CAT.MDFBROCHURE.8/18

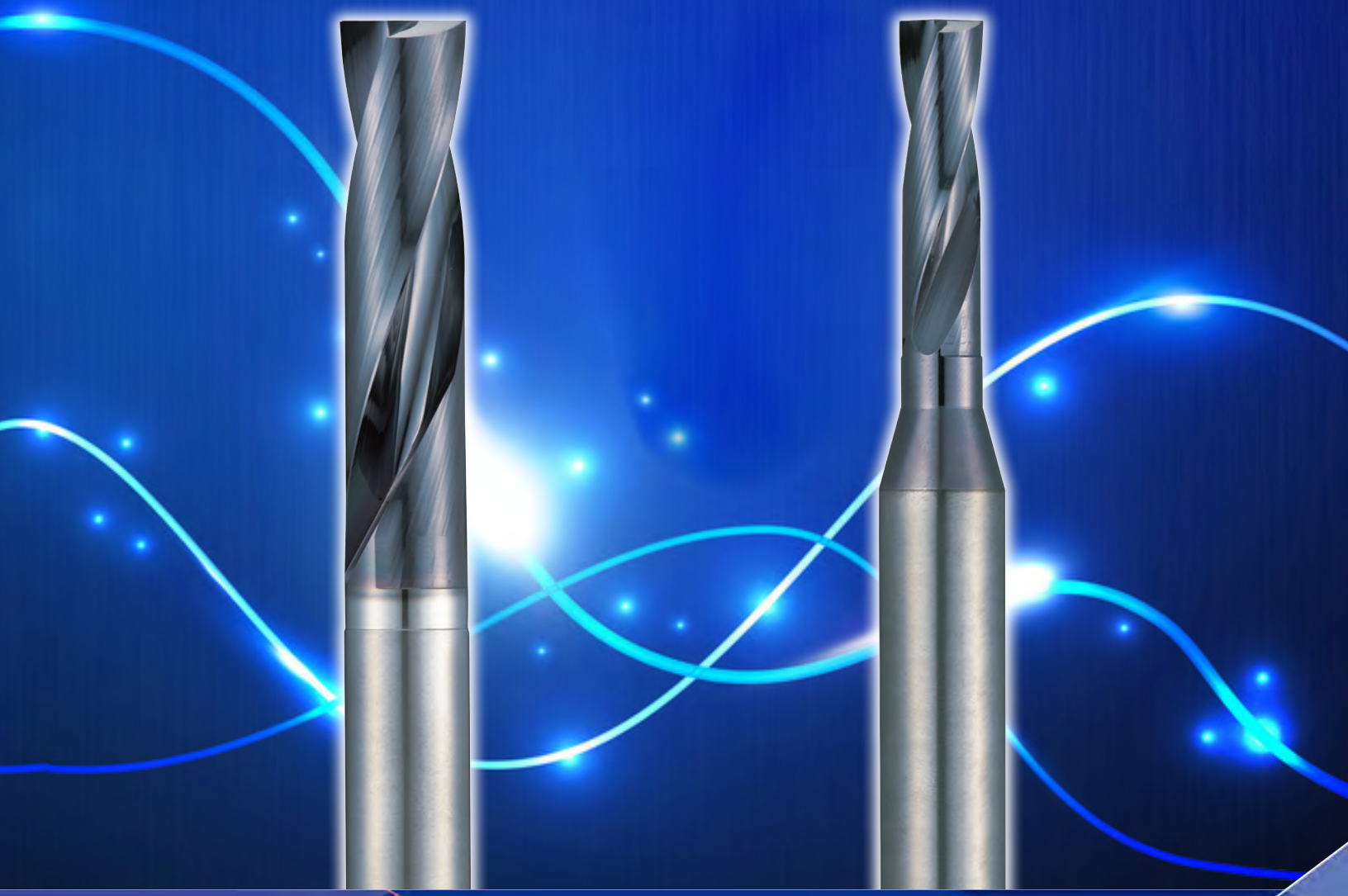
SUMITOMO
CARBIDE - CBN - DIAMOND

Coated Carbide Drills

Flat MULTIDRILL MDF Series

180° Point Angle Solid Carbide Drills

Optimized for drilling inclined and cylindrical surfaces
Reduces burrs at hole exit



P K M N S H

SUMITOMO ELECTRIC GROUP

■ General Features

The flat multidrill MDF type is a solid carbide drill that can be used for various purposes including high-efficiency spot facing and drilling on inclined surfaces and curved surfaces.

■ Features & Benefits

- **Applicable to various types of drilling thanks to a point angle of 180°**
  Applicable to high-efficiency spot facing, drilling in non-horizontal surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.
- **Improves machining stability**
  Achieves high rigidity by employing RS THINNING, which ensures thick web at the bottom.
- **Excellent chip evacuation**
  Achieves excellent chip evacuation thanks to the wide chip pocket and a high-quality rake face shape.
- **Excellent cutting edge strength**
  Achieves excellent cutting edge strength through optimized cutting edge design.

MDF-L Long Shank Type (2XD) Characteristics

Long Shank Type (L2D Type) for flat base drilling, hole expansion, and burr prevention in long overhang conditions!

- For drilling with long overhang and to avoid interference with the workpiece.

* Drilling with long shank type drills require a prepared hole of the same diameter or a centering hole larger than the drill diameter.

DC<6mm DC≤DMM

DC≥6mm DC>DMM

*Internal Coolant Supply is Available!

MDF-H Type (3XD & 5XD) Characteristics

With Oil Hole (H3D Type/H5D Type) up to 5D deep hole drilling!

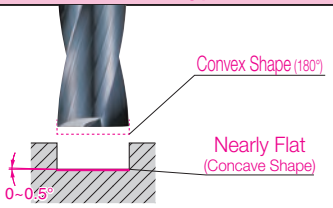
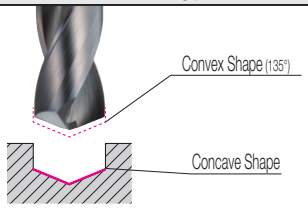
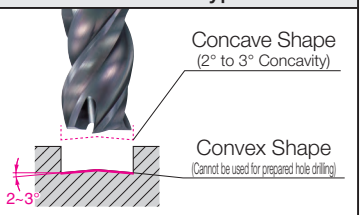
- Having internal coolant allows for deeper flat hole drilling.

* Drilling with L/D=5 drills with oil holes require a prepared hole of the same diameter or a centering hole larger than the drill diameter.

■ Series

Coolant Supply	Cat. No.	Diameter Range (mm)	Drilling Depth ($^L/_D$)	Content
External	MDF□□□□S2D	ø0.3 to 20.0	Up to 2	132 items
	MDF□□□□L2D	ø3.0 to 20.0	Up to 2	107 items
Internal	MDF□□□□H3D	ø3.0 to 16.0	Up to 3	99 items
	MDF□□□□H5D	ø3.0 to 16.0	Up to 5	99 items

■ Flat Drills, General-Purpose Drills, & Endmills Comparison

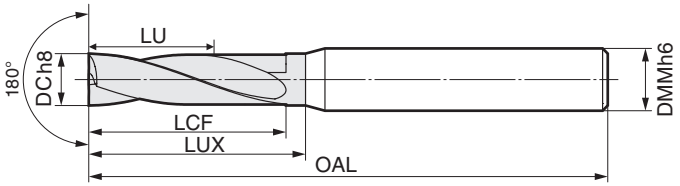
Tool	Flat Drill MDF Type		General-Purpose Drill GS/HGS Type		Endmill for Spot Facing GSXSLT Type	
Hole Bottom Shape						
Drilling in Flat Surfaces	○	Feed rate approximately half of a general-purpose drill	◎	Best	△	Within 1D, limited to low feed rate Feed rate one-fifth or lower of a general-purpose drill
Drilling in Non-Flat Surfaces	◎	Optimal (Within 2D is recommended)	×	Unusable	○	Within 1D, limited to low feed rate Feed rate one-two or lower of a Flat Drill
Traversing	×	Unusable	×	Unusable	◎	Best

