ZCC·CT

Next Generation
Multi Functional Heavy Duty
Shoulder Milling Tool

EMP09系列

Higher tool strength, Greater feed, Minimum tool marks

ZHUZHOU CEMENTED CARBIDE
CUTTING TOOLS CO., LTD.

Next generation
Multi Functional Heavy Duty Shoulder Milling Tool

EMP09 Series

Precise 90 square shoulder and 4 cutting edges.

Double positive rake angle design reduces cutting forces.

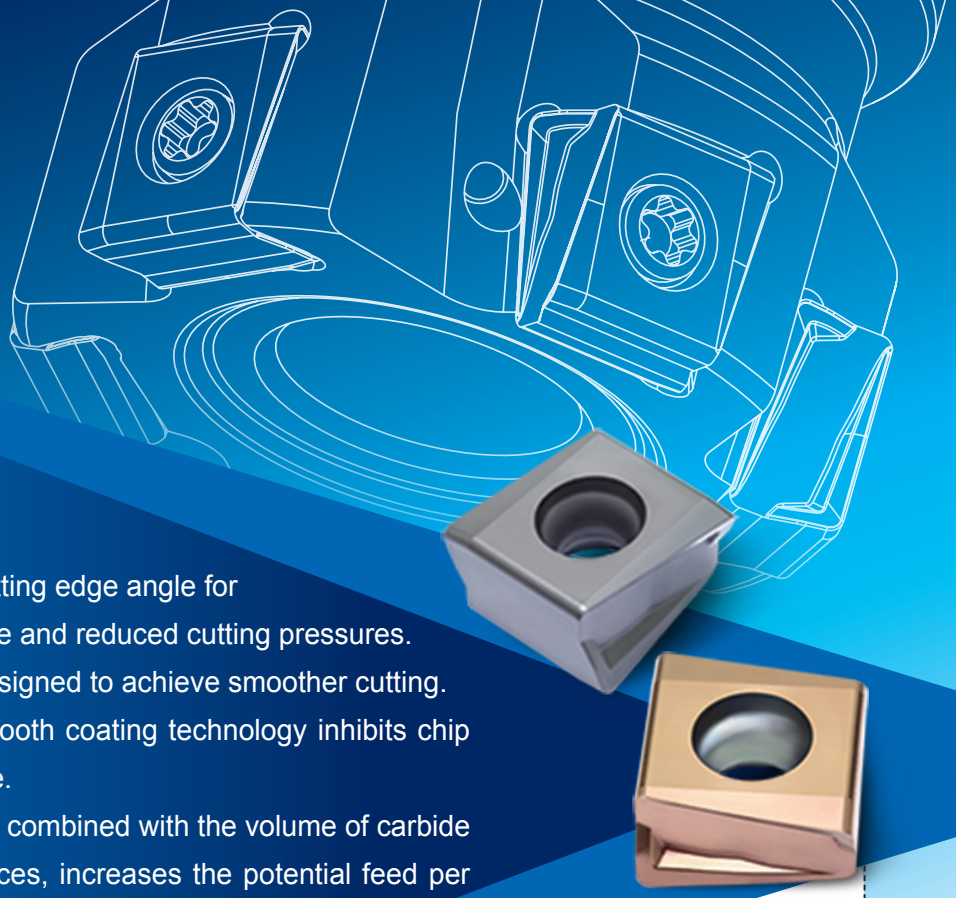
High tool precision for high quality and efficient roughing.

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.

For multi-functional square shoulder milling in steel, stainless steel, cast iron, and difficult to machine materials. Can be widely applied in automotive, aerospace, general machining industries, and more.



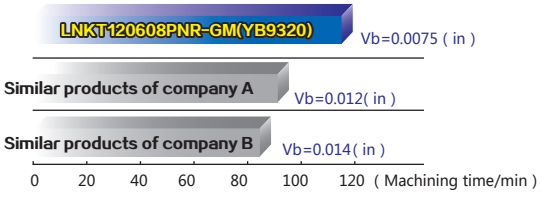
- High strength positive cutting edge angle for increased wear resistance and reduced cutting pressures.
- Helical cutting edge is designed to achieve smoother cutting.
- Highly versatile, ultra-smooth coating technology inhibits chip welding for longer tool life.
- Vertical mounting design, combined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

Long service life

Machining case

Workpiece material: 45# Hardness: 175–190 (HB)
Cooling method: none
Operation: square shoulder milling
Tool：EMP09–2.00"–A0.75"–LN12–05C
Insert：LNKT120608PNR–GM (YB9320)
Similar products of company A
Similar products of company B
Cutting data：Vc=850 SFPM，ap=0.315 in，
ae=0.079 in，fz=0.008 in/z

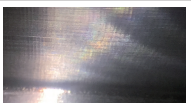
Result: The machining life of our LNKT12 (YB9320) is about 1.3 times that of similar products of Company A, 1.4 times of that of similar products of Company B. The tool has excellent wear resistance and long service life.



