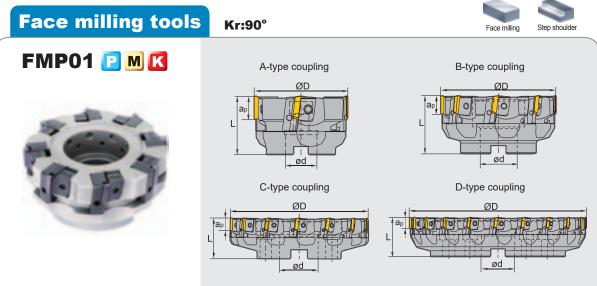
# Milling Tools 90°

-063-A22-SUI2-076

Indexable milling tools

## Indexable Milling Tools MILLING



#### Specification of tools

	Туре		ock		Basic dime	nsions(mm)		Number of teeth	Type of	Weight
	туре	R	L	ØD	ød	L	a <sub>p</sub> max	Z	coupling	(kg)
FMP01	-080-A27-TP22-04		$\bigtriangleup$	80	27	50	18	4	А	1.2
	-100-B32-TP22-06		$\bigtriangleup$	100	32	50	18	6	В	1.7
	-125-B40-TP22-08		Δ	125	40	63	18	8	В	3.2
	-160-B40-TP22-10		$\bigtriangleup$	160	40	63	18	10	В	5.1
	-200-C60-TP22-12		$\bigtriangleup$	200	60	63	18	12	С	7.4
	-250-C60-TP22-16		Δ	250	60	63	18	16	С	12.3
	-315-D60-TP22-20		Δ	315	60	70	18	20	D	21.9

▲Stock available △Make-to-order

#### **Spare parts**

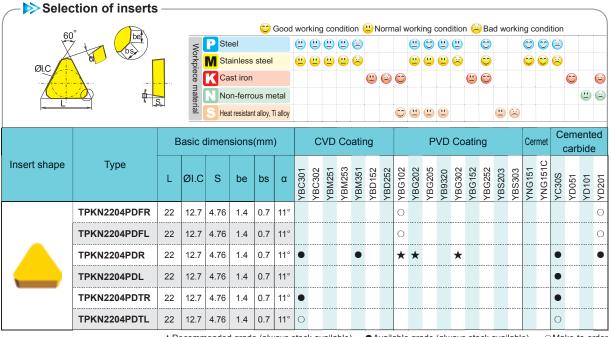
Diameter	Locator	Wedge	Wedge Screw	Locator screw	Wrench	
ØD	-	4	5		Y	
Ø80 Ø100	LTP4R1/L1		WM8×17		WT20T	
Ø125 ~ Ø315	LTP4R/L	W04R/L	WM8×22	LOM5×15.1	WT25T	







Face milling tools milling tools



★Recommended grade (always stock available) ●Available grade (always stock available)

ailable) OMake-to-order

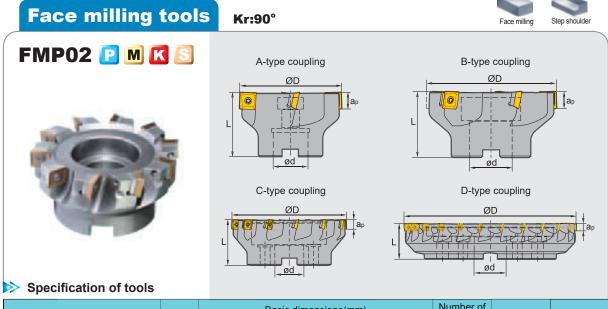
#### Recommended cutting parameters

10/-	ulunia en anatonia l		la - at sur da	Cutting pa	arameters
000	rkpiece material	Hardness HB	Insert grade	V₀(m/min)	fz(mm/z)
			YBC301	270 (220-350)	0.2 (0.1-0.4)
	Low-carbon steel、	≤180	YBM351	220 (180-300)	0.2 (0.08-0.3)
	Soft steel	≪ 100	YBG202	270 (200-360)	0.2 (0.1-0.3)
			YC30S	140 (100-220)	0.22 (0.1-0.3)
			YBC301	240 (200-320)	0.2 (0.1-0.4)
D	High-carbon steel、	180—280	YBM351	200 (160-280)	0.2 (0.08-0.3)
	Alloy steel	100-200	YBG202	240 (180-350)	0.2 (0.1-0.3)
			YC30S	120 (80-200)	0.22 (0.1-0.3)
			YBC301	220 (180-300)	0.2 (0.1-0.4)
	Alloy tool steel	280—350	YBM351	180 (150-250)	0.2 (0.08-0.3)
	Anoy tool steel	200—330	YBG202	220 (170-340)	0.2 (0.1-0.3)
			YC30S	100 (60-180)	0.22 (0.1-0.3)
Μ	Stainless steel	≤270	YBM351	140 (100-240)	0.2 (0.08-0.3)
	Stairliess steel	~270	YBG202	140 (100-250)	0.2 (0.1-0.3)
			YBG102	210 (120-300)	0.2 (0.1-0.3)
Κ	Cast iron	180—250	YBG302	160 (120-200)	0.35 (0.10-0.4)
			YD201	100 (80-160)	0.24 (0.15-0.4)

MILLING

2

Face milling tools milling tools



	Туре	Stock		Basic dime	nsions(mm)		Number of teeth	Type of	Weight
	туре	SIUCK	ØD	ød	L	apmax	Z	coupling	(kg)
FMP02	-040-A16-SE09-04	$\bigtriangleup$	40	16	40	6.7	4	А	0.2
	-040-A16-SE09-06	Δ	40	16	40	6.7	6	A	0.22
	-050-A22-SE09-05		50	22	40	6.7	5	A	0.3
	-050-A22-SE09-07	Δ	50	22	40	6.7	7	A	0.313
	-063-A22-SE09-06		63	22	40	6.7	6	A	0.5
	-063-A22-SE09-08	Δ	63	22	40	6.7	8	A	0.479
	-080-A27-SE09-08		80	27	50	6.7	8	A	0.9
	-080-A27-SE09-10	Δ	80	27	50	6.7	10	A	1.079
	-100-B32-SE09-08		100	32	50	6.7	8	В	1.7
	-100-B32-SE09-10	Δ	100	32	50	6.7	10	В	1.7
	-125-B40-SE09-12	$\bigtriangleup$	125	40	63	6.7	12	В	2.6

▲Stock available ∠

 $\triangle$ Make-to-order

#### Specification of tools

	Turce	Charle		Basic dime	nsions(mm)		Number of	Type of	Weight
	Туре	Stock	ØD	ød	L	apmax	teeth Z	coupling	(kg)
FMP02	-050-A22-SE12-03		50	22	40	10.8	3	А	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	В	1.2
	-125-B40-SE12-06		125	40	63	10.8	6	В	3.1
	-160-C40-SE12-08		160	40	63	10.8	8	С	4.1
	-200-C60-SE12-10		200	60	63	10.8	10	С	5.718
	-250-C60-SE12-12		250	60	63	10.8	12	С	11.1
	-050-A22-SE12-04		50	22	40	10.8	4	A	0.3
	-063-A22-SE12-05		63	22	40	10.8	5	A	0.4
	-080-A27-SE12-06		80	27	50	10.8	6	A	0.8
	-100-B32-SE12-07		100	32	50	10.8	7	В	1.2
	-125-B40-SE12-08		125	40	63	10.8	8	В	3.0
	-160-C40-SE12-12		160	40	63	10.8	12	С	3.9
	-050-A22-SE12-05		50	22	40	10.8	5	A	0.2
	-063-A22-SE12-06		63	22	40	10.8	6	A	0.4
	-080-A27-SE12-08		80	27	50	10.8	8	A	0.8
	-100-B32-SE12-10		100	32	50	10.8	10	В	1.2
	-125-B40-SE12-12		125	40	63	10.8	12	В	2.9
	-160-C40-SE12-15	Δ	160	40	63	10.8	15	С	4.061
	-200-C60-SE12-16		200	60	63	10.8	16	С	6.1
	-250-C60-SE12-18		250	60	63	10.8	18	С	10.9
	-315-D60-SE12-24		315	60	63	10.8	24	D	21.6

▲Stock available △Make-to-order

#### Spare parts

Diameter		Shim	Insert screw	Shim screw	Wrench	Wrench		
ØD	Inserts	()	-	5	, and	-		
Ø50 ~ Ø125	SE09		I60M3×7		WT09IS			
Ø50	SE12		I60M3.5×10				1	
Ø63 ~ Ø315	SEIZ	S12BSX	I60M3.5×12	SM5×7×A	WT15IS	WH35L		





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Indexable Milling Tools MILLING

Sel	lection of inserts																										
ØI.C	ød 200	_	Morkpiece materia	Cast irc Non-fer	on rrous n	el netal	•	•	۳		<ul> <li>(2)</li> <li>(2)</li></ul>		orkir	0		- 1	3	(2)									
		Ba	sic dim	nensio	ns(mi	m)		С	VD	Сс	atir	ıg	_			P١	/D	Coa	atir	ng			Cer	met			nted ide
Insert shape	Туре	L	ØI.C	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
-	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					•	*			•		*										

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

#### >> Chipbreaker selection for FMP02 milling inserts

Function	For finishing	For semi-finishing	For roughing
Р			-APR
м	-APF	-APM	
к			
S			

# **Features** of

## **Series Milling Tools**

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

					Cutting pa	arameters	
Wo	orkpiece material	Hardness HB	Insert grade			fz(mm/z)	
				V₀(m/min)	-APF	-APM	-APR
	Low-carbon steel、	≤180	YBG202	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	Soft steel	≈ 160	YB9320	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YBM351	240 (200-320)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
Р	High-carbon steel、 Alloy steel	180-280	YBG202	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
P	Alloy Steel		YB9320	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YBM351	220 (180-300)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	Alloy tool steel	280-350	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)
			YBM351	150 (120-240)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
Μ	Stainless steel	≤270	YBG202	160 (110-270)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			YB9320	160 (110-270)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
K	Cast iron	180-250	YBG202	160 (120-200)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	Cast Iron	100-250	YBD152	270 (150-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
S	Difficult-to-machine materials	≤400	YBS303	100 (60-120)	0.1(0.08-0.2)	0.15 (0.1-0.25)	

