

MULTIDRILL

NEXEO MDE Series

Rev. 4

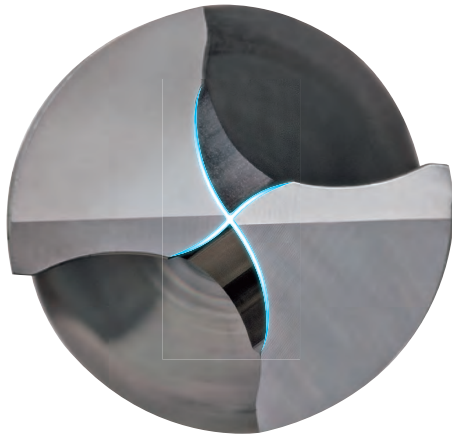
Innovative General-Purpose Drills - Next for Everyone -



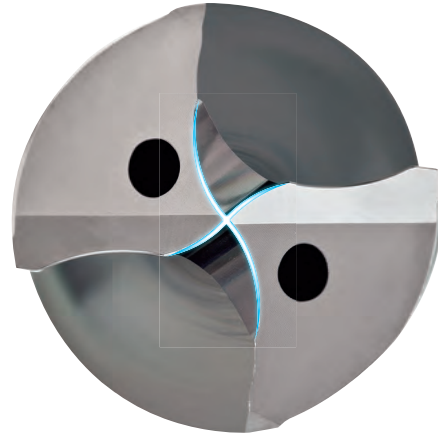
Small-diameter sizes
and for Pre-tap hole drilling
Expanded
for Hub processing
Newly available

Suitable for a wide range of Materials, from high-carbon steels and die steels to stainless steels. Stable Drilling for small machining center and lathes.

RX Thinning & Arc-Shaped Edge



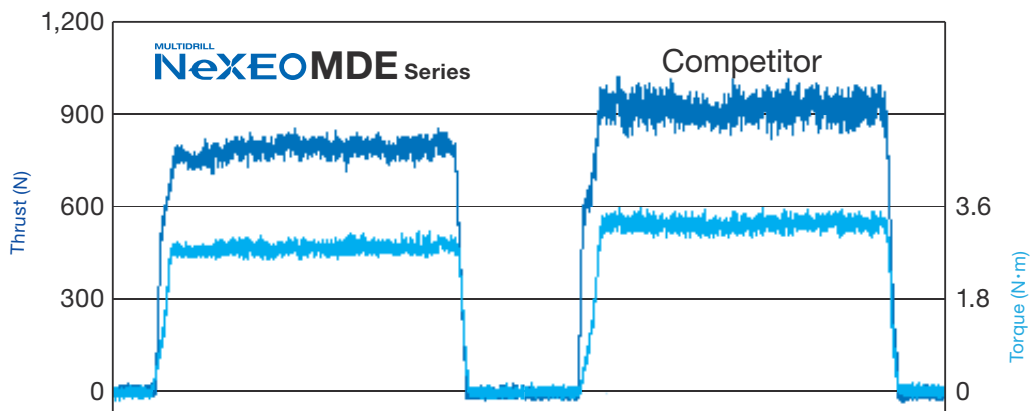
External Coolant



Internal Coolant

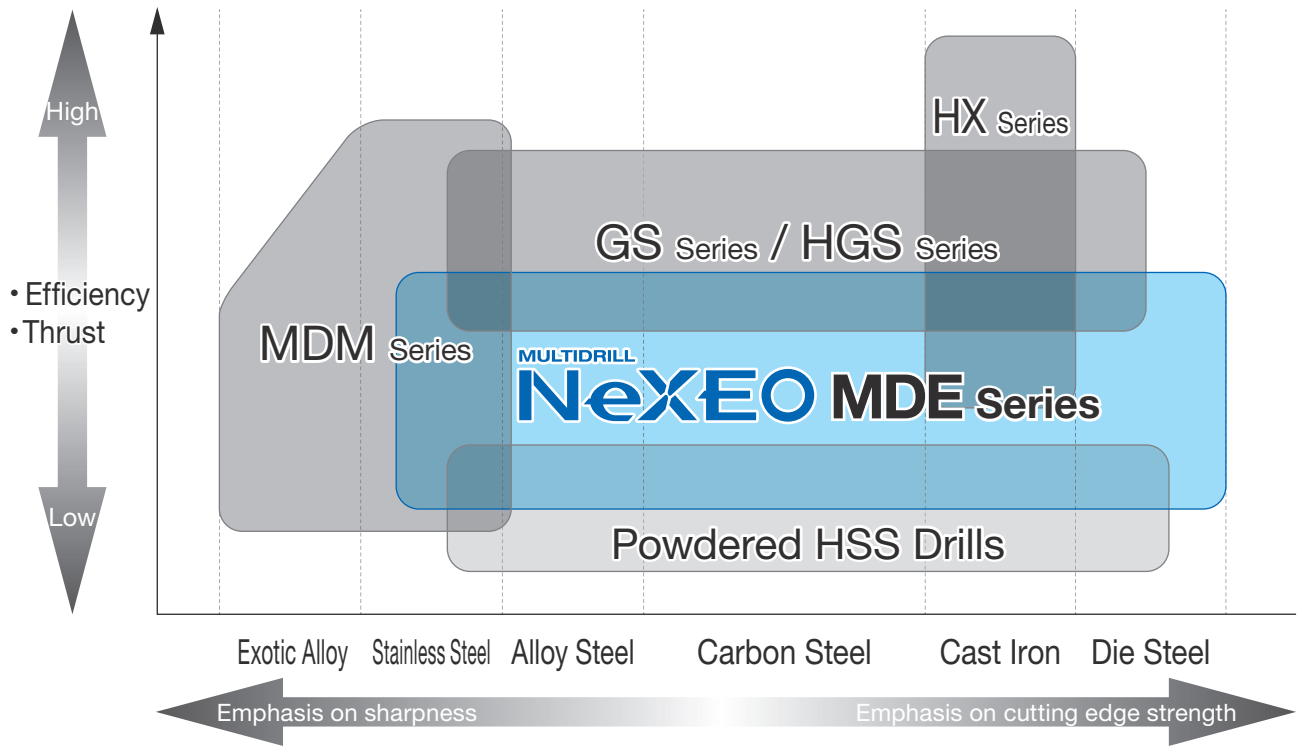
Low Resistance and Chip Breaking

- RX Thinning Reduces Thrust
 Applicable for Small Machining Centers and lathes



Material: S50C, Diameter: ø8 mm, Hole Depth: 5D,
 Cutting Conditions: $v_c=80$ m/min, $f=0.15$ mm/rev, $H=38$ mm (through) Internal Coolant (Water-Soluble)

for a Wide Range

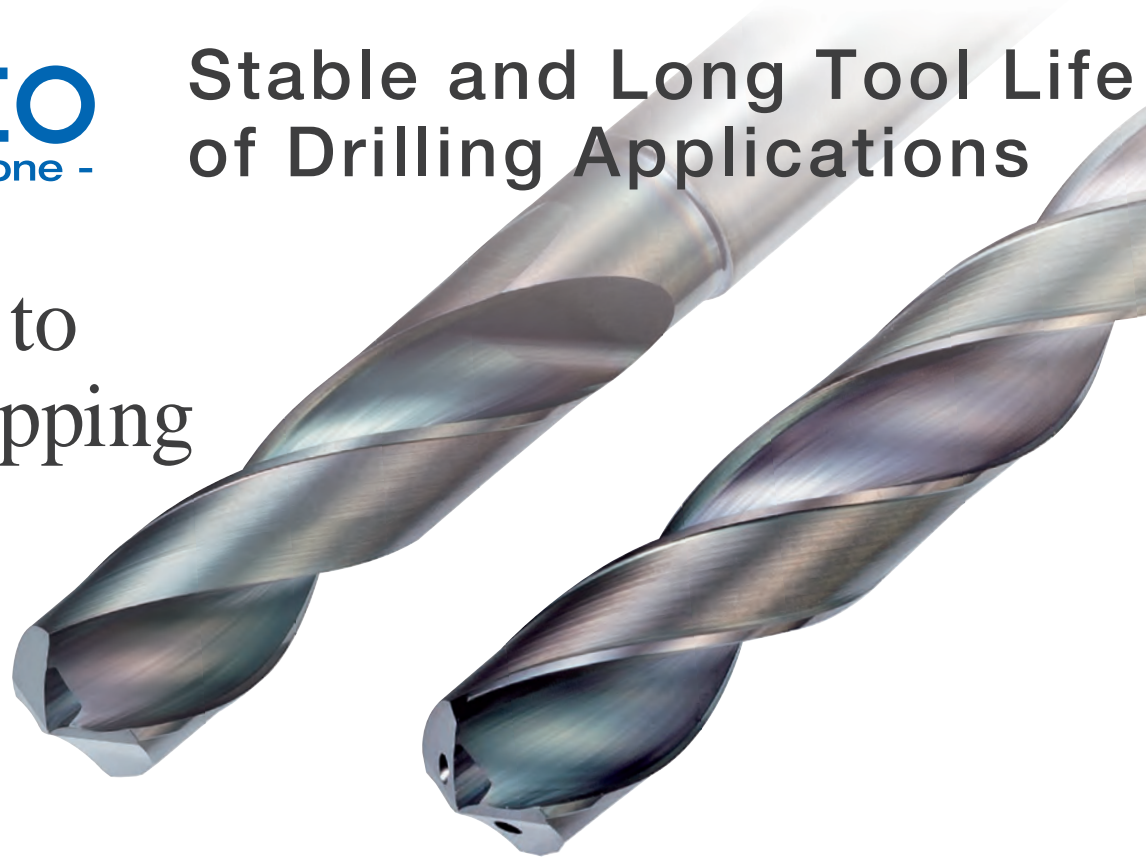


● Good Chip Control with the New Arc-Shaped Edge



Material: S50C, Diameter: $\varnothing 9$ mm, Hole Depth: 5D,
Cutting Conditions: $v_c=80$ m/min, $f=0.15$ mm/rev Internal Coolant (Water-Soluble)

Resistant to Edge Chipping



New New General Purpose Grade

ACT100

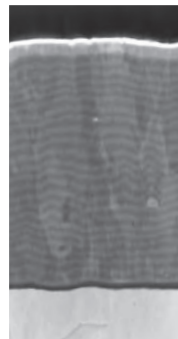
● **Fine-grained Carbide Substrate**

Featuring both wear and fracture resistance!

● **NX Coating**

Absotech® Coating Technology achieves superior wear and thermal resistance, high quality, hardness and strength!

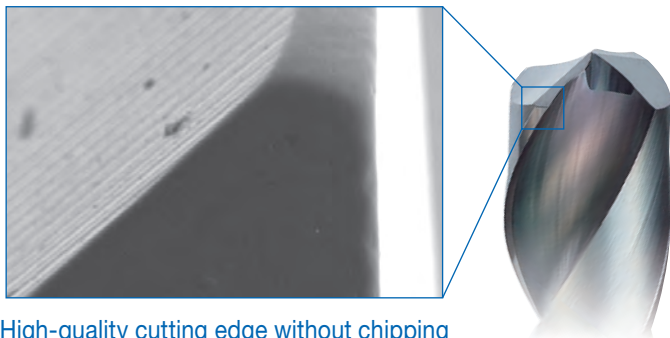
● **High Quality Edge Ensures Long Tool Life**



TiAlCrSi Super Multi-Layer Coating
 Hardness HV: 46 GPa
 Starting Temperature for Oxidization: 1,100°C

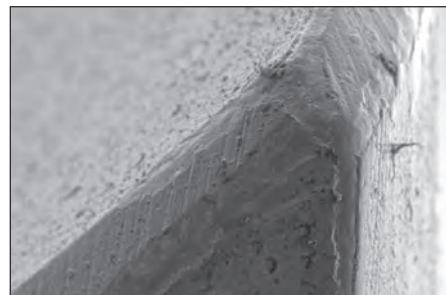
Highly Adhesive Coating Layer

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NEXEOMDE Series



High-quality cutting edge without chipping

Competitor A



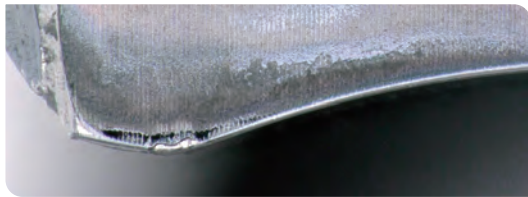
Chipped edge coating

Across a Wide Range

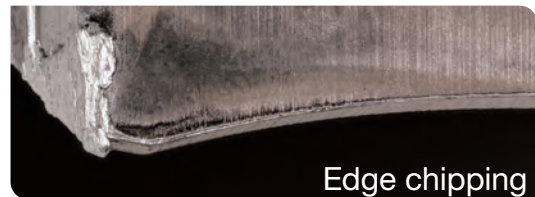
Strong Edge even for

High Carbon Steel Drilling

MULTIDRILL
NeXEOMDE Series



Competitor B



Material: S50C, Cutting Conditions: $v_c=80$ m/min, $f=0.15$ mm/rev Internal Coolant (Water-Soluble)

