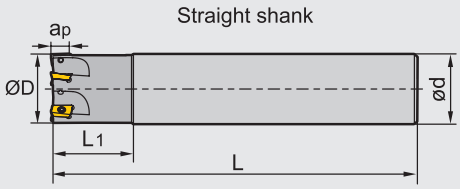
Square shoulder milling tools Kr:90°

EMP01

P M K N S



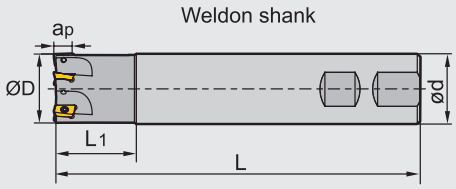
Specification of tools

Type		Dimensions(inch)					
		ØD	ød	L_1	L	$a_p$max	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

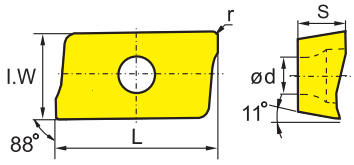
Type		Dimensions(inch)					
		ØD	ød	L_1	L	$a_p$max	Z (Number of teeth)
EMP01 Weldon	**-0.50"-XP0.625"-AP11-01**	0.500	0.625	1.25	3.50	0.433	1
	-0.625"-XP0.625"-AP11-02	0.625	0.625	1.25	3.50	0.433	2
	-0.75"-XP0.75"-AP11-02	0.750	0.750	1.75	4.00	0.433	2
	-0.75"-XP0.75"-AP11-03	0.750	0.750	1.75	4.00	0.433	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

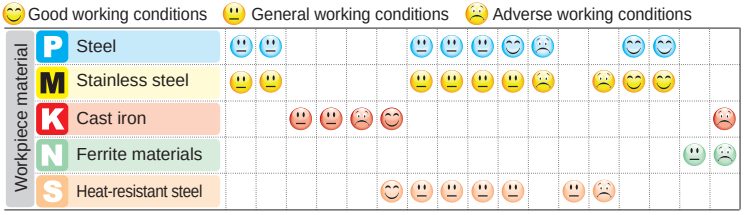
Spare parts

Diameter ØD	Insert specifrication	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	

D

Selection of inserts





Insert shape	Type	Dimensions(inch)					Coated grade													Cermet		Cemented carbide	
		L	I.W	S	ød	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT11T304-APF	0.482	0.256	0.142	0.110	0.016	●	●								●							
	APKT11T308-APF	0.482	0.256	0.142	0.110	0.031	●	●								●		○	○				
	APKT160408-APF	0.704	0.367	0.227	0.173	0.031	●	●								●		○	○				
	APKT11T304-APM	0.482	0.256	0.142	0.110	0.016		●	●	○						●							
	APKT11T308-APM	0.482	0.256	0.142	0.110	0.031		●		○						●		○	○				
	APKT11T312-APM	0.482	0.256	0.142	0.110	0.047		●	●							●							
	APKT11T316-APM	0.482	0.256	0.142	0.110	0.063			●							●							
	APKT11T320-APM	0.482	0.256	0.142	0.110	0.079		●								●							
	APKT160408-APM	0.704	0.367	0.227	0.173	0.031		●	●	○						●		○	○				
	APKT160416-APM	0.704	0.367	0.227	0.173	0.063		●	●							●		○					
	APKT160420-APM	0.704	0.367	0.227	0.173	0.079			●							●							
	APKT160424-APM	0.704	0.367	0.227	0.173	0.094										●							
	APKT160430-APM	0.704	0.367	0.227	0.173	0.118										●							
	APKT11T304-ALH	0.482	0.256	0.142	0.110	0.016																●	○
	APKT11T308-ALH	0.482	0.256	0.142	0.110	0.031																●	○
	APKT160408-ALH	0.704	0.367	0.227	0.173	0.031																●	○

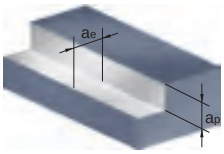
● Recommended grade ○ Produce according to order

D

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



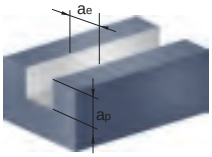
Recommended cutting parameters

(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					-ALH		
	Aluminium alloy	--	YD101	1000-	0.008 (0.03-0.016)		⩽0.5D
			YD201	1000-	0.008 (0.03-0.016)		⩽0.5D

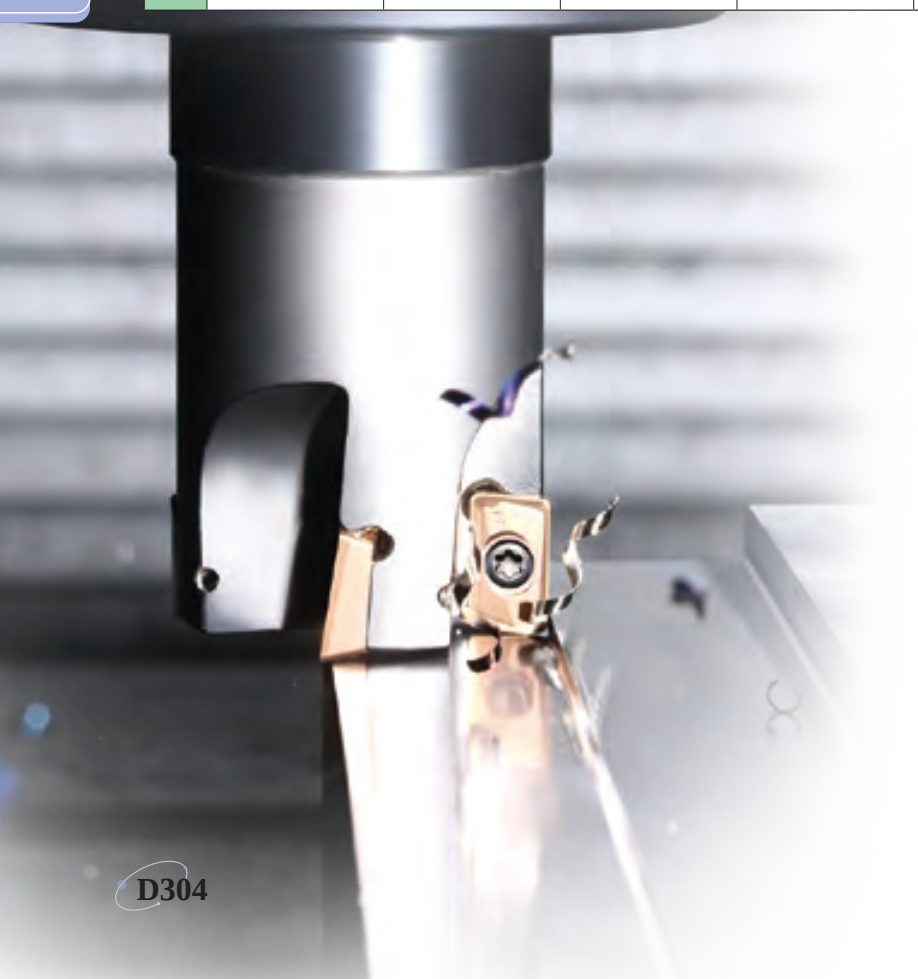
D

2 Slot milling

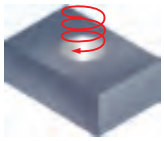


Recommended cutting parameters (D: Diameter)

Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V(SFPM)	f(IPT)		a_e(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)	D
			YBM253	490 (420-690)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	D
	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)	D
			YBM253	450 (360-650)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	D
	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)	D
			YBM253	420 (360-590)	0.004 (0.003-0.006)	0.006 (0.004-0.01)	D
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)			D
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)	D
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					-ALH		
	Aluminium alloy	--	YD101	1000-	0.008 (0.003-0.012)		D
			YD201	1000-	0.008 (0.003-0.012)		D

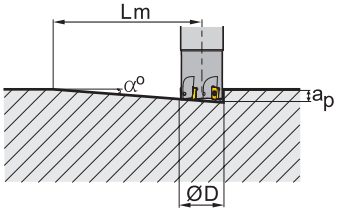


3 Ramp milling, helical interpolation milling



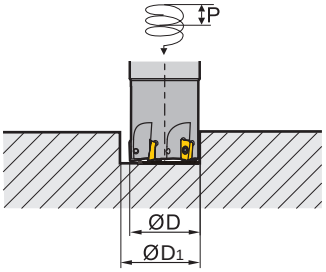

Recommended cutting parameters (D: Diameter)

● Ramp milling



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

● Helical interpolation milling



$tg\alpha = \frac{P}{\pi D_1}$ (α: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 $ØD_1$(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 $ØD_1$(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

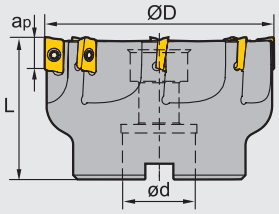
Note: For cutting speed and feed rate per tooth, see square shoulder milling.