### **Case for FMP02**



#### SEET120308PER-APM inserts tests

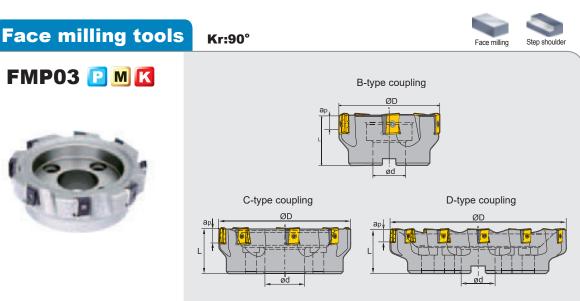
Ap=7mr	m, Ae=5mm		Ap=7mm, Ae=5mm					
Runout value	Surface mad	chined	Runout value	Surface machined				
0.006			0.006					
0.012			0.012					
0.013			0.015					
12			Λ					
	-APM	Resul	ts:					
		Comp	aring \	with competitors,				
		SEET	T120308PER-APM inserts					
	Product of	can ge	get better surface quality					

Data 2:

Vc=200m/min, fz=0.25mm/z

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MILLING



#### Specification of tools

	Туре	Ste	ock	ØD	ød	I	apmax	Number of teeth	Style of	Weight	
	Type	R	L		Øu	L	apmax	Z	coupling	(kg)	
FMP03	-125-B40-LN15-06		$\triangle$	125	40	63	13	6	В	3.2	
	-160-C40-LN15-08		Δ	160	40	63	13	8	С	5.1	
	-200-C60-LN15-10		Δ	200	60	70	13	10	С	7.5	
	-250-C60-LN15-12		$\triangle$	250	60	70	13	12	С	12.2	
	-315-D60-LN15-16		$\triangle$	315	60	80	13	16	D	23.7	
	-125-B40-LN20-06		$\triangle$	125	40	63	17	6	В	3.3	
	-160-C40-LN20-08		Δ	160	40	63	17	8	С	5.3	
	-200-C60-LN20-10		$\triangle$	200	60	70	17	10	С	8.8	
	-250-C60-LN20-12		$\triangle$	250	60	70	17	12	С	14.0	
	-315-D60-LN20-15		$\triangle$	315	60	80	17	15	D	23.9	
	-125-B40-LN25-05		$\triangle$	125	40	63	22	5	В	3.3	
	-160-C40-LN25-06		$\triangle$	160	40	63	22	6	С	5.1	
	-200-C60-LN25-08		Δ	200	60	70	22	8	С	8.9	
	-250-C60-LN25-10		$\triangle$	250	60	70	22	10	С	12.0	
	-315-D60-LN25-12		$\bigtriangleup$	315	60	80	22	12	D	21.9	

▲ Stock available △Make-to-order

#### **Spare parts**

	Shim	Shim screw	Insert screw	Wre	ench	
Inserts	0	1	1	-	×	1 1 6
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	







Technical information B234–B240

Selec	tion of inserts —																									
I.W(	ød	Norkpi	P Stee M Stair Cast	nless ste	el metal		<b>(</b>		(1)	<ul><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><li>(2)</li><l< th=""><th></th><th>_</th><th></th><th>•••</th><th><b>(</b>)</th><th></th><th>Bad</th><th></th><th>rking CO</th><th>g co</th><th></th><th>0</th><th></th><th></th><th></th><th></th></l<></ul>		_		•••	<b>(</b> )		Bad		rking CO	g co		0				
		Basic	dimer	nsions(	mm)		С	VD	Со	atir	ng				P	VD	Co	atir	ng			Cei	met		eme carb	ented ide
Insert shape	Туре	L	I.W	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101 YD201
	LNKT1506EN-ZR	15.875	14	6.35	4.6					0	0						*									
0	LNKT2007DN-ZR	20	17	7.94	4.6					0	0						*									
	LNKT2510-ZR	25	18	9.525	5.5					0		0					*									
	*	Recomm	ended g	grade (a	lways	stoc	k av	/aila	able	)	• A	vail	able	gra	ade	(alw	/ays	s sto	ock	ava	ilab	le)	C	Ma	ike-t	o-ordei

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#### Recommended cutting parameters

Wc	orkpiece material	Hardness HB	Insert grade	Cutting pa	arameters
			incort grado	V₀(m/min)	fz(mm/z)
	Low-carbon steel、	≤180	YBG302	180 (150-300)	0.5 (0.2-0.8)
	Soft steel	~ 160	YBM351	180 (150-300)	0.5 (0.2-0.8)
	High-carbon steel、	400.000	YBG302	150 (120-280)	0.5 (0.2-0.8)
	Alloy steel	180-280	YBM351	140 (120-280)	0.5 (0.2-0.8)
	Alloy tool steel	280-350	YBG302	120 (80-250)	0.45 (0.2-0.6)
	Alloy tool steel	280-350	YBM351	100 (80-250)	0.45 (0.2-0.6)
Μ	Stainless steel	≤270	YBG302	120 (80-200)	0.45 (0.2-0.6)
	Stainless steel	~270	YBM351	100 (80-200)	0.45 (0.2-0.6)
			YBD152	220 (150-300)	0.5 (0.2-0.8)
Κ	Cast iron	180-250	YBD252	210 (150-300)	0.5 (0.2-0.8)
			YBG302	200 (150-300)	0.5 (0.2-0.8)

Note: Cutting parameters can be adjusted according to the Max. power of machine.

#### **Case for FMP03**



Tool type: FMP03-200-C60-LN25-08 Insert type/grade: LNKT2510-ZR/YBG302

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

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





Kr:90°

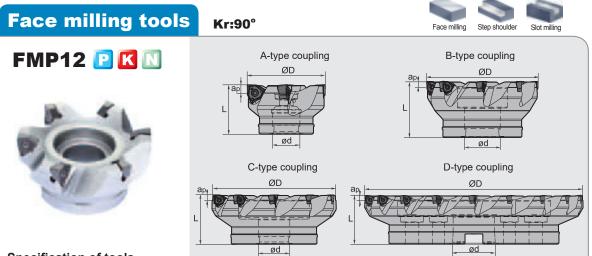
O Double negative angle of the cutter, combined with unique insert structure, to achieve double positive tool angle, which is beneficial to reducing cutting force;

**O** 6-flute cutting double-sided slot milling inserts, enabling highquality 90° square shoulder milling, face milling and slot milling;

O Insert with wiper enables large feed and better surface finish.

#### Application case

Tool specification: FMP12-080-A27-WN08-05C 1200 Insert specification/grade: WNHU080608PNR-GM/YBD152 1000 Part Name: Turbine Housing Workpiece material: QT450 800 bC <u>∎</u> 600 Hardness: HB230-280 Tool Cooling :Dry cutting 400 Machine: Vertical machining center 200 Cutting data: Vc=260m/min, ap=1.0mm, z=0.1mm/z, ae=30mm 0 Similar products of ZCC·CT company A Milling style: Down milling Area of machining: End surface Comparison of tool lif



#### Specification of tools

	Turne	Stock		Basic dime	nsions(mm)		Number of teeth	Type of
	Туре	SLOCK	ØD	ød	L	apmax	Z	coupling
FMP12	-050-A22-WN06-05C	$\bigtriangleup$	50	22	40	5.7	5	А
	-063-A22-WN06-06C	Δ	63	22	40	5.7	6	A
	-080-A27-WN06-07C	Δ	80	27	50	5.7	7	А
	-100-B32-WN06-09	Δ	100	32	50	5.7	9	В
	-125-B40-WN06-11	Δ	125	40	63	5.7	11	В
	-160-C40-WN06-14	Δ	160	40	63	5.7	14	С
	-063-A22-WN08-04C	Δ	63	22	40	7.7	4	A
	-080-A27-WN08-05C	Δ	80	27	50	7.7	5	A
	-100-B32-WN08-06	Δ	100	32	50	7.7	6	В
	-125-B40-WN08-08	Δ	125	40	63	7.7	8	В
	-160-C40-WN08-10	Δ	160	40	63	7.7	10	С
	-200-C60-WN08-12	Δ	200	60	63	7.7	12	С
	-250-C60-WN08-14	Δ	250	60	63	7.7	14	С
	-315-D60-WN08-18	Δ	315	60	70	7.7	18	D

▲ Stock available

△Make-to-order

#### > Spare parts

	Insert screw	Wrench	
Inserts	<b>1</b>		
WNHU06	I60M3×9	WT09IS	
WNHU08	I60M4×10	WT15IS	

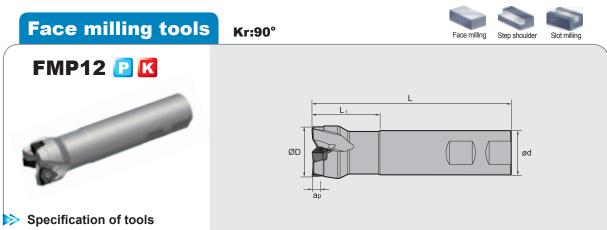
Tools code key B24-B25

Grade selection guide B19-B23



Face milling tools milling tools

MILLING



	Turpo	Stock		Basic	dimensions	s(mm)		Number of teeth	Type of
	Туре	Stock	ØD	ød	L	L1	apmax	Z	coupling
FMP12	-025-XP25-WN06-02C		25	25	100	30	5.7	2	XP
	-032-XP25-WN06-03C		32	25	120	40	5.7	3	XP
	-040-XP32-WN06-04C	$\bigtriangleup$	40	32	140	40	5.7	4	XP
	-050-XP40-WN06-05C	Δ	50	40	169	40	5.7	5	XP

▲Stock available △Make-to-order

2

Indexable Face milling tools

#### > Spare parts

Wrench	Insert screw	
650	500 C	Inserts
WT09IS	I60M3×9	WNHU06
WT15IS	I60M4×10	WNHU08
	WT09IS WT15IS	I60M3×9 WT09IS

