP02 Milling Tool Series

- 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.



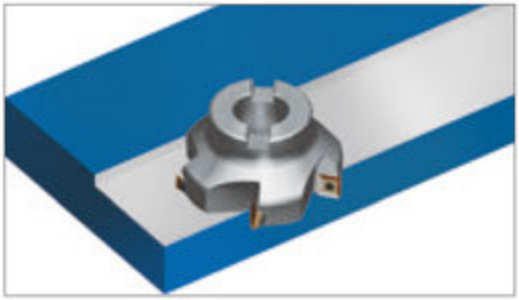
- Screw down clamping resulting in better chip evacuation.

Recommended cutting parameters

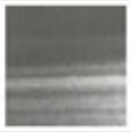
Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V(m/min)	f(mm/z)		
					-APF	-APM	-APR
P	Cutting parameters	≤180	YBG202	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YB9320	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	High-carbon steel, Alloy steel	180-280	YBM253	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	YBM253	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	YBM253	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)

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.

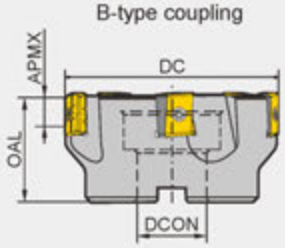
Face milling tools

KAPR:90°

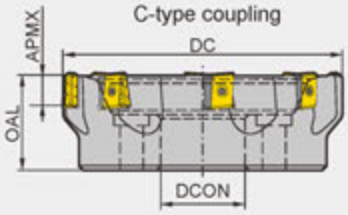
Face milling | Step shoulder milling

FMP03 P M K

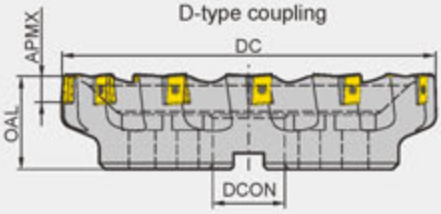
B-type coupling



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	DC	DCON	OAL	APMX			
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

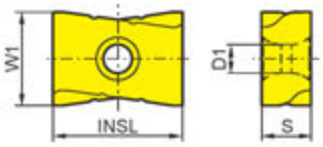
▲Stock available △Make-to-order

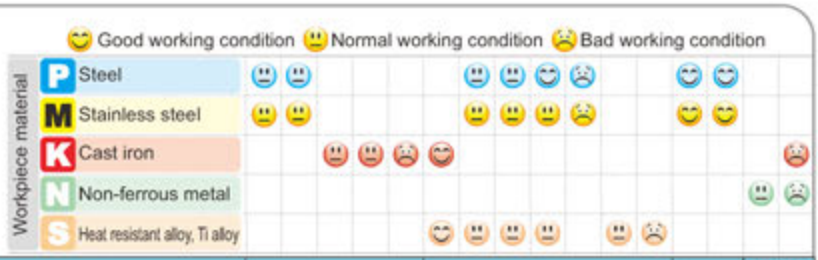
Spare parts

Insert	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 B271–B276

Selection of inserts





Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBG302	180 (150-300)	0.5 (0.2-0.8)
			YBM253	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)
			YBM253	140 (120-280)	0.5 (0.2-0.8)
	Alloy tool steel	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
			YBM253	100 (80-250)	0.45 (0.2-0.6)
M	Stainless steel	≤270	YBG302	120 (80-200)	0.45 (0.2-0.6)
			YBM253	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

Tool type: FMP03-200-C60-LN25-08

Insert type/grade: LNKT2510-ZR/YBG302

The tool operates easily and fast at high cutting depth with good chip breaking performance. Cutting efficiency is doubled, and tool life increases to 1-2 times that of the original.

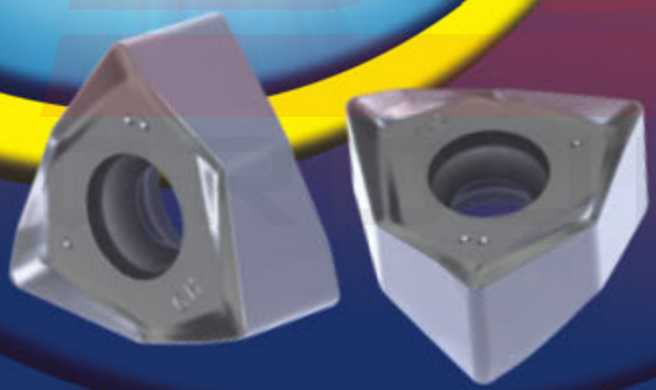
Workpiece material: 45#
Hardness(HB): 190
Cooling system: Dry cutting
Cutting parameters: Vc=130m/min, a_p=12mm, f_z=0.5mm/z
a_e=140mm

FMP12

Milling Tool Series

KAPR: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

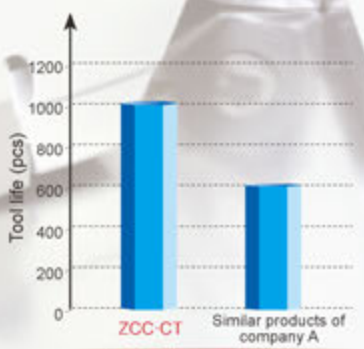
Hardness: HB230-280

Cooling: Dry cutting

Machine: Vertical machining center

Cutting data: Vc=260m/min, ap=1.0mm, z=0.1mm/z, ae=30mm

Milling style: Down milling Area of machining: End surface

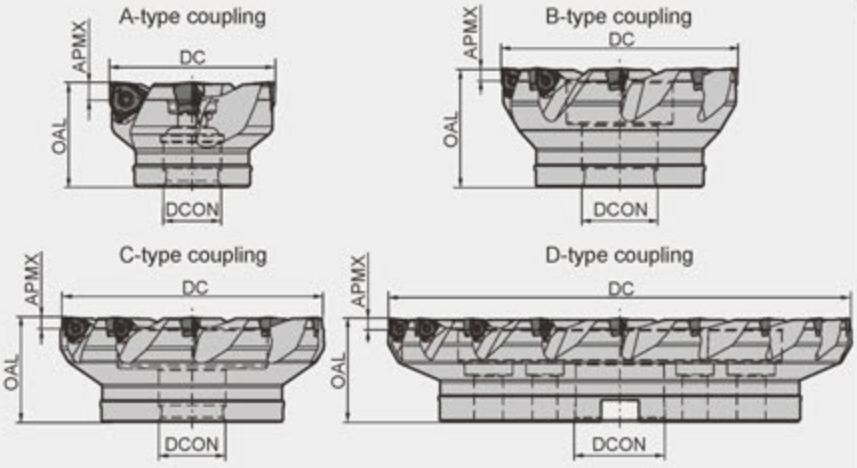


Comparison of tool life

Face milling tools

KAPR:90°

FMP12 P K N



Specification of tools

Type		Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling
		R	L	DC	DCON	OAL	APMX		
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

Diameter DC	Insert	Insert screw	Wrench
			
Ø50 -Ø63	WN□U06	I60M3×9	WT09IS
Ø80 -Ø160			
Ø63	WN□U08	I60M4×10	WT15IS
Ø80 -Ø125			
Ø160 -Ø315			

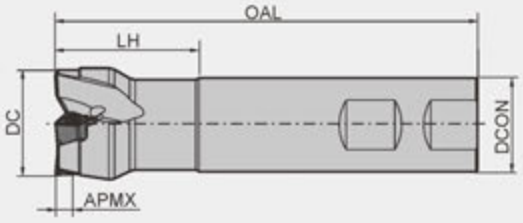
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Face milling tools

KAPR:90°

Face milling | Step shoulder milling | Slot milling

FMP12 P K N



Specification of tools

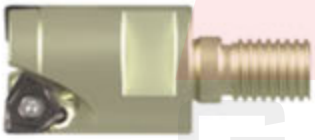
Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling
			DC	DCON	OAL	LH	APMX		
FMP12	-025-XP25-WN06-02C	▲	25	25	100	30	5.7	2	XP
	-032-XP25-WN06-03C	▲	32	25	120	40	5.7	3	XP
	-040-XP32-WN06-04C	▲	40	32	140	40	5.7	4	XP
	-050-XP40-WN06-05C	▲	50	40	169	40	5.7	5	XP

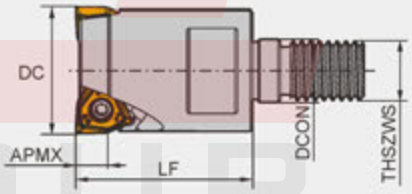
▲Stock available △Make-to-order

Step shoulder | Step shoulder milling | Ramp milling | Helical machining | Plunge milling

QCH-*WN*M*Series

P M K N S





Specification of tools

Type		Stock	Basic dimensions(mm)					Applicable inserts	Number of teeth Z	Weight (kg)
			DC	DCON	LF	APMX	THSZWS			
QCH	-25-WN06-M12-02	▲	25	12.5	35	5.7	12	WN□U0604□□PN□-□□	2	0.12
	-32-WN06-M16-03	▲	32	17	45	5.7	16		3	0.23
	-40-WN06-M16-04	▲	40	17	45	5.7	16		4	0.26

▲Stock available △Make-to-order

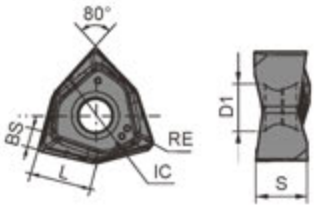
Spare parts

Diameter DC	Inserts	Insert screw	Wrench
Ø25-Ø50	WN□U06	I60M3×9	WT09IP

Diameter DC	Insert	Insert screw	Wrench
Ø25-Ø40	WN□U06	I60M3×9	WT09IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		L	IC	S	D1	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	WNHU060404PNR-GM	5.7	9.525	4.0	3.5	1.35	0.4		★	★					★	★							
	WNHU060408PNR-GM	5.7	9.525	4.0	3.5	1.35	0.8		★	★					★	★							
	WNHU080608PNR-GM	7.7	12.7	5.4	4.4	1.6	0.8		★	★					★	★							
	WNHU080612PNR-GM	7.7	12.7	5.4	4.4	1.6	1.2		★	★					★	★							
	WNHU080616PNR-GM	7.7	12.7	5.4	4.4	1.6	1.6		★	★					★	★							
	WNMU060408PNN-GM	5.7	9.525	4.0	3.5	1.35	0.8		★	★					★	★							
	WNMU080608PNN-GM	7.7	12.7	5.4	4.4	1.6	0.8		★	★					★	★							
	WNHU080608PNR-LH	7.7	12.7	5.4	4.4	1.6	0.8															★	

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

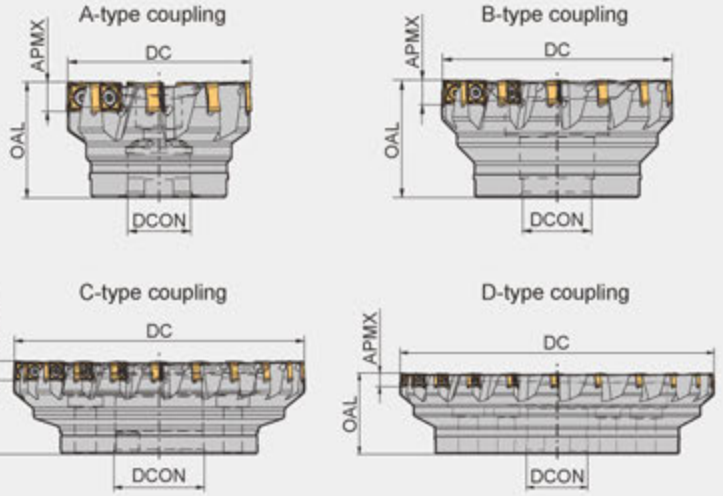
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				V(m/min)	f(mm/z)	ap_{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)
P	High-carbon steel, Alloy steel	180-280	YBM253 YBG205 YB9320	260 (200-340)	0.2 (0.1-0.4)	
P	Alloy tool steel	280-350	YBM253 YBG205 YB9320	240 (180-320)	0.2(0.1-0.4)	
M	Stainless steel	≤270	YBM253 YBG205 YB9320	160 (110-220)	0.15(0.1-0.3)	
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)	

Face milling tools

KAPR:88°

FMP17 P M K S



Specification of tools

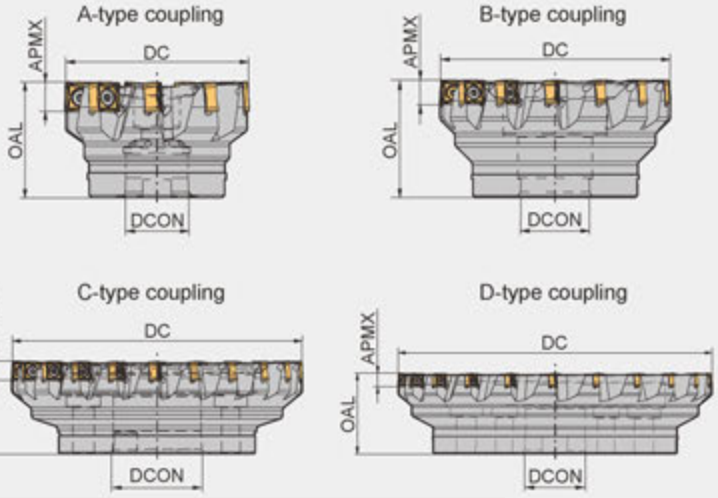
Type		Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCON	OAL	APMX			
FMP17 Coarse pitch	**-050-A22-SN12-04C**	▲	△	50	22	40	10.5	4	A	0.296
	-063-A22-SN12-05C	▲	△	63	22	40	10.5	5	A	0.462
	-080-A27-SN12-07C	▲	△	80	27	50	10.5	7	A	1.000
	-100-A32-SN12-08	▲	△	100	32	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
	-250-C60-SN12-18	▲	△	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

Face milling tools

KAPR:88°

FMP17 P M K S



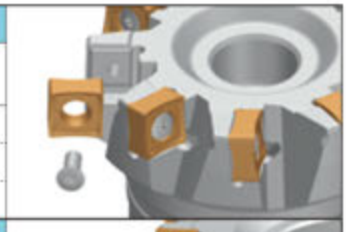
Specification of tools

Type		Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DCON	OAL	APMX			
FMP17 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	1.020
	-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
Finishing cutterhead	-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

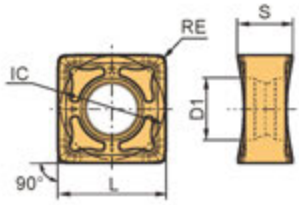
Diameter DC	Insert	Insert screw	Wrench
			
Ø50-Ø63	SNGX□□PNN-GH/GL/GM SNMX□□□-GH/GL/GM	IRM4×10	WT15IP
Ø80-Ø125			WT15IS
Ø160-Ø400			WT15IT



Finishing cutterhead diameter DC	Insert	Insert screw	Wedge screw	Adjustment block	Wrench
					
Ø125-Ø200	SNG□□XPNN-GH/GL/GM SNMX□□□-GH/GL/GM SNCU120420-W4	IRM4×10	DM6×20A	ADJ-M6×1.0A	WT15IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

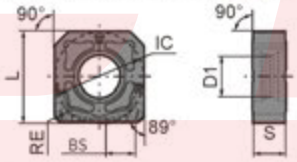
Selection of inserts

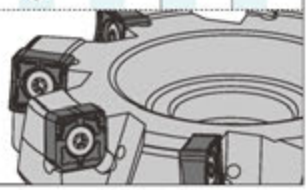


Good working condition Normal working condition Bad working condition

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	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205PNN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★						
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★						
	SNGX1205PNN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★		●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★		●				
	SNGX1205PNN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★						
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★						
	SNCU120420-W4	12.7	12.7	4.8	-	5.9	2.0						●										
	SNGX1205PNN-W	12.86	12.7	4.8	4.26	5.9	1.2									●							





- Inserts can be mounted left or right.
- The W4 wiper inserts for adjustable tool holders.
- The W wiper inserts can be mounted directly on the cutting teeth.

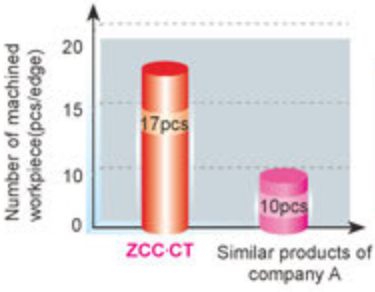
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

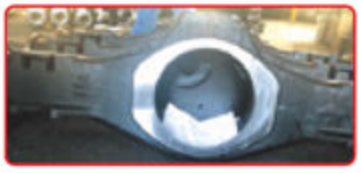
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	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	hard-to-cut material	≤400	YBS203 YBS303	100(60-120)	--	0.15(0.1-0.25)	--

Case for FMP17

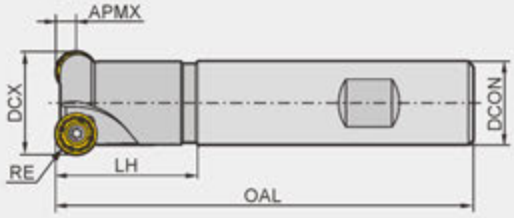
Workpiece: Truck axle housing
Workpiece material: QT600(HB250)
Tool type: FMP17-100-A32-SN12-08C
Insert: SNGX1205PNN-GM/YB9320
Cutting parameters: Vc=267m/min, fz=0.18mm/z, ap=1.5mm, ae=90mm
Cooling: External coolant





Face milling tools

FMR01 P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
			DCX	DCON	OAL	LH	RE	APMX		
FMR01	-020-XP20-RC10-02	▲	20	20	100	30	5	5	2	0.1
	-025-XP20-RC10-02	▲	25	20	100	30	5	5	2	0.2
	-032-XP25-RC10-03	▲	32	25	120	35	5	5	3	0.5
	-025-XP20-RC12-02	▲	25	20	100	30	6	6	2	0.2
	-032-XP25-RC12-03	▲	32	25	120	35	6	6	3	0.4
	-040-XP32-RC12-03	▲	40	32	120	40	6	6	3	0.7
	-040-XP32-RC12-04	▲	40	32	120	40	6	6	4	0.6

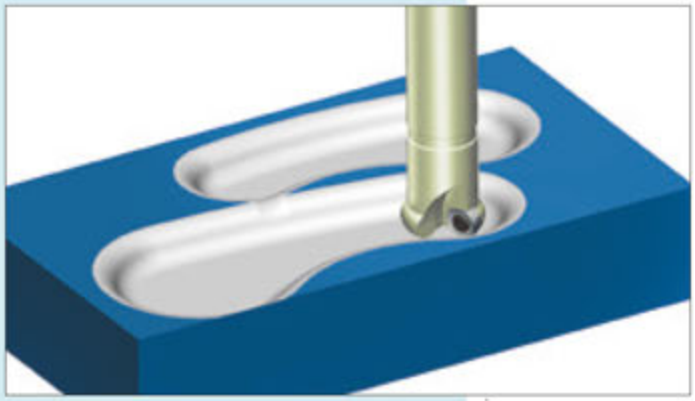
▲Stock available △Make-to-order

Spare parts

Diameter DCX	Inserts	Insert screw	Wrench
Ø20 -Ø32	RC□□10T3MO-DM	I60M4×8.4	WT15IP
Ø25 -Ø40	RC□□1204MO-□□	I60M3.5×10	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Case for FMR01



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

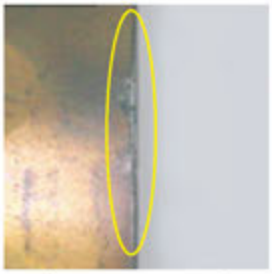
Tool type: FMR01-025-XP20-RC10-02
Insert type/grade: RCKT10T3MO-DM/YBG202

●Comparison of insert abrasion

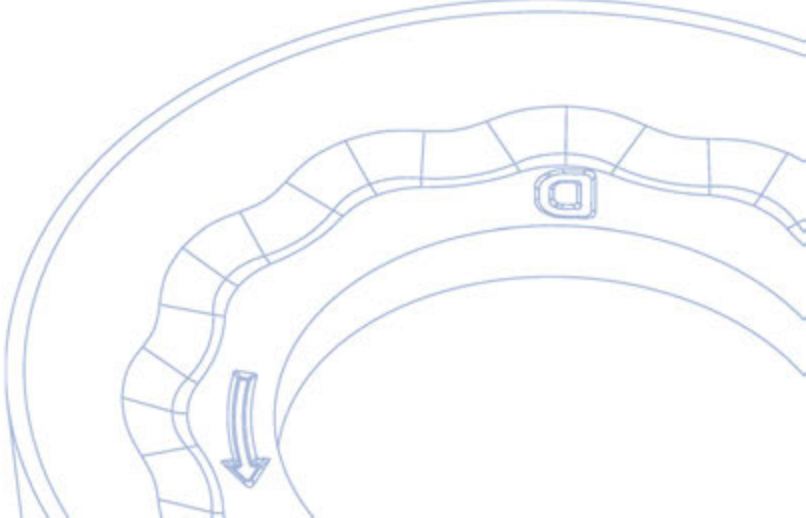
ZCC·CT

22minutes later

Similar overseas products



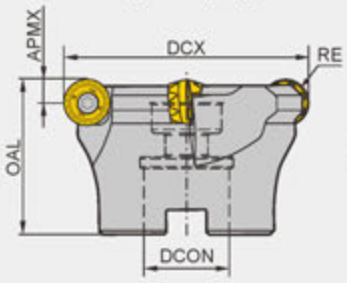
22minutes later



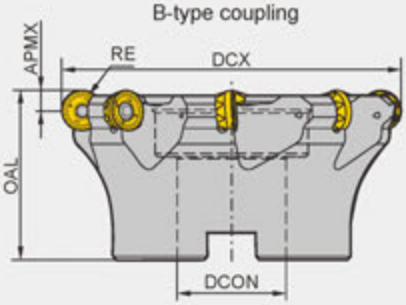
Face milling tools

FMR02 P M K H S

A-type coupling



B-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DCX	DCON	OAL	RE	APMX			
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

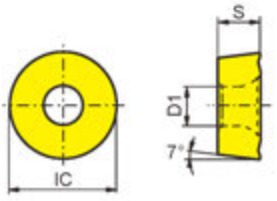
▲Stock available △Make-to-order

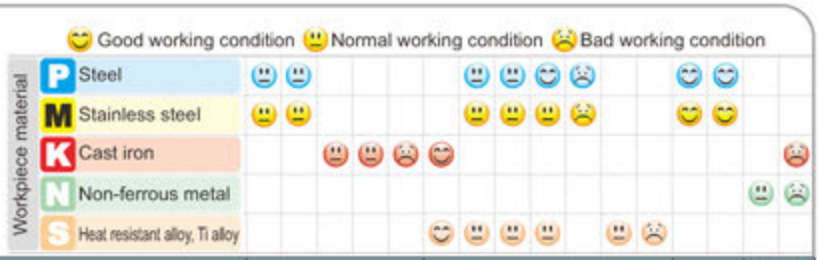
Spare parts

Diameter DCX	Inserts	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts





Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating						Cermet		Cemented carbide	
		IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RCKT10T3MO-DM	10.0	3.97	4.4							●	★								
	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		○							○	○		○				

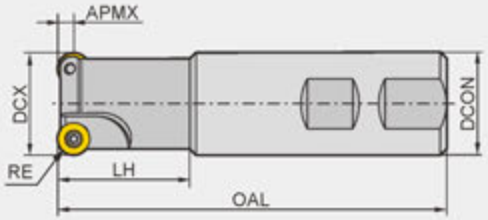
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters					
				V(m/min)	f(mm/z)				
					-DM	-DR	-ER	-PCBN	-NM
P	Low-carbon steel, Soft steel	≤HB180	YBM253 YBC302	270 (220-350)	0.2(0.1-0.5)	0.3 (0.2-0.8)			
			YBM253 YBG302	220 (180-300)	0.25(0.1-0.5)	0.3 (0.2-0.8)			0.25 (0.1-0.5)
			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	HB180-280	YBM253 YBC302	240 (200-320)	0.2(0.1-0.5)	0.3 (0.2-0.8)			
			YBM253 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	YBM253 YBC302	220 (180-300)	0.2(0.1-0.4)	0.3 (0.2-0.6)			
			YBM253 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)
M	Stainless steel	≤HB270	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)
			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	HB180-250	YBG302	210 (120-300)	0.2(0.1-0.5)	0.3 (0.2-0.8)			0.2 (0.1-0.5)
			YCB011	800 (500-1200)				0.2(0.1-0.5)	
			YBD152	240 (180-300)	0.2(0.1-0.3)				
			YBD252	220 (180-300)		0.2 (0.1-0.3)			
H	Hardened steel	≥HRC45	YCB012	150 (100-500)				0.15(0.1-0.5)	
S	Difficult-to-machine materials	≤400	YBS203 YBS303	100 (60-120)					0.15 (0.1-0.3)

Face milling tools

FMR03 P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
			DCX	DCON	OAL	LH	RE	APMX		
FMR03	-016-XP16-RD08-02	▲	16	16	100	25	4	4	2	0.1
	-020-XP20-RD08-02	▲	20	20	100	30	4	4	2	0.2
	-025-XP25-RD08-02	▲	25	25	100	30	4	4	2	0.3
	-025-XP25-RD08-03	▲	25	25	100	30	4	4	3	0.2
	-020-XP20-RD10-02	▲	20	20	100	30	5	5	2	0.2
	-025-XP25-RD10-02	▲	25	25	100	30	5	5	2	0.3
	-032-XP32-RD10-02	▲	32	32	120	40	5	5	2	0.7
	-032-XP32-RD10-03	▲	32	32	120	40	5	5	3	0.6
	-025-XP25-RD12-02	▲	25	25	100	30	6	6	2	0.2
	-032-XP32-RD12-02	▲	32	32	120	40	6	6	2	0.6
	-040-XP32-RD12-03	▲	40	32	120	40	6	6	3	0.7
	-040-XP32-RD12-04	▲	40	32	120	40	6	6	4	0.6

▲Stock available △Make-to-order

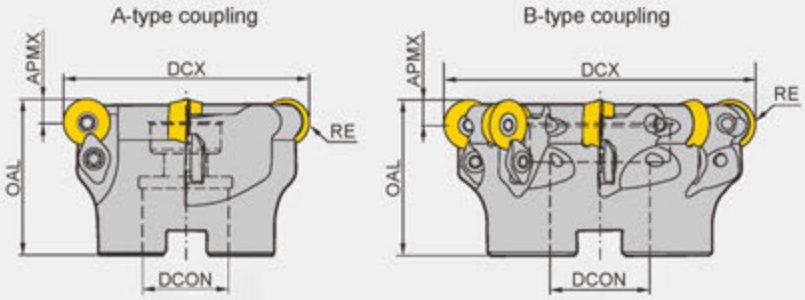
Spare parts

Diameter DCX	Inserts	Insert screw	Wrench
			
Ø16-Ø25	RDKW0803MO	I60M3×7	WT09IP
Ø32-Ø50	RDKW10T3MO	I60M4×10	WT15IP
	RDKW10T3MO-NM		
	RDKW1204MO		

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Face milling tools

FMR04 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DCX	DCON	OAL	RE	APMX			
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

Spare parts

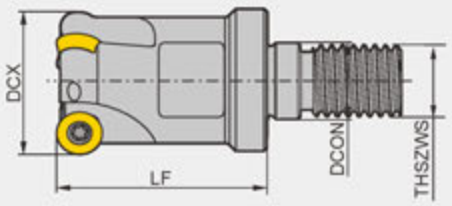
Diameter DCX	Inserts	Insert screw	Clamp	Clamp screw	Wrench	
Ø50-Ø80	RDKW1204MO	I60M3.5×10	WD-204	I60M4×10	WT15IP	--
Ø63 -Ø125	RDKW1605MO	I60M5×13	WD-207	I60M5×13	--	WT20IT
Ø125 -Ø160	RDKW2006MO	I43M6×16	--	--	--	WT25IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Face milling tools

QCH-*RD*M*Series

P M K



Specification of tools

Type		Stock	Basic dimensions(mm)				Applicable inserts	Number of teeth Z	Weight (kg)
			DCX	DCON	LF	THSZWS			
QCH	-16-RD07-M8-02	△	16	8.5	25	8	RDKW0702MO	2	0.027
	-16-RD07-M8-03	△	16	8.5	25	8		3	0.030
	-20-RD07-M10-03	△	20	10.5	30	10		3	0.058
	-22-RD07-M10-03	△	22	10.5	30	10		3	0.060
	-25-RD07-M12-03	△	25	12.5	35	12		3	0.093
	-20-RD10-M10-02	△	20	10.5	30	10	RDKW10T3MO	2	0.054
	-22-RD10-M10-02	△	22	10.5	35	10		2	0.065
	-25-RD10-M12-02	△	25	12.5	35	12		2	0.097
	-32-RD10-M16-03	△	32	17	45	16		3	0.183
	-32-RD10-M16-04	△	32	17	45	16		4	0.210
	-25-RD12-M12-02	△	25	12.5	35	12	RDKW1204MO	2	0.086
	-32-RD12-M16-03	△	32	17	45	16		3	0.193
	-40-RD12-M16-04	△	40	17	45	16		4	0.218
	-32-RD16-M16-02	△	32	17	45	16	RDKW1605MO	2	0.156
	-40-RD16-M16-03	△	40	17	45	16		3	0.220

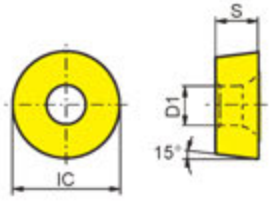
▲Stock available △Make-to-order

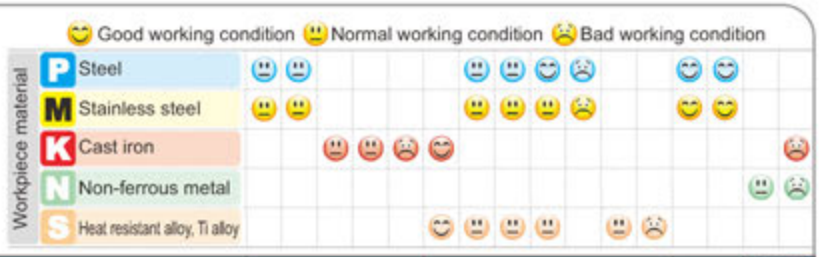
Spare parts

Diameter DCX	Insert	Screw	Wrench	
				
Ø16-Ø25	RDKW07□□	I60M2.5×6.5T	WT08IP	--
Ø20-Ø32	RDKW10□□	I60M4×8	WT15IP	--
Ø25-Ø40	RDKW12□□	I60M4×10	WT15IP	--
Ø32-Ø40	RDKW16□□	I60M5×13	--	WT20IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts





Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating						Cermet		Cemented carbide	
		IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RDKW0803MO	8	3.18	3.4							●	★		○						
	RDKW10T3MO	10	3.97	4.4							●	★								
	RDKW1204MO	12.0	4.76	4.4							●	★								
	RDKW1605MO	16.0	5.56	5.5							○	★		○						
	RDKW2006MO	20.0	6.35	6.5								○								

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

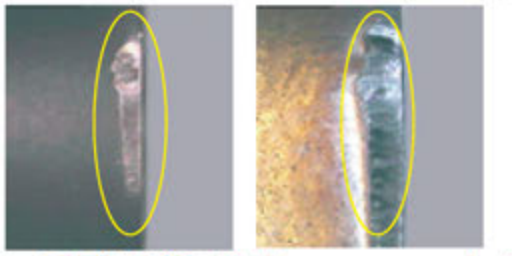
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBM253 YBC302	270 (220-350)	0.2 (0.08-0.45)
			YBM253 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	YBM253 YBC302	240 (200-320)	0.2 (0.08-0.45)
			YBM253 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	YBM253 YBC302	220 (180-300)	0.2 (0.08-0.45)
			YBM253 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)
			YBM253 YBG302	150 (120-240)	0.2 (0.08-0.45)
			YBM253	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)

Case for FMR04

Workpiece material: 42CrMo (HRC35)
Cooling system: Dry cutting
Machine: Vertical machining center
Tool type: FMR04-063-A22-RD12-04
Insert type/grade: RDKW1204MO/YBG202
Cutting parameters: V_c=200m/min, a_p=3mm, f_z=0.3mm/z

Abrasion comparison after 90 minutes cavity milling



ZCC·CT Similar overseas products

Face milling tools

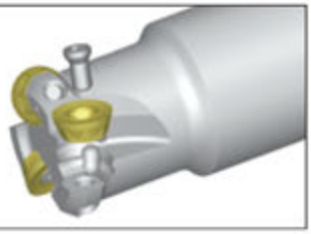
FMR11 P M K S

Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH	APMX		
FMR11	-020-XP20-RD10-02C(30,160)	▲	20	20	160	30	5	2	0.345
	-025-XP25-RD10-03C(30,180)	▲	25	25	180	30	5	3	0.575
	-032-XP32-RD10-03C(30,180)	▲	32	32	180	30	5	3	0.982
	-040-XP32-RD10-04C(30,200)	▲	40	32	200	30	5	4	1.200
	-025-XP25-RD12-02C(30,180)	▲	25	25	180	30	6	2	0.565
	-032-XP32-RD12-03C(30,180)	▲	32	32	180	30	6	3	0.970
	-040-XP32-RD12-04C(30,200)	▲	40	32	200	30	6	4	1.150
	-020-XP20-RP10-02C(30,160)	▲	20	20	160	30	5	2	0.335
	-025-XP25-RP10-03C(30,180)	▲	25	25	180	30	5	3	0.586
	-032-XP32-RP10-03C(30,180)	▲	32	32	180	30	5	3	0.982
	-040-XP32-RP10-04C(30,200)	▲	40	32	200	30	5	4	1.175
	-025-XP25-RP12-02C(30,180)	▲	25	25	180	30	6	2	0.577
	-032-XP32-RP12-02C(30,180)	▲	32	32	180	30	6	2	0.980
	-032-XP32-RP12-03C(30,180)	▲	32	32	180	30	6	3	0.980
	-040-XP32-RP12-04C(30,200)	▲	40	32	200	30	6	4	1.162

▲Stock available △Make-to-order

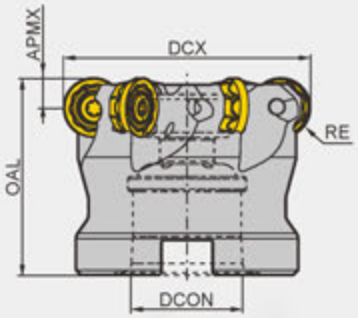
Spare parts

Diameter DC	Insert	Insert screw	Wrench	
				
Ø20-Ø40	R□□□10□□-H/M/MM	I60M3.5×8	WT15IP	
	R□□□12□□-H/M/MM			

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Face milling tools

FMR11 P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)
			DCX	DCON	OAL	APMX		
FMR11	-040-A16-RD10-06C	▲	40	16	40	5	6	0.188
	-050-A22-RD10-07C	▲	50	22	40	5	7	0.300
	-063-A22-RD10-08C	▲	63	22	40	5	8	0.500
	-040-A16-RD12-05C	▲	40	16	40	6	5	0.180
	-050-A22-RD12-05C	▲	50	22	40	6	5	0.260
	-050-A22-RD12-06C	▲	50	22	40	6	6	0.270
	-063-A22-RD12-07C	▲	63	22	40	6	7	0.410
	-080-A27-RD12-08C	▲	80	27	50	6	8	1.000
	-040-A16-RP10-06C	▲	40	16	40	5	6	0.190
	-050-A22-RP10-07C	▲	50	22	40	5	7	0.290
	-063-A22-RP10-08C	▲	63	22	40	5	8	0.480
	-040-A16-RP12-05C	▲	40	16	40	6	5	0.160
	-050-A22-RP12-06C	▲	50	22	40	6	6	0.270
	-063-A22-RP12-07C	▲	63	22	40	6	7	0.450
	-080-A27-RP12-08C	▲	80	27	50	6	8	1.000