Superior surface quality

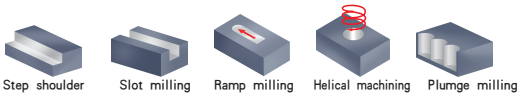
Machining case

Workpiece material: 45#
Hardness: 175–190 (HB)
Cooling method: none
Operation: square shoulder milling
Tool：EMP09–2.00"–A0.75"–LN12–05C
Insert：LNKT120608PNR–GM (YB9320)
Similar products of company A
Cutting data：Vc=780 SFPM，ap=0.315 in，
ae=0.079 in，fz=0.008 in/z

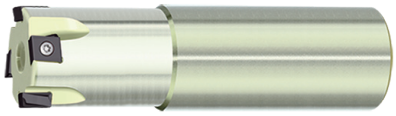
EMP09	Similar products of company A
	
No obvious tool mark	Slight step

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.

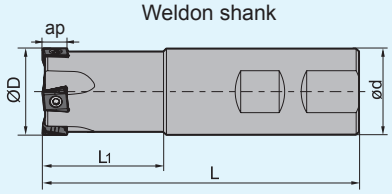
EMP09 Series Multi Functional Heavy Duty Shoulder Milling Tool



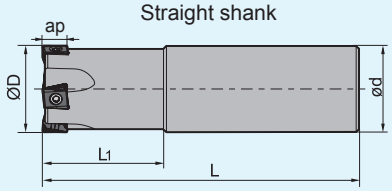
EMP09 P M K Kr:90°



Weldon shank



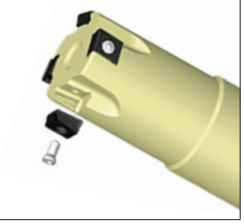
Straight shank

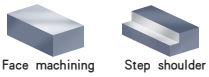


Specification of tools

specification		Basic dimensions(inch)					Z	Weight (kg)
		ØD	ød	L	L_1	ap_{max}		
EMP09 Weldon shank	**-1.00"-XP1.00"-LN08-03C**	1.00	1.00	4.00	1.25	0.315	3	0.36
	-1.00"-XP1.00"-LN08-04C	1.00	1.00	4.00	1.25	0.315	4	0.35
	-1.25"-XP1.25"-LN08-04C	1.25	1.25	4.50	1.50	0.315	4	0.67
	-1.25"-XP1.25"-LN08-05C	1.25	1.25	4.50	1.50	0.315	5	0.67
	-1.50"-XP1.50"-LN08-05C	1.50	1.50	5.00	1.50	0.315	5	1.15
	-1.50"-XP1.50"-LN08-06C	1.50	1.50	5.00	1.50	0.315	6	1.14
	-1.50"-XP1.50"-LN12-03C	1.50	1.50	5.00	1.50	0.452	3	1.11
	-1.50"-XP1.50"-LN12-04C	1.50	1.50	5.00	1.50	0.452	4	1.10
Straight shank	**-1.00"-G1.00"-LN08-03C**	1.00	1.00	4.00	1.25	0.315	3	0.36
	-1.00"-G1.00"-LN08-04C	1.00	1.00	4.00	1.25	0.315	4	0.35
	-1.25"-G1.25"-LN08-04C	1.25	1.25	4.50	1.50	0.315	4	0.67
	-1.25"-G1.25"-LN08-05C	1.25	1.25	4.50	1.50	0.315	5	0.67
	-1.50"-G1.50"-LN12-03C	1.50	1.50	5.00	1.50	0.452	3	1.11
	-1.50"-G1.50"-LN12-04C	1.50	1.50	5.00	1.50	0.452	4	1.10

