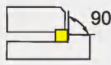
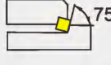
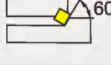
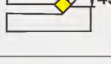
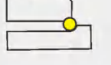


### Indexable milling tools code key

Cutter type	
<b>FM</b>	Face milling
<b>EM</b>	Square shoulder milling
<b>HM</b>	Helical end milling
<b>SM</b>	Side and face milling
<b>BM</b>	Profile milling
<b>CM</b>	Chamfer milling
<b>XM</b>	Special milling
<b>TM</b>	T-slot milling
<b>AM</b>	Aluminum alloy high speed milling

Approach angle		
<b>P</b>	90°	
<b>E</b>	75°	
<b>D</b>	60°	
<b>A</b>	45°	
<b>R</b>		

**Series code**

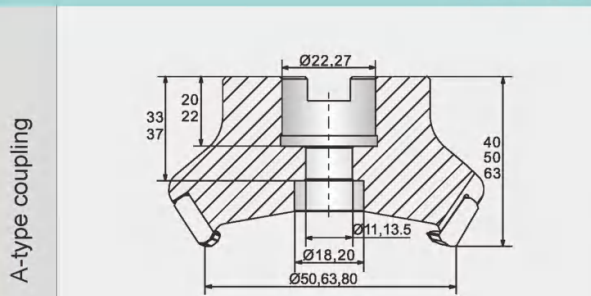
**Cutting diameter ØD**  
Side and face milling tool: diameter X cutting edge width

Coupling structurebe (see below)			
<b>A</b>	A-type coupling	<b>XP</b>	Weldon shank
<b>B</b>	B-type coupling	<b>G</b>	Straight shank
<b>C</b>	C-type coupling	<b>MW</b>	Morse adapter with a conical hole and without a flat tail
<b>D</b>	D-type coupling		

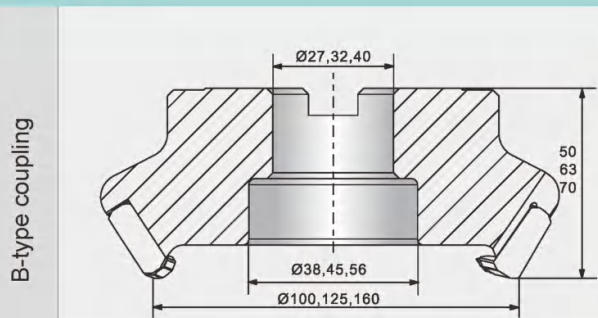
**Coupling size(mm)**  
(see below)

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

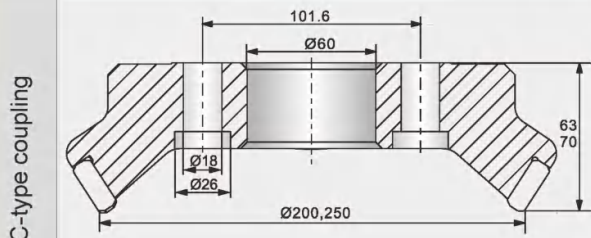
### Coupling structure of arbor



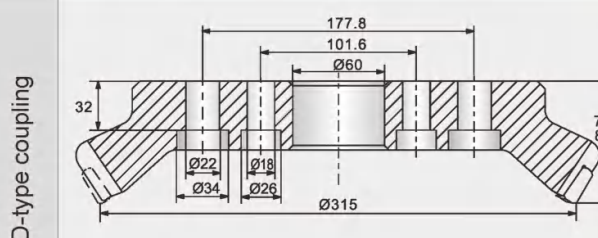
Ø50- Ø80 arbor face milling cutter as per GB5342-96



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



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











D≥Ø315 arbor face milling cutter as per GB5342-96

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

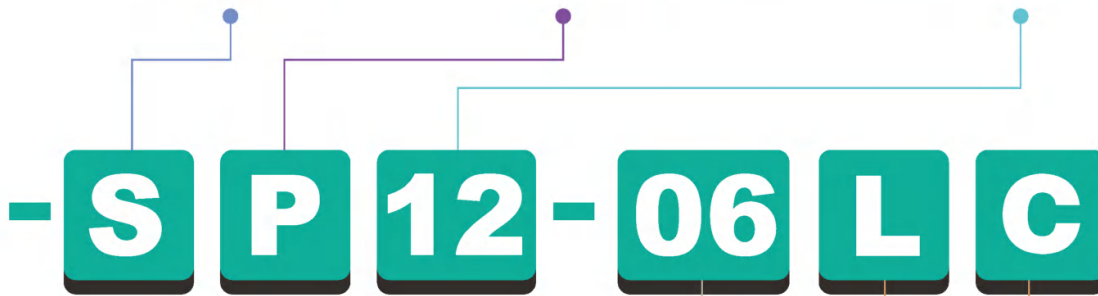
Indexable milling tools

Indexable milling tools code key

Insert shape	
 <b>C</b>	 <b>D</b>
 <b>R</b>	 <b>S</b>
 <b>T</b>	 <b>L</b>
 <b>H</b>	 <b>O</b>

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

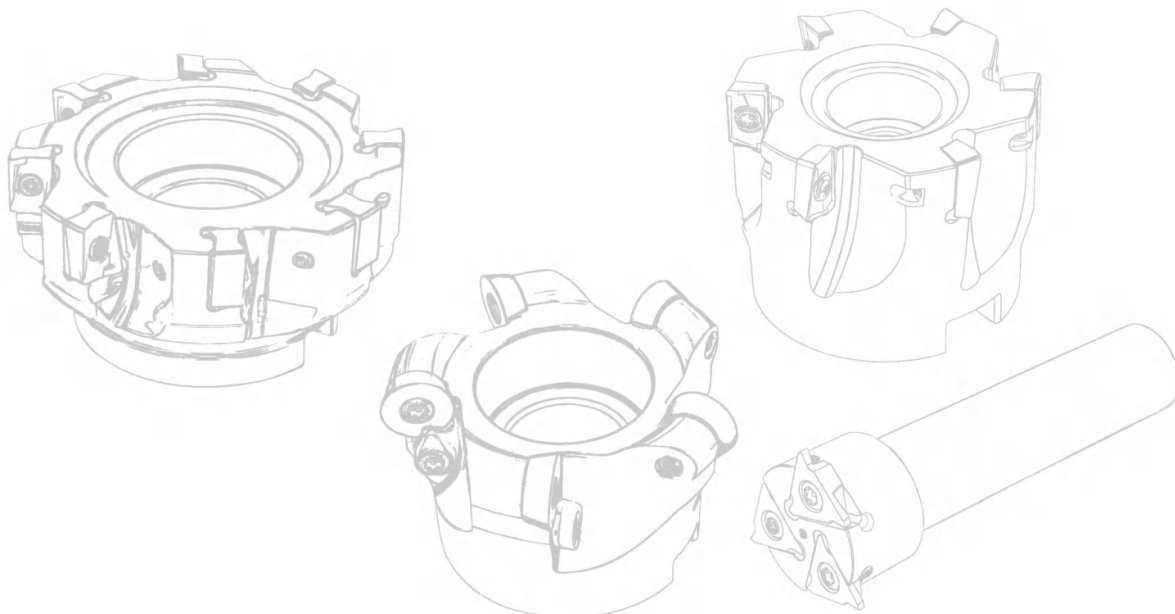
Diameter of insert's inscribed circle	Length of cutting edge					
	C	D	R	S	T	L
5.556	—	—	—	—	09	—
6.350	06	07	—	—	11	—
9.525	09	11	09	09	16	—
12.700	12	15	12	12	22	—
15.875	16	19	15	15	27	—
19.050	19	—	19	19	33	—
25.400	25	—	25	25	44	2



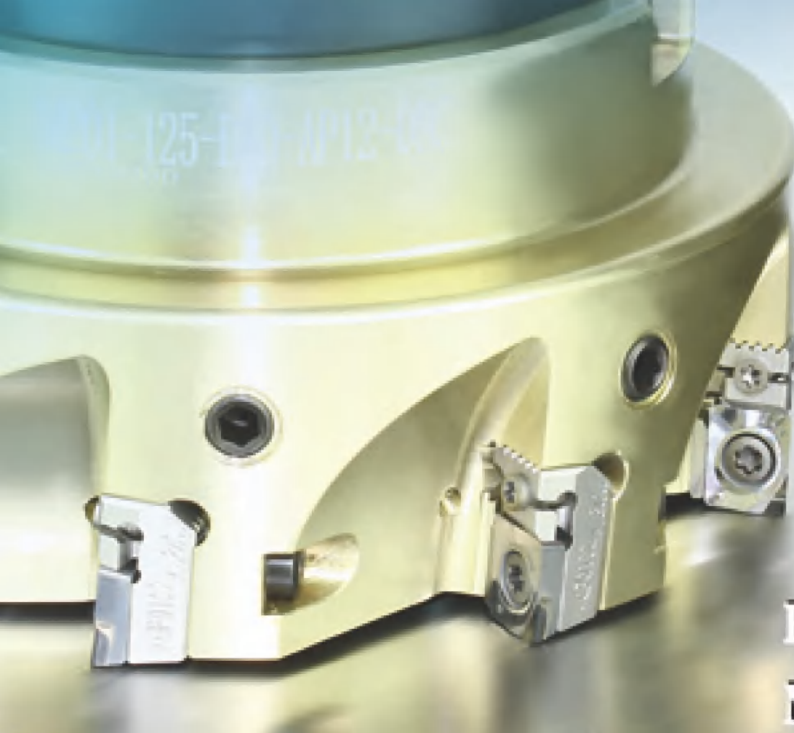
**Number of teeth**  
(number of flute in the case of helical end mills)

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

**Internal cooling structure**

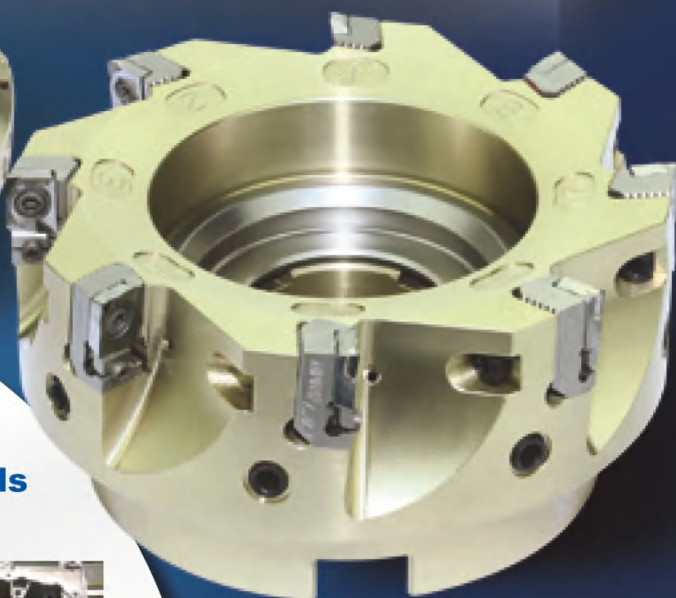
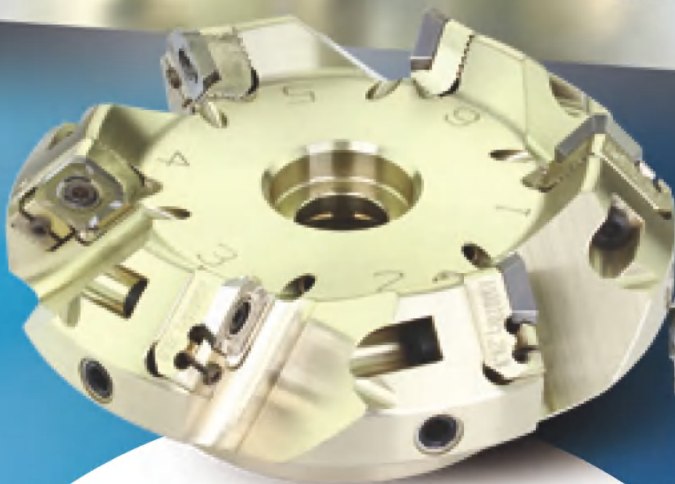


Indexable milling tools code key



# AMA01 AMP01 Series

High-speed and High-precision  
Milling Tools



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

Area of machining: Bottom surface of cylinder housing

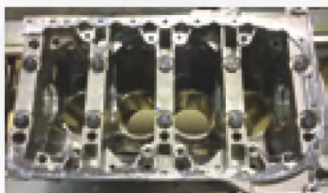
Machine: Machining center

Coolant: Internal

Workpiece material: Aluminum alloy (HB 110)

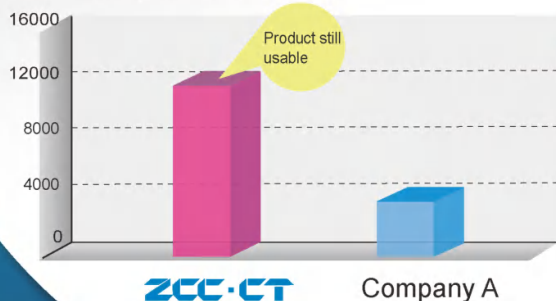
Operation: Face milling

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



## ● Comparison of tool life

Number of workpiece machined(pieces)



Results:

**ZCC-CT**: 12000 pcs  
(Still usable)

Product of company A: 3500 pcs



## High-speed and high-precision milling tools

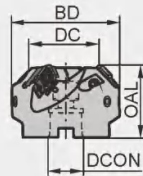
**KAPR:45°**



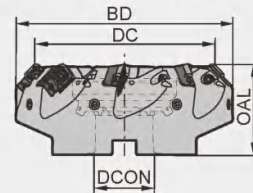
**AMA01 N K H**



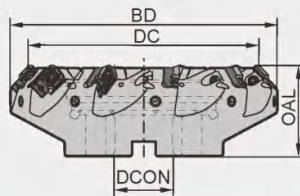
A-type coupling



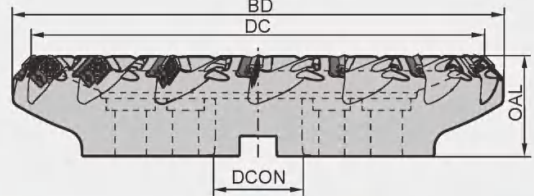
B-type coupling



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			
<b>AMA01</b> -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		M8×12(GB77-85)			--	AMA0102			WT15IS				
Ø80										--	AMA0103		
Ø100-Ø160												--	
Ø200													--
Ø250-Ø500													

Tools code key **B26-B27**

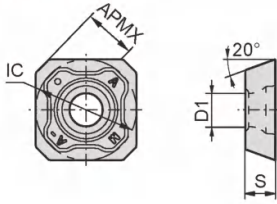
Grade selection guide **B19-B23**

Technical data **B271-B276**

Indexable milling tools

High-speed and high-precision milling tools

## Selection of inserts



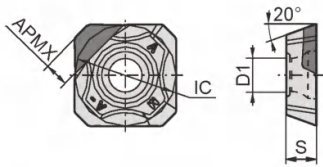
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

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		YCB011	YCB012	
	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		YCB011	YCB012	
	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)	fz(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 milling tools