Carbon Steel, Alloy Steel		Tempered Steel	Hardened Steel		Stainless steel	Ti Alloy	Heat-resistant steels	Cast Iron	Ductile Cast Iron	Aluminium Alloy	Copper alloy	Composite CFRP
Up to 0.28%	From 0.29%		Up to 45HRC	From 46HRC								
◎	◎	◎	○		○			○	○	○		

PVD Coat 2D

MDF Type (2XD)

External Coolant Supply



●Diameter ø0.3 to ø7.0mm

Diameter DC (mm)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
0.3	3.0	MDF0030S2D	★	0.9	1.0	1.3	40
0.4		MDF0040S2D	★	1.2	1.4	1.8	
0.5	3.0	MDF0050S2D	★	1.5	2.0	2.2	40
0.6		MDF0060S2D	★	1.8	2.4	2.6	
0.7		MDF0070S2D	★	2.1	2.8	3.1	
0.8		MDF0080S2D	★	2.4	3.2	3.5	
0.9		MDF0090S2D	★	2.7	3.6	4.0	
1.0	3.0	MDF0100S2D	★	3.0	4.0	4.4	45
1.1		MDF0110S2D	★	3.3	4.4	4.8	
1.2		MDF0120S2D	★	3.6	4.8	5.3	
1.3		MDF0130S2D	★	3.9	5.2	5.7	
1.4		MDF0140S2D	★	4.2	5.6	6.2	
1.5	3.0	MDF0150S2D	★	4.5	6.0	6.6	45
1.6		MDF0160S2D	★	4.8	6.4	7.0	
1.7		MDF0170S2D	★	5.1	6.8	7.5	
1.8		MDF0180S2D	★	5.4	7.2	7.9	
1.9		MDF0190S2D	★	5.7	7.6	8.4	
2.0	4.0	MDF0200S2D	★	6.0	8.0	8.8	50
2.1		MDF0210S2D	★	6.3	8.4	9.2	
2.2		MDF0220S2D	★	6.6	8.8	9.7	
2.3		MDF0230S2D	★	6.9	9.2	10.1	
2.4		MDF0240S2D	★	7.2	9.6	10.6	
2.5	4.0	MDF0250S2D	★	7.5	10.0	11.0	50
2.6		MDF0260S2D	★	7.8	10.4	11.4	
2.7		MDF0270S2D	★	8.1	10.8	11.9	
2.8		MDF0280S2D	★	8.4	11.2	12.3	
2.9		MDF0290S2D	★	8.7	11.6	12.8	
3.0	6.0	MDF0300S2D	★	9.0	12.0	13.2	50
3.1		MDF0310S2D	★	9.3	12.4	13.6	
3.2		MDF0320S2D	★	9.6	12.8	14.1	
3.3		MDF0330S2D	★	9.9	13.2	14.5	
3.4		MDF0340S2D	★	10.2	13.6	15.0	
3.5		MDF0350S2D	★	10.5	14.0	15.4	
3.6	6.0	MDF0360S2D	★	10.8	14.4	15.8	50
3.7		MDF0370S2D	★	11.1	14.8	16.3	
3.8		MDF0380S2D	★	11.4	15.2	16.7	
3.9		MDF0390S2D	★	11.7	15.6	17.2	
4.0		MDF0400S2D	★	12.0	16.0	17.6	
4.1	6.0	MDF0410S2D	★	12.3	16.4	18.0	60
4.2		MDF0420S2D	★	12.6	16.8	18.5	
4.3		MDF0430S2D	★	12.9	17.2	18.9	
4.4		MDF0440S2D	★	13.2	17.6	19.4	
4.5		MDF0450S2D	★	13.5	18.0	19.8	
4.6	6.0	MDF0460S2D	★	13.8	18.4	20.2	60
4.7		MDF0470S2D	★	14.1	18.8	20.7	
4.8		MDF0480S2D	★	14.4	19.2	21.1	
4.9		MDF0490S2D	★	14.7	19.6	21.6	
5.0		MDF0500S2D	★	15.0	20.0	22.0	
5.1	6.0	MDF0510S2D	★	15.3	20.4	22.4	60
5.2		MDF0520S2D	★	15.6	20.8	22.9	
5.3		MDF0530S2D	★	15.9	21.2	23.3	
5.4		MDF0540S2D	★	16.2	21.6	23.8	
5.5		MDF0550S2D	★	16.5	22.0	24.2	
5.6	6.0	MDF0560S2D	★	16.8	22.4	24.6	60
5.7		MDF0570S2D	★	17.1	22.8	25.1	
5.8		MDF0580S2D	★	17.4	23.2	25.5	
5.9		MDF0590S2D	★	17.7	23.6	26.0	
6.0		MDF0600S2D	★	18.0	24.0	26.4	
6.1	8.0	MDF0610S2D	★	18.3	24.4	26.8	70
6.2		MDF0620S2D	★	18.6	24.8	27.3	
6.3		MDF0630S2D	★	18.9	25.2	27.7	
6.4		MDF0640S2D	★	19.2	25.6	28.2	
6.5		MDF0650S2D	★	19.5	26.0	28.6	
6.6	8.0	MDF0660S2D	★	19.8	26.4	29.0	70
6.7		MDF0670S2D	★	20.1	26.8	29.5	
6.8		MDF0680S2D	★	20.4	27.2	29.9	
6.9		MDF0690S2D	★	20.7	27.6	30.4	
7.0		MDF0700S2D	★	21.0	28.0	30.8	

