

# Innovative General-Purpose Drills

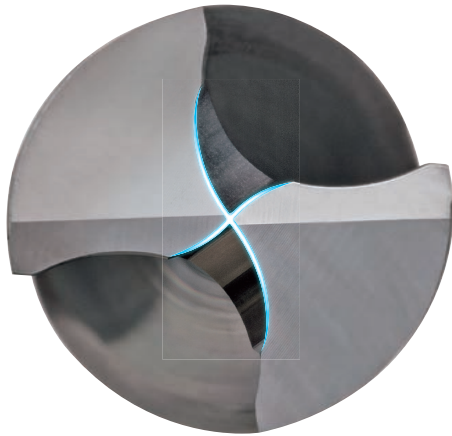
- Next for Everyone -



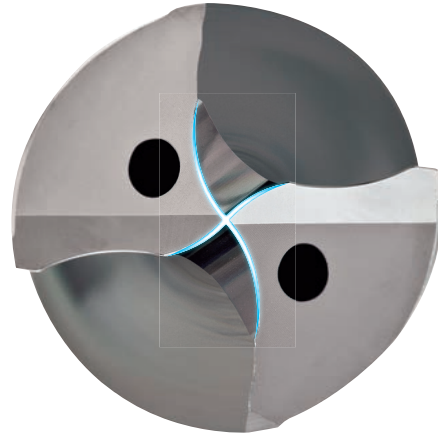
Suitable for a wide range of Materials, from high-carbon steels and die steels to stainless steels. Stable Drilling for small machining center and lathes.

Standard price has been revised on July 1st, 2022.

# RX Thinning + Arc Shaped Cutting Lip



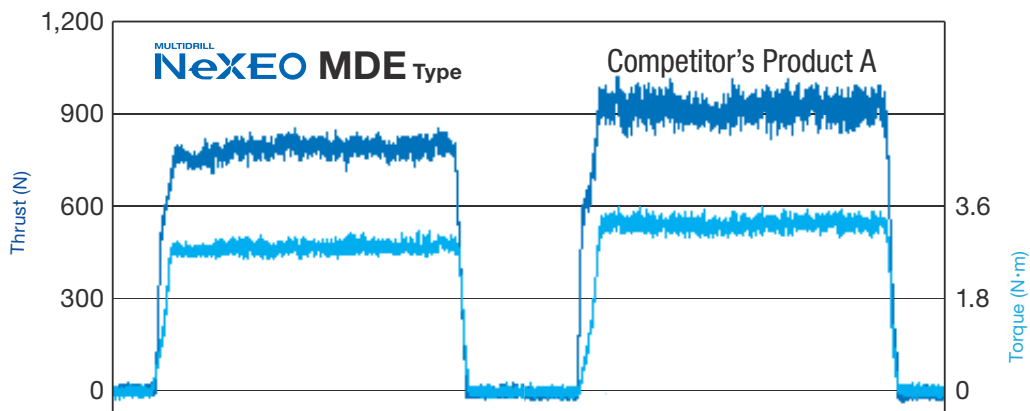
External Coolant Supply



Internal Coolant Supply

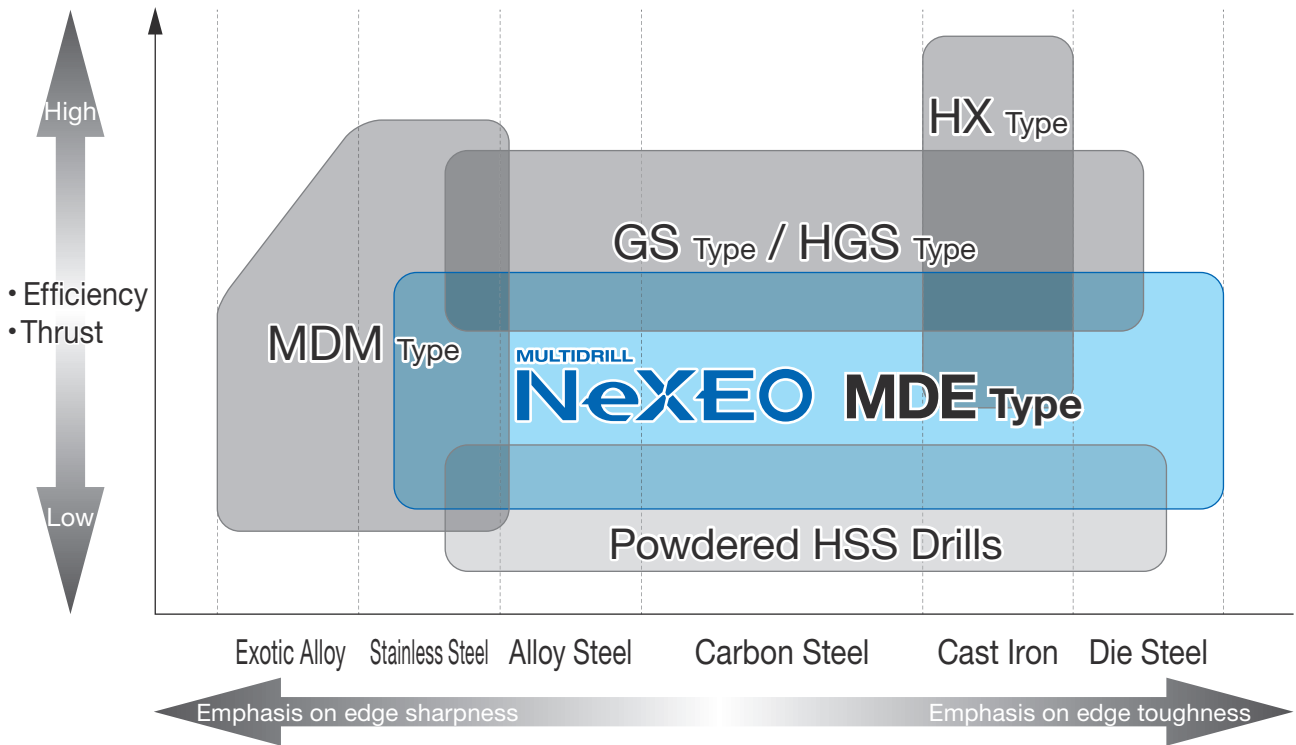
## Low resistance chip breaking

- RX thinning reduces thrust.
- Also ideal for small machining centres and small lathes.



Work 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 supply (water soluble)

# for a wide range of conditions



## ● Good Chip Control with the New Arc-Shaped Edge



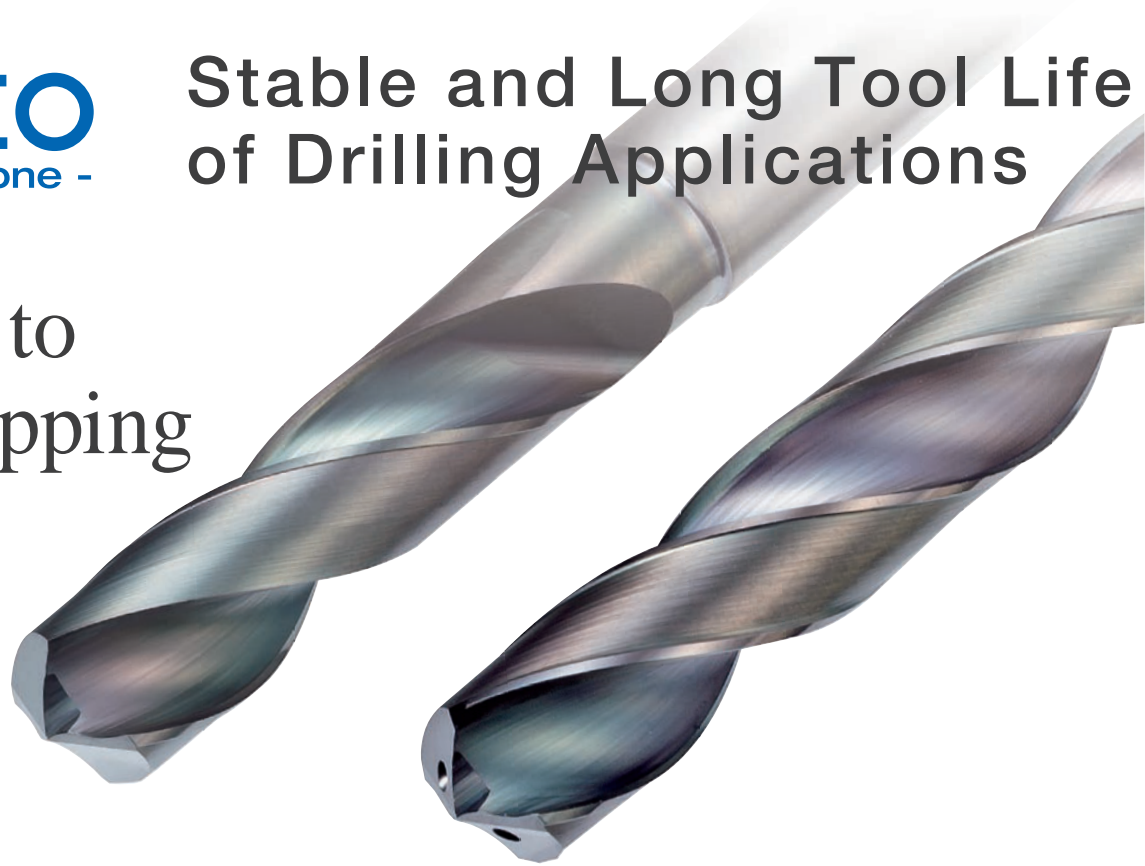
Chips are cut into fine pieces



Long chips

Work Material: S50C, Diameter:  $\varnothing 9$  mm, Hole Depth: 5D,  
 Cutting Conditions:  $v_c=80$  m/min,  $f=0.15$  mm/rev, internal coolant supply (water soluble)

## Resistant to Edge Chipping



General-purpose grade

# ACT100

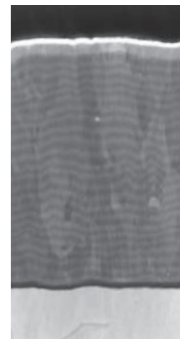
- **Fine-grained Carbide Substrate**

Featuring both wear and fracture resistance!

- **NX Coating**

Absotech™ technology for high quality, high hardness, high strength and excellent wear resistance and thermal resistance.

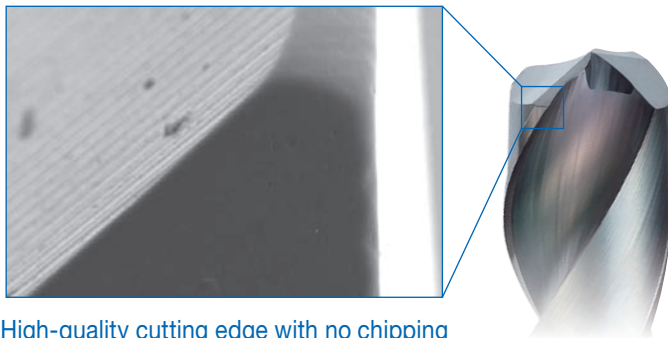
- **High-quality edge provides stable tool life**



**TiAlCrSi-based Super Multi-Layered Coated Carbide**  
 Hardness HV: 46 GPa  
 Starting Temperature For Oxidisation: 1,100°C

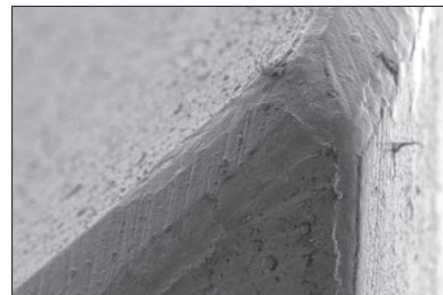
Highly Adhesive Layer

MULTIDRILL  
**NEXEO MDE** Type



High-quality cutting edge with no chipping

Competitor's Product A



Chipping in edge coating

# Across a Wide Range

Strong Edge even for

High Carbon Steel Drilling

MULTIDRILL  
**NeXEO MDE** Type



Competitor's Product B



Edge chipping

Work Material: S50C, Cutting Conditions:  $v_c=80$  m/min,  $f=0.15$  mm/rev, internal coolant supply (water soluble)

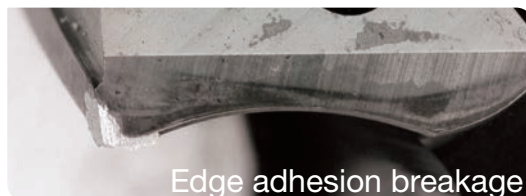
Strong Edge even for

Alloy Steel Drilling

MULTIDRILL  
**NeXEO MDE** Type



Competitor's Product C



Edge adhesion breakage

Work Material: SCM415, Cutting Conditions:  $v_c=110$  m/min,  $f=0.2$  mm/rev, internal coolant supply (water soluble)

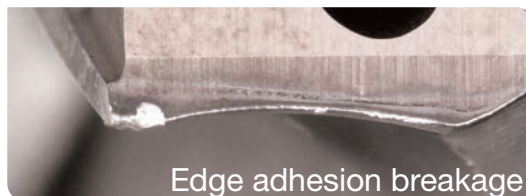
Strong Edge even for

Stainless Steel Drilling

MULTIDRILL  
**NeXEO MDE** Type

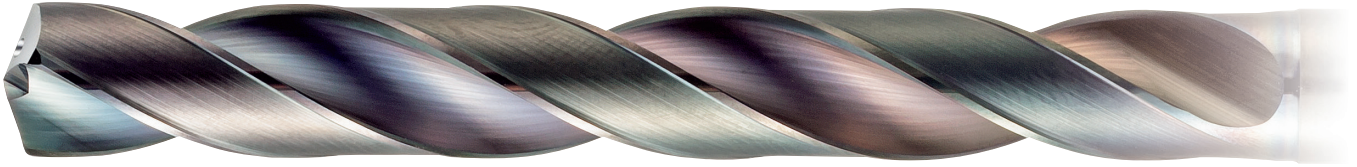


Competitor's Product D



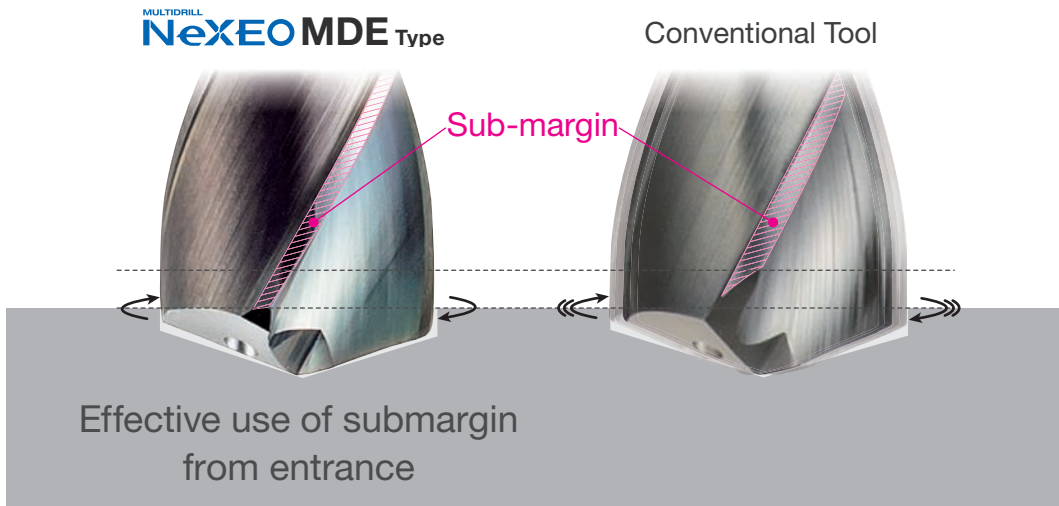
Edge adhesion breakage

Work Material: SUS304, Cutting Conditions:  $v_c=60$  m/min,  $f=0.1$  mm/rev, internal coolant supply (water soluble)

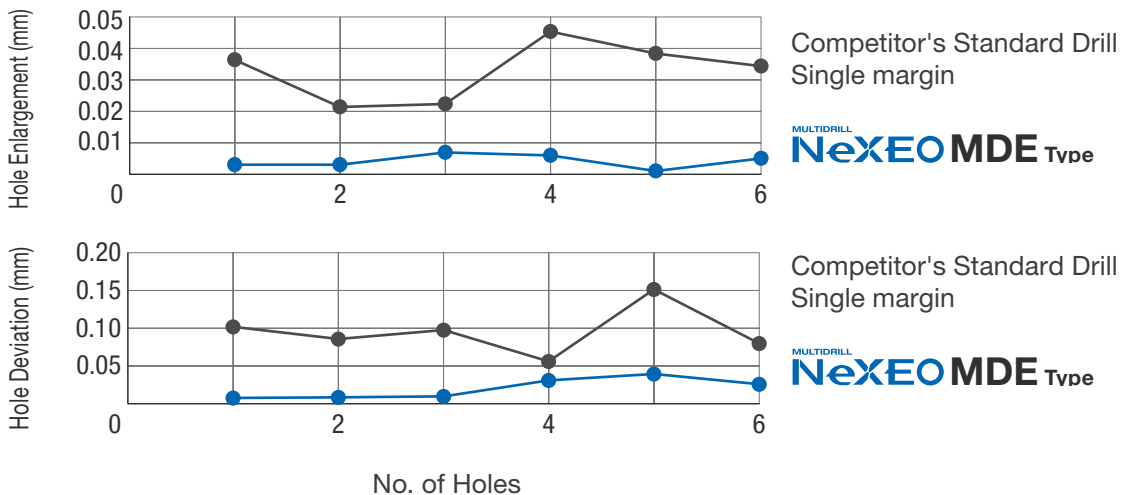


Internal Coolant Supply: Double Margin

●Special double margin for good hole precision (internal coolant supply)

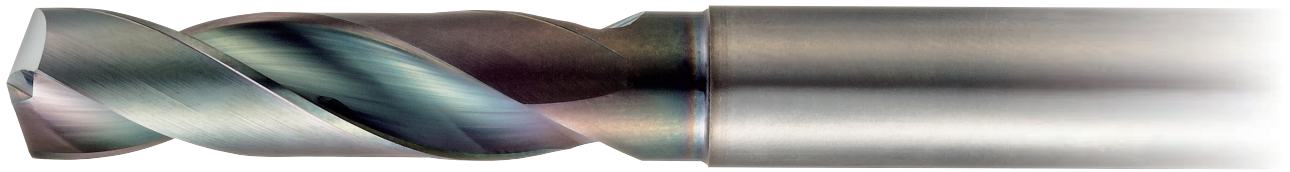


●Comparison of hole precision (die steel drilling)



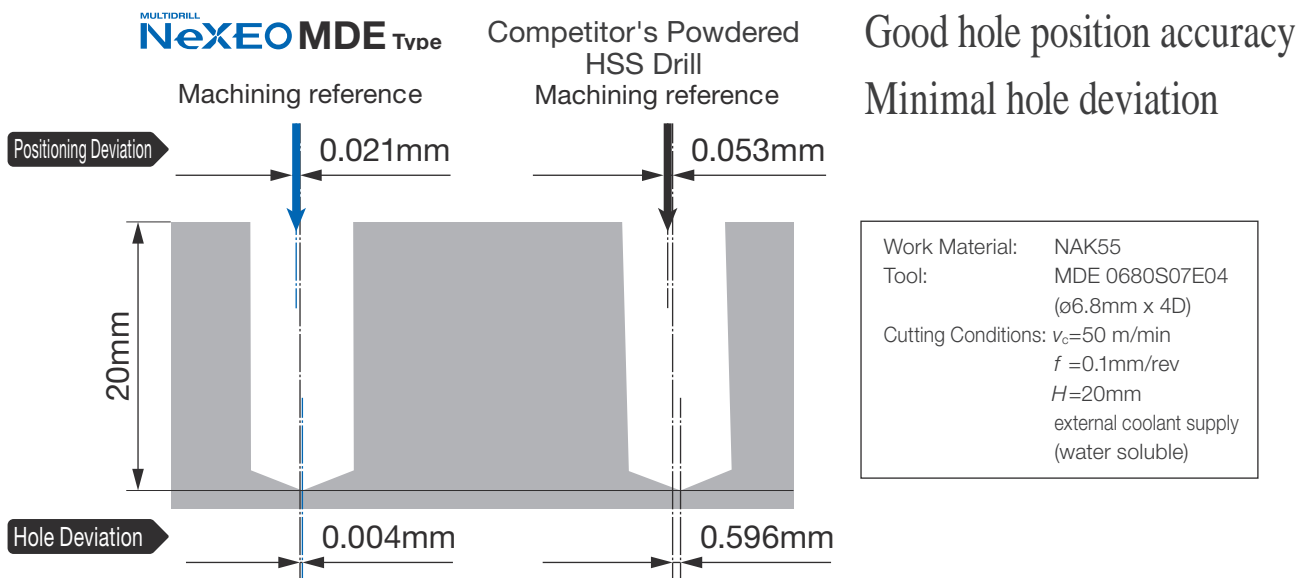
Work Material: DH31S (49HRC), Tool: MDE 0800S08H05 (ø8mm×5D) with hole  
 Cutting Conditions:  $v_c=17$  m/min,  $f=0.07$  mm/rev, internal coolant supply (water soluble)

and high quality

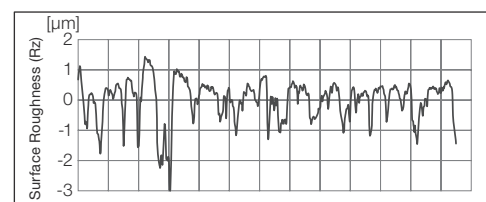
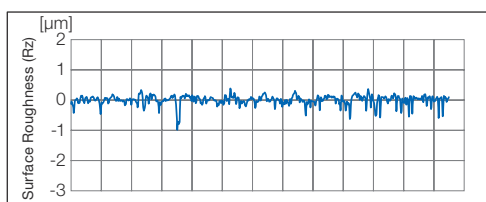
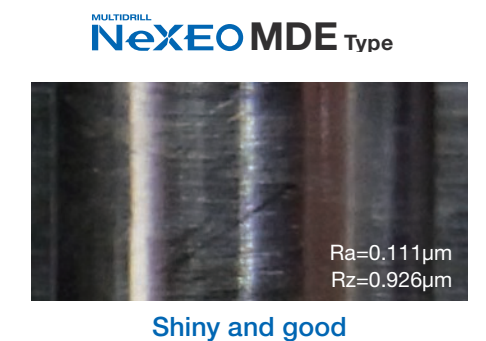


External Coolant Supply: Single Margin

● Compared to powdered HSS drill, good hole precision (die steel drilling)

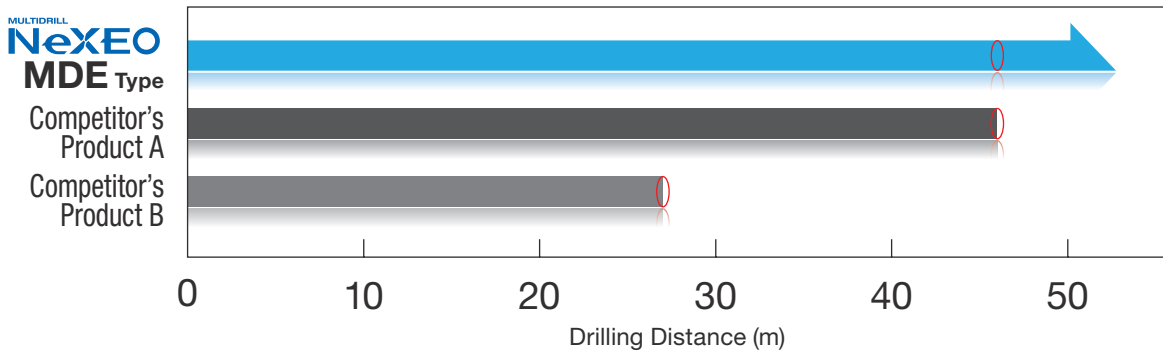


● Comparison of hole wall



## ●Application Example: High Carbon Steel

ACT100 grade achieves high wear resistance and peripheral edge breakage resistance

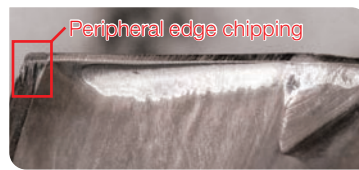


MULTIDRILL NeXEO MDE T<sub>vpe</sub>



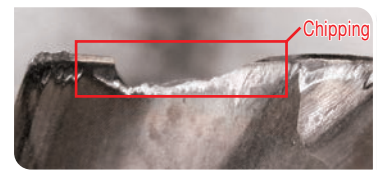
After drilling 46m

Competitor's Product A



After drilling 46m

Competitor's Product B



After drilling 27m

Work Material: S50C, Machine: BT30 vertical machining centre  
 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 supply (water soluble)