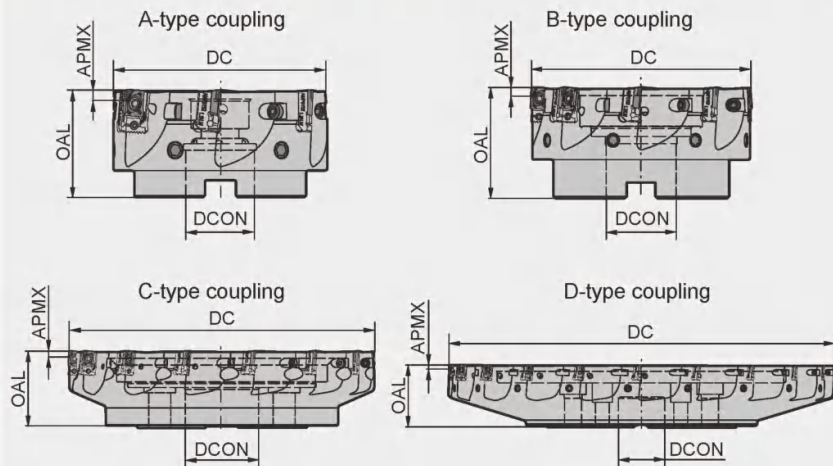
KAPR:90°



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			
<b>AMP01</b> -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	
Ø80-Ø160		M8×12(GB77-85)			AMP0102	WT15IS	
Ø200		--			AMP0103		
Ø250-Ø500		--					

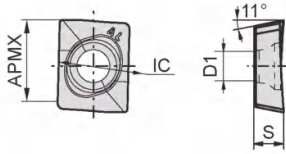
Tools code key  
B26-B27

Grade selection guide  
B19-B23

Technical data  
B271-B276

Indexable milling tools  
High-speed and high-precision milling tools

### Selection of inserts



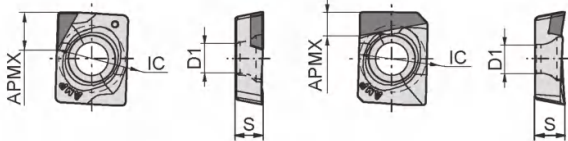
😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

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		YCB011	YCB012	
	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		YCB011	YCB012	
	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

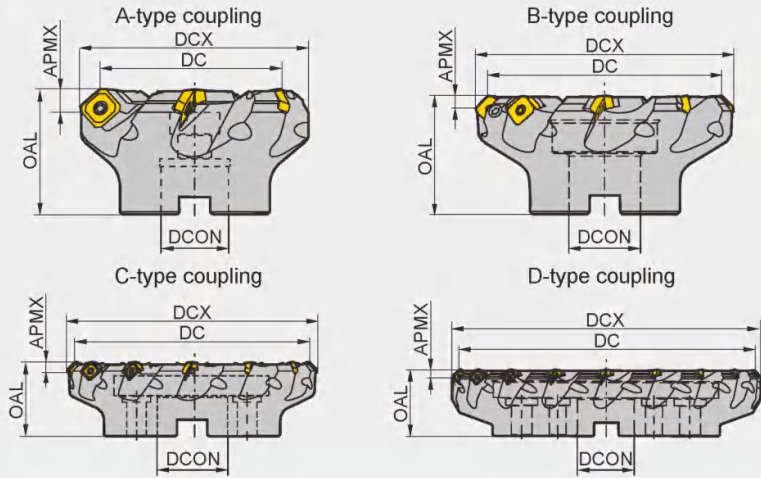
Workpiece material	Insert material	Cutting parameters	
		V(m/min)	f <sub>z</sub> (mm/z)
N Aluminum alloy (Si content ≤ 12%)	YCD011	1500(800-3000)	0.1(0.08-0.3)
	YD201	600(300-1000)	0.15(0.05-0.3)
K Cast iron	YCB011	800(500-1200)	0.2(0.1-0.5)
H Hardened steel	YCB012	150(100-500)	0.15(0.1-0.5)

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

Indexable milling tools  
Face milling tools

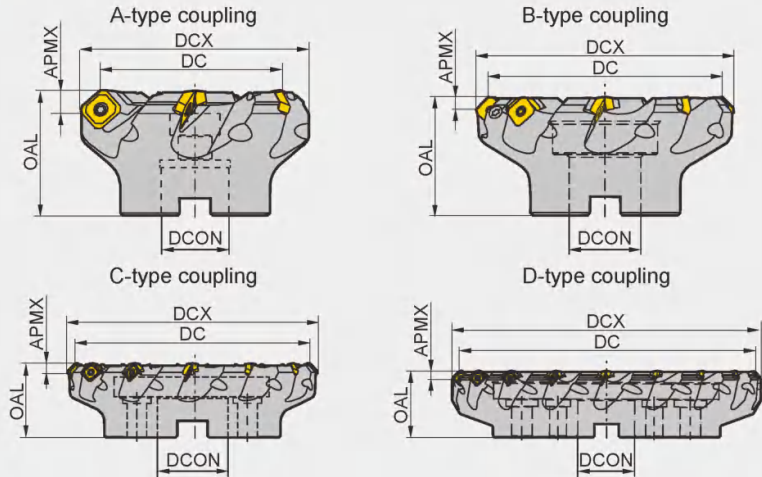


## Face milling tools

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			
<b>FMA01</b> Close pitch	▲	△	50	63	22	40	6.0	5	A	0.427
	▲	△	63	74	22	40	6.0	6	A	0.771
	▲	△	80	93	27	50	6.0	8	A	1.37
	▲	△	100	114	32	50	6.0	10	B	1.755
	▲	△	125	136	40	63	6.0	12	B	3.666
	▲	△	160	174	40	63	6.0	16	B	5.21
	▲	△	200	214	60	63	6.0	20	C	9.32
	▲	△	250	264	60	63	6.0	24	C	15.892
	▲	△	100	114	32	63	10.4	6	B	2.98
	▲	△	125	144	40	63	10.4	7	B	3.803
	▲	△	200	220	60	63	10.4	12	C	7.191
	▲	△	250	265	60	63	10.4	14	C	14.9

▲Stock available    △Make-to-order

### Spare parts

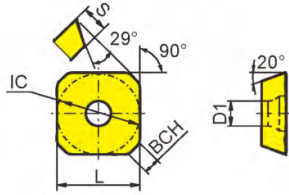
Diameter DC	Insert	Insert screw	Shim	Shim screw	Wrench	Wrench	
Ø50-Ø315	SEET12□□-	I60M3.5×12	S13BS	SM5×7XA	WT15IS	WH35L	
Ø100-Ø315	SEET18□□-	I60M5×17	S18BS	SM8×9XA	WT20IT	WH50L	

Tools code key → B26-B27

Grade selection guide → B19-B23

Technical data → B271-B276

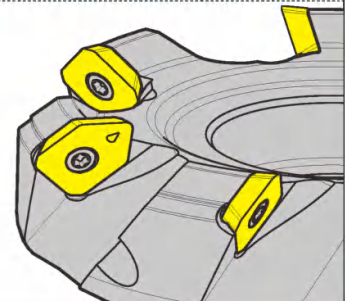
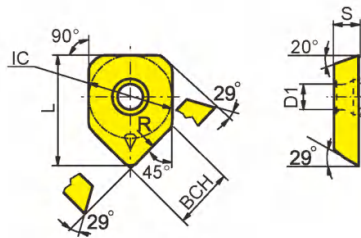
## Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating					Cermets		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



Indexable milling tools  
Face milling tools

### Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters				
			V(m/min)	f(mm/z)			
				-DF	-DM	-DR	
<b>P</b>	Low-carbon steel, Soft steel	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)
<b>M</b>	Stainless steel	≤270		-EF	-EM		
			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)	
<b>K</b>	Cast iron	180-250		-CF	-CM	-CR	
			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)
<b>N</b>	Al alloy steel	--		-LH			
			YD101	300-	0.25 (0.1-0.4)		
			YD201	300-			
<b>S</b>	High-temperature alloy	≤400		-EF	-EM		
			YBG105	50(20-60)	0.1 (0.1-0.2)	0.15 (0.1-0.3)	

Indexable  
milling tools

Face milling tools

Case for FMA01



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

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"



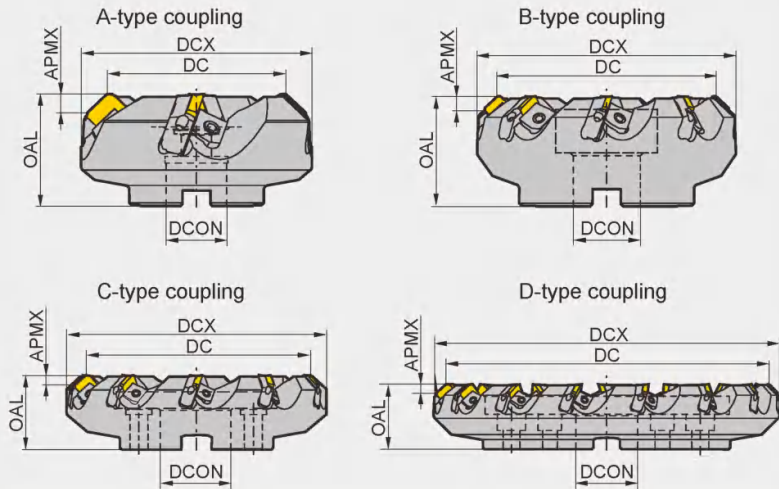
Indexable milling tools  
 Face milling tools

## 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			
<b>FMA03</b> -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

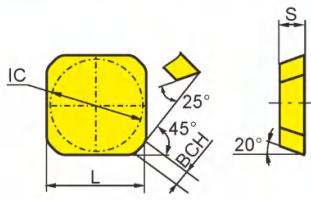
Grade selection guide

B19-B23

Technical data

B271-B276

## Selection of inserts



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

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

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

Indexable milling tools

Face milling tools



### ➤ Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters	
			V(m/min)	f(mm/z)
<b>P</b>	Low-carbon steel, Soft steel	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	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	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)
<b>M</b>	Stainless steel	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)
<b>K</b>	Cast iron	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)

Indexable  
milling tools

Face milling tools

Face milling tools

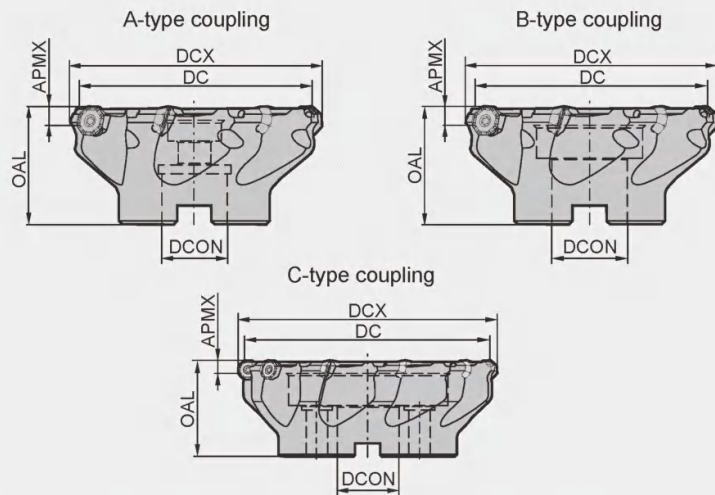
KAPR:45°



FMA04 P M K N



Screw clamping



Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
	R	L	DC	DCX	DCON	OAL	APMX			
<b>FMA04</b> -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

Indexable milling tools

Face milling tools

Spare parts

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

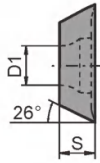
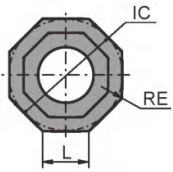
Tools code key  
B26-B27

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
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		
	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



Indexable milling tools

Face milling tools

## Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters			
			V(m/min)	f(mm/z)		
				-DF	-DM	
<b>P</b>	Low-carbon steel, Soft steel	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)
<b>M</b>	Stainless steel	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)	
<b>K</b>	Cast iron	180-250	YBG105	210 (120-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
<b>N</b>				-LH		
	Al alloy steel	-	YD101	300-	0.15 (0.05-0.3)	

Indexable milling tools  
Face milling tools

### 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:  $V_c=180\text{m/min}$ ,  $a_p=1\text{mm}$ ,  $f_z=0.2\text{mm/z}$ ,  $a_e=60\text{mm}$



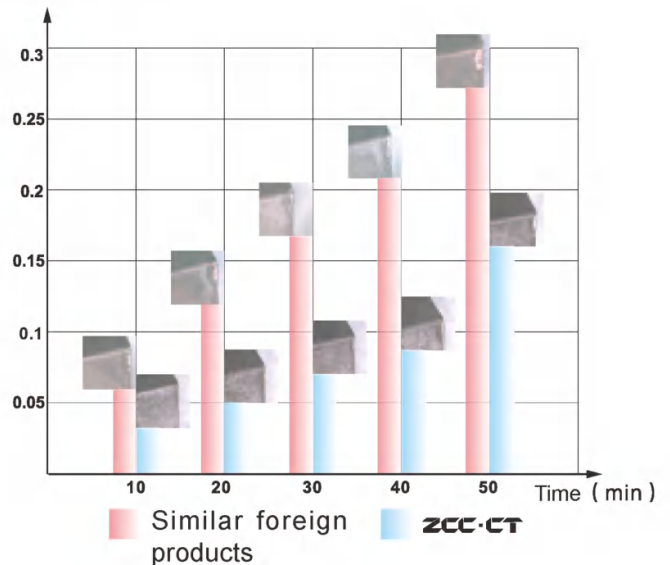
Surface roughness of workpiece being processed:

**ZCC-CT: Ra1.2**

Similar foreign products: Ra1.6

### Insert wear comparison

Flank wear VB(mm)



### Face milling tools

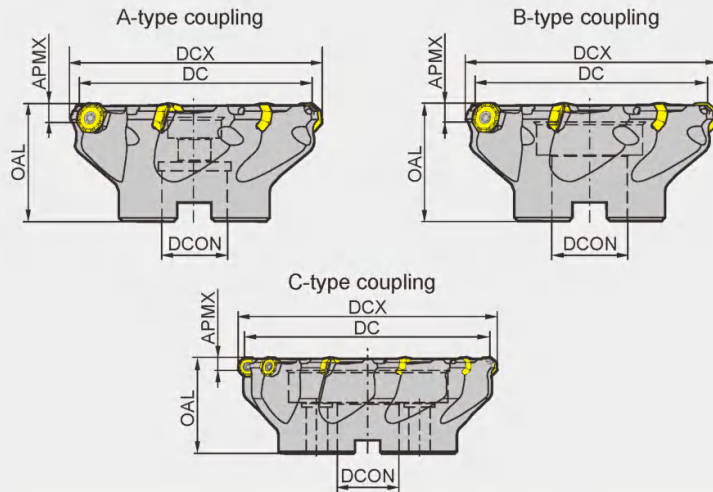
KAPR:45°



**FMA04** P M K N S



Screw clamping



#### Specification of tools

Type	Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)	
	R	L	DC	DCX	DCON	OAL	APMX				
<b>FMA04</b> 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

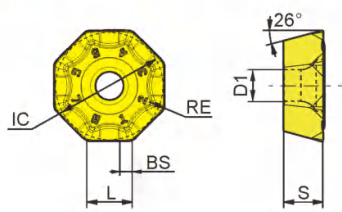
Diameter DC	Insert screw	Wrench	
Ø50-Ø63	I60M5×13	WT20IP	
Ø80-Ø125		WT20IS	
Ø160		WT20IT	

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
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	-GM	-GH	
<b>P</b> 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)				
<b>M</b> 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)				
<b>K</b> 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)	
<b>S</b> High-temperature alloy	≤400	YBS303	100(60-120)	--	0.15 (0.1-0.25)	--	
<b>N</b> Aluminium alloy	--	-LH					
		YD101	300-	0.15 (0.05-0.3)			
		YD201					

Indexable milling tools  
Face milling tools

HURRICANE

# FMA07

Milling Tool Series

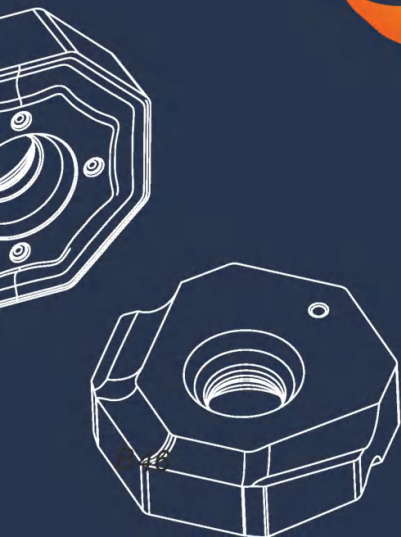
New Generation of High Economy  
Milling Tools



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).



