



General Features

Micro Long Drills are oil-hole drills for high efficiency drilling that were developed for drilling deep, small-diameter holes. These next-generation, small-diameter hole drills feature improved strength - often a problem area with small-diameter drills.

Characteristics and Applications

Deep-hole drilling

New groove shape ensures good drill rigidity and chip evacuation performance.

High efficiency drilling to depths of over 20x drill diameter at over $v_c=500\text{mm/min}$ (drill diameter 1.3mm, SUS416 equivalent).

Optimal thinning and edge balance for stable chip control.

Long tool life

Special coating provides long tool life with a wide variety of work materials.

Improved chip evacuation performance makes it possible to reduce spindle load fluctuation, ensuring stable tool life.

Series

Application	Cat. No.	Diameter Range (mm)	Drilling Depth (L/D)	Content
Deep Hole Drilling	MLDH□□□□L5	ø0.8 to 2.0	Up to 5	41 items
	MLDH□□□□L12	ø0.8 to 2.0	Up to 12	41 items
	MLDH□□□□L20	ø0.8 to 2.0	Up to 20	41 items
	MLDH□□□□L30	ø0.8 to 2.0	Up to 30	41 items
Guide Hole Drilling	MLDH□□□□P	ø0.8 to 2.0	Up to 2	41 items

Recommended Cutting Conditions

MLDH-P Type/MLDH-L5 Type

(v_c : Cutting Speed m/min f : Feed Rate mm/rev)

Drill Diameter DC (mm)	Cutting Conditions	Soft Steel Up to 200HB	General Steel Up to 250HB	Alloy Steel Up to 300HB	Stainless Steel Up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steels
Up to 1.0	v_c	40 - 50 - 60	40 - 50 - 60	40 - 50 - 60	20 - 30 - 40	40 - 50 - 60	50 - 60 - 70	5 - 10 - 15
	f	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.02 - 0.03 - 0.04	0.03 - 0.04 - 0.06	0.005 - 0.01 - 0.02
Up to 1.5	v_c	40 - 50 - 60	40 - 50 - 60	40 - 50 - 60	20 - 30 - 40	40 - 50 - 60	50 - 60 - 70	5 - 10 - 15
	f	0.04 - 0.08 - 0.12	0.04 - 0.08 - 0.12	0.04 - 0.08 - 0.12	0.02 - 0.05 - 0.10	0.04 - 0.08 - 0.12	0.05 - 0.10 - 0.15	0.01 - 0.03 - 0.05
Up to 2.0	v_c	40 - 50 - 60	40 - 50 - 60	40 - 50 - 60	20 - 30 - 40	40 - 50 - 60	50 - 60 - 70	5 - 10 - 15
	f	0.06 - 0.08 - 0.12	0.06 - 0.08 - 0.12	0.06 - 0.08 - 0.12	0.04 - 0.06 - 0.10	0.06 - 0.08 - 0.12	0.08 - 0.12 - 0.15	0.01 - 0.03 - 0.05

MLDH-L12 Type/MLDH-L20 Type/MLDH-L30 Type

Min. - Optimum - Max.

Drill Diameter DC (mm)	Cutting Conditions	Soft Steel Up to 200HB	General Steel Up to 250HB	Alloy Steel Up to 300HB	Stainless Steel Up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steels
Up to 1.0	v_c	40 - 50 - 60	40 - 50 - 60	40 - 50 - 60	20 - 30 - 40	40 - 50 - 60	50 - 60 - 70	5 - 10 - 15
	f	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.02 - 0.03 - 0.04	0.03 - 0.04 - 0.06	0.005 - 0.01 - 0.02
Up to 1.5	v_c	40 - 50 - 60	40 - 50 - 60	40 - 50 - 60	20 - 30 - 40	40 - 50 - 60	50 - 60 - 70	5 - 10 - 15
	f	0.03 - 0.05 - 0.07	0.03 - 0.05 - 0.07	0.03 - 0.05 - 0.07	0.02 - 0.04 - 0.07	0.04 - 0.07 - 0.10	0.05 - 0.08 - 0.12	0.01 - 0.02 - 0.03
Up to 2.0	v_c	40 - 50 - 60	40 - 50 - 60	40 - 50 - 60	20 - 30 - 40	40 - 50 - 60	50 - 60 - 70	5 - 10 - 15
	f	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.07 - 0.10	0.05 - 0.08 - 0.12	0.01 - 0.02 - 0.03

Min. - Optimum - Max.

