Face milling tools

Kr:45°

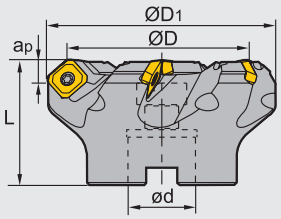

Face milling


Chamfering

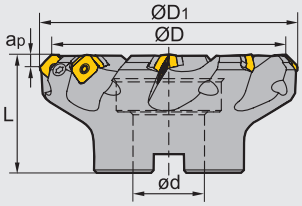
FMA01 P M K N S

Close and even pitch

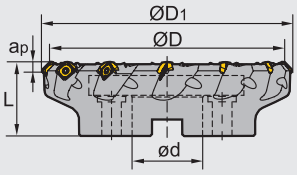
A-type coupling



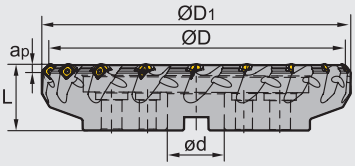
B-type coupling



C-type coupling



D-type coupling



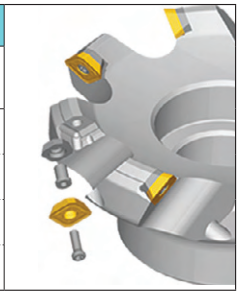
Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	ØD	ØD1	ød	L	apmax			
FMA01	**-050-A22-SE12-04**	▲	△	50	61	22	40	6	4	A	0.3
	-063-A22-SE12-05	▲	△	63	74	22	40	6	5	A	0.5
	-080-A27-SE12-06	▲	△	80	91	27	50	6	6	A	1.2
	-100-B32-SE12-07	▲	△	100	107	32	50	6	7	B	1.2
	-100-B32-SE18-04	▲	△	100	120	32	63	10.4	4	B	2.22
	-125-B40-SE12-08	▲	△	125	136	40	63	6	8	B	2.6
	-125-B40-SE18-05	▲	△	125	145	40	63	10.4	5	B	3.15
	-160-B40-SE12-10	▲	△	160	170	40	63	6	10	B	4.3
	-160-B40-SE18-06	▲	△	160	180	40	63	10.4	6	B	5.01
	-200-C60-SE12-12	▲	△	200	210	60	63	6	12	C	7.6
	-200-C60-SE18-08	▲	△	200	220	60	63	10.4	8	C	6.9
	-250-C60-SE12-14	▲	△	250	260	60	63	6	14	C	13.5
	-250-C60-SE18-10	△	△	250	270	60	63	10.4	10	C	13.1
	-315-D60-SE12-18	△	△	315	325	60	70	6	18	D	20.8
	-315-D60-SE18-12	△	△	315	335	60	80	10.4	12	D	24.5

▲Stock available △Make-to-order

Spare parts

Diameter ØD	Insert screw	Shim	Shim screw	Wrench	Wrench
					
Ø50 -Ø100	I60M3.5×10	--	--	WT15IS	--
Ø125-Ø315	I60M3.5×12	S13BS	SM5×7XA		WH35L
Ø100-Ø315	I60M5×17	S18BS	SM8×9XA	WT20IT	WH50L



Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Face milling tools

Kr:45°

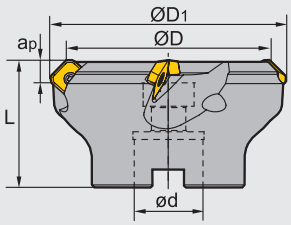

Face milling


Chamfering

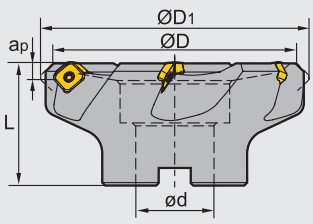
FMA02 P M K N S

Coarse and differential pitch

A-type coupling



B-type coupling



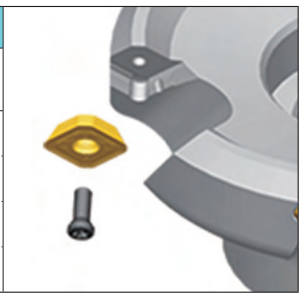
Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	ØD	ØD1	ød	L	$a_p$max			
FMA02	**-050-A22-SE12-03**	▲	△	50	61	22	40	6	3	A	0.4
	-063-A22-SE12-04	▲	△	63	74	22	40	6	4	A	0.6
	-080-A27-SE12-04	▲	△	80	91	27	50	6	4	A	1.3
	-100-B32-SE12-05	▲	△	100	107	32	50	6	5	B	1.3
	-125-B40-SE12-06	▲	△	125	131	40	63	6	6	B	2.6

▲Stock available △Make-to-order

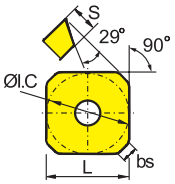
Spare parts

Diameter ØD	Insert screw	Wrench
		
Ø50-Ø125	I60M3.5×10	WT15IS



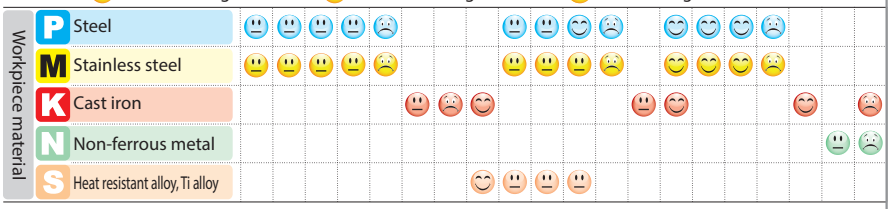
Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Selection of inserts

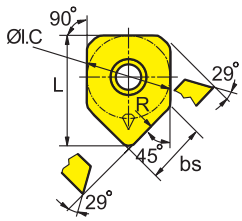


Good working condition Normal working condition Bad working condition

Workpiece material



Insert shape	Type	Basic dimensions(mm)						CVD Coating							PVD Coating							Cermet		Cemented carbide				
		L	ØI.C	S	ød	bs	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SEET12T3-DF	13.4	13.4	3.97	4.1	2.55		●	★	●							★		○								
	SEET12T3-CF	13.4	13.4	3.97	4.1	2.55							○		★		★		○								
	SEET12T3-EF	13.4	13.4	3.97	4.1	2.55											★		○								
	SEET12T3-DM	13.4	13.4	3.97	4.1	2.55		●	★	●		○					★		★								
	SEET18T6-DM	18.0	18.0	6.1	5.5	1.5	1.0		●		●						★										
	SEET12T3-CM	13.4	13.4	3.97	4.1	2.55							★				★		○								
	SEET12T3-EM	13.4	13.4	3.97	4.1	2.55				●		●					★		★								
	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		★	●			★				★					★					