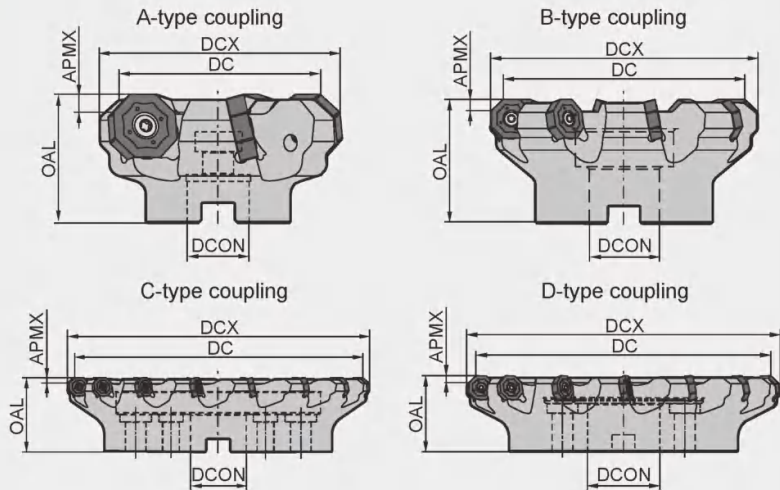
Face milling tools

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			
<b>FMA07</b> -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

Indexable milling tools

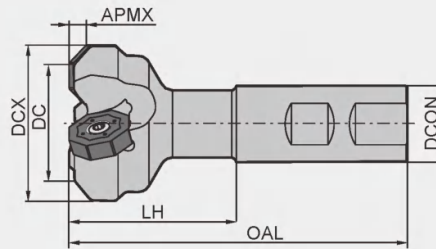
Face milling tools

## Face milling tools

KAPR:45°



**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		
<b>FMA07</b> -025-XP20-ON06-02	▲	△	25	37	20	95	45	4	2	0.2
-040-XP25-ON06-03	▲	△	40	52	25	106	50	4	3	0.4
-032-XP25-ON08-02	▲	△	32	47	25	111	55	5	2	0.4
-040-XP25-ON08-03	▲	△	40	55	25	111	55	5	3	0.5
-050-XP25-ON08-04	▲	△	50	65	25	111	55	5	4	0.6

▲ Stock available    △ Make-to-order

Indexable milling tools

Face milling tools

### Spare parts

Diameter 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

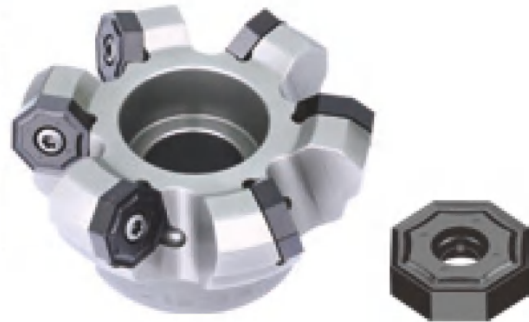
Grade selection guide

B19-B23

Technical data

B271-B276

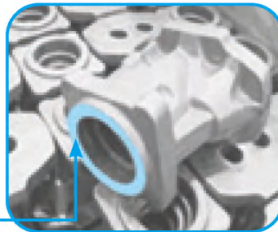
Case for FMA07



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

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

Insert type/grade: ONHU08T508-PM/YBD152



Indexable milling tools

Face milling tools

Comparison of insert abrasion

Abrasion on rake face



ZCC-CT



similar product of company A

Abrasion on clearance face



ZCC-CT

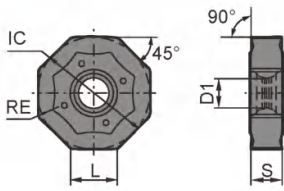


similar product of company A





### Selection of inserts



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

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

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

Indexable milling tools  
Face milling tools

### Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters				
			Vc(m/min)	fz(mm/z)	apmax(mm)		
					ONHU06□□□□-PF/PM	ONHU08□□□□-PF/PM	
<b>P</b> Low-carbon steel, Soft steel	≤180	YBG105 YBM253 YBG202 YBC302 YBG205	270 (220-350)	0.2 (0.1-0.4)	4	5	
	180-280	YBG105 YBM253 YBG202 YBC302 YBG205	260 (200-320)	0.2 (0.1-0.4)	4	5	
	280-350	YBG105 YBM253 YBG202 YBC302 YBG205	240 (180-300)	0.2 (0.1-0.4)	4	5	
<b>M</b> Stainless steel	≤270	YBM253 YBG205	230(180-300)	0.2(0.1-0.3)	4	5	
<b>K</b> 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.

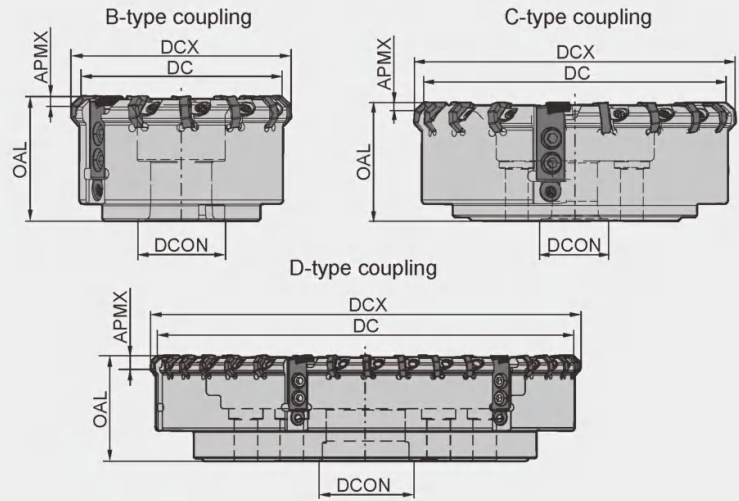
Face milling tools

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			
<b>FMA08</b> -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

Indexable milling tools  
Face milling tools

Spare parts

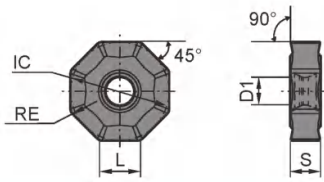
Diameter DC	Insert	Briquette	Screw	Wrench	Clamp	Clamp screw	Adjustment blocks	
∅100-∅315	ONHU060408-CM XEEC120904	W18N	DM6×20A	WT15IT WH50L	LOCATOR-XEEC12	M6×18(GB70-85)	ADJ01	

Tools code key  
B26-B27

Grade selection guide  
B19-B23

Technical data  
B271-B276

## Selection of inserts



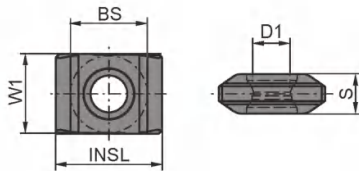
😊 Good working condition    😐 Normal working condition    😞 Bad working condition

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

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating			Cermet	Cemented carbide								
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201		
	<b>ONHU060408-CM</b>	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



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

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

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

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

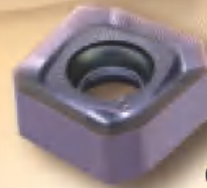
## Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters	
			V <sub>c</sub> (m/min)	f <sub>z</sub> (mm/z)
<b>K</b> Cast iron	180-250	YBD152 YBG105	250 (150-300)	0.06-0.25

Note: The recommended feed per tooth of the Wiper insert is  $f_z \leq 0.25 \text{ mm/z}$ .

# 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.



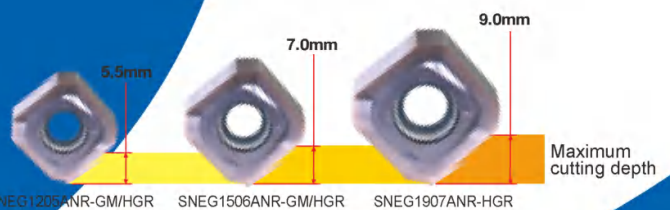
Insert with wiper, smoother surface roughness.

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



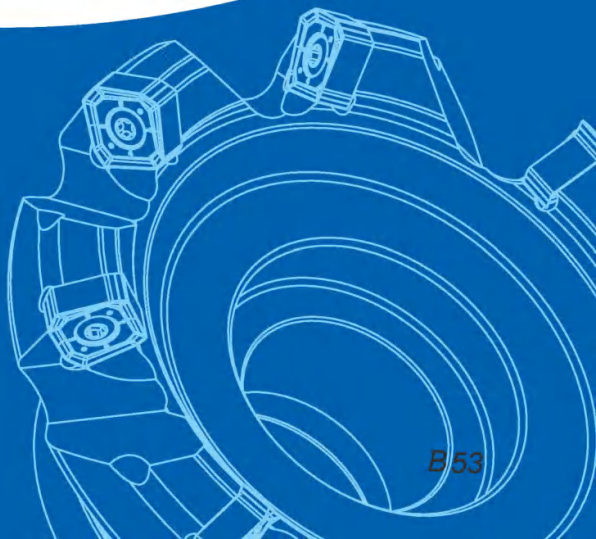
Double negative structure, excellent impact resistance.

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.

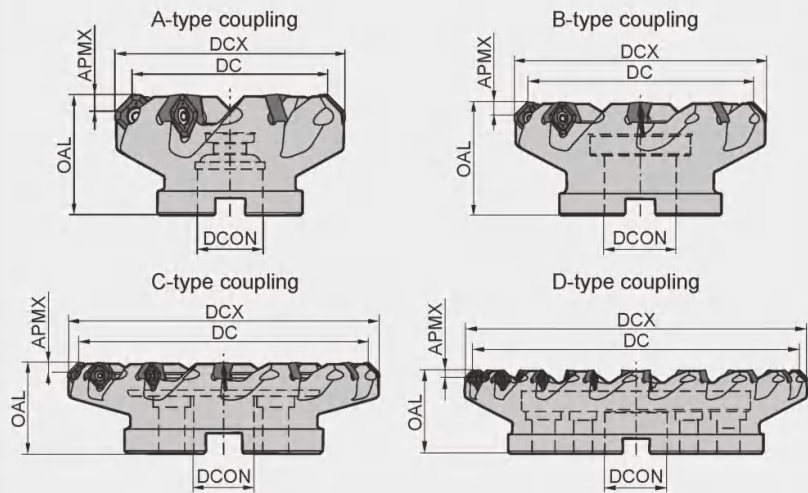


## Face milling tools

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			
<b>FMA11</b> Coarse pitch	▲	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

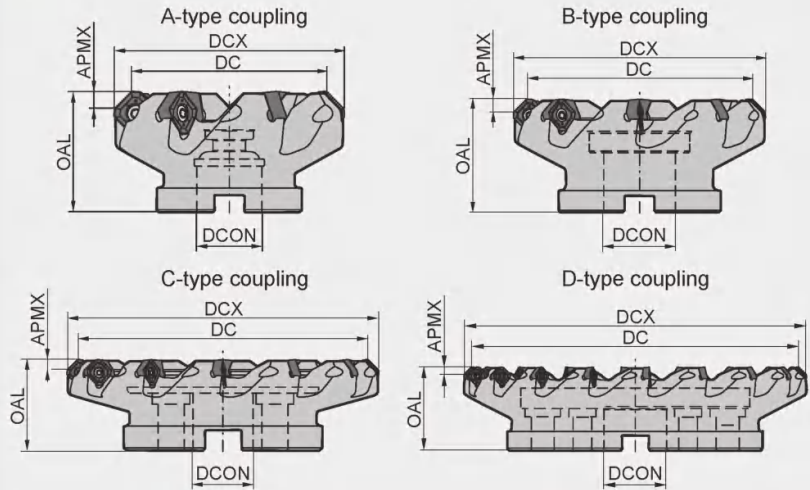
B271-B276

Face milling tools

KAPR:45°



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				
<b>FMA11</b> 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

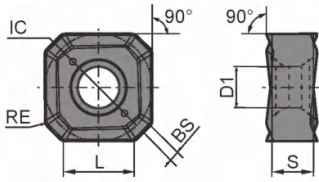
Spare parts

Diameter DC	Inserts	Insert screw	Wrench	
Ø63 - Ø160	SNEG1205ANR-GM/HGR/W	I60M3.5×10	--	WT151S
Ø63 - Ø315	SNEG1506ANR-GM/HGR/W	I60M5×13	WT20IT	--
Ø125 - Ø315	SNEG1907ANR-HGR	I43M6×16	WT25IT	--



Indexable milling tools  
Face milling tools

### Selection of inserts



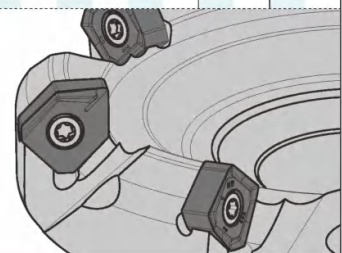
😊 Good working condition    😐 Normal working condition    😞 Bad working condition

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

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating			Cermets		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  
Face milling tools



## ► Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters		
				V(m/min)	f(mm/z)	a <sub>pmax</sub> (mm)
<b>P</b>	Low-carbon steel, Soft steel	≤180	YBM253 YBC302 YBG205 YB9320	270 (220-350)	0.2 (0.1-0.4)	5.5(SN12) 7.0(SN15) 9.0(SN19)
	High-carbon steel, Alloy steel	180-280	YBM253 YBC302 YBG205 YB9320	260 (200-320)	0.2 (0.1-0.4)	
	Alloy tool steel	280-350	YBM253 YBC302 YBG205 YB9320	240 (180-300)	0.2 (0.1-0.4)	
<b>K</b>	Cast iron	180-250	YBD152	270 (150-300)	0.3(0.1-0.5)	
			YBD252	200 (150-250)	0.4 (0.2-0.6)	
<b>S</b>	Hard-to-cut material	≤400	YBS203 YBS303	100 (60-120)	0.15 (0.08-0.3)	