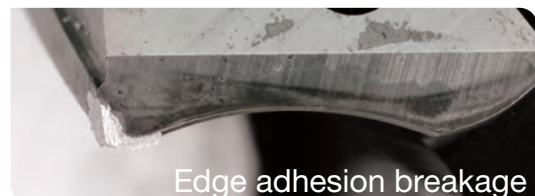
Strong Edge even for

Alloy Steel Drilling

MULTIDRILL
NeXEOMDE Series



Competitor C



Material: SCM415, Cutting Conditions: $v_c=110$ m/min, $f=0.2$ mm/rev Internal Coolant (Water-Soluble)

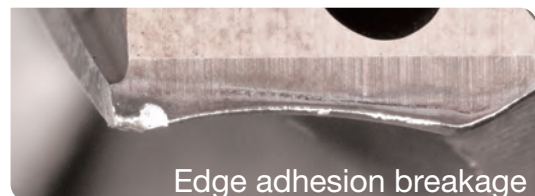
Strong Edge even for

Stainless Steel Drilling

MULTIDRILL
NeXEOMDE Series

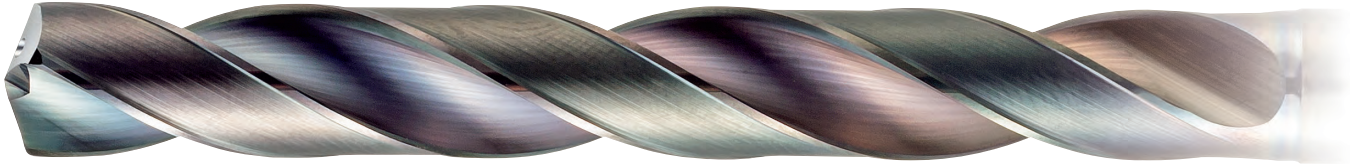


Competitor D



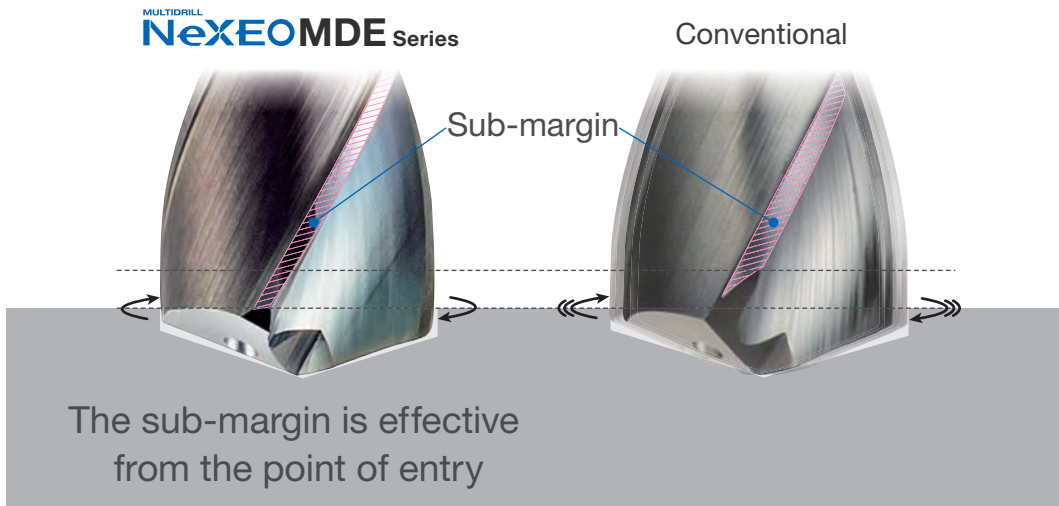
Material: SUS304, Cutting Conditions: $v_c=60$ m/min, $f=0.1$ mm/rev Internal Coolant (Water-Soluble)

Excellent Hole Accuracy

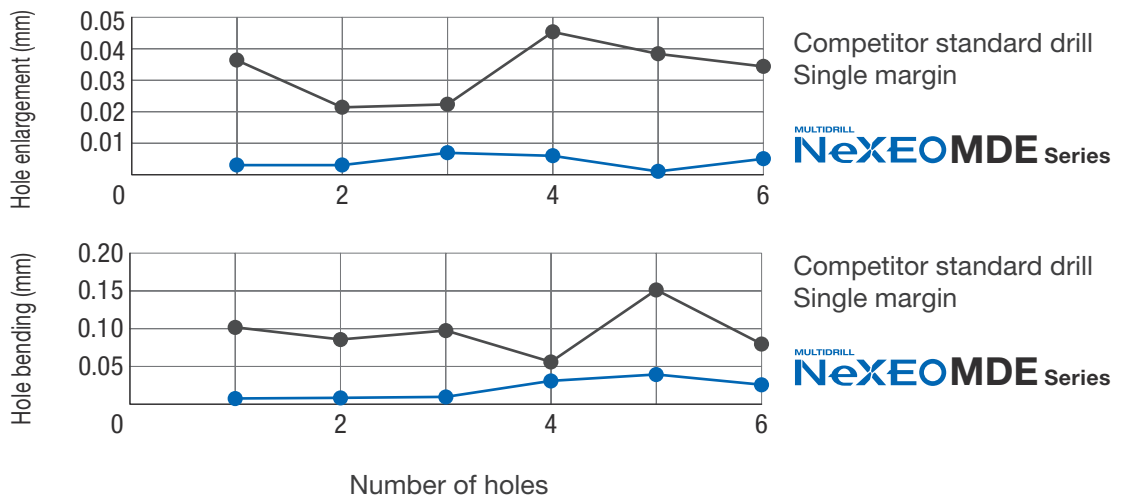


Internal Coolant: Double Margin

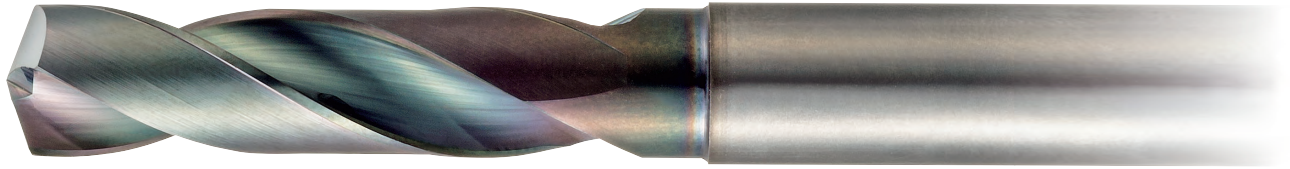
● Excellent Hole Accuracy with the Special Double Margin (Internal Coolant)



● Hole Accuracy Comparison (Die Steel Machining)

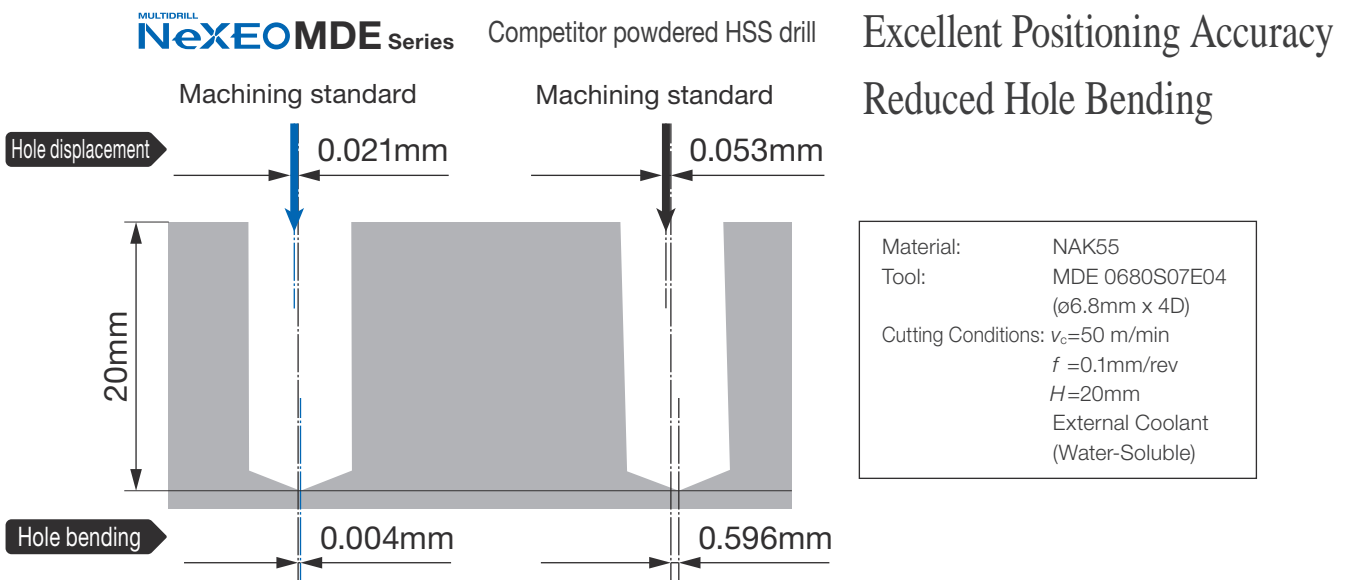


Material: DH31S (49HRC), Tool: MDE 0800S08H05 (ø8mm×5D) with hole
 Cutting Conditions: $v_c=17$ m/min, $f=0.07$ mm/rev Internal Coolant (Water-Soluble)

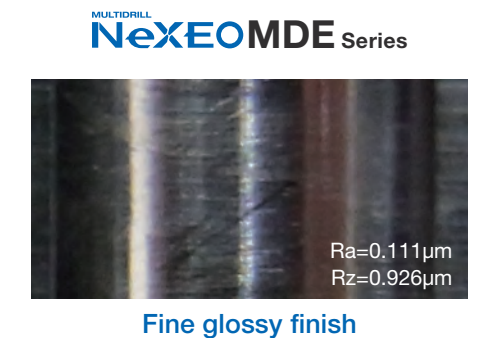


External Coolant: Single Margin

● Excellent Hole Accuracy Compared to Powdered HSS Drills (Die Steel Drilling)

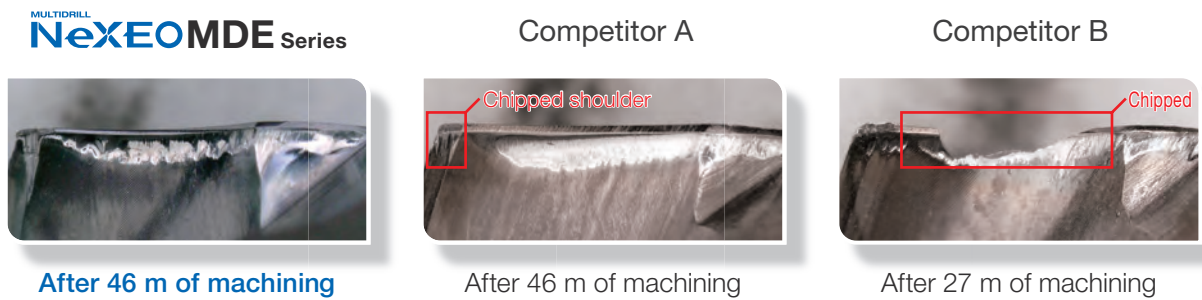
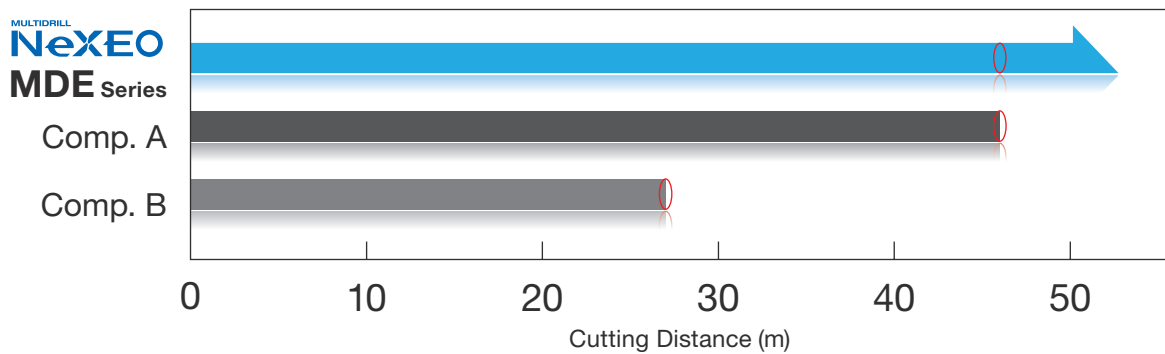


