

# SEC-MULTIDRILL SMD Series

Rev.24



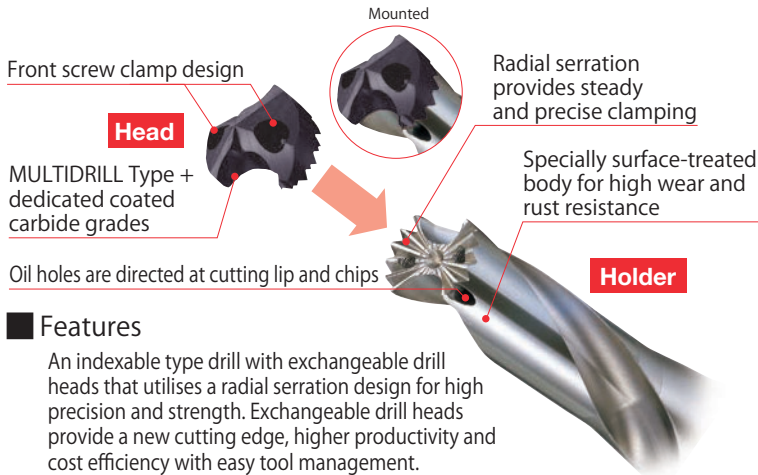
- Flanged Holder Lineup Expanded by 148 Items
- Lineup of MSL type Heads Ideal for Drilling in Mild Steel and Stainless Steel
- Supports Deep Holes and Long Overhang Drilling with 12D Holder
- Cutting Edge Selectable by Application
- Regrindable Cutting Edge (excluding MFS Type)

Diameter Lineup (Drill Heads)

|     |                  |   |   |   |   |   |   |
|-----|------------------|---|---|---|---|---|---|
| MTL | ø12.0 to ø42.5mm | P | M | K | N | S | H |
| MSL | ø12.0 to ø30.8mm | P | M | K | N | S | H |
| MFS | ø12.0 to ø30.0mm | P | M | K | N | S | H |
| MB  | ø24.5 to ø26.7mm | P | M | K | N | S | H |



MSL Type



### Features

An indexable type drill with exchangeable drill heads that utilizes a radial serration design for high precision and strength. Exchangeable drill heads provide a new cutting edge, higher productivity and cost efficiency with easy tool management. Regrinding allowance of 1.5mm to 3mm makes further tool cost reductions possible.

\* Regrinding is available only for MTL/MSL/MEL/MB

### Product Range

| Head     | Applications    | L/D: Holder Type             | DC Range   |
|----------|-----------------|------------------------------|--|
| MTL Type | General Steel   | 1.5 : -1.5D(F) Type / S Type | -1.5D(F) to -12D Type / S Type                   |
|          |                 | 3 : M Type / -3D(F) Type     | ø12.0 to ø30.8                                   |
|          |                 | 5 : L Type / -5D(F) Type     | M Type / L Type                                  |
|          |                 | 8 : D Type / -8D(F) Type     | ø12.0 to ø42.5                                   |
| MSL Type | SUS<br>SS<br>FC | 1.5 : -1.5D(F) Type / S Type | -1.5D(F) to -12D Type / M Type / L Type / S Type |
|          |                 | 3 : M Type / -3D(F) Type     | ø12.0 to ø30.8                                   |
|          |                 | 5 : L Type / -5D(F) Type     | D Type   |
|          |                 | 8 : D Type / -8D(F) Type     | ø13.5 to ø30.8                                   |
| MFS Type | Spot Facing     | 1.5 : -1.5D(F) Type / S Type | ø12.0 to ø30.0                                   |
| MB Type  | Bridge          | 3 : B3 Type                  | ø24.5 to ø26.7                                   |

\*MFS Type can also be used with 3D, 5D, 8D, and 12D holders. S Type holder has been changed to -1.5DF Type.

MFS Type P16 MB Type P24

### Tool Life and Cost

#### Comparison of Tool Life

#### Tool Comparison for Drilling of 1,000 Workpieces

#### Results

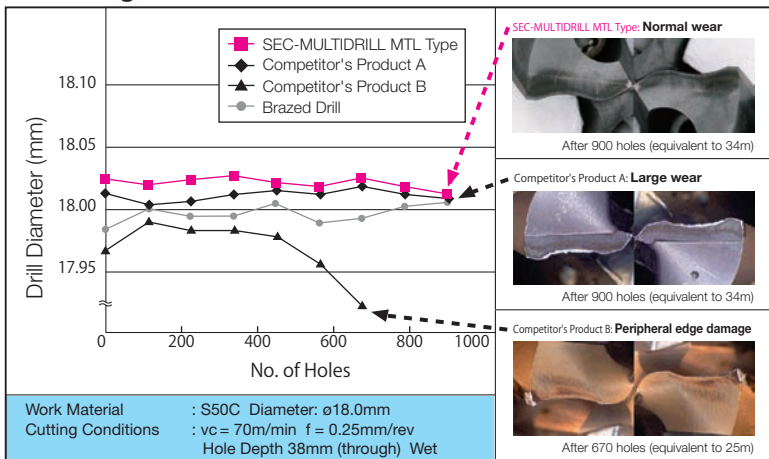
For regrinding purposes, brazed drills are only used up to 50-70% of their actual tool life potential. SEC-MULTIDRILL MTL Type can be used up to 100%!

SEC-MULTIDRILL MTL Type offers: Double the tool life of brazed drills! Shorter tool change time!

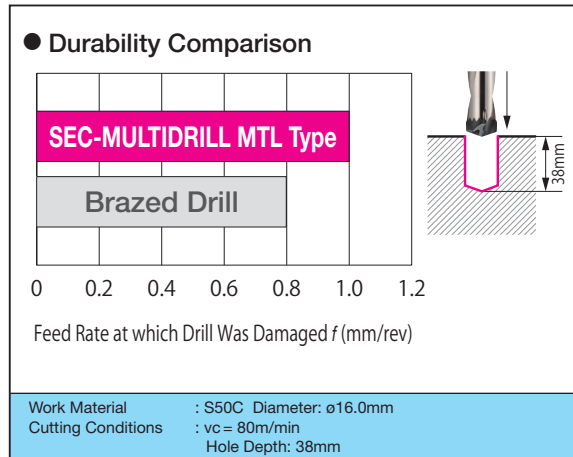
#### Workpiece Example and Cutting Conditions

SEC-MULTIDRILL MTL Type  
Head: SMDT1800MTL  
Holder: SMDH180M  
Work Material: S50C (Machine Component), Wet

### Drilling Precision

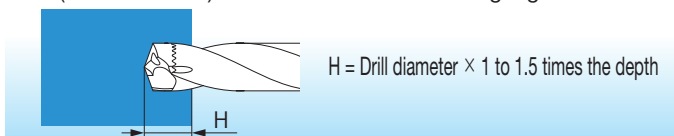


### Tool Strength

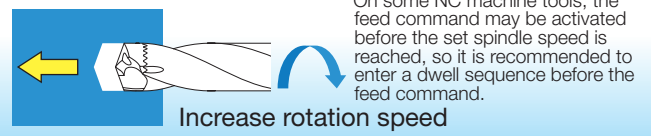
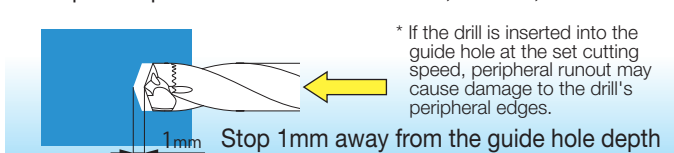


### Recommended Drilling Method for 12D Type: Use a hydro chuck, milling chuck or collet chuck to hold the 12D drill body

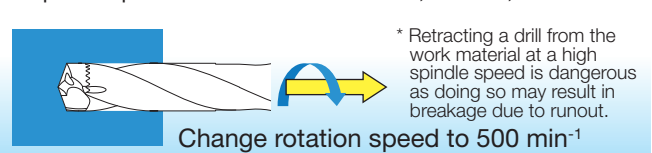
- (1) SMDH000-1.5D(F) Type (1.5D Holder) + MTL Type (head) to drill a guide hole
  - Use a 1.5D drill body and a drill head with the same diameter (same Cat. No.) as the 12D drill when drilling a guide hole.
- (2) Feed the SMDH000-12D (12D holder) + MTL Type (head) through the guide hole at a low spindle speed
  - Spindle speed: 500min<sup>-1</sup> ● Feed rate: 1,000 to 2,000mm/min
- (3) Increase spindle speed until the set spindle speed is reached, then start drilling
- (4) After drilling, rotation speed is reduced and the drill is retracted from the work material
  - Spindle speed: 500min<sup>-1</sup> ● Feed rate: 1,000 to 2,000mm/min



\* If the drill is inserted into the guide hole at the set cutting speed, peripheral runout may cause damage to the drill's peripheral edges.



\* On some NC machine tools, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.



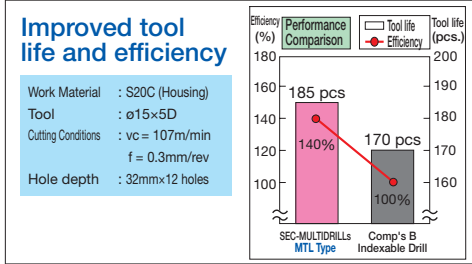
# MTL Type Suitable for high-efficiency drilling of general steel

X-Type Thinning



- **Excellent cutting edge strength**  
Large edge treatment is used to reduce fracture of the cutting edge.
- **Stable machined hole accuracy**  
X Type thinning achieves excellent centring on drill entry and stable drilling.

## Longer Tool Life



## Drilling Precision



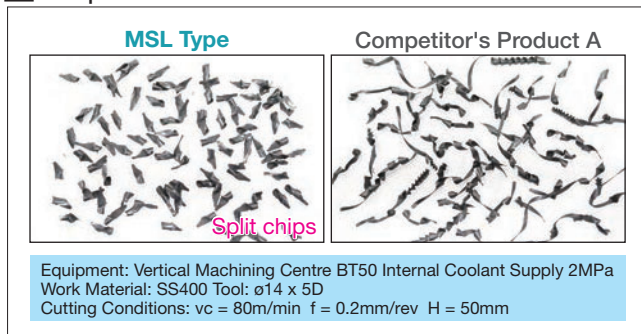
# MSL Type Stable drilling of mild steel, stainless steel, etc.

Special R web thinning

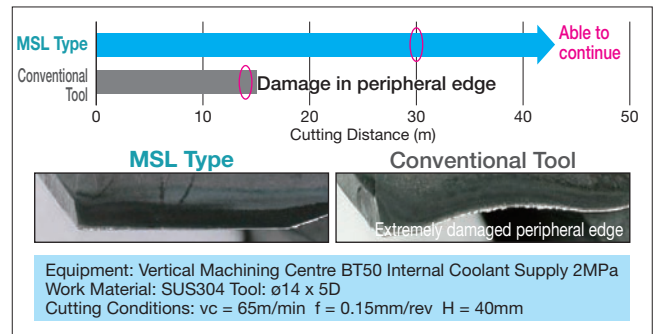


- **Overwhelming cutting edge sharpness in mild steel and SUS drilling**  
Newly designed linear cutting edge and special R web thinning enable improved chip evacuation and stable drilling.
- **Stable long tool life**  
NX Coat based on ABSOTECH™ technology for improved fracture resistance and adhesion resistance.

## Chip Control



## Longer Tool Life



## Recommended Cutting Conditions (MSL Type / MTL Type)

n: Spindle Speed (min<sup>-1</sup>), vc: Cutting Speed (m/min), f: Feed Rate (mm/rev)

| Work Material              | Mild Steel (up to 250HB)                  | General Steel (250 to 320HB) |                       | Hardened Steel (45HRC) | Stainless Steel (up to 200HB) | Gray Cast Iron        | Ductile Cast Iron     | Aluminum Alloy (Special Cutting Edge)* |                           |
|----------------------------|---|------------------------------|-----------------------|------------------------|-------------------------------|-----------------------|-----------------------|--|---------------------------|
|                            |   | MSL Type                     | MTL Type              |                        |                               |                       |                       |  |                           |
| Recommended Head           | MSL Type                                  | MTL Type                     | MSL Type              | MTL Type               | MSL Type                      | MTL Type / MSL Type   | MTL Type / MSL Type   | (Special Cutting Edge)*                |                           |
|                            | Dia. DC (mm)                              | Cutting Conditions           |                       | Cutting Conditions     |                               | Cutting Conditions    |                       | Cutting Conditions                     |                           |
|                            |   | Min. - Optimum - Max.        | Min. - Optimum - Max. | Min. - Optimum - Max.  | Min. - Optimum - Max.         | Min. - Optimum - Max. | Min. - Optimum - Max. | Min. - Optimum - Max.                  | Min. - Optimum - Max.     |
| up to $\phi 16.0$          | n   | 2,000 (1,400)                | 2,000 (1,400)         | 2,000 (1,400)          | 1,200 (1,000)                 | 1,200 (1,000)         | 1,400 (1,200)         | 1,200 (1,000)                          | 4,800 (4,000)             |
|                            | vc  | 80-100-120 (50-70-80)        | 70-100-120 (50-70-80) | 70-100-120 (50-70-80)  | 40-60-90 (30-50-70)           | 30-50-80 (30-50-60)   | 50-70-90 (40-60-80)   | 50-60-80 (40-50-70)                    | 200-240-260 (180-200-240) |
|                            | f   | 0.15-0.20-0.25               | 0.15-0.20-0.30        | 0.10-0.15-0.20         | 0.10-0.15-0.20                | 0.10-0.15-0.20        | 0.20-0.25-0.30        | 0.20-0.25-0.30                         | 0.35-0.45-0.55            |
| up to $\phi 20.0$          | n   | 1,600 (1,100)                | 1,600 (1,100)         | 1,600 (1,100)          | 1,000 (800)                   | 1,100 (950)           | 1,300 (1,100)         | 1,100 (950)                            | 3,800 (3,200)             |
|                            | vc  | 80-100-120 (50-70-80)        | 70-100-120 (50-70-80) | 70-100-120 (50-70-80)  | 40-60-90 (30-50-70)           | 30-60-90 (30-50-70)   | 60-80-100 (50-70-90)  | 50-70-90 (40-60-80)                    | 200-240-260 (180-200-240) |
|                            | f   | 0.15-0.25-0.30               | 0.20-0.25-0.35        | 0.15-0.20-0.25         | 0.15-0.20-0.25                | 0.10-0.20-0.25        | 0.20-0.30-0.35        | 0.20-0.25-0.35                         | 0.35-0.50-0.60            |
| up to $\phi 30.8$          | n   | 1,000 (700)                  | 1,000 (700)           | 1,000 (700)            | 600 (500)                     | 700 (600)             | 800 (700)             | 700 (600)                              | 2,500 (2,000)             |
|                            | vc  | 80-100-120 (50-70-80)        | 70-100-120 (50-70-80) | 70-100-120 (50-70-80)  | 40-60-90 (30-50-70)           | 30-60-90 (30-50-70)   | 60-80-100 (50-70-90)  | 50-70-90 (40-60-80)                    | 200-240-260 (180-200-240) |
|                            | f   | 0.20-0.25-0.30               | 0.20-0.25-0.35        | 0.15-0.20-0.25         | 0.15-0.20-0.25                | 0.10-0.20-0.25        | 0.20-0.30-0.40        | 0.25-0.30-0.35                         | 0.35-0.50-0.60            |
| Recommended Head           | Large Diameter MTL Type ( $\phi 31.0$ up) |                              |                       |                        |                               |                       |                       |  |                           |
|                            | n   | 650 (520)                    | 650 (520)             | 380 (300)              | 450 (300)                     | 520 (450)             | 450 (380)             | 1,800 (1,500)                          |                           |
|                            | vc  | 70-90-120 (50-70-80)         | 70-90-120 (50-70-80)  | 40-50-80 (30-40-60)    | 40-60-80 (30-40-60)           | 60-70-100 (50-60-90)  | 50-60-90 (40-50-70)   | 200-240-260 (180-200-240)              |                           |
| $\phi 31.0$ to $\phi 42.5$ | f   | 0.25-0.35-0.45               | 0.25-0.30-0.40        | 0.15-0.25-0.30         | 0.20-0.25-0.30                | 0.25-0.35-0.45        | 0.25-0.30-0.35        | 0.35-0.50-0.60                         |                           |

Note: Where machine and work clamp rigidity are good, conditions may be increased up to the maximum.

