

EPBPN Epoch Ball Pencil Neck Long Carbide Ball End Mill

High Speed - High Precision - High Hard Cutting

D1mm ~ D12mm

• For Materials $\leq 65\text{HRC}$

• $l_n \leq 20 \times D$

***• Neck Angles:
1°30' | 3° | 5°***

EPBPN | Epoch Ball Pencil Neck

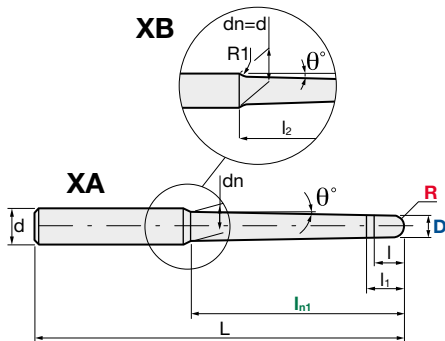
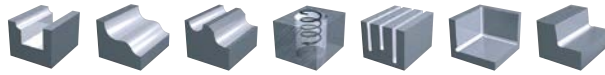
V max
High Speed

▽▽▽
Finishing

HRC
65

▦
Rib. Miniature

No. of Teeth
2



Carbide
Micro Grain

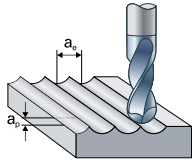
C
Century Coating

Rake Angle
Positive

Helix Angle	R Tol. [mm]	d Tol.
30°	+/-0.01	h6

Size												
ID Code	Item Code	Z	R	D	θ°	l	dn	l ₁	l _{n1}	L	d	Type
EP186	EPBPN-2010-15	2	0.5	1	1°30'	2.5	1.8	4	20	60	6	XA
EP187	EPBPN-2010-30				3°		4.8		40	80		
EP188	EPBPN-2010-50				5°		3.8		20	60		
EP189	EPBPN-2020-15		1	2	1°30'	5	2.7	7	20	80		
EP190	EPBPN-2020-30				3°		5.5		40	80		
EP191	EPBPN-2020-50				5°		4.3		20	60		
EP192	EPBPN-2030-15		1.5	3	1°30'	8	5.1	10	50	90	8	XB
EP193	EPBPN-2030-30				3°		6		30	70		
EP194	EPBPN-2040-15				1°30'		6		48.2	90		
EP195	EPBPN-2040-30		2	4	3°	10	7.5	12	29.1	70		
EP196	EPBPN-2050-15				1°30'		6		60	110		
EP197	EPBPN-2050-30				3°		8		40.6	90		
EP198	EPBPN-2060-15		3	6	1°30'	12	9.3	14	52.2	110	10	XB
EP199	EPBPN-2060-30				3°		8		33.1	90		
EP200	EPBPN-2070-15				1°30'		9.3		60	120		
EP201	EPBPN-2070-30		3.5	7	3°	14	9.5	16	40	100		
EP202	EPBPN-2080-15				1°30'		10		54.2	120		
EP203	EPBPN-2080-30				3°		10		35.1	100		
EP204	EPBPN-2100-15		5	10	1°30'	18	12	20	58.2	130	12	XB
EP205	EPBPN-2100-30				3°		12		39.1	110		
EP206	EPBPN-2120-15				1°30'		14.9		80	160		
EP207	EPBPN-2120-30		6	12	3°	22	16	25	63.2	140		

