

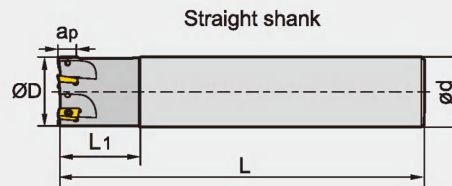
Square shoulder milling tools

Kr:90°



EMP01

P M K N S



Specification of tools

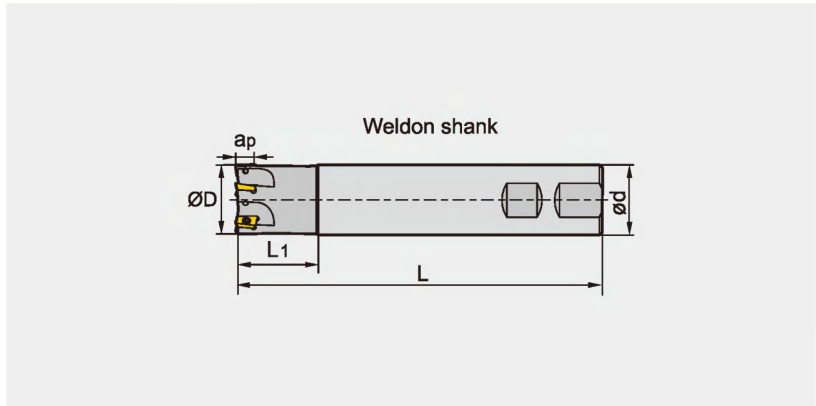
Type		Dimensions(inch)					
		ØD	ød	L1	L	apmax	Z (Number of teeth)
EMP01 Straight shank	-0.50"-G0.625"-AP11-01	0.500	0.625	1.00	3.50	0.433	1
	-0.625"-G0.625"-AP11-02(L=2")	0.625	0.625	1.00	2.00	0.433	2
	-0.625"-G0.625"-AP11-02	0.625	0.625	1.00	3.50	0.433	2
	-0.75"-G0.75"-AP11-02	0.750	0.750	1.25	4.00	0.433	2
	-0.75"-G0.75"-AP11-02(L=6.5")	0.750	0.750	3.50	6.50	0.433	2
	-0.75"-G0.75"-AP11-02(L=10")	0.750	0.750	1.25	10.00	0.433	2
	-1.00"-G1.00"-AP11-03	1.000	1.000	1.50	4.50	0.433	3
	-1.25"-G1.25"-AP11-04	1.250	1.250	1.50	5.00	0.433	4
	-1.00"-G1.00"-AP16-02	1.000	1.000	1.50	4.50	0.630	2
	-1.00"-G1.00"-AP11-03 (L=10")	1.000	1.000	1.50	10.00	0.433	3
	-1.00"-G1.00"-AP11-03 (L=6.5")	1.000	1.000	3.50	6.50	0.433	3
	-1.00"-G1.00"-AP16-02 (L=7")	1.000	1.000	4.00	7.00	0.630	2
	-1.00"-G1.00"-AP16-02 (L=10")	1.000	1.000	1.50	10.00	0.630	2
	-1.25"-G1.25"-AP16-03	1.250	1.250	1.50	5.00	0.630	3
	-1.25"-G1.25"-AP11-04 (L=10")	1.250	1.250	1.50	10.00	0.433	4
	-1.25"-G1.25"-AP16-03 (L=7")	1.250	1.250	4.00	7.00	0.630	3
	-1.25"-G1.25"-AP16-03 (L=10")	1.250	1.250	1.50	10.00	0.630	3
	-1.50"-G1.25"-AP16-04	1.500	1.250	1.75	5.00	0.630	4
	-1.50"-G1.25"-AP16-04 (L=7")	1.500	1.250	1.75	7.00	0.630	4
	-1.50"-G1.25"-AP16-04 (L=10")	1.500	1.250	1.75	10.00	0.630	4
-1.50"-G1.50"-AP16-04 (L=7")	1.500	1.500	4.00	7.00	0.630	4	
-2.00"-G1.25"-AP16-05	2.000	1.250	1.75	5.50	0.630	5	
-2.50"-G1.25"-AP16-06	2.500	1.250	1.75	5.50	0.630	6	



Square shoulder milling tools **Kr:90°**



EMP01 **P M K N S**



Specification of tools

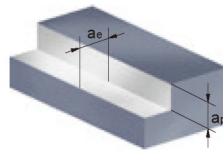
Type		Dimensions(inch)					
		ØD	ød	L1	L	apmax	Z (Number of teeth)
EMP01 Weldon	-0.50"-XP0.625"-AP11-01	0.500	0.625	1.25	3.50	0.433	1
	-0.625"-XP0.625"-AP11-02	0.625	0.625	1.25	3.50	0.433	2
	-0.75"-XP0.75"-AP11-02	0.750	0.750	1.75	4.00	0.433	2
	-0.75"-XP0.75"-AP11-03	0.750	0.750	1.75	4.00	0.433	3
	-1.00"-XP1.00"-AP11-03	1.000	1.000	2.25	4.50	0.433	3
	-1.25"-XP1.25"-AP11-04	1.250	1.250	2.75	5.00	0.433	4
	-1.00"-XP1.00"-AP16-02	1.000	1.000	2.25	4.50	0.630	2
	-1.25"-XP1.25"-AP16-03	1.250	1.250	2.75	5.00	0.630	3
	-1.50"-XP1.25"-AP16-04	1.500	1.250	1.75	5.00	0.630	4
	-2.00"-XP1.25"-AP16-05	2.000	1.250	1.75	5.50	0.630	5
	-2.50"-XP1.25"-AP16-06	2.500	1.250	1.75	5.50	0.630	6
	-1.00"-XPL1.00"-AP16-02	1.000	1.000	4.25	6.50	0.630	2
	-1.00"-XPXL1.00"-AP16-02	1.000	1.000	5.75	8.00	0.630	2
	-1.25"-XPL1.25"-AP16-03	1.250	1.250	4.25	6.50	0.630	3
	-1.25"-XPXL1.25"-AP16-03	1.250	1.250	6.25	8.50	0.630	3

Spare parts

Diameter ØD	Insert specification	screw	Wrench	Sketch of installation
				
Ø0.50"~Ø1.25"	APKT11□□□□-APF/APM/ALH	I60M2.5×6.5T	WT08IP	
Ø1.00"~Ø2.50"	APKT16□□□□-APF/APM/ALH	I60M4×8.4	WT15IS	

Chipbreaker selection

Classification	Function	For finishing	For Semi-finishing
P		-APF	-APM
M		-APF	-APM
S		-APF	-APM
K		-APF	-APM
N		-ALH	



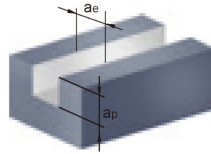
1 Square shoulder milling

Recommended cutting parameters

(D: Diameter)