Application Examples

Automotive Component Mould (Equivalent to SUS416)

Tool : MLDH1400L20 (Guide : MLDH1400P)

Equipment : Vertical Machining Center (HSKA63)

Coolant Supply : Internal Coolant (Emulsion Type, Pump Pressure : 4MPa)

Cutting Conditions : $v_c=60\text{m/min}$ $f=0.03\text{mm/rev}$ $H=21\text{mm}$

Tool Life : 600 Units (11.4m/reg)



Tooling Component (Equivalent to SKD11)

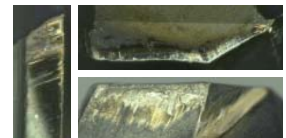
Tool : MLDH1900L20 (Guide : MLDH1900P)

Equipment : Vertical Machining Center (HSKA63)

Coolant Supply : Internal Coolant (Emulsion Type, Pump Pressure : 4MPa)

Cutting Conditions : $v_c=60\text{m/min}$ $f=0.10\text{mm/rev}$ $H=27\text{mm}$

Tool Life : 600 Units (18m/reg)

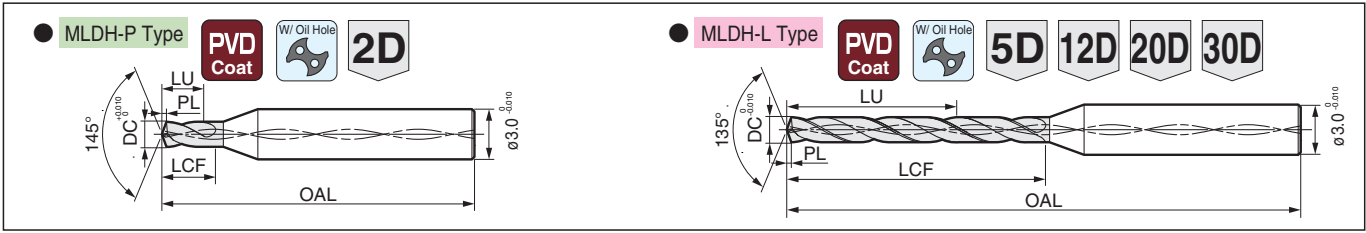


Drilling
Solid
Special
Indexable
Reamer
Brazed
Others

MLDH-L / MLDH-P Type

Internal Coolant Supply

Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Ti Alloy	Heat-resistant Steels	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP
Up to 0.28%	From 0.28%	Steel	Up to 45HRC	From 45HRC	Steel						



Body Diameter $\varnothing 0.80$ to 0.90 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				Shank DMM (mm)
				Effective Length LU	Flute Length LCF	Total length OAL	Tip PL	
0.80	2	●	MLDH 0800P	2.4	3.2	45.0	0.1	3.0
	5	●	0800L5	4.8	8.0	50.0	0.2	
	12	●	0800L12	10.4	14.0	55.0	0.2	
	20	●	0800L20	16.8	19.0	60.0	0.2	
	30	●	0800L30	24.8	28.0	70.0	0.2	
0.81	2	●	MLDH 0810P	2.4	3.2	45.0	0.1	3.0
	5	●	0810L5	4.8	9.0	50.0	0.2	
	12	●	0810L12	10.5	14.0	55.0	0.2	
	20	●	0810L20	17.0	19.0	60.0	0.2	
	30	●	0810L30	25.1	28.0	70.0	0.2	
0.82	2	●	MLDH 0820P	2.4	3.3	45.0	0.1	3.0
	5	●	0820L5	4.9	9.0	50.0	0.2	
	12	●	0820L12	10.6	14.0	55.0	0.2	
	20	●	0820L20	17.2	20.0	60.0	0.2	
	30	●	0820L30	25.4	28.0	70.0	0.2	
0.83	2	●	MLDH 0830P	2.4	3.3	45.0	0.1	3.0
	5	●	0830L5	4.9	9.0	50.0	0.2	
	12	●	0830L12	10.7	14.0	55.0	0.2	
	20	●	0830L20	17.4	20.0	60.0	0.2	
	30	●	0830L30	25.7	28.0	70.0	0.2	
0.84	2	●	MLDH 0840P	2.5	3.4	45.0	0.1	3.0
	5	●	0840L5	5.0	9.0	50.0	0.2	
	12	●	0840L12	10.9	14.0	55.0	0.2	
	20	●	0840L20	17.6	20.0	60.0	0.2	
	30	●	0840L30	26.0	29.0	70.0	0.2	
0.85	2	●	MLDH 0850P	2.5	3.4	45.0	0.1	3.0
	5	●	0850L5	5.1	9.0	50.0	0.2	
	12	●	0850L12	11.0	14.0	55.0	0.2	
	20	●	0850L20	17.8	20.0	60.0	0.2	
	30	●	0850L30	26.3	29.0	70.0	0.2	
0.86	2	●	MLDH 0860P	2.5	3.4	45.0	0.1	3.0
	5	●	0860L5	5.1	9.0	50.0	0.2	
	12	●	0860L12	11.1	15.0	55.0	0.2	
	20	●	0860L20	18.0	21.0	65.0	0.2	
	30	●	0860L30	26.6	29.0	70.0	0.2	
0.87	2	●	MLDH 0870P	2.6	3.5	45.0	0.1	3.0
	5	●	0870L5	5.2	9.0	50.0	0.2	
	12	●	0870L12	11.3	15.0	55.0	0.2	
	20	●	0870L20	18.2	21.0	65.0	0.2	
	30	●	0870L30	26.9	30.0	70.0	0.2	
0.88	2	●	MLDH 0880P	2.6	3.5	45.0	0.1	3.0
	5	●	0880L5	5.2	9.0	50.0	0.2	
	12	●	0880L12	11.4	15.0	55.0	0.2	
	20	●	0880L20	18.4	21.0	65.0	0.2	
	30	●	0880L30	27.2	30.0	70.0	0.2	
0.89	2	●	MLDH 0890P	2.6	3.6	45.0	0.1	3.0
	5	●	0890L5	5.3	9.0	50.0	0.2	
	12	●	0890L12	11.5	15.0	55.0	0.2	
	20	●	0890L20	18.6	21.0	65.0	0.2	
	30	●	0890L30	27.5	30.0	70.0	0.2	
0.90	2	●	MLDH 0900P	2.7	3.6	45.0	0.1	3.0
	5	●	0900L5	5.4	9.0	50.0	0.2	
	12	●	0900L12	11.7	15.0	55.0	0.2	
	20	●	0900L20	18.9	22.0	65.0	0.2	
	30	●	0900L30	27.9	31.0	75.0	0.2	