EPBPN | Recommended Cutting Conditions

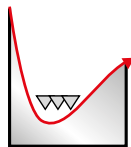


Work piece material		a_p / a_e	Parameter	Tool Diameter/Radius (mm)					
				R1/D2	R2/D4	R3/D6	R4/D8	R5/D10	R6/D12
II	Alloy steel Tool steel (25-35HRC)	(see below)	V_c m/min	50 ~ 70	50 ~ 90	50 ~ 110	50 ~ 120	50 ~ 150	50 ~ 150
			n min ⁻¹	8,000 ~ 11,100	4,000 ~ 7,200	2,700 ~ 5,800	2,000 ~ 4,800	1,600 ~ 4,800	1,300 ~ 4,000
			f_z mm/tooth	0.07 ~ 0.07	0.11 ~ 0.11	0.12 ~ 0.12	0.15 ~ 0.15	0.18 ~ 0.18	0.21 ~ 0.21
			V_f mm/min	1,120 ~ 1,550	880 ~ 1,580	650 ~ 1,390	600 ~ 1,440	580 ~ 1,730	550 ~ 1,680
III	Prehardened steel (35-45HRC)	(see below)	V_c m/min	40 ~ 70	40 ~ 90	40 ~ 110	40 ~ 120	40 ~ 150	40 ~ 150
			n min ⁻¹	6,400 ~ 11,100	3,200 ~ 7,200	2,100 ~ 5,800	1,600 ~ 4,800	1,300 ~ 4,800	1,100 ~ 4,000
			f_z mm/tooth	0.07 ~ 0.07	0.11 ~ 0.11	0.12 ~ 0.12	0.15 ~ 0.15	0.18 ~ 0.18	0.21 ~ 0.21
			V_f mm/min	900 ~ 1,550	700 ~ 1,580	500 ~ 1,390	480 ~ 1,440	470 ~ 1,730	460 ~ 1,680
IV	Hardened steel (45-55HRC)	(see below)	V_c m/min	30 ~ 50	30 ~ 60	30 ~ 110	30 ~ 120	30 ~ 150	30 ~ 150
			n min ⁻¹	4,800 ~ 8,000	2,400 ~ 4,800	1,600 ~ 5,800	1,200 ~ 4,800	1,000 ~ 4,800	800 ~ 4,000
			f_z mm/tooth	0.04 ~ 0.04	0.10 ~ 0.10	0.11 ~ 0.11	0.14 ~ 0.14	0.15 ~ 0.15	0.16 ~ 0.16
			V_f mm/min	380 ~ 640	480 ~ 960	350 ~ 1,280	340 ~ 1,340	300 ~ 1,440	260 ~ 1,280
VIII	Cast iron (150-200HB) GG GGG	(see below)	V_c m/min	70 ~ 95	70 ~ 95	70 ~ 110	70 ~ 120	70 ~ 150	70 ~ 150
			n min ⁻¹	11,100 ~ 15,100	5,600 ~ 7,600	3,700 ~ 5,800	2,800 ~ 4,800	2,200 ~ 4,800	1,900 ~ 4,000
			f_z mm/tooth	0.07 ~ 0.07	0.11 ~ 0.11	0.13 ~ 0.13	0.17 ~ 0.17	0.20 ~ 0.20	0.25 ~ 0.25
			V_f mm/min	1,550 ~ 2,110	1,230 ~ 1,670	960 ~ 1,510	950 ~ 1,630	880 ~ 1,920	950 ~ 2,000
IX	Aluminium Copper Brass	(see below)	V_c m/min	70 ~ 80	70 ~ 90	70 ~ 110	70 ~ 120	70 ~ 150	70 ~ 150
			n min ⁻¹	11,100 ~ 12,700	5,600 ~ 7,200	3,700 ~ 5,800	2,800 ~ 4,800	2,200 ~ 4,800	1,900 ~ 4,000
			f_z mm/tooth	0.07 ~ 0.07	0.11 ~ 0.11	0.12 ~ 0.12	0.15 ~ 0.15	0.18 ~ 0.18	0.21 ~ 0.21
			V_f mm/min	1,550 ~ 1,780	1,230 ~ 1,580	890 ~ 1,390	840 ~ 1,440	790 ~ 1,730	800 ~ 1,680

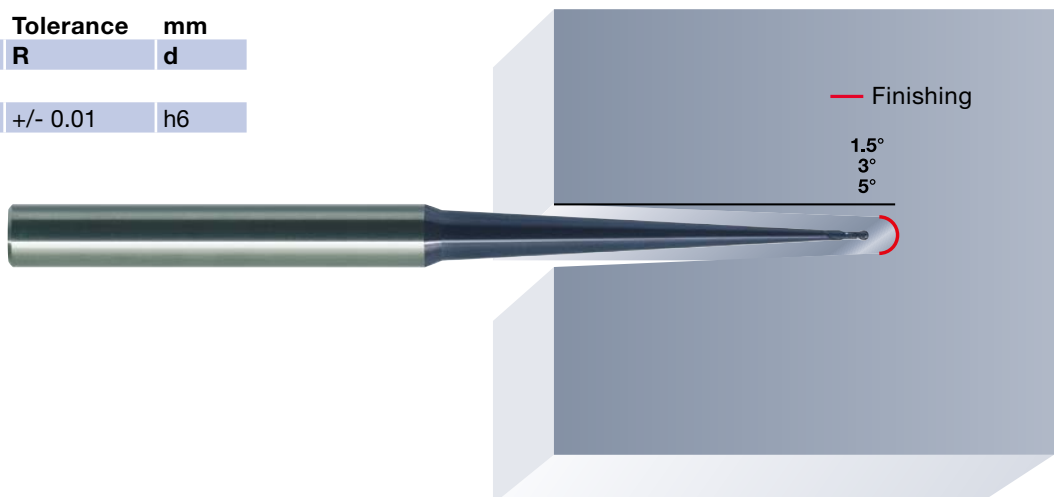
	a_p	a_e
$R \leq 1.0$	under 0.05R	< 0.2R
$R > 1.0$	under 0.1R	< 0.2R

	Length/Diameter
$L/D \leq 5$	bigger number
$5 < L/D < 10$	middle number
$L/D = 10$	lower number
$10 < L/D$	30% down of lower number

Application and Tolerance



Item	R	Tolerance mm	
		R	d
EPBPN	0.5 ~ 6	+/- 0.01	h6



Always up to date: Please check our P50 QuickFinder



Attentions on Safety

1. Cautions regarding handling

- (1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
- (2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

- (1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
- (2) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
- (3) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

- (1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
- (2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
- (3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
- (4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. Please caution of fire while using oil base coolant, fire prevention is necessary.
- (5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

- (1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
- (2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
- (3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with the local laws and regulations regarding prevention of hazards due to specified chemical substances.

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