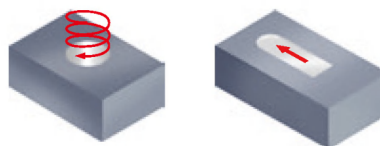
Workpiece material	Hardness HB	Insert grade	Cutting parameters				
			V(SFPM)	f(IPT)		ae(inch)	
				-APF	-APM		
P	Low-carbon steel, Soft steel	≤ 180	YBC302	1000 (750-1300)	0.004 (0.003-0.008)	--	≤ 0.5D
			YB9320	1000 (650-1300)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
			YBM253	950 (1000-1100)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
	High-carbon steel, Alloy steel	180-280	YBC302	900 (650-1200)	0.004 (0.003-0.008)	--	≤ 0.5D
			YB9320	900 (590-1100)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
			YBM253	850 (490-1200)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
Alloy tool steel	280-350	YBC302	850 (590-1100)	0.004 (0.003-0.008)	--	≤ 0.5D	
		YB9320	850 (520-1000)	0.004 (0.003-0.008)	0.008 (0.004-0.012)		
		YBM253	720 (490-910)	0.004 (0.003-0.008)	0.008 (0.004-0.012)		
M	Stainless steel	≤ 270	YB9320	650 (360-980)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
			YBM253	590 (490-820)			
K	Cast iron	180-250	YB9320	590 (490-820)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
			YBD152	650 (490-820)	--	0.008 (0.004-0.012)	
S	High-temperature alloy	≤ 400	YBS203	320 (190-400)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
			YBS303	320 (190-400)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
N	Aluminium alloy	--	-ALH				
			YD101	1000-	0.008 (0.03-0.016)		≤ 0.5D
			YD201	1000-	0.008 (0.03-0.016)		≤ 0.5D

2 Slot milling



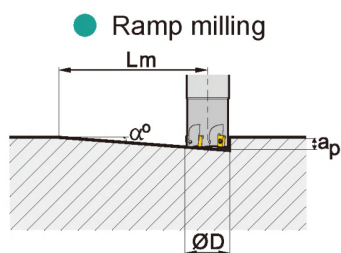
Recommended cutting parameters (D: Diameter)

Workpiece material	Hardness HB	Insert grade	Cutting parameters				
			V(SFPM)	f(IPT)		ae(inch)	
				-APF	-APM		
P Low-carbon steel, Soft steel	≤ 180	YBC302	620 (550-820)	0.004 (0.003-0.006)	--	D	
		YB9320	620 (450-820)	0.004 (0.003-0.006)	0.006 (0.004-0.01)		
		YBM253	490 (420-690)	0.004 (0.003-0.006)	0.006 (0.004-0.01)		
	High-carbon steel, Alloy steel	180-280	YBC302	550 (490-720)	0.004 (0.003-0.006)	--	D
			YB9320	550 (420-820)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	
			YBM253	450 (360-650)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	
Alloy tool steel	280-350	YBC302	490 (420-680)	0.004 (0.003-0.006)	--	D	
		YB9320	490 (360-780)	0.004 (0.003-0.006)	0.006 (0.004-0.01)		
		YBM253	420 (360-590)	0.004 (0.003-0.006)	0.006 (0.004-0.01)		
M Stainless steel	≤ 270	YB9320	390 (260-620)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	D	
		YBM253	320 (260-550)				
K Cast iron	180-250	YB9320	390 (260-590)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	D	
		YBD152	390 (260-690)	--	0.006 (0.004-0.01)		
S High-temperature alloy	≤ 400	YBS203	190 (150-360)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	D	
		YBS303	190 (150-360)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	D	
N Aluminium alloy	--				-ALH		
		YD101	1000-	0.008 (0.003-0.012)		D	
		YD201	1000-	0.008 (0.003-0.012)		D	



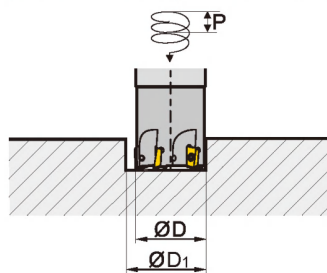
3 Ramp milling, helical interpolation milling

Recommended cutting parameters (D: Diameter)



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

● Helical interpolation milling



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

Diameter ØD	APKT Ramp milling, helical interpolation milling (Inserts-11)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth a_p (in)	Maximum ramp angle α°	Minimum length L_m (in)	Minimum diameter $\text{Ø}D_1$ (in)	Maximum pitch(in)
Ø0.62"	0.394	10.0	2.232	0.787	0.079
Ø0.75"	0.394	5.0	4.504	1.102	0.079
Ø1.00"	0.394	4.5	5.000	1.575	0.079
Ø1.25"	0.394	3.0	7.512	2.205	0.079
Ø1.50"	0.394	2.0	11.276	2.756	0.079
Diameter ØD	APKT Ramp milling, helical interpolation milling (Inserts-16)				
	Ramp milling			Helical interpolation milling	
	Maximum cutting depth a_p (in)	Maximum ramp angle α°	Minimum length L_m (in)	Minimum diameter $\text{Ø}D_1$ (in)	Maximum pitch(in)
Ø1.00"	0.59	6.0	5.59	1.25	0.079
Ø1.25"	0.59	4.5	8.425	1.89	0.079
Ø1.50"	0.59	2.5	13.50	2.362	0.079
Ø2.00"	0.59	1.5	22.52	3.15	0.079
Ø2.50"	0.59	1.0	33.82	4.134	0.079

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

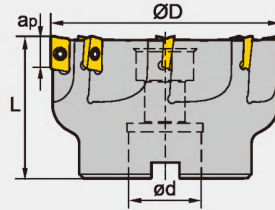
Square shoulder milling tools **Kr:90°**



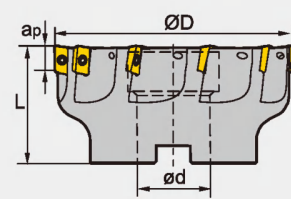
EMP02 **P M K N S**



A type of mounting



B type of mounting



Specification of tools

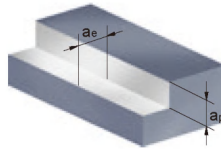
Type		Dimensions(inch)					
		ØD	ød	L	ap	Z (Number of teeth)	Mounting type
EMP02	-2.00"-A0.75"-AP11-06	2.00	0.75	1.50	0.433	6	A
	-2.50"-A0.75"-AP11-08	2.50	0.75	1.50	0.433	8	A
	-3.00"-A1.00"-AP11-08	3.00	1.00	2.00	0.433	8	A
	-4.00"-B1.25"-AP11-10	4.00	1.25	2.00	0.433	10	B
	-2.00"-A0.75"-AP16-05	2.00	0.75	1.50	0.630	5	A
	-2.50"-A0.75"-AP16-06	2.50	0.75	1.50	0.630	6	A
	-3.00"-A1.00"-AP16-07	3.00	1.00	2.00	0.630	7	A
	-4.00"-B1.25"-AP16-08	4.00	1.25	2.00	0.630	8	B
	-5.00"-B1.50"-AP16-08	5.00	1.50	2.50	0.630	8	B
	-6.00"-B1.50"-AP16-09	6.00	1.50	2.50	0.630	9	B

Spare parts

Diameter ØD	Inserts	Screw	Wrench	Sketch of installation
				
Ø2.00"~Ø4.00"	APKT11□□□□-APF/APM/ALH	I60M2.5×6.5T	WT08IS	
Ø2.00"~Ø4.00"	APKT16□□□□-APF/APM/ALH	I60M4×10	WT15IS	
Ø5.00"~Ø8.00"	APKT16□□□□-APF/APM/ALH	I60M4×10	WT15IS	

