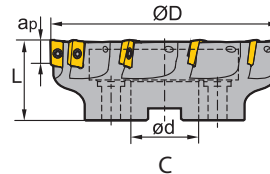
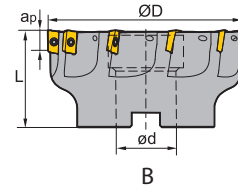
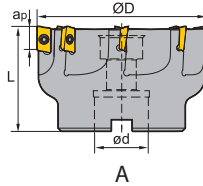
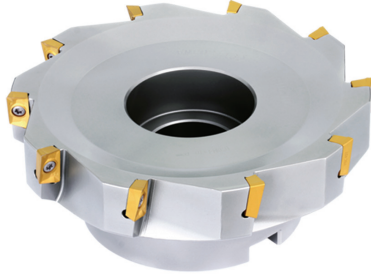
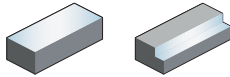


Square shoulder milling

EMP02 Kr: 90°



Article	*	Stock	Dimensions [mm]				Teeth	Coupling	kg	Inserts
			ØD	ød	L	a _p max				
EMP02-032-A16-AP07-08C	*	●	32	16	35	6.4	8	A	0.34	APKT0702
EMP02-040-A16-AP07-10C	*	●	40	16	40	6.4	10	A	0.4	
EMP02-050-A22-AP07-12C	*	●	50	22	40	6.4	12	A	0.6	
EMP02-040-A16-AP11-04C	*	●	40	16	40	11	4	A	0.237	
EMP02-040-A16-AP11-05C	*	●	40	16	40	11	5	A	0.177	
EMP02-040-A16-AP11-06C	*	●	40	16	40	11	6	A	0.234	
EMP02-050-A22-AP11-06		●	50	22	40	11	6	A	0.3	APKT11T3
EMP02-050-A22-AP11-06C	*	●	50	22	40	11	6	A	0.3	
EMP02-050-A22-AP11-07C	*	●	50	22	40	11	7	A	0.39	
EMP02-063-A22-AP11-08		●	63	22	40	11	8	A	0.6	
EMP02-063-A22-AP11-08C	*	●	63	22	40	11	8	A	0.6	
EMP02-063-A22-AP11-09C	*	●	63	22	40	11	9	A	0.54	
EMP02-080-A27-AP11-08		●	80	27	50	11	8	A	1.2	APKT1604
EMP02-080-A27-AP11-08C	*	●	80	27	50	11	8	A	1.2	
EMP02-080-A27-AP11-10C	*	●	80	27	50	11	10	A	1.13	
EMP02-100-B32-AP11-10		●	100	32	50	11	10	B	1.7	
EMP02-100-B32-AP11-10C	*	○	100	32	50	11	10	B	1.7	
EMP02-125-B40-AP11-10		○	125	40	63	11	10	B	3.42	
EMP02-040-A16-AP16-03		○	40	16	40	15.5	3	A	0.17	APKT1604
EMP02-040-A16-AP16-04C	*	●	40	16	40	15.5	4	A	0.17	
EMP02-050-A22-AP16-05		●	50	22	40	15.5	5	A	0.3	
EMP02-050-A22-AP16-05C	*	●	50	22	40	15.5	5	A	0.3	
EMP02-063-A22-AP16-06		●	63	22	40	15.5	6	A	0.5	
EMP02-063-A22-AP16-06C	*	●	63	22	40	15.5	6	A	0.5	
EMP02-080-A27-AP16-06C	*	○	80	27	50	15.5	6	A	1.08	
EMP02-080-A27-AP16-07		●	80	27	50	15.5	7	A	1.1	
EMP02-080-A27-AP16-07C	*	●	80	27	50	15.5	7	A	1.1	
EMP02-100-B32-AP16-08		●	100	32	50	15.5	8	B	1.6	

● Ex stock ○ On demand

* With internal cooling

System code > B26

Grade selection > B24

Technical info > B527

Cutting data > B230

Indexable milling

A

Turning

B

Milling

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Technical
Information

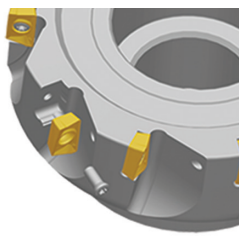
E

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Article	*	Stock	Dimensions [mm]				Teeth	Coupling		Inserts 
			ØD	ød	L	a _{p max}				
EMP02-100-B32-AP16-08C	*	●	100	32	50	15.5	8	B	1.6	APKT1604
EMP02-125-B40-AP16-06C	*	○	125	40	63	15.5	6	B	3.18	
EMP02-125-B40-AP16-10		○	125	40	63	15.5	10	B	3.2	
EMP02-125-B40-AP16-10C	*	○	125	40	63	15.5	10	B	3.2	
EMP02-160-B40-AP16-07C	*	○	160	40	63	15.5	7	B	4.3	
EMP02-160-B40-AP16-10		○	160	40	63	15.5	10	B	6.3	
EMP02-160-B40-AP16-10C	*	○	160	40	63	15.5	10	B	6.3	
EMP02-200-C60-AP16-12		○	200	60	63	15.5	12	C	8.1	
EMP02-250-C60-AP16-12		○	250	60	63	15.5	12	C	11.2	

