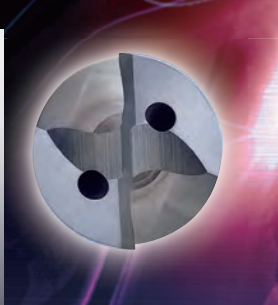


Flat MULTIDRILL **MDF** Series

Rev. 13

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



MDF-S Type

External Coolant Supply
ø0.3~20.0mm

2D 188items

MDF-L Type

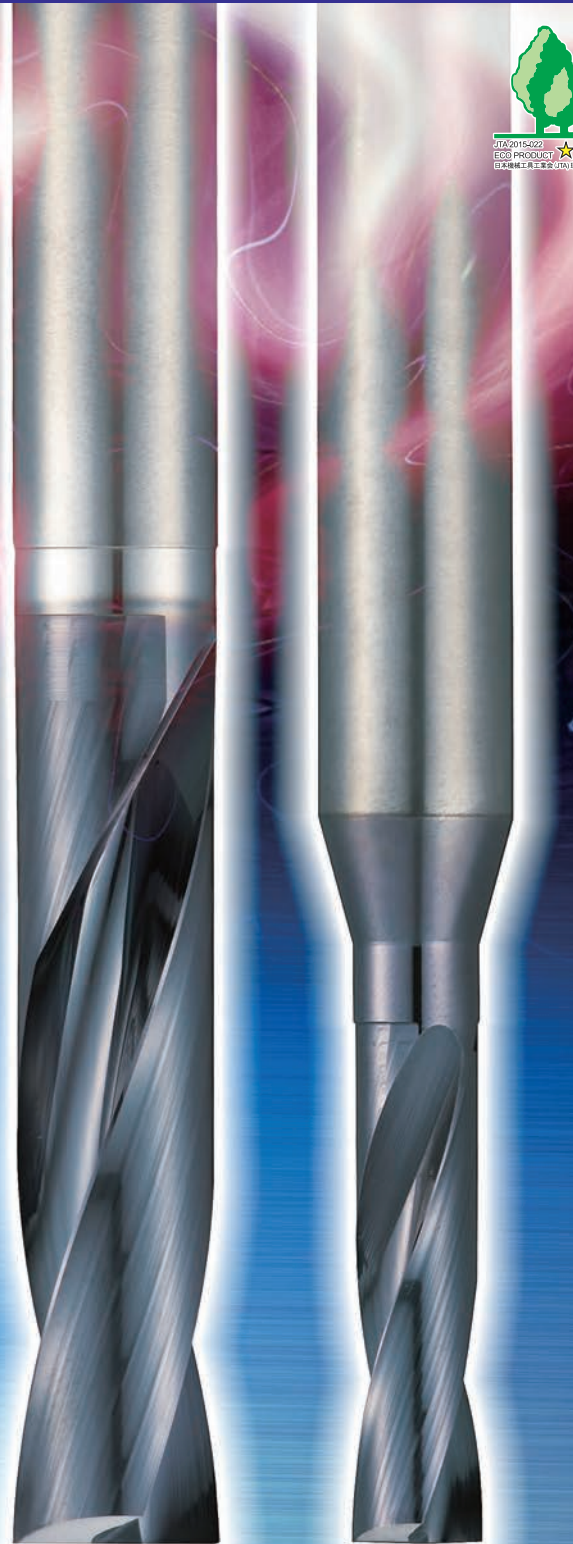
Long Shank/External Coolant Supply
ø3.0~20.0mm

2D 115items

MDF-H Type

Internal Coolant Supply
ø3.0~16.0mm

3D 5D 198items





General Features

The flat MULTIDRILL MDF series is a solid carbide drill that can be used for various applications, including high-efficiency spot facing and drilling on inclined and curved surfaces.



Characteristics and Applications

Suited for various types of drilling thanks to a point angle of 180°

Can be used for high-efficiency spot facing, drilling on 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 high-quality rake face shape.

Excellent cutting edge strength

Achieves excellent cutting edge strength through optimised cutting edge design.

Drills with internal coolant supply

Achieve deeper hole drilling.



Reduction of Burrs at Hole Exit

<p>Burrs at Hole Exit</p>	<p>Material:SCM415 Tool : MDF0500S2D (ø5.0mm 2D) Cutting Conditions: v_c=65m/min, f=0.12mm/rev H=10mm,150 Units, Wet Equipment : Vertical Machining Centre (BT40)</p>	<p>Burr height : 0.18mm</p> <p>Flat MULTIDRILL MDF Series</p>	<p>Burr height : 0.44mm</p> <p>Conv. general-purpose drill</p>
<p>Reduces exit burrs by half compared with general-purpose drills</p>			

Machining Applications

<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>
<p>High-efficiency spot facing</p>	<p>Hole expansion drilling</p>	<p>Drilling on non-horizontal surface (inclined surface, cylindrical surface, etc.)</p>	<p>Interrupted drilling</p>
<p>5</p>	<p>6</p>	<p>7</p>	<p>8</p>
<p>Cross drilling</p>	<p>Pre-tap hole drilling on thin sheets</p>	<p>Deep spot facing</p>	<p>Avoiding interference with work materials</p>

Long shanked type (2D) for flat base drilling, hole expansion and burr control in long overhang conditions.

● **For drilling with long overhang and to avoid interference with the workpiece**

* A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the long type.

DC < 6mm, stepped shank



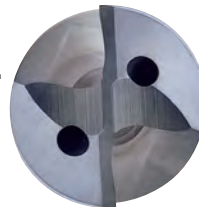
DC ≥ 6mm, relief shank



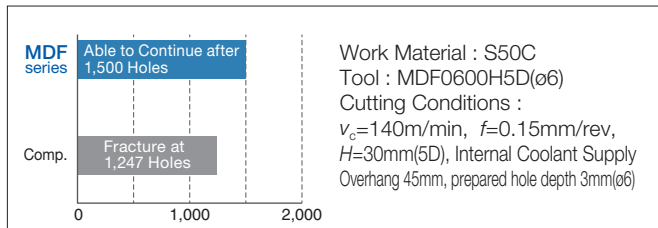
H Type with oil hole (3D/5D) for 2-5D deep hole applications

● **Internal coolant supply enables deep flat hole drilling.**

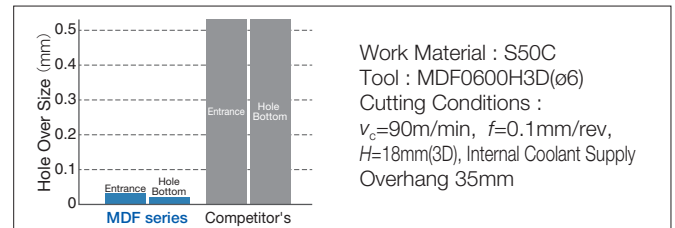
* A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with an L/D=5 oil hole.



Deep Spot Facing



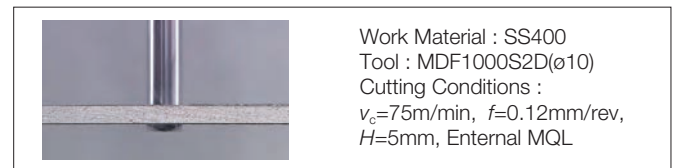
Long Overhang Spot Facing



Drilling on slanted surfaces



Prevents burrs and conical remnants on tool withdrawal



■ **Distinguishing flat drills, general-purpose drills and endmills**

Tool	Using Flat Drills MDF Series	General-Purpose Drill GS/HGS Series	Endmill for Spot Facing GSX MILL Slot
Hole Bottom Shape	Convex Shape (180°) Nearly Flat (Concave Shape) 0-0.5°	Convex Shape (135°) Concave Shape	Concave Shape (2° to 3° concavity) Convex Shape (Cannot be used for prepared hole drilling)
Drilling in Horizontal 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-Horizontal 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

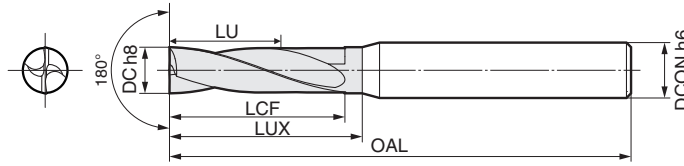
■ **Product Range**

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
External	MDF□□□□S2D	ø0.3 to 20.0	up to 2	188 items in stock
	MDF□□□□L2D	ø3.0 to 20.0	up to 2	115 items in stock
Internal	MDF□□□□H3D	ø3.0 to 16.0	up to 3	99 items in stock
	MDF□□□□H5D	ø3.0 to 16.0	up to 5	99 items in stock

MDF-S Type (External Coolant Supply)



For the tolerances h6 and h8, refer to the general data in chapter N of the general catalog.