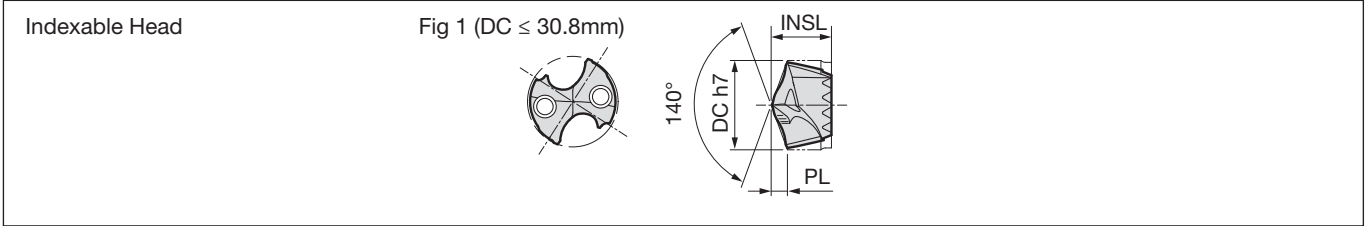
For 8D and 12D drills, use the cutting speeds in parentheses as a guideline. Before drilling 8D and 12D holes, a guide hole of a similar diameter is recommended.

(\*) Inquire if you require special drill heads for aluminum alloy.





\*For h7 tolerance, refer to Chapter N References in the General Catalogue.



Indexable Head MTL Type Diameter ø12.0 to 17.3mm Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |  |   |
|---------|-------|---------------|------------------|--------|--------------------|-----|--|---|
| 12.0    | ●     | SMDT 1200 MTL | 9.1              | 2.2    | SMDH120□           | 1   |  |   |
| 12.1    | ●     | SMDT 1210 MTL |                  |        |                    | 1   |  |   |
| 12.2    | ●     | SMDT 1220 MTL |                  | 1      |                    |     |  |   |
| 12.3    | ●     | SMDT 1230 MTL |                  | 1      |                    |     |  |   |
| 12.4    | ●     | SMDT 1240 MTL |                  | 2.3    |                    | 1   |  |   |
| 12.5    | ●     | SMDT 1250 MTL | 9.4              | 2.3    | SMDH125□           | 1   |  |   |
| 12.6    | ●     | SMDT 1260 MTL |                  |        |                    | 1   |  |   |
| 12.7    | ●     | SMDT 1270 MTL |                  |        |                    | 1   |  |   |
| 12.8    | ●     | SMDT 1280 MTL |                  |        |                    | 1   |  |   |
| 12.9    | ●     | SMDT 1290 MTL |                  |        |                    | 1   |  |   |
| 13.0    | ●     | SMDT 1300 MTL | 9.7              | 2.4    | SMDH130□           | 1   |  |   |
| 13.1    | ●     | SMDT 1310 MTL |                  |        |                    | 1   |  |   |
| 13.2    | ●     | SMDT 1320 MTL |                  |        |                    | 1   |  |   |
| 13.3    | ●     | SMDT 1330 MTL |                  |        |                    | 1   |  |   |
| 13.4    | ●     | SMDT 1340 MTL |                  |        |                    | 1   |  |   |
| 13.5    | ●     | SMDT 1350 MTL | 10.3             | 2.5    | SMDH140□           | 1   |  |   |
| 13.6    | ●     | SMDT 1360 MTL |                  |        |                    | 1   |  |   |
| 13.7    | ●     | SMDT 1370 MTL |                  |        |                    | 1   |  |   |
| 13.8    | ●     | SMDT 1380 MTL |                  |        |                    | 1   |  |   |
| 13.9    | ●     | SMDT 1390 MTL |                  |        |                    | 1   |  |   |
| 14.0    | ●     | SMDT 1400 MTL |                  | 1      |                    |     |  |   |
| 14.1    | ●     | SMDT 1410 MTL |                  | 1      |                    |     |  |   |
| 14.2    | ●     | SMDT 1420 MTL |                  | 1      |                    |     |  |   |
| 14.3    | ●     | SMDT 1430 MTL |                  | 1      |                    |     |  |   |
| 14.4    | ●     | SMDT 1440 MTL |                  | 1      |                    |     |  |   |
| 14.5    | ●     | SMDT 1450 MTL | 1                |        |                    |     |  |   |
| 14.6    | ●     | SMDT 1460 MTL | 11.0             | 2.7    | SMDH150□           | 1   |  |   |
| 14.7    | ●     | SMDT 1470 MTL |                  |        |                    | 1   |  |   |
| 14.8    | ●     | SMDT 1480 MTL |                  |        |                    | 1   |  |   |
| 14.9    | ●     | SMDT 1490 MTL |                  |        |                    | 1   |  |   |
| 15.0    | ●     | SMDT 1500 MTL |                  |        |                    | 1   |  |   |
| 15.1    | ●     | SMDT 1510 MTL |                  | 1      |                    |     |  |   |
| 15.2    | ●     | SMDT 1520 MTL |                  | 1      |                    |     |  |   |
| 15.3    | ●     | SMDT 1530 MTL |                  | 1      |                    |     |  |   |
| 15.4    | ●     | SMDT 1540 MTL |                  | 1      |                    |     |  |   |
| 15.5    | ●     | SMDT 1550 MTL |                  | 1      |                    |     |  |   |
| 15.6    | ●     | SMDT 1560 MTL | 11.6             | 2.8    | SMDH160□           | 1   |  |   |
| 15.7    | ●     | SMDT 1570 MTL |                  |        |                    | 1   |  |   |
| 15.8    | ●     | SMDT 1580 MTL |                  |        |                    | 1   |  |   |
| 15.9    | ●     | SMDT 1590 MTL |                  |        |                    | 1   |  |   |
| 16.0    | ●     | SMDT 1600 MTL |                  |        |                    | 1   |  |   |
| 16.1    | ●     | SMDT 1610 MTL |                  | 1      |                    |     |  |   |
| 16.2    | ●     | SMDT 1620 MTL |                  | 1      |                    |     |  |   |
| 16.3    | ●     | SMDT 1630 MTL |                  | 1      |                    |     |  |   |
| 16.4    | ●     | SMDT 1640 MTL |                  | 1      |                    |     |  |   |
| 16.5    | ●     | SMDT 1650 MTL |                  | 1      |                    |     |  |   |
| 16.6    | ●     | SMDT 1660 MTL | 12.2             | 3.0    | SMDH170□           | 1   |  |   |
| 16.7    | ●     | SMDT 1670 MTL |                  |        |                    | 1   |  |   |
| 16.8    | ●     | SMDT 1680 MTL |                  |        |                    | 1   |  |   |
| 16.9    | ●     | SMDT 1690 MTL |                  |        |                    | 1   |  |   |
| 17.0    | ●     | SMDT 1700 MTL |                  |        |                    | 1   |  |   |
| 17.1    | ●     | SMDT 1710 MTL |                  | 1      |                    |     |  |   |
| 17.2    | ●     | SMDT 1720 MTL |                  | 1      |                    |     |  |   |
| 17.3    | ●     | SMDT 1730 MTL |                  | 1      |                    |     |  |   |
|         |       |               |                  |        |                    | 3.1 |  | 1 |

Grade: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions **P3** Applicable Holders **P10**

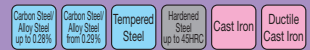
Indexable Head MTL Type Diameter ø17.4 to 22.7mm Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |
|---------|-------|---------------|------------------|--------|--------------------|-----|
| 17.4    | ●     | SMDT 1740 MTL | 12.2             | 3.2    | SMDH170□           | 1   |
| 17.5    | ●     | SMDT 1750 MTL |                  |        |                    | 1   |
| 17.6    | ●     | SMDT 1760 MTL | 12.9             | 3.2    | SMDH180□           | 1   |
| 17.7    | ●     | SMDT 1770 MTL |                  |        |                    | 1   |
| 17.8    | ●     | SMDT 1780 MTL |                  |        |                    | 1   |
| 17.9    | ●     | SMDT 1790 MTL |                  |        |                    | 1   |
| 18.0    | ●     | SMDT 1800 MTL |                  |        |                    | 1   |
| 18.1    | ●     | SMDT 1810 MTL |                  | 1      |                    |     |
| 18.2    | ●     | SMDT 1820 MTL |                  | 1      |                    |     |
| 18.3    | ●     | SMDT 1830 MTL |                  | 1      |                    |     |
| 18.4    | ●     | SMDT 1840 MTL |                  | 1      |                    |     |
| 18.5    | ●     | SMDT 1850 MTL |                  | 3.4    |                    | 1   |
| 18.6    | ●     | SMDT 1860 MTL | 13.5             | 3.4    | SMDH190□           | 1   |
| 18.7    | ●     | SMDT 1870 MTL |                  |        |                    | 1   |
| 18.8    | ●     | SMDT 1880 MTL |                  |        |                    | 1   |
| 18.9    | ●     | SMDT 1890 MTL |                  |        |                    | 1   |
| 19.0    | ●     | SMDT 1900 MTL |                  |        |                    | 1   |
| 19.1    | ●     | SMDT 1910 MTL |                  | 1      |                    |     |
| 19.2    | ●     | SMDT 1920 MTL |                  | 1      |                    |     |
| 19.3    | ●     | SMDT 1930 MTL |                  | 1      |                    |     |
| 19.4    | ●     | SMDT 1940 MTL |                  | 1      |                    |     |
| 19.5    | ●     | SMDT 1950 MTL |                  | 1      |                    |     |
| 19.6    | ●     | SMDT 1960 MTL | 14.1             | 3.5    | SMDH200□           | 1   |
| 19.7    | ●     | SMDT 1970 MTL |                  |        |                    | 1   |
| 19.8    | ●     | SMDT 1980 MTL |                  |        |                    | 1   |
| 19.9    | ●     | SMDT 1990 MTL |                  |        |                    | 1   |
| 20.0    | ●     | SMDT 2000 MTL |                  |        |                    | 1   |
| 20.1    | ●     | SMDT 2010 MTL |                  | 1      |                    |     |
| 20.2    | ●     | SMDT 2020 MTL |                  | 1      |                    |     |
| 20.3    | ●     | SMDT 2030 MTL |                  | 1      |                    |     |
| 20.4    | ●     | SMDT 2040 MTL |                  | 1      |                    |     |
| 20.5    | ●     | SMDT 2050 MTL |                  | 1      |                    |     |
| 20.6    | ●     | SMDT 2060 MTL | 14.8             | 3.6    | SMDH210□           | 1   |
| 20.7    | ●     | SMDT 2070 MTL |                  |        |                    | 1   |
| 20.8    | ●     | SMDT 2080 MTL |                  |        |                    | 1   |
| 20.9    | ●     | SMDT 2090 MTL |                  |        |                    | 1   |
| 21.0    | ●     | SMDT 2100 MTL |                  |        |                    | 1   |
| 21.1    | ●     | SMDT 2110 MTL |                  | 1      |                    |     |
| 21.2    | ●     | SMDT 2120 MTL |                  | 1      |                    |     |
| 21.3    | ●     | SMDT 2130 MTL |                  | 1      |                    |     |
| 21.4    | ●     | SMDT 2140 MTL |                  | 1      |                    |     |
| 21.5    | ●     | SMDT 2150 MTL |                  | 1      |                    |     |
| 21.6    | ●     | SMDT 2160 MTL | 15.0             | 3.7    | SMDH220□           | 1   |
| 21.7    | ●     | SMDT 2170 MTL |                  |        |                    | 1   |
| 21.8    | ●     | SMDT 2180 MTL |                  |        |                    | 1   |
| 21.9    | ●     | SMDT 2190 MTL |                  |        |                    | 1   |
| 22.0    | ●     | SMDT 2200 MTL |                  |        |                    | 1   |
| 22.1    | ●     | SMDT 2210 MTL |                  | 1      |                    |     |
| 22.2    | ●     | SMDT 2220 MTL |                  | 1      |                    |     |
| 22.3    | ●     | SMDT 2230 MTL |                  | 1      |                    |     |
| 22.4    | ●     | SMDT 2240 MTL |                  | 1      |                    |     |
| 22.5    | ●     | SMDT 2250 MTL |                  | 1      |                    |     |
| 22.6    | ●     | SMDT 2260 MTL | 1                |        |                    |     |
| 22.7    | ●     | SMDT 2270 MTL | 4.0              | 1      |                    |     |
|         |       |               | 4.1              |        |                    | 1   |
|         |       |               |                  | 1      |                    |     |
|         |       |               |                  | 1      |                    |     |
|         |       |               |                  | 1      |                    |     |
|         |       |               |                  | 1      |                    |     |

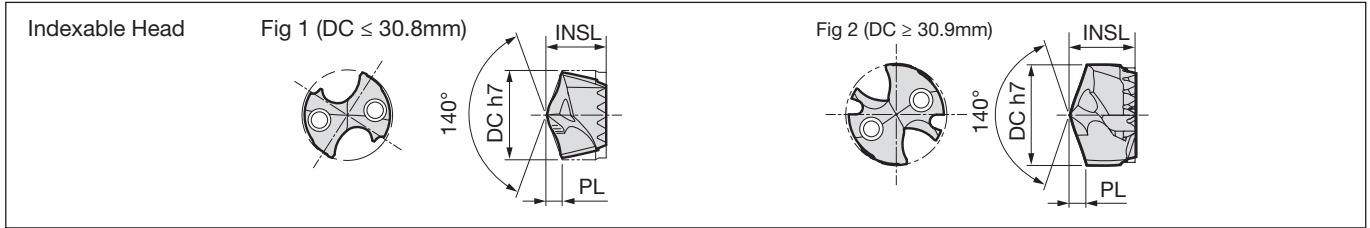
Grade: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions **P3** Applicable Holders **P10**

# SMD Type (Internal Coolant Supply)



\*For h7 tolerance, refer to Chapter N References in the General Catalogue.