● Ex stock ○ On demand

* With internal cooling

Spare parts					
Insert	APKT11T3	APKT1604	APKT1604		
ØD	40-125	40-160	160-250		
Cassette			Locator-APKT16		
 Screw (insert)		I60M4×10 (3.4 Nm)	I60M4×10 (3.4 Nm)		
 Screw (insert)	I60M2.5×6.5T (1.0 Nm)				
 Wrench (insert)	WT08IS	WT15IS	WT15IS		

System code > B26

Grade selection > B24

Technical info > B527

Cutting data > B230

Milling inserts

-  Ideal machining conditions
-  Normal machining conditions
-  Unfavourable machining conditions

APKT	L	S	d
07 02	4.26	2.38	2
11 T3	12.24	3.6	2.8
16 04	17.877	5.76	4.4

[illegible]

● Ex stock ○ On demand

HC ¹	Coated carbide
HT	Uncoated cermet
HC ²	Coated cermet
HW	Uncoated carbide

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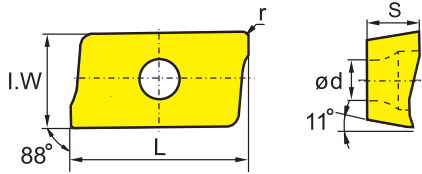
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-  Ideal machining conditions
-  Normal machining conditions
-  Unfavourable machining conditions

Milling inserts

APKT	L	S	d
07 02	4.26	2.38	2
11 T3	12.24	3.6	2.8
16 04	17.877	5.76	4.4

AP** milling insert					HC ¹ (CVD)										HC ¹ (PVD)										HT		HC ²		HW					
					P																													
					M																													
					K																													
					N																													
					S																													
					H																													
ISO					r	I.W	YBC302	YBC301	YBC401	YBM253	YBM251	YBM351	YBD152	YBD252	YBG101	YBG102	YBG202	YBG212	YBS203	YBG205	YB9320	YBG302	YBS303	YBG252	YNG151	YNG151C	YD101	YD201						
	APKT11T304-PR				0.4	6.5							○									○												
	APKT11T316-PR				1.6	6.5																○												
	APKT11T3XR													●								●												

● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

System code > B26

Grade selection > B24

Technical info > B527

Cutting data > B230

FM A 12 050 – A22 O – N 06 – 04 (L) (C)

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11

Type	
Code	Description
BM	Profile milling
CM	Chamfer milling
EM	Square shoulder milling
FM	Face milling
HM	Helical milling
SM	Slot milling
TM	T-slot milling
XM	Special

1

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

2

Serial number

3

Nominal diameter [mm]	
Code	Description
025	25
050	50
160	160
315	315
...	

4

Type and size of tool holders			
Code	Type	Code	Type
A	Nominal diameter Ø50 – 80 mm	B	Nominal diameter Ø100 – 160 mm
C	Nominal diameter Ø200 – 250 mm	D	Nominal diameter Ø315 mm
G	Straight shank	XP	Weldon shank
K	Bore with keyway		

5

With respect to mounting please adhere to the information provided by the tool holder manufacturer.

Insert shape	
A 	C 
H 	L 
M 	O 
P 	R 
S 	T 
W 	X Special
Z Special	

6

Clearance angle	
B 	C 
D 	E 
F 	N 
P 	

7

Cutting edge length l [mm]	
Insert shape	
	
A	C, M
	
H, O, P	L
	
R	S
	
T	W

8

Number of teeth

9

Cutting direction	
Code	Description
L	Left

10

With inner cooling

11


Tools with B coupling and inner coolant supply require the following spare parts:



Coolant clamp screw



Coolant shower plate



Spare parts (B coupling with inner coolant supply)

		B27	B32	B40	B40
	Ø	80	100	125	160
	Coolant clamp screw	LDB27C	LDB32C	LDB40C	LDB40C
	Coolant shower plate	B27-002-CP	B32-002-CP	B40-002-CP	B40-003-CP

When purchasing tools with inner coolant supply and B coupling these spare parts are included in delivery.