●Diameter ø7.1 to ø20.0mm

Diameter DC (mm)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
7.1	8.0	MDF0710S2D	★	21.3	28.4	31.2	70
7.2		MDF0720S2D	★	21.6	28.8	31.7	
7.3		MDF0730S2D	★	21.9	29.2	32.1	
7.4		MDF0740S2D	★	22.2	29.6	32.6	
7.5		MDF0750S2D	★	22.5	30.0	33.0	
7.6	8.0	MDF0760S2D	★	22.8	30.4	33.4	70
7.7		MDF0770S2D	★	23.1	30.8	33.9	
7.8		MDF0780S2D	★	23.4	31.2	34.3	
7.9		MDF0790S2D	★	23.7	31.6	34.8	
8.0		MDF0800S2D	★	24.0	32.0	35.2	
8.1	10.0	MDF0810S2D	★	24.3	32.4	35.6	80
8.2		MDF0820S2D	★	24.6	32.8	36.1	
8.3		MDF0830S2D	★	24.9	33.2	36.5	
8.4		MDF0840S2D	★	25.2	33.6	37.0	
8.5		MDF0850S2D	★	25.5	34.0	37.4	
8.6	10.0	MDF0860S2D	★	25.8	34.4	37.8	80
8.7		MDF0870S2D	★	26.1	34.8	38.3	
8.8		MDF0880S2D	★	26.4	35.2	38.7	
8.9		MDF0890S2D	★	26.7	35.6	39.2	
9.0		MDF0900S2D	★	27.0	36.0	39.6	
9.1	10.0	MDF0910S2D	★	27.3	36.4	40.0	80
9.2		MDF0920S2D	★	27.6	36.8	40.5	
9.3		MDF0930S2D	★	27.9	37.2	40.9	
9.4		MDF0940S2D	★	28.2	37.6	41.4	
9.5		MDF0950S2D	★	28.5	38.0	41.8	
9.6	10.0	MDF0960S2D	★	28.8	38.4	42.2	80
9.7		MDF0970S2D	★	29.1	38.8	42.7	
9.8		MDF0980S2D	★	29.4	39.2	43.1	
9.9		MDF0990S2D	★	29.7	39.6	43.6	
10.0		MDF1000S2D	★	30.0	40.0	44.0	
10.1	12.0	MDF1010S2D	★	30.3	40.4	44.4	90
10.2		MDF1020S2D	★	30.6	40.8	44.9	
10.3		MDF1030S2D	★	30.9	41.2	45.3	
10.4		MDF1040S2D	★	31.2	41.6	45.8	
10.5		MDF1050S2D	★	31.5	42.0	46.2	
10.6	12.0	MDF1060S2D	★	31.8	42.4	46.6	90
10.7		MDF1070S2D	★	32.1	42.8	47.1	
10.8		MDF1080S2D	★	32.4	43.2	47.5	
10.9		MDF1090S2D	★	32.7	43.6	48.0	
11.0		MDF1100S2D	★	33.0	44.0	48.4	
11.1	12.0	MDF1110S2D	★	33.3	44.4	48.8	90
11.2		MDF1120S2D	★	33.6	44.8	49.3	
11.3		MDF1130S2D	★	33.9	45.2	49.7	
11.4		MDF1140S2D	★	34.2	45.6	50.2	
11.5		MDF1150S2D	★	34.5	46.0	50.6	
11.6	12.0	MDF1160S2D	★	34.8	46.4	51.0	90
11.7		MDF1170S2D	★	35.1	46.8	51.5	
11.8		MDF1180S2D	★	35.4	47.2	51.9	
11.9		MDF1190S2D	★	35.7	47.6	52.4	
12.0		MDF1200S2D	★	36.0	48.0	52.8	
12.5	14.0	MDF1250S2D	★	37.5	50.0	54.0	100
13.0		MDF1300S2D	★	39.0	52.0	56.8	
13.5		MDF1350S2D	★	40.5	54.0	59.6	110
14.0		MDF1400S2D	★	42.0	56.0	62.4	
14.5	16.0	MDF1450S2D	★	43.5	58.0	65.2	110
15.0		MDF1500S2D	★	45.0	60.0	68.0	
15.5		MDF1550S2D	★	46.5	62.0	70.8	115
16.0		MDF1600S2D	★	48.0	64.0	73.6	
16.5	18.0	MDF1650S2D	★	49.5	66.0	72.4	125
17.0		MDF1700S2D	★	51.0	68.0	75.2	
17.5		MDF1750S2D	★	52.5	70.0	78.0	130
18.0		MDF1800S2D	★	54.0	72.0	80.8	
18.5	20.0	MDF1850S2D	★	55.5	74.0	83.6	140
19.0		MDF1900S2D	★	57.0	76.0	86.4	
19.5		MDF1950S2D	★	58.5	78.0	89.2	
20.0		MDF2000S2D	★	60.0	80.0	92.0	

Grade: ACF75

★ - World Wide Warehouse Item

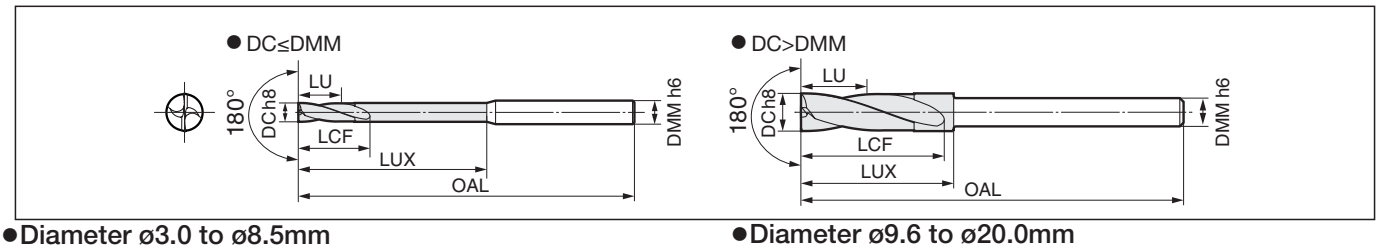
Carbon Steel, Alloy Steel		Tempered Steel	Hardened Steel		Stainless steel	Ti Alloy	Heat-resistant steels	Cast Iron	Ductile Cast Iron	Aluminium Alloy	Copper alloy	Composite CFRP
Up to 0.28%	From 0.29%		Up to 45HRC	From 46HRC								
◎	◎	◎	○		○			○	○	○		

PVD Coat

2D

MDF-L Long Shank Type (2XD)

External Coolant Supply



●Diameter ø3.0 to ø8.5mm

Diameter DC (mm)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
3.0	6.0	MDF0300L2D	★	9.0	13.5	30.0	100
3.1		MDF0310L2D	★	9.3	14.0	31.0	
3.2		MDF0320L2D	★	9.6	14.4	32.0	
3.3		MDF0330L2D	★	9.9	14.9	33.0	
3.4		MDF0340L2D	★	10.2	15.3	34.0	
3.5		MDF0350L2D	★	10.5	15.8	35.0	
3.6	6.0	MDF0360L2D	★	10.8	16.2	36.0	100
3.7		MDF0370L2D	★	11.1	16.7	37.0	
3.8		MDF0380L2D	★	11.4	17.1	38.0	
3.9		MDF0390L2D	★	11.7	17.6	39.0	
4.0		MDF0400L2D	★	12.0	18.0	40.0	
4.1	6.0	MDF0410L2D	★	12.3	18.5	41.0	100
4.2		MDF0420L2D	★	12.6	18.9	42.0	
4.3		MDF0430L2D	★	12.9	19.4	43.0	
4.4		MDF0440L2D	★	13.2	19.8	44.0	
4.5		MDF0450L2D	★	13.5	20.3	45.0	
4.6	6.0	MDF0460L2D	★	13.8	20.7	46.0	100
4.7		MDF0470L2D	★	14.1	21.2	47.0	
4.8		MDF0480L2D	★	14.4	21.6	48.0	
4.9		MDF0490L2D	★	14.7	22.1	49.0	
5.0		MDF0500L2D	★	15.0	22.5	50.0	
5.1	6.0	MDF 0510L2D	★	15.3	23.0	51.0	110
5.2		MDF0520L2D	★	15.6	23.4	52.0	
5.3		MDF0530L2D	★	15.9	23.9	53.0	
5.4		MDF0540L2D	★	16.2	24.3	54.0	
5.5		MDF0550L2D	★	16.5	24.8	55.0	
5.6	6.0	MDF0560L2D	★	16.8	25.2	56.0	110
5.7		MDF0570L2D	★	17.1	25.7	57.0	
5.8		MDF0580L2D	★	17.4	26.1	58.0	
5.9		MDF0590L2D	★	17.7	26.6	59.0	
6.0	5.0	MDF0600L2D-S5	★	18.0	27.0	30.0	110
6.0	6.0	MDF0600L2D	★	18.0	27.0	60.0	110
6.1	6.0	MDF0610L2D	★	18.3	27.5	30.5	120
6.2		MDF0620L2D	★	18.6	27.9	30.9	
6.3		MDF0630L2D	★	18.9	28.4	31.4	
6.4		MDF0640L2D	★	19.2	28.8	31.8	
6.5		MDF0650L2D	★	19.5	29.3	32.3	
6.6	6.0	MDF0660L2D	★	19.8	29.7	32.7	120
6.7		MDF0670L2D	★	20.1	30.2	33.2	
6.8		MDF0680L2D	★	20.4	30.6	33.6	
6.9		MDF0690L2D	★	20.7	31.1	34.1	
7.0		MDF0700L2D	★	21.0	31.5	34.5	
7.1	6.0	MDF0710L2D	★	21.3	32.0	35.0	130
7.2		MDF0720L2D	★	21.6	32.4	35.4	
7.3		MDF0730L2D	★	21.9	32.9	35.9	
7.4		MDF0740L2D	★	22.2	33.3	36.3	
7.5		MDF0750L2D	★	22.5	33.8	36.8	
7.6	6.0	MDF0760L2D	★	22.8	34.2	37.2	130
7.7		MDF0770L2D	★	23.1	34.7	37.7	
7.8		MDF0780L2D	★	23.4	35.1	38.1	
7.9		MDF0790L2D	★	23.7	35.6	38.6	
8.0	6.0	MDF0800L2D-S6	★	24.0	36.0	39.0	130
8.0	8.0	MDF0800L2D	★	24.0	36.0	80.0	130
8.1	8.0	MDF0810L2D	★	24.3	36.5	39.5	140
8.2		MDF0820L2D	★	24.6	36.9	39.9	
8.3		MDF0830L2D	★	24.9	37.4	40.4	
8.4		MDF0840L2D	★	25.2	37.8	40.8	
8.5		MDF0850L2D	★	25.5	38.3	41.3	
8.6	8.0	MDF0860L2D	★	25.8	38.7	41.7	140
8.7		MDF0870L2D	★	26.1	39.2	42.2	
8.8		MDF0880L2D	★	26.4	39.6	42.6	
8.9		MDF0890L2D	★	26.7	40.1	43.1	
9.0		MDF0900L2D	★	27.0	40.5	43.5	
9.1	8.0	MDF0910L2D	★	27.3	41.0	44.0	150
9.2		MDF0920L2D	★	27.6	41.4	44.4	
9.3		MDF0930L2D	★	27.9	41.9	44.9	
9.4		MDF0940L2D	★	28.2	42.3	45.3	
9.5		MDF0950L2D	★	28.5	42.8	45.8	