**Indexable Head MTL Type Diameter ø22.8 to 28.1mm** Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig      |
|---------|-------|---------------|------------------|--------|--------------------|----------|
| 22.8    | ●     | SMDT 2280 MTL | 15.0             | 4.1    | SMDH220□           | 1        |
| 22.9    | ●     | SMDT 2290 MTL | 15.1             | 4.2    | SMDH230□           | 1        |
| 23.0    | ●     | SMDT 2300 MTL |                  |        |                    | 1        |
| 23.1    | ●     | SMDT 2310 MTL |                  |        |                    | 1        |
| 23.2    | ●     | SMDT 2320 MTL |                  |        |                    | 1        |
| 23.3    | ●     | SMDT 2330 MTL |                  |        |                    | 1        |
| 23.4    | ●     | SMDT 2340 MTL |                  | 1      |                    |          |
| 23.5    | ●     | SMDT 2350 MTL |                  | 4.3    |                    | 1        |
| 23.6    | ●     | SMDT 2360 MTL |                  |        |                    | 1        |
| 23.7    | ●     | SMDT 2370 MTL |                  |        |                    | 1        |
| 23.8    | ●     | SMDT 2380 MTL |                  |        |                    | 1        |
| 23.9    | ●     | SMDT 2390 MTL | 15.4             |        | 4.3                | SMDH240□ |
| 24.0    | ●     | SMDT 2400 MTL |                  | 4.4    | 1                  |          |
| 24.1    | ●     | SMDT 2410 MTL |                  |        | 1                  |          |
| 24.2    | ●     | SMDT 2420 MTL |                  |        | 1                  |          |
| 24.3    | ●     | SMDT 2430 MTL |                  |        | 1                  |          |
| 24.4    | ●     | SMDT 2440 MTL |                  |        | 1                  |          |
| 24.5    | ●     | SMDT 2450 MTL |                  | 4.5    | 1                  |          |
| 24.6    | ●     | SMDT 2460 MTL |                  |        | 1                  |          |
| 24.7    | ●     | SMDT 2470 MTL |                  |        | 1                  |          |
| 24.8    | ●     | SMDT 2480 MTL |                  |        | 1                  |          |
| 24.9    | ●     | SMDT 2490 MTL | 15.8             |        | 4.5                | SMDH250□ |
| 25.0    | ●     | SMDT 2500 MTL |                  | 4.6    | 1                  |          |
| 25.1    | ●     | SMDT 2510 MTL |                  |        | 1                  |          |
| 25.2    | ●     | SMDT 2520 MTL |                  |        | 1                  |          |
| 25.3    | ●     | SMDT 2530 MTL |                  |        | 1                  |          |
| 25.4    | ●     | SMDT 2540 MTL |                  |        | 1                  |          |
| 25.5    | ●     | SMDT 2550 MTL |                  | 4.7    | 1                  |          |
| 25.6    | ●     | SMDT 2560 MTL |                  |        | 1                  |          |
| 25.7    | ●     | SMDT 2570 MTL |                  |        | 1                  |          |
| 25.8    | ●     | SMDT 2580 MTL |                  |        | 1                  |          |
| 25.9    | ●     | SMDT 2590 MTL | 16.4             |        | 4.7                | SMDH260□ |
| 26.0    | ●     | SMDT 2600 MTL |                  | 4.8    | 1                  |          |
| 26.1    | ●     | SMDT 2610 MTL |                  |        | 1                  |          |
| 26.2    | ●     | SMDT 2620 MTL |                  |        | 1                  |          |
| 26.3    | ●     | SMDT 2630 MTL |                  |        | 1                  |          |
| 26.4    | ●     | SMDT 2640 MTL |                  |        | 1                  |          |
| 26.5    | ●     | SMDT 2650 MTL |                  | 4.9    | 1                  |          |
| 26.6    | ●     | SMDT 2660 MTL |                  |        | 1                  |          |
| 26.7    | ●     | SMDT 2670 MTL |                  |        | 1                  |          |
| 26.8    | ●     | SMDT 2680 MTL |                  |        | 1                  |          |
| 26.9    | ●     | SMDT 2690 MTL | 17.1             |        | 4.9                | SMDH270□ |
| 27.0    | ●     | SMDT 2700 MTL |                  | 5.0    | 1                  |          |
| 27.1    | ●     | SMDT 2710 MTL |                  |        | 1                  |          |
| 27.2    | ●     | SMDT 2720 MTL |                  |        | 1                  |          |
| 27.3    | ●     | SMDT 2730 MTL |                  |        | 1                  |          |
| 27.4    | ●     | SMDT 2740 MTL |                  |        | 1                  |          |
| 27.5    | ●     | SMDT 2750 MTL |                  | 5.1    | 1                  |          |
| 27.6    | ●     | SMDT 2760 MTL |                  |        | 1                  |          |
| 27.7    | ●     | SMDT 2770 MTL |                  |        | 1                  |          |
| 27.8    | ●     | SMDT 2780 MTL |                  |        | 1                  |          |
| 27.9    | ●     | SMDT 2790 MTL | 17.7             |        | 5.1                | SMDH280□ |
| 28.0    | ●     | SMDT 2800 MTL |                  | 1      |                    |          |
| 28.1    | ●     | SMDT 2810 MTL |                  | 1      |                    |          |

Grade: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions **P3** Applicable Holders **P10**

**Indexable Head MTL Type Diameter ø28.2 to 42.5mm** Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig      |          |          |
|---------|-------|---------------|------------------|--------|--------------------|----------|----------|----------|
| 28.2    | ●     | SMDT 2820 MTL | 17.7             | 5.1    | SMDH280□           | 1        |          |          |
| 28.3    | ●     | SMDT 2830 MTL |                  | 5.2    |                    | 1        |          |          |
| 28.4    | ●     | SMDT 2840 MTL |                  |        |                    | 1        |          |          |
| 28.5    | ●     | SMDT 2850 MTL |                  |        |                    | 1        |          |          |
| 28.6    | ●     | SMDT 2860 MTL |                  |        |                    | 1        |          |          |
| 28.7    | ●     | SMDT 2870 MTL |                  |        |                    | 1        |          |          |
| 28.8    | ●     | SMDT 2880 MTL |                  |        |                    | 1        |          |          |
| 28.9    | ●     | SMDT 2890 MTL |                  |        |                    | 18.3     | 5.3      | SMDH290□ |
| 29.0    | ●     | SMDT 2900 MTL | 1                |        |                    |          |          |          |
| 29.1    | ●     | SMDT 2910 MTL | 1                |        |                    |          |          |          |
| 29.2    | ●     | SMDT 2920 MTL | 1                |        |                    |          |          |          |
| 29.3    | ●     | SMDT 2930 MTL | 1                |        |                    |          |          |          |
| 29.4    | ●     | SMDT 2940 MTL | 5.4              | 1      |                    |          |          |          |
| 29.5    | ●     | SMDT 2950 MTL |                  | 1      |                    |          |          |          |
| 29.6    | ●     | SMDT 2960 MTL |                  | 1      |                    |          |          |          |
| 29.7    | ●     | SMDT 2970 MTL |                  | 1      |                    |          |          |          |
| 29.8    | ●     | SMDT 2980 MTL |                  | 1      |                    |          |          |          |
| 29.9    | ●     | SMDT 2990 MTL | 19.0             | 5.4    | SMDH300□           | 1        |          |          |
| 30.0    | ●     | SMDT 3000 MTL |                  | 5.5    |                    | 1        |          |          |
| 30.1    | ●     | SMDT 3010 MTL |                  |        |                    | 1        |          |          |
| 30.2    | ●     | SMDT 3020 MTL |                  |        |                    | 1        |          |          |
| 30.3    | ●     | SMDT 3030 MTL |                  |        |                    | 1        |          |          |
| 30.4    | ●     | SMDT 3040 MTL |                  |        |                    | 5.6      | 1        |          |
| 30.5    | ●     | SMDT 3050 MTL |                  | 1      |                    |          |          |          |
| 30.6    | ●     | SMDT 3060 MTL |                  | 1      |                    |          |          |          |
| 30.7    | ●     | SMDT 3070 MTL |                  | 1      |                    |          |          |          |
| 30.8    | ●     | SMDT 3080 MTL |                  | 1      |                    |          |          |          |
| 31.0    | ●     | SMDT 3100 MTL | 21.0             | 5.6    | SMDH320□           | 2        |          |          |
| 31.5    | ●     | SMDT 3150 MTL |                  | 5.7    |                    | 2        |          |          |
| 32.0    | ●     | SMDT 3200 MTL |                  | 5.8    |                    | 2        |          |          |
| 32.5    | ●     | SMDT 3250 MTL |                  | 5.9    |                    | 2        |          |          |
| 33.0    | ●     | SMDT 3300 MTL |                  | 6.0    |                    | 2        |          |          |
| 33.5    | ●     | SMDT 3350 MTL |                  | 6.1    |                    | 2        |          |          |
| 34.0    | ●     | SMDT 3400 MTL |                  | 23.0   |                    | 6.2      | SMDH350□ | 2        |
| 34.5    | ●     | SMDT 3450 MTL |                  |        |                    | 6.3      |          | 2        |
| 35.0    | ●     | SMDT 3500 MTL | 6.4              |        | 2                  |          |          |          |
| 35.5    | ●     | SMDT 3550 MTL | 6.5              |        | 2                  |          |          |          |
| 36.0    | ●     | SMDT 3600 MTL | 6.6              |        | SMDH365□           | 2        |          |          |
| 36.5    | ●     | SMDT 3650 MTL |                  | 2      |                    |          |          |          |
| 37.0    | ●     | SMDT 3700 MTL | 25.0             | 6.7    | SMDH380□           | 2        |          |          |
| 37.5    | ●     | SMDT 3750 MTL |                  | 6.8    |                    | 2        |          |          |
| 38.0    | ●     | SMDT 3800 MTL |                  | 6.9    |                    | 2        |          |          |
| 38.5    | ●     | SMDT 3850 MTL |                  | 7.0    |                    | SMDH395□ | 2        |          |
| 39.0    | ●     | SMDT 3900 MTL |                  |        |                    |          | 7.1      | 2        |
| 39.5    | ●     | SMDT 3950 MTL |                  | 7.2    |                    | 2        |          |          |
| 40.0    | ●     | SMDT 4000 MTL |                  | 27.0   |                    | 7.3      | SMDH410□ | 2        |
| 40.5    | ●     | SMDT 4050 MTL |                  |        |                    | 7.4      |          | 2        |
| 41.0    | ●     | SMDT 4100 MTL | 7.5              |        | 2                  |          |          |          |
| 41.5    | ●     | SMDT 4150 MTL | 7.6              |        | SMDH425□           | 2        |          |          |
| 42.0    | ●     | SMDT 4200 MTL |                  |        |                    | 2        |          |          |
| 42.5    | ●     | SMDT 4250 MTL | 7.7              | 2      |                    |          |          |          |

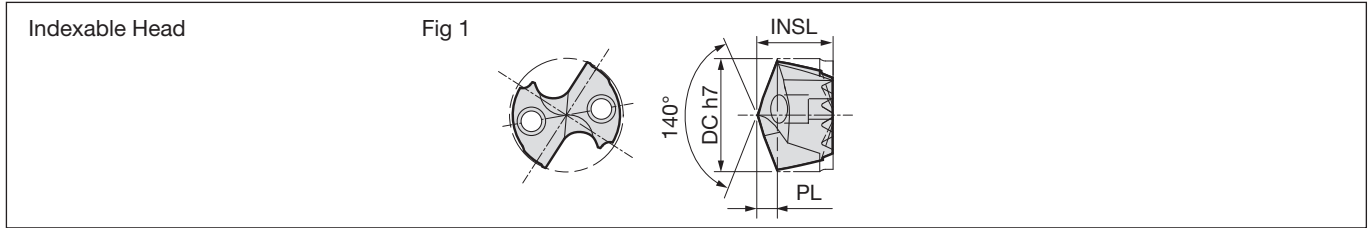
Grade: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Recommended Cutting Conditions **P3** Applicable Holders **P10**

# SMD Type (Internal Coolant Supply)



\*For h7 tolerance, refer to Chapter N References in the General Catalogue.