● Surface Finish Comparison



● Application Example: High Carbon Steel

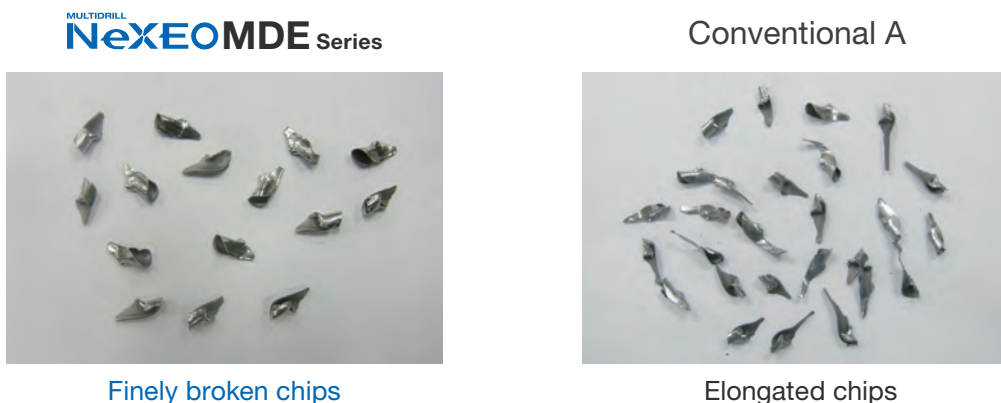
The new ACT100 grade achieves superior wear resistance and fracture resistance



Material: S50C, Machine: Vertical M/C BT30
 Tool: MDE 0800S08H05 (ø8mm×5D) with hole
 Cutting Conditions: $v_c=80$ m/min, $f=0.15$ mm/rev, $H=38$ mm (through) Internal Coolant (Water-Soluble)

● Application Example: Low Carbon Steel

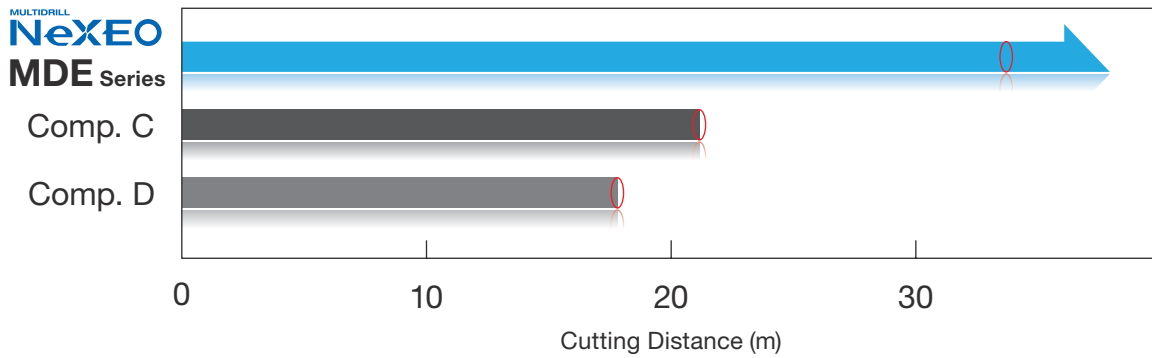
Excellent chip control with low carbon steel



Material: SM material (machine tools frame parts), Machine: Large bridge-type M/C
 Tool: MDE 1150S12H05 (ø11.5mm×5D) with hole
 Cutting Conditions: $v_c=100$ m/min, $f=0.25$ mm/rev, Internal Coolant (Water-Soluble), Cutting Distance: approx. 20 m/30 minutes

● Application Example: Hardened Steel Alloy

The new ACT100 grade and new cutting edge are also resistant to adhesion breakages



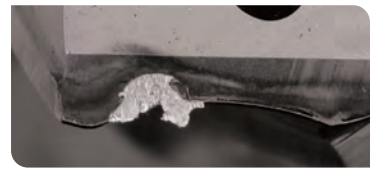
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NeXEO MDE Series



Competitor C



Competitor D

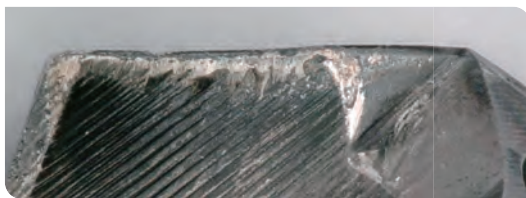


Material: SCM440H (30HRC), Machine: Vertical M/C BT30
 Tool: MDE 0800S08H05 ($\phi 8\text{mm} \times 5\text{D}$) with hole
 Cutting Conditions: $v_c=80$ m/min, $f=0.15$ mm/rev, $H=40$ mm (through) Internal Coolant (Water-Soluble)

● Application Example: Stainless Steel

Stable machining of stainless steel using a lathe

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Conventional B



Material: SUS310, Machine: NC lathe (rotating work material)
 Tool: MDE 0350S04H05 ($\phi 3.5\text{mm} \times 5\text{D}$) with hole
 Cutting Conditions: $v_c=40$ m/min, $f=0.05$ mm/rev, $H=14$ mm Internal Coolant (Non-water Soluble), Machined: 5,000 pieces

● Application Example: Ductile Cast Iron

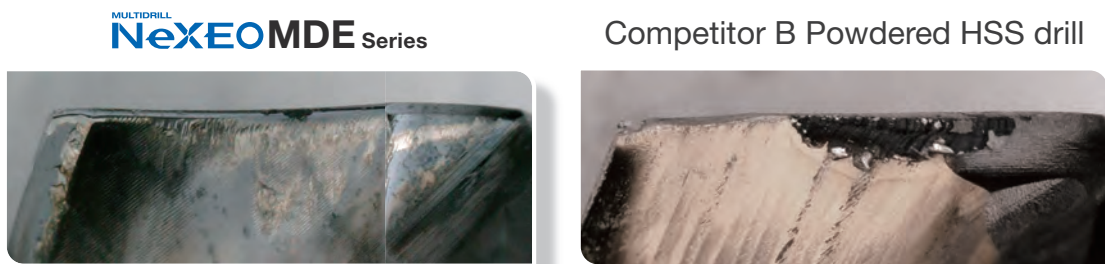
The new coating reduces margin damage and rake face wear



Material: FCD450, Machine: M/C HSK63
 Tool: MDE 079S08H05 ($\phi 7.9$ mm $\times 5$ D) with hole
 Cutting Conditions: $v_c=70$ m/min $f=0.1$ mm/rev, $H=40$ mm (through), $L=64$ m Internal Coolant (Water-Soluble)

● Application Example: Replacement Compared to Powdered HSS Drill

Approximately 10 times longer tool life compared to powdered HSS drills

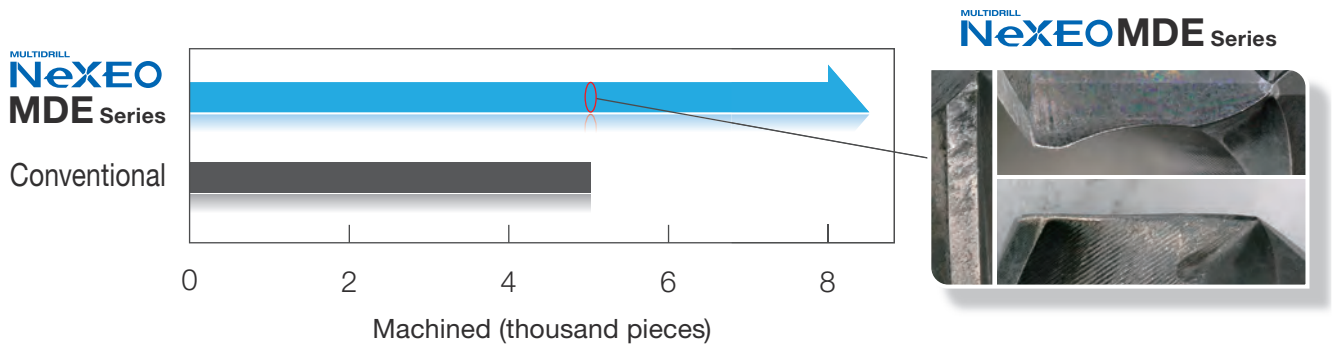


Material: S15C (automobile part), Machine: Small M/C BT30
 Tool: MDE 0680S07E04 ($\phi 6.8$ mm $\times 4$ D)
 Cutting Conditions: $v_c=60$ m/min, $f=0.15$ mm/rev,
 External Coolant (Non-water-Soluble),
 Machined: 12,000 holes

Competitor B powdered HSS drill ($\phi 6.8$ mm $\times 4$ D)
 $v_c=40$ m/min, $f=0.15$ mm/rev
 External Coolant (Non-water Soluble),
 Machined: 1,200 holes

● Application Example: Stainless Steel in a Small Machining Center

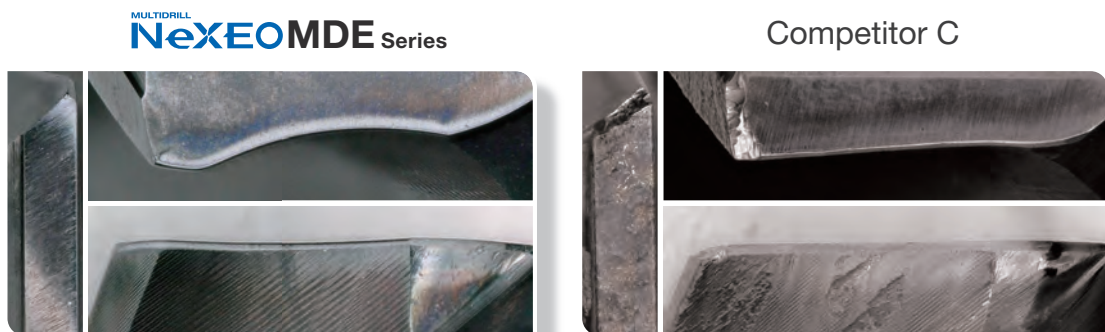
Reduced resistance achieves excellent chip control and a stable and long tool life



Material: SUS316L (95–100HRB) (plug parts), Machine: CNC automatic lathe (rotating work materials)
Tool: MDE 0680S07E2 ($\phi 6.8$ mm $\times 2D$)
Cutting Conditions: $v_c=50$ m/min, $f=0.09$ mm/rev External Coolant (Non-water Soluble)

● Application Example: High Carbon Steel in a Small Machining Center

Stable and long tool life even for low-feed machining of high carbon steel

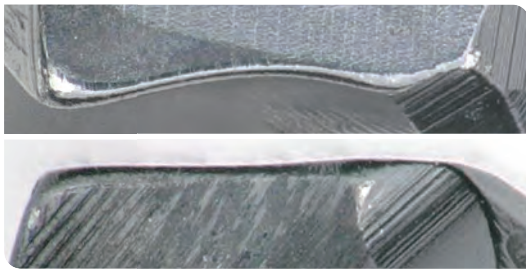


Material: S48C, Machine: Small M/C BT30
Tool: MDE 0830S07E4 ($\phi 8.3$ mm $\times 4D$)
Cutting Conditions: $v_c=30$ m/min, $f=0.08$ mm/rev External Coolant (Water-Soluble), Machined: 150 pieces

Diameter : ϕ 1.0 to 2.9mm

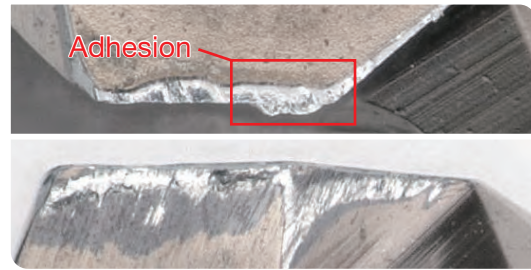
●Application Example: Low Carbon Steel

マルチドリル NexEO MDE型



After 900 holes of machining

Competitor A

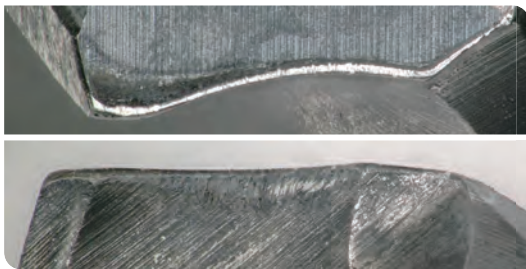


After 900 holes of machining

Work Material: SCM415, Machine: Vertical M/C BT30
 Tool: MDE0100S03H05 (ϕ 1.0mm \times 5D) with hole
 Cutting Conditions: $v_c=40$ m/min, $f=0.04$ mm/rev, $H=5$ mm (through) Internal Coolant (Water-Soluble)

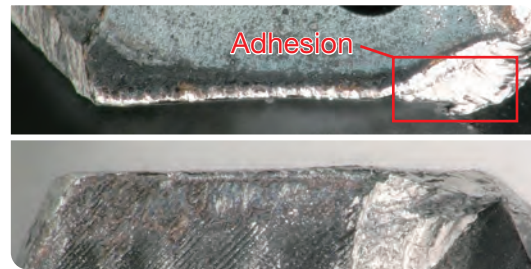
●Application Example: Stainless Steel

マルチドリル NexEO MDE型



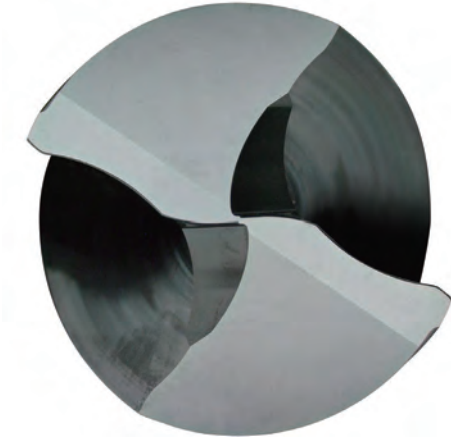
After 3,840 holes of machining

Conventional A



After 3,840 holes of machining

Work Material: SUS304, Machine: Vertical M/C BT30
 Tool: MDE0200S03H05 (ϕ 2.0mm \times 5D) with hole
 Cutting Conditions: $v_c=40$ m/min, $f=0.04$ mm/rev, $H=10$ mm (through) Internal Coolant (Water-Soluble)



The overlap thinning achieves low cutting force and wear reduction.
 Suitable for shallow hole drilling!!

