



Size R0.1~R1

CBN-LBF

cBN
 0°
R ± 0.003
Shank Dia 0/-0.004

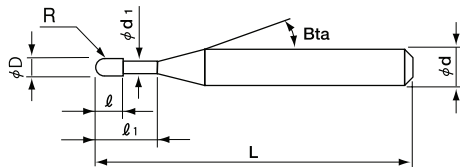
NEW

Material Applications (☆ Highly Recommended ○ Recommended ○ Suggested)

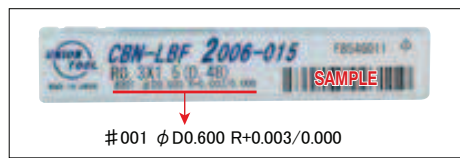
Work Material															
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
S45C S55C	SK / SCM SUS	NAK HPM	~55HRC	~60HRC	~70HRC										
		○	○	○	○										
					~68HRC										

Features

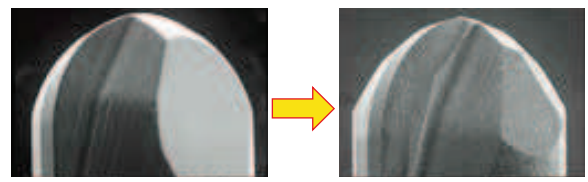
- Optimized cBN material for milling the ultra-hard materials and improved flute design offers high precision milling and long tool life.
- Excellent wear resistance and chipping resistant tool maintain outstanding surface roughness and precision under long cycle time.
- Ball radius accuracy : $\pm 0.003\text{mm}$ based on Nominal Radius.
- *Nominal Radius: Directly input the nominal ball radius rate into the CAM for higher precision milling.
- Highly precision shank diameter (0/-0.004).



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.



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



[Conventional]

[New]

Sharp cutting edge
Better biting
Higher milling precision

- UDC Series
- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Taper Neck Radius
- Ball / Long Shank Ball
- Long Neck Ball
- Taper Neck Ball
- Taper
- Spiral V Cutter
- Drill
- EURO Series
- Technical Data

Total 40 models

*Shank taper angle Bta is only for reference.

Unit (mm)