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S P K N 12 04 ED T21K R – DM

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Insert shape	
A	C
H	L
M	O
P	R
S	T
W	X Special
Z	Special

1

Clearance angle	
B	C
D	E
F	N
P	

2

Tolerance class			
Code	I.C [mm]	m [mm]	S [mm]
A	±0,025	±0,005	±0,025
C	±0,025	±0,013	±0,025
E	±0,025	±0,025	±0,025
F	±0,013	±0,005	±0,025
G	±0,025	±0,025	±0,130
H	±0,013	±0,013	±0,025
J	±0,05–0,13	±0,005	±0,025
K	±0,05–0,13	±0,013	±0,025
L	±0,05–0,13	±0,025	±0,025
M	±0,05–0,13	±0,08–0,18	±0,130
N	±0,05–0,13	±0,08–0,18	±0,025
U	±0,08–0,25	±0,13–0,38	±0,130

3

Fastening features (metric)	
Insert shape	
A	B
C	F
G	H
J	M
N	Q
R	T
U	W
X	Special

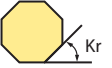
4

Cutting edge length l [mm]	
Insert shape	
A	C, M
H, O, P	L
R	S
T	W

5

Insert thickness S [mm]			
			
Code	S	Code	S
00	0,79	05	5,56
T0	0,99	T5	5,95
01	1,59	06	6,35
T1	1,98	T6	6,75
02	2,38	07	7,94
T2	2,58	09	9,52
03	3,18	T9	9,72
T3	3,97	11	11,11
04	4,76	12	12,70
T4	4,96		

6

Angle			
			
Code	Kr	Code	an
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	Special	F	25°
		G	30°
		N	0°
		P	11°
		Z	Special

7

Chamfer							
Code	Type	Code	Angle	Code	Width [mm]	Code	Position
F		0	5°	0	0,10	K	
E		1	10°	1	0,15	P	
T		2	15°	2	0,20	W	
S		3	20°	3	0,25	-	
		4	25°	4	0,30		
		5	30°	5	0,35		
				6	0,40		
				7	0,45		

8

Cutting direction	
Code	Description
R	Right
L	Left
N	Right and left

9

Chip breaker overview (on page B20)
--

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Guide for recommended cutting data – indexable milling

Indexable milling – group 1 (FMA07/11/12, FMD02, EMP09/13)

Material group	Composition / structure / heat treatment	Brinell hardness HB	Machining group	Starting values for cutting speed v_c (m/min)							
				HC (CVD)							
				YBC302		YBC401		YBD152		YBD252	
				a_p / D		a_p / D		a_p / D		a_p / D	
				1/1 3/4	1/5	1/1 3/4	1/5	1/1 3/4	1/5	1/1 3/4	1/5
P	Unalloyed steel	ca. 0,15 % C	annealed	125	1	260	300	225	260		
		ca. 0,45 % C	annealed	190	2	225	255	195	225		
		ca. 0,45 % C	tempered	250	3	210	240	180	210		
		ca. 0,75 % C	annealed	270	4	185	210	160	185		
		ca. 0,75 % C	tempered	300	5	170	195	150	170		
	Low-alloyed steel		annealed	180	6	225	255	195	225		
			tempered	275	7	185	210	160	185		
			tempered	300	8	170	195	150	170		
			tempered	350	9	145	165	125	145		
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	130	150	115	130		
			hardened and tempered	325	11	95	105	80	95		
M	Stainless steel	ferritic/martensitic	annealed	200	12						
		martensitic	tempered	240	13						
		austenitic	quench hardened	180	14						
		austenitic-ferritic		230	15						
K	Grey cast iron	perlitic/ferritic		180	16			370	430	320	370
		perlitic (martensitic)		260	17			220	255	190	220
	Cast iron with spheroidal graphite	ferritic		160	18			255	295	220	255
		perlitic		250	19			170	200	145	170
	Malleable cast iron	ferritic		130	20			305	355	265	305
		perlitic		230	21			205	240	175	205
N	Aluminium wrought alloys	cannot be hardened		60	22						
		hardenable	hardened	100	23						
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24						
		≤ 12 % Si, hardenable	hardened	90	25						
		> 12 % Si, cannot be hardened		130	26						
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27						
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30						
			hardened	280	31						
		Ni or Co base	annealed	250	32						
			hardened	350	33						
	Titanium alloys		cast	320	34						
		pure titanium		R _m 400	35						
H	Hardened steel		hardened and tempered	R _m 1050	36						
			hardened and tempered	55 HRC	37						
			hardened and tempered	60 HRC	38						
X	Non-metallic materials	Hard cast iron	cast	400	39						
		Hardened cast iron	hardened and tempered	55 HRC	40						
		Thermoplasts			41						
		Thermosetting plastics			42						
		Plastic, glass-fibre reinforced GFRP			43						
		Plastic, carbon fibre reinforced CFRP			44						
E		Graphite			45						
		Wood			46						

Note: The given cutting values are guide values, which were determined under ideal conditions.

