Size R0.05～R3

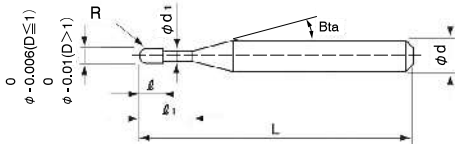
DLCLB

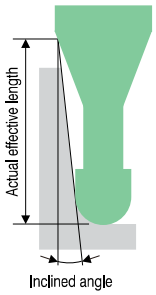
Super MG | DLC | 30° | R ±0.002 (R0.05～R0.2) | R ±0.003 (R0.25～R2) | R ±0.004 (R3) | Shank Dia 0/-0.004 | Back Taper Geometry

Back taper geometry does not apply to R0.15 or below.

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	~ 50HRC	~ 55HRC	~ 60HRC	~ 65HRC	~ 70HRC										
									●		★						





Label Sample

#001 φD0.597 R+0.001/−0.001

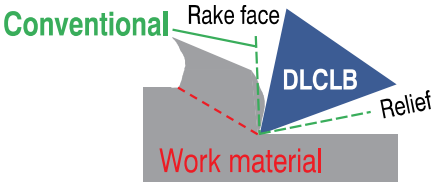
Diameter and Ball Radius accuracy measurments are printed on the label to support High Precision milling.

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 71 models

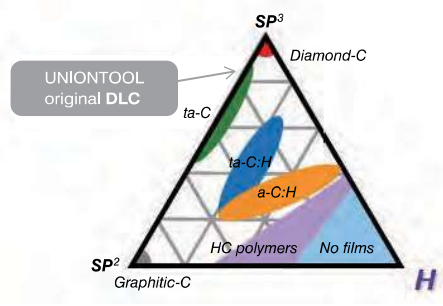
Model Number	Radius of Ball Nose R	Effective Length ℓ1	Length of Cut ℓ	Neck Diameter φd1	Shank Taper Angle Bta	Overall Length L	Shank Diameter φd	Suggested Retail Price ¥
DLCLB 2001-003	R0.05	0.3	0.08	0.095	11°	45	4	10,600
DLCLB 2001-005		0.5				45	4	11,000
DLCLB 20015-003	R0.075	0.3	0.12	0.14	11°	45	4	11,700
DLCLB 20015-005		0.5				45	4	12,400
DLCLB 20015-010		1				45	4	12,900
DLCLB 2002-003	R0.1	0.3	0.16	0.19	11°	45	4	8,500
DLCLB 2002-005		0.5				45	4	8,500
DLCLB 2002-010		1				45	4	8,900
DLCLB 2002-015		1.5				45	4	9,200

Best wedge angle for copper milling



Wedge angle
DLCLB < **Conventional**

Near Diamond hardness DLC coating



The hard DLC was developed by our in-house coating furnace.

High accuracy

Tolerance settings that enable high accuracy milling (mm)

Ball Radius Accuracy	D ≦ R0.5	D > R0.5
Diameter Tolerance	0/-0.006	0/-0.01

Ball Radius Accuracy	R0.05 ~ R0.2	R0.25 ~ R2	R3
Radius Accuracy	± 0.002	± 0.003	± 0.004
Shank Diameter Tolerance	0/-0.004		

Unit (mm)

Model Number	Radius of Ball Nose R	Effective Length ℓ1	Effective Length by Inclined Angles				
			30′	1°	1° 30′	2°	3°
DLCLB 2001-003	R0.05	0.3	0.34	0.36	0.39	0.41	0.46
DLCLB 2001-005		0.5	0.55	0.59	0.62	0.65	0.73
DLCLB 20015-003	R0.075	0.3	0.36	0.38	0.40	0.42	0.47
DLCLB 20015-005		0.5	0.57	0.60	0.63	0.66	0.74
DLCLB 20015-010		1	1.09	1.15	1.21	1.27	1.43
DLCLB 2002-003	R0.1	0.3	0.41	0.43	0.45	0.47	0.53
DLCLB 2002-005		0.5	0.62	0.65	0.68	0.72	0.80
DLCLB 2002-010		1	1.14	1.20	1.26	1.33	1.49
DLCLB 2002-015		1.5	1.67	1.75	1.84	1.94	2.17