▲Stock available △Make-to-order

Spare parts

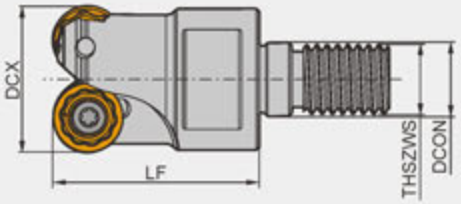
Diameter DC	Insert	Insert screw	Wrench
			
Ø40-Ø63	R□□□10□□-H/M/MM	I60M3.5×8	WT15IP
	R□□□12□□-H/M/MM		
Ø80	R□□□12□□-H/M/MM	I60M4×8.4	WT15IS

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Face milling tools

QCH-*M*(FMR11)Series

P M K



Specification of tools

Type		Stock	Basic dimensions(mm)				Applicable inserts	Number of teeth Z	Weight (kg)
			DCX	DCON	LF	THSZWS			
QCH	-25-RD10-M12-03(FMR11)	△	25	12.5	35	12	RD□□10T3MO-□□	2	0.027
	-32-RD10-M16-03(FMR11)	△	32	17	45	16		3	0.030
	-42-RD10-M16-05(FMR11)	△	42	17	45	16		3	0.058
	-25-RD12-M12-02(FMR11)	△	25	12.5	35	12	RD□□1204MO-□□	3	0.060
	-32-RD12-M16-05(FMR11)	△	32	17	45	16		3	0.093
	-42-RD12-M16-05(FMR11)	△	42	17	45	16		2	0.054
	-25-RP10-M12-03(FMR11)	△	25	12.5	40	12	RD□□1204MO-□□	2	0.065
	-32-RP10-M16-03(FMR11)	△	32	17	45	16		2	0.097
	-42-RP10-M16-05(FMR11)	△	42	17	45	16		3	0.183
	-25-RP12-M12-02(FMR11)	△	25	12.5	40	12	RP□□1204MO-□□	4	0.210
	-32-RP12-M16-03(FMR11)	△	32	17	45	16		2	0.156
	-42-RP12-M16-05(FMR11)	△	42	17	45	16		3	0.220

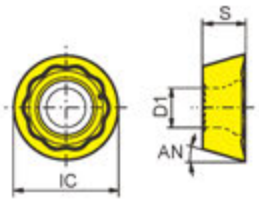
▲Stock available △Make-to-order

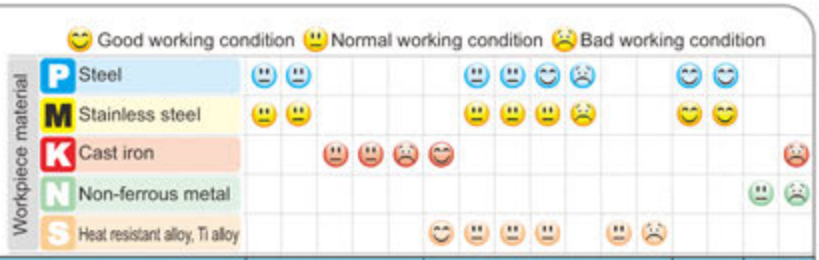
Spare parts

Diameter DCX	Insert	Insert screw	Wrench
Ø25-Ø42	RD□□10T3	I60M3.5×8	WT15IP
Ø25-Ø42	RD□□1204	I60M4×8.4	WT15IP
Ø25-Ø42	RP□□10T3	I60M3.5×8	WT15IP
Ø25-Ø42	RP□□1204	I60M4×8.4	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts





Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RPMW10T3MO-H	10.0	3.97	4.1	11°								●								
	RPMW1204MO-H	12.0	4.76	4.4	11°								●								
	RDMW10T3MO-H	10.0	3.97	4.1	15°								●								
	RDMW1204MO-H	12.0	4.76	4.4	15°								●								
	RPMT10T3MO-M	10.0	3.97	4.1	11°								●			●	●				
	RPMT1204MO-M	12.0	4.76	4.4	11°								●			●	●				
	RDMT10T3MO-M	10.0	3.97	4.1	15°								●			●	●				
	RDMT1204MO-M	12.0	4.76	4.4	15°								●			●	●				
	RPMT10T3MO-MM	10.0	3.97	4.1	11°								●			●	●				
	RPMT1204MO-MM	12.0	4.76	4.4	11°								●			●	●				
	RDMT10T3MO-MM	10.0	3.97	4.1	15°								●			●	●				
	RDMT1204MO-MM	12.0	4.76	4.4	15°								●			●	●				

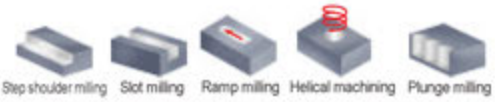
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Recommended cutting parameters

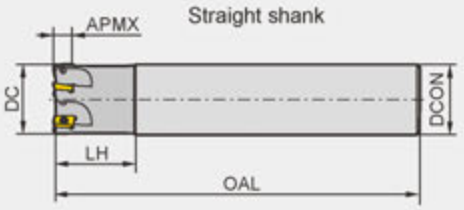
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBG205	270(200-360)	0.2(0.1-0.4)
	High-carbon steel, Alloy steel	180-280	YBG205	240(180-350)	0.2(0.1-0.4)
	Alloy tool steel	280-350	YBG205	220(170-340)	0.2(0.1-0.4)
M	Stainless steel	≤270	YBG205	160(110-270)	0.2(0.1-0.4)
S	Difficult-to-machine materials	≤400	YBS203 YBS303	100(60-120)	0.15(0.1-0.3)

Square shoulder milling tools

KAPR:90°



EMP01 P M K S N



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH	APMX		
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

Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH	APMX		
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

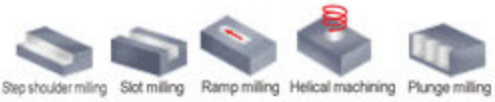
Spare parts

Diameter DC	Inserts	Screw	Wrench
Ø10-Ø16	APKT07	I60M1.8×4	WT05IP
Ø12-Ø32	APKT11	I60M2.5×6.5T	WT08IP
Ø25-Ø63	APKT16	I60M4×8.4	WT15IP

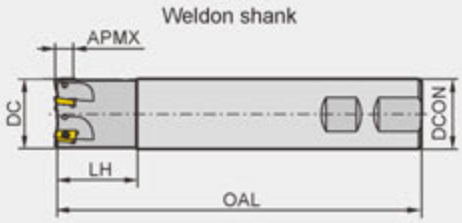
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°



EMP01 P M K S N



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH	APMX		
EMP01 Weldon shank	**-012-XP16-AP11-01**	▲	12	16	85	25	10.5	1	0.1
	-016-XP16-AP11-02	▲	16	16	90	25	10.5	2	0.1
	-020-XP20-AP11-02	▲	20	20	100	30	10.5	2	0.2
	-025-XP25-AP11-03	▲	25	25	115	35	10.5	3	0.4
	-032-XP32-AP11-04	▲	32	32	125	40	10.5	4	0.7
	-025-XP25-AP16-02	▲	25	25	115	35	15.5	2	0.4
	-032-XP32-AP16-03	▲	32	32	125	40	15.5	3	0.7
	-040-XP32-AP16-04	▲	40	32	130	42	15.5	4	0.8
	-050-XP32-AP16-05	▲	50	32	135	45	15.5	5	1.0
	-063-XP32-AP16-06	▲	63	32	135	45	15.5	6	1.4

▲Stock available △Make-to-order

Spare parts

Diameter DC	Inserts	Screw	Wrench
Ø12-Ø32	APKT11	I60M2.5×6.5T	WT08IP
Ø25-Ø63	APKT16	I60M4×8.4	WT15IP

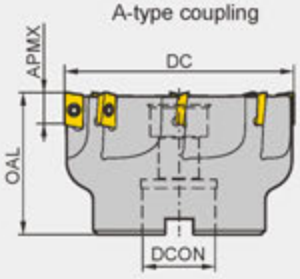
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

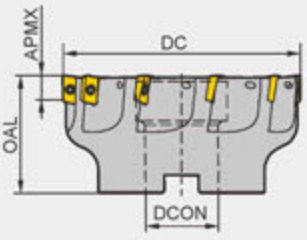
KAPR:90°

EMP02 P M K S N

A-type coupling



B-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCON	OAL	APMX			
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 DC	Inserts	Screw	Wrench
			
Ø50-Ø100	AP11	I60M2.5×6.5T	WT08IS
Ø50-Ø160	AP16	I60M4×10	WT15IS

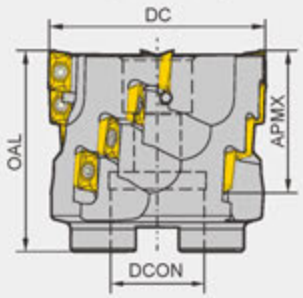
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

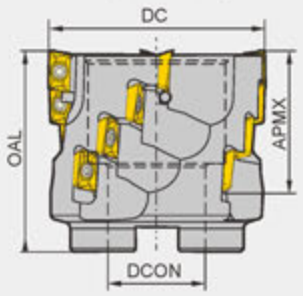
KAPR:90°

EMP03 P M K S N

A-type coupling



B-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth z	Number of inserts	Type of coupling	Weight (kg)
			DC	DCON	OAL	APMX				
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
	-040x43-A16-AP16-02	△	40	16	63	43	2	6	A	0.4
	-050x43-A22-AP16-03	△	50	22	63	43	3	9	A	0.6
	-063x57-A27-AP16-04	△	63	27	80	57	4	16	A	1.2
	-080x57-A32-AP16-04	△	80	32	80	57	4	16	A	2.1

▲Stock available △Make-to-order

Spare parts

Diameter DC	Inserts	Screw	Wrench
			
Ø50-Ø63	APKT11	I60M2.5×6.5T	WT08IP
Ø80-Ø100			WT08IS
Ø40-Ø63	APKT16	I60M4×10	WT15IP
Ø80			WT15IS

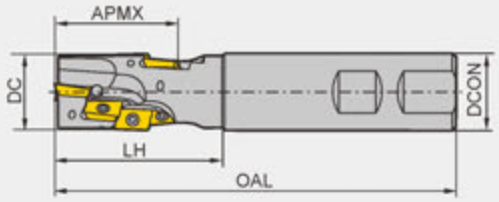
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°

EMP04 P M K S N

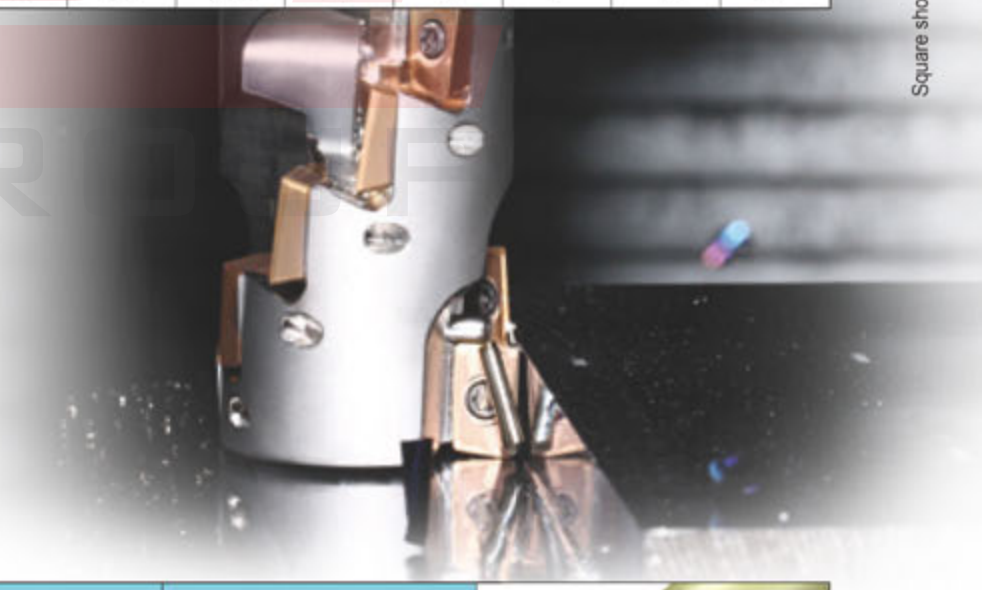
Weldon shank



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth z	Number of inserts	Weight (kg)
			DC	DCON	OAL	LH	APMX			
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
	040x57-XP40-AP16-02	△	40	40	150	75	57	2	8	1.3
	050x57-XP50-AP16-03	△	50	50	160	75	57	3	12	2.1

▲Stock available △Make-to-order



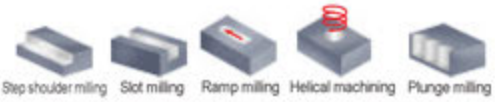
Spare parts

Diameter DC	Inserts	Screw	Wrench
			
Ø20-Ø40	APKT11	I60M2.5×6.5T	WT08IP
Ø40-Ø50	APKT16	I60M4×10	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

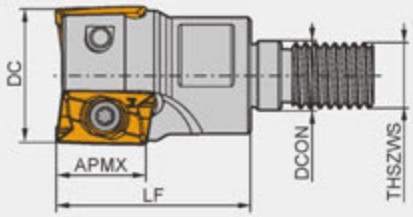
Square shoulder milling tools

KAPR:90°



QCH-*APKT*M*Series

P M K S N



Specification of tools

Type		Stock	Basic dimensions(mm)					Applicable inserts	Number of teeth Z	Weight (kg)
			DC	DCON	LF	APMX	THSZWS			
QCH	-16-APKT07-M8-03	▲	16	8.5	25	6	8	APKT0702□□-□□	3	0.030
	-20-APKT07-M10-04	▲	20	10.5	30	6	10		4	0.060
	-16-APKT11-M8-02	▲	16	8.5	28	10.5	8	APKT11T3□□-□□	2	0.026
	-20-APKT11-M10-03	▲	20	10.5	30	10.5	10		3	0.050
	-22-APKT11-M10-03	▲	22	10.5	35	10.5	10		3	0.065
	-25-APKT11-M12-04	▲	25	12.5	35	10.5	12		4	0.100
	-28-APKT11-M12-04	▲	28	12.5	40	10.5	12		4	0.120
	-32-APKT11-M16-05	▲	32	17	45	10.5	16		5	0.219
	-40-APKT11-M16-06	▲	40	17	42	10.5	16		6	0.270
	-25-APKT16-M12-02	▲	25	12.5	35	15.5	12	APKT1604□□-□□	2	0.081
	-28-APKT16-M12-02	▲	28	12.5	40	15.5	12		2	0.120
	-32-APKT16-M16-02	▲	32	17	45	15.5	16		2	0.210
	-32-APKT16-M16-03	▲	32	17	45	15.5	16		3	0.189
	-40-APKT16-M16-03	▲	40	17	45	15.5	16		3	0.235
	-40-APKT16-M16-04	▲	40	17	45	15.5	16		4	0.225

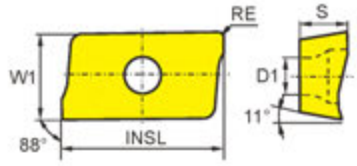
▲Stock available △Make-to-order

Spare parts

Diameter DC	Inserts	Insert screw	Wrench
			
Ø16-Ø20	APKT07	I60M1.8×4	WT05IP
Ø16-Ø40	APKT11	I60M2.5×5.5	WT07IP
Ø25-Ø40	APKT16	I60M4×8.4	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT11T304-APL	12.24	6.6	3.6	2.8	0.4									★					○		
	APKT11T308-APL	12.24	6.6	3.6	2.8	0.8	★	★	★						★			○				
	APKT160408-APL	17.877	9.33	5.76	4.4	0.8	★	★	★						★			○				
	APKT160420-APL	17.877	9.33	5.76	4.4	2.0									★							
	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									★							
	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	●								★		●	●				
	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

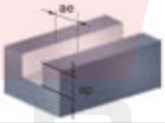
Classification \ Application	Finishing	Medium, semi-finishing	Light,semi-finishing
P	-APF	-APM	-APL
M	-APF	-APM	-APL
S	-APF	-APM	-APL
K	-APF	-APM	-APL
N	-ALH		

1 Square shoulder milling

Recommended cutting parameters (D: Diameter)

Workpiece material		Hardness HB	Insert grade	Cutting parameters				
				V (m/min)	f (mm/z)			a_e(mm)
					-APF	-APM	-APL	
P	Low-carbon steel, Soft steel	≤180	YBC302	320 (240-400)	0.1 (0.08-0.2)	--	0.1 (0.08-0.2)	≤0.5D
			YB9320	320 (200-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	
			YBM253	300 (320-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	
	High-carbon steel, Alloy steel	180-280	YBC302	280 (210-380)	0.1 (0.08-0.2)	--	0.1 (0.08-0.2)	≤0.5D
			YB9320	280 (180-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	
			YBM253	260 (150-380)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	
	Alloy tool steel	280-350	YBC302	260 (180-350)	0.1 (0.08-0.2)	--	0.1 (0.08-0.2)	≤0.5D
			YB9320	260 (160-330)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	
			YBM253	220 (150-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	
M	Stainless steel	≤270	YB9320	200 (110-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	≤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)	0.1 (0.08-0.2)	≤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)	0.1 (0.08-0.2)	≤0.5D
			YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)	≤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



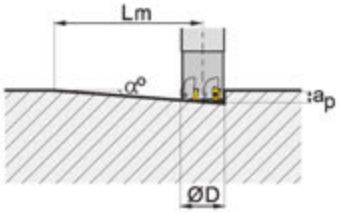
Recommended cutting parameters (D: Diameter)

Workpiece material		Hardness HB	Insert grade	Cutting parameters				
				V (m/min)	f (mm/z)			a_e(mm)
					-APF	-APM	-APL	
P	Low-carbon steel, Soft steel	≤180	YBC302	190 (170-250)	0.1 (0.08-0.15)	--	0.1 (0.08-0.15)	D
			YB9320	190 (140-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	
			YBM253	150 (130-210)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	
	High-carbon steel, Alloy steel	180-280	YBC302	170 (150-220)	0.1 (0.08-0.15)	--	0.1 (0.08-0.15)	D
			YB9320	170 (130-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	
			YBM253	140 (110-200)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	
	Alloy tool steel	280-350	YBC302	150 (130-210)	0.1 (0.08-0.15)	--	0.1 (0.08-0.15)	D
			YB9320	150 (110-240)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	
			YBM253	130 (110-180)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	
M	Stainless steel	≤270	YB9320	120 (80-190)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	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)	0.1 (0.08-0.15)	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)	0.1 (0.08-0.15)	D
			YBS303	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)	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

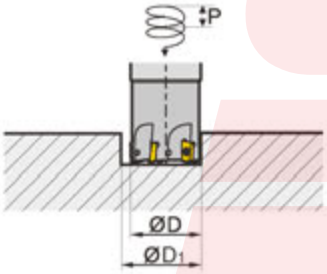
Recommended cutting parameters (D: Diameter)

● Ramp milling



$L_m = \frac{a_p}{tg\alpha}$ (α:Maximum ramp angle)

● Helical interpolation milling



$tg\alpha = \frac{P}{\pi D_1}$ (α:Helical angle)

Diameter ØD(mm)	APKT Ramp milling, helical interpolation milling (Inserts-7)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth	Maximum ramp angle	Minimum length	Minimum diameter	Maximum pitch
	a_p(mm)	α°	L_m(mm)	$ØD_1$(mm)	(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	Maximum ramp angle	Minimum length	Minimum diameter	Maximum pitch
	a_p(mm)	α°	L_m(mm)	$ØD_1$(mm)	(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	Maximum ramp angle	Minimum length	Minimum diameter	Maximum pitch
	a_p(mm)	α°	L_m(mm)	$ØD_1$(mm)	(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:
Vc=150m/min
f= 0.2mm/z

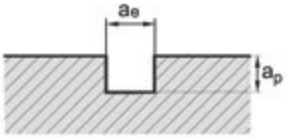
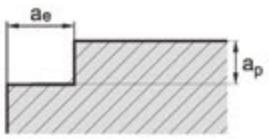
Insert specification/grade: APKT160408-APM/YB9320

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.

Recommended cutting parameters

Slot milling	Square shoulder milling	Deep square shoulder milling
		
a_e=D，a_p≤0.5D	a_e≤0.5D，a_p≤1.2D	a_e≤0.2D，a_p<Cutting length of insert

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Square shoulder milling			
				V (m/min)	f (mm/z)		
					-APF	-APM	-APL
P	Low-carbon steel, Soft steel	≤180	YBC302	270 (240-350)	0.1 (0.08-0.2)	--	0.1 (0.08-0.2)
			YB9320	220 (200-360)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
			YBM253	270 (180-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
	High-carbon steel, Alloy steel	180-280	YBC302	240 (210-320)	0.1 (0.08-0.2)	--	0.1 (0.08-0.2)
			YB9320	240 (180-360)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
			YBM253	200 (160-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
	Alloy tool steel	280-350	YBC302	220 (180-300)	0.1 (0.08-0.2)	--	0.1 (0.08-0.2)
			YB9320	220 (160-340)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
			YBM253	180 (150-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
M	Stainless steel	≤270	YB9320	150 (110-270)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
			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)	0.1 (0.08-0.2)
			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)	0.1 (0.08-0.2)
			YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.1 (0.08-0.2)
N					-ALH		
	Aluminium alloy	--	YD101	300-	0.2 (0.08-0.4)		
			YD201	300-	0.2 (0.08-0.4)		

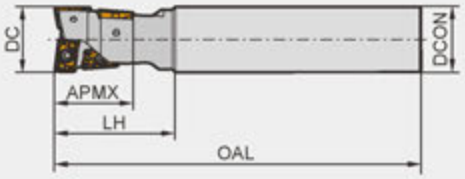
Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Slot milling、Deep square shoulder milling			
				V (m/min)	f (mm/z)		
					-APF	-APM	-APL
P	Low-carbon steel, Soft steel	≤180	YBC302	270 (240-350)	0.1 (0.08-0.15)	--	0.1 (0.08-0.15)
			YB9320	270 (200-360)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
			YBM253	220 (180-300)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
	High-carbon steel, Alloy steel	180-280	YBC302	240 (210-320)	0.1 (0.08-0.15)	--	0.1 (0.08-0.15)
			YB9320	240 (180-360)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
			YBM253	200 (160-280)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
	Alloy tool steel	280-350	YBC302	220 (180-300)	0.1 (0.08-0.15)	--	0.1 (0.08-0.15)
			YB9320	220 (160-340)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
			YBM253	180 (150-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
M	Stainless steel	≤270	YB9320	150 (110-270)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
			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)	0.1 (0.08-0.15)
			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)	0.1 (0.08-0.15)
			YBS303	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.1 (0.08-0.15)
N					-ALH		
	Aluminium alloy	--	YD101	300-	0.2 (0.08-0.3)		
			YD201	300-	0.2 (0.08-0.3)		

Square shoulder milling tools

KAPR:90°

EMP05 P M K

Standardized edge



Specification of tools

Type		Stock	Basic dimensions(mm)					Insert quantities			
			DC	DCON	LH	OAL	APMX	End teeth	Quantity	Peripheral	Quantity
EMP05	-016-G16-AD08-C	▲	16	16	33	120	19	ADKT080308L-GM	1	ADKT090308R-GM	3
	-020-G20-AD10-C	▲	20	20	35	130	23	ADKT100308L-GM	1	ADKT100308R-GM	3
	-025-G25-AD12-C	▲	25	25	45	140	29	ADKT12T308L-GM	1	ADKT12T308R-GM	3
	-032-G32-AD15-C	▲	32	32	50	150	34	ADKT160508L-GM	1	ADKT150508R-GM	3
	-040-G32-AD12-C	▲	40	32	55	160	40	ADKT12T308L-GM	2	ADKT12T308R-GM	4
	-050-G40-AD15-C	▲	50	40	70	170	50	ADKT160508L-GM	2	ADKT150508R-GM	4

▲Stock available △Make-to-order

Spare parts

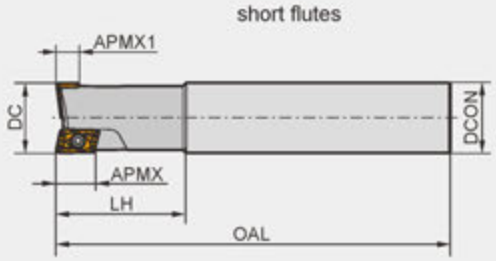
Diameter DC	Inserts	Screw	Wrench
Ø16	ADKT-GM	I60M2.2×5.5	WT07IP
Ø20		I60M2.5×6.5T	WT08IP
Ø25		I60M3×7	WT09IP
Ø32		I43M4×8	WT15S
Ø40		I60M3×7	WT09IP
Ø50		I43M4×8	WT15S

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°

EMP05 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)						Insert quantities			
			DC	DCON	LH	OAL	APMX	APMX1	End teeth	Quantity	Peripheral	Quantity
EMP05	-S016-G16-AD08-C	▲	16	16	33	120	8.5	4.5	ADKT080308L-GM	1	ADKT090308R-GM	1
	-S017-G16-AD08-C	▲	17									
	-S020-G20-AD10-C	▲	20	20	35	130	9.5	5.5	ADKT100308L-GM	1	ADKT100308R-GM	1
	-S021-G20-AD10-C	▲	21									
	-S025-G25-AD12-C	▲	25	25	45	140	12.5	7	ADKT12T308L-GM	1	ADKT12T308R-GM	1
	-S026-G25-AD12-C	▲	26									
	-S032-G32-AD15-C	▲	32	32	50	150	14.5	8.5	ADKT160508L-GM	1	ADKT150508R-GM	1
	-S040-G32-AD12-C	▲	40	32	55	160	12.5	7	ADKT12T308L-GM	2	ADKT12T308R-GM	1
	-S050-G40-AD15-C	▲	50	40	70	170	14.5	8.5	ADKT160508L-GM	2	ADKT150508R-GM	1

▲Stock available △Make-to-order

Spare parts

Diameter DC	Inserts	Screw	Wrench
			
Ø16	ADKT-GM	I60M2.2X5.5	WT07IP
Ø17			
Ø20		I60M2.5X6.5T	WT08IP
Ø21			
Ø25		I60M3X7	WT09IP
Ø26			
Ø32		I43M4X8	WT15S
Ø40		I60M3X7	WT09IP
Ø50		I43M4X8	WT15S

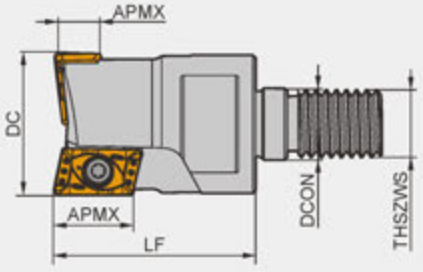
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°

QCH-*AD*M*Series

P M K



Specification of tools

Type		Stock	Basic dimensions(mm)						Insert quantities				Weight (kg)
			DC	THSZWS	DCON	LF	APMX	APMX1	End teeth	Quantity	Peripheral	Quantity	
QCH	-16-AD08-M08-C	▲	16	M8	8.5	28	8.5	4.5	ADKT080308L-GM	1	ADKT090308R-GM	1	0.027
	-17-AD08-M08-C	▲	17	M8	8.5	28	8.5	4.5	ADKT080308L-GM	1	ADKT090308R-GM	1	0.029
	-20-AD10-M10-C	▲	20	M10	10.5	30	9.5	5.5	ADKT100308L-GM	1	ADKT100308R-GM	1	0.053
	-21-AD10-M10-C	▲	21	M10	10.5	30	9.5	5.5	ADKT100308L-GM	1	ADKT100308R-GM	1	0.055
	-25-AD12-M12-C	▲	25	M12	12.5	35	12.5	7	ADKT12T308L-GM	1	ADKT12T308R-GM	1	0.087
	-26-AD12-M12-C	▲	26	M12	12.5	35	12.5	7	ADKT12T308L-GM	1	ADKT12T308R-GM	1	0.095
	-32-AD15-M16-C	▲	32	M16	17	43	14.5	8.5	ADKT160508L-GM	1	ADKT150508R-GM	1	0.19
	-33-AD15-M16-C	▲	33	M16	17	43	14.5	8.5	ADKT160508L-GM	1	ADKT150508R-GM	1	0.2
	-40-AD12-M16-C	▲	40	M16	17	45	12.5	7	ADKT12T308L-GM	2	ADKT12T308R-GM	1	0.25

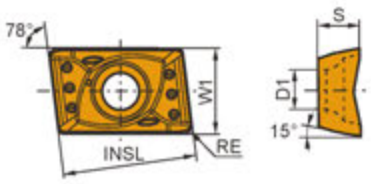
▲Stock available △Make-to-order

Spare parts

Diameter DC	Inserts	Screw	Wrench
			
Ø16-17	ADKT-GM	I60M2.2×5.5	WT07IP
Ø20-21		I60M2.5×6.5T	WT08IP
Ø25-26		I60M3×7	WT09IP
Ø32-33		I43M4×8	WT15S
Ø40		I60M3×7	WT09IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



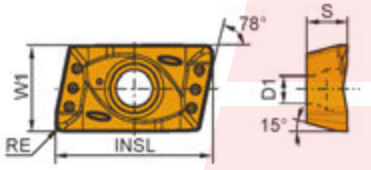
Good working condition Normal working condition Bad working condition

Workpiece material		CVD Coating					PVD Coating							Cermet		Cemented carbide	
		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ADKT080308L-GM	7.96	5.33	3	2.4	0.5									★							
	ADKT100308L-GM	10	6.44	3.2	2.8	0.5									★							
	ADKT12T308L-GM	12.44	8	3.9	3.5	0.5									★							
	ADKT160508L-GM	16	9.62	5	4.4	0.5									★							

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

Selection of inserts



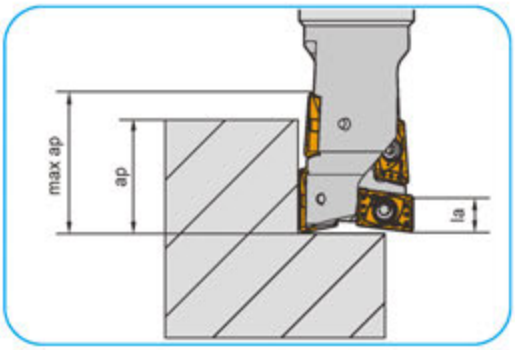
Good working condition Normal working condition Bad working condition

Workpiece material		CVD Coating					PVD Coating							Cermet		Cemented carbide	
		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ADKT090308R-GM	10	5	2.8	2.4	0.8									★							
	ADKT100308R-GM	11.65	6.04	3.5	2.8	0.8									★							
	ADKT12T308R-GM	15	8.16	3.9	3.54	0.8									★							
	ADKT150508R-GM	17.05	8.81	4.95	4.5	0.8									★							

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

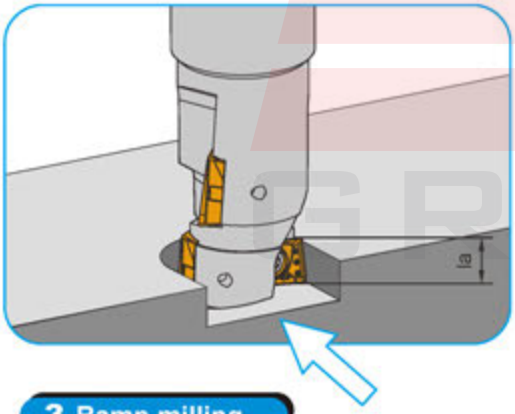
1 Square shoulder milling



- When the cutting depth is less than la, both the left and right inserts are involved in cutting
- When the cutting depth is larger than la, the right insert is involved in cutting for exceeding depth beyond la
- Generally, as the cutting depth increases, it is necessary to reduce the tool speed appropriately and feed rate
- The longer the overhang of the shank, the more likely it is to vibrate during machining. When vibration occurs, please reduce the cutting parameters appropriately until there is no visible vibration.

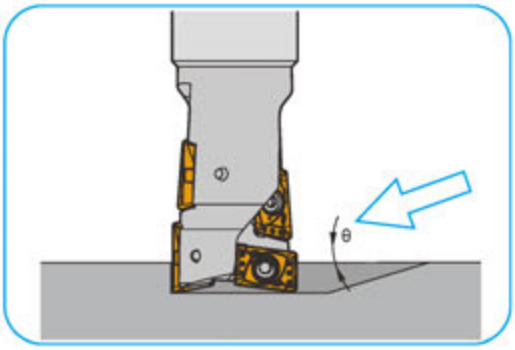
External diameter	L&R double-edge cutting zone la	Recommended cutting depth ap	Maximum cutting depth Max ap
Ø6, Ø17	~4.5	13~16	19
Ø20, Ø21	~5.5	15~18	23
Ø25, Ø26	~7.0	18~24	29
Ø32, Ø33	~8.5	21~28	34
Ø40	~7.0~	21~23	42
Ø50	~8.5~	21~28	50

2 Slot milling



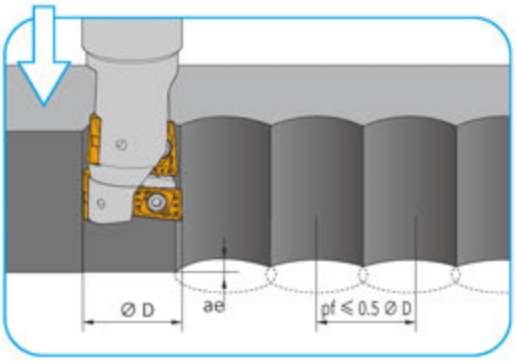
- It is recommended that the cutting depth for slot milling should not exceed la
- It is recommended that the feed for slot milling does not exceed 70% of that for shoulder milling with the same parameters.
- The longer the overhang of the shank, the more likely it is to vibrate during machining. When vibration occurs, please reduce the cutting parameters appropriately until there is no visible vibration

3 Ramp milling



- It is recommended that the ramp angle of normal P materials should not exceed 3° when conducting a ramp milling
- It is recommended that the feed for ramp milling does not exceed 70% of that for shoulder milling with the same parameters
- It is recommended that the ramp angle for P materials with a hardness of more than HRC45 should not exceed 1°
- The longer the overhang of the shank, the more likely it is to vibrate during machining. When vibration occurs, please reduce the cutting parameters appropriately until there is no visible vibration

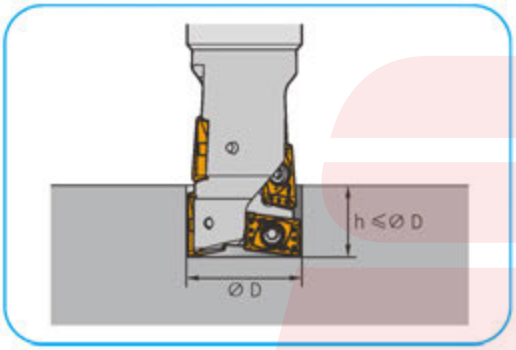
4 Plunging



- It is recommended that the feed of insert for plunging is 1.5-1.8 times that of drilling and milling
- The recommended radial feed ae refer to the following table when the stepover pf ≤ 0.5D

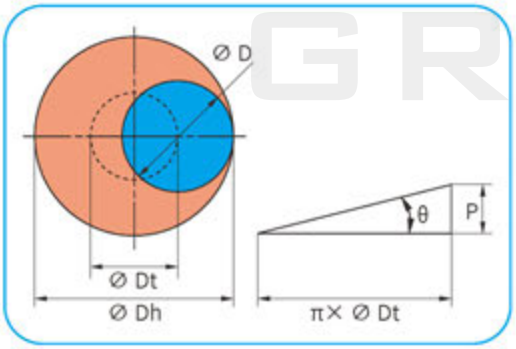
Diameter	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
Radial cutting depth ae	4.5	6	7.5	8.5	7.5	8.5

5 Drilling and milling



- The drilling depth h should be less than half of the tool diameter ØD. In addition, materials with a hardness over HRC40 should be helical bored
- For chip removal, step feed should be performed
- Blast equipment removes cuts during processing
- Take appropriate safety measures during machining as chips may fly off in unexpected directions

6 Helical interpolation



- Referring to the machining parameters, feed is set 70% value. The outer diameter of helical interpolation milling is 1.2-1.8 times the diameter of the milling tool. The size of the inclination angle refers to the angle range of ramp milling; use compressed air to remove the chips in the hole

Tool centre path: Ø Dt= Ø Dh- Ø Dc

Feed per helix: P=π× Ø Dt×tanθ

1 Drilling and milling

Recommended cutting parameters

The drilling depth h should be less than half of the tool diameter φD. Materials with a hardness over HRC40 should be helical bored

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V（m/min）	f（mm/z）
P	Low-carbon steel, Soft steel	≤180	YB9320	180(120-220)	0.2(0.08-0.25)
P	High-carbon steel, Alloy steel	180-280	YB9320	160(130-200)	0.15(0.08-0.2)
P	Alloy tool steel	280-350	YB9320	140(120-180)	0.12(0.05-0.2)
M	Stainless steel	≤270	YB9320	80(50-150)	0.08(0.03-0.15)
K	Cast iron	180-250	YB9320	150(100-220)	0.15(0.08-0.2)

2 Milling

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Square shoulder milling	
				V（m/min）	f（mm/z）
P	Low-carbon steel, Soft steel	≤180	YB9320	190(140-250)	0.08(0.04-0.15)
P	High-carbon steel, Alloy steel	180-280	YB9320	170(130-250)	0.08(0.04-0.15)
P	Alloy tool steel	280-350	YB9320	150(120-180)	0.08(0.04-0.15)
M	Stainless steel	≤270	YB9320	120(80-190)	0.08(0.04-0.15)
K	Cast iron	180-250	YB9320	120(80-210)	0.08(0.04-0.15)

- 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.