*L/D=2 sizes only

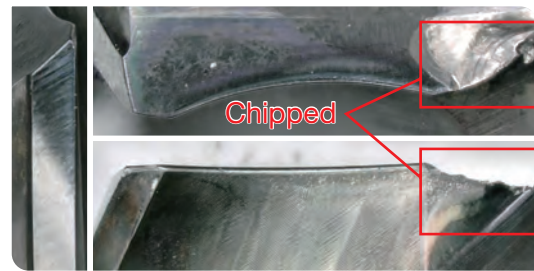
●Application Example: Inner Shaft Bolt Press-Fitting Hole for Hub

マルチドリル ネクシオ
NexEO MDE型



After 2,500 pieces of machining
 (5 holes / piece)

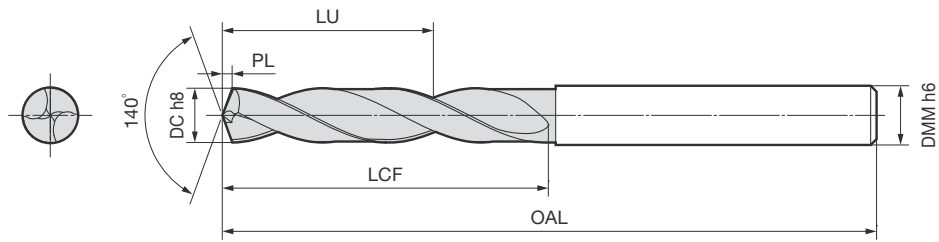
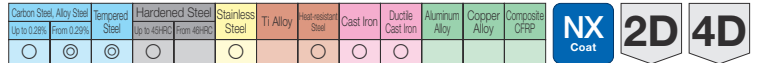
Conventional B



After 1,000 pieces of machining
 (5 holes / piece)

Work Material: equivalent to S55C, Machine: Vertical M/C
 Tool: MDE1397S14E02H (ø13.97mm×2D)
 Cutting Conditions: $v_c=75\text{m/min}$, $f=0.2\text{mm/rev}$, $H=15\text{mm}$ (Through) External Coolant (Water-Soluble)

MDE-E Type (External Coolant)



● Diameter: ø13.1 to 15.2 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
13.1	2	●	MDE 1310S14E02	32.8	52.4	107.4	2.4	14.0	12,700
	4	●	MDE 1310S14E04	66.8	86.4	149.4	2.4	14.0	14,600
13.2	2	●	MDE 1320S14E02	32.6	52.4	107.4	2.4	14.0	12,700
	4	●	MDE 1320S14E04	66.6	86.4	149.4	2.4	14.0	14,600
13.3	2	●	MDE 1330S14E02	32.5	52.4	107.4	2.4	14.0	12,700
	4	●	MDE 1330S14E04	66.5	86.4	149.4	2.4	14.0	14,600
13.4	2	●	MDE 1340S14E02	32.3	52.4	107.4	2.4	14.0	12,700
	4	●	MDE 1340S14E04	66.3	86.4	149.4	2.4	14.0	14,600
13.5	2	●	MDE 1350S14E02	32.3	52.5	107.5	2.5	14.0	12,700
	4	●	MDE 1350S14E04	66.3	86.5	149.5	2.5	14.0	14,600
13.6	2	●	MDE 1360S14E02	34.1	54.5	107.5	2.5	14.0	13,000
	4	●	MDE 1360S14E04	68.1	88.5	149.5	2.5	14.0	15,200
13.7	2	●	MDE 1370S14E02	34.0	54.5	107.5	2.5	14.0	13,000
	4	●	MDE 1370S14E04	68.0	88.5	149.5	2.5	14.0	15,200
13.8	2	●	MDE 1380S14E02	33.8	54.5	107.5	2.5	14.0	13,000
	4	●	MDE 1380S14E04	67.8	88.5	149.5	2.5	14.0	15,200
13.9	2	●	MDE 1390S14E02	33.7	54.5	107.5	2.5	14.0	13,000
	4	●	MDE 1390S14E04	67.7	88.5	149.5	2.5	14.0	15,200
14.0	2	●	MDE 1400S14E02	33.5	54.5	107.5	2.5	14.0	13,000
	4	●	MDE 1400S14E04	67.5	88.5	149.5	2.5	14.0	15,200
14.1	2	●	MDE 1410S15E02	33.5	54.6	110.6	2.6	15.0	16,300
	4	●	MDE 1410S15E04	70.5	91.6	155.6	2.6	15.0	18,900
14.2	2	●	MDE 1420S15E02	33.3	54.6	110.6	2.6	15.0	16,300
	4	●	MDE 1420S15E04	70.3	91.6	155.6	2.6	15.0	18,900
14.3	2	●	MDE 1430S15E02	33.2	54.6	110.6	2.6	15.0	16,300
	4	●	MDE 1430S15E04	70.2	91.6	155.6	2.6	15.0	18,900
14.4	2	●	MDE 1440S15E02	33.0	54.6	110.6	2.6	15.0	16,300
	4	●	MDE 1440S15E04	70.0	91.6	155.6	2.6	15.0	18,900
14.5	2	●	MDE 1450S15E02	32.9	54.6	110.6	2.6	15.0	16,300
	4	●	MDE 1450S15E04	69.9	91.6	155.6	2.6	15.0	18,900
14.6	2	●	MDE 1460S15E02	33.8	55.7	110.7	2.7	15.0	16,800
	4	●	MDE 1460S15E04	71.8	93.7	155.7	2.7	15.0	19,500
14.7	2	●	MDE 1470S15E02	33.7	55.7	110.7	2.7	15.0	16,800
	4	●	MDE 1470S15E04	71.7	93.7	155.7	2.7	15.0	19,500
14.8	2	●	MDE 1480S15E02	33.5	55.7	110.7	2.7	15.0	16,800
	4	●	MDE 1480S15E04	71.5	93.7	155.7	2.7	15.0	19,500
14.9	2	●	MDE 1490S15E02	33.4	55.7	110.7	2.7	15.0	16,800
	4	●	MDE 1490S15E04	71.4	93.7	155.7	2.7	15.0	19,500
15.0	2	●	MDE 1500S15E02	33.2	55.7	110.7	2.7	15.0	16,800
	4	●	MDE 1500S15E04	71.2	93.7	155.7	2.7	15.0	19,500
15.1	2	●	MDE 1510S16E02	33.1	55.7	114.7	2.7	16.0	17,400
	4	●	MDE 1510S16E04	74.1	96.7	162.7	2.7	16.0	20,100
15.2	2	●	MDE 1520S16E02	33.0	55.8	114.8	2.8	16.0	17,400
	4	●	MDE 1520S16E04	74.0	96.8	162.8	2.8	16.0	20,100

Grade ACT100

● Diameter: ø15.3 to 20.0 mm

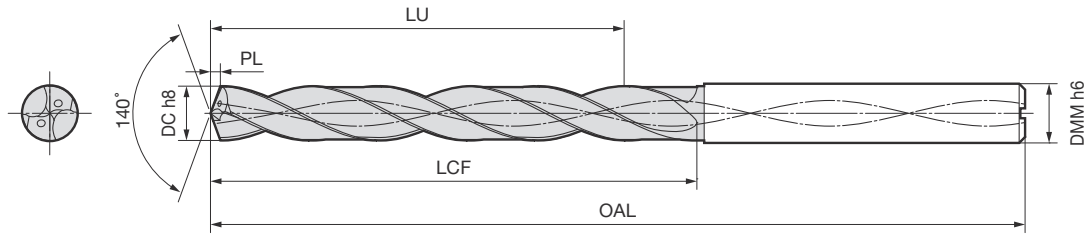
Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
15.3	2	●	MDE 1530S16E02	32.9	55.8	114.8	2.8	16.0	17,400
	4	●	MDE 1530S16E04	73.9	96.8	162.8	2.8	16.0	20,100
15.4	2	●	MDE 1540S16E02	32.7	55.8	114.8	2.8	16.0	17,400
	4	●	MDE 1540S16E04	73.7	96.8	162.8	2.8	16.0	20,100
15.5	2	●	MDE 1550S16E02	32.6	55.8	114.8	2.8	16.0	17,400
	4	●	MDE 1550S16E04	73.6	96.8	162.8	2.8	16.0	20,100
15.6	2	●	MDE 1560S16E02	34.4	57.8	114.8	2.8	16.0	17,800
	4	●	MDE 1560S16E04	75.4	98.8	162.8	2.8	16.0	20,700
15.7	2	●	MDE 1570S16E02	34.4	57.9	114.9	2.9	16.0	17,800
	4	●	MDE 1570S16E04	75.4	98.9	162.9	2.9	16.0	20,700
15.8	2	●	MDE 1580S16E02	34.2	57.9	114.9	2.9	16.0	17,800
	4	●	MDE 1580S16E04	75.2	98.9	162.9	2.9	16.0	20,700
15.9	2	●	MDE 1590S16E02	34.1	57.9	114.9	2.9	16.0	17,800
	4	●	MDE 1590S16E04	75.1	98.9	162.9	2.9	16.0	20,700
16.0	2	●	MDE 1600S16E02	33.9	57.9	114.9	2.9	16.0	17,800
	4	●	MDE 1600S16E04	74.9	98.9	162.9	2.9	16.0	20,700
16.5	2	●	MDE 1650S17E02	34.3	59.0	119.0	3.0	17.0	19,400
	4	●	MDE 1650S17E04	76.3	101.0	170.0	3.0	17.0	23,400
16.8	4	●	MDE 1680S17E04	75.9	101.1	170.1	3.1	17.0	25,300
	17.0	2	●	MDE 1700S17E02	34.6	60.1	119.1	3.1	17.0
4		●	MDE 1700S17E04	75.7	101.2	170.2	3.2	17.0	25,300
17.5	2	●	MDE 1750S18E02	35.0	61.2	123.2	3.2	18.0	22,600
	4	●	MDE 1750S18E04	77.0	103.2	170.2	3.2	18.0	27,500
18.0	2	●	MDE 1800S18E02	35.3	62.3	123.3	3.3	18.0	24,300
	4	●	MDE 1800S18E04	78.3	105.3	170.3	3.3	18.0	29,800
18.5	2	●	MDE 1850S19E02	34.7	62.4	126.4	3.4	19.0	25,700
	4	●	MDE 1850S19E04	79.7	107.4	182.4	3.4	19.0	32,500
19.0	2	●	MDE 1900S19E02	35.0	63.5	126.5	3.5	19.0	27,500
	4	●	MDE 1900S19E04	80.9	109.4	182.4	3.4	19.0	33,700
19.5	2	●	MDE 1950S20E02	35.3	64.5	130.5	3.5	20.0	29,200
	4	●	MDE 1950S20E04	84.3	113.5	182.5	3.5	20.0	34,500
19.7	4	●	MDE 1970S20E04	88.1	117.6	182.6	3.6	20.0	35,500
	20.0	2	●	MDE 2000S20E02	35.6	65.6	130.6	3.6	20.0
4		●	MDE 2000S20E04	87.6	117.6	182.6	3.6	20.0	35,500

Grade ACT100

●mark: Standard stocked item

MDE-H Type (Internal Coolant) Expansion

Carbon Steel Up to 0.28%	Alloy Steel From 0.29%	Tempered Steel	Hardened Steel Up to 49HRC	Stainless Steel From 49HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP	NX Coat	W/ Oil Hole	3D	5D	8D
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● Diameter: $\phi 6.6$ to 7.8 mm