●Diameter ø9.6 to ø20.0mm

Diameter DC (mm)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
9.6	8.0	MDF0960L2D	★	28.8	43.2	46.2	150
9.7		MDF0970L2D	★	29.1	43.7	46.7	
9.8		MDF0980L2D	★	29.4	44.1	47.1	
9.9		MDF0990L2D	★	29.7	44.6	47.6	
10.0	8.0	MDF1000L2D-S8	★	30.0	45.0	48.0	150
10.0	10.0	MDF1000L2D	★	30.0	45.0	100.0	150
10.1	10.0	MDF1010L2D	★	30.3	45.5	48.5	160
10.2		MDF1020L2D	★	30.6	45.9	48.9	
10.3		MDF1030L2D	★	30.9	46.4	49.4	
10.4		MDF1040L2D	★	31.2	46.8	49.8	
10.5		MDF1050L2D	★	31.5	47.3	50.3	
10.6	10.0	MDF1060L2D	★	31.8	47.7	50.7	160
10.7		MDF1070L2D	★	32.1	48.2	51.2	
10.8		MDF1080L2D	★	32.4	48.6	51.6	
10.9		MDF1090L2D	★	32.7	49.1	52.1	
11.0		MDF1100L2D	★	33.0	49.5	52.5	
11.1	10.0	MDF1110L2D	★	33.3	50.0	53.0	170
11.2		MDF1120L2D	★	33.6	50.4	53.4	
11.3		MDF1130L2D	★	33.9	50.9	53.9	
11.4		MDF1140L2D	★	34.2	51.3	54.3	
11.5		MDF1150L2D	★	34.5	51.8	54.8	
11.6	10.0	MDF1160L2D	★	34.8	52.2	55.2	170
11.7		MDF1170L2D	★	35.1	52.7	55.7	
11.8		MDF1180L2D	★	35.4	53.1	56.1	
11.9		MDF1190L2D	★	35.7	53.6	56.6	
12.0	10.0	MDF1200L2D-S10	★	36.0	54.0	57.0	170
12.0	12.0	MDF1200L2D	★	36.0	54.0	120.0	170
12.5	12.0	MDF1250L2D	★	37.5	56.3	59.3	180
13.0		MDF1300L2D	★	39.0	58.5	61.5	
13.5		MDF1350L2D	★	40.5	60.8	63.8	190
14.0	12.0	MDF1400L2D-S12	★	42.0	63.0	66.0	190
14.0	14.0	MDF1400L2D	★	42.0	63.0	140.0	190
14.5	14.0	MDF1450L2D	★	43.5	65.3	68.3	200
15.0		MDF1500L2D	★	45.0	67.5	70.5	
15.5		MDF1550L2D	★	46.5	69.8	72.8	210
16.0	14.0	MDF1600L2D-S14	★	48.0	72.0	75.0	210
16.0	16.0	MDF1600L2D	★	48.0	72.0	160.0	210
16.5	16.0	MDF1650L2D	★	49.5	74.3	77.3	220
17.0		MDF1700L2D	★	51.0	76.5	79.5	
17.5		MDF1750L2D	★	52.5	78.8	81.8	230
18.0	16.0	MDF1800L2D-S16	★	54.0	81.0	84.0	230
18.0	18.0	MDF1800L2D	★	54.0	81.0	180.0	230
18.5	18.0	MDF1850L2D	★	55.5	83.3	86.3	240
19.0		MDF1900L2D	★	57.0	85.5	88.5	
19.5		MDF1950L2D	★	58.5	87.8	90.8	250
20.0	18.0	MDF2000L2D-S18	★	60.0	90.0	93.0	250
20.0	20.0	MDF2000L2D	★	60.0	90.0	200.0	250

When using this series, a prepared hole of the same diameter or a centering hole larger than the drill diameter is required.

Grade: ACF75

★ - World Wide Warehouse Item

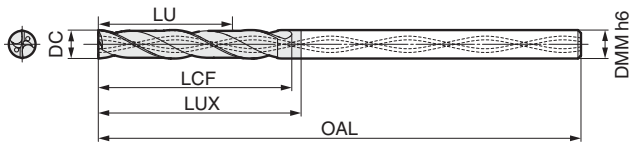
Carbon Steel, Alloy Steel Up to 0.28%	Carbon Steel, Alloy Steel From 0.29%	Tempered Steel	Hardened Steel Up to 45HRC	Hardened Steel From 46HRC	Stainless Steel	Ti Alloy	Heat-resistant Steels	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP
◎	◎	◎	○		○			○	○	○		

PVD Coat 3D 5D

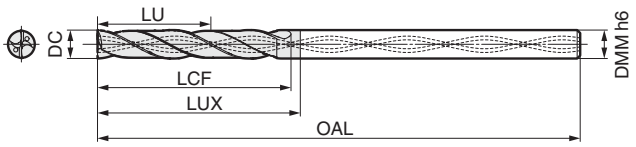
MDF-H Type (3XD & 5XD)