KAPR:90°

A New Generation of Tangential Milling Tool EMP09 Series

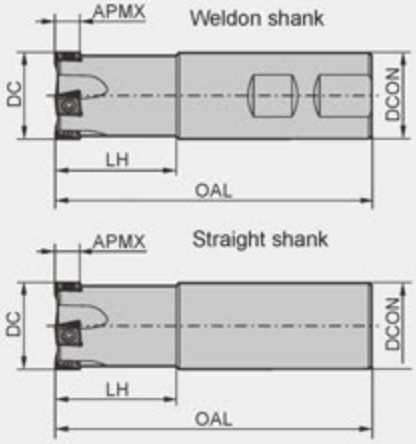
To meet the diverse processing needs and achieve efficient rough machining.

- 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.

Square shoulder milling tools

KAPR:90°

EMP09 P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH	APMX		
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
	-032-XP32-LN12-03C	▲	32	32	115	40	11.5	3	0.60
	-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-LN08-05C	▲	40	40	125	40	8.0	5	1.1
	-040-G40-LN08-06C	▲	40	40	125	40	8.0	6	1.1
	-032-G32-LN12-03C	▲	32	32	115	40	11.5	3	0.6
	-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 DC	Inserts	Screw	Wrench	
				
Ø20-Ø40	LN□T0804□□-GM/GL	I60M3×7	WT09IP	
Ø32-Ø40	LN□T1206□□-GM/GL	I60M4×12	WT15IP	

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

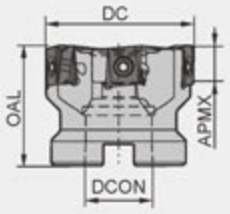
KAPR:90°


Face milling

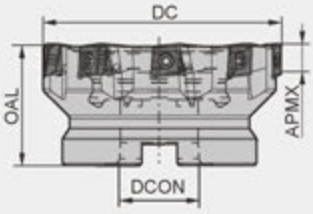

Step shoulder milling

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)
			DC	DCON	OAL	APMX			
EMP09	-040-A16-LN08-05C	▲	40	16	40	8.0	5	A	0.21
	-040-A16-LN08-06C	▲	40	16	40	8.0	6	A	0.21
	-050-A22-LN08-06C	▲	50	22	40	8.0	6	A	0.35
	-050-A22-LN08-07C	▲	50	22	40	8.0	7	A	0.35
	-063-A22-LN08-08C	▲	63	22	40	8.0	8	A	0.60
	-063-A22-LN08-10C	▲	63	22	40	8.0	10	A	0.60
	-080-A27-LN08-10C	▲	80	27	50	8.0	10	A	1.26
	-080-A27-LN08-12C	▲	80	27	50	8.0	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

Square shoulder milling tools

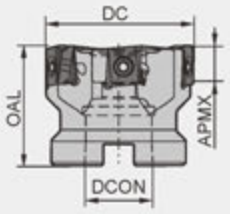
KAPR:90°


Face milling

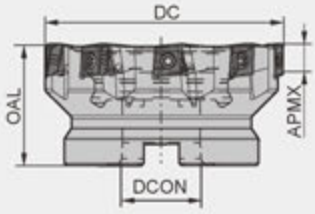

Step shoulder milling

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)
			DC	DCON	OAL	APMX			
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

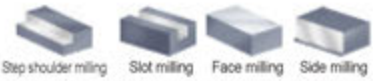
Spare parts

Diameter DC	Inserts	Screw	Wrench
Ø40~Ø63	LN□T0804□□-GM/GL	I60M3×7	WT09IP
Ø80			WT09IS
Ø40~Ø63	LN□T1206□□-GM/GL	I60M4×12	WT15IP
Ø80~Ø125			WT15IS
Ø50~Ø63	LN□T1607□□-GM/GL	I60M5×13	WT20IP
Ø80~Ø125			WT20IS
Ø160			WT20IT

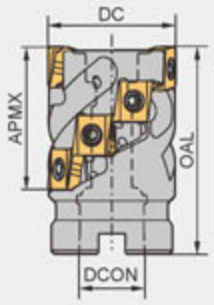
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°



EMP09 P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Number of inserts	Weight (kg)
			DC	DCON	OAL	APMX			
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

Spare parts

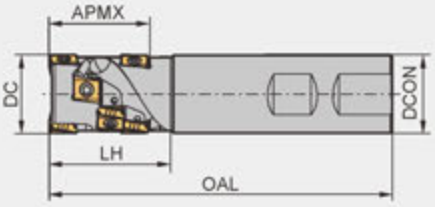
Diameter DC	Inserts	Screw	Wrench
			
Ø32×38-Ø50×45	LN□T0804□□-GM/GL	I60M3×7	WT09IP
Ø40×33-Ø63×53	LN□T1206□□-GM/GL	I60M4×12	WT15IP
Ø80×43-Ø100×63			WT15IS

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°

EMP09 P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Number of inserts	Weight (kg)
			DC	DCON	OAL	LH	APMX			
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

Spare parts

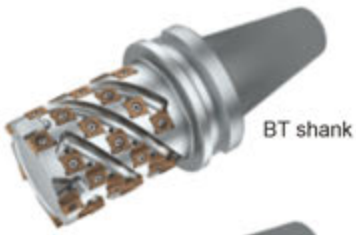
Diameter DC	Inserts	Screw	Wrench
			
Ø25×30-Ø40×45	LN□T0804□□-GM/GL	I60M3×7	WT09IP
Ø40×33-Ø50×53	LN□T1206□□-GM/GL	I60M4×12	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

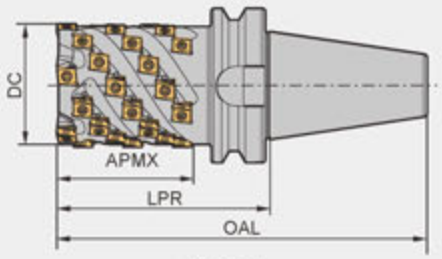
Square shoulder milling tools

KAPR:90°

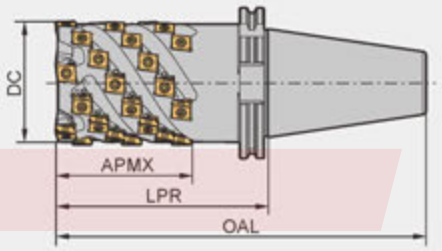
EMP09 P M K S



BT shank



JT shank

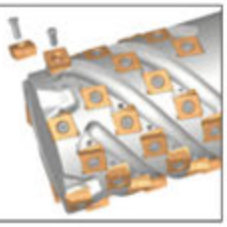


Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Shank type	Number of inserts	Weight (kg)
			DC	APMX	LPR	OAL				
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
	-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

Spare parts

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

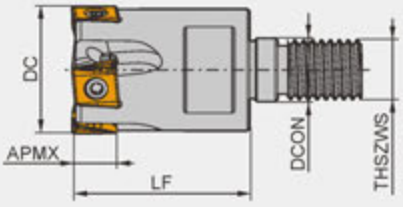
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°

QCH-*LN*M*Series

P M K S



Specification of tools

Type		Stock	Basic dimensions(mm)					Applicable inserts	Number of teeth Z	Weight (kg)
			DC	DCON	LF	APMX	THSZWS			
QCH	-20-LN08-M10-02	△	20	10.5	30	8.0	10	LN□T0804□□-GM/GL	2	0.062
	-20-LN08-M10-03	△	20	10.5	30	8.0	10		3	0.059
	-22-LN08-M10-03	△	22	10.5	35	8.0	10		3	0.075
	-25-LN08-M12-03	△	25	12.5	35	8.0	12		3	0.112
	-25-LN08-M12-04	△	25	12.5	35	8.0	12		4	0.116
	-32-LN08-M16-04	△	32	17	45	8.0	16		4	0.230
	-32-LN08-M16-05	△	32	17	45	8.0	16		5	0.228
	-40-LN08-M16-05	△	40	17	45	8.0	16		5	0.309
	-40-LN08-M16-06	△	40	17	45	8.0	16		6	0.316
	-32-LN12-M16-02	△	32	17	45	11.5	16	LN□T1206□□-GM/GL	2	0.230
	-32-LN12-M16-03	△	32	17	45	11.5	16		3	0.225
	-40-LN12-M16-03	△	40	17	45	11.5	16		3	0.290
	-40-LN12-M16-04	△	40	17	45	11.5	16		4	0.288

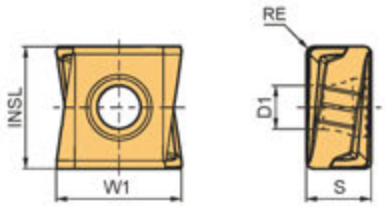
▲Stock available △Make-to-order

Spare parts

Diameter DC	Inserts	Insert screw	Wrench
			
Ø20-Ø40	LN□T0804□□-GM/GL	I60M3×7	WT09IP
Ø32-Ø40	LN□T1206□□-GM/GL	I60M4×12	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



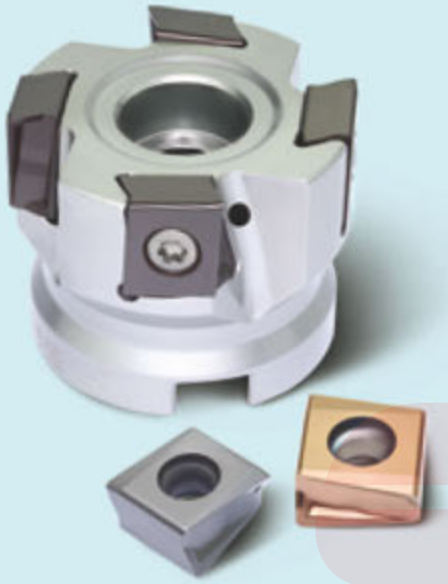
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNKT080404PNR-GL	8.75	8.5	4.45	3.4	0.4		★	●		●				★			●				
	LNKT120608PNR-GL	12.7	13	6.75	4.4	0.8		★	●		●				★			●				
	LNKT160708PNR-GL	16.05	15	7.35	5.5	0.8		★	●		●				★			●				
	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		★	●		●				★							
	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

Recommended cutting parameters

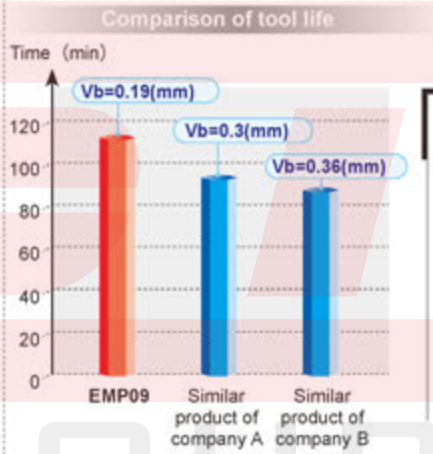
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Vc(m/min)	fz(mm/z)
P	Low-carbon steel, Soft steel	≤180	YBM253	260 (160-300)	0.3 (0.1-0.35)
			YB9320	260 (160-300)	0.3 (0.1-0.35)
	High-carbon steel, Alloy steel	180-280	YBM253	240 (160-240)	0.25 (0.1-0.35)
			YB9320	240 (160-240)	0.25 (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



●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: Vc=260m/min, Ap=8mm, Ae=2mm, fz=0.2mm/z



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: Vc=240m/min, Ap=8mm
Ae=2mm, fz=0.2mm/z

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.

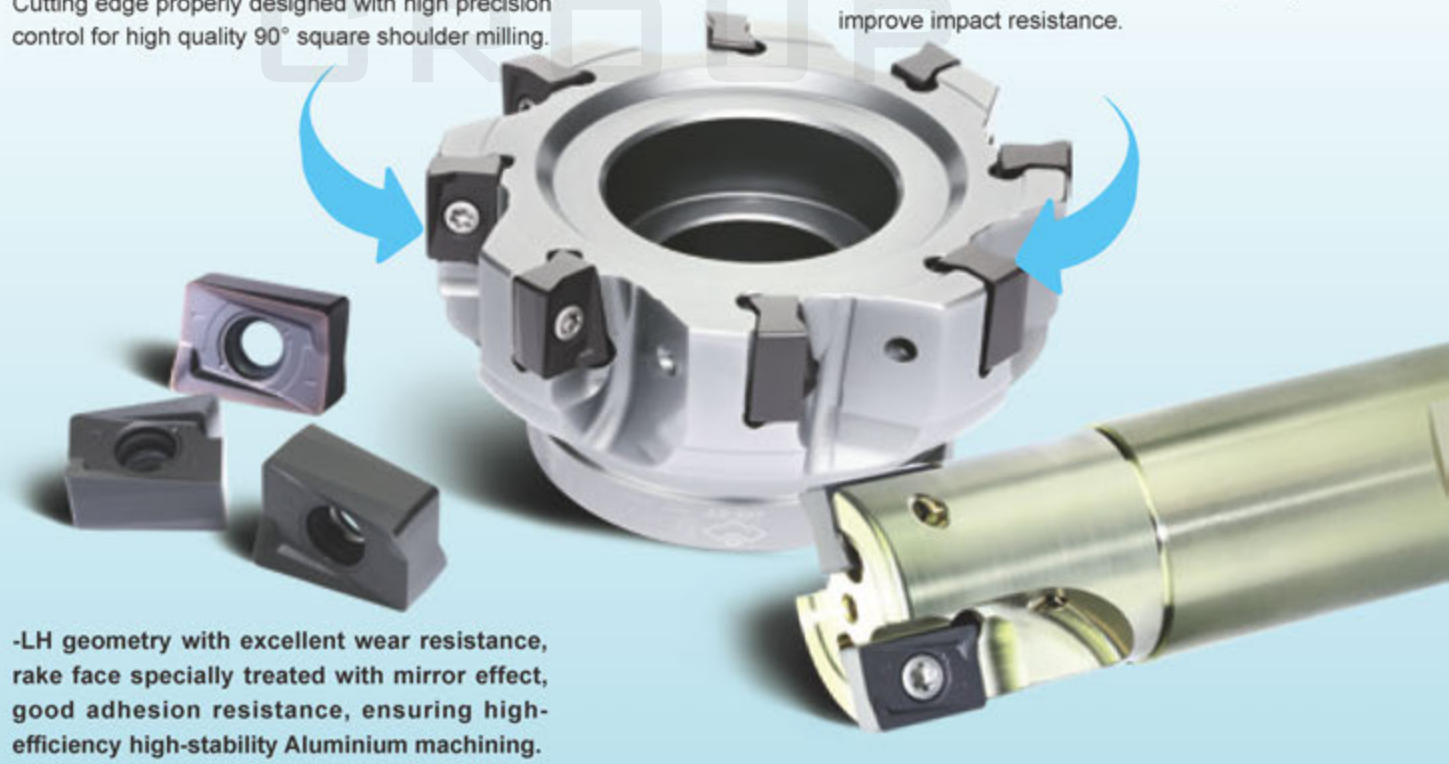
Achieving High Quality 90° Square Shoulder Milling,

EMP13 Square Shoulder Milling Tool Series

KAPR:90°

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

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

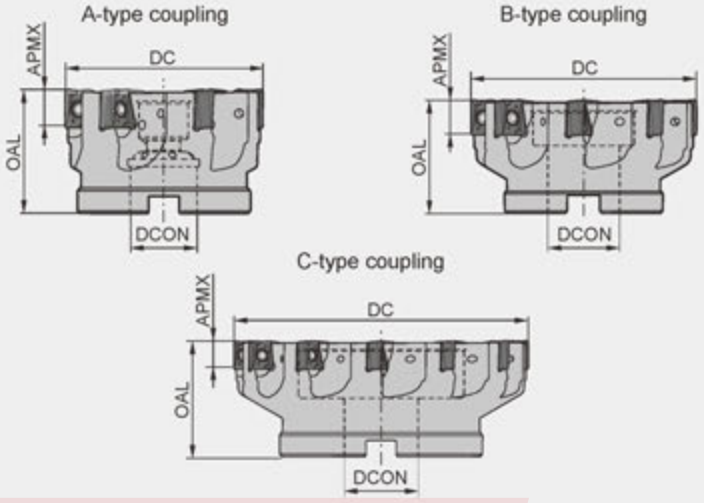


-LH geometry with excellent wear resistance, rake face specially treated with mirror effect, good adhesion resistance, ensuring high-efficiency high-stability Aluminium machining.

Square shoulder milling tools

KAPR:90°

EMP13 P M K S N



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCON	OAL	APMX			
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 DC	Inserts	Insert screw	Wrench
			
Ø50-Ø160	AN□X11□□□□-GM/LH	I60M3×9	WT09IS
Ø50-Ø160	AN□X15□□□□-GM/LH	I60M4×12	WT15IS

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

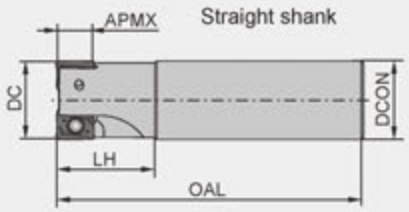
Square shoulder milling tools

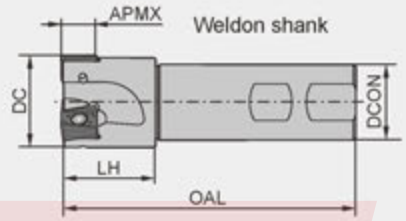
KAPR:90°

EMP13 P M K S N


Straight shank


Weldon shank





Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH	APMX		
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 DC	Inserts	Insert screw	Wrench
			
Ø25-Ø40	AN□X11□□□□-GM/LH	I60M3×9	WT09IP
Ø32-Ø40	AN□X15□□□□-GM/LH	I60M4×12	WT15IP

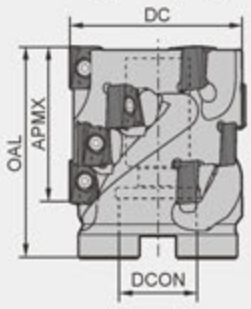
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°

EMP13 P M K S N

A-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Number of inserts	Type of coupling	Weight (kg)
			DC	DCON	OAL	APMX				
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

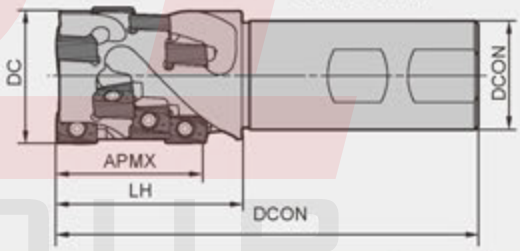
▲Stock available △Make-to-order

Square shoulder milling tools

KAPR:90°

EMP13 P M K S N

Weldon shank



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Number of inserts	Weight (kg)
			DC	DCON	OAL	LH	APMX			
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

Spare parts

Diameter DC	Inserts	Insert screw	Wrench	
Ø50-Ø63	AN□X11□□□□-GM/LH	I60M3×9	WT09IP	
Ø63	AN□X15□□□□-GM/LH	I60M4×12	WT15IP	
Ø80			WT15IS	
Diameter DC	Inserts	Insert screw	Wrench	
Ø32-Ø40	AN□X11□□□□-GM/LH	I60M3×9	WT09IP	
Ø40-Ø50	AN□X15□□□□-GM/LH	I60M4×12	WT15IP	

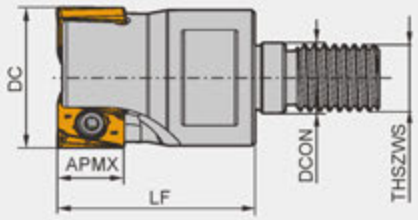
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Square shoulder milling tools

KAPR:90°

QCH-*AN*M*Series

P M K S N



Specification of tools

Type		Stock	Basic dimensions(mm)					Applicable inserts	Number of teeth Z	Weight (kg)
			DC	DCON	LF	APMX	THSZWS			
QCH	-25-AN11-M12-02	△	25	12.5	35	11.2	12	AN□X1105□□-□□	2	0.105
	-32-AN11-M16-03	△	32	17	45	11.2	16		3	0.230
	-40-AN11-M16-04	△	40	17	45	11.2	16		4	0.300
	-32-AN15-M16-02	△	32	17	45	14.5	16	AN□X1506□□-□□	2	0.205
	-40-AN15-M16-03	△	40	17	45	14.5	16		3	0.255

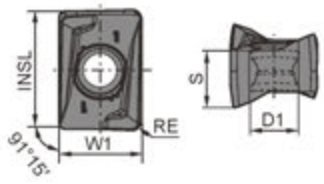
▲Stock available △Make-to-order

Spare parts

Diameter DC	Inserts	Insert screw	Wrench
			
Ø25-Ø40	AN□X11	I60M3×9	WT09IP
Ø32-Ø40	AN□X15	I60M4×12	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ANGX110504PNR-GM	11.85	8.4	5.7	3.5	0.4		★	★					★	★							
	ANGX110508PNR-GM	11.85	8.4	5.7	3.5	0.8		★	★					★	★			●				
	ANGX110520PNR-GM	11.85	8.4	5.7	3.5	2.0		★	★		★			★								
	ANGX150608PNR-GM	15.43	11.0	7.3	4.4	0.8		★	★					★	★			●				
	ANGX150616PNR-GM	15.43	11.0	7.3	4.4	1.6		★	★					★	★							
	ANGX150620PNR-GM	15.43	11.0	7.3	4.4	2.0			★		★			★								
	ANMX110508PNR-GM	11.85	8.4	5.7	3.5	0.8		★	★						★			★				
	ANMX150608PNR-GM	15.43	11.0	7.3	4.4	0.8		★	★					★	★							
	ANGX110502PNR-LH	11.85	8.4	5.7	3.5	0.2															★	
	ANGX110504PNR-LH	11.85	8.4	5.7	3.5	0.4															★	
	ANGX150608PNR-LH	15.43	11.0	7.3	4.4	0.8															★	

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

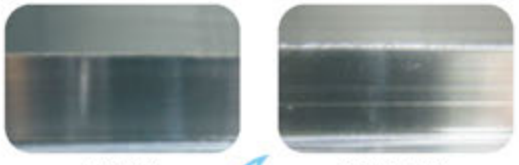
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				Vc(m/min)	fz(mm/z)	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)
P	Alloy steel	180-350	YBM253 YBG205 YB9320	240(180-320)	0.2(0.1-0.4)	
M	Stainless stee	≤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)	

Case for EMP13

Workpiece material: NAK80(HRC36)
Tool: EMP13-032-G32-AN15-02C
Insert: ANGX150608PNR-GM/YBG205
Cutting data: fz=0.1mm/z,
Vc=220m/min,
ae=10mm,
ap=14.5mm
Cutting condition: Dry cutting

●Surface quality comparison

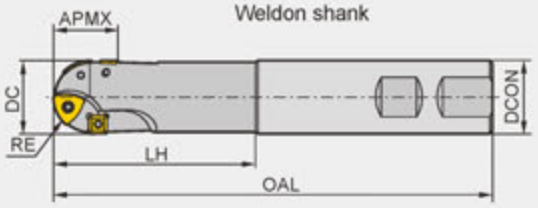


EMP13 Company A

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

Profile milling tools

BMR01 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)						Applicable inserts				Weight (kg)
			RE	DC	APMX	DCON	OAL	LH	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

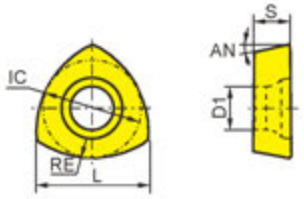
▲Stock available △Make-to-order

Spare parts

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

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



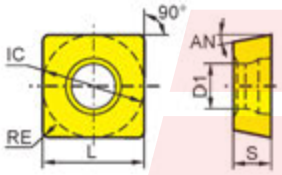
Good working condition Normal working condition Bad working condition

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	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZDET08T2CYR10	10	8.4	6.75	2.78	2.8	14°										○						
	ZDET1103CYR12.5	12.5	10.6	8.5	3.18	2.8	14°										○						
	ZDET13T3CYR16	16	13.2	10.5	3.97	4.4	14°										○						
	ZPNT2204CY(R20)	20	16.1	12.7	4.76	5.56	11°										○						
	ZPNT2204CY(R25)	25	16.9	12.7	4.76	5.56	11°										○						
	ZPNT2204CY(R31)	31.5	17.6	12.7	4.76	5.56	11°										○						

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



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	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPMT060304	0.4	6.35	6.35	3.18	2.8	11°										○						
	SDMT090308	0.8	9.525	9.525	3.18	4.4	15°										○						
	SPMT120408	0.8	12.7	12.70	4.76	5.5	11°										★						

★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)
P	Low-carbon steel, Soft steel	≤180	YBM253	180(120-220)	0.25(0.1-0.4)
			YBG302	160(120-220)	0.25(0.1-0.4)
	High-carbon steel, Alloy steel	180-280	YBM253	150(100-200)	0.2(0.1-0.4)
			YBG302	120(100-200)	0.2(0.1-0.4)
	Alloy tool steel	280-350	YBM253	100(80-150)	0.2(0.1-0.3)
			YBG302	100(80-150)	0.2(0.1-0.3)
M	Stainless steel	≤270	YBM253	100(80-150)	0.2(0.1-0.3)
			YBG302	100(80-150)	0.2(0.1-0.3)
K	Cast iron	180-250	YBG302	150(100-180)	0.3(0.2-0.5)

Profile milling tools

BMR02 P M K

Specification of tools

Type		Stock	Basic dimensions(mm)					Weight (kg)
			RE	DC	DCON	OAL	LH	
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

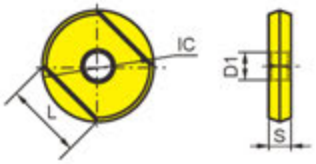
▲Stock available △Make-to-order

Spare parts

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

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		IC	L	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBH053	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ROHX1203	12	8.5	3	4											○						
	ROHX1604	16	11.3	4	5											○						
	ROHX2005	20	14.1	5	5											○						

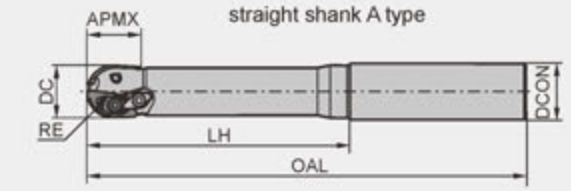
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

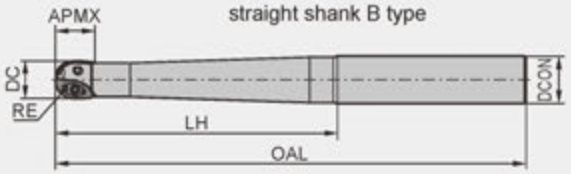
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	Diameter		
					Ø12	Ø16	Ø20
P	Carbon steel	HB≤180	YBH053	V(m/min)	100~200	100~200	100~200
				f_z(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
				a_{pmax}(mm)	0.8	1	1.25
				a_{emax}(mm)	0.8	1	1.25
	Alloy steel	HB180~280		V(m/min)	80~180	80~180	80~180
				f_z(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
				a_{pmax}(mm)	0.8	1	1.25
				a_{emax}(mm)	0.8	1	1.25
	Hardened steel	HRC55~65		V(m/min)	60~100	60~100	60~100
				f_z(mm/z)	0.15~0.25	0.2~0.3	0.2~0.3
				a_{pmax}(mm)	0.4	0.5	0.6
				a_{emax}(mm)	0.4	0.5	0.6
M	Stainless steel	HB≤270		V(m/min)	70~150	70~150	70~150
				f_z(mm/z)	0.1~0.2	0.1~0.25	0.1~0.25
				a_{pmax}(mm)	0.6	0.8	1
				a_{emax}(mm)	0.6	0.8	1
K	Cast iron	HB180-250		V(m/min)	160~300	160~300	160~300
				f_z(mm/z)	0.2~0.3	0.25~0.35	0.25~0.35
				a_{pmax}(mm)	1	1.5	1.8
				a_{emax}(mm)	1	1.5	1.8

Profile milling tools

BMR03 P M K





Specification of tools

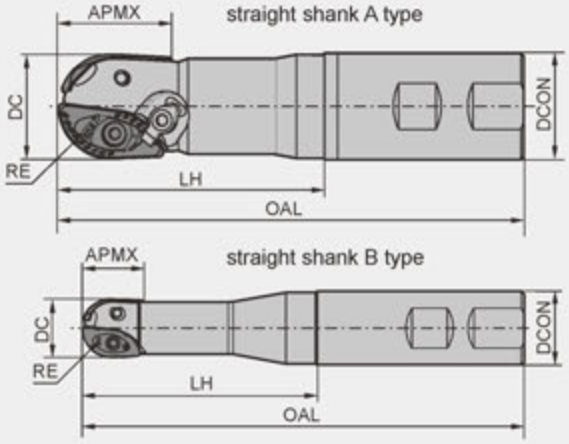
Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Type	Clamp
			RE	DC	DCON	OAL	LH	APMX				
BMR03	-016-G20-S	▲	8	16	20	150	70	16	2	0.3	B	--
	-016-G20-M	▲	8	16	20	180	80	16	2	0.4	B	
	-020-G25-S	▲	10	20	25	180	80	20	2	0.5	B	
	-020-G25-M	▲	10	20	25	200	100	20	2	0.6	B	
	-020-G25-L	▲	10	20	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	
	-040-G40-S	△	20	40	40	200	120	40	2	1.6	A	CBH5R1
	-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

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Profile milling tools

BMR03 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Type	Clamp
			RE	DC	DCON	OAL	LH	APMX				
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	

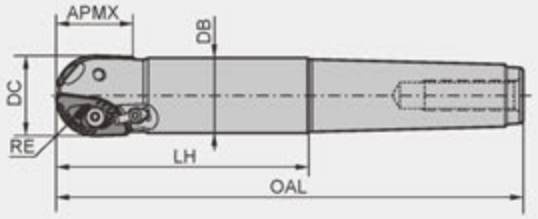
▲Stock available △Make-to-order

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

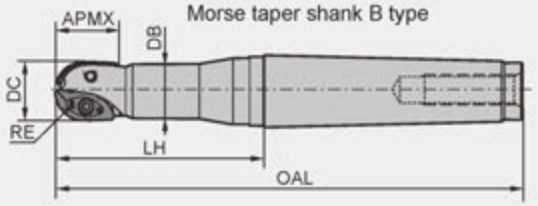
Profile milling tools

BMR03 P M K

Morse taper shank A type



Morse taper shank B type



Specification of tools

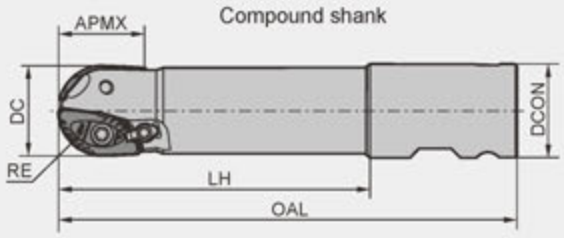
Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Type	Clamp
			RE	DC	DB	OAL	LH	APMX				
BMR03	-020-MT3-M	▲	10	20	18.7	156	70	20	2	0.4	B	--
	-020-MT3-L	△	10	20	18.7	186	100	20	2	0.4	B	
	-025-MT3-M	▲	12.5	25	23.5	156	70	25	2	0.4	B	
	-025-MT3-L	△	12.5	25	23.5	186	100	25	2	0.4	B	
	-030-MT4-M	▲	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

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Profile milling tools

BMR03 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)	Clamp
			RE	DC	DCON	OAL	LH	APMX			
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

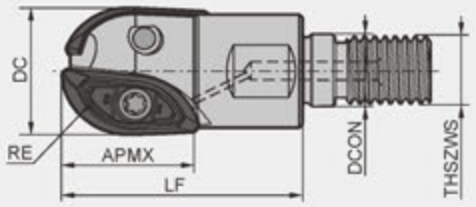
Diameter DC	Clamp	Screw	Wrench	
Ø16	--	I60M2.5×6.5	--	WT07P
Ø20	--	I60M3.5×08TT		WT10IP
Ø25	--	I60M4×10		WT15S
Ø30	WD-208	I60M5×13	WT20IT	--
Ø32	WD-208	I60M5×13		
Ø40	CBH5R1	I43M6×16	WT25IT	
Ø50	CBH5R1	I43M8×21 I43M6×16	WT25IT WT30IT	

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Profile milling tools

QCH-*XPHT*M*Series

P M K



Specification of tools

Type		Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Weight (kg)
			DC	RE	DCON	LF	APMX	THSZWS			
QCH	-16-XPHT16-M10	▲	16	8	10.5	28	16	10	XPHT16R0803-GM	2	0.036
	-20-XPHT20-M12	▲	20	10	12.5	30	20	12	XPHT20R10T3-GM	2	0.051
	-25-XPHT25-M12	▲	25	12.5	12.5	35	25	12	XPHT25R1204-GM	2	0.071
	-30-XPHT30-M16	▲	30	15	17	45	30	16	XPHT30R1506-GM	2	0.140
	-32-XPHT32-M16	▲	32	16	17	45	32	16	XPHT32R1606-GM	2	0.162

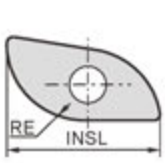
▲Stock available △Make-to-order

Spare parts

Diameter DC	Screw	Wrench		
				
Ø16	I60M2.5×6.5	WT07IP	--	--
Ø20	I60M3.5×08TT	WT10IP	--	--
Ø25	I60M4×10	WT15IP	--	--
Ø30	I60M5×13.2	--	--	WT20IT
Ø32	I60M5×13.2	--		

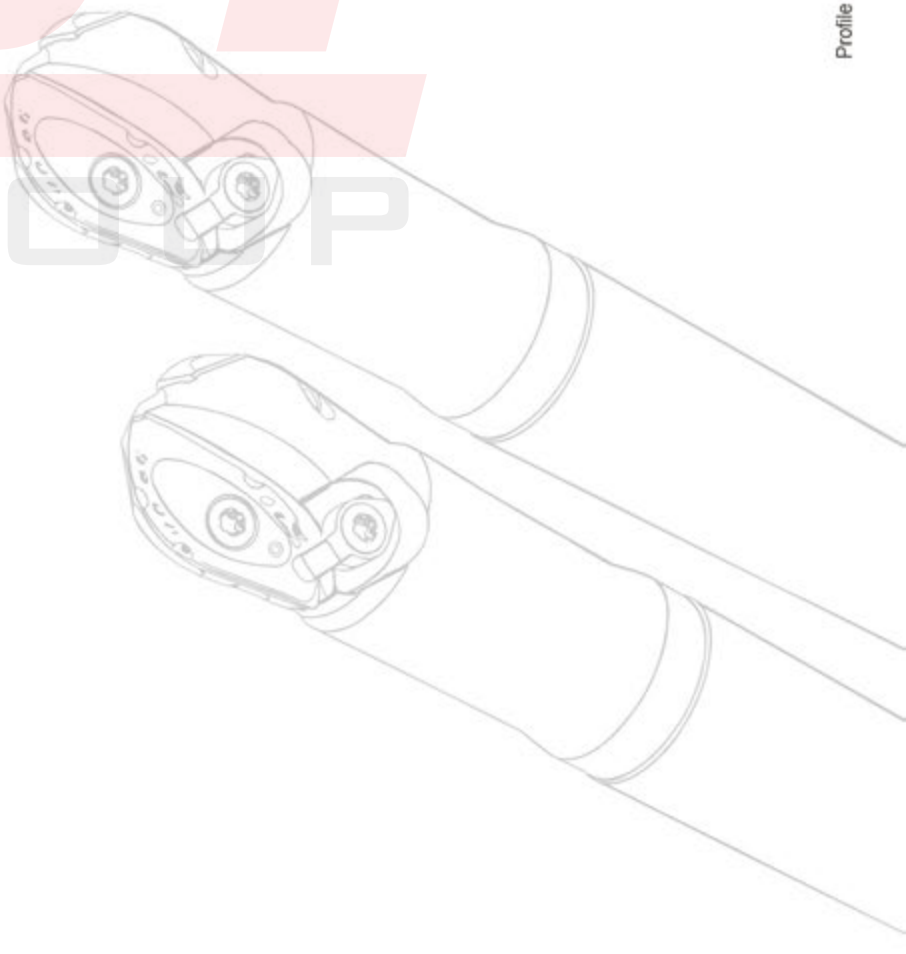
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

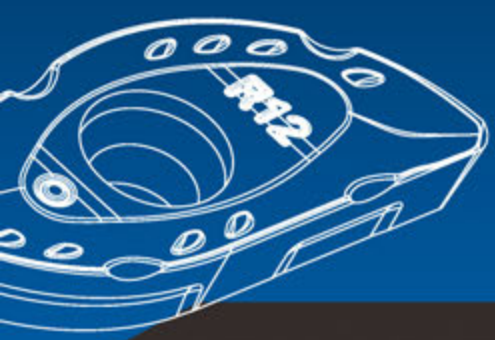
Selection of inserts



Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	D1	S	AN	INSL	Applicable tools	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	XPHT16R0803-GM	8	3.1	3.18	9°	16	ø16										★						
	XPHT20R10T3-GM	10	4.0	3.97	9°	20	ø20										★						
	XPHT25R1204-GM	12.5	4.7	4.76	9°	25	ø25										★						
	XPHT30R1506-GM	15	5.8	6.35	11°	30	ø30										★						
	XPHT32R1606-GM	16	5.8	6.35	9°	32	ø32										★						
	XPHT40R2007-GM	20	6.7	7.94	9°	40	ø40										★						
	XPHT50R2507-GM	25	9.2	7.94	9°	50	ø50										★						

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



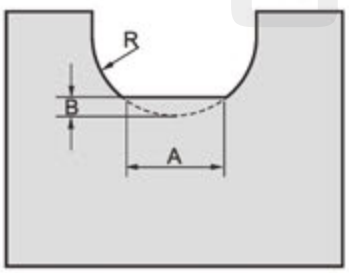


BMR03

Ball Nose End Milling Tool Series

- 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.