## ●Application Example: Low Carbon Steel

Good chip control in low carbon steel drilling

MULTIDRILL NeXEO MDE T<sub>vpe</sub>



Chips are cut into fine pieces

Conventional Product A



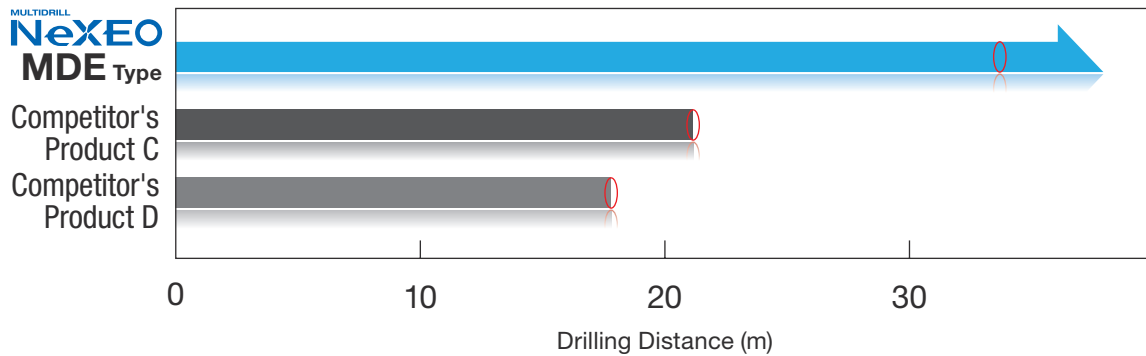
Long chips

Work 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 supply (water soluble), drilling distance: approx. 20 m pre 30 min



## ●Application Example: Ultra-hard Alloy Steel

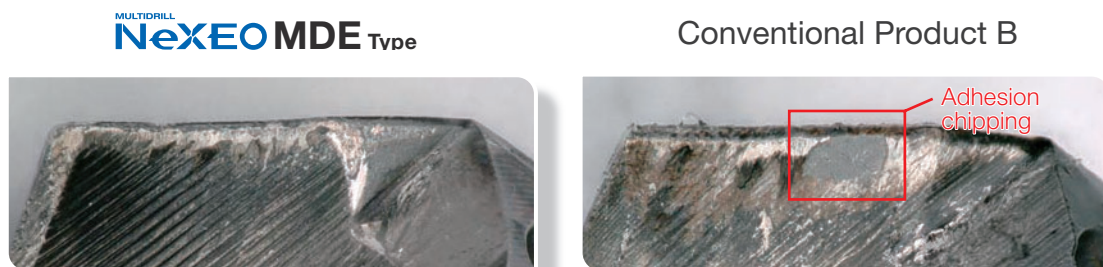
Grade **ACT100** and new edge design prevent workpiece adhesion chipping



Work Material: SCM440H (30HRC), Machine: BT30 vertical machining centre  
 Tool: MDE 0800S08H05 (ø8mm×5D) with hole  
 Cutting Conditions:  $v_c=80$  m/min,  $f=0.15$  mm/rev,  $H=40$  mm (through), internal coolant supply (water soluble)

## ●Application Example: Stainless Steel

Stable drilling of stainless steel on a lathe



Work Material: SUS310, Machine: NC lathe (rotating work material)  
 Tool: MDE 0350S04H05 (ø3.5mm×5D) with hole  
 Cutting Conditions:  $v_c=40$  m/min,  $f=0.05$  mm/rev,  $H=14$  mm, internal coolant supply (non-water-soluble), No. of workpieces 5,000

## ●Application Example: Ductile Cast Iron

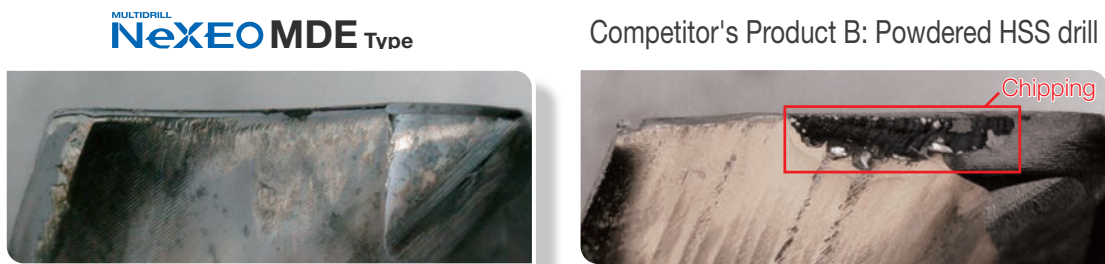
NX coating reduces margin damage and rake face wear



Work 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), internal coolant supply (water soluble), drilling distance: 64m

## ●Application Example: Frequency of Replacement Compared to Powdered HSS Drill

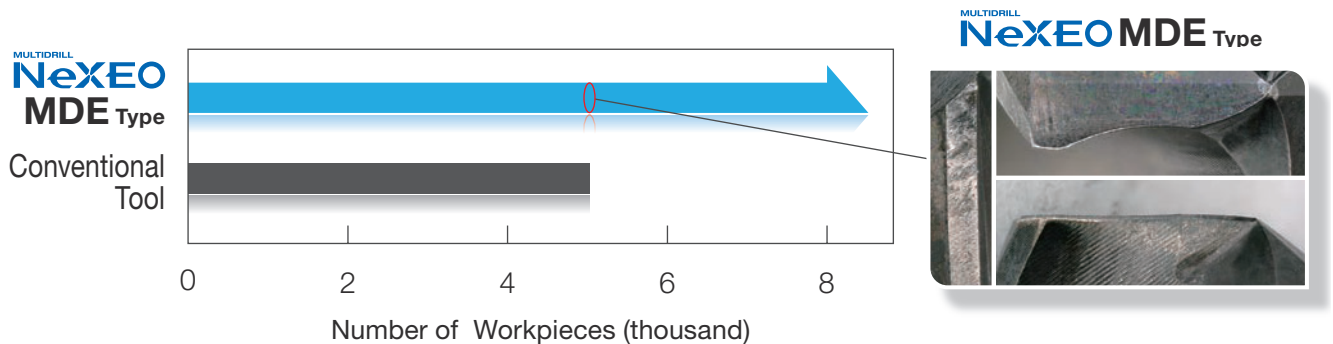
Long tool life approx. 10 times longer than powdered HSS drill



|   |   |
|---|---|
| Material: S15C (automobile parts), Machine: BT30 small machining centre | Comp's Product B powdered HSS drill ( $\phi 6.8$ mm $\times 4$ D) |
| Tool: MDE 0680S07E04 ( $\phi 6.8$ mm $\times 4$ D)                      | $v_c=40$ m/min, $f=0.15$ mm/rev                                   |
| Cutting Conditions: $v_c=60$ m/min, $f=0.15$ mm/rev,                    | external coolant supply (non-water-soluble),                      |
| external coolant supply (non-water soluble),                            | No. of Workpieces: 1,200 holes                                    |
| No. of Workpieces: 12,000 holes   |   |

## ●Application Example: Stainless Steel, Small Lathe

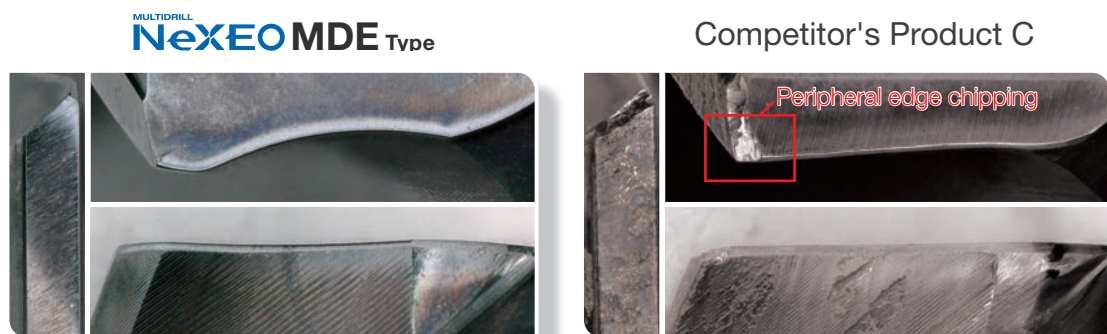
Low resistance, good chip control and long, stable tool life



Work Material: SUS316L (95 to 100HRB) (plugs), Machine: Automatic CNC lathe (workpiece rotates)  
 Tool: MDE 0680S07E2 (ø6.8 mm×2D)  
 Cutting Conditions:  $v_c=50$  m/min,  $f=0.09$  mm/rev, external coolant supply (non-water-soluble)

## ●Application Example: High Carbon Steel, Small Machining Centre

Achieves long, stable tool life even with low feed drilling of high carbon steel

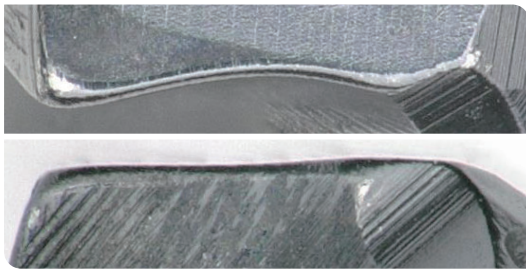


Work Material: S48C, Machine: BT30 small machining centre  
 Tool: MDE 0830S07E4 (ø8.3 mm×4D)  
 Cutting Conditions:  $v_c=30$  m/min,  $f=0.08$  mm/rev, external coolant supply (water soluble), No. of Workpieces: 150

Diameter :  $\phi 1.0\text{mm}$  to  $2.9\text{mm}$

## ●Application Example: Low Carbon Steel

マルチドリル ネクシオ  
**NexEO MDE型**



After drilling 900 holes

Competitor's Product A

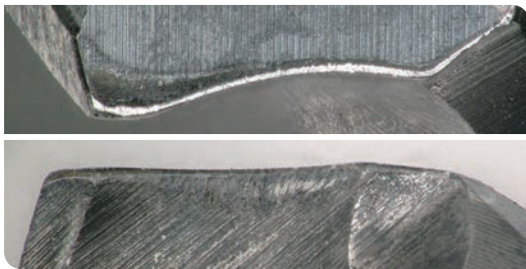


After drilling 900 holes

Work Material: SCM415, Machine: BT30 vertical machining centre  
 Tool: MDE 0100S03H05 ( $\phi 1.0\text{mm} \times 5\text{D}$ ) with hole  
 Cutting Conditions:  $v_c=40\text{m/min}$ ,  $f=0.04\text{mm/rev}$ ,  $H=5\text{mm}$  (through), internal coolant supply (water soluble)

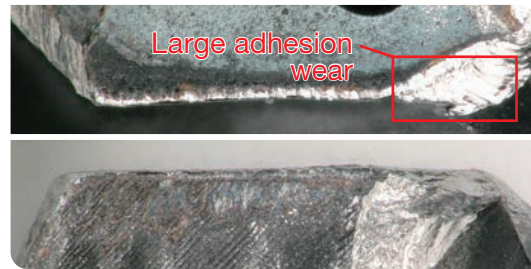
## ●Application Example: Stainless Steel

マルチドリル ネクシオ  
**NexEO MDE型**



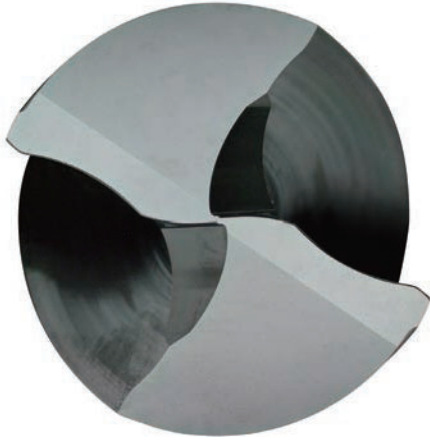
After drilling 3,840 holes

Conventional Product A



After drilling 3,840 holes

Work Material: SUS304, Machine: BT30 vertical machining centre  
 Tool: MDE 0200S03H05 ( $\phi 2.0\text{mm} \times 5\text{D}$ ) with hole  
 Cutting Conditions:  $v_c=40\text{m/min}$ ,  $f=0.04\text{mm/rev}$ ,  $H=10\text{mm}$  (through), internal coolant supply (water soluble)



Further reduces resistance with  
 overlap thinning, suppressing  
 wear in hub drilling.  
 Excellent for shallow holes

\*L/D=2 sizes only

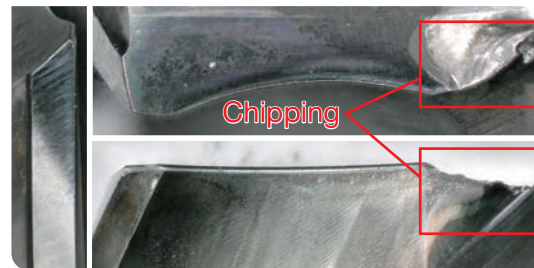
●Application Example: Hole for Press-fitting Bolt in Inner Shaft of Hub

マルチドリル ネクシオ  
**NexEO MDE型**



After drilling 2,500 workpieces  
 (5 holes per workpiece)

Conventional Product B

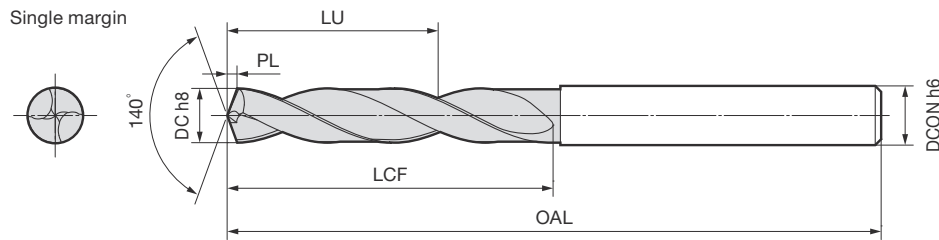


After drilling 1,000 workpieces  
 (5 holes per workpiece)

Work Material: equivalent to S55C, Machine: Vertical machining centre  
 Tool: MDE 1397S14E02H (ø13.97mm×2D)  
 Cutting Conditions:  $v_c=75\text{m/min}$ ,  $f=0.2\text{mm/rev}$ ,  $H=15\text{mm}$  (through), external coolant supply (water soluble)

# ●MDE-E Type (External Coolant Supply)

|  |                |   |                 |          |                    |           |                   |                |              |                |            |    |    |
|--|----------------|---|-----------------|----------|--------------------|-----------|-------------------|----------------|--------------|----------------|------------|----|----|
| Carbon Steel, Alloy Steel<br>Up to 0.28%<br>From 0.29% | Tempered Steel | Hardened Steel<br>Up to 45HRC<br>From 46HRC | Stainless Steel | Ti Alloy | Heat-treated Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy | Composite CFRP | NX<br>Coat | 2D | 4D |
| ○  | ◎              | ◎   | ○               | ○        | ○                  | ◎         | ◎                 | ◎              | ◎            | ◎              |            |    |    |



## ●Diameter: ø1.0 to 3.0 mm

| Diameter<br>DC<br>(mm) | Hole Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)        |                     |                       |           |                   | Standard<br>Price<br>(JPY) |
|------------------------|------------------|-------|----------------|------------------------|---------------------|-----------------------|-----------|-------------------|----------------------------|
|                        |                  |       |                | Effective Length<br>LU | Flute Length<br>LCF | Overall Length<br>OAL | Tip<br>PL | Shank Dia<br>DCON |                            |
| 1.0                    | 2                | ●     | MDE 0100S03E02 | 5.7                    | 7.2                 | 45.2                  | 0.2       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0100S03E04 | 7.7                    | 9.2                 | 49.2                  | 0.2       | 3.0               | 6,350                      |
| 1.1                    | 2                | ●     | MDE 0110S03E02 | 5.6                    | 7.2                 | 45.2                  | 0.2       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0110S03E04 | 7.6                    | 9.2                 | 49.2                  | 0.2       | 3.0               | 6,350                      |
| 1.2                    | 2                | ●     | MDE 0120S03E02 | 6.4                    | 8.2                 | 45.2                  | 0.2       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0120S03E04 | 8.4                    | 10.2                | 49.2                  | 0.2       | 3.0               | 6,350                      |
| 1.3                    | 2                | ●     | MDE 0130S03E02 | 6.3                    | 8.2                 | 45.2                  | 0.2       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0130S03E04 | 9.3                    | 11.2                | 49.2                  | 0.2       | 3.0               | 6,350                      |
| 1.4                    | 2                | ●     | MDE 0140S03E02 | 7.2                    | 9.3                 | 45.3                  | 0.3       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0140S03E04 | 9.2                    | 11.3                | 49.3                  | 0.3       | 3.0               | 6,350                      |
| 1.5                    | 2                | ●     | MDE 0150S03E02 | 7.1                    | 9.3                 | 45.3                  | 0.3       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0150S03E04 | 10.1                   | 12.3                | 49.3                  | 0.3       | 3.0               | 6,350                      |
| 1.6                    | 2                | ●     | MDE 0160S03E02 | 7.9                    | 10.3                | 45.3                  | 0.3       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0160S03E04 | 10.9                   | 13.3                | 49.3                  | 0.3       | 3.0               | 6,350                      |
| 1.7                    | 2                | ●     | MDE 0170S03E02 | 7.8                    | 10.3                | 45.3                  | 0.3       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0170S03E04 | 10.8                   | 13.3                | 49.3                  | 0.3       | 3.0               | 6,350                      |
| 1.8                    | 2                | ●     | MDE 0180S03E02 | 8.6                    | 11.3                | 45.3                  | 0.3       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0180S03E04 | 11.6                   | 14.3                | 49.3                  | 0.3       | 3.0               | 6,350                      |
| 1.9                    | 2                | ●     | MDE 0190S03E02 | 8.5                    | 11.3                | 45.3                  | 0.3       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0190S03E04 | 12.5                   | 15.3                | 49.3                  | 0.3       | 3.0               | 6,350                      |
| 2.0                    | 2                | ●     | MDE 0200S03E02 | 9.4                    | 12.4                | 45.4                  | 0.4       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0200S03E04 | 13.4                   | 16.4                | 49.4                  | 0.4       | 3.0               | 6,350                      |
| 2.1                    | 2                | ●     | MDE 0210S03E02 | 9.3                    | 12.4                | 45.4                  | 0.4       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0210S03E04 | 13.3                   | 16.4                | 49.4                  | 0.4       | 3.0               | 6,350                      |
| 2.2                    | 2                | ●     | MDE 0220S03E02 | 10.1                   | 13.4                | 45.4                  | 0.4       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0220S03E04 | 14.1                   | 17.4                | 49.4                  | 0.4       | 3.0               | 6,350                      |
| 2.3                    | 2                | ●     | MDE 0230S03E02 | 10.0                   | 13.4                | 45.4                  | 0.4       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0230S03E04 | 14.0                   | 17.4                | 49.4                  | 0.4       | 3.0               | 6,350                      |
| 2.4                    | 2                | ●     | MDE 0240S03E02 | 10.8                   | 14.4                | 45.4                  | 0.4       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0240S03E04 | 14.8                   | 18.4                | 49.4                  | 0.4       | 3.0               | 6,350                      |
| 2.5                    | 2                | ●     | MDE 0250S03E02 | 10.8                   | 14.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0250S03E04 | 14.8                   | 18.5                | 49.5                  | 0.5       | 3.0               | 6,350                      |
| 2.6                    | 2                | ●     | MDE 0260S03E02 | 11.6                   | 15.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0260S03E04 | 15.6                   | 19.5                | 49.5                  | 0.5       | 3.0               | 6,350                      |
| 2.7                    | 2                | ●     | MDE 0270S03E02 | 11.5                   | 15.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0270S03E04 | 15.5                   | 19.5                | 49.5                  | 0.5       | 3.0               | 6,350                      |
| 2.76                   | 2                | ●     | MDE 0276S03E02 | 11.3                   | 15.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
| 2.78                   | 2                | ●     | MDE 0278S03E02 | 11.3                   | 15.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
| 2.8                    | 2                | ●     | MDE 0280S03E02 | 11.3                   | 15.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0280S03E04 | 15.3                   | 19.5                | 49.5                  | 0.5       | 3.0               | 6,350                      |
| 2.9                    | 2                | ●     | MDE 0290S03E02 | 11.2                   | 15.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0290S03E04 | 15.2                   | 19.5                | 49.5                  | 0.5       | 3.0               | 6,350                      |
| 3.0                    | 2                | ●     | MDE 0300S03E02 | 9.0                    | 13.5                | 45.5                  | 0.5       | 3.0               | 5,360                      |
|                        |                  | ●     | MDE 0300S03E04 | 15.0                   | 19.5                | 49.5                  | 0.5       | 3.0               | 6,350                      |

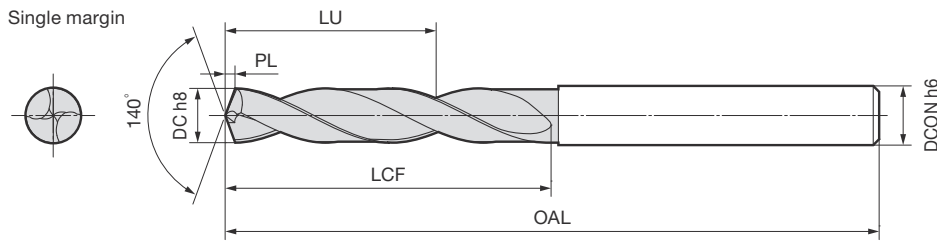
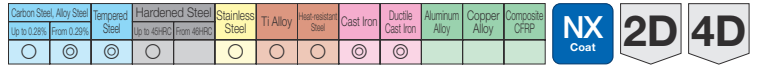
Grade ACT100

## ●Diameter: ø3.1 to 5.0 mm

| Diameter<br>DC<br>(mm) | Hole Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)        |                     |                       |           |                   | Standard<br>Price<br>(JPY) |
|------------------------|------------------|-------|----------------|------------------------|---------------------|-----------------------|-----------|-------------------|----------------------------|
|                        |                  |       |                | Effective Length<br>LU | Flute Length<br>LCF | Overall Length<br>OAL | Tip<br>PL | Shank Dia<br>DCON |                            |
| 3.1                    | 2                | ●     | MDE 0310S04E02 | 15.0                   | 19.6                | 54.6                  | 0.6       | 4.0               | 5,780                      |
|                        |                  | ●     | MDE 0310S04E04 | 20.0                   | 24.6                | 60.6                  | 0.6       | 4.0               | 6,820                      |
| 3.2                    | 2                | ●     | MDE 0320S04E02 | 14.8                   | 19.6                | 54.6                  | 0.6       | 4.0               | 5,780                      |
|                        |                  | ●     | MDE 0320S04E04 | 19.8                   | 24.6                | 60.6                  | 0.6       | 4.0               | 6,820                      |
| 3.3                    | 2                | ●     | MDE 0330S04E02 | 14.7                   | 19.6                | 54.6                  | 0.6       | 4.0               | 5,780                      |
|                        |                  | ●     | MDE 0330S04E04 | 19.7                   | 24.6                | 60.6                  | 0.6       | 4.0               | 6,820                      |
| 3.4                    | 2                | ●     | MDE 0340S04E02 | 14.5                   | 19.6                | 54.6                  | 0.6       | 4.0               | 5,780                      |
|                        |                  | ●     | MDE 0340S04E04 | 19.5                   | 24.6                | 60.6                  | 0.6       | 4.0               | 6,820                      |
| 3.5                    | 2                | ●     | MDE 0350S04E02 | 14.4                   | 19.6                | 54.6                  | 0.6       | 4.0               | 5,780                      |
|                        |                  | ●     | MDE 0350S04E04 | 19.4                   | 24.6                | 60.6                  | 0.6       | 4.0               | 6,820                      |
| 3.6                    | 2                | ●     | MDE 0360S04E02 | 16.3                   | 21.7                | 54.7                  | 0.7       | 4.0               | 6,030                      |
|                        |                  | ●     | MDE 0360S04E04 | 22.3                   | 27.7                | 60.7                  | 0.7       | 4.0               | 7,180                      |
| 3.66                   | 2                | ●     | MDE 0366S04E02 | 16.2                   | 21.7                | 54.7                  | 0.7       | 4.0               | 6,030                      |
| 3.68                   | 2                | ●     | MDE 0368S04E02 | 16.2                   | 21.7                | 54.7                  | 0.7       | 4.0               | 6,030                      |
| 3.7                    | 2                | ●     | MDE 0370S04E02 | 16.2                   | 21.7                | 54.7                  | 0.7       | 4.0               | 6,030                      |
|                        |                  | ●     | MDE 0370S04E04 | 22.2                   | 27.7                | 60.7                  | 0.7       | 4.0               | 7,180                      |
| 3.8                    | 2                | ●     | MDE 0380S04E02 | 16.0                   | 21.7                | 54.7                  | 0.7       | 4.0               | 6,030                      |
|                        |                  | ●     | MDE 0380S04E04 | 22.0                   | 27.7                | 60.7                  | 0.7       | 4.0               | 7,180                      |
| 3.9                    | 2                | ●     | MDE 0390S04E02 | 15.9                   | 21.7                | 54.7                  | 0.7       | 4.0               | 6,030                      |
|                        |                  | ●     | MDE 0390S04E04 | 21.9                   | 27.7                | 60.7                  | 0.7       | 4.0               | 7,180                      |
| 4.0                    | 2                | ●     | MDE 0400S04E02 | 15.7                   | 21.7                | 54.7                  | 0.7       | 4.0               | 6,030                      |
|                        |                  | ●     | MDE 0400S04E04 | 21.7                   | 27.7                | 60.7                  | 0.7       | 4.0               | 7,180                      |
| 4.1                    | 2                | ●     | MDE 0410S05E02 | 17.6                   | 23.7                | 61.7                  | 0.7       | 5.0               | 6,520                      |
|                        |                  | ●     | MDE 0410S05E04 | 25.6                   | 31.7                | 76.7                  | 0.7       | 5.0               | 7,710                      |
| 4.2                    | 2                | ●     | MDE 0420S05E02 | 17.5                   | 23.8                | 61.8                  | 0.8       | 5.0               | 6,520                      |
|                        |                  | ●     | MDE 0420S05E04 | 25.5                   | 31.8                | 76.8                  | 0.8       | 5.0               | 7,710                      |
| 4.3                    | 2                | ●     | MDE 0430S05E02 | 17.4                   | 23.8                | 61.8                  | 0.8       | 5.0               | 6,520                      |
|                        |                  | ●     | MDE 0430S05E04 | 25.4                   | 31.8                | 76.8                  | 0.8       | 5.0               | 7,710                      |
| 4.4                    | 2                | ●     | MDE 0440S05E02 | 17.2                   | 23.8                | 61.8                  | 0.8       | 5.0               | 6,520                      |
|                        |                  | ●     | MDE 0440S05E04 | 25.2                   | 31.8                | 76.8                  | 0.8       | 5.0               | 7,710                      |
| 4.5                    | 2                | ●     | MDE 0450S05E02 | 17.1                   | 23.8                | 61.8                  | 0.8       | 5.0               | 6,520                      |
|                        |                  | ●     | MDE 0450S05E04 | 25.1                   | 31.8                | 76.8                  | 0.8       | 5.0               | 7,710                      |
| 4.6                    | 2                | ●     | MDE 0460S05E02 | 18.9                   | 25.8                | 61.8                  | 0.8       | 5.0               | 6,960                      |
|                        |                  | ●     | MDE 0460S05E04 | 31.9                   | 38.8                | 76.8                  | 0.8       | 5.0               | 8,190                      |
| 4.62                   | 2                | ●     | MDE 0462S05E02 | 18.9                   | 25.8                | 61.8                  | 0.8       | 5.0               | 6,960                      |
| 4.64                   | 2                | ●     | MDE 0464S05E02 | 18.9                   | 25.8                | 61.8                  | 0.8       | 5.0               | 6,960                      |
| 4.7                    | 2                | ●     | MDE 0470S05E02 | 18.9                   | 25.9                | 61.9                  | 0.9       | 5.0               | 6,960                      |
|                        |                  | ●     | MDE 0470S05E04 | 31.9                   | 38.9                | 76.9                  | 0.9       | 5.0               | 8,190                      |
| 4.8                    | 2                | ●     | MDE 0480S05E02 | 18.7                   | 25.9                | 61.9                  | 0.9       | 5.0               | 6,960                      |
|                        |                  | ●     | MDE 0480S05E04 | 31.7                   | 38.9                | 76.9                  | 0.9       | 5.0               | 8,190                      |
| 4.9                    | 2                | ●     | MDE 0490S05E02 | 18.6                   | 25.9                | 61.9                  | 0.9       | 5.0               | 6,960                      |
|                        |                  | ●     | MDE 0490S05E04 | 31.6                   | 38.9                | 76.9                  | 0.9       | 5.0               | 8,190                      |
| 5.0                    | 2                | ●     | MDE 0500S05E02 | 18.4                   | 25.9                | 61.9                  | 0.9       | 5.0               | 6,960                      |
|                        |                  | ●     | MDE 0500S05E04 | 31.4                   | 38.9                | 76.9                  | 0.9       | 5.0               | 8,190                      |