Indexable  
milling tools

Face milling tools

## Case for FMA11

Workpiece material: NAK80





Operation: Face milling

Tool: FMA11-125-B40-SN12-08

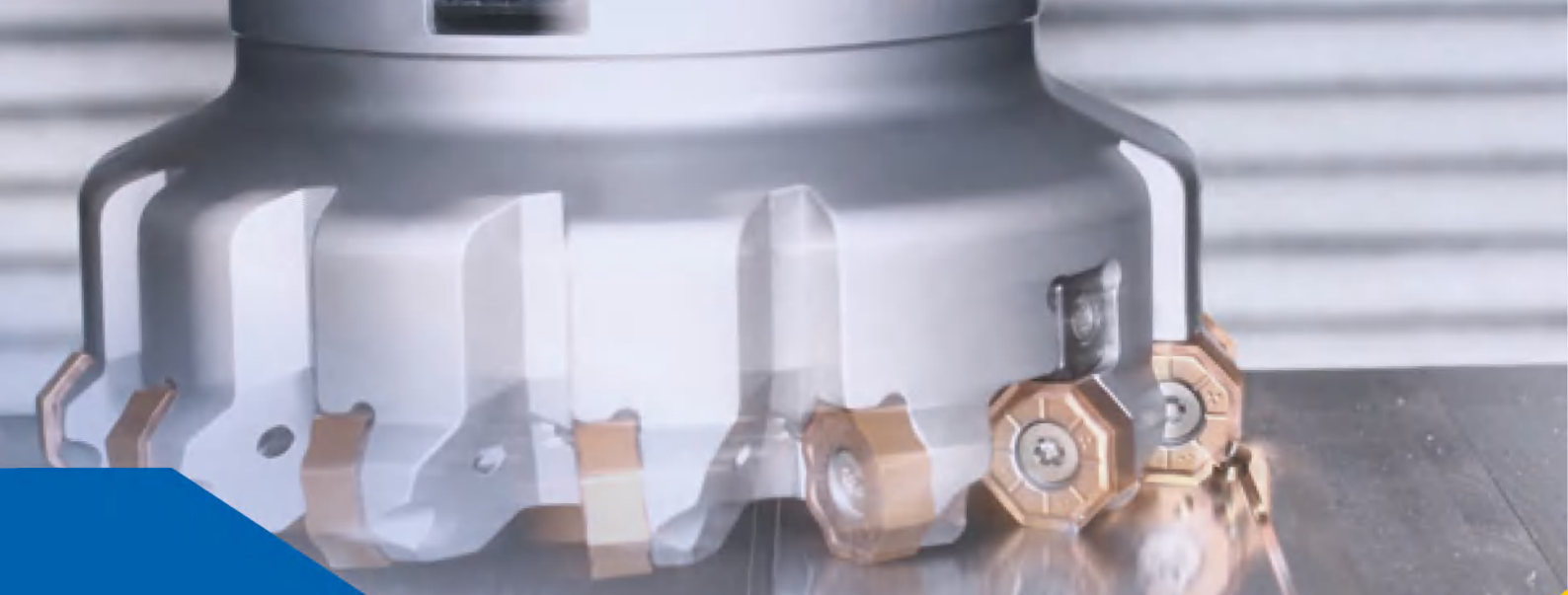
Insert: SNEG1205ANR-HGR/YBG205

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



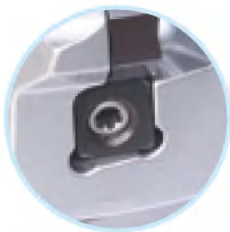


# FMA 12 Series

KAPR:45°

Series

*High Performance Face Milling with 16 Edges  
for Outstanding Economy*



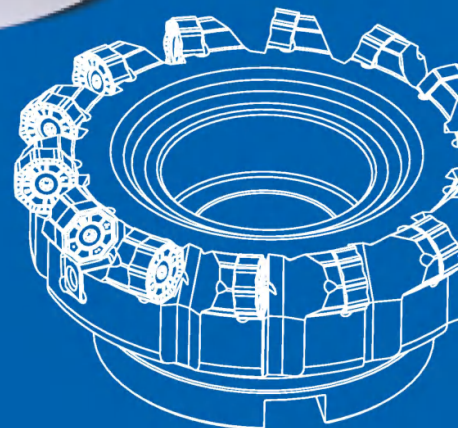
### Adjustment screw of wiper insert

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-dimensional 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.

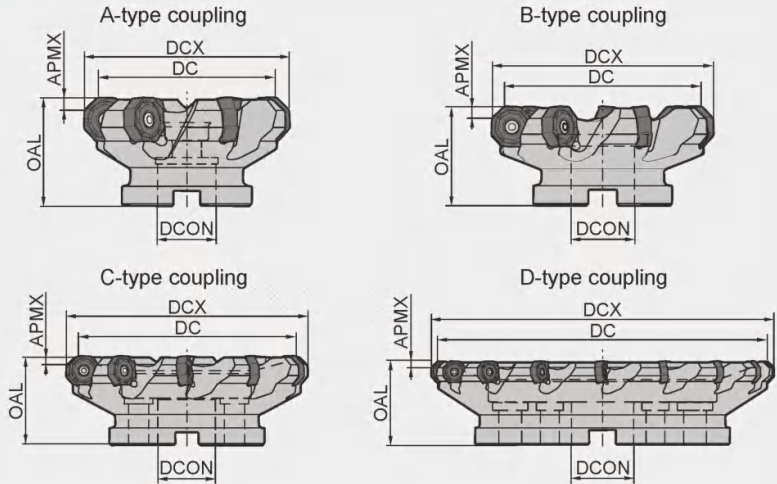


Face milling tools

KAPR:45°



FMA12 P M K S



Specification of tools

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

▲Stock available    △Make-to-order

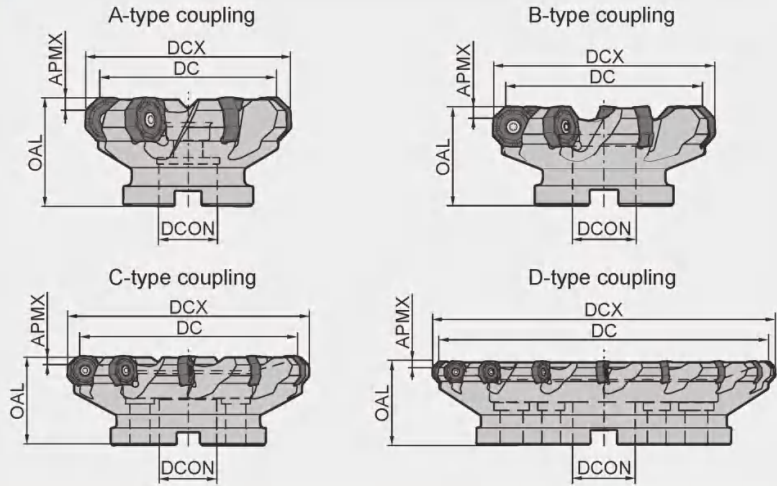
Indexable milling tools  
Face milling tools

## Face milling tools

KAPR:45°



### FMA12 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	DCON	OAL	APMX				
<b>FMA12</b> 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		Image
		Image	Image	Image	Image	
Ø50-Ø63	ONMU06□□□□-GM/GH ONHU06□□□□ANN-GM/GH/GL	IRM4×10		WT15IP	WT15IS WT15IT	
Ø80-Ø125						
Ø160						
Ø63-Ø125	ONMU09□□□□-GM/GH ONHU09□□□□ANN-GM/GH/GL	IRM5×13		WT20IS	WT20IT	
Ø160-Ø400						
Finishing cutterhead diameter DC	Insert	Insert screw	Adjustment block	Insert screw	Wrench	Image
		Image	Image	Image	Image	
Ø125	ONMU06□□□□-GM/GH ONHU06□□□□ANN-GM/GH/GL	DM6×20A	ADJ-M6×1.0A	IRM4×10	WT15IS	
Ø160-Ø200						

Tools code key

B26-B27

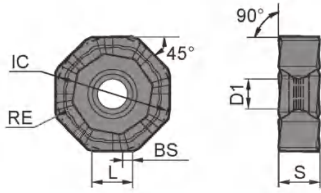
Grade selection guide

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

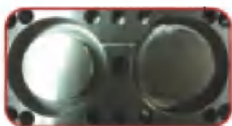
Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating			Cermet	Cemented carbide								
		L	IC	S	D1	RE	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBS302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201		
	ONHU060404ANN-GL	6.15	15.875	5.54	6	0.4	1.2	●	●					●	●										
	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

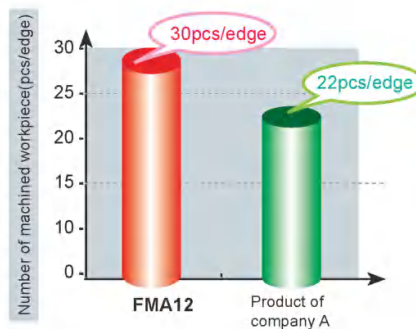
## Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters								a <sub>pmax</sub> (mm)
			-GL		-GM		-GH		a <sub>pmax</sub> (mm)		
			Vc(m/min)	f <sub>z</sub> (mm/z)	Vc(m/min)	f <sub>z</sub> (mm/z)	Vc(m/min)	f <sub>z</sub> (mm/z)			
<b>P</b> 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(ON06) 5.5(ON09)		
	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)			
<b>M</b> 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)			
<b>K</b> 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)			
<b>S</b> 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<sub>c</sub>=300m/min, f<sub>z</sub>=0.25mm/z, a<sub>p</sub>=3.5mm, a<sub>e</sub>=120mm  
 System of cooling: External



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

Indexable milling tools  
Face milling tools

# FMA 14

## 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



**-GHI-GMI-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

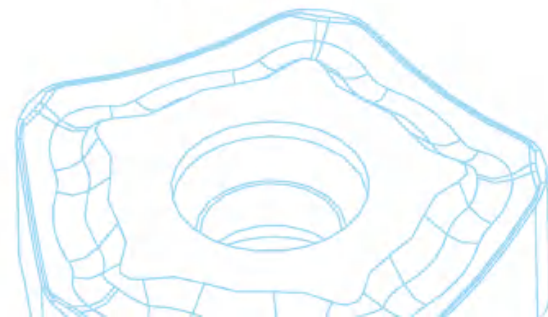
**-GM: First choice for P material machining**

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**

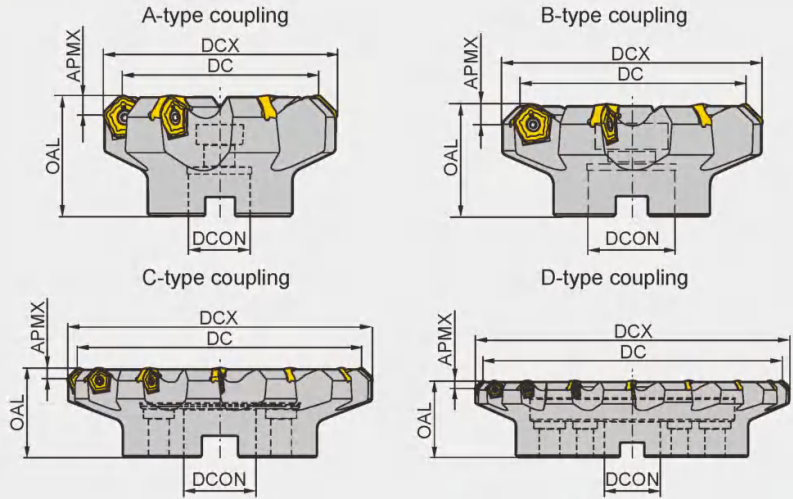


Face milling tools

KAPR:45°



FMA14 P M K



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)		
		DC	DCX	OAL	DCON	APMX					
<b>FMA14</b> 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

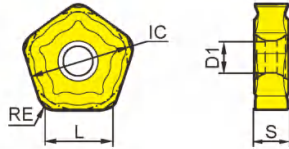
Grade selection guide  
B19-B23

Technical data  
B271-B276

Indexable milling tools

Face milling tools

### Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating					Cermet		Cemented carbide					
		L	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 <sub>max</sub>
				-GL		-GM		-GH		
				V(m/min)	Fz(mm/z)	V(m/min)	Fz(mm/z)	V(m/min)	Fz(mm/z)	
<b>P</b>	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
<b>M</b>	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
<b>K</b>	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

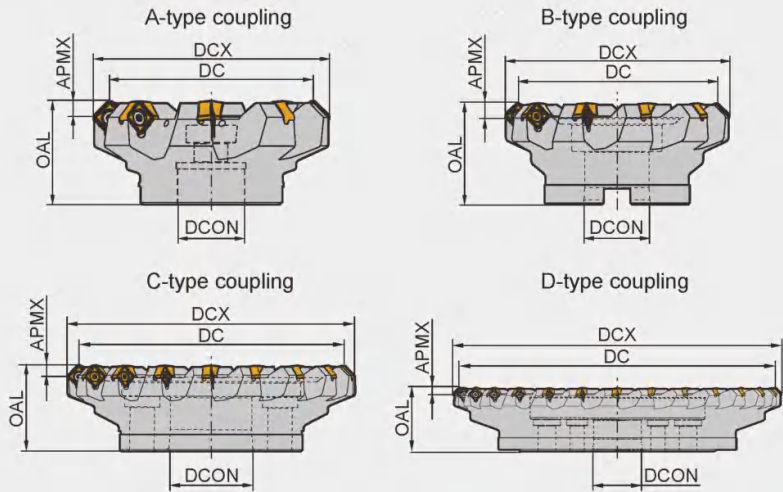
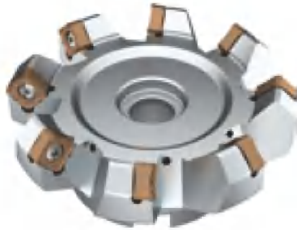
	PNEG110530-GM	similar product of company A
Time	135min	65min
Abrasion on clearance face		
Abrasion on rake face		

Face milling tools

KAPR:45°



FMA17 **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				
<b>FMA17</b> 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

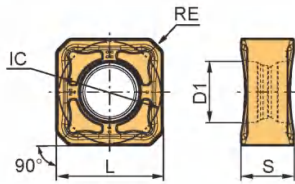
Technical data  
B271-B276

Indexable milling tools

Face milling tools



## Selection of inserts



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

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

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	●	●						★			●						
	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

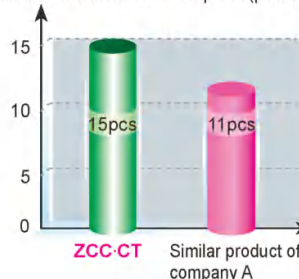
## Recommended cutting parameters

ISO	Workpiece material	Hardness HB	Insert grade	Cutting parameters					
				Vc(m/min)	fz(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)	--	
	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)	--	
	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

Number of machined workpiece(pcs/edge)



**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.

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

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

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

High strength screw clamping

67° approach angle

Wiper

Each insert has 10 cutting edges

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

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

**New**  
New chipbreaker for cast iron  
-KH -KM -KL

**-KH**

The optimized cutting edge design emphasis on anti-breakage machining

**-KM**

General machining chipbreaker. The first choice for cast iron machining

**-KL**

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

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.