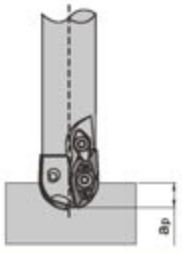
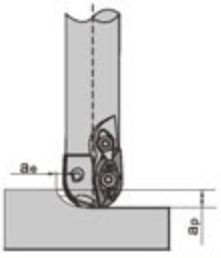
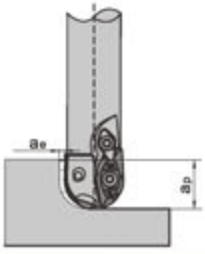
Slot shape after machining



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.

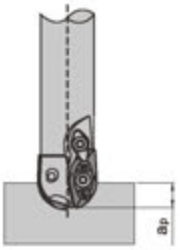
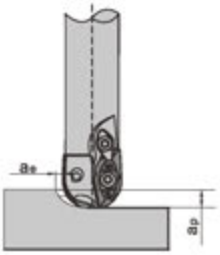
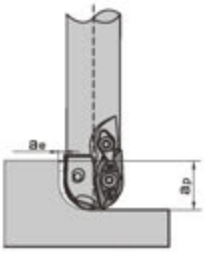
Recommended cutting parameters Diameter Ø16

Operations						
Workpiece material	Cutting parameters	Slot milling	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	V(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)	4	4	8	16	
	a_e(mm)	--	3	4	1.5	
Alloy steel Hardness 150~280HB	V(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)	4	4	8	16	
	a_e(mm)	--	3	4	1.5	
Die steel Hardness 150~255HB	V(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)	4	4	8	16	
	a_e(mm)	--	3	4	1.5	
Hardened steel Hardness 40~50HRC	V(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)	4	4	8	--	
	a_e(mm)	--	2	3	--	
Gray cast iron Hardness 160~260HB	V(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)	4	4	8	16	
	a_e(mm)	--	3	4	1.5	
Nodular cast iron Hardness 170~300HB	V(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)	4	4	8	16	
	a_e(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.

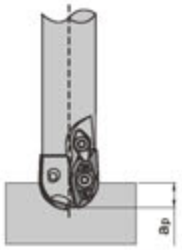
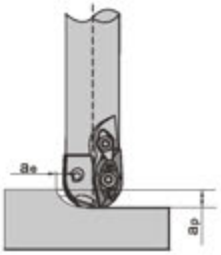
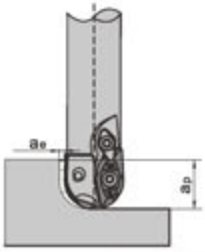
Recommended cutting parameters Diameter Ø20

Operations						
Workpiece material	Cutting parameters	Slot milling	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	V(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)	5	5	10	20	
	a_e(mm)	--	4	5	2	
Alloy steel Hardness 150~280HB	V(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)	5	5	10	20	
	a_e(mm)	--	4	5	2	
Die steel Hardness 150~255HB	V(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)	5	5	10	20	
	a_e(mm)	--	4	5	2	
Hardened steel Hardness 40~50HRC	V(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)	5	5	10	--	
	a_e(mm)	--	4	5	--	
Gray cast iron Hardness 160~260HB	V(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)	5	5	10	20	
	a_e(mm)	--	4	5	2	
Nodular cast iron Hardness 170~300HB	V(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)	5	5	10	20	
	a_e(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.

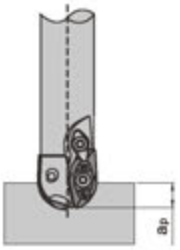
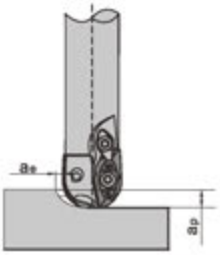
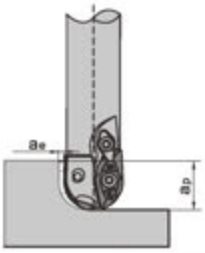
Recommended cutting parameters Diameter Ø25

Operations						
Workpiece material	Cutting parameters	Slot milling	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	V(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	V(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	V(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	V(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	V(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	V(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.

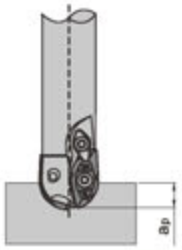
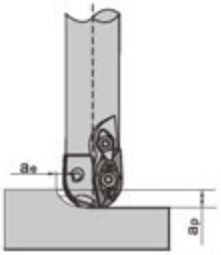
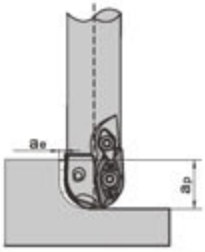
Recommended cutting parameters Diameter Ø30, Ø32

Operations						
Workpiece material	Cutting parameters	Slot milling	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	V(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	V(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	V(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	V(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	V(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	V(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.

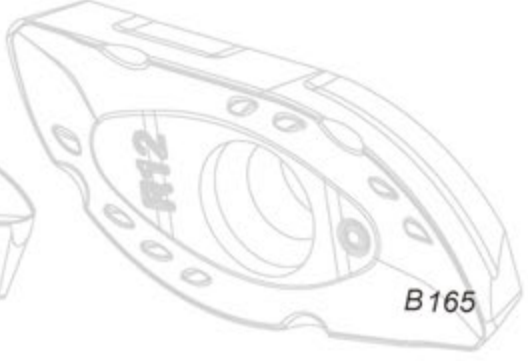
2. Wind cooling to be preferred.

Recommended cutting parameters Diameter Ø40

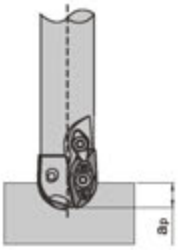
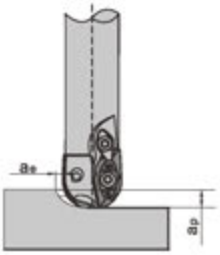
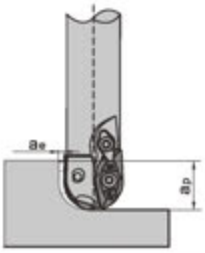
Operations						
Workpiece material	Cutting parameters	Slot milling	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	V(m/min)	150~220	150~220	150~220	150~220	YBG302
	Fz(mm/z)	0.1~0.4	0.1~0.4	0.1~0.4	0.1~0.4	
	a_p(mm)	12	10	20	35	
	a_e(mm)	--	8	12	8	
Alloy steel Hardness 150~280HB	V(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	V(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	V(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	V(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	V(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	

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	Slot milling	Side milling (slight)		Side milling (deep)	Insert grade
Medium carbon steel Hardness 150~250HB	V(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	V(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	V(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	V(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	V(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	V(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.

Profile milling tools

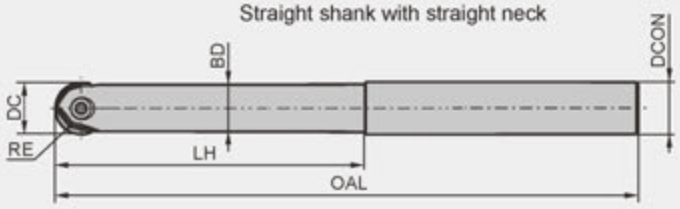

Side milling(R)

Slot milling

Profile milling

BMR04 P M K

Straight shank with straight neck



Specification of tools

Type		Stock	Basic dimensions(mm)						Weight (kg)
			RE	DC	DCON	BD	LH	OAL	
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

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Profile milling tools

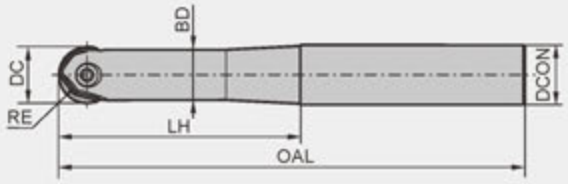

Side milling(R)

Slot milling

Profile milling

BMR04 P M K

Straight shank with taper neck



Specification of tools

Type		Stock	Basic dimensions(mm)						Weight (kg)
			RE	DC	DCON	BD	LH	OAL	
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

Spare parts

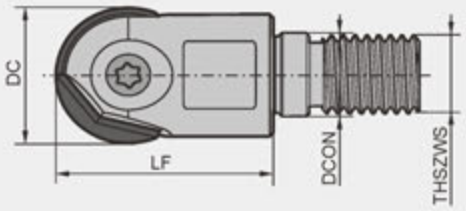
Diameter	Screw	Wrench	
			
Ø12	I70M4×10TT	WT15IP	--
Ø16	I70M5×12TT	WT20IP	--
Ø20	I70M5×16TT	WT20IP	--
Ø25	I70M6×20TT	WT20IP	--
Ø30	I70M8×25TT	--	WT30IT
Ø32	I70M8×25TT	--	WT30IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Profile milling tools

QCH-*ZOHX*M*Series

P M K S N



Specification of tools

Type		Stock	Basic dimensions(mm)				Applicable inserts	Weight (kg)
			DC	DCON	LF	THSZWS		
QCH	-16-ZOHX16-M8	▲	16	8.5	28	8	ZOHX1604-□□	0.029
	-20-ZOHX20-M10	▲	20	10.5	30	10	ZOHX2005-□□	0.048
	-25-ZOHX25-M12	▲	25	12.5	35	12	ZOHX2506-□□	0.087
	-30-ZOHX30-M16	▲	30	17	45	16	ZOHX3007-□□	0.170
	-32-ZOHX32-M16	▲	32	17	45	16	ZOHX3207-□□	0.180

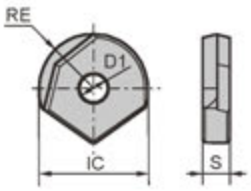
▲Stock available △Make-to-order

Spare parts

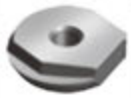
Diameter DC	Screw	Wrench	
Ø16	I70M5×12TT	WT20IP	--
Ø20	I70M5×16TT	WT20IP	--
Ø25	I70M6×20TT	WT20IP	--
Ø30	I70M8×25TT	--	WT30IT
Ø32	I70M8×25TT	--	WT30IT

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Good working condition Normal working condition Bad working condition

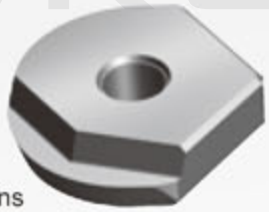
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating								Cermet		Cemented carbide	
		RE	IC	S	D1	Applicable tools ØD	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBH053	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZOHX1203-GF	6	12	3	4	Ø12											★						
	ZOHX1604-GF	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											★						
	ZOHX1203-HM	6	12	3	4	Ø12											★						
	ZOHX1604-HM	8	16	4	5	Ø16											★						
	ZOHX2005-HM	10	20	5	5	Ø20											★						
	ZOHX2506-HM	12.5	25	6	6	Ø25											★						
	ZOHX3007-HM	15	30	7	8	Ø30											★						
	ZOHX3207-HM	16	32	7	8	Ø32											★						

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

BMR04

Ball Nose End Finishing Milling Tool Series

-GM



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

-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.

-HM

- The combination of variable rake angle and streamlined cutting edge takes full consideration of the different cutting edges
- The cutting conditions at the position take into account cutting sharpness and edge strength, Improved processing stability

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.

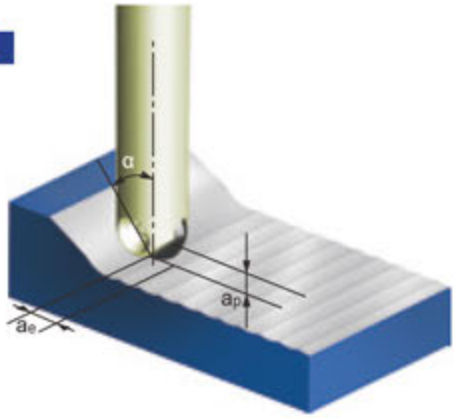
Calculation of cutting speed for BMR02/04 series ball nose end mills

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

$$N = \frac{1000Vc}{\pi Dc}(r/min)$$

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

N：rotating speed
Vc：actual cutting speed
Dc：effective cutting diameter
D：tool nominal diameter
a_p：axial cutting depth



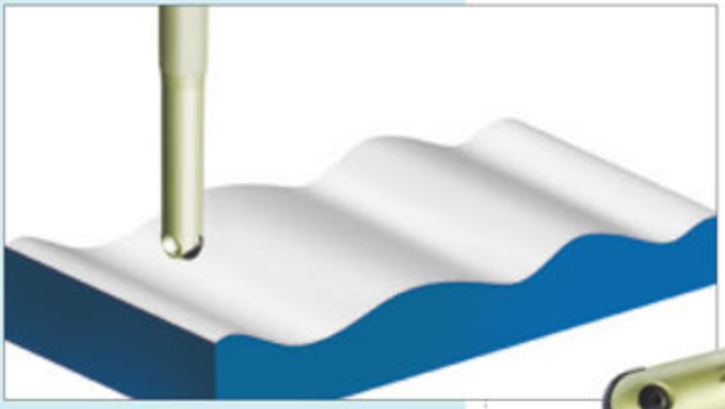
2.When there is an inclined angle between the tool axial line and the surface being machined, the recommended cutting speed should be multiplied by a factor in the table below to obtain the cutting speed used for programming.

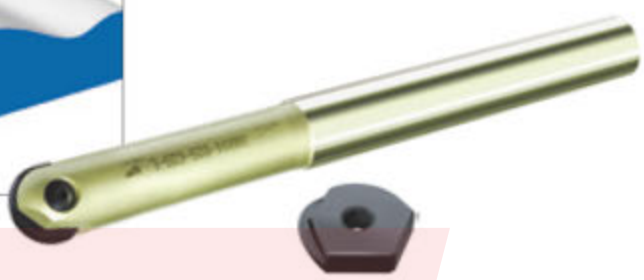
Diameter(mm)		Ø12		Ø16		Ø20		Ø25		Ø30		Ø32	
Cutting depth a_p(mm)		0.2	0.5	0.2	0.5	0.5	1	0.5	1	0.5	1.5	0.5	1.5
Inclined angle α	15°	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.01	1.00	1.00	1.00	1.00
	30°	1.04	1.01	1.05	1.01	1.02	1.04	1.03	1.04	1.04	1.01	1.04	1.00
	45°	1.16	1.07	1.18	1.10	1.12	1.06	1.14	1.08	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	YBH053	V(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
				a_{pmax}(mm)	0.8	1	1.25	1.5	2	2
				a_{emax}(mm)	0.8	1	1.25	1.5	2	2
	Alloy stee	HB180~280		V(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
				a_{pmax}(mm)	0.8	1	1.25	1.5	2	2
				a_{emax}(mm)	0.8	1	1.25	1.5	2	2
	Hardened steel	HRC55~65		V(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
				a_{pmax}(mm)	0.4	0.5	0.6	0.8	1	1
				a_{emax}(mm)	0.4	0.5	0.6	0.8	1	1
M	Stainless steel	HB≤270		V(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
				a_{pmax}(mm)	0.6	0.8	1	1.25	1.5	1.5
				a_{emax}(mm)	0.6	0.8	1	1.25	1.5	1.5
K	Cast iron	HB180-250		V(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
				a_{pmax}(mm)	1	1.5	1.8	2	2.5	2.5
				a_{emax}(mm)	1	1.5	1.8	2	2.5	2.5

Case for BMR04





Workpiece material: 42CrMo (HRC35)
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters:
Vc=150m/min
a_p=0.1mm
fz=0.2mm/Z

Tool type: BMR04-020-G25-M
Insert type/grade: ZOHX2005-GM/YBG252

●Abrasion comparison of inserts after milling curved face

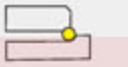
	ZCC·CT	Other company product
After 60 minutes of cutting	 Abrasion on the clearance face 0.08	 Abrasion on the clearance face 0.10
After 120 minutes of cutting	 Abrasion on the clearance face 0.12	 Abrasion on the clearance face 0.16

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

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		

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)

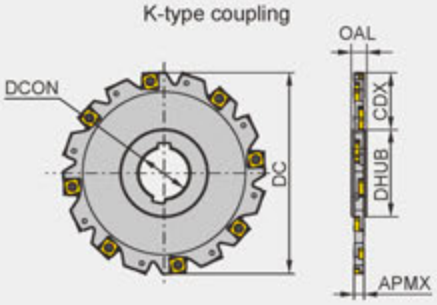
Number of teeth

Side and face milling tools

Slot milling

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)
			DC	DCON	DHUB	OAL	APMX	CDX				
SMP01 Mounting by keyway	-100×4-K27-SN12-10	△	100	27	45	12	4	25		10	K	0.2
	-125×4-K40-SN12-12	△	125	40	56	12	4	32	XSEQ1202	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		10	K	0.2
	-125×5-K40-SN12-12	△	125	40	56	12	5	32	XSEQ1203	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		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	XSEQ12T3	16	K	0.7
	-200×6-K50-SN12-18	△	200	50	71	12	6	62		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		12	K	0.4
	-160×7-K40-SN12-16	△	160	40	67	12	7	44	XSEQ1204	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		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

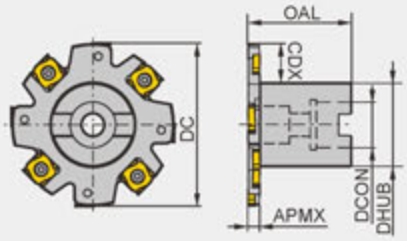
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Side and face milling tools

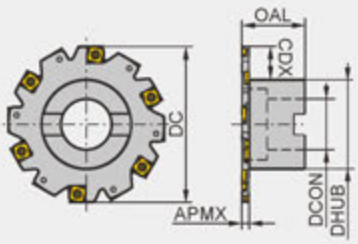
Slot milling

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	DC	DCON	DHUB	OAL	APMX	CDX				
SMP01 Arbor mounting	**-063×4-A22-SN12-06**	△	△	63	22	32	40	4	14		6	A	0.2
	-080×4-A22-SN12-08	△	△	80	22	40	40	4	18	XSEQ1202	8	A	0.4
	-100×4-A27-SN12-10	△	△	100	27	48	50	4	23		10	A	0.6
	-063×5-A22-SN12-06	△	△	63	22	32	40	5	14		6	A	0.2
	-080×5-A22-SN12-08	△	△	80	22	40	40	5	18	XSEQ1203	8	A	0.4
	-100×5-A27-SN12-10	△	△	100	27	48	50	5	23		10	A	0.7
	-063×6-A22-SN12-06	△	△	63	22	32	40	6	14		6	A	0.2
	-080×6-A22-SN12-08	△	△	80	22	40	40	6	18		8	A	0.5
	-100×6-A27-SN12-10	△	△	100	27	48	50	6	23	XSEQ12T3	10	A	0.7
	-125×6-B32-SN12-12	△	△	125	32	70	50	6	30		12	B	1.0
	-160×6-B40-SN12-16	△	△	160	40	70	50	6	41		16	B	1.3
	-063×7-A22-SN12-06	△	△	63	22	32	40	7	14		6	A	0.2
	-080×7-A22-SN12-08	△	△	80	22	40	40	7	18		8	A	0.5
	-100×7-A27-SN12-10	△	△	100	27	48	50	7	23	XSEQ1204	10	A	0.7
	-125×7-B32-SN12-12	△	△	125	32	70	50	7	30		12	B	1.1
	-160×7-B40-SN12-16	△	△	160	40	70	50	7	41		16	B	1.4
	-063×8-A22-SN12-06	△	△	63	22	32	40	8	14		6	A	0.2
	-080×8-A22-SN12-08	△	△	80	22	40	40	8	18		8	A	0.5
	-100×8-A27-SN12-10	△	△	100	27	48	50	8	23	XSEQ12T4	10	A	0.8
	-125×8-B32-SN12-12	△	△	125	32	70	50	8	30		12	B	1.1
	-160×8-B40-SN12-16	△	△	160	40	70	50	8	41		16	B	1.5

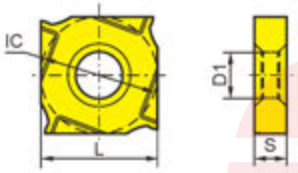
▲Stock available △Make-to-order

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Spare parts

Diameter DC	Edge width a_p	Screw	Wrench
			
Ø63-Ø160	4	I91M4×3.2X	WT08IS/IP
Ø63-Ø160	5	I91M4×4.2X	
Ø63-Ø250	6	I91M4×5.1X	
Ø63-Ø250	7	I91M4×6.1X	
Ø63-Ø250	8	I91M4×7.1X	

Selection of inserts



Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating						Cermet		Cemented carbide	
		IC	L	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	XSEQ1202	12.7	12.7	2.3	5.0										★						
	XSEQ1203	12.7	12.7	3.0	5.0										★						
	XSEQ12T3	12.7	12.7	3.5	5.0										★						
	XSEQ1204	12.7	12.7	4.0	5.0										★						
	XSEQ12T4	12.7	12.7	4.5	5.0										★						

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

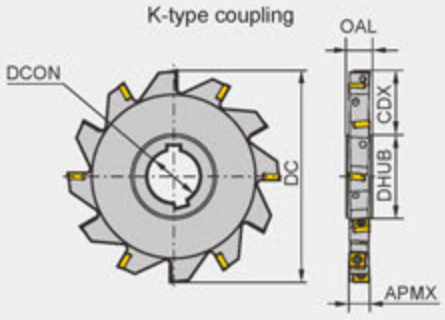
Recommended cutting parameters

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

Slot milling

SMP03 P M K



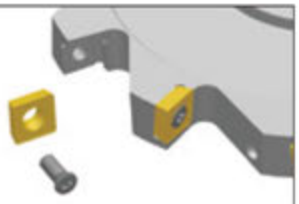
Specification of tools

Type		Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
			DC	DHUB	DCON	CDX	APMX	OAL				
SMP03 Mounting by keyway	-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

Spare parts

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

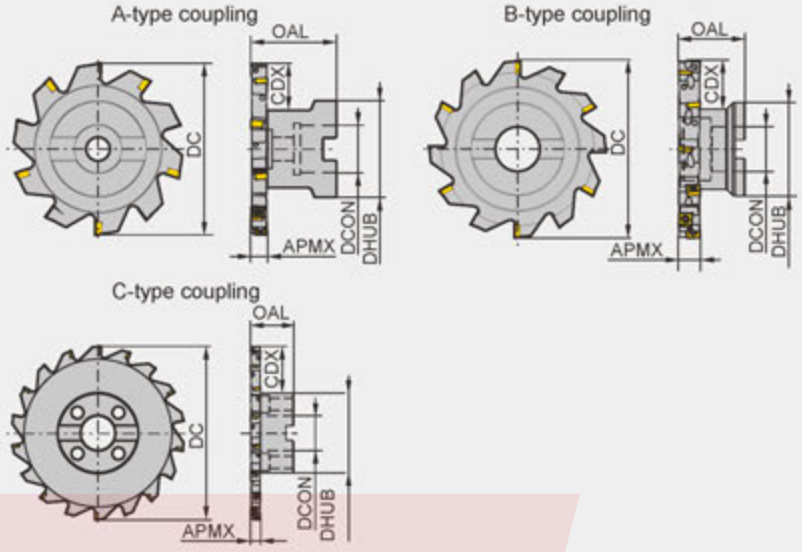


Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Side and face milling tools

Slot milling

SMP03 P M K



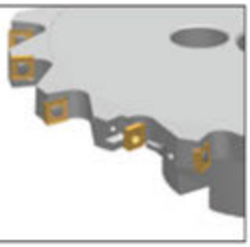
Specification of tools

Type		Stock		Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
		R	L	DC	DHUB	DCON	CDX	APMX	OAL				
SMP03 Arbor mounting	**-080×8-A22-MP06-10**	△	△	80	45	22	21	8	40	MPHT060304-DM	10	A	0.4
	-100×8-B27-MP06-14	△	△	100	55	27	24	8	40		14	B	0.6
	-100×10-B27-MP06-14	△	△	100	55	27	24	10	40		14	B	0.7
	-125×10-B32-MP06-16	△	△	125	65	32	33	10	45		16	B	1.1
	-125×12-B32-MP08-12	△	△	125	65	32	33	12	45	MPHT080305-DM	12	B	1.4
	-160×12-B40-MP08-14	△	△	160	80	40	45	12	50		14	B	1.9
	-200×12-C40-MP08-18	△	△	200	92	40	53	12	50		18	C	3.2
	-125×16-B32-MP12-10	△	△	125	65	32	33	16	50	MPHT120408-DM	10	B	2.3
	-160×16-B40-MP12-12	△	△	160	80	40	45	16	60		12	B	2.3
	-160×18-B40-MP12-12	△	△	160	80	40	45	18	60		12	B	2.4
	-200×16-C40-MP12-14	△	△	200	92	40	53	16	50		14	C	3.6
	-200×18-C40-MP12-14	△	△	200	92	40	53	18	50		14	C	3.9
	-200×20-C40-MP12-14	△	△	200	92	40	53	20	50		14	C	4.2

▲Stock available △Make-to-order

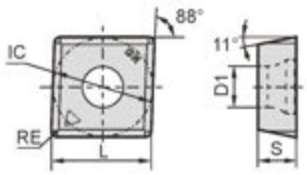
Spare parts

Diameter DC	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Good working condition Normal working condition Bad working condition

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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

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 width 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

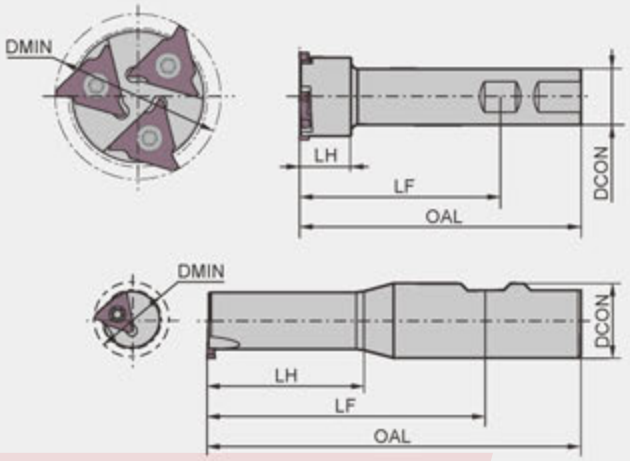
Cutting edge length code	Inscribed circuler(mm)
16	9.525
22	12.70

Slot milling tool

Slot milling

SMP05

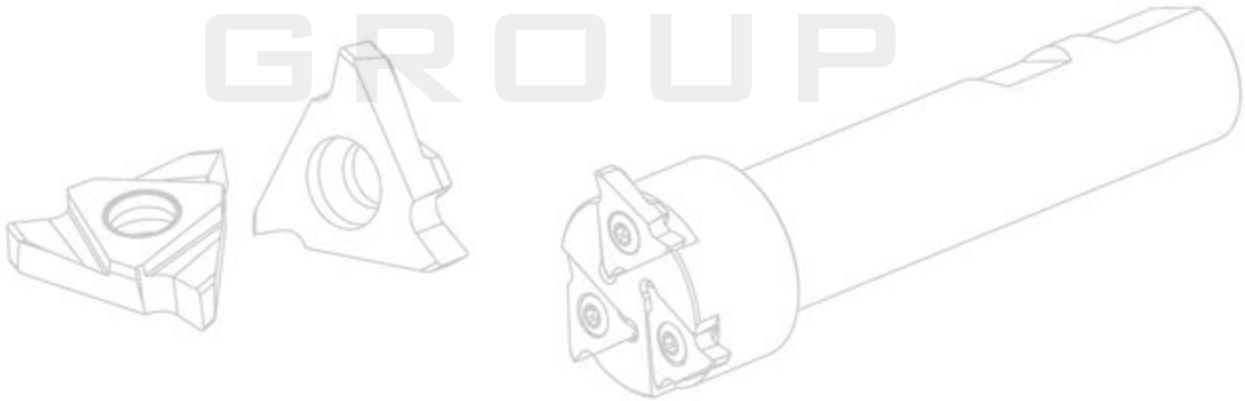
Single tooth slot milling tool



Specification of tools

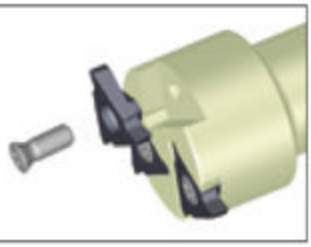
Type		Stock	Basic dimensions(mm)					Number of teeth Z	Applicable inserts	Width(mm)
			DMIN	DCON	LH	LF	OAL			
SMP05	-025×3.0-XP25-QC16-01	△	25	25	40	89	125	1	QC16L 110~300	1.10-3.00
	-039×3.0-XP25-QC16-03	△	39	25	23	89	125	3	QC16L 110~300	1.10-3.00
	-044×4.8-XP25-QC22-03	△	44	25	23	89	125	3	QC22L 125~480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

▲Stock available △Make-to-order



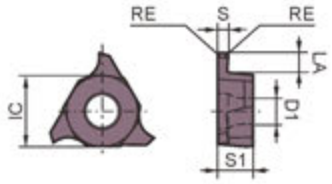
Spare parts

Diameter DMIN	Screw	Wrench
		
ø25	I60M3.5×10	WT15IP
ø39	I60M3.5×10	WT15IP
ø44	I60M5×13	WT20IP



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	😊 😐 😐 😐 😐 😕

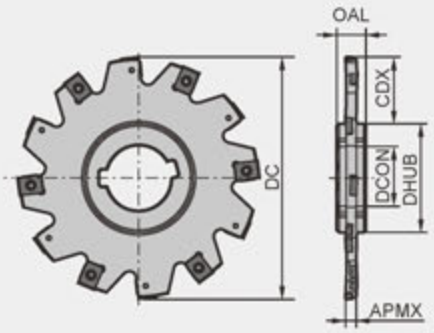
Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		S±0.025	LA	RE	IC	S1	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	QC16L110-R01	1.10	2.00	R0.1	9.525	3.18	4.4							○	○								
	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

Slot milling

SMP08 P M K



K-type coupling

Specification of tools

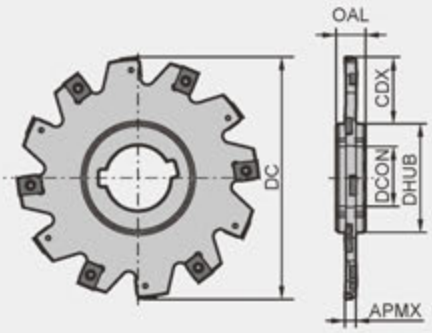
Type		Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCON	DHUB	OAL	APMX	CDX				
SMP08	-063×4-K22-LN1023-08	▲	63	22	34	8	4	12.0		8	K	0.1
	-080×4-K22-LN1023-10	▲	80	22	34	8	4	21.0		10	K	0.1
	-100×4-K27-LN1023-12	▲	100	27	41	12	4	27.0	LNET102304-GM	12	K	0.2
	-125×4-K40-LN1023-14	▲	125	40	55	12	4	32.0		14	K	0.4
	-160×4-K40-LN1023-18	▲	160	40	55	12	4	50.0		18	K	0.6
	-063×5-K22-LN1028-08	▲	63	22	34	8	5	13.0		8	K	0.1
	-080×5-K22-LN1028-10	▲	80	22	34	8	5	21.0		10	K	0.2
	-100×5-K27-LN1028-12	▲	100	27	41	12	5	27.0	LNET102804-GM	12	K	0.3
	-125×5-K40-LN1028-14	▲	125	40	55	12	5	33.0		14	K	0.4
	-160×5-K40-LN1028-18	▲	160	40	55	12	5	50.0		18	K	0.7
	-063×6-K22-LN1033-08	▲	63	22	34	8	6	13.0		8	K	0.1
	-080×6-K22-LN1033-10	▲	80	22	34	8	6	21.5		10	K	0.2
	-100×6-K27-LN1033-12	▲	100	27	41	12	6	27.0		12	K	0.3
	-125×6-K40-LN1033-14	▲	125	40	55	12	6	33.0	LNET103304-GM	14	K	0.5
	-160×6-K40-LN1033-18	▲	160	40	55	12	6	50.0		18	K	0.8
	-200×6-K50-LN1033-20	▲	200	50	69	12	6	63.0		20	K	1.2
	-250×6-K50-LN1033-24	▲	250	50	69	12	6	88.0		24	K	2.0
	-080×7-K22-LN1238-08	▲	80	22	34	12	7	20.0		8	K	0.2
	-100×7-K27-LN1238-10	▲	100	27	41	12	7	26.5		10	K	0.3
	-125×7-K40-LN1238-12	▲	125	40	55	12	7	32.0	LNET123804-GM	12	K	0.5
	-160×7-K40-LN1238-16	▲	160	40	55	12	7	49.5		16	K	0.8
	-200×7-K50-LN1238-18	▲	200	50	69	12	7	62.5		18	K	1.3
	-250×7-K50-LN1238-24	▲	250	50	69	12	7	87.5		24	K	2.1

▲Stock available △Make-to-order

Side and face milling tools

Slot milling

SMP08 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)
			DC	DCON	DHUB	OAL	APMX	CDX				
SMP08	-080×8-K22-LN1243-08	▲	80	22	34	12	8	20.5	LNET124304-GM	8	K	0.2
	-100×8-K27-LN1243-10	▲	100	27	41	12	8	27.0		10	K	0.3
	-125×8-K40-LN1243-12	▲	125	40	55	12	8	32.5		12	K	0.9
	-160×8-K40-LN1243-16	▲	160	40	55	12	8	50.0		16	K	0.9
	-200×8-K50-LN1243-18	▲	200	50	69	12	8	63.0		18	K	1.4
	-250×8-K50-LN1243-24	▲	250	50	69	12	8	83.0		24	K	2.3
	-100×9-K27-LN1248-10	▲	100	27	41	12	9	27.5	LNET124804-GM	10	K	0.4
	-125×9-K40-LN1248-12	▲	125	40	55	12	9	33.0		12	K	0.6
	-160×9-K40-LN1248-16	▲	160	40	55	12	9	50.5		16	K	1
	-200×9-K50-LN1248-18	▲	200	50	69	12	9	63.5		18	K	1.6
	-250×9-K50-LN1248-24	▲	250	50	69	12	9	88.5		24	K	2.6
	-100×10-K27-LN1253-10	▲	100	27	41	12	10	28.0	LNET125304-GM	10	K	0.4
	-125×10-K40-LN1253-12	▲	125	40	55	12	10	33.5		12	K	0.6
	-160×10-K40-LN1253-16	▲	160	40	55	12	10	51.0		16	K	1.1
	-200×10-K50-LN1253-18	▲	200	50	69	12	10	64.0		18	K	1.8
	-250×10-K50-LN1253-24	▲	250	50	69	12	10	89.0		24	K	2.9