Chipbreaker selection

Classification	Function	For finishing	For Semi-finishing
P		-APF	-APM
M		-APF	-APM
S		-APF	-APM
K		-APF	-APM
N		-ALH	



Square shoulder milling

Recommended cutting parameters (D: Diameter)

Workpiece material	Hardness HB	Insert grade	Cutting parameters				
			V(SFPM)	f(IPT)		ae(inch)	
				-APF	-APM		
P	Low-carbon steel, Soft steel	≤ 180	YBC302	1000 (750-1300)	0.004 (0.003-0.008)	--	≤ 0.5D
			YB9320	1000 (650-1300)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
			YBM253	950 (1000-1100)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
	High-carbon steel, Alloy steel	180-280	YBC302	900 (650-1200)	0.004 (0.003-0.008)	--	≤ 0.5D
			YB9320	900 (590-1100)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
			YBM253	850 (490-1200)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
Alloy tool steel	280-350	YBC302	850 (590-1100)	0.004 (0.003-0.008)	--	≤ 0.5D	
		YB9320	850 (520-1000)	0.004 (0.003-0.008)	0.008 (0.004-0.012)		
		YBM253	720 (490-910)	0.004 (0.003-0.008)	0.008 (0.004-0.012)		
M	Stainless steel	≤ 270	YB9320	650 (360-980)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
			YBM253	590 (490-820)			
K	Cast iron	180-250	YB9320	590 (490-820)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
			YBD152	650 (490-820)	--	0.008 (0.004-0.012)	
S	High-temperature alloy	≤ 400	YBS203	320 (190-400)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
			YBS303	320 (190-400)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	≤ 0.5D
N			-ALH				
	Aluminium alloy	--	YD101	1000-	0.008 (0.03-0.016)		≤ 0.5D
			YD201	1000-	0.008 (0.03-0.016)		≤ 0.5D



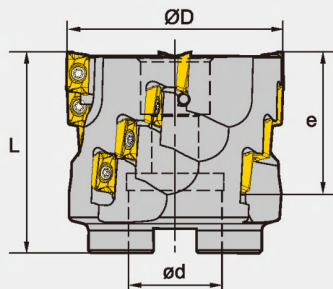
Square shoulder milling tools **Kr:90°**



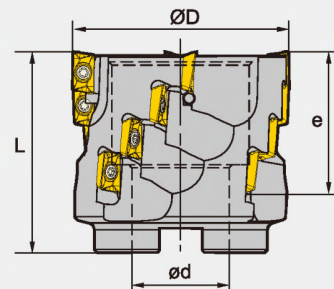
EMP03 **P M K N S**



A type of mounting






B type of mounting



Specification of tools

Type		Dimensions(inch)						
		ØD	ød	L	e	Z (Number of teeth)	Inserts total	Mounting type
EMP03	-2.00"-A0.75"-AP11-04	2.00	0.75	2.5	1.535	4	16	A
	-2.50"-A1.00"-AP11-04	2.50	1.00	2.5	1.535	4	16	A
	-3.00"-B1.25"-AP11-05	3.00	1.25	2.5	1.535	5	20	B
	-4.00"-B1.50"-AP11-06	4.00	1.50	2.5	1.535	6	24	B

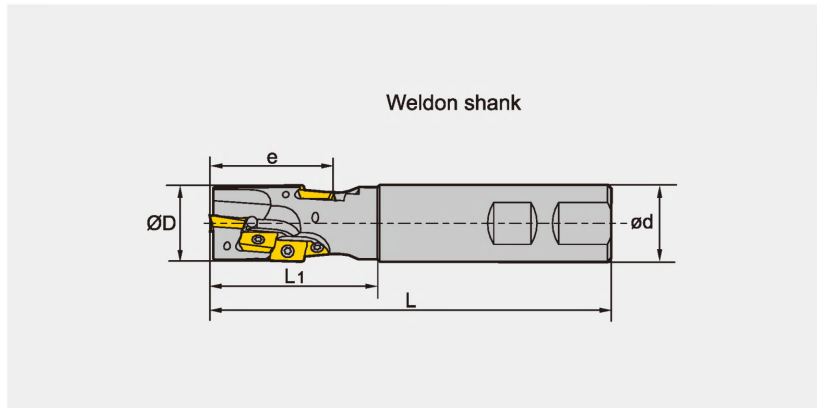
Spare parts

Diameter ØD	Insert specification	Inserts screw	Wrench	Sketch of installation
				
Ø2.00"~Ø4.00"	APKT11□□□□-APF/APM/ALH	I60M2.5×6.5T	WT08IS	

Square shoulder milling tools **Kr:90°**



EMP04 **P M K N S**

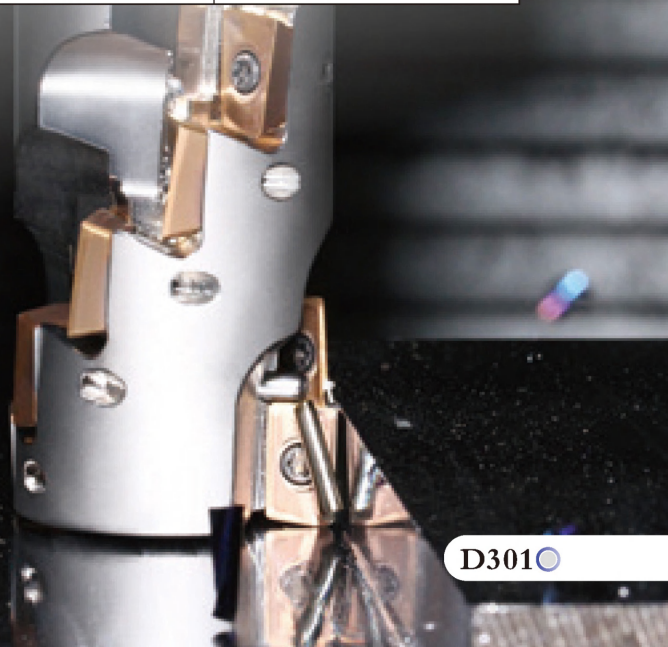


Specification of tools

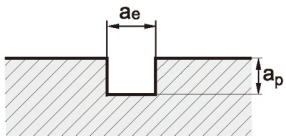
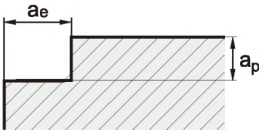

Type		Dimensions(inch)						Z (Number of teeth)	Inserts total
		ØD	ød	L ₁	L	e			
EMP04	-0.75" -XP0.75" -AP11-01	0.75	0.75	2.50	4.75	1.157	1	3	
	-1.00" -XP1.00" -AP11-02	1.00	1.00	2.75	5.00	1.531	2	8	
	-1.25" -XP1.25" -AP11-02	1.25	1.25	3.25	5.50	1.909	2	10	
	-1.50" -XP1.50" -AP11-02	1.50	1.50	3.75	6.00	2.283	2	14	