Tools code key B24-B25

Grade selection guide B19-B23

Technical data B234-B240



_ <b>⊳</b> Se	lection of inserts																												
bs	ød Øl.C		Vorkpie	P Ste	Coo eel ainless st iron n-ferro t resistar	steel	ətal	۳	<b>(</b>	۲	No	(2)	l wo	(2)	0	( <u>)</u>	0	9 9	8	woi	rking CO CO			0	0	<ul> <li>Control (1)</li> <li>Control</li></ul>	O		
		E	Basic d	limer	nsions	s(mm	)		С	VD	Co	atin	g				P\	/D	Со	atir	ng			Cer	met			ente oide	
Insert shape	Туре	L	ØI.C	S	ød	bs	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C			YD101	
	WNHU060404PNR-GM	5.7	9.525	4.0	3.5	1.35	0.4				*		*		-		*				-		-	-	-	-		<u> </u>	
	WNHU060408PNR-GM	5.7	9.525	4.0	3.5	1.35	0.8				★		★				★	★											
E	WNHU080608PNR-GM	7.7	12.7	5.4	4.4	1.6	0.8				★		*				★	★											
1.1	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				*		*				*	*											
0	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																					*	
		± ₽a	comme	ndoc	arad			too	k av	(oilo	blo)	_			blo	ora	do (		200	oto		avai	labl				ko t	o-or	dor

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

#### Recommended cutting parameters

10	larknigga material	Hardness HB	lpoort grade		Cutting parameters	
V V	/orkpiece material	naturiess no	Insert grade	V₀(m/min)	fz(mm/z)	a <sub>p</sub> max(mm)
	Low-carbon steel、 Soft steel	≤180	YBM253 YBG205 YB9320	280(220-360)	0.2 (0.1-0.4)	
P	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)	5.7(WN06) 7.7(WN08)
K	Cast iron	180-250	YBD152	280 (150-320)	0.2(0.1-0.4)	
N	Aluminium alloy		YD101	300-	0.25(0.1-0.4)	

3

MILLING

Square shoulder milling tools Kr:90°



Straight shank

ap

L1

ØD

pø

# EMP01 🖻 M 🔣 🖸 N

Specification of tools Number of Basic dimensions(mm) Weight Туре Stock teeth (kg) ØD ød L L<sub>1</sub> apmax Ζ -010-G10-AP07-02C(25/85) 10 10 85 25 0.043 EMP01  $\triangle$ 6.0 2 Straight 0.063 -010-G10-AP07-02C(25/120)  $\bigtriangleup$ 10 10 120 25 6.0 2 shank -012-G12-AP07-02C(25/85) 12 12 85 25 6.0 2 0.061  $\bigtriangleup$ -012-G12-AP07-02C(25/120) 12 12 120 25 6.0 2 0.089  $\triangle$ 85 25 3 0.104 -014-G16-AP07-03C(25/85)  $\triangle$ 14 16 6.0 -014-G16-AP07-03C(25/120) 0 153  $\bigtriangleup$ 14 16 120 25 60 3 -016-G16-AP07-03C(25/85)  $\triangle$ 16 16 85 25 6.0 3 0.112 -016-G16-AP07-03C(25/120) 0.162  $\triangle$ 16 16 120 25 6.0 3 -012-G16-AP11-01 0.1 12 16 85 25 10.5 1 -016-G16-AP11-02 16 25 10.5 2 0.1 16 90 -016-G16-AP11-02C(25/85)  $\bigtriangleup$ 16 16 85 25 10.5 2 0.108 -016-G16-AP11-02C(25/120)  $\bigtriangleup$ 16 16 120 25 10.5 2 0.16 -016-G16-AP11-02C(25/180) 16 16 180 25 10.5 2 0.248  $\triangle$ 25 0 121 -020-G16-AP11-03C(25/85)  $\triangle$ 20 16 85 10.5 3 -020-G20-AP11-02 20 20 100 30 10.5 2 0.2 -020-G20-AP11-02C(30/100) 20 20 100 30 10.5 2 0.18  $\bigtriangleup$ -020-G20-AP11-02C(30/150)  $\triangle$ 20 20 150 30 10.5 2 0.312 -020-G20-AP11-02C(30/200) 2 0.401  $\triangle$ 20 20 200 30 10.5 -020-G20-AP11-03C(30/100)  $\bigtriangleup$ 20 20 100 30 10.5 3 0.2 -020-G20-AP11-03C(30/150)  $\triangle$ 20 20 150 30 10.5 3 0.357 -020-G20-AP11-03C(30/200)  $\bigtriangleup$ 20 20 200 30 10.5 3 0.424 -025-G25-AP11-03 25 10.5 3 0.4 25 115 35 -025-G25-AP11-03C(35/115) 0.357  $\bigtriangleup$ 25 25 115 35 10.5 3 -025-G25-AP11-03C(35/170) 25 25 170 35 10.5 3 0.577  $\bigtriangleup$ -025-G25-AP11-03C(35/220) 10.5 0.758  $\triangle$ 25 25 220 35 3 -025-G25-AP11-04C(35/115)  $\triangle$ 25 25 115 35 10.5 4 0.376

2

▲ Stock available △Make-to-order

-025-G25-AP11-04C(35/170)

-025-G25-AP11-04C(35/220)

 $\bigtriangleup$ 

 $\triangle$ 

25

25

#### EMP01-010-G10-AP07-02C(25/85)

170

220

35

35

Grade selection guide

10.5

10.5

B19-B23

25

25

Effective cutting depth/Overall length

Technical data

4

4

0.575

0.686

B234-B240

B112

#### Specification of tools

	Туре	Stock		Basic	dimension	s(mm)		Number of teeth	Weigh
	Туре	SIOCK	ØD	ød	L	L1	apmax	Z	(kg)
EMP01	-030-G25-AP11-04C(35/115)	$\triangle$	30	25	115	35	10.5	4	0.411
Straight shank	-030-G25-AP11-04C(35/170)	$\triangle$	30	25	170	35	10.5	4	0.61
	-030-G25-AP11-04C(35/220)	$\triangle$	30	25	220	35	10.5	4	0.791
	-032-G32-AP11-04		32	32	125	40	10.5	4	0.7
	-032-G32-AP11-04C(45/125)	$\bigtriangleup$	32	32	125	45	10.5	4	0.673
	-032-G32-AP11-04C(45/190)	$\triangle$	32	32	190	45	10.5	4	1.057
	-032-G32-AP11-04C(45/260)	Δ	32	32	260	45	10.5	4	1.47
	-032-G32-AP11-05C(45/125)	Δ	32	32	125	45	10.5	5	0.71
	-032-G32-AP11-05C(45/190)	Δ	32	32	190	45	10.5	5	1.054
	-032-G32-AP11-05C(45/260)	$\triangle$	32	32	260	45	10.5	5	1.53
	-025-G25-AP16-02		25	25	115	35	15.5	2	0.4
	-025-G25-AP16-02C(35/115)	$\triangle$	25	25	115	35	15.5	2	0.374
	-025-G25-AP16-02C(35/170)	$\triangle$	25	25	170	35	15.5	2	0.496
	-025-G25-AP16-02C(35/220)	$\triangle$	25	25	220	35	15.5	2	0.658
	-030-G25-AP16-02C(35/115)	$\triangle$	30	25	115	35	15.5	2	0.521
	-030-G25-AP16-02C(35/170)	$\triangle$	30	25	170	35	15.5	2	0.632
	-030-G25-AP16-02C(35/220)	$\triangle$	30	25	220	35	15.5	2	0.78
	-032-G32-AP16-03		32	32	125	40	15.5	3	0.7
	-032-G32-AP16-03C(45/125)	Δ	32	32	125	45	15.5	3	0.607
	-032-G32-AP16-03C(45/190)	Δ	32	32	190	45	15.5	3	0.976
	-032-G32-AP16-03C(45/260)	$\triangle$	32	32	260	45	15.5	3	1.374
	-040-G32-AP16-04		40	32	130	42	15.5	4	0.8
	-040-G32-AP16-04C(45/125)	Δ	40	32	125	45	15.5	4	0.716
	-040-G32-AP16-04C(45/190)	$\triangle$	40	32	190	45	15.5	4	1.085
	-040-G32-AP16-04C(45/260)	Δ	40	32	260	45	15.5	4	1.483
	-050-G32-AP16-05		50	32	135	45	15.5	5	1.0
	-050-G32-AP16-05C(45/125)	Δ	50	32	125	45	15.5	5	0.825
	-050-G32-AP16-05C(45/190)	$\triangle$	50	32	190	45	15.5	5	1.195
	-050-G32-AP16-05C(45/260)	$\triangle$	50	32	260	45	15.5	5	1.592
	-063-G32-AP16-06		63	32	135	45	15.5	6	1.4

8

▲Stock available

 $\triangle$ Make-to-order

EMP01-010-G10-AP07-02C(25/85)

-Effective cutting depth/Overall length

#### **Spare parts**

Diameter		Screw	Wre	ench	
ØD	Inserts	1	~	650	
Ø10-Ø16	AP07	I60M1.8×4	WT05IP		
Ø12-Ø32	AP11	I60M2.5×6.5T	WT08IP		
Ø25-Ø63	AP16	I60M4×8.4		WT15IS	



Grade selection guide



Square shoulder milling tools Kr:90°



Slot milling Ramp milling Helical machining Plunge milling



Weldon shank

#### Specification of tools

Indexable milling tools

Square shoulder milling tools

	Type Stock			Basi		Number of	Weight		
	Туре	SLOCK	ØD	ød	L	L1	a <sub>p</sub> max	teeth Z	(kg)
EMP01	-012-XP16-AP11-01		12	16	85	25	10.5	1	0.1
Weldon shank	-016-XP16-AP11-02		16	16	90	25	10.5	2	0.1
	-020-XP20-AP11-02		20	20	100	30	10.5	2	0.2
	-025-XP25-AP11-03		25	25	115	35	10.5	3	0.4
	-032-XP32-AP11-04		32	32	125	40	10.5	4	0.7
	-025-XP25-AP16-02		25	25	115	35	15.5	2	0.4
	-032-XP32-AP16-03		32	32	125	40	15.5	3	0.7
	-040-XP32-AP16-04		40	32	130	42	15.5	4	0.8
	-050-XP32-AP16-05		50	32	135	45	15.5	5	1.0
	-063-XP32-AP16-06		63	32	135	45	15.5	6	1.4

▲Stock available △Make-to-order

#### **Spare parts**

Diameter		Screw	Wre	ench	
ØD	Inserts	<b>1</b>	~	650	
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