Indexable Head MSL Type Diameter  $\phi$ 12.0 to 17.3mm Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |   |
|---------|-------|---------------|------------------|--------|--------------------|-----|---|
| 12.0    | ●     | SMDT 1200 MSL | 9.1              | 2.2    | SMDH120□           | 1   |   |
| 12.1    | ●     | SMDT 1210 MSL |                  |        |                    | 1   |   |
| 12.2    | ●     | SMDT 1220 MSL |                  | 1      |                    |     |   |
| 12.3    | ●     | SMDT 1230 MSL |                  | 1      |                    |     |   |
| 12.4    | ●     | SMDT 1240 MSL |                  | 2.3    |                    | 1   |   |
| 12.5    | ●     | SMDT 1250 MSL | 9.4              | 2.3    | SMDH125□           | 1   |   |
| 12.6    | ●     | SMDT 1260 MSL |                  |        |                    | 1   |   |
| 12.7    | ●     | SMDT 1270 MSL |                  | 1      |                    |     |   |
| 12.8    | ●     | SMDT 1280 MSL |                  | 1      |                    |     |   |
| 12.9    | ●     | SMDT 1290 MSL |                  | 1      |                    |     |   |
| 13.0    | ●     | SMDT 1300 MSL | 9.7              | 2.4    | SMDH130□           | 1   |   |
| 13.1    | ●     | SMDT 1310 MSL |                  |        |                    | 1   |   |
| 13.2    | ●     | SMDT 1320 MSL |                  | 1      |                    |     |   |
| 13.3    | ●     | SMDT 1330 MSL |                  | 1      |                    |     |   |
| 13.4    | ●     | SMDT 1340 MSL |                  | 1      |                    |     |   |
| 13.5    | ●     | SMDT 1350 MSL | 10.3             | 2.5    | SMDH140□           | 1   |   |
| 13.6    | ●     | SMDT 1360 MSL |                  |        |                    | 1   |   |
| 13.7    | ●     | SMDT 1370 MSL |                  |        |                    | 1   |   |
| 13.8    | ●     | SMDT 1380 MSL |                  |        |                    | 1   |   |
| 13.9    | ●     | SMDT 1390 MSL |                  |        |                    | 1   |   |
| 14.0    | ●     | SMDT 1400 MSL |                  | 2.6    |                    | 1   |   |
| 14.1    | ●     | SMDT 1410 MSL |                  |        |                    | 1   |   |
| 14.2    | ●     | SMDT 1420 MSL |                  | 1      |                    |     |   |
| 14.3    | ●     | SMDT 1430 MSL |                  | 1      |                    |     |   |
| 14.4    | ●     | SMDT 1440 MSL |                  | 1      |                    |     |   |
| 14.5    | ●     | SMDT 1450 MSL |                  | 1      |                    |     |   |
| 14.6    | ●     | SMDT 1460 MSL | 11.0             | 2.7    | SMDH150□           | 1   |   |
| 14.7    | ●     | SMDT 1470 MSL |                  |        |                    | 1   |   |
| 14.8    | ●     | SMDT 1480 MSL |                  |        |                    | 1   |   |
| 14.9    | ●     | SMDT 1490 MSL |                  |        |                    | 1   |   |
| 15.0    | ●     | SMDT 1500 MSL |                  |        |                    | 1   |   |
| 15.1    | ●     | SMDT 1510 MSL |                  | 2.8    |                    | 1   |   |
| 15.2    | ●     | SMDT 1520 MSL |                  |        |                    | 1   |   |
| 15.3    | ●     | SMDT 1530 MSL |                  | 1      |                    |     |   |
| 15.4    | ●     | SMDT 1540 MSL |                  | 1      |                    |     |   |
| 15.5    | ●     | SMDT 1550 MSL |                  | 1      |                    |     |   |
| 15.6    | ●     | SMDT 1560 MSL | 11.6             | 2.8    | SMDH160□           | 1   |   |
| 15.7    | ●     | SMDT 1570 MSL |                  |        |                    | 1   |   |
| 15.8    | ●     | SMDT 1580 MSL |                  |        |                    | 1   |   |
| 15.9    | ●     | SMDT 1590 MSL |                  |        |                    | 1   |   |
| 16.0    | ●     | SMDT 1600 MSL |                  |        |                    | 2.9 | 1 |
| 16.1    | ●     | SMDT 1610 MSL |                  | 1      |                    |     |   |
| 16.2    | ●     | SMDT 1620 MSL |                  | 1      |                    |     |   |
| 16.3    | ●     | SMDT 1630 MSL |                  | 3.0    |                    | 1   |   |
| 16.4    | ●     | SMDT 1640 MSL |                  |        |                    | 1   |   |
| 16.5    | ●     | SMDT 1650 MSL |                  | 1      |                    |     |   |
| 16.6    | ●     | SMDT 1660 MSL | 12.2             | 3.0    | SMDH170□           | 1   |   |
| 16.7    | ●     | SMDT 1670 MSL |                  |        |                    | 1   |   |
| 16.8    | ●     | SMDT 1680 MSL |                  |        |                    | 1   |   |
| 16.9    | ●     | SMDT 1690 MSL |                  |        |                    | 3.1 | 1 |
| 17.0    | ●     | SMDT 1700 MSL |                  |        |                    |     | 1 |
| 17.1    | ●     | SMDT 1710 MSL |                  | 1      |                    |     |   |
| 17.2    | ●     | SMDT 1720 MSL |                  | 1      |                    |     |   |
| 17.3    | ●     | SMDT 1730 MSL |                  | 1      |                    |     |   |

Grade: ACT100 Recommended Cutting Conditions **P3** Applicable Holders **P10**

Indexable Head MSL Type Diameter  $\phi$ 17.4 to 22.7mm Dimensions (mm)

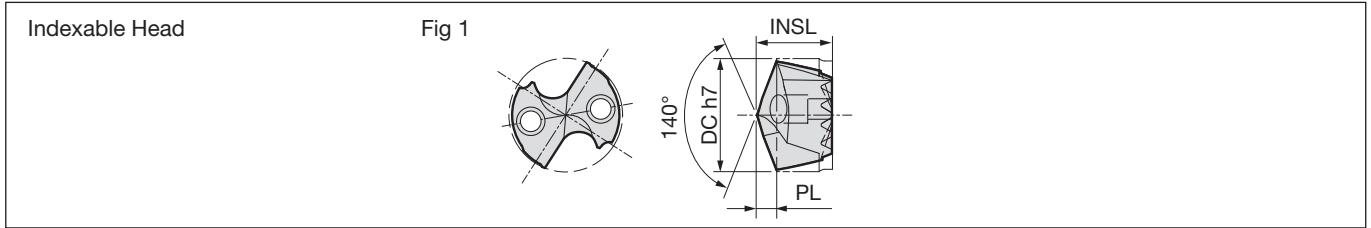
| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |          |
|---------|-------|---------------|------------------|--------|--------------------|-----|----------|
| 17.4    | ●     | SMDT 1740 MSL | 12.2             | 3.2    | SMDH170□           | 1   |          |
| 17.5    | ●     | SMDT 1750 MSL |                  |        |                    | 1   |          |
| 17.6    | ●     | SMDT 1760 MSL | 12.9             | 3.2    | SMDH180□           | 1   |          |
| 17.7    | ●     | SMDT 1770 MSL |                  |        |                    | 1   |          |
| 17.8    | ●     | SMDT 1780 MSL |                  | 1      |                    |     |          |
| 17.9    | ●     | SMDT 1790 MSL |                  | 3.3    |                    | 1   |          |
| 18.0    | ●     | SMDT 1800 MSL |                  |        |                    | 1   |          |
| 18.1    | ●     | SMDT 1810 MSL |                  | 3.4    |                    | 1   |          |
| 18.2    | ●     | SMDT 1820 MSL |                  |        |                    | 1   |          |
| 18.3    | ●     | SMDT 1830 MSL | 3.4              | 1      |                    |     |          |
| 18.4    | ●     | SMDT 1840 MSL |                  | 1      |                    |     |          |
| 18.5    | ●     | SMDT 1850 MSL |                  | 1      |                    |     |          |
| 18.6    | ●     | SMDT 1860 MSL | 13.5             | 3.4    | SMDH190□           | 1   |          |
| 18.7    | ●     | SMDT 1870 MSL |                  |        |                    | 1   |          |
| 18.8    | ●     | SMDT 1880 MSL |                  |        |                    | 1   |          |
| 18.9    | ●     | SMDT 1890 MSL |                  |        |                    | 3.5 | 1        |
| 19.0    | ●     | SMDT 1900 MSL |                  |        |                    |     | 1        |
| 19.1    | ●     | SMDT 1910 MSL |                  | 3.5    |                    | 1   |          |
| 19.2    | ●     | SMDT 1920 MSL |                  |        |                    | 1   |          |
| 19.3    | ●     | SMDT 1930 MSL |                  | 3.6    |                    | 1   |          |
| 19.4    | ●     | SMDT 1940 MSL |                  |        |                    | 1   |          |
| 19.5    | ●     | SMDT 1950 MSL |                  |        |                    | 1   |          |
| 19.6    | ●     | SMDT 1960 MSL | 14.1             | 3.6    | SMDH200□           | 1   |          |
| 19.7    | ●     | SMDT 1970 MSL |                  |        |                    | 1   |          |
| 19.8    | ●     | SMDT 1980 MSL |                  |        |                    | 1   |          |
| 19.9    | ●     | SMDT 1990 MSL |                  |        |                    | 3.7 | 1        |
| 20.0    | ●     | SMDT 2000 MSL |                  |        |                    |     | 1        |
| 20.1    | ●     | SMDT 2010 MSL |                  | 3.7    |                    | 1   |          |
| 20.2    | ●     | SMDT 2020 MSL |                  |        |                    | 1   |          |
| 20.3    | ●     | SMDT 2030 MSL |                  | 3.7    |                    | 1   |          |
| 20.4    | ●     | SMDT 2040 MSL |                  |        |                    | 1   |          |
| 20.5    | ●     | SMDT 2050 MSL |                  |        |                    | 1   |          |
| 20.6    | ●     | SMDT 2060 MSL | 14.8             | 3.7    | SMDH210□           | 1   |          |
| 20.7    | ●     | SMDT 2070 MSL |                  |        |                    | 1   |          |
| 20.8    | ●     | SMDT 2080 MSL |                  |        |                    | 3.8 | 1        |
| 20.9    | ●     | SMDT 2090 MSL |                  |        |                    |     | 1        |
| 21.0    | ●     | SMDT 2100 MSL |                  |        |                    | 3.9 | 1        |
| 21.1    | ●     | SMDT 2110 MSL |                  | 1      |                    |     |          |
| 21.2    | ●     | SMDT 2120 MSL |                  | 3.9    |                    | 1   |          |
| 21.3    | ●     | SMDT 2130 MSL |                  |        |                    | 1   |          |
| 21.4    | ●     | SMDT 2140 MSL |                  |        |                    | 1   |          |
| 21.5    | ●     | SMDT 2150 MSL |                  | 15.0   |                    | 3.9 | SMDH220□ |
| 21.6    | ●     | SMDT 2160 MSL | 4.0              |        | 1                  |     |          |
| 21.7    | ●     | SMDT 2170 MSL |                  |        | 1                  |     |          |
| 21.8    | ●     | SMDT 2180 MSL | 4.0              |        | 1                  |     |          |
| 21.9    | ●     | SMDT 2190 MSL |                  |        | 1                  |     |          |
| 22.0    | ●     | SMDT 2200 MSL | 4.1              |        | 1                  |     |          |
| 22.1    | ●     | SMDT 2210 MSL |                  |        | 1                  |     |          |
| 22.2    | ●     | SMDT 2220 MSL | 4.1              |        | 1                  |     |          |
| 22.3    | ●     | SMDT 2230 MSL |                  |        | 1                  |     |          |
| 22.4    | ●     | SMDT 2240 MSL | 1                |        |                    |     |          |
| 22.5    | ●     | SMDT 2250 MSL | 1                |        |                    |     |          |
| 22.6    | ●     | SMDT 2260 MSL | 1                |        |                    |     |          |
| 22.7    | ●     | SMDT 2270 MSL | 1                |        |                    |     |          |

Grade: ACT100 Recommended Cutting Conditions **P3** Applicable Holders **P10**

# SMD Type (Internal Coolant Supply)



\*For h7 tolerance, refer to Chapter N References in the General Catalogue.



**Indexable Head MSL Type Diameter  $\phi$ 22.8 to 28.1mm** Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL   | Applicable Holders | Fig      |          |   |
|---------|-------|---------------|------------------|----------|--------------------|----------|----------|---|
| 22.8    | ●     | SMDT 2280 MSL | 15.0             | 4.1      | SMDH220□           | 1        |          |   |
| 22.9    | ●     | SMDT 2290 MSL | 15.1             | 4.2      | SMDH230□           | 1        |          |   |
| 23.0    | ●     | SMDT 2300 MSL |                  |          |                    | 1        |          |   |
| 23.1    | ●     | SMDT 2310 MSL |                  | 1        |                    |          |          |   |
| 23.2    | ●     | SMDT 2320 MSL |                  | 1        |                    |          |          |   |
| 23.3    | ●     | SMDT 2330 MSL |                  | 1        |                    |          |          |   |
| 23.4    | ●     | SMDT 2340 MSL |                  | 1        |                    |          |          |   |
| 23.5    | ●     | SMDT 2350 MSL |                  | 1        |                    |          |          |   |
| 23.6    | ●     | SMDT 2360 MSL | 4.3              | SMDH240□ | 1                  |          |          |   |
| 23.7    | ●     | SMDT 2370 MSL |                  |          | 1                  |          |          |   |
| 23.8    | ●     | SMDT 2380 MSL | 1                |          |                    |          |          |   |
| 23.9    | ●     | SMDT 2390 MSL | 15.4             |          | 4.3                | SMDH240□ | 1        |   |
| 24.0    | ●     | SMDT 2400 MSL |                  |          | 1                  |          |          |   |
| 24.1    | ●     | SMDT 2410 MSL |                  |          | 1                  |          |          |   |
| 24.2    | ●     | SMDT 2420 MSL |                  |          | 4.4                |          | SMDH240□ | 1 |
| 24.3    | ●     | SMDT 2430 MSL |                  | 1        |                    |          |          |   |
| 24.4    | ●     | SMDT 2440 MSL |                  | 1        |                    |          |          |   |
| 24.5    | ●     | SMDT 2450 MSL |                  | 1        |                    |          |          |   |
| 24.6    | ●     | SMDT 2460 MSL |                  | 4.5      | SMDH240□           |          |          | 1 |
| 24.7    | ●     | SMDT 2470 MSL |                  |          |                    |          |          | 1 |
| 24.8    | ●     | SMDT 2480 MSL |                  | 1        |                    |          |          |   |
| 24.9    | ●     | SMDT 2490 MSL | 15.8             | 4.5      |                    | SMDH250□ |          | 1 |
| 25.0    | ●     | SMDT 2500 MSL |                  | 1        |                    |          |          |   |
| 25.1    | ●     | SMDT 2510 MSL |                  | 1        |                    |          |          |   |
| 25.2    | ●     | SMDT 2520 MSL |                  | 4.6      |                    |          | SMDH250□ | 1 |
| 25.3    | ●     | SMDT 2530 MSL |                  |          |                    |          |          | 1 |
| 25.4    | ●     | SMDT 2540 MSL |                  | 1        |                    |          |          |   |
| 25.5    | ●     | SMDT 2550 MSL |                  | 1        |                    |          |          |   |
| 25.6    | ●     | SMDT 2560 MSL |                  | 1        |                    |          |          |   |
| 25.7    | ●     | SMDT 2570 MSL |                  | 4.7      | SMDH250□           |          |          | 1 |
| 25.8    | ●     | SMDT 2580 MSL |                  |          |                    |          |          | 1 |
| 25.9    | ●     | SMDT 2590 MSL | 16.4             | 4.7      |                    | SMDH260□ |          | 1 |
| 26.0    | ●     | SMDT 2600 MSL |                  | 1        |                    |          |          |   |
| 26.1    | ●     | SMDT 2610 MSL |                  | 1        |                    |          |          |   |
| 26.2    | ●     | SMDT 2620 MSL |                  | 1        |                    |          |          |   |
| 26.3    | ●     | SMDT 2630 MSL |                  | 4.8      |                    |          | SMDH260□ | 1 |
| 26.4    | ●     | SMDT 2640 MSL |                  |          |                    |          |          | 1 |
| 26.5    | ●     | SMDT 2650 MSL |                  | 1        |                    |          |          |   |
| 26.6    | ●     | SMDT 2660 MSL |                  | 1        |                    |          |          |   |
| 26.7    | ●     | SMDT 2670 MSL |                  | 4.9      | SMDH260□           |          |          | 1 |
| 26.8    | ●     | SMDT 2680 MSL |                  |          |                    |          |          | 1 |
| 26.9    | ●     | SMDT 2690 MSL | 17.1             | 4.9      |                    | SMDH270□ |          | 1 |
| 27.0    | ●     | SMDT 2700 MSL |                  | 1        |                    |          |          |   |
| 27.1    | ●     | SMDT 2710 MSL |                  | 1        |                    |          |          |   |
| 27.2    | ●     | SMDT 2720 MSL |                  | 1        |                    |          |          |   |
| 27.3    | ●     | SMDT 2730 MSL |                  | 5.0      |                    |          | SMDH270□ | 1 |
| 27.4    | ●     | SMDT 2740 MSL |                  |          |                    |          |          | 1 |
| 27.5    | ●     | SMDT 2750 MSL |                  | 1        |                    |          |          |   |
| 27.6    | ●     | SMDT 2760 MSL |                  | 1        |                    |          |          |   |
| 27.7    | ●     | SMDT 2770 MSL |                  | 1        |                    |          |          |   |
| 27.8    | ●     | SMDT 2780 MSL |                  | 5.1      | SMDH270□           |          |          | 1 |
| 27.9    | ●     | SMDT 2790 MSL | 1                |          |                    |          |          |   |
| 28.0    | ●     | SMDT 2800 MSL | 17.7             | 5.1      | SMDH280□           | 1        |          |   |
| 28.1    | ●     | SMDT 2810 MSL |                  |          |                    | 1        |          |   |