Spare parts

Diameter ØD	Insert specification	Insert screw	Wrench	Sketch of installation
				
Ø2.00"~Ø4.00"	APKT11□□□□-APF/APM/ALH	I60M2.5×6.5T	WT08IS	



Recommended cutting parameters

Slot milling	Square shoulder milling	Deep square shoulder milling
		
$a_e = D$ $a_p \leq 0.5D$	$a_e \leq 0.5D$ $a_p \leq 1.2D$	$a_e \leq 0.2D$ $a_p < \text{Cutting length of insert}$

Workpiece material	Hardness HB	Insert grade	Cutting parameters			
			Square shoulder milling			
			V(SFPM)	f(IPT)		
				-APF	-APM	
P Low-carbon steel, Soft steel	≤ 180	YBC302	880 (780-1100)	0.004 (0.003-0.008)	--	
		YB9320	720 (650-1200)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
		YBM253	880 (590-1000)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
	High-carbon steel, Alloy steel	180-280	YBC302	780 (680-1050)	0.004 (0.003-0.008)	--
			YB9320	780 (590-1150)	0.004 (0.003-0.008)	0.008 (0.004-0.012)
			YBM253	650 (520-900)	0.004 (0.003-0.008)	0.008 (0.004-0.012)
Alloy tool steel	280-350	YBC302	720 (590-1000)	0.004 (0.003-0.008)	--	
		YB9320	720 (520-1100)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
		YBM253	590 (490-820)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
M Stainless steel	≤ 270	YB9320	490 (410-880)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
		YBM253	450 (320-820)			
K Cast iron	180-250	YB9320	490 (320-650)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
		YBD152	590 (390-1000)	--	0.008 (0.004-0.012)	
S High-temperature alloy	≤ 400	YBS203	320 (190-400)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
		YBS303	320 (190-400)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
N Aluminium alloy	--			-ALH		
		YD101	1000-	0.008 (0.003-0.016)		
		YD201	1000-	0.008 (0.003-0.016)		



	Workpiece material	Hardness HB	Insert grade	Cutting parameters		
				Slotting, Deep square shoulder milling		
				V(SFPM)	f(IPT)	
					-APF	-APM
P	Low-carbon steel, Soft steel	≤ 180	YBC302	880 (780-1100)	0.004 (0.003-0.006)	--
			YB9320	720 (650-1200)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
			YBM253	880 (590-1000)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
	High-carbon steel, Alloy steel	180-280	YBC302	780 (680-1050)	0.004 (0.003-0.006)	--
			YB9320	780 (590-1150)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
			YBM253	650 (520-900)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
	Alloy tool steel	280-350	YBC302	720 (590-1000)	0.004 (0.003-0.006)	--
			YB9320	720 (520-1100)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
			YBM253	590 (490-820)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
M	Stainless steel	≤ 270	YB9320	490 (410-880)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
			YBM253	450 (320-820)		
K	Cast iron	180-250	YB9320	490 (320-650)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
			YBD152	590 (390-1000)	--	0.006 (0.004-0.01)
S	High-temperature alloy	≤ 400	YBS203	200 (150-360)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
			YBS303	200 (150-360)	0.004 (0.003-0.006)	0.006 (0.004-0.01)
N					-ALH	
	Aluminium alloy	--	YD101	1000-	0.008 (0.003-0.012)	
			YD201	1000-	0.008 (0.003-0.012)	



Precise 90 square shoulder and 4 cutting edges.

Double positive rake angle design reduces cutting forces.

High tool precision for high quality and efficient roughing.

Vertical mounting of the insert changes the direction of cutting forces into the insert thickness in order to increased tool rigidity.

High strength tool body material with surface coating for more wear-resistance and longer service life.

Achieve efficient milling in a wide variety of machining applications.

Next generation Multi Functional Heavy Duty Shoulder Milling Tool **EMPO09** Series Kr:90°

LNKT-GM:

GM chip breaker shows both high impact resistance and sharpness, which is mainly be used for milling steel and cast iron.

LNKT-GL:

GL chip breaker shows greater sharpness in cutting edge and mainly be used for milling stainless steel and soft steel.

- High strength positive cutting edge angle for increased wear resistance and reduced cutting pressures.
- Helical cutting edge is designed to achieve smoother cutting.
- Highly versatile, ultra-smooth coating technology inhibits chip welding for longer tool life.
- Vertical mounting design, combined with the volume of carbide absorbing the cutting forces, increases the potential feed per tooth by 30% compared to the horizontally mounted insert.



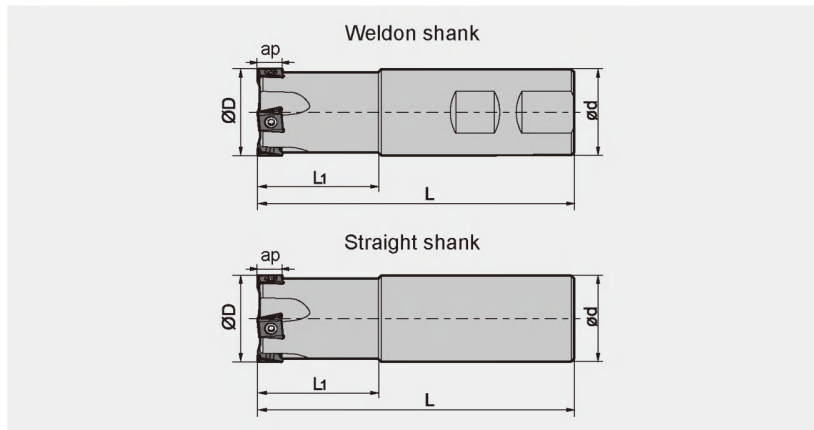
Square shoulder milling tools

Kr:90°






EMP09

P M K S



Type		Dimensions(inch)					
		ØD	ød	L	L ₁	a _{pmax}	Z (Number of teeth)
EMP09 Weldon shank	-1.00"-XP1.00"-LN08-03C	1.00	1.00	4.0	1.25	0.315	3
	-1.00"-XP1.00"-LN08-04C	1.00	1.00	4.0	1.25	0.315	4
	-1.25"-XP1.25"-LN08-04C	1.25	1.25	4.5	1.50	0.315	4
	-1.25"-XP1.25"-LN08-05C	1.25	1.25	4.5	1.50	0.315	5
	-1.50"-XP1.50"-LN08-05C	1.50	1.50	5.0	1.50	0.315	5
	-1.50"-XP1.50"-LN08-06C	1.50	1.50	5.0	1.50	0.315	6
	-1.50"-XP1.50"-LN12-03C	1.50	1.50	5.0	1.50	0.453	3
	-1.50"-XP1.50"-LN12-04C	1.50	1.50	5.0	1.50	0.453	4
Straight shank	-1.00"-G1.00"-LN08-03C	1.00	1.00	4.0	1.25	0.315	3
	-1.00"-G1.00"-LN08-04C	1.00	1.00	4.0	1.25	0.315	4
	-1.25"-G1.25"-LN08-04C	1.25	1.25	4.5	1.50	0.315	4
	-1.25"-G1.25"-LN08-05C	1.25	1.25	4.5	1.50	0.315	5
	-1.50"-G1.50"-LN12-03C	1.50	1.50	5.0	1.50	0.453	3
	-1.50"-G1.50"-LN12-04C	1.50	1.50	5.0	1.50	0.453	4