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2 Flutes　DLC for Copper Electrode

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 ¥
DLCLB 2003-006	R0.15	0.6	0.24	0.29	11°	45	4	8,900
DLCLB 2003-010		1				45	4	8,900
DLCLB 2003-015		1.5				45	4	9,200
DLCLB 2003-020		2				45	4	9,600
DLCLB 2004-010	R0.2	1	0.32	0.39	11°	45	4	7,700
DLCLB 2004-020		2				45	4	7,900
DLCLB 2004-030		3				45	4	8,000
DLCLB 2004-040		4				45	4	8,200
DLCLB 2005-010	R0.25	1	0.4	0.49	11°	45	4	7,600
DLCLB 2005-020		2				45	4	7,600
DLCLB 2005-030		3				45	4	7,700
DLCLB 2005-040		4				45	4	7,900
DLCLB 2005-050		5				45	4	8,000
DLCLB 2006-010	R0.3	1	0.48	0.59	11°	45	4	5,900
DLCLB 2006-020		2				45	4	5,900
DLCLB 2006-030		3				45	4	6,100
DLCLB 2006-040		4				45	4	6,200
DLCLB 2006-050		5				45	4	6,400
DLCLB 2006-060		6				45	4	6,500
DLCLB 2008-020	R0.4	2	0.64	0.79	11°	45	4	6,100
DLCLB 2008-030		3				45	4	6,100
DLCLB 2008-040		4				45	4	6,200
DLCLB 2008-060		6				45	4	6,400
DLCLB 2008-080		8				45	4	6,500
DLCLB 2010-020	R0.5	2	0.8	0.98	11°	45	4	5,800
DLCLB 2010-030		3				45	4	5,800
DLCLB 2010-040		4				45	4	5,800
DLCLB 2010-050		5				45	4	5,900
DLCLB 2010-060		6				45	4	5,900
DLCLB 2010-080		8				45	4	6,200
DLCLB 2010-100		10				45	4	6,200
DLCLB 2010-120		12				45	4	6,200

Unit (mm)

Model Number	Radius of Ball Nose R	Effective Length ℓ1	Effective Length by Inclined Angles				
			30′	1°	1° 30′	2°	3°
DLCLB 2003-006	R0.15	0.6	0.72	0.75	0.79	0.83	0.92
DLCLB 2003-010		1	1.14	1.19	1.25	1.32	1.47
DLCLB 2003-015		1.5	1.67	1.74	1.83	1.93	2.15
DLCLB 2003-020		2	2.19	2.29	2.41	2.53	2.84
DLCLB 2004-010	R0.2	1	1.14	1.19	1.24	1.30	1.45
DLCLB 2004-020		2	2.19	2.29	2.40	2.52	2.82
DLCLB 2004-030		3	3.23	3.39	3.56	3.74	4.19
DLCLB 2004-040		4	4.28	4.49	4.71	4.96	5.56
DLCLB 2005-010	R0.25	1	1.14	1.18	1.24	1.29	1.43
DLCLB 2005-020		2	2.18	2.28	2.39	2.51	2.80
DLCLB 2005-030		3	3.23	3.38	3.55	3.73	4.17
DLCLB 2005-040		4	4.28	4.48	4.70	4.95	5.54
DLCLB 2005-050		5	5.33	5.58	5.86	6.17	6.91
DLCLB 2006-010	R0.3	1	1.14	1.18	1.23	1.28	1.41
DLCLB 2006-020		2	2.18	2.28	2.38	2.50	2.78
DLCLB 2006-030		3	3.23	3.38	3.54	3.72	4.15
DLCLB 2006-040		4	4.28	4.48	4.70	4.94	5.52
DLCLB 2006-050		5	5.32	5.57	5.85	6.16	6.89
DLCLB 2006-060		6	6.37	6.67	7.01	7.38	8.26
DLCLB 2008-020	R0.4	2	2.18	2.27	2.37	2.48	2.75
DLCLB 2008-030		3	3.22	3.37	3.52	3.70	4.12
DLCLB 2008-040		4	4.27	4.47	4.68	4.92	5.48
DLCLB 2008-060		6	6.37	6.66	6.99	7.36	8.22
DLCLB 2008-080		8	8.46	8.86	9.30	9.79	10.96
DLCLB 2010-020	R0.5	2	2.19	2.28	2.37	2.48	2.73
DLCLB 2010-030		3	3.24	3.37	3.53	3.70	4.10
DLCLB 2010-040		4	4.28	4.47	4.68	4.92	5.47
DLCLB 2010-050		5	5.33	5.57	5.84	6.14	6.84
DLCLB 2010-060		6	6.38	6.67	6.99	7.35	8.21
DLCLB 2010-080		8	8.47	8.87	9.31	9.79	10.95
DLCLB 2010-100		10	10.57	11.07	11.62	12.23	13.68
DLCLB 2010-120		12	12.66	13.26	13.93	14.67	16.42