Square shoulder milling tools Kr:90°

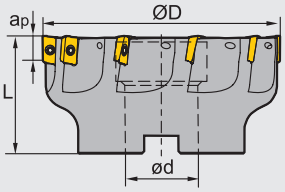
EMP02

P M K N S

A type of mounting



B type of mounting



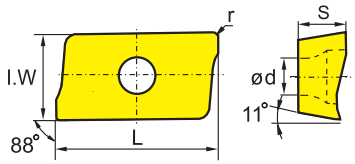
Specification of tools

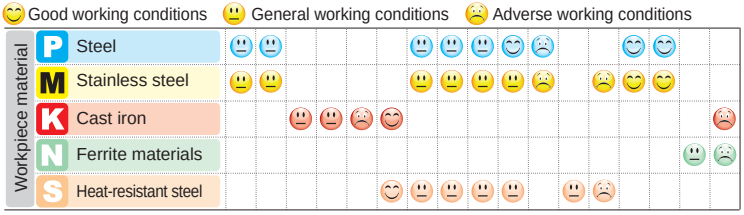
Type		Dimensions(inch)					
		ØD	ød	L	ap	Z (Number of teeth)	Mounting type
EMP02	**-2.00"-A0.75"-AP11-06**	2.00	0.75	1.50	0.433	6	A
	-2.50"-A0.75"-AP11-08	2.50	0.75	1.50	0.433	8	A
	-3.00"-A1.00"-AP11-08	3.00	1.00	2.00	0.433	8	A
	-4.00"-B1.25"-AP11-10	4.00	1.25	2.00	0.433	10	B
	-2.00"-A0.75"-AP16-05	2.00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

Selection of inserts





Insert shape	Type	Dimensions(inch)					Coated grade												Cermet		Cemented carbide	
		L	I.W	S	ød	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT11T304-APF	0.482	0.256	0.142	0.110	0.016	●	●								●							
	APKT11T308-APF	0.482	0.256	0.142	0.110	0.031	●	●								●		○	○				
	APKT160408-APF	0.704	0.367	0.227	0.173	0.031	●									●		○	○				
	APKT11T304-APM	0.482	0.256	0.142	0.110	0.016		●								●							
	APKT11T308-APM	0.482	0.256	0.142	0.110	0.031		●	●							●		○	○				
	APKT11T312-APM	0.482	0.256	0.142	0.110	0.047			●							●							
	APKT11T316-APM	0.482	0.256	0.142	0.110	0.063										●							
	APKT11T320-APM	0.482	0.256	0.142	0.110	0.079		●								●							
	APKT160408-APM	0.704	0.367	0.227	0.173	0.031		●	●							●		○	○				
	APKT160416-APM	0.704	0.367	0.227	0.173	0.063		●	●							●		○					
	APKT160420-APM	0.704	0.367	0.227	0.173	0.079			●							●							
	APKT160424-APM	0.704	0.367	0.227	0.173	0.094										●							
	APKT160430-APM	0.704	0.367	0.227	0.173	0.118										●							
	APKT11T304-ALH	0.482	0.256	0.142	0.110	0.016																●	○
	APKT11T308-ALH	0.482	0.256	0.142	0.110	0.031																●	○
	APKT160408-ALH	0.704	0.367	0.227	0.173	0.031																●	○

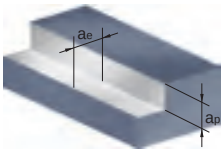
● Recommended grade ○ Produce according to order

D

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)

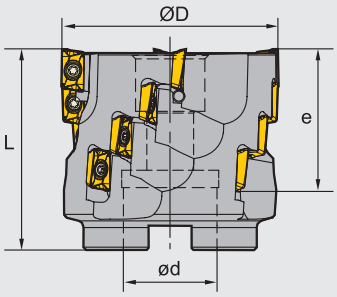
Workpiece material		Hardness HB	Insert grade	Cutting parameters			
				V(SFPM)	f(IPT)		ae(inch)
					-APF	-APM	
P	Low-carbon steel, Soft steel	⩽180	YBC302	1000 (750-1300)	0.004 (0.003-0.008)	--	⩽0.5D
			YB9320	1000 (650-1300)	0.004 (0.003-0.008)	0.008 (0.004-0.012)	
			YBM253	950 (1000-1100)	0.004 (0.003-0.008)	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°

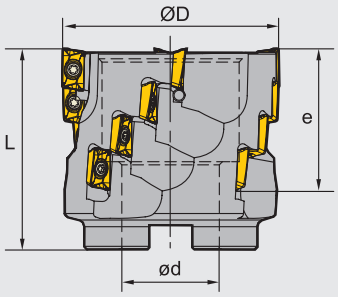
EMP03

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

D

Spare parts

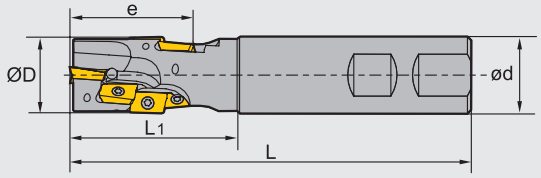
Diameter ØD	Insert specifrication	Inserts screw	Wrench	Sketch of installation
				
Ø2.00″~Ø4.00″	APKT11□□□□-APF/APM/ALH	I60M2.5×6.5T	WT08IS	

Square shoulder milling tools Kr:90°

EMP04

P M K N S

Weldon shank



Specification of tools

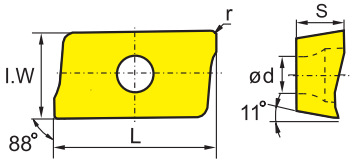
Type		Dimensions(inch)						
		ØD	ød	L1	L	e	Z (Number of teeth)	Inserts total
EMP04	**-0.75" -XP0.75" -AP11-01**	0.75	0.75	2.50	4.75	1.157	1	3
	-1.00" -XP1.00" -AP11-02	1.00	1.00	2.75	5.00	1.531	2	8
	-1.25" -XP1.25" -AP11-02	1.25	1.25	3.25	5.50	1.909	2	10
	-1.50" -XP1.50" -AP11-02	1.50	1.50	3.75	6.00	2.283	2	14

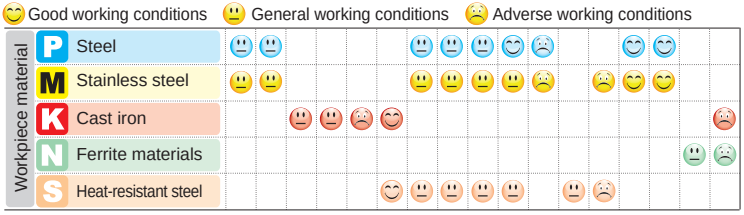
D

Spare parts

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

Selection of inserts





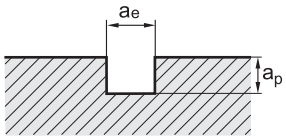
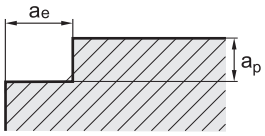
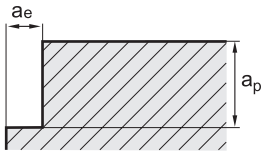
Insert shape	Type	Dimensions(inch)					Coated grade													Cermet		Cemented carbide	
		L	I.W	S	ød	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT11T304-APF	0.482	0.256	0.142	0.110	0.016	●	●								●							
	APKT11T308-APF	0.482	0.256	0.142	0.110	0.031	●	●								●		○	○				
	APKT11T304-APM	0.482	0.256	0.142	0.110	0.016		●								●							
	APKT11T308-APM	0.482	0.256	0.142	0.110	0.031		●	●							●		○	○				
	APKT11T312-APM	0.482	0.256	0.142	0.110	0.047			●							●							
	APKT11T316-APM	0.482	0.256	0.142	0.110	0.063										●							
	APKT11T320-APM	0.482	0.256	0.142	0.110	0.079		●								●							
	APKT11T304-ALH	0.482	0.256	0.142	0.110	0.016																●	○
	APKT11T308-ALH	0.482	0.256	0.142	0.110	0.031																●	○