Grade: ACT100 Recommended Cutting Conditions **P3** Applicable Holders **P10**

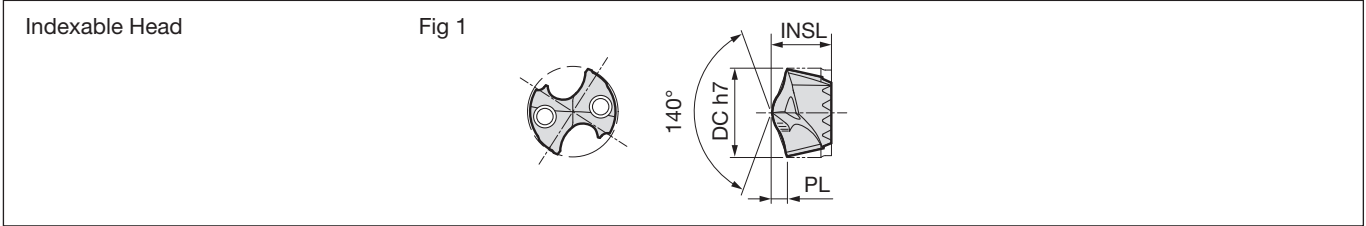
**Indexable Head MSL Type Diameter  $\phi$ 28.2 to 30.8mm** Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig      |          |          |   |
|---------|-------|---------------|------------------|--------|--------------------|----------|----------|----------|---|
| 28.2    | ●     | SMDT 2820 MSL | 17.7             | 5.1    | SMDH280□           | 1        |          |          |   |
| 28.3    | ●     | SMDT 2830 MSL |                  | 1      |                    |          |          |          |   |
| 28.4    | ●     | SMDT 2840 MSL |                  | 1      |                    |          |          |          |   |
| 28.5    | ●     | SMDT 2850 MSL |                  | 5.2    |                    | SMDH280□ | 1        |          |   |
| 28.6    | ●     | SMDT 2860 MSL |                  |        |                    |          | 1        |          |   |
| 28.7    | ●     | SMDT 2870 MSL |                  | 1      |                    |          |          |          |   |
| 28.8    | ●     | SMDT 2880 MSL |                  | 1      |                    |          |          |          |   |
| 28.9    | ●     | SMDT 2890 MSL | 18.3             | 5.3    | SMDH290□           |          | 1        |          |   |
| 29.0    | ●     | SMDT 2900 MSL |                  |        |                    |          | 1        |          |   |
| 29.1    | ●     | SMDT 2910 MSL |                  | 1      |                    |          |          |          |   |
| 29.2    | ●     | SMDT 2920 MSL |                  | 5.4    |                    | SMDH290□ | 1        |          |   |
| 29.3    | ●     | SMDT 2930 MSL |                  |        |                    |          | 1        |          |   |
| 29.4    | ●     | SMDT 2940 MSL |                  | 1      |                    |          |          |          |   |
| 29.5    | ●     | SMDT 2950 MSL |                  | 1      |                    |          |          |          |   |
| 29.6    | ●     | SMDT 2960 MSL |                  | 5.4    |                    |          | SMDH290□ | 1        |   |
| 29.7    | ●     | SMDT 2970 MSL |                  |        |                    |          |          | 1        |   |
| 29.8    | ●     | SMDT 2980 MSL |                  | 1      |                    |          |          |          |   |
| 29.9    | ●     | SMDT 2990 MSL | 19.0             | 5.4    | SMDH300□           |          |          | 1        |   |
| 30.0    | ●     | SMDT 3000 MSL |                  | 1      |                    |          |          |          |   |
| 30.1    | ●     | SMDT 3010 MSL |                  | 5.5    |                    |          |          | SMDH300□ | 1 |
| 30.2    | ●     | SMDT 3020 MSL |                  |        |                    | 1        |          |          |   |
| 30.3    | ●     | SMDT 3030 MSL |                  | 1      |                    |          |          |          |   |
| 30.4    | ●     | SMDT 3040 MSL |                  | 5.6    |                    | SMDH300□ |          |          | 1 |
| 30.5    | ●     | SMDT 3050 MSL |                  |        |                    |          |          |          | 1 |
| 30.6    | ●     | SMDT 3060 MSL |                  | 1      |                    |          |          |          |   |
| 30.7    | ●     | SMDT 3070 MSL |                  | 1      |                    |          |          |          |   |
| 30.8    | ●     | SMDT 3080 MSL |                  | 1      |                    |          |          |          |   |

Grade: ACT100 Recommended Cutting Conditions **P3** Applicable Holders **P10**



\*For h7 tolerance, refer to Chapter N References in the General Catalogue.



Indexable Head MEL Type Diameter  $\phi$ 12.0 to 17.3mm Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |   |   |
|---------|-------|---------------|------------------|--------|--------------------|-----|---|---|
| 12.0    | ▲     | SMDT 1200 MEL | 9.1              | 2.2    | SMDH120□           | 1   |   |   |
| 12.1    | ▲     | SMDT 1210 MEL |                  |        |                    | 1   |   |   |
| 12.2    | ▲     | SMDT 1220 MEL |                  | 1      |                    |     |   |   |
| 12.3    | ▲     | SMDT 1230 MEL |                  | 1      |                    |     |   |   |
| 12.4    | ▲     | SMDT 1240 MEL |                  | 2.3    |                    | 1   |   |   |
| 12.5    | ▲     | SMDT 1250 MEL | 9.4              | 2.3    | SMDH125□           | 1   |   |   |
| 12.6    | ▲     | SMDT 1260 MEL |                  |        |                    | 1   |   |   |
| 12.7    | ▲     | SMDT 1270 MEL |                  | 1      |                    |     |   |   |
| 12.8    | ▲     | SMDT 1280 MEL |                  | 1      |                    |     |   |   |
| 12.9    | ▲     | SMDT 1290 MEL |                  | 1      |                    |     |   |   |
| 13.0    | ▲     | SMDT 1300 MEL | 9.7              | 2.4    | SMDH130□           | 1   |   |   |
| 13.1    | ▲     | SMDT 1310 MEL |                  |        |                    | 1   |   |   |
| 13.2    | ▲     | SMDT 1320 MEL |                  | 1      |                    |     |   |   |
| 13.3    | ▲     | SMDT 1330 MEL |                  | 1      |                    |     |   |   |
| 13.4    | ▲     | SMDT 1340 MEL |                  | 1      |                    |     |   |   |
| 13.5    | ▲     | SMDT 1350 MEL | 10.3             | 2.5    | SMDH140□           | 1   |   |   |
| 13.6    | ▲     | SMDT 1360 MEL |                  |        |                    | 1   |   |   |
| 13.7    | ▲     | SMDT 1370 MEL |                  |        |                    | 1   |   |   |
| 13.8    | ▲     | SMDT 1380 MEL |                  |        |                    | 1   |   |   |
| 13.9    | ▲     | SMDT 1390 MEL |                  |        |                    | 1   |   |   |
| 14.0    | ▲     | SMDT 1400 MEL |                  | 2.6    |                    | 1   | 1 |   |
| 14.1    | ▲     | SMDT 1410 MEL |                  |        |                    |     |   | 1 |
| 14.2    | ▲     | SMDT 1420 MEL |                  |        |                    |     |   | 1 |
| 14.3    | ▲     | SMDT 1430 MEL |                  |        |                    |     |   | 1 |
| 14.4    | ▲     | SMDT 1440 MEL |                  |        |                    |     |   | 1 |
| 14.5    | ▲     | SMDT 1450 MEL | 1                |        |                    |     |   |   |
| 14.6    | ▲     | SMDT 1460 MEL | 11.0             | 2.7    | SMDH150□           | 1   |   |   |
| 14.7    | ▲     | SMDT 1470 MEL |                  |        |                    | 1   |   |   |
| 14.8    | ▲     | SMDT 1480 MEL |                  |        |                    | 1   |   |   |
| 14.9    | ▲     | SMDT 1490 MEL |                  |        |                    | 1   |   |   |
| 15.0    | ▲     | SMDT 1500 MEL |                  |        |                    | 1   |   |   |
| 15.1    | ▲     | SMDT 1510 MEL |                  | 2.8    |                    | 1   | 1 |   |
| 15.2    | ▲     | SMDT 1520 MEL |                  |        |                    |     |   | 1 |
| 15.3    | ▲     | SMDT 1530 MEL |                  |        |                    |     |   | 1 |
| 15.4    | ▲     | SMDT 1540 MEL |                  |        |                    |     |   | 1 |
| 15.5    | ▲     | SMDT 1550 MEL |                  |        |                    |     |   | 1 |
| 15.6    | ▲     | SMDT 1560 MEL | 11.6             | 2.8    | SMDH160□           | 1   |   |   |
| 15.7    | ▲     | SMDT 1570 MEL |                  |        |                    | 1   |   |   |
| 15.8    | ▲     | SMDT 1580 MEL |                  |        |                    | 1   |   |   |
| 15.9    | ▲     | SMDT 1590 MEL |                  |        |                    | 1   |   |   |
| 16.0    | ▲     | SMDT 1600 MEL |                  |        |                    | 2.9 | 1 | 1 |
| 16.1    | ▲     | SMDT 1610 MEL |                  | 1      |                    |     |   |   |
| 16.2    | ▲     | SMDT 1620 MEL |                  | 1      |                    |     |   |   |
| 16.3    | ▲     | SMDT 1630 MEL |                  | 1      |                    |     |   |   |
| 16.4    | ▲     | SMDT 1640 MEL |                  | 3.0    |                    |     |   |   |
| 16.5    | ▲     | SMDT 1650 MEL |                  |        |                    | 1   |   |   |
| 16.6    | ▲     | SMDT 1660 MEL | 12.2             | 3.0    | SMDH170□           | 1   |   |   |
| 16.7    | ▲     | SMDT 1670 MEL |                  |        |                    | 1   |   |   |
| 16.8    | ▲     | SMDT 1680 MEL |                  |        |                    | 1   |   |   |
| 16.9    | ▲     | SMDT 1690 MEL |                  |        |                    | 3.1 | 1 | 1 |
| 17.0    | ▲     | SMDT 1700 MEL |                  |        |                    |     |   |   |
| 17.1    | ▲     | SMDT 1710 MEL |                  | 1      |                    |     |   |   |
| 17.2    | ▲     | SMDT 1720 MEL |                  | 1      |                    |     |   |   |
| 17.3    | ▲     | SMDT 1730 MEL |                  | 1      |                    |     |   |   |

Grade: ACX80 Recommended Cutting Conditions Applicable Holders

Indexable Head MEL Type Diameter  $\phi$ 17.4 to 22.7mm Dimensions (mm)