Sele	ction of inserts								6							0										
		Ī	< P	Steel	Bood w	orking			n 🙂			wor	king	-	dition			wo	rking CO	) cor		on 🔭 (	$\odot$		_	
	t	S .		Stainle	ess ste	el			<u>.</u>										0			000				
I.W	ød -	<u>[]</u> .		Cast ir	on							<u> </u>	3					<b>(</b>	$\odot$					6	)	$\odot$
		4	Workpiece material	Non-fe	rrous r	metal																				
88° 🐂 🗕	<u> </u>			Heat resi	stant alloy	y, Ti alloy							(	0		<b>(</b>				<b>(</b> )	8					
		Bas	sic din	nensio	ns(m	m)		С	VD	Co	ating	g			F	vD	Со	atir	ng			Cern	net		nent rbid	
Insert shape	Туре						-	2	1	33	11	0 0	N	2 2	2	0	2	5	53	<i>с</i>	e	1	1C			
		L	I.W	S	ød	r	YBC301	YBC302	YBM251	BM25	YBM351	BD15	8029	YBG102	YBG205	YB9320	YBG302	BG15	BG25	BS20	YBS303	YNG151	NG18	YC30S	D101	D201
	APKT070204-APF	7.32	4.34	2.38	2	0.4	≻	<u>ج</u>	≻	<u>&gt;</u>	≻	≻ :	~	≻ >		₹	≻	≻	≻	≻	≻	≻	≻	× >	- >	≻
	APKT11T304-APF	12.24	6.6	3.6	2.8	0.4		•		•						^ *										
100	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	9.33 4.34	2.38	2	0.8		-	_	•	_	•		-	-	*	-			-	•		_		_	-
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4				•		-				^ *										
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4				•		•				*				•						
										-										•	•					
_	APKT11T312-APM	12.24	6.6	3.6	2.8	1.2						•				*										
CO.	APKT11T316-APM	12.24	6.6	3.6		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						_		_	_	*						_			_	-
101	APKT11T304-ALH	12.24	6.6	3.6	2.8	0.4																				*
	APKT11T308-ALH	12.24	6.6	3.6	2.8	0.8																				0
	APKT160408-ALH	17.877 ★Reco	9.33	5.76	4.4	0.8						_			_		vavs							Make	_	*

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

#### Chipbreaker selection

Application Classification	For finishing	For semi-finishing						
Р	-APF	-APM						
м	-APF	-APM						
S	-APF	-APM						
К	-APF	-APM						
N	-A	LH						

MILLING

#### 1 Square shoulder milling



Recommended cutting parameters (D: Diameter)

		Llardaaaa		Cutting parameters								
Wor	kpiece material	Hardness HB	Insert grade	Vc(m/min)	fz(m	m/z)	a. (mm)					
		TID		VC(III/IIIII)	-APF	-APM	a <sub>e</sub> (mm)					
			YBC302	320 (240-400)	0.1 (0.08-0.2)							
	Low-carbon steel、Soft steel	≤180	YB9320	320 (200-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D					
			YBM253	300 (320-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)						
			YBC302	280 (210-380)	0.1 (0.08-0.2)							
P	High-carbon steel、Alloy steel	180-280	YB9320	280 (180-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D					
		YBM253		260 (150-380)	0.1 (0.08-0.2)	0.1 (0.08-0.2) 0.2 (0.1-0.3)						
			YBC302	260 (180-350)	0.1 (0.08-0.2)							
	Alloy tool steel	280-350	YB9320	260 (160-330)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D					
			YBM253	220 (150-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)						
Μ	Stainless steel	≤270	YB9320	200 (110-300)	0.1 (0.08-0.2)	0.0 (0.1.0.0)	≤0.5D					
	Stairliess steel	≈270	YBM253	180 (150-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≈0.5D					
Κ	Cast iron	180-250	YB9320	180 (150-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D					
	Cast IIOII	160-250	YBD152	200 (150-250)		0.2 (0.1-0.3)	≈0.5D					
S	Difficult-to-	< 100	YBS203	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D					
9	machine materials		YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D					
					-Al	LH						
Ν	Aluminium alloy	YD101		300-	0.2 (0.0	08-0.4)	≤0.5D					
	Aluminum alloy		YD201	300-	0.2 (0.0	08-0.4)	≤0.5D					

#### 2 Slot milling



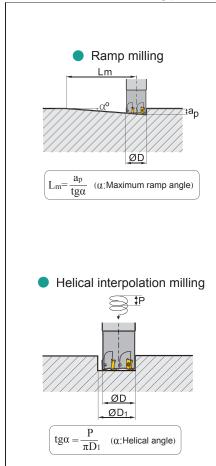
#### Recommended cutting parameters (D: Diameter)

					Cutting pa	arameters	
Wo	rkpiece material	Hardness HB	Insert grade	Vc(m/min)	fz(m	m/z)	a <sub>e</sub> (mm)
				VC(III/IIIII)	-APF	-APM	ae(mm)
			YBC302	190 (170-250)	0.1 (0.08-0.15)		
	Low-carbon steel、 Soft steel	≤180	YB9320	190 (140-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
			YBM253	150 (130-210)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
			YBC302	170 (150-220)	0.1 (0.08-0.15)		
P	High-carbon steel、Alloy steel	180-280	YB9320	170 (130-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
			YBM253	140 (110-200)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	
			YBC302	150 (130-210)	0.1 (0.08-0.15)		
	Alloy tool steel	280-350	YB9320	150 (110-240)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
			YBM253		0.1 (0.08-0.15)	0.15 (0.1-0.25)	
Μ	Stainless steel	≤270	YB9320	120 (80-190)	0.4 (0.00.0.45)	0.45 (0.4.0.25)	D
	Stairliess steel	~270	YBM253	100 (80-170)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
Κ	Cast iron	180-250	YB9320	120 (80-180)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
	Cast IIOII	100-250	YBD152	120 (80-210)		0.15 (0.1-0.25)	D
e	Difficult-to-machine	≪400	YBS203	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
	materials	~400	YBS303	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	D
					-A	LH	
Ν	Aluminium alloy		YD101	300-	0.2 (0.	08-0.3)	D
	Aluminum alloy		YD201	300-	0.2 (0.	08-0.3)	D

#### **3** Ramp milling, helical interpolation milling



Recommended cutting parameters (D: Diameter)



	APKT Ramp milling, helical interpolation milling (Inserts-7)													
Diameter	F	Ramp milling	I	Helical interpolation milling										
ØD(mm)	Maximum cutting depth	Maximum ramp angle	Minimum length	Minimum diameter	Maximum pitch									
	a <sub>p</sub> (mm)	α°	Lm(mm)	ØD₁(mm)	(mm)									
10	6	6	57	12	2.0									
12	6	4	85	15	2.0									
14	6	3	114	18	2.0									
16	6	2.5	137	21	2.0									
	APKT Ram	milling, hel	ical interpola	ation milling	(Inserts-11)									

		A RT Ramp mining, nencal interpolation mining									
Diameter	F	Ramp milling	Helical interpolation milling								
ØD(mm)	Maximum cutting depth	Maximum ramp angle	Minimum length	Minimum diameter	Maximum pitch						
	a <sub>p</sub> (mm)	α°	Lm(mm)	ØD₁(mm)	(mm)						
16	10.0	10.0	56.7	20.0	2.0						
20	10.0	5.0	114.4	28.0	2.0						
25	10.0	4.5	127.0	40.0	2.0						
30	10.0	3.5	153.0	48.0	2.0						
32	10.0	3.0	190.8	56.0	2.0						
40	10.0	2.0	286.4	70.0	2.0						

-10	10.0	10.0	2.0						
	APKT Ramp	o milling, hel	ical interpola	ation milling	(Inserts-16)				
Diameter	F	Ramp milling	Helical interpolation milling						
ØD(mm)	Maximum cutting depth	Maximum ramp angle	Minimum length	Minimum diameter	Maximum pitch				
	a <sub>p</sub> (mm)	α°	Lm(mm)	ØD₁(mm)	(mm)				
25	15	6	142	32	2.0				
30	15	5	171	40	2.0				
32	15	4.5	214	45	2.0				
40	15	2.5	343	60	2.0				
50	15	1.5	572	80	2.0				
63	15	1	859	105	2.0				

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

### **Case for EMP01**

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

Insert specification/grade: APKT160408-APM/YB9320 Tools specification: EMP01-040-XP32-AP16-04

#### Comprehensively improve mould cavity machining efficiency



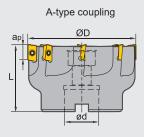
Optimized structure in combination with brandnew "golden drill" coating technique, ZCC·CT products with APM chipbreaker is more suitable for mold cavity machining, greatly improve machining efficiency when compare with competitors similar products.