▲Stock available △Make-to-order

Spare parts

Diameter DC	Edge width a_p (mm)	Screw	Wrench	
Ø63-Ø160	4	I60M2.5×3.2×B	WT06IP/IS	
	5	I60M2.5×3.9×B		
Ø63-Ø250	6	I60M2.5×4.8×B		
	7	I60M4×5.1×B	WT10IP/IS	
	8	I60M4×6.6×B		
	9	I60M4×7.6×B		
	10	I60M4×8.5×B		

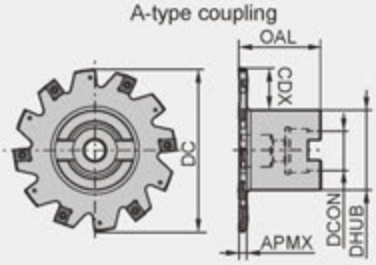
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Side and face milling tools

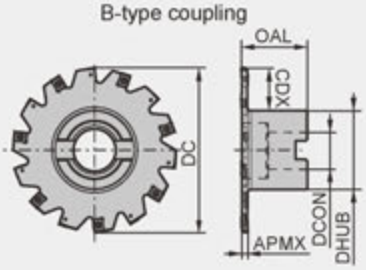
Slot milling

SMP08 P M K

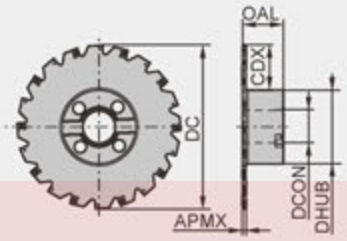
A-type coupling



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)
			DC	DCON	DHUB	OAL	APMX	CDX				
SMP08	-080×4-A22-LN1023-10	▲	80	22	42	50	4	18	LNET102304-GM	10	A	0.4
	-100×4-A27-LN1023-12	▲	100	27	52	50	4	23		12	A	0.6
	-125×4-B32-LN1023-14	▲	125	32	63	50	4	30		14	B	1.0
	-160×4-B40-LN1023-18	▲	160	40	76	50	4	41		18	B	1.2
	-080×5-A22-LN1028-10	▲	80	22	42	50	5	18	LNET102804-GM	10	A	0.4
	-100×5-A27-LN1028-12	▲	100	27	52	50	5	23		12	A	0.6
	-125×5-B32-LN1028-14	▲	125	32	63	50	5	30		14	B	1.0
	-160×5-B40-LN1028-18	▲	160	40	76	50	5	41		18	B	1.2
	-080×6-A22-LN1033-10	▲	80	22	42	50	6	18	LNET103304-GM	10	A	0.5
	-100×6-A27-LN1033-12	▲	100	27	52	50	6	23		12	A	0.7
	-125×6-B32-LN1033-14	▲	125	32	63	50	6	30		14	B	1.1
	-160×6-B40-LN1033-18	▲	160	40	76	50	6	41		18	B	1.4
	-200×6-C40-LN1033-20	▲	200	40	94	50	6	52		20	C	2.8
	-250×6-C60-LN1033-24	▲	250	60	132	50	6	58		24	C	4.6
	-080×7-A22-LN1238-08	▲	80	22	42	50	7	18	LNET123804-GM	8	A	0.5
	-100×7-A27-LN1238-10	▲	100	27	52	50	7	23		10	A	0.7
	-125×7-B32-LN1238-12	▲	125	32	63	50	7	30		12	B	1.1
	-160×7-B40-LN1238-16	▲	160	40	76	50	7	41		16	B	1.4
	-200×7-C40-LN1238-18	▲	200	40	94	50	7	52		18	C	2.9
	-250×7-C60-LN1238-24	▲	250	60	132	50	7	58		24	C	4.7

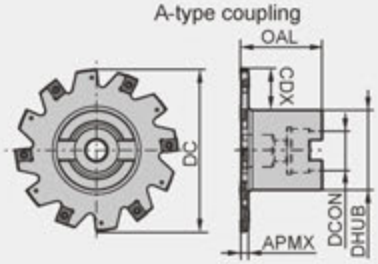
▲Stock available △Make-to-order

Side and face milling tools

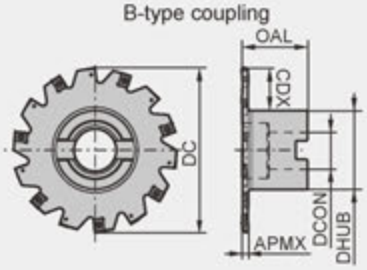
Slot milling

SMP08 P M K

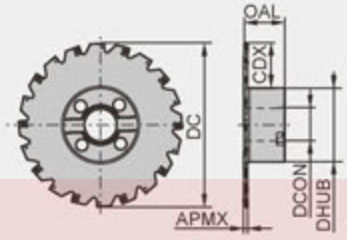
A-type coupling



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)
			DC	DCON	DHUB	OAL	APMX	CDX				
SMP08	-080×8-A22-LN1243-08	▲	80	22	42	50	8	18	LNET124304-GM	8	A	0.5
	-100×8-A27-LN1243-10	▲	100	27	52	50	8	23		10	A	0.7
	-125×8-B32-LN1243-12	▲	125	32	63	50	8	30		12	B	1.1
	-160×8-B40-LN1243-16	▲	160	40	76	50	8	41		16	B	1.4
	-200×8-C40-LN1243-18	▲	200	40	94	50	8	52		18	C	2.9
	-250×8-C60-LN1243-24	▲	250	60	132	50	8	58		24	C	4.7
	-100×9-A27-LN1248-10	▲	100	27	52	50	9	23	LNET124804-GM	10	A	0.7
	-125×9-B32-LN1248-12	▲	125	32	63	50	9	30		12	B	1.1
	-160×9-B40-LN1248-16	▲	160	40	76	50	9	41		16	B	1.5
	-200×9-C40-LN1248-18	▲	200	40	94	50	9	52		18	C	3
	-250×9-C60-LN1248-24	▲	250	60	132	50	9	58		24	C	4.8
	-100×10-A27-LN1253-10	▲	100	27	52	50	10	23	LNET125304-GM	10	A	0.7
	-125×10-B32-LN1253-12	▲	125	32	63	50	10	30		12	B	1.1
	-160×10-B40-LN1253-16	▲	160	40	76	50	10	41		16	B	1.5
	-200×10-C40-LN1253-18	▲	200	40	94	50	10	52		18	C	3
	-250×10-C60-LN1253-24	▲	250	60	132	50	10	58		24	C	5

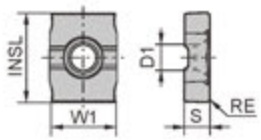
▲Stock available △Make-to-order

Spare parts

Diameter DC	Edge width a_p (mm)	Screw	Wrench
			
Ø63-Ø160	4	I60M2.5×3.2×B	WT06IP/IS
	5	I60M2.5×3.9×B	
Ø63-Ø250	6	I60M2.5×4.8×B	
	7	I60M4×5.1×B	WT10IP/IS
	8	I60M4×6.6×B	
	9	I60M4×7.6×B	
	10	I60M4×8.5×B	

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Good working condition Normal working condition Bad working condition

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	INSL	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNET102304-GM	7.5	10	2.3	2.9	0.4									★			●				
	LNET102804-GM	7.5	10	2.8	2.9	0.4									★			●				
	LNET103304-GM	7.5	10	3.3	2.9	0.4									★			●				
	LNET123804-GM	10	13	3.8	4.4	0.4									★			●				
	LNET124304-GM	10	13	4.3	4.4	0.4									★			●				
	LNET124804-GM	10	13	4.8	4.4	0.4									★			●				
	LNET125304-GM	10	13	5.3	4.4	0.4									★			●				

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

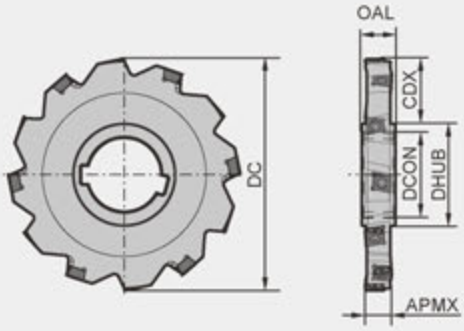
Recommended cutting parameters

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

Side and face milling tools

Slot milling

SMP09 P M K



K-type coupling

Specification of tools

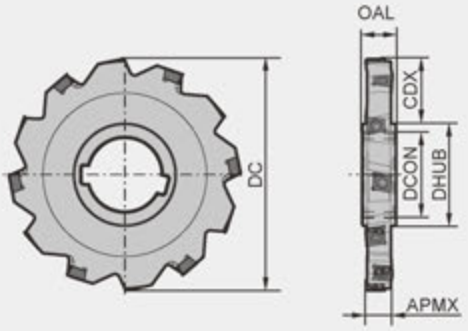
Type		Stock	Basic dimensions(mm)						Applicable inserts	Number of teeth Z	Type of coupling	Weight (kg)
			DC	DCON	DHUB	OAL	APMX	CDX				
SMP09	-080×10-K27-LN10-08	△	80	27	43	14	10	17	LNGX1005□□-GM	8	K	0.2
	-100×10-K32-LN10-10	△	100	32	47	14	10	25		10	K	0.37
	-125×10-K40-LN10-12	△	125	40	55	14	10	34		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

Side and face milling tools

Slot milling

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)
			DC	DCON	DHUB	OAL	APMX	CDX				
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 DC	Edge width a_p (mm)	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

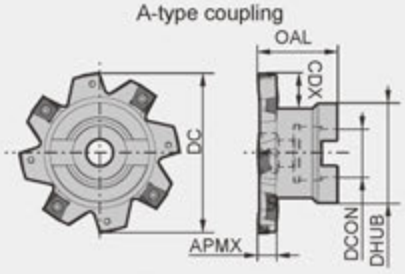
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Side and face milling tools

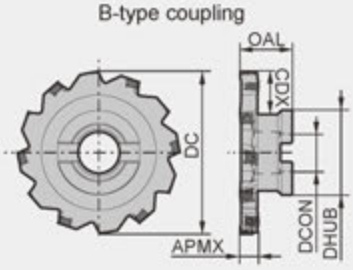
Slot milling

SMP09 P M K

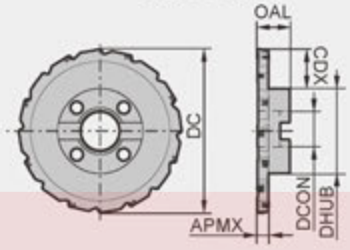
A-type coupling



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)
			DC	DCON	DHUB	OAL	APMX	CDX				
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

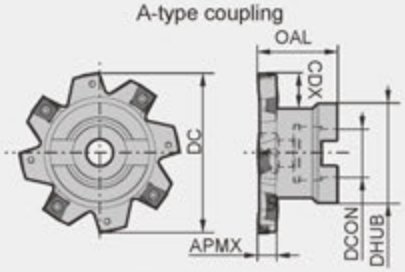
▲Stock available △Make-to-order

Side and face milling tools

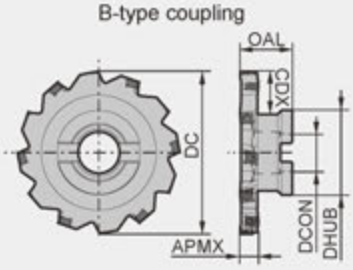
Machining of slot

SMP09 P M K

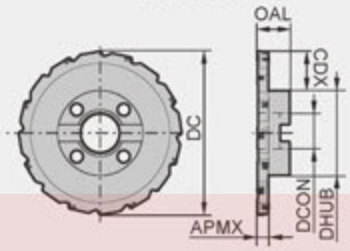
A-type coupling



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)
			DC	DCON	DHUB	OAL	APMX	CDX				
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

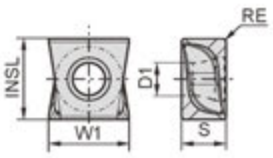
▲Stock available △Make-to-order

Spare parts

Diameter DC	Edge width a_p (mm)	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Good working condition Normal working condition Bad working condition

Workpiece material		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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) W1	INSL	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNGX100504-GM	9.9	10	5.5	4.1	0.4									★			●				
	LNGX100508-GM	9.9	10	5.5	4.1	0.8									★			●				
	LNGX100512-GM	9.9	10	5.5	4.1	1.2									★			●				
	LNGX100516-GM	9.9	10	5.5	4.1	1.6									★			●				
	LNGX100520-GM	9.9	10	5.5	4.1	2.0									★			●				
	LNGX100524-GM	9.9	10	5.5	4.1	2.4									★			●				
	LNGX100530-GM	9.9	10	5.5	4.1	3.0									★			●				
	LNGX100540-GM	9.9	10	5.5	4.1	4.0									★			●				
	LNGX140704-GM	13.4	14	7.5	4.4	0.4									★			●				
	LNGX140708-GM	13.4	14	7.5	4.4	0.8									★			●				
	LNGX140712-GM	13.4	14	7.5	4.4	1.2									★			●				
	LNGX140716-GM	13.4	14	7.5	4.4	1.6									★			●				
	LNGX140720-GM	13.4	14	7.5	4.4	2.0									★			●				
	LNGX140724-GM	13.4	14	7.5	4.4	2.4									★			●				
	LNGX140730-GM	13.4	14	7.5	4.4	3.0									★			●				
	LNGX140740-GM	13.4	14	7.5	4.4	4.0									★			●				
	LNGX140750-GM	13.4	14	7.5	4.4	5.0									★			●				

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

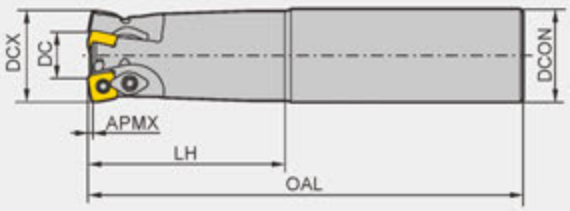
Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters Vc(m/min)	fz(mm/z)
P	Low-carbon steel, Soft steel	⩽ 180	YB9320 YBM253	150(100-200)	0.12(0.1-0.3)
P	High-carbon steel, Alloy steel	180-280	YB9320 YBM253	120(80-200)	0.12(0.1-0.3)
P	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)

High feed milling tools

XMR01 P M K S

S-type insert, straight shank



Specification of tools

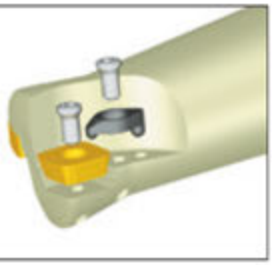
Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
			DCX	APMX	DC	LH	OAL	DCON		
XMR01	-020-G20-SD06-02	▲	20	0.8	11.1	50	130	20	2	0.26
	-020-G20-SD06-02CL	△	20	0.8	11.1	100	180	20	2	0.364
	-020-G20-SD06-02CXL	△	20	0.8	11.1	130	250	20	2	0.522
	-025-G25-SD06-03	▲	25	0.8	16.1	60	140	25	3	0.46
	-025-G25-SD06-03CL	△	25	0.8	16.1	120	200	25	3	0.670
	-025-G25-SD06-03CXL	△	25	0.8	16.1	130	250	25	3	0.850
	-025-G25-SD09-02	▲	25	1.4	11.24	60	140	25	2	0.5
	-025-G25-SD09-02CL	△	25	1.4	11.24	120	200	25	2	0.636
	-025-G25-SD09-02CXL	△	25	1.4	11.24	180	300	25	3	0.980
	-032-G32-SD09-03	▲	32	1.4	18.24	90	150	32	3	0.8
	-032-G32-SD09-03CL	△	32	1.4	18.24	120	200	32	3	1.006
	-032-G32-SD09-03CXL	△	32	1.4	18.24	180	300	32	3	1.551
	-035-G32-SD09-03	▲	35	1.4	18.24	70	150	32	3	0.8
	-035-G32-SD09-03CL	△	35	1.4	18.24	120	200	32	3	1.037
	-035-G32-SD09-03CXL	△	35	1.4	18.24	180	300	32	3	1.582
	-032-G32-SD12-02	▲	32	1.8	14.46	90	150	32	2	0.8
	-032-G32-SD12-02CL	△	32	1.8	14.46	120	200	32	2	1.002
	-032-G32-SD12-02CXL	△	32	1.8	14.46	180	300	32	2	1.547
	-040-G40-SD12-03	▲	40	1.8	22.46	70	150	40	3	1.3
	-040-G40-SD12-03CL	△	40	1.8	22.46	70	250	40	3	2.118
	-040-G40-SD12-03CXL	△	40	1.8	22.46	70	300	40	3	2.579
	-040-G40-SD15-02	▲	40	2.2	16.6	70	200	40	2	1.6
	-040-G40-SD15-02CL	△	40	2.2	16.6	70	250	40	2	2.061
	-040-G40-SD15-02CXL	△	40	2.2	16.6	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	--

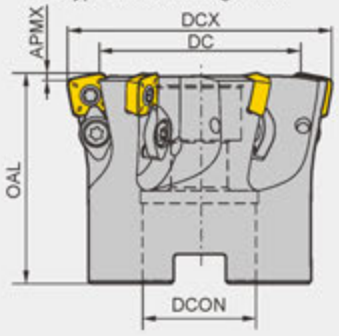


Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

High feed milling tools

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)
			DCX	APMX	DC	OAL	DCON			
XMR01	-050-A22-SD06-07C	▲	50	0.8	38.4	40	22	7	A	0.36
	-063-A22-SD06-10C	▲	63	0.8	51.4	40	22	10	A	0.53
	-063-A27-SD06-10C	▲	63	0.8	51.4	50	27	10	A	0.57
	-050-A22-SD09-04C	▲	50	1.4	32.4	40	22	4	A	0.3
	-063-A22-SD09-06C	▲	63	1.4	45.4	40	22	6	A	0.5
	-063-A27-SD09-06C	▲	63	1.4	45.4	50	27	6	A	0.6
	-063-A22-SD12-05C	▲	63	1.8	39.6	40	22	5	A	0.5
	-063-A27-SD12-05C	▲	63	1.8	39.6	50	27	5	A	0.6
	-080-A27-SD12-05C	▲	80	1.8	56.6	50	27	5	A	0.9
	-100-B32-SD12-06	▲	100	1.8	76.6	50	32	6	B	1.8
	-080-A27-SD15-05C	▲	80	2.2	52	50	27	5	A	0.78
	-080-A32-SD15-05	▲	80	2.2	52	50	32	5	A	0.72
	-100-B32-SD15-07	▲	100	2.2	72	50	32	7	B	1.2
	-125-B40-SD15-09	▲	125	2.2	97	63	40	9	B	2.9
	-160-B40-SD15-12	▲	160	2.2	132	63	40	12	B	4.4

▲Stock available △Make-to-order

Spare parts

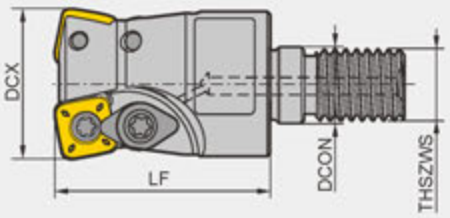
Tool type	Screw	Clamp Screw	Clamp	Wrench	
XMR01□□-SD06□□	I60M2.2×5.5	--	--	WT07IP	--
XMR01□□-SD09□□	I60M3.5×08TT	I60M4×8.4	WD-204	WT10IP	WT15IP
XMR01□□-SD12□□	I60M4×8.4			WT15IP	
XMR01□□-SD15□□	I60M5×13		WD-208	WT20IP	--

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

High feed milling tools

QCH-*SDMT*M*Series

P M K



Specification of tools

Type		Stock	Basic dimensions(mm)				Applicable inserts	Number of teeth Z	Weight (kg)
			DCX	DCON	LF	THSZWS			
QCH	-16-SDMT06-M8-02	▲	16	8.5	28	8	SDMT06T208-□□	2	0.031
	-20-SDMT06-M10-03	▲	20	10.5	30	10		3	0.050
	-25-SDMT06-M12-04	▲	25	12.5	35	12		4	0.090
	-32-SDMT06-M16-06	▲	32	17	45	16		6	0.219
	-25-SDMT09-M12-02	▲	25	12.5	35	12	SDMT09T312-□□	2	0.088
	-30-SDMT09-M16-03	▲	30	17	45	16		3	0.176
	-35-SDMT09-M16-03	▲	35	17	45	16		3	0.216
	-35-SDMT09-M16-05	▲	35	17	45	16		5	0.219
	-40-SDMT09-M16-04	▲	40	17	45	16		4	0.230
	-32-SDMT12-M16-03	▲	32	17	45	16	SDMT120412-□□	2	0.175
	-35-SDMT12-M16-02	▲	35	17	45	16		2	0.200
	-35-SDMT12-M16-03	▲	35	17	45	16		3	0.201
	-40-SDMT12-M16-03	▲	40	17	45	16		3	0.214

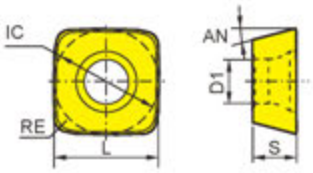
▲Stock available △Make-to-order

Spare parts

Diameter DCX	Inserts	Screw	Clamp	Clamp screw	Wrench
Ø16-Ø32	SDMT06	I60M2.2×5.5	--	--	WT07IP
Ø25-Ø40	SDMT09	I60M3×08TT	WD-204	I60M4×8.4	WT10IP WT15IP
Ø32-Ø40	SDMT12	I60M4×8.4	WD-204	I60M4×8.4	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

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	
		IC	L	RE	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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°		●							●			●				

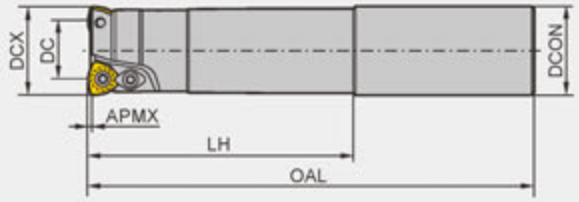
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Chipbreaker introduction:
-PM chipbreaker has sharp cutting edge, it is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel and Ti alloy, etc.
-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 tools

XMR01 P M K

W-type insert, straight shank



Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
			DCX	APMX	DC	LH	OAL	DCON		
XMR01	-020-G20-WP05-02-M	△	20	1.5	12.4	50	130	20	2	0.2
	-020-G20-WP05-02-L	△	20	1.5	12.4	100	180	20	2	0.3
	-020-G20-WP05-02-XL	△	20	1.5	12.4	130	250	20	2	0.8
	-025-G25-WP06-02-M	△	25	1.5	16.3	60	140	25	2	0.4
	-025-G25-WP06-02-L	△	25	1.5	16.3	120	200	25	2	0.6
	-025-G25-WP06-02-XL	△	25	1.5	16.3	180	300	25	2	1.0
	-032-G32-WP06-03-M	△	32	1.5	23.3	70	150	32	3	0.8
	-032-G32-WP06-03-L	△	32	1.5	23.3	120	200	32	3	1.0
	-032-G32-WP06-03-XL	△	32	1.5	23.3	180	300	32	3	1.6
	-040-G32-WP06-03-M	△	40	1.5	31.3	50	150	32	3	0.9
	-040-G32-WP06-03-L	△	40	1.5	31.3	50	250	32	3	1.5
	-040-G32-WP06-03-XL	△	40	1.5	31.3	50	300	32	3	1.8
	-040-G32-WP08-02-M	△	40	1.5	28.68	50	150	32	2	0.9
	-040-G32-WP08-02-L	△	40	1.5	28.68	50	250	32	2	1.5
	-040-G32-WP08-02-XL	△	40	1.5	28.68	50	300	32	2	1.9
	-050-G32-WP09-02-M	△	50	3.0	36.4	50	150	32	2	1.9
	-050-G32-WP09-02-L	△	50	3.0	36.4	50	250	32	2	2.5

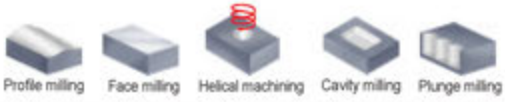
▲Stock available △Make-to-order

Spare parts

Diameter	Clamp/Insert screw	Clamp	Wrench	
				
XMR01□□-WP05□□	I60M3.5×08TT	--	WT10P	--
XMR01□□-WP06□□	I60M4×8.4		WT15P	
XMR01□□-WP08□□	I60M5×13	WD-208	--	WT20IT
XMR01□□-WP09□□				

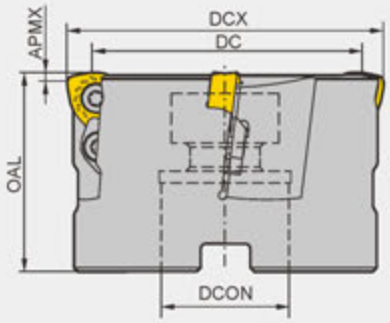
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

High feed milling tools



XMR01 P M K

W-type insert, arbor mounting



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DCX	APMX	DC	OAL	DCON			
XMR01	-050-A22-WP06-04	△	50	1.5	41.3	40	22	4	A	0.4
	-050-A22-WP08-03	△	50	1.5	38.68	50	22	3	A	0.4
	-063-A22-WP08-04C	△	63	1.5	51.68	50	22	4	A	0.7
	-063-A27-WP08-04C	△	63	1.5	51.68	50	27	4	A	0.7
	-080-A27-WP08-05C	△	80	1.5	68.68	63	27	5	A	1.5
	-100-B32-WP08-06	△	100	1.5	88.68	63	32	6	B	2.2
	-125-B40-WP08-07	△	125	1.5	113.68	63	40	7	B	3.5
	-160-B40-WP08-08	△	160	1.5	148.68	63	40	8	B	6.0
	-063-A22-WP09-03C	△	63	3.0	49.4	50	22	3	A	0.7
	-080-A27-WP09-04C	△	80	3.0	66.4	63	27	4	A	1.4
	-100-B32-WP09-05	△	100	3.0	86.4	63	32	5	B	2.1
	-125-B40-WP09-06	△	125	3.0	111.4	63	40	6	B	3.7
	-160-B40-WP09-07	△	160	3.0	146.4	63	40	7	B	6.3

▲Stock available △Make-to-order

Spare parts

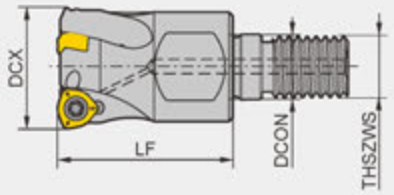
Diameter	Clamp/Insert screw	Clamp	Wrench	
				
XMR01□□-WP06□□	I60M4×8.4	--	WT15S	--
XMR01□□-WP08□□	I60M5×13	WD-208	--	WT20IT
XMR01□□-WP09□□	I60M5×13	WD-208	--	

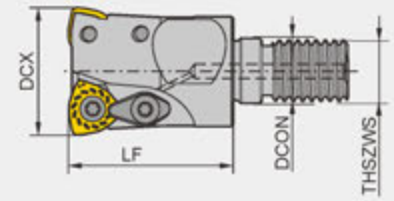
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

High feed milling tools

QCH-*WPGT*M*Series

P M K





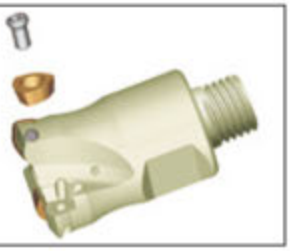
Specification of tools

Type		Stock	Basic dimensions(mm)				Applicable inserts	Number of teeth Z	Weight (kg)
			DCX	DCON	LF	THSZWS			
QCH	-20-WPGT05-M10-02	△	20	10.5	30	10	WPGT050315ZSR	2	0.056
	-20-WPGT05-M10-03	△	20	10.5	30	10		3	0.055
	-22-WPGT05-M10-02	△	22	10.5	30	10		2	0.062
	-22-WPGT05-M10-03	△	22	10.5	30	10		3	0.060
	-25-WPGT05-M12-03	△	25	12.5	35	12		3	0.106
	-28-WPGT05-M12-03	△	28	12.5	35	12		3	0.110
	-25-WPGT06-M12-02	△	25	12.5	35	12	WPGT060415ZSR	2	0.097
	-28-WPGT06-M12-02	△	28	12.5	35	12		2	0.109
	-30-WPGT06-M16-03	△	30	17	45	16		3	0.197
	-32-WPGT06-M16-03	△	32	17	45	16		3	0.185
	-35-WPGT06-M16-03	△	35	17	45	16		3	0.201
	-40-WPGT06-M16-04	△	40	17	45	16		4	0.240
	-42-WPGT06-M16-04	△	42	17	45	16		4	0.270
	-30-WPGT08-M16-02	△	30	17	45	16	WPGT080615ZSR	2	0.176
	-32-WPGT08-M16-02	△	32	17	45	16		2	0.179
	-35-WPGT08-M16-02	△	35	17	45	16		2	0.196
	-40-WPGT08-M16-03	△	40	17	45	16		3	0.220

▲Stock available △Make-to-order

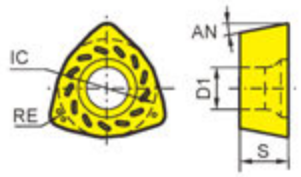
Spare parts

Diameter DCX	Inserts	Screw	Clamp	Wrench
Ø20-Ø28	WPGT05	I60M3.5×6.5TT	--	WT10P
Ø25-Ø42	WPGT06	I60M4×8.4	--	WT15P
Ø30-Ø40	WPGT08	I60M4×8.4	--	WT15P



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



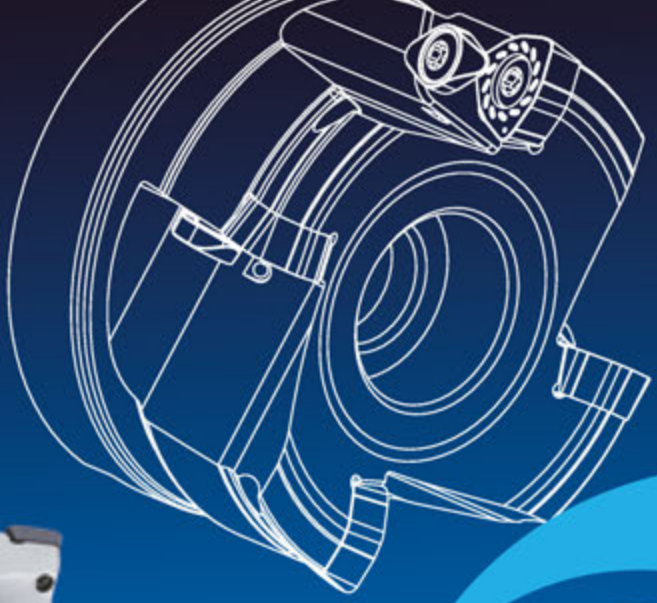
Good working condition Normal working condition Bad working condition

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	
		IC	RE	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	WPGT050315ZSR	7.94	1.5	3.5	4.0	11°	★															
	WPGT060415ZSR	9.525	1.5	4.2	4.4	11°	★															
	WPGT080615ZSR	12.85	1.5	6.35	5.5	11°	★															
	WPGT090725ZSR	15.00	2.5	7	5.5	11°	★															
	WPGT050315ZSR-PM	7.94	1.5	3.5	4.0	11°	★							●								
	WPGT060415ZSR-PM	9.525	1.5	4.2	4.4	11°	★							●								
	WPGT080615ZSR-PM	12.85	1.5	6.35	5.5	11°	★							●								
	WPGT090725ZSR-PM	15.00	2.5	7.00	5.5	11°	★							●								

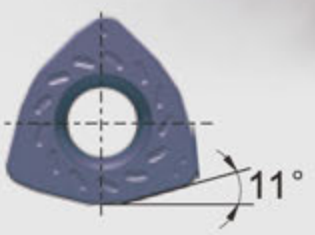
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

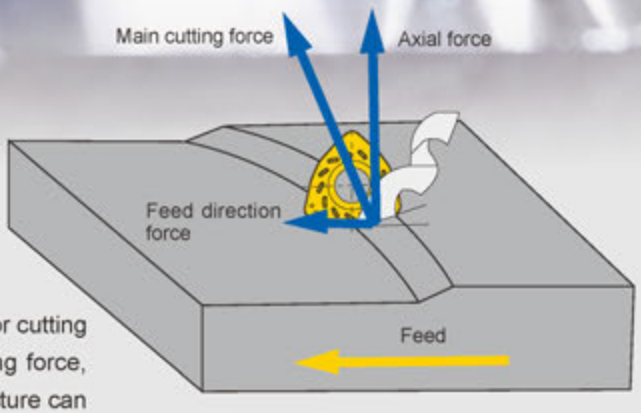
Chipbreaker introduction:
-PM chipbreaker has sharp cutting edge, it is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel and Ti alloy, etc.
General chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron, etc.



XMR01

Milling Tool Series

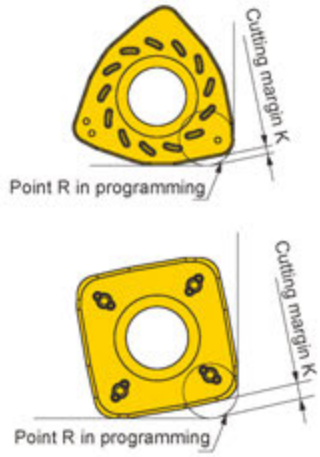




The main feature of high feed tools is to resolve the major cutting force to the axial direction, greatly reducing the radial cutting force, thus improve tool's vibration resistance. In addition, this structure can effectively reduce vibration in long-overhang milling operation.

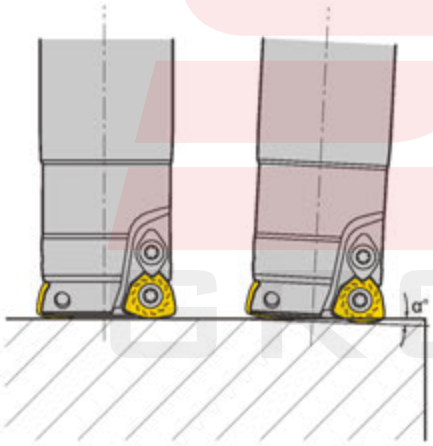
Approximate R in machining program

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	4.0	1.38

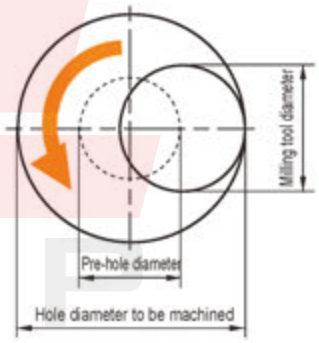


Different machining styles

■ Ramp milling



■ 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.

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting speed (m/min)	Ø20/Ø25		Ø30/Ø32/Ø35	
					Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth
P	Soft steel Carbon Steel	≤HB180 HB180-280	YBC302 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
P	Alloy steel Alloy tool steel	HB280-350	YBC302 YBM253 YBG205 YB9320	130(80-180)	0.4~1.2	0.6~1.2	0.4~1.0	0.5~1.4
P	pre-hardened steel	≤HRC35	YBC302 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	YBM253	120(80-160)	0.6~1.0	0.6~1.0	0.8~1.2	0.8~1.2
M	Stainless steel	≤HB270	YBG205 YB9320	120(80-190)	0.6~1.0	0.6~1.0	0.8~1.2	0.8~1.2
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
K	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
S	Difficult-to-machine materials	≤400	YBS303	60(45-110)	0.4~0.8	0.4~0.8	0.4~1.0	0.4~0.8

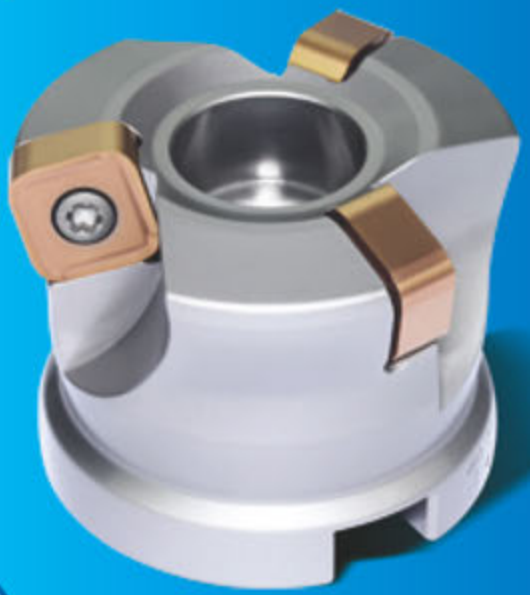
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting speed (m/min)	Ø40/Ø50		Ø63/Ø80		Ø100/Ø125/Ø160	
					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 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
P	Alloy steel Alloy tool steel	HB280-350	YBC302 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
P	pre-hardened steel	≤HRC35	YBC302 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	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
M	Stainless steel	≤HB270	YBG205 YB9320	120(80-190)	0.8~1.2	0.8~1.2	1.1~1.5	0.9~1.3	1.0~1.5	0.8~1.3
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
K	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
S	Difficult-to-machine materials	≤400	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.