■ Diameter ø0.3 to 5.1mm

Dia. DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
0.3*	2	●	MDF 0030S2D*	0.9	1.0	1.3	40	3.0
0.4*	2	●	MDF 0040S2D	1.2	1.4	1.8	40	3.0
0.5	2	●	MDF 0050S2D	1.5	2.0	2.2	40	3.0
0.6	2	●	MDF 0060S2D	1.8	2.4	2.6	40	3.0
0.7	2	●	MDF 0070S2D	2.1	2.8	3.1	40	3.0
0.8	2	●	MDF 0080S2D	2.4	3.2	3.5	40	3.0
0.9	2	●	MDF 0090S2D	2.7	3.6	4.0	40	3.0
1.0	2	●	MDF 0100S2D	3.0	4.0	4.4	45	3.0
1.1	2	●	MDF 0110S2D	3.3	4.4	4.8	45	3.0
1.2	2	●	MDF 0120S2D	3.6	4.8	5.3	45	3.0
1.3	2	●	MDF 0130S2D	3.9	5.2	5.7	45	3.0
1.4	2	●	MDF 0140S2D	4.2	5.6	6.2	45	3.0
1.5	2	●	MDF 0150S2D	4.5	6.0	6.6	45	3.0
1.6	2	●	MDF 0160S2D	4.8	6.4	7.0	45	3.0
1.7	2	●	MDF 0170S2D	5.1	6.8	7.5	45	3.0
1.8	2	●	MDF 0180S2D	5.4	7.2	7.9	45	3.0
1.9	2	●	MDF 0190S2D	5.7	7.6	8.4	45	3.0
2.0	2	●	MDF 0200S2D	6.0	8.0	8.8	50	4.0
2.1	2	●	MDF 0210S2D	6.3	8.4	9.2	50	4.0
2.2	2	●	MDF 0220S2D	6.6	8.8	9.7	50	4.0
2.3	2	●	MDF 0230S2D	6.9	9.2	10.1	50	4.0
2.4	2	●	MDF 0240S2D	7.2	9.6	10.6	50	4.0
2.5	2	●	MDF 0250S2D	7.5	10.0	11.0	50	4.0
2.6	2	●	MDF 0260S2D	7.8	10.4	11.4	50	4.0
2.7	2	●	MDF 0270S2D	8.1	10.8	11.9	50	4.0
2.76	2	●	MDF 0276S2D	6.9	11.0	12.0	50	4.0
2.78	2	●	MDF 0278S2D	6.9	11.1	12.1	50	4.0
2.8	2	●	MDF 0280S2D	8.4	11.2	12.3	50	4.0
2.9	2	●	MDF 0290S2D	8.7	11.6	12.8	50	4.0
3.0	2	●	MDF 0300S2D	9.0	12.0	13.2	50	6.0
3.1	2	●	MDF 0310S2D	9.3	12.4	13.6	50	6.0
3.2	2	●	MDF 0320S2D	9.6	12.8	14.1	50	6.0
3.3	2	●	MDF 0330S2D	9.9	13.2	14.5	50	6.0
3.4	2	●	MDF 0340S2D	10.2	13.6	15.0	50	6.0
3.5	2	●	MDF 0350S2D	10.5	14.0	15.4	50	6.0
3.6	2	●	MDF 0360S2D	10.8	14.4	15.8	50	6.0
3.66	2	●	MDF 0366S2D	9.1	14.6	15.3	50	4.0
3.68	2	●	MDF 0368S2D	9.2	14.7	15.4	50	4.0
3.7	2	●	MDF 0370S2D	11.1	14.8	16.3	50	6.0
3.8	2	●	MDF 0380S2D	11.4	15.2	16.7	50	6.0
3.9	2	●	MDF 0390S2D	11.7	15.6	17.2	50	6.0
4.0	2	●	MDF 0400S2D	12.0	16.0	17.6	50	6.0
4.1	2	●	MDF 0410S2D	12.3	16.4	18.0	60	6.0
4.2	2	●	MDF 0420S2D	12.6	16.8	18.5	60	6.0
4.3	2	●	MDF 0430S2D	12.9	17.2	18.9	60	6.0
4.4	2	●	MDF 0440S2D	13.2	17.6	19.4	60	6.0
4.5	2	●	MDF 0450S2D	13.5	18.0	19.8	60	6.0
4.6	2	●	MDF 0460S2D	13.8	18.4	20.2	60	6.0
4.62	2	●	MDF 0462S2D	11.5	18.4	20.9	60	6.0
4.64	2	●	MDF 0464S2D	11.6	18.5	21.0	60	6.0
4.7	2	●	MDF 0470S2D	14.1	18.8	20.7	60	6.0
4.8	2	●	MDF 0480S2D	14.4	19.2	21.1	60	6.0
4.9	2	●	MDF 0490S2D	14.7	19.6	21.6	60	6.0
5.0	2	●	MDF 0500S2D	15.0	20.0	22.0	60	6.0
5.1	2	●	MDF 0510S2D	15.3	20.4	22.4	60	6.0

*RS thinning is used for ø0.5mm and larger sizes.

Grade: ACF75

■ Diameter ø5.2 to 9.52mm

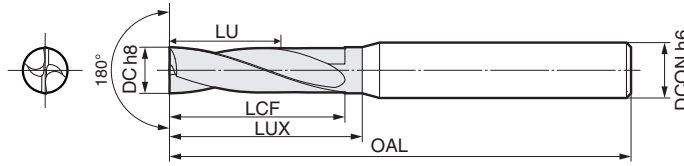
Dia. DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
5.2	2	●	MDF 0520S2D	15.6	20.8	22.9	60	6.0
5.3	2	●	MDF 0530S2D	15.9	21.2	23.3	60	6.0
5.4	2	●	MDF 0540S2D	16.2	21.6	23.8	60	6.0
5.5	2	●	MDF 0550S2D	16.5	22.0	24.2	60	6.0
5.52	2	●	MDF 0552S2D	13.8	22.0	26.1	60	6.0
5.54	2	●	MDF 0554S2D	13.8	22.1	26.2	60	6.0
5.6	2	●	MDF 0560S2D	16.8	22.4	24.6	60	6.0
5.7	2	●	MDF 0570S2D	17.1	22.8	25.1	60	6.0
5.8	2	●	MDF 0580S2D	17.4	23.2	25.5	60	6.0
5.9	2	●	MDF 0590S2D	17.7	23.6	26.0	60	6.0
6.0	2	●	MDF 0600S2D	18.0	24.0	26.4	70	8.0
6.1	2	●	MDF 0610S2D	18.3	24.4	26.8	70	8.0
6.2	2	●	MDF 0620S2D	18.6	24.8	27.3	70	8.0
6.3	2	●	MDF 0630S2D	18.9	25.2	27.7	70	8.0
6.4	2	●	MDF 0640S2D	19.2	25.6	28.2	70	8.0
6.5	2	●	MDF 0650S2D	19.5	26.0	28.6	70	8.0
6.6	2	●	MDF 0660S2D	19.8	26.4	29.0	70	8.0
6.7	2	●	MDF 0670S2D	20.1	26.8	29.5	70	8.0
6.8	2	●	MDF 0680S2D	20.4	27.2	29.9	70	8.0
6.9	2	●	MDF 0690S2D	20.7	27.6	30.4	70	8.0
7.0	2	●	MDF 0700S2D	21.0	28.0	30.8	70	8.0
7.1	2	●	MDF 0710S2D	21.3	28.4	31.2	70	8.0
7.2	2	●	MDF 0720S2D	21.6	28.8	31.7	70	8.0
7.3	2	●	MDF 0730S2D	21.9	29.2	32.1	70	8.0
7.36	2	●	MDF 0736S2D	18.4	29.4	34.7	70	8.0
7.38	2	●	MDF 0738S2D	18.4	29.5	34.8	70	8.0
7.4	2	●	MDF 0740S2D	22.2	29.6	32.6	70	8.0
7.5	2	●	MDF 0750S2D	22.5	30.0	33.0	70	8.0
7.52	2	●	MDF 0752S2D	18.8	30.0	35.7	70	8.0
7.54	2	●	MDF 0754S2D	18.8	30.1	35.8	70	8.0
7.6	2	●	MDF 0760S2D	22.8	30.4	33.4	70	8.0
7.7	2	●	MDF 0770S2D	23.1	30.8	33.9	70	8.0
7.8	2	●	MDF 0780S2D	23.4	31.2	34.3	70	8.0
7.9	2	●	MDF 0790S2D	23.7	31.6	34.8	70	8.0
8.0	2	●	MDF 0800S2D	24.0	32.0	35.2	70	8.0
8.1	2	●	MDF 0810S2D	24.3	32.4	35.6	80	10.0
8.2	2	●	MDF 0820S2D	24.6	32.8	36.1	80	10.0
8.3	2	●	MDF 0830S2D	24.9	33.2	36.5	80	10.0
8.4	2	●	MDF 0840S2D	25.2	33.6	37.0	80	10.0
8.5	2	●	MDF 0850S2D	25.5	34.0	37.4	80	10.0
8.6	2	●	MDF 0860S2D	25.8	34.4	37.8	80	10.0
8.7	2	●	MDF 0870S2D	26.1	34.8	38.3	80	10.0
8.8	2	●	MDF 0880S2D	26.4	35.2	38.7	80	10.0
8.9	2	●	MDF 0890S2D	26.7	35.6	39.2	80	10.0
9.0	2	●	MDF 0900S2D	27.0	36.0	39.6	80	10.0
9.1	2	●	MDF 0910S2D	27.3	36.4	40.0	80	10.0
9.2	2	●	MDF 0920S2D	27.6	36.8	40.5	80	10.0
9.24	2	●	MDF 0924S2D	23.1	36.9	43.6	80	10.0
9.26	2	●	MDF 0926S2D	23.1	37.0	43.7	80	10.0
9.3	2	●	MDF 0930S2D	27.9	37.2	40.9	80	10.0
9.36	2	●	MDF 0936S2D	23.4	37.4	44.3	80	10.0
9.38	2	●	MDF 0938S2D	23.4	37.5	44.4	80	10.0
9.4	2	●	MDF 0940S2D	28.2	37.6	41.4	80	10.0
9.5	2	●	MDF 0950S2D	28.5	38.0	41.8	80	10.0
9.52	2	●	MDF 0952S2D	23.8	38.0	45.3	80	10.0

Grade: ACF75

● mark: Standard stocked item



For the tolerances h6 and h8, refer to the general data in chapter N of the general catalog.