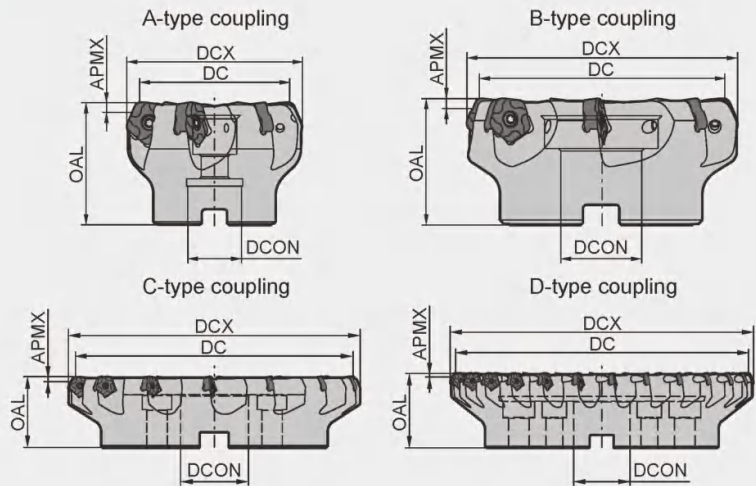
The low cutting forces design could effectively control the vibration. The combination of the FMD02 could achieve high-performance cast iron machining.

## Face milling tools

KAPR:67°



### 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				
Coarse pitch (unequal pitch)	<b>FMD02</b> -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

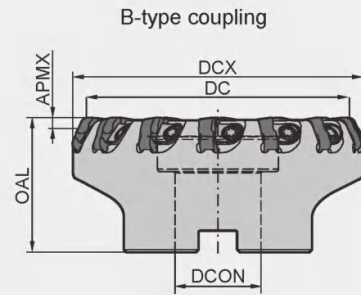
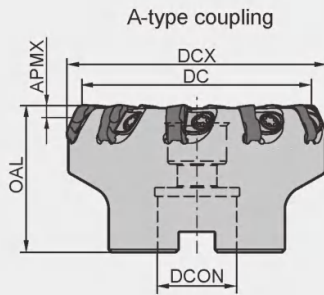
B271-B276

Face milling tools

KAPR:67°



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			
<b>FMD02</b> Extra close pitch	▲	△	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

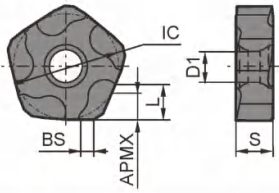
Grade selection guide  
B19-B23

Technical data  
B271-B276

Indexable milling tools

Face milling tools

## Selection of inserts



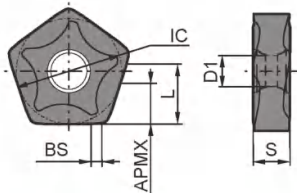
😊 Good working condition   😐 Normal working condition   😞 Bad working condition

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

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

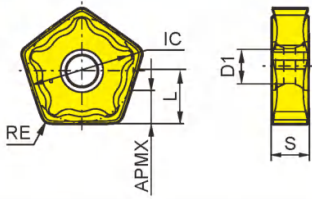
Workpiece material	Steel (P)	Stainless steel (M)	Cast iron (K)	Non-ferrous metal (N)	Heat resistant alloy, Ti alloy (S)
Steel (P)	😊😊	😊😊	😊😊	😊😊	😊😊
Stainless steel (M)	😊😊	😊😊	😊😊	😊😊	😊😊
Cast iron (K)	😊😊	😊😊	😊😊	😊😊	😊😊
Non-ferrous metal (N)	😊😊	😊😊	😊😊	😊😊	😊😊
Heat resistant alloy, Ti alloy (S)	😊😊	😊😊	😊😊	😊😊	😊😊

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

Indexable milling tools  
Face milling tools

### Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating					Cermets		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

Indexable milling tools

Face milling tools

### Recommended cutting parameters

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

### Case for FMD02

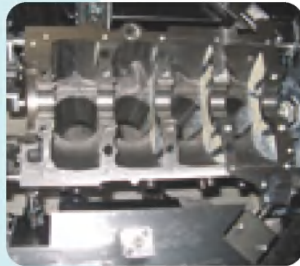
#### Application case

##### ZCC-CT

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

similar product of company A

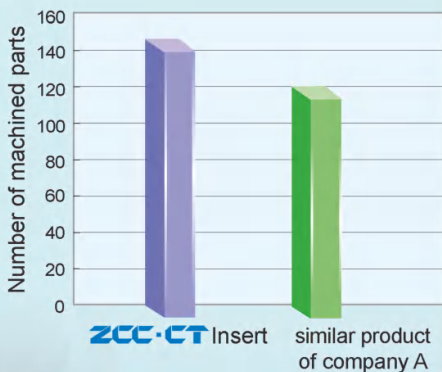
Cutting parameters:  
 D=100mm,  $a_p=3\sim 5\text{mm}$ ,  
 $V_c=243\text{m/min}$ ,  $f_z=0.12\text{mm/z}$ ,  
 T=120~133 piece



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

Insert type/grade: PNEG110512R-CR/YBD152

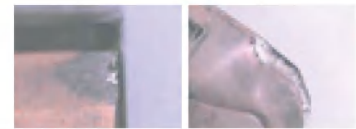
(The inserts without clearance angle to have a total of 10 cutting edges)



#### Comparison of insert abrasion



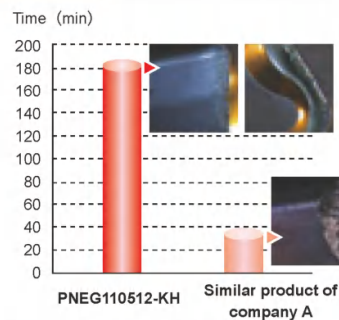
ZCC-CT insert after 80 minutes machining



Insert of company A after 48 minutes machining

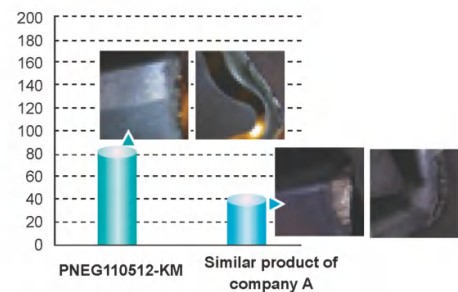
#### Application case

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 comparison

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



Abrasion comparison

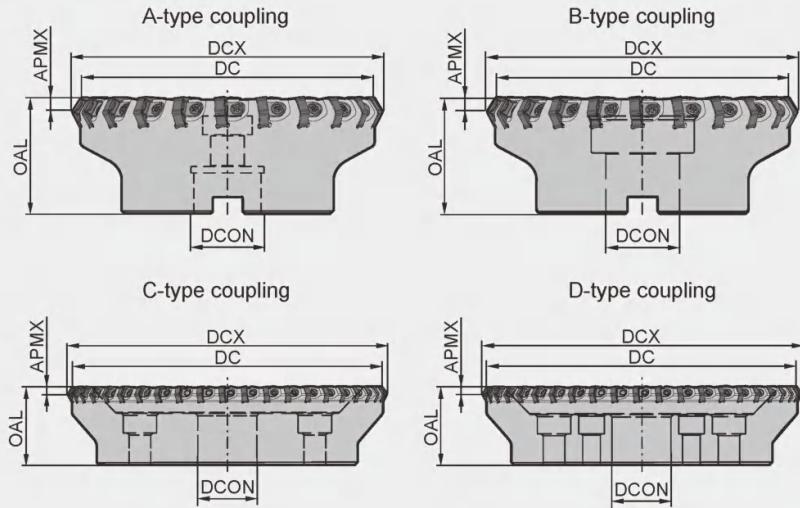
Cutting parameters:  $V_c=300\text{m/min}$ ,  
 $f_z=0.2\text{mm/z}$ ,  $A_p=2\text{mm}$ ,  $A_e=70\text{mm}$

Face milling tools

KAPR:55°



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			
<b>FMD02</b> -080-A27-HN09-10	▲	△	80	27	50	6	10	A	1.1
-100-B32-HN09-14	▲	△	100	32	63	6	14	B	2.6
-125-B40-HN09-18	▲	△	125	40	70	6	18	B	3.7
-160-B40-HN09-22	▲	△	160	40	63	6	22	B	5.6
-200-C60-HN09-28	▲	△	200	60	63	6	28	C	6.3
-250-C60-HN09-36	▲	△	250	60	63	6	36	C	10.3
-315-D60-HN09-44	▲	△	315	60	63	6	44	D	21.7

▲Stock available    △Make-to-order

Indexable milling tools  
Face milling tools

Spare parts

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

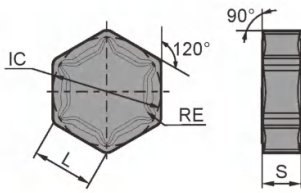
Tools code key  
B26-B27

Grade selection guide  
B19-B23

Technical data  
B271-B276



### Selection of inserts



😊 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	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				
		L	IC	S	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201	
	<b>HNEX090512-DF</b>	9.16	15.875	5.56	1.2			★														
	<b>HNEX090512-DM</b>	9.16	15.875	5.56	1.2			★														
	<b>HNEX090512-DR</b>	9.16	15.875	5.56	1.2			○		★												

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

Indexable milling tools  
Face milling tools

### Chipbreaker selection for FMD02 milling inserts

Classification	Function	For finishing	For semi-finishing	For roughing
<b>K</b>		-DF	-DM	-DR

### Recommended cutting parameters

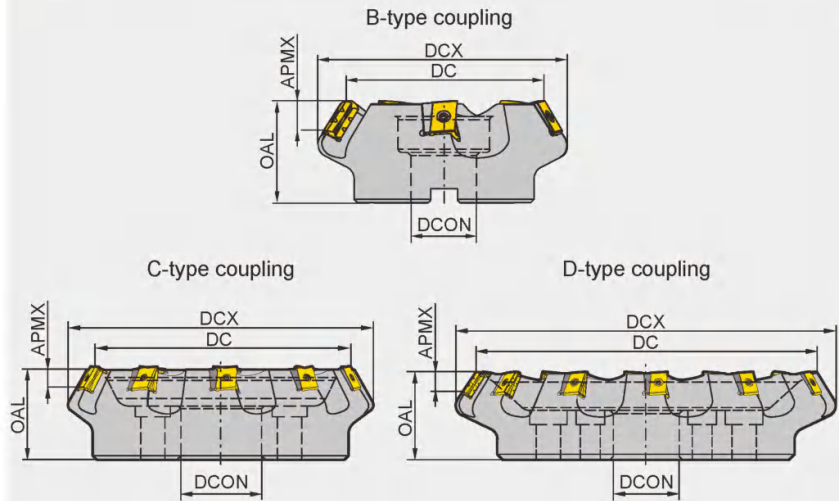
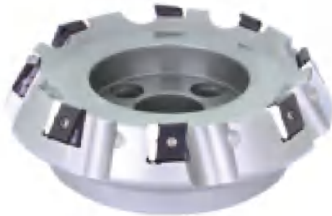
Workpiece material	Hardness HB	Insert grade	Cutting parameters			
			V(m/min)	f(mm/z)		
				-DF	-DM	-DR
<b>K</b> Cast iron	180-250	YBD152	180 (110-250)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.5)
		YBD252	130 (110-200)	0.2(0.1-0.2)	0.25 (0.1-0.3)	0.3(0.2-0.5)

Face milling tools

KAPR:60°



**FMD03** 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			
<b>FMD03</b> -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
LNKT2510-ZR	LLN25R-ZR	I60M3.5×10.4	I60M5×17	WT20IT	WT15IS

Tools code key  
B26-B27

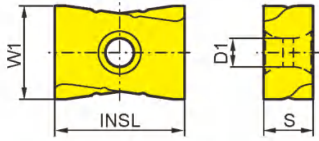
Grade selection guide  
B19-B23

Technical data  
B271-B276

Indexable milling tools

Face milling tools

## Selection of inserts



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

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

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)
<b>P</b> 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)
	180-280	YBG302	150 (120-280)	0.5 (0.2-0.8)
		YBM253	140 (120-280)	0.5 (0.2-0.8)
	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
		YBM253	100 (80-250)	0.45 (0.2-0.6)
<b>M</b> Stainless steel	≤270	YBG302	120 (80-200)	0.45 (0.2-0.6)
		YBM253	100 (80-200)	0.45 (0.2-0.6)
<b>K</b> 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:

V<sub>c</sub>=120m/min  
a<sub>p</sub>=12mm  
f<sub>z</sub>=0.55mm/z  
a<sub>e</sub>=230mm

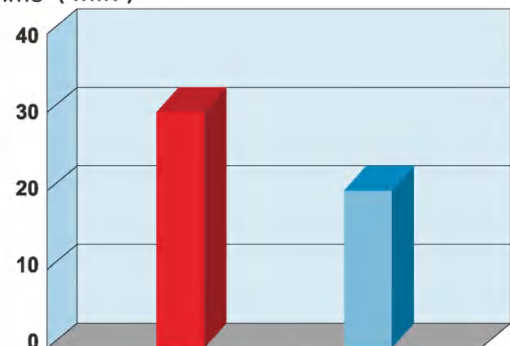


Tool type: FMD03-315-D60-LN25-12

Insert type/grade: LNKT2510-ZR/YBG302

## Comparison of machining time

Time (min)



FMD03

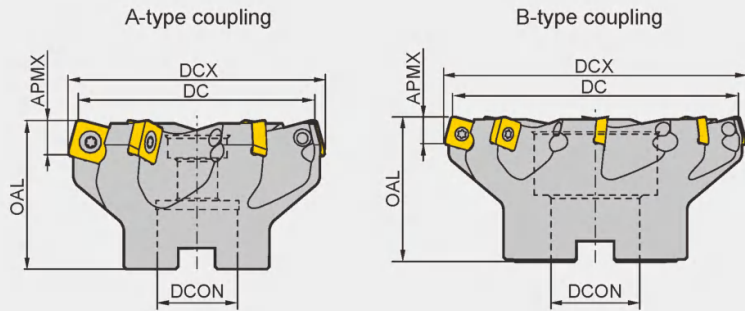
Similar product of company A

Face milling tools

KAPR:75°



**FME02** P M K



Specification of tools

Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		DC	DCX	DCON	OAL	APMX			
<b>FME02</b> -050-A22-SP12-04	△	50	54	22	40	6	4	A	0.3
-063-A22-SP12-05	△	63	66	22	50	6	5	A	0.6
-080-A27-SP12-06	△	80	83	27	50	6	6	A	0.9
-100-B32-SP12-07	△	100	103	32	50	6	7	B	1.4
-125-B40-SP12-08	△	125	128	40	63	6	8	B	2.5

▲Stock available    △Make-to-order



Indexable milling tools  
Face milling tools

Spare parts

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

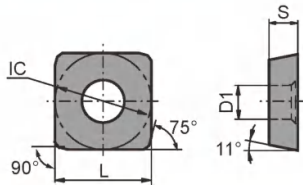


Tools code key  
B26-B27

Grade selection guide  
B19-B23

Technical data  
B271-B276

### Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating					Cermets		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