● Recommended grade ○ Produce according to order

Chipbreaker selection

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

Recommended cutting parameters

Slot milling	Square shoulder milling	Deep square shoulder milling
		
a_e=D a_p≤0.5D	a_e≤0.5D a_p≤1.2D	a_e≤0.2D a_p<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					-ALH	
	Aluminium alloy	--	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)	

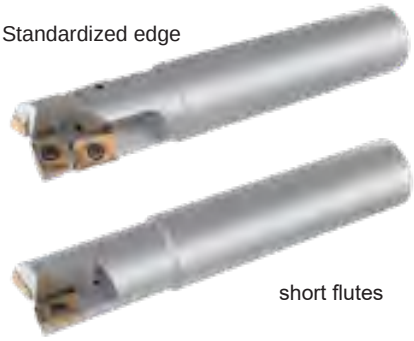
D

Square shoulder milling tools Kr:90°

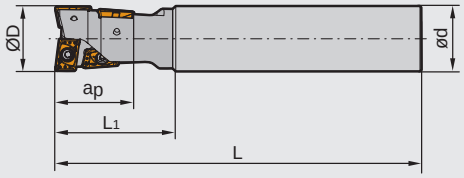
EMP05

P M K

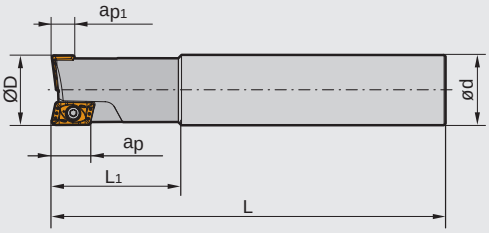
Standardized edge



short flutes



Standardized edge



short flutes

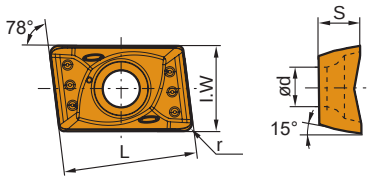
Specification of tools

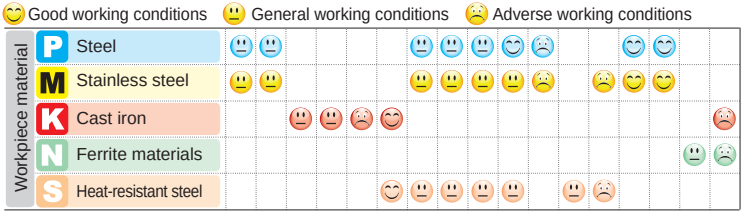
Type		Dimensions(inch)						Insert quantities			
		ØD	ød	L1	L	ap	ap1	End teeth	Quantity	Peripheral	Quantity
EMP05 Standardized edge	**-0.625″-G0.625″-AD08-C**	0.625	0.625	1.25	4.75	0.750	0.172	ADKT080308L-GM	1	ADKT090308R-GM	3
	-0.75″-G0.75″-AD10-C	0.75	0.75	1.375	5.00	0.937	0.219	ADKT100308L-GM	1	ADKT100308R-GM	3
	-1.00″-G1.00″-AD12-C	1.00	1.00	1.75	5.50	1.125	0.281	ADKT12T308L-GM	1	ADKT12T308R-GM	3
	-1.25″-G1.25″-AD15-C	1.25	1.25	2.00	6.00	1.313	0.344	ADKT160508L-GM	1	ADKT150508R-GM	3
	-1.50″-G1.25″-AD12-C	1.50	1.25	2.25	6.25	1.563	0.281	ADKT12T308L-GM	2	ADKT12T308R-GM	4
	-2.00″-G1.50″-AD15-C	2.00	1.50	2.75	6.50	1.938	0.344	ADKT160508L-GM	2	ADKT150508R-GM	4
short flutes	**-S0.625″-G0.625″-AD08-C**	0.625	0.625	1.25	4.75	0.750	0.172	ADKT080308L-GM	1	ADKT090308R-GM	1
	-S0.656″-G0.625″-AD08-C	0.656									
	-S0.781″-G0.781″-AD10-C	0.781	0.781	1.375	5.00	0.937	0.219	ADKT100308L-GM	1	ADKT100308R-GM	1
	-S0.844″-G0.781″-AD10-C	0.844									
	-S0.969″-G0.969″-AD10-C	0.969	0.969	1.75	5.50	1.125	0.281	ADKT12T308L-GM	1	ADKT12T308R-GM	1
	-S0.969″-G0.969″-AD12-C	0.969									
	-S1.250″-G1.250″-AD15-C	1.250	1.250	2.00	6.00	1.313	0.344	ADKT160508L-GM	1	ADKT150508R-GM	1
	-S1.563″-G1.250″-AD12-C	1.563	1.250	2.25	6.25	1.563	0.281	ADKT12T308L-GM	2	ADKT12T308R-GM	1
	-S1.938″-G1.563″-AD15-C	1.938	1.563	2.75	6.50	1.938	0.344	ADKT160508L-GM	2	ADKT150508R-GM	1

Spare parts

Insert	Screw	Отвертка			Sketch of installation
					
ADKT08□□L/R-GM ADKT09□□L/R-GM	I60M2.2×5.5	WT07IP	--	--	Standardized edge
ADKT10□□L/R-GM	I60M2.5×6.5T	WT08IP	--	--	
ADKT12□□L/R-GM	I60M3×7	WT09IP	--	--	
ADKT15□□L/R-GM	I43M4×8	--	WT15IS	--	short flutes
ADKT16□□L/R-GM	I43M4×8	--	WT15IS	--	

Selection of inserts



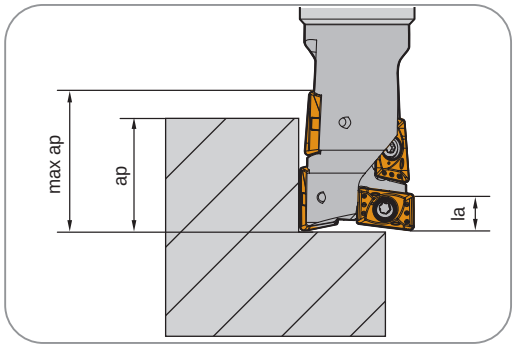


Insert shape	Type	Dimensions(inch)					Coated grade													Cermet		Cemented carbide	
		L	I.W	S	ød	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ADKT080308L-GM	0.313	0.210	0.118	0.095	0.0197									○	○			○				
	ADKT100308L-GM	0.394	0.254	0.126	0.110	0.0197									○	○			○				
	ADKT12T308L-GM	0.490	0.315	0.154	0.138	0.0197									○	○			○				
	ADKT160508L-GM	0.630	0.379	0.197	0.173	0.0197									○	○			○				
	ADKT090308R-GM	0.394	0.197	0.110	0.095	0.0315									○	○			○				
	ADKT100308R-GM	0.459	0.238	0.138	0.110	0.0315									○	○			○				
	ADKT12T308R-GM	0.591	0.321	0.154	0.139	0.0315									○	○			○				
	ADKT150508R-GM	0.671	0.347	0.195	0.177	0.0315									○	○			○				

● Recommended grade ○ Produce according to order

D

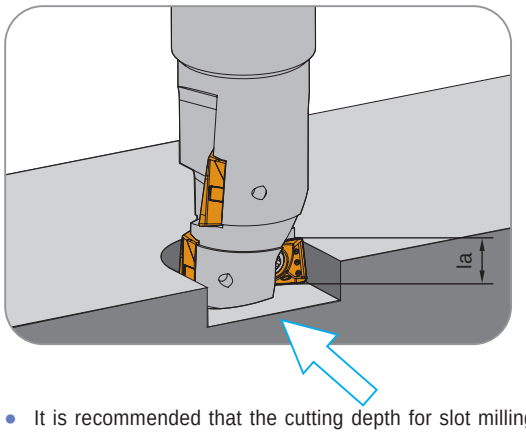
1 Square Shoulder Milling



- When the cutting depth is less than la, both the left and right inserts are involved in cutting
- When the cutting depth is larger than la, the right insert is involved in cutting for exceeding depth beyond la
- Generally, as the cutting depth increases, it is necessary to reduce the tool speed appropriately and feed rate
- The longer the overhang of the shank, the more likely it is to vibrate during machining. When vibration occurs, please reduce the cutting parameters appropriately until there is no visible vibration.