■ Diameter ø9.54 to 14.5mm

Dia. DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
9.54	2	●	MDF 0954S2D	23.8	38.1	45.4	80	10.0
9.6	2	●	MDF 0960S2D	28.8	38.4	42.2	80	10.0
9.7	2	●	MDF 0970S2D	29.1	38.8	42.7	80	10.0
9.8	2	●	MDF 0980S2D	29.4	39.2	43.1	80	10.0
9.9	2	●	MDF 0990S2D	29.7	39.6	43.6	80	10.0
10.0	2	●	MDF 1000S2D	30.0	40.0	44.0	80	10.0
10.1	2	●	MDF 1010S2D	30.3	40.4	44.4	90	12.0
10.2	2	●	MDF 1020S2D	30.6	40.8	44.9	90	12.0
10.3	2	●	MDF 1030S2D	30.9	41.2	45.3	90	12.0
10.4	2	●	MDF 1040S2D	31.2	41.6	45.8	90	12.0
10.5	2	●	MDF 1050S2D	31.5	42.0	46.2	90	12.0
10.6	2	●	MDF 1060S2D	31.8	42.4	46.6	90	12.0
10.7	2	●	MDF 1070S2D	32.1	42.8	47.1	90	12.0
10.8	2	●	MDF 1080S2D	32.4	43.2	47.5	90	12.0
10.9	2	●	MDF 1090S2D	32.7	43.6	48.0	90	12.0
11.0	2	●	MDF 1100S2D	33.0	44.0	48.4	90	12.0
11.1	2	●	MDF 1110S2D	33.3	44.4	48.8	90	12.0
11.2	2	●	MDF 1120S2D	33.6	44.8	49.3	90	12.0
11.22	2	●	MDF 1122S2D	28.0	44.8	53.1	90	12.0
11.24	2	●	MDF 1124S2D	28.1	44.9	53.2	90	12.0
11.3	2	●	MDF 1130S2D	33.9	45.2	49.7	90	12.0
11.36	2	●	MDF 1136S2D	28.4	45.4	53.9	90	12.0
11.38	2	●	MDF 1138S2D	28.4	45.5	54.0	90	12.0
11.4	2	●	MDF 1140S2D	34.2	45.6	50.2	90	12.0
11.5	2	●	MDF 1150S2D	34.5	46.0	50.6	90	12.0
11.6	2	●	MDF 1160S2D	34.8	46.4	51.0	90	12.0
11.7	2	●	MDF 1170S2D	35.1	46.8	51.5	90	12.0
11.8	2	●	MDF 1180S2D	35.4	47.2	51.9	90	12.0
11.9	2	●	MDF 1190S2D	35.7	47.6	52.4	90	12.0
12.0	2	●	MDF 1200S2D	36.0	48.0	52.8	90	12.0
12.1	2	●	MDF 1210S2D	30.2	48.4	52.2	100	14.0
12.2	2	●	MDF 1220S2D	30.5	48.8	52.7	100	14.0
12.3	2	●	MDF 1230S2D	30.7	49.2	53.1	100	14.0
12.4	2	●	MDF 1240S2D	31.0	49.6	53.5	100	14.0
12.5	2	●	MDF 1250S2D	37.5	50.0	54.0	100	14.0
12.6	2	●	MDF 1260S2D	31.5	50.4	55.0	100	14.0
12.7	2	●	MDF 1270S2D	31.7	50.8	55.4	100	14.0
12.8	2	●	MDF 1280S2D	32.0	51.2	55.9	100	14.0
12.9	2	●	MDF 1290S2D	32.2	51.6	56.3	100	14.0
13.0	2	●	MDF 1300S2D	39.0	52.0	56.8	100	14.0
13.1	2	●	MDF 1310S2D	32.7	52.4	57.8	110	14.0
13.2	2	●	MDF 1320S2D	33.0	52.8	58.2	110	14.0
13.3	2	●	MDF 1330S2D	33.2	53.2	58.7	110	14.0
13.4	2	●	MDF 1340S2D	33.5	53.6	59.1	110	14.0
13.5	2	●	MDF 1350S2D	40.5	54.0	59.6	110	14.0
13.6	2	●	MDF 1360S2D	34.0	54.4	60.6	110	14.0
13.7	2	●	MDF 1370S2D	34.2	54.8	61.0	110	14.0
13.8	2	●	MDF 1380S2D	34.5	55.2	61.5	110	14.0
13.9	2	●	MDF 1390S2D	34.7	55.6	61.9	110	14.0
14.0	2	●	MDF 1400S2D	42.0	56.0	62.4	110	14.0
14.1	2	●	MDF 1410S2D	35.2	56.4	63.4	110	16.0
14.2	2	●	MDF 1420S2D	35.5	56.8	63.8	110	16.0
14.3	2	●	MDF 1430S2D	35.7	57.2	64.3	110	16.0
14.4	2	●	MDF 1440S2D	36.0	57.6	64.7	110	16.0
14.5	2	●	MDF 1450S2D	43.5	58.0	65.2	110	16.0

Grade: ACF75

■ Diameter ø14.6 to 20.0mm

Dia. DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
14.6	2	●	MDF 1460S2D	36.5	58.4	66.1	110	16.0
14.7	2	●	MDF 1470S2D	36.7	58.8	66.6	110	16.0
14.8	2	●	MDF 1480S2D	37.0	59.2	67.0	110	16.0
14.9	2	●	MDF 1490S2D	37.2	59.6	67.5	110	16.0
15.0	2	●	MDF 1500S2D	45.0	60.0	68.0	110	16.0
15.1	2	●	MDF 1510S2D	37.7	60.4	68.9	115	16.0
15.2	2	●	MDF 1520S2D	38.0	60.8	69.4	115	16.0
15.3	2	●	MDF 1530S2D	38.2	61.2	69.8	115	16.0
15.4	2	●	MDF 1540S2D	38.5	61.6	70.3	115	16.0
15.5	2	●	MDF 1550S2D	46.5	62.0	70.8	115	16.0
15.6	2	●	MDF 1560S2D	39.0	62.4	71.7	115	16.0
15.7	2	●	MDF 1570S2D	39.2	62.8	72.2	115	16.0
15.8	2	●	MDF 1580S2D	39.5	63.2	72.6	115	16.0
15.9	2	●	MDF 1590S2D	39.7	63.6	73.1	115	16.0
16.0	2	●	MDF 1600S2D	48.0	64.0	73.6	115	16.0
16.5	2	●	MDF 1650S2D	49.5	66.0	72.4	125	18.0
17.0	2	●	MDF 1700S2D	51.0	68.0	75.2	125	18.0
17.5	2	●	MDF 1750S2D	52.5	70.0	78.0	130	18.0
18.0	2	●	MDF 1800S2D	54.0	72.0	80.8	130	18.0
18.5	2	●	MDF 1850S2D	55.5	74.0	83.6	140	20.0
19.0	2	●	MDF 1900S2D	57.0	76.0	86.4	140	20.0
19.5	2	●	MDF 1950S2D	58.5	78.0	89.2	140	20.0
20.0	2	●	MDF 2000S2D	60.0	80.0	92.0	140	20.0

Grade: ACF75

● mark: Standard stocked item

MDF-S Type (External Coolant Supply)

Recommended Cutting Conditions (for 2D)

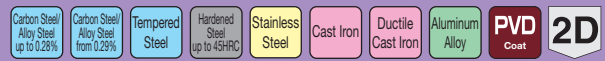
1. The recommended hole depth is 2xDC. The depth is measured from the highest point of the hole when drilling on inclined surfaces.
2. The recommended cutting conditions are those for drilling on flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling on an 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 traverse cutting or helical milling.