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2 Flutes　DLC for Copper Electrode

Model Number	Radius of Ball Nose R	Effective Length ℓ1	Length of Cut ℓ	Neck Diameter φd1	Shank Taper Angle Bta	Overall Length L	Shank Diameter φd	Suggested Retail Price ¥
DLCLB 2015-040	R0.75	4	1.2	1.47	11°	45	4	5,900
DLCLB 2015-060		6				45	4	5,900
DLCLB 2015-120		12				50	4	6,700
DLCLB 2015-180		18				55	4	7,400
DLCLB 2020-040	R1	4	1.6	1.98	11°	45	4	6,100
DLCLB 2020-060		6				45	4	6,100
DLCLB 2020-080		8				45	4	6,200
DLCLB 2020-100		10				45	4	6,200
DLCLB 2020-120		12				50	4	6,200
DLCLB 2020-140		14				50	4	6,200
DLCLB 2020-160		16				50	4	6,200
DLCLB 2020-200		20				55	4	6,900
DLCLB 2020-250		25				65	4	7,700
DLCLB 2030-100	R1.5	10	2.4	2.95	11°	60	6	7,900
DLCLB 2030-120		12				60	6	8,100
DLCLB 2030-140		14				60	6	8,100
DLCLB 2030-160		16				60	6	8,400
DLCLB 2030-200		20				70	6	8,400
DLCLB 2030-250		25				70	6	8,400
DLCLB 2030-300		30				70	6	9,200
DLCLB 2040-100	R2	10	3.2	3.95	11°	70	6	7,300
DLCLB 2040-150		15				70	6	7,300
DLCLB 2040-200		20				70	6	8,600
DLCLB 2040-250		25				70	6	9,200
DLCLB 2040-300		30				70	6	9,500
DLCLB 2040-400		40				80	6	10,300
DLCLB 2060-100	R3	10	4.8	5.95	—	80	6	9,500
DLCLB 2060-150		15				80	6	9,500
DLCLB 2060-200		20				80	6	9,500
DLCLB 2060-300		30				80	6	10,000

Unit (mm)