Model Number	Outside Diameter R	Effective Length ℓ_1	Length of Cut ℓ	Neck Diameter ϕd_1	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Price ¥	Effective Length by Inclined Angles				
									30°	1°	1°30'	2°	3°
CBN-LBF 2002-006	R0.1	0.6	0.16	0.19	15°	50	4	31,700	0.60	0.61	0.63	0.65	0.70
CBN-LBF 2002-010		1				50	4	33,300	1.01	1.04	1.07	1.11	1.19
CBN-LBF 2003-009	R0.15	0.9	0.24	0.28	15°	50	4	31,700	0.91	0.94	0.96	1.00	1.06
CBN-LBF 2003-015		1.5				50	4	33,300	1.53	1.58	1.63	1.68	1.80
CBN-LBF 2004-012	R0.2	1.2	0.32	0.38	15°	50	4	28,800	1.22	1.25	1.29	1.33	1.42
CBN-LBF 2004-020		2				50	4	30,600	2.04	2.10	2.17	2.24	2.40
CBN-LBF 2004-030		3				50	4	33,300	3.07	3.17	3.27	3.38	3.62
CBN-LBF 2005-015	R0.25	1.5	0.4	0.48	15°	50	4	28,800	1.53	1.57	1.62	1.66	1.78
CBN-LBF 2005-025		2.5				50	4	30,600	2.56	2.63	2.72	2.80	3.00
CBN-LBF 2005-035		3.5				50	4	32,200	3.59	3.70	3.82	3.94	4.22
CBN-LBF 2006-015	R0.3	1.5	0.48	0.58	15°	50	4	26,600	1.52	1.57	1.61	1.66	1.76
CBN-LBF 2006-030		3				50	4	28,400	3.07	3.16	3.26	3.37	3.60
CBN-LBF 2006-040		4				50	4	28,400	4.10	4.23	4.36	4.50	4.82
CBN-LBF 2006-050		5				50	4	28,800	5.13	5.29	5.46	5.64	6.05
CBN-LBF 2006-060		6				50	4	31,600	6.17	6.36	6.56	6.78	7.27
CBN-LBF 2008-020		R0.4				2	0.6	0.78	15°	50	4	26,600	2.04
CBN-LBF 2008-040	4		50	4	28,400	4.10				4.22	4.35	4.49	4.80
CBN-LBF 2008-060	6		50	4	31,100	6.16				6.35	6.55	6.77	7.25
CBN-LBF 2010-025	R0.5	2.5	0.7	0.98	15°	50	4	26,600	2.56	2.63	2.70	2.78	2.96
CBN-LBF 2010-040		4				50	4	28,400	4.11	4.23	4.35	4.49	4.79
CBN-LBF 2010-050		5				50	4	28,400	5.14	5.29	5.45	5.63	6.02
CBN-LBF 2010-060		6				50	4	28,400	6.17	6.36	6.55	6.77	7.24
CBN-LBF 2010-080		8				50	4	28,800	8.23	8.49	8.76	9.04	9.69
CBN-LBF 2010-100		10				50	4	29,500	10.30	10.62	10.96	11.32	12.13
CBN-LBF 2012-024	R0.6	2.4	0.8	1.18	15°	50	4	27,700	2.46	2.53	2.60	2.68	2.85
CBN-LBF 2012-030		3				50	4	27,700	3.08	3.17	3.27	3.37	3.60
CBN-LBF 2012-060		6				50	4	32,200	6.18	6.38	6.59	6.82	7.33
CBN-LBF 2015-030	R0.75	3	0.9	1.46	15°	50	4	27,700	3.12	3.20	3.29	3.39	3.61
CBN-LBF 2015-040		4				50	4	27,700	4.15	4.27	4.40	4.54	4.85
CBN-LBF 2015-060		6				50	4	27,700	6.22	6.41	6.62	6.84	7.34
CBN-LBF 2015-080		8				50	4	30,600	8.28	8.55	8.83	9.14	9.83
CBN-LBF 2015-100		10				50	4	32,200	10.35	10.69	11.05	11.44	12.31
CBN-LBF 2015-150		15				50	4	32,200	15.52	16.04	16.59	17.19	18.53
CBN-LBF 2020-040	R1	4	1.2	1.97	15°	50	4	27,700	4.12	4.23	4.35	4.48	4.77
CBN-LBF 2020-050		5				50	4	27,700	5.16	5.30	5.46	5.63	6.01
CBN-LBF 2020-060		6				50	4	27,700	6.19	6.37	6.57	6.78	7.26
CBN-LBF 2020-080		8				50	4	30,600	8.26	8.51	8.79	9.08	9.74
CBN-LBF 2020-100		10				50	4	30,600	10.32	10.65	11.00	11.38	12.23
CBN-LBF 2020-140		14				50	4	32,700	14.46	14.93	15.44	15.98	17.20
CBN-LBF 2020-200		20				50	4	32,700	20.66	21.35	22.09	22.88	No Interference