Grade: ACV70

Body Diameter $\varnothing 0.91$ to 1.05 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				Shank DMM (mm)
				Effective Length LU	Flute Length LCF	Total length OAL	Tip PL	
0.91	2	●	MLDH 0910P	2.7	3.6	45.0	0.1	3.0
	5	●	0910L5	5.4	10.0	50.0	0.2	
	12	●	0910L12	11.8	15.0	55.0	0.2	
	20	●	0910L20	19.1	22.0	65.0	0.2	
	30	●	0910L30	28.2	31.0	75.0	0.2	
0.92	2	●	MLDH 0920P	2.7	3.7	45.0	0.1	3.0
	5	●	0920L5	5.5	10.0	50.0	0.2	
	12	●	0920L12	11.9	16.0	60.0	0.2	
	20	●	0920L20	19.3	22.0	65.0	0.2	
	30	●	0920L30	28.5	31.0	75.0	0.2	
0.93	2	●	MLDH 0930P	2.7	3.7	45.0	0.1	3.0
	5	●	0930L5	5.5	10.0	50.0	0.2	
	12	●	0930L12	12.0	16.0	60.0	0.2	
	20	●	0930L20	19.5	22.0	65.0	0.2	
	30	●	0930L30	28.8	32.0	75.0	0.2	
0.94	2	●	MLDH 0940P	2.8	3.8	45.0	0.1	3.0
	5	●	0940L5	5.6	10.0	50.0	0.2	
	12	●	0940L12	12.2	16.0	60.0	0.2	
	20	●	0940L20	19.7	23.0	65.0	0.2	
	30	●	0940L30	29.1	32.0	75.0	0.2	
0.95	2	●	MLDH 0950P	2.8	3.8	45.0	0.1	3.0
	5	●	0950L5	5.7	10.0	50.0	0.2	
	12	●	0950L12	12.3	16.0	60.0	0.2	
	20	●	0950L20	19.9	23.0	65.0	0.2	
	30	●	0950L30	29.4	32.0	75.0	0.2	
0.96	2	●	MLDH 0960P	2.8	3.8	45.0	0.2	3.0
	5	●	0960L5	5.7	10.0	50.0	0.2	
	12	●	0960L12	12.4	16.0	60.0	0.2	
	20	●	0960L20	20.1	23.0	65.0	0.2	
	30	●	0960L30	29.7	33.0	75.0	0.2	
0.97	2	●	MLDH 0970P	2.9	3.9	45.0	0.2	3.0
	5	●	0970L5	5.8	10.0	50.0	0.2	
	12	●	0970L12	12.6	16.0	60.0	0.2	
	20	●	0970L20	20.3	23.0	65.0	0.2	
	30	●	0970L30	30.0	33.0	75.0	0.2	
0.98	2	●	MLDH 0980P	2.9	3.9	45.0	0.2	3.0
	5	●	0980L5	5.8	10.0	50.0	0.2	
	12	●	0980L12	12.7	17.0	60.0	0.2	
	20	●	0980L20	20.5	24.0	65.0	0.2	
	30	●	0980L30	30.3	33.0	75.0	0.2	
0.99	2	●	MLDH 0990P	2.9	4.0	45.0	0.2	3.0
	5	●	0990L5	5.9	10.0	50.0	0.2	
	12	●	0990L12	12.8	17.0	60.0	0.2	
	20	●	0990L20	20.7	24.0	65.0	0.2	
	30	●	0990L30	30.6	34.0	75.0	0.2	
1.00	2	●	MLDH 1000P	3.0	4.0	45.0	0.2	3.0
	5	●	1000L5	6.0	10.0	50.0	0.2	
	12	●	1000L12	13.0	17.0	60.0	0.2	
	20	●	1000L20	21.0	24.0	65.0	0.2	
	30	●	1000L30	31.0	34.0	75.0	0.2	
1.05	2	●	MLDH 1050P	3.1	4.2	45.0	0.2	3.0
	5	●	1050L5	6.3	12.0	55.0	0.2	
	12	●	1050L12	13.6	18.0	60.0	0.2	
	20	●	1050L20	22.0	25.0	65.0	0.2	
	30	●	1050L30	32.5	36.0	80.0	0.2	