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

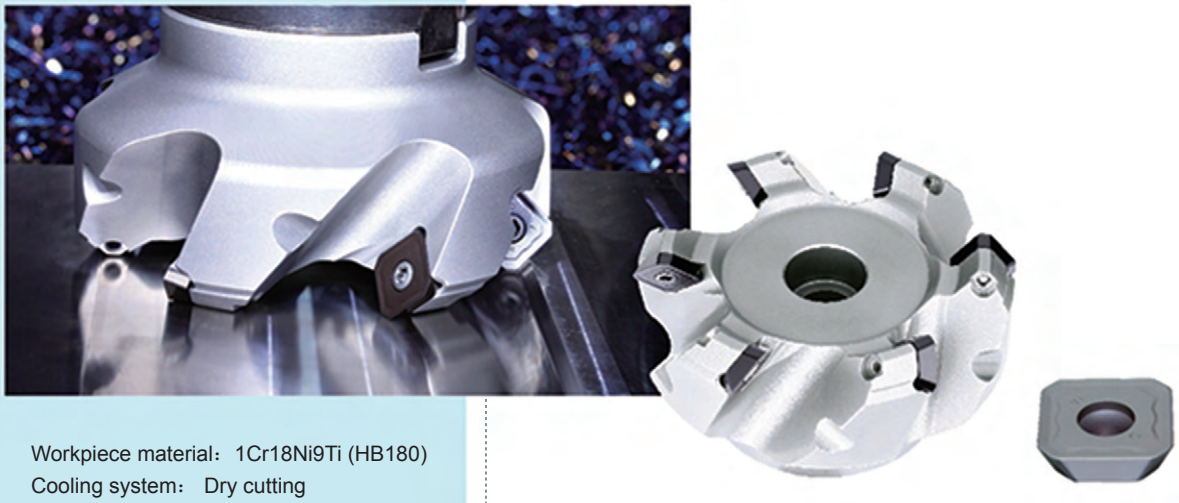
Chipbreaker selection for FMA01 milling inserts

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

Recommended cutting parameters

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

Case for FMA01



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

Surface roughness of workpiece:

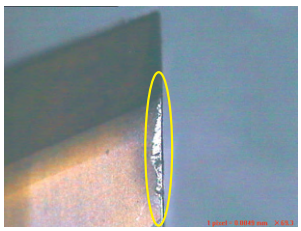
ZCC-CT:Ra1.2

Similar overseas products：Ra1.6

Tool type：FMA01-080-A27-SE12-06

Insert type/grade：SEET12T3-DM/YBG302

●Comparison of insert abrasion

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

Face milling tools

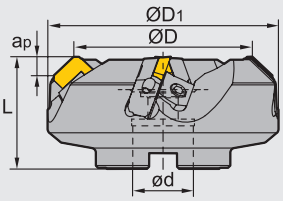
Kr:45°


Face milling

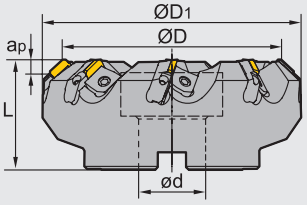

Chamfering

FMA03 P M K

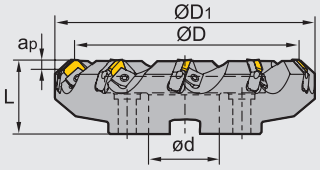
A-type coupling



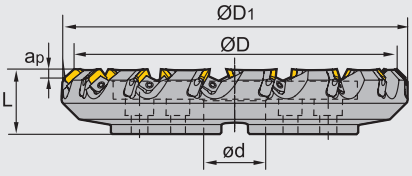
B-type coupling



C-type coupling



D-type coupling



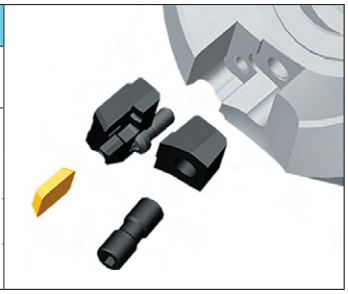
Specification of tools

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

▲Stock available △Make-to-order

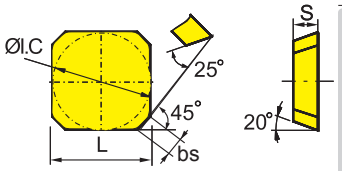
Spare parts

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



Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Selection of inserts



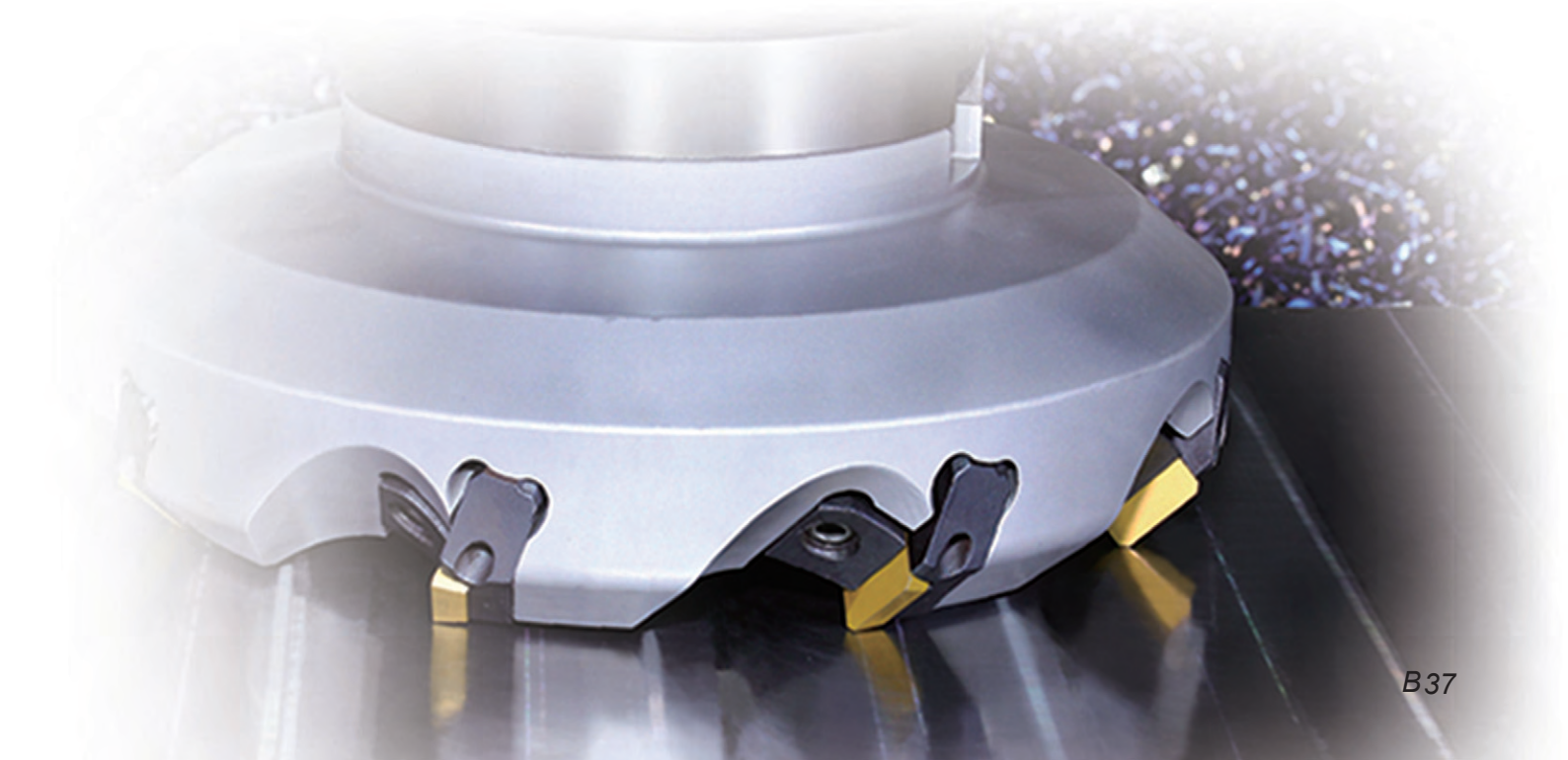
Good working condition Normal working condition Bad working condition