Grade ACT100

# MDE-E Type (External Coolant Supply)



## ● Diameter: ø5.1 to 7.1 mm

| Diameter DC (mm) | Flute Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                 | Standard Price (JPY) |
|------------------|-------------------|-------|----------------|---------------------|------------------|--------------------|--------|-----------------|----------------------|
|                  |                   |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia. DCON |                      |
| 5.1              | 2                 | ●     | MDE 0510S06E02 | 18.3                | 25.9             | 65.9               | 0.9    | 6.0             | 7,370                |
|                  | 4                 | ●     | MDE 0510S06E04 | 32.3                | 39.9             | 81.9               | 0.9    | 6.0             | 8,670                |
| 5.2              | 2                 | ●     | MDE 0520S06E02 | 18.1                | 25.9             | 65.9               | 0.9    | 6.0             | 7,370                |
|                  | 4                 | ●     | MDE 0520S06E04 | 32.1                | 39.9             | 81.9               | 0.9    | 6.0             | 8,670                |
| 5.3              | 2                 | ●     | MDE 0530S06E02 | 18.1                | 26.0             | 66.0               | 1.0    | 6.0             | 7,370                |
|                  | 4                 | ●     | MDE 0530S06E04 | 32.1                | 40.0             | 82.0               | 1.0    | 6.0             | 8,670                |
| 5.4              | 2                 | ●     | MDE 0540S06E02 | 17.9                | 26.0             | 66.0               | 1.0    | 6.0             | 7,370                |
|                  | 4                 | ●     | MDE 0540S06E04 | 31.9                | 40.0             | 82.0               | 1.0    | 6.0             | 8,670                |
| 5.5              | 2                 | ●     | MDE 0550S06E02 | 17.8                | 26.0             | 66.0               | 1.0    | 6.0             | 7,370                |
|                  | 4                 | ●     | MDE 0550S06E04 | 31.8                | 40.0             | 82.0               | 1.0    | 6.0             | 8,670                |
| 5.52             | 2                 | ●     | MDE 0552S06E02 | 19.6                | 28.0             | 66.0               | 1.0    | 6.0             | 7,710                |
| 5.54             | 2                 | ●     | MDE 0554S06E02 | 19.6                | 28.0             | 66.0               | 1.0    | 6.0             | 7,710                |
| 5.6              | 2                 | ●     | MDE 0560S06E02 | 19.6                | 28.0             | 66.0               | 1.0    | 6.0             | 7,710                |
|                  | 4                 | ●     | MDE 0560S06E04 | 33.6                | 42.0             | 82.0               | 1.0    | 6.0             | 9,120                |
| 5.7              | 2                 | ●     | MDE 0570S06E02 | 19.5                | 28.0             | 66.0               | 1.0    | 6.0             | 7,710                |
|                  | 4                 | ●     | MDE 0570S06E04 | 33.5                | 42.0             | 82.0               | 1.0    | 6.0             | 9,120                |
| 5.8              | 2                 | ●     | MDE 0580S06E02 | 19.4                | 28.1             | 66.1               | 1.1    | 6.0             | 7,710                |
|                  | 4                 | ●     | MDE 0580S06E04 | 33.4                | 42.1             | 82.1               | 1.1    | 6.0             | 9,120                |
| 5.9              | 2                 | ●     | MDE 0590S06E02 | 19.3                | 28.1             | 66.1               | 1.1    | 6.0             | 7,710                |
|                  | 4                 | ●     | MDE 0590S06E04 | 33.3                | 42.1             | 82.1               | 1.1    | 6.0             | 9,120                |
| 6.0              | 2                 | ●     | MDE 0600S06E02 | 19.1                | 28.1             | 66.1               | 1.1    | 6.0             | 7,710                |
|                  | 4                 | ●     | MDE 0600S06E04 | 33.1                | 42.1             | 82.1               | 1.1    | 6.0             | 9,120                |
| 6.1              | 2                 | ●     | MDE 0610S07E02 | 23.0                | 32.1             | 74.1               | 1.1    | 7.0             | 7,710                |
|                  | 4                 | ●     | MDE 0610S07E04 | 34.0                | 43.1             | 84.1               | 1.1    | 7.0             | 9,120                |
| 6.2              | 2                 | ●     | MDE 0620S07E02 | 22.8                | 32.1             | 74.1               | 1.1    | 7.0             | 7,710                |
|                  | 4                 | ●     | MDE 0620S07E04 | 33.8                | 43.1             | 84.1               | 1.1    | 7.0             | 9,120                |
| 6.3              | 2                 | ●     | MDE 0630S07E02 | 22.7                | 32.1             | 74.1               | 1.1    | 7.0             | 7,710                |
|                  | 4                 | ●     | MDE 0630S07E04 | 33.7                | 43.1             | 84.1               | 1.1    | 7.0             | 9,120                |
| 6.4              | 2                 | ●     | MDE 0640S07E02 | 22.6                | 32.2             | 74.2               | 1.2    | 7.0             | 7,710                |
|                  | 4                 | ●     | MDE 0640S07E04 | 33.6                | 43.2             | 84.2               | 1.2    | 7.0             | 9,120                |
| 6.5              | 2                 | ●     | MDE 0650S07E02 | 22.5                | 32.2             | 74.2               | 1.2    | 7.0             | 7,710                |
|                  | 4                 | ●     | MDE 0650S07E04 | 33.5                | 43.2             | 84.2               | 1.2    | 7.0             | 9,120                |
| 6.6              | 2                 | ●     | MDE 0660S07E02 | 24.3                | 34.2             | 74.2               | 1.2    | 7.0             | 8,190                |
|                  | 4                 | ●     | MDE 0660S07E04 | 34.3                | 44.2             | 84.2               | 1.2    | 7.0             | 9,650                |
| 6.7              | 2                 | ●     | MDE 0670S07E02 | 24.2                | 34.2             | 74.2               | 1.2    | 7.0             | 8,190                |
|                  | 4                 | ●     | MDE 0670S07E04 | 34.2                | 44.2             | 84.2               | 1.2    | 7.0             | 9,650                |
| 6.8              | 2                 | ●     | MDE 0680S07E02 | 24.0                | 34.2             | 74.2               | 1.2    | 7.0             | 8,190                |
|                  | 4                 | ●     | MDE 0680S07E04 | 34.0                | 44.2             | 84.2               | 1.2    | 7.0             | 9,650                |
| 6.9              | 2                 | ●     | MDE 0690S07E02 | 24.0                | 34.3             | 74.3               | 1.3    | 7.0             | 8,190                |
|                  | 4                 | ●     | MDE 0690S07E04 | 34.0                | 44.3             | 84.3               | 1.3    | 7.0             | 9,650                |
| 7.0              | 2                 | ●     | MDE 0700S07E02 | 23.8                | 34.3             | 74.3               | 1.3    | 7.0             | 8,190                |
|                  | 4                 | ●     | MDE 0700S07E04 | 33.8                | 44.3             | 84.3               | 1.3    | 7.0             | 9,650                |
| 7.1              | 2                 | ●     | MDE 0710S08E02 | 23.7                | 34.3             | 79.3               | 1.3    | 8.0             | 8,670                |
|                  | 4                 | ●     | MDE 0710S08E04 | 35.7                | 46.3             | 91.3               | 1.3    | 8.0             | 10,300               |

Grade ACT100

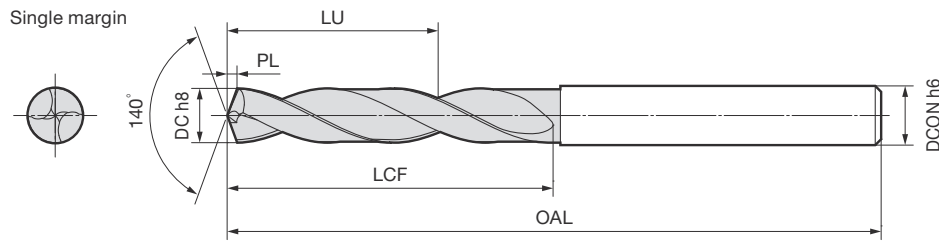
## ● Diameter: ø7.2 to 9.1 mm

| Diameter DC (mm) | Flute Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                 | Standard Price (JPY) |
|------------------|-------------------|-------|----------------|---------------------|------------------|--------------------|--------|-----------------|----------------------|
|                  |                   |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia. DCON |                      |
| 7.2              | 2                 | ●     | MDE 0720S08E02 | 23.5                | 34.3             | 79.3               | 1.3    | 8.0             | 8,670                |
|                  | 4                 | ●     | MDE 0720S08E04 | 35.5                | 46.3             | 91.3               | 1.3    | 8.0             | 10,300               |
| 7.3              | 2                 | ●     | MDE 0730S08E02 | 23.4                | 34.3             | 79.3               | 1.3    | 8.0             | 8,670                |
|                  | 4                 | ●     | MDE 0730S08E04 | 35.4                | 46.3             | 91.3               | 1.3    | 8.0             | 10,300               |
| 7.36             | 2                 | ●     | MDE 0736S08E02 | 23.2                | 34.3             | 79.3               | 1.3    | 8.0             | 8,670                |
| 7.38             | 2                 | ●     | MDE 0738S08E02 | 23.2                | 34.3             | 79.3               | 1.3    | 8.0             | 8,670                |
| 7.4              | 2                 | ●     | MDE 0740S08E02 | 23.2                | 34.3             | 79.3               | 1.3    | 8.0             | 8,670                |
|                  | 4                 | ●     | MDE 0740S08E04 | 35.2                | 46.3             | 91.3               | 1.3    | 8.0             | 10,300               |
| 7.5              | 2                 | ●     | MDE 0750S08E02 | 23.2                | 34.4             | 79.4               | 1.4    | 8.0             | 8,670                |
|                  | 4                 | ●     | MDE 0750S08E04 | 35.2                | 46.4             | 91.4               | 1.4    | 8.0             | 10,300               |
| 7.52             | 2                 | ●     | MDE 0752S08E02 | 26.0                | 37.4             | 79.4               | 1.4    | 8.0             | 9,120                |
| 7.54             | 2                 | ●     | MDE 0754S08E02 | 26.0                | 37.4             | 79.4               | 1.4    | 8.0             | 9,120                |
| 7.6              | 2                 | ●     | MDE 0760S08E02 | 26.0                | 37.4             | 79.4               | 1.4    | 8.0             | 9,120                |
|                  | 4                 | ●     | MDE 0760S08E04 | 38.0                | 49.4             | 91.4               | 1.4    | 8.0             | 10,800               |
| 7.7              | 2                 | ●     | MDE 0770S08E02 | 25.9                | 37.4             | 79.4               | 1.4    | 8.0             | 9,120                |
|                  | 4                 | ●     | MDE 0770S08E04 | 37.9                | 49.4             | 91.4               | 1.4    | 8.0             | 10,800               |
| 7.8              | 2                 | ●     | MDE 0780S08E02 | 25.7                | 37.4             | 79.4               | 1.4    | 8.0             | 9,120                |
|                  | 4                 | ●     | MDE 0780S08E04 | 37.7                | 49.4             | 91.4               | 1.4    | 8.0             | 10,800               |
| 7.9              | 2                 | ●     | MDE 0790S08E02 | 25.6                | 37.4             | 79.4               | 1.4    | 8.0             | 9,120                |
|                  | 4                 | ●     | MDE 0790S08E04 | 37.6                | 49.4             | 91.4               | 1.4    | 8.0             | 10,800               |
| 8.0              | 2                 | ●     | MDE 0800S08E02 | 25.5                | 37.5             | 79.5               | 1.5    | 8.0             | 9,120                |
|                  | 4                 | ●     | MDE 0800S08E04 | 37.5                | 49.5             | 91.5               | 1.5    | 8.0             | 10,800               |
| 8.1              | 2                 | ●     | MDE 0810S09E02 | 25.4                | 37.5             | 83.5               | 1.5    | 9.0             | 9,650                |
|                  | 4                 | ●     | MDE 0810S09E04 | 42.4                | 54.5             | 99.5               | 1.5    | 9.0             | 11,400               |
| 8.2              | 2                 | ●     | MDE 0820S09E02 | 25.2                | 37.5             | 83.5               | 1.5    | 9.0             | 9,650                |
|                  | 4                 | ●     | MDE 0820S09E04 | 42.2                | 54.5             | 99.5               | 1.5    | 9.0             | 11,400               |
| 8.3              | 2                 | ●     | MDE 0830S09E02 | 25.1                | 37.5             | 83.5               | 1.5    | 9.0             | 9,650                |
|                  | 4                 | ●     | MDE 0830S09E04 | 42.1                | 54.5             | 99.5               | 1.5    | 9.0             | 11,400               |
| 8.4              | 2                 | ●     | MDE 0840S09E02 | 24.9                | 37.5             | 83.5               | 1.5    | 9.0             | 9,650                |
|                  | 4                 | ●     | MDE 0840S09E04 | 41.9                | 54.5             | 99.5               | 1.5    | 9.0             | 11,400               |
| 8.5              | 2                 | ●     | MDE 0850S09E02 | 24.8                | 37.5             | 83.5               | 1.5    | 9.0             | 9,650                |
|                  | 4                 | ●     | MDE 0850S09E04 | 41.8                | 54.5             | 99.5               | 1.5    | 9.0             | 11,400               |
| 8.6              | 2                 | ●     | MDE 0860S09E02 | 26.7                | 39.6             | 83.6               | 1.6    | 9.0             | 10,100               |
|                  | 4                 | ●     | MDE 0860S09E04 | 43.7                | 56.6             | 99.6               | 1.6    | 9.0             | 11,800               |
| 8.7              | 2                 | ●     | MDE 0870S09E02 | 26.6                | 39.6             | 83.6               | 1.6    | 9.0             | 10,100               |
|                  | 4                 | ●     | MDE 0870S09E04 | 43.6                | 56.6             | 99.6               | 1.6    | 9.0             | 11,800               |
| 8.8              | 2                 | ●     | MDE 0880S09E02 | 26.4                | 39.6             | 83.6               | 1.6    | 9.0             | 10,100               |
|                  | 4                 | ●     | MDE 0880S09E04 | 43.4                | 56.6             | 99.6               | 1.6    | 9.0             | 11,800               |
| 8.9              | 2                 | ●     | MDE 0890S09E02 | 26.3                | 39.6             | 83.6               | 1.6    | 9.0             | 10,100               |
|                  | 4                 | ●     | MDE 0890S09E04 | 43.3                | 56.6             | 99.6               | 1.6    | 9.0             | 11,800               |
| 9.0              | 2                 | ●     | MDE 0900S09E02 | 26.1                | 39.6             | 83.6               | 1.6    | 9.0             | 10,100               |
|                  | 4                 | ●     | MDE 0900S09E04 | 43.1                | 56.6             | 99.6               | 1.6    | 9.0             | 11,800               |
| 9.1              | 2                 | ●     | MDE 0910S10E02 | 26.1                | 39.7             | 88.7               | 1.7    | 10.0            | 10,600               |
|                  | 4                 | ●     | MDE 0910S10E04 | 46.1                | 59.7             | 106.7              | 1.7    | 10.0            | 12,500               |

Grade ACT100

# ●MDE-E Type (External Coolant Supply)

|  |                              |   |                 |          |                    |           |                   |                |              |                |            |    |    |
|--|------------------------------|---|-----------------|----------|--------------------|-----------|-------------------|----------------|--------------|----------------|------------|----|----|
| Carbon Steel, Alloy Steel<br>Up to 0.28% | Tempered Steel<br>From 0.28% | Hardened Steel<br>Up to 45HRC<br>From 49HRC | Stainless Steel | Ti Alloy | Heat-treated Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy | Composite CFRP | NX<br>Coat | 2D | 4D |
| ○  | ◎                            | ◎   | ○               | ○        | ○                  | ◎         | ◎                 | ◎              | ◎            | ◎              |            |    |    |



## ●Diameter: ø9.2 to 11.0 mm

| Diameter<br>DC<br>(mm) | Hole Depth (μD) | Stock | Cat. No.       | Dimensions (mm)        |                     |                       |           |                   | Standard<br>Price<br>(JPY) |
|------------------------|-----------------|-------|----------------|------------------------|---------------------|-----------------------|-----------|-------------------|----------------------------|
|                        |                 |       |                | Effective Length<br>LU | Flute Length<br>LCF | Overall Length<br>OAL | Tip<br>PL | Shank Dia<br>DCON |                            |
| 9.2                    | 2               | ●     | MDE 0920S10E02 | 25.9                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
|                        | 4               | ●     | MDE 0920S10E04 | 45.9                   | 59.7                | 106.7                 | 1.7       | 10.0              | 12,500                     |
| 9.24                   | 2               | ●     | MDE 0924S10E02 | 25.8                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
| 9.26                   | 2               | ●     | MDE 0926S10E02 | 25.8                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
| 9.3                    | 2               | ●     | MDE 0930S10E02 | 25.8                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
|                        | 4               | ●     | MDE 0930S10E04 | 45.8                   | 59.7                | 106.7                 | 1.7       | 10.0              | 12,500                     |
| 9.36                   | 2               | ●     | MDE 0936S10E02 | 25.6                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
| 9.38                   | 2               | ●     | MDE 0938S10E02 | 25.6                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
| 9.4                    | 2               | ●     | MDE 0940S10E02 | 25.6                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
|                        | 4               | ●     | MDE 0940S10E04 | 45.6                   | 59.7                | 106.7                 | 1.7       | 10.0              | 12,500                     |
| 9.5                    | 2               | ●     | MDE 0950S10E02 | 25.5                   | 39.7                | 88.7                  | 1.7       | 10.0              | 10,600                     |
|                        | 4               | ●     | MDE 0950S10E04 | 45.5                   | 59.7                | 106.7                 | 1.7       | 10.0              | 12,500                     |
| 9.52                   | 2               | ●     | MDE 0952S10E02 | 28.3                   | 42.7                | 88.7                  | 1.7       | 10.0              | 11,100                     |
| 9.54                   | 2               | ●     | MDE 0954S10E02 | 28.3                   | 42.7                | 88.7                  | 1.7       | 10.0              | 11,100                     |
| 9.6                    | 2               | ●     | MDE 0960S10E02 | 28.3                   | 42.7                | 88.7                  | 1.7       | 10.0              | 11,100                     |
|                        | 4               | ●     | MDE 0960S10E04 | 47.3                   | 61.7                | 106.7                 | 1.7       | 10.0              | 13,000                     |
| 9.7                    | 2               | ●     | MDE 0970S10E02 | 28.3                   | 42.8                | 88.8                  | 1.8       | 10.0              | 11,100                     |
|                        | 4               | ●     | MDE 0970S10E04 | 47.3                   | 61.8                | 106.8                 | 1.8       | 10.0              | 13,000                     |
| 9.8                    | 2               | ●     | MDE 0980S10E02 | 28.1                   | 42.8                | 88.8                  | 1.8       | 10.0              | 11,100                     |
|                        | 4               | ●     | MDE 0980S10E04 | 47.1                   | 61.8                | 106.8                 | 1.8       | 10.0              | 13,000                     |
| 9.9                    | 2               | ●     | MDE 0990S10E02 | 28.0                   | 42.8                | 88.8                  | 1.8       | 10.0              | 11,100                     |
|                        | 4               | ●     | MDE 0990S10E04 | 47.0                   | 61.8                | 106.8                 | 1.8       | 10.0              | 13,000                     |
| 10.0                   | 2               | ●     | MDE 1000S10E02 | 27.8                   | 42.8                | 88.8                  | 1.8       | 10.0              | 11,100                     |
|                        | 4               | ●     | MDE 1000S10E04 | 46.8                   | 61.8                | 106.8                 | 1.8       | 10.0              | 13,000                     |
| 10.1                   | 2               | ●     | MDE 1010S11E02 | 27.7                   | 42.8                | 94.8                  | 1.8       | 11.0              | 11,600                     |
|                        | 4               | ●     | MDE 1010S11E04 | 52.7                   | 67.8                | 115.8                 | 1.8       | 11.0              | 13,700                     |
| 10.2                   | 2               | ●     | MDE 1020S11E02 | 27.6                   | 42.9                | 94.9                  | 1.9       | 11.0              | 11,600                     |
|                        | 4               | ●     | MDE 1020S11E04 | 52.6                   | 67.9                | 115.9                 | 1.9       | 11.0              | 13,700                     |
| 10.3                   | 2               | ●     | MDE 1030S11E02 | 27.5                   | 42.9                | 94.9                  | 1.9       | 11.0              | 11,600                     |
|                        | 4               | ●     | MDE 1030S11E04 | 52.5                   | 67.9                | 115.9                 | 1.9       | 11.0              | 13,700                     |
| 10.4                   | 2               | ●     | MDE 1040S11E02 | 27.3                   | 42.9                | 94.9                  | 1.9       | 11.0              | 11,600                     |
|                        | 4               | ●     | MDE 1040S11E04 | 52.3                   | 67.9                | 115.9                 | 1.9       | 11.0              | 13,700                     |
| 10.5                   | 2               | ●     | MDE 1050S11E02 | 27.2                   | 42.9                | 94.9                  | 1.9       | 11.0              | 11,600                     |
|                        | 4               | ●     | MDE 1050S11E04 | 52.2                   | 67.9                | 115.9                 | 1.9       | 11.0              | 13,700                     |
| 10.6                   | 2               | ●     | MDE 1060S11E02 | 31.0                   | 46.9                | 94.9                  | 1.9       | 11.0              | 12,100                     |
|                        | 4               | ●     | MDE 1060S11E04 | 54.0                   | 69.9                | 115.9                 | 1.9       | 11.0              | 14,100                     |
| 10.7                   | 2               | ●     | MDE 1070S11E02 | 30.9                   | 46.9                | 94.9                  | 1.9       | 11.0              | 12,100                     |
|                        | 4               | ●     | MDE 1070S11E04 | 53.9                   | 69.9                | 115.9                 | 1.9       | 11.0              | 14,100                     |
| 10.8                   | 2               | ●     | MDE 1080S11E02 | 30.8                   | 47.0                | 95.0                  | 2.0       | 11.0              | 12,100                     |
|                        | 4               | ●     | MDE 1080S11E04 | 53.8                   | 70.0                | 116.0                 | 2.0       | 11.0              | 14,100                     |
| 10.9                   | 2               | ●     | MDE 1090S11E02 | 30.7                   | 47.0                | 95.0                  | 2.0       | 11.0              | 12,100                     |
|                        | 4               | ●     | MDE 1090S11E04 | 53.7                   | 70.0                | 116.0                 | 2.0       | 11.0              | 14,100                     |
| 11.0                   | 2               | ●     | MDE 1100S11E02 | 30.5                   | 47.0                | 95.0                  | 2.0       | 11.0              | 12,100                     |
|                        | 4               | ●     | MDE 1100S11E04 | 53.5                   | 70.0                | 116.0                 | 2.0       | 11.0              | 14,100                     |