Internal Coolant Supply

● MDF Type 3D Single Margin



● MDF Type 5D Double Margin



●Diameter ø3.0 to ø6.3mm

Diameter DC (mm)	Hole Depth (L/D)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
3.0	3	3	MDF0300H3D	★	12.0	13.5	16.5	68
	5		MDF0300H5D	★	18.0	20.1	23.1	78
3.1	3	3	MDF0310H3D	★	12.4	14.0	17.0	72
	5		MDF0310H5D	★	18.6	20.8	23.8	86
3.2	3	4	MDF0320H3D	★	12.8	14.4	17.4	72
	5		MDF0320H5D	★	19.2	21.4	24.4	86
3.3	3	4	MDF0330H3D	★	13.2	14.9	17.9	72
	5		MDF0330H5D	★	19.8	22.1	25.1	86
3.4	3	4	MDF0340H3D	★	13.6	15.3	18.3	72
	5		MDF0340H5D	★	20.4	22.8	25.8	86
3.5	3	4	MDF0350H3D	★	14.0	15.8	18.8	72
	5		MDF0350H5D	★	21.0	23.5	26.5	86
3.6	3	4	MDF0360H3D	★	14.4	16.2	19.2	72
	5		MDF0360H5D	★	21.6	24.1	27.1	86
3.7	3	4	MDF0370H3D	★	14.8	16.7	19.7	72
	5		MDF0370H5D	★	22.2	24.8	27.8	86
3.8	3	4	MDF0380H3D	★	15.2	17.1	20.1	72
	5		MDF0380H5D	★	22.8	25.5	28.5	86
3.9	3	4	MDF0390H3D	★	15.6	17.6	20.6	72
	5		MDF0390H5D	★	23.4	26.1	29.1	86
4.0	3	4	MDF0400H3D	★	16.0	18.0	21.0	72
	5		MDF0400H5D	★	24.0	26.8	29.8	86
4.1	3	4	MDF0410H3D	★	16.4	18.5	21.5	80
	5		MDF0410H5D	★	24.6	27.5	30.5	98
4.2	3	5	MDF0420H3D	★	16.8	18.9	21.9	80
	5		MDF0420H5D	★	25.2	28.1	31.1	98
4.3	3	5	MDF0430H3D	★	17.2	19.4	22.4	80
	5		MDF0430H5D	★	25.8	28.8	31.8	98
4.4	3	5	MDF0440H3D	★	17.6	19.8	22.8	80
	5		MDF0440H5D	★	26.4	29.5	32.5	98
4.5	3	5	MDF0450H3D	★	18.0	20.3	23.3	80
	5		MDF0450H5D	★	27.0	30.2	33.2	98
4.6	3	5	MDF0460H3D	★	18.4	20.7	23.7	80
	5		MDF0460H5D	★	27.6	30.8	33.8	98
4.7	3	5	MDF0470H3D	★	18.8	21.2	24.2	80
	5		MDF0470H5D	★	28.2	31.5	34.5	98
4.8	3	5	MDF0480H3D	★	19.2	21.6	24.6	80
	5		MDF0480H5D	★	28.8	32.2	35.2	98
4.9	3	5	MDF0490H3D	★	19.6	22.1	25.1	80
	5		MDF0490H5D	★	29.4	32.8	35.8	98
5.0	3	5	MDF0500H3D	★	20.0	22.5	25.5	80
	5		MDF0500H5D	★	30.0	33.5	36.5	98
5.1	3	5	MDF0510H3D	★	20.4	23.0	26.0	82
	5		MDF0510H5D	★	30.6	34.2	37.2	100
5.2	3	6	MDF0520H3D	★	20.8	23.4	26.4	82
	5		MDF0520H5D	★	31.2	34.8	37.8	100
5.3	3	6	MDF0530H3D	★	21.2	23.9	26.9	82
	5		MDF0530H5D	★	31.8	35.5	38.5	100
5.4	3	6	MDF0540H3D	★	21.6	24.3	27.3	82
	5		MDF0540H5D	★	32.4	36.2	39.2	100
5.5	3	6	MDF0550H3D	★	22.0	24.8	27.8	82
	5		MDF0550H5D	★	33.0	36.9	39.9	100
5.6	3	6	MDF0560H3D	★	22.4	25.2	28.2	82
	5		MDF0560H5D	★	33.6	37.5	40.5	100
5.7	3	6	MDF0570H3D	★	22.8	25.7	28.7	82
	5		MDF0570H5D	★	34.2	38.2	41.2	100
5.8	3	6	MDF0580H3D	★	23.2	26.1	29.1	82
	5		MDF0580H5D	★	34.8	38.9	41.9	100
5.9	3	6	MDF0590H3D	★	23.6	26.6	29.6	82
	5		MDF0590H5D	★	35.4	39.5	42.5	100
6.0	3	6	MDF0600H3D	★	24.0	27.0	30.0	82
	5		MDF0600H5D	★	36.0	40.2	43.2	100
6.1	3	7	MDF0610H3D	★	24.4	27.5	30.5	88
	5		MDF0610H5D	★	36.6	40.9	43.9	109
6.2	3	7	MDF0620H3D	★	24.8	27.9	30.9	88
	5		MDF0620H5D	★	37.2	41.5	44.5	109
6.3	3	7	MDF0630H3D	★	25.2	28.4	31.4	88
	5		MDF0630H5D	★	37.8	42.2	45.2	109

●Diameter ø6.4 to ø9.7mm

Diameter DC (mm)	Hole Depth (L/D)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
6.4	3	7	MDF0640H3D	★	25.6	28.8	31.8	88
	5		MDF0640H5D	★	38.4	42.9	45.9	109
6.5	3	7	MDF0650H3D	★	26.0	29.3	32.3	88
	5		MDF0650H5D	★	39.0	43.6	46.6	109
6.6	3	7	MDF0660H3D	★	26.4	29.7	32.7	88
	5		MDF0660H5D	★	39.6	44.2	47.2	109
6.7	3	7	MDF0670H3D	★	26.8	30.2	33.2	88
	5		MDF0670H5D	★	40.2	44.9	47.9	109
6.8	3	7	MDF0680H3D	★	27.2	30.6	33.6	88
	5		MDF0680H5D	★	40.8	45.6	48.6	109
6.9	3	7	MDF0690H3D	★	27.6	31.1	34.1	88
	5		MDF0690H5D	★	41.4	46.2	49.2	109
7.0	3	7	MDF0700H3D	★	28.0	31.5	34.5	88
	5		MDF0700H5D	★	42.0	46.9	49.9	109
7.1	3	8	MDF0710H3D	★	28.4	32.0	35.0	94
	5		MDF0710H5D	★	42.6	47.6	50.6	118
7.2	3	8	MDF0720H3D	★	28.8	32.4	35.4	94
	5		MDF0720H5D	★	43.2	48.2	51.2	118
7.3	3	8	MDF0730H3D	★	29.2	32.9	35.9	94
	5		MDF0730H5D	★	43.8	48.9	51.9	118
7.4	3	8	MDF0740H3D	★	29.6	33.3	36.3	94
	5		MDF0740H5D	★	44.4	49.6	52.6	118
7.5	3	8	MDF0750H3D	★	30.0	33.8	36.8	94
	5		MDF0750H5D	★	45.0	50.3	53.3	118
7.6	3	8	MDF0760H3D	★	30.4	34.2	37.2	94
	5		MDF0760H5D	★	45.6	50.9	53.9	118
7.7	3	8	MDF0770H3D	★	30.8	34.7	37.7	94
	5		MDF0770H5D	★	46.2	51.6	54.6	118
7.8	3	8	MDF0780H3D	★	31.2	35.1	38.1	94
	5		MDF0780H5D	★	46.8	52.3	55.3	118
7.9	3	8	MDF0790H3D	★	31.6	35.6	38.6	94
	5		MDF0790H5D	★	47.4	52.9	55.9	118
8.0	3	8	MDF0800H3D	★	32.0	36.0	39.0	94
	5		MDF0800H5D	★	48.0	53.6	56.6	118
8.1	3	9	MDF0810H3D	★	32.4	36.5	39.5	100
	5		MDF0810H5D	★	48.6	54.3	57.3	127
8.2	3	9	MDF0820H3D	★	32.8	36.9	39.9	100
	5		MDF0820H5D	★	49.2	54.9	57.9	127
8.3	3	9	MDF0830H3D	★	33.2	37.4	40.4	100
	5		MDF0830H5D	★	49.8	55.6	58.6	127
8.4	3	9	MDF0840H3D	★	33.6	37.8	40.8	100
	5		MDF0840H5D	★	50.4	56.3	59.3	127
8.5	3	9	MDF0850H3D	★	34.0	38.3	41.3	100
	5		MDF0850H5D	★	51.0	57.0	60.0	127
8.6	3	9	MDF0860H3D	★	34.4	38.7	41.7	100
	5		MDF0860H5D	★	51.6	57.6	60.6	127
8.7	3	9	MDF0870H3D	★	34.8	39.2	42.2	100
	5		MDF0870H5D	★	52.2	58.3	61.3	127
8.8	3	9	MDF0880H3D	★	35.2	39.6	42.6	100
	5		MDF0880H5D	★	52.8	59.0	62.0	127
8.9	3	9	MDF0890H3D	★	35.6	40.1	43.1	100
	5		MDF0890H5D	★	53.4	59.6	62.6	127
9.0	3	9	MDF0900H3D	★	36.0	40.5	43.5	100
	5		MDF0900H5D	★	54.0	60.3	63.3	127
9.1	3	10	MDF0910H3D	★	36.4	41.0	44.0	106
	5		MDF0910H5D	★	54.6	61.0	64.0	136
9.2	3	10	MDF0920H3D	★	36.8	41.4	44.4	106
	5		MDF0920H5D	★	55.2	61.6	64.6	136
9.3	3	10	MDF0930H3D	★	37.2	41.9	44.9	106
	5		MDF0930H5D	★	55.8	62.3	65.3	136
9.4	3	10	MDF0940H3D	★	37.6	42.3	45.3	106
	5		MDF0940H5D	★	56.4	63.0	66.0	136
9.5	3	10	MDF0950H3D	★	38.0	42.8	45.8	106
	5		MDF0950H5D	★	57.0	63.7	66.7	136
9.6	3	10	MDF0960H3D	★	38.4	43.2	46.2	106
	5		MDF0960H5D	★	57.6	64.3	67.3	136
9.7	3	10	MDF0970H3D	★	38.8	43.7	46.7	106
	5		MDF0970H5D	★	58.2	65.0	68.0	136