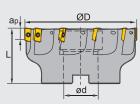


## EMP02 🕑 M 🔣 S N









#### Specification of tools

	Туре			Basic dime	nsions(mm)		Number of	Type of	Weight
	туре	Stock	ØD	ød	L	a <sub>p</sub> max	teeth Z	coupling	(kg)
EMP02	<b>WP02</b> -050-A22-AP11-06		50	22	40	10.5	6	А	0.3
	-063-A22-AP11-08		63	22	40	10.5	8	A	0.6
	-080-A27-AP11-08		80	27	50	10.5	8	А	1.2
	-100-B32-AP11-10		100	32	50	10.5	10	В	1.7
	-050-A22-AP16-05		50	22	40	15.5	5	A	0.3
	-063-A22-AP16-06		63	22	40	15.5	6	A	0.5
	-080-A27-AP16-07		80	27	50	15.5	7	А	1.1
	-100-B32-AP16-08		100	32	50	15.5	8	В	1.6
	-125-B40-AP16-10		125	40	63	15.5	10	В	3.2
	-160-B40-AP16-10		160	40	63	15.5	10	В	6.3

▲Stock available △Make-to-order

#### **Spare parts**

Diameter		Screw	Wrench	
ØD	Inserts	5 m	680	
Ø50-Ø100	AP11	I60M2.5×6.5T	WT08IS	S. A.
Ø50-Ø160	AP16	I60M4×10	WT15IS	





Sele	ction of inserts																							 		
I.W	ød 11°	S	Vorkpie	Steel Stainle Cast ir Non-fe	ess stee	metal		(***	on ( <u></u>	•	(C) (C)		orkin	0				3	00		onditi (2)	$\bigcirc$	0			
		Bas	sic din	nensic	ons(m	m)		С	VD	Сс	oatir	ng	•			PV	DC	Coat	ing	·	-	Cer	met	eme		
Insert shape	Туре	L	I.W	s	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205		YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C		YD101	
	APKT11T304-APF	12.24	6.6	3.6	2.8	0.4		•		•				-	-		*							~	_	_
0	APKT11T308-APF	12.24	6.6	3.6	2.8	0.8		•		•						7	k			•	•			 		
	APKT160408-APF	17.877	9.33	5.76	4.4	0.8		•								7	k			•	•					
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4				•						7	k									
	APKT11T308-APM	12.24	6.6	3.6	2.8	0.8				•		•				7	k			•	•			 		
	APKT11T312-APM	12.24	6.6	3.6	2.8	1.2						•				7	k							 		
_	APKT11T316-APM	12.24	6.6	3.6	2.8	1.6										7	k							 		
0	APKT11T320-APM	12.24	6.6	3.6	2.8	2.0				•							k							 		
3 83	APKT160408-APM	17.877	9.33	5.76	4.4	0.8				•		•					k			•	•			 		
	APKT160416-APM	17.877	9.33	5.76	4.4	1.6				•		•					k			•				 		
	APKT160420-APM	17.877	9.33	5.76	4.4	2.0						•					k							 		
	APKT160424-APM APKT160430-APM	17.877	9.33	5.76	4.4	2.4											k L							 		
	APKT160430-APM	17.877	9.33 6.6	5.76 3.6	4.4 2.8	3.0 0.4	-	-	_	-						ſ	k	-	-						*	+
0	APKT11T304-ALH	12.24	6.6	3.6	2.8	0.4																		 		<b>^</b>
	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

3

MILLING

#### Chipbreaker selection

Function	For finishing	For semi-finishing							
Р	-APF	-APM							
м	-APF	-APM							
S	-APF	-APM							
К	-APF	-APM							
N	-A	LH							

#### 1 Square shoulder milling



#### Recommended cutting parameters (D: Diameter)

		Llardnaaa	Hardness		Cutting	parameters				
Wor	kpiece material	Hardness	Insert grade	Vc(m/min)	fz(m	m/z)	a <sub>e</sub> (mm)			
				VC(III/IIIII)	-APF	-APM	ae(mm)			
			YBC302	320 (240-400)	0.1 (0.08-0.2)					
	Low-carbon steel、Soft steel	≤180	YB9320	320 (200-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≪0.5D			
			YBM253	300 (320-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)				
			YBC302	280 (210-380)	0.1 (0.08-0.2)					
P	High-carbon steel、Alloy steel	180-280	YB9320	280 (180-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D			
		YBN		260 (150-380)						
			YBC302	260 (180-350)	0.1 (0.08-0.2)					
	Alloy tool steel	280-350	YB9320	260 (160-330)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D			
			YBM253	220 (150-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)				
Μ	Stainless stee	≤270	YB9320	200 (110-300)	0.1 (0.09.0.2)		≤0.5D			
	Stall liess stee	≈270	YBM253	180 (150-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≪0.5D			
Κ	Cast iron	180-250	180-250	YB9320	180 (150-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D		
	Cast Iron	180-250	YBD152	200 (150-250)		0.2 (0.1-0.3)	≈0.5D			
e	Difficult-to-	≤400	YBS203	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D			
5	machine materials	≈400	YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	≤0.5D			
					-Al	LH				
Ν	Aluminium alloy		YD101	300-	0.2 (0.0	≤0.5D				
	Auminium alloy		YD201	300-	0.2 (0.0	08-0.4)	≤0.5D			

Indexable milling tools

Square shoulder milling tools Kr:90°

Slot milling Step shoulder

L

Side milling

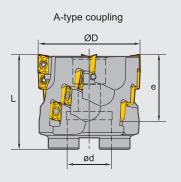
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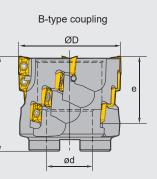
Face milling

C

EMP03 🖸 M 🔣 🕥 N







#### Specification of tools

	Туре			Basic dime	nsions(mm)		Number of teeth	Number of	Type of coupling	Weight
турс		Stock	ØD	ød	L	е	Z	inserts		(kg)
EMP03	-050-A22-AP11-04		50	22	58	39	4	16	А	0.5
	-063-A27-AP11-04		63	27	58	39	4	16	А	0.9
	-080-B32-AP11-05		80	32	63	39	5	20	В	1.3
	-100-B40-AP11-06		100	40	63	39	6	24	В	2.0

▲Stock available  $\triangle$ Make-to-order

#### >> Spare parts

Diameter	Screw	Wrench	
ØD	<b>*</b>	and the second s	
Ø50-Ø100	I60M2.5×6.5T	WT08IS	
			D T







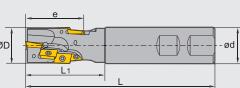


Weldon shank

Step shoulde

Side milling

Slot milling



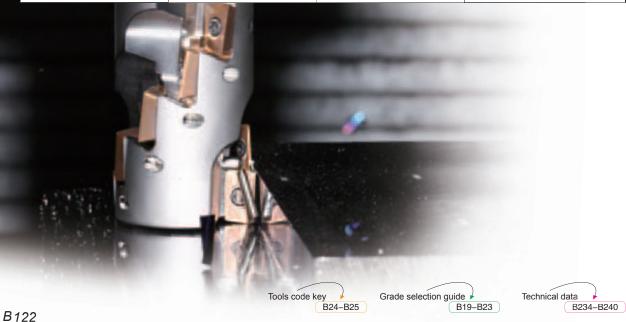
#### Specification of tools

Туре		Stock		Basic	dimensions	Number of teeth	Number of	Weight		
		SIUCK	ØD	ød	L	L1	е	Z	inserts	(kg)
EMP04	-020-XP20-AP11-01		20	20	120	45	29.4	1	3	0.3
	-025-XP25-AP11-02		25	25	130	55	38.9	2	8	0.4
	-032-XP32-AP11-02		32	32	140	65	48.5	2	10	0.7
	-040-XP40-AP11-02		40	40	150	75	58.0	2	14	1.3

▲ Stock available △Make-to-order

#### **Spare parts**

Diamatan	Screw	Wrench	
Diameter ØD	<b>1</b>		and a
Ø20-Ø40	I60M2.5×6.5T	WT08IS	and and
			90



Indexable milling tools

Sele	ction of inserts			<u></u>	Good w	ortina		ditio		No			ultin	~ ~ ~	malit	ion	<u>оо</u> г	Ded		line		n diti						7
I.W	ød 11°	S	Vork pie	Steel Stainle Cast in Non-fe	ess stee	el	(1)	<b>(</b>	(1)	(1) (1) (1)	8 8 8			0		_				© ©			$\bigcirc$	0	8			8
		Bas	sic din	nensio	ons(m	m)		С	VD	Со	atir	ıg				P\	/D	Coa	atin	ıg			Cer	met		eme carb	ente ide	d
Insert shape	Туре	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
501	APKT11T304-APF	12.24	6.6	3.6	2.8	0.4		•		•							*											
	APKT11T308-APF	12.24	6.6	3.6	2.8	0.8		•		•							*				•	•						
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4				•							*											
_	APKT11T308-APM	12.24	6.6	3.6	2.8	0.8				•		•					*				•	•						
a con	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				•							*											
01	APKT11T304-ALH	12.24	6.6	3.6	2.8	0.4																					*	*
	APKT11T308-ALH	12.24	6.6	3.6	2.8	0.8																					*	0
		★Reco	mmen	ded gr	ade (al	ways	stoc	k av	/aila	ble)	(	A	vaila	able	gra	de (	alw	ays	sto	ck a	avai	labl	e)	С	Ma	ke-to	o-orc	ler

ols Indexable milling tools

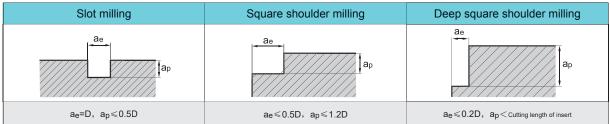
3

MILLING

#### Chipbreaker selection

Application Classification	For finishing	For semi-finishing						
Р	-APF	-APM						
м	-APF	-APM						
S	-APF	-APM						
К	-APF	-APM						
N	-ALH							

#### Recommended cutting parameters



					Cutting parameters			
	arkaises metarial	Hardness HB	lucent avade	:	Square shoulder millin	g		
vv	orkpiece material	Hardness HB	Insert grade		fz(m	ım/z)		
				Vc(m/min)	-APF	-APM		
	Low-carbon steel		YBC302	270 (240-350)	0.1 (0.08-0.2)			
	Soft steel	≤180	YB9320	220 (200-360)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
	SUIT STEEL		YBM253	270 (180-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
	High-carbon steel、		YBC302	240 (210-320)	0.1 (0.08-0.2)			
P	Alloy steel	180-280	YB9320	240 (180-360)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
	Alloy Steel		YBM253	200 (160-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
			YBC302	220 (180-300)	0.1 (0.08-0.2)			
	Alloy tool steel	280-350	YB9320	220 (160-340)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
			YBM253	180 (150-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
Μ	Stainless steel	≤270	YB9320	150 (110-270)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
	Stanless steel	~210	YBM253	140 (100-250)	0.1 (0.06-0.2)	0.2 (0.1-0.3)		
K	Cast iron	180-250	YB9320	150 (100-200)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
	Cast IIOII	160-250	YBD152	180 (120-300)		0.2 (0.1-0.3)		
<b>C</b>	Difficult-to-machine	≤400	YBS203	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
9	materials	≈400	YBS303	100 (60-120)	0.1 (0.08-0.2)	0.2 (0.1-0.3)		
					-A	LH		
	Aluminium alloy		YD101	300-	0.2 (0.	08-0.4)		
	Auminium alloy		YD201	300-	0.2 (0.08-0.4)			

				Cutting parameters							
10/	orknicco motorial	Hardness HB	lagort grade	Slot milling	、Deep square shou	lder milling					
vv	orkpiece material	naiuliess no	Insert grade		fz(m	m/z)					
				Vc(m/min)	-APF	-APM					
	Low-carbon steel		YBC302	270 (240-350)	0.1 (0.08-0.15)						
	Soft steel	≤180	YB9320	270 (200-360)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
	SUIT STEEL		YBM253	220 (180-300)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
	High-carbon steel		YBC302	240 (210-320)	0.1 (0.08-0.15)						
P	Alloy steel	180-280	YB9320	240 (180-360)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
	Alloy Steel		YBM253	200 (160-280)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
			YBC302	220 (180-300)	0.1 (0.08-0.15)						
	Alloy tool steel	280-350	YB9320	220 (160-340)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
			YBM253	180 (150-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
Μ	Stainless steel	≤270	YB9320	150 (110-270)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
	Stanless steel	~210	YBM253	140 (100-250)	0.1 (0.00-0.13)	0.13 (0.1-0.23)					
K	Cast iron	180-250	YB9320	150 (100-200)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
	Cast IIOII	100-250	YBD152	180 (120-300)		0.15 (0.1-0.25)					
S	Difficult-to-machine	≤400	YBS203	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
	materials	≈400	YBS303	60 (45-110)	0.1 (0.08-0.15)	0.15 (0.1-0.25)					
					-A	LH					
	Aluminium alloy		YD101	300-	0.2 (0.	08-0.3)					
			YD201	300-	0.2 (0.08-0.3)						

4 available cutting edges and precise 90°square shoulder.