Diameter DC (mm)	Hole Depth L/D	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
6.6	3	●	MDE 0660S07H03	26.3	36.2	89.2	1.2	7.0	13,100
	5	●	MDE 0660S07H05	47.3	57.2	110.2	1.2	7.0	15,000
	8	●	MDE 0660S07H08	68.3	78.2	131.2	1.2	7.0	17,400
6.7	3	●	MDE 0670S07H03	26.2	36.2	89.2	1.2	7.0	13,100
	5	●	MDE 0670S07H05	47.2	57.2	110.2	1.2	7.0	15,000
	8	●	MDE 0670S07H08	68.2	78.2	131.2	1.2	7.0	17,400
6.8	3	●	MDE 0680S07H03	26.0	36.2	89.2	1.2	7.0	13,100
	5	●	MDE 0680S07H05	47.0	57.2	110.2	1.2	7.0	15,000
	8	●	MDE 0680S07H08	68.0	78.2	131.2	1.2	7.0	17,400
6.9	3	●	MDE 0690S07H03	26.0	36.3	89.3	1.3	7.0	13,100
	5	●	MDE 0690S07H05	47.0	57.3	110.3	1.3	7.0	15,000
	8	●	MDE 0690S07H08	68.0	78.3	131.3	1.3	7.0	17,400
7.0	3	●	MDE 0700S07H03	25.8	36.3	89.3	1.3	7.0	13,100
	5	●	MDE 0700S07H05	46.8	57.3	110.3	1.3	7.0	15,000
	8	●	MDE 0700S07H08	67.8	78.3	131.3	1.3	7.0	17,400
7.1	3	●	MDE 0710S08H03	28.2	38.8	95.3	1.3	8.0	14,200
	5	●	MDE 0710S08H05	50.7	61.3	119.3	1.3	8.0	16,200
	8	●	MDE 0710S08H08	73.2	83.8	143.3	1.3	8.0	18,600
7.2	3	●	MDE 0720S08H03	28.0	38.8	95.3	1.3	8.0	14,200
	5	●	MDE 0720S08H05	50.5	61.3	119.3	1.3	8.0	16,200
	8	●	MDE 0720S08H08	73.0	83.8	143.3	1.3	8.0	18,600
7.3	3	●	MDE 0730S08H03	27.9	38.8	95.3	1.3	8.0	14,200
	5	●	MDE 0730S08H05	50.4	61.3	119.3	1.3	8.0	16,200
	8	●	MDE 0730S08H08	72.9	83.8	143.3	1.3	8.0	18,600
7.36	5	●	MDE 0736S08H05	50.2	61.3	119.3	1.3	8.0	16,200
7.38	5	●	MDE 0738S08H05	50.2	61.3	119.3	1.3	8.0	16,200
7.4	3	●	MDE 0740S08H03	27.7	38.8	95.3	1.3	8.0	14,200
	5	●	MDE 0740S08H05	50.2	61.3	119.3	1.3	8.0	16,200
	8	●	MDE 0740S08H08	72.7	83.8	143.3	1.3	8.0	18,600
7.5	3	●	MDE 0750S08H03	27.7	38.9	95.4	1.4	8.0	14,200
	5	●	MDE 0750S08H05	50.2	61.4	119.4	1.4	8.0	16,200
	8	●	MDE 0750S08H08	72.7	83.9	143.4	1.4	8.0	18,600
7.52	5	●	MDE 0752S08H05	54.0	65.4	119.4	1.4	8.0	16,600
7.54	5	●	MDE 0754S08H05	54.0	65.4	119.4	1.4	8.0	16,600
7.6	3	●	MDE 0760S08H03	30.0	41.4	95.4	1.4	8.0	14,500
	5	●	MDE 0760S08H05	54.0	65.4	119.4	1.4	8.0	16,600
	8	●	MDE 0760S08H08	78.0	89.4	143.4	1.4	8.0	18,900
7.7	3	●	MDE 0770S08H03	29.9	41.4	95.4	1.4	8.0	14,500
	5	●	MDE 0770S08H05	53.9	65.4	119.4	1.4	8.0	16,600
	8	●	MDE 0770S08H08	77.9	89.4	143.4	1.4	8.0	18,900
7.8	3	●	MDE 0780S08H03	29.7	41.4	95.4	1.4	8.0	14,500
	5	●	MDE 0780S08H05	53.7	65.4	119.4	1.4	8.0	16,600
	8	●	MDE 0780S08H08	77.7	89.4	143.4	1.4	8.0	18,900

Grade ACT100

● Diameter: $\phi 7.9$ to 9.2 mm

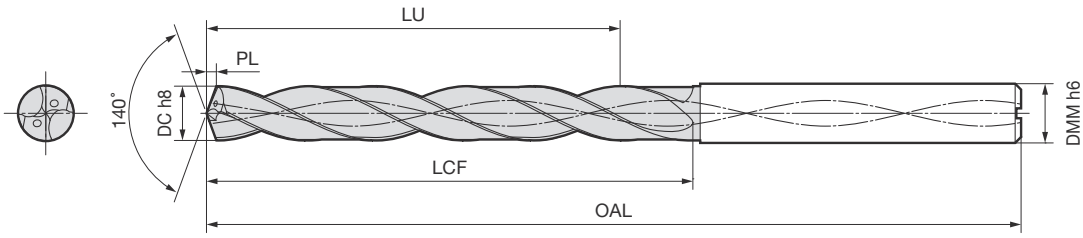
Diameter DC (mm)	Hole Depth L/D	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
7.9	3	●	MDE 0790S08H03	29.6	41.4	95.4	1.4	8.0	14,500
	5	●	MDE 0790S08H05	53.6	65.4	119.4	1.4	8.0	16,600
	8	●	MDE 0790S08H08	77.6	89.4	143.4	1.4	8.0	18,900
8.0	3	●	MDE 0800S08H03	29.5	41.5	95.5	1.5	8.0	14,500
	5	●	MDE 0800S08H05	53.5	65.5	119.5	1.5	8.0	16,600
	8	●	MDE 0800S08H08	77.5	89.5	143.5	1.5	8.0	18,900
8.1	3	●	MDE 0810S09H03	31.9	44.0	101.5	1.5	9.0	15,600
	5	●	MDE 0810S09H05	57.4	69.5	128.5	1.5	9.0	17,800
	8	●	MDE 0810S09H08	82.9	95.0	155.5	1.5	9.0	19,800
8.2	3	●	MDE 0820S09H03	31.7	44.0	101.5	1.5	9.0	15,600
	5	●	MDE 0820S09H05	57.2	69.5	128.5	1.5	9.0	17,800
	8	●	MDE 0820S09H08	82.7	95.0	155.5	1.5	9.0	19,800
8.3	3	●	MDE 0830S09H03	31.6	44.0	101.5	1.5	9.0	15,600
	5	●	MDE 0830S09H05	57.1	69.5	128.5	1.5	9.0	17,800
	8	●	MDE 0830S09H08	82.6	95.0	155.5	1.5	9.0	19,800
8.4	3	●	MDE 0840S09H03	31.4	44.0	101.5	1.5	9.0	15,600
	5	●	MDE 0840S09H05	56.9	69.5	128.5	1.5	9.0	17,800
	8	●	MDE 0840S09H08	82.4	95.0	155.5	1.5	9.0	19,800
8.5	3	●	MDE 0850S09H03	31.3	44.0	101.5	1.5	9.0	15,600
	5	●	MDE 0850S09H05	56.8	69.5	128.5	1.5	9.0	17,800
	8	●	MDE 0850S09H08	82.3	95.0	155.5	1.5	9.0	19,800
8.6	3	●	MDE 0860S09H03	33.7	46.6	101.6	1.6	9.0	15,800
	5	●	MDE 0860S09H05	60.7	73.6	128.6	1.6	9.0	18,200
	8	●	MDE 0860S09H08	87.7	100.6	155.6	1.6	9.0	20,000
8.7	3	●	MDE 0870S09H03	33.6	46.6	101.6	1.6	9.0	15,800
	5	●	MDE 0870S09H05	60.6	73.6	128.6	1.6	9.0	18,200
	8	●	MDE 0870S09H08	87.6	100.6	155.6	1.6	9.0	20,000
8.8	3	●	MDE 0880S09H03	33.4	46.6	101.6	1.6	9.0	15,800
	5	●	MDE 0880S09H05	60.4	73.6	128.6	1.6	9.0	18,200
	8	●	MDE 0880S09H08	87.4	100.6	155.6	1.6	9.0	20,000
8.9	3	●	MDE 0890S09H03	33.3	46.6	101.6	1.6	9.0	15,800
	5	●	MDE 0890S09H05	60.3	73.6	128.6	1.6	9.0	18,200
	8	●	MDE 0890S09H08	87.3	100.6	155.6	1.6	9.0	20,000
9.0	3	●	MDE 0900S09H03	33.1	46.6	101.6	1.6	9.0	15,800
	5	●	MDE 0900S09H05	60.1	73.6	128.6	1.6	9.0	18,200
	8	●	MDE 0900S09H08	87.1	100.6	155.6	1.6	9.0	20,000
9.1	3	●	MDE 0910S10H03	35.6	49.2	107.7	1.7	10.0	16,900
	5	●	MDE 0910S10H05	64.1	77.7	137.7	1.7	10.0	19,400
	8	●	MDE 0910S10H08	92.6	106.2	167.7	1.7	10.0	22,800
9.2	3	●	MDE 0920S10H03	35.4	49.2	107.7	1.7	10.0	16,900
	5	●	MDE 0920S10H05	63.9	77.7	137.7	1.7	10.0	19,400
	8	●	MDE 0920S10H08	92.4	106.2	167.7	1.7	10.0	22,800

Grade ACT100

●mark: Standard stocked item ●mark: Standard stocked item (expanded item)

MDE-H Type (Internal Coolant)

Expansion



● Diameter: $\phi 9.24$ to 10.4 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
9.24	5	●	MDE 0924S10H05	63.8	77.7	137.7	1.7	10.0	19,400
9.26	5	●	MDE 0926S10H05	63.8	77.7	137.7	1.7	10.0	19,400
9.3	3	●	MDE 0930S10H03	35.3	49.2	107.7	1.7	10.0	16,900
	5	●	MDE 0930S10H05	63.8	77.7	137.7	1.7	10.0	19,400
	8	●	MDE 0930S10H08	92.3	106.2	167.7	1.7	10.0	22,800
9.36	5	●	MDE 0936S10H05	63.6	77.7	137.7	1.7	10.0	19,400
9.38	5	●	MDE 0938S10H05	63.6	77.7	137.7	1.7	10.0	19,400
9.4	3	●	MDE 0940S10H03	35.1	49.2	107.7	1.7	10.0	16,900
	5	●	MDE 0940S10H05	63.6	77.7	137.7	1.7	10.0	19,400
	8	●	MDE 0940S10H08	92.1	106.2	167.7	1.7	10.0	22,800
9.5	3	●	MDE 0950S10H03	35.0	49.2	107.7	1.7	10.0	16,900
	5	●	MDE 0950S10H05	63.5	77.7	137.7	1.7	10.0	19,400
	8	●	MDE 0950S10H08	92.0	106.2	167.7	1.7	10.0	22,800
9.52	5	●	MDE 0952S10H05	67.3	81.7	137.7	1.7	10.0	19,700
9.54	5	●	MDE 0954S10H05	67.3	81.7	137.7	1.7	10.0	19,700
9.6	3	●	MDE 0960S10H03	37.3	51.7	107.7	1.7	10.0	17,300
	5	●	MDE 0960S10H05	67.3	81.7	137.7	1.7	10.0	19,700
	8	●	MDE 0960S10H08	97.3	111.7	167.7	1.7	10.0	23,300
9.7	3	●	MDE 0970S10H03	37.3	51.8	107.8	1.8	10.0	17,300
	5	●	MDE 0970S10H05	67.3	81.8	137.8	1.8	10.0	19,700
	8	●	MDE 0970S10H08	97.3	111.8	167.8	1.8	10.0	23,300
9.8	3	●	MDE 0980S10H03	37.1	51.8	107.8	1.8	10.0	17,300
	5	●	MDE 0980S10H05	67.1	81.8	137.8	1.8	10.0	19,700
	8	●	MDE 0980S10H08	97.1	111.8	167.8	1.8	10.0	23,300
9.9	3	●	MDE 0990S10H03	37.0	51.8	107.8	1.8	10.0	17,300
	5	●	MDE 0990S10H05	67.0	81.8	137.8	1.8	10.0	19,700
	8	●	MDE 0990S10H08	97.0	111.8	167.8	1.8	10.0	23,300
10.0	3	●	MDE 1000S10H03	36.8	51.8	107.8	1.8	10.0	17,300
	5	●	MDE 1000S10H05	66.8	81.8	137.8	1.8	10.0	19,700
	8	●	MDE 1000S10H08	96.8	111.8	167.8	1.8	10.0	23,300
10.1	3	●	MDE 1010S11H03	39.2	54.3	117.8	1.8	11.0	18,400
	5	●	MDE 1010S11H05	70.7	85.8	150.8	1.8	11.0	20,900
	8	●	MDE 1010S11H08	102.2	117.3	183.8	1.8	11.0	25,700
10.2	3	●	MDE 1020S11H03	39.1	54.4	117.9	1.9	11.0	18,400
	5	●	MDE 1020S11H05	70.6	85.9	150.9	1.9	11.0	20,900
8	●	MDE 1020S11H08	102.1	117.4	183.9	1.9	11.0	25,700	
10.3	3	●	MDE 1030S11H03	39.0	54.4	117.9	1.9	11.0	18,400
	5	●	MDE 1030S11H05	70.5	85.9	150.9	1.9	11.0	20,900
	8	●	MDE 1030S11H08	102.0	117.4	183.9	1.9	11.0	25,700
10.4	3	●	MDE 1040S11H03	38.8	54.4	117.9	1.9	11.0	18,400
	5	●	MDE 1040S11H05	70.3	85.9	150.9	1.9	11.0	20,900
	8	●	MDE 1040S11H08	101.8	117.4	183.9	1.9	11.0	25,700