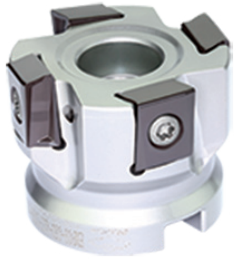
Tool accessories

Tool diameter ØD	Insert	Screw	Wrench	
				
1.00"~1.50"	LNKT080404PNR-GM	I60M3×7	WT10IS	
1.50"	LNKT120608PNR-GM	I60M4×12	WT15IS	

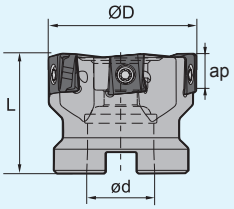


EMP09 P M K

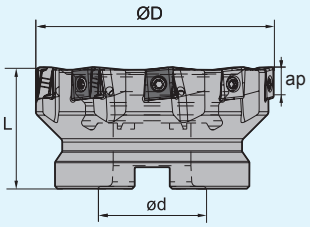
Kr:90°



Coupling style A

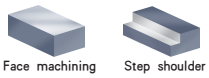


Coupling style B

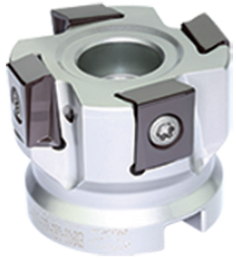


Specification of tools

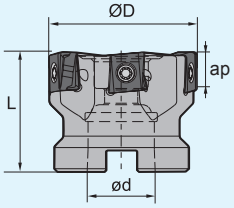
specification		Basic dimensions(inch)				Z	Interface form	Weight (kg)
		ØD	ød	L	ap_{max}			
EMP09	**-2.00"-A0.75"-LN08-06C**	2.00	0.75	1.75	0.315	6	A	0.21
	-2.00"-A0.75"-LN08-07C	2.00	0.75	1.75	0.315	7	A	0.21
	-2.50"-A0.75"-LN08-08C	2.50	0.75	1.75	0.315	8	A	0.35
	-2.50"-A0.75"-LN08-10C	2.50	0.75	1.75	0.315	10	A	0.35
	-3.00"-A1.00"-LN08-10C	3.00	1.00	2.00	0.315	10	A	0.60
	-3.00"-A1.00"-LN08-12C	3.00	1.00	2.00	0.315	12	A	0.60
	-2.00"-A0.75"-LN12-05C	2.00	0.75	1.75	0.452	5	A	1.26
	-2.00"-A0.75"-LN12-06C	2.00	0.75	1.75	0.452	6	A	1.26
	-2.50"-A0.75"-LN12-06C	2.50	0.75	1.75	0.452	6	A	0.20
	-2.50"-A0.75"-LN12-08C	2.50	0.75	1.75	0.452	8	A	0.19
	-3.00"-A1.00"-LN12-07C	3.00	1.00	2.00	0.452	7	A	0.30
	-3.00"-A1.00"-LN12-10C	3.00	1.00	2.00	0.452	10	A	0.30
	-4.00"-B1.50"-LN12-09	4.00	1.50	2.50	0.452	9	B	0.54
	-4.00"-B1.50"-LN12-13	4.00	1.50	2.50	0.452	13	B	0.54
	-5.00"-B1.50"-LN12-11	5.00	1.50	2.50	0.452	11	B	1.18
	-5.00"-B1.50"-LN12-16	5.00	1.50	2.50	0.452	16	B	1.18



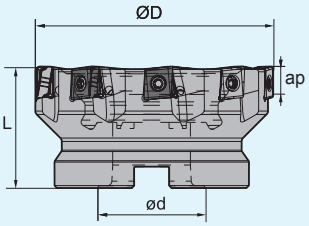
EMP09 P M K Kr:90°



Coupling style A



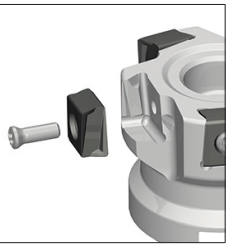
Coupling style B



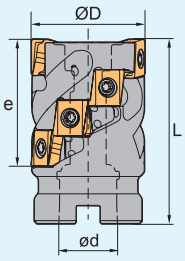
Specification of tools

specification		Basic dimensions(inch)				Z	Interface form	Weight (kg)
		ØD	ød	L	ap_{max}			
EMP09	**-2.00"-A0.75"-LN16-04C**	2.00	0.75	1.75	0.591	4	A	0.31
	-2.00"-A0.75"-LN16-05C	2.00	0.75	1.75	0.591	5	A	0.31
	-2.50"-A0.75"-LN16-05C	2.50	0.75	1.75	0.591	5	A	0.56
	-2.50"-A0.75"-LN16-06C	2.50	0.75	1.75	0.591	6	A	0.56
	-3.00"-A1.00"-LN16-06C	3.00	1.00	2.00	0.591	6	A	1.20
	-3.00"-A1.00"-LN16-07C	3.00	1.00	2.00	0.591	7	A	1.20
	-4.00"-B1.50"-LN16-08	4.00	1.50	2.50	0.591	8	B	1.62
	-4.00"-B1.50"-LN16-10	4.00	1.50	2.50	0.591	10	B	1.62
	-5.00"-B1.50"-LN16-10	5.00	1.50	2.50	0.591	10	B	3.27
	-5.00"-B1.50"-LN16-13	5.00	1.50	2.50	0.591	13	B	3.27
	-6.00"-B2.00"-LN16-12	6.00	2.00	2.50	0.591	12	B	6.37
	-6.00"-B2.00"-LN16-16	6.00	2.00	2.50	0.591	16	B	6.37