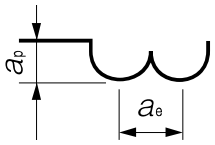
Model Number	Radius of Ball Nose R	Effective Length ℓ1	Effective Length by Inclined Angles				
			30′	1°	1° 30′	2°	3°
DLCLB 2015-040	R0.75	4	4.21	4.39	4.58	4.80	5.31
DLCLB 2015-060		6	6.31	6.59	6.89	7.23	8.04
DLCLB 2015-120		12	12.59	13.18	13.83	14.55	16.26
DLCLB 2015-180		18	18.87	19.77	20.76	21.86	24.47
DLCLB 2020-040	R1	4	4.18	4.34	4.51	4.71	5.18
DLCLB 2020-060		6	6.27	6.53	6.82	7.15	7.92
DLCLB 2020-080		8	8.36	8.73	9.14	9.59	10.66
DLCLB 2020-100		10	10.46	10.93	11.45	12.02	13.39
DLCLB 2020-120		12	12.55	13.12	13.76	14.46	16.13
DLCLB 2020-140		14	14.65	15.32	16.07	16.90	18.87
DLCLB 2020-160		16	16.74	17.52	18.38	19.34	No Interference
DLCLB 2020-200		20	20.93	21.91	23.00	24.21	No Interference
DLCLB 2020-250		25	26.16	27.41	28.78	No Interference	No Interference
DLCLB 2030-100	R1.5	10	10.51	10.96	11.46	12.01	13.32
DLCLB 2030-120		12	12.61	13.16	13.77	14.45	16.06
DLCLB 2030-140		14	14.70	15.36	16.08	16.89	18.80
DLCLB 2030-160		16	16.80	17.56	18.39	19.32	21.54
DLCLB 2030-200		20	20.98	21.95	23.02	24.20	27.01
DLCLB 2030-250		25	26.22	27.44	28.79	30.30	No Interference
DLCLB 2030-300		30	31.45	32.94	34.57	36.39	No Interference
DLCLB 2040-100	R2	10	10.49	10.91	11.38	11.90	13.14
DLCLB 2040-150		15	15.73	16.41	17.16	18.00	19.99
DLCLB 2040-200		20	20.96	21.90	22.94	24.09	No Interference
DLCLB 2040-250		25	26.20	27.39	28.72	30.19	No Interference
DLCLB 2040-300		30	31.43	32.89	34.50	No Interference	No Interference
DLCLB 2040-400		40	41.90	43.87	No Interference	No Interference	No Interference
DLCLB 2060-100	R3	10	No Interference	No Interference	No Interference	No Interference	No Interference
DLCLB 2060-150		15	No Interference	No Interference	No Interference	No Interference	No Interference
DLCLB 2060-200		20	No Interference	No Interference	No Interference	No Interference	No Interference
DLCLB 2060-300		30	No Interference	No Interference	No Interference	No Interference	No Interference