Indexable milling tools  
Face milling tools

### Cutting edge treatment selection for FME02 milling inserts

Classification	Function	For finishing	For semi-finishing	For roughing
<b>P</b>		EDFR	EDR	EDSR
<b>M</b>		EDFR	EDR	EDSR
<b>K</b>		EDFR	EDR	EDSR

### Recommended cutting parameters

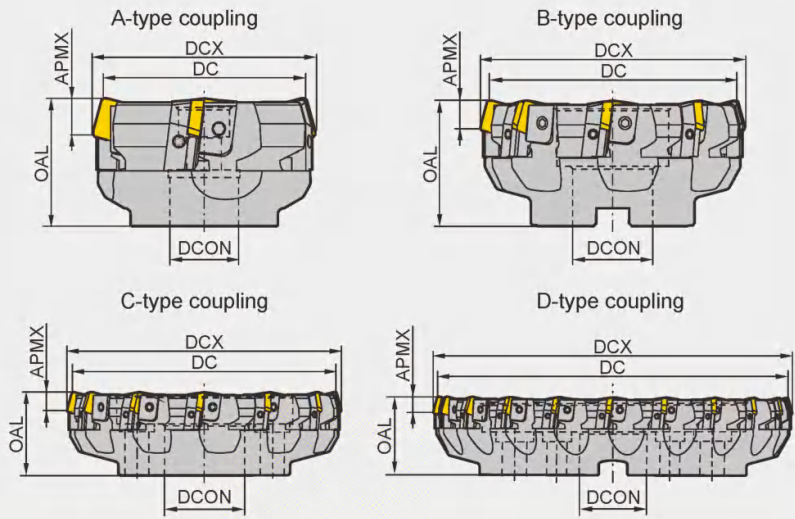
Workpiece material	Hardness HB	Insert grade	Cutting parameters		
			V(m/min)	f(mm/z)	
<b>P</b>	Low-carbon steel, Soft steel	≤180	YBG202	270(200-360)	0.2 (0.1-0.3)
	High-carbon steel, Alloy steel	180-280	YBG202	240 (180-350)	0.2 (0.1-0.3)
	Alloy tool steel	280-350	YBG202	220 (170-340)	0.2 (0.1-0.3)
<b>M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

Face milling tools

KAPR:75°



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			
<b>FME03</b> -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

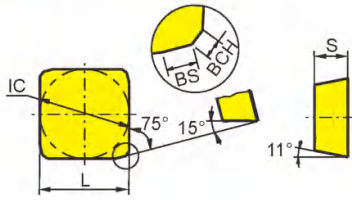
Grade selection guide  
B19-B23

Technical data  
B271-B276

Indexable milling tools

Face milling tools

## Selection of inserts



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

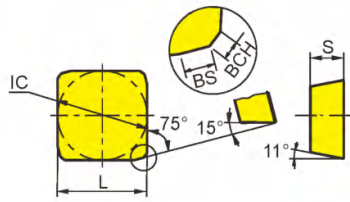
Workpiece material	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
P	😊😊	😊😊	😊😊	😊😊	😊😊
M	😊😊	😊😊	😊😊	😊😊	😊😊
K	😊😊	😊😊	😊😊	😊😊	😊😊
N	😊😊	😊😊	😊😊	😊😊	😊😊
S	😊😊	😊😊	😊😊	😊😊	😊😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating					Cermets		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.

Indexable milling tools  
Face milling tools

Selection of inserts



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

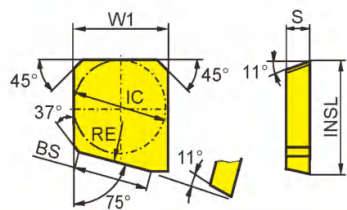
Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
P Steel	😊😊	😊😊	😊😊	😊😊	😊😊
M Stainless steel	😊😊	😊😊	😊😊	😊😊	😊😊
K Cast iron	😊😊	😊😊	😊😊	😊😊	😊😊
N Non-ferrous metal	😊😊	😊😊	😊😊	😊😊	😊😊
S Heat resistant alloy, Ti alloy	😊😊	😊😊	😊😊	😊😊	😊😊

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating			Cermet	Cemented carbide							
		L	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

Indexable milling tools  
Face milling tools

Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating			Cermet	Cemented carbide							
		INSL	IC	W1	S	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201	
	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)	
<b>P</b>	Low-carbon steel, Soft steel	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)
<b>M</b>	Stainless steel	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)	
<b>K</b>	Cast iron	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)	

Indexable milling tools  
Face milling tools

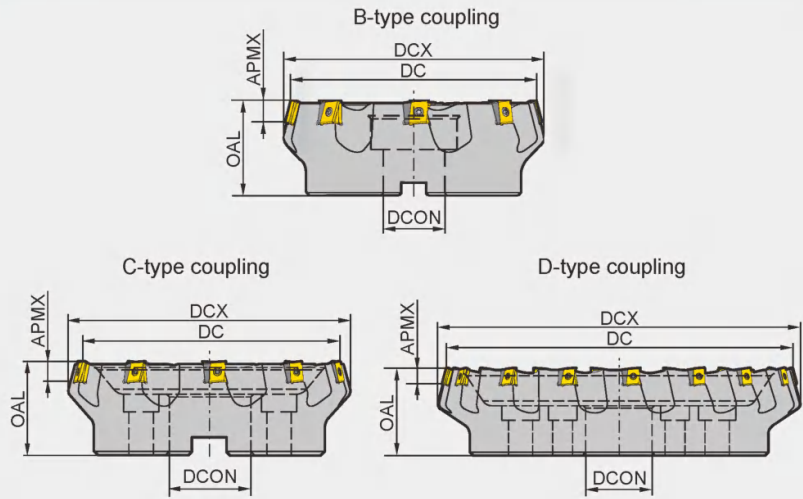


Face milling tools

KAPR:75°



FME04 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			
<b>FME04</b> -125-B40-LN15-06	▲	△	125	137	40	63	12	6	B	3.8
-160-B40-LN15-08	▲	△	160	170	40	63	12	8	B	6.6
-200-C60-LN15-10	▲	△	200	208	60	70	12	10	C	9.6
-250-C60-LN15-12	▲	△	250	257	60	70	12	12	C	13.4
-315-D60-LN15-16	▲	△	315	328	60	80	12	16	D	25.2

▲Stock available    △Make-to-order

Indexable milling tools

Face milling tools

Spare parts

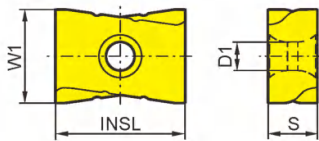
Diameter DC	Shim	Shim screw	Insert screw	Wrench
Ø125-Ø315	LLN15-ZR	I60M3×7	I60M4×12	WT151S, WT091S

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

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	○	○							★								

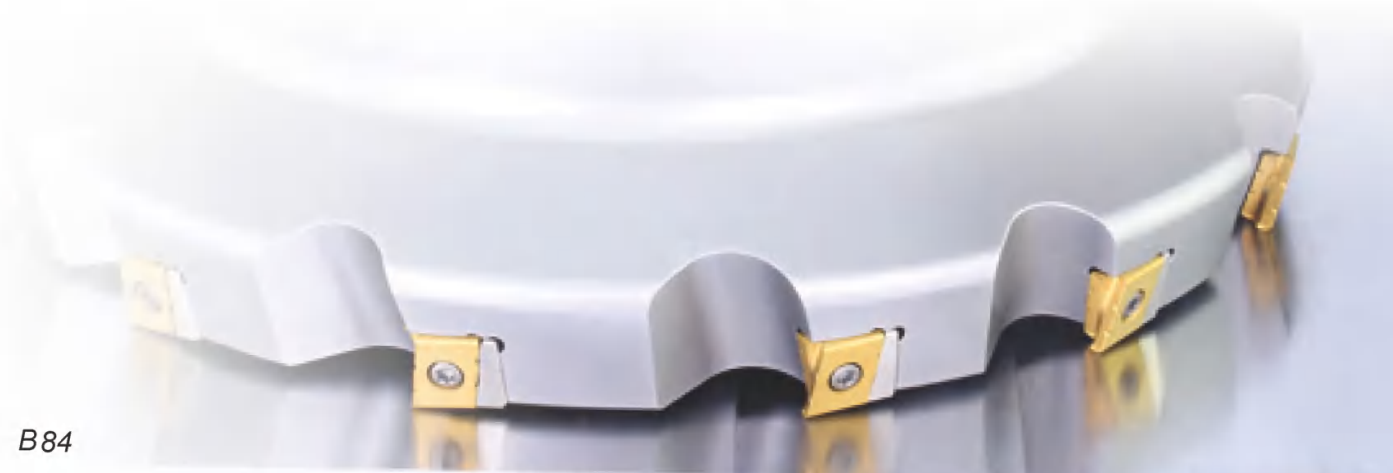
★Recommended grade (always stock available)    ●Available grade (always stock available)    ○Make-to-order

### Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters	
			V <sub>c</sub> (m/min)	f <sub>z</sub> (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)
	180-280	YBG302	150 (120-280)	0.5 (0.2-0.8)
		YBM253	140 (120-280)	0.5 (0.2-0.8)
	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.

Indexable milling tools  
Face milling tools

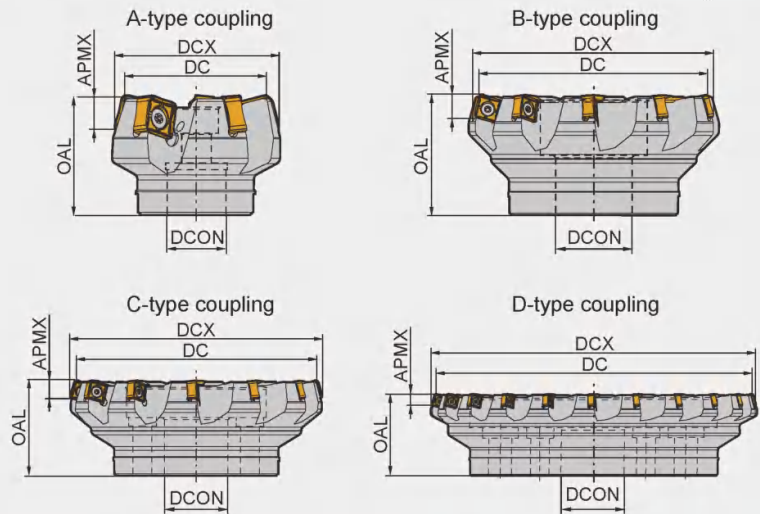


Face milling tools

KAPR:75°



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			
Coarse pitch	▲	△	50	60	22	40	8.0	4	A	0.361
	▲	△	63	73	22	40	8.0	5	A	0.520
	▲	△	80	90	27	50	8.0	6	A	1.101
	▲	△	100	110	32	50	8.0	8	A	1.663
	▲	△	125	135	40	63	8.0	10	B	3.099
	▲	△	160	170	40	63	8.0	12	C	4.535
	▲	△	200	210	60	63	8.0	14	C	6.450
	▲	△	250	260	60	63	8.0	18	C	12.980
	▲	△	315	325	60	80	8.0	22	D	21.932
Close pitch	△	△	400	410	60	80	8.0	28	D	41.555
	▲	△	50	60	22	40	8.0	5	A	0.337
	▲	△	63	73	22	40	8.0	7	A	0.530
	▲	△	80	90	27	50	8.0	9	A	1.112
	▲	△	100	110	32	50	8.0	11	A	1.577
	▲	△	125	135	40	63	8.0	14	B	3.145
	▲	△	160	170	40	63	8.0	18	C	4.647
	▲	△	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

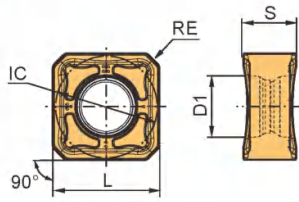
Tools code key B26-B27

Grade selection guide B19-B23

Technical data B271-B276

Indexable milling tools  
Face milling tools

## Selection of inserts



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

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

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

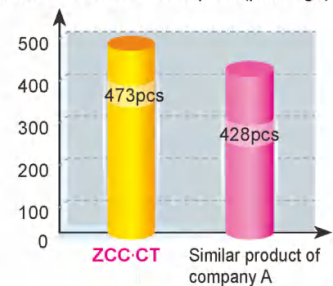
ISO	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				Vc(m/min)	fz(mm/z)		
					-GL	-GM	-GH
P	Low-carbon steel, Soft steel	≤180	YBM253 YB9320	270(220-350)	0.15(0.1-0.3)	0.2(0.1-0.4)	0.3(0.2-0.5)
	High-carbon steel, Alloy steel	180-280	YBM253 YB9320	260(220-320)	0.15(0.1-0.3)	0.2(0.1-0.4)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

## Case for 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



Number of machined workpiece(pcs/edge)

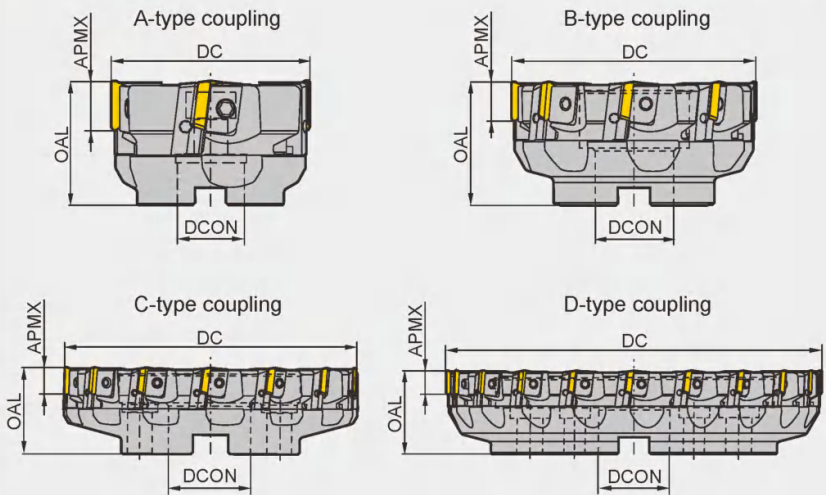


Face milling tools

KAPR:90°



FMP01 P M K



Specification of tools

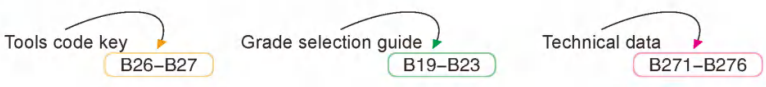
Type	Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
	R	L	DC	DCX	OAL	APMX			
<b>FMP01</b> -080-A27-TP22-04	▲	△	80	27	50	18	4	A	1.2
-100-B32-TP22-06	▲	△	100	32	50	18	6	B	1.7
-125-B40-TP22-08	▲	△	125	40	63	18	8	B	3.2
-160-B40-TP22-10	▲	△	160	40	63	18	10	B	5.1
-200-C60-TP22-12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

▲Stock available    △Make-to-order

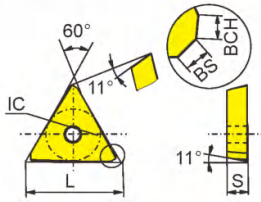
Indexable milling tools  
Face milling tools