Workpiece material

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

Insert shape	Type	Basic dimensions(mm)				CVD Coating							PVD Coating							Cermet		Cemented carbide			
		L	ØI.C	S	bs	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	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	●		●		●				★			○					●			●
	SEKR1203AFN	12.7	12.7	3.18	1.8	●								○			○								
	SEKN1504AFN	15.875	15.875	4.76	1.6	●		●														●			●
	SEKN1504AFTN	15.875	15.875	4.76	1.6	○		●		●							○					●			●
	SEKR1504AFN	15.875	15.875	4.76	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)
P	Low-carbon steel、Soft steel	≤180	YNG151	430 (340-500)	0.2 (0.1-0.4)
			YBM251 YBC301	270 (220-350)	0.2 (0.1-0.4)
			YBM351	220 (180-300)	0.25 (0.15-0.3)
			YBG202	270 (200-360)	0.2 (0.1-0.3)
			YC30S	140 (100-220)	0.27 (0.1-0.4)
	High-carbon steel、Alloy steel	180-280	YNG151	400 (320-480)	0.2 (0.1-0.4)
			YBM251 YBC301	240 (200-320)	0.2 (0.1-0.4)
			YBM351	200 (160-280)	0.25 (0.15-0.3)
			YBG202	240 (180-350)	0.2 (0.1-0.3)
			YC30S	120 (80-200)	0.27 (0.1-0.4)
	Alloy tool steel	280-350	YNG151	350 (300-450)	0.2 (0.1-0.4)
			YBM251 YBC301	220 (180-300)	0.2 (0.1-0.4)
			YBM351	180 (150-250)	0.25 (0.15-0.3)
			YBG202	220 (170-340)	0.2 (0.1-0.3)
			YC30S	100 (60-180)	0.27 (0.1-0.4)
M	Stainless steel	≤270	YNG151	220 (160-280)	0.2 (0.1-0.4)
			YBM251	130 (100-220)	0.2 (0.1-0.4)
			YBM351	140 (100-240)	0.25 (0.15-0.3)
			YBG202	140 (100-250)	0.2 (0.1-0.3)
K	Cast iron	180-250	YBG102	210 (120-300)	0.2 (0.1-0.3)
			YBD252	200 (150-250)	0.2 (0.1-0.4)
			YD201	100 (80-160)	0.25 (0.1-0.4)

Face milling tools

Kr:45°

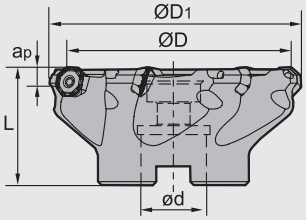

Face milling


Chamfering

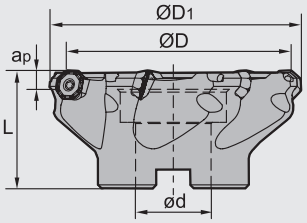
FMA04 P M K N

Screw clamping

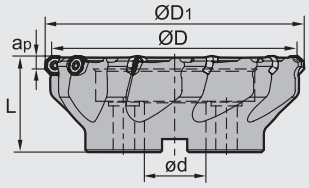
A-type coupling



B-type coupling



C-type coupling



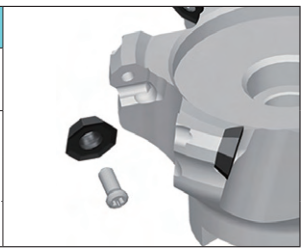
Specification of tools

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

▲Stock available △Make-to-order

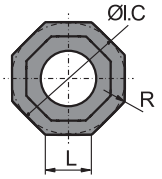
Spare parts

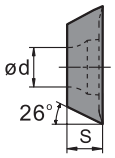
Diameter ØD	Insert screw	Wrench
Ø50- Ø63	I60M4×8.4	WT15IS
Ø80 -Ø160	I60M4×10	

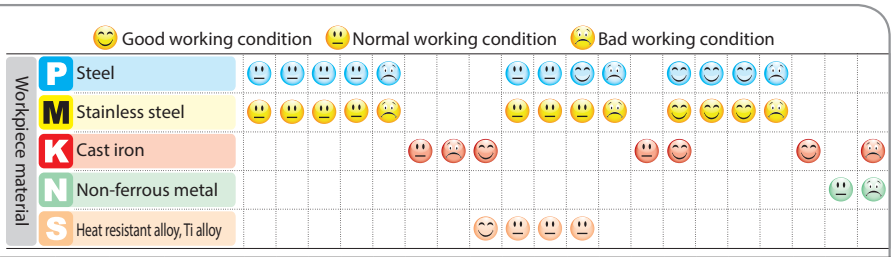


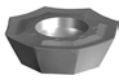
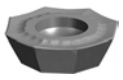
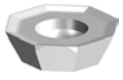
Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Selection of inserts







Insert shape	Type	Basic dimensions(mm)					CVD Coating							PVD Coating							Cermet		Cemented carbide			
		L	ØI.C	S	ød	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	**OFKT05T3-DF**	5.26	12.7	3.97	4.4	0.5								○	★											
	**OFKT05T3-DM**	5.26	12.7	3.97	4.4	0.5			○					★	★			★								
	**OFKT05T3-LH**	5.26	12.7	3.97	4.4	0.5																			○	

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

Chipbreaker selection for FMA04 milling inserts

Classification \ Function	For finishing	For semi-finishing
P	-DF	-DM
M		
K		
N	-LH	