XMR03

High Feed Milling Tool Series

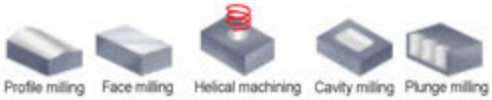
8 cutting edges on both sides achieve economical and cost-effective machining.

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

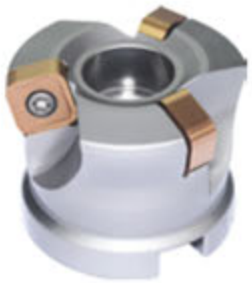
Due to the good versatility, it can be used for large-feed processing of various steels, as well as processing viscous materials such as stainless steel and titanium alloy.

4×2=8 cutting edges

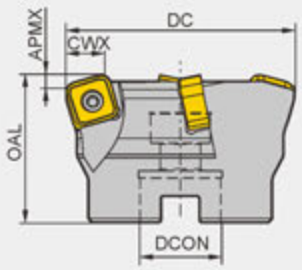
High feed milling tools



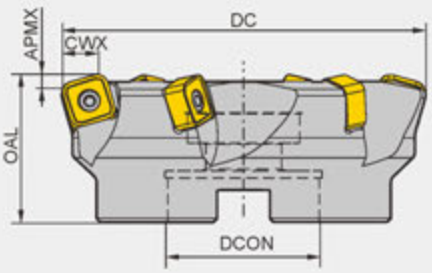
XMR03 P M



A-type coupling



B-type coupling



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
			DC	APMX	CWX	OAL	DCON			
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

Spare parts

Diameter	Insert screw	Wrench
		
XMR03□□-SD12□□	I60M4×10	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	RE	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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 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 YBM253 YBG205	170(120-220) 150(100-200)	0.6~1.5	0.5~1.5	0.6~1.5	0.6~1.5
P	Alloy steel, alloy tool steel	HB280-350	YB9320 YBM253 YBG205	130(80-180)	0.4~1.3	0.5~1.5	0.4~1.3	0.6~1.5
P	Pre-hardened steel	≤HRC35	YB9320 YBM253 YBG205	120(80-160)	0.4~1.3	0.5~1.0	0.4~1.3	0.5~1.0
M	Stainless steel	≤HB270	YBM253	120(80-160)	0.4~1.5	0.4~1.2	0.4~1.5	0.5~1.3
M	Stainless steel	≤HB270	YBG205 YB9320	120(80-190)	0.4~1.5	0.4~1.2	0.4~1.5	0.5~1.3

XMR03series milling cutter processing case

Workpiece: 718H(HRC 34)

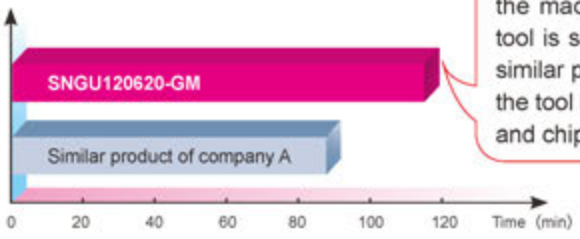
Toolholder: XMR03-050-A22-SN12-03

Insert: SNGU120620-GM/YB9320

Cutting parameter:

Vc=142m/min , fz=1.25mm/z ,

ap=0.8mm



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.

High feed milling tools

XMR12 P M

Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
			DCX	DC	APMX	OAL	LH	DCON		
XMR12	-016-G16-EN12-02C	▲	16	10.4	1	100	30	16	2	0.12
	-017-G16-EN12-02C	▲	17	11.4	1	100	30	16	2	0.13
	-018-G16-EN12-02C	▲	18	12.4	1	100	30	16	2	0.13
	-020-G20-EN12-03C	▲	20	14.4	1	130	50	20	3	0.25
	-022-G20-EN12-03C	▲	22	16.4	1	130	50	20	3	0.27
	-025-G25-EN12-04C	▲	25	19.4	1	140	60	25	4	0.44
	-028-G25-EN12-04C	▲	28	22.4	1	140	60	25	4	0.48
	-030-G32-EN12-04C	▲	30	24.4	1	150	70	32	4	0.74
	-032-G32-EN12-05C	▲	32	26.4	1	150	70	32	5	0.79
	-033-G32-EN12-05C	▲	33	27.4	1	150	70	32	5	0.81
	-035-G32-EN12-05C	▲	35	29.4	1	150	35	32	5	0.86

▲Stock available △Make-to-order

Note: The dimensions in the above table are based on ENMX1206XR-GM inserts. The values of DCX, OAL and LH for ENMX120608-GM or ENMX1206R30-GM inserts are shown in the table below:

ENMX1206XR-GM	ENMX120608-GM	ENMX1206R30-GM
LH	LH+0.11	LH+0.11
OAL	OAL+0.11	OAL+0.11
DCX	DCX-0.4	DCX-0.4

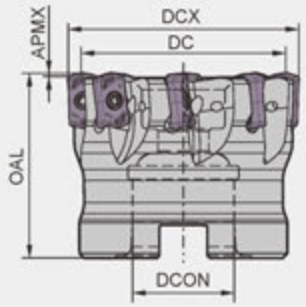
Spare parts

Tool model	Insert screw	Wrench	
			
XMR12-□□-G□□-EN12-□□C	I60M2.5×6.5	WT07IP	

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

High feed milling tools

XMR12 P M



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Weight (kg)
			DCX	DC	APMX	OAL	DCON		
XMR12	-040-A16-EN12-06C	▲	40	34.4	1	40	16	6	0.42
	-050-A22-EN12-08C	▲	50	44.4	1	40	22	8	0.32
	-063-A22-EN12-10C	▲	63	57.4	1	40	22	10	0.48

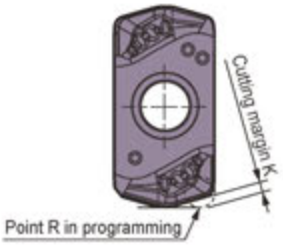
▲Stock available △Make-to-order

Note: The dimensions in the above table are based on ENMX1206XR-GM inserts. The values of DCX, OAL for ENMX120608-GM or ENMX1206R30-GM inserts are shown in the table below:

ENMX1206XR-GM	ENMX120608-GM	ENMX1206R30-GM
OAL	OAL+0.11	OAL+0.11
DCX	DCX-0.4	DCX-0.4

Approximate R in machining program

Applicable insert	Approximate R(mm)	Cutting margin K(mm)
ENMX1206XR-GM	1	0.5
	1.5	0.4
	2	0.3



Spare parts

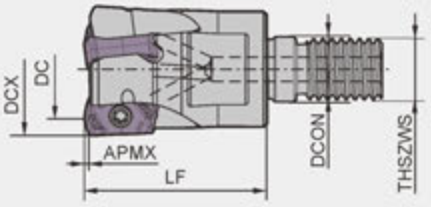
Tool model	Insert screw	Wrench
XMR12-□□-A□□-EN12-□□C	I60M2.5×6.5	WT07IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

High feed milling tools

QCH-*EN*M*Series

P M



Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
			DCX	DC	APMX	LF	DCON	THSZWS		
QCH	-16-EN12-M8-02(XMR12)	▲	16	10.4	1	28	8.5	8	2	0.025
	-17-EN12-M8-02(XMR12)	▲	17	11.4	1	28	8.5	8	2	0.029
	-18-EN12-M8-02(XMR12)	▲	18	12.4	1	28	8.5	8	2	0.033
	-20-EN12-M10-03(XMR12)	▲	20	14.4	1	30	10.5	10	3	0.046
	-22-EN12-M10-03(XMR12)	▲	22	16.4	1	30	10.5	10	3	0.057
	-25-EN12-M12-04(XMR12)	▲	25	19.4	1	35	12.5	12	4	0.090
	-28-EN12-M12-04(XMR12)	▲	28	22.4	1	35	12.5	12	4	0.104
	-30-EN12-M16-05(XMR12)	▲	30	24.4	1	40	17	16	5	0.189
	-32-EN12-M16-05(XMR12)	▲	32	26.4	1	40	17	16	5	0.196
	-33-EN12-M16-05(XMR12)	▲	33	27.5	1	40	17	16	5	0.199

▲Stock available △Make-to-order

Note: The dimensions in the above table are based on ENMX1206XR-GM inserts. The values of DCX and LF for ENMX120608-GM or ENMX1206R30-GM inserts are shown in the table below:

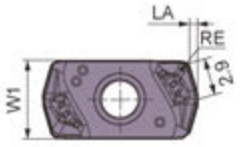
ENMX1206XR-GM	ENMX120608-GM	ENMX1206R30-GM
LF	LF+0.11	LF+0.11
DCX	DCX-0.4	DCX-0.4

Spare parts

Tool model	Insert screw	Wrench	
			
XMR12-□□-EN12-M□□-□□	I60M2.5×6.5	WT07IP	

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



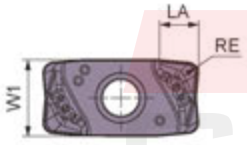
Good working condition Normal working condition Bad working condition

Workpiece material		CVD Coating					PVD Coating							Cermet		Cemented carbide	
		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ENMX1206XR-GM	6	0.6	1								●								

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

Selection of inserts



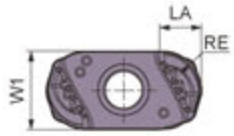
Good working condition Normal working condition Bad working condition

Workpiece material		CVD Coating					PVD Coating							Cermet		Cemented carbide	
		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ENMX120608-GM	6	0.8	3								●								

★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		
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	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ENMX1206R20-GM	6	2.0	1.8								○								
	ENMX1206R30-GM	6	3.0	2.8								●								

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

1.Large feed

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				Cutting speed (m/min)	f(mm/z)		
					Ø16-30	Ø30-63	Plunge milling
P	Low-carbon steel, Soft steel	≤HB180	YBG205H	200(100-300)	0.5-1.2	0.5-1.5	0.1
P	Alloy steel, alloy tool steel	HB180-280	YBG205H	150(100-200)	0.5-1.2	0.5-1.5	0.1
P	Pre-hardened steel	≤HRC35	YBG205H	150(100-200)	0.5-0.7	0.5-1	0.1
M	Stainless steel	≤HB200	YBG205H	125(100-150)	0.5-0.5	0.5-0.7	0.08
K	Cast iron	HB150-250	YBG205H	140(80-200)	0.5-1.2	0.5-1.5	0.1

2.Square shoulder milling

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Cutting speed (m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤HB180	YBG205H	260(160-300)	0.1-0.35
P	Alloy steel, Alloy tool steel	HB180-280	YBG205H	240(160-240)	0.1-0.35
P	Pre-hardened steel	≤HRC35	YBG205H	200(120-240)	0.1-0.35
M	Stainless steel	≤HB200	YBG205H	160(100-230)	0.1-0.3
K	Cast iron	HB150-250	YBG205H	220(140-250)	0.1-0.3

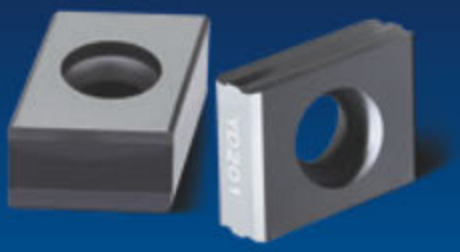
3.Profile milling

Recommended cutting parameters

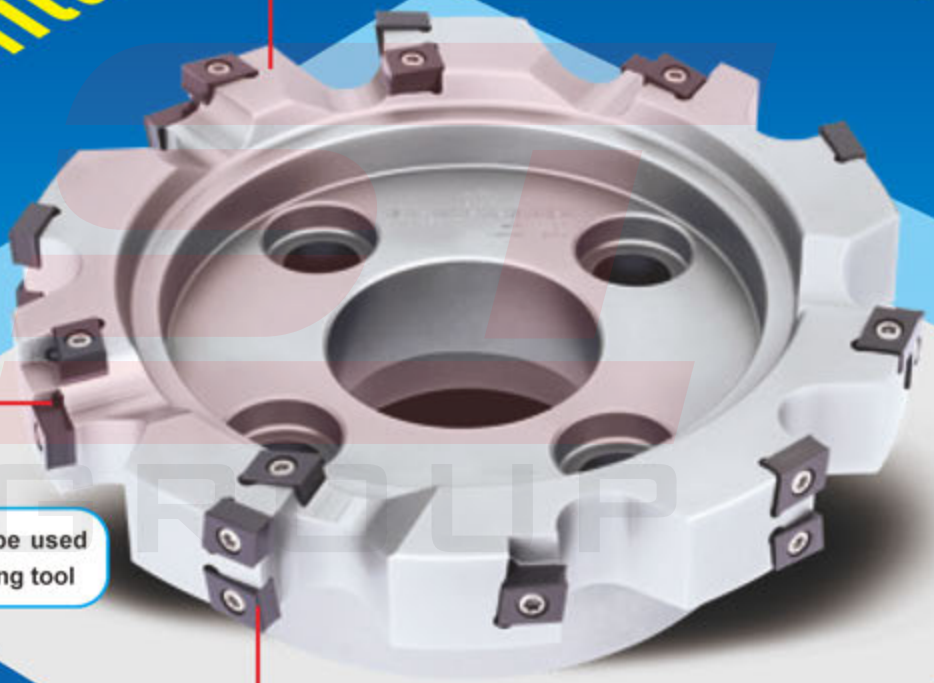
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				Cutting speed (m/min)	f(mm/z)
P	Low-carbon steel, Soft steel	≤HB180	YBG205H	150-250	0.2-0.6
P	Alloy steel, alloy tool steel	HB180-280	YBG205H	150-250	0.2-0.6
P	Pre-hardened steel	≤HRC35	YBG205H	100-200	0.15-0.4
M	Stainless steel	≤HB200	YBG205H	100-200	0.2-0.6
K	Cast iron	HB150-250	YBG205H	150-250	0.2-0.6

XMP01

Boring and Milling Tools

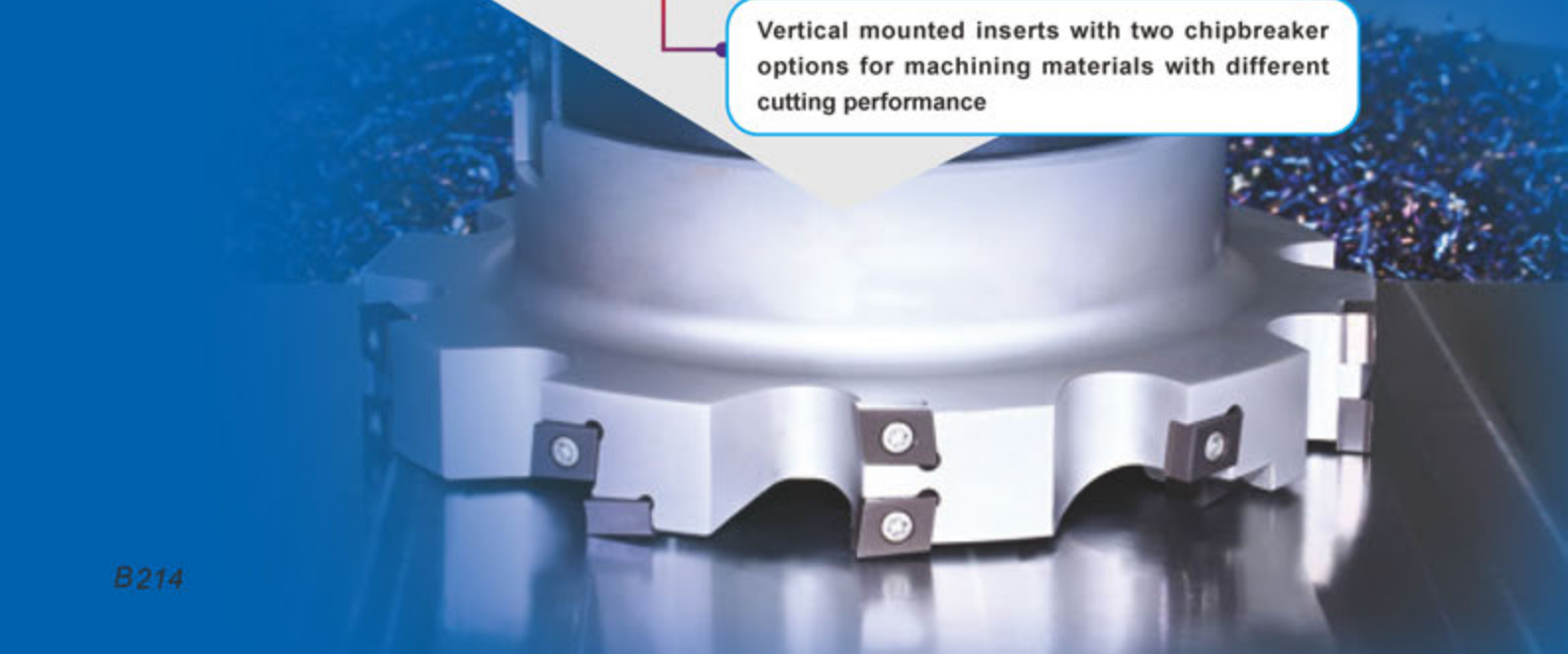


Composite milling tools, mainly used for boring and milling of large diameter holes and cavities



Highly versatile, can be used as a face and side milling tool

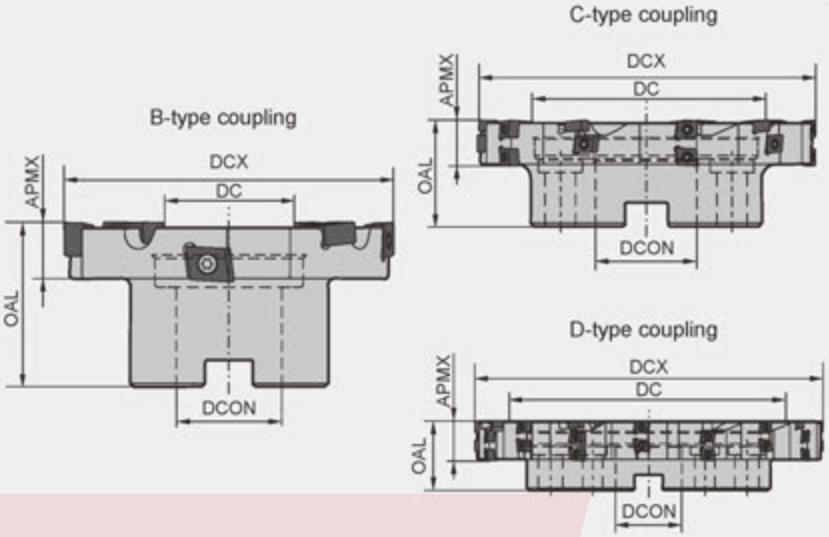
Vertical mounted inserts with two chipbreaker options for machining materials with different cutting performance



Boring and milling tools

KAPR:90°

XMP01 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Zeff (Peripheral/ End teeth)	Type of coupling	Weight (kg)
			DCX	DCON	OAL	DC	APMX				
XMP01	**-080X18-B27-CNE1210-08**	△	80	27	50	42	18	8	2/2	B	0.67
	-100X18-B32-CNE1210-08	△	100	32	50	62	18	8	2/2	B	0.99
	-125X27-B40-CNE1210-15	△	125	40	63	71	27	15	3/2	B	2.46
	-160X27-C40-CNE1210-18	△	160	40	63	106	27	18	4/2	C	3.7
	-200X27-C60-CNE1210-21	△	200	60	63	146	27	21	5/2	C	5.46
	-250X36-C60-CNE1210-32	△	250	40	63	178	36	32	6/2	C	9.79
	-315X36-D60-CNE1210-42	△	315	60	63	225	36	42	8/2	D	17.65
	-400X36-D60-CNE1210-52	△	400	60	63	294	36	52	10/2	D	27.36

Note: APMX, DCX values can be customised within a certain range according to customer requirements; Zeff means the effective number of teeth

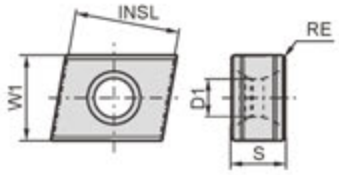
▲Stock available △Make-to-order

Spare parts

Diameter DCX	Inserts	Screws	Wrench
			
Ø80-Ø400	CNE121006*	I60M4×12	WT15IP

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts

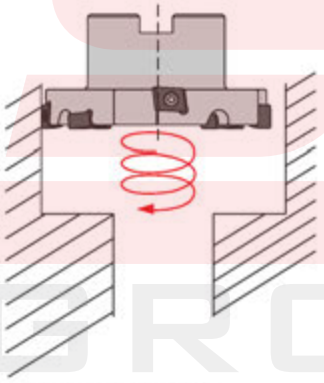


Good working condition Normal working condition Bad working condition

Workpiece material		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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	
		INSL	W1	S	RE	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	CNE121006A	12.8	10.0	6.35	0.4	4.4		●	○													
	CNE121006B	12.0	10.0	6.35	0.6	4.4		●	○													

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



Recommended cutting parameters

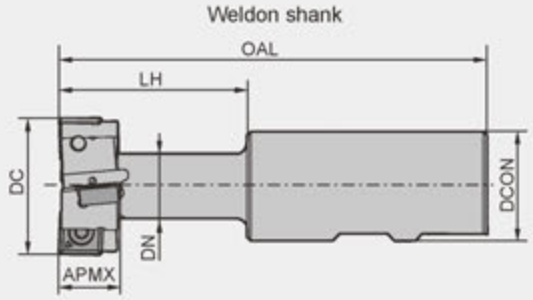
Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V (m/min)	f (mm/Zeff)	apmax (mm)	
						CNE121006A	CNE121006B
P	Soft steel,Carbon steel	≤180	YBM253	270 (220-350)	0.2 (0.15-0.3)	15-90	15-90
P	High-carbon steel, Alloy steel	180-280	YBM253	260 (200-320)	0.2 (0.15-0.3)	15-90	15-90
P	Alloy tool steel	280-350	YBM253	240 (180-300)	0.2 (0.15-0.3)	15-90	15-90
M	Stainless steel	≤270	YBM253	230(180-300)	0.2(0.1-0.3)	15-90	15-90
K	Cast iron	180-250	YBD152	270 (150-300)	0.2(0.15-0.3)	15-90	15-90

Note: Zeff means the effective number of teeth

T-slot milling tools

KAPR:90°

TMP01 K



Specification of tools

Type		Stock	Basic dimensions(mm)						Number of teeth Z	Number of insert	T-slot specification
			DC	DCON	DN	OAL	LH	APMX			
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

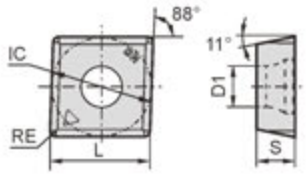
Spare parts

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	--	WT20IT
TMP01-050-XP40-MP12-02	I60M5×10		
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.

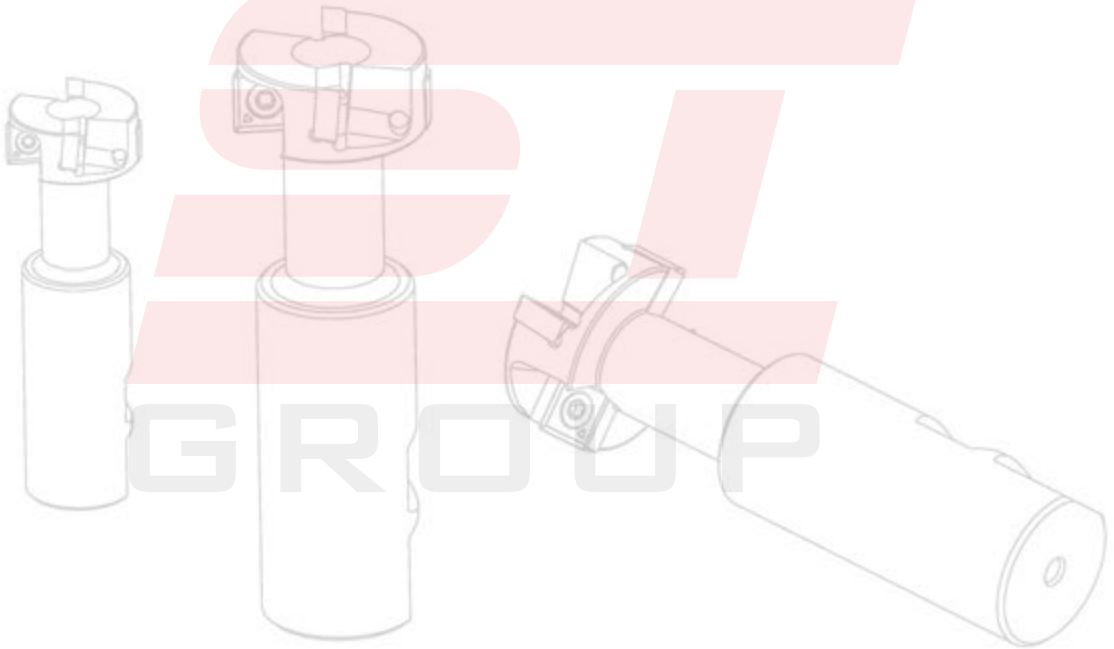
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts

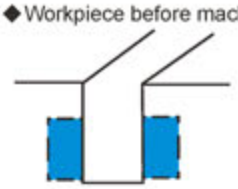


Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	MPHT060304-DM	6.35	6.35	3.18	2.8	0.4										★						
	MPHT080305-DM	8.3	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



◆Workpiece before machining



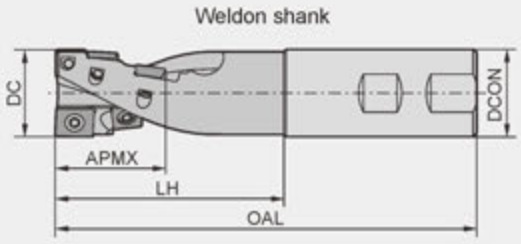
Recommended cutting parameters

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

Helical milling tools

KAPR:90°

HMP01 P K



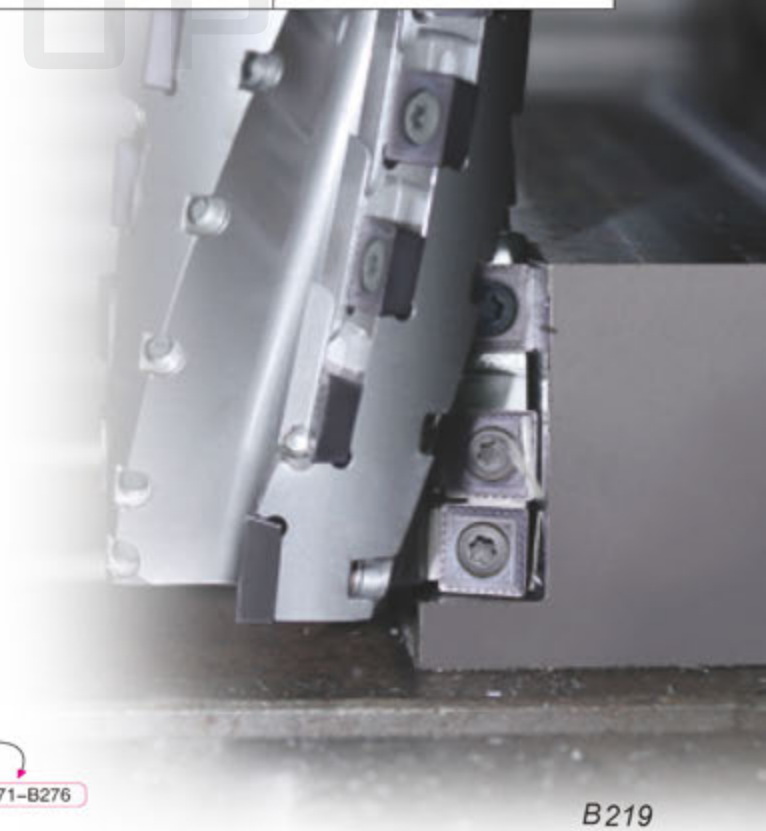
Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Number of inserts		Shank type
		R	L	DC	DCON	APMX	LH	OAL		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 DC	Screw	Wrench
Ø40	I60M5×10	WT20T
Ø50	I60M5×13	WT20T



Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

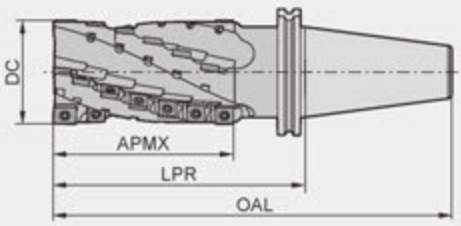
Helical milling tools

KAPR:90°

Side milling Slot milling

HMP01 P K

JT shank/ BT shank (JT shank shown)



Specification of tools

Type		Stock		Basic dimensions(mm)				Number of teeth Z	Number of inserts		Shank type
		R	L	DC	APMX	LPR	OAL		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 DC	Screw	Wrench
		
Ø50	I60M5×13	WT20IS
Ø63	I60M5×13	WT20IS
Ø80	I60M5×13	WT20IS

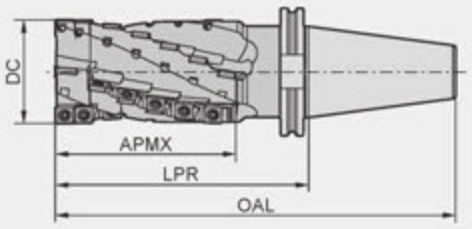
Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Interchangeable helical end mills

KAPR:90°

HMP01 EC P K

JT shank/ BT shank (JT shank shown)



Specification of tools

Type		Stock		Basic dimensions(mm)				Number of teeth Z	Number of inserts		Shank type
		R	L	DC	APMX	LPR	OAL		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

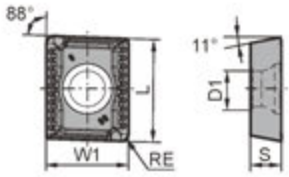
▲Stock available △Make-to-order

Spare parts

Diameter DC	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 B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



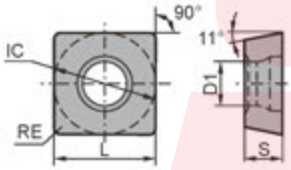
Good working condition Normal working condition Bad working condition

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	
		L	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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



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	

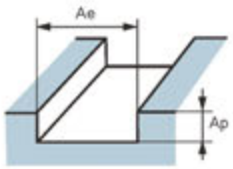
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPMT120408-PM	12.7	12.7	4.76	5.5	0.8		★								●						
	SPMT120408-KM	12.7	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

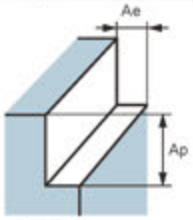
Classification \ Function	For semi-finishing	For roughing
P	-PM	-PM
K	-KM	-KM

A Slot milling



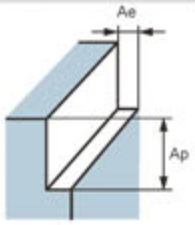
Ae=D
Ap=0.5D(cast iron)
Maximum 12mm(steel)

B Square shoulder milling



Ae=0.5D
Ap=1.5D(cast iron)
1.0D(steel)

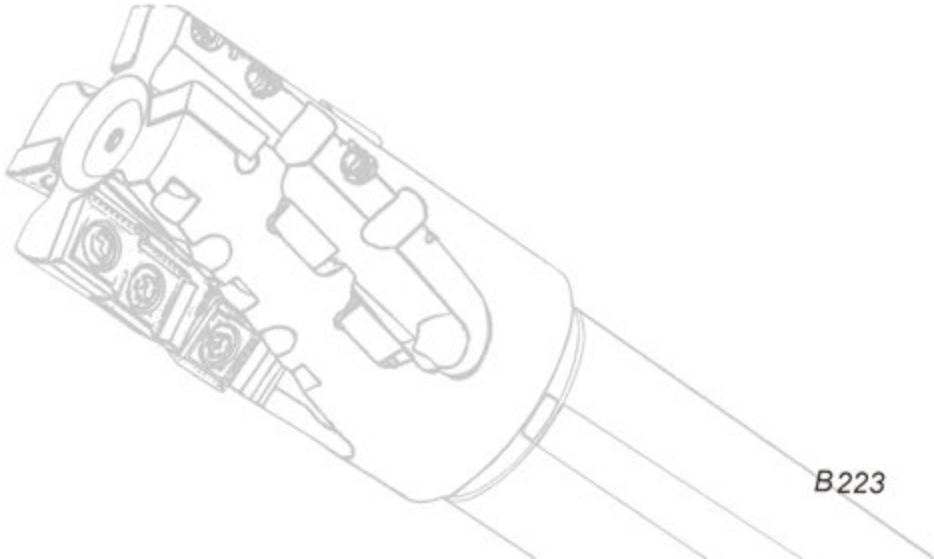
C Narrow shoulder milling



Ae=0.1D
ApsMaximum 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



Chamfer milling tools

KAPR:30°

CMZ01 P M K

Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH		
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

▲Stock available △Make-to-order

Spare parts

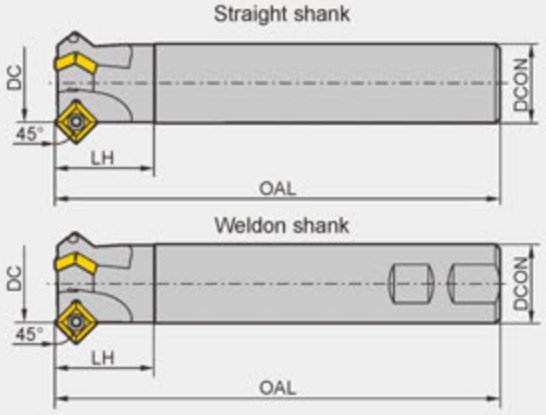
Diameter DC	Screw	Wrench
		
Ø12-Ø32	I43M5×11	WT20IS

Indexable milling tools
Chamfer milling tools

Chamfer milling tools

KAPR:45°

CMA01 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH		
CMA01 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

Spare parts

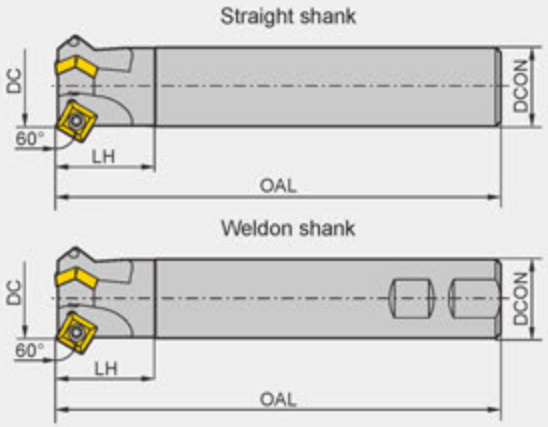
Diameter DC	Screw	Wrench
		
Ø12-Ø32	I43M5×11	WT20IS

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Chamfer milling tools

KAPR:60°

CMD01 P M K



Specification of tools

Type		Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)
			DC	DCON	OAL	LH		
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
Weldon 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

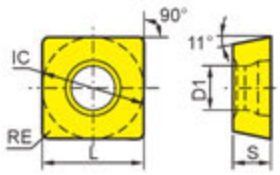
Spare parts

Diameter DC	Screw	Wrench
		
Ø12-Ø36	I43M5×11	WT20IS

Indexable milling tools
Chamfer milling tools

Tools code key B26–B27
Grade selection guide B19–B23
Technical data B271–B276

Selection of inserts



Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	RE	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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	≤180	YBM253 YBC302	180(100-250)	0.25 (0.1-0.4)
			YBM253 YBG302	150(100-200)	0.3 (0.1-0.5)
	High-carbon steel, Alloy steel	180-280	YBM253 YBC302	160(100-220)	0.3 (0.1-0.4)
			YBM253 YBG302	130(100-180)	0.3 (0.1-0.5)
	Alloy tool steel	280-350	YBM253 YBC302	120(80-180)	0.3 (0.1-0.4)
			YBM253 YBG302	100(80-150)	0.3 (0.1-0.5)
M	Stainless steel	≤270	YBM253 YBC302	120(80—180)	0.3 (0.1-0.4)
			YBM253 YBG302	100(80-150)	0.3 (0.1-0.5)
K	Cast iron	180-250	YBG302	130(100-180)	0.4 (0.1-0.5)