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

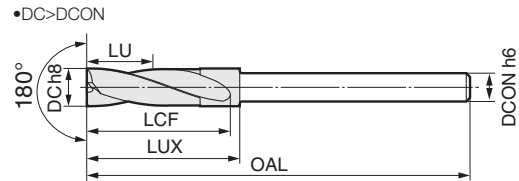
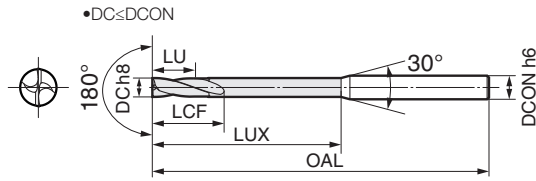
Dia. DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø0.5	v_c	30 - 40 - 50	30 - 35 - 40	15 - 20 - 25	15 - 20 - 25	30 - 40 - 50	20 - 30 - 40	60 - 80 - 100
	f	0.004 - 0.005 - 0.006	0.004 - 0.005 - 0.006	0.001 - 0.002 - 0.003	0.003 - 0.004 - 0.005	0.004 - 0.005 - 0.006	0.001 - 0.003 - 0.005	0.003 - 0.005 - 0.007
ø1.0	v_c	45 - 55 - 65	35 - 45 - 55	20 - 30 - 40	20 - 25 - 30	45 - 55 - 65	30 - 40 - 50	80 - 100 - 120
	f	0.01 - 0.03 - 0.05	0.01 - 0.03 - 0.05	0.002 - 0.006 - 0.01	0.005 - 0.007 - 0.01	0.01 - 0.03 - 0.05	0.005 - 0.01 - 0.015	0.01 - 0.02 - 0.03
ø2.0	v_c	50 - 60 - 70	40 - 50 - 60	20 - 30 - 40	20 - 30 - 40	50 - 60 - 70	45 - 55 - 65	90 - 110 - 130
	f	0.02 - 0.04 - 0.06	0.02 - 0.04 - 0.06	0.01 - 0.018 - 0.025	0.01 - 0.015 - 0.02	0.02 - 0.04 - 0.06	0.015 - 0.03 - 0.045	0.03 - 0.05 - 0.07
ø4.0	v_c	60 - 75 - 90	50 - 65 - 80	20 - 30 - 40	20 - 30 - 40	60 - 75 - 90	55 - 65 - 75	90 - 110 - 130
	f	0.06 - 0.08 - 0.10	0.05 - 0.08 - 0.10	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.06 - 0.08 - 0.10
ø6.0	v_c	60 - 75 - 90	50 - 65 - 80	20 - 30 - 40	20 - 30 - 50	60 - 75 - 90	60 - 70 - 80	90 - 110 - 130
	f	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	0.04 - 0.06 - 0.08	0.03 - 0.04 - 0.05	0.05 - 0.10 - 0.15	0.06 - 0.09 - 0.12	0.05 - 0.10 - 0.15
ø8.0	v_c	60 - 75 - 90	50 - 65 - 80	20 - 30 - 40	20 - 30 - 50	60 - 75 - 90	60 - 70 - 80	90 - 110 - 130
	f	0.10 - 0.15 - 0.20	0.10 - 0.15 - 0.20	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.10 - 0.15 - 0.20	0.10 - 0.12 - 0.15	0.10 - 0.15 - 0.20
ø10.0	v_c	60 - 75 - 90	50 - 65 - 80	20 - 30 - 40	20 - 30 - 50	60 - 75 - 90	60 - 70 - 80	90 - 110 - 130
	f	0.12 - 0.17 - 0.22	0.12 - 0.17 - 0.22	0.08 - 0.10 - 0.12	0.06 - 0.08 - 0.10	0.12 - 0.17 - 0.22	0.12 - 0.15 - 0.18	0.12 - 0.17 - 0.22
ø12.0	v_c	60 - 75 - 90	50 - 65 - 80	20 - 30 - 40	20 - 30 - 50	60 - 75 - 90	60 - 70 - 80	90 - 110 - 130
	f	0.15 - 0.20 - 0.25	0.15 - 0.20 - 0.25	0.12 - 0.15 - 0.18	0.08 - 0.10 - 0.12	0.15 - 0.20 - 0.25	0.15 - 0.18 - 0.20	0.15 - 0.20 - 0.25
ø16.0	v_c	60 - 75 - 90	50 - 65 - 80	20 - 30 - 40	20 - 30 - 50	60 - 75 - 90	60 - 70 - 80	90 - 110 - 130
	f	0.20 - 0.25 - 0.30	0.20 - 0.25 - 0.30	0.14 - 0.17 - 0.20	0.10 - 0.15 - 0.20	0.17 - 0.22 - 0.27	0.15 - 0.20 - 0.25	0.20 - 0.25 - 0.30
ø20.0	v_c	60 - 75 - 90	50 - 65 - 80	20 - 30 - 40	20 - 30 - 50	60 - 75 - 90	60 - 70 - 80	90 - 110 - 130
	f	0.25 - 0.30 - 0.35	0.25 - 0.30 - 0.35	0.16 - 0.19 - 0.22	0.15 - 0.20 - 0.25	0.25 - 0.30 - 0.35	0.20 - 0.25 - 0.30	0.25 - 0.30 - 0.35

Min. - Optimum - Max.

MDF-L Type Long Type (External Coolant Supply)



For the tolerances h6 and h8, refer to the general data in chapter N of the general catalog.



■ Diameter ø3.0 to 8.5mm

Dia. DC (mm)	Hole Depth (D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
3.0	2	●	MDF 0300L2D	9.0	13.5	30.0	100	6.0
3.1	2	●	MDF 0310L2D	9.3	14.0	31.0	100	6.0
3.2	2	●	MDF 0320L2D	9.6	14.4	32.0	100	6.0
3.3	2	●	MDF 0330L2D	9.9	14.9	33.0	100	6.0
3.4	2	●	MDF 0340L2D	10.2	15.3	34.0	100	6.0
3.5	2	●	MDF 0350L2D	10.5	15.8	35.0	100	6.0
3.6	2	●	MDF 0360L2D	10.8	16.2	36.0	100	6.0
3.7	2	●	MDF 0370L2D	11.1	16.7	37.0	100	6.0
3.8	2	●	MDF 0380L2D	11.4	17.1	38.0	100	6.0
3.9	2	●	MDF 0390L2D	11.7	17.6	39.0	100	6.0
4.0	2	●	MDF 0400L2D	12.0	18.0	40.0	100	6.0
4.1	2	●	MDF 0410L2D	12.3	18.5	41.0	100	6.0
4.2	2	●	MDF 0420L2D	12.6	18.9	42.0	100	6.0
4.3	2	●	MDF 0430L2D	12.9	19.4	43.0	100	6.0
4.4	2	●	MDF 0440L2D	13.2	19.8	44.0	100	6.0
4.5	2	●	MDF 0450L2D	13.5	20.3	45.0	100	6.0
4.6	2	●	MDF 0460L2D	13.8	20.7	46.0	100	6.0
4.7	2	●	MDF 0470L2D	14.1	21.2	47.0	100	6.0
4.8	2	●	MDF 0480L2D	14.4	21.6	48.0	100	6.0
4.9	2	●	MDF 0490L2D	14.7	22.1	49.0	100	6.0
5.0	2	●	MDF 0500L2D	15.0	22.5	50.0	100	6.0
5.1	2	●	MDF 0510L2D	15.3	23.0	51.0	110	6.0
5.2	2	●	MDF 0520L2D	15.6	23.4	52.0	110	6.0
5.3	2	●	MDF 0530L2D	15.9	23.9	53.0	110	6.0
5.4	2	●	MDF 0540L2D	16.2	24.3	54.0	110	6.0
5.5	2	●	MDF 0550L2D	16.5	24.8	55.0	110	6.0
5.6	2	●	MDF 0560L2D	16.8	25.2	56.0	110	6.0
5.7	2	●	MDF 0570L2D	17.1	25.7	57.0	110	6.0
5.8	2	●	MDF 0580L2D	17.4	26.1	58.0	110	6.0
5.9	2	●	MDF 0590L2D	17.7	26.6	59.0	110	6.0
6.0	2	●	MDF 0600L2D-S5	18.0	27.0	30.0	110	5.0
6.0	2	●	MDF 0600L2D	18.0	27.0	60.0	110	6.0
6.1	2	●	MDF 0610L2D	18.3	27.5	30.5	120	6.0
6.2	2	●	MDF 0620L2D	18.6	27.9	30.9	120	6.0
6.3	2	●	MDF 0630L2D	18.9	28.4	31.4	120	6.0
6.4	2	●	MDF 0640L2D	19.2	28.8	31.8	120	6.0
6.5	2	●	MDF 0650L2D	19.5	29.3	32.3	120	6.0
6.6	2	●	MDF 0660L2D	19.8	29.7	32.7	120	6.0
6.7	2	●	MDF 0670L2D	20.1	30.2	33.2	120	6.0
6.8	2	●	MDF 0680L2D	20.4	30.6	33.6	120	6.0
6.9	2	●	MDF 0690L2D	20.7	31.1	34.1	120	6.0
7.0	2	●	MDF 0700L2D	21.0	31.5	34.5	120	6.0
7.1	2	●	MDF 0710L2D	21.3	32.0	35.0	130	6.0
7.2	2	●	MDF 0720L2D	21.6	32.4	35.4	130	6.0
7.3	2	●	MDF 0730L2D	21.9	32.9	35.9	130	6.0
7.4	2	●	MDF 0740L2D	22.2	33.3	36.3	130	6.0
7.5	2	●	MDF 0750L2D	22.5	33.8	36.8	130	6.0
7.6	2	●	MDF 0760L2D	22.8	34.2	37.2	130	6.0
7.7	2	●	MDF 0770L2D	23.1	34.7	37.7	130	6.0
7.8	2	●	MDF 0780L2D	23.4	35.1	38.1	130	6.0
7.9	2	●	MDF 0790L2D	23.7	35.6	38.6	130	6.0
8.0	2	●	MDF 0800L2D-S6	24.0	36.0	39.0	130	6.0
8.0	2	●	MDF 0800L2D	24.0	36.0	80.0	130	8.0
8.1	2	●	MDF 0810L2D	24.3	36.5	39.5	140	8.0
8.2	2	●	MDF 0820L2D	24.6	36.9	39.9	140	8.0
8.3	2	●	MDF 0830L2D	24.9	37.4	40.4	140	8.0
8.4	2	●	MDF 0840L2D	25.2	37.8	40.8	140	8.0
8.5	2	●	MDF 0850L2D	25.5	38.3	41.3	140	8.0