Recommended cutting parameters

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

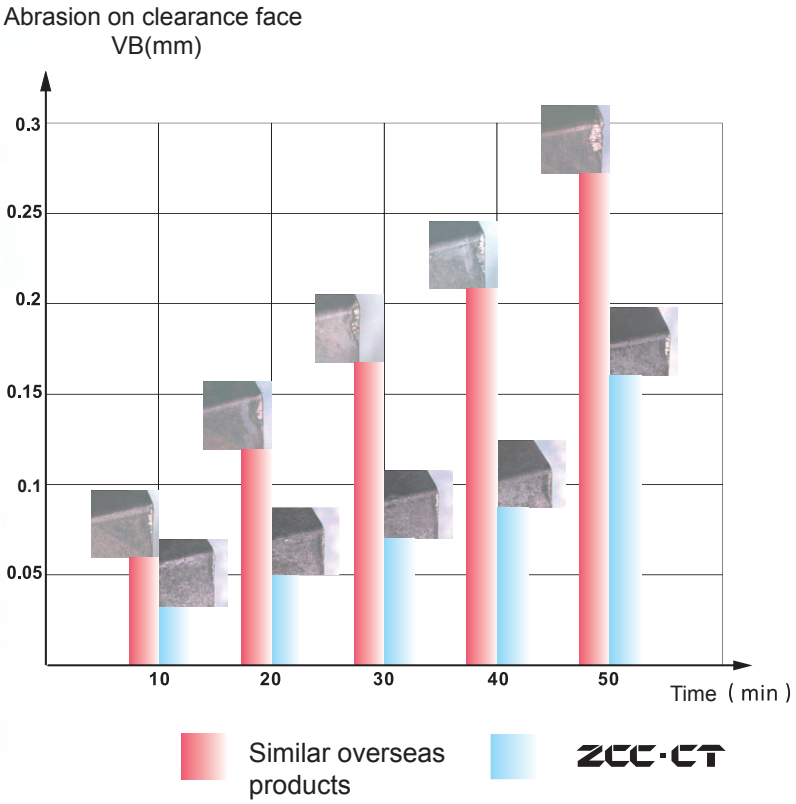
Case for FMA04

Workpiece material：42CrMo (HB280)
Cooling system: Dry cutting
Machine: Vertical machining center
Cutting parameters：
V_c=180m/min
a_p=1mm
fz=0.2mm/z
a_e=60mm

Tool type：FMA04-100-B32-OF05-07
Insert type/grade：OFKT05T3-DM/YBG202

Surface roughness of workpiece:
ZCC-CT:Ra1.2
Similar overseas products：
Ra1.6

●Comparison of insert abrasion



Face milling tools

Kr:45°

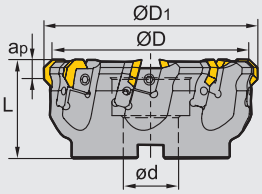

Face milling


Chamfering

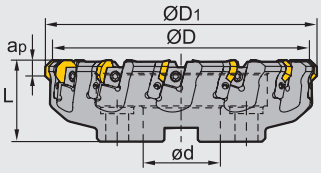
FMA04 P M K

Top clamping

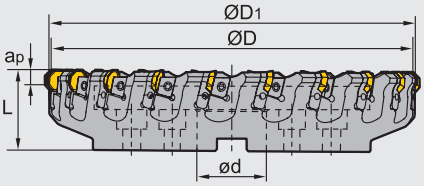
B-type coupling



C-type coupling



D-type coupling



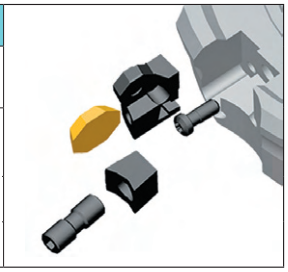
Specification of tools

Type		Stock		Basic dimensions(mm)					Number of teeth Z	Type of coupling	Weight (kg)
		R	L	ØD	ØD1	ød	L	$a_p$max			
FMA04	**-125-B40-OF07-08**	▲	△	125	136	40	63	5	8	B	3.9
	-160-B40-OF07-10	▲	△	160	171	40	63	5	10	B	5.9
	-200-C60-OF07-12	▲	△	200	211	60	63	5	12	C	7.6
	-250-C60-OF07-16	▲	△	250	261	60	63	5	16	C	13.3
	-315-D60-OF07-20	▲	△	315	321	60	63	5	20	D	20.3

▲Stock available △Make-to-order

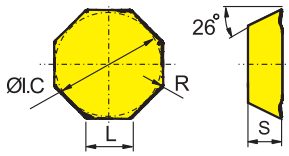
Spare parts

Diameter ØD	Locator	Wedge	Wedge screw	Locator screw	Wrench
					
Ø125-Ø315	LOF07R/L	W02R/L	DM8×21X	LOM5×15.1	WT20T WH40T



Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Selection of inserts



Good working condition Normal working condition Bad working condition

Workpiece material

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

Insert shape	Type	Basic dimensions(mm)				CVD Coating							PVD Coating							Cermet		Cemented carbide			
		L	ØI.C	S	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	**OFKR0704-DF**	7.45	17.94	4.76	0.8			●	○					○											
	**OFKR0704-DM**	7.45	17.94	4.76	0.8	●		●	○	●		○	○	★			★								

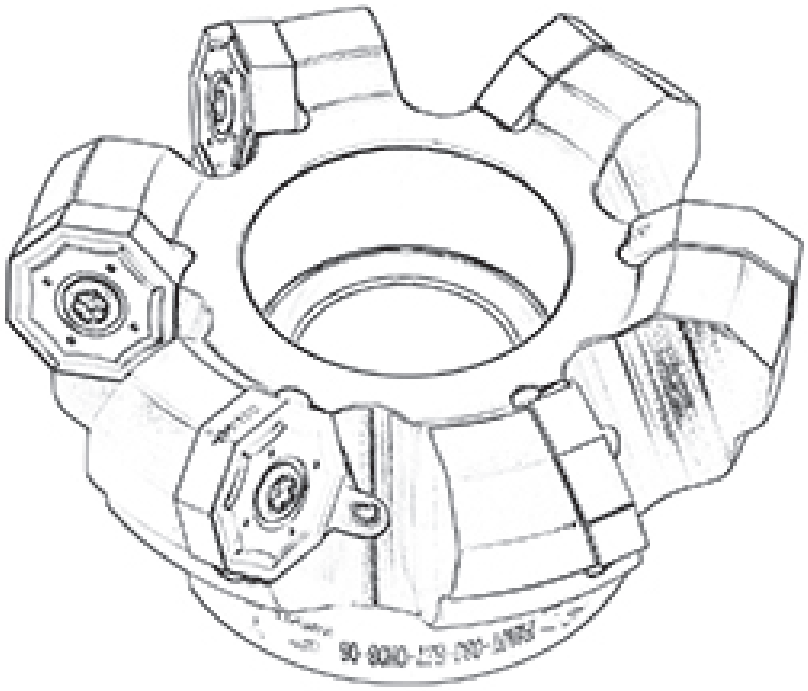
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Chipbreaker selection for FMA04 milling inserts