The values have to be adapted in individual cases.

Feed rate recommendations on page B248

For examples of material for cutting tool groups view page D22.

Recommend feed rate

Indexable milling – group1 (FMA07/11/12, FMD02, EMP09/13)

5		Material group	Feed rate per cutting edge [mm]																		
			EMP09			EMP13			EMP13			FMA07			FMA07			FMA11			
			LNKT12			ANGX15			ANGX15			ONHU06			ONHU08			SNEG12			
			Application																		
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R		
P	Unalloyed steel		0,25	0,50		0,23			0,25			0,19	0,23		0,19	0,23			0,20	0,23	
	Low-alloyed steel		0,23	0,47		0,22			0,23			0,17	0,22		0,17	0,22			0,19	0,21	
	High-alloyed steel and high-alloyed tool steel		0,22	0,44		0,20			0,22			0,16	0,20		0,16	0,20			0,18	0,20	
M	Stainless steel		0,18	0,35															0,14	0,16	
K	Grey cast iron		0,28	0,55		0,26			0,28			0,20	0,26		0,20	0,26			0,22	0,25	
	Cast iron with spheroidal graphite		0,25	0,50		0,23			0,25			0,19	0,23		0,19	0,23			0,20	0,23	
	Malleable cast iron		0,25	0,50		0,23			0,25			0,19	0,23		0,19	0,23			0,20	0,23	
N	Aluminium wrought alloys					0,20			0,21												
	Aluminium-Gusslegierungen					0,20			0,21												
	Copper and copper alloys(bronze/brass)					0,18			0,19												
S	Heat-resistant alloys																				
	Titanium alloys																				
H	Hardened steel																				
	Hard cast iron																				
	Hardened cast iron																				
X	Non-metallic materials																				

1. Select the appropriate product family/cutting data group.
2. Select the used grade.
3. Determine the immersion.
4. Select the used material and read the cutting speed.
5. Please have a look at the detached feed rate recommendations.
6. Select the used tool, the machining mode and the used material.

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Indexable milling – group 2 (FMA01/02/03/04, FME01/02, FMP01/02, EMP01/02/03/04)

	Material group	Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]							
						HC (CVD)							
						YBC302	YBC401		YBD152	YBD252			
						a_e / D	a_e / D	a_e / D	a_e / D	a_e / D	a_e / D	a_e / D	a_e / D
						1/1 3/4	1/5	1/1 3/4	1/5	1/1 3/4	1/5	1/1 3/4	1/5
A	P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	245	285	210	245			
			approx. 0,45 % C	annealed	190	2	210	245	180	210			
			approx. 0,45 % C	tempered	250	3	200	230	170	200			
			approx. 0,75 % C	annealed	270	4	175	200	150	175			
			approx. 0,75 % C	tempered	300	5	160	190	140	160			
B	P	Low-alloyed steel		annealed	180	6	210	245	180	210			
				tempered	275	7	175	200	150	175			
				tempered	300	8	160	190	140	160			
				tempered	350	9	135	160	120	135			
	P	High-alloyed steel and high-alloyed tool steel		annealed	200	10	125	145	105	125			
				hardened and tempered	325	11	90	100	75	90			
C	M	Stainless steel	ferritic/martensitic	annealed	200	12							
			martensitic	tempered	240	13							
			austenitic	quench hardened	180	14							
			austenitic-ferritic		230	15							
	K	Grey cast iron	perlite/ferritic		180	16				315	365	270	315
			perlite (martensitic)		260	17				185	215	160	190
		Cast iron with spheroidal graphite	ferritic		160	18				215	250	185	215
			perlite		250	19				145	170	125	145
		Malleable cast iron	ferritic		130	20				260	300	225	260
			perlite		230	21				175	205	150	175
D	N	Aluminium wrought alloys	cannot be hardened		60	22							
			hardenable	hardened	100	23							
		Cast aluminium alloys	$\leq 12\% \text{ Si}$, cannot be hardened		75	24							
			$\leq 12\% \text{ Si}$, hardenable	hardened	90	25							
			$> 12\% \text{ Si}$, cannot be hardened		130	26							
	N	Copper and copper alloys (bronze/brass)	machining steel, PB > 1%		110	27							
			CuZn, CuSnZn		90	28							
E	S	Heat-resistant alloys	Fe-based alloys	annealed	200	30							
				hardened	280	31							
			Ni or Co bass	annealed	250	32							
				hardened	350	33							
				cast	320	34							
	S	Titanium alloys	pure titanium		R _m 400	35							
			α and β alloys	hardened	R _m 1050	36							
F	H	Hardened steel		hardened and tempered	55 HRC	37							
				hardened and tempered	60 HRC	38							
		Hard cast iron		cast	400	39							
				hardened and tempered	55 HRC	40							
	X	Non-metallic materials	Thermoplasts			41							
			Thermosetting plastics			42							
			Plastic, glass-fibre reinforced GFRP			43							
			Plastic, carbon fibre reinforced CFRP			44							
			Graphite			45							
			Wood			46							