Grade: ACF75

★ - World Wide Warehouse Item

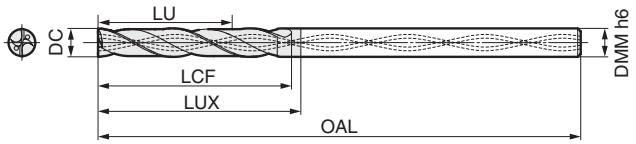
Carbon Steel, Alloy Steel		Tempered Steel	Hardened Steel		Stainless Steel	Ti Alloy	Heat-resistant Steels	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP
Up to 0.28%	From 0.28%		Up to 45HRC	From 45HRC								
◎	◎	◎	○		○			○	○	○		

PVD Coat 3D 5D

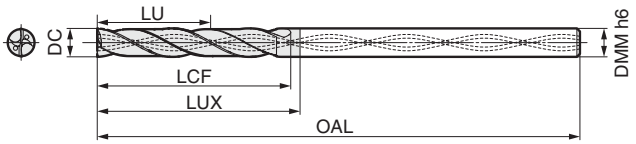
MDF-H Type (3XD & 5XD)

Internal Coolant Supply

● MDF Type 3D Single Margin



● MDF Type 5D Double Margin



●Diameter ø9.8 to ø16.0mm

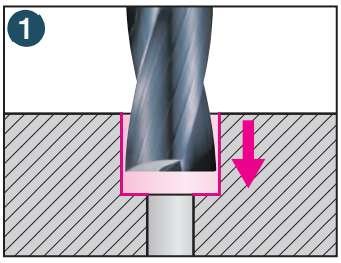
Diameter DC (mm)	Hole Depth (L/D)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
9.8	3	10	MDF0980H3D	★	39.2	44.1	47.1	106
	5		MDF0980H5D	★	58.8	65.7	68.7	136
9.9	3	10	MDF0990H3D	★	39.6	44.6	47.6	106
	5		MDF0990H5D	★	59.4	66.3	69.3	136
10.0	3	10	MDF1000H3D	★	40.0	45.0	48.0	106
	5		MDF1000H5D	★	60.0	67.0	70.0	136
10.1	3	11	MDF1010H3D	★	40.4	45.5	48.5	116
	5		MDF1010H5D	★	60.6	67.7	70.7	149
10.2	3	11	MDF1020H3D	★	40.8	45.9	48.9	116
	5		MDF1020H5D	★	61.2	68.3	71.3	149
10.3	3	11	MDF1030H3D	★	41.2	46.4	49.4	116
	5		MDF1030H5D	★	61.8	69.0	72.0	149
10.4	3	11	MDF1040H3D	★	41.6	46.8	49.8	116
	5		MDF1040H5D	★	62.4	69.7	72.7	149
10.5	3	11	MDF1050H3D	★	42.0	47.3	50.3	116
	5		MDF1050H5D	★	63.0	70.4	73.4	149
10.6	3	11	MDF1060H3D	★	42.4	47.7	50.7	116
	5		MDF1060H5D	★	63.6	71.0	74.0	149
10.7	3	11	MDF1070H3D	★	42.8	48.2	51.2	116
	5		MDF1070H5D	★	64.2	71.7	74.7	149
10.8	3	11	MDF1080H3D	★	43.2	48.6	51.6	116
	5		MDF1080H5D	★	64.8	72.4	75.4	149
10.9	3	11	MDF1090H3D	★	43.6	49.1	52.1	116
	5		MDF1090H5D	★	65.4	73.0	76.0	149
11.0	3	11	MDF1100H3D	★	44.0	49.5	52.5	116
	5		MDF1100H5D	★	66.0	73.7	76.7	149
11.1	3	12	MDF1110H3D	★	44.4	50.0	53.0	122
	5		MDF1110H5D	★	66.6	74.4	77.4	158
11.2	3	12	MDF1120H3D	★	44.8	50.4	53.4	122
	5		MDF1120H5D	★	67.2	75.0	78.0	158
11.3	3	12	MDF1130H3D	★	45.2	50.9	53.9	122
	5		MDF1130H5D	★	67.8	75.7	78.7	158
11.4	3	12	MDF1140H3D	★	45.6	51.3	54.3	122
	5		MDF1140H5D	★	68.4	76.4	79.4	158

Diameter DC (mm)	Hole Depth (L/D)	Shank DMM (mm)	Cat. No.	Stock	Dimensions (mm) LU	LCF	LUX	OAL
11.5	3	12	MDF1150H3D	★	46.0	51.8	54.8	122
	5		MDF1150H5D	★	69.0	77.1	80.1	158
11.6	3	12	MDF 1160H3D	★	46.4	52.2	55.2	122
	5		MDF1160H5D	★	69.6	77.7	80.7	158
11.7	3	12	MDF1170H3D	★	46.8	52.7	55.7	122
	5		MDF1170H5D	★	70.2	78.4	81.4	158
11.8	3	12	MDF1180H3D	★	47.2	53.1	56.1	122
	5		MDF1180H5D	★	70.8	79.1	82.1	158
11.9	3	12	MDF1190H3D	★	47.6	53.6	56.6	122
	5		MDF1190H5D	★	71.4	79.7	82.7	158
12.0	3	12	MDF1200H3D	★	48.0	54.0	57.0	122
	5		MDF1200H5D	★	72.0	80.4	83.4	158
12.5	3	13	MDF1250H3D	★	50.0	56.3	59.3	128
	5		MDF1250H5D	★	75.0	83.8	86.8	167
13.0	3	13	MDF1300H3D	★	52.0	58.5	61.5	128
	5		MDF1300H5D	★	78.0	87.1	90.1	167
13.5	3	14	MDF 1350H3D	★	54.0	60.8	63.8	134
	5		MDF1350H5D	★	81.0	90.5	93.5	176
14.0	3	14	MDF1400H3D	★	56.0	63.0	66.0	134
	5		MDF1400H5D	★	84.0	93.8	96.8	176
14.5	3	15	MDF 1450H3D	★	58.0	65.3	68.3	140
	5		MDF1450H5D	★	87.0	97.2	100.2	185
15.0	3	15	MDF1500H3D	★	60.0	67.5	70.5	140
	5		MDF1500H5D	★	90.0	100.5	103.5	185
15.5	3	16	MDF 1550H3D	★	62.0	69.8	72.8	146
	5		MDF1550H5D	★	93.0	103.9	106.9	194
16.0	3	16	MDF1600H3D	★	64.0	72.0	75.0	146
	5		MDF1600H5D	★	96.0	107.2	110.2	194