Spare parts

Diameter ØD	Insert specification	Screw	Wrench	Sketch of installation
				
Ø1.00"~Ø1.50"	LNKT0804□□-GM/GL	I60M3×7	WT10IS	
Ø1.50"	LNKT1206□□-GM/GL	I60M4×12	WT15IS	

Square shoulder milling tools

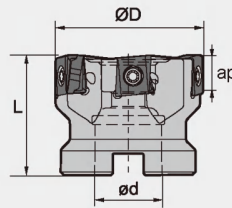
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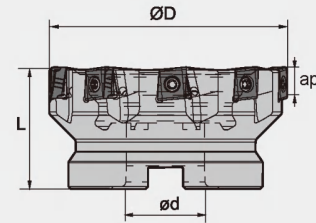
EMP09



A type of mounting



B type of mounting



Specification of tools

Type		Dimensions(inch)					Mounting type
		ØD	ød	L	apmax	Z (Number of teeth)	
EMP09	-1.50"-A0.625"-LN08-05C	1.50	0.625	1.50	0.315	5	A
	-1.50"-A0.625"-LN08-06C	1.50	0.625	1.50	0.315	6	A
	-2.00"-A0.75"-LN08-06C	2.00	0.750	1.75	0.315	6	A
	-2.00"-A0.75"-LN08-07C	2.00	0.750	1.75	0.315	7	A
	-2.50"-A0.75"-LN08-08C	2.50	0.750	1.75	0.315	8	A
	-2.50"-A0.75"-LN08-10C	2.50	0.750	1.75	0.315	10	A
	-3.00"-A1.00"-LN08-10C	3.00	1.000	2.00	0.315	10	A
	-3.00"-A1.00"-LN08-12C	3.00	1.000	2.00	0.453	12	A
	-1.50"-A0.625"-LN12-03C	1.50	0.625	1.50	0.453	3	A
	-1.50"-A0.625"-LN12-04C	1.50	0.625	1.50	0.453	4	A
	-2.00"-A0.75"-LN12-05C	2.00	0.750	1.75	0.453	5	A
	-2.00"-A0.75"-LN12-06C	2.00	0.750	1.75	0.453	6	A
	-2.50"-A0.75"-LN12-06C	2.50	0.750	1.75	0.453	6	A
	-2.50"-A0.75"-LN12-08C	2.50	0.750	1.75	0.453	8	A
	-3.00"-A1.00"-LN12-07C	3.00	1.000	2.00	0.453	7	A
	-3.00"-A1.00"-LN12-10C	3.00	1.000	2.00	0.453	10	A
	-4.00"-B1.25"-LN12-09C	4.00	1.250	2.00	0.453	9	B
	-4.00"-B1.25"-LN12-13C	4.00	1.250	2.00	0.453	13	B
	-5.00"-B1.50"-LN12-11C	5.00	1.500	2.50	0.453	11	B
	-5.00"-B1.50"-LN12-16C	5.00	1.500	2.50	0.453	16	B

D

Square shoulder milling tools

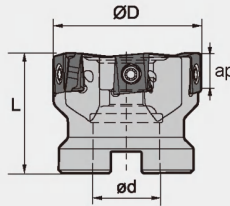
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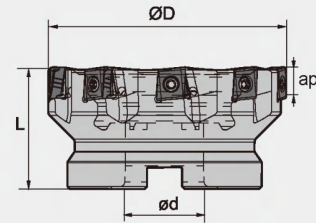
EMP09



A type of mounting



B type of mounting



Specification of tools

Type		Dimensions(inch)					Mounting type
		ØD	ød	L	apmax	Z (Number of teeth)	
EMP09	-2.00"-A0.75"-LN16-04C	2.00	0.75	1.75	0.591	4	A
	-2.00"-A0.75"-LN16-05C	2.00	0.75	1.75	0.591	5	A
	-2.50"-A0.75"-LN16-05C	2.50	0.75	1.75	0.591	5	A
	-2.50"-A0.75"-LN16-06C	2.50	0.75	1.75	0.591	6	A
	-3.00"-A1.00"-LN16-06C	3.00	1.00	2.00	0.591	6	A
	-3.00"-A1.00"-LN16-07C	3.00	1.00	2.00	0.591	7	A
	-4.00"-B1.25"-LN16-08C	4.00	1.25	2.00	0.591	8	B
	-4.00"-B1.25"-LN16-10C	4.00	1.25	2.00	0.591	10	B
	-5.00"-B1.50"-LN16-10C	5.00	1.50	2.50	0.591	10	B
	-5.00"-B1.50"-LN16-13C	5.00	1.50	2.50	0.591	13	B
	-6.00"-B1.50"-LN16-12C	6.00	1.50	2.50	0.591	12	B
	-6.00"-B1.50"-LN16-16C	6.00	1.50	2.50	0.591	16	B

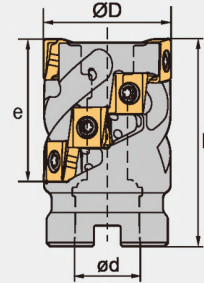
Spare parts

Diameter ØD	Insert specification	Screw	Wrench	Sketch of installation
Ø1.50"~Ø3.00"	LNKT0804□□-GM/GL	I60M3×7	WT10IS	
Ø1.50"~Ø5.00"	LNKT1206□□-GM/GL	I60M4×12	WT15IS	
Ø2.00"~Ø6.00"	LNKT1607□□-GM/GL	I60M5×13	WT20IS	

Square shoulder milling tools **Kr:90°**





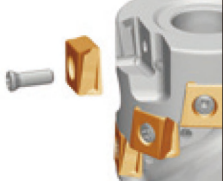
EMP09 **P M K S**



Specification of tools

Type		Dimensions(inch)					Z (Number of teeth)	Insert Quality
		ØD	ød	L	e			
EMP09	-1.50"×1.70"-A0.625"-LN12-02C	1.25	0.625	2.50	1.70	2	8	
	-2.00"×1.70"-A0.75"-LN12-03C	2.00	0.750	2.75	1.70	3	12	
	-2.50"×1.70"-A1.00"-LN12-04C	2.50	1.000	2.75	1.70	4	16	
	-3.00"×1.70"-A1.00"-LN12-05C	3.00	1.000	2.75	1.70	5	20	

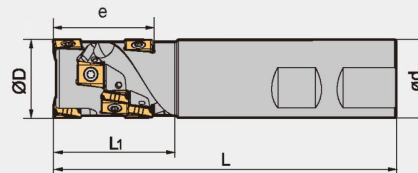
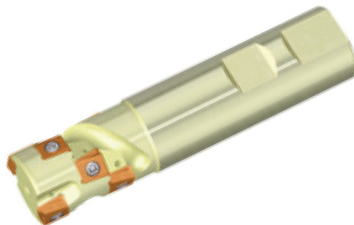
Spare parts

Diameter ØD	Insert specification	Screw	Wrench	Sketch of installation
				
Ø1.50"×1.70"~Ø3.00"×1.70"	LNKT1206□□-GM/GL	I60M4×12	WT15IS	

Square shoulder milling tools **Kr:90°**



EMP09



Specification of tools

Type		Dimensions(inch)						Z (Number of teeth)	Insert Quality
		ØD	ød	L	L ₁	e			
EMP09	-1.00"×1.215"-XP1.00"-LN08-02C	1.00	1.00	4.0	1.50	1.215	2	8	
	-1.25"×1.5"-XP1.25"-LN08-03C	1.25	1.25	4.5	1.75	1.500	3	15	