Grade ACT100

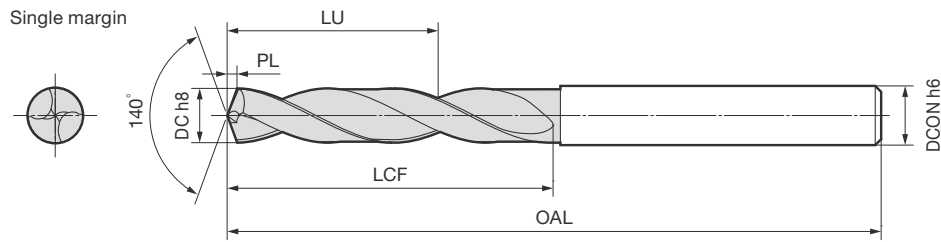
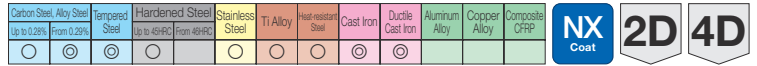
## ●Diameter: ø11.1 to 13.0 mm

| Diameter<br>DC<br>(mm) | Hole Depth (μD) | Stock | Cat. No.       | Dimensions (mm)        |                     |                       |           |                   | Standard<br>Price<br>(JPY) |
|------------------------|-----------------|-------|----------------|------------------------|---------------------|-----------------------|-----------|-------------------|----------------------------|
|                        |                 |       |                | Effective Length<br>LU | Flute Length<br>LCF | Overall Length<br>OAL | Tip<br>PL | Shank Dia<br>DCON |                            |
| 11.1                   | 2               | ●     | MDE 1110S12E02 | 30.4                   | 47.0                | 102.0                 | 2.0       | 12.0              | 12,500                     |
|                        | 4               | ●     | MDE 1110S12E04 | 56.4                   | 73.0                | 123.0                 | 2.0       | 12.0              | 14,700                     |
| 11.2                   | 2               | ●     | MDE 1120S12E02 | 30.2                   | 47.0                | 102.0                 | 2.0       | 12.0              | 12,500                     |
|                        | 4               | ●     | MDE 1120S12E04 | 56.2                   | 73.0                | 123.0                 | 2.0       | 12.0              | 14,700                     |
| 11.22                  | 2               | ●     | MDE 1122S12E02 | 30.2                   | 47.0                | 102.0                 | 2.0       | 12.0              | 12,500                     |
| 11.24                  | 2               | ●     | MDE 1124S12E02 | 30.2                   | 47.0                | 102.0                 | 2.0       | 12.0              | 12,500                     |
| 11.3                   | 2               | ●     | MDE 1130S12E02 | 30.2                   | 47.1                | 102.1                 | 2.1       | 12.0              | 12,500                     |
|                        | 4               | ●     | MDE 1130S12E04 | 56.2                   | 73.1                | 123.1                 | 2.1       | 12.0              | 14,700                     |
| 11.36                  | 2               | ●     | MDE 1136S12E02 | 30.0                   | 47.1                | 102.1                 | 2.1       | 12.0              | 12,500                     |
| 11.38                  | 2               | ●     | MDE 1138S12E02 | 30.0                   | 47.1                | 102.1                 | 2.1       | 12.0              | 12,500                     |
| 11.4                   | 2               | ●     | MDE 1140S12E02 | 30.0                   | 47.1                | 102.1                 | 2.1       | 12.0              | 12,500                     |
|                        | 4               | ●     | MDE 1140S12E04 | 56.0                   | 73.1                | 123.1                 | 2.1       | 12.0              | 14,700                     |
| 11.5                   | 2               | ●     | MDE 1150S12E02 | 29.9                   | 47.1                | 102.1                 | 2.1       | 12.0              | 12,500                     |
|                        | 4               | ●     | MDE 1150S12E04 | 55.9                   | 73.1                | 123.1                 | 2.1       | 12.0              | 14,700                     |
| 11.6                   | 2               | ●     | MDE 1160S12E02 | 31.7                   | 49.1                | 102.1                 | 2.1       | 12.0              | 13,000                     |
|                        | 4               | ●     | MDE 1160S12E04 | 57.7                   | 75.1                | 123.1                 | 2.1       | 12.0              | 15,300                     |
| 11.7                   | 2               | ●     | MDE 1170S12E02 | 31.6                   | 49.1                | 102.1                 | 2.1       | 12.0              | 13,000                     |
|                        | 4               | ●     | MDE 1170S12E04 | 57.6                   | 75.1                | 123.1                 | 2.1       | 12.0              | 15,300                     |
| 11.8                   | 2               | ●     | MDE 1180S12E02 | 31.4                   | 49.1                | 102.1                 | 2.1       | 12.0              | 13,000                     |
|                        | 4               | ●     | MDE 1180S12E04 | 57.4                   | 75.1                | 123.1                 | 2.1       | 12.0              | 15,300                     |
| 11.9                   | 2               | ●     | MDE 1190S12E02 | 31.4                   | 49.2                | 102.2                 | 2.2       | 12.0              | 13,000                     |
|                        | 4               | ●     | MDE 1190S12E04 | 57.4                   | 75.2                | 123.2                 | 2.2       | 12.0              | 15,300                     |
| 12.0                   | 2               | ●     | MDE 1200S12E02 | 31.2                   | 49.2                | 102.2                 | 2.2       | 12.0              | 13,000                     |
|                        | 4               | ●     | MDE 1200S12E04 | 57.2                   | 75.2                | 123.2                 | 2.2       | 12.0              | 15,300                     |
| 12.1                   | 2               | ●     | MDE 1210S13E02 | 31.1                   | 49.2                | 102.2                 | 2.2       | 13.0              | 13,600                     |
|                        | 4               | ●     | MDE 1210S13E04 | 60.1                   | 78.2                | 139.2                 | 2.2       | 13.0              | 15,600                     |
| 12.2                   | 2               | ●     | MDE 1220S13E02 | 30.9                   | 49.2                | 102.2                 | 2.2       | 13.0              | 13,600                     |
|                        | 4               | ●     | MDE 1220S13E04 | 59.9                   | 78.2                | 139.2                 | 2.2       | 13.0              | 15,600                     |
| 12.3                   | 2               | ●     | MDE 1230S13E02 | 30.8                   | 49.2                | 102.2                 | 2.2       | 13.0              | 13,600                     |
|                        | 4               | ●     | MDE 1230S13E04 | 59.8                   | 78.2                | 139.2                 | 2.2       | 13.0              | 15,600                     |
| 12.4                   | 2               | ●     | MDE 1240S13E02 | 30.7                   | 49.3                | 102.3                 | 2.3       | 13.0              | 13,600                     |
|                        | 4               | ●     | MDE 1240S13E04 | 59.7                   | 78.3                | 139.3                 | 2.3       | 13.0              | 15,600                     |
| 12.5                   | 2               | ●     | MDE 1250S13E02 | 30.6                   | 49.3                | 102.3                 | 2.3       | 13.0              | 13,600                     |
|                        | 4               | ●     | MDE 1250S13E04 | 59.6                   | 78.3                | 139.3                 | 2.3       | 13.0              | 15,600                     |
| 12.6                   | 2               | ●     | MDE 1260S13E02 | 32.4                   | 51.3                | 102.3                 | 2.3       | 13.0              | 13,900                     |
|                        | 4               | ●     | MDE 1260S13E04 | 61.4                   | 80.3                | 139.3                 | 2.3       | 13.0              | 16,300                     |
| 12.7                   | 2               | ●     | MDE 1270S13E02 | 32.3                   | 51.3                | 102.3                 | 2.3       | 13.0              | 13,900                     |
|                        | 4               | ●     | MDE 1270S13E04 | 61.3                   | 80.3                | 139.3                 | 2.3       | 13.0              | 16,300                     |
| 12.8                   | 2               | ●     | MDE 1280S13E02 | 32.1                   | 51.3                | 102.3                 | 2.3       | 13.0              | 13,900                     |
|                        | 4               | ●     | MDE 1280S13E04 | 61.1                   | 80.3                | 139.3                 | 2.3       | 13.0              | 16,300                     |
| 12.9                   | 2               | ●     | MDE 1290S13E02 | 32.0                   | 51.3                | 102.3                 | 2.3       | 13.0              | 13,900                     |
|                        | 4               | ●     | MDE 1290S13E04 | 61.0                   | 80.3                | 139.3                 | 2.3       | 13.0              | 16,300                     |
| 13.0                   | 2               | ●     | MDE 1300S13E02 | 31.9                   | 51.4                | 102.4                 | 2.4       | 13.0              | 13,900                     |
|                        | 4               | ●     | MDE 1300S13E04 | 60.9                   | 80.4                | 139.4                 | 2.4       | 13.0              | 16,300                     |

Grade ACT100



# MDE-E Type (External Coolant Supply)



## ● Diameter: ø13.1 to 15.2 mm

| Diameter DC (mm) | Flute Depth (μD) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                 | Standard Price (JPY) |
|------------------|------------------|-------|----------------|---------------------|------------------|--------------------|--------|-----------------|----------------------|
|                  |                  |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia. DCON |                      |
| 13.1             | 2                | ●     | MDE 1310S14E02 | 32.8                | 52.4             | 107.4              | 2.4    | 14.0            | 14,600               |
|                  | 4                | ●     | MDE 1310S14E04 | 66.8                | 86.4             | 149.4              | 2.4    | 14.0            | 16,800               |
| 13.2             | 2                | ●     | MDE 1320S14E02 | 32.6                | 52.4             | 107.4              | 2.4    | 14.0            | 14,600               |
|                  | 4                | ●     | MDE 1320S14E04 | 66.6                | 86.4             | 149.4              | 2.4    | 14.0            | 16,800               |
| 13.3             | 2                | ●     | MDE 1330S14E02 | 32.5                | 52.4             | 107.4              | 2.4    | 14.0            | 14,600               |
|                  | 4                | ●     | MDE 1330S14E04 | 66.5                | 86.4             | 149.4              | 2.4    | 14.0            | 16,800               |
| 13.4             | 2                | ●     | MDE 1340S14E02 | 32.3                | 52.4             | 107.4              | 2.4    | 14.0            | 14,600               |
|                  | 4                | ●     | MDE 1340S14E04 | 66.3                | 86.4             | 149.4              | 2.4    | 14.0            | 16,800               |
| 13.5             | 2                | ●     | MDE 1350S14E02 | 32.3                | 52.5             | 107.5              | 2.5    | 14.0            | 14,600               |
|                  | 4                | ●     | MDE 1350S14E04 | 66.3                | 86.5             | 149.5              | 2.5    | 14.0            | 16,800               |
| 13.6             | 2                | ●     | MDE 1360S14E02 | 34.1                | 54.5             | 107.5              | 2.5    | 14.0            | 15,000               |
|                  | 4                | ●     | MDE 1360S14E04 | 68.1                | 88.5             | 149.5              | 2.5    | 14.0            | 17,500               |
| 13.7             | 2                | ●     | MDE 1370S14E02 | 34.0                | 54.5             | 107.5              | 2.5    | 14.0            | 15,000               |
|                  | 4                | ●     | MDE 1370S14E04 | 68.0                | 88.5             | 149.5              | 2.5    | 14.0            | 17,500               |
| 13.8             | 2                | ●     | MDE 1380S14E02 | 33.8                | 54.5             | 107.5              | 2.5    | 14.0            | 15,000               |
|                  | 4                | ●     | MDE 1380S14E04 | 67.8                | 88.5             | 149.5              | 2.5    | 14.0            | 17,500               |
| 13.9             | 2                | ●     | MDE 1390S14E02 | 33.7                | 54.5             | 107.5              | 2.5    | 14.0            | 15,000               |
|                  | 4                | ●     | MDE 1390S14E04 | 67.7                | 88.5             | 149.5              | 2.5    | 14.0            | 17,500               |
| 14.0             | 2                | ●     | MDE 1400S14E02 | 33.5                | 54.5             | 107.5              | 2.5    | 14.0            | 15,000               |
|                  | 4                | ●     | MDE 1400S14E04 | 67.5                | 88.5             | 149.5              | 2.5    | 14.0            | 17,500               |
| 14.1             | 2                | ●     | MDE 1410S15E02 | 33.5                | 54.6             | 110.6              | 2.6    | 15.0            | 18,700               |
|                  | 4                | ●     | MDE 1410S15E04 | 70.5                | 91.6             | 155.6              | 2.6    | 15.0            | 21,700               |
| 14.2             | 2                | ●     | MDE 1420S15E02 | 33.3                | 54.6             | 110.6              | 2.6    | 15.0            | 18,700               |
|                  | 4                | ●     | MDE 1420S15E04 | 70.3                | 91.6             | 155.6              | 2.6    | 15.0            | 21,700               |
| 14.3             | 2                | ●     | MDE 1430S15E02 | 33.2                | 54.6             | 110.6              | 2.6    | 15.0            | 18,700               |
|                  | 4                | ●     | MDE 1430S15E04 | 70.2                | 91.6             | 155.6              | 2.6    | 15.0            | 21,700               |
| 14.4             | 2                | ●     | MDE 1440S15E02 | 33.0                | 54.6             | 110.6              | 2.6    | 15.0            | 18,700               |
|                  | 4                | ●     | MDE 1440S15E04 | 70.0                | 91.6             | 155.6              | 2.6    | 15.0            | 21,700               |
| 14.5             | 2                | ●     | MDE 1450S15E02 | 32.9                | 54.6             | 110.6              | 2.6    | 15.0            | 18,700               |
|                  | 4                | ●     | MDE 1450S15E04 | 69.9                | 91.6             | 155.6              | 2.6    | 15.0            | 21,700               |
| 14.6             | 2                | ●     | MDE 1460S15E02 | 33.8                | 55.7             | 110.7              | 2.7    | 15.0            | 19,300               |
|                  | 4                | ●     | MDE 1460S15E04 | 71.8                | 93.7             | 155.7              | 2.7    | 15.0            | 22,400               |
| 14.7             | 2                | ●     | MDE 1470S15E02 | 33.7                | 55.7             | 110.7              | 2.7    | 15.0            | 19,300               |
|                  | 4                | ●     | MDE 1470S15E04 | 71.7                | 93.7             | 155.7              | 2.7    | 15.0            | 22,400               |
| 14.8             | 2                | ●     | MDE 1480S15E02 | 33.5                | 55.7             | 110.7              | 2.7    | 15.0            | 19,300               |
|                  | 4                | ●     | MDE 1480S15E04 | 71.5                | 93.7             | 155.7              | 2.7    | 15.0            | 22,400               |
| 14.9             | 2                | ●     | MDE 1490S15E02 | 33.4                | 55.7             | 110.7              | 2.7    | 15.0            | 19,300               |
|                  | 4                | ●     | MDE 1490S15E04 | 71.4                | 93.7             | 155.7              | 2.7    | 15.0            | 22,400               |
| 15.0             | 2                | ●     | MDE 1500S15E02 | 33.2                | 55.7             | 110.7              | 2.7    | 15.0            | 19,300               |
|                  | 4                | ●     | MDE 1500S15E04 | 71.2                | 93.7             | 155.7              | 2.7    | 15.0            | 22,400               |
| 15.1             | 2                | ●     | MDE 1510S16E02 | 33.1                | 55.7             | 114.7              | 2.7    | 16.0            | 20,000               |
|                  | 4                | ●     | MDE 1510S16E04 | 74.1                | 96.7             | 162.7              | 2.7    | 16.0            | 23,100               |
| 15.2             | 2                | ●     | MDE 1520S16E02 | 33.0                | 55.8             | 114.8              | 2.8    | 16.0            | 20,000               |
|                  | 4                | ●     | MDE 1520S16E04 | 74.0                | 96.8             | 162.8              | 2.8    | 16.0            | 23,100               |

Grade ACT100

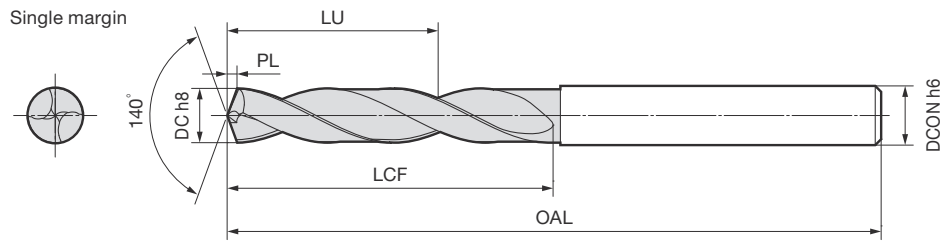
## ● Diameter: ø15.3 to 20.0 mm

| Diameter DC (mm) | Flute Depth (μD) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                 | Standard Price (JPY) |
|------------------|------------------|-------|----------------|---------------------|------------------|--------------------|--------|-----------------|----------------------|
|                  |                  |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia. DCON |                      |
| 15.3             | 2                | ●     | MDE 1530S16E02 | 32.9                | 55.8             | 114.8              | 2.8    | 16.0            | 20,000               |
|                  | 4                | ●     | MDE 1530S16E04 | 73.9                | 96.8             | 162.8              | 2.8    | 16.0            | 23,100               |
| 15.4             | 2                | ●     | MDE 1540S16E02 | 32.7                | 55.8             | 114.8              | 2.8    | 16.0            | 20,000               |
|                  | 4                | ●     | MDE 1540S16E04 | 73.7                | 96.8             | 162.8              | 2.8    | 16.0            | 23,100               |
| 15.5             | 2                | ●     | MDE 1550S16E02 | 32.6                | 55.8             | 114.8              | 2.8    | 16.0            | 20,000               |
|                  | 4                | ●     | MDE 1550S16E04 | 73.6                | 96.8             | 162.8              | 2.8    | 16.0            | 23,100               |
| 15.6             | 2                | ●     | MDE 1560S16E02 | 34.4                | 57.8             | 114.8              | 2.8    | 16.0            | 20,500               |
|                  | 4                | ●     | MDE 1560S16E04 | 75.4                | 98.8             | 162.8              | 2.8    | 16.0            | 23,800               |
| 15.7             | 2                | ●     | MDE 1570S16E02 | 34.4                | 57.9             | 114.9              | 2.9    | 16.0            | 20,500               |
|                  | 4                | ●     | MDE 1570S16E04 | 75.4                | 98.9             | 162.9              | 2.9    | 16.0            | 23,800               |
| 15.8             | 2                | ●     | MDE 1580S16E02 | 34.2                | 57.9             | 114.9              | 2.9    | 16.0            | 20,500               |
|                  | 4                | ●     | MDE 1580S16E04 | 75.2                | 98.9             | 162.9              | 2.9    | 16.0            | 23,800               |
| 15.9             | 2                | ●     | MDE 1590S16E02 | 34.1                | 57.9             | 114.9              | 2.9    | 16.0            | 20,500               |
|                  | 4                | ●     | MDE 1590S16E04 | 75.1                | 98.9             | 162.9              | 2.9    | 16.0            | 23,800               |
| 16.0             | 2                | ●     | MDE 1600S16E02 | 33.9                | 57.9             | 114.9              | 2.9    | 16.0            | 21,400               |
|                  | 4                | ●     | MDE 1600S16E04 | 74.9                | 98.9             | 162.9              | 2.9    | 16.0            | 24,800               |
| 16.5             | 2                | ●     | MDE 1650S17E02 | 34.3                | 59.0             | 119.0              | 3.0    | 17.0            | 23,300               |
|                  | 4                | ●     | MDE 1650S17E04 | 76.3                | 101.0            | 170.0              | 3.0    | 17.0            | 28,100               |
| 16.8             | 4                | ●     | MDE 1680S17E04 | 75.9                | 101.1            | 170.1              | 3.1    | 17.0            | 30,400               |
|                  | 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            | 30,400               |
| 17.5             | 2                | ●     | MDE 1750S18E02 | 35.0                | 61.2             | 123.2              | 3.2    | 18.0            | 27,100               |
|                  | 4                | ●     | MDE 1750S18E04 | 77.0                | 103.2            | 170.2              | 3.2    | 18.0            | 33,000               |
| 18.0             | 2                | ●     | MDE 1800S18E02 | 35.3                | 62.3             | 123.3              | 3.3    | 18.0            | 29,200               |
|                  | 4                | ●     | MDE 1800S18E04 | 78.3                | 105.3            | 170.3              | 3.3    | 18.0            | 35,800               |
| 18.5             | 2                | ●     | MDE 1850S19E02 | 34.7                | 62.4             | 126.4              | 3.4    | 19.0            | 30,800               |
|                  | 4                | ●     | MDE 1850S19E04 | 79.7                | 107.4            | 182.4              | 3.4    | 19.0            | 39,000               |
| 19.0             | 2                | ●     | MDE 1900S19E02 | 35.0                | 63.5             | 126.5              | 3.5    | 19.0            | 33,000               |
|                  | 4                | ●     | MDE 1900S19E04 | 80.9                | 109.4            | 182.4              | 3.4    | 19.0            | 40,400               |
| 19.5             | 2                | ●     | MDE 1950S20E02 | 35.3                | 64.5             | 130.5              | 3.5    | 20.0            | 35,000               |
|                  | 4                | ●     | MDE 1950S20E04 | 84.3                | 113.5            | 182.5              | 3.5    | 20.0            | 41,400               |
| 19.7             | 4                | ●     | MDE 1970S20E04 | 88.1                | 117.6            | 182.6              | 3.6    | 20.0            | 42,600               |
|                  | 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            | 42,600               |

Grade ACT100

# ●MDE-E Type for Hub Drilling (External Coolant Supply)

|  |                              |                                |                                |          |                    |           |                   |                |              |                |         |    |
|--|------------------------------|--------------------------------|--------------------------------|----------|--------------------|-----------|-------------------|----------------|--------------|----------------|---------|----|
| Carbon Steel, Alloy Steel<br>Up to 0.20% | Tempered Steel<br>From 0.20% | Hardened Steel<br>30 to 45 HRC | Stainless Steel<br>From 40 HRC | 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<br>DC<br>(mm) | Hole Depth (L/D) | Stock | Cat. No.        | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------------|------------------|-------|-----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                        |                  |       |                 | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 8.80                   | 2                | ●     | MDE 0880S09E02H | 26.4                | 39.6             | 83.6               | 1.6    | 9.0            | 10,100               |
| 10.00                  | 2                | ●     | MDE 1000S10E02H | 27.8                | 42.8             | 88.8               | 1.8    | 10.0           | 11,100               |
| 10.80                  | 2                | ●     | MDE 1080S11E02H | 30.8                | 47.0             | 95.0               | 2.0    | 11.0           | 12,100               |
| 12.04                  | 2                | ●     | MDE 1204S13E02H | 31.1                | 49.2             | 102.2              | 2.2    | 13.0           | 13,600               |
| 12.52                  | 2                | ●     | MDE 1252S13E02H | 32.4                | 51.3             | 102.3              | 2.3    | 13.0           | 13,900               |
| 13.85                  | 2                | ●     | MDE 1385S14E02H | 33.7                | 54.5             | 107.5              | 2.5    | 14.0           | 15,000               |
| 13.92                  | 2                | ●     | MDE 1392S14E02H | 33.5                | 54.5             | 107.5              | 2.5    | 14.0           | 15,000               |
| 13.97                  | 2                | ●     | MDE 1397S14E02H | 33.5                | 54.5             | 107.5              | 2.5    | 14.0           | 15,000               |