Classification \ Function	For finishing	For semi-finishing
P	-DF	-DM
M		
K		

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				V(m/min)	f(mm/z)	
					-DF	-DM
P	Low-carbon steel、Soft steel	⩽180	YBM251 YBM253 YBC301	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)
			YBM351	220 (180-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			YBG302	230 (170-350)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	High-carbon steel、Alloy steel	180-280	YBM251 YBM253 YBC301	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)
			YBM351	200 (160-280)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			YBG302	220 (150-330)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	Alloy tool steel	280-350	YBM251 YBM253 YBC301	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)
			YBM351	180 (150-250)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			YBG302	190 (130-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
M	Stainless steel	⩽270	YBG202	160 (110-270)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBG302	140 (100-250)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBM251	150 (120-250)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			YBM253	230 (180-300)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
K	Cast iron	180-250	YBG102	210 (120-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			YBD252	200 (150-250)	0.2 (0.1-0.3)	0.25 (0.1-0.4)

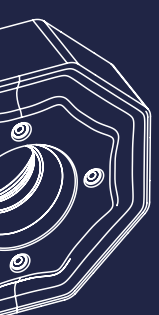


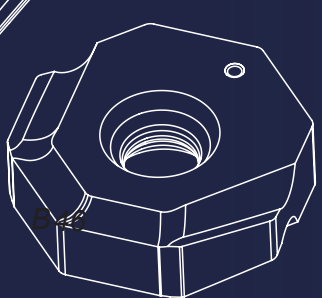
HURRICANE

FMA07 milling cutter series

New generation of high economy milling cutters

16 cutting edges
high economy
8×2=16





- 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).

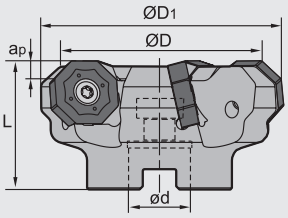
Face milling tools

Kr:45°

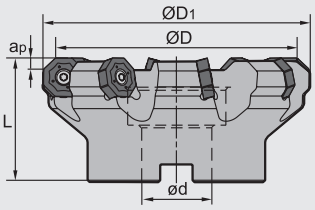
Face milling

FMA07 P M K

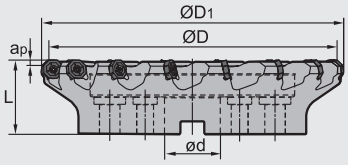
A-type coupling



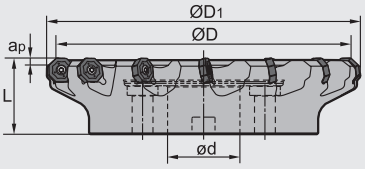
B-type coupling



C-type coupling



D-type coupling



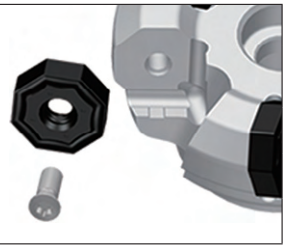
Specification of tools

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

▲Stock available △Make-to-order

Spare parts

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



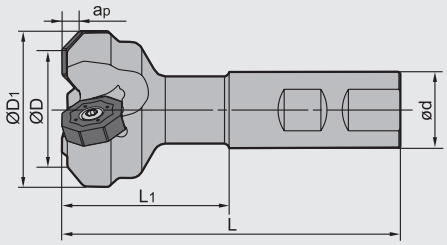
Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Face milling tools

Kr:45°

Face milling | Chamfering

FMA07 P M K



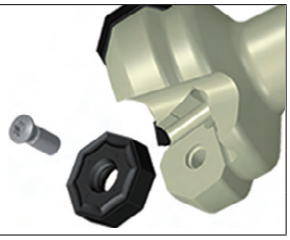
Specification of tools

Type		Stock		Basic dimensions(mm)						Number of teeth Z	Weight (kg)
		R	L	ØD	ØD1	Ød	L	L1	apmax		
FMA07	-025-XP20-ON06-02	▲	△	25	37	20	95	45	4	2	0.2
	-040-XP25-ON06-03	▲	△	40	52	25	106	50	4	3	0.4
	-032-XP25-ON08-02	▲	△	32	47	25	111	55	5	2	0.4
	-040-XP25-ON08-03	▲	△	40	55	25	111	55	5	3	0.5
	-050-XP25-ON08-04	▲	△	50	65	25	111	55	5	4	0.6

▲Stock available △Make-to-order

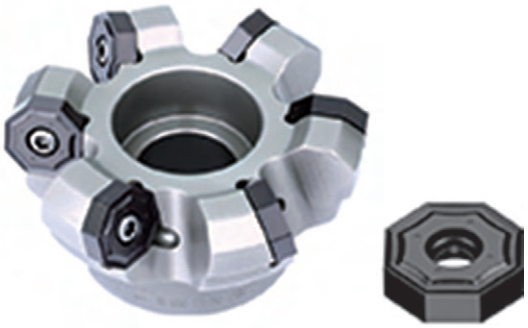
Spare parts

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



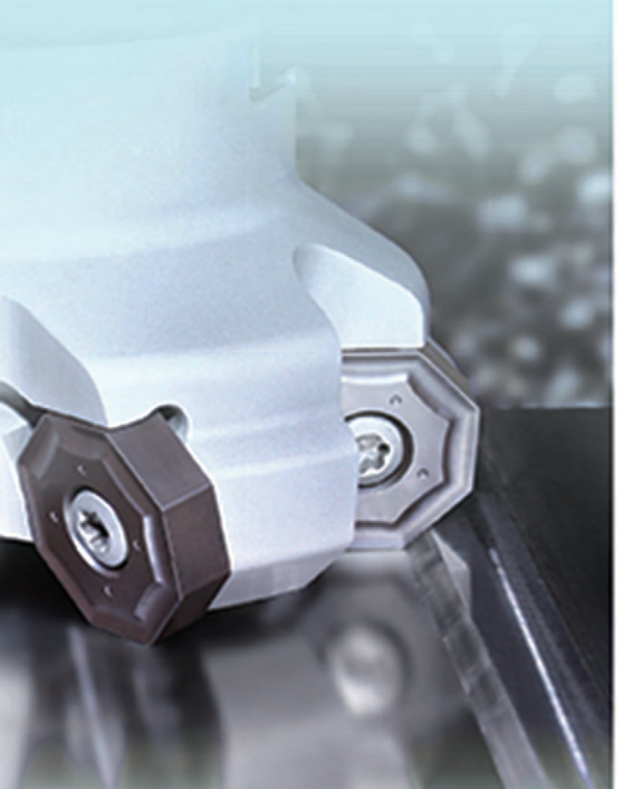
Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Case for FMA07