Spare parts

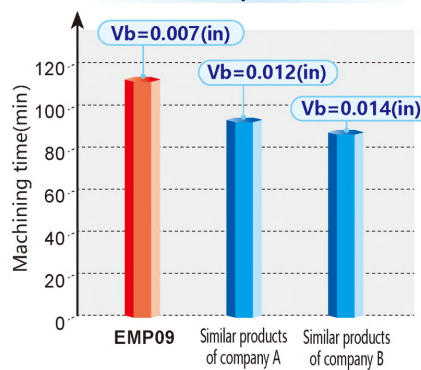
Diameter ØD	Insert specification	Screw	Wrench	Sketch of installation
Ø1.00"×1.25"~Ø1.25"×1.50"	LNKT0804□□-GM/GL	I60M3×7	WT10IS	

Case for EMP09

Long service life

Workpiece material: 45#
 Hardness: 175-190 (HB)
 Machine tool: Planer milling machine
 Cooling method: none
 Operation: square shoulder milling
 Tool: EMP09-2.0"-A0.75"-LN12-05C
 Insert: LNKT120608PNR-GM/YB9320
 Cutting data: $V=850\text{SFPM}$, $A_p=0.315\text{in}$, $A_e=0.079\text{in}$, $f_z=0.008\text{IPT}$

Tool life comparison chart



Result: The machining life of our LNKT12 (YB9320) is about 1.3 times that of similar products of Company A, 1.4 times of that of similar products of Company B. The tool has excellent wear resistance and long service life.

Superior surface quality

Workpiece material: NAK80
 Hardness: HRC(33-37)
 Machine tool: Planer milling machine
 Cooling method: none
 Operation: square shoulder milling
 Tool: EMP09-2.0"-A0.75"-LN12-05C
 Insert: LNKT120608PNR-GM (YB9320)
 Similar products of company A
 Cutting data: $V_c=780\text{SFPM}$, $A_p=0.315\text{in}$, $A_e=0.079\text{in}$, $f_z=0.008\text{IPT}$

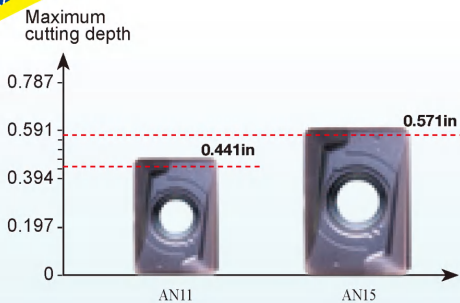


Results: EMP09 series vertical milling cutters have high precision, good surface quality, no obvious tool marks in the contours, and the runout value of square shoulders are better than those of similar products of Company A.

Kr:90°

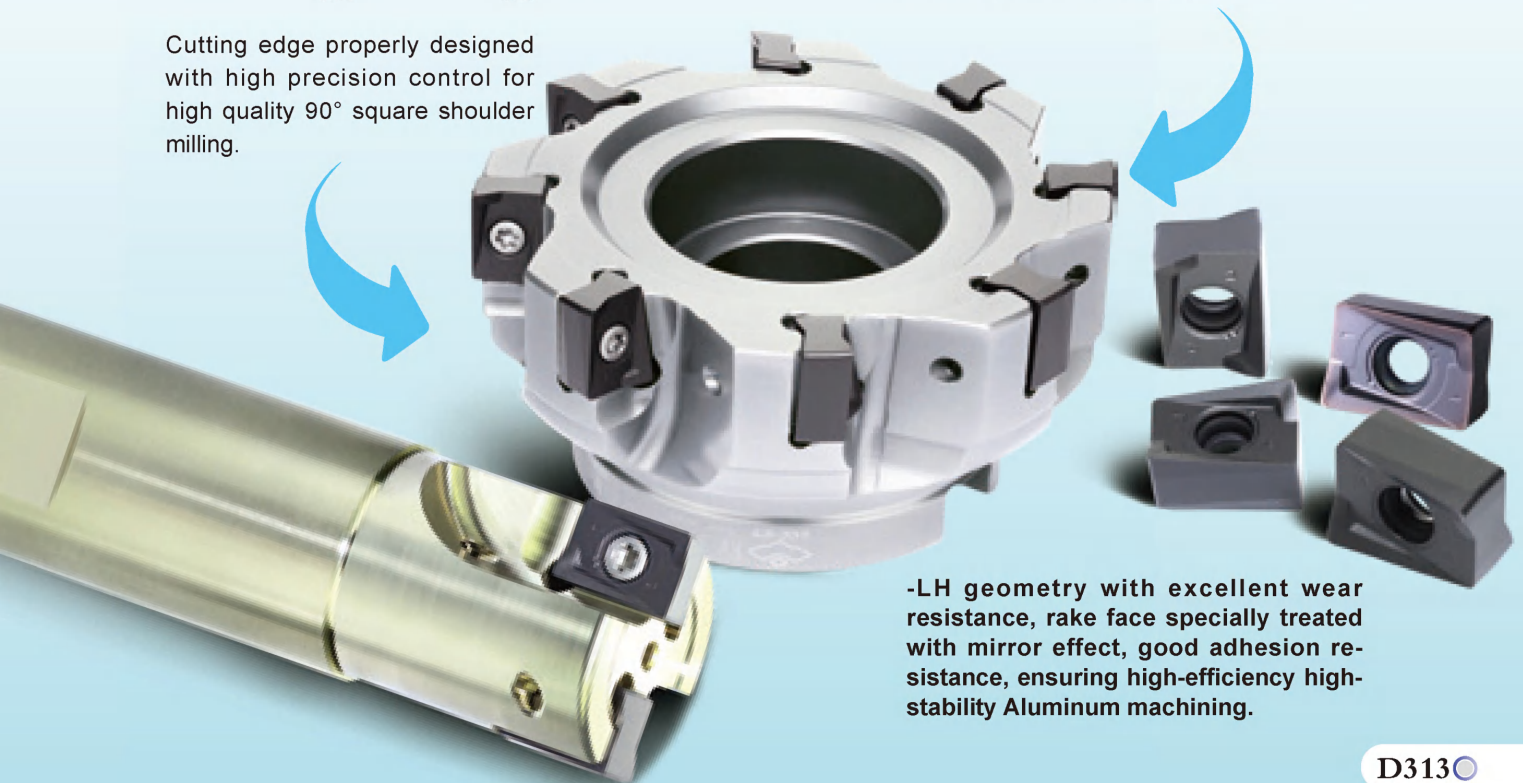
**Achieving high quality
90° square shoulder milling**

EMP13 Series Square Shoulder Mills



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

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



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

Square shoulder milling tools

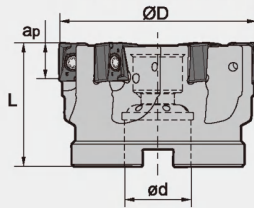
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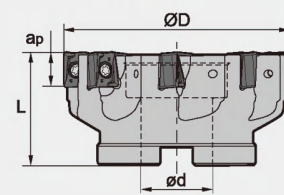
EMP13