Double rake angle can effectively reduce cutting force.

- High precision of cutting tool can achieve high quality and efficient roughing.
- The Tangential assembling can change the cutting force of main direction to be borne by the thickness direction to realize the high rigidity of the cutting tool.

The optimized material of cutter body with high strength and special coating treatment achieves better wear-resistance and longer tool life.

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

A New Generation of Tangential Milling Cutter of Tangential Milling Series

- High strength of tool nose, sharp cutting and good wear resistance.
- The spiral cutting edge stands for a lighter chipbreaker.

Kr:90°

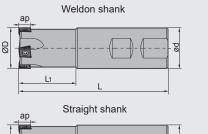
- Excellent universal coating materials, super smooth coating technology, no sticky chip and longer life.
- The vertical design makes the carbide has large volume along the direction of the cutting force, so that the feed per tooth is 30% higher than the flat load insert.

## Square shoulder milling tools K

5 Kr:90°



EMPO9 PM CS





#### Specification of tools

	Tune	Stock		Basi	c dimensions	(mm)		Number of teeth	Weight
	Туре	SLOCK	ØD	ød	L	L <sub>1</sub>	apmax	z	(kg)
EMP09	-020-XP20-LN08-02C		20	20	100	25	8.0	2	0.20
Weldon shank	-020-XP20-LN08-03C		20	32	100	25	8.0	3	0.20
	-025-XP25-LN08-03C		25	25	100	32	8.0	3	0.36
	-025-XP25-LN08-04C		25	25	100	32	8.0	4	0.35
	-032-XP32-LN08-04C		32	32	115	40	8.0	4	0.67
 	-032-XP32-LN08-05C		32	32	115	40	8.0	5	0.67
	-040-XP40-LN08-05C		40	40	125	40	8.0	5	1.15
	-040-XP40-LN08-06C		40	40	125	40	8.0	6	1.14
	-040-XP40-LN12-03C		40	40	125	40	11.5	3	1.11
	-040-XP40-LN12-04C		40	40	125	40	11.5	4	1.10
Straight shank	-020-G20-LN08-02C		20	20	100	25	8.0	2	0.2
Shank	-020-G20-LN08-03C		20	20	100	25	8.0	3	0.2
	-025-G25-LN08-03C		25	25	100	32	8.0	3	0.36
	-025-G25-LN08-04C		25	25	100	32	8.0	4	0.35
	-032-G32-LN08-04C		32	32	115	40	8.0	4	0.67
	-032-G32-LN08-05C		32	32	115	40	8.0	5	0.67
	-040-G40-LN12-03C		40	40	125	40	11.5	3	1.11
	-040-G40-LN12-04C		40	40	125	40	11.5	4	1.10

▲Stock available △Make-to-order

#### Spare parts

Diameter ØD	Inserts	Screw	Wrench	A
Ø20~Ø40	LN T0804 -GM/GL	I60M3×7	WT09IS	
Ø32~Ø40	LN T1206 -GM/GL	I60M4×12	WT15IS	



Technical data B234–B240

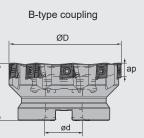
## Square shoulder milling tools Kr:90°



C



A-type coupling



MILL

#### Specification of tools

	Туре	Stock		Basic dime	nsions(mm)		Number of teeth	Type of	Weight
	туре	SLOCK	ØD	ød	L	apmax	z teetn	coupling	(kg)
EMP09	-040-A16-LN08-05C		40	16	40	8	5	А	0.21
	-040-A16-LN08-06C		40	16	40	8	6	A	0.21
	-050-A22-LN08-06C		50	22	40	8	6	A	0.35
	-050-A22-LN08-07C		50	22	40	8	7	A	0.35
	-063-A22-LN08-08C		63	22	40	8	8	A	0.60
	-063-A22-LN08-10C		63	22	40	8	10	A	0.60
	-080-A27-LN08-10C		80	27	50	8	10	A	1.26
	-080-A27-LN08-12C		80	27	50	8	12	A	1.26
	-040-A16-LN12-03C		40	16	40	11.5	3	A	0.20
	-040-A16-LN12-04C		40	16	40	11.5	4	A	0.19
	-050-A22-LN12-05C		50	22	40	11.5	5	A	0.30
	-050-A22-LN12-06C		50	22	40	11.5	6	A	0.30
	-063-A22-LN12-06C		63	22	40	11.5	6	A	0.54
	-063-A22-LN12-08C		63	22	40	11.5	8	А	0.54
	-080-A27-LN12-07C		80	27	50	11.5	7	A	1.18
	-080-A27-LN12-10C		80	27	50	11.5	10	A	1.18
	-100-B32-LN12-09C		100	32	50	11.5	9	В	1.64
	-100-B32-LN12-13C		100	32	50	11.5	13	В	1.64
	-125-B40-LN12-11C		125	40	63	11.5	11	В	2.74
	-125-B40-LN12-16C		125	40	63	11.5	16	В	2.74

▲Stock available △Make-to-order



Grade selection guide B19-B23

Technical data B234-B240

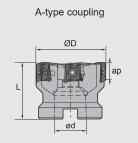


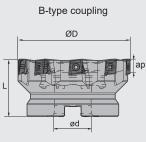




EMP09 📔 M 🔣 🖂







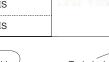
#### Specification of tools

	Turne	Stock		Basic dime	nsions(mm)		Number of teeth	Type of	Weight	
	Туре	SLUCK	ØD	ød	L	apmax	z	coupling	(kg)	
EMP09	-050-A22-LN16-04C		50	22	40	15	4	А	0.31	
	-050-A22-LN16-05C		50	22	40	15	5	A	0.31	
	-063-A22-LN16-05C		63	22	40	15	5	A	0.56	
	-063-A22-LN16-06C		63	22	40	15	6	A	0.56	
	-080-A27-LN16-06C		80	27	50	15	6	А	1.20	
	-080-A27-LN16-07C		80	27	50	15	7	A	1.20	
	-100-B32-LN16-08C		100	32	50	15	8	В	1.62	
	-100-B32-LN16-10C		100	32	50	15	10	В	1.62	
	-125-B40-LN16-10C		125	40	63	15	10	В	3.27	
	-125-B40-LN16-13C		125	40	63	15	13	В	3.27	
	-160-B40-LN16-12C		160	40	63	15	12	В	6.37	
	-160-B40-LN16-16C		160	40	63	15	16	В	6.37	

▲Stock available  $\triangle$ Make-to-order

#### **Spare parts**

Diameter		Screw	Wrench	-
ØD	Inserts		650	In Com
Ø40~Ø80	LN T0804 G-GM/GL	I60M3×7	WT09IS	-
Ø40~Ø125	LN T1206 -GM/GL	I60M4×12	WT15IS	ALC:
Ø50~Ø160	LN T1607 - GM/GL	I60M5×13	WT20IS	





Grade selection guide B19–B23

Technical data B234–B240

Square shoulder milling tools Kr:90°

:90° Step shoulder

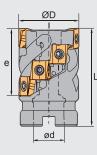


ING

MILL

EMP09 📔 M 🔣 😒





#### Specification of tools

	Туре	Stock		Basic dime	nsions(mm)		Number of	Number of	Weight
	туре	SIUCK	ØD	ød	L	е	teeth Z	inserts	(kg)
EMP09	-032×38-A16-LN08-03C		32	16	55	38	3	15	0.15
	-040×38-A16-LN08-04C		40	16	55	38	4	20	0.3
	-040×45-A16-LN08-04C		40	16	65	45	4	24	0.4
	-050×38-A22-LN08-05C		50	22	55	38	5	25	0.5
	-050×45-A22-LN08-05C		50	22	65	45	5	30	0.6
	-040×33-A16-LN12-02C		40	16	55	33	2	6	0.3
	-040×43-A16-LN12-02C		40	16	65	43	2	8	0.34
	-050×33-A16-LN12-03C		50	16	55	33	3	9	0.5
	-050×43-A22-LN12-03C		50	22	70	43	3	12	0.62
	-063×43-A27-LN12-04C		63	27	70	43	4	16	1.03
	-063×53-A27-LN12-04C		63	27	80	53	4	20	1.2
	-080×43-A27-LN12-05C		80	27	70	43	5	20	1.91
	-080×53-A27-LN12-05C		80	27	80	53	5	25	2.1
	-100×63-A27-LN12-06C		100	27	90	63	6	36	3.3

▲Stock available △Make-to-order

#### Spare parts

Diameter		Screw	Wrench	-
ØD	Inserts	<b>1</b>	650	× 14
Ø32×38-Ø50×45	LNDT0804DD-GM/GL	I60M3×7	WT09IP	
Ø40×33-Ø63×53	LNDT1206DD-GM/GL	I60M4×12	WT15IP	Ubr-
Ø80×43-Ø100×63		1001014×12	WT15IS	10