Grade: ACV70

Drilling

Solid
Special
Indexable
Reamer
Brazed
Others

MLDH-P Type



MLDH-L Type

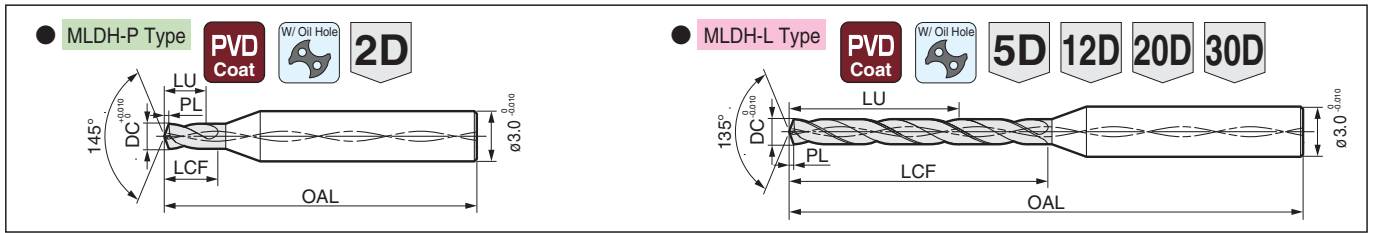


Micro Long Drill

MLDH-L / MLDH-P Type

Internal Coolant Supply

Carbon Steel, Alloy Steel Up to 0.28% C	Tempered Steel From 0.28% C	Hardened Steel Up to 65HRC	Stainless Steel From 40HRC	Ti Alloy	Heat-resistant Steels	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composites CFRP
⊙	⊙	○	○	⊙	○	⊙	⊙	○	○	○



Body Diameter ø1.10 to 1.60mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				Shank DMM (mm)
				Effective Length LU	Flute Length LCF	Total length OAL	Tip PL	
1.10	2	●	MLDH 1100P	3.3	4.4	45.0	0.2	3.0
	5	●	1100L5	6.6	12.0	55.0	0.2	
	12	●	1100L12	14.3	19.0	60.0	0.2	
	20	●	1100L20	23.1	26.0	70.0	0.2	
	30	●	1100L30	34.1	37.0	80.0	0.2	
1.15	2	●	MLDH 1150P	3.4	4.6	45.0	0.2	3.0
	5	●	1150L5	6.9	12.0	55.0	0.2	
	12	●	1150L12	14.9	20.0	60.0	0.2	
	20	●	1150L20	24.1	28.0	70.0	0.2	
	30	●	1150L30	35.6	39.0	80.0	0.2	
1.20	2	●	MLDH 1200P	3.6	4.8	45.0	0.2	3.0
	5	●	1200L5	7.2	12.0	55.0	0.2	
	12	●	1200L12	15.6	20.0	60.0	0.2	
	20	●	1200L20	25.2	29.0	70.0	0.2	
	30	●	1200L30	37.2	41.0	85.0	0.2	
1.25	2	●	MLDH 1250P	3.7	5.0	45.0	0.2	3.0
	5	●	1250L5	7.5	14.0	55.0	0.3	
	12	●	1250L12	16.2	21.0	65.0	0.3	
	20	●	1250L20	26.2	30.0	70.0	0.3	
	30	●	1250L30	38.7	43.0	85.0	0.3	
1.30	2	●	MLDH 1300P	3.9	5.2	45.0	0.2	3.0
	5	●	1300L5	7.8	14.0	55.0	0.3	
	12	●	1300L12	16.9	22.0	65.0	0.3	
	20	●	1300L20	27.3	31.0	75.0	0.3	
	30	●	1300L30	40.3	44.0	85.0	0.3	
1.35	2	●	MLDH 1350P	4.0	5.4	45.0	0.2	3.0
	5	●	1350L5	8.1	14.0	55.0	0.3	
	12	●	1350L12	17.5	23.0	65.0	0.3	
	20	●	1350L20	28.3	32.0	75.0	0.3	
	30	●	1350L30	41.8	46.0	90.0	0.3	
1.40	2	●	MLDH 1400P	4.2	5.6	45.0	0.2	3.0
	5	●	1400L5	8.4	14.0	55.0	0.3	
	12	●	1400L12	18.2	24.0	65.0	0.3	
	20	●	1400L20	29.4	34.0	75.0	0.3	
	30	●	1400L30	43.4	48.0	90.0	0.3	
1.45	2	●	MLDH 1450P	4.3	5.8	45.0	0.2	3.0
	5	●	1450L5	8.7	16.0	55.0	0.3	
	12	●	1450L12	18.8	25.0	65.0	0.3	
	20	●	1450L20	30.4	35.0	75.0	0.3	
	30	●	1450L30	44.9	49.0	90.0	0.3	
1.50	2	●	MLDH 1500P	4.5	6.0	45.0	0.2	3.0
	5	●	1500L5	9.0	16.0	55.0	0.3	
	12	●	1500L12	19.5	26.0	65.0	0.3	
	20	●	1500L20	31.5	36.0	75.0	0.3	
	30	●	1500L30	46.5	51.0	90.0	0.3	
1.55	2	●	MLDH 1550P	4.6	6.2	45.0	0.2	3.0
	5	●	1550L5	9.3	16.0	55.0	0.3	
	12	●	1550L12	20.1	26.0	65.0	0.3	
	20	●	1550L20	32.5	37.0	80.0	0.3	
	30	●	1550L30	48.0	53.0	95.0	0.3	
1.60	2	●	MLDH 1600P	4.8	6.4	45.0	0.3	3.0
	5	●	1600L5	9.6	16.0	55.0	0.3	
	12	●	1600L12	20.8	27.0	70.0	0.3	
	20	●	1600L20	33.6	38.0	80.0	0.3	
	30	●	1600L30	49.6	54.0	95.0	0.3	