Grade ACT100

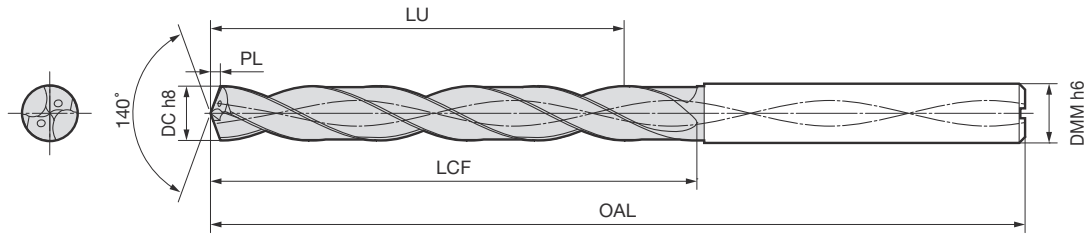
● Diameter: $\phi 10.5$ to 11.7 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
10.5	3	●	MDE 1050S11H03	38.7	54.4	117.9	1.9	11.0	18,400
	5	●	MDE 1050S11H05	70.2	85.9	150.9	1.9	11.0	20,900
	8	●	MDE 1050S11H08	101.7	117.4	183.9	1.9	11.0	25,700
10.6	3	●	MDE 1060S11H03	41.0	56.9	117.9	1.9	11.0	18,800
	5	●	MDE 1060S11H05	74.0	89.9	150.9	1.9	11.0	21,500
	8	●	MDE 1060S11H08	107.0	122.9	183.9	1.9	11.0	26,300
10.7	3	●	MDE 1070S11H03	40.9	56.9	117.9	1.9	11.0	18,800
	5	●	MDE 1070S11H05	73.9	89.9	150.9	1.9	11.0	21,500
	8	●	MDE 1070S11H08	106.9	122.9	183.9	1.9	11.0	26,300
10.8	3	●	MDE 1080S11H03	40.8	57.0	118.0	2.0	11.0	18,800
	5	●	MDE 1080S11H05	73.8	90.0	151.0	2.0	11.0	21,500
	8	●	MDE 1080S11H08	106.8	123.0	184.0	2.0	11.0	26,300
10.9	3	●	MDE 1090S11H03	40.7	57.0	118.0	2.0	11.0	18,800
	5	●	MDE 1090S11H05	73.7	90.0	151.0	2.0	11.0	21,500
	8	●	MDE 1090S11H08	106.7	123.0	184.0	2.0	11.0	26,300
11.0	3	●	MDE 1100S11H03	40.5	57.0	118.0	2.0	11.0	18,800
	5	●	MDE 1100S11H05	73.5	90.0	151.0	2.0	11.0	21,500
	8	●	MDE 1100S11H08	106.5	123.0	184.0	2.0	11.0	26,300
11.1	3	●	MDE 1110S12H03	42.9	59.5	124.0	2.0	12.0	19,800
	5	●	MDE 1110S12H05	77.4	94.0	160.0	2.0	12.0	22,800
	8	●	MDE 1110S12H08	111.9	128.5	196.0	2.0	12.0	29,000
11.2	3	●	MDE 1120S12H03	42.7	59.5	124.0	2.0	12.0	19,800
	5	●	MDE 1120S12H05	77.2	94.0	160.0	2.0	12.0	22,800
	8	●	MDE 1120S12H08	111.7	128.5	196.0	2.0	12.0	29,000
11.22	5	●	MDE 1122S12H05	77.2	94.0	160.0	2.0	12.0	22,800
11.24	5	●	MDE 1124S12H05	77.2	94.0	160.0	2.0	12.0	22,800
11.3	3	●	MDE 1130S12H03	42.7	59.6	124.1	2.1	12.0	19,800
	5	●	MDE 1130S12H05	77.2	94.1	160.1	2.1	12.0	22,800
	8	●	MDE 1130S12H08	111.7	128.6	196.1	2.1	12.0	29,000
11.36	5	●	MDE 1136S12H05	77.0	94.1	160.1	2.1	12.0	22,800
11.38	5	●	MDE 1138S12H05	77.0	94.1	160.1	2.1	12.0	22,800
11.4	3	●	MDE 1140S12H03	42.5	59.6	124.1	2.1	12.0	19,800
	5	●	MDE 1140S12H05	77.0	94.1	160.1	2.1	12.0	22,800
	8	●	MDE 1140S12H08	111.5	128.6	196.1	2.1	12.0	29,000
11.5	3	●	MDE 1150S12H03	42.4	59.6	124.1	2.1	12.0	19,800
	5	●	MDE 1150S12H05	76.9	94.1	160.1	2.1	12.0	22,800
	8	●	MDE 1150S12H08	111.4	128.6	196.1	2.1	12.0	29,000
11.6	3	●	MDE 1160S12H03	44.7	62.1	124.1	2.1	12.0	20,400
	5	●	MDE 1160S12H05	80.7	98.1	160.1	2.1	12.0	23,200
	8	●	MDE 1160S12H08	116.7	134.1	196.1	2.1	12.0	29,600
11.7	3	●	MDE 1170S12H03	44.6	62.1	124.1	2.1	12.0	20,400
	5	●	MDE 1170S12H05	80.6	98.1	160.1	2.1	12.0	23,200
	8	●	MDE 1170S12H08	116.6	134.1	196.1	2.1	12.0	29,600

Grade ACT100

●mark: Standard stocked item ●mark: Standard stocked item (expanded item)

MDE-H Type (Internal Coolant)



● Diameter: ø13.4 to 14.6 mm

Diameter DC (mm)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
			Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
11.8	3	MDE 1180S12H03	44.4	62.1	124.1	2.1	12.0	20,400
	5	MDE 1180S12H05	80.4	98.1	160.1	2.1	12.0	23,200
	8	MDE 1180S12H08	116.4	134.1	196.1	2.1	12.0	29,600
11.9	3	MDE 1190S12H03	44.4	62.2	124.2	2.2	12.0	20,400
	5	MDE 1190S12H05	80.4	98.2	160.2	2.2	12.0	23,200
	8	MDE 1190S12H08	116.4	134.2	196.2	2.2	12.0	29,600
12.0	3	MDE 1200S12H03	44.2	62.2	124.2	2.2	12.0	20,400
	5	MDE 1200S12H05	80.2	98.2	160.2	2.2	12.0	23,200
	8	MDE 1200S12H08	116.2	134.2	196.2	2.2	12.0	29,600
12.1	3	MDE 1210S13H03	46.6	64.7	130.2	2.2	13.0	21,500
	5	MDE 1210S13H05	84.1	102.2	169.2	2.2	13.0	24,400
	8	MDE 1210S13H08	121.6	139.7	208.2	2.2	13.0	32,900
12.2	3	MDE 1220S13H03	46.4	64.7	130.2	2.2	13.0	21,500
	5	MDE 1220S13H05	83.9	102.2	169.2	2.2	13.0	24,400
	8	MDE 1220S13H08	121.4	139.7	208.2	2.2	13.0	32,900
12.3	3	MDE 1230S13H03	46.3	64.7	130.2	2.2	13.0	21,500
	5	MDE 1230S13H05	83.8	102.2	169.2	2.2	13.0	24,400
	8	MDE 1230S13H08	121.3	139.7	208.2	2.2	13.0	32,900
12.4	3	MDE 1240S13H03	46.2	64.8	130.3	2.3	13.0	21,500
	5	MDE 1240S13H05	83.7	102.3	169.3	2.3	13.0	24,400
	8	MDE 1240S13H08	121.2	139.8	208.3	2.3	13.0	32,900
12.5	3	MDE 1250S13H03	46.1	64.8	130.3	2.3	13.0	21,500
	5	MDE 1250S13H05	83.6	102.3	169.3	2.3	13.0	24,400
	8	MDE 1250S13H08	121.1	139.8	208.3	2.3	13.0	32,900
12.6	3	MDE 1260S13H03	48.4	67.3	130.3	2.3	13.0	21,800
	5	MDE 1260S13H05	87.4	106.3	169.3	2.3	13.0	24,900
	8	MDE 1260S13H08	126.4	145.3	208.3	2.3	13.0	33,300
12.7	3	MDE 1270S13H03	48.3	67.3	130.3	2.3	13.0	21,800
	5	MDE 1270S13H05	87.3	106.3	169.3	2.3	13.0	24,900
	8	MDE 1270S13H08	126.3	145.3	208.3	2.3	13.0	33,300
12.8	3	MDE 1280S13H03	48.1	67.3	130.3	2.3	13.0	21,800
	5	MDE 1280S13H05	87.1	106.3	169.3	2.3	13.0	24,900
	8	MDE 1280S13H08	126.1	145.3	208.3	2.3	13.0	33,300
12.9	3	MDE 1290S13H03	48.0	67.3	130.3	2.3	13.0	21,800
	5	MDE 1290S13H05	87.0	106.3	169.3	2.3	13.0	24,900
	8	MDE 1290S13H08	126.0	145.3	208.3	2.3	13.0	33,300
13.0	3	MDE 1300S13H03	47.9	67.4	130.4	2.4	13.0	21,800
	5	MDE 1300S13H05	86.9	106.4	169.4	2.4	13.0	24,900
	8	MDE 1300S13H08	125.9	145.4	208.4	2.4	13.0	33,300
13.1	3	MDE 1310S14H03	50.3	69.9	136.4	2.4	14.0	22,900
	5	MDE 1310S14H05	90.8	110.4	178.4	2.4	14.0	26,200
	8	MDE 1310S14H08	131.3	150.9	220.4	2.4	14.0	37,300

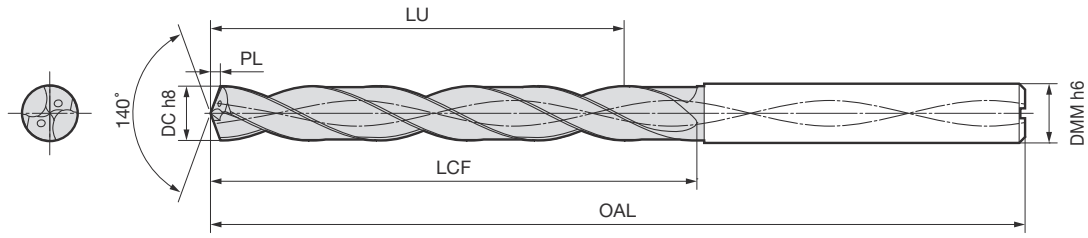
Grade ACT100

● Diameter: ø14.7 to 15.9 mm

Diameter DC (mm)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
			Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
13.2	3	MDE 1320S14H03	50.1	69.9	136.4	2.4	14.0	22,900
	5	MDE 1320S14H05	90.6	110.4	178.4	2.4	14.0	26,200
	8	MDE 1320S14H08	131.1	150.9	220.4	2.4	14.0	37,300
13.3	3	MDE 1330S14H03	50.0	69.9	136.4	2.4	14.0	22,900
	5	MDE 1330S14H05	90.5	110.4	178.4	2.4	14.0	26,200
	8	MDE 1330S14H08	131.0	150.9	220.4	2.4	14.0	37,300
13.4	3	MDE 1340S14H03	49.8	69.9	136.4	2.4	14.0	22,900
	5	MDE 1340S14H05	90.3	110.4	178.4	2.4	14.0	26,200
	8	MDE 1340S14H08	130.8	150.9	220.4	2.4	14.0	37,300
13.5	3	MDE 1350S14H03	49.8	70.0	136.5	2.5	14.0	22,900
	5	MDE 1350S14H05	90.3	110.5	178.5	2.5	14.0	26,200
	8	MDE 1350S14H08	130.8	151.0	220.5	2.5	14.0	37,300
13.6	3	MDE 1360S14H03	52.1	72.5	136.5	2.5	14.0	23,300
	5	MDE 1360S14H05	94.1	114.5	178.5	2.5	14.0	26,600
	8	MDE 1360S14H08	136.1	156.5	220.5	2.5	14.0	37,800
13.7	3	MDE 1370S14H03	52.0	72.5	136.5	2.5	14.0	23,300
	5	MDE 1370S14H05	94.0	114.5	178.5	2.5	14.0	26,600
	8	MDE 1370S14H08	136.0	156.5	220.5	2.5	14.0	37,800
13.8	3	MDE 1380S14H03	51.8	72.5	136.5	2.5	14.0	23,300
	5	MDE 1380S14H05	93.8	114.5	178.5	2.5	14.0	26,600
	8	MDE 1380S14H08	135.8	156.5	220.5	2.5	14.0	37,800
13.9	3	MDE 1390S14H03	51.7	72.5	136.5	2.5	14.0	23,300
	5	MDE 1390S14H05	93.7	114.5	178.5	2.5	14.0	26,600
	8	MDE 1390S14H08	135.7	156.5	220.5	2.5	14.0	37,800
14.0	3	MDE 1400S14H03	51.5	72.5	136.5	2.5	14.0	23,300
	5	MDE 1400S14H05	93.5	114.5	178.5	2.5	14.0	26,600
	8	MDE 1400S14H08	135.5	156.5	220.5	2.5	14.0	37,800
14.1	3	MDE 1410S15H03	54.0	75.1	142.6	2.6	15.0	25,700
	5	MDE 1410S15H05	97.5	118.6	187.6	2.6	15.0	29,500
	8	MDE 1410S15H08	141.0	162.1	232.6	2.6	15.0	44,800
14.2	3	MDE 1420S15H03	53.8	75.1	142.6	2.6	15.0	25,700
	5	MDE 1420S15H05	97.3	118.6	187.6	2.6	15.0	29,500
	8	MDE 1420S15H08	140.8	162.1	232.6	2.6	15.0	44,800
14.3	3	MDE 1430S15H03	53.7	75.1	142.6	2.6	15.0	25,700
	5	MDE 1430S15H05	97.2	118.6	187.6	2.6	15.0	29,500
	8	MDE 1430S15H08	140.7	162.1	232.6	2.6	15.0	44,800
14.4	3	MDE 1440S15H03	53.5	75.1	142.6	2.6	15.0	25,700
	5	MDE 1440S15H05	97.0	118.6	187.6	2.6	15.0	29,500
	8	MDE 1440S15H08	140.5	162.1	232.6	2.6	15.0	44,800
14.5	3	MDE 1450S15H03	53.4	75.1	142.6	2.6	15.0	25,700
	5	MDE 1450S15H05	96.9	118.6	187.6	2.6	15.0	29,500
	8	MDE 1450S15H08	140.4	162.1	232.6	2.6	15.0	44,800