Note: The given cutting values are guide values, which were determined under ideal conditions.
 The values have to be adapted in individual cases.
 Feed rate recommendations on page B254.
 For examples of material for cutting tool groups view page D11.

HC	Coated carbide
HT	Uncoated carbide, main component (TiC) o. (TiN), cermet
HC ₁	Coated cermet
HW	Uncoated carbide, main component (WC)

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Indexable milling – group 2 (FMA01/02/03/04, FME01/02, FMP01/02, EMP01/02/03/04)

	Material group	Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed vc [m/min]			
						HC1			
						YNG151C			
						a _e / D			
						1/1 3/4 1/5			
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	285	335		
		approx. 0,45 % C	annealed	190	2	250	285		
		approx. 0,45 % C	tempered	250	3	235	270		
		approx. 0,75 % C	annealed	270	4	205	235		
		approx. 0,75 % C	tempered	300	5	190	225		
P	Low-alloyed steel		annealed	180	6	250	285		
			tempered	275	7	205	235		
			tempered	300	8	190	225		
			tempered	350	9	160	190		
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	150	170		
			hardened and tempered	325	11	105	120		
M	Stainless steel	ferritic/martensitic	annealed	200	12	145	170		
		martensitic	tempered	240	13	120	145		
		austenitic	quench hardened	180	14	155	180		
		austenitic-ferritic		230	15	120	145		
K	Grey cast iron	perlitic/ferritic		180	16				
		perlitic (martensitic)		260	17				
	Cast iron with spheroidal graphite	ferritic		160	18				
		perlitic		250	19				
	Malleable cast iron	ferritic		130	20				
		perlitic		230	21				
N	Aluminium wrought alloys	cannot be hardened		60	22				
		hardenable	hardened	100	23				
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24				
		≤ 12 % Si, hardenable	hardened	90	25				
		> 12 % Si, cannot be hardened		130	26				
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27				
		CuZn, CuSnZn		90	28				
		CuSn, Pb-free copper, electrolytic copper		100	29				
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30				
			hardened	280	31				
		Ni or Co bass	annealed	250	32				
			hardened	350	33				
			cast	320	34				
	Titanium alloys	pure titanium		R _m 400	35				
		α and β alloys	hardened	R _m 1050	36				
H	Hardened steel		hardened and tempered	55 HRC	37				
			hardened and tempered	60 HRC	38				
	Hard cast iron		cast	400	39				
	Hardened cast iron		hardened and tempered	55 HRC	40				
X	Non-metallic materials	Thermoplasts			41				
		Thermosetting plastics			42				
		Plastic, glass-fibre reinforced GFRP			43				
		Plastic, carbon fibre reinforced CFRP			44				
		Graphite			45				
		Wood			46				

Note: The given cutting values are guide values, which were determined under ideal conditions.
 The values have to be adapted in individual cases.
 Feed rate recommendations on page B254.
 For examples of material for cutting tool groups view page D11.

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HC	Coated carbide
HT	Uncoated carbide, main component (TiC) o. (TiN), cermet
HC ₁	Coated cermet
HW	Uncoated carbide, main component (WC)

Recommended feed rate

Indexable milling – group 2 (FMA01/02/03/04, FME01/02, FMP01/02, EMP01/02/03/04)