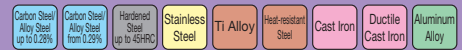
| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |   |   |   |
|---------|-------|---------------|------------------|--------|--------------------|-----|---|---|---|
| 17.4    | ▲     | SMDT 1740 MEL | 12.2             | 3.2    | SMDH170□           | 1   |   |   |   |
| 17.5    | ▲     | SMDT 1750 MEL |                  |        |                    | 1   |   |   |   |
| 17.6    | ▲     | SMDT 1760 MEL | 12.9             | 3.2    | SMDH180□           | 1   |   |   |   |
| 17.7    | ▲     | SMDT 1770 MEL |                  |        |                    | 1   |   |   |   |
| 17.8    | ▲     | SMDT 1780 MEL |                  | 3.3    |                    | 1   | 1 |   |   |
| 17.9    | ▲     | SMDT 1790 MEL |                  |        |                    |     |   | 1 |   |
| 18.0    | ▲     | SMDT 1800 MEL |                  |        |                    |     |   | 1 |   |
| 18.1    | ▲     | SMDT 1810 MEL | 13.5             | 3.3    | SMDH180□           | 1   |   |   |   |
| 18.2    | ▲     | SMDT 1820 MEL |                  |        |                    | 1   |   |   |   |
| 18.3    | ▲     | SMDT 1830 MEL |                  | 3.4    |                    | 1   | 1 |   |   |
| 18.4    | ▲     | SMDT 1840 MEL |                  |        |                    |     |   | 1 |   |
| 18.5    | ▲     | SMDT 1850 MEL |                  |        |                    |     |   | 1 |   |
| 18.6    | ▲     | SMDT 1860 MEL | 13.5             | 3.4    | SMDH190□           | 1   |   |   |   |
| 18.7    | ▲     | SMDT 1870 MEL |                  |        |                    | 1   |   |   |   |
| 18.8    | ▲     | SMDT 1880 MEL |                  |        |                    | 3.5 | 1 | 1 |   |
| 18.9    | ▲     | SMDT 1890 MEL |                  |        |                    |     |   |   | 1 |
| 19.0    | ▲     | SMDT 1900 MEL |                  |        |                    |     |   |   | 1 |
| 19.1    | ▲     | SMDT 1910 MEL |                  | 3.5    |                    | 1   | 1 |   |   |
| 19.2    | ▲     | SMDT 1920 MEL |                  |        |                    |     |   | 1 |   |
| 19.3    | ▲     | SMDT 1930 MEL |                  |        |                    |     |   | 1 |   |
| 19.4    | ▲     | SMDT 1940 MEL |                  |        |                    |     |   | 1 |   |
| 19.5    | ▲     | SMDT 1950 MEL |                  |        |                    |     |   | 1 |   |
| 19.6    | ▲     | SMDT 1960 MEL | 14.1             | 3.6    | SMDH200□           | 1   |   |   |   |
| 19.7    | ▲     | SMDT 1970 MEL |                  |        |                    | 1   |   |   |   |
| 19.8    | ▲     | SMDT 1980 MEL |                  |        |                    | 3.7 | 1 | 1 |   |
| 19.9    | ▲     | SMDT 1990 MEL |                  |        |                    |     |   |   | 1 |
| 20.0    | ▲     | SMDT 2000 MEL |                  |        |                    |     |   |   | 1 |
| 20.1    | ▲     | SMDT 2010 MEL |                  | 3.7    |                    | 1   | 1 |   |   |
| 20.2    | ▲     | SMDT 2020 MEL |                  |        |                    |     |   | 1 |   |
| 20.3    | ▲     | SMDT 2030 MEL |                  |        |                    |     |   | 1 |   |
| 20.4    | ▲     | SMDT 2040 MEL |                  |        |                    |     |   | 1 |   |
| 20.5    | ▲     | SMDT 2050 MEL |                  |        |                    |     |   | 1 |   |
| 20.6    | ▲     | SMDT 2060 MEL | 14.8             | 3.7    | SMDH210□           | 1   |   |   |   |
| 20.7    | ▲     | SMDT 2070 MEL |                  |        |                    | 1   |   |   |   |
| 20.8    | ▲     | SMDT 2080 MEL |                  |        |                    | 3.8 | 1 | 1 |   |
| 20.9    | ▲     | SMDT 2090 MEL |                  |        |                    |     |   |   | 1 |
| 21.0    | ▲     | SMDT 2100 MEL |                  |        |                    |     |   |   | 1 |
| 21.1    | ▲     | SMDT 2110 MEL |                  | 3.9    |                    | 1   | 1 |   |   |
| 21.2    | ▲     | SMDT 2120 MEL |                  |        |                    |     |   | 1 |   |
| 21.3    | ▲     | SMDT 2130 MEL |                  |        |                    |     |   | 1 |   |
| 21.4    | ▲     | SMDT 2140 MEL |                  |        |                    |     |   | 1 |   |
| 21.5    | ▲     | SMDT 2150 MEL |                  |        |                    |     |   | 1 |   |
| 21.6    | ▲     | SMDT 2160 MEL | 15.0             | 3.9    | SMDH220□           | 1   |   |   |   |
| 21.7    | ▲     | SMDT 2170 MEL |                  |        |                    | 1   |   |   |   |
| 21.8    | ▲     | SMDT 2180 MEL |                  |        |                    | 4.0 | 1 | 1 |   |
| 21.9    | ▲     | SMDT 2190 MEL |                  |        |                    |     |   |   | 1 |
| 22.0    | ▲     | SMDT 2200 MEL |                  |        |                    |     |   |   | 1 |
| 22.1    | ▲     | SMDT 2210 MEL |                  | 4.1    |                    | 1   | 1 |   |   |
| 22.2    | ▲     | SMDT 2220 MEL |                  |        |                    |     |   | 1 |   |
| 22.3    | ▲     | SMDT 2230 MEL |                  |        |                    |     |   | 1 |   |
| 22.4    | ▲     | SMDT 2240 MEL |                  |        |                    |     |   | 1 |   |
| 22.5    | ▲     | SMDT 2250 MEL |                  |        |                    |     |   | 1 |   |
| 22.6    | ▲     | SMDT 2260 MEL | 4.1              | 1      | 1                  |     |   |   |   |
| 22.7    | ▲     | SMDT 2270 MEL |                  |        |                    | 1   |   |   |   |

Grade: ACX80 Recommended Cutting Conditions Applicable Holders

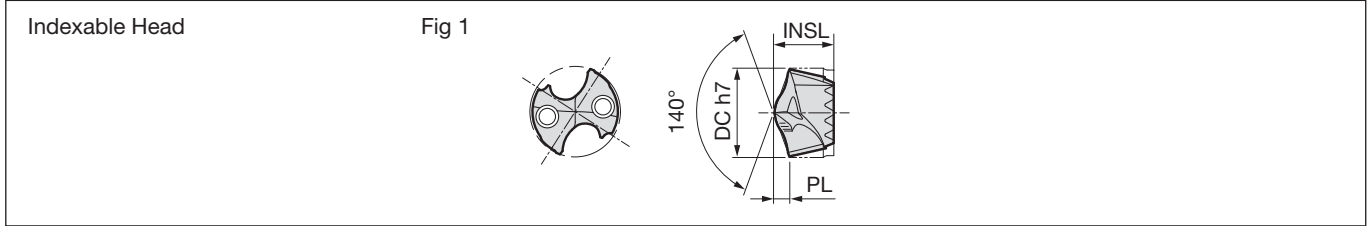
▲ mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability).



# SMD Type (Internal Coolant Supply)



\*For h7 tolerance, refer to Chapter N References in the General Catalogue.



**Indexable Head MEL Type Diameter  $\varnothing$ 22.8 to 28.1mm** Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |
|---------|-------|---------------|------------------|--------|--------------------|-----|
| 22.8    | ▲     | SMDT 2280 MEL | 15.0             | 4.1    | SMDH220□           | 1   |
| 22.9    | ▲     | SMDT 2290 MEL | 15.1             | 4.2    | SMDH230□           | 1   |
| 23.0    | ▲     | SMDT 2300 MEL |                  |        |                    | 1   |
| 23.1    | ▲     | SMDT 2310 MEL |                  |        |                    | 1   |
| 23.2    | ▲     | SMDT 2320 MEL |                  |        |                    | 1   |
| 23.3    | ▲     | SMDT 2330 MEL |                  |        |                    | 1   |
| 23.4    | ▲     | SMDT 2340 MEL |                  |        |                    | 1   |
| 23.5    | ▲     | SMDT 2350 MEL |                  |        |                    | 1   |
| 23.6    | ▲     | SMDT 2360 MEL |                  |        |                    | 1   |
| 23.7    | ▲     | SMDT 2370 MEL | 4.3              | 1      |                    |     |
| 23.8    | ▲     | SMDT 2380 MEL | 1                | 1      |                    |     |
| 23.9    | ▲     | SMDT 2390 MEL | 15.4             | 4.3    | SMDH240□           | 1   |
| 24.0    | ▲     | SMDT 2400 MEL |                  | 1      |                    |     |
| 24.1    | ▲     | SMDT 2410 MEL |                  | 1      |                    |     |
| 24.2    | ▲     | SMDT 2420 MEL |                  | 4.4    |                    | 1   |
| 24.3    | ▲     | SMDT 2430 MEL |                  | 1      |                    |     |
| 24.4    | ▲     | SMDT 2440 MEL |                  | 1      |                    |     |
| 24.5    | ▲     | SMDT 2450 MEL |                  | 1      |                    |     |
| 24.6    | ▲     | SMDT 2460 MEL |                  | 1      |                    |     |
| 24.7    | ▲     | SMDT 2470 MEL | 4.5              | 1      |                    |     |
| 24.8    | ▲     | SMDT 2480 MEL | 1                | 1      |                    |     |
| 24.9    | ▲     | SMDT 2490 MEL | 15.8             | 4.5    | SMDH250□           | 1   |
| 25.0    | ▲     | SMDT 2500 MEL |                  | 1      |                    |     |
| 25.1    | ▲     | SMDT 2510 MEL |                  | 1      |                    |     |
| 25.2    | ▲     | SMDT 2520 MEL |                  | 1      |                    |     |
| 25.3    | ▲     | SMDT 2530 MEL |                  | 4.6    |                    | 1   |
| 25.4    | ▲     | SMDT 2540 MEL |                  | 1      |                    |     |
| 25.5    | ▲     | SMDT 2550 MEL |                  | 1      |                    |     |
| 25.6    | ▲     | SMDT 2560 MEL |                  | 1      |                    |     |
| 25.7    | ▲     | SMDT 2570 MEL | 4.7              | 1      |                    |     |
| 25.8    | ▲     | SMDT 2580 MEL | 1                | 1      |                    |     |
| 25.9    | ▲     | SMDT 2590 MEL | 16.4             | 4.7    | SMDH260□           | 1   |
| 26.0    | ▲     | SMDT 2600 MEL |                  | 1      |                    |     |
| 26.1    | ▲     | SMDT 2610 MEL |                  | 1      |                    |     |
| 26.2    | ▲     | SMDT 2620 MEL |                  | 1      |                    |     |
| 26.3    | ▲     | SMDT 2630 MEL |                  | 4.8    |                    | 1   |
| 26.4    | ▲     | SMDT 2640 MEL |                  | 1      |                    |     |
| 26.5    | ▲     | SMDT 2650 MEL |                  | 1      |                    |     |
| 26.6    | ▲     | SMDT 2660 MEL |                  | 1      |                    |     |
| 26.7    | ▲     | SMDT 2670 MEL | 4.9              | 1      |                    |     |
| 26.8    | ▲     | SMDT 2680 MEL | 1                | 1      |                    |     |
| 26.9    | ▲     | SMDT 2690 MEL | 17.1             | 4.9    | SMDH270□           | 1   |
| 27.0    | ▲     | SMDT 2700 MEL |                  | 1      |                    |     |
| 27.1    | ▲     | SMDT 2710 MEL |                  | 1      |                    |     |
| 27.2    | ▲     | SMDT 2720 MEL |                  | 1      |                    |     |
| 27.3    | ▲     | SMDT 2730 MEL |                  | 1      |                    |     |
| 27.4    | ▲     | SMDT 2740 MEL |                  | 5.0    |                    | 1   |
| 27.5    | ▲     | SMDT 2750 MEL |                  | 1      |                    |     |
| 27.6    | ▲     | SMDT 2760 MEL |                  | 1      |                    |     |
| 27.7    | ▲     | SMDT 2770 MEL | 1                |        |                    |     |
| 27.8    | ▲     | SMDT 2780 MEL | 5.1              | 1      |                    |     |
| 27.9    | ▲     | SMDT 2790 MEL | 17.7             | 5.1    | SMDH280□           | 1   |
| 28.0    | ▲     | SMDT 2800 MEL |                  |        |                    | 1   |
| 28.1    | ▲     | SMDT 2810 MEL |                  |        |                    | 1   |

Grade: ACX80 Recommended Cutting Conditions **P3** Applicable Holders **P10**

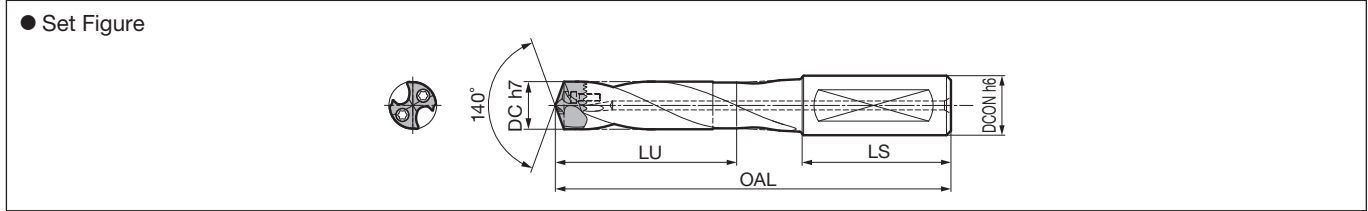
**Indexable Head MEL Type Diameter  $\varnothing$ 28.2 to 30.8mm** Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Tip PL | Applicable Holders | Fig |          |
|---------|-------|---------------|------------------|--------|--------------------|-----|----------|
| 28.2    | ▲     | SMDT 2820 MEL | 17.7             | 5.1    | SMDH280□           | 1   |          |
| 28.3    | ▲     | SMDT 2830 MEL |                  | 1      |                    |     |          |
| 28.4    | ▲     | SMDT 2840 MEL |                  | 1      |                    |     |          |
| 28.5    | ▲     | SMDT 2850 MEL |                  | 5.2    |                    | 1   |          |
| 28.6    | ▲     | SMDT 2860 MEL |                  | 1      |                    |     |          |
| 28.7    | ▲     | SMDT 2870 MEL |                  | 1      |                    |     |          |
| 28.8    | ▲     | SMDT 2880 MEL |                  | 1      |                    |     |          |
| 28.9    | ▲     | SMDT 2890 MEL |                  | 18.3   |                    | 5.3 | SMDH290□ |
| 29.0    | ▲     | SMDT 2900 MEL | 1                |        |                    |     |          |
| 29.1    | ▲     | SMDT 2910 MEL | 1                |        |                    |     |          |
| 29.2    | ▲     | SMDT 2920 MEL | 1                |        |                    |     |          |
| 29.3    | ▲     | SMDT 2930 MEL | 1                |        |                    |     |          |
| 29.4    | ▲     | SMDT 2940 MEL | 1                |        |                    |     |          |
| 29.5    | ▲     | SMDT 2950 MEL | 5.4              |        | 1                  |     |          |
| 29.6    | ▲     | SMDT 2960 MEL | 1                |        |                    |     |          |
| 29.7    | ▲     | SMDT 2970 MEL | 1                |        |                    |     |          |
| 29.8    | ▲     | SMDT 2980 MEL | 1                | 1      |                    |     |          |
| 29.9    | ▲     | SMDT 2990 MEL | 19.0             | 5.4    | SMDH300□           | 1   |          |
| 30.0    | ▲     | SMDT 3000 MEL |                  | 1      |                    |     |          |
| 30.1    | ▲     | SMDT 3010 MEL |                  | 1      |                    |     |          |
| 30.2    | ▲     | SMDT 3020 MEL |                  | 5.5    |                    | 1   |          |
| 30.3    | ▲     | SMDT 3030 MEL |                  | 1      |                    |     |          |
| 30.4    | ▲     | SMDT 3040 MEL |                  | 1      |                    |     |          |
| 30.5    | ▲     | SMDT 3050 MEL |                  | 1      |                    |     |          |
| 30.6    | ▲     | SMDT 3060 MEL |                  | 5.6    |                    | 1   |          |
| 30.7    | ▲     | SMDT 3070 MEL | 1                |        |                    |     |          |
| 30.8    | ▲     | SMDT 3080 MEL | 1                | 1      |                    |     |          |

Grade: ACX80 Recommended Cutting Conditions **P3** Applicable Holders **P10**

|   |                                     |                            |                            |                      |   |
|---|-------------------------------------|----------------------------|----------------------------|----------------------|---|
| <b>MTL</b><br>Carbon Steel Alloy Steel up to 2.25% Hardened Steel up to 45HRC | Carbon Steel Alloy Steel from 1.25% | Tempered Steel             | Hardened Steel up to 45HRC | Cast Iron            | Ductile Cast Iron   |
| <b>MSL</b><br>Carbon Steel Alloy Steel up to 2.25%                            | Carbon Steel Alloy Steel from 1.25% | Stainless Steel            | Ti Alloy                   | Heat-resistant Steel | Cast Iron Ductile Cast Iron Aluminum Alloy                      |
| <b>MEL</b><br>Carbon Steel Alloy Steel up to 2.25%                            | Carbon Steel Alloy Steel from 1.25% | Hardened Steel up to 45HRC | Stainless Steel            | Ti Alloy             | Heat-resistant Steel Cast Iron Ductile Cast Iron Aluminum Alloy |