Grade: ACF75

■ Diameter ø8.6 to 20.0mm

Dia. DC (mm)	Hole Depth (D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
8.6	2	●	MDF 0860L2D	25.8	38.7	41.7	140	8.0
8.7	2	●	MDF 0870L2D	26.1	39.2	42.2	140	8.0
8.8	2	●	MDF 0880L2D	26.4	39.6	42.6	140	8.0
8.9	2	●	MDF 0890L2D	26.7	40.1	43.1	140	8.0
9.0	2	●	MDF 0900L2D	27.0	40.5	43.5	140	8.0
9.1	2	●	MDF 0910L2D	27.3	41.0	44.0	150	8.0
9.2	2	●	MDF 0920L2D	27.6	41.4	44.4	150	8.0
9.3	2	●	MDF 0930L2D	27.9	41.9	44.9	150	8.0
9.4	2	●	MDF 0940L2D	28.2	42.3	45.3	150	8.0
9.5	2	●	MDF 0950L2D	28.5	42.8	45.8	150	8.0
9.6	2	●	MDF 0960L2D	28.8	43.2	46.2	150	8.0
9.7	2	●	MDF 0970L2D	29.1	43.7	46.7	150	8.0
9.8	2	●	MDF 0980L2D	29.4	44.1	47.1	150	8.0
9.9	2	●	MDF 0990L2D	29.7	44.6	47.6	150	8.0
10.0	2	●	MDF 1000L2D-S8	30.0	45.0	48.0	150	8.0
10.0	2	●	MDF 1000L2D	30.0	45.0	100.0	150	10.0
10.1	2	●	MDF 1010L2D	30.3	45.5	48.5	160	10.0
10.2	2	●	MDF 1020L2D	30.6	45.9	48.9	160	10.0
10.3	2	●	MDF 1030L2D	30.9	46.4	49.4	160	10.0
10.4	2	●	MDF 1040L2D	31.2	46.8	49.8	160	10.0
10.5	2	●	MDF 1050L2D	31.5	47.3	50.3	160	10.0
10.6	2	●	MDF 1060L2D	31.8	47.7	50.7	160	10.0
10.7	2	●	MDF 1070L2D	32.1	48.2	51.2	160	10.0
10.8	2	●	MDF 1080L2D	32.4	48.6	51.6	160	10.0
10.9	2	●	MDF 1090L2D	32.7	49.1	52.1	160	10.0
11.0	2	●	MDF 1100L2D	33.0	49.5	52.5	160	10.0
11.1	2	●	MDF 1110L2D	33.3	50.0	53.0	170	10.0
11.2	2	●	MDF 1120L2D	33.6	50.4	53.4	170	10.0
11.3	2	●	MDF 1130L2D	33.9	50.9	53.9	170	10.0
11.4	2	●	MDF 1140L2D	34.2	51.3	54.3	170	10.0
11.5	2	●	MDF 1150L2D	34.5	51.8	54.8	170	10.0
11.6	2	●	MDF 1160L2D	34.8	52.2	55.2	170	10.0
11.7	2	●	MDF 1170L2D	35.1	52.7	55.7	170	10.0
11.8	2	●	MDF 1180L2D	35.4	53.1	56.1	170	10.0
11.9	2	●	MDF 1190L2D	35.7	53.6	56.6	170	10.0
12.0	2	●	MDF 1200L2D-S10	36.0	54.0	57.0	170	10.0
12.0	2	●	MDF 1200L2D	36.0	54.0	120.0	170	12.0
12.5	2	●	MDF 1250L2D	37.5	56.3	59.3	180	12.0
13.0	2	●	MDF 1300L2D	39.0	58.5	61.5	180	12.0
13.5	2	●	MDF 1350L2D	40.5	60.8	63.8	190	12.0
14.0	2	●	MDF 1400L2D-S12	42.0	63.0	66.0	190	12.0
14.0	2	●	MDF 1400L2D	42.0	63.0	140.0	190	14.0
14.5	2	●	MDF 1450L2D	43.5	65.3	68.3	200	14.0
15.0	2	●	MDF 1500L2D	45.0	67.5	70.5	200	14.0
15.5	2	●	MDF 1550L2D	46.5	69.8	72.8	210	14.0
16.0	2	●	MDF 1600L2D-S14	48.0	72.0	75.0	210	14.0
16.0	2	●	MDF 1600L2D	48.0	72.0	160.0	210	16.0
16.5	2	●	MDF 1650L2D	49.5	74.3	77.3	220	16.0
17.0	2	●	MDF 1700L2D	51.0	76.5	79.5	220	16.0
17.5	2	●	MDF 1750L2D	52.5	78.8	81.8	230	16.0
18.0	2	●	MDF 1800L2D-S16	54.0	81.0	84.0	230	16.0
18.0	2	●	MDF 1800L2D	54.0	81.0	180.0	230	18.0
18.5	2	●	MDF 1850L2D	55.5	83.3	86.3	240	18.0
19.0	2	●	MDF 1900L2D	57.0	85.5	88.5	240	18.0
19.5	2	●	MDF 1950L2D	58.5	87.8	90.8	250	18.0
20.0	2	●	MDF 2000L2D-S18	60.0	90.0	93.0	250	18.0
20.0	2	●	MDF 2000L2D	60.0	90.0	200.0	250	20.0

Grade: ACF75

A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with this tool.

● mark: Standard stocked item

MDF-L Type Long Type (External Coolant Supply)

Recommended Cutting Conditions (for 2D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. The following cutting conditions are recommended for drilling with a prepared hole.
3. The recommended hole depth is 2xDC. The 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 traverse cutting or helical milling.

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

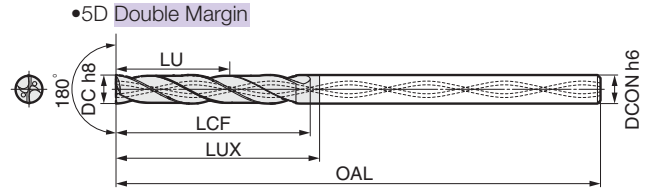
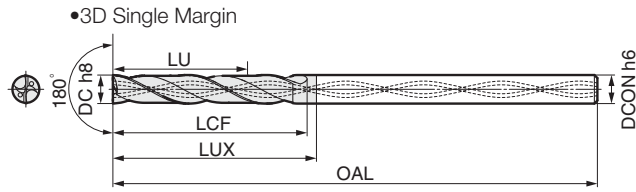
Dia. DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4.0	v_c	60 - 80 - 100	50 - 70 - 90	20 - 30 - 40	20 - 30 - 40	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.06 - 0.08 - 0.10	0.05 - 0.08 - 0.10	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.06 - 0.08 - 0.10
ø6.0	v_c	60 - 80 - 100	50 - 70 - 90	20 - 30 - 40	20 - 30 - 50	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	0.04 - 0.06 - 0.08	0.03 - 0.04 - 0.05	0.05 - 0.10 - 0.15	0.06 - 0.09 - 0.12	0.05 - 0.10 - 0.15
ø8.0	v_c	60 - 80 - 100	50 - 70 - 90	20 - 30 - 40	20 - 30 - 50	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.10 - 0.15 - 0.20	0.10 - 0.15 - 0.20	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.10 - 0.15 - 0.20	0.10 - 0.12 - 0.15	0.10 - 0.15 - 0.20
ø10.0	v_c	60 - 80 - 100	50 - 70 - 90	20 - 30 - 40	20 - 30 - 50	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.15 - 0.20 - 0.25	0.15 - 0.20 - 0.25	0.08 - 0.10 - 0.12	0.06 - 0.08 - 0.10	0.15 - 0.20 - 0.25	0.12 - 0.15 - 0.18	0.15 - 0.20 - 0.25
ø12.0	v_c	60 - 80 - 100	50 - 70 - 90	20 - 30 - 40	20 - 30 - 50	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.20 - 0.25 - 0.30	0.20 - 0.25 - 0.30	0.12 - 0.15 - 0.18	0.08 - 0.10 - 0.12	0.17 - 0.22 - 0.27	0.15 - 0.20 - 0.25	0.20 - 0.25 - 0.30
ø16.0	v_c	60 - 80 - 100	50 - 70 - 90	20 - 30 - 40	20 - 30 - 50	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.20 - 0.25 - 0.30	0.20 - 0.25 - 0.30	0.14 - 0.17 - 0.20	0.10 - 0.15 - 0.20	0.20 - 0.25 - 0.30	0.20 - 0.25 - 0.30	0.25 - 0.30 - 0.35
ø20.0	v_c	60 - 80 - 100	50 - 70 - 90	20 - 30 - 40	20 - 30 - 50	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.25 - 0.30 - 0.35	0.25 - 0.30 - 0.35	0.16 - 0.19 - 0.22	0.15 - 0.20 - 0.25	0.30 - 0.35 - 0.40	0.25 - 0.30 - 0.35	0.35 - 0.40 - 0.45

Min. - **Optimum** - Max.

