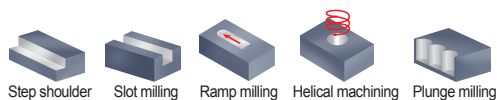
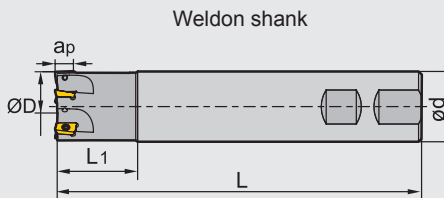
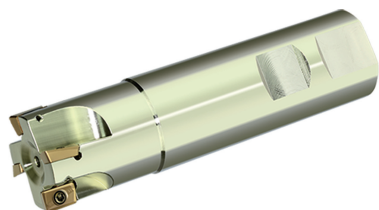


Square shoulder milling tools

Kr:90°



EMP01 P M K S N



Specification of tools

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

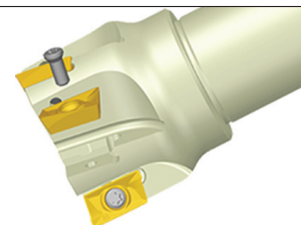
▲ Stock available △ Make-to-order

Indexable milling tools

Square shoulder milling tools

Spare parts

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

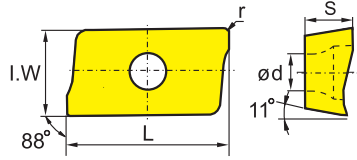


Tools code key [B24-B25](#)

Grade selection guide [B19-B23](#)

Technical data [B234-B240](#)

Selection of inserts



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

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

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

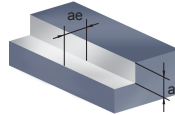
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Chipbreaker selection

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

Indexable milling tools
Square shoulder milling tools

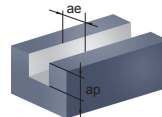
1 Square shoulder milling



Recommended cutting parameters (D: Diameter)

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

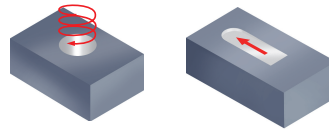
2 Slot milling



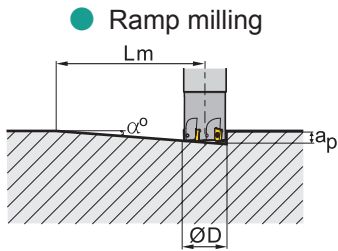
Recommended cutting parameters (D: Diameter)

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

3 Ramp milling, helical interpolation milling

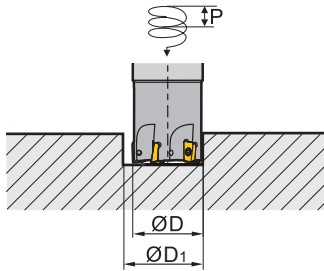


▶ Recommended cutting parameters (D: Diameter)



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

● Helical interpolation milling



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

Diameter ØD(mm)	APKT Ramp milling, helical interpolation milling (Inserts-7)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth ap(mm)	Maximum ramp angle α°	Minimum length Lm(mm)	Minimum diameter ØD1(mm)	Maximum pitch (mm)
10	6	6	57	12	2.0
12	6	4	85	15	2.0
14	6	3	114	18	2.0
16	6	2.5	137	21	2.0
Diameter ØD(mm)	APKT Ramp milling, helical interpolation milling (Inserts-11)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth ap(mm)	Maximum ramp angle α°	Minimum length Lm(mm)	Minimum diameter ØD1(mm)	Maximum pitch (mm)
16	10.0	10.0	56.7	20.0	2.0
20	10.0	5.0	114.4	28.0	2.0
25	10.0	4.5	127.0	40.0	2.0
30	10.0	3.5	153.0	48.0	2.0
32	10.0	3.0	190.8	56.0	2.0
40	10.0	2.0	286.4	70.0	2.0
Diameter ØD(mm)	APKT Ramp milling, helical interpolation milling (Inserts-16)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth ap(mm)	Maximum ramp angle α°	Minimum length Lm(mm)	Minimum diameter ØD1(mm)	Maximum pitch (mm)
25	15	6	142	32	2.0
30	15	5	171	40	2.0
32	15	4.5	214	45	2.0
40	15	2.5	343	60	2.0
50	15	1.5	572	80	2.0
63	15	1	859	105	2.0

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

Case for EMP01



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

Insert specification/grade: APKT160408-APM/YB9320

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

● Comprehensively improve mould cavity machining efficiency



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

Indexable milling tools

Square shoulder milling tools