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

Tool type：FMA07-100-B32-ON08-07
Insert type/grade：ONHU08T508-PM/YBD152



●Comparison of insert abrasion

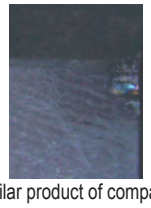
Abrasion on rake face

ZCC·CT

similar product of company A

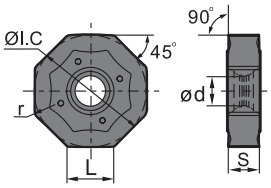
Abrasion on clearance face

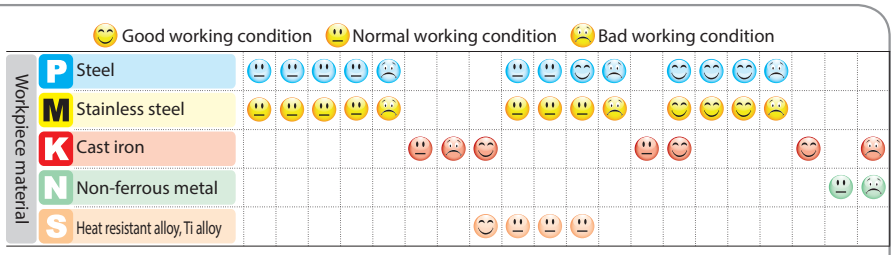
ZCC·CT

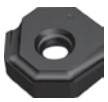


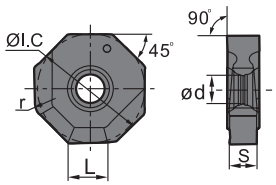
similar product of company A

Selection of inserts





Insert shape	Type	Basic dimensions(mm)					CVD Coating							PVD Coating							Cermet		Cemented carbide			
		L	ØI.C	S	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	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		★		★		★														
	**ONHU08T5-W**	6.9	20.5	6.00	5.3			★				★		★		★										



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

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V_c(m/min)	f_z(mm/z)	a_{pmax}(mm)	
						ONHU06□□□□-PF/PM	ONHU08□□□□-PF/PM/W
P	Low-carbon steel、Soft steel	⩽180	YBG102 YBM253 YBG202 YBC302 YBG205	270 (220-350)	0.2 (0.1-0.4)	4	5
P	High-carbon steel、Alloy steel	180-280	YBG102 YBM253 YBG202 YBC302 YBG205	260 (200-320)	0.2 (0.1-0.4)	4	5
P	Alloy tool steel	280-350	YBG102 YBM253 YBG202 YBC302 YBG205	240 (180-300)	0.2 (0.1-0.4)	4	5
M	Stainless steel	⩽270	YBM253 YBG205	230(180-300)	0.2(0.1-0.3)	4	5
K	Cast iron	180-250	YBD152	270 (150-300)	0.4 (0.1-0.5)	4	5

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

FMA11 Kr:45° Series

With outstanding economy and high performance

4 × 2=8edge

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.

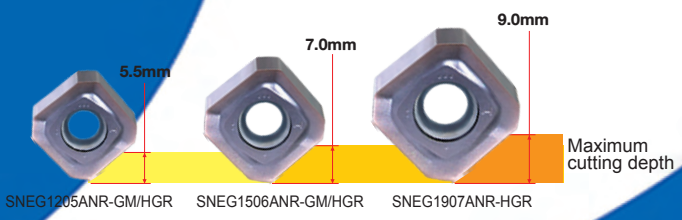
New -HGR geometry, high edge strength, excellent breakage resistance.

Insert with wiper, smoother surface roughness.

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

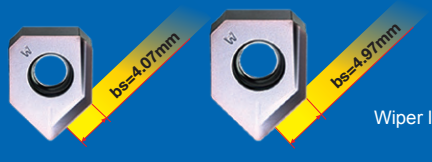
Double negative structure, excellent impact resistance.

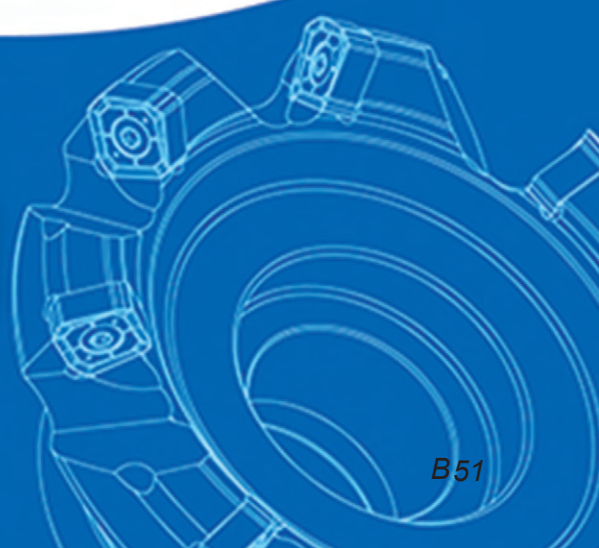
Optimized design of pitch and chip pocket, for unobstructed chip flow, and higher cutting efficiency.



-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.





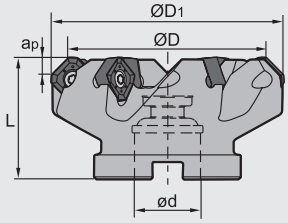
Face milling tools

Kr:45°

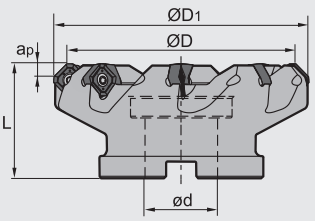
Face milling Chamfering

FMA11 P K

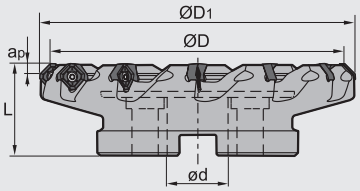
A-type coupling



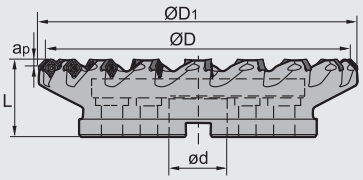
B-type coupling



C-type coupling



D-type coupling



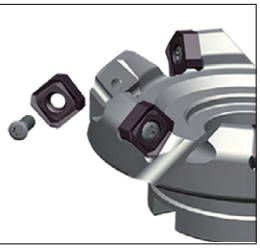
Specification of tools

Type		Stock	Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
		R	ØD	ØD1	Ød	L	a_{pmax}			
FMA11 Coarse pitch	**-063-A22-SN12-05C**	▲	63	75.2	22	40	5.5	5	A	0.55
	-080-A27-SN12-06C	▲	80	92.2	27	50	5.5	6	A	1.14
	-100-B32-SN12-07	▲	100	112.2	32	50	5.5	7	B	1.42
	-125-B40-SN12-08	▲	125	137.2	40	63	5.5	8	B	2.86
	-160-C40-SN12-10	▲	160	172.2	40	63	5.5	10	C	4.06
	-063-A22-SN15-05C	▲	63	78.4	22	40	7.0	5	A	0.56
	-080-A27-SN15-06C	▲	80	95.4	27	50	7.0	6	A	1.06
	-100-B32-SN15-07	▲	100	115.4	32	50	7.0	7	B	1.47
	-125-B40-SN15-08	▲	125	140.4	40	63	7.0	8	B	2.70
	-160-C40-SN15-10	▲	160	175.4	40	63	7.0	10	C	3.92
	-200-C60-SN15-12	▲	200	215.4	60	63	7.0	12	C	5.46
	-250-C60-SN15-14	▲	250	265.4	60	63	7.0	14	C	11.26
	-315-D60-SN15-18	▲	315	330.4	60	80	7.0	18	D	20.00
	-125-B40-SN19-07	▲	125	144.4	40	63	9.0	7	B	3.00
	-160-C40-SN19-09	▲	160	179.4	40	63	9.0	9	C	4.25
	-200-C60-SN19-11	▲	200	219.4	60	63	9.0	11	C	6.18
	-250-C60-SN19-13	▲	250	269.4	60	63	9.0	13	C	11.55
	-315-D60-SN19-16	▲	315	334.4	60	80	9.0	16	D	20.90