MDF-H Type (Internal Coolant Supply)



For the tolerances h6 and h8, refer to the general data in chapter N of the general catalog.



■ Diameter ø3.0 to 5.7mm

Dia. DC (mm)	Hole Depth (D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
3.0	3	●	MDF 0300H3D	12.0	13.5	16.5	68	3.0
	5	●	MDF 0300H5D	18.0	20.1	23.1	78	3.0
3.1	3	●	MDF 0310H3D	12.4	14.0	17.0	72	4.0
	5	●	MDF 0310H5D	18.6	20.8	23.8	86	4.0
3.2	3	●	MDF 0320H3D	12.8	14.4	17.4	72	4.0
	5	●	MDF 0320H5D	19.2	21.4	24.4	86	4.0
3.3	3	●	MDF 0330H3D	13.2	14.9	17.9	72	4.0
	5	●	MDF 0330H5D	19.8	22.1	25.1	86	4.0
3.4	3	●	MDF 0340H3D	13.6	15.3	18.3	72	4.0
	5	●	MDF 0340H5D	20.4	22.8	25.8	86	4.0
3.5	3	●	MDF 0350H3D	14.0	15.8	18.8	72	4.0
	5	●	MDF 0350H5D	21.0	23.5	26.5	86	4.0
3.6	3	●	MDF 0360H3D	14.4	16.2	19.2	72	4.0
	5	●	MDF 0360H5D	21.6	24.1	27.1	86	4.0
3.7	3	●	MDF 0370H3D	14.8	16.7	19.7	72	4.0
	5	●	MDF 0370H5D	22.2	24.8	27.8	86	4.0
3.8	3	●	MDF 0380H3D	15.2	17.1	20.1	72	4.0
	5	●	MDF 0380H5D	22.8	25.5	28.5	86	4.0
3.9	3	●	MDF 0390H3D	15.6	17.6	20.6	72	4.0
	5	●	MDF 0390H5D	23.4	26.1	29.1	86	4.0
4.0	3	●	MDF 0400H3D	16.0	18.0	21.0	72	4.0
	5	●	MDF 0400H5D	24.0	26.8	29.8	86	4.0
4.1	3	●	MDF 0410H3D	16.4	18.5	21.5	80	5.0
	5	●	MDF 0410H5D	24.6	27.5	30.5	98	5.0
4.2	3	●	MDF 0420H3D	16.8	18.9	21.9	80	5.0
	5	●	MDF 0420H5D	25.2	28.1	31.1	98	5.0
4.3	3	●	MDF 0430H3D	17.2	19.4	22.4	80	5.0
	5	●	MDF 0430H5D	25.8	28.8	31.8	98	5.0
4.4	3	●	MDF 0440H3D	17.6	19.8	22.8	80	5.0
	5	●	MDF 0440H5D	26.4	29.5	32.5	98	5.0
4.5	3	●	MDF 0450H3D	18.0	20.3	23.3	80	5.0
	5	●	MDF 0450H5D	27.0	30.2	33.2	98	5.0
4.6	3	●	MDF 0460H3D	18.4	20.7	23.7	80	5.0
	5	●	MDF 0460H5D	27.6	30.8	33.8	98	5.0
4.7	3	●	MDF 0470H3D	18.8	21.2	24.2	80	5.0
	5	●	MDF 0470H5D	28.2	31.5	34.5	98	5.0
4.8	3	●	MDF 0480H3D	19.2	21.6	24.6	80	5.0
	5	●	MDF 0480H5D	28.8	32.2	35.2	98	5.0
4.9	3	●	MDF 0490H3D	19.6	22.1	25.1	80	5.0
	5	●	MDF 0490H5D	29.4	32.8	35.8	98	5.0
5.0	3	●	MDF 0500H3D	20.0	22.5	25.5	80	5.0
	5	●	MDF 0500H5D	30.0	33.5	36.5	98	5.0
5.1	3	●	MDF 0510H3D	20.4	23.0	26.0	82	6.0
	5	●	MDF 0510H5D	30.6	34.2	37.2	100	6.0
5.2	3	●	MDF 0520H3D	20.8	23.4	26.4	82	6.0
	5	●	MDF 0520H5D	31.2	34.8	37.8	100	6.0
5.3	3	●	MDF 0530H3D	21.2	23.9	26.9	82	6.0
	5	●	MDF 0530H5D	31.8	35.5	38.5	100	6.0
5.4	3	●	MDF 0540H3D	21.6	24.3	27.3	82	6.0
	5	●	MDF 0540H5D	32.4	36.2	39.2	100	6.0
5.5	3	●	MDF 0550H3D	22.0	24.8	27.8	82	6.0
	5	●	MDF 0550H5D	33.0	36.9	39.9	100	6.0
5.6	3	●	MDF 0560H3D	22.4	25.2	28.2	82	6.0
	5	●	MDF 0560H5D	33.6	37.5	40.5	100	6.0
5.7	3	●	MDF 0570H3D	22.8	25.7	28.7	82	6.0
	5	●	MDF 0570H5D	34.2	38.2	41.2	100	6.0

Grade: ACF75

■ Diameter ø5.8 to 8.5mm

Dia. DC (mm)	Hole Depth (D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
5.8	3	●	MDF 0580H3D	23.2	26.1	29.1	82	6.0
	5	●	MDF 0580H5D	34.8	38.9	41.9	100	6.0
5.9	3	●	MDF 0590H3D	23.6	26.6	29.6	82	6.0
	5	●	MDF 0590H5D	35.4	39.5	42.5	100	6.0
6.0	3	●	MDF 0600H3D	24.0	27.0	30.0	82	6.0
	5	●	MDF 0600H5D	36.0	40.2	43.2	100	6.0
6.1	3	●	MDF 0610H3D	24.4	27.5	30.5	88	7.0
	5	●	MDF 0610H5D	36.6	40.9	43.9	109	7.0
6.2	3	●	MDF 0620H3D	24.8	27.9	30.9	88	7.0
	5	●	MDF 0620H5D	37.2	41.5	44.5	109	7.0
6.3	3	●	MDF 0630H3D	25.2	28.4	31.4	88	7.0
	5	●	MDF 0630H5D	37.8	42.2	45.2	109	7.0
6.4	3	●	MDF 0640H3D	25.6	28.8	31.8	88	7.0
	5	●	MDF 0640H5D	38.4	42.9	45.9	109	7.0
6.5	3	●	MDF 0650H3D	26.0	29.3	32.3	88	7.0
	5	●	MDF 0650H5D	39.0	43.6	46.6	109	7.0
6.6	3	●	MDF 0660H3D	26.4	29.7	32.7	88	7.0
	5	●	MDF 0660H5D	39.6	44.2	47.2	109	7.0
6.7	3	●	MDF 0670H3D	26.8	30.2	33.2	88	7.0
	5	●	MDF 0670H5D	40.2	44.9	47.9	109	7.0
6.8	3	●	MDF 0680H3D	27.2	30.6	33.6	88	7.0
	5	●	MDF 0680H5D	40.8	45.6	48.6	109	7.0
6.9	3	●	MDF 0690H3D	27.6	31.1	34.1	88	7.0
	5	●	MDF 0690H5D	41.4	46.2	49.2	109	7.0
7.0	3	●	MDF 0700H3D	28.0	31.5	34.5	88	7.0
	5	●	MDF 0700H5D	42.0	46.9	49.9	109	7.0
7.1	3	●	MDF 0710H3D	28.4	32.0	35.0	94	8.0
	5	●	MDF 0710H5D	42.6	47.6	50.6	118	8.0
7.2	3	●	MDF 0720H3D	28.8	32.4	35.4	94	8.0
	5	●	MDF 0720H5D	43.2	48.2	51.2	118	8.0
7.3	3	●	MDF 0730H3D	29.2	32.9	35.9	94	8.0
	5	●	MDF 0730H5D	43.8	48.9	51.9	118	8.0
7.4	3	●	MDF 0740H3D	29.6	33.3	36.3	94	8.0
	5	●	MDF 0740H5D	44.4	49.6	52.6	118	8.0
7.5	3	●	MDF 0750H3D	30.0	33.8	36.8	94	8.0
	5	●	MDF 0750H5D	45.0	50.3	53.3	118	8.0
7.6	3	●	MDF 0760H3D	30.4	34.2	37.2	94	8.0
	5	●	MDF 0760H5D	45.6	50.9	53.9	118	8.0
7.7	3	●	MDF 0770H3D	30.8	34.7	37.7	94	8.0
	5	●	MDF 0770H5D	46.2	51.6	54.6	118	8.0
7.8	3	●	MDF 0780H3D	31.2	35.1	38.1	94	8.0
	5	●	MDF 0780H5D	46.8	52.3	55.3	118	8.0
7.9	3	●	MDF 0790H3D	31.6	35.6	38.6	94	8.0
	5	●	MDF 0790H5D	47.4	52.9	55.9	118	8.0
8.0	3	●	MDF 0800H3D	32.0	36.0	39.0	94	8.0
	5	●	MDF 0800H5D	48.0	53.6	56.6	118	8.0
8.1	3	●	MDF 0810H3D	32.4	36.5	39.5	100	9.0
	5	●	MDF 0810H5D	48.6	54.3	57.3	127	9.0
8.2	3	●	MDF 0820H3D	32.8	36.9	39.9	100	9.0
	5	●	MDF 0820H5D	49.2	54.9	57.9	127	9.0
8.3	3	●	MDF 0830H3D	33.2	37.4	40.4	100	9.0
	5	●	MDF 0830H5D	49.8	55.6	58.6	127	9.0
8.4	3	●	MDF 0840H3D	33.6	37.8	40.8	100	9.0
	5	●	MDF 0840H5D	50.4	56.3	59.3	127	9.0
8.5	3	●	MDF 0850H3D	34.0	38.3	41.3	100	9.0
	5	●	MDF 0850H5D	51.0	57.0	60.0	127	9.0