\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



Body ø12.0 to 29.8mm Dimensions with MTL Type / MSL Type / MEL Type Set Dimensions (mm) Parts

| Dia. DC         | Hole Depth (L/D) | Cat. No.         | Stock | Effective Length LU | Overall Length OAL | Shank LS | Shank Dia. DCON | Indexable Head | Fig | Cap Screw  |              | Wrench   |
|-----------------|------------------|------------------|-------|---------------------|--------------------|----------|-----------------|----------------|-----|------------|--------------|----------|
|                 |                  |                  |       |                     |                    |          |                 |                |     |            |              |          |
| 12.0 ≤ D < 12.5 | 3                | <b>SMDH 120M</b> | ●     | 42.0                | 107.2              | 48       | 16              | MTL/MSL<br>MEL | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | <b>SMDH 120L</b> | ●     | 67.0                | 132.2              |          |                 |                |     |            |              |          |
| 12.5 ≤ D < 13.0 | 3                | <b>SMDH 125M</b> | ●     | 44.0                | 107.3              | 48       | 16              | MTL/MSL<br>MEL | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | <b>SMDH 125L</b> | ●     | 69.0                | 132.3              |          |                 |                |     |            |              |          |
| 13.0 ≤ D < 13.5 | 3                | <b>SMDH 130M</b> | ●     | 45.0                | 112.4              | 48       | 16              | MTL/MSL<br>MEL | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | <b>SMDH 130L</b> | ●     | 72.0                | 142.4              |          |                 |                |     |            |              |          |
| 13.5 ≤ D ≤ 14.5 | 3                | <b>SMDH 140M</b> | ●     | 51.0                | 119.0              | 48       | 16              | MTL/MSL<br>MEL | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | <b>SMDH 140L</b> | ●     | 80.0                | 149.0              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 140D</b> | ●     | 123.0               | 194.0              |          |                 |                |     |            |              |          |
| 14.5 < D ≤ 15.5 | 3                | <b>SMDH 150M</b> | ●     | 54.0                | 129.2              | 50       | 20              | MTL/MSL<br>MEL | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | <b>SMDH 150L</b> | ●     | 85.0                | 159.2              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 150D</b> | ●     | 131.0               | 204.2              |          |                 |                |     |            |              |          |
| 15.5 < D ≤ 16.5 | 3                | <b>SMDH 160M</b> | ●     | 57.0                | 134.4              | 50       | 20              | MTL/MSL<br>MEL | 1   | BXD02509IP | 0.93 to 1.24 | TRDR10IP |
|                 | 5                | <b>SMDH 160L</b> | ●     | 90.0                | 169.4              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 160D</b> | ●     | 140.0               | 214.4              |          |                 |                |     |            |              |          |
| 16.5 < D ≤ 17.5 | 3                | <b>SMDH 170M</b> | ●     | 60.0                | 139.6              | 50       | 20              | MTL/MSL<br>MEL | 1   | BXD02509IP | 0.93 to 1.24 | TRDR10IP |
|                 | 5                | <b>SMDH 170L</b> | ●     | 95.0                | 174.6              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 170D</b> | ●     | 148.0               | 224.6              |          |                 |                |     |            |              |          |
| 17.5 < D ≤ 18.5 | 3                | <b>SMDH 180M</b> | ●     | 63.0                | 144.8              | 50       | 20              | MTL/MSL<br>MEL | 1   | BXD02509IP | 0.93 to 1.24 | TRDR10IP |
|                 | 5                | <b>SMDH 180L</b> | ●     | 100.0               | 179.8              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 180D</b> | ●     | 156.0               | 229.8              |          |                 |                |     |            |              |          |
| 18.5 < D ≤ 19.5 | 3                | <b>SMDH 190M</b> | ●     | 67.0                | 160.0              | 56       | 25              | MTL/MSL<br>MEL | 1   | BXD03011IP | 1.83 to 2.44 | TRDR15IP |
|                 | 5                | <b>SMDH 190L</b> | ●     | 106.0               | 195.0              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 190D</b> | ●     | 164.0               | 255.0              |          |                 |                |     |            |              |          |
| 19.5 < D ≤ 20.5 | 3                | <b>SMDH 200M</b> | ●     | 70.0                | 160.1              | 56       | 25              | MTL/MSL<br>MEL | 1   | BXD03011IP | 1.83 to 2.44 | TRDR15IP |
|                 | 5                | <b>SMDH 200L</b> | ●     | 111.0               | 200.1              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 200D</b> | ●     | 172.0               | 265.1              |          |                 |                |     |            |              |          |
| 20.5 < D ≤ 21.5 | 3                | <b>SMDH 210M</b> | ●     | 73.0                | 160.3              | 56       | 25              | MTL/MSL<br>MEL | 1   | BXD03011IP | 1.83 to 2.44 | TRDR15IP |
|                 | 5                | <b>SMDH 210L</b> | ●     | 116.0               | 200.3              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 210D</b> | ●     | 180.0               | 270.3              |          |                 |                |     |            |              |          |
| 21.5 < D ≤ 22.8 | 3                | <b>SMDH 220M</b> | ●     | 77.0                | 165.1              | 56       | 25              | MTL/MSL<br>MEL | 1   | BXD03512IP | 2.79 to 3.72 | TRDR15IP |
|                 | 5                | <b>SMDH 220L</b> | ●     | 123.0               | 205.1              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 220D</b> | ●     | 191.0               | 275.1              |          |                 |                |     |            |              |          |
| 22.8 < D ≤ 23.8 | 3                | <b>SMDH 230M</b> | ●     | 80.0                | 164.7              | 56       | 25              | MTL/MSL<br>MEL | 1   | BXD03512IP | 2.79 to 3.72 | TRDR15IP |
|                 | 5                | <b>SMDH 230L</b> | ●     | 128.0               | 214.7              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 230D</b> | ●     | 199.0               | 284.7              |          |                 |                |     |            |              |          |
| 23.8 < D ≤ 24.8 | 3                | <b>SMDH 240M</b> | ●     | 83.0                | 174.6              | 60       | 32              | MTL/MSL<br>MEL | 1   | BXD03512IP | 2.79 to 3.72 | TRDR15IP |
|                 | 5                | <b>SMDH 240L</b> | ●     | 133.0               | 224.6              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 240D</b> | ●     | 207.0               | 299.6              |          |                 |                |     |            |              |          |
| 24.8 < D ≤ 25.8 | 3                | <b>SMDH 250M</b> | ●     | 87.0                | 174.5              | 60       | 32              | MTL/MSL<br>MEL | 1   | BXD04014IP | 4.14 to 5.52 | TRDR20IP |
|                 | 5                | <b>SMDH 250L</b> | ●     | 138.0               | 229.5              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 250D</b> | ●     | 216.0               | 304.5              |          |                 |                |     |            |              |          |
| 25.8 < D ≤ 26.8 | 3                | <b>SMDH 260M</b> | ●     | 90.0                | 179.7              | 60       | 32              | MTL/MSL<br>MEL | 1   | BXD04014IP | 4.14 to 5.52 | TRDR20IP |
|                 | 5                | <b>SMDH 260L</b> | ●     | 143.0               | 234.7              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 260D</b> | ●     | 224.0               | 314.7              |          |                 |                |     |            |              |          |
| 26.8 < D ≤ 27.8 | 3                | <b>SMDH 270M</b> | ●     | 93.0                | 179.9              | 60       | 32              | MTL/MSL<br>MEL | 1   | BXD04014IP | 4.14 to 5.52 | TRDR20IP |
|                 | 5                | <b>SMDH 270L</b> | ●     | 149.0               | 239.9              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 270D</b> | ●     | 232.0               | 324.9              |          |                 |                |     |            |              |          |
| 27.8 < D ≤ 28.8 | 3                | <b>SMDH 280M</b> | ●     | 96.0                | 185.1              | 60       | 32              | MTL/MSL<br>MEL | 1   | BXD04515IP | 4.98 to 6.64 | TRDR25IP |
|                 | 5                | <b>SMDH 280L</b> | ●     | 154.0               | 245.1              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 280D</b> | ●     | 240.0               | 330.1              |          |                 |                |     |            |              |          |
| 28.8 < D ≤ 29.8 | 3                | <b>SMDH 290M</b> | ●     | 99.0                | 190.3              | 60       | 32              | MTL/MSL<br>MEL | 1   | BXD04515IP | 4.98 to 6.64 | TRDR25IP |
|                 | 5                | <b>SMDH 290L</b> | ●     | 159.0               | 250.3              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 290D</b> | ●     | 248.0               | 340.3              |          |                 |                |     |            |              |          |

Recommended Cutting Conditions MTL Type Head MSL Type Head MEL Type Head Recommended Tightening Torque (N·m)

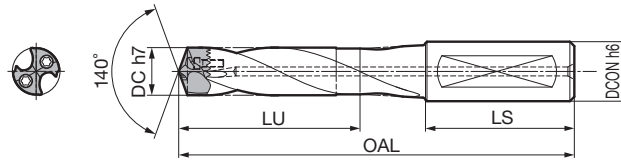
● mark: Standard stocked item

|            |                                      |                                     |                            |                            |                      |                      |
|------------|--------------------------------------|-------------------------------------|----------------------------|----------------------------|----------------------|----------------------|
| <b>MTL</b> | Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Tempered Steel             | Hardened Steel up to 65HRC | Cast Iron            | Ductile Cast Iron    |
| <b>MSL</b> | Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Stainless Steel            | Ti Alloy                   | Heat-resistant Steel | Cast Iron            |
| <b>MEL</b> | Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Hardened Steel up to 65HRC | Stainless Steel            | Ti Alloy             | Heat-resistant Steel |
|            |                                      |                                     |                            |                            |                      | Ductile Cast Iron    |
|            |                                      |                                     |                            |                            |                      | Cast Iron            |
|            |                                      |                                     |                            |                            |                      | Ductile Cast Iron    |
|            |                                      |                                     |                            |                            |                      | Aluminum Alloy       |
|            |                                      |                                     |                            |                            |                      | Ductile Cast Iron    |
|            |                                      |                                     |                            |                            |                      | Aluminum Alloy       |



\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.

● Set Figure



■ Body ø29.8 to 42.5mm Dimensions with MTL Type / MSL Type / MEL Type Set Dimensions (mm) ■ Parts

| Dia. DC         | Hole Depth (L/D) | Cat. No.         | Stock | Effective Length LU | Overall Length OAL | Shank LS | Shank Dia. DCON | Indexable Head | Fig | Cap Screw  |              | Wrench   |
|-----------------|------------------|------------------|-------|---------------------|--------------------|----------|-----------------|----------------|-----|------------|--------------|----------|
|                 |                  |                  |       |                     |                    |          |                 |                |     |            |              |          |
| 29.8 < D ≤ 30.8 | 3                | <b>SMDH 300M</b> | ●     | 103.0               | 190.5              | 60       | 32              | MTL/MSL<br>MEL | 1   | BXD04515IP | 4.98 to 6.64 | TRDR25IP |
|                 | 5                | <b>SMDH 300L</b> | ●     | 164.0               | 260.5              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 300D</b> | ●     | 257.0               | 350.5              |          |                 |                |     |            |              |          |
| 30.8 < D ≤ 32.0 | 3                | <b>SMDH 320M</b> | ●     | 106.0               | 200.7              | 60       | 32              | MTL            | 1   | BXD04515IP | 4.98 to 6.64 | TRDR25IP |
|                 | 5                | <b>SMDH 320L</b> | ●     | 170.0               | 265.8              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 320D</b> | ●     | 266.0               | 360.8              |          |                 |                |     |            |              |          |
| 32.0 < D ≤ 33.5 | 3                | <b>SMDH 335M</b> | ●     | 111.0               | 205.9              | 60       | 32              | MTL            | 1   | BXD04515IP | 4.98 to 6.64 | TRDR25IP |
|                 | 5                | <b>SMDH 335L</b> | ●     | 178.0               | 274.1              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 335D</b> | ●     | 279.0               | 376.1              |          |                 |                |     |            |              |          |
| 33.5 < D ≤ 35.0 | 3                | <b>SMDH 350M</b> | ●     | 116.0               | 221.2              | 70       | 40              | MTL            | 1   | BX0515     | 7.2          | HD040    |
|                 | 5                | <b>SMDH 350L</b> | ●     | 186.0               | 296.4              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 350D</b> | ●     | 291.0               | 401.4              |          |                 |                |     |            |              |          |
| 35.0 < D ≤ 36.5 | 3                | <b>SMDH 365M</b> | ●     | 121.0               | 226.4              | 70       | 40              | MTL            | 1   | BX0515     | 7.2          | HD040    |
|                 | 5                | <b>SMDH 365L</b> | ●     | 194.0               | 301.6              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 365D</b> | ●     | 303.0               | 411.6              |          |                 |                |     |            |              |          |
| 36.5 < D ≤ 38.0 | 3                | <b>SMDH 380M</b> | ●     | 125.0               | 231.7              | 70       | 40              | MTL            | 1   | BX0515     | 7.2          | HD040    |
|                 | 5                | <b>SMDH 380L</b> | ●     | 201.0               | 311.9              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 380D</b> | ●     | 315.0               | 426.9              |          |                 |                |     |            |              |          |
| 38.0 < D ≤ 39.5 | 3                | <b>SMDH 395M</b> | ●     | 130.0               | 237.0              | 70       | 40              | MTL            | 1   | BX0515     | 7.2          | HD040    |
|                 | 5                | <b>SMDH 395L</b> | ●     | 209.0               | 322.2              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 395D</b> | ●     | 328.0               | 437.2              |          |                 |                |     |            |              |          |
| 39.5 < D ≤ 41.0 | 3                | <b>SMDH 410M</b> | ●     | 135.0               | 252.2              | 70       | 40              | MTL            | 1   | BX0515     | 7.2          | HD040    |
|                 | 5                | <b>SMDH 410L</b> | ●     | 217.0               | 332.5              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 410D</b> | ●     | 340.0               | 457.5              |          |                 |                |     |            |              |          |
| 41.0 < D ≤ 42.5 | 3                | <b>SMDH 425M</b> | ●     | 140.0               | 257.5              | 70       | 40              | MTL            | 1   | BX0515     | 7.2          | HD040    |
|                 | 5                | <b>SMDH 425L</b> | ●     | 225.0               | 342.7              |          |                 |                |     |            |              |          |
|                 | 8                | <b>SMDH 425D</b> | ●     | 352.0               | 467.7              |          |                 |                |     |            |              |          |