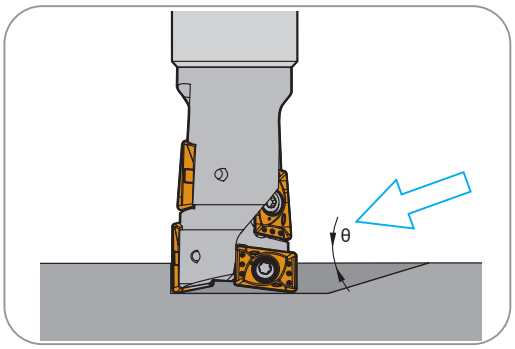
Diameter(inch)	Cutting length La(in)	Recommended axial depth ap(in)	Max axial depth ap(in)
Ø0.266, Ø0.661	~0.172	0.516~0.625	0.750
Ø0.781, Ø0.844	~0.219	0.594~0.703	0.937
Ø0.969, Ø1.031	~0.281	0.703~0.938	1.125
Ø1.250, Ø1.281	~0.344	0.828~1.094	1.313
Ø1.563	~0.281	0.828~0.906	1.563
Ø1.938	~0.344	0.828~1.094	1.938

2 Slot milling



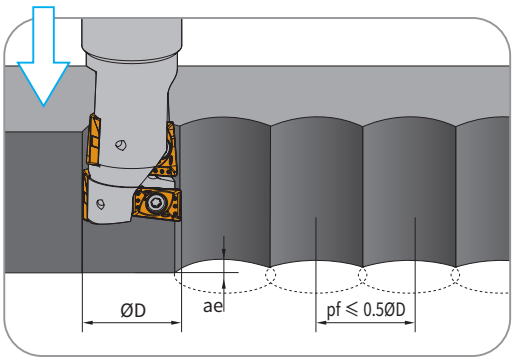
- It is recommended that the cutting depth for slot milling should not exceed la
- It is recommended that the feed for slot milling does not exceed 70% of that for shoulder milling with the same parameters.
- The longer the overhang of the shank, the more likely it is to vibrate during machining. When vibration occurs, please reduce the cutting parameters appropriately until there is no visible vibration

3 Ramp milling



- It is recommended that the ramp angle of normal P materials should not exceed 3° when conducting a ramp milling
- It is recommended that the feed for ramp milling does not exceed 70% of that for shoulder milling with the same parameters
- It is recommended that the ramp angle for P materials with a hardness of more than HRC45 should not exceed 1°
- The longer the overhang of the shank, the more likely it is to vibrate during machining. When vibration occurs, please reduce the cutting parameters appropriately until there is no visible vibration

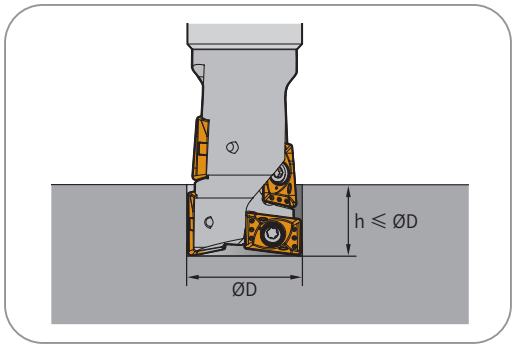
4 Plunging



- It is recommended that the feed of insert for plunging is 1.5-1.8 times that of drilling and milling
- The recommended radial feed ae refer to the following table when the stepover pf ≤ 0.5D

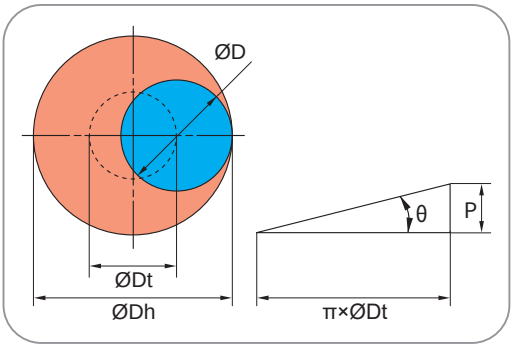
Diameter(inch)	Ø0.661	Ø0.781	Ø0.969	Ø1.250	Ø1.563	Ø1.938
Radial Depth of Cut ae	0.172	0.234	0.297	0.3441	0.297	0.344

5 Drilling and milling



- The drilling depth h should be less than half of the tool diameter ØD. In addition, materials with a hardness over HRC40 should be helical bored
- For chip removal, step feed should be performed
- Blast equipment removes cuts during processing
- Take appropriate safety measures during machining as chips may fly off in unexpected directions

6 Helical interpolation



- Referring to the machining parameters, feed is set 70% value. The outer diameter of helical interpolation milling is 1.2-1.8 times the diameter of the milling tool. The size of the inclination angle refers to the angle range of ramp milling; use compressed air to remove the chips in the hole

Tool centre path: ØDt=ØDh-ØDc
Feed per helix: P=π×ØDt×tanθ

1 Drilling and milling

Recommended cutting parameters

The drilling depth h should be less than half of the tool diameter ØD. Materials with a hardness over HRC40 should be helical bored

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(SFPM)	f(IPT)
P	Low-carbon steel, Soft steel	⩽180	YBG205H	590(394~722)	0.008(0.003~0.010)
P	High-carbon steel, Alloy steel	180-280	YBG205H	525(427~656)	0.006(0.003~0.008)
P	Alloy tool steel	280-350	YBG205H	459(394~590)	0.005(0.002~0.008)
M	Stainless steel	⩽270	YBG205H	262(164~492)	0.003(0.001~0.006)
K	Cast iron	180-250	YBG205H	492(328~722)	0.006(0.003~0.008)

2 Miliing

Recommended cutting parameters

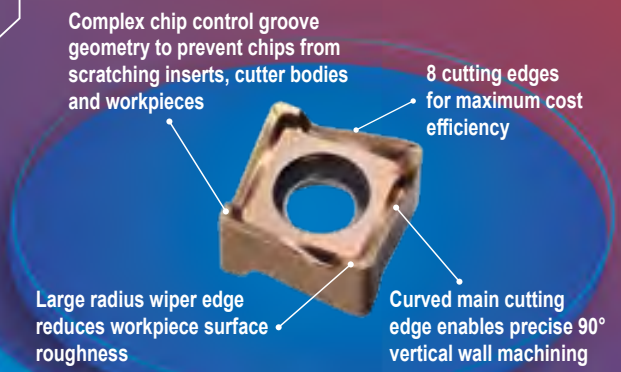
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(SFPM)	f(IPT)
P	Low-carbon steel, Soft steel	⩽180	YBG205H	623(459~820)	0.003(0.002~0.006)
P	High-carbon steel, Alloy steel	180-280	YBG205H	558(427~820)	0.003(0.002~0.006)
P	Alloy tool steel	280-350	YBG205H	492(394~590)	0.003(0.002~0.006)
M	Stainless steel	⩽270	YBG205H	394(262~623)	0.003(0.002~0.006)
K	Cast iron	180-250	YBG205H	394(262~689)	0.003(0.002~0.006)

EMP08 Series

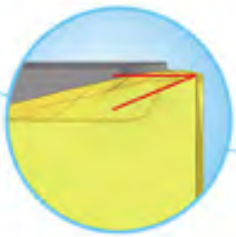
New-generation highly cost-effective general-purpose cutter for face milling and square shoulder milling