Tools code key B24-B25

Grade selection guide B19-B23

Technical data B234-B240



#### Specification of tools

	Turne		Basic	dimension	Number of	Number of	Weight				
	Туре	Stock	ØD	ød	L	L1	е	teeth Z	inserts	(kg)	
EMP09	-025×30-XP25-LN08-02C		25	25	100	40	30	2	8	0.31	
	-032×38-XP32-LN08-03C		32	32	115	45	38	3	15	0.62	
	-040×45-XP32-LN08-04C		40	32	120	55	45	4	24	0.7	
	-040×33-XP32-LN12-02C		40	32	115	45	33	2	6	0.7	
	-040×43-XP32-LN12-02C		40	32	125	55	43	2	8	0.7	
	-050×43-XP40-LN12-03C		50	40	135	55	43	3	12	1.4	
	-050×53-XP40-LN12-03C		50	40	145	65	53	3	15	1.5	

▲ Stock available  $\triangle$ Make-to-order

#### Spare parts

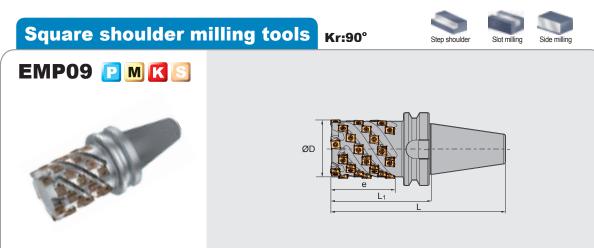
Diameter		Screw	Wrench	
ØD	Inserts		680	
Ø25×30-Ø32×38	LN T0804 - GM/GL	I60M3×7	WT09IS	
Ø40×33-Ø50×53	LN□T1206□□-GM/GL	I60M4×12	WT15IP	1 10





Grade selection guide B19-B23

B130



#### Specification of tools

	Туре		E	Basic dime	nsions(mn	n)	Number of	Shank tuno	Number of	Weight (kg)	
туре		Stock	ØD	е	L1	L	teeth Z	Shank type	inserts		
EMP09	-050×63-BT50-LN12-03C	$\triangle$	50	63	124	225.8	3	BT	18	4.34	
	-050×85-BT50-LN12-03C	Δ	50	85	146	246.8	3	BT	24	4.57	
	-050×103-BT50-LN12-03C	Δ	50	103	164	265.8	3	BT	30	4.89	
	-063×85-BT50-LN12-04C	$\triangle$	63	85	146	246.8	4	BT	32	5.35	
	-063×115-BT50-LN12-04C	$\triangle$	63	115	176	277.8	4	BT	44	6.07	
	-080×125-BT50-LN12-05C	$\triangle$	80	125	186	287.8	5	BT	60	8.25	

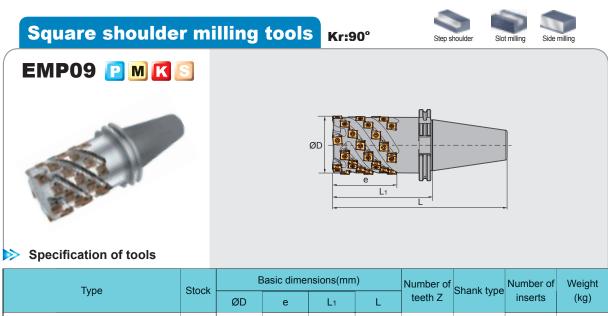
▲Stock available △Make-to-order

#### Spare parts

Diameter ØD	Inserts	Screw	Wrench	-
Ø50×63-Ø63×115	LN□T1206□□-GM/GL	I60M4×12	WT15IP	
Ø80×125			WT15IS	To Car
Tools code key B24-B25	Brade selection guide B19–B23	Technical data B234–B240		84

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MILLING



Ivpe		Stock								
	туре	SIUCK	ØD	е	L1	L	teeth Z	Shank type	inserts	(kg)
EMP09	-050×103-JT50-LN12-03C	$\bigtriangleup$	50	103	164	265.75	3	JT	30	5.11
	-063×85-JT50-LN12-04C	Δ	63	85	146	246.75	4	JT	32	4.34
	-063×115-JT50-LN12-04C	$\triangle$	63	115	176	277.75	4	JT	44	5.46
	-080×125-JT50-LN12-05C	$\triangle$	80	125	186	287.75	5	JT	60	7.82

▲Stock available △Make-to-order

## Spare parts

Diameter		Screw	Wrench	41
ØD	Inserts		689	
Ø50×63-Ø63×115	LN□T1206□□-GM/GL	I60M4×12	WT15IP	C. C. C.
Ø80×125			WT15IS	The second

Tools code key B24-B25



Indexable milling tools

->> Seleo	ction of inserts —															_									
			Ps	🙄 Go	od wo	orking			_	Nori		worki	ng co	ondit		-		-	king	g cor			08		
	<b>a</b> M	Work		tainless	s stee	I	-								• •	_			<ul> <li>○</li> <li>○</li> </ul>						
I.W	ød	Workpiece material		ast iror				-					$\odot$	Ū	•				0					0	(
		mate		on-ferr		ietal							•					-	•					•	<u>.</u>
	S	erial	SH	eat resista	nt alloy,	Ti alloy							$\odot$	٢	<b>(</b>	<b>!!</b>				۲	$\odot$				
																								em	ente
		Bas	ic dim	ensio	ns(m	ım)		C	VD	Coa	ting				P١	/D	Coa	atin	g			Cerme	et		bide
Insert shape	Туре	L	I.W	S	ød	r	YBC301	YBC302	YBM251	YBM253		YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151C	YC30S	YD051	YD101
	LNKT080404PNR-GM	8.75	8.5	4.45	3.4	0.4				*	•	•				*					•				
	LNKT080408PNR-GM	8.75	8.5	4.45	3.4	0.8				*	•	•				*									
	LNKT080412PNR-GM	8.75	8.5	4.45	3.4	1.2				*		•				*									
	LNKT120608PNR-GM	12.7	13	6.75	4.4	0.8				*		•				*					•				
	LNKT120612PNR-GM	12.7	13	6.75	4.4	1.2				*		•				*									
0	LNKT120616PNR-GM	12.7	13	6.75	4.4	1.6				*		•				*									
	LNKT120620PNR-GM	12.7	13	6.75	4.4	2.0				*		•				*									
	LNKT120624PNR-GM	12.7	13	6.75	4.4	2.4				*	•	•				*									
	LNKT120632PNR-GM	12.7	13	6.75	4.4	3.2				*		•				*									
	LNKT160708PNR-GM	16.05	15	7.35	5.5	0.8				*		•				*					•				
	LNKT160712PNR-GM	16.05	15	7.35	5.5	1.2				*		•				*									
	LNKT160716PNR-GM	16.05	15	7.35	5.5	1.6				*		•				*									
	LNKT080404PNR-GL	8.75	8.5	4.45	3.4	0.4				*		•				*					•				
0	LNKT120608PNR-GL	12.7	13	6.75	4.4	0.8				*		•				*					•				
	LNKT160708PNR-GL	16.05	15	7.35	5.5	0.8				*	•	•				*					•				
	LNMT080404PNR-GM	8.75	8.5	4.45	3.4	0.4				*	•	•				*									
0	LNMT120608PNR-GM	12.7	13	6.75	4.4	0.8				*	•	•				*									
	LNMT160708PNR-GM	16.05	15	7.35	5.5	0.8				*		•				*									

#### Recommended cutting parameters

Wc	orkpiece material	Hardness HB	Insert grade	Cutting pa	arameters
	inpicoe material	Tharancess Tib	insert grade	Vc(m/min)	fz(mm/z)
	Low-carbon steel、	≤180	YBM253	260 (160-300)	0.3 (0.1-0.35)
	Soft steel	≈ 100	YB9320	260 (160-300)	0.3 (0.1-0.35)
n	High-carbon steel、	180-280	YBM253	240 (160-240)	0.25 (0.1-0.35)
	Alloy steel	100-200	YB9320	240 (160-240)	0.25 (0.1-0.35)
	Alloy tool steel	280-350	YBM253	200 (120-240)	0.2 (0.1-0.35)
	Alloy tool steel	200-350	YB9320	200 (120-240)	0.2 (0.1-0.35)
			YBM253	180 (100-230)	0.15 (0.1-0.3)
M	Stainless stee	≤270	YB9320	160 (100-230)	0.15 (0.1-0.3)
			YBD152	220 (140-250)	0.2 (0.1-0.3)
K	Cast iron	180-250	YBD152	220 (140-250)	0.2 (0.1-0.3)
			T BD252	220 (140-250)	0.2 (0.1-0.3)
S	Difficult-to-machine s400		YBS303	100 (60-120)	0.15 (0.1-0.25)

3

MILLING

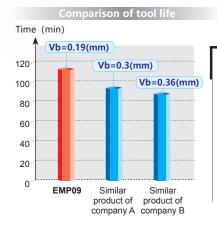
#### **Case for EMP09**





#### Ultra-long working life

The material of workpiece: 45<sup>#</sup> Hardness: 175-190 (HB) Machine tool: Planer-type milling machine Type of cooling: No cooling The machining type: Shoulder milling Toolholder: EMP09-050-A22-LN12-05C Insert: LNKT120608PNR-GM/YB9320 Cutting parameter: Vc=260m/min, Ap=8mm, Ae=2mm, fz=0.2mm/z



Result: The processing life of LNKT12 (YB9320) is approximately 1.3 times of the similar product of company A and 1.4 times of the similar product of company B, with excellent wear resistance and longer tool life.

#### Better surface quality

The material of workpiece: NAK80 Hardness: HRC(33–37) Machine tool: Planer-type milling machine Type of cooling: No cooling The machining type: Shoulder milling Toolholder: EMP09–050–A22–LN12–05C Insert: LNKT120608PNR–GM (YB9320) Similar product of company A Cutting parameter: Vc=240m/min, Ap=8mm Ae=2mm, fz=0.2mm/z



Result: EMP09 series of tangential milling cutter has higher precision and better surface quality, no obvious gear mark, and runout value, which is better than the similar product of company A. 20 15 10 5 0 AN11 AN15

apmax(mm)

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

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

chieving high ality 90° square

Series Square Shoulder Milling Tools

Kr:90°

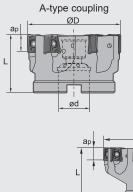
-LH geometry with excellent wear resistance, rake face specially treated with mirror effect, good adhesion resistance, ensuring highefficiency high-stability Aluminium machining.

