



Next Generation
Multi Functional Heavy Duty
Shoulder Milling Tool

EMP09 Series

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.

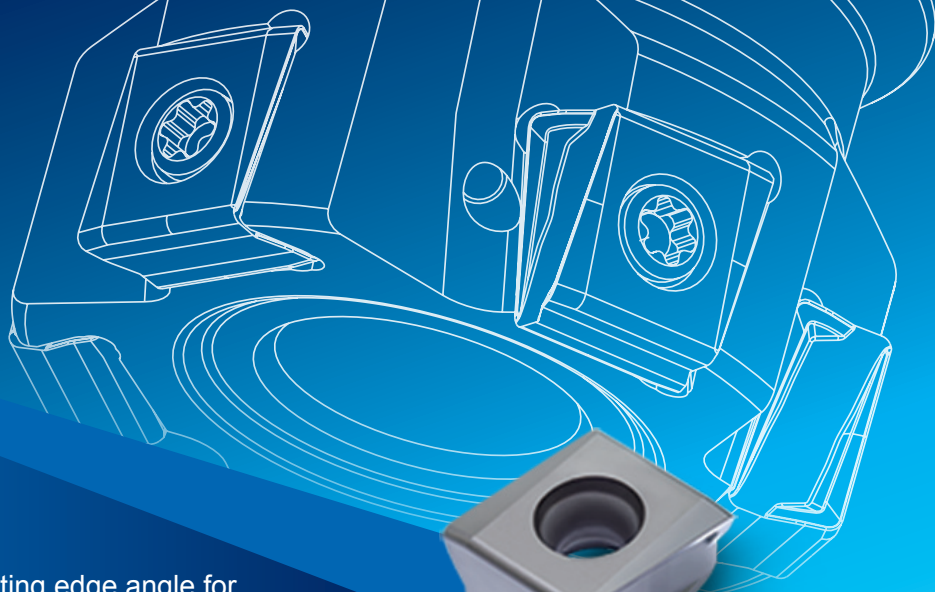
Vertical mounting of the insert changes the direction of cutting forces into the insert thickness in order to increased tool rigidity.

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.





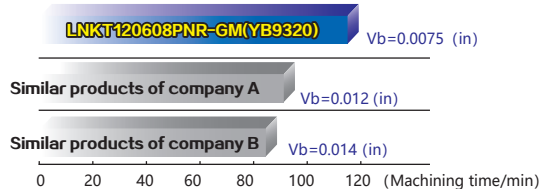
- High strength positive cutting edge angle for increased wear resistance and reduced cutting pressures.
- Helical cutting edge is designed to achieve smoother cutting.
- Highly versatile, ultra-smooth coating technology inhibits chip welding for longer tool life.
- Vertical mounting design, combined 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: $V_c=850$ SFPM, $a_p=0.315$ in,
 $a_e=0.079$ in, $f_z=0.008$ 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

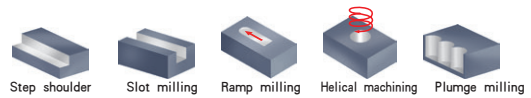
Machining case >>

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: $V_c=780$ SFPM, $a_p=0.315$ in,
 $a_e=0.079$ in, $f_z=0.008$ in/z

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

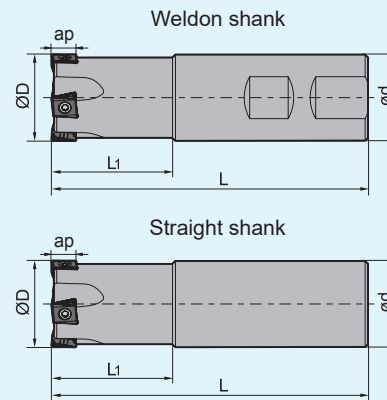
Results: EMP09 series vertical milling cutters have high precision, good surface quality, no obvious tool marks in the contours, and the runout value of square shoulders are better than those of similar products of Company A.

