



Size $\phi 0.4 \sim \phi 6$

DCLS

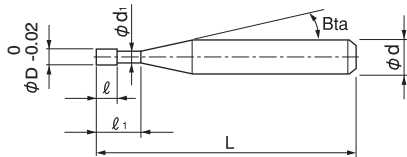


Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

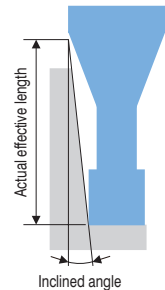
Work Material																	
Carbon Steels S45C S55C	Alloy Steels SK / SCM SUS	Prehardened Steels NAK HPM	Hardened Steels					Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
			~50HRC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

Features

2 Flute Diamond coated Long Neck Square End Mills for milling Graphite Electrodes.
 New diamond coating, with a highly adhesive base layer, offers excellent wear resistance and long tool life.



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 45 models

Unit (mm)

Model Number	Outside Diameter ϕD	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°
DCLS 2004-020	0.4	2	0.8	0.37	16°	45	4	16,000	2.26	2.43	2.57	2.68	2.89
DCLS 2004-040		4							4.40	4.63	4.80	4.97	5.34
DCLS 2004-060		6							6.51	6.77	7.00	7.24	7.79
DCLS 2005-020	0.5	2	1	0.47	16°	45	4	16,000	2.32	2.52	2.68	2.82	3.07
DCLS 2005-040		4							4.48	4.74	4.95	5.13	5.51
DCLS 2005-060		6							6.60	6.91	7.15	7.40	7.96
DCLS 2006-020	0.6	2	1.2	0.57	16°	45	4	16,000	2.36	2.60	2.78	2.95	3.23
DCLS 2006-040		4							4.55	4.85	5.08	5.29	5.68
DCLS 2006-060		6							6.69	7.04	7.31	7.56	8.13
DCLS 2006-080		8							8.80	9.19	9.51	9.84	10.58
DCLS 2006-100		10				45	4	16,000	10.90	11.33	11.71	12.12	13.03

Unit (mm)

Model Number	Outside Diameter ϕD	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°
DCLS 2007-040	0.7	4	1.4	0.67	16°	45	4	16,000	4.55	4.85	5.08	5.29	5.68
DCLS 2007-060		6				45	4	16,000	6.69	7.04	7.31	7.56	8.13
DCLS 2007-080		8				45	4	16,000	8.80	9.19	9.51	9.84	10.58
DCLS 2007-100		10				45	4	16,000	10.90	11.33	11.71	12.12	13.03
DCLS 2008-040	0.8	4	1.6	0.77	16°	45	4	16,000	4.55	4.85	5.08	5.29	5.68
DCLS 2008-060		6				45	4	16,000	6.69	7.04	7.31	7.56	8.13
DCLS 2008-080		8				45	4	16,000	8.80	9.19	9.51	9.84	10.58
DCLS 2008-100		10				45	4	16,000	10.90	11.33	11.71	12.12	13.03
DCLS 2010-040	1	4	2	0.96	16°	45	4	16,000	4.57	4.86	5.09	5.30	5.70
DCLS 2010-060		6				45	4	16,000	6.70	7.05	7.32	7.57	8.14
DCLS 2010-080		8				45	4	16,000	8.82	9.20	9.52	9.85	10.59
DCLS 2010-100		10				45	4	16,000	10.91	11.34	11.72	12.13	13.04
DCLS 2010-160		16				50	4	16,000	17.16	17.73	18.32	18.96	20.38
DCLS 2010-210		21				55	4	16,000	22.33	23.05	23.82	24.65	26.50
DCLS 2015-060	1.5	6	3	1.44	16°	45	4	16,000	6.17	6.37	6.58	6.81	7.33
DCLS 2015-100		10				45	4	16,000	10.29	10.63	10.98	11.37	12.22
DCLS 2015-160		16				50	4	16,000	16.48	17.02	17.59	18.20	19.56
DCLS 2015-210		21				55	4	16,000	21.64	22.34	23.09	23.89	No Interference
DCLS 2020-060	2	6	4	1.9	16°	50	4	16,000	6.22	6.42	6.64	6.87	7.39
DCLS 2020-100		10				50	4	16,000	10.35	10.68	11.04	11.43	12.28
DCLS 2020-160		16				50	4	16,000	16.53	17.07	17.65	18.26	No Interference
DCLS 2020-210		21				55	4	16,000	21.69	22.40	23.15	23.95	No Interference
DCLS 2020-260		26				55	4	16,000	26.85	27.72	28.65	No Interference	No Interference
DCLS 2030-160	3	16	6	2.9	16°	70	6	18,000	16.53	17.07	17.65	18.26	19.63
DCLS 2030-210		21				70	6	20,000	21.69	22.40	23.15	23.95	25.74
DCLS 2030-260		26				70	6	20,000	26.85	27.72	28.65	29.65	No Interference
DCLS 2030-320		32				80	6	20,000	33.04	34.11	35.25	36.48	No Interference
DCLS 2040-210	4	21	8	3.91	16°	70	6	20,000	21.68	22.39	23.14	23.94	No Interference
DCLS 2040-260		26				70	6	20,000	26.84	27.71	28.64	No Interference	No Interference
DCLS 2040-320		32				70	6	20,000	33.03	34.10	35.24	No Interference	No Interference
DCLS 2040-420		42				80	6	23,000	43.34	44.75	No Interference	No Interference	No Interference
DCLS 2060-320	6	32	12	5.71	—	80	6	23,000	No Interference	No Interference	No Interference	No Interference	No Interference
DCLS 2060-420		42				80	6	23,000	No Interference	No Interference	No Interference	No Interference	No Interference
DCLS 2060-630		63				120	6	30,000	No Interference	No Interference	No Interference	No Interference	No Interference