Larger open chip gullets

Stable clamping structure with tilted screws designed via simulation calculation



Large positive axial rake angle



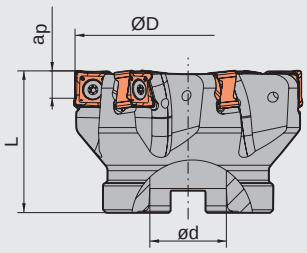
Large positive radial rake angle

Controlled chip shape and chip flow

Enhanced cutter stability, verified by finite element simulation

Square shoulder milling tools Kr:90°

EMP08



Specification of tools

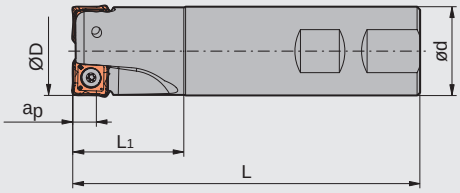
Type		Dimensions(inch)				
		ØD	ød	L	ap	Z (Number of teeth)
EMP08	**-1.25"-A0.625"-SN07-04C**	1.25	0.625	1.375	0.219	4
	-1.50"-A0.625"-SN07-05C	1.50	0.625	1.50	0.219	5
	-2.00"-A0.875"-SN07-06C	2.00	0.875	1.50	0.219	6
	-2.50"-A0.875"-SN07-07C	2.50	0.875	1.50	0.219	7
	-1.50"-A0.625"-SN07-06C	1.50	0.625	1.50	0.219	6
	-2.00"-A0.875"-SN07-08C	2.00	0.875	1.50	0.219	8
	-2.50"-A0.875"-SN07-10C	2.50	0.875	1.50	0.219	10
	-2.00"-A0.875"-SN12-04C	2.00	0.875	1.50	0.313	4
	-2.00"-A0.875"-SN12-05C	2.00	0.875	1.50	0.313	5
	-2.50"-A0.875"-SN12-05C	2.50	0.875	1.50	0.313	5
	-2.50"-A0.875"-SN12-06C	2.50	0.875	1.50	0.313	6
	-3.00"-A1.00"-SN12-06C	3.00	1.00	2.00	0.313	6
	-3.00"-A1.00"-SN12-08C	3.00	1.00	2.00	0.313	8
	-4.00"-A1.25"-SN12-08C	4.00	1.25	2.00	0.313	8
	-4.00"-A1.25"-SN12-10C	4.00	1.25	2.00	0.313	10
	-5.00"-B1.50"-SN12-10C	5.00	1.50	2.50	0.313	10
	-5.00"-B1.50"-SN12-12C	5.00	1.50	2.50	0.313	12
	-6.00"-C1.50"-SN12-12	6.00	1.50	2.50	0.313	12
	-6.00"-C1.50"-SN12-14	6.00	1.50	2.50	0.313	14
	-8.00"-C2.50"-SN12-14	8.00	2.50	2.50	0.313	14
	-8.00"-C2.50"-SN12-16	8.00	2.50	2.50	0.313	16

Spare parts

Insert	Insert screw	Отвертка			Sketch of installation
					
SNMY07□□PNR-□□	I60M2.5×7.4	WT07IP	WT07IS	--	
SNGY12□□PNR-□□	IRM4×10	WT15IP	WT15IS	--	

Square shoulder milling tools Kr:90°

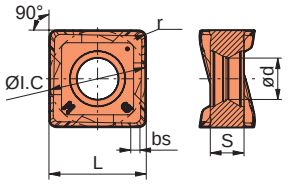
EMP08

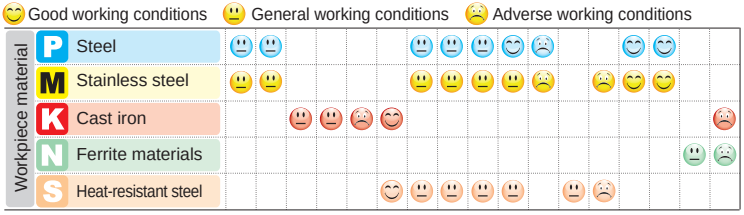


Specification of tools

Type		Dimensions (inch)					
		ØD	ød	L	L_1	a_p	Z (Number of teeth)
EMP08	**-0.75"-XP0.75"-SN07-02C**	0.75	0.75	4.00	1.25	0.219	2
	-1.00"-XP1.00"-SN07-03C	1.00	1.00	4.50	1.375	0.219	3
	-1.25"-XP1.25"-SN07-04C	1.25	1.25	5.00	1.50	0.219	4
	-1.50"-XP1.25"-SN07-05C	1.50	1.25	5.50	2.00	0.219	5
	-1.00"-XP1.00"-SN07-04C	1.00	1.00	4.50	1.375	0.219	4
	-1.25"-XP1.25"-SN07-05C	1.25	1.25	5.00	1.50	0.219	5
	-1.50"-XP1.25"-SN07-06C	1.50	1.25	5.50	2.00	0.219	6
	-1.25"-XP1.25"-SN12-02C	1.25	1.25	5.00	1.50	0.219	2
	-1.50"-XP1.25"-SN12-03C	1.50	1.25	5.00	1.75	0.219	3
	-1.50"-XP1.25"-SN12-04C	1.50	1.25	5.00	1.75	0.313	4

Selection of inserts





Insert shape	Type	Dimensions(inch)						Coated grade												Cermet		Cemented carbide	
		ØI.C	L	S	ød	bs	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNMY07T308PNR-GM	0.297	0.297	0.156	0.141	0.109	0.078		●	●						○	○			○				
	SNGY12T508PNR-GM	0.500	0.500	0.188	0.172	0.125	0.078		●	●						○	○			○				
	SNGY12T508PNR-GL	0.500	0.500	0.188	0.172	0.125	0.078		●	●						○	○			○				
	SNGY12T508PNR-GH	0.500	0.500	0.188	0.172	0.125	0.078		●	●						○	○			○				

● Recommended grade ○ Produce according to order

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(SFPM)	f(IPT)
P	Low-carbon steel, Soft steel	⩽180	YBM253 YB9320	853(525~984)	0.012(0.004~0.014)
P	High-carbon steel, Alloy steel	180-280	YBM253 YB9320	787(525~787)	0.010(0.004~0.014)
P	Alloy tool steel	280-350	YBM253 YB9320	656(394~787)	0.008(0.004~0.014)
M	Stainless steel	⩽270	YBM253 YB9320	590(328~755)	0.006(0.004~0.012)
K	Cast iron	180-250	YBD152 YBD252	722(459~820)	0.008(0.004~0.012)
S	High-temperature alloy	⩽400	YBS303	328(197~394)	0.006(0.004~0.010)

D

- 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

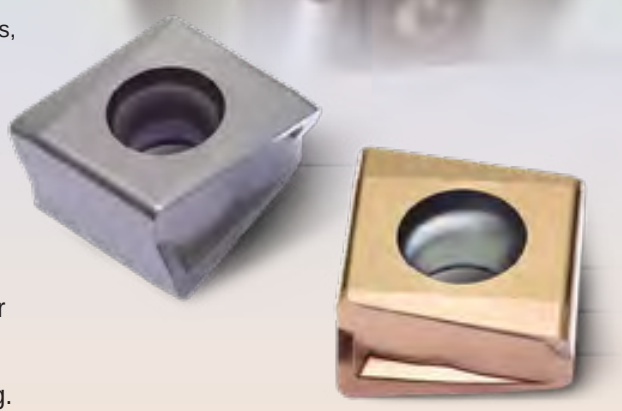
EMP09 Series Kr:90°

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.

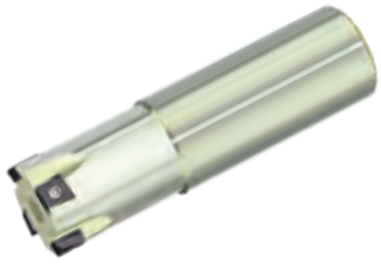


- High strength positive cutting edge angle for increased wear resistance and reduced cutting pressures.
- Helical cutting edge is designed to achieve smoother cutting.
- Highly versatile, ultra-smooth coating technology inhibits chip welding for longer tool life.
- Vertical mounting design, combined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

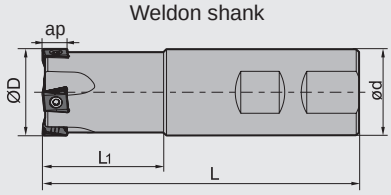
Square shoulder milling tools Kr:90°

EMP09

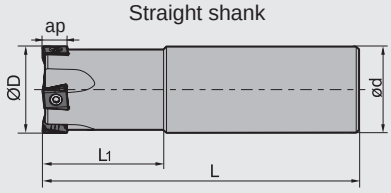
P M K S



Weldon shank



Straight shank



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

D

Spare parts

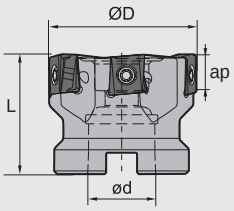
Diameter ØD	Insert specification	Screw	Wrench	Sketch of installation
				
Ø1.00"~Ø1.50"	LNKT0804☐☐-GM/GL	I60M3×7	WT10IS	
Ø1.50"	LNKT1206☐☐-GM/GL	I60M4×12	WT15IS	

Square shoulder milling tools Kr:90°

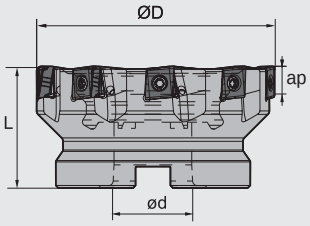
EMP09

P M K S

A type of mounting



B type of mounting



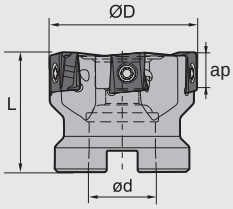
Specification of tools

Type		Dimensions(inch)					
		ØD	ød	L	a_{pmax}	Z (Number of teeth)	Mounting type
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