A type of mounting






B type of mounting



Specification of tools

Type		Dimensions (inch)					
		ØD	ød	L	ap _{max}	Z (Number of teeth)	Mounting type
EMP13	-2.00"-A0.75"-AN11-06C	2.00	0.75	1.75	0.441	6	A
	-2.50"-A0.75"-AN11-07C	2.50	0.75	1.75	0.441	7	A
	-3.00"-A1.00"-AN11-09C	3.00	1.00	2.00	0.441	9	A
	-4.00"-B1.50"-AN11-12	4.00	1.50	2.50	0.441	12	B
	-5.00"-B1.50"-AN11-14	5.00	1.50	2.50	0.441	14	B
	-6.00"-B2.00"-AN11-16	6.00	2.00	2.50	0.441	16	B
	-2.00"-A0.75"-AN15-04C	2.00	0.75	1.75	0.571	4	A
	-2.50"-A0.75"-AN15-05C	2.50	0.75	1.75	0.571	5	A
	-3.00"-A1.00"-AN15-06C	3.00	1.00	2.00	0.571	6	A
	-4.00"-B1.50"-AN15-08	4.00	1.50	2.50	0.571	8	B
	-5.00"-B1.50"-AN15-10	5.00	1.50	2.50	0.571	10	B
	-6.00"-B2.00"-AN15-12	6.00	2.00	2.50	0.571	12	B

Spare parts

Diameter ØD	Insert specification	Insert screw	Wrench	Sketch of installation
				
Ø2.00"~Ø6.00"	ANGX110504PNR-GM/LH	I60M3×9	WT09IS	
	ANGX110508PNR-GM/LH			
Ø2.00"~Ø6.00"	ANGX150608PNR-GM/LH	I60M4×12	WT15IS	
	ANGX150616PNR-GM/LH			

Square shoulder milling tools **Kr:90°**

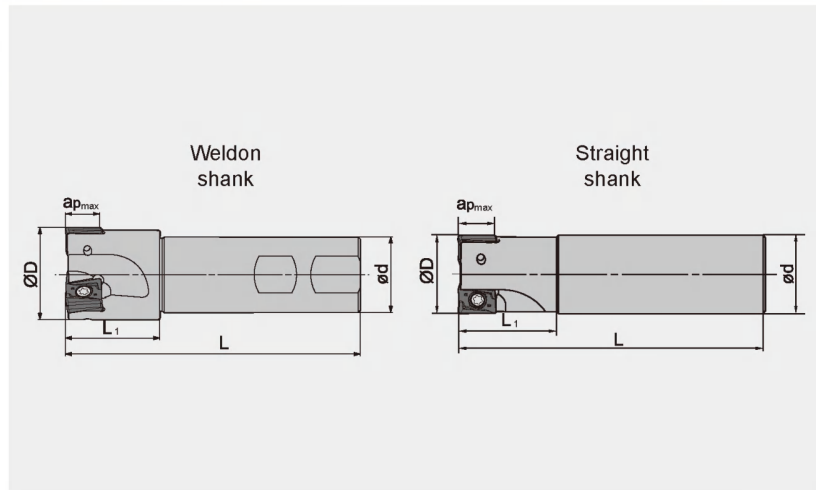


EMP13 **P M K N**



Straight shank




Weldon shank



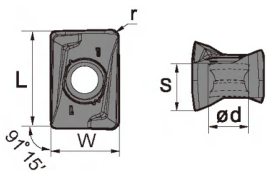
Specification of tools

Type		Dimensions (inch)					
		ØD	ød	L	L ₁	a _{pmax}	Z (Number of teeth)
EMP13 Weldon shank	-0.75"-XP0.75"-AN11-01C	0.75	0.75	4.00	1.75	0.441	1
	-1.00"-XP1.00"-AN11-02C	1.00	1.00	4.50	2.25	0.441	2
	-1.25"-XP1.25"-AN11-03C	1.25	1.25	5.00	2.75	0.441	3
	-1.50"-XP1.25"-AN11-04C	1.50	1.25	5.00	1.50	0.441	4
	-1.25"-XP1.25"-AN15-02C	1.25	1.25	5.00	2.75	0.571	2
	-1.50"-XP1.25"-AN15-03C	1.50	1.25	5.00	1.50	0.571	3
Straight shank	-0.75"-G0.75"-AN11-01C	0.75	0.75	4.00	1.25	0.441	1
	-1.00"-G1.00"-AN11-02C	1.00	1.00	4.50	1.50	0.441	2
	-1.25"-G1.25"-AN11-03C	1.25	1.25	5.00	1.50	0.441	3
	-1.50"-G1.25"-AN11-04C	1.50	1.25	5.00	1.75	0.441	4
	-1.25"-G1.25"-AN15-02C	1.25	1.25	5.00	1.50	0.571	2
	-1.50"-G1.25"-AN15-03C	1.50	1.25	5.00	1.75	0.571	3

Spare parts

Diameter ØD	Insert specification	Insert screw	Wrench	Sketch of installation
				
Ø0.75"~Ø1.50"	ANGX110504PNR-GM/LH	I60M3×9	WT09IS	
	ANGX110508PNR-GM/LH			
Ø0.75"~Ø1.50"	ANGX150608PNR-GM/LH	I60M4×12	WT15IS	
	ANGX150616PNR-GM/LH			

Selection of inserts



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Ferrite materials	S Heat-resistant steel
P Steel	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊
K Cast iron	😊	😊	😊	😊	😊
N Ferrite materials	😊	😊	😊	😊	😊
S Heat-resistant steel	😊	😊	😊	😊	😊

Insert shape	Type	Dimensions(inch)					Coated grade										Cermet	Cemented carbide							
		L	W	S	ød	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320			YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ANGX110504PNR-GM	0.467	0.331	0.224	0.138	0.016	●	●					●	●											
	ANGX110508PNR-GM	0.467	0.331	0.224	0.138	0.031	●	●	○				●	●											
	ANGX110520PNR-GM	0.467	0.331	0.224	0.138	0.079	●	●		●			●												
	ANGX150608PNR-GM	0.608	0.433	0.287	0.173	0.031	●	●	○				●	●											
	ANGX150616PNR-GM	0.608	0.433	0.287	0.173	0.063	●	●					●	●											
	ANGX150620PNR-GM	0.608	0.433	0.287	0.173	0.079			●	●			●												
	ANGX110502PNR-LH	0.467	0.331	0.224	0.138	0.008																	●		
	ANGX110504PNR-LH	0.467	0.331	0.224	0.138	0.016																	●		
	ANGX150608PNR-LH	0.608	0.433	0.287	0.173	0.031																	●		

● Recommended grade ○ Produce according to order

Recommended cutting parameters

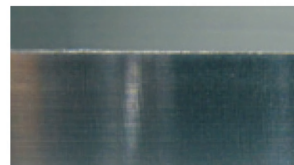
Workpiece material	Hardness HB	Grade	Cutting data		
			V(SFPM)	f(IPT)	a _{pmax} (in)
P Low-carbon steel	≤ 180	YBM253 YBG205 YB9320	900(700-1100)	0.01(0.004-0.016)	0.441(AN11) 0.571(AN15)
		YBM253 YBG205 YB9320	800(600-1000)	0.008(0.004-0.016)	
M Stainless steel	≤ 270	YBG205 YB9320	490(410-880)	0.004(0.003-0.006)	
		YBM253	450(320-820)		
K Cast iron	180-260	YBD152 YBD252	880(500-1000) 700(400-1000)	0.01(0.004-0.016) 0.008(0.004-0.012)	
		N Aluminium alloy	YD101	-LH	
1000-	0.008(0.003-0.016)				

Case for EMP13

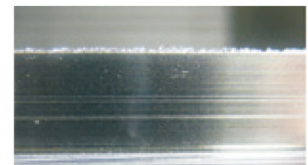
(Machining quality)

Workpiece material: NAK80(HRC36)
 Tool: EMP13-1.25"-G1.25"-AN15-02C
 Insert: ANGX150608PNR-GM/YBG205
 Cutting data: V_c=700SFPM, f_z=0.004IPT, a_p=0.5inch,
 a_e=0.4inch
 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.