Grade: ACF75

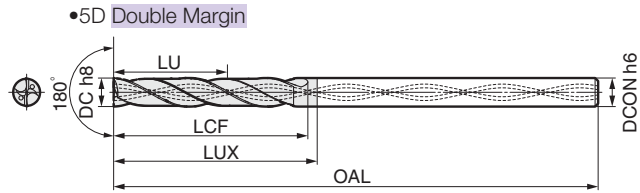
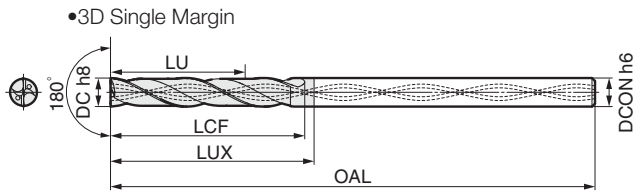
A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the 5D tool.

● mark: Standard stocked item

MDF-H Type (Internal Coolant Supply)



For the tolerances h6 and h8, refer to the general data in chapter N of the general catalog.



■ Diameter ø8.6 to 11.3mm

Dia. DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
8.6	3	●	MDF 0860H3D	34.4	38.7	41.7	100	9.0
	5	●	MDF 0860H5D	51.6	57.6	60.6	127	9.0
8.7	3	●	MDF 0870H3D	34.8	39.2	42.2	100	9.0
	5	●	MDF 0870H5D	52.2	58.3	61.3	127	9.0
8.8	3	●	MDF 0880H3D	35.2	39.6	42.6	100	9.0
	5	●	MDF 0880H5D	52.8	59.0	62.0	127	9.0
8.9	3	●	MDF 0890H3D	35.6	40.1	43.1	100	9.0
	5	●	MDF 0890H5D	53.4	59.6	62.6	127	9.0
9.0	3	●	MDF 0900H3D	36.0	40.5	43.5	100	9.0
	5	●	MDF 0900H5D	54.0	60.3	63.3	127	9.0
9.1	3	●	MDF 0910H3D	36.4	41.0	44.0	106	10.0
	5	●	MDF 0910H5D	54.6	61.0	64.0	136	10.0
9.2	3	●	MDF 0920H3D	36.8	41.4	44.4	106	10.0
	5	●	MDF 0920H5D	55.2	61.6	64.6	136	10.0
9.3	3	●	MDF 0930H3D	37.2	41.9	44.9	106	10.0
	5	●	MDF 0930H5D	55.8	62.3	65.3	136	10.0
9.4	3	●	MDF 0940H3D	37.6	42.3	45.3	106	10.0
	5	●	MDF 0940H5D	56.4	63.0	66.0	136	10.0
9.5	3	●	MDF 0950H3D	38.0	42.8	45.8	106	10.0
	5	●	MDF 0950H5D	57.0	63.7	66.7	136	10.0
9.6	3	●	MDF 0960H3D	38.4	43.2	46.2	106	10.0
	5	●	MDF 0960H5D	57.6	64.3	67.3	136	10.0
9.7	3	●	MDF 0970H3D	38.8	43.7	46.7	106	10.0
	5	●	MDF 0970H5D	58.2	65.0	68.0	136	10.0
9.8	3	●	MDF 0980H3D	39.2	44.1	47.1	106	10.0
	5	●	MDF 0980H5D	58.8	65.7	68.7	136	10.0
9.9	3	●	MDF 0990H3D	39.6	44.6	47.6	106	10.0
	5	●	MDF 0990H5D	59.4	66.3	69.3	136	10.0
10.0	3	●	MDF 1000H3D	40.0	45.0	48.0	106	10.0
	5	●	MDF 1000H5D	60.0	67.0	70.0	136	10.0
10.1	3	●	MDF 1010H3D	40.4	45.5	48.5	116	11.0
	5	●	MDF 1010H5D	60.6	67.7	70.7	149	11.0
10.2	3	●	MDF 1020H3D	40.8	45.9	48.9	116	11.0
	5	●	MDF 1020H5D	61.2	68.3	71.3	149	11.0
10.3	3	●	MDF 1030H3D	41.2	46.4	49.4	116	11.0
	5	●	MDF 1030H5D	61.8	69.0	72.0	149	11.0
10.4	3	●	MDF 1040H3D	41.6	46.8	49.8	116	11.0
	5	●	MDF 1040H5D	62.4	69.7	72.7	149	11.0
10.5	3	●	MDF 1050H3D	42.0	47.3	50.3	116	11.0
	5	●	MDF 1050H5D	63.0	70.4	73.4	149	11.0
10.6	3	●	MDF 1060H3D	42.4	47.7	50.7	116	11.0
	5	●	MDF 1060H5D	63.6	71.0	74.0	149	11.0
10.7	3	●	MDF 1070H3D	42.8	48.2	51.2	116	11.0
	5	●	MDF 1070H5D	64.2	71.7	74.7	149	11.0
10.8	3	●	MDF 1080H3D	43.2	48.6	51.6	116	11.0
	5	●	MDF 1080H5D	64.8	72.4	75.4	149	11.0
10.9	3	●	MDF 1090H3D	43.6	49.1	52.1	116	11.0
	5	●	MDF 1090H5D	65.4	73.0	76.0	149	11.0
11.0	3	●	MDF 1100H3D	44.0	49.5	52.5	116	11.0
	5	●	MDF 1100H5D	66.0	73.7	76.7	149	11.0
11.1	3	●	MDF 1110H3D	44.4	50.0	53.0	122	12.0
	5	●	MDF 1110H5D	66.6	74.4	77.4	158	12.0
11.2	3	●	MDF 1120H3D	44.8	50.4	53.4	122	12.0
	5	●	MDF 1120H5D	67.2	75.0	78.0	158	12.0
11.3	3	●	MDF 1130H3D	45.2	50.9	53.9	122	12.0
	5	●	MDF 1130H5D	67.8	75.7	78.7	158	12.0

Grade: ACF75

■ Diameter ø11.4 to 16.0mm

Dia. DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				
				Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON
11.4	3	●	MDF 1140H3D	45.6	51.3	54.3	122	12.0
	5	●	MDF 1140H5D	68.4	76.4	79.4	158	12.0
11.5	3	●	MDF 1150H3D	46.0	51.8	54.8	122	12.0
	5	●	MDF 1150H5D	69.0	77.1	80.1	158	12.0
11.6	3	●	MDF 1160H3D	46.4	52.2	55.2	122	12.0
	5	●	MDF 1160H5D	69.6	77.7	80.7	158	12.0
11.7	3	●	MDF 1170H3D	46.8	52.7	55.7	122	12.0
	5	●	MDF 1170H5D	70.2	78.4	81.4	158	12.0
11.8	3	●	MDF 1180H3D	47.2	53.1	56.1	122	12.0
	5	●	MDF 1180H5D	70.8	79.1	82.1	158	12.0
11.9	3	●	MDF 1190H3D	47.6	53.6	56.6	122	12.0
	5	●	MDF 1190H5D	71.4	79.7	82.7	158	12.0
12.0	3	●	MDF 1200H3D	48.0	54.0	57.0	122	12.0
	5	●	MDF 1200H5D	72.0	80.4	83.4	158	12.0
12.5	3	●	MDF 1250H3D	50.0	56.3	59.3	128	13.0
	5	●	MDF 1250H5D	75.0	83.8	86.8	167	13.0
13.0	3	●	MDF 1300H3D	52.0	58.5	61.5	128	13.0
	5	●	MDF 1300H5D	78.0	87.1	90.1	167	13.0
13.5	3	●	MDF 1350H3D	54.0	60.8	63.8	134	14.0
	5	●	MDF 1350H5D	81.0	90.5	93.5	176	14.0
14.0	3	●	MDF 1400H3D	56.0	63.0	66.0	134	14.0
	5	●	MDF 1400H5D	84.0	93.8	96.8	176	14.0
14.5	3	●	MDF 1450H3D	58.0	65.3	68.3	140	15.0
	5	●	MDF 1450H5D	87.0	97.2	100.2	185	15.0
15.0	3	●	MDF 1500H3D	60.0	67.5	70.5	140	15.0
	5	●	MDF 1500H5D	90.0	100.5	103.5	185	15.0
15.5	3	●	MDF 1550H3D	62.0	69.8	72.8	146	16.0
	5	●	MDF 1550H5D	93.0	103.9	106.9	194	16.0
16.0	3	●	MDF 1600H3D	64.0	72.0	75.0	146	16.0
	5	●	MDF 1600H5D	96.0	107.2	110.2	194	16.0

Grade: ACF75

A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the 5D tool.

● mark: Standard stocked item

MDF-H Type (Internal Coolant Supply)

Recommended Cutting Conditions (for 3D)

1. The recommended hole depth is 3xDC. The depth is measured from the highest point of the hole when drilling on 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 traverse cutting or helical milling.
7. A prepared hole with the same diameter is recommended for machining of stainless steel.