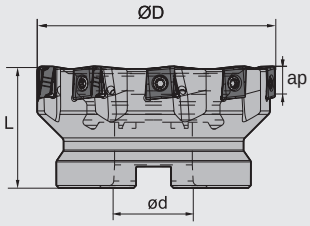
Square shoulder milling tools Kr:90°

EMP09

A type of mounting



B type of mounting



Specification of tools

Type		Dimensions(inch)					
		ØD	ød	L	a_{pmax}	Z (Number of teeth)	Mounting type
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

D

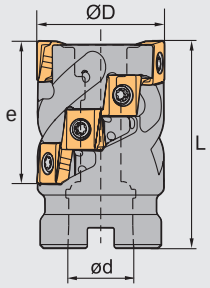
Spare parts

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)					
		ØD	ød	L	e	Z (Number of teeth)	Insert Quality
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

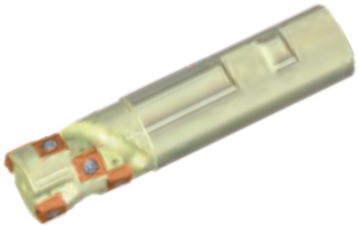
D

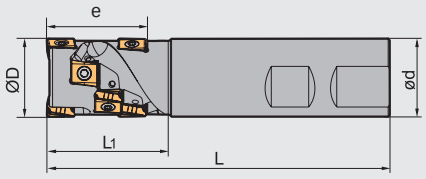
Spare parts

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

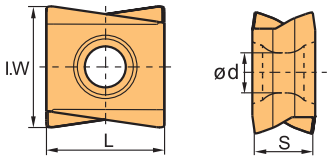
Type		Dimensions(inch)						
		ØD	ød	L	L_1	e	Z (Number of teeth)	Insert Quality
EMP09	**-1.00"×1.215"-XP1.00"-LN08-02C**	1.00	1.00	4.0	1.50	1.215	2	8
	-1.25"×1.5"-XP1.25"-LN08-03C	1.25	1.25	4.5	1.75	1.500	3	15

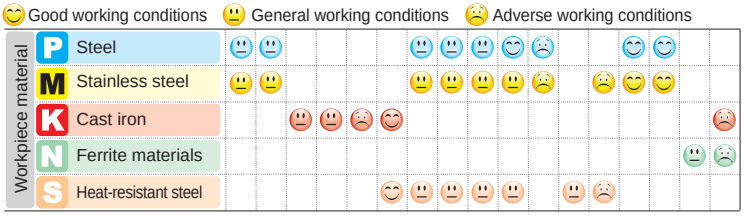
D

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	

Selection of inserts



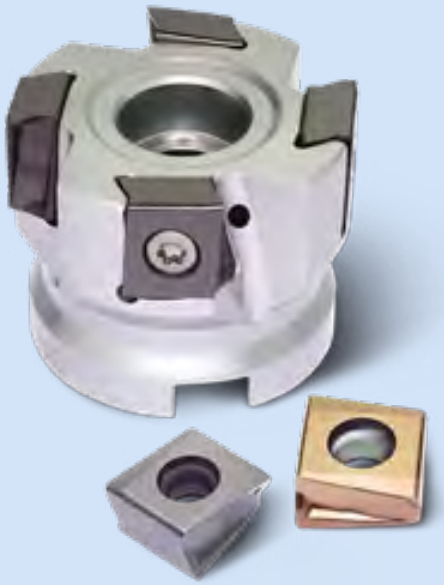


Insert shape	Type	Dimensions(inch)					Coated grade												Cermet		Cemented carbide	
		L	I.W	S	ød	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNKT080404PNR-GM	0.350	0.335	0.175	0.134	0.016		●	●	○	●				●	●							
	LNKT080408PNR-GM	0.350	0.335	0.175	0.134	0.031		●	●		●				●	●							
	LNKT080412PNR-GM	0.350	0.335	0.175	0.134	0.047		●	●		●					●							
	LNKT120608PNR-GM	0.500	0.512	0.266	0.173	0.031		●	●	○	●				●	●			●				
	LNKT120612PNR-GM	0.500	0.512	0.266	0.173	0.047		●	●		●					●							
	LNKT120616PNR-GM	0.500	0.512	0.266	0.173	0.063		●	●		●					●							
	LNKT120620PNR-GM	0.500	0.512	0.266	0.173	0.079		●	●		●					●							
	LNKT120624PNR-GM	0.500	0.512	0.266	0.173	0.095		●	●		●					●							
	LNKT160708PNR-GM	0.632	0.591	0.289	0.217	0.031		●	●	○	●				●	●			●				
	LNKT160712PNR-GM	0.632	0.591	0.289	0.217	0.047		●	●		●					●							
	LNKT160716PNR-GM	0.632	0.591	0.289	0.217	0.063		●	●		●					●							
	LNKT080404PNR-GL	0.350	0.335	0.175	0.134	0.016		○	○	○	○				●	○			●				
	LNKT120608PNR-GL	0.500	0.512	0.266	0.173	0.031		○	○	○	○				●	○			●				
	LNKT160708PNR-GL	0.632	0.591	0.289	0.217	0.031		○	○	○	○					○			●				

● Recommended grade ○ Produce according to order

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(SFPM)	f(IPT)
P	Low-carbon steel, Soft steel	≤180	YBM253	850 (520-980)	0.012 (0.004-0.014)
			YB9320 YBG205H	850 (520-980)	0.012 (0.004-0.014)
	High-carbon steel, Alloy steel	180-280	YBM253	750 (520-780)	0.001 (0.004-0.014)
			YB9320 YBG205H	750 (520-780)	0.001 (0.004-0.014)
	Alloy tool steel	280-350	YBM253	650 (380-750)	0.008 (0.004-0.014)
			YB9320 YBG205H	650 (380-750)	0.008 (0.004-0.014)
M	Stainless steel	≤270	YBM253	590 (320-750)	0.006 (0.004-0.012)
			YB9320 YBG205H	520 (350-750)	0.006 (0.004-0.012)
K	Cast iron	180-250	YBD152 YBD252	720 (450-820)	0.008 (0.004-0.012)
				720 (450-820)	0.008 (0.004-0.012)
				720 (450-820)	0.008 (0.004-0.012)
S	High-temperature alloy	≤400	YBS303	200(150-360)	0.006(0.004-0.01)

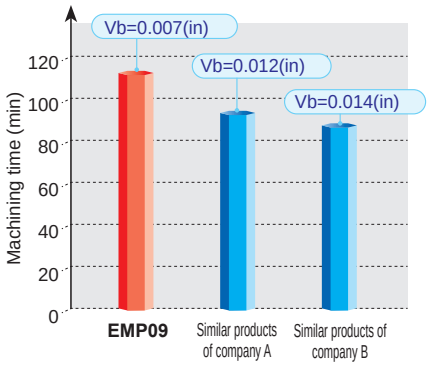


Case for EMP09

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=850SFPM, Ap=0.315in, Ae=0.079in, fz=0.008IPT

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.

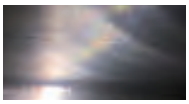
Superior surface quality

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: Vc=780SFPM, Ap=0.315in
Ae=0.079in, fz=0.008IPT

EMP09

No obvious tool mark

Similar products of company A



Slight step

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.

D

EMP10 Series

Vertically mounted high cost-efficiency general square shoulder milling cutter

Complex insert geometry supports layered square shoulder milling

Compound clearance angle delivers high cutting edge strength

Complex curved main cutting edge guarantees accurate 90° square shoulder profile

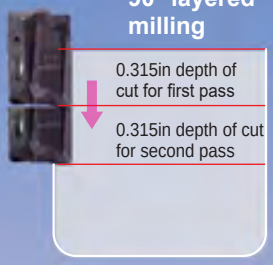
Precision ground end face and wiper edges

Eight cutting edges

④×2=8 edges

Positive inclination angle

90° layered milling



High reliability ▶▶▶▶

For cutters of the same diameter, this series features a thicker core compared to flat-back cutters, delivering higher tool body rigidity.

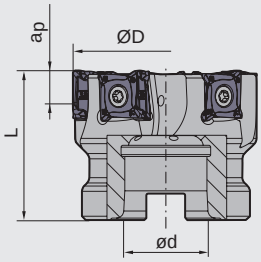
In the direction of the main cutting force, the thicker insert design enables it to withstand greater cutting loads.