▲Stock available △Make-to-order

Spare parts

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



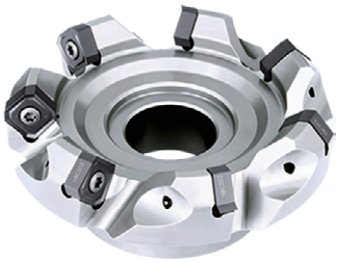
Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Face milling tools

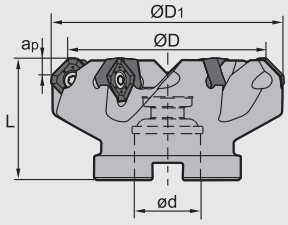
Kr:45°

Face milling Chamfering

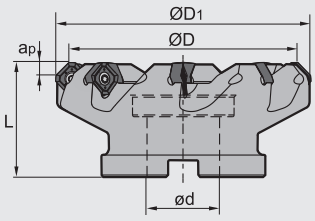
FMA11 P K



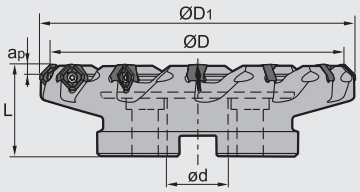
A-type coupling



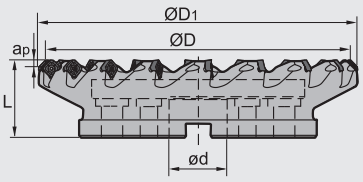
B-type coupling



C-type coupling



D-type coupling



Specification of tools

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

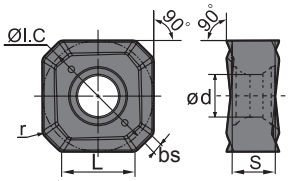
▲Stock available △Make-to-order

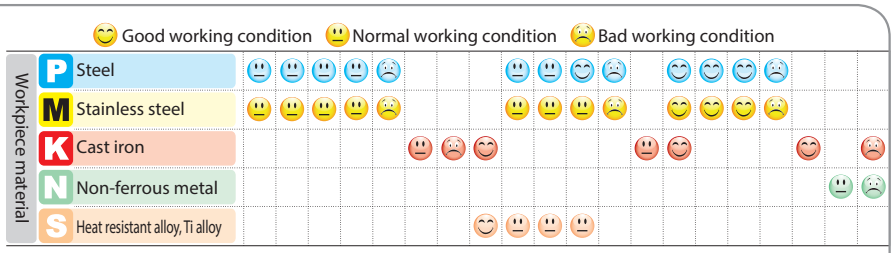
Spare parts

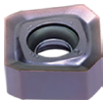
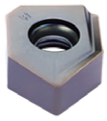
Diameter ØD	Inserts	Insert screw	Wrench	
				
Ø63 -Ø160	SNEG1205ANR-GM/HGR/W	I60M3.5×10	--	WT15IS
Ø63 -Ø315	SNEG1506ANR-GM/HGR/W	I60M5×13	WT20IT	--
Ø125 -Ø315	SNEG1907ANR-HGR	I43M6×16	WT25IT	--

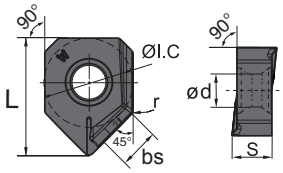
Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Selection of inserts





Insert shape	Type	Basic dimensions(mm)						CVD Coating							PVD Coating							Cermet		Cemented carbide			
		L	ØI.C	S	bs	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	**SNEG1205ANR-GM**	7.6	12.0	4.76	1.05	4.6	0.8		★		★		★				★	★									
	SNEG1506ANR-GM	9.4	15.0	5.54	1.30	5.5	0.9		★		★		★				★	★									
	**SNEG1205ANR-HGR**	7.6	12.0	4.76	1.05	4.6	0.8		★		★		★	○			★	★									
	SNEG1506ANR-HGR	9.4	15.0	5.54	1.30	5.5	0.9		★		★		★	○			★	★									
	SNEG1907ANR-HGR	12.1	19.0	7.0	1.67	7.2	1.0		★		★		★	○			★	★									
	**SNEG1205ANR-W**	15.9	12.0	4.76	4.07	4.6	0.6										●										
	SNEG1506ANR-W	19.9	15.0	5.54	4.97	5.5	0.9										●										



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

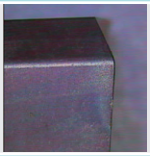
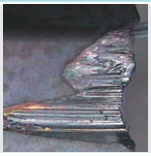
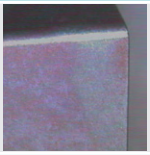
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				V(m/min)	f(mm/z)	a_{pmax}(mm)
P	Low-carbon steel、Soft steel	⩽180	YBM253 YBC302 YBG205 YB9320	270 (220-350)	0.2 (0.1-0.4)	5.5(SN12) 7.0(SN15) 9.0(SN19)
P	High-carbon steel、Alloy steel	180-280	YBM253 YBC302 YBG205 YB9320	260 (200-320)	0.2 (0.1-0.4)	
P	Alloy tool steel	280-350	YBM253 YBC302 YBG205 YB9320	240 (180-300)	0.2 (0.1-0.4)	
K	Cast iron	180-250	YBD152	270 (150-300)	0.3(0.1-0.5)	
			YBD252	200 (150-250)	0.4 (0.2-0.6)	

Case for FMA11

Workpiece material：NAK80
Operation: Face milling
Tool：FMA11-125-B40-SN12-08
Insert：SNEG1205ANR-HGR/YBG205
Cutting parameters：Vc=200m/min，fz=0.2mm/z，
Ap=2mm，Ae=50mm