Ø3mm Shank
V SeriesUDC-PCD
SeriesCBN
SeriesSquare
Long Neck
SquareRadius
Radius
Long Neck
RadiusTaper Neck
RadiusBall / Long
Shank BallLong Neck
Ball

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data

Milling Conditions for DCLS

WORK MATERIAL			GRAPHITE				
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Side Milling		Slotting
					a _D Axial Depth (mm)	a _e Radial Depth (mm)	a _D Axial Depth (mm)
2004-020	0.4	2	34,000	410	0.4	0.02	0.02
2004-040		4	34,000	240	0.4	0.02	0.02
2004-060		6	34,000	180	0.4	0.02	0.02
2005-020	0.5	2	34,000	540	0.5	0.025	0.025
2005-040		4	34,000	350	0.5	0.025	0.025
2005-060		6	34,000	240	0.5	0.025	0.025
2006-020	0.6	2	34,000	660	0.6	0.03	0.03
2006-040		4	34,000	520	0.6	0.03	0.03
2006-060		6	34,000	320	0.6	0.03	0.03
2006-080		8	25,000	220	0.6	0.03	0.03
2006-100	0.7	10	24,000	120	0.6	0.03	0.03
2007-040		4	34,000	600	0.7	0.035	0.035
2007-060		6	34,000	380	0.7	0.035	0.035
2007-080	0.8	8	25,000	260	0.7	0.035	0.035
2007-100		10	24,000	140	0.7	0.035	0.035
2008-040	0.8	4	34,000	690	0.8	0.04	0.04
2008-060		6	34,000	440	0.8	0.04	0.04
2008-080		8	25,000	300	0.8	0.04	0.04
2008-100		10	24,000	170	0.8	0.04	0.04
2010-040	1	4	34,000	1,170	1	0.05	0.1
2010-060		6	26,000	850	1	0.05	0.1
2010-080		8	22,000	660	1	0.05	0.1
2010-100		10	22,100	530	1	0.05	0.1
2010-160		16	14,300	300	1	0.05	0.1
2010-210		21	12,500	200	1	0.05	0.1
2015-060	1.5	6	22,000	1,620	1.5	0.075	0.15
2015-100		10	17,000	1,050	1.5	0.075	0.15
2015-160		16	15,000	600	1.5	0.075	0.15
2015-210		21	10,000	370	1.5	0.075	0.15
2020-060	2	6	25,500	2,175	2	0.1	0.2
2020-100		10	21,000	1,680	2	0.1	0.2
2020-160		16	19,500	1,230	2	0.1	0.2
2020-210		21	16,500	750	2	0.1	0.2
2020-260		26	12,000	590	2	0.1	0.2
2030-160	3	16	22,000	2,200	3	0.15	0.3
2030-210		21	20,000	1,800	3	0.15	0.3
2030-260		26	18,000	1,450	3	0.15	0.3
2030-320		32	15,000	1,040	3	0.15	0.3
2040-210	4	21	14,000	1,760	4	0.2	0.4
2040-260		26	13,500	1,450	4	0.2	0.4
2040-320		32	13,000	1,160	4	0.2	0.4
2040-420		42	11,000	900	4	0.2	0.4
2060-320	6	32	12,000	1,500	6	0.6	1.2
2060-420		42	10,800	1,160	6	0.6	1.2
2060-630		63	7,400	620	6	0.6	1.2

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

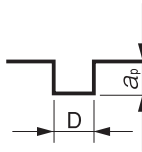
Barrel

Spiral
V Cutter

Drill

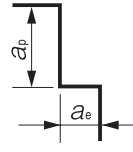
Technical Data

Slotting



D : Outside Diameter (mm)

Side Milling



Note:

- Use a milling machine dedicated for Graphite.
- Recommend air blow for Graphite.

Other series for Graphite milling

Square / Long Neck Square

(★ Highly Recommended ● Recommended ○ Suggested)

Number of Flutes, Tool Type	Model Number	Appearance	Coating	Size	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Hard Brittle (Non-Metallic) Materials	Page
4 flutes Square	CGE		Non-coat	$\phi 2 \sim \phi 20$	○	★	○	○	○		236
2 flutes Square	DCES 2000		DIA	$\phi 0.2 \sim \phi 6$	○	★	○	○	●	○	188
4 flutes Square	DCES 4000		DIA	$\phi 3 \sim \phi 10$	○	★	○	○	●	○	234
2 flutes Long Neck Square	DCLS		DIA	$\phi 0.4 \sim \phi 6$	○	★	○	○	●	○	266

Long Neck Radius

4 flutes Long Neck Radius	DCLRS		DIA	$\phi 1 \sim \phi 6$	○	★	○	○	●	○	396
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Ball / Long Neck Ball / Taper Neck Ball

2 flutes Ball	CGB 2000		Non-coat	R0.2~R6	○	★	○	○	○		440
4 flutes Ball	CGB 4000		Non-coat	R2~R10	○	★	○	○	○		458
2 flutes Ball	DCB		DIA	R0.5~R6	○	★	○	○	●	○	438
2 flutes Long Neck Ball	DCLB		DIA	R0.2~R3	○	★	○	○	●	○	512
2 flutes Taper Neck Ball	DCTNB		DIA	R0.5~R1	○	★	○	○	●	○	556

φ3mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Square
Long Neck
Square

Radius

Radius
Long Neck
Radius

Taper Neck
Radius

Ball / Long
Shank Ball

Ball

Ball
Long Neck
Ball
Taper Neck
Ball

Taper

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data