

1 Flute Binderless PCD Long Neck Ball End Mills for Finishing Cemented Carbide and Hard Brittle Materials



Size R0.1~R1

**UPDLB**



Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

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

**Features**

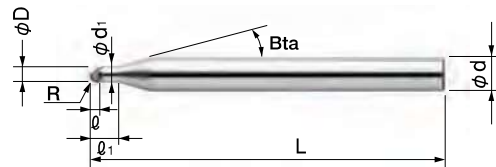
**Long Neck Ball type End Mills for finishing of Cemented Carbide and Hard Brittle Materials.**  
**Provides excellent machined surface quality due to the sharp cutting edge and optimized edge treatment.**  
**Maintains excellent dimensional accuracy for a long time due to the high contour accuracy of the cutting edge and the excellent wear resistance of diamonds.**

Label Sample



#001  $\phi D1.002$  R0.504/0.502

Diameter and Ball R accuracy measurements are printed on the label to support high precision milling.



Be sure to confirm the interference between the inclined work piece and the shank part by actual measurement.

Total 5 models

Unit (mm)

Model Number	Radius of Ball Nose R	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle Bta	Overall Length L	Shank Diameter $\phi d$	Suggested Retail Price ¥
UPDLB 1002-004	R0.1	0.4	0.1	0.18	16°	40	4	Open price
UPDLB 1004-008	R0.2	0.8	0.2	0.38	16°	40	4	Open price
UPDLB 1006-010	R0.3	1	0.3	0.58	16°	40	4	Open price
UPDLB 1010-020	R0.5	2	0.5	0.95	16°	40	4	Open price
UPDLB 1020-030	R1	3	1	1.95	16°	40	4	Open price

- 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

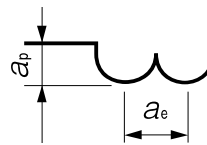
## Milling Conditions for UPDLB

For finishing of bottom surface

WORK MATERIAL			CEMENTED CARBIDE			
Model Number	Radius of Ball Nose (mm)	Effective Length (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	$a_p$ (mm)	$a_e$ (mm)
1002-004	R0.1	0.4	40,000	100	0.001	0.001
1004-008	R0.2	0.8	40,000	150	0.001	0.001
1006-010	R0.3	1	40,000	200	0.001	0.001
1010-020	R0.5	2	40,000	400	0.001	0.003
1020-030	R1	3	40,000	600	0.001	0.005

For Profile milling

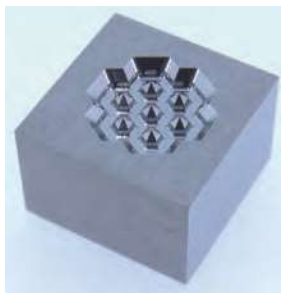
WORK MATERIAL			CEMENTED CARBIDE			
Model Number	Radius of Ball Nose (mm)	Effective Length (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	$a_p$ (mm)	$a_e$ (mm)
1002-004	R0.1	0.4	40,000	100	0.001	0.001
1004-008	R0.2	0.8	40,000	150	0.002	0.001
1006-010	R0.3	1	40,000	200	0.003	0.001
1010-020	R0.5	2	40,000	400	0.005	0.003
1020-030	R1	3	40,000	600	0.01	0.005



Note:

- Use a machine with high accuracy for stable cutting.
- Non-water soluble coolant recommended. Supply as a mist or external coolant. Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
- Shorten overhang as much as possible.
- Adjust cutting conditions as necessary as machine spec and other conditions may vary.
- These cutting parameters show reference value. Adjust the cutting conditions to the desired machined surface finish.

### UPDLB Milling Example for Finishing UDCBF / UPDLB R0.5 Cemented Carbide VF-20 (92.5HRA)



Milling Area : 10.2 × 10.2 × Depth 1.4 mm

Work Size : 20 × 20 × 10 mm

After Finishing



Milling Process	Tool	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	$a_p$ (mm)	$a_e$ (mm)	Allowance (mm)	Coolant	Cycle Time
Roughing	UDCBF 2010-0070 (R0.5 × L0.7)	30,000	300	0.05	0.25	0.005	Air Blow	30 min
Semi-finishing		30,000	300	0.001 (Cusp Height)	0.06321	0.005		12 min
Finishing	UPDLB 1010-020 (R0.5 × EL2)	40,000	400	0.0035	0.00495	0	Oil Mist	1 h 30 min

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