Spare parts

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



### Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating					Cermets		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

Indexable milling tools  
Face milling tools

### Recommended cutting parameters

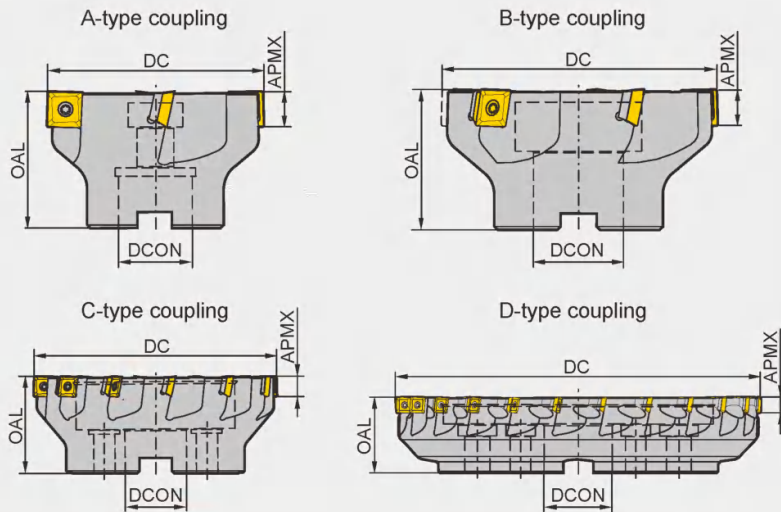
Workpiece material	Hardness HB	Insert grade	Cutting parameters	
			V(m/min)	f(mm/z)
<b>P</b> Low-carbon steel, Soft steel	≤180	YBC302	270 (220-350)	0.2 (0.1-0.4)
		YBM253	220 (180-300)	0.2 (0.08-0.3)
		YBG202	270 (200-360)	0.2 (0.1-0.3)
	180—280	YBC302	240 (200-320)	0.2 (0.1-0.4)
		YBM253	200 (160-280)	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)
<b>M</b> Stainless steel	≤270	YBM253	140 (100-240)	0.2 (0.08-0.3)
		YBG202	140 (100-250)	0.2 (0.1-0.3)
<b>K</b> 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			
<b>FMP02</b> -040-A16-SE09-04	▲	40	16	40	6.7	4	A	0.2
Coarse pitch -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

Indexable milling tools  
Face milling tools



## Specification of tools

Type	Stock	Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
		DC	DCON	OAL	APMX			
<b>FMP02</b> Close pitch	▲	40	16	40	6.7	6	A	0.22
	▲	50	22	40	6.7	7	A	0.313
	▲	63	22	40	6.7	8	A	0.479
	▲	80	27	50	6.7	10	A	1.079
	▲	100	32	50	6.7	10	B	1.7
	▲	50	22	40	10.8	4	A	0.3
	▲	63	22	40	10.8	5	A	0.4
	▲	80	27	50	10.8	6	A	0.8
	▲	100	32	50	10.8	7	B	1.2
	▲	125	40	63	10.8	8	B	3.0
	▲	160	40	63	10.8	12	C	3.9
Extra close pitch	▲	50	22	40	10.8	5	A	0.2
	▲	63	22	40	10.8	6	A	0.4
	▲	80	27	50	10.8	8	A	0.8
	▲	100	32	50	10.8	10	B	1.2
	▲	125	40	63	10.8	12	B	2.9
	▲	160	40	63	10.8	15	C	4.061
	▲	200	60	63	10.8	16	C	6.1
	▲	250	60	63	10.8	18	C	10.9
▲	315	60	63	10.8	24	D	21.6	

▲ Stock available    △ Make-to-order

Indexable milling tools  
Face milling tools

## 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

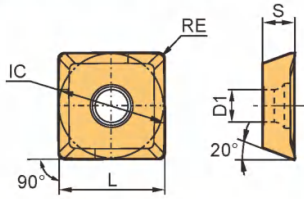
Grade selection guide

B19-B23

Technical data

B271-B276

## Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating					Cermets		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

Indexable milling tools  
Face milling tools

## Chipbreaker selection for FMP02 milling inserts

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



**Features of**

# **FMP02**

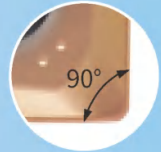
## **Milling Tool Series**



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.

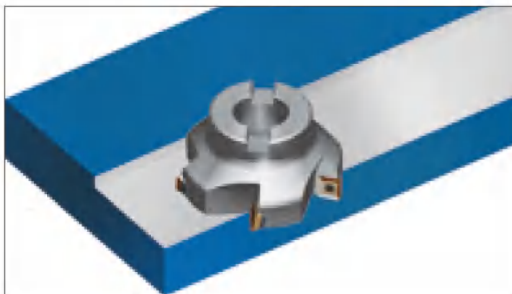
## ➤ Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				V(m/min)	f(mm/z)		
					-APF	-APM	-APR
<b>P</b>	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)
	Alloy tool steel	280-350	YB9320	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YBM253	220 (180-300)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
<b>M</b>	Stainless steel	≤270	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)
			YBM253	150 (120-240)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
<b>K</b>	Cast iron	180-250	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)
			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

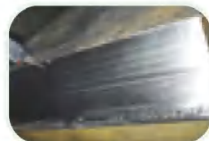


## ● SEET120308PER-APM inserts tests

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.

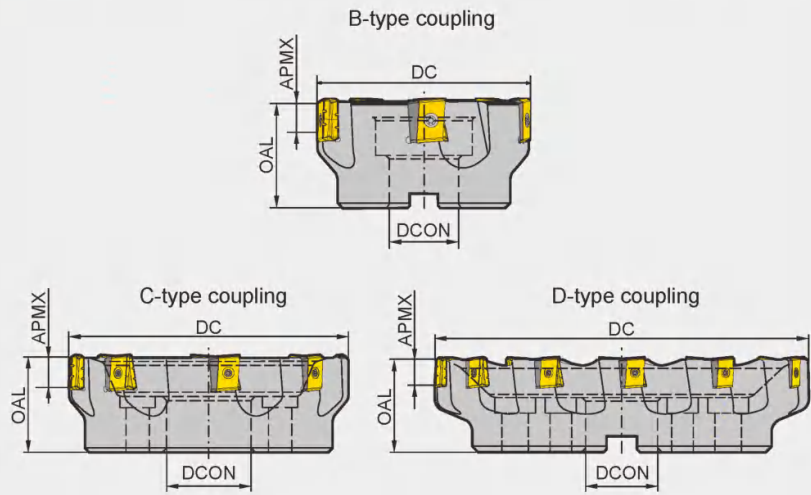
Indexable milling tools  
Face milling tools

## Face milling tools

KAPR:90°



### FMP03 P M K



### Specification of tools

Type	Stock		Basic dimensions(mm)				Number of teeth Z	Type of coupling	Weight (kg)
	R	L	DC	DCON	OAL	APMX			
<b>FMP03</b> -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

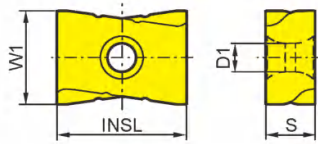
Insert	Shim	Shim screw	Insert screw	Wrench	
LNKT1506EN-ZR	LLN15-ZR	I60M3×7	I60M4×12	WT15IS	WT09IS
LNKT2007DN-ZR	LLN20R-ZR	I60M3×7	I60M4×15	WT15IS	WT09IS
LNKT2510-ZR	LLN25R-ZR	I60M3.5×10.4	I60M5×17	WT20IT	WT15IS

Tools code key → B26-B27

Grade selection guide → B19-B23

Technical data → B271-B276

## Selection of inserts



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

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

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)
<b>P</b> 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)
	180-280	YBG302	150 (120-280)	0.5 (0.2-0.8)
		YBM253	140 (120-280)	0.5 (0.2-0.8)
	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
		YBM253	100 (80-250)	0.45 (0.2-0.6)
<b>M</b> Stainless steel	≤ 270	YBG302	120 (80-200)	0.45 (0.2-0.6)
		YBM253	100 (80-200)	0.45 (0.2-0.6)
<b>K</b> 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:  $V_c=130\text{m/min}$ ,  $a_p=12\text{mm}$ ,  $f_z=0.5\text{mm/z}$

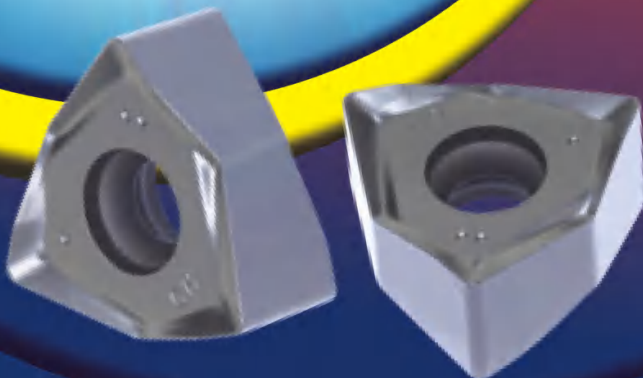
$a_e=140\text{mm}$



# 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

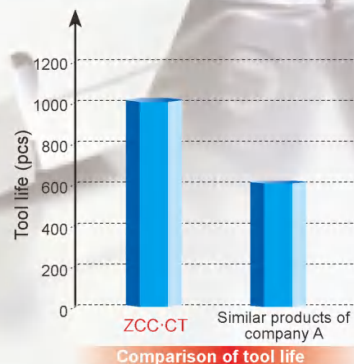
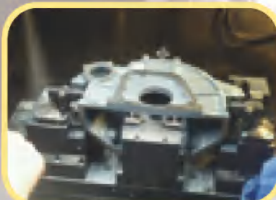
Hardness: HB230-280

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

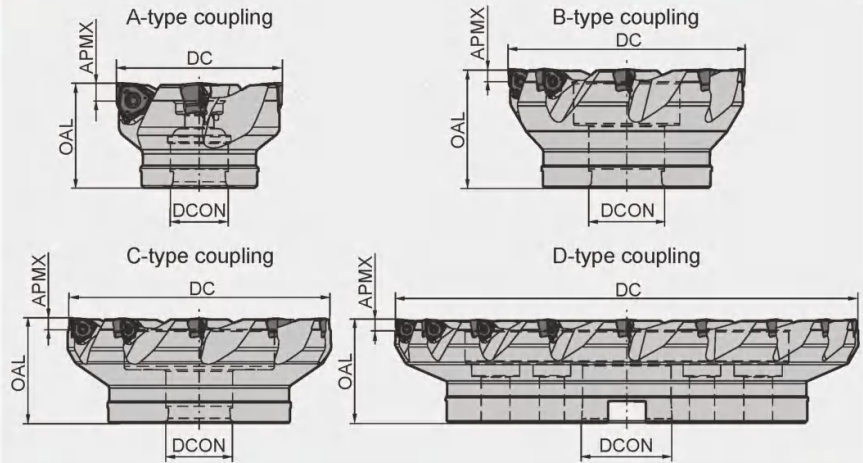


Face milling tools

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		
<b>FMP12</b> -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

Indexable milling tools

Face milling tools

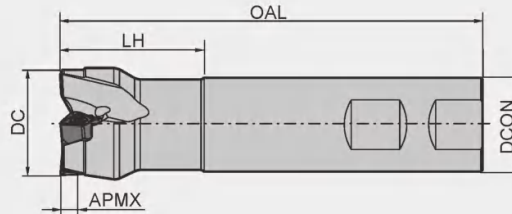


## Face milling tools

KAPR:90°



### FMP12 P K N



#### Specification of tools

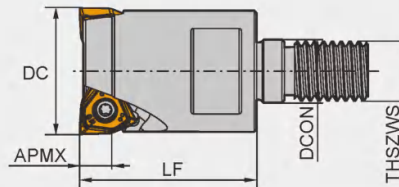
Type	Stock	Basic dimensions(mm)					Number of teeth Z	Type of coupling
		DC	DCON	OAL	LH	APMX		
<b>FMP12</b> -025-XP25-WN06-02C	▲	25	25	100	30	5.7	2	XP
-032-XP25-WN06-03C	▲	32	25	120	40	5.7	3	XP
-040-XP32-WN06-04C	▲	40	32	140	40	5.7	4	XP
-050-XP40-WN06-05C	▲	50	40	169	40	5.7	5	XP

▲Stock available    △Make-to-order



### 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			
<b>QCH</b> -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	WT091P
Diameter DC	Insert	Insert screw	Wrench
Ø25-Ø40	WN□U06	I60M3×9	WT091P

Tools code key

B26-B27

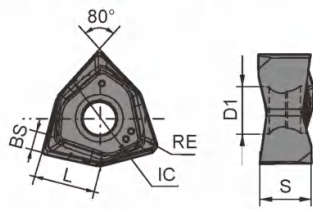
Grade selection guide

B19-B23

Technical data

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## Selection of inserts



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

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy	Working Condition															
						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			
		L	IC	S	D1	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101
	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

Indexable milling tools

Face milling tools

## Recommended cutting parameters

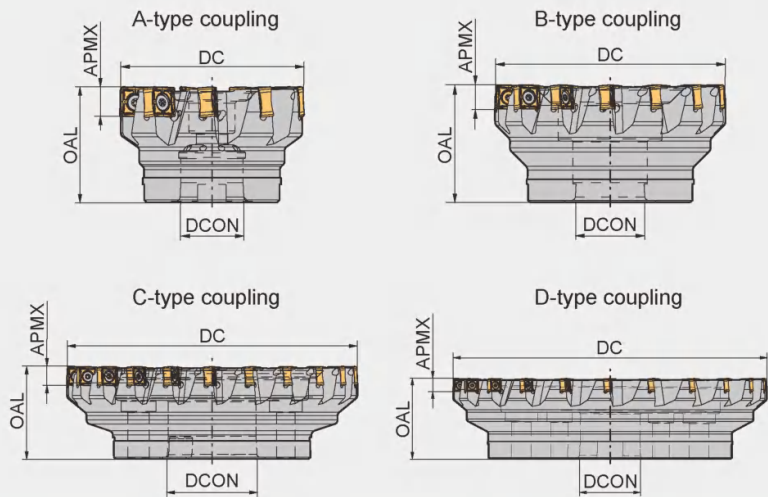
	Workpiece material	Hardness HB	Insert grade	Cutting parameters		
				V(m/min)	f(mm/z)	ap <sub>max</sub> (mm)
<b>P</b>	Low-carbon steel, Soft steel	≤180	YBM253 YBG205 YB9320	280(220-360)	0.2 (0.1-0.4)	5.7(WN06) 7.7(WN08)
	High-carbon steel, Alloy steel	180-280	YBM253 YBG205 YB9320	260 (200-340)	0.2 (0.1-0.4)	
	Alloy tool steel	280-350	YBM253 YBG205 YB9320	240 (180-320)	0.2(0.1-0.4)	
<b>M</b>	Stainless steel	≤270	YBM253 YBG205 YB9320	160 (110-220)	0.15(0.1-0.3)	
<b>K</b>	Cast iron	180-250	YBD152	280 (150-320)	0.2(0.1-0.4)	
<b>N</b>	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			
<b>FMP17</b> 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