UDC Series

Square

Long Neck Square

Radius

Long Neck Radius

Taper Neck Radius

Ball / Long Shank Ball

Long Neck Ball

Taper Neck Ball

Taper

Spiral V Cutter

Drill

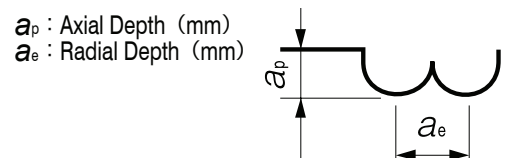
EURO Series

Technical Data

Milling Conditions for CBN-LBF

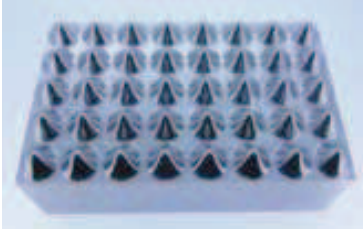
WORK MATERIAL			HEAT-TREATED STEELS / HARDENED STEELS STAVAX (~52HRC)				HARDENED STEELS SKD11 (~62HRC)				HARDENED STEELS HAP10 (~68HRC)				
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	a _e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	a _e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	a _e Radial Depth (mm)	
2002-006	R0.1	0.6	30,000	500	0.005	0.005	30,000	400	0.005	0.005	30,000	300	0.005	0.005	
		2002-010	1	30,000	290	0.005	0.005	30,000	200	0.005	0.005	30,000	120	0.005	0.005
		2003-009	R0.15	0.9	30,000	760	0.005	0.005	30,000	600	0.005	0.005	30,000	430	0.005
2003-015	1.5			30,000	460	0.005	0.005	30,000	320	0.005	0.005	30,000	190	0.005	0.005
2004-012	R0.2	1.2	30,000	1,050	0.005	0.01	30,000	800	0.005	0.01	30,000	620	0.005	0.005	
2004-020		2	30,000	600	0.005	0.01	30,000	450	0.005	0.01	30,000	330	0.005	0.005	
2004-030		3	20,000	400	0.005	0.005	20,000	300	0.005	0.005	20,000	190	0.003	0.003	
2005-015	R0.25	1.5	30,000	1,300	0.01	0.01	30,000	1,000	0.01	0.01	30,000	760	0.005	0.01	
2005-025		2.5	30,000	800	0.01	0.01	30,000	700	0.01	0.01	30,000	480	0.005	0.01	
2005-035		3.5	22,000	550	0.01	0.01	22,000	500	0.005	0.01	22,000	330	0.005	0.005	
2006-015	R0.3	1.5	30,000	2,000	0.02	0.03	30,000	1,500	0.02	0.03	30,000	1,000	0.01	0.02	
2006-030		3	26,000	1,100	0.02	0.02	26,000	900	0.02	0.02	26,000	760	0.01	0.01	
2006-040		4	22,000	750	0.01	0.02	22,000	650	0.01	0.02	22,000	570	0.005	0.01	
2006-050		5	18,000	550	0.01	0.01	18,000	450	0.01	0.01	18,000	410	0.005	0.005	
2006-060		6	12,000	350	0.005	0.01	12,000	290	0.005	0.005	12,000	260	0.003	0.003	
2008-020	R0.4	2	30,000	2,500	0.02	0.03	30,000	2,100	0.02	0.03	30,000	1,700	0.01	0.02	
2008-040		4	25,000	1,500	0.02	0.02	25,000	1,350	0.02	0.02	25,000	1,200	0.01	0.01	
2008-060		6	18,000	1,000	0.01	0.02	18,000	800	0.01	0.02	18,000	750	0.005	0.01	
2010-025	R0.5	2.5	30,000	3,300	0.04	0.04	30,000	3,000	0.03	0.04	30,000	2,100	0.02	0.03	
2010-040		4	27,000	2,700	0.03	0.04	27,000	2,300	0.03	0.03	27,000	1,800	0.02	0.02	
2010-050		5	23,000	2,200	0.03	0.03	23,000	1,800	0.03	0.03	23,000	1,450	0.02	0.02	
2010-060		6	20,000	1,900	0.02	0.03	20,000	1,500	0.02	0.03	20,000	1,200	0.01	0.02	
2010-080		8	14,000	1,300	0.01	0.02	14,000	1,000	0.01	0.02	14,000	800	0.01	0.01	
2010-100		10	9,000	800	0.01	0.02	9,000	600	0.01	0.01	9,000	490	0.005	0.005	
2012-024	R0.6	2.4	30,000	3,000	0.05	0.05	29,500	2,550	0.035	0.04	29,000	2,100	0.02	0.03	
2012-030		3	30,000	2,750	0.05	0.05	29,000	2,350	0.035	0.035	28,000	2,000	0.02	0.025	
2012-060		6	23,500	2,000	0.03	0.03	23,500	1,650	0.025	0.025	23,500	1,300	0.02	0.02	
2015-030	R0.75	3	30,000	3,000	0.07	0.07	28,500	2,550	0.045	0.05	27,000	2,100	0.02	0.03	
2015-040		4	28,500	2,750	0.06	0.06	27,250	2,300	0.04	0.04	26,000	1,900	0.02	0.025	
2015-060		6	26,000	2,200	0.04	0.045	25,500	1,900	0.03	0.03	25,000	1,650	0.02	0.02	
2015-080		8	24,000	2,000	0.025	0.03	24,000	1,700	0.02	0.025	24,000	1,400	0.015	0.02	
2015-100		10	16,000	1,300	0.02	0.02	16,000	1,100	0.015	0.018	16,000	900	0.01	0.015	
2015-150		15	6,000	600	0.01	0.015	6,000	550	0.008	0.012	6,000	490	0.005	0.008	
2020-040	R1	4	30,000	3,000	0.1	0.1	27,000	2,550	0.06	0.065	24,000	2,100	0.02	0.03	
2020-050		5	28,000	2,750	0.08	0.08	26,000	2,300	0.05	0.05	24,000	1,900	0.02	0.025	
2020-060		6	27,000	2,500	0.05	0.06	25,500	2,050	0.035	0.04	24,000	1,650	0.015	0.025	
2020-080		8	25,000	2,200	0.035	0.045	24,500	1,800	0.025	0.03	24,000	1,400	0.015	0.02	
2020-100		10	24,000	2,000	0.02	0.03	24,000	1,600	0.015	0.025	24,000	1,200	0.01	0.02	
2020-140		14	15,000	1,250	0.015	0.02	15,000	1,050	0.012	0.018	15,000	850	0.008	0.015	
2020-200		20	4,500	490	0.01	0.01	4,500	490	0.008	0.01	4,500	490	0.005	0.01	