Grade ACT100

MDE-H Type (Internal Coolant)



● Diameter: ø16.0 to 20.0 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
14.6	3	●	MDE 1460S15H03	55.8	77.7	142.7	2.7	15.0	26,300
	5	●	MDE 1460S15H05	100.8	122.7	187.7	2.7	15.0	29,900
	8	●	MDE 1460S15H08	145.8	167.7	232.7	2.7	15.0	45,400
14.7	3	●	MDE 1470S15H03	55.7	77.7	142.7	2.7	15.0	26,300
	5	●	MDE 1470S15H05	100.7	122.7	187.7	2.7	15.0	29,900
	8	●	MDE 1470S15H08	145.7	167.7	232.7	2.7	15.0	45,400
14.8	3	●	MDE 1480S15H03	55.5	77.7	142.7	2.7	15.0	26,300
	5	●	MDE 1480S15H05	100.5	122.7	187.7	2.7	15.0	29,900
	8	●	MDE 1480S15H08	145.5	167.7	232.7	2.7	15.0	45,400
14.9	3	●	MDE 1490S15H03	55.4	77.7	142.7	2.7	15.0	26,300
	5	●	MDE 1490S15H05	100.4	122.7	187.7	2.7	15.0	29,900
	8	●	MDE 1490S15H08	145.4	167.7	232.7	2.7	15.0	45,400
15.0	3	●	MDE 1500S15H03	55.2	77.7	142.7	2.7	15.0	26,300
	5	●	MDE 1500S15H05	100.2	122.7	187.7	2.7	15.0	29,900
	8	●	MDE 1500S15H08	145.2	167.7	232.7	2.7	15.0	45,400
15.1	3	●	MDE 1510S16H03	57.6	80.2	148.7	2.7	16.0	27,400
	5	●	MDE 1510S16H05	104.1	126.7	196.7	2.7	16.0	31,400
	8	●	MDE 1510S16H08	150.6	173.2	244.7	2.7	16.0	50,700
15.2	3	●	MDE 1520S16H03	57.5	80.3	148.8	2.8	16.0	27,400
	5	●	MDE 1520S16H05	104.0	126.8	196.8	2.8	16.0	31,400
	8	●	MDE 1520S16H08	150.5	173.3	244.8	2.8	16.0	50,700
15.3	3	●	MDE 1530S16H03	57.4	80.3	148.8	2.8	16.0	27,400
	5	●	MDE 1530S16H05	103.9	126.8	196.8	2.8	16.0	31,400
	8	●	MDE 1530S16H08	150.4	173.3	244.8	2.8	16.0	50,700
15.4	3	●	MDE 1540S16H03	57.2	80.3	148.8	2.8	16.0	27,400
	5	●	MDE 1540S16H05	103.7	126.8	196.8	2.8	16.0	31,400
	8	●	MDE 1540S16H08	150.2	173.3	244.8	2.8	16.0	50,700
15.5	3	●	MDE 1550S16H03	57.1	80.3	148.8	2.8	16.0	27,400
	5	●	MDE 1550S16H05	103.6	126.8	196.8	2.8	16.0	31,400
	8	●	MDE 1550S16H08	150.1	173.3	244.8	2.8	16.0	50,700
15.6	3	●	MDE 1560S16H03	59.4	82.8	148.8	2.8	16.0	27,800
	5	●	MDE 1560S16H05	107.4	130.8	196.8	2.8	16.0	31,800
	8	●	MDE 1560S16H08	155.4	178.8	244.8	2.8	16.0	51,200
15.7	3	●	MDE 1570S16H03	59.4	82.9	148.9	2.9	16.0	27,800
	5	●	MDE 1570S16H05	107.4	130.9	196.9	2.9	16.0	31,800
	8	●	MDE 1570S16H08	155.4	178.9	244.9	2.9	16.0	51,200
15.8	3	●	MDE 1580S16H03	59.2	82.9	148.9	2.9	16.0	27,800
	5	●	MDE 1580S16H05	107.2	130.9	196.9	2.9	16.0	31,800
	8	●	MDE 1580S16H08	155.2	178.9	244.9	2.9	16.0	51,200
15.9	3	●	MDE 1590S16H03	59.1	82.9	148.9	2.9	16.0	27,800
	5	●	MDE 1590S16H05	107.1	130.9	196.9	2.9	16.0	31,800
	8	●	MDE 1590S16H08	155.1	178.9	244.9	2.9	16.0	51,200

Grade ACT100

● Diameter: ø16.0 to 20.0 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
16.0	3	●	MDE 1600S16H03	58.9	82.9	148.9	2.9	16.0	27,800
	5	●	MDE 1600S16H05	106.9	130.9	196.9	2.9	16.0	31,800
	8	●	MDE 1600S16H08	154.9	178.9	244.9	2.9	16.0	51,200
16.5	3	●	MDE 1650S17H03	60.8	85.5	155.0	3.0	17.0	30,500
	5	●	MDE 1650S17H05	110.3	135.0	206.0	3.0	17.0	38,100
17.0	3	●	MDE 1700S17H03	62.6	88.1	155.1	3.1	17.0	30,800
	5	●	MDE 1700S17H05	113.6	139.1	206.1	3.1	17.0	38,500
17.5	3	●	MDE 1750S18H03	64.5	90.7	161.2	3.2	18.0	35,900
	5	●	MDE 1750S18H05	116.9	143.2	217.3	3.2	18.0	44,700
18.0	3	●	MDE 1800S18H03	66.3	93.3	161.3	3.3	18.0	36,300
	5	●	MDE 1800S18H05	120.3	147.3	217.3	3.3	18.0	45,100
18.5	3	●	MDE 1850S19H03	68.2	95.9	167.4	3.4	19.0	41,500
	5	●	MDE 1850S19H05	123.6	151.4	224.4	3.4	19.0	51,300
19.0	3	●	MDE 1900S19H03	70.0	98.5	167.5	3.5	19.0	41,800
	5	●	MDE 1900S19H05	127.0	155.5	224.5	3.5	19.0	51,700
19.5	3	●	MDE 1950S20H03	71.8	101.0	173.5	3.5	20.0	46,900
	5	●	MDE 1950S20H05	130.3	159.5	233.5	3.5	20.0	57,900
20.0	3	●	MDE 2000S20H03	73.6	103.6	173.6	3.6	20.0	47,300
	5	●	MDE 2000S20H05	133.6	163.6	233.6	3.6	20.0	58,300

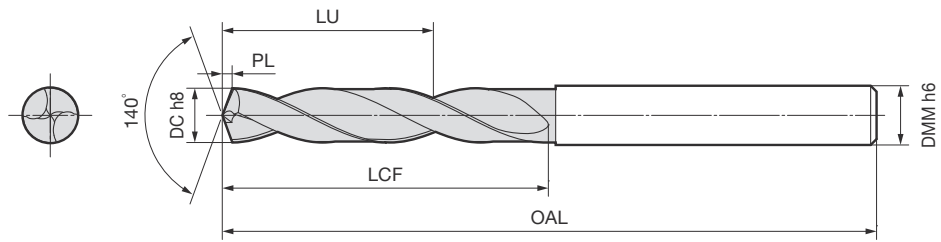
Grade ACT100

● mark: Standard stocked item

● MDE-E Type for Hub Processing *New*

(External Coolant)

Carbon Steel, Alloy Steel Up to 0.22%	Tempered Steel From 0.22%	Hardened Steel Up to 45HRC From 48HRC	Stainless Steel	Ti Alloy	Heat-treated Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP	NX Coat	2D
○	◎	◎	○	○	○	○	○	○	○	○		



● Diameter: ø8.80 to 13.97 mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)					Standard Price (JPY)
				Effective Length LU	Flute Length LCF	Total Length OAL	Tip PL	Shank DMM	
8.80	2	●	MDE 0880S09E02H	26.4	39.6	83.6	1.6	9.0	8,780
10.00	2	●	MDE 1000S10E02H	27.8	42.8	88.8	1.8	10.0	9,630
10.80	2	●	MDE 1080S11E02H	30.8	47.0	95.0	2.0	11.0	10,500
12.04	2	●	MDE 1204S13E02H	31.1	49.2	102.2	2.2	13.0	11,800
12.52	2	●	MDE 1252S13E02H	32.4	51.3	102.3	2.3	13.0	12,100
13.85	2	●	MDE 1385S14E02H	33.7	54.5	107.5	2.5	14.0	13,000
13.92	2	●	MDE 1392S14E02H	33.5	54.5	107.5	2.5	14.0	13,000
13.97	2	●	MDE 1397S14E02H	33.5	54.5	107.5	2.5	14.0	13,000

Grade ACT100

● Recommended Cutting Conditions (MDE-E Type, External Coolant, 2D/4D) *Diameter ϕ 1.0 to 2.9mm

Material	Soft steel, Low carbon steel SS400-S15C ~160HB		Carbon Steel S35C-S50C ~230HB		Alloy Steel SCM-SCr 20~30HRC		Alloy Steel SCM-SCr 30~38HRC	
Cutting speed	60~100m/min		60~120m/min		50~100m/min		40~80m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
1.0	9,500	0.02~0.04	9,500	0.02~0.04	9,500	0.02~0.04	9,500	0.02~0.03
1.5	8,500	0.03~0.06	8,500	0.03~0.06	8,500	0.03~0.06	8,500	0.03~0.06
2.0	9,000	0.04~0.08	8,000	0.04~0.08	8,000	0.04~0.08	8,000	0.04~0.08
2.5	9,500	0.04~0.08	9,000	0.04~0.08	8,500	0.04~0.08	7,600	0.04~0.08

*We recommend the GS Series for high-efficiency machining.

Material	SCast Iron FC250~280HB		Ductile Cast Iron FCD450-FCD600 ~270HB		Stainless steel (non-water soluble machining) SUS304-SUS410 ~200HB		Special steel, Pre-hardened steel SKS2, SKD61 (untempered) 30~38HRC	
Cutting speed	60~100m/min		50~100m/min		20~50m/min		30~60m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
1.0	9,500	0.02~0.04	9,500	0.02~0.04	9,500	0.02~0.03	9,500	0.02~0.03
1.5	8,500	0.03~0.06	8,500	0.03~0.06	8,500	0.02~0.05	8,500	0.02~0.04
2.0	8,000	0.04~0.08	8,000	0.04~0.08	8,000	0.03~0.06	7,100	0.03~0.06
2.5	9,000	0.04~0.08	8,500	0.04~0.08	7,600	0.03~0.07	5,700	0.03~0.06

*We recommend the GS Series for high-efficiency machining.

1. The above tables assume usage of water-soluble coolant (excluding stainless steel)
2. Supply sufficient water-soluble coolant to the outer cutting edge tip.
3. When using non-water soluble coolant, decrease cutting speed by 20 to 30% and ensure sufficient oil flow.
4. When the drill is set in a collet, set the outer cutting edge tip runout to less than 0.02 mm.
5. Avoid extending the flute inside the collet.
6. Where the entry point of the workpiece has an irregular shape (sloped, interrupted, etc.), reduce the feed rate by half at the entry point.
*If you still can't maintain machining stability, we recommend using the flat surface of the Flat MULTIDRILL MDF Series for spot facing.