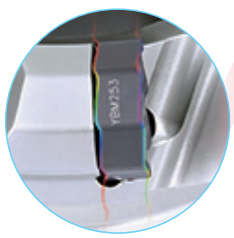
●Tool Life Comparison

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

FMA12 Series

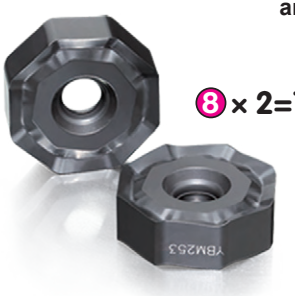
Kr:45°

High Performance Face Mill with 16 edges for outstanding economy

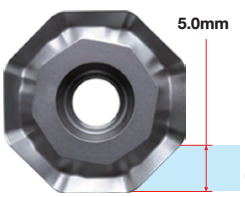


Unique 3-dimentional edge

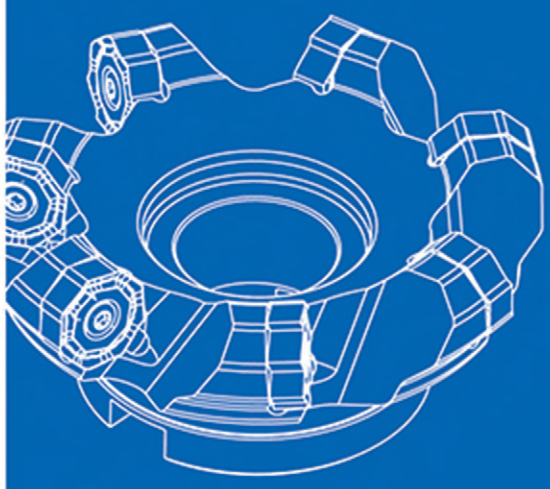
Double negative rake angle, in combination with helical insert structure, achieves double positive axial angle, which will help reduce cutting resistance and improve chip evacuation.



8 × 2=16edges



ONHU08T624R-GM



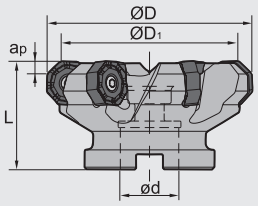
Face milling tools

Kr:45°

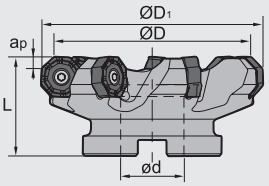
Face milling Chamfering

FMA12 P K

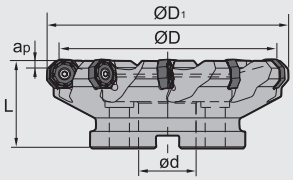
A-type coupling



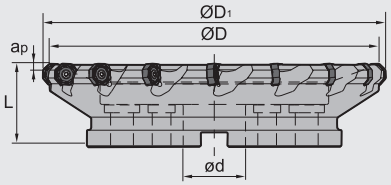
B-type coupling



C-type coupling



D-type coupling



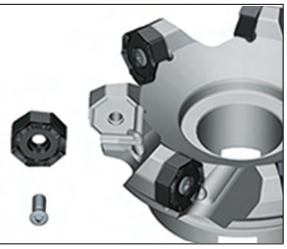
Specification of tools

type		Stock	Basic dimensions(mm)					Number of teeth Z	Style of coupling	Weight (kg)
			ØD	ØD1	Ød	L	$a_p$max			
FMA12	**-080-A27-ON08 -06**	▲	80	95	27	50	5.0	6	A	0.97
	-100-B32-ON08 -07	▲	100	115	32	50	5.0	7	B	1.28
	-125-B40-ON08-08	▲	125	140	40	63	5.0	8	B	2.59
	-160-C40-ON08-10	▲	160	175	40	63	5.0	10	C	4.10
	-200-C60-ON08-12	▲	200	215	60	63	5.0	12	C	5.68
	-250-C60-ON08-14	▲	250	265	60	63	5.0	14	C	11.90
	-315-D60-ON08-18	▲	315	330	60	80	5.0	18	D	20.41

▲Stock available △Make-to-order

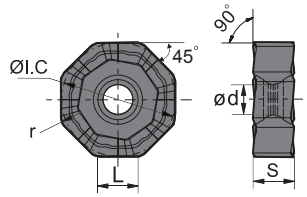
Spare parts

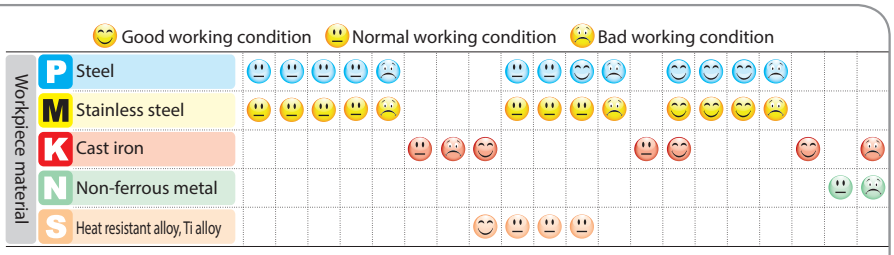
Diameter ØD	Inserts	Insert screw	Wrench
			
Ø80-Ø315	ONHU08T624R-GM	I60M5X13	WT20IT



Tools code key B24–B25
Grade selection guide B19–B23
Technical data B210–B216

Selection of inserts





Insert shape	Type	Basic dimensions(mm)					CVD Coating							PVD Coating							Cermet		Cemented carbide			
		L	ØI.C	S	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	**ONHU08T624R-GM**	6.38	20.2	6.3	5.3	2.4				★		★				★										

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

Note：ONHU08T508-PF、ONHU08T508-PM also compatible.

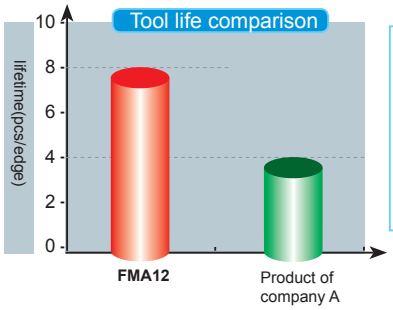
Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters		
				Cutting speed（m/min）	Feed per tooth（mm）	a_{pmax}(mm)
P	Low carbon steel	⩽180	YBM253 YBG205	270(220-350)	0.2(0.1-0.3)	5
P	Alloy steel	180-350	YBM253 YBG205	240(180-320)	0.15(0.1-0.3)	5
M	Stainless steel	⩽270	YBM253 YBG205	230 (180-300) 160 (110-270)	0.15 (0.1-0.3)	5
K	Cast iron	180-260	YBD152	270(150-300)	0.2(0.1-0.3)	5

Case for FMA12

Case (Cast iron machining)

Workpiece: Cylinder
Workpiece material: Gray cast iron (HB250)
Machining location: Milling 4 sides
Tool: FMA12-160-C40-ON08-10
Insert: ONHU08T624R-GM/YBD152
Cutting data: V_c=150m/min，f_z=0.25mm/z，
a_p=3mm，a_e=160mm
System of cooling: External



Doubled tool life of FMA12 series compared to similar product of company A.

Case (Steel machining)

A36(HB180~220)
Operation: Face milling
Tool: FMA12-200-C60-ON08-12
nsert: ONHU08T624R-GM/YBM253
Cutting data: V_c=250m/min，f_z=0.15mm/z，
a_p=3mm，a_e=125mm