Grade ACT100

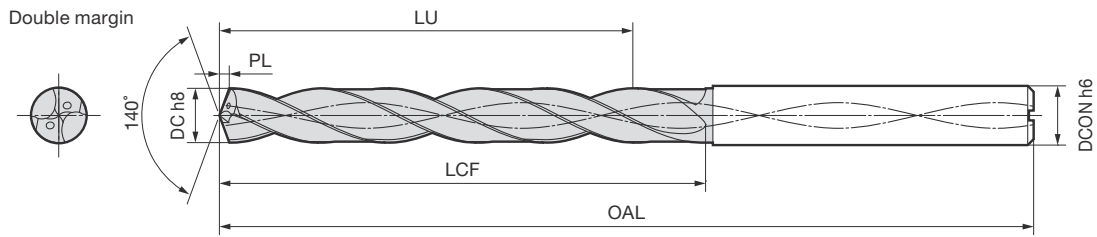
## ● Recommended Cutting Conditions (MDE-E Type, External Coolant Supply, 2D/4D) Includes Hub drilling

| Work Material           |          | Mild Steel/Low Carbon Steel<br>SS400/S15C<br>up to 160HB |                    | Carbon Steel<br>S35C/S50C<br>up to 230HB |                    | Alloy Steel<br>SCM/SCr<br>20 to 30HRC |                    | Alloy Steel<br>SCM/SCr<br>30 to 38HRC |                    |
|-------------------------|----------|--|--------------------|--|--------------------|---------------------------------------|--------------------|---------------------------------------|--------------------|
| Cutting speed           | Dia. <ø3 | 30 to 80m/min  |                    | 30 to 80m/min                            |                    | 30 to 80m/min                         |                    | 30 to 80m/min                         |                    |
|                         | Dia. ≥ø3 | 60 to 100m/min   |                    | 60 to 120m/min                           |                    | 50 to 100m/min                        |                    | 40 to 80m/min                         |                    |
| Diameter DC             |          | Spindle speed (min <sup>-1</sup> )                       | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )       | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )    | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )    | Feed rate (mm/rev) |
| ø1.0                    |          | 9,500  | 0.02 to 0.04       | 9,500                                    | 0.02 to 0.04       | 9,500                                 | 0.02 to 0.04       | 9,500                                 | 0.02 to 0.03       |
| ø1.5                    |          | 8,500  | 0.03 to 0.06       | 8,500                                    | 0.03 to 0.06       | 8,500                                 | 0.03 to 0.06       | 8,500                                 | 0.03 to 0.06       |
| ø2.0                    |          | 9,000  | 0.04 to 0.08       | 8,000                                    | 0.04 to 0.08       | 8,000                                 | 0.04 to 0.08       | 8,000                                 | 0.04 to 0.08       |
| ø2.5                    |          | 9,500  | 0.04 to 0.08       | 9,000                                    | 0.04 to 0.08       | 8,500                                 | 0.04 to 0.08       | 7,600                                 | 0.04 to 0.08       |
| ø3.0                    |          | 8,500  | 0.05 to 0.12       | 8,500                                    | 0.05 to 0.12       | 7,500                                 | 0.05 to 0.12       | 6,400                                 | 0.05 to 0.12       |
| ø4.0                    |          | 6,400  | 0.07 to 0.17       | 6,400                                    | 0.07 to 0.17       | 5,600                                 | 0.07 to 0.17       | 4,800                                 | 0.07 to 0.17       |
| ø5.0                    |          | 5,100  | 0.08 to 0.20       | 5,100                                    | 0.08 to 0.20       | 4,500                                 | 0.08 to 0.20       | 3,900                                 | 0.08 to 0.20       |
| ø6.0                    |          | 4,300  | 0.10 to 0.20       | 4,300                                    | 0.10 to 0.20       | 3,800                                 | 0.10 to 0.20       | 3,200                                 | 0.10 to 0.20       |
| ø7.0                    |          | 3,700  | 0.12 to 0.23       | 3,700                                    | 0.12 to 0.23       | 3,200                                 | 0.12 to 0.23       | 2,800                                 | 0.12 to 0.23       |
| ø8.0                    |          | 3,200  | 0.15 to 0.25       | 3,200                                    | 0.15 to 0.25       | 2,800                                 | 0.15 to 0.25       | 2,400                                 | 0.15 to 0.25       |
| ø9.0                    |          | 2,900  | 0.17 to 0.25       | 2,900                                    | 0.17 to 0.25       | 2,500                                 | 0.17 to 0.25       | 2,200                                 | 0.17 to 0.25       |
| ø10.0                   |          | 2,600  | 0.18 to 0.28       | 2,600                                    | 0.18 to 0.28       | 2,300                                 | 0.18 to 0.28       | 2,000                                 | 0.18 to 0.28       |
| ø11.0                   |          | 2,400  | 0.20 to 0.30       | 2,400                                    | 0.20 to 0.30       | 2,100                                 | 0.20 to 0.30       | 1,800                                 | 0.20 to 0.30       |
| ø12.0                   |          | 2,200  | 0.20 to 0.30       | 2,200                                    | 0.20 to 0.30       | 1,900                                 | 0.20 to 0.30       | 1,600                                 | 0.20 to 0.30       |
| ø14.0                   |          | 1,900  | 0.20 to 0.30       | 1,900                                    | 0.20 to 0.30       | 1,600                                 | 0.20 to 0.30       | 1,400                                 | 0.20 to 0.30       |
| ø16.0                   |          | 1,600  | 0.20 to 0.30       | 1,600                                    | 0.20 to 0.30       | 1,400                                 | 0.20 to 0.30       | 1,200                                 | 0.20 to 0.30       |
| ø18.0                   |          | 1,500  | 0.20 to 0.30       | 1,500                                    | 0.20 to 0.30       | 1,300                                 | 0.20 to 0.30       | 1,100                                 | 0.20 to 0.30       |
| ø20.0                   |          | 1,300  | 0.20 to 0.30       | 1,300                                    | 0.20 to 0.30       | 1,200                                 | 0.20 to 0.30       | 1,000                                 | 0.20 to 0.30       |
| High-efficiency Product |          | GS Type  |                    | GS Type                                  |                    | GS Type                               |                    | GS Type                               |                    |

| Work Material           |          | Cast Iron<br>FC250<br>to 280HB     |                    | Ductile Cast Iron<br>FCD450/FCD600<br>to 270HB |                    | Stainless Steel (oil-based drilling)<br>SUS304/SUS410<br>to 200HB |                    | Special Steel/Pre-hardened Steel<br>SKS2/SKD61 (non-tempered)<br>30 to 38 HRC |                    |
|-------------------------|----------|------------------------------------|--------------------|--|--------------------|---|--------------------|---|--------------------|
| Cutting speed           | Dia. <ø3 | 30 to 80m/min                      |                    | 30 to 80m/min                                  |                    | 20 to 50m/min   |                    | 30 to 60m/min   |                    |
|                         | Dia. ≥ø3 | 60 to 100m/min                     |                    | 50 to 100m/min                                 |                    | 20 to 50m/min   |                    | 30 to 60m/min   |                    |
| Diameter DC             |          | Spindle speed (min <sup>-1</sup> ) | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )             | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )                                | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )  | Feed rate (mm/rev) |
| ø1.0                    |          | 9,500                              | 0.02 to 0.04       | 9,500  | 0.02 to 0.04       | 9,500   | 0.02 to 0.03       | 9,500   | 0.02 to 0.03       |
| ø1.5                    |          | 8,500                              | 0.03 to 0.06       | 8,500  | 0.03 to 0.06       | 8,500   | 0.02 to 0.05       | 8,500   | 0.02 to 0.04       |
| ø2.0                    |          | 8,000                              | 0.04 to 0.08       | 8,000  | 0.04 to 0.08       | 6,300   | 0.03 to 0.06       | 7,100   | 0.03 to 0.06       |
| ø2.5                    |          | 9,000                              | 0.04 to 0.08       | 8,500  | 0.04 to 0.08       | 5,100   | 0.03 to 0.07       | 5,700   | 0.03 to 0.06       |
| ø3.0                    |          | 8,500                              | 0.06 to 0.15       | 7,500  | 0.05 to 0.12       | 4,300   | 0.05 to 0.10       | 5,400   | 0.05 to 0.12       |
| ø4.0                    |          | 6,400                              | 0.08 to 0.18       | 5,600  | 0.07 to 0.17       | 3,200   | 0.05 to 0.10       | 4,000   | 0.07 to 0.17       |
| ø5.0                    |          | 5,100                              | 0.10 to 0.20       | 4,500  | 0.08 to 0.20       | 2,600   | 0.06 to 0.15       | 3,200   | 0.08 to 0.20       |
| ø6.0                    |          | 4,300                              | 0.12 to 0.23       | 3,800  | 0.10 to 0.20       | 2,200   | 0.06 to 0.15       | 2,700   | 0.10 to 0.20       |
| ø7.0                    |          | 3,700                              | 0.12 to 0.23       | 3,200  | 0.12 to 0.23       | 1,900   | 0.06 to 0.18       | 2,300   | 0.10 to 0.20       |
| ø8.0                    |          | 3,200                              | 0.18 to 0.25       | 2,800  | 0.15 to 0.25       | 1,600   | 0.06 to 0.20       | 2,000   | 0.12 to 0.25       |
| ø9.0                    |          | 2,900                              | 0.17 to 0.25       | 2,500  | 0.17 to 0.25       | 1,500   | 0.08 to 0.20       | 1,800   | 0.12 to 0.25       |
| ø10.0                   |          | 2,600                              | 0.18 to 0.28       | 2,300  | 0.18 to 0.28       | 1,300   | 0.08 to 0.20       | 1,600   | 0.12 to 0.25       |
| ø11.0                   |          | 2,400                              | 0.20 to 0.30       | 2,100  | 0.20 to 0.30       | 1,200   | 0.08 to 0.20       | 1,500   | 0.15 to 0.30       |
| ø12.0                   |          | 2,200                              | 0.20 to 0.30       | 1,900  | 0.20 to 0.30       | 1,100   | 0.10 to 0.25       | 1,400   | 0.15 to 0.30       |
| ø14.0                   |          | 1,900                              | 0.20 to 0.30       | 1,600  | 0.20 to 0.30       | 1,000   | 0.10 to 0.25       | 1,200   | 0.15 to 0.30       |
| ø16.0                   |          | 1,600                              | 0.20 to 0.30       | 1,400  | 0.20 to 0.30       | 800   | 0.10 to 0.25       | 1,000   | 0.15 to 0.30       |
| ø18.0                   |          | 1,500                              | 0.20 to 0.30       | 1,300  | 0.20 to 0.30       | 800   | 0.10 to 0.25       | 900   | 0.15 to 0.30       |
| ø20.0                   |          | 1,300                              | 0.20 to 0.30       | 1,200  | 0.20 to 0.30       | 700   | 0.10 to 0.25       | 800   | 0.15 to 0.30       |
| High-efficiency Product |          | GS Type                            |                    | GS Type  |                    | GS Type   |                    | GS Type   |                    |

1. The recommended cutting conditions below are for cases where a water soluble coolant is used (excluding drilling of stainless steel).
2. Supply sufficient water soluble coolant to the cutting edge.
3. If using non-water-soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
4. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
5. Make sure the flute does not enter the collet.
6. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.  
\* If stable drilling is still not possible, pre-machining of the flat surface with the MDF Flat MULTIDRILL is recommended.
7. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

# MDE-H Type (Internal Coolant Supply)



## ● Diameter: ø1.0 to 2.4 mm

| Diameter DC (mm) | Hole Depth (LD) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|-----------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                 |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 1.0              | 3               | ●     | MDE 0100S03H03 | 6.7                 | 8.2              | 57.2               | 0.2    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0100S03H05 | 8.7                 | 10.2             | 59.2               | 0.2    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0100S03H08 | 11.7                | 13.2             | 62.2               | 0.2    | 3.0            | 16,200               |
| 1.1              | 3               | ●     | MDE 0110S03H03 | 6.6                 | 8.2              | 57.2               | 0.2    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0110S03H05 | 8.6                 | 10.2             | 59.2               | 0.2    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0110S03H08 | 12.6                | 14.2             | 62.2               | 0.2    | 3.0            | 16,200               |
| 1.2              | 3               | ●     | MDE 0120S03H03 | 7.4                 | 9.2              | 57.2               | 0.2    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0120S03H05 | 9.4                 | 11.2             | 59.2               | 0.2    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0120S03H08 | 13.4                | 15.2             | 62.2               | 0.2    | 3.0            | 16,200               |
| 1.3              | 3               | ●     | MDE 0130S03H03 | 7.3                 | 9.2              | 57.2               | 0.2    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0130S03H05 | 10.3                | 12.2             | 59.2               | 0.2    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0130S03H08 | 14.3                | 16.2             | 62.2               | 0.2    | 3.0            | 16,200               |
| 1.4              | 3               | ●     | MDE 0140S03H03 | 8.2                 | 10.3             | 57.3               | 0.3    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0140S03H05 | 11.2                | 13.3             | 59.3               | 0.3    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0140S03H08 | 15.2                | 17.3             | 62.3               | 0.3    | 3.0            | 16,200               |
| 1.5              | 3               | ●     | MDE 0150S03H03 | 9.1                 | 11.3             | 57.3               | 0.3    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0150S03H05 | 12.1                | 14.3             | 59.3               | 0.3    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0150S03H08 | 16.1                | 18.3             | 62.3               | 0.3    | 3.0            | 16,200               |
| 1.6              | 3               | ●     | MDE 0160S03H03 | 8.9                 | 11.3             | 59.3               | 0.3    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0160S03H05 | 11.9                | 14.3             | 62.3               | 0.3    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0160S03H08 | 16.9                | 19.3             | 67.3               | 0.3    | 3.0            | 16,200               |
| 1.7              | 3               | ●     | MDE 0170S03H03 | 9.8                 | 12.3             | 59.3               | 0.3    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0170S03H05 | 12.8                | 15.3             | 62.3               | 0.3    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0170S03H08 | 17.8                | 20.3             | 67.3               | 0.3    | 3.0            | 16,200               |
| 1.8              | 3               | ●     | MDE 0180S03H03 | 9.6                 | 12.3             | 59.3               | 0.3    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0180S03H05 | 13.6                | 16.3             | 62.3               | 0.3    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0180S03H08 | 18.6                | 21.3             | 67.3               | 0.3    | 3.0            | 16,200               |
| 1.9              | 3               | ●     | MDE 0190S03H03 | 10.5                | 13.3             | 59.3               | 0.3    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0190S03H05 | 14.5                | 17.3             | 62.3               | 0.3    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0190S03H08 | 19.5                | 22.3             | 70.3               | 0.3    | 3.0            | 16,200               |
| 2.0              | 3               | ●     | MDE 0200S03H03 | 11.4                | 14.4             | 59.4               | 0.4    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0200S03H05 | 15.4                | 18.4             | 62.4               | 0.4    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0200S03H08 | 21.4                | 24.4             | 70.4               | 0.4    | 3.0            | 16,200               |
| 2.1              | 3               | ●     | MDE 0210S03H03 | 11.3                | 14.4             | 59.4               | 0.4    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0210S03H05 | 15.3                | 18.4             | 62.4               | 0.4    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0210S03H08 | 22.3                | 25.4             | 70.4               | 0.4    | 3.0            | 16,200               |
| 2.2              | 3               | ●     | MDE 0220S03H03 | 12.1                | 15.4             | 59.4               | 0.4    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0220S03H05 | 16.1                | 19.4             | 62.4               | 0.4    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0220S03H08 | 23.1                | 26.4             | 70.4               | 0.4    | 3.0            | 16,200               |
| 2.3              | 3               | ●     | MDE 0230S03H03 | 12.0                | 15.4             | 63.4               | 0.4    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0230S03H05 | 17.0                | 20.4             | 68.4               | 0.4    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0230S03H08 | 24.0                | 27.4             | 75.4               | 0.4    | 3.0            | 16,200               |
| 2.4              | 3               | ●     | MDE 0240S03H03 | 12.8                | 16.4             | 63.4               | 0.4    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0240S03H05 | 17.8                | 21.4             | 68.4               | 0.4    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0240S03H08 | 24.8                | 28.4             | 75.4               | 0.4    | 3.0            | 16,200               |

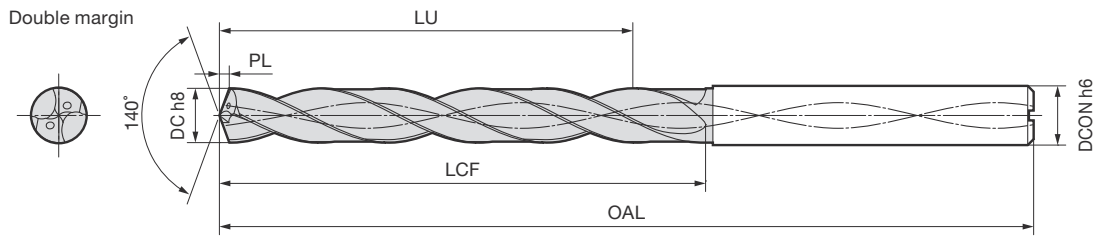
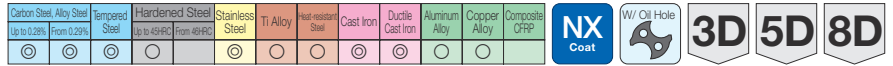
Grade ACT100

## ● Diameter: ø2.5 to 3.7 mm

| Diameter DC (mm) | Hole Depth (LD) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|-----------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                 |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 2.5              | 3               | ●     | MDE 0250S03H03 | 13.8                | 17.5             | 63.5               | 0.5    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0250S03H05 | 18.8                | 22.5             | 68.5               | 0.5    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0250S03H08 | 25.8                | 29.5             | 75.5               | 0.5    | 3.0            | 16,200               |
| 2.6              | 3               | ●     | MDE 0260S03H03 | 13.6                | 17.5             | 63.5               | 0.5    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0260S03H05 | 18.6                | 22.5             | 68.5               | 0.5    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0260S03H08 | 26.6                | 30.5             | 75.5               | 0.5    | 3.0            | 16,200               |
| 2.7              | 3               | ●     | MDE 0270S03H03 | 14.5                | 18.5             | 68.5               | 0.5    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0270S03H05 | 19.5                | 23.5             | 78.5               | 0.5    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0270S03H08 | 27.5                | 31.5             | 81.5               | 0.5    | 3.0            | 16,200               |
| 2.76             | 5               | ●     | MDE0276S03H05  | 20.3                | 24.5             | 78.5               | 0.5    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE0278S03H05  | 20.3                | 24.5             | 78.5               | 0.5    | 3.0            | 13,700               |
| 2.8              | 3               | ●     | MDE 0280S03H03 | 14.3                | 18.5             | 68.5               | 0.5    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0280S03H05 | 20.3                | 24.5             | 78.5               | 0.5    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0280S03H08 | 28.3                | 32.5             | 81.5               | 0.5    | 3.0            | 16,200               |
| 2.9              | 3               | ●     | MDE 0290S03H03 | 15.2                | 19.5             | 68.5               | 0.5    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0290S03H05 | 21.2                | 25.5             | 78.5               | 0.5    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0290S03H08 | 29.2                | 33.5             | 81.5               | 0.5    | 3.0            | 16,200               |
| 3.0              | 3               | ●     | MDE 0300S03H03 | 14.0                | 18.5             | 68.5               | 0.5    | 3.0            | 9,870                |
|                  | 5               | ●     | MDE 0300S03H05 | 24.0                | 28.5             | 78.5               | 0.5    | 3.0            | 13,700               |
|                  | 8               | ●     | MDE 0300S03H08 | 29.0                | 33.5             | 81.5               | 0.5    | 3.0            | 16,200               |
| 3.1              | 3               | ●     | MDE 0310S04H03 | 16.0                | 20.6             | 72.6               | 0.6    | 4.0            | 10,700               |
|                  | 5               | ●     | MDE 0310S04H05 | 28.0                | 32.6             | 86.6               | 0.6    | 4.0            | 13,900               |
|                  | 8               | ●     | MDE 0310S04H08 | 34.5                | 39.1             | 92.6               | 0.6    | 4.0            | 16,600               |
| 3.2              | 3               | ●     | MDE 0320S04H03 | 15.8                | 20.6             | 72.6               | 0.6    | 4.0            | 10,700               |
|                  | 5               | ●     | MDE 0320S04H05 | 27.8                | 32.6             | 86.6               | 0.6    | 4.0            | 13,900               |
|                  | 8               | ●     | MDE 0320S04H08 | 34.3                | 39.1             | 92.6               | 0.6    | 4.0            | 16,600               |
| 3.3              | 3               | ●     | MDE 0330S04H03 | 15.7                | 20.6             | 72.6               | 0.6    | 4.0            | 10,700               |
|                  | 5               | ●     | MDE 0330S04H05 | 27.7                | 32.6             | 86.6               | 0.6    | 4.0            | 13,900               |
|                  | 8               | ●     | MDE 0330S04H08 | 34.2                | 39.1             | 92.6               | 0.6    | 4.0            | 16,600               |
| 3.4              | 3               | ●     | MDE 0340S04H03 | 15.5                | 20.6             | 72.6               | 0.6    | 4.0            | 10,700               |
|                  | 5               | ●     | MDE 0340S04H05 | 27.5                | 32.6             | 86.6               | 0.6    | 4.0            | 13,900               |
|                  | 8               | ●     | MDE 0340S04H08 | 34.0                | 39.1             | 92.6               | 0.6    | 4.0            | 16,600               |
| 3.5              | 3               | ●     | MDE 0350S04H03 | 15.4                | 20.6             | 72.6               | 0.6    | 4.0            | 10,700               |
|                  | 5               | ●     | MDE 0350S04H05 | 27.4                | 32.6             | 86.6               | 0.6    | 4.0            | 13,900               |
|                  | 8               | ●     | MDE 0350S04H08 | 33.9                | 39.1             | 92.6               | 0.6    | 4.0            | 16,600               |
| 3.6              | 3               | ●     | MDE 0360S04H03 | 17.8                | 23.2             | 72.7               | 0.7    | 4.0            | 10,900               |
|                  | 5               | ●     | MDE 0360S04H05 | 31.3                | 36.7             | 86.7               | 0.7    | 4.0            | 14,000               |
|                  | 8               | ●     | MDE 0360S04H08 | 39.3                | 44.7             | 92.7               | 0.7    | 4.0            | 16,600               |
| 3.66             | 5               | ●     | MDE 0366S04H05 | 31.2                | 36.7             | 86.7               | 0.7    | 4.0            | 14,000               |
|                  | 8               | ●     | MDE 0368S04H05 | 31.2                | 36.7             | 86.7               | 0.7    | 4.0            | 14,000               |
| 3.7              | 3               | ●     | MDE 0370S04H03 | 17.7                | 23.2             | 72.7               | 0.7    | 4.0            | 10,900               |
|                  | 5               | ●     | MDE 0370S04H05 | 31.2                | 36.7             | 86.7               | 0.7    | 4.0            | 14,000               |
|                  | 8               | ●     | MDE 0370S04H08 | 39.2                | 44.7             | 92.7               | 0.7    | 4.0            | 16,600               |

Grade ACT100

# MDE-H Type (Internal Coolant Supply)



## ● Diameter: ø3.8 to 5.1 mm

| Diameter DC (mm) | Hole Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|------------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                  |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 3.8              | 3                | ●     | MDE 0380S04H03 | 17.5                | 23.2             | 72.7               | 0.7    | 4.0            | 10,900               |
|                  | 5                | ●     | MDE 0380S04H05 | 31.0                | 36.7             | 86.7               | 0.7    | 4.0            | 14,000               |
|                  | 8                | ●     | MDE 0380S04H08 | 39.0                | 44.7             | 92.7               | 0.7    | 4.0            | 16,600               |
| 3.9              | 3                | ●     | MDE 0390S04H03 | 17.4                | 23.2             | 72.7               | 0.7    | 4.0            | 10,900               |
|                  | 5                | ●     | MDE 0390S04H05 | 30.9                | 36.7             | 86.7               | 0.7    | 4.0            | 14,000               |
|                  | 8                | ●     | MDE 0390S04H08 | 38.9                | 44.7             | 92.7               | 0.7    | 4.0            | 16,600               |
| 4.0              | 3                | ●     | MDE 0400S04H03 | 17.2                | 23.2             | 72.7               | 0.7    | 4.0            | 10,900               |
|                  | 5                | ●     | MDE 0400S04H05 | 30.7                | 36.7             | 86.7               | 0.7    | 4.0            | 14,000               |
|                  | 8                | ●     | MDE 0400S04H08 | 38.7                | 44.7             | 92.7               | 0.7    | 4.0            | 16,600               |
| 4.1              | 3                | ●     | MDE 0410S05H03 | 19.6                | 25.7             | 80.7               | 0.7    | 5.0            | 12,000               |
|                  | 5                | ●     | MDE 0410S05H05 | 34.6                | 40.7             | 98.7               | 0.7    | 5.0            | 14,600               |
|                  | 8                | ●     | MDE 0410S05H08 | 44.1                | 50.2             | 105.7              | 0.7    | 5.0            | 17,300               |
| 4.2              | 3                | ●     | MDE 0420S05H03 | 19.5                | 25.8             | 80.8               | 0.8    | 5.0            | 12,000               |
|                  | 5                | ●     | MDE 0420S05H05 | 34.5                | 40.8             | 98.8               | 0.8    | 5.0            | 14,600               |
|                  | 8                | ●     | MDE 0420S05H08 | 44.0                | 50.3             | 105.8              | 0.8    | 5.0            | 17,300               |
| 4.3              | 3                | ●     | MDE 0430S05H03 | 19.4                | 25.8             | 80.8               | 0.8    | 5.0            | 12,000               |
|                  | 5                | ●     | MDE 0430S05H05 | 34.4                | 40.8             | 98.8               | 0.8    | 5.0            | 14,600               |
|                  | 8                | ●     | MDE 0430S05H08 | 43.9                | 50.3             | 105.8              | 0.8    | 5.0            | 17,300               |
| 4.4              | 3                | ●     | MDE 0440S05H03 | 19.2                | 25.8             | 80.8               | 0.8    | 5.0            | 12,000               |
|                  | 5                | ●     | MDE 0440S05H05 | 34.2                | 40.8             | 98.8               | 0.8    | 5.0            | 14,600               |
|                  | 8                | ●     | MDE 0440S05H08 | 43.7                | 50.3             | 105.8              | 0.8    | 5.0            | 17,300               |
| 4.5              | 3                | ●     | MDE 0450S05H03 | 19.1                | 25.8             | 80.8               | 0.8    | 5.0            | 12,000               |
|                  | 5                | ●     | MDE 0450S05H05 | 34.1                | 40.8             | 98.8               | 0.8    | 5.0            | 14,600               |
|                  | 8                | ●     | MDE 0450S05H08 | 43.6                | 50.3             | 105.8              | 0.8    | 5.0            | 17,300               |
| 4.6              | 3                | ●     | MDE 0460S05H03 | 21.4                | 28.3             | 80.8               | 0.8    | 5.0            | 12,800               |
|                  | 5                | ●     | MDE 0460S05H05 | 37.9                | 44.8             | 98.8               | 0.8    | 5.0            | 14,800               |
|                  | 8                | ●     | MDE 0460S05H08 | 48.9                | 55.8             | 105.8              | 0.8    | 5.0            | 17,500               |
| 4.62             | 5                | ●     | MDE 0462S05H05 | 37.9                | 44.8             | 98.8               | 0.8    | 5.0            | 14,800               |
| 4.64             | 5                | ●     | MDE 0464S05H05 | 37.9                | 44.8             | 98.8               | 0.8    | 5.0            | 14,800               |
| 4.7              | 3                | ●     | MDE 0470S05H03 | 21.4                | 28.4             | 80.9               | 0.9    | 5.0            | 12,800               |
|                  | 5                | ●     | MDE 0470S05H05 | 37.9                | 44.9             | 98.9               | 0.9    | 5.0            | 14,800               |
|                  | 8                | ●     | MDE 0470S05H08 | 48.9                | 55.9             | 105.9              | 0.9    | 5.0            | 17,500               |
| 4.8              | 3                | ●     | MDE 0480S05H03 | 21.2                | 28.4             | 80.9               | 0.9    | 5.0            | 12,800               |
|                  | 5                | ●     | MDE 0480S05H05 | 37.7                | 44.9             | 98.9               | 0.9    | 5.0            | 14,800               |
|                  | 8                | ●     | MDE 0480S05H08 | 48.7                | 55.9             | 105.9              | 0.9    | 5.0            | 17,500               |
| 4.9              | 3                | ●     | MDE 0490S05H03 | 21.1                | 28.4             | 80.9               | 0.9    | 5.0            | 12,800               |
|                  | 5                | ●     | MDE 0490S05H05 | 37.6                | 44.9             | 98.9               | 0.9    | 5.0            | 14,800               |
|                  | 8                | ●     | MDE 0490S05H08 | 48.6                | 55.9             | 105.9              | 0.9    | 5.0            | 17,500               |
| 5.0              | 3                | ●     | MDE 0500S05H03 | 20.9                | 28.4             | 80.9               | 0.9    | 5.0            | 12,800               |
|                  | 5                | ●     | MDE 0500S05H05 | 37.4                | 44.9             | 98.9               | 0.9    | 5.0            | 14,800               |
|                  | 8                | ●     | MDE 0500S05H08 | 48.4                | 55.9             | 105.9              | 0.9    | 5.0            | 17,500               |
| 5.1              | 3                | ●     | MDE 0510S06H03 | 20.8                | 28.4             | 82.9               | 0.9    | 6.0            | 13,700               |
|                  | 5                | ●     | MDE 0510S06H05 | 37.3                | 44.9             | 100.9              | 0.9    | 6.0            | 15,500               |
|                  | 8                | ●     | MDE 0510S06H08 | 53.8                | 61.4             | 118.9              | 0.9    | 6.0            | 18,200               |