Material group		Feed rate per cutting edge [mm]																		
		FMA01 FMA02			FMA03			FMA03			FMA04			FMA04			FMA04			
		SEET12			SEKN12			SEKN15			OFKT05			OFKR07			ODHT06			
		Application																		
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	
P	Unalloyed steel	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25		
	Low-alloyed steel	0,14	0,19	0,23		0,17			0,19		0,19	0,23		0,19	0,23		0,19	0,23		
	High-alloyed steel and high-alloyed tool steel	0,13	0,18	0,22		0,16			0,18		0,18	0,22		0,18	0,22		0,18	0,22		
M	Stainless steel	0,11	0,14	0,18		0,13			0,14		0,14	0,18		0,14	0,18		0,14	0,18		
K	Grey cast iron	0,17	0,22	0,28		0,20			0,22		0,22	0,28		0,22	0,28		0,22	0,28		
	Cast iron with spheroidal graphite	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25		
	Malleable cast iron	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25		
N	Aluminium wrought alloys	0,13	0,17	0,21							0,17	0,21		0,17	0,21		0,17	0,21		
	Aluminum cast alloys	0,13	0,17	0,21							0,17	0,21		0,17	0,21		0,17	0,21		
	Copper and copper alloys (bronze/brass)	0,11	0,15	0,19							0,15	0,19		0,15	0,19		0,15	0,19		
S	Heat-resistant alloys	0,11	0,14	0,18							0,14	0,18		0,14	0,18		0,14	0,18		
	Titanium alloys	0,11	0,14	0,18							0,14	0,18		0,14	0,18		0,14	0,18		
H	Hardened steel																			
	Hard cast iron																			
	Hardened cast iron																			
X	Non-metallic materials																			

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

Indexable milling – group 3 (FMR01/02/03/04) Face milling

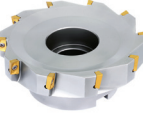
Material group		Feed rate per cutting edge [mm]																		
		FMR01			FMR01			FMR02			FMR02			FMR02			FMR03			
		RCKT10			RC*12			RC*12			RCKT16			RCKT20			RDKW07			
		Application																		
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	
P	Unalloyed steel		0,20	0,25		0,20	0,25		0,20	0,25		0,23	0,29		0,26	0,33		0,17		
	Low-alloyed steel		0,19	0,23		0,19	0,23		0,19	0,23		0,21	0,27		0,25	0,31		0,16		
	High-alloyed steel and high-alloyed tool steel		0,18	0,22		0,18	0,22		0,18	0,22		0,20	0,25		0,23	0,29		0,15		
M	Stainless steel		0,14	0,18		0,14	0,18		0,14	0,18		0,16	0,20		0,19	0,23		0,12		
K	Grey cast iron		0,22	0,28		0,22	0,28		0,22	0,28		0,25	0,32		0,29	0,36		0,19		
	Cast iron with spheroidal graphite		0,20	0,25		0,20	0,25		0,20	0,25		0,23	0,29		0,26	0,33		0,17		
	Malleable cast iron		0,20	0,25		0,20	0,25		0,20	0,25		0,23	0,29		0,26	0,33		0,17		
N	Aluminum wrought alloys					0,17	0,21		0,17	0,21										
	Aluminum cast alloys					0,17	0,21		0,17	0,21										
	Copper and copper alloys (bronze/brass)					0,15	0,19		0,15	0,19										
S	Heat-resistant alloys																			
	Titanium alloys																			
H	Hardened steel																			
	Hard cast iron																			
	Hardened cast iron																			
X	Non-metallic materials																			

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

F	Finishing
M	Medium machining
R	Roughing

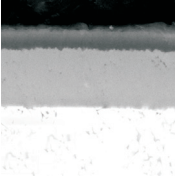
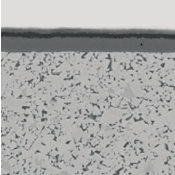
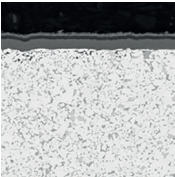
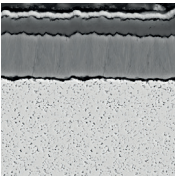
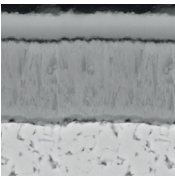
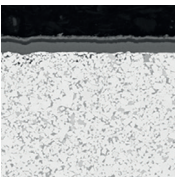
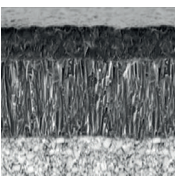
F	Finishing
M	Medium machining
R	Roughing