EMP09 Series Multi Functional Heavy Duty Shoulder Milling Tool



EMP09 **P M K**




Kr:90°



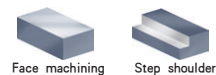
Specification of tools

| specification | Basic dimensions(inch) | | | | | Z | Weight (kg) | |
|------------------------------|-------------------------|------|------|------|-------------------|-------|-------------|------|
| | ØD | ød | L | L1 | 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

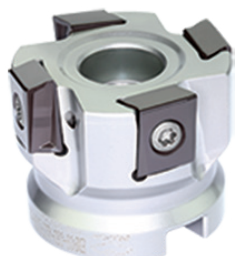
| Tool diameter ØD | Insert | Screw | Wrench |  |
|---------------------|------------------|---|---|---|
| | |  |  | |
| 1.00"~1.50" | LNKT080404PNR-GM | I60M3×7 | WT10IS | |
| 1.50" | LNKT120608PNR-GM | I60M4×12 | WT15IS | |

EMP09 Series Multi Functional Heavy Duty Shoulder Milling Tool

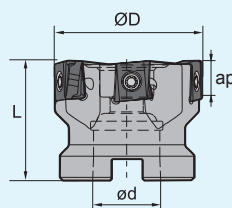


EMP09 **P** **M** **K**

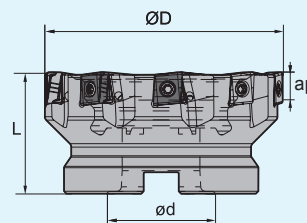
Kr:90°



Coupling style A



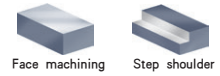
Coupling style B



➤ **Specification of tools**

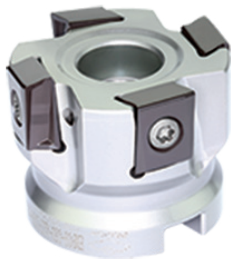
| specification | Basic dimensions(inch) | | | | Z | Interface form | Weight (kg) |
|-------------------------------------|------------------------|------|------|-------------------|----|----------------|-------------|
| | ØD | ød | L | ap _{max} | | | |
| EMP09 -2.00"-A0.75"-LN08-06C | 2.00 | 0.75 | 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 Series Multi Functional Heavy Duty Shoulder Milling Tool

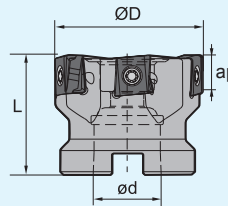


EMP09 **P M K**

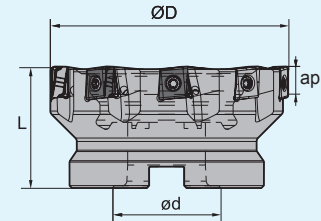
Kr:90°



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

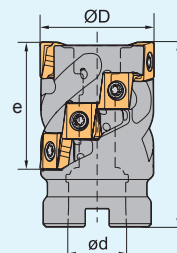
| Tool diameter ØD | Insert | Screw | Wrench | |
|---------------------|------------------|----------|--------|--|
| | | | | |
| 2.00"~3.00" | LNKT080408PNR-GM | I60M3×7 | WT10IS | |
| 2.00"~5.00" | LNKT120608PNR-GM | I60M4×12 | WT15IS | |
| 2.00"~6.00" | LNKT160708PNR-GM | I60M5×17 | WT20IT | |

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EMP09 **P** **M** **K**

Kr:90°

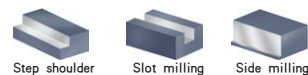


Specification of tools

| 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 |

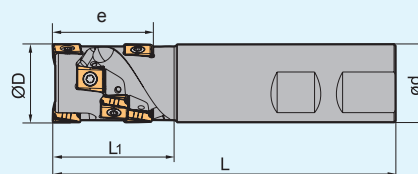
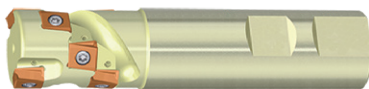
Tool accessories

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



EMP09 **P** **M** **K**

Kr:90°



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 | 1.25 | 1.25 | 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) |
| | 180-280 | YBM253 | 750 (500-800) | 0.01 (0.004-0.014) |
| | | YB9320 | 750 (500-800) | 0.01 (0.004-0.014) |
| | 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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