Grade: ACV70

Body Diameter ø1.65 to 2.00mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				Shank DMM (mm)
				Effective Length LU	Flute Length LCF	Total length OAL	Tip PL	
1.65	2	●	MLDH 1650P	4.9	6.6	50.0	0.3	3.0
	5	●	1650L5	9.9	18.0	60.0	0.3	
	12	●	1650L12	21.4	28.0	70.0	0.3	
	20	●	1650L20	34.6	40.0	80.0	0.3	
	30	●	1650L30	51.1	56.0	95.0	0.3	
1.70	2	●	MLDH 1700P	5.1	6.8	50.0	0.3	3.0
	5	●	1700L5	10.2	18.0	60.0	0.4	
	12	●	1700L12	22.1	29.0	70.0	0.4	
	20	●	1700L20	35.7	41.0	80.0	0.4	
	30	●	1700L30	52.7	58.0	100.0	0.4	
1.75	2	●	MLDH 1750P	5.2	7.0	50.0	0.3	3.0
	5	●	1750L5	10.5	18.0	60.0	0.4	
	12	●	1750L12	22.7	30.0	70.0	0.4	
	20	●	1750L20	36.7	42.0	85.0	0.4	
	30	●	1750L30	54.2	60.0	100.0	0.4	
1.80	2	●	MLDH 1800P	5.4	7.2	50.0	0.3	3.0
	5	●	1800L5	10.8	18.0	60.0	0.4	
	12	●	1800L12	23.4	31.0	70.0	0.4	
	20	●	1800L20	37.8	43.0	85.0	0.4	
	30	●	1800L30	55.8	61.0	100.0	0.4	
1.85	2	●	MLDH 1850P	5.5	7.4	50.0	0.3	3.0
	5	●	1850L5	11.1	20.0	60.0	0.4	
	12	●	1850L12	24.0	31.0	70.0	0.4	
	20	●	1850L20	38.8	44.0	85.0	0.4	
	30	●	1850L30	57.3	63.0	103.0	0.4	
1.90	2	●	MLDH 1900P	5.7	7.6	50.0	0.3	3.0
	5	●	1900L5	11.4	20.0	60.0	0.4	
	12	●	1900L12	24.7	32.0	75.0	0.4	
	20	●	1900L20	39.9	46.0	85.0	0.4	
	30	●	1900L30	58.9	65.0	103.0	0.4	
1.95	2	●	MLDH 1950P	5.8	7.8	50.0	0.3	3.0
	5	●	1950L5	11.7	20.0	60.0	0.4	
	12	●	1950L12	25.3	33.0	75.0	0.4	
	20	●	1950L20	40.9	47.0	85.0	0.4	
	30	●	1950L30	60.4	66.0	103.0	0.4	
2.00	2	●	MLDH 2000P	6.0	8.0	50.0	0.3	3.0
	5	●	2000L5	12.0	20.0	60.0	0.4	
	12	●	2000L12	26.0	34.0	75.0	0.4	
	20	●	2000L20	42.0	48.0	90.0	0.4	
	30	●	2000L30	62.0	68.0	103.0	0.4	

Grade: ACV70

■ Made to Order Items: Inquire about production of drills in tool diameters and lengths not listed above or not in stock.

Drilling

Solid

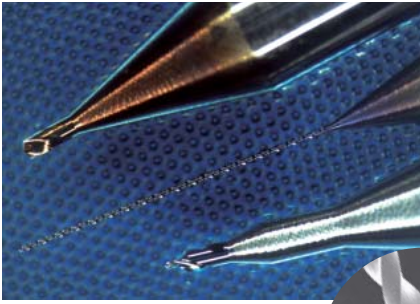
Special

Indexable

Reamer

Brazed

Others



For Steel, Stainless Steel, and Other Metals

Micro MultiDrill MDUS Type φ0.03-φ0.19mm

- High-precision shank ! Shank tolerance h3. Circularity 0.3μm or less. Cylindricity of 0.5μm or less.
- New ultra-thin TiAlN coating gives improved wear resistance.
- Perfect for steel, stainless steel, or copper machining.
- Available in sizes from φ0.03mm to φ0.19mm in 0.005mm increments.