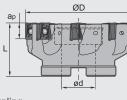
## Square shoulder milling tools Kr:90°





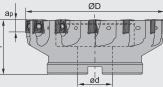
# EMP13 🖸 M 🔣 🕥 😒





B-type coupling

C-type coupling

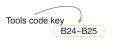


#### Specification of tools

	Time	Cheal		Basic dime	nsions(mm)		Number of	Type of	Weight
	Туре	Stock	ØD	ØD ød L apr		apmax	teeth Z	coupling	(kg)
EMP13	-050-A22-AN11-06C		50	22	40	11.2	6	А	0.30
	-063-A22-AN11-07C		63	22	40	11.2	7	А	0.49
	-080-A27-AN11-09C		80	27	50	11.2	9	A	1.18
	-100-B32-AN11-12		100	32	50	11.2	12	В	1.46
	-125-B40-AN11-14		125	40	63	11.2	14	В	2.92
	-160-C40-AN11-16		160	40	63	11.2	16	С	4.30
	-050-A22-AN15-04C		50	22	40	14.5	4	A	0.26
	-063-A22-AN15-05C		63	22	40	14.5	5	A	0.53
	-080-A27-AN15-06C		80	27	50	14.5	6	А	1.23
	-100-B32-AN15-08		100	32	50	14.5	8	В	1.52
	-125-B40-AN15-10		125	40	63	14.5	10	В	3.05
	-160-C40-AN15-12		160	40	63	14.5	12	С	4.46

▲ Stock available △Make-to-order

▶> Spare parts				
Diameter		Screw	Wrench	
ØD	Inserts		, and a	
Ø50-Ø160	AN 🗆 X11 🗆 🗆 🗆 - GM/LH	I60M3X9	WT09IS	
Ø50-Ø160	AN X15 G GM/LH	I60M4X12	WT15IS	199





Technical data B234–B240

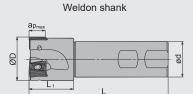
## Square shoulder milling tools Kr:90°

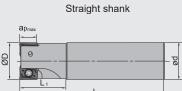
Face milling Step shoulder Slot milling

MIL

## EMP13 🕑 M 🔣 🕥 S







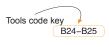
#### Specification of tools

	Turne	Steal		Basic	dimension	s(mm)		Number of	Weight
	Туре	Stock	ØD	ød	L	L1	a <sub>p</sub> max	flute Z	(kg)
EMP13 -025-XP25-AN11-02C			25	25	100	32	11.2	2	0.31
Weldon shank	Weldon shank -032-XP32-AN11-03C		32	32	115	40	11.2	3	0.61
	-040-XP32-AN11-04C	<b></b>	40	32	125	40	11.2	4	0.75
	-032-XP32-AN15-02C	<b></b>	32	32	125	40	14.5	2	0.66
	-040-XP32-AN15-03C		40	32	125	40	14.5	3	0.76
Straight shank	-025-G25-AN11-02C		25	25	100	32	11.2	2	0.31
	-032-G32-AN11-03C		32	32	115	40	11.2	3	0.61
	-040-G32-AN11-04C		40	32	125	40	11.2	4	0.75
	-032-G32-AN15-02C	<b></b>	32	32	125	40	14.5	2	0.66
	-040-G32-AN15-03C	<b></b>	40	32	125	40	14.5	3	0.76

▲Stock available △Make-to-order

#### Spare parts

Diameter		Screw	Wrench	
ØD	Inserts	1 m	, and a	
Ø25-Ø40	AN X11 G GM/LH	I60M3X9	WT09 <u>I</u> S	1
Ø32-Ø40	AN X15 G GM/LH	I60M4X12	WT15IS	



Grade selection guide B19-B23



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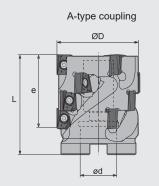
Square shoulder milling tools Kr:90°





EMP13 🖻 🕅 🔀 ℕ S





#### Specification of tools

	Tuno	Stock	E	Basic dime	nsions(mm	ı)	Number of teeth	Number	Type of	Weight	
	Туре		ØD	ød	L	е	Z	of inserts	coupling	(kg)	
EMP13	-050×43-A22-AN11-03		50	22	60	43	3	12	А	0.52	
	-063×65-A27-AN11-04		63	27	80	64	4	24	А	1.15	
	-063×53-A27-AN15-03		63	27	75	53	3	12	А	1.14	
	-080×56-A32-AN15-04		80	32	75	53	4	16	А	1.82	

▲Stock available △Make-to-order

#### **Spare parts**

Diameter		Screw	Wrench	-
ØD	Inserts			5
Ø50-Ø63	AN <sup>O</sup> X11 <sup>O</sup> O-GM/LH	I60M3×9	WT09IS	1 341
Ø63-Ø80	AN X15 G GM/LH	I60M4×12	WT15IS	9 . 9





B138

Square shoulder milling tools Kr:90°



MILL

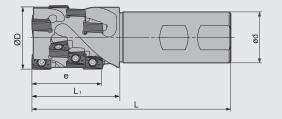


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2

EMP13 🖻 M 🔀 🗋 S

#### Weldon shank



#### Specification of tools

	Turo	Stock		Basic	dimension	s(mm)		Number of teeth	Number	Weight
	Туре		ØD	ød	L	L1	е	Z	of inserts	(kg)
EMP13	-032×43-XP32-AN11-02		32	32	115	48	43	2	8	0.61
	-040×43-XP32-AN11-03	<b></b>	40	32	125	55	43	3	12	0.79
	-040×40-XP32-AN15-02		40	32	115	55	40	2	6	0.79
	-050×53-XP40-AN15-02		50	40	145	70	53	2	8	1.53

▲Stock available △Make-to-order

#### >> Spare parts

Diameter		Screw	Wrench	
ØD	Inserts	1	, and a	
Ø32-Ø40	AN X11 C C GM/LH	I60M3X9	WT09IS	
Ø40-Ø50	AN X15 C C -GM/LH	I60M4X12	WT15IS	a da



Grade selection guide B19–B23



∕ <b>⊳</b> Sel	lection of inserts –																										
	r			00	Good w	orking	con	ditic	on 🥲	Nc	orma	l wo	orkin	g co	nditi	on (	<mark>ien e</mark>	Bad	wo	rking	g co	nditi	ion				
i F		n i	s P	Steel			<b>(</b> )	<b>(</b>	•	<b>(</b>	$\odot$				<u>.</u>	<u></u> (		$\overline{\mathbf{S}}$		$^{\circ}$			$^{\circ}$	$^{\odot}$	$\odot$		
L			M	Stainle	ess ste	el			•	<u></u>	$\bigotimes$				<u>.</u>	<u>.</u>	<u>.</u>	$\odot$		$^{\circ}$			0	$^{\circ}$	$\bigotimes$		
				Cast ir	on							(1)	$\odot$	$\odot$				(	•	$\odot$						$\odot$	6
0,	W Ød			Non-fe	errous r	metal						-		-												- (	•
				Heat resi	stant alloy									$\odot$	<u></u>	<b>(</b> )	•				•	$\approx$					
	1	_		Tical Icol	starit alloy	y, 11 all0y								<u> </u>			-				•	<u> </u>					
		Bas	sic din	nensi	ons(m	ım)		С	VD	Co	atir	ıg				P∖	D	Coa	atir	ng			Cer	met		eme arb	nted ide
Insert shape	Туре	L	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
	ANGX110504PNR-GM	11.85	8.4	5.7	3.5	0.4		ŕ	ŕ	*		*	ŕ	ŕ	_		*	ŕ	-	,		-	-			<u>,</u>	
	ANGX110508PNR-GM	11.85	8.4	5.7	3.5	0.8				*		*				*	*										
0	ANGX110520PNR-GM	11.85	8.4	5.7	3.5	2.0				*		*	*			*											
-	ANGX150608PNR-GM	15.43	11.0	7.3	4.4	0.8				*		*				*	*										
	ANGX150616PNR-GM	15.43	11.0	7.3	4.4	1.6				*		*				*	*										
	ANGX150620PNR-GM	15.43	11.0	7.3	4.4	2.0						*	*			*											
	ANMX110508PNR-GM	11.85	8.4	5.7	3.5	0.8				*		*		_			*					*				-	
0	ANMX150608PNR-GM	15.43	11.0	7.3	4.4	0.8				*		*				*	*										
-	ANGX110502PNR-LH	11.85	8.4	5.7	3.5	0.2																					*
	ANGX110504PNR-LH	11.85	8.4	5.7	3.5	0.4																					*
	ANGX150608PNR-LH	15.43	11.0	7.3	4.4	0.8																					*
	,, <b>,</b>	Recor	nmenc	ded gra	ade (al	lways	stoc	k a	vaila	ble)	)	•A	vaila	able	gra	de (	alw	ays	sto	ock a	avai	labl	e)	С	Mal	ke-to	o-orde

#### Recommended cutting parameters

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VV	orkpiece material	Hardness HB	Insert grade	Vc(m/min)	fz(mm/z)	a <sub>p</sub> max(mm)					
	Low carbon steel	≤180	YBM253 YBG205 YB9320	270(220-350)	0.25(0.1-0.4)						
	Alloy steel	180-350	YBM253 YBG205 YB9320	240(180-320)	0.2(0.1-0.4)						
M	Stainless stee	≤270	YB9320 YBM253	200(110-300) 180(150-300)	0.2(0.1-0.3)	11.2(AN11)					
K	Cast iron	180-260	YBD152 YBD252	270(150-300) 220(120-320)	0.25(0.1-0.4) 0.2(0.1-0.3)	14.5(AN15)					
			VD404	-l	H						
	Aluminium alloy		YD101	300-	0.2(0.08-0.4)						
5	Difficult-to-machine <400		YBS303	100(60-120)	0.15(0.1-0.25)						

### **Case for EMP13**

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

# Surface quality comparison EMP13 Company A

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