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

Dia. DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.06 - 0.08 - 0.10	0.05 - 0.08 - 0.10	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.06 - 0.08 - 0.10
ø6.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	70 - 80 - 90	90 - 120 - 150
	f	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	0.04 - 0.06 - 0.08	0.03 - 0.04 - 0.05	0.05 - 0.10 - 0.15	0.06 - 0.09 - 0.12	0.05 - 0.10 - 0.15
ø8.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	70 - 80 - 90	90 - 120 - 150
	f	0.10 - 0.15 - 0.20	0.10 - 0.15 - 0.20	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.10 - 0.15 - 0.20	0.10 - 0.12 - 0.15	0.10 - 0.15 - 0.20
ø10.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	70 - 80 - 90	90 - 120 - 150
	f	0.12 - 0.17 - 0.22	0.12 - 0.17 - 0.22	0.08 - 0.10 - 0.12	0.06 - 0.08 - 0.10	0.12 - 0.17 - 0.22	0.12 - 0.15 - 0.18	0.15 - 0.20 - 0.25
ø12.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	70 - 80 - 90	90 - 120 - 150
	f	0.15 - 0.20 - 0.25	0.15 - 0.20 - 0.25	0.12 - 0.15 - 0.18	0.08 - 0.10 - 0.12	0.15 - 0.20 - 0.25	0.15 - 0.18 - 0.20	0.20 - 0.25 - 0.30
ø16.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	70 - 80 - 90	90 - 120 - 150
	f	0.15 - 0.20 - 0.25	0.15 - 0.20 - 0.25	0.12 - 0.15 - 0.18	0.10 - 0.15 - 0.20	0.17 - 0.22 - 0.27	0.15 - 0.20 - 0.25	0.25 - 0.30 - 0.40

Min. - Optimum - Max.

Recommended Cutting Conditions (for 5D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. The following cutting conditions are recommended for drilling with a prepared hole.
3. The recommended hole depth is 5xDC. The 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 traverse cutting or helical milling.

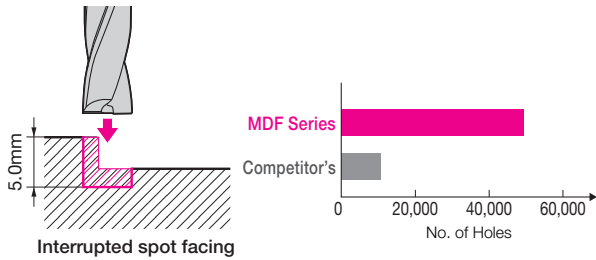
(v_c: Cutting Speed (m/min) f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.06 - 0.08 - 0.10	0.05 - 0.08 - 0.10	0.01 - 0.02 - 0.03	0.01 - 0.02 - 0.03	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.06 - 0.08 - 0.10
ø6.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	0.04 - 0.06 - 0.08	0.03 - 0.04 - 0.05	0.05 - 0.10 - 0.15	0.06 - 0.09 - 0.12	0.05 - 0.10 - 0.15
ø8.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.10 - 0.15 - 0.20	0.10 - 0.15 - 0.20	0.06 - 0.08 - 0.10	0.04 - 0.06 - 0.08	0.10 - 0.15 - 0.20	0.10 - 0.12 - 0.15	0.10 - 0.15 - 0.20
ø10.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.15 - 0.20 - 0.25	0.15 - 0.20 - 0.25	0.08 - 0.10 - 0.12	0.06 - 0.08 - 0.10	0.15 - 0.20 - 0.25	0.12 - 0.15 - 0.18	0.15 - 0.20 - 0.25
ø12.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.20 - 0.25 - 0.30	0.20 - 0.25 - 0.30	0.12 - 0.15 - 0.18	0.08 - 0.10 - 0.12	0.17 - 0.22 - 0.27	0.15 - 0.20 - 0.25	0.20 - 0.25 - 0.30
ø16.0	v _c	70 - 85 - 100	60 - 75 - 90	30 - 40 - 50	25 - 35 - 45	70 - 85 - 100	65 - 75 - 85	90 - 120 - 150
	f	0.20 - 0.25 - 0.30	0.20 - 0.25 - 0.30	0.14 - 0.17 - 0.20	0.10 - 0.15 - 0.20	0.20 - 0.25 - 0.30	0.20 - 0.25 - 0.30	0.25 - 0.30 - 0.35

Min. - Optimum - Max.

Application Examples

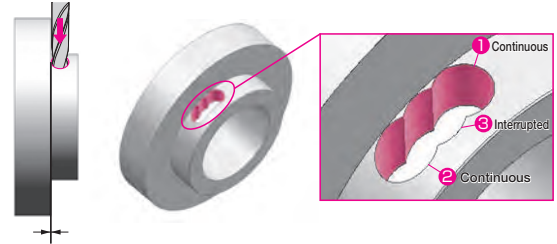
Gear Frame component (SCM435)



4 times longer tool life compared to competitor's drill

Tool: MDF0500S2D(ø5.0)
Cutting Conditions: $v_c=65\text{m/min}$, $f=0.10\text{mm/rev}$, $v_f=414\text{mm/min}$,
 $H=5\text{mm}$ (Blind Hole), External Coolant

Gear component (SCM415)

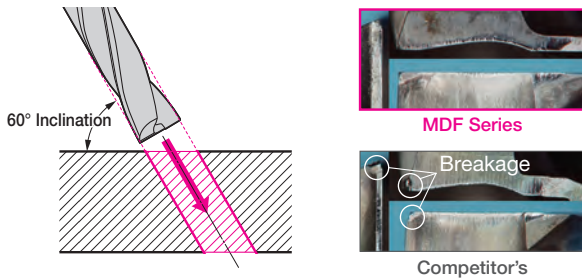


Clearance between Drill and side wall is 0.1mm

Stable drilling on non-planar surface is achieved

Tool: MDF0600S2D(ø6.0)
Cutting Conditions: $v_c=65\text{m/min}$, $f=0.04\text{mm/rev} \rightarrow 0.15\text{mm/rev}$,
 $v_f=138$ to 518mm/min , $H=$ up to 15mm (Through), External Coolant

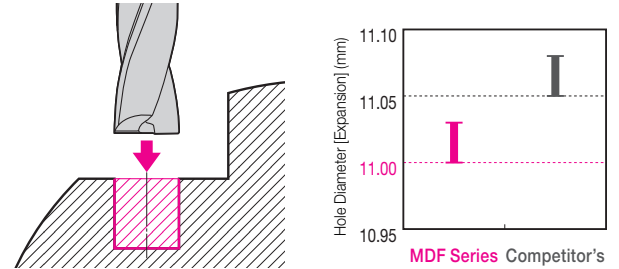
Automotive component (S35C)



Excellent cutting edge strength enables stable drilling

Tool: MDF0300S2D(ø3.0)
Cutting Conditions: $v_c=80\text{m/min}$, $f=0.045\text{mm/rev}$, $v_f=370\text{mm/min}$,
 $H=8\text{mm}$ (Through), External Coolant

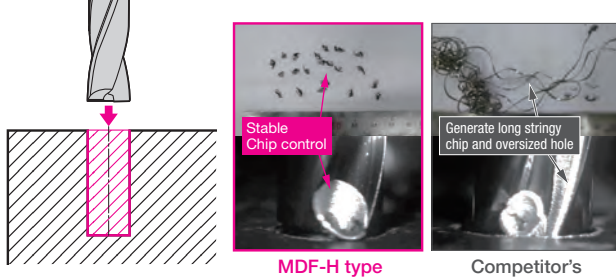
Jig component (SCM Materials)



Good hole accuracy with minimal diameter expansion

Tool: MDF1100S2D(ø11.0)
Cutting Conditions: $v_c=60\text{m/min}$, $f=0.20\text{mm/rev}$, $v_f=347\text{mm/min}$,
 $H=11\text{mm}$ (Blind Hole), External Coolant

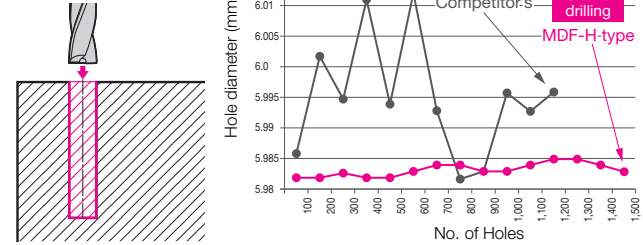
Blind hole drilling (S50C)



Excellent chip control compared to competitor's drill

Tool: MDF0600H3D(ø6.0)
Cutting Conditions: $v_c=75\text{m/min}$, $f=0.10\text{mm/rev}$,
 $H=15\text{mm}$ (Blind Hole), Internal Coolant

Blind hole drilling (S50C)



Accurate hole diameter and long tool life due to double margin and internal coolant

Tool: MDF0600H5D(ø6.0)
Cutting Conditions: $v_c=140\text{m/min}$, $f=0.15\text{mm/rev}$, $H=30\text{mm}$ (Blind Hole),
Internal Coolant, (*Pilot hole: MDW0600GS2)



• Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.

< SAFETY NOTES >

• Please handle with care as this product has sharp edges.
• Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.

• When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

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