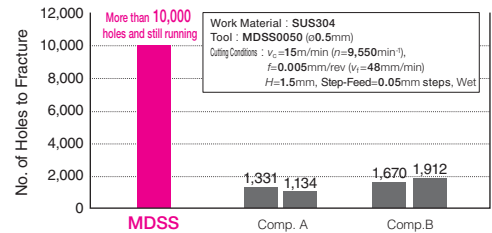
Application Examples

Work Material : SUS304
 Tool : MDUS0030-30C (φ0.03mm)
 Cutting Conditions : $n=15,000\text{min}^{-1}$, $v_f=3\text{mm/min}$
 Step-Feed=0.003mm

Work Material : SUS316
 Tool : MDUS0100-30C (φ0.1mm)
 Cutting Conditions : $n=20,000\text{min}^{-1}$, $v_f=20\text{mm/min}$
 Step-Feed=0.01mm

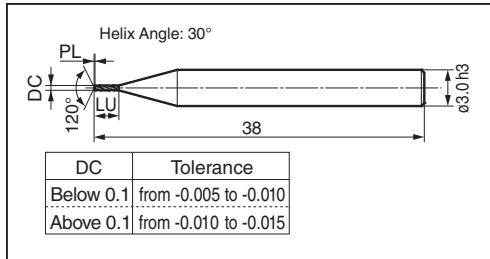
Solid Carbide Mini Multi Drill MDSS Type φ0.20-φ1.00mm

- The combination of a hard, tough carbide substrate and a high rigidity design (web thickness, web thickness ratio, helix angle) greatly improves fracture resistance.
- PVD coating specifically for small drills significantly extends tool life.
- Suitable for a wide range of materials including carbon steel, alloy steel, die steel, and stainless steel.
- Shanks standardised to 3-mm diameter, 38-mm total length for greater ease of use.

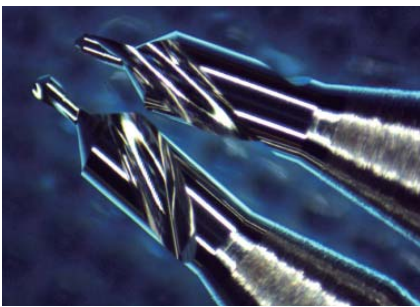


Micro Multi Pointing Drill MDUP Type φ0.03-φ0.18mm

- For drilling guide holes with MDUS type drills



Diameter DC (mm)	Stock	Cat. No.	Dimensions (mm)			Shank DMM (mm)
			Effective Length LU	Total length OAL	Tip PL	
0.03	●	MDUP 0030-30C	0.04	38	0.01	3.0
0.04	●	0040-30C	0.05	38	0.01	3.0
0.05	●	0050-30C	0.06	38	0.01	3.0
0.08	●	MDUP 0080-30C	0.10	38	0.02	3.0
0.10	●	0100-30C	0.13	38	0.03	3.0
0.12	●	MDUP 0120-30C	0.15	38	0.03	3.0
0.15	●	0150-30C	0.19	38	0.04	3.0
0.18	●	MDUP 0180-30C	0.23	38	0.05	3.0

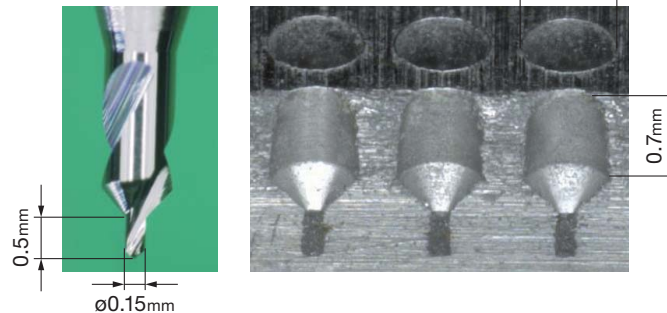


For Ceramics and Non-metals

Made-to-Order Fine Drill φ0.02mm-

- Exclusive cutting edges are available for various work materials including non-metals, ceramics, and resins.
- Customized designs are also available for the improvement of efficiency, such as through the integration of processes by using a stepped drill.
- Various drill diameters (from φ0.02) and LxDs are available to order. (Contact us for possible profiles.)

Example of Proposed Stepped Drill



MDSS Recommended Cutting Conditions (Wet) (Inquire about cutting conditions for the MDUS type)

Work Cond	Alloy Steel, Pre-hardened Steel SCM, NAK			Die Steel, Tempered Steel (30 to 40HRC)			Stainless Steel SUS		
	Rotation Speed min^{-1}	Feed Rate mm/min	Step-feed (mm)	Rotation Speed min^{-1}	Feed Rate mm/min	Step-feed (mm)	Rotation Speed min^{-1}	Feed Rate mm/min	Step-feed (mm)
φ0.2	26,500	50	0.1D	21,200	40	0.1D	10,600	20	0.1D
φ0.3	26,500	80		21,200	60		10,600	30	
φ0.4	25,900	100	19,900	80	9,500	40			
φ0.5	25,500	150	19,100	110	9,500	50			
φ1.0	15,900	240	12,700	190	5,600	80			

1. The above conditions are recommended under wet conditions, using water-soluble coolant.
 2. If machine noises and vibrations are present, please adjust the cutting conditions accordingly.
 3. If the machine cannot achieve the standard spindle speed, please use the max. spindle speed available. In this case, lower the feed rate by the same ratio.
- * Step feed is recommended for drilling of holes deeper than 3xD.