Milling Conditions for DLCLB

WORK MATERIAL			COPPER / ALUMINUM ALLOYS				TUNGSTEN COPPER			
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)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
2001-003	**R0.05**	0.3	43,600	220	0.01	0.01	32,700	160	0.008	0.008
2001-005		0.5	43,600	160	0.007	0.007	32,700	110	0.005	0.005
20015-003	**R0.075**	0.3	43,600	250	0.015	0.02	32,700	190	0.012	0.016
20015-005		0.5	43,600	220	0.015	0.02	32,700	150	0.012	0.016
20015-010		1	43,600	160	0.007	0.01	32,700	120	0.006	0.008
2002-003	**R0.1**	0.3	43,600	550	0.025	0.05	32,700	380	0.02	0.04
2002-005		0.5	43,600	550	0.025	0.05	32,700	380	0.02	0.04
2002-010		1	43,600	440	0.02	0.04	32,700	270	0.015	0.03
2002-015		1.5	32,900	250	0.015	0.03	24,700	120	0.008	0.02
2003-006	**R0.15**	0.6	43,600	760	0.03	0.07	32,700	550	0.03	0.07
2003-010		1	43,600	760	0.03	0.07	32,700	550	0.03	0.07
2003-015		1.5	43,600	550	0.025	0.05	32,700	290	0.02	0.05
2003-020		2	39,200	390	0.02	0.03	29,400	200	0.01	0.02
2004-010	**R0.2**	1	43,600	1,090	0.05	0.1	32,700	760	0.04	0.08
2004-020		2	43,600	650	0.035	0.06	32,700	380	0.02	0.05
2004-030		3	35,000	470	0.02	0.04	29,200	230	0.01	0.03
2004-040		4	27,300	270	0.008	0.015	19,600	110	0.005	0.01
2005-010	**R0.25**	1	43,600	1,420	0.08	0.15	32,700	890	0.08	0.15
2005-020		2	43,600	870	0.08	0.15	32,700	550	0.08	0.15
2005-030		3	38,200	650	0.06	0.1	29,500	390	0.06	0.08
2005-040		4	32,700	440	0.04	0.08	24,000	220	0.025	0.05
2005-050		5	27,300	330	0.02	0.04	19,600	160	0.01	0.02
2006-010	**R0.3**	1	43,600	1,870	0.12	0.2	32,700	1,400	0.12	0.2
2006-020		2	43,600	1,750	0.12	0.2	32,700	1,310	0.12	0.2
2006-030		3	43,600	1,090	0.1	0.14	32,700	760	0.08	0.1
2006-040		4	32,700	760	0.07	0.1	27,300	440	0.04	0.06
2006-050		5	29,500	650	0.05	0.08	24,000	330	0.02	0.04
2006-060		6	27,300	550	0.04	0.06	21,800	220	0.01	0.03
2008-020	**R0.4**	2	43,600	2,820	0.15	0.3	32,700	1,980	0.15	0.3
2008-030		3	43,600	2,180	0.15	0.3	32,700	1,530	0.15	0.3
2008-040		4	38,200	1,750	0.12	0.2	29,500	1,090	0.1	0.16
2008-060		6	32,700	1,090	0.08	0.15	21,800	550	0.05	0.1
2008-080		8	23,800	760	0.05	0.06	17,300	320	0.02	0.025
2010-020	**R0.5**	2	39,100	2,740	0.25	0.4	30,000	2,050	0.25	0.4
2010-030		3	39,100	2,740	0.25	0.4	30,000	1,960	0.25	0.4
2010-040		4	39,100	2,350	0.2	0.4	29,500	1,560	0.2	0.4
2010-050		5	38,200	2,180	0.16	0.3	29,500	1,530	0.12	0.25
2010-060		6	34,500	1,840	0.14	0.3	26,200	1,150	0.1	0.25
2010-080		8	27,300	1,090	0.12	0.2	19,600	550	0.06	0.1
2010-100		10	20,300	810	0.08	0.15	16,200	300	0.03	0.05
2010-120		12	13,100	490	0.06	0.1	9,800	160	0.015	0.04