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.



Milling Example for Finishing CBN-LBF R0.3 × 1.5 STAVAX (52HRC)

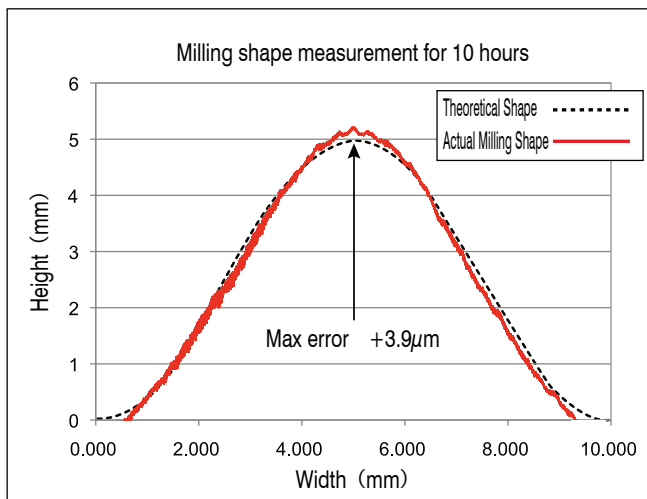
Size 80 × 50 × 30 mm



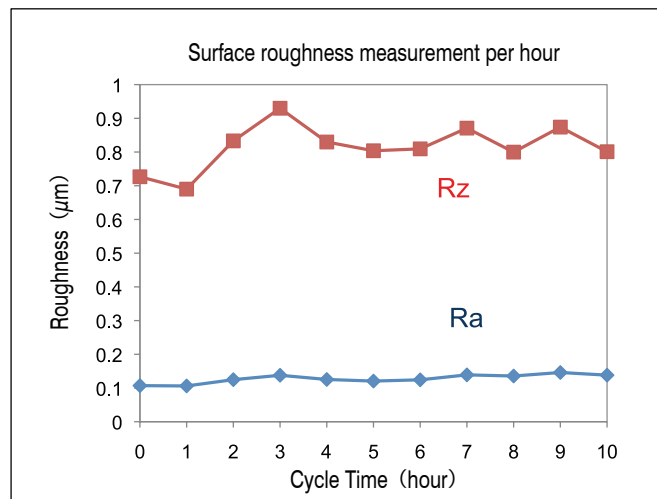
Tool	CBN-LBF 2006-015
Milling Process	Finishing
Milling Method	Z-level + helical milling
Spindle Speed	30,000 min ⁻¹
Feed Rate	800 mm/min
Axial Depth	0.0001 mm (Cusp Height)
Radial Depth	0.015 mm
Coolant	Oil Mist
Cycle Time	9 h 48 min 2 sec



Tool damage after milling 10 hours.



Excellent finishing shape for 10 hours milling.



Constant surface roughness under long cycle time.

UDC Series

Square

Long Neck Square

Radius

Long Neck Radius

Taper Neck Radius

Ball / Long Shank Ball

Long Neck Ball

Taper Neck Ball

Taper

Spiral V Cutter

Drill

EURO Series

Technical Data