Square shoulder milling

Series	Milling body	Inserts	Kr	Application						Features	Page
				P	M	K	N	S	H		
EMP01		 APKT0702 APKT11T3 APKT1604	90°	✓	✓	✓	✓	✓		- Diameter range Ø12 – 63 mm - For steel, stainless steel, cast iron, non-ferrous metals and heatresistant alloys - Weldon shank - For square shoulder milling, slot milling and ramping - Milling cutter with positive, soft cutting geometry - Inserts with two cutting edges	B103
EMP01		 APKT11T3 APKT0702 APKT1604	90°	✓	✓	✓	✓	✓		- Diameter range Ø12 – 63 mm - For steel, stainless steel, cast iron, non-ferrous metals and heatresistant alloys - Weldon shank - For square shoulder milling, slot milling and ramping - Milling cutter with positive, soft cutting geometry - Inserts with two cutting edges	B106
EMP02		 APKT0702 APKT11T3 APKT1604	90°	✓	✓	✓	✓	✓		- Diameter range Ø40–250 mm - For steel, stainless steel, cast iron, non-ferrous metals and heat-resistant alloys - For square-shoulder, slot and plunge milling - Milling cutter with positive, soft cutting geometry - INSERTs with two cutting edges	B109
EMP03		 APKT11T3	90°	✓	✓	✓	✓			- Diameter range Ø50–100 mm - For steel, stainless steel, cast iron, non-ferrous metals and heat-resistant alloys - For square-shoulder, slot and plunge milling - Milling cutter with positive, soft cutting geometry - INSERTs with two cutting edges	B113
EMP04		 APKT11T3	90°	✓	✓	✓	✓			- Diameter range Ø20–40 mm - For steel, stainless steel, cast iron, non-ferrous metals and heat-resistant alloys - For square-shoulder, slot and plunge milling - Milling cutter with positive, soft cutting geometry - INSERTs with two cutting edges	B115
EMP05		 APMT1135	90°	✓	✓	✓				- Diameter range Ø25–40 mm - For steel, stainless steel and cast iron - Straight shank - For square-shoulder, slot and plunge milling - Milling cutter with positive, soft cutting geometry - INSERTs with two cutting edges - Machining in z-direction possible	B117

✓ Very suitable ✓ Suitable

Coated cemented carbide CVD

Grade	ISO	Micro structure	Grade description
YBC302	P20 - P35		CVD coated P20–P35 carbide grade for medium operation to roughing of steel at higher cutting speed. Optimal performance of wear resistance and toughness for a wide application field.
YBC301	P20 - P35		CVD coated P20–P35 carbide grade for medium operation to roughing of steel at lower cutting speed.
YBC401	P30 - P50 M30 - M40		CVD coated P30–P50/M30–M40 carbide grade for roughing operation of steel at lower cutting speed and unstable condition.
YBM251	P20 - P30 M15 - M35		CVD coated P20–P30/M15–M35 carbide grade for medium to roughing operation in stainless steel and steel with wide application field. Good wear resistance and capability against plastic deformation at normal cutting speed.
YBM253	M15 - M35		CVD coated M15–M35 carbide grade for medium to roughing operation in stainless steel with wide application field. High wear resistance and capability against plastic deformation at higher cutting speed.
YBM351	P25 - P40 M20 - M40		CVD coated P25–P40/M25–M40 carbide grade for roughing operation in stainless steel and steel. Good wear resistance and edge stability at normal cutting speed.
YBD152	K10 - K25		CVD coated K10–K25 carbide substrate. Optimized for medium to roughing operation of cast iron. Good wear resistance and toughness at higher cutting speed.
YBD252	K20 - K35		CVD coated K20–K35 carbide substrate. Optimized for medium to roughing operation of cast iron and Steel. Good wear resistance and toughness at higher cutting speed.

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Turning

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Milling

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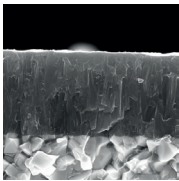
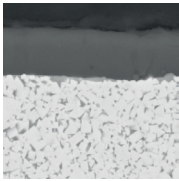
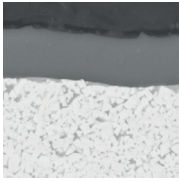
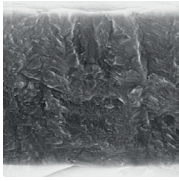
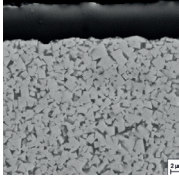
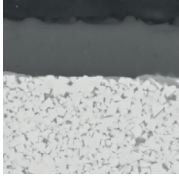
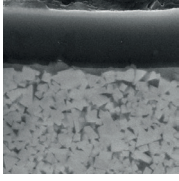
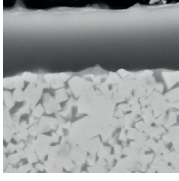
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Turning