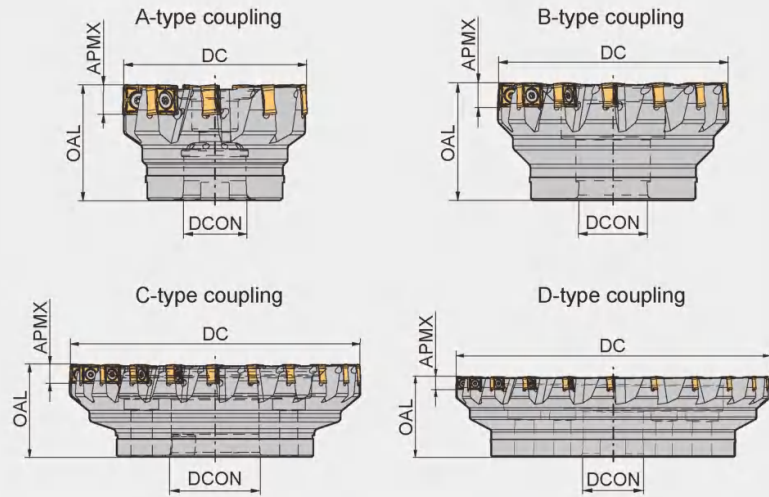
▲Stock available    △Make-to-order

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				
<b>FMP17</b> 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

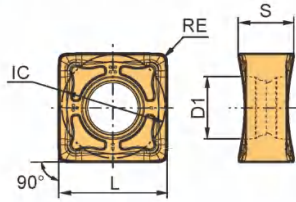
Tools code key  
B26-B27

Grade selection guide  
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Technical data  
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Indexable milling tools  
Face milling tools

## Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating			Cermets		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							●										

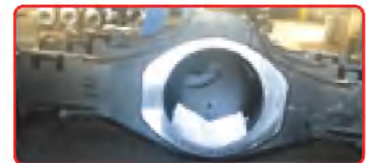
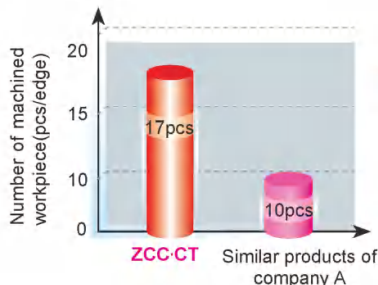
- Inserts can be mounted left or right.    ★ Recommended grade (always stock available)    ● Available grade (always stock available)    ○ Make-to-order
- The W4 wiper inserts for adjustable tool holders.
- The W wiper inserts can be mounted directly on the cutting teeth.

## Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters				
			Vc(m/min)	fz(mm/z)			
				-GL	-GM	-GH	
<b>P</b> 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)	
	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)	
	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)	
<b>M</b> 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)	
<b>K</b> 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)	
<b>S</b> hard-to-cut material	≤400	YBS203 YBS303	100(60-120)	--	0.15(0.1-0.25)	--	

## Case for FMP17

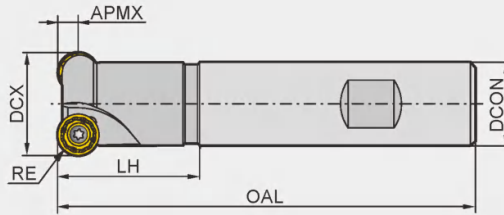
Workpiece: Truck axle housing  
 Workpiece material: QT600(HB250)  
 Tool type: FMP17-100-A32-SN12-08C  
 Insert: SNGX1205PNN-GM/YB9320  
 Cutting parameters: Vc=267m/min, fz=0.18mm/z, ap=1.5mm, ae=90mm  
 Cooling: External coolant



Face milling tools



FMR01 P M K S



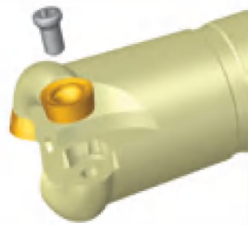


Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		DCX	DCON	OAL	LH	RE	APMX		
<b>FMR01</b> -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

Indexable milling tools  
Face milling tools

Spare parts

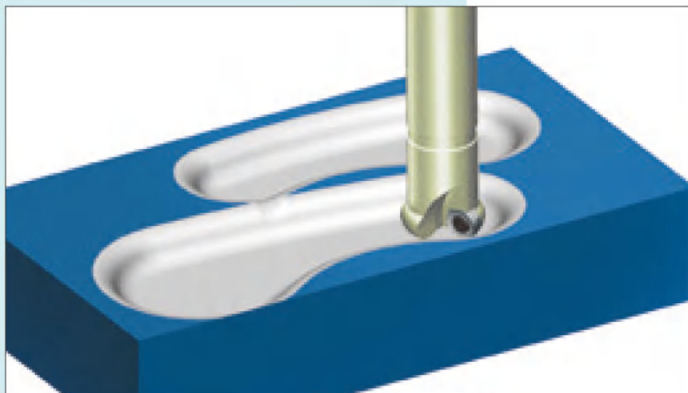
Diameter DCX	Inserts	Insert screw	Wrench	
				
Ø20 -Ø32	RC□□10T3MO-DM	I60M4×8.4	WT15IP	
Ø25 -Ø40	RC□□1204MO-□□	I60M3.5×10	WT15IP	

Tools code key  
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### Case for FMR01



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

Insert type/grade: RCKT10T3MO-DM/YBG202

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

Indexable  
milling tools

Face milling tools

### Comparison of insert abrasion

ZCC-CT

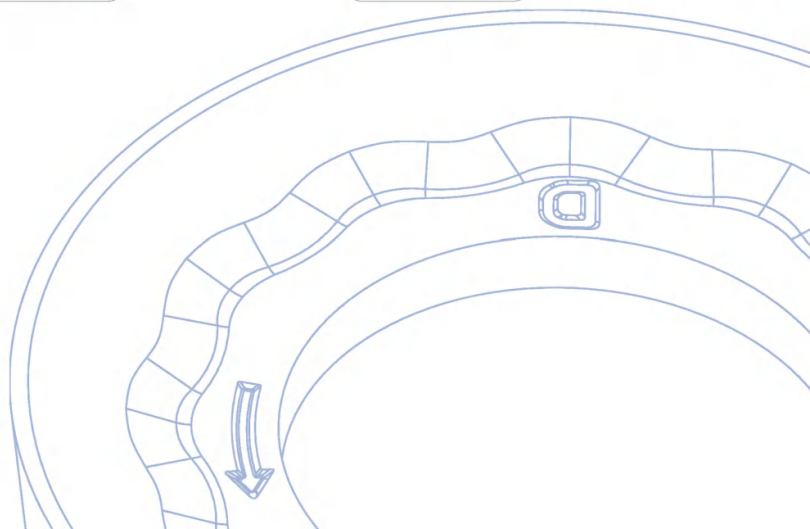
Similar overseas products



22minutes later



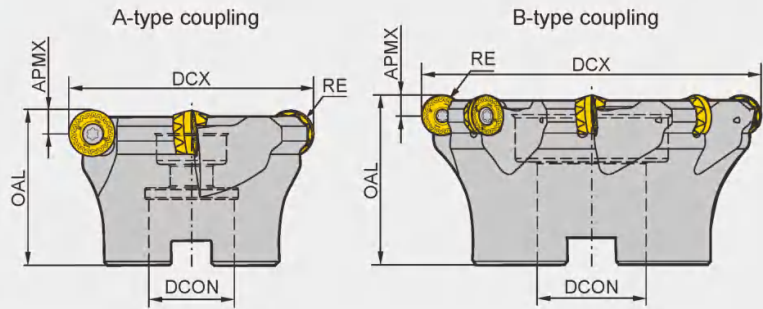
22minutes later



Face milling tools



FMR02 P M K H S



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
Close pitch	-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
	-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	Wrench		
		Insert screw	Wrench	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  
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Grade selection guide  
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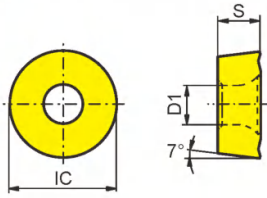
Technical data  
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Indexable milling tools

Face milling tools



### Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating			Cermets		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

Indexable milling tools

Face milling tools

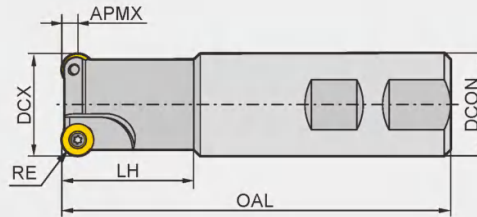
 Recommended cutting parameters

Workpiece material	Hardness HB	Insert grade	Cutting parameters						
			V(m/min)	f(mm/z)					
				-DM	-DR	-ER	-PCBN	-NM	
<b>P</b>	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)
<b>M</b>	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)
<b>K</b>	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)			
<b>H</b>	Hardened steel	≥HRC45	YCB012	150 (100-500)				0.15(0.1-0.5)	
<b>S</b>	Difficult-to- machine materials	≤400	YBS203 YBS303	100 (60-120)					0.15 (0.1-0.3)

### Face milling tools



### FMR03 P M K S

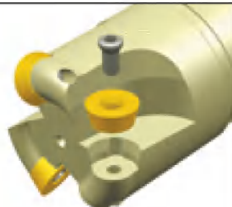




#### Specification of tools

Type	Stock	Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		DCX	DCON	OAL	LH	RE	APMX		
<b>FMR03</b> -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

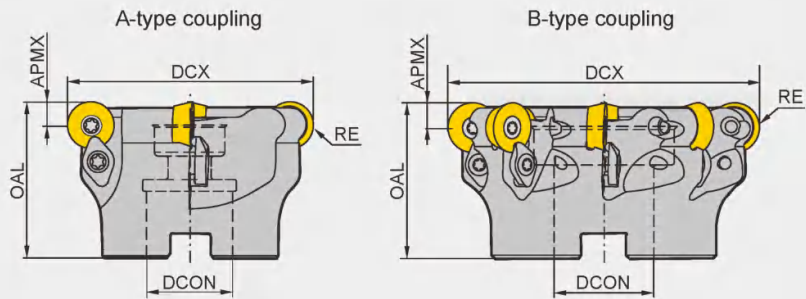
Technical data

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				
<b>FMR04</b> 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

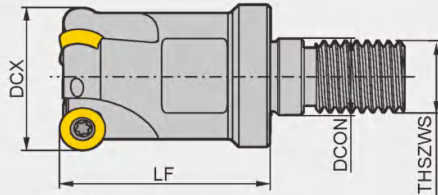
Indexable milling tools  
Face milling tools

### 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				
<b>QCH</b>	-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		2	0.156
-40-RD16-M16-03	△	40	17	45	16	RDKW1605MO	3	0.220	

▲Stock available    △Make-to-order

#### Spare parts

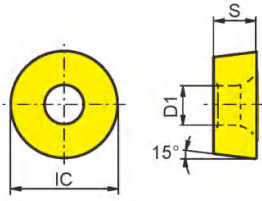
Diameter DCX	Insert	Screw			Wrench	
Ø16-Ø25	RDKW07□□	I60M2.5×6.5T	WT08IP	--	--	
Ø20-Ø32	RDKW10□□	I60M4×8	WT15IP	--	--	
Ø25-Ø40	RDKW12□□	I60M4×10	WT15IP	--	--	
Ø32-Ø40	RDKW16□□	I60M5×13	--	WT20IT	--	

Tools code key **B26-B27**

Grade selection guide **B19-B23**

Technical data **B271-B276**

## Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating					Cermet	Cemented carbide				
		IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG320	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)	
<b>P</b> 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)	
<b>M</b> 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)	
<b>K</b> Cast iron	180-250	YBG302	210 (120-300)	0.2 (0.1-0.45)	
<b>S</b> 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:  $V_c=200\text{m/min}$ ,  $a_p=3\text{mm}$ ,  
 $f_z=0.3\text{mm/z}$



## Abrasion comparison after 90 minutes cavity milling

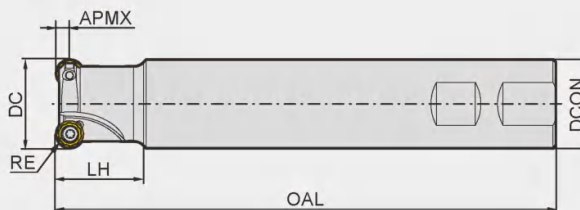


ZCC-CT Similar overseas products

## 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		
<b>FMR11</b> -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	WT151P	
	R□□□12□□-H/M/MM			

Tools code key → B26-B27

Grade selection guide → B19-B23

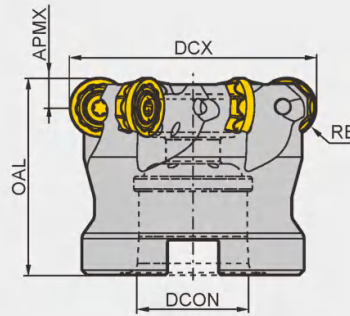
Technical data → B271-B276

Indexable milling tools  
Face milling tools

Face milling tools



FMR11 P M K S



Specification of tools

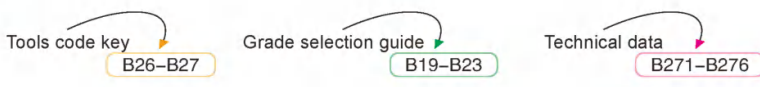
Type	Stock	Basic dimensions(mm)				Number of teeth Z	Weight (kg)	
		DCX	DCON	OAL	APMX			
<b>FMR11</b>	-040-A16-RD10-06C	▲	40	16	40	5	6	0.188
	-050-A22-RD10-07C	▲	50	22	40	5	7	0.300
	-063-A22-RD10-08C	▲	63	22	40	5	8	0.500
	-040-A16-RD12-05C	▲	40	16	40	6	5	0.180
	-050-A22-RD12-05C	▲	50	22	40	6	5	0.260
	-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

Indexable milling tools  
Face milling tools

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



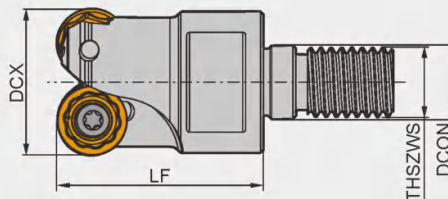


## Face milling tools



### 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			
<b>QCH</b> -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

Indexable milling tools  
Face milling tools

### Spare parts

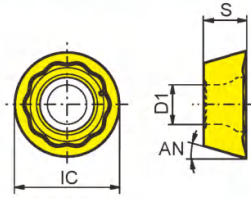
Diameter DCX	Insert	Insert screw	Wrench	
				
Ø25-Ø42	RD□□10T3	I60M3.5×8	WT15IP	
Ø25-Ø42	RD□□1204	I60M4×8.4	WT15IP	
Ø25-Ø42	RP□□10T3	I60M3.5×8	WT15IP	
Ø25-Ø42	RP□□1204	I60M4×8.4	WT15IP	

Tools code key → B26-B27

Grade selection guide → B19-B23

Technical data → B271-B276

## Selection of inserts



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

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

Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating					Cermets		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

Indexable milling tools

Face milling tools

## Recommended cutting parameters

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