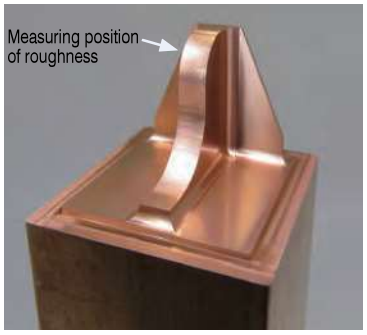
Milling Conditions for DLCLB

WORK MATERIAL			COPPER / ALUMINUM ALLOYS				TUNGSTEN COPPER			
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)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
2015-040	**R0.75**	4	25,500	2,270	0.3	0.6	21,300	1,700	0.3	0.6
2015-060		6	25,500	2,040	0.3	0.6	21,300	1,530	0.3	0.6
2015-120		12	17,500	1,090	0.15	0.3	13,100	550	0.1	0.2
2015-180		18	8,500	590	0.08	0.12	6,800	170	0.02	0.06
2020-040	**R1**	4	18,700	2,490	0.45	0.8	14,000	1,500	0.45	0.8
2020-060		6	18,700	2,080	0.45	0.8	14,000	1,250	0.45	0.8
2020-080		8	18,700	1,800	0.4	0.8	13,500	1,200	0.4	0.8
2020-100		10	18,700	1,700	0.3	0.6	13,500	1,190	0.25	0.5
2020-120		12	16,800	1,470	0.3	0.6	12,600	950	0.25	0.5
2020-140		14	15,000	1,250	0.28	0.5	11,200	750	0.18	0.4
2020-160		16	13,100	1,090	0.25	0.5	9,800	550	0.12	0.25
2020-200		20	10,000	800	0.15	0.3	8,000	350	0.06	0.1
2020-250		25	6,700	500	0.08	0.15	5,000	170	0.03	0.05
2030-100	**R1.5**	10	15,000	2,550	0.6	1.2	12,000	1,800	0.6	1.2
2030-120		12	15,000	2,550	0.6	1.2	11,800	1,740	0.6	1.2
2030-140		14	15,000	2,510	0.6	1.2	11,700	1,670	0.6	1.2
2030-160		16	14,200	2,140	0.6	1	10,700	1,600	0.5	1
2030-200		20	12,700	1,910	0.5	0.8	9,500	1,110	0.4	0.6
2030-250		25	10,100	1,520	0.4	0.6	8,400	760	0.2	0.3
2030-300		30	8,700	1,310	0.2	0.4	6,500	550	0.08	0.15
2040-100	**R2**	10	11,500	2,880	0.8	1.6	8,600	2,010	0.8	1.6
2040-150		15	11,500	2,670	0.8	1.6	8,600	1,880	0.8	1.6
2040-200		20	11,500	2,460	0.8	1.6	8,200	1,640	0.8	1.2
2040-250		25	10,300	2,210	0.6	1.2	6,700	1,270	0.5	1
2040-300		30	9,000	1,800	0.5	1	5,300	900	0.3	0.5
2040-400		40	6,000	900	0.4	0.8	3,800	380	0.15	0.3
2060-100	**R3**	10	10,000	4,190	1	2.2	7,500	3,150	1	2.2
2060-150		15	10,000	4,190	1	2.2	7,500	2,800	1	2.2
2060-200		20	10,000	3,000	1	2	7,500	2,000	0.7	1.5
2060-300		30	10,000	3,000	0.8	1.6	7,000	1,800	0.4	0.8

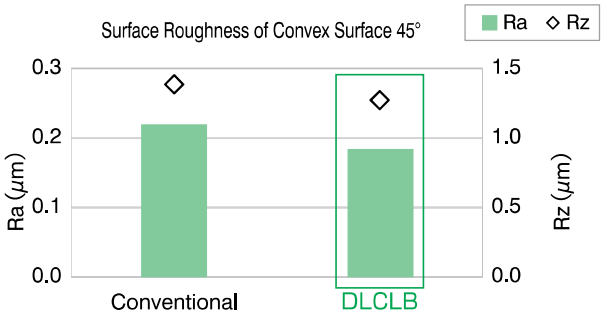


Note:
- Decrease the feed rate more than 50% from the milling parameters when slot milling.
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed, or when chattering occurs.
- Recommend wet coolant for Copper and Tungsten-Copper.

Milling Example of Copper Electrode Model DLCLB R1 × EL16 — Tough Pitch Copper C1100



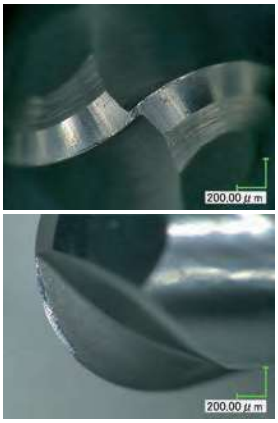
Model Size : 20 x 20 x Depth 16 mm
Coolant : Oil Mist



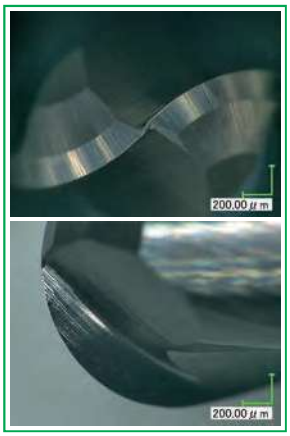
Improved surface roughness compared to the conventional model.