Interchangable Milling Tools

Interchangable cutters head

Screw interface

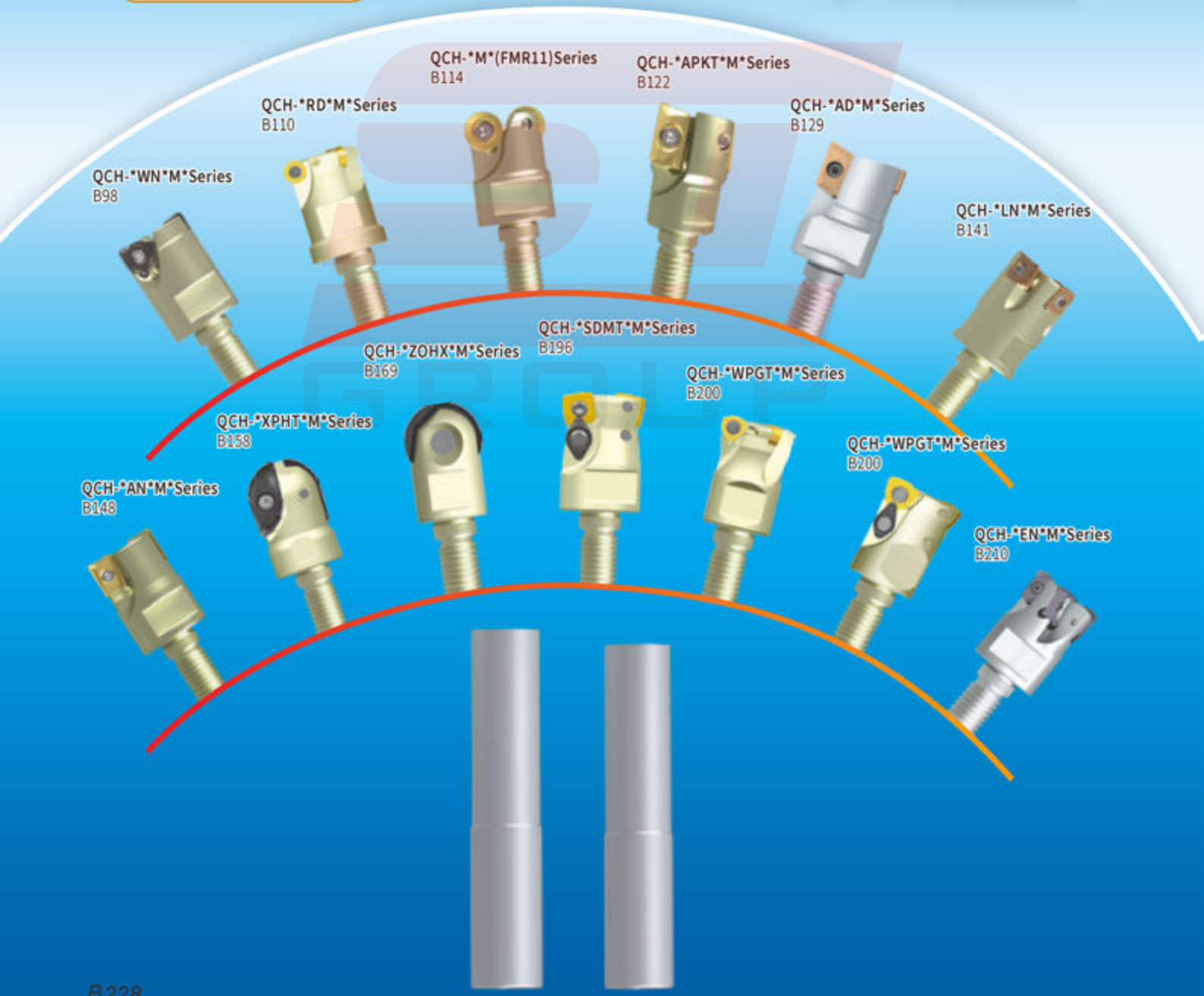
High precision, double threaded, taper contact provides good accuracy and stability for the tool

Interchangable shanks

Steel shanks, cemented carbide shanks, and tooling systems are available for large overhangs and large feeds

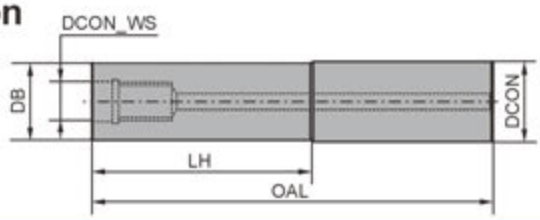
High precision positioning surface

Guaranteeing the perfect combination of toolholder and cutter head



Interchangeable tool holder selection

Cemented carbide shank

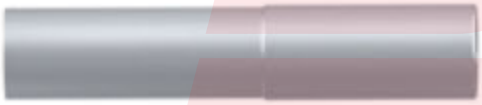


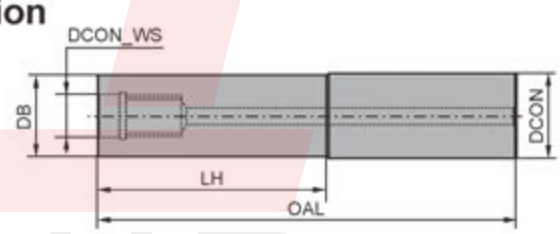
Type		Stock	Basic dimensions(mm)				
			DCON_WS	OAL	LH	DCON	DB
M8	G16-QCH-M8-100C	△	8.5	100	45	16	15
	G16-QCH-M8-150C	▲	8.5	150	95	16	15
	G16-QCH-M8-200C	△	8.5	200	145	16	15
M10	G20-QCH-M10-100C	△	10.5	100	45	20	19
	G20-QCH-M10-150C	▲	10.5	150	95	20	19
	G20-QCH-M10-200C	△	10.5	200	145	20	19
M12	G25-QCH-M12-120C	△	12.5	120	55	25	24
	G25-QCH-M12-170C	▲	12.5	170	105	25	24
	G25-QCH-M12-220C	△	12.5	220	155	25	24
M16	G32-QCH-M16-150C	△	17	150	85	32	30
	G32-QCH-M16-200C	▲	17	200	135	32	30
	G32-QCH-M16-300C	△	17	300	235	32	30

▲Stock available △Make-to-order

Interchangeable tool holder selection

Steel shank



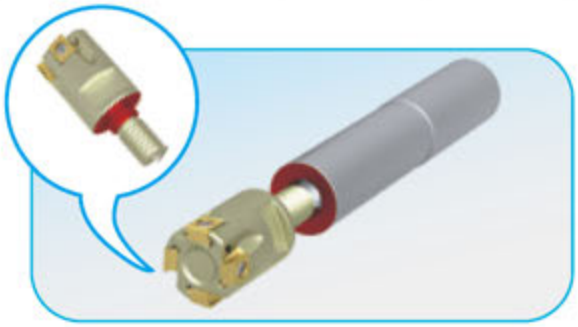


Type		Stock	Basic dimensions(mm)				
			DCON_WS	OAL	LH	DCON	DB
M8	G16-QCH-M8-100S	▲	8.5	100	52	16	15
	G16-QCH-M8-150S	▲	8.5	150	102	16	15
M10	G20-QCH-M10-100S	▲	10.5	100	50	20	19
	G20-QCH-M10-150S	▲	10.5	150	100	20	19
M12	G25-QCH-M12-125S	▲	12.5	125	71	25	24
	G25-QCH-M12-150S	▲	12.5	150	96	25	24
	G25-QCH-M12-200S	▲	12.5	200	144	25	24
M16	G32-QCH-M16-150S	▲	17	150	90	32	30
	G32-QCH-M16-200S	▲	17	200	140	32	30
	G32-QCH-M16-230S	▲	17	230	170	32	30

▲Stock available △Make-to-order

Installation Notes:

1.Before installation, clean the mounting parts of the cutter head and the shank. Ensure that the contact surfaces are tightly fitted after installation.
2.High temperatures are generated when the tool is cutting. Do not touch the cutter with your hands immediately after use to prevent burns.
3.Carbide inserts are very sharp. Be careful when changing inserts to avoid injured.



PCD&PCBN inserts

	APHT-PCD	APHT-W	APHT-CBN	SEHT-PCD	SEHT-CBN
Page	B237	B237	B237	B262	B262

Inserts for face milling

	SEET-CF	SEET-CM	SEET-CR	SEET-DF	SEET-DM	SEET-DR	SEET-EF	SEET-EM
Page	B256	B256	B256	B256	B256	B256	B256	B256

	SEET-LH	SEET-W	SEHT-AL	OFKT-DF	OFKT-DM	OFKT-LH	SEEN	SEKN
Page	B256	B256	B262	B246	B246	B246	B257	B257

	SEMR-M	SEKR-M	SEKN	SEMR-M	SEKR-M	ODHT-GM	ODHT-GH	ODHT-GL
Page	B257	B257	B257	B257	B257	B247	B247	B247

	ODMT-GM	ODHT-LH	ONHU-PF	ONHU-PM	ONHU-W	ONHU-GM	ONHU-GH	ONHU-GL
Page	B247	B247	B248	B248	B248	B248	B248	B248

	ONMU-GM	ONMU-GH	ONHU-W	ONHU-CM	SNEG-GM	SNEG-GR	SNEG-HGR	SNEG-W
Page	B248	B248	B248	B247	B258	B258	B258	B258

Inserts for face milling

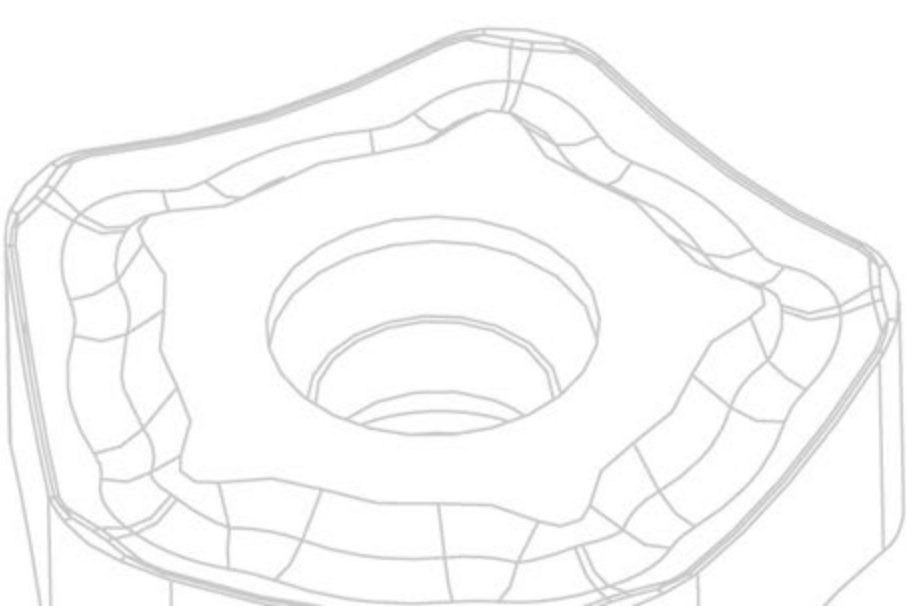
								
	HNEX-DF	HNEX-DM	HNEX-DR	PNEG-CF/CM/CR	PNEG-GL	PNEG-GM	PNEG-GH	PNEG-PF/PM/PR
Page	B242	B242	B242	B249	B249	B249	B249	B250

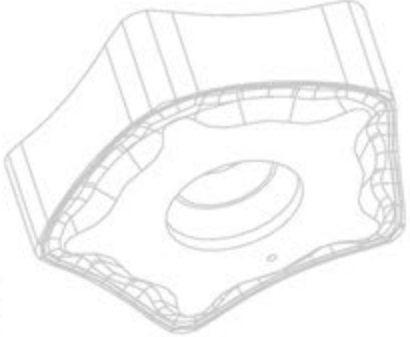
							
	SPKN	SPKR-GM	SPMR-M	SPEX	TPKN	TPMR	SEET□PER-APF
Page	B264	B264,B265	B264,B265	B266	B266	B266	B258

								
	PNEG-KL	PNEG-KM	PNEG-KH	LNKT-ZR	LNKT-ZR	LNKT-ZR	SPKW	SPKT
Page	B250	B250	B250	B242	B242	B242	B265	B265

								
	SEET□PER-APM	SEET□PER-APR	SEET-LH	WN□U-GM	WNHU-LH	RCKT-DM	RCKT-DM	RCKT-DR
Page	B258	B258	B258	B267	B267	B252	B252	B252

								
	RCKT-ER	RCKT-NM	RDKW□MO	RPMW-H	RPMT-M	R□MT-MM	SN□X□-GL	SN□X□-GM
Page	B252	B252	B253	B254	B254	B254	B259,B260,B261	B259,B260,B261





Inserts for face milling

	SN□X□-GH	SNGX-LH	SNCU-W4	SNGX-W	SNGX-W	SNGX-W	XEEC
Page	B259,B260,B261	B259	B261	B259	B260	B261	B268

Inserts for square shoulder milling

	ADKT-GM	ADKT-GM	APHT-AL	APKT-APL	APKT-APF	APKT-APM	APKT-ALH	ANGX□PNR-GM
Page	B236	B236	B237	B238	B238	B238	B238	B239

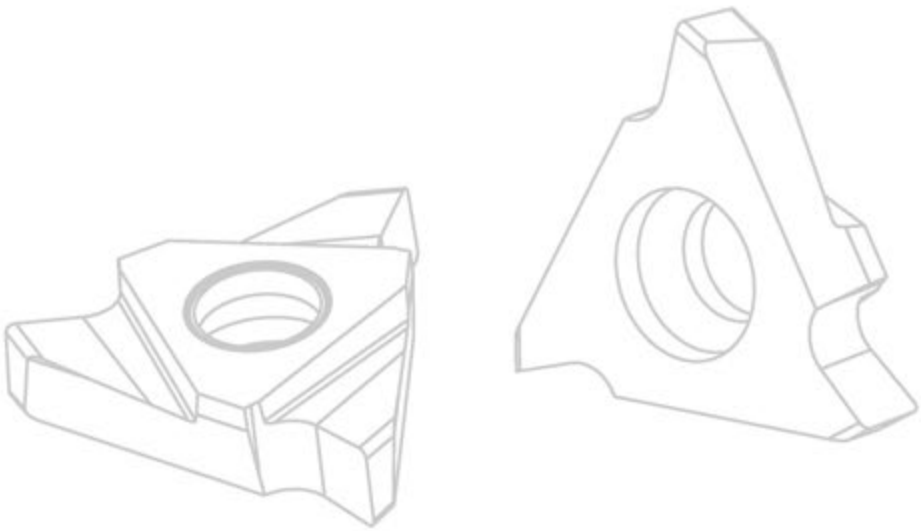
	ANMX□PNR-GM	ANGX□PNR-LH	LNKT-GM	LNKT-GL	LNMT-GM
Page	B239	B239	B243	B243	B243

Inserts for profile milling

	ZDET	ZPNT	SDMT/SPMT	ROHX	XPHT-GM	ZOHX-GF	ZOHX-GM	ZOHX-HM
Page	B269	B270	B254,B263	B253	B268	B270	B270	B270

Inserts for side and face milling

	XSEQ	QC□□L	LNET-GM	LNGX-GM
Page	B269	B251	B244	B245



Inserts for high feed

	SDMT-DM	SDMT-PM	SDMT-NM	WPGT	WPGT-PM	SNGU-GM	ENMX□□-GM
Page	B255	B255	B255	B267	B267	B262	B240-B241

Inserts for boring

	CNE-A	CNE-B
Page	B240	B240

Inserts for T-slot milling

	MPHT
Page	B246

Inserts for helical milling

	APKT-PM/KM	SPMT-PM/KM
Page	B238	B263

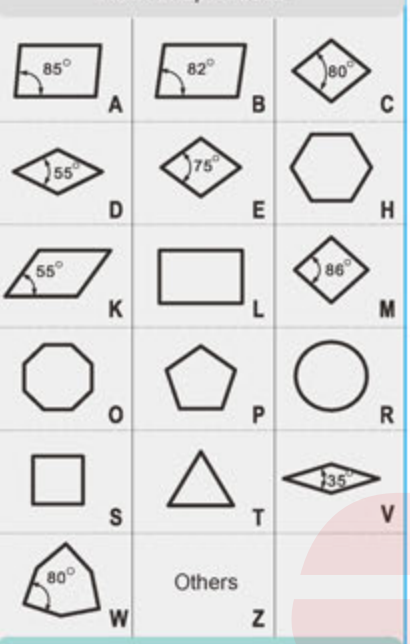
Inserts for chamfering

	SPMT
Page	B263

Indexable milling inserts code key

Insert shape

Insert Shape / Code



Chipbreaker and clamping system

Metric

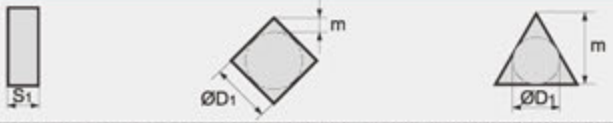
Code	With/Without hole	With/Without chipbreaker	Section plane of Insert	Code	With/Without hole	With/Without chipbreaker	Section plane of Insert
B	With	Without	>65°	N	Without	Without	
H	With	Single-side	>65°	R	Without	Single-side	
C	With	Without	>65°	F	Without	Double-side	
J	With	Double-side	>65°	A	With	Without	
W	With	Without	≤65°	M	With	Single-side	
T	With	Single-side	≤65°	G	With	Double-side	
Q	With	Without	≤65°	X	---	---	Special
U	With	Double-side	≤65°				

S P K N

Clearance angle of main cutting edge

Code	Clearance angle	Code	Clearance angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Other clearance angle

Tolerance



Code	Nose height M Tolerance(mm)	Inscribed circle ØD1 Tolerance(mm)	Thickness S Tolerance(mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05-±0.13	±0.025
K	±0.013	±0.05-±0.13	±0.025
L	±0.025	±0.05-±0.13	±0.025
M	±0.08-±0.18	±0.05-±0.13	±0.13
N	±0.08-±0.18	±0.05-±0.13	±0.025
U	±0.13-±0.38	±0.08-±0.25	±0.13

(Reference) details of M-class tolerance (identified by shape and size)

● Nose height tolerance(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

● Tolerance of Inscribed Circle ØD1(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
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				
5.56					09		
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

Kr		αn	
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)

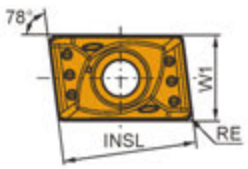
F	0-5°	0-0.10	K
E	1-10°	1-0.15	P
	2-15°	2-0.20	
	3-20°	3-0.25	
T	4-25°	4-0.30	W
	5-30°	5-0.35	
		6-0.40	
S		7-0.45	No mark

Chipbreaker code

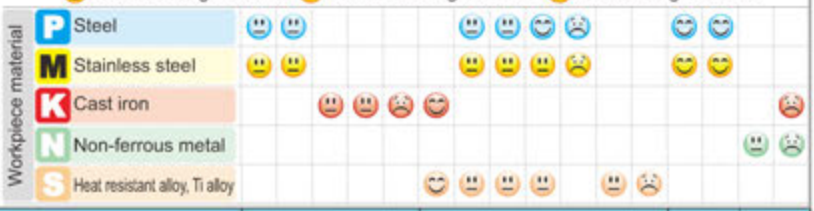
Cutting direction

R	Right hand
L	Left hand
N	Neutral

AD□□



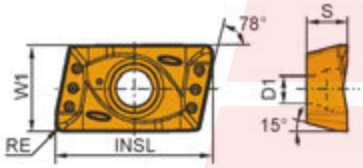
Good working condition Normal working condition Bad working condition



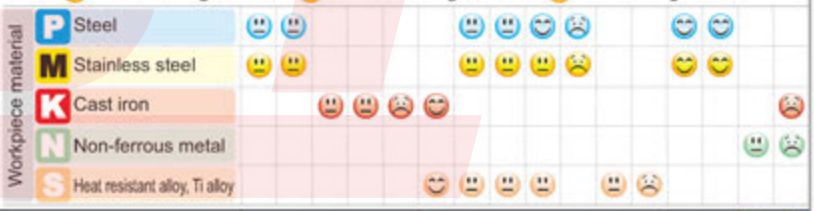
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating						Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ADKT080308L-GM	7.96	5.33	3	2.4	0.5									★							
	ADKT100308L-GM	10	6.44	3.2	2.8	0.5									★							
	ADKT12T308L-GM	12.44	8	3.9	3.5	0.5									★							
	ADKT160508L-GM	16	9.62	5	4.4	0.5									★							

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

AD□□



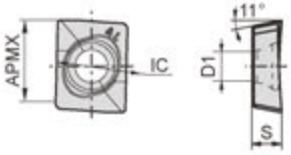
Good working condition Normal working condition Bad working condition



Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating						Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ADKT090308R-GM	10	5	2.8	2.4	0.8									★							
	ADKT100308R-GM	11.65	6.04	3.5	2.8	0.8									★							
	ADKT12T308R-GM	15	8.16	3.9	3.54	0.8									★							
	ADKT150508R-GM	17.05	8.81	4.95	4.5	0.8									★							

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

APㅁㅁ



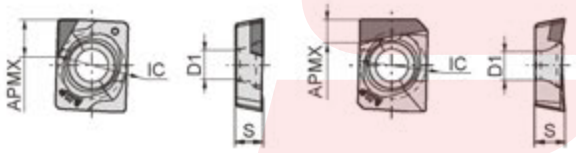
Good working condition 😐 Normal working condition 😢 Bad working condition

Workpiece material					
H	High hardness materials			😐	
K	Cast iron		😊		😢
N	Non-ferrous metal	😐			😐

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	APHT12T304PPFR-AL	12.7	3.97	4.4	12				★

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

APㅁㅁ



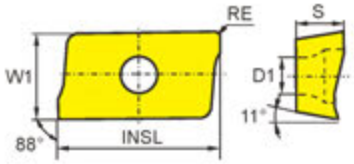
Good working condition 😐 Normal working condition 😢 Bad working condition

Workpiece material					
H	High hardness materials			😐	
K	Cast iron		😊		😢
N	Non-ferrous metal	😐			😐

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	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

APKT



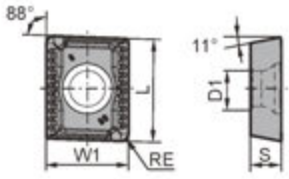
Good working condition Normal working condition Bad working condition

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	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT11T304-APL	12.24	6.6	3.6	2.8	0.4									★					○		
	APKT11T308-APL	12.24	6.6	3.6	2.8	0.8	★	★	★						★			○				
	APKT160408-APL	17.877	9.33	5.76	4.4	0.8	★	★	★						★			○				
	APKT160420-APL	17.877	9.33	5.76	4.4	2.0									★							
	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									★							
	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	●								★		●	●				
	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

AP□□



Good working condition Normal working condition Bad working condition

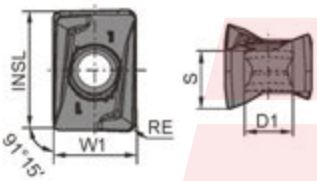
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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) L	W1	S	D1	RE	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	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

AN□□



Good working condition Normal working condition Bad working condition

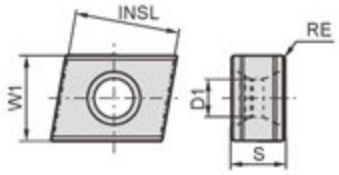
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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) INSL	W1	S	D1	RE	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	ANGX110504PNR-GM	11.85	8.4	5.7	3.5	0.4		★	★					★	★							
	ANGX110508PNR-GM	11.85	8.4	5.7	3.5	0.8		★	★					★	★			●				
	ANGX110520PNR-GM	11.85	8.4	5.7	3.5	2.0		★	★		★			★								
	ANGX150608PNR-GM	15.43	11.0	7.3	4.4	0.8		★	★					★	★			●				
	ANGX150616PNR-GM	15.43	11.0	7.3	4.4	1.6		★	★					★	★							
	ANGX150620PNR-GM	15.43	11.0	7.3	4.4	2.0			★		★			★								
	ANMX110508PNR-GM	11.85	8.4	5.7	3.5	0.8		★	★						★			★				
	ANMX150608PNR-GM	15.43	11.0	7.3	4.4	0.8		★	★					★	★							
	ANGX110502PNR-LH	11.85	8.4	5.7	3.5	0.2															★	
	ANGX110504PNR-LH	11.85	8.4	5.7	3.5	0.4															★	
	ANGX150608PNR-LH	15.43	11.0	7.3	4.4	0.8															★	

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

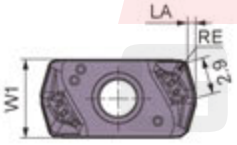
CN□□

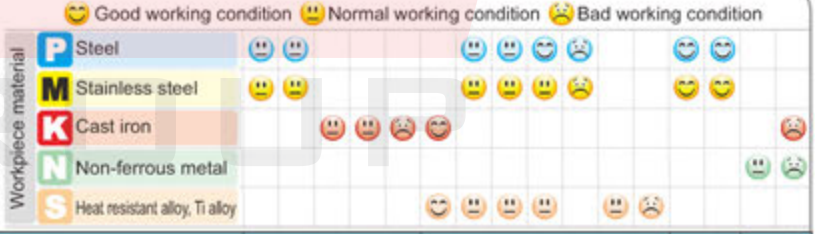


Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	RE	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	CNE121006A	12.8	10.0	6.35	0.4	4.4		●	○													
	CNE121006B	12.0	10.0	6.35	0.6	4.4		●	○													

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

EN□□

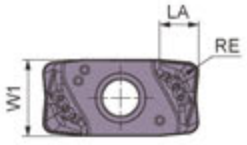




Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ENMX1206XR-GM	6	0.6	1								●								

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

EN□□



Good working condition Normal working condition Bad working condition

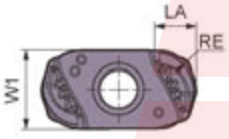
Workpiece material

- 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	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ENMX120608-GM	6	0.8	3								●								

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

EN□□



Good working condition Normal working condition Bad working condition

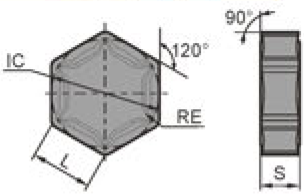
Workpiece material

- 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	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ENMX1206R20-GM	6	2.0	1.8								○								
	ENMX1206R30-GM	6	3.0	2.8								●								

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

HN□□



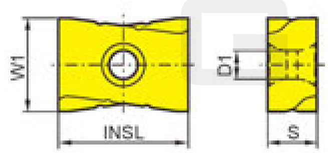
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm) L	IC	S	RE	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	HNEX090512-DF	9.16	15.875	5.56	1.2			★													
	HNEX090512-DM	9.16	15.875	5.56	1.2			★													
	HNEX090512-DR	9.16	15.875	5.56	1.2			○		★											

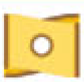
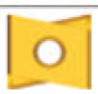
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

LN□□



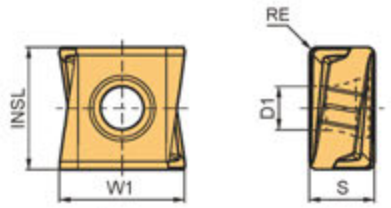
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm) INSL	W1	S	D1	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	LNKT2007DN-ZR	20	17	7.94	4.6		○	○							★						
	LNKT2510-ZR	25	18	9.525	5.5		○			○					★						
	LNKT1506EN-ZR	15.875	14	6.35	4.6		○	○							★						

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

LN□□



Good working condition Normal working condition Bad working condition

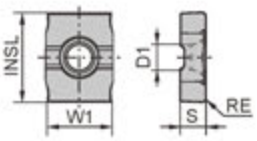
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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		★	●		●				★			●				
	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		★	●		●				★							
	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

LN□□



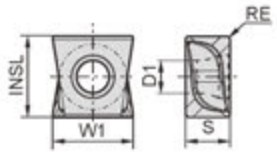
Good working condition Normal working condition Bad working condition

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

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	INSL	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNET102304-GM	7.5	10	2.3	2.9	0.4									★			●				
	LNET102804-GM	7.5	10	2.8	2.9	0.4									★			●				
	LNET103304-GM	7.5	10	3.3	2.9	0.4									★			●				
	LNET123804-GM	10	13	3.8	4.4	0.4									★			●				
	LNET124304-GM	10	13	4.3	4.4	0.4									★			●				
	LNET124804-GM	10	13	4.8	4.4	0.4									★			●				
	LNET125304-GM	10	13	5.3	4.4	0.4									★			●				

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

LN□□



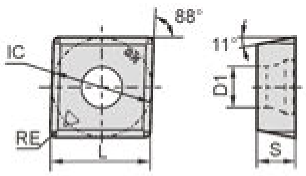
Good working condition Normal working condition Bad working condition

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

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	INSL	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNGX100504-GM	9.9	10	5.5	4.1	0.4									★			●				
	LNGX100508-GM	9.9	10	5.5	4.1	0.8									★			●				
	LNGX100512-GM	9.9	10	5.5	4.1	1.2									★			●				
	LNGX100516-GM	9.9	10	5.5	4.1	1.6									★			●				
	LNGX100520-GM	9.9	10	5.5	4.1	2.0									★			●				
	LNGX100524-GM	9.9	10	5.5	4.1	2.4									★			●				
	LNGX100530-GM	9.9	10	5.5	4.1	3.0									★			●				
	LNGX100540-GM	9.9	10	5.5	4.1	4.0									★			●				
	LNGX140704-GM	13.4	14	7.5	4.4	0.4									★			●				
	LNGX140708-GM	13.4	14	7.5	4.4	0.8									★			●				
	LNGX140712-GM	13.4	14	7.5	4.4	1.2									★			●				
	LNGX140716-GM	13.4	14	7.5	4.4	1.6									★			●				
	LNGX140720-GM	13.4	14	7.5	4.4	2.0									★			●				
	LNGX140724-GM	13.4	14	7.5	4.4	2.4									★			●				
	LNGX140730-GM	13.4	14	7.5	4.4	3.0									★			●				
	LNGX140740-GM	13.4	14	7.5	4.4	4.0									★			●				
	LNGX140750-GM	13.4	14	7.5	4.4	5.0									★			●				

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

MP□□



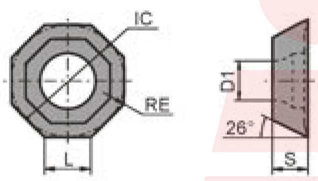
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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□□



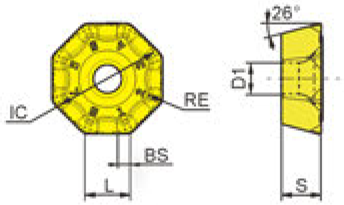
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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															○	

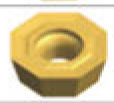
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

OD□□



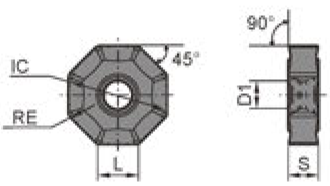
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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

ON□□



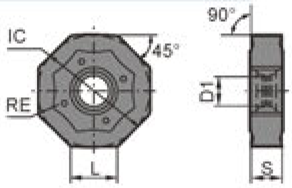
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ONHU060408-CM	6.58	15.875	4.76	4.4	0.8			●			●			●							

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

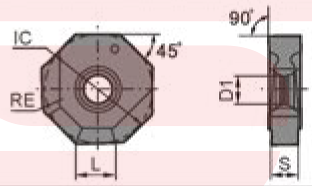
ON□□

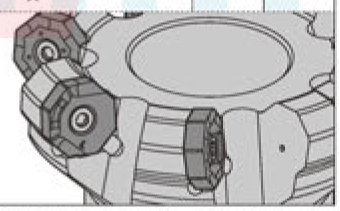


Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

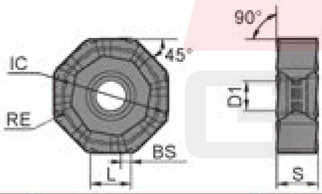
Insert shape	Type	Basic dimensions(mm) L	IC	S	D1	RE	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	ONHU060408-PF	6.58	15.875	4.76	4.4	0.83	★		★				★									
	ONHU08T508-PF	8.37	20.2	5.77	5.3	0.83	★		★				★									
	ONHU060408-PM	6.58	15.875	4.76	4.4	0.83	★	★	★													
	ONHU08T508-PM	8.37	20.2	5.79	5.3	0.83	★	★	★													
	ONHU08T508-W	6.9	20.5	6.00	5.3	0.80						★		★								





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

ON□□



Good working condition / Normal working condition / Bad working condition

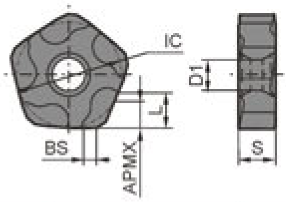
Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm) L	IC	S	D1	RE	BS	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	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

PN□□



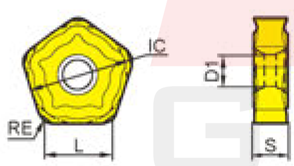
😊 Good working condition 😐 Normal working condition 😟 Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BS	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	PNEG110512R-CF	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CF	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512R-CM	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CM	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512R-CR	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CR	5.4	15.875	5.56	4.64	1.6	5			●													

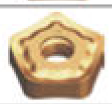
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

PN□□



😊 Good working condition 😐 Normal working condition 😟 Bad working condition

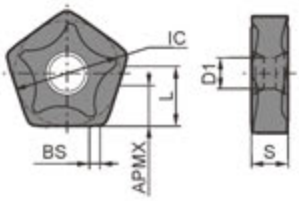
Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	PNEG110512-GL	7.5	15.875	5.56	4.64	1.2		●						●	★							
	PNEG110530-GM	7.5	15.875	5.56	4.64	3.0		●						●	★							
	PNEG110530-GH	7.5	15.875	5.56	4.64	3.0		●						●	★							

•Inserts are suitable for both left and right cuts

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

PN□□



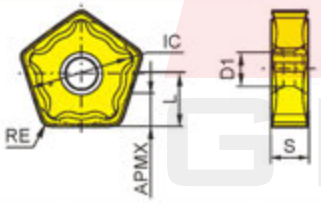
Good working condition Normal working condition Bad working condition

Workpiece material

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BS	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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	★	●														

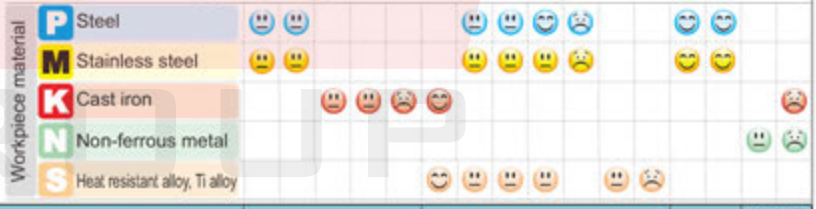
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

PN□□



Good working condition Normal working condition Bad working condition

Workpiece material

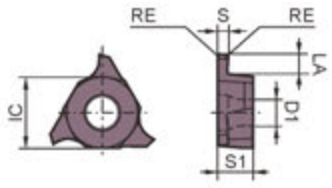


Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	PNEG110512-KL	6.5	15.875	5.56	4.64	1.2	6.5			●		●											
	PNEG110512-KM	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

QC□□



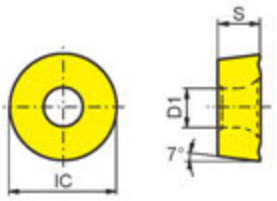
Good working condition Normal working condition Bad working condition

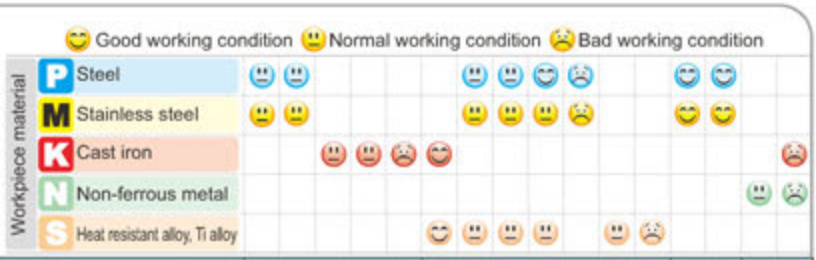
Workpiece material		
P	Steel	😃 😃 😃 😃 😊 😢 😊 😊
M	Stainless steel	😃 😃 😃 😃 😃 😢 😊 😊
K	Cast iron	😃 😃 😢 😊 😢
N	Non-ferrous metal	😃 😢
S	Heat resistant alloy, Ti alloy	😊 😃 😃 😃 😃 😢

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		S±0.025	LA	RE	IC	S1	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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

RC□□

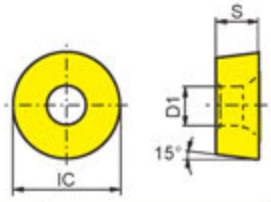




Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RCKT10T3MO-DM	10.0	3.97	4.4							●	★								
	RCKT1204MO-DM	12.0	4.76	4.0			○				●	★		●						
	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

RD□□



Good working condition Normal working condition Bad working condition

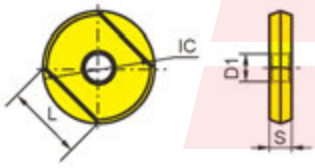
Workpiece material

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	
		IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RDKW0803MO	8	3.18	3.4							●	★		○						
	RDKW10T3MO	10	3.97	4.4							●	★								
	RDKW1204MO	12.0	4.76	4.4							●	★								
	RDKW1605MO	16.0	5.56	5.5							○	★		○						
	RDKW2006MO	20.0	6.35	6.5								○								

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

RO□□



Good working condition Normal working condition Bad working condition

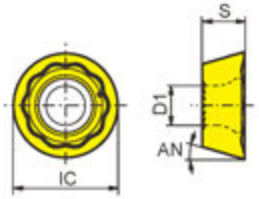
Workpiece material

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	
		IC	L	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBH053	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ROHX1203	12	8.5	3	4											○						
	ROHX1604	16	11.3	4	5											○						
	ROHX2005	20	14.1	5	5											○						

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

RP/D□□



Good working condition Normal working condition Bad working condition

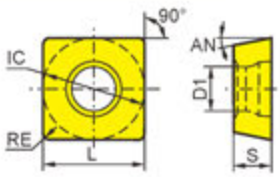
Workpiece material

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	
		IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RPMW10T3MO-H	10.0	3.97	4.1	11°								●								
	RPMW1204MO-H	12.0	4.76	4.4	11°								●								
	RDMW10T3MO-H	10.0	3.97	4.1	15°								●								
	RDMW1204MO-H	12.0	4.76	4.4	15°								●								
	RPMT10T3MO-M	10.0	3.97	4.1	11°								●			●	●				
	RPMT1204MO-M	12.0	4.76	4.4	11°								●			●	●				
	RDMT10T3MO-M	10.0	3.97	4.1	15°								●			●	●				
	RDMT1204MO-M	12.0	4.76	4.4	15°								●			●	●				
	RPMT10T3MO-MM	10.0	3.97	4.1	11°								●			●	●				
	RPMT1204MO-MM	12.0	4.76	4.4	11°								●			●	●				
	RDMT10T3MO-MM	10.0	3.97	4.1	15°								●			●	●				
	RDMT1204MO-MM	12.0	4.76	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

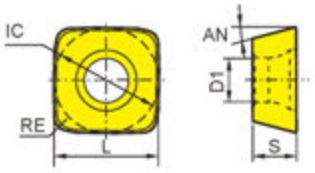
Workpiece material

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

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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□□

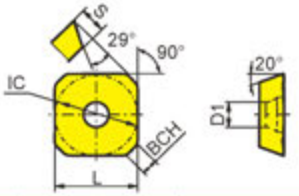


Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	RE	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SDMT06T208-DM	6.35	6.35	0.8	2.58	2.5	15°	★	★							●	●		●				
	SDMT09T312-DM	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

Chipbreaker introduction:
-PM chipbreaker has sharp cutting edge, it is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel and Ti alloy, etc.
-DM chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron, etc.

