

2 Flutes CBN Long Neck Ball End Mills for Super Mirror Milling



Size **R0.2~R0.5**

CBN-PLB



Patent pending

NEW

Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

Work Material																	
Carbon Steels S45C S55C	Alloy Steels SK / SCM SUS	Prehardened Steels NAK HPM	Hardened Steels					Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
			~50HRC	~55HRC	~60HRC	~65HRC	~70HRC										
		○	●	●	●	●	●										

Features

1. CBN material featuring very high wear resistance.
2. Burnishing effect enables super mirror milling!
3. The slot design that allows coolant to reach the cutting edge.
Chip evacuation effect offers long tool life.
Prevention of repetitive chip cutting offers uniform milling surfaces.

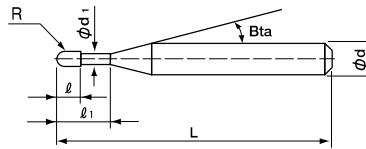


Label Sample

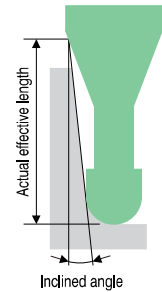


#001 R0.5 R+0.001/-0.001

Ball Radius accuracy measurements are printed on the label to support High Precision milling.



The shank taper angle shown is not an exact value and to avoid contact with the work piece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the work piece.



Total 3 models

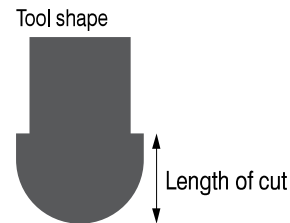
Unit (mm)

Model Number	Radius of Ball Nose R	Effective Length ℓ_1	Length of Cut ℓ	Neck Diameter ϕd_1	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥	Effective Length by Inclined Angles				
									30°	1°	1°30'	2°	3°
CBN-PLB 2004-010	R0.2	1	0.24	0.38	15°	50	4	32,800	1.03	1.06	1.09	1.13	1.21
CBN-PLB 2006-015	R0.3	1.5	0.36	0.58	15°	50	4	30,800	1.53	1.57	1.62	1.68	1.79
CBN-PLB 2010-025	R0.5	2.5	0.6	0.98	15°	50	4	30,800	2.57	2.64	2.72	2.81	3.00

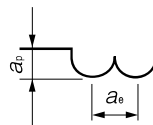
- φ3mm Shank V Series
- UDC-PCD Series
- CBN Series**
- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Taper Neck Radius
- Ball / Long Shank Ball
- Long Neck Ball**
- Taper Neck Ball
- Taper
- Barrel
- Spiral V Cutter
- Drill
- Technical Data

Milling Conditions for CBN-PLB

WORK MATERIAL			HEAT-TREATED STEELS / HARDENED STEELS STAVAX / ELMAX / HAP10 / HAP72 (~70HRC)			
Model Number	Radius of Ball Nose (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	a _e Radial Depth (mm)
2004-010	R0.2	1	30,000	150	0.001	0.001
2006-015	R0.3	1.5	30,000	300	0.002	0.002
2010-025	R0.5	2.5	30,000	375	0.003	0.003



The length of cut that is 1.2 times the ball radius enables finishing on vertical surfaces.



Note:

- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend oil mist to avoid tool damage.

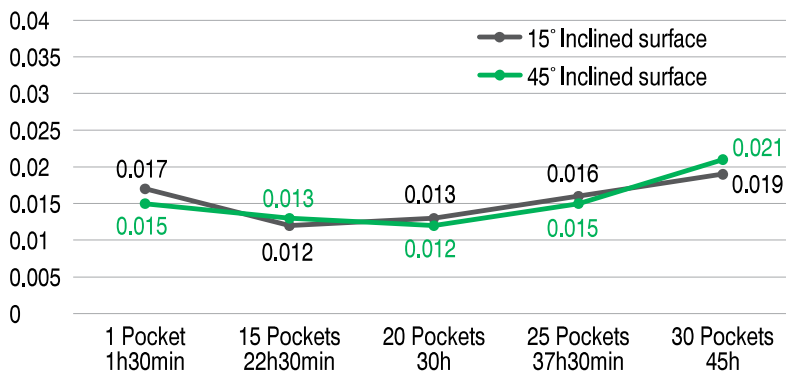
Inclined surface milling 2 Flutes CBN-PLB R0.5 × EL2.5 ELMAX (60HRC)

Process	Finishing
Coolant	Oil Mist
Milling Method	Contour milling
Spindle Speed	30,000 min ⁻¹
Feed Rate	375 mm/min
Allowance	0.003 mm
Cycle Time	1 pocket 1 h 30 min



Surface roughness
15° Ra 0.014 μm
45° Ra 0.018 μm

Milling time and transition of Ra (Unit: μm)



Only subtle difference in surface roughness after 45 hours.



Tool after 45h of milling

- 3mm Shank V Series
- UDC-PCD Series
- CBN Series
- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Taper Neck Radius
- Ball / Long Shank Ball
- Long Neck Ball
- Taper Neck Ball
- Taper
- Barrel
- Spiral V Cutter
- Drill
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