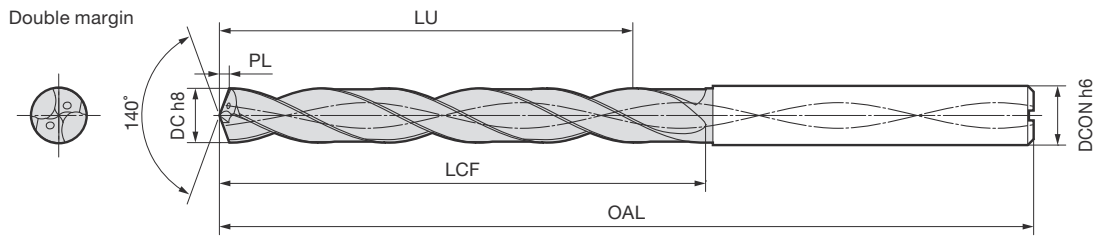
Grade ACT100

## ● Diameter: ø5.2 to 6.5 mm

| Diameter DC (mm) | Hole Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|------------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                  |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 5.2              | 3                | ●     | MDE 0520S06H03 | 20.6                | 28.4             | 82.9               | 0.9    | 6.0            | 13,700               |
|                  | 5                | ●     | MDE 0520S06H05 | 37.1                | 44.9             | 100.9              | 0.9    | 6.0            | 15,500               |
|                  | 8                | ●     | MDE 0520S06H08 | 53.6                | 61.4             | 118.9              | 0.9    | 6.0            | 18,200               |
| 5.3              | 3                | ●     | MDE 0530S06H03 | 20.6                | 28.5             | 83.0               | 1.0    | 6.0            | 13,700               |
|                  | 5                | ●     | MDE 0530S06H05 | 37.1                | 45.0             | 101.0              | 1.0    | 6.0            | 15,500               |
|                  | 8                | ●     | MDE 0530S06H08 | 53.6                | 61.5             | 119.0              | 1.0    | 6.0            | 18,200               |
| 5.4              | 3                | ●     | MDE 0540S06H03 | 20.4                | 28.5             | 83.0               | 1.0    | 6.0            | 13,700               |
|                  | 5                | ●     | MDE 0540S06H05 | 36.9                | 45.0             | 101.0              | 1.0    | 6.0            | 15,500               |
|                  | 8                | ●     | MDE 0540S06H08 | 53.4                | 61.5             | 119.0              | 1.0    | 6.0            | 18,200               |
| 5.5              | 3                | ●     | MDE 0550S06H03 | 20.3                | 28.5             | 83.0               | 1.0    | 6.0            | 13,700               |
|                  | 5                | ●     | MDE 0550S06H05 | 36.8                | 45.0             | 101.0              | 1.0    | 6.0            | 15,500               |
|                  | 8                | ●     | MDE 0550S06H08 | 53.3                | 61.5             | 119.0              | 1.0    | 6.0            | 18,200               |
| 5.52             | 5                | ●     | MDE 0552S06H05 | 40.6                | 49.0             | 101.0              | 1.0    | 6.0            | 16,000               |
| 5.54             | 5                | ●     | MDE 0554S06H05 | 40.6                | 49.0             | 101.0              | 1.0    | 6.0            | 16,000               |
| 5.6              | 3                | ●     | MDE 0560S06H03 | 22.6                | 31.0             | 83.0               | 1.0    | 6.0            | 13,800               |
|                  | 5                | ●     | MDE 0560S06H05 | 40.6                | 49.0             | 101.0              | 1.0    | 6.0            | 16,000               |
|                  | 8                | ●     | MDE 0560S06H08 | 58.6                | 67.0             | 119.0              | 1.0    | 6.0            | 18,700               |
| 5.7              | 3                | ●     | MDE 0570S06H03 | 22.5                | 31.0             | 83.0               | 1.0    | 6.0            | 13,800               |
|                  | 5                | ●     | MDE 0570S06H05 | 40.5                | 49.0             | 101.0              | 1.0    | 6.0            | 16,000               |
|                  | 8                | ●     | MDE 0570S06H08 | 58.5                | 67.0             | 119.0              | 1.0    | 6.0            | 18,700               |
| 5.8              | 3                | ●     | MDE 0580S06H03 | 22.4                | 31.1             | 83.1               | 1.1    | 6.0            | 13,800               |
|                  | 5                | ●     | MDE 0580S06H05 | 40.4                | 49.1             | 101.1              | 1.1    | 6.0            | 16,000               |
|                  | 8                | ●     | MDE 0580S06H08 | 58.4                | 67.1             | 119.1              | 1.1    | 6.0            | 18,700               |
| 5.9              | 3                | ●     | MDE 0590S06H03 | 22.3                | 31.1             | 83.1               | 1.1    | 6.0            | 13,800               |
|                  | 5                | ●     | MDE 0590S06H05 | 40.3                | 49.1             | 101.1              | 1.1    | 6.0            | 16,000               |
|                  | 8                | ●     | MDE 0590S06H08 | 58.3                | 67.1             | 119.1              | 1.1    | 6.0            | 18,700               |
| 6.0              | 3                | ●     | MDE 0600S06H03 | 22.1                | 31.1             | 83.1               | 1.1    | 6.0            | 13,800               |
|                  | 5                | ●     | MDE 0600S06H05 | 40.1                | 49.1             | 101.1              | 1.1    | 6.0            | 16,000               |
|                  | 8                | ●     | MDE 0600S06H08 | 58.1                | 67.1             | 119.1              | 1.1    | 6.0            | 18,700               |
| 6.1              | 3                | ●     | MDE 0610S07H03 | 24.5                | 33.6             | 89.1               | 1.1    | 7.0            | 14,800               |
|                  | 5                | ●     | MDE 0610S07H05 | 44.0                | 53.1             | 110.1              | 1.1    | 7.0            | 16,800               |
|                  | 8                | ●     | MDE 0610S07H08 | 63.5                | 72.6             | 131.1              | 1.1    | 7.0            | 19,800               |
| 6.2              | 3                | ●     | MDE 0620S07H03 | 24.3                | 33.6             | 89.1               | 1.1    | 7.0            | 14,800               |
|                  | 5                | ●     | MDE 0620S07H05 | 43.8                | 53.1             | 110.1              | 1.1    | 7.0            | 16,800               |
|                  | 8                | ●     | MDE 0620S07H08 | 63.3                | 72.6             | 131.1              | 1.1    | 7.0            | 19,800               |
| 6.3              | 3                | ●     | MDE 0630S07H03 | 24.2                | 33.6             | 89.1               | 1.1    | 7.0            | 14,800               |
|                  | 5                | ●     | MDE 0630S07H05 | 43.7                | 53.1             | 110.1              | 1.1    | 7.0            | 16,800               |
|                  | 8                | ●     | MDE 0630S07H08 | 63.2                | 72.6             | 131.1              | 1.1    | 7.0            | 19,800               |
| 6.4              | 3                | ●     | MDE 0640S07H03 | 24.1                | 33.7             | 89.2               | 1.2    | 7.0            | 14,800               |
|                  | 5                | ●     | MDE 0640S07H05 | 43.6                | 53.2             | 110.2              | 1.2    | 7.0            | 16,800               |
|                  | 8                | ●     | MDE 0640S07H08 | 63.1                | 72.7             | 131.2              | 1.2    | 7.0            | 19,800               |
| 6.5              | 3                | ●     | MDE 0650S07H03 | 24.0                | 33.7             | 89.2               | 1.2    | 7.0            | 14,800               |
|                  | 5                | ●     | MDE 0650S07H05 | 43.5                | 53.2             | 110.2              | 1.2    | 7.0            | 16,800               |
|                  | 8                | ●     | MDE 0650S07H08 | 63.0                | 72.7             | 131.2              | 1.2    | 7.0            | 19,800               |

Grade ACT100

# MDE-H Type (Internal Coolant Supply)



## ● Diameter: ø6.6 to 7.8 mm

| Diameter DC (mm) | Hole Depth (LD) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|-----------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                 |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 6.6              | 3               | ●     | MDE 0660S07H03 | 26.3                | 36.2             | 89.2               | 1.2    | 7.0            | 15,100               |
|                  | 5               | ●     | MDE 0660S07H05 | 47.3                | 57.2             | 110.2              | 1.2    | 7.0            | 17,300               |
|                  | 8               | ●     | MDE 0660S07H08 | 68.3                | 78.2             | 131.2              | 1.2    | 7.0            | 20,000               |
| 6.7              | 3               | ●     | MDE 0670S07H03 | 26.2                | 36.2             | 89.2               | 1.2    | 7.0            | 15,100               |
|                  | 5               | ●     | MDE 0670S07H05 | 47.2                | 57.2             | 110.2              | 1.2    | 7.0            | 17,300               |
|                  | 8               | ●     | MDE 0670S07H08 | 68.2                | 78.2             | 131.2              | 1.2    | 7.0            | 20,000               |
| 6.8              | 3               | ●     | MDE 0680S07H03 | 26.0                | 36.2             | 89.2               | 1.2    | 7.0            | 15,100               |
|                  | 5               | ●     | MDE 0680S07H05 | 47.0                | 57.2             | 110.2              | 1.2    | 7.0            | 17,300               |
|                  | 8               | ●     | MDE 0680S07H08 | 68.0                | 78.2             | 131.2              | 1.2    | 7.0            | 20,000               |
| 6.9              | 3               | ●     | MDE 0690S07H03 | 26.0                | 36.3             | 89.3               | 1.3    | 7.0            | 15,100               |
|                  | 5               | ●     | MDE 0690S07H05 | 47.0                | 57.3             | 110.3              | 1.3    | 7.0            | 17,300               |
|                  | 8               | ●     | MDE 0690S07H08 | 68.0                | 78.3             | 131.3              | 1.3    | 7.0            | 20,000               |
| 7.0              | 3               | ●     | MDE 0700S07H03 | 25.8                | 36.3             | 89.3               | 1.3    | 7.0            | 15,100               |
|                  | 5               | ●     | MDE 0700S07H05 | 46.8                | 57.3             | 110.3              | 1.3    | 7.0            | 17,300               |
|                  | 8               | ●     | MDE 0700S07H08 | 67.8                | 78.3             | 131.3              | 1.3    | 7.0            | 20,000               |
| 7.1              | 3               | ●     | MDE 0710S08H03 | 28.2                | 38.8             | 95.3               | 1.3    | 8.0            | 16,300               |
|                  | 5               | ●     | MDE 0710S08H05 | 50.7                | 61.3             | 119.3              | 1.3    | 8.0            | 18,600               |
|                  | 8               | ●     | MDE 0710S08H08 | 73.2                | 83.8             | 143.3              | 1.3    | 8.0            | 21,400               |
| 7.2              | 3               | ●     | MDE 0720S08H03 | 28.0                | 38.8             | 95.3               | 1.3    | 8.0            | 16,300               |
|                  | 5               | ●     | MDE 0720S08H05 | 50.5                | 61.3             | 119.3              | 1.3    | 8.0            | 18,600               |
|                  | 8               | ●     | MDE 0720S08H08 | 73.0                | 83.8             | 143.3              | 1.3    | 8.0            | 21,400               |
| 7.3              | 3               | ●     | MDE 0730S08H03 | 27.9                | 38.8             | 95.3               | 1.3    | 8.0            | 16,300               |
|                  | 5               | ●     | MDE 0730S08H05 | 50.4                | 61.3             | 119.3              | 1.3    | 8.0            | 18,600               |
|                  | 8               | ●     | MDE 0730S08H08 | 72.9                | 83.8             | 143.3              | 1.3    | 8.0            | 21,400               |
| 7.36             | 5               | ●     | MDE 0736S08H05 | 50.2                | 61.3             | 119.3              | 1.3    | 8.0            | 18,600               |
| 7.38             | 5               | ●     | MDE 0738S08H05 | 50.2                | 61.3             | 119.3              | 1.3    | 8.0            | 18,600               |
| 7.4              | 3               | ●     | MDE 0740S08H03 | 27.7                | 38.8             | 95.3               | 1.3    | 8.0            | 16,300               |
|                  | 5               | ●     | MDE 0740S08H05 | 50.2                | 61.3             | 119.3              | 1.3    | 8.0            | 18,600               |
|                  | 8               | ●     | MDE 0740S08H08 | 72.7                | 83.8             | 143.3              | 1.3    | 8.0            | 21,400               |
| 7.5              | 3               | ●     | MDE 0750S08H03 | 27.7                | 38.9             | 95.4               | 1.4    | 8.0            | 16,300               |
|                  | 5               | ●     | MDE 0750S08H05 | 50.2                | 61.4             | 119.4              | 1.4    | 8.0            | 18,600               |
|                  | 8               | ●     | MDE 0750S08H08 | 72.7                | 83.9             | 143.4              | 1.4    | 8.0            | 21,400               |
| 7.52             | 5               | ●     | MDE 0752S08H05 | 54.0                | 65.4             | 119.4              | 1.4    | 8.0            | 19,100               |
| 7.54             | 5               | ●     | MDE 0754S08H05 | 54.0                | 65.4             | 119.4              | 1.4    | 8.0            | 19,100               |
| 7.6              | 3               | ●     | MDE 0760S08H03 | 30.0                | 41.4             | 95.4               | 1.4    | 8.0            | 16,700               |
|                  | 5               | ●     | MDE 0760S08H05 | 54.0                | 65.4             | 119.4              | 1.4    | 8.0            | 19,100               |
|                  | 8               | ●     | MDE 0760S08H08 | 78.0                | 89.4             | 143.4              | 1.4    | 8.0            | 21,700               |
| 7.7              | 3               | ●     | MDE 0770S08H03 | 29.9                | 41.4             | 95.4               | 1.4    | 8.0            | 16,700               |
|                  | 5               | ●     | MDE 0770S08H05 | 53.9                | 65.4             | 119.4              | 1.4    | 8.0            | 19,100               |
|                  | 8               | ●     | MDE 0770S08H08 | 77.9                | 89.4             | 143.4              | 1.4    | 8.0            | 21,700               |
| 7.8              | 3               | ●     | MDE 0780S08H03 | 29.7                | 41.4             | 95.4               | 1.4    | 8.0            | 16,700               |
|                  | 5               | ●     | MDE 0780S08H05 | 53.7                | 65.4             | 119.4              | 1.4    | 8.0            | 19,100               |
|                  | 8               | ●     | MDE 0780S08H08 | 77.7                | 89.4             | 143.4              | 1.4    | 8.0            | 21,700               |

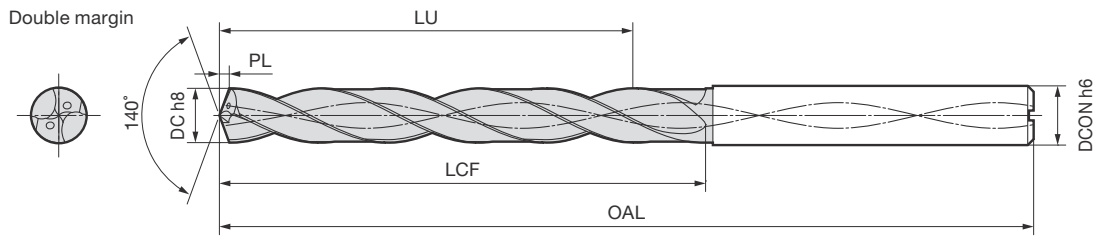
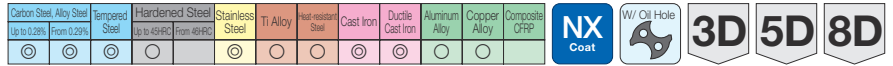
Grade ACT100

## ● Diameter: ø7.9 to 9.2 mm

| Diameter DC (mm) | Hole Depth (LD) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|-----------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                 |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 7.9              | 3               | ●     | MDE 0790S08H03 | 29.6                | 41.4             | 95.4               | 1.4    | 8.0            | 16,700               |
|                  | 5               | ●     | MDE 0790S08H05 | 53.6                | 65.4             | 119.4              | 1.4    | 8.0            | 19,100               |
|                  | 8               | ●     | MDE 0790S08H08 | 77.6                | 89.4             | 143.4              | 1.4    | 8.0            | 21,700               |
| 8.0              | 3               | ●     | MDE 0800S08H03 | 29.5                | 41.5             | 95.5               | 1.5    | 8.0            | 16,700               |
|                  | 5               | ●     | MDE 0800S08H05 | 53.5                | 65.5             | 119.5              | 1.5    | 8.0            | 19,100               |
|                  | 8               | ●     | MDE 0800S08H08 | 77.5                | 89.5             | 143.5              | 1.5    | 8.0            | 21,700               |
| 8.1              | 3               | ●     | MDE 0810S09H03 | 31.9                | 44.0             | 101.5              | 1.5    | 9.0            | 17,900               |
|                  | 5               | ●     | MDE 0810S09H05 | 57.4                | 69.5             | 128.5              | 1.5    | 9.0            | 20,500               |
|                  | 8               | ●     | MDE 0810S09H08 | 82.9                | 95.0             | 155.5              | 1.5    | 9.0            | 22,800               |
| 8.2              | 3               | ●     | MDE 0820S09H03 | 31.7                | 44.0             | 101.5              | 1.5    | 9.0            | 17,900               |
|                  | 5               | ●     | MDE 0820S09H05 | 57.2                | 69.5             | 128.5              | 1.5    | 9.0            | 20,500               |
|                  | 8               | ●     | MDE 0820S09H08 | 82.7                | 95.0             | 155.5              | 1.5    | 9.0            | 22,800               |
| 8.3              | 3               | ●     | MDE 0830S09H03 | 31.6                | 44.0             | 101.5              | 1.5    | 9.0            | 17,900               |
|                  | 5               | ●     | MDE 0830S09H05 | 57.1                | 69.5             | 128.5              | 1.5    | 9.0            | 20,500               |
|                  | 8               | ●     | MDE 0830S09H08 | 82.6                | 95.0             | 155.5              | 1.5    | 9.0            | 22,800               |
| 8.4              | 3               | ●     | MDE 0840S09H03 | 31.4                | 44.0             | 101.5              | 1.5    | 9.0            | 17,900               |
|                  | 5               | ●     | MDE 0840S09H05 | 56.9                | 69.5             | 128.5              | 1.5    | 9.0            | 20,500               |
|                  | 8               | ●     | MDE 0840S09H08 | 82.4                | 95.0             | 155.5              | 1.5    | 9.0            | 22,800               |
| 8.5              | 3               | ●     | MDE 0850S09H03 | 31.3                | 44.0             | 101.5              | 1.5    | 9.0            | 17,900               |
|                  | 5               | ●     | MDE 0850S09H05 | 56.8                | 69.5             | 128.5              | 1.5    | 9.0            | 20,500               |
|                  | 8               | ●     | MDE 0850S09H08 | 82.3                | 95.0             | 155.5              | 1.5    | 9.0            | 22,800               |
| 8.6              | 3               | ●     | MDE 0860S09H03 | 33.7                | 46.6             | 101.6              | 1.6    | 9.0            | 18,200               |
|                  | 5               | ●     | MDE 0860S09H05 | 60.7                | 73.6             | 128.6              | 1.6    | 9.0            | 20,900               |
|                  | 8               | ●     | MDE 0860S09H08 | 87.7                | 100.6            | 155.6              | 1.6    | 9.0            | 23,000               |
| 8.7              | 3               | ●     | MDE 0870S09H03 | 33.6                | 46.6             | 101.6              | 1.6    | 9.0            | 18,200               |
|                  | 5               | ●     | MDE 0870S09H05 | 60.6                | 73.6             | 128.6              | 1.6    | 9.0            | 20,900               |
|                  | 8               | ●     | MDE 0870S09H08 | 87.6                | 100.6            | 155.6              | 1.6    | 9.0            | 23,000               |
| 8.8              | 3               | ●     | MDE 0880S09H03 | 33.4                | 46.6             | 101.6              | 1.6    | 9.0            | 18,200               |
|                  | 5               | ●     | MDE 0880S09H05 | 60.4                | 73.6             | 128.6              | 1.6    | 9.0            | 20,900               |
|                  | 8               | ●     | MDE 0880S09H08 | 87.4                | 100.6            | 155.6              | 1.6    | 9.0            | 23,000               |
| 8.9              | 3               | ●     | MDE 0890S09H03 | 33.3                | 46.6             | 101.6              | 1.6    | 9.0            | 18,200               |
|                  | 5               | ●     | MDE 0890S09H05 | 60.3                | 73.6             | 128.6              | 1.6    | 9.0            | 20,900               |
|                  | 8               | ●     | MDE 0890S09H08 | 87.3                | 100.6            | 155.6              | 1.6    | 9.0            | 23,000               |
| 9.0              | 3               | ●     | MDE 0900S09H03 | 33.1                | 46.6             | 101.6              | 1.6    | 9.0            | 18,200               |
|                  | 5               | ●     | MDE 0900S09H05 | 60.1                | 73.6             | 128.6              | 1.6    | 9.0            | 20,900               |
|                  | 8               | ●     | MDE 0900S09H08 | 87.1                | 100.6            | 155.6              | 1.6    | 9.0            | 23,000               |
| 9.1              | 3               | ●     | MDE 0910S10H03 | 35.6                | 49.2             | 107.7              | 1.7    | 10.0           | 19,400               |
|                  | 5               | ●     | MDE 0910S10H05 | 64.1                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
|                  | 8               | ●     | MDE 0910S10H08 | 92.6                | 106.2            | 167.7              | 1.7    | 10.0           | 26,200               |
| 9.2              | 3               | ●     | MDE 0920S10H03 | 35.4                | 49.2             | 107.7              | 1.7    | 10.0           | 19,400               |
|                  | 5               | ●     | MDE 0920S10H05 | 63.9                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
|                  | 8               | ●     | MDE 0920S10H08 | 92.4                | 106.2            | 167.7              | 1.7    | 10.0           | 26,200               |