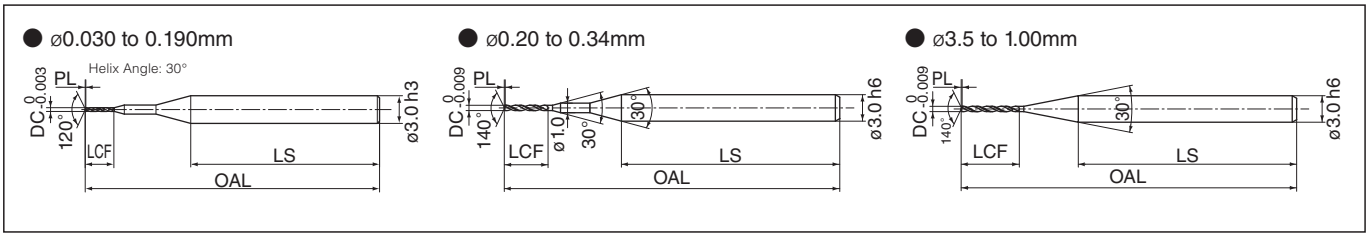
Micro MultiDrill MINI-MultiDrill
MDUS / MDSS Type

MDSS Type



External Coolant Supply/Small Diameter

	Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP
MDUS	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
MDSS	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙



Body Diameter ø0.030 to 0.49mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				Shank DMM (mm)
				Effective Length LU	Total Length OAL	Tip PL	Shank LS	
0.030	10	●	MDUS 0030-30C	0.27	38.0	0.01	28	3.0
0.035	10		MDUS 0035-30C	0.36	38.0	0.01	28	3.0
0.040	10	●	0040-30C	0.36	38.0	0.01	28	3.0
0.045	10		MDUS 0045-30C	0.45	38.0	0.01	28	3.0
0.050	10	●	0050-30C	0.45	38.0	0.01	28	3.0
0.055	10		MDUS 0055-30C	0.54	38.0	0.02	28	3.0
0.060	10		0060-30C	0.54	38.0	0.02	28	3.0
0.065	10		MDUS 0065-30C	0.63	38.0	0.02	28	3.0
0.070	10		0070-30C	0.63	38.0	0.02	28	3.0
0.075	10		MDUS 0075-30C	0.72	38.0	0.02	28	3.0
0.080	10	●	0080-30C	0.72	38.0	0.02	28	3.0
0.085	10		MDUS 0085-30C	0.90	38.0	0.02	28	3.0
0.090	10		0090-30C	0.90	38.0	0.03	28	3.0
0.095	10		0095-30C	0.90	38.0	0.03	28	3.0
0.100	10	●	0100-30C	0.90	38.0	0.03	28	3.0
0.110	10		MDUS 0110-30C	1.08	38.0	0.03	28	3.0
0.120	10	●	0120-30C	1.08	38.0	0.03	28	3.0
0.130	10		MDUS 0130-30C	1.35	38.0	0.04	28	3.0
0.140	10		0140-30C	1.35	38.0	0.04	28	3.0
0.150	10	●	0150-30C	1.35	38.0	0.04	28	3.0
0.160	10		MDUS 0160-30C	1.62	38.0	0.05	28	3.0
0.170	10		0170-30C	1.62	38.0	0.05	28	3.0
0.180	10	●	0180-30C	1.62	38.0	0.05	28	3.0
0.190	10		MDUS 0190-30C	1.71	38.0	0.05	28	3.0
0.20	10	●	MDSS 0020	2.25	38.0	0.04	28	3.0
0.21	10	●	0021	2.25	38.0	0.04	28	3.0
0.22	10	●	0022	2.25	38.0	0.04	28	3.0
0.23	10	●	0023	2.25	38.0	0.04	28	3.0
0.24	10	●	0024	2.25	38.0	0.04	28	3.0
0.25	10	●	0025	2.25	38.0	0.05	28	3.0
0.26	10	●	0026	2.25	38.0	0.05	28	3.0
0.27	10	●	0027	2.25	38.0	0.05	28	3.0
0.28	10	●	0028	2.25	38.0	0.05	28	3.0
0.29	10	●	0029	2.25	38.0	0.05	28	3.0
0.30	10	●	MDSS 0030	2.7	38.0	0.05	28	3.0
0.31	10	●	0031	2.7	38.0	0.06	28	3.0
0.32	10	●	0032	2.7	38.0	0.06	28	3.0
0.33	10	●	0033	2.7	38.0	0.06	28	3.0
0.34	10	●	0034	2.7	38.0	0.06	28	3.0
0.35	10	●	MDSS 0035	3.6	38.0	0.06	28	3.0
0.36	10	●	0036	3.6	38.0	0.07	28	3.0
0.37	10	●	0037	3.6	38.0	0.07	28	3.0
0.38	10	●	0038	3.6	38.0	0.07	28	3.0
0.39	10	●	0039	3.6	38.0	0.07	28	3.0
0.40	10	●	MDSS 0040	4.5	38.0	0.07	28	3.0
0.41	10	●	0041	4.5	38.0	0.07	28	3.0
0.42	10	●	0042	4.5	38.0	0.08	28	3.0
0.43	10	●	0043	4.5	38.0	0.08	28	3.0
0.44	10	●	0044	4.5	38.0	0.08	28	3.0
0.45	10	●	0045	4.5	38.0	0.08	28	3.0
0.46	10	●	0046	4.5	38.0	0.08	28	3.0
0.47	10	●	0047	4.5	38.0	0.09	28	3.0
0.48	10	●	0048	4.5	38.0	0.09	28	3.0
0.49	10	●	0049	4.5	38.0	0.09	28	3.0