● Recommended Cutting Conditions (MDE-H Type, Internal Coolant, 3D/5D/8D) *Diameter ϕ 1.0 to 2.9mm

Material	Soft steel, Low carbon steel SS400-S15C ~160HB		Carbon Steel S35C-S50C ~230HB		Alloy Steel SCM-SCr 20~30HRC		Alloy Steel SCM-SCr 30~38HRC	
Cutting speed	70~110m/min		60~120m/min		60~120m/min		40~80m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
1.0	9,500	0.02~0.04	9,500	0.02~0.04	9,500	0.02~0.04	9,500	0.02~0.03
1.5	8,500	0.03~0.06	8,500	0.03~0.06	8,500	0.03~0.06	8,500	0.03~0.06
2.0	9,000	0.04~0.08	8,000	0.04~0.08	8,000	0.04~0.08	8,000	0.04~0.08
2.5	9,500	0.04~0.08	9,000	0.04~0.08	8,500	0.04~0.08	7,600	0.04~0.08

*We recommend the HGS Series for high-efficiency machining.

Material	SCast Iron FC250~280HB		Ductile Cast Iron FCD450-FCD600 ~270HB		Stainless steel (non-water soluble machining) SUS304-SUS410 ~200HB		Special steel, Pre-hardened steel SKS2, SKD61 (untempered) 30~38HRC	
Cutting speed	60~100m/min		50~100m/min		40~80m/min		30~60m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
1.0	9,500	0.02~0.04	9,500	0.02~0.04	9,500	0.02~0.03	9,500	0.02~0.03
1.5	8,500	0.03~0.06	8,500	0.03~0.06	8,500	0.02~0.05	8,500	0.02~0.04
2.0	8,000	0.04~0.08	8,000	0.04~0.08	8,000	0.03~0.06	7,100	0.03~0.06
2.5	9,000	0.04~0.08	8,500	0.04~0.08	7,600	0.03~0.07	5,700	0.03~0.06

*We recommend the GS Series for high-efficiency machining.

1. The above tables assume usage of water-soluble coolant.
2. MQL coolant can also be used. However, please take care with external mixing type MQL machine where the shank diameter (DMM) is ϕ 16mm or above, as the MQL may not be generated.
3. When the drill is set in a collet, set the outer cutting edge tip runout to less than 0.02 mm.
4. Avoid extending the flute inside the collet.
5. Where the entry point of the workpiece has an irregular shape (sloped, interrupted, etc.), reduce the feed rate by half at the entry point.
*If you still can't maintain machining stability, we recommend using the flat surface of the Flat MULTIDRILL MDF Series for spot facing.
6. When machining becomes interrupted at the exit point, reduce the feed rate by half before the drill exits.

● Recommended Cutting Conditions (MDE-E Type, External Coolant, 2D/4D) *Diameter ø3.0mm ~ / Including for Hub processing

Material	Soft steel, Low carbon steel SS400-S15C ~160HB		Carbon Steel S35C-S50C ~230HB		Alloy Steel SCM-SCr 20~30HRC		Alloy Steel SCM-SCr 30~38HRC	
Cutting speed	60~100m/min		60~120m/min		50~100m/min		40~80m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
3	8,500	0.05~0.12	8,500	0.05~0.12	7,500	0.05~0.12	6,400	0.05~0.12
4	6,400	0.07~0.17	6,400	0.07~0.17	5,600	0.07~0.17	4,800	0.07~0.17
5	5,100	0.08~0.20	5,100	0.08~0.20	4,500	0.08~0.20	3,900	0.08~0.20
6	4,300	0.10~0.20	4,300	0.10~0.20	3,800	0.10~0.20	3,200	0.10~0.20
7	3,700	0.12~0.23	3,700	0.12~0.23	3,200	0.12~0.23	2,800	0.12~0.23
8	3,200	0.15~0.25	3,200	0.15~0.25	2,800	0.15~0.25	2,400	0.15~0.25
9	2,900	0.17~0.25	2,900	0.17~0.25	2,500	0.17~0.25	2,200	0.17~0.25
10	2,600	0.18~0.28	2,600	0.18~0.28	2,300	0.18~0.28	2,000	0.18~0.28
11	2,400	0.20~0.30	2,400	0.20~0.30	2,100	0.20~0.30	1,800	0.20~0.30
12	2,200	0.20~0.30	2,200	0.20~0.30	1,900	0.20~0.30	1,600	0.20~0.30
14	1,900	0.20~0.30	1,900	0.20~0.30	1,600	0.20~0.30	1,400	0.20~0.30
16	1,600	0.20~0.30	1,600	0.20~0.30	1,400	0.20~0.30	1,200	0.20~0.30
18	1,500	0.20~0.30	1,500	0.20~0.30	1,300	0.20~0.30	1,100	0.20~0.30
20	1,300	0.20~0.30	1,300	0.20~0.30	1,200	0.20~0.30	1,000	0.20~0.30

*We recommend the GS Series for high-efficiency machining.

Material	SCast Iron FC250~280HB		Ductile Cast Iron FCD450-FCD600 ~270HB		Stainless steel (non-water soluble machining) SUS304-SUS410 ~200HB		Special steel, Pre-hardened steel SKS2, SKD61 (untempered) 30~38HRC	
Cutting speed	60~100m/min		50~100m/min		20~50m/min		30~60m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
3	8,500	0.06~0.15	7,500	0.05~0.12	4,300	0.05~0.10	5,400	0.05~0.12
4	6,400	0.08~0.18	5,600	0.07~0.17	3,200	0.05~0.10	4,000	0.07~0.17
5	5,100	0.10~0.20	4,500	0.08~0.20	2,600	0.06~0.15	3,200	0.08~0.20
6	4,300	0.12~0.23	3,800	0.10~0.20	2,200	0.06~0.15	2,700	0.10~0.20
7	3,700	0.12~0.23	3,200	0.12~0.23	1,900	0.06~0.18	2,300	0.10~0.20
8	3,200	0.18~0.25	2,800	0.15~0.25	1,600	0.06~0.20	2,000	0.12~0.25
9	2,900	0.17~0.25	2,500	0.17~0.25	1,500	0.08~0.20	1,800	0.12~0.25
10	2,600	0.18~0.28	2,300	0.18~0.28	1,300	0.08~0.20	1,600	0.12~0.25
11	2,400	0.20~0.30	2,100	0.20~0.30	1,200	0.08~0.20	1,500	0.15~0.30
12	2,200	0.20~0.30	1,900	0.20~0.30	1,100	0.10~0.25	1,400	0.15~0.30
14	1,900	0.20~0.30	1,600	0.20~0.30	1,000	0.10~0.25	1,200	0.15~0.30
16	1,600	0.20~0.30	1,400	0.20~0.30	800	0.10~0.25	1,000	0.15~0.30
18	1,500	0.20~0.30	1,300	0.20~0.30	800	0.10~0.25	900	0.15~0.30
20	1,300	0.20~0.30	1,200	0.20~0.30	700	0.10~0.25	800	0.15~0.30

*We recommend the GS Series for high-efficiency machining.

1. The above tables assume usage of water-soluble coolant (excluding stainless steel)
2. Supply sufficient water-soluble coolant to the outer cutting edge tip.
3. When using non-water soluble coolant, decrease cutting speed by 20 to 30% and ensure sufficient oil flow.
4. When the drill is set in a collet, set the outer cutting edge tip runout to less than 0.02 mm.
5. Avoid extending the flute inside the collet.
6. Where the entry point of the workpiece has an irregular shape (sloped, interrupted, etc.), reduce the feed rate by half at the entry point.
*If you still can't maintain machining stability, we recommend using the flat surface of the Flat MULTIDRILL MDF Series for spot facing.
7. When machining becomes interrupted at the exit point, reduce the feed rate by half before the drill exits.

● Recommended Cutting Conditions (MDE-H Type, Internal Coolant, 3D/5D/8D) *Diameter ø3.0mm ~

Material	Soft steel, Low carbon steel SS400-S15C ~160HB		Carbon Steel S35C-S50C ~230HB		Alloy Steel SCM-SCr 20~30HRC		Alloy Steel SCM-SCr 30~38HRC	
Cutting speed	70~110m/min		60~120m/min		60~120m/min		40~80m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
3	9,600	0.05~0.12	8,500	0.05~0.12	7,500	0.05~0.12	6,400	0.05~0.12
4	7,200	0.07~0.17	6,400	0.07~0.17	5,600	0.07~0.17	4,800	0.07~0.17
5	5,800	0.08~0.20	5,100	0.08~0.20	4,500	0.08~0.20	3,900	0.08~0.20
6	4,800	0.10~0.20	4,300	0.10~0.20	3,800	0.10~0.20	3,200	0.10~0.20
7	4,100	0.12~0.23	3,700	0.12~0.23	3,200	0.12~0.23	2,800	0.12~0.23
8	3,600	0.12~0.25	3,200	0.12~0.25	2,800	0.12~0.25	2,400	0.12~0.25
9	3,200	0.14~0.25	2,900	0.14~0.25	2,500	0.14~0.25	2,200	0.14~0.25
10	2,900	0.16~0.28	2,600	0.16~0.28	2,300	0.16~0.28	2,000	0.16~0.28
11	2,700	0.18~0.30	2,400	0.18~0.30	2,100	0.18~0.30	1,800	0.18~0.30
12	2,400	0.20~0.30	2,200	0.20~0.30	1,900	0.20~0.30	1,600	0.20~0.30
14	2,100	0.20~0.30	1,900	0.20~0.30	1,600	0.20~0.30	1,400	0.20~0.30
16	1,800	0.20~0.30	1,600	0.20~0.30	1,400	0.20~0.30	1,200	0.20~0.30
18	1,600	0.20~0.30	1,500	0.20~0.30	1,300	0.20~0.30	1,100	0.20~0.30
20	1,500	0.20~0.30	1,300	0.20~0.30	1,200	0.20~0.30	1,000	0.20~0.30

*We recommend the HGS Series for high-efficiency machining.

Material	SCast Iron FC250~280HB		Ductile Cast Iron FCD450-FCD600 ~270HB		Stainless steel (non-water soluble machining) SUS304-SUS410 ~200HB		Special steel, Pre-hardened steel SKS2, SKD61 (untempered) 30~38HRC	
Cutting speed	60~100m/min		50~100m/min		40~80m/min		30~60m/min	
Diameter DC (mm)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)	Spindle speed (min ⁻¹)	Feed rate (mm/rev)
3	8,500	0.06~0.15	7,500	0.05~0.12	6,400	0.05~0.12	4,800	0.05~0.10
4	6,400	0.08~0.18	5,600	0.07~0.17	4,800	0.07~0.17	3,600	0.06~0.13
5	5,100	0.10~0.20	4,500	0.08~0.20	3,900	0.08~0.20	2,900	0.07~0.15
6	4,300	0.12~0.23	3,800	0.10~0.20	3,200	0.10~0.20	2,400	0.08~0.18
7	3,700	0.12~0.23	3,200	0.12~0.23	2,800	0.10~0.23	2,100	0.10~0.20
8	3,200	0.18~0.25	2,800	0.12~0.25	2,400	0.10~0.20	1,800	0.12~0.22
9	2,900	0.17~0.25	2,500	0.14~0.25	2,200	0.12~0.23	1,600	0.14~0.22
10	2,600	0.18~0.28	2,300	0.16~0.28	2,000	0.12~0.23	1,500	0.16~0.25
11	2,400	0.20~0.30	2,100	0.18~0.30	1,800	0.15~0.25	1,400	0.18~0.28
12	2,200	0.20~0.30	1,900	0.20~0.30	1,600	0.15~0.25	1,200	0.18~0.28
14	1,900	0.20~0.30	1,600	0.20~0.30	1,400	0.15~0.25	1,100	0.18~0.30
16	1,600	0.20~0.30	1,400	0.20~0.30	1,200	0.15~0.25	900	0.18~0.30
18	1,500	0.20~0.30	1,300	0.20~0.30	1,100	0.15~0.25	800	0.18~0.30
20	1,300	0.20~0.30	1,200	0.20~0.30	1,000	0.15~0.25	720	0.18~0.30

*For high-efficiency machining we recommend the HX (HY) Series (cast iron, ductile cast iron), the MDM Series (stainless steel), and the HGS Series (special steel, pre-hardened steel).

1. The above tables assume usage of water-soluble coolant.
2. MQL coolant can also be used. However, please take care with external mixing type MQL machine where the shank diameter (DMM) is ø16mm or above, as the MQL may not be generated.
3. When the drill is set in a collet, set the outer cutting edge tip runout to less than 0.02 mm.
4. Avoid extending the flute inside the collet.
5. Where the entry point of the workpiece has an irregular shape (sloped, interrupted, etc.), reduce the feed rate by half at the entry point.
*If you still can't maintain machining stability, we recommend using the flat surface of the Flat MULTIDRILL MDF Series for spot facing.
6. When machining becomes interrupted at the exit point, reduce the feed rate by half before the drill exits.



- 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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