Grade ACT100

# MDE-H Type (Internal Coolant Supply)



## ● Diameter: ø9.24 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 | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 9.24             | 5                | ●     | MDE 0924S10H05 | 63.8                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
| 9.26             | 5                | ●     | MDE 0926S10H05 | 63.8                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
| 9.3              | 3                | ●     | MDE 0930S10H03 | 35.3                | 49.2             | 107.7              | 1.7    | 10.0           | 19,400               |
|                  | 5                | ●     | MDE 0930S10H05 | 63.8                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
|                  | 8                | ●     | MDE 0930S10H08 | 92.3                | 106.2            | 167.7              | 1.7    | 10.0           | 26,200               |
| 9.36             | 5                | ●     | MDE 0936S10H05 | 63.6                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
| 9.38             | 5                | ●     | MDE 0938S10H05 | 63.6                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
| 9.4              | 3                | ●     | MDE 0940S10H03 | 35.1                | 49.2             | 107.7              | 1.7    | 10.0           | 19,400               |
|                  | 5                | ●     | MDE 0940S10H05 | 63.6                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
|                  | 8                | ●     | MDE 0940S10H08 | 92.1                | 106.2            | 167.7              | 1.7    | 10.0           | 26,200               |
| 9.5              | 3                | ●     | MDE 0950S10H03 | 35.0                | 49.2             | 107.7              | 1.7    | 10.0           | 19,400               |
|                  | 5                | ●     | MDE 0950S10H05 | 63.5                | 77.7             | 137.7              | 1.7    | 10.0           | 22,300               |
|                  | 8                | ●     | MDE 0950S10H08 | 92.0                | 106.2            | 167.7              | 1.7    | 10.0           | 26,200               |
| 9.52             | 5                | ●     | MDE 0952S10H05 | 67.3                | 81.7             | 137.7              | 1.7    | 10.0           | 22,700               |
| 9.54             | 5                | ●     | MDE 0954S10H05 | 67.3                | 81.7             | 137.7              | 1.7    | 10.0           | 22,700               |
| 9.6              | 3                | ●     | MDE 0960S10H03 | 37.3                | 51.7             | 107.7              | 1.7    | 10.0           | 19,900               |
|                  | 5                | ●     | MDE 0960S10H05 | 67.3                | 81.7             | 137.7              | 1.7    | 10.0           | 22,700               |
|                  | 8                | ●     | MDE 0960S10H08 | 97.3                | 111.7            | 167.7              | 1.7    | 10.0           | 26,800               |
| 9.7              | 3                | ●     | MDE 0970S10H03 | 37.3                | 51.8             | 107.8              | 1.8    | 10.0           | 19,900               |
|                  | 5                | ●     | MDE 0970S10H05 | 67.3                | 81.8             | 137.8              | 1.8    | 10.0           | 22,700               |
|                  | 8                | ●     | MDE 0970S10H08 | 97.3                | 111.8            | 167.8              | 1.8    | 10.0           | 26,800               |
| 9.8              | 3                | ●     | MDE 0980S10H03 | 37.1                | 51.8             | 107.8              | 1.8    | 10.0           | 19,900               |
|                  | 5                | ●     | MDE 0980S10H05 | 67.1                | 81.8             | 137.8              | 1.8    | 10.0           | 22,700               |
|                  | 8                | ●     | MDE 0980S10H08 | 97.1                | 111.8            | 167.8              | 1.8    | 10.0           | 26,800               |
| 9.9              | 3                | ●     | MDE 0990S10H03 | 37.0                | 51.8             | 107.8              | 1.8    | 10.0           | 19,900               |
|                  | 5                | ●     | MDE 0990S10H05 | 67.0                | 81.8             | 137.8              | 1.8    | 10.0           | 22,700               |
|                  | 8                | ●     | MDE 0990S10H08 | 97.0                | 111.8            | 167.8              | 1.8    | 10.0           | 26,800               |
| 10.0             | 3                | ●     | MDE 1000S10H03 | 36.8                | 51.8             | 107.8              | 1.8    | 10.0           | 19,900               |
|                  | 5                | ●     | MDE 1000S10H05 | 66.8                | 81.8             | 137.8              | 1.8    | 10.0           | 22,700               |
|                  | 8                | ●     | MDE 1000S10H08 | 96.8                | 111.8            | 167.8              | 1.8    | 10.0           | 26,800               |
| 10.1             | 3                | ●     | MDE 1010S11H03 | 39.2                | 54.3             | 117.8              | 1.8    | 11.0           | 21,200               |
|                  | 5                | ●     | MDE 1010S11H05 | 70.7                | 85.8             | 150.8              | 1.8    | 11.0           | 24,000               |
|                  | 8                | ●     | MDE 1010S11H08 | 102.2               | 117.3            | 183.8              | 1.8    | 11.0           | 29,600               |
| 10.2             | 3                | ●     | MDE 1020S11H03 | 39.1                | 54.4             | 117.9              | 1.9    | 11.0           | 21,200               |
|                  | 5                | ●     | MDE 1020S11H05 | 70.6                | 85.9             | 150.9              | 1.9    | 11.0           | 24,000               |
|                  | 8                | ●     | MDE 1020S11H08 | 102.1               | 117.4            | 183.9              | 1.9    | 11.0           | 29,600               |
| 10.3             | 3                | ●     | MDE 1030S11H03 | 39.0                | 54.4             | 117.9              | 1.9    | 11.0           | 21,200               |
|                  | 5                | ●     | MDE 1030S11H05 | 70.5                | 85.9             | 150.9              | 1.9    | 11.0           | 24,000               |
|                  | 8                | ●     | MDE 1030S11H08 | 102.0               | 117.4            | 183.9              | 1.9    | 11.0           | 29,600               |
| 10.4             | 3                | ●     | MDE 1040S11H03 | 38.8                | 54.4             | 117.9              | 1.9    | 11.0           | 21,200               |
|                  | 5                | ●     | MDE 1040S11H05 | 70.3                | 85.9             | 150.9              | 1.9    | 11.0           | 24,000               |
|                  | 8                | ●     | MDE 1040S11H08 | 101.8               | 117.4            | 183.9              | 1.9    | 11.0           | 29,600               |

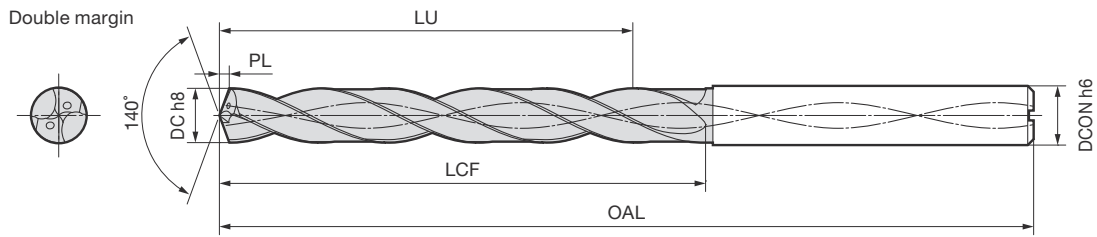
Grade ACT100

## ● Diameter: ø10.5 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 | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 10.5             | 3                | ●     | MDE 1050S11H03 | 38.7                | 54.4             | 117.9              | 1.9    | 11.0           | 21,200               |
|                  | 5                | ●     | MDE 1050S11H05 | 70.2                | 85.9             | 150.9              | 1.9    | 11.0           | 24,000               |
|                  | 8                | ●     | MDE 1050S11H08 | 101.7               | 117.4            | 183.9              | 1.9    | 11.0           | 29,600               |
| 10.6             | 3                | ●     | MDE 1060S11H03 | 41.0                | 56.9             | 117.9              | 1.9    | 11.0           | 21,600               |
|                  | 5                | ●     | MDE 1060S11H05 | 74.0                | 89.9             | 150.9              | 1.9    | 11.0           | 24,700               |
|                  | 8                | ●     | MDE 1060S11H08 | 107.0               | 122.9            | 183.9              | 1.9    | 11.0           | 30,200               |
| 10.7             | 3                | ●     | MDE 1070S11H03 | 40.9                | 56.9             | 117.9              | 1.9    | 11.0           | 21,600               |
|                  | 5                | ●     | MDE 1070S11H05 | 73.9                | 89.9             | 150.9              | 1.9    | 11.0           | 24,700               |
|                  | 8                | ●     | MDE 1070S11H08 | 106.9               | 122.9            | 183.9              | 1.9    | 11.0           | 30,200               |
| 10.8             | 3                | ●     | MDE 1080S11H03 | 40.8                | 57.0             | 118.0              | 2.0    | 11.0           | 21,600               |
|                  | 5                | ●     | MDE 1080S11H05 | 73.8                | 90.0             | 151.0              | 2.0    | 11.0           | 24,700               |
|                  | 8                | ●     | MDE 1080S11H08 | 106.8               | 123.0            | 184.0              | 2.0    | 11.0           | 30,200               |
| 10.9             | 3                | ●     | MDE 1090S11H03 | 40.7                | 57.0             | 118.0              | 2.0    | 11.0           | 21,600               |
|                  | 5                | ●     | MDE 1090S11H05 | 73.7                | 90.0             | 151.0              | 2.0    | 11.0           | 24,700               |
|                  | 8                | ●     | MDE 1090S11H08 | 106.7               | 123.0            | 184.0              | 2.0    | 11.0           | 30,200               |
| 11.0             | 3                | ●     | MDE 1100S11H03 | 40.5                | 57.0             | 118.0              | 2.0    | 11.0           | 21,600               |
|                  | 5                | ●     | MDE 1100S11H05 | 73.5                | 90.0             | 151.0              | 2.0    | 11.0           | 24,700               |
|                  | 8                | ●     | MDE 1100S11H08 | 106.5               | 123.0            | 184.0              | 2.0    | 11.0           | 30,200               |
| 11.1             | 3                | ●     | MDE 1110S12H03 | 42.9                | 59.5             | 124.0              | 2.0    | 12.0           | 22,800               |
|                  | 5                | ●     | MDE 1110S12H05 | 77.4                | 94.0             | 160.0              | 2.0    | 12.0           | 26,200               |
|                  | 8                | ●     | MDE 1110S12H08 | 111.9               | 128.5            | 196.0              | 2.0    | 12.0           | 33,400               |
| 11.2             | 3                | ●     | MDE 1120S12H03 | 42.7                | 59.5             | 124.0              | 2.0    | 12.0           | 22,800               |
|                  | 5                | ●     | MDE 1120S12H05 | 77.2                | 94.0             | 160.0              | 2.0    | 12.0           | 26,200               |
|                  | 8                | ●     | MDE 1120S12H08 | 111.7               | 128.5            | 196.0              | 2.0    | 12.0           | 33,400               |
| 11.22            | 5                | ●     | MDE 1122S12H05 | 77.2                | 94.0             | 160.0              | 2.0    | 12.0           | 26,200               |
| 11.24            | 5                | ●     | MDE 1124S12H05 | 77.2                | 94.0             | 160.0              | 2.0    | 12.0           | 26,200               |
| 11.3             | 3                | ●     | MDE 1130S12H03 | 42.7                | 59.6             | 124.1              | 2.1    | 12.0           | 22,800               |
|                  | 5                | ●     | MDE 1130S12H05 | 77.2                | 94.1             | 160.1              | 2.1    | 12.0           | 26,200               |
|                  | 8                | ●     | MDE 1130S12H08 | 111.7               | 128.6            | 196.1              | 2.1    | 12.0           | 33,400               |
| 11.36            | 5                | ●     | MDE 1136S12H05 | 77.0                | 94.1             | 160.1              | 2.1    | 12.0           | 26,200               |
| 11.38            | 5                | ●     | MDE 1138S12H05 | 77.0                | 94.1             | 160.1              | 2.1    | 12.0           | 26,200               |
| 11.4             | 3                | ●     | MDE 1140S12H03 | 42.5                | 59.6             | 124.1              | 2.1    | 12.0           | 22,800               |
|                  | 5                | ●     | MDE 1140S12H05 | 77.0                | 94.1             | 160.1              | 2.1    | 12.0           | 26,200               |
|                  | 8                | ●     | MDE 1140S12H08 | 111.5               | 128.6            | 196.1              | 2.1    | 12.0           | 33,400               |
| 11.5             | 3                | ●     | MDE 1150S12H03 | 42.4                | 59.6             | 124.1              | 2.1    | 12.0           | 22,800               |
|                  | 5                | ●     | MDE 1150S12H05 | 76.9                | 94.1             | 160.1              | 2.1    | 12.0           | 26,200               |
|                  | 8                | ●     | MDE 1150S12H08 | 111.4               | 128.6            | 196.1              | 2.1    | 12.0           | 33,400               |
| 11.6             | 3                | ●     | MDE 1160S12H03 | 44.7                | 62.1             | 124.1              | 2.1    | 12.0           | 23,500               |
|                  | 5                | ●     | MDE 1160S12H05 | 80.7                | 98.1             | 160.1              | 2.1    | 12.0           | 26,700               |
|                  | 8                | ●     | MDE 1160S12H08 | 116.7               | 134.1            | 196.1              | 2.1    | 12.0           | 34,000               |
| 11.7             | 3                | ●     | MDE 1170S12H03 | 44.6                | 62.1             | 124.1              | 2.1    | 12.0           | 23,500               |
|                  | 5                | ●     | MDE 1170S12H05 | 80.6                | 98.1             | 160.1              | 2.1    | 12.0           | 26,700               |
|                  | 8                | ●     | MDE 1170S12H08 | 116.6               | 134.1            | 196.1              | 2.1    | 12.0           | 34,000               |

Grade ACT100

# MDE-H Type (Internal Coolant Supply)



## ● Diameter: ø11.8 to 13.1 mm

| Diameter DC (mm) | Hole Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|------------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                  |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 11.8             | 3                | ●     | MDE 1180S12H03 | 44.4                | 62.1             | 124.1              | 2.1    | 12.0           | 23,500               |
|                  | 5                | ●     | MDE 1180S12H05 | 80.4                | 98.1             | 160.1              | 2.1    | 12.0           | 26,700               |
|                  | 8                | ●     | MDE 1180S12H08 | 116.4               | 134.1            | 196.1              | 2.1    | 12.0           | 34,000               |
| 11.9             | 3                | ●     | MDE 1190S12H03 | 44.4                | 62.2             | 124.2              | 2.2    | 12.0           | 23,500               |
|                  | 5                | ●     | MDE 1190S12H05 | 80.4                | 98.2             | 160.2              | 2.2    | 12.0           | 26,700               |
|                  | 8                | ●     | MDE 1190S12H08 | 116.4               | 134.2            | 196.2              | 2.2    | 12.0           | 34,000               |
| 12.0             | 3                | ●     | MDE 1200S12H03 | 44.2                | 62.2             | 124.2              | 2.2    | 12.0           | 23,500               |
|                  | 5                | ●     | MDE 1200S12H05 | 80.2                | 98.2             | 160.2              | 2.2    | 12.0           | 26,700               |
|                  | 8                | ●     | MDE 1200S12H08 | 116.2               | 134.2            | 196.2              | 2.2    | 12.0           | 34,000               |
| 12.1             | 3                | ●     | MDE 1210S13H03 | 46.6                | 64.7             | 130.2              | 2.2    | 13.0           | 24,700               |
|                  | 5                | ●     | MDE 1210S13H05 | 84.1                | 102.2            | 169.2              | 2.2    | 13.0           | 28,100               |
|                  | 8                | ●     | MDE 1210S13H08 | 121.6               | 139.7            | 208.2              | 2.2    | 13.0           | 37,800               |
| 12.2             | 3                | ●     | MDE 1220S13H03 | 46.4                | 64.7             | 130.2              | 2.2    | 13.0           | 24,700               |
|                  | 5                | ●     | MDE 1220S13H05 | 83.9                | 102.2            | 169.2              | 2.2    | 13.0           | 28,100               |
|                  | 8                | ●     | MDE 1220S13H08 | 121.4               | 139.7            | 208.2              | 2.2    | 13.0           | 37,800               |
| 12.3             | 3                | ●     | MDE 1230S13H03 | 46.3                | 64.7             | 130.2              | 2.2    | 13.0           | 24,700               |
|                  | 5                | ●     | MDE 1230S13H05 | 83.8                | 102.2            | 169.2              | 2.2    | 13.0           | 28,100               |
|                  | 8                | ●     | MDE 1230S13H08 | 121.3               | 139.7            | 208.2              | 2.2    | 13.0           | 37,800               |
| 12.4             | 3                | ●     | MDE 1240S13H03 | 46.2                | 64.8             | 130.3              | 2.3    | 13.0           | 24,700               |
|                  | 5                | ●     | MDE 1240S13H05 | 83.7                | 102.3            | 169.3              | 2.3    | 13.0           | 28,100               |
|                  | 8                | ●     | MDE 1240S13H08 | 121.2               | 139.8            | 208.3              | 2.3    | 13.0           | 37,800               |
| 12.5             | 3                | ●     | MDE 1250S13H03 | 46.1                | 64.8             | 130.3              | 2.3    | 13.0           | 24,700               |
|                  | 5                | ●     | MDE 1250S13H05 | 83.6                | 102.3            | 169.3              | 2.3    | 13.0           | 28,100               |
|                  | 8                | ●     | MDE 1250S13H08 | 121.1               | 139.8            | 208.3              | 2.3    | 13.0           | 37,800               |
| 12.6             | 3                | ●     | MDE 1260S13H03 | 48.4                | 67.3             | 130.3              | 2.3    | 13.0           | 25,100               |
|                  | 5                | ●     | MDE 1260S13H05 | 87.4                | 106.3            | 169.3              | 2.3    | 13.0           | 28,600               |
|                  | 8                | ●     | MDE 1260S13H08 | 126.4               | 145.3            | 208.3              | 2.3    | 13.0           | 38,300               |
| 12.7             | 3                | ●     | MDE 1270S13H03 | 48.3                | 67.3             | 130.3              | 2.3    | 13.0           | 25,100               |
|                  | 5                | ●     | MDE 1270S13H05 | 87.3                | 106.3            | 169.3              | 2.3    | 13.0           | 28,600               |
|                  | 8                | ●     | MDE 1270S13H08 | 126.3               | 145.3            | 208.3              | 2.3    | 13.0           | 38,300               |
| 12.8             | 3                | ●     | MDE 1280S13H03 | 48.1                | 67.3             | 130.3              | 2.3    | 13.0           | 25,100               |
|                  | 5                | ●     | MDE 1280S13H05 | 87.1                | 106.3            | 169.3              | 2.3    | 13.0           | 28,600               |
|                  | 8                | ●     | MDE 1280S13H08 | 126.1               | 145.3            | 208.3              | 2.3    | 13.0           | 38,300               |
| 12.9             | 3                | ●     | MDE 1290S13H03 | 48.0                | 67.3             | 130.3              | 2.3    | 13.0           | 25,100               |
|                  | 5                | ●     | MDE 1290S13H05 | 87.0                | 106.3            | 169.3              | 2.3    | 13.0           | 28,600               |
|                  | 8                | ●     | MDE 1290S13H08 | 126.0               | 145.3            | 208.3              | 2.3    | 13.0           | 38,300               |
| 13.0             | 3                | ●     | MDE 1300S13H03 | 47.9                | 67.4             | 130.4              | 2.4    | 13.0           | 25,100               |
|                  | 5                | ●     | MDE 1300S13H05 | 86.9                | 106.4            | 169.4              | 2.4    | 13.0           | 28,600               |
|                  | 8                | ●     | MDE 1300S13H08 | 125.9               | 145.4            | 208.4              | 2.4    | 13.0           | 38,300               |
| 13.1             | 3                | ●     | MDE 1310S14H03 | 50.3                | 69.9             | 136.4              | 2.4    | 14.0           | 26,300               |
|                  | 5                | ●     | MDE 1310S14H05 | 90.8                | 110.4            | 178.4              | 2.4    | 14.0           | 30,100               |
|                  | 8                | ●     | MDE 1310S14H08 | 131.3               | 150.9            | 220.4              | 2.4    | 14.0           | 42,900               |

Grade ACT100

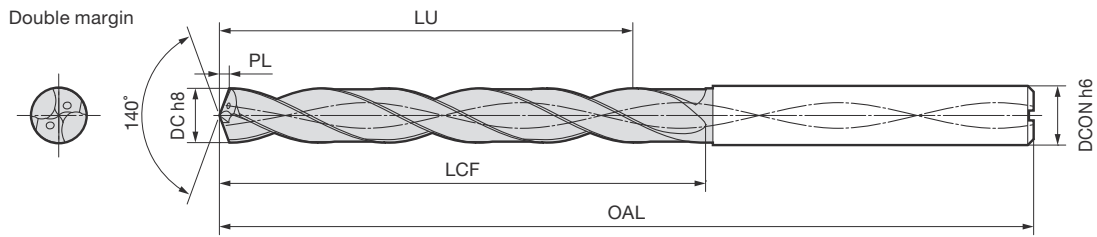
## ● Diameter: ø13.2 to 14.5 mm

| Diameter DC (mm) | Hole Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                | Standard Price (JPY) |
|------------------|------------------|-------|----------------|---------------------|------------------|--------------------|--------|----------------|----------------------|
|                  |                  |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia DCON |                      |
| 13.2             | 3                | ●     | MDE 1320S14H03 | 50.1                | 69.9             | 136.4              | 2.4    | 14.0           | 26,300               |
|                  | 5                | ●     | MDE 1320S14H05 | 90.6                | 110.4            | 178.4              | 2.4    | 14.0           | 30,100               |
|                  | 8                | ●     | MDE 1320S14H08 | 131.1               | 150.9            | 220.4              | 2.4    | 14.0           | 42,900               |
| 13.3             | 3                | ●     | MDE 1330S14H03 | 50.0                | 69.9             | 136.4              | 2.4    | 14.0           | 26,300               |
|                  | 5                | ●     | MDE 1330S14H05 | 90.5                | 110.4            | 178.4              | 2.4    | 14.0           | 30,100               |
|                  | 8                | ●     | MDE 1330S14H08 | 131.0               | 150.9            | 220.4              | 2.4    | 14.0           | 42,900               |
| 13.4             | 3                | ●     | MDE 1340S14H03 | 49.8                | 69.9             | 136.4              | 2.4    | 14.0           | 26,300               |
|                  | 5                | ●     | MDE 1340S14H05 | 90.3                | 110.4            | 178.4              | 2.4    | 14.0           | 30,100               |
|                  | 8                | ●     | MDE 1340S14H08 | 130.8               | 150.9            | 220.4              | 2.4    | 14.0           | 42,900               |
| 13.5             | 3                | ●     | MDE 1350S14H03 | 49.8                | 70.0             | 136.5              | 2.5    | 14.0           | 26,300               |
|                  | 5                | ●     | MDE 1350S14H05 | 90.3                | 110.5            | 178.5              | 2.5    | 14.0           | 30,100               |
|                  | 8                | ●     | MDE 1350S14H08 | 130.8               | 151.0            | 220.5              | 2.5    | 14.0           | 42,900               |
| 13.6             | 3                | ●     | MDE 1360S14H03 | 52.1                | 72.5             | 136.5              | 2.5    | 14.0           | 26,800               |
|                  | 5                | ●     | MDE 1360S14H05 | 94.1                | 114.5            | 178.5              | 2.5    | 14.0           | 30,600               |
|                  | 8                | ●     | MDE 1360S14H08 | 136.1               | 156.5            | 220.5              | 2.5    | 14.0           | 43,500               |
| 13.7             | 3                | ●     | MDE 1370S14H03 | 52.0                | 72.5             | 136.5              | 2.5    | 14.0           | 26,800               |
|                  | 5                | ●     | MDE 1370S14H05 | 94.0                | 114.5            | 178.5              | 2.5    | 14.0           | 30,600               |
|                  | 8                | ●     | MDE 1370S14H08 | 136.0               | 156.5            | 220.5              | 2.5    | 14.0           | 43,500               |
| 13.8             | 3                | ●     | MDE 1380S14H03 | 51.8                | 72.5             | 136.5              | 2.5    | 14.0           | 26,800               |
|                  | 5                | ●     | MDE 1380S14H05 | 93.8                | 114.5            | 178.5              | 2.5    | 14.0           | 30,600               |
|                  | 8                | ●     | MDE 1380S14H08 | 135.8               | 156.5            | 220.5              | 2.5    | 14.0           | 43,500               |
| 13.9             | 3                | ●     | MDE 1390S14H03 | 51.7                | 72.5             | 136.5              | 2.5    | 14.0           | 26,800               |
|                  | 5                | ●     | MDE 1390S14H05 | 93.7                | 114.5            | 178.5              | 2.5    | 14.0           | 30,600               |
|                  | 8                | ●     | MDE 1390S14H08 | 135.7               | 156.5            | 220.5              | 2.5    | 14.0           | 43,500               |
| 14.0             | 3                | ●     | MDE 1400S14H03 | 51.5                | 72.5             | 136.5              | 2.5    | 14.0           | 26,800               |
|                  | 5                | ●     | MDE 1400S14H05 | 93.5                | 114.5            | 178.5              | 2.5    | 14.0           | 30,600               |
|                  | 8                | ●     | MDE 1400S14H08 | 135.5               | 156.5            | 220.5              | 2.5    | 14.0           | 43,500               |
| 14.1             | 3                | ●     | MDE 1410S15H03 | 54.0                | 75.1             | 142.6              | 2.6    | 15.0           | 29,600               |
|                  | 5                | ●     | MDE 1410S15H05 | 97.5                | 118.6            | 187.6              | 2.6    | 15.0           | 33,900               |
|                  | 8                | ●     | MDE 1410S15H08 | 141.0               | 162.1            | 232.6              | 2.6    | 15.0           | 51,500               |
| 14.2             | 3                | ●     | MDE 1420S15H03 | 53.8                | 75.1             | 142.6              | 2.6    | 15.0           | 29,600               |
|                  | 5                | ●     | MDE 1420S15H05 | 97.3                | 118.6            | 187.6              | 2.6    | 15.0           | 33,900               |
|                  | 8                | ●     | MDE 1420S15H08 | 140.8               | 162.1            | 232.6              | 2.6    | 15.0           | 51,500               |
| 14.3             | 3                | ●     | MDE 1430S15H03 | 53.7                | 75.1             | 142.6              | 2.6    | 15.0           | 29,600               |
|                  | 5                | ●     | MDE 1430S15H05 | 97.2                | 118.6            | 187.6              | 2.6    | 15.0           | 33,900               |
|                  | 8                | ●     | MDE 1430S15H08 | 140.7               | 162.1            | 232.6              | 2.6    | 15.0           | 51,500               |
| 14.4             | 3                | ●     | MDE 1440S15H03 | 53.5                | 75.1             | 142.6              | 2.6    | 15.0           | 29,600               |
|                  | 5                | ●     | MDE 1440S15H05 | 97.0                | 118.6            | 187.6              | 2.6    | 15.0           | 33,900               |
|                  | 8                | ●     | MDE 1440S15H08 | 140.5               | 162.1            | 232.6              | 2.6    | 15.0           | 51,500               |
| 14.5             | 3                | ●     | MDE 1450S15H03 | 53.4                | 75.1             | 142.6              | 2.6    | 15.0           | 29,600               |
|                  | 5                | ●     | MDE 1450S15H05 | 96.9                | 118.6            | 187.6              | 2.6    | 15.0           | 33,900               |
|                  | 8                | ●     | MDE 1450S15H08 | 140.4               | 162.1            | 232.6              | 2.6    | 15.0           | 51,500               |