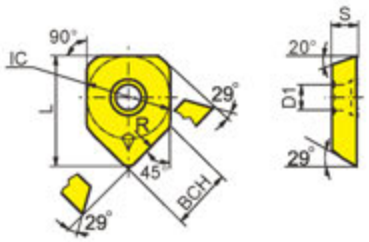
SE□□

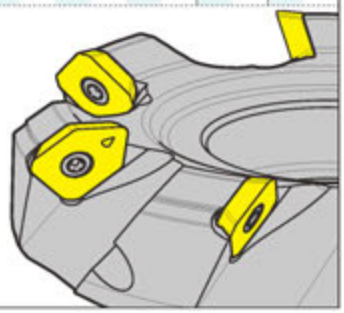


Good working condition Normal working condition Bad working condition

Workpiece material		CVD Coating					PVD Coating							Cermet		Cemented carbide	
		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😃	😃					😃	😃	😊	😟			😊	😊		
M	Stainless steel	😃	😃					😃	😃	😃	😟			😊	😊		
K	Cast iron			😃	😃	😟	😊										😟
N	Non-ferrous metal															😃	😟
S	Heat resistant alloy, Ti alloy						😊	😃	😃	😃		😃	😟				

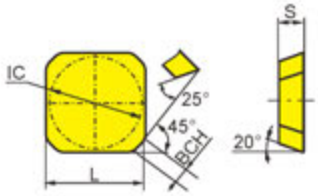
Insert shape	Type	Basic dimensions(mm) L	IC	S	D1	BCH	R	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	SEET12T3-DF	13.4	13.4	3.97	4.1	2.55	--	★							★		○	○	○				
	SEET12T3-CF	13.4	13.4	3.97	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

SE□□



Good working condition Normal working condition Bad working condition

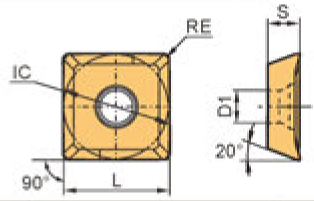
Workpiece material

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	
		L	IC	S	BCH	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SEEN1203AFTN	12.7	12.7	3.18	1.8							○						●			
	SEKN1203AFFN	12.7	12.7	3.18	1.8						★										
	SEKN1203AFN	12.7	12.7	3.18	1.8	●						○									
	SEKN1203AFTN	12.7	12.7	3.18	1.8	★	★	●				★	★					●			
	SEMR1203AN-M	12.7	12.7	3.3	-								●								
	SEKR1203AN-M	12.7	12.7	3.3	-								●								
	SEKN1504AFN	15.875	15.875	4.76	1.6	●	●														
	SEKN1504AFTN	15.875	15.875	4.76	1.6	★	★							★	●						
	SEMR1504AN-M	15.875	15.875	4.9	-								●								
	SEKR1504AN-M	15.875	15.875	4.9	-								●								

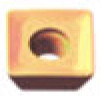
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

SE□□



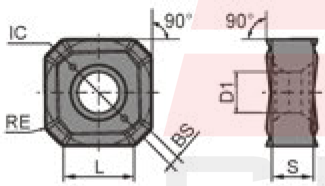
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SEET09T308PER-APF	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APF	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET09T308PER-APM	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APM	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET09T308PER-APR	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APR	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET120308-LH	13.3	13.3	4.05	4.1	0.8															★	

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

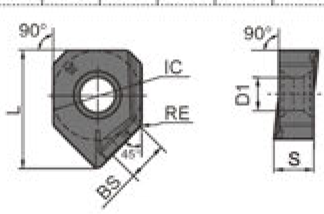
SN□□

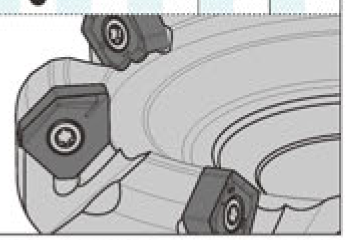


Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNEG1205ANR-GM	7.6	12.0	4.76	1.05	4.6	0.6	★	★	★	○				★	★		○	○				
	SNEG1506ANR-GM	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★	○				★	★		○	○				
	SNEG1205ANR-GR	7.6	12.0	4.76	1.05	4.6	0.6	★	★	★					★				●				
	SNEG1506ANR-GR	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★					★				●				
	SNEG1907ANR-GR	12.1	19.0	7.0	1.67	7.2	1.0	★	★	★		★			★								
	SNEG1205ANR-HGR	7.6	12.0	4.76	1.05	4.6	0.8	★	★	★	○	○			★	★							
	SNEG1506ANR-HGR	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★	○	○			★	★							
	SNEG1907ANR-HGR	12.1	19.0	7.0	1.67	7.2	1.0	★	★	★		○			★	★							
	SNEG1205ANR-W	15.9	12.0	4.76	4.07	4.6	0.6								●								
	SNEG1506ANR-W	19.9	15.0	5.54	4.97	5.5	0.9								●								



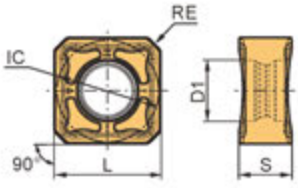


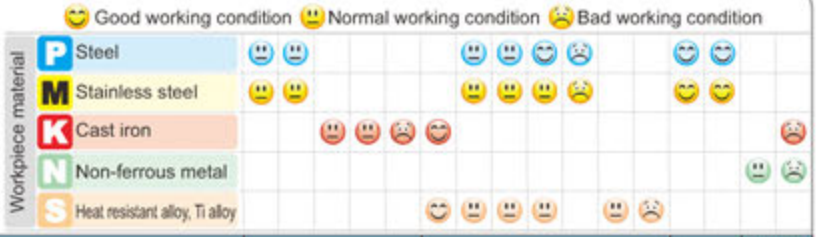
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Indexable milling tools

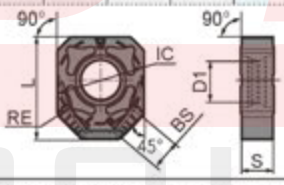
Milling inserts

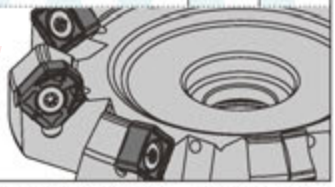
SN□□





Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205ANN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ANN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX1205ANN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						★			●				
	SNGX1205ANN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ANN-LH	12.7	12.7	6.5	-	5.9	0.8																●
	SNGX1205ANN-W	15	12.7	4.8	4.32	5.9	1.2						●										

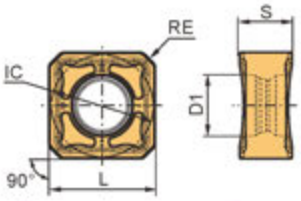


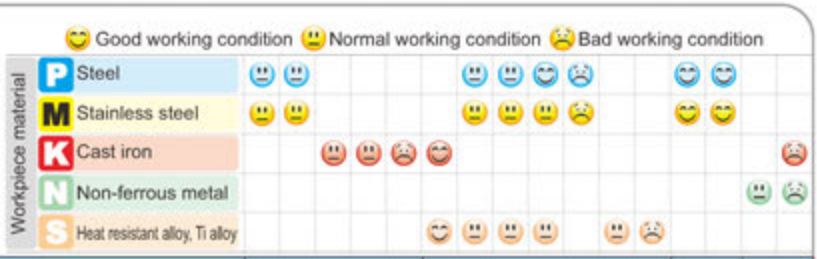


●Inserts are suitable for both left and right cuts

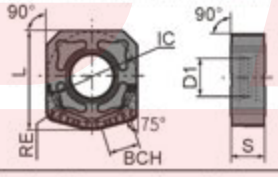
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

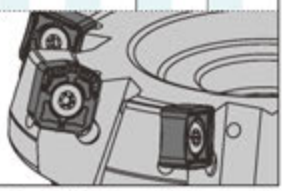
SN□□





Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating						Cermet		Cemented carbide	
		L	IC	S	BCH	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205ENN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ENN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						★			●				
	SNGX1205ENN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ENN-W	13.7	12.7	4.8	4.69	5.9	1.2						●										

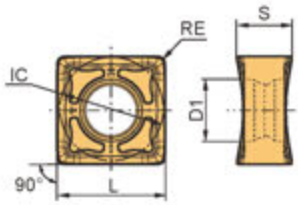


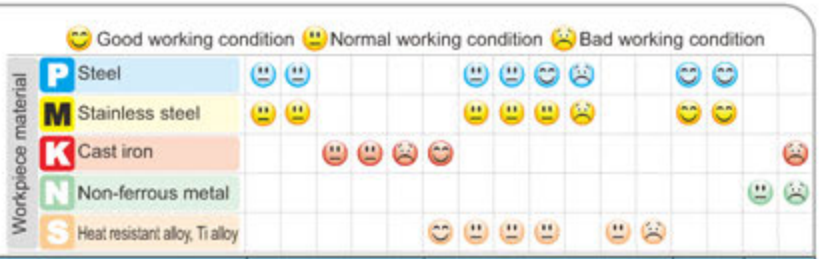


●Inserts are suitable for both left and right cuts

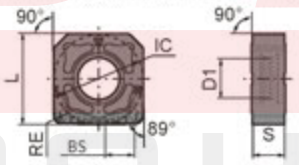
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

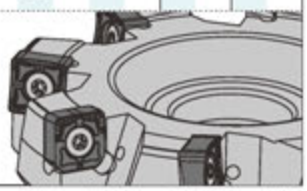
SN□□





Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205PNN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★						
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★						
	SNGX1205PNN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★		●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★		●				
	SNGX1205PNN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★						
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★						
	SNCU120420-W4	12.7	12.7	4.8	-	5.9	2.0						●										
	SNGX1205PNN-W	12.86	12.7	4.8	4.26	5.9	1.2									●							





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

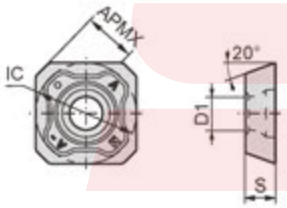
- Inserts can be mounted left or right.
- The W4 wiper inserts for adjustable tool holders.
- The W wiper inserts can be mounted directly on the cutting teeth.

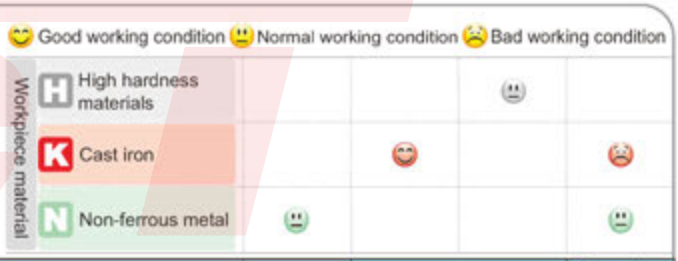
SN□□

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	RE	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	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

SE□□

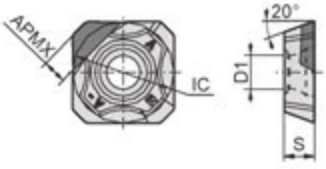


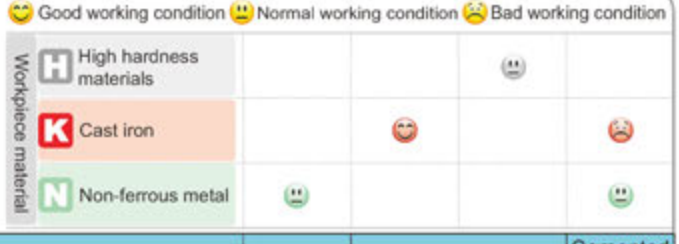


Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	SEHT12T3AFFN-AL	12.7	3.97	4.4	6.6				★

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

SE□□



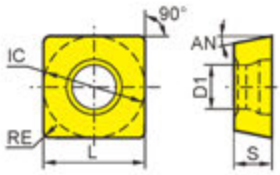


Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	SEHT12T308AFFN-PCD	12.7	3.97	4.4	2.5	★			
	SEHT12T308AFFN-CBN	12.7	3.97	4.4	2		○	○	

CBN insert edge can be treated as per machining requirements

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

SP□□



Good working condition Normal working condition Bad working condition

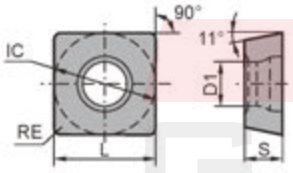
Workpiece material

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	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPMT060304	0.4	6.35	6.35	3.18	2.8	11°										○						
	SPMT120408	0.8	0.8	12.70	4.76	5.5	11°										★						
	SPMT120408	12.7	12.7	0.8	4.76	5.5	11°										★						

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

SP□□



Good working condition Normal working condition Bad working condition

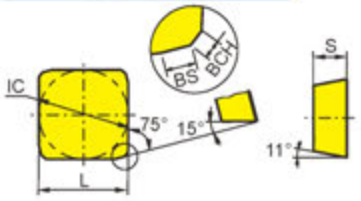
Workpiece material

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	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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

SP□N



Good working condition Normal working condition Bad working condition

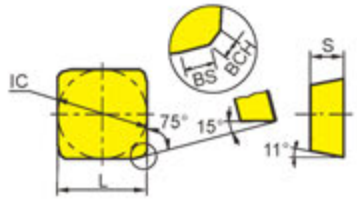
Workpiece material

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	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	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							★			★						●
	SPMR1203EDSR-M	12.7	12.7	3.18	-	1.3	●	★	●													
	SPMR1203EDSL-M	12.7	12.7	3.18	-	1.3	●	★	●													
	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.

SP□N



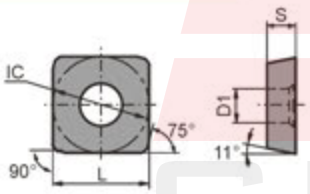
Good working condition Normal working condition Bad working condition

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	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPKR1504EDR-GM	15.875	15.875	4.76	1	1.4							★			★						●
	SPKR1504EDL-GM	15.875	15.875	4.76	1	1.4							★			★						●
	SPMR1504ESR-M	15.875	15.875	4.76	-	1.2	●	★	●													
	SPMR1504ESL-M	15.875	15.875	4.76	-	1.2	●	★	●													

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

SP□□



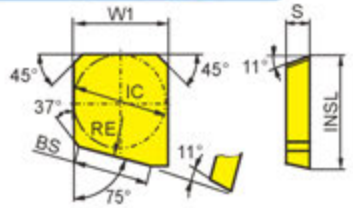
Good working condition Normal working condition Bad working condition

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	
		L	IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPKW1204EDFR	12.7	12.7	4.76	5.56							○									
	SPKW1204EDSR	12.7	12.7	4.76	5.56							○									
	SPKT1204EDR	12.7	12.7	4.76	5.56							★									

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

SP□X



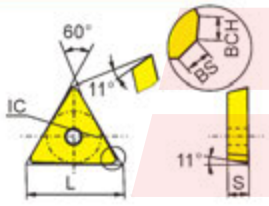
Good working condition Normal working condition Bad working condition

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	
		INSL	IC	W1	S	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
inserts with wiper	SPEX1203EDL-1	15	12.7	12.7	3.18	10	500																●
	SPEX1203EDR-1	15	12.7	12.7	3.18	10	500																●
	SPEX1504EDL-1	18.2	15.875	15.875	4.76	10	500																●
	SPEX1504EDR-1	18.2	15.875	15.875	4.76	10	500																●

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

TP□□



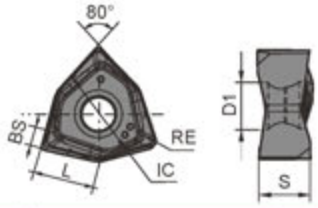
Good working condition Normal working condition Bad working condition

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	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	TPKN2204PDFR	22	12.7	4.76	1.4	0.7						●										
	TPKN2204PDFL	22	12.7	4.76	1.4	0.7						●										
	TPKN2204PDR	22	12.7	4.76	1.4	0.7	●	●				●	★	●		●						
	TPKN2204PDL	22	12.7	4.76	1.4	0.7	●							●								
	TPKN2204PDTR	22	12.7	4.76	1.4	0.7	●															
	TPKN2204PDTL	22	12.7	4.76	1.4	0.7	●															
	TPMR2204PDSL	22	12.7	4.76	1.4	0.7	○	○														
	TPMR2204PDSR	22	12.7	4.76	1.4	0.7	○	○														

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

WN□□



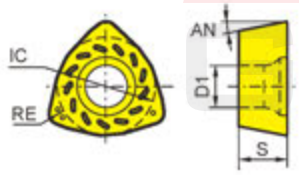
Good working condition Normal working condition Bad working condition

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	
		L	IC	S	D1	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	WNHU060404PNR-GM	5.7	9.525	4.0	3.5	1.35	0.4		★	★					★	★							
	WNHU060408PNR-GM	5.7	9.525	4.0	3.5	1.35	0.8		★	★					★	★							
	WNHU080608PNR-GM	7.7	12.7	5.4	4.4	1.6	0.8		★	★					★	★							
	WNHU080612PNR-GM	7.7	12.7	5.4	4.4	1.6	1.2		★	★					★	★							
	WNHU080616PNR-GM	7.7	12.7	5.4	4.4	1.6	1.6		★	★					★	★							
	WNMU060408PNN-GM	5.7	9.525	4.0	3.5	1.35	0.8		★	★					★	★							
	WNMU080608PNN-GM	7.7	12.7	5.4	4.4	1.6	0.8		★	★					★	★							
	WNHU080608PNR-LH	7.7	12.7	5.4	4.4	1.6	0.8															★	

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

WP□□



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	
		IC	RE	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	WPGT050315ZSR	7.94	1.5	3.5	4.0	11°	★															
	WPGT060415ZSR	9.525	1.5	4.2	4.4	11°	★															
	WPGT080615ZSR	12.85	1.5	6.35	5.5	11°	★															
	WPGT090725ZSR	15.00	2.5	7	5.5	11°	★															
	WPGT050315ZSR-PM	7.94	1.5	3.5	4.0	11°	★							●								
	WPGT060415ZSR-PM	9.525	1.5	4.2	4.4	11°	★							●								
	WPGT080615ZSR-PM	12.85	1.5	6.35	5.5	11°	★							●								
	WPGT090725ZSR-PM	15.00	2.5	7.00	5.5	11°	★							●								

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

Chipbreaker introduction:
-PM chipbreaker has sharp cutting edge, it is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel and Ti alloy, etc.
General chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron, etc.

XP□□

Good working condition Normal working condition Bad working condition

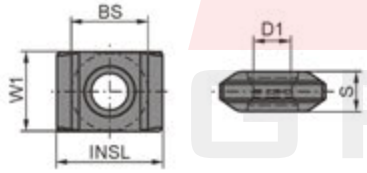
Workpiece material

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	
		RE	D1	S	AN	INSL	Applicable tools	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	XPHT16R0803-GM	8	3.1	3.18	9°	16	Ø16										★						
	XPHT20R10T3-GM	10	4.0	3.97	9°	20	Ø20										★						
	XPHT25R1204-GM	12.5	4.7	4.76	9°	25	Ø25										★						
	XPHT30R1506-GM	15	5.8	6.35	11°	30	Ø30										★						
	XPHT32R1606-GM	16	5.8	6.35	9°	32	Ø32										★						
	XPHT40R2007-GM	20	6.7	7.94	9°	40	Ø40										★						
	XPHT50R2507-GM	25	9.2	7.94	9°	50	Ø50										★						

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

XE□□



Good working condition Normal working condition Bad working condition

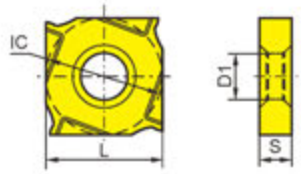
Workpiece material

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	
		INSL	W1	S	D1	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	XEEC120904	12.7	9.525	4.76	4.4	7.3			●			●										

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

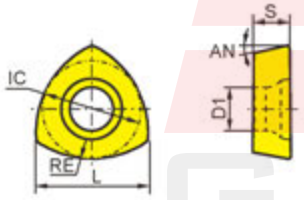
XS□□

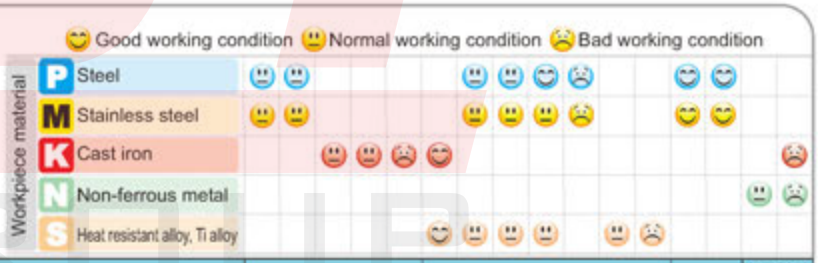


Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating						Cermet		Cemented carbide	
		IC	L	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	XSEQ1202	12.7	12.7	2.3	5.0										★						
	XSEQ1203	12.7	12.7	3.0	5.0										★						
	XSEQ12T3	12.7	12.7	3.5	5.0										★						
	XSEQ1204	12.7	12.7	4.0	5.0										★						
	XSEQ12T4	12.7	12.7	4.5	5.0										★						

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

ZD□□

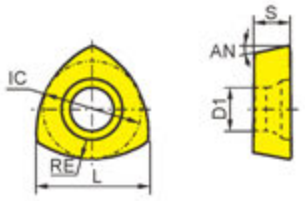




Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating						Cermet		Cemented carbide	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZDET08T2CYR10	10	8.4	6.75	2.78	2.8	14°										○						
	ZDET1103CYR12.5	12.5	10.6	8.5	3.18	2.8	14°										○						
	ZDET13T3CYR16	16	13.2	10.5	3.97	4.4	14°										○						

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

ZP□□



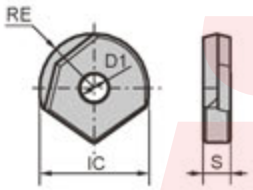
Good working condition Normal working condition Bad working condition

Workpiece material

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZPNT2204CY(R20)	20	16.1	12.7	4.76	5.56	11°										○						
	ZPNT2204CY(R25)	25	16.9	12.7	4.76	5.56	11°										○						
	ZPNT2204CY(R31)	31.5	17.6	12.7	4.76	5.56	11°										○						

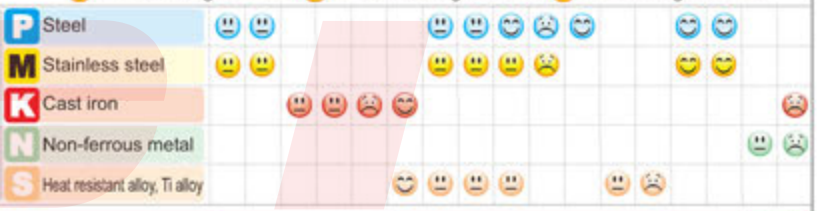
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

ZO□□



Good working condition Normal working condition Bad working condition

Workpiece material



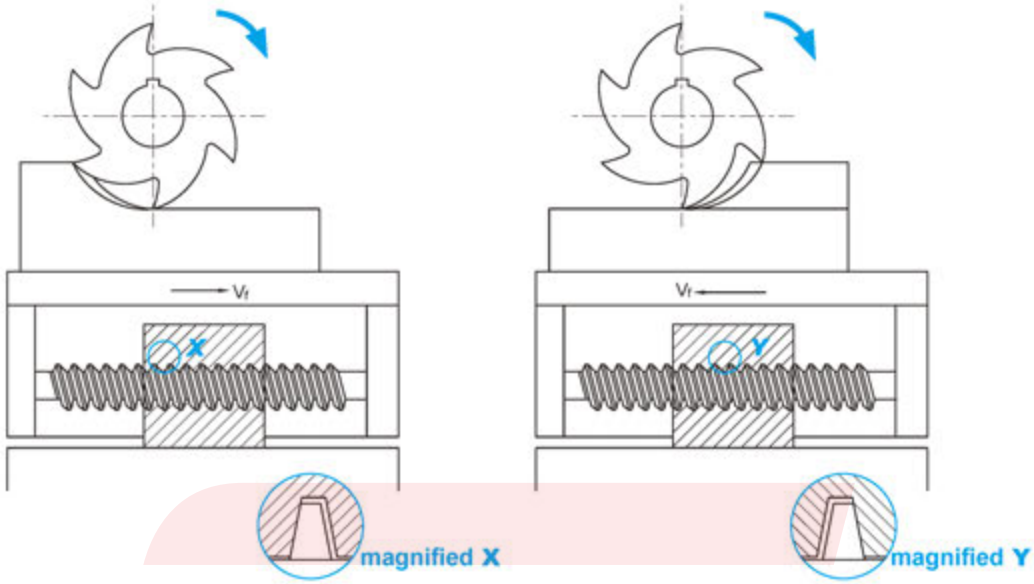
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating								Cermet		Cemented carbide	
		RE	IC	S	D1	Applicable tools ØD	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBH053	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZOHX1203-GF	6	12	3	4	Ø12											★						
	ZOHX1604-GF	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											★						
	ZOHX1203-HM	6	12	3	4	Ø12											★						
	ZOHX1604-HM	8	16	4	5	Ø16											★						
	ZOHX2005-HM	10	20	5	5	Ø20											★						
	ZOHX2506-HM	12.5	25	6	6	Ø25											★						
	ZOHX3007-HM	15	30	7	8	Ø30											★						
	ZOHX3207-HM	16	32	7	8	Ø32											★						

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

Common problems in milling and solutions

Failure		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
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	✓				
	Burrs occuring	Unsuitable geometry shape of cutting edge			↓	↓	↓	✓												
		Improper 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								↑			↓	✓						

Difference and selection between down milling and up milling



Up milling

Down 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 (Ra). 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.

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	$h_{ex}=f_z\times sinkr$
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	$h_{ex}=\frac{\sqrt{iC^2\times(iC-2a_p)^2}}{iC}\times f_z$

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_z : feed rate per revolution (mm/rev)

- Cutting speed

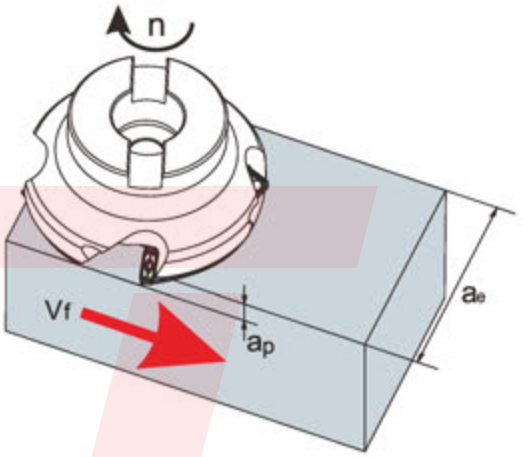
$$V_c = \frac{\pi \times D_c \times n}{1000} \text{ (m/min)}$$

- Spindle speed

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

- Feed rate of worktable (feed speed)

$$V_f = f_z \times n \times z_n \text{ (mm/min)}$$

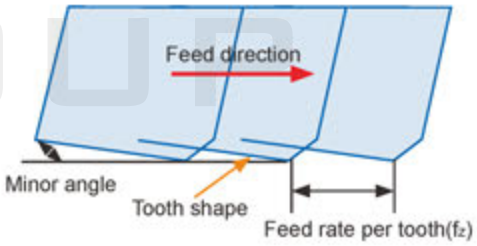


- Feed rate per tooth

$$f_z = \frac{V_f}{n \times Z_n} \text{ (mm/z)}$$

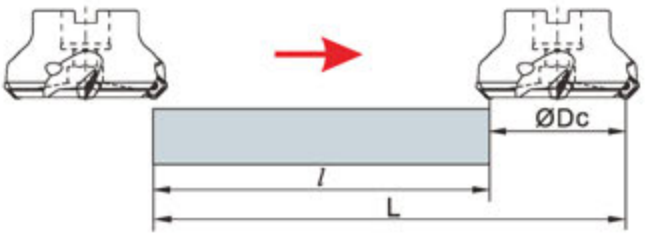
- Feed rate per revolution

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



- Machining time

$$T_c = \frac{L}{V_f} \text{ (min)}$$

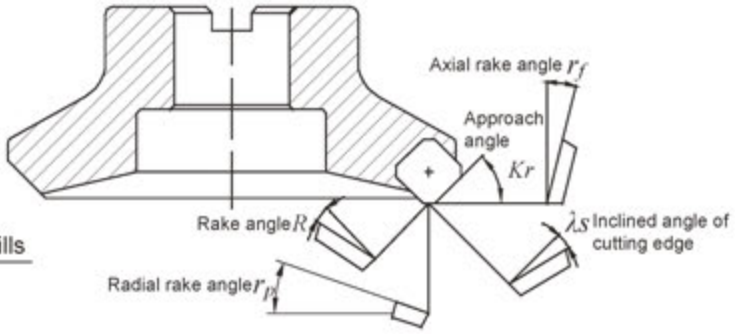


- Metal removal rate

$$Q = \frac{a_p \times a_e \times V_f}{1000} \text{ (cm}^3\text{/min)}$$

Function of each part in face milling

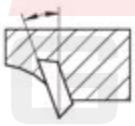
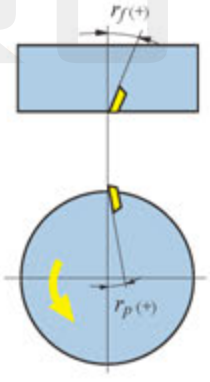
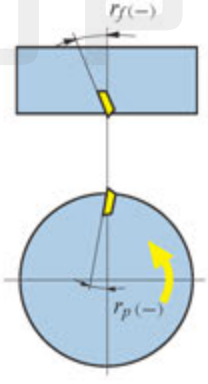
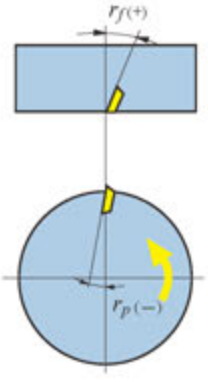
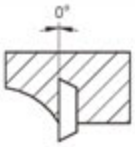
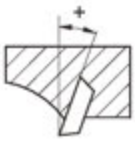
Main angles of face mills



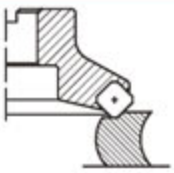
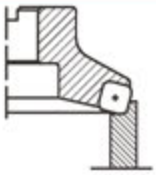
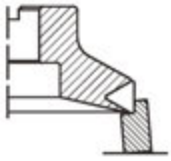
Main angles of face mills

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 performanc		
Approach angle Kr	Determining the chip thickness	Kr↑, chip thickness↑; Kr↓, chip thickness↓;		
Rake angle R	Determining whether easy and fast the cutting is or not	Poor cutting performance, High-strength cutting edge	(−)←0→(+)	Good cutting performance, Low-strength cutting edge
Inclined angle of cutting edge λs	Determining the chip flow direction	Poor capability of chip removal, High-strength cutting edge	(−)←0→(+)	Good performance of chip removal, Low-strength cutting edge

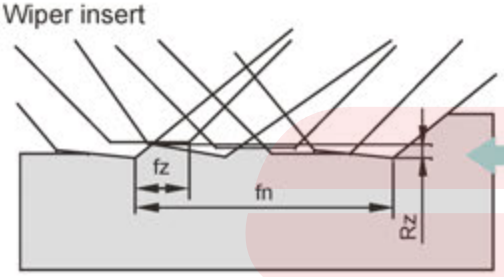
Characteristics of different rake angles combined

		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-wall workpiece.

Wiper insert

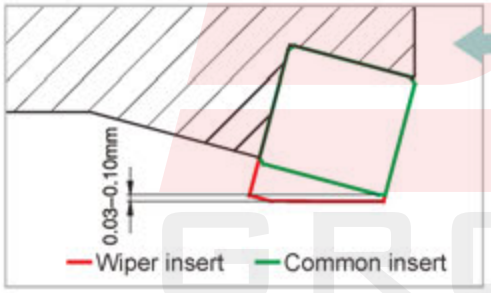


It has axial and radial run-out because tools and inserts have manufacturing tolerance. The axial run-out leads to poor surface roughness.

Solution

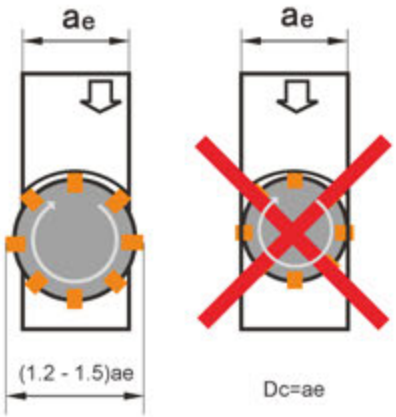
Mounting wiper inserts

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.

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.