EMP14 aluminium milling system

Precisely 90° for shoulder milling operations

YOUR BENEFITS

- Shoulder milling at precisely 90°
- Wide assortment of nose radii available to choose from (0.008" to 0.197")
- Ideal choice for the aerospace industry
- Highly polished, precision-ground inserts for top-quality surfaces
- New chip space design for optimum chip removal



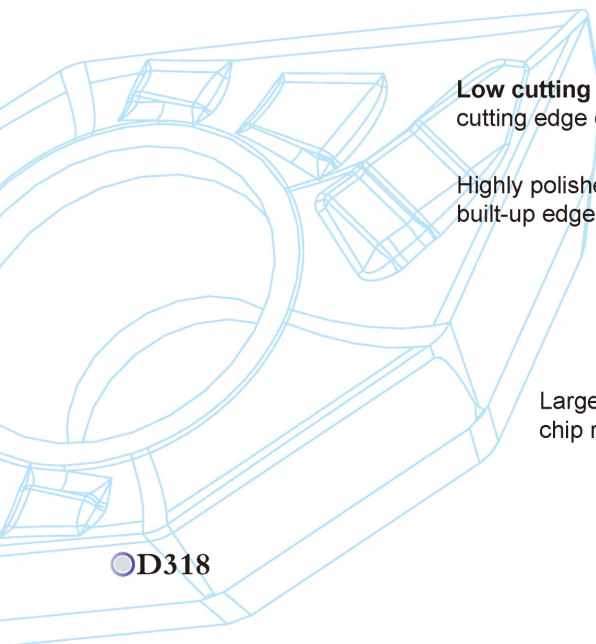
Precision insert seat with $Kr:90^\circ$

Large chip spaces for optimum chip removal

Available as an end mill, indexable head or shell-type milling cutter

Diameter range 1.25"-4.00"

EMP14-2.00"-A0.75"-VP22-04C



Low cutting forces thanks to positive cutting edge design

Highly polished insert reduces formation of built-up edges

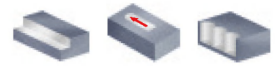
Precision-ground insert

Large chip groove for controlled chip removal



VPGT220530-LP YD101

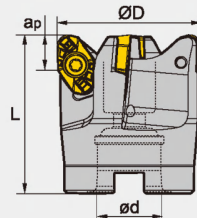
Square shoulder milling tools **Kr:90°**



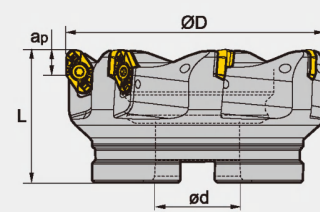
EMP14 N



A type of mounting





B type of mounting



Specification of tools

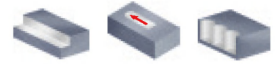
Type		Dimensions (inch)					Insert
		ØD	ød	L	ap _{max}	Z (Number of teeth)	
EMP14	-2.00"-A0.75"-VP22-04CA	2.00	0.75	1.75	0.40	4	VPGT220502 VPGT220505 VPGT220508
	-2.50"-A0.75"-VP22-04CA	2.50	0.75	1.75	0.40	4	VPGT220510 VPGT220515
	-3.00"-A1.00"-VP22-05CA	3.00	1.00	2.00	0.40	5	VPGT220520 VPGT220525
	-4.00"-A1.25"-VP22-06CA	4.00	1.25	2.50	0.40	6	VPGT220530 VPGT220532
	-2.00"-A0.75"-VP22-04C	2.00	0.75	1.75	0.40	4	VPGT220540 VPGT220550
	-2.50"-A0.75"-VP22-04C	2.50	0.75	1.75	0.40	4	
	-3.00"-A1.00"-VP22-05C	3.00	1.00	2.00	0.40	5	
	-4.00"-A1.25"-VP22-06C	4.00	1.25	2.50	0.40	6	

Spare parts

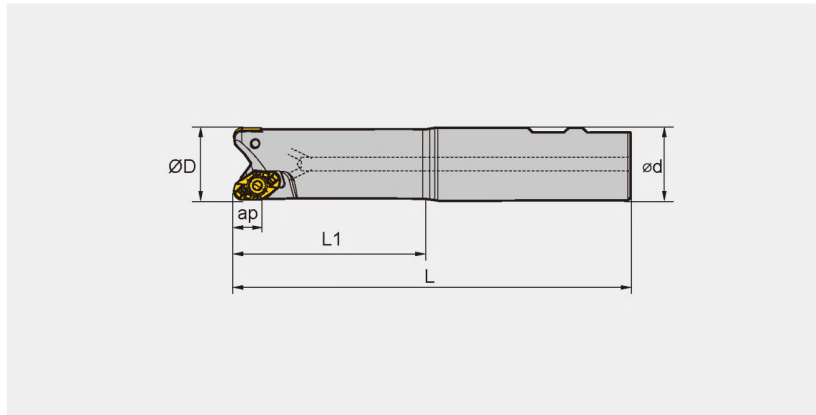
Diameter ØD	Insert specification	Insert screw	Wrench	Sketch of installation		
					Ø2.00"~Ø4.00"	VPGT□□□□-LP

Square shoulder milling tools

Kr:90°





EMP14 N



Specification of tools

Type		Dimensions (inch)						Z (Number of teeth)	Insert
		ØD	ød	L	L1	apmax			
EMP14	-1.25"-XP1.25"-VP22-02CA	1.25	1.25	5.00	1.50	0.40	2	VPGT220502- VPGT220532	
	-1.50"-XP1.50"-VP22-03CA	1.50	1.50	5.00	1.50	0.40	2		
	-1.50"-XP1.25"-VP22-03CA	1.50	1.25	5.00	1.50	0.40	2		
	-1.25"-XP1.25"-VP22-02C	1.25	1.25	5.00	1.50	0.40	2	VPGT220540- VPGT220550	
	-1.50"-XP1.50"-VP22-03C	1.50	1.50	5.00	1.50	0.40	2		
	-1.50"-XP1.25"-VP22-03C	1.50	1.25	5.00	1.50	0.40	2		

Spare parts

Diameter ØD	Insert specification	Insert screw	Wrench	Sketch of installation
				
Ø1.25"~Ø1.50"	VPGT□□□□-LP	I60M5×11	WT20IT	