Coated cemented carbide PVD

Grade	ISO	Micro structure	Grade description
YBG101	N05–N20		PVD coated N05–N20 carbide substrate for finishing to semi-finishing in aluminium materials. Coating only on the top face, in combination with the aluminium chip breakers, prevents built-up edges and gives a smooth cut.
YBG102	S05 - S15		PVD coated S05–S15 carbide substrate for finishing to medium application of super alloy material, stainless steel and aluminum. Good wear resistance in a wide application field.
YBG202	P10 - P30 M10-M25		PVD coated P10–P30/M10–M25 carbide substrate for finishing to medium application of stainless steel and steel (milling). Good wear resistance in a wide application field.
YBG212	P25 - P35 M25-M40		PVD coated M25–M40/P25–P35 carbide substrate for steel and stainless steel. Especially for inner insert at drilling operation.
YBS203	S15 – S25		Turning and milling grades for processing heat-resistant materials. A special carbon substrate and the latest PVD coating technology enable a very good wear behaviour, high fracture toughness and high thermal stability.
YBG205	P10 - P30 M20 - M40 S15-S25		PVD multilayer coated P10–P30/M20–M40/S15–S25 carbide substrate for finishing to medium machining of stainless steel, super alloys and steel (milling). Excellent wear resistance and thermal stability in a wide range of applications.
YB9320	P10 - P30 M10-M25		PVD multilayer coated P10–P30/M10–M25 carbide substrate for finishing to medium machining of stainless steel, super alloys and steel (grooving/milling). Optimised coating stability for higher wear resistance and thermal stability in a wide range of applications.
YBG302	P15 - P30 M25 - M40		PVD coated P15–P30/M25–M40 carbide substrate for medium roughing application of stainless steel and steel (milling). Good wear resistance and toughness.

B

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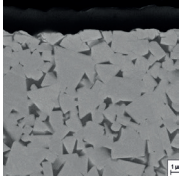
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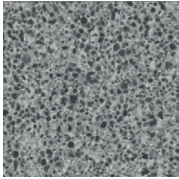
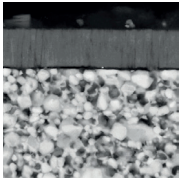
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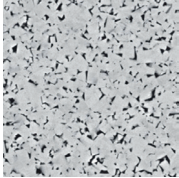
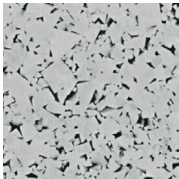
Coated cemented carbide PVD

Grade	ISO	Micro structure	Grade description
YBS303	S25 - S35		Milling grade for machining titanium alloys. A tough carbide substrate and the latest PVD coating technology with increased impact resistance and high thermal stability.

Cermet

Grade	ISO	Micro structure	Grade description
YNG151	P05 - P15		Uncoated P05-P15 cermet grade for fine finishing operation of steel and stainless steel. Good resistance against plastic deformation for good surface finishing.
YNG151C	P05 - P15		PVD coated P05-P15 cermet grade for fine finishing operation of steel and stainless steel. Good wear resistance and capability against plastic deformation for good surface roughness.

Uncoated cemented carbide

Grade	ISO	Micro structure	Grade description
YD101	N05 - N25 K05 - K20		Uncoated K05-K20/N05-N20 carbide substrate for fine to medium application in aluminum and other material.
YD201	K10 - K30 N10 - N30		Uncoated K10-K30/N10-N30 carbide substrate for medium application in aluminum and other material.

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Application fields of grades – indexable milling

	ISO	HC ¹ (CVD)	HC ¹ (PVD)	HT	HC ²	HW	PCBN/PCD
P	P01		YBG102		YNG151C		
	P10		YBG202	YNG151			
	P20	YBC301	YBG205				
	P30	YBC302	YBG302			YC305	
	P40	YBC401	YB9320				
M	M01		YBG102		YNG151C		
	M10	YBM251	YBG202	YNG151			
	M20	YBM253	YBG205				
	M30	YBM351	YBG302			YC305	
	M40	YBC401	YB9320				
K	K01		YBG102				
	K10	YBD152	YBG152				
	K20	YBD252	YBG202			YD201	
	K30						
	K40						
N	N01					YD051	
	N10		YBG101			YD101	
	N20		YBG202				YD201
	N30						
S	S01		YBG102				
	S10		YBG202				
	S20		YBG205				
	S30		YBS203				
H	H01		YBG102				
	H10						
	H20						
	H30						

P	Steel
M	Stainless steel
K	Cast iron

N	Non-ferrous metals
S	Heat-resistant alloys
H	Hardened materials

HC¹ Coated carbide
 HT Uncoated cermet
 HC² Coated carbide
 HW Uncoated carbide