Tool accessories

Tool diameter ØD	Insert	Screw	Wrench	
2.00"~3.00"	LNKT080408PNR-GM	I60M3×7	WT10IS	
2.00"~5.00"	LNKT120608PNR-GM	I60M4×12	WT15IS	
2.00"~6.00"	LNKT160708PNR-GM	I60M5×17	WT20IT	

EMP09 P M K Kr:90°

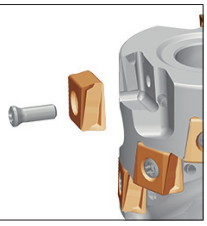


Specification of tools

specification		Basic dimensions(inch)				Z	Inserts total	Weight (kg)
		ØD	ød	L	e			
EMP09	-2.00"X1.70"-A0.75"-LN12-03C	2.00	0.75	2.75	1.70	3	12	0.62
	-2.50"X1.70"-A1.00"-LN12-04C	2.50	1.00	2.75	1.70	4	16	1.03
	-3.00"X1.70"-A1.25"-LN12-05C	3.00	1.25	2.75	1.70	5	20	1.91

Tool accessories

Tool diameter ØD	Insert	Screw	Wrench
2.00"x1.70"~3.00"x1.70"	LNKT120608PNR-GM	I60M4×12	WT15IS



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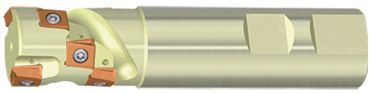
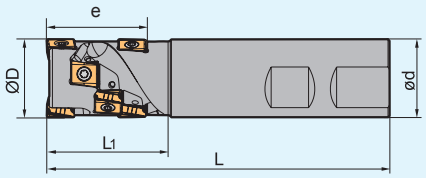


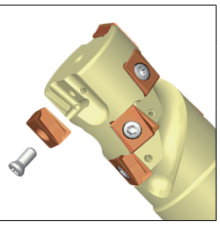


Specification of tools

specification		Basic dimensions(inch)					Z	Inserts total	Weight (kg)
		ØD	ød	L	L1	e			
EMP09	-1.00"X1.18"-XP1.00"-LN08-02C	1.00	1.00	4.0	1.575	1.18	2	8	0.31
	-1.25"X1.50"-XP1.25"-LN08-03C	1.50	1.50	4.5	1.772	1.50	3	15	0.62

Tool accessories

Tool diameter ØD	Insert	Screw	Wrench
1.00"x1.18"~1.25"x1.50"	LNKT080408PNR-GM	I60M3×7	WT10IS



Insert selection

Insert shape	Specification	Basic dimensions(inch)					CVD coating						PVD coating								Cermet		Cemented carbide			
		L	I.W	S	ød	r	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	LNKT080404PNR-GM	0.345	0.335	0.175	0.134	0.016			●		●	●				●									
	LNKT120608PNR-GM	0.5	0.512	0.266	0.173	0.031			●		●	●				●									
	LNKT160708PNR-GM	0.632	0.591	0.289	0.217	0.031			●		●	●				●									

Recommended cutting data

Workpiece material		Hardness HB	Insert grade	Cutting data	
				V(SFPM)	f(in/z)
P	Low carbon steel、soft steel	⩽180	YBM253	850 (500-1000)	0.012 (0.004-0.014)
			YB9320	850 (500-1000)	0.012 (0.004-0.014)
	High carbon steel、alloy steel	180-280	YBM253	750 (500-800)	0.01 (0.004-0.014)
			YB9320	750 (500-800)	0.01 (0.004-0.014)
	Alloy tool steel	280-350	YBM253	650 (400-800)	0.008 (0.004-0.014)
			YB9320	650 (400-800)	0.008 (0.004-0.014)
M	Stainless steel	⩽270	YBM253	600 (300-750)	0.006 (0.004-0.012)
			YB9320	500 (300-750)	0.006 (0.004-0.012)
K	Cast iron	180-250	YBD152 YBD252	700 (450-800)	0.008 (0.004-0.012)

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