Tangential insert clamping

Radial insert positioning

Square shoulder milling tools Kr:90°

EMP10



Specification of tools

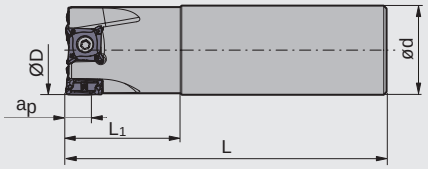
Type		Dimensions(inch)				
		ØD	ød	L	ap	Z (Number of teeth)
EMP10 Coarse pitch	**-1.50"-A0.625"-SO13-03C**	1.50	0.625	1.50	0.313	3
	-1.50"-A0.625"-SO13-04C	1.50	0.625	1.50	0.313	4
	-1.50"-A0.625"-SO13-05C	1.50	0.625	1.50	0.313	5
	-2.00"-A0.875"-SO13-04C	2.00	0.875	1.50	0.313	4
	-2.00"-A0.875"-SO13-05C	2.00	0.875	1.50	0.313	5
	-2.00"-A0.875"-SO13-06C	2.00	0.875	1.50	0.313	6
Close pitch	**-2.50"-A0.875"-SO13-06C**	2.50	0.875	1.50	0.313	6
	-2.50"-A0.875"-SO13-07C	2.50	0.875	1.50	0.313	7
	-2.50"-A0.875"-SO13-08C	2.50	0.875	1.50	0.313	8
	-3.00"-A1.00"-SO13-06C	3.00	1.00	2.00	0.313	6
	-3.00"-A1.00"-SO13-07C	3.00	1.00	2.00	0.313	7
	-3.00"-A1.00"-SO13-09C	3.00	1.00	2.00	0.313	9
	-4.00"-A1.25"-SO13-08C	4.00	1.25	2.00	0.313	8
	-4.00"-A1.25"-SO13-12C	4.00	1.25	2.00	0.313	12
Extra close pitch	**-5.00"-B1.50"-SO13-10**	5.00	1.50	2.50	0.313	10
	-5.00"-B1.50"-SO13-15	5.00	1.50	2.50	0.313	15
	-6.00"-C1.50"-SO13-12	6.00	1.50	2.50	0.313	12
	-6.00"-C1.50"-SO13-18	6.00	1.50	2.50	0.313	18

Spare parts

Insert	Insert screw	Отвертка			Sketch of installation
					
SOKX130608PNR-□□	I60M4×12	WT15IP	WT15IS	--	

Square shoulder milling tools Kr:90°

EMP10

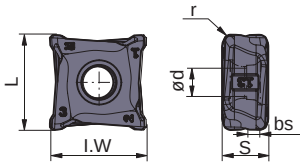


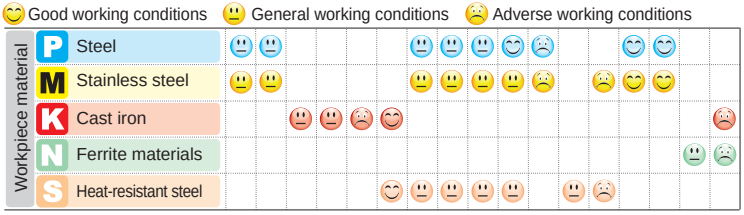
Specification of tools

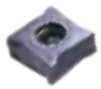
Type		Dimensions(inch)					
		ØD	ød	L	L_1	ap	Z (Number of teeth)
EMP10	**-1.25″-XP1.25″-SO13-03C**	1.25	1.25	4.50	1.50	0.313	3
	-1.25″-G1.25″-SO13-03C	1.25	1.25	4.50	1.50	0.313	3
	-1.50″-XP1.50″-SO13-04C	1.50	1.50	5.00	1.50	0.313	4
	-1.50″-G1.50″-SO13-04C	1.50	1.50	5.00	1.50	0.313	4

D

Selection of inserts





Insert shape	Type	Dimensions(inch)						Coated grade													Cermet		Cemented carbide	
		L	l.W	S	ød	bs	r	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SOKX130608PNR-GM	0.531	0.531	0.250	0.172	0.141	0.078		●			●				○	○							

● Recommended grade ○ Produce according to order

Recommended cutting parameters

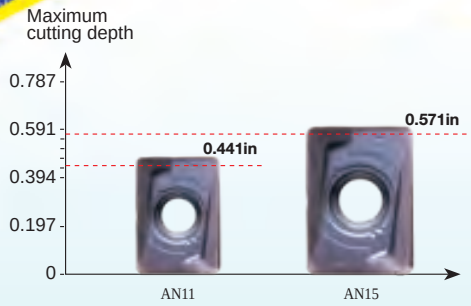
Workpiece material		Hardness HB	Insert grade	Cutting parameters	
				V(SFPM)	f(IPT)
P	Low-carbon steel, Soft steel	⩽180	YBM253 YB9320	853 (525 - 984)	0.012 (0.004 - 0.014)
	High-carbon steel, Alloy steel	180-280	YBM253 YB9320	787 (525 - 787)	0.010 (0.004 - 0.014)
	Alloy tool steel	280-350	YBM253 YB9320	656 (394 - 787)	0.008 (0.004 - 0.014)
M	Stainless steel	⩽270	YBM253 YB9320	590 (328 - 755)	0.006 (0.004 - 0.012)
K	Cast iron	180-250	YBD152 YBD252	722 (459 - 820)	0.008 (0.004 - 0.012)
S	Difficult-to-machine materials	⩽400	YBS303	328 (197 - 394)	0.006 (0.004 - 0.010)

D

Kr:90°

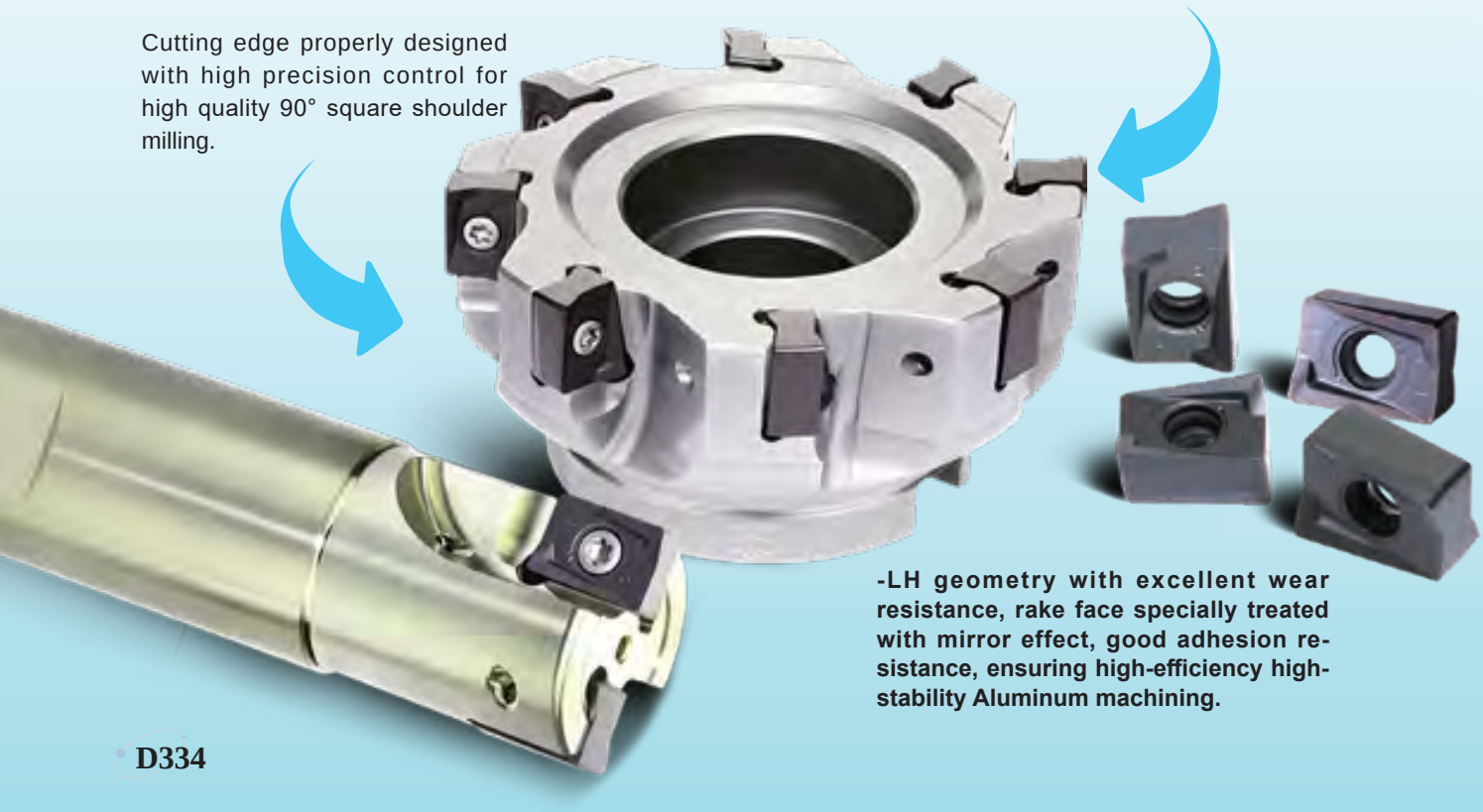
Achieving high quality 90° square shoulder milling

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.