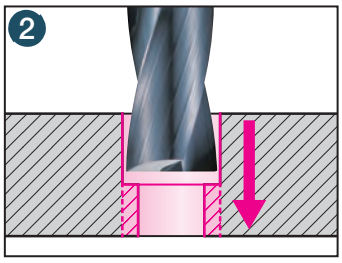
Grade: ACF75

★ - World Wide Warehouse Item

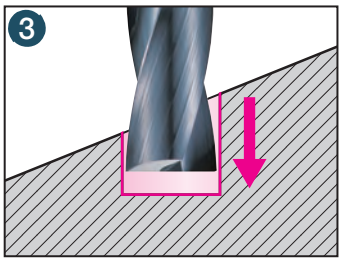
■ Applications



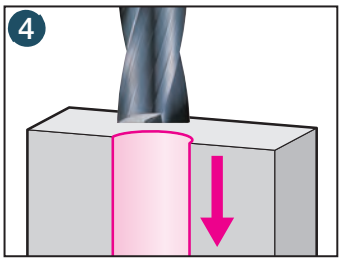
High-efficiency spot facing



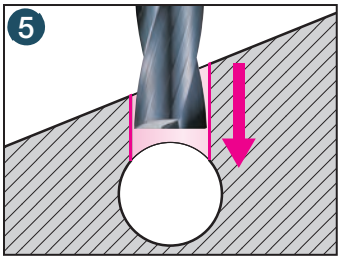
Hole Expansion Drilling



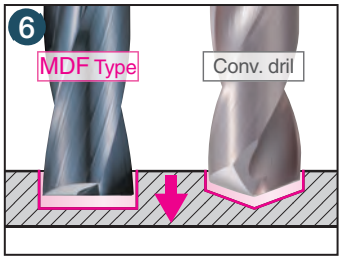
Drilling in non-horizontal surface
(inclined surface, cylindrical surface, etc.)



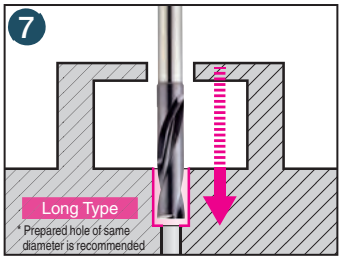
Interrupted drilling



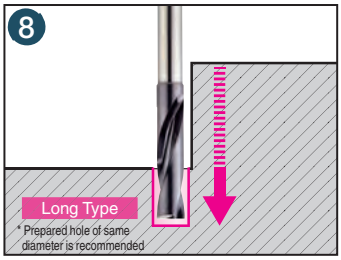
Cross drilling



Pre-tap hole drilling in thin sheets



Deep Spot Facing



Avoiding Interference With Work Materials

■ MDF Type (2XD) Recommended Cutting Conditions

v_c: Cutting Speed (SFM) f: Feed Rate (IPR)

1. The recommended hole depth is 2 x Dc. The depth is measured from the highest point of the hole on drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling on flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling on an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traversing or helical milling.

Diameter øDc (mm)	Cutting Conditions	Soft Steel/General Steel (Up to 250HB)	Alloy Steel (Up to 300HB)	Hardened steel (Up to HRC50)	Stainless Steel (Up to 200HB)	Grey Cast Iron FC250	Ductile Cast Iron	Aluminum Alloy
~ ø.5	v_c (SFM)	100 - 130 - 160	100 - 115 - 130	50 - 65 - 85	50 - 65 - 85	100 -130 -160	65 - 100 - 130	200 -260 - 330
	f (IPR)	.00016 - .0002 - .00024	.00016 - .0002 - .00024	.00004-.00008-.00012	.00012-.00016-.0002	.00016 - .0002 - .00024	.00004-.00012-.0002	.00012-.0002-.00028
~ ø1	v_c (SFM)	145 - 180 - 215	115 - 145 - 215	65 - 100 - 130	65 - 85 - 100	145 - 180 - 215	100 - 130 - 160	260 - 330 - 400
	f (IPR)	.0004 - .0012 - 0.0020	.0004 - .0012 - 0.0020	.00008-.00024-.0004	.0002-.00028-.0004	.0004 - .0012 - .0020	.0002 -.0004 -.0006	.0004 -.0006- .0008
~ ø2	v_c (SFM)	160 - 200 - 230	130 - 160 - 200	65 - 100 - 130	65 - 100 - 130	160 - 200 - 230	145 - 180 - 215	295 - 360 - 430
	f (IPR)	.0008- .0012- .0016	.0008- .0012- .0016	.0004- .0007- .001	.0004- .0006- .0008	.0008- .0016- .0024	.0006- .0012- .0018	.0012- .002- .0028
~ ø4	v_c (SFM)	200 - 250 - 295	160 - 215 - 265	65 - 100 - 130	65 - 100 - 130	200 - 250 - 295	160 - 215 - 250	295 - 360 - 430
	f (IPR)	.0024 - .0032 - 0.004	0.002 - 0.0032 - 0.004	.0004 - .0008 - .0012	.0004 - .0008 - .0012	.0024 - .0032 - 0.004	.0016 - .0024 - .0032	.0024 - .0032 - 0.004
~ ø6	v_c (SFM)	200 - 250 - 295	160 - 215 - 265	65 - 100 - 130	65 - 100 - 160	200 - 250 - 295	200 - 230 - 265	295 - 360 - 430
	f (IPR)	0.002 - 0.004 - 0.006	0.002 - 0.004 - 0.006	.0016 - .0024 - .0032	.0012 - .002 - .0024	.002 - .004 - .006	.0024 - .0035 - .005	.002 - 0.004 - .006
~ ø8	v_c (SFM)	200 - 250 - 295	160 - 215 - 265	65 - 100 - 130	65 - 100 - 160	200 - 250 - 295	200 - 230 - 265	295 - 360 - 430
	f (IPR)	.004 - .006 - .008	.004 - .006 - .008	.0024 - .0032 - .004	.0016 - .0024 - .0032	.004 - .006 - .008	.004 - .0047 - .006	.004 - .006 - .008
~ ø10	v_c (SFM)	200 - 250 - 295	160 - 215 - 265	65 - 100 - 130	65 - 100 - 160	200 - 250 - 295	200 - 230 - 265	295 - 360 - 430
	f (IPR)	.0047 - .0067 - .0087	.0047 - .0067 - .0087	.0032 - .004 - .0047	.0024 - .0032 - .004	.0047 - .0067 - .0087	.0047 - .006 - .007	.0047 - .0067 - .0087
~ ø12	v_c (SFM)	200 - 250 - 295	160 - 215 - 265	65 - 100 - 130	65 - 100 - 160	200 - 250 - 295	200 - 230 - 265	295 - 360 - 430
	f (IPR)	.006 - .008 - .001	.006 - .008 - .01	.0047 - .006 - .007	.003 - .004 - .0047	.006 - .008 - .01	.006 - .007 - .008	.006 - .008 - .01
~ ø16	v_c (SFM)	200 - 250 - 295	160 - 215 - 265	65 - 100 - 130	65 - 100 - 160	200 - 250 - 295	200 - 230 - 265	295 - 360 - 430
	f (IPR)	.008 - .01 - .012	.008 - .01 - .012	.005 - .0067 - .008	.004 - .006 - .008	.0067 - .0087 - .011	.006 - .008 - .01	.008 - .01 - .012
~ ø20	v_c (SFM)	200 - 250 - 295	160 - 215 - 265	65 - 100 - 130	65 - 100 - 160	200 - 250 - 295	200 - 230 - 265	295 - 360 - 430
	f (IPR)	.01 - .012 - .014	.01 - .012 - .014	.006 - .0075 - .0087	.006 - .008 - .01	.008 - .01 - .012	.008 - .01 - .012	.01 - .012 - .014

■ MDF-L Long Shank Type (2XD) Recommended Cutting Conditions

v_c: Cutting Speed (SFM) f: Feed Rate (IPR)

1. Drilling with this series requires a prepared hole of the same diameter.
2. The following conditions are recommedations with a prepared hole.
3. The recommended hole depth is 5xDc. The hole depth is measured from the highest point of the hole when drilling on inclined surfaces.
4. This product is a drilling tool. Do not use it for traversing or helical milling.