No	Milling Process	Milling Method	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	a_e (mm)	Overhang Length (mm)	Cycle Time (h:m:s)
1	Roughing	Contour Milling	10,800	1,090	0.25	0.5	24	1:31:59
2	Semi-finishing		10,800	1,090	0.05	0.05		1:31:15
3	Finishing		13,090	545	0.0001 (Cusp Height)	0.03		1:15:26
							Total	4:18:40

Conventional



DLCLB



Tools after milling

DLCLB has less wear and damage after 4 hours of milling, and enables stable milling throughout the long cycle time.

DLCLB series Introduction Video

DLCLB series Housing-rib Electrode Milling Video

DLCLB Milling example　Copper Tungsten (Cu30 : W70)

Work Size : 50 x 50 x 50 mm
Coolant : Oil Mist

No	Milling Process		Tool	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	a_e (mm)	Allowance (mm)	Cycle Time (h:m:s)
1	Roughing	—	R1.5 × EL10	12,000	1,800	0.6	1.2	0.1	0:19:07
2	Roughing	—	R0.75 × EL6	21,300	1,530	0.3	0.6	0.1	0:21:34
3	Semi-finishing	Flat surface	R1 × EL6	14,000	1,250	0.05	0.1	0.05	0:32:15
4	Semi-finishing	Convex Pocket	R0.5 × EL5	29,500	1,530	0.05	0.06	0.05	1:43:09
5	Semi-finishing	Corner	R0.4 × EL6	21,800	550	0.06	0.06	0.05	1:10:33
6	Finishing	Flat surface	R1 × EL6	14,000	1,250	0.05	0.04	0	1:25:15
5	Finishing	Convex Pocket	R0.5 × EL5	29,500	1,530	0.05	0.028	0	1:37:19
6	Finishing	Cylinder corner	R0.3 × EL5	24,000	330	0.0002 (Cusp Height)	0.0002 (Cusp Height)	0	4:54:10

Total 12:03:22

DLC coating offers high wear resistance and is suited even for copper tungsten that is hard to mill.

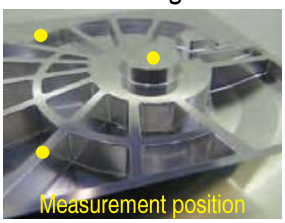
DLCLB Milling example　Aluminum A7075

Work Size : 50 x 50 x 50 mm
Coolant : Water Soluble

Reflection of the background

The surface finish is of such high quality that the letters reflect perfectly in it.

Surface roughness



Average of 3 positions
Ra 0.03μm

Suited even for Aluminum milling as the cutting edge is sharper than normal endmills for steels.

No	Milling Process		Tool	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	a_e (mm)	Allowance (mm)	Cycle Time (h:m:s)
1	Roughing	—	R1.5 × EL10	15,000	2,550	0.6	1.2	0.1	0:17:49
2	Roughing	—	R0.75 × EL6	25,500	2,040	0.3	0.6	0.1	0:20:22
3	Semi-finishing	Flat surface	R1 × EL6	18,700	2,100	0.05	0.1	0.05	0:25:06
4	Semi-finishing	Convex Pocket	R0.5 × EL5	30,000	1,700	0.05	0.06	0.05	0:53:17
5	Semi-finishing	Corner	R0.4 × EL6	30,000	1,000	0.06	0.06	0.05	0:17:02
6	Finishing	Flat surface	R1 × EL6	18,700	2,100	0.05	0.04	0	1:06:03
5	Finishing	Convex Pocket	R0.5 × EL5	30,000	1,700	0.05	0.028	0	1:31:32
6	Finishing	Cylinder corner	R0.3 × EL5	30,000	650	0.0002 (Cusp Height)	0.0002 (Cusp Height)	0	2:40:18

Total 7:31:29