Body Diameter ø0.50 to 1.00mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				Shank DMM (mm)
				Effective Length LU	Total Length OAL	Tip PL	Shank LS	
0.50	10	●	MDSS 0050	5.4	38.0	0.09	27	3.0
0.51	10	●	0051	5.4	38.0	0.09	27	3.0
0.52	10	●	0052	5.4	38.0	0.09	27	3.0
0.53	10	●	0053	5.4	38.0	0.10	27	3.0
0.54	10	●	0054	5.4	38.0	0.10	27	3.0
0.55	10	●	0055	5.4	38.0	0.10	27	3.0
0.56	10	●	0056	5.4	38.0	0.10	27	3.0
0.57	10	●	0057	5.4	38.0	0.10	27	3.0
0.58	10	●	0058	5.4	38.0	0.11	27	3.0
0.59	10	●	0059	5.4	38.0	0.11	27	3.0
0.60	10	●	MDSS 0060	6.3	38.0	0.11	26	3.0
0.61	10	●	0061	6.3	38.0	0.11	26	3.0
0.62	10	●	0062	6.3	38.0	0.11	26	3.0
0.63	10	●	0063	6.3	38.0	0.11	26	3.0
0.64	10	●	0064	6.3	38.0	0.12	26	3.0
0.65	10	●	0065	6.3	38.0	0.12	26	3.0
0.66	10	●	0066	6.3	38.0	0.12	26	3.0
0.67	10	●	0067	6.3	38.0	0.12	26	3.0
0.68	10	●	0068	6.3	38.0	0.12	26	3.0
0.69	10	●	0069	6.3	38.0	0.13	26	3.0
0.70	10	●	MDSS 0070	8.1	38.0	0.13	24	3.0
0.71	10	●	0071	8.1	38.0	0.13	24	3.0
0.72	10	●	0072	8.1	38.0	0.13	24	3.0
0.73	10	●	0073	8.1	38.0	0.13	24	3.0
0.74	10	●	0074	8.1	38.0	0.13	24	3.0
0.75	10	●	0075	8.1	38.0	0.14	24	3.0
0.76	10	●	0076	8.1	38.0	0.14	24	3.0
0.77	10	●	0077	8.1	38.0	0.14	24	3.0
0.78	10	●	0078	8.1	38.0	0.14	24	3.0
0.79	10	●	0079	8.1	38.0	0.14	24	3.0
0.80	10	●	MDSS 0080	9.0	38.0	0.15	23	3.0
0.81	10	●	0081	9.0	38.0	0.15	23	3.0
0.82	10	●	0082	9.0	38.0	0.15	23	3.0
0.83	10	●	0083	9.0	38.0	0.15	23	3.0
0.84	10	●	0084	9.0	38.0	0.15	23	3.0
0.85	10	●	0085	9.0	38.0	0.15	23	3.0
0.86	10	●	0086	9.0	38.0	0.16	23	3.0
0.87	10	●	0087	9.0	38.0	0.16	23	3.0
0.88	10	●	0088	9.0	38.0	0.16	23	3.0
0.89	10	●	0089	9.0	38.0	0.16	23	3.0
0.90	10	●	MDSS 0090	9.9	38.0	0.16	22	3.0
0.91	10	●	0091	9.9	38.0	0.17	22	3.0
0.92	10	●	0092	9.9	38.0	0.17	22	3.0
0.93	10	●	0093	9.9	38.0	0.17	22	3.0
0.94	10	●	0094	9.9	38.0	0.17	22	3.0
0.95	10	●	0095	9.9	38.0	0.17	22	3.0
0.96	10	●	0096	9.9	38.0	0.17	22	3.0
0.97	10	●	0097	9.9	38.0	0.18	22	3.0
0.98	10	●	0098	9.9	38.0	0.18	22	3.0
0.99	10	●	0099	9.9	38.0	0.18	22	3.0
1.00	10	●	MDSS 0100	10.8	38.0	0.18	21	3.0

Drilling
 Solid
 Special
 Indexable
 Reamer
 Brazed
 Others