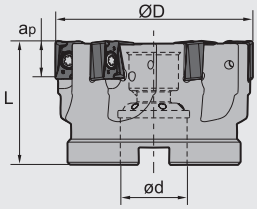


-LH geometry with excellent wear resistance, rake face specially treated with mirror effect, good adhesion resistance, ensuring high-efficiency high-stability Aluminum machining.

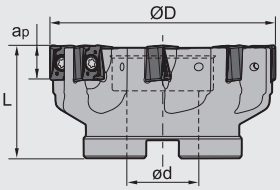
Square shoulder milling tools Kr:90°

EMP13

A type of mounting



B type of mounting



Specification of tools

Type		Dimensions (inch)					
		ØD	ød	L	$a_p$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

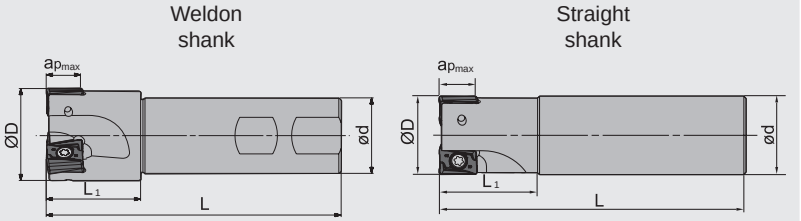
Diameter ØD	Insert specification	Insert screw	Wrench	Sketch of installation
				
Ø2.00"~Ø6.00"	ANGX110504PNR-GM/LH	I60M3×9	WT09IS	
	ANGX110508PNR-GM/LH			
Ø2.00"~Ø6.00"	ANGX150608PNR-GM/LH	I60M4×12	WT15IS	
	ANGX150616PNR-GM/LH			

Square shoulder milling tools Kr:90°

EMP13 P M K N

Straight shank

Weldon shank



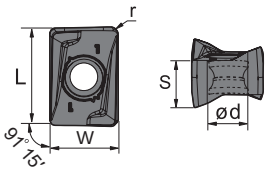
Specification of tools

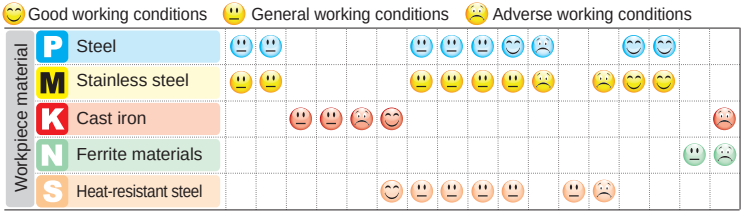
Type		Dimensions (inch)					
		ØD	ød	L	L_1	$a_p$max	Z (Number of teeth)
EMP13 Weldon shank	**-0.75″-XP0.75″-AN11-01C**	0.75	0.75	4.00	1.75	0.441	1
	-1.00″-XP1.00″-AN11-02C	1.00	1.00	4.50	2.25	0.441	2
	-1.25″-XP1.25″-AN11-03C	1.25	1.25	5.00	2.75	0.441	3
	-1.50″-XP1.25″-AN11-04C	1.50	1.25	5.00	1.50	0.441	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 ANGX110508PNR-GM/LH	I60M3×9	WT09IS	
Ø0.75"~Ø1.50"	ANGX150608PNR-GM/LH ANGX150616PNR-GM/LH	I60M4×12	WT15IS	

Selection of inserts





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

D

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)
P	Alloy steel	180-350	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)	
M	Stainless steel	≤270	YBM253	450(320-820)	0.004(0.003-0.006)	
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		
N	Aluminium alloy	--	YD101	1000-	0.008(0.003-0.016)	

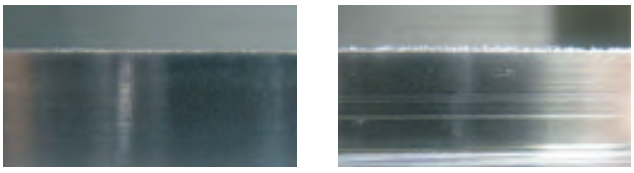
D

Case for EMP13

(Machining quality)

Workpiece material: NAK80(HRC36)
Tool: EMP13-1.25"-G1.25"-AN15-02C
Insert: ANGX150608PNR-GM/YBG205
Cutting data: Vc=700SFPM, fz=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°

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

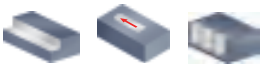
Highly polished insert reduces formation of built-up edges

Precision-ground insert

Large chip groove for controlled chip removal

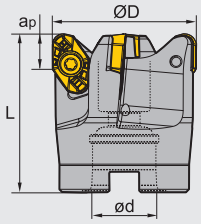
VPGT220530-LP YD101

Square shoulder milling tools Kr:90°

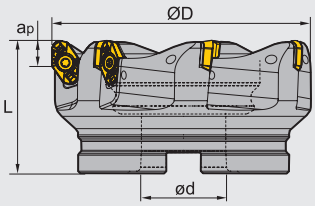


EMP14

A type of mounting



B type of mounting



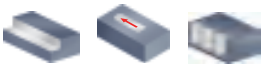
Specification of tools

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

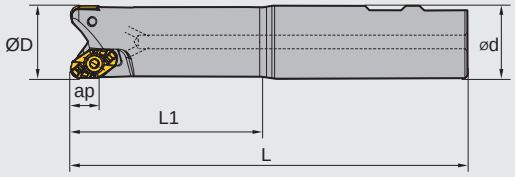
Spare parts

Diameter ØD	Insert specification	Insert screw	Wrench	Sketch of installation
				
Ø2.00"~Ø4.00"	VPGT□□□□-LP	I60M5×11	WT20IT	

Square shoulder milling tools Kr:90°



EMP14



Specification of tools

Type		Dimensions (inch)						
		ØD	ød	L	L_1	$a_p$max	Z (Number of teeth)	Insert
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	

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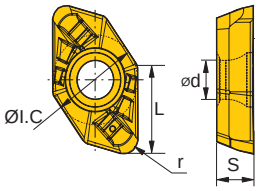
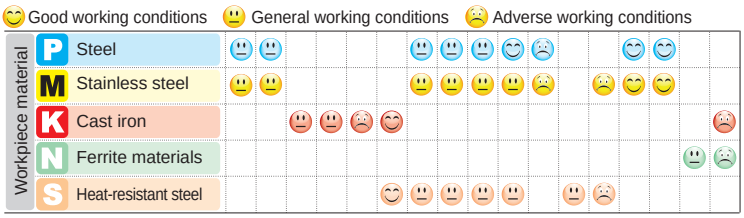
Spare parts

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

Selection of inserts





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
	VPGT220502-LP	0.472	0.500	0.219	0.217	0.008																○	
	VPGT220505-LP	0.472	0.500	0.219	0.217	0.020																●	
	VPGT220508-LP	0.472	0.500	0.219	0.217	0.031																●	
	VPGT220510-LP	0.472	0.500	0.219	0.217	0.039																●	
	VPGT220515-LP	0.472	0.500	0.219	0.217	0.059																●	
	VPGT220520-LP	0.472	0.500	0.219	0.217	0.079																●	
	VPGT220525-LP	0.472	0.500	0.219	0.217	0.098																●	
	VPGT220530-LP	0.472	0.500	0.219	0.217	0.118																●	
	VPGT220532-LP	0.472	0.500	0.219	0.217	0.126																●	
	VPGT220540-LP	0.472	0.500	0.219	0.217	0.157																●	
	VPGT220550-LP	0.472	0.500	0.219	0.217	0.197																○	

● Recommended grade ○ Produce according to order

Recommended cutting parameters

Workpiece material		Hardness HB	Grade	Cutting data	
				V(SFPM)	f(IPT)
N	Aluminium alloy	--	YD101	1640(1000-10000)	0.008(0.003-0.016)

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