Grade ACT100



# MDE-H Type (Internal Coolant Supply)



## ● Diameter: ø14.6 to 15.9 mm

| Diameter DC (mm) | Hole Depth (L/D) | Stock | Cat. No.       | Dimensions (mm)     |                  |                    |        |                 | Standard Price (JPY) |
|------------------|------------------|-------|----------------|---------------------|------------------|--------------------|--------|-----------------|----------------------|
|                  |                  |       |                | Effective Length LU | Flute Length LCF | Overall Length OAL | Tip PL | Shank Dia. DCON |                      |
| 14.6             | 3                | ●     | MDE 1460S15H03 | 55.8                | 77.7             | 142.7              | 2.7    | 15.0            | 30,200               |
|                  | 5                | ●     | MDE 1460S15H05 | 100.8               | 122.7            | 187.7              | 2.7    | 15.0            | 34,400               |
|                  | 8                | ●     | MDE 1460S15H08 | 145.8               | 167.7            | 232.7              | 2.7    | 15.0            | 52,200               |
| 14.7             | 3                | ●     | MDE 1470S15H03 | 55.7                | 77.7             | 142.7              | 2.7    | 15.0            | 30,200               |
|                  | 5                | ●     | MDE 1470S15H05 | 100.7               | 122.7            | 187.7              | 2.7    | 15.0            | 34,400               |
|                  | 8                | ●     | MDE 1470S15H08 | 145.7               | 167.7            | 232.7              | 2.7    | 15.0            | 52,200               |
| 14.8             | 3                | ●     | MDE 1480S15H03 | 55.5                | 77.7             | 142.7              | 2.7    | 15.0            | 30,200               |
|                  | 5                | ●     | MDE 1480S15H05 | 100.5               | 122.7            | 187.7              | 2.7    | 15.0            | 34,400               |
|                  | 8                | ●     | MDE 1480S15H08 | 145.5               | 167.7            | 232.7              | 2.7    | 15.0            | 52,200               |
| 14.9             | 3                | ●     | MDE 1490S15H03 | 55.4                | 77.7             | 142.7              | 2.7    | 15.0            | 30,200               |
|                  | 5                | ●     | MDE 1490S15H05 | 100.4               | 122.7            | 187.7              | 2.7    | 15.0            | 34,400               |
|                  | 8                | ●     | MDE 1490S15H08 | 145.4               | 167.7            | 232.7              | 2.7    | 15.0            | 52,200               |
| 15.0             | 3                | ●     | MDE 1500S15H03 | 55.2                | 77.7             | 142.7              | 2.7    | 15.0            | 30,200               |
|                  | 5                | ●     | MDE 1500S15H05 | 100.2               | 122.7            | 187.7              | 2.7    | 15.0            | 34,400               |
|                  | 8                | ●     | MDE 1500S15H08 | 145.2               | 167.7            | 232.7              | 2.7    | 15.0            | 52,200               |
| 15.1             | 3                | ●     | MDE 1510S16H03 | 57.6                | 80.2             | 148.7              | 2.7    | 16.0            | 31,500               |
|                  | 5                | ●     | MDE 1510S16H05 | 104.1               | 126.7            | 196.7              | 2.7    | 16.0            | 36,100               |
|                  | 8                | ●     | MDE 1510S16H08 | 150.6               | 173.2            | 244.7              | 2.7    | 16.0            | 58,300               |
| 15.2             | 3                | ●     | MDE 1520S16H03 | 57.5                | 80.3             | 148.8              | 2.8    | 16.0            | 31,500               |
|                  | 5                | ●     | MDE 1520S16H05 | 104.0               | 126.8            | 196.8              | 2.8    | 16.0            | 36,100               |
|                  | 8                | ●     | MDE 1520S16H08 | 150.5               | 173.3            | 244.8              | 2.8    | 16.0            | 58,300               |
| 15.3             | 3                | ●     | MDE 1530S16H03 | 57.4                | 80.3             | 148.8              | 2.8    | 16.0            | 31,500               |
|                  | 5                | ●     | MDE 1530S16H05 | 103.9               | 126.8            | 196.8              | 2.8    | 16.0            | 36,100               |
|                  | 8                | ●     | MDE 1530S16H08 | 150.4               | 173.3            | 244.8              | 2.8    | 16.0            | 58,300               |
| 15.4             | 3                | ●     | MDE 1540S16H03 | 57.2                | 80.3             | 148.8              | 2.8    | 16.0            | 31,500               |
|                  | 5                | ●     | MDE 1540S16H05 | 103.7               | 126.8            | 196.8              | 2.8    | 16.0            | 36,100               |
|                  | 8                | ●     | MDE 1540S16H08 | 150.2               | 173.3            | 244.8              | 2.8    | 16.0            | 58,300               |
| 15.5             | 3                | ●     | MDE 1550S16H03 | 57.1                | 80.3             | 148.8              | 2.8    | 16.0            | 31,500               |
|                  | 5                | ●     | MDE 1550S16H05 | 103.6               | 126.8            | 196.8              | 2.8    | 16.0            | 36,100               |
|                  | 8                | ●     | MDE 1550S16H08 | 150.1               | 173.3            | 244.8              | 2.8    | 16.0            | 58,300               |
| 15.6             | 3                | ●     | MDE 1560S16H03 | 59.4                | 82.8             | 148.8              | 2.8    | 16.0            | 32,000               |
|                  | 5                | ●     | MDE 1560S16H05 | 107.4               | 130.8            | 196.8              | 2.8    | 16.0            | 36,600               |
|                  | 8                | ●     | MDE 1560S16H08 | 155.4               | 178.8            | 244.8              | 2.8    | 16.0            | 58,900               |
| 15.7             | 3                | ●     | MDE 1570S16H03 | 59.4                | 82.9             | 148.9              | 2.9    | 16.0            | 32,000               |
|                  | 5                | ●     | MDE 1570S16H05 | 107.4               | 130.9            | 196.9              | 2.9    | 16.0            | 36,600               |
|                  | 8                | ●     | MDE 1570S16H08 | 155.4               | 178.9            | 244.9              | 2.9    | 16.0            | 58,900               |
| 15.8             | 3                | ●     | MDE 1580S16H03 | 59.2                | 82.9             | 148.9              | 2.9    | 16.0            | 32,000               |
|                  | 5                | ●     | MDE 1580S16H05 | 107.2               | 130.9            | 196.9              | 2.9    | 16.0            | 36,600               |
|                  | 8                | ●     | MDE 1580S16H08 | 155.2               | 178.9            | 244.9              | 2.9    | 16.0            | 58,900               |
| 15.9             | 3                | ●     | MDE 1590S16H03 | 59.1                | 82.9             | 148.9              | 2.9    | 16.0            | 32,000               |
|                  | 5                | ●     | MDE 1590S16H05 | 107.1               | 130.9            | 196.9              | 2.9    | 16.0            | 36,600               |
|                  | 8                | ●     | MDE 1590S16H08 | 155.1               | 178.9            | 244.9              | 2.9    | 16.0            | 58,900               |

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 | Overall Length OAL | Tip PL | Shank Dia. DCON |                      |
| 16.0             | 3                | ●     | MDE 1600S16H03 | 58.9                | 82.9             | 148.9              | 2.9    | 16.0            | 33,400               |
|                  | 5                | ●     | MDE 1600S16H05 | 106.9               | 130.9            | 196.9              | 2.9    | 16.0            | 38,200               |
|                  | 8                | ●     | MDE 1600S16H08 | 154.9               | 178.9            | 244.9              | 2.9    | 16.0            | 61,400               |
| 16.5             | 3                | ●     | MDE 1650S17H03 | 60.8                | 85.5             | 155.0              | 3.0    | 17.0            | 36,600               |
|                  | 5                | ●     | MDE 1650S17H05 | 110.3               | 135.0            | 206.0              | 3.0    | 17.0            | 45,700               |
| 17.0             | 3                | ●     | MDE 1700S17H03 | 62.6                | 88.1             | 155.1              | 3.1    | 17.0            | 37,000               |
|                  | 5                | ●     | MDE 1700S17H05 | 113.6               | 139.1            | 206.1              | 3.1    | 17.0            | 46,200               |
| 17.5             | 3                | ●     | MDE 1750S18H03 | 64.5                | 90.7             | 161.2              | 3.2    | 18.0            | 43,100               |
|                  | 5                | ●     | MDE 1750S18H05 | 116.9               | 143.2            | 217.3              | 3.2    | 18.0            | 53,600               |
| 18.0             | 3                | ●     | MDE 1800S18H03 | 66.3                | 93.3             | 161.3              | 3.3    | 18.0            | 43,600               |
|                  | 5                | ●     | MDE 1800S18H05 | 120.3               | 147.3            | 217.3              | 3.3    | 18.0            | 54,100               |
| 18.5             | 3                | ●     | MDE 1850S19H03 | 68.2                | 95.9             | 167.4              | 3.4    | 19.0            | 49,800               |
|                  | 5                | ●     | MDE 1850S19H05 | 123.6               | 151.4            | 224.4              | 3.4    | 19.0            | 61,600               |
| 19.0             | 3                | ●     | MDE 1900S19H03 | 70.0                | 98.5             | 167.5              | 3.5    | 19.0            | 50,200               |
|                  | 5                | ●     | MDE 1900S19H05 | 127.0               | 155.5            | 224.5              | 3.5    | 19.0            | 62,000               |
| 19.5             | 3                | ●     | MDE 1950S20H03 | 71.8                | 101.0            | 173.5              | 3.5    | 20.0            | 56,300               |
|                  | 5                | ●     | MDE 1950S20H05 | 130.3               | 159.5            | 233.5              | 3.5    | 20.0            | 69,500               |
| 20.0             | 3                | ●     | MDE 2000S20H03 | 73.6                | 103.6            | 173.6              | 3.6    | 20.0            | 56,800               |
|                  | 5                | ●     | MDE 2000S20H05 | 133.6               | 163.6            | 233.6              | 3.6    | 20.0            | 70,000               |

Grade ACT100

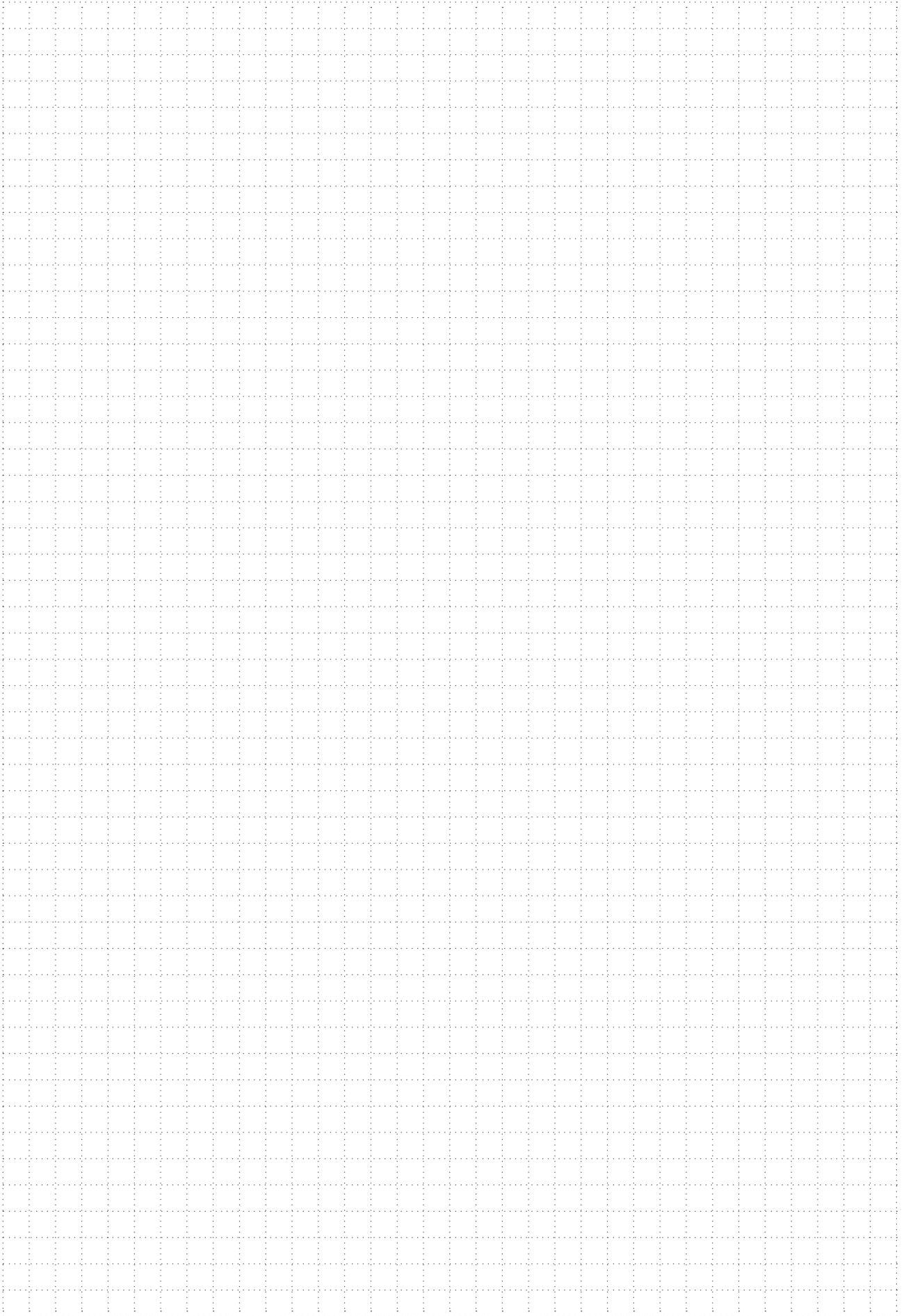
## ● Recommended Cutting Conditions (MDE-H Type, Internal Coolant Supply, 3D/5D/8D)

| Work Material           |          | Mild Steel/Low Carbon Steel<br>SS400/S15C<br>up to 160HB |                    | Carbon Steel<br>S35C/S50C<br>up to 230HB |                    | Alloy Steel<br>SCM/SCr<br>20 to 30HRC |                    | Alloy Steel<br>SCM/SCr<br>30 to 38HRC |                    |
|-------------------------|----------|--|--------------------|--|--------------------|---------------------------------------|--------------------|---------------------------------------|--------------------|
| Cutting speed           | Dia. <ø3 | 30 to 80m/min  |                    | 30 to 80m/min                            |                    | 30 to 80m/min                         |                    | 30 to 80m/min                         |                    |
|                         | Dia. ≥ø3 | 60 to 100m/min   |                    | 60 to 120m/min                           |                    | 50 to 100m/min                        |                    | 40 to 80m/min                         |                    |
| Diameter DC             |          | Spindle speed (min <sup>-1</sup> )                       | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )       | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )    | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )    | Feed rate (mm/rev) |
| ø1.0                    |          | 9,500  | 0.02 to 0.04       | 9,500                                    | 0.02 to 0.04       | 9,500                                 | 0.02 to 0.04       | 9,500                                 | 0.02 to 0.03       |
| ø1.5                    |          | 8,500  | 0.03 to 0.06       | 8,500                                    | 0.03 to 0.06       | 8,500                                 | 0.03 to 0.06       | 8,500                                 | 0.03 to 0.06       |
| ø2.0                    |          | 9,000  | 0.04 to 0.08       | 8,000                                    | 0.04 to 0.08       | 8,000                                 | 0.04 to 0.08       | 8,000                                 | 0.04 to 0.08       |
| ø2.5                    |          | 9,500  | 0.04 to 0.08       | 9,000                                    | 0.04 to 0.08       | 8,500                                 | 0.04 to 0.08       | 7,600                                 | 0.04 to 0.08       |
| ø3.0                    |          | 9,600  | 0.05 to 0.12       | 8,500                                    | 0.05 to 0.12       | 7,500                                 | 0.05 to 0.12       | 6,400                                 | 0.05 to 0.12       |
| ø4.0                    |          | 7,200  | 0.07 to 0.17       | 6,400                                    | 0.07 to 0.17       | 5,600                                 | 0.07 to 0.17       | 4,800                                 | 0.07 to 0.17       |
| ø5.0                    |          | 5,800  | 0.08 to 0.20       | 5,100                                    | 0.08 to 0.20       | 4,500                                 | 0.08 to 0.20       | 3,900                                 | 0.08 to 0.20       |
| ø6.0                    |          | 4,800  | 0.10 to 0.20       | 4,300                                    | 0.10 to 0.20       | 3,800                                 | 0.10 to 0.20       | 3,200                                 | 0.10 to 0.20       |
| ø7.0                    |          | 4,100  | 0.12 to 0.23       | 3,700                                    | 0.12 to 0.23       | 3,200                                 | 0.12 to 0.23       | 2,800                                 | 0.12 to 0.23       |
| ø8.0                    |          | 3,600  | 0.12 to 0.25       | 3,200                                    | 0.12 to 0.25       | 2,800                                 | 0.12 to 0.25       | 2,400                                 | 0.12 to 0.25       |
| ø9.0                    |          | 3,200  | 0.14 to 0.25       | 2,900                                    | 0.14 to 0.25       | 2,500                                 | 0.14 to 0.25       | 2,200                                 | 0.14 to 0.25       |
| ø10.0                   |          | 2,900  | 0.16 to 0.28       | 2,600                                    | 0.16 to 0.28       | 2,300                                 | 0.16 to 0.28       | 2,000                                 | 0.16 to 0.28       |
| ø11.0                   |          | 2,700  | 0.18 to 0.30       | 2,400                                    | 0.18 to 0.30       | 2,100                                 | 0.18 to 0.30       | 1,800                                 | 0.18 to 0.30       |
| ø12.0                   |          | 2,400  | 0.20 to 0.30       | 2,200                                    | 0.20 to 0.30       | 1,900                                 | 0.20 to 0.30       | 1,600                                 | 0.20 to 0.30       |
| ø14.0                   |          | 2,100  | 0.20 to 0.30       | 1,900                                    | 0.20 to 0.30       | 1,600                                 | 0.20 to 0.30       | 1,400                                 | 0.20 to 0.30       |
| ø16.0                   |          | 1,800  | 0.20 to 0.30       | 1,600                                    | 0.20 to 0.30       | 1,400                                 | 0.20 to 0.30       | 1,200                                 | 0.20 to 0.30       |
| ø18.0                   |          | 1,600  | 0.20 to 0.30       | 1,500                                    | 0.20 to 0.30       | 1,300                                 | 0.20 to 0.30       | 1,100                                 | 0.20 to 0.30       |
| ø20.0                   |          | 1,500  | 0.20 to 0.30       | 1,300                                    | 0.20 to 0.30       | 1,200                                 | 0.20 to 0.30       | 1,000                                 | 0.20 to 0.30       |
| High-efficiency Product |          | HGS Type   |                    | HGS Type                                 |                    | HGS Type                              |                    | HGS Type                              |                    |

| Work Material           |          | Cast Iron<br>FC250<br>to 280HB     |                    | Ductile Cast Iron<br>FCD450/FCD600<br>to 270HB |                    | Stainless Steel (oil-based drilling)<br>SUS304/SUS410<br>to 200HB |                    | Special Steel/Pre-hardened Steel<br>SKS2/SKD61 (non-tempered)<br>30 to 38 HRC |                    |
|-------------------------|----------|------------------------------------|--------------------|--|--------------------|---|--------------------|---|--------------------|
| Cutting speed           | Dia. <ø3 | 30 to 80m/min                      |                    | 30 to 80m/min                                  |                    | 20 to 50m/min   |                    | 30 to 60m/min   |                    |
|                         | Dia. ≥ø3 | 60 to 100m/min                     |                    | 50 to 100m/min                                 |                    | 20 to 50m/min   |                    | 30 to 60m/min   |                    |
| Diameter DC             |          | Spindle speed (min <sup>-1</sup> ) | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )             | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )                                | Feed rate (mm/rev) | Spindle speed (min <sup>-1</sup> )  | Feed rate (mm/rev) |
| ø1.0                    |          | 9,500                              | 0.02 to 0.04       | 9,500  | 0.02 to 0.04       | 9,500   | 0.02 to 0.03       | 9,500   | 0.02 to 0.03       |
| ø1.5                    |          | 8,500                              | 0.03 to 0.06       | 8,500  | 0.03 to 0.06       | 8,500   | 0.02 to 0.05       | 8,500   | 0.02 to 0.04       |
| ø2.0                    |          | 8,000                              | 0.04 to 0.08       | 8,000  | 0.04 to 0.08       | 8,000   | 0.03 to 0.06       | 7,100   | 0.03 to 0.06       |
| ø2.5                    |          | 9,000                              | 0.04 to 0.08       | 8,500  | 0.04 to 0.08       | 7,600   | 0.03 to 0.07       | 5,700   | 0.03 to 0.06       |
| ø3.0                    |          | 8,500                              | 0.06 to 0.15       | 7,500  | 0.05 to 0.12       | 6,400   | 0.05 to 0.12       | 4,800   | 0.05 to 0.10       |
| ø4.0                    |          | 6,400                              | 0.08 to 0.18       | 5,600  | 0.07 to 0.17       | 4,800   | 0.07 to 0.17       | 3,600   | 0.06 to 0.13       |
| ø5.0                    |          | 5,100                              | 0.10 to 0.20       | 4,500  | 0.08 to 0.20       | 3,900   | 0.08 to 0.20       | 2,900   | 0.07 to 0.15       |
| ø6.0                    |          | 4,300                              | 0.12 to 0.23       | 3,800  | 0.10 to 0.20       | 3,200   | 0.10 to 0.20       | 2,400   | 0.08 to 0.18       |
| ø7.0                    |          | 3,700                              | 0.12 to 0.23       | 3,200  | 0.12 to 0.23       | 2,800   | 0.10 to 0.23       | 2,100   | 0.10 to 0.20       |
| ø8.0                    |          | 3,200                              | 0.18 to 0.25       | 2,800  | 0.12 to 0.25       | 2,400   | 0.10 to 0.20       | 1,800   | 0.12 to 0.22       |
| ø9.0                    |          | 2,900                              | 0.17 to 0.25       | 2,500  | 0.14 to 0.25       | 2,200   | 0.12 to 0.23       | 1,600   | 0.14 to 0.22       |
| ø10.0                   |          | 2,600                              | 0.18 to 0.28       | 2,300  | 0.16 to 0.28       | 2,000   | 0.12 to 0.23       | 1,500   | 0.16 to 0.25       |
| ø11.0                   |          | 2,400                              | 0.20 to 0.30       | 2,100  | 0.18 to 0.30       | 1,800   | 0.15 to 0.25       | 1,400   | 0.18 to 0.28       |
| ø12.0                   |          | 2,200                              | 0.20 to 0.30       | 1,900  | 0.20 to 0.30       | 1,600   | 0.15 to 0.25       | 1,200   | 0.18 to 0.28       |
| ø14.0                   |          | 1,900                              | 0.20 to 0.30       | 1,600  | 0.20 to 0.30       | 1,400   | 0.15 to 0.25       | 1,100   | 0.18 to 0.30       |
| ø16.0                   |          | 1,600                              | 0.20 to 0.30       | 1,400  | 0.20 to 0.30       | 1,200   | 0.15 to 0.25       | 900   | 0.18 to 0.30       |
| ø18.0                   |          | 1,500                              | 0.20 to 0.30       | 1,300  | 0.20 to 0.30       | 1,100   | 0.15 to 0.25       | 800   | 0.18 to 0.30       |
| ø20.0                   |          | 1,300                              | 0.20 to 0.30       | 1,200  | 0.20 to 0.30       | 1,000   | 0.15 to 0.25       | 720   | 0.18 to 0.30       |
| High-efficiency Product |          | HX Type (HY Type)                  |                    | HX Type (HY Type)                              |                    | MDM Type  |                    | HGS Type  |                    |

1. The recommended cutting conditions below are for cases where a water soluble coolant is used.
2. MQL coolant is also usable. Note that external mixing MQL equipment may not generate MQL with a shank diameter (DCON) of ø16mm or more.
3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
4. Make sure the flute does not enter the collet.
5. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.  
\* If stable drilling is still not possible, pre-machining of the flat surface with the MDF Flat MULTIDRILL is recommended.
6. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

# MEMO





- 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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