Diameter øDc (mm)	Cutting Conditions	Soft Steel/General Steel (Up to 250HB)	Alloy Steel (Up to 300HB)	Hardened steel (Up to HRC50)	Stainless Steel (Up to 200HB)	Grey Cast Iron FC250	Ductile Cast Iron	Aluminum Alloy
Up to ø4.0	v_c (SFM)	200 - 260 - 330	160 - 230 - 300	65 - 100 - 130	65 - 100 - 130	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.0024 - .0032 - 0.004	.002 - .0032 - 0.004	.0004 - .0008 - 0.0012	.0004 - .0008 - 0.0012	.0024 - .0032 - 0.004	.0016 - .0024 - .0032	.0024 - .0032 - .004
Up to ø6.0	v_c (SFM)	200 - 260 - 330	160 - 230 - 300	65 - 100 - 130	65 - 100 - 165	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.002 - .004 - .006	.002 - .004 - .006	.0016 - .0024 - .0032	.0012 - .0016 - 0.002	0.002 - 0.004 - 0.006	.0024 - .0036 - .0052	.002 - .004 - .006
Up to ø8.0	v_c (SFM)	200 - 260 - 330	160 - 230 - 300	65 - 100 - 130	65 - 100 - 165	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.004 - .006 - .008	.004 - .006 - .008	.0024 - .0032 - 0.004	.0016 - .0024 - .0032	.004 - .006 - .008	.004 - .0048 - .006	.004 - .006 - .008
Up to ø10.0	v_c (SFM)	200 - 260 - 330	160 - 230 - 300	65 - 100 - 130	65 - 100 - 165	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.006 - .008 - .01	.006 - .008 - .01	.0032 - .004 - .0048	.0024 - .0032 - .004	.006 - .008 - .01	.0048 - .006 - .0072	.006 - .008 - .01
Up to ø12.0	v_c (SFM)	200 - 260 - 330	160 - 230 - 300	65 - 100 - 130	65 - 100 - 165	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.008 - .01 - .012	.008 - .01 - .012	.0048 - .006 - .0072	.0032 - .004 - .0048	.0068 - .01 - .012	.006 - .008 - .01	.008 - .01 - .012
Up to ø16.0	v_c (SFM)	200 - 260 - 330	160 - 230 - 300	65 - 100 - 130	65 - 100 - 165	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.008 - .01 - .012	.008 - .01 - .012	.0056 - .0068 - .008	.004 - .006 - .008	.008 - .01 - .012	.008 - .01 - .012	.01 - .012 - .014
Up to 20.0	v_c (SFM)	200 - 260 - 330	160 - 230 - 300	65 - 100 - 130	65 - 100 - 165	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.01 - .012 - .014	.01 - .012 - .014	.0064 - .0076 - .0088	.006 - .008 - .01	.012 - .014 - .016	.01 - .012 - .014	.014 - .016 - .018

■ MDF-H Internal Coolant Type (3XD) Recommended Cutting Conditions

v_c: Cutting Speed (SFM) f: Feed Rate (IPR)

1. The recommended hole depth is 3 x DC. The depth is measured from the highest point of the hole on drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling on flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling on an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traversing or helical milling.
7. A prepared hole of the same diameter is recommended when drilling stainless steel.

Diameter øDc (mm)	Cutting Conditions	Soft Steel/General Steel (Up to 250HB)	Alloy Steel (Up to 300HB)	Hardened steel (Up to HRC50)	Stainless Steel (Up to 200HB)	Grey Cast Iron FC250	Ductile Cast Iron	Aluminum Alloy
Up to ø4.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.0024 - .0032 - 0.004	.002 - .0032 - 0.004	.0004 - .0008 - 0.0012	.0004 - .0008 - 0.0012	.0024 - .0032 - 0.004	.0016 - .0024 - .0032	.0024 - .0032 - .004
Up to ø6.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.002 - .004 - .006	.002 - .004 - .006	.0016 - .0024 - .0032	.0012 - .0016 - 0.002	0.002 - 0.004 - 0.006	.0024 - .0036 - .0052	.002 - .004 - .006
Up to ø8.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.004 - .006 - .008	.004 - .006 - .008	.0024 - .0032 - 0.004	.0016 - .0024 - .0032	.004 - .006 - .008	.0044 - .0052 - .006	.004 - .006 - .008
Up to ø10.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.0048 - .0068 - .0088	.0048 - .0068 - .0088	.0032 - .004 - .0048	.0024 - .0032 - 0.004	.0048 - .0068 - .0088	.0048 - .006 - .0072	.006 - .008 - .01
Up to ø12.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.006 - .008 - .01	.008 - .01 - .012	.0048 - .006 - .0072	.0032 - .004 - .0048	.006 - .008 - .01	.006 - .0072 - .008	.008 - .01 - .012
Up to ø16.0	v_c (SFM)	231 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.006 - .008 - .01	.008 - .01 - .012	.0048 - .006 - .0072	.004 - .006 - .008	.0068 - .0088 - .0108	.006 - .008 - .01	.01 - .012 - .0124

■ MDF-H Internal Coolant Type (5XD) Recommended Cutting Conditions

v_c: Cutting Speed (SFM) f: Feed Rate (IPR)

1. Drilling that uses this tool requires a prepared hole of the same diameter.
2. The cutting conditions are the recommended conditions with a prepared hole of the same diameter.
3. The recommended hole depth is 5×DC. The depth is measured from the highest point of the work when drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traversing or helical milling.

Diameter øDc (mm)	Cutting Conditions	Soft Steel/General Steel (Up to 250HB)	Alloy Steel (Up to 300HB)	Hardened steel (Up to HRC50)	Stainless Steel (Up to 200HB)	Grey Cast Iron FC250	Ductile Cast Iron	Aluminum Alloy
Up to ø4.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.0024 - .0032 - 0.004	.002 - .0032 - 0.004	.0004 - .0008 - 0.0012	.0004 - .0008 - 0.0012	.0024 - .0032 - 0.004	.0016 - .0024 - .0032	.0024 - .0032 - .004
Up to ø6.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.002 - .004 - .006	.002 - .004 - .006	.0016 - .0024 - .0032	.0012 - .0016 - 0.002	0.002 - 0.004 - 0.006	.0024 - .0036 - .0052	.002 - .004 - .006
Up to ø8.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.004 - .006 - .008	.004 - .006 - .008	.0024 - .0032 - 0.004	.0016 - .0024 - .0032	.004 - .006 - .008	.0044 - .0052 - .006	.004 - .006 - .008
Up to ø10.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.006 - .008 - .01	.006 - .008 - .01	.0032 - .004 - .0048	.0024 - .0032 - 0.004	.006 - .008 - .01	.0048 - .006 - .0072	.006 - .008 - .01
Up to ø12.0	v_c (SFM)	230 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.008 - .01 - .012	.008 - .01 - .012	.0048 - .006 - .0072	.0032 - .004 - .0048	.0068 - .0088 - .0108	.006 - .008 - .01	.008 - .01 - .012
Up to ø16.0	v_c (SFM)	231 - 280 - 330	200 - 250 - 300	100 - 130 - 165	82 - 115 - 150	230 - 280 - 330	215 - 250 - 280	300 - 400 - 500
	f (IPR)	.008 - .01 - .012	.008 - .01 - .012	.0056 - .0068 - .008	.004 - .006 - .008	.008 - .01 - .012	.008 - .01 - .012	.01 - .012 - .014

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