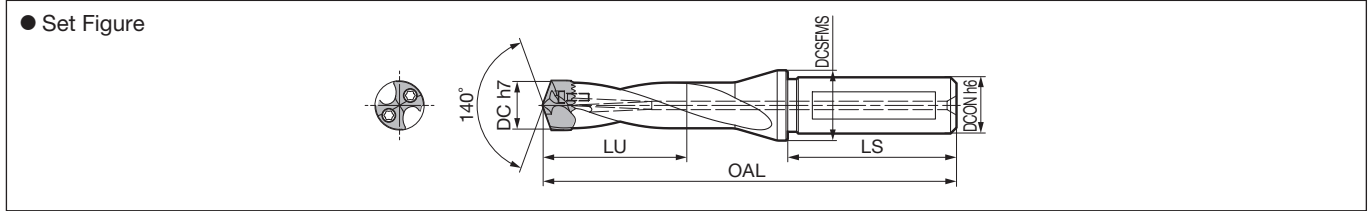
Recommended Cutting Conditions P3 MTL Type Head P4 MSL Type Head P6 MEL Type Head P8

Recommended Tightening Torque (N·m)

● mark: Standard stocked item

|  |   |                                  |                                  |                         |                         |
|--|---|----------------------------------|----------------------------------|-------------------------|-------------------------|
| <b>MTL</b><br>Carbon Steel<br>Alloy Steel<br>up to 0.25% | Carbon Steel<br>Alloy Steel<br>from 0.25% | Tempered<br>Steel                | Hardened<br>Steel<br>up to 65HRC | Cast Iron               | Ductile<br>Cast Iron    |
| <b>MSL</b><br>Carbon Steel<br>Alloy Steel<br>up to 0.25% | Carbon Steel<br>Alloy Steel<br>from 0.25% | Stainless<br>Steel               | Ti Alloy                         | Heat-resistant<br>Steel | Cast Iron               |
| <b>MEL</b><br>Carbon Steel<br>Alloy Steel<br>up to 0.25% | Carbon Steel<br>Alloy Steel<br>from 0.25% | Hardened<br>Steel<br>up to 65HRC | Stainless<br>Steel               | Ti Alloy                | Heat-resistant<br>Steel |

\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



Body ø12.0 to 24.8mm Dimensions with MTL Type / MSL Type / MEL Type Set Dimensions (mm) Parts

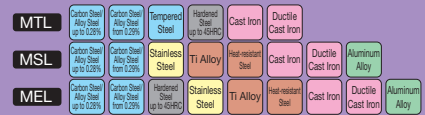
| Dia. DC         | Hole Depth (L/D) | Cat. No.       | Stock | Effective Length LU | Overall Length OAL | Shank LS | Flange Dia. DCSFMS | Shank Dia. DCON | Indexable Head     | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------|----------------|-------|---------------------|--------------------|----------|--------------------|-----------------|--------------------|-----|-------------|--------------|----------|
|                 |                  |                |       |                     |                    |          |                    |                 |                    |     |             |              |          |
| 12.0 ≤ D < 12.5 | 1.5              | SMDH 120-1.5DF | ●     | 23.0                | 90.5               | 48       | 20                 | 16              | MTL/<br>MSL<br>MEL | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 120-3DF   | ●     | 42.0                | 107.2              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 120-5DF   | ●     | 67.0                | 132.2              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 120-8DF   | ●     | 98.0                | 164.4              |          |                    |                 |                    |     |             |              |          |
| 12.5 ≤ D < 13.0 | 1.5              | SMDH 125-1.5DF | ●     | 24.0                | 91.0               | 48       | 20                 | 16              | MTL/<br>MSL<br>MEL | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 125-3DF   | ●     | 44.0                | 107.3              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 125-5DF   | ●     | 69.0                | 132.3              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 125-8DF   | ●     | 102.0               | 170.1              |          |                    |                 |                    |     |             |              |          |
| 13.0 ≤ D < 13.5 | 1.5              | SMDH 130-1.5DF | ●     | 25.0                | 92.2               | 48       | 20                 | 16              | MTL/<br>MSL<br>MEL | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 130-3DF   | ●     | 45.0                | 112.4              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 130-5DF   | ●     | 72.0                | 142.4              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 130-8DF   | ●     | 106.0               | 178.4              |          |                    |                 |                    |     |             |              |          |
| 13.5 ≤ D ≤ 14.5 | 1.5              | SMDH 140-1.5DF | ●     | 29.0                | 96.3               | 48       | 20                 | 16              | MTL/<br>MSL<br>MEL | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 140-3DF   | ●     | 51.0                | 119.0              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 140-5DF   | ●     | 80.0                | 149.0              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 140-8DF   | ●     | 123.0               | 194.0              |          |                    |                 |                    |     |             |              |          |
| 14.5 < D ≤ 15.5 | 1.5              | SMDH 150-1.5DF | ●     | 31.0                | 100.0              | 50       | 25                 | 20              | MTL/<br>MSL<br>MEL | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 150-3DF   | ●     | 54.0                | 129.2              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 150-5DF   | ●     | 85.0                | 159.2              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 150-8DF   | ●     | 131.0               | 204.2              |          |                    |                 |                    |     |             |              |          |
| 15.5 < D ≤ 16.5 | 1.5              | SMDH 160-1.5DF | ●     | 32.0                | 102.7              | 50       | 25                 | 20              | MTL/<br>MSL<br>MEL | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 160-3DF   | ●     | 57.0                | 134.4              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 160-5DF   | ●     | 90.0                | 169.4              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 160-8DF   | ●     | 140.0               | 214.4              |          |                    |                 |                    |     |             |              |          |
| 16.5 < D ≤ 17.5 | 1.5              | SMDH 170-1.5DF | ●     | 34.0                | 104.4              | 50       | 25                 | 20              | MTL/<br>MSL<br>MEL | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 170-3DF   | ●     | 60.0                | 139.6              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 170-5DF   | ●     | 95.0                | 174.6              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 170-8DF   | ●     | 148.0               | 224.6              |          |                    |                 |                    |     |             |              |          |
| 17.5 < D ≤ 18.5 | 1.5              | SMDH 180-1.5DF | ●     | 36.0                | 107.1              | 50       | 25                 | 20              | MTL/<br>MSL<br>MEL | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 180-3DF   | ●     | 63.0                | 144.8              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 180-5DF   | ●     | 100.0               | 179.8              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 180-8DF   | ●     | 156.0               | 229.8              |          |                    |                 |                    |     |             |              |          |
| 18.5 < D ≤ 19.5 | 1.5              | SMDH 190-1.5DF | ●     | 37.0                | 114.8              | 56       | 30                 | 25              | MTL/<br>MSL<br>MEL | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 190-3DF   | ●     | 67.0                | 160.0              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 190-5DF   | ●     | 106.0               | 195.0              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 190-8DF   | ●     | 164.0               | 255.0              |          |                    |                 |                    |     |             |              |          |
| 19.5 < D ≤ 20.5 | 1.5              | SMDH 200-1.5DF | ●     | 39.0                | 117.4              | 56       | 30                 | 25              | MTL/<br>MSL<br>MEL | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 200-3DF   | ●     | 70.0                | 160.1              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 200-5DF   | ●     | 111.0               | 200.1              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 200-8DF   | ●     | 172.0               | 265.1              |          |                    |                 |                    |     |             |              |          |
| 20.5 < D ≤ 21.5 | 1.5              | SMDH 210-1.5DF | ●     | 41.0                | 119.1              | 56       | 30                 | 25              | MTL/<br>MSL<br>MEL | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 210-3DF   | ●     | 73.0                | 160.3              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 210-5DF   | ●     | 116.0               | 200.3              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 210-8DF   | ●     | 180.0               | 270.3              |          |                    |                 |                    |     |             |              |          |
| 21.5 < D ≤ 22.8 | 1.5              | SMDH 220-1.5DF | ●     | 43.0                | 120.9              | 56       | 30                 | 25              | MTL/<br>MSL<br>MEL | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 220-3DF   | ●     | 77.0                | 165.1              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 220-5DF   | ●     | 123.0               | 205.1              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 220-8DF   | ●     | 191.0               | 275.1              |          |                    |                 |                    |     |             |              |          |
| 22.8 < D ≤ 23.8 | 1.5              | SMDH 230-1.5DF | ●     | 45.0                | 122.0              | 56       | 30                 | 25              | MTL/<br>MSL<br>MEL | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 230-3DF   | ●     | 80.0                | 164.7              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 230-5DF   | ●     | 128.0               | 214.7              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 230-8DF   | ●     | 199.0               | 284.7              |          |                    |                 |                    |     |             |              |          |
| 23.8 < D ≤ 24.8 | 1.5              | SMDH 240-1.5DF | ●     | 46.0                | 128.4              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 240-3DF   | ●     | 83.0                | 174.6              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 240-5DF   | ●     | 133.0               | 224.6              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 240-8DF   | ●     | 207.0               | 299.6              |          |                    |                 |                    |     |             |              |          |

Recommended Cutting Conditions MTL Type Head MSL Type Head MEL Type Head Recommended Tightening Torque (N·m)

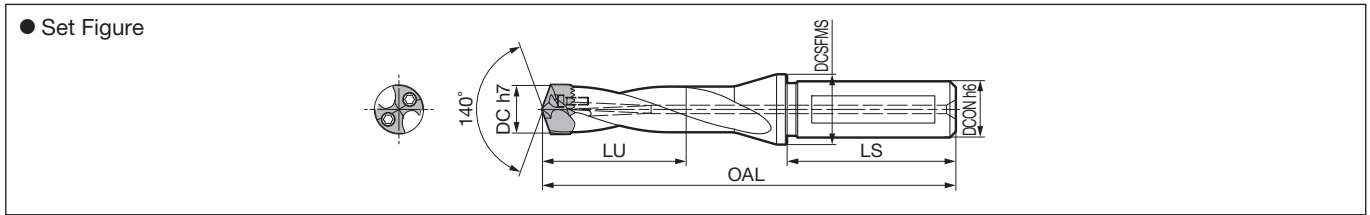
\*The SMDH000S Holder Cat. No. has been changed to SMDH000-1.5DF. The specifications have not changed.

● mark: Standard stocked item





\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



Body ø24.8 to 30.8mm Dimensions with MTL Type / MSL Type / MEL Type Set

Dimensions (mm)

Parts

| Dia. DC         | Hole Depth (L/D) | Cat. No.       | Stock | Effective Length LU | Overall Length OAL | Shank LS | Flange Dia. DCSFMS | Shank Dia. DCON | Indexable Head     | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------|----------------|-------|---------------------|--------------------|----------|--------------------|-----------------|--------------------|-----|-------------|--------------|----------|
|                 |                  |                |       |                     |                    |          |                    |                 |                    |     |             |              |          |
| 24.8 < D ≤ 25.8 | 1.5              | SMDH 250-1.5DF | ●     | 48.0                | 128.8              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 250-3DF   | ●     | 87.0                | 174.5              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 250-5DF   | ●     | 138.0               | 229.5              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 250-8DF   | ●     | 216.0               | 304.5              |          |                    |                 |                    |     |             |              |          |
| 25.8 < D ≤ 26.8 | 1.5              | SMDH 260-1.5DF | ●     | 50.0                | 131.5              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 260-3DF   | ●     | 90.0                | 179.7              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 260-5DF   | ●     | 143.0               | 234.7              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 260-8DF   | ●     | 224.0               | 314.7              |          |                    |                 |                    |     |             |              |          |
| 26.8 < D ≤ 27.8 | 1.5              | SMDH 270-1.5DF | ●     | 51.0                | 132.2              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 270-3DF   | ●     | 93.0                | 179.9              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 270-5DF   | ●     | 149.0               | 239.9              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 270-8DF   | ●     | 232.0               | 324.9              |          |                    |                 |                    |     |             |              |          |
| 27.8 < D ≤ 28.8 | 1.5              | SMDH 280-1.5DF | ●     | 53.0                | 133.9              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 280-3DF   | ●     | 96.0                | 185.1              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 280-5DF   | ●     | 154.0               | 245.1              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 280-8DF   | ●     | 240.0               | 330.1              |          |                    |                 |                    |     |             |              |          |
| 28.8 < D ≤ 29.8 | 1.5              | SMDH 290-1.5DF | ●     | 55.0                | 135.6              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 290-3DF   | ●     | 99.0                | 190.3              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 290-5DF   | ●     | 159.0               | 250.3              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 290-8DF   | ●     | 248.0               | 340.3              |          |                    |                 |                    |     |             |              |          |
| 29.8 < D ≤ 30.8 | 1.5              | SMDH 300-1.5DF | ●     | 56.0                | 138.3              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 300-3DF   | ●     | 103.0               | 190.5              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 300-5DF   | ●     | 164.0               | 260.5              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 300-8DF   | ●     | 257.0               | 350.5              |          |                    |                 |                    |     |             |              |          |

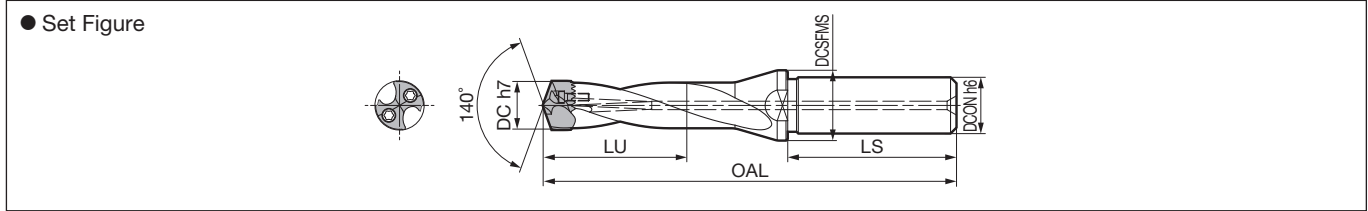
Recommended Cutting Conditions MTL Type Head MSL Type Head MEL Type Head Recommended Tightening Torque (N-m)

\*The SMDH000S Holder Cat. No. has been changed to SMDH000-1.5DF. The specifications have not changed.

|   |                            |                            |                      |                      |
|---|----------------------------|----------------------------|----------------------|----------------------|
| <b>MTL</b><br>Carbon Steel Alloy Steel up to 2.2% Ni<br>Carbon Steel Alloy Steel from 2.2% Ni | Tempered Steel             | Hardened Steel up to 45HRC | Cast Iron            | Ductile Cast Iron    |
| <b>MSL</b><br>Carbon Steel Alloy Steel up to 2.2% Ni<br>Carbon Steel Alloy Steel from 2.2% Ni | Stainless Steel            | Ti Alloy                   | Heat-resistant Steel | Cast Iron            |
| <b>MEL</b><br>Carbon Steel Alloy Steel up to 2.2% Ni<br>Carbon Steel Alloy Steel from 2.2% Ni | Hardened Steel up to 45HRC | Stainless Steel            | Ti Alloy             | Heat-resistant Steel |

DEX Coat
NX Coat
Indesizable head MTL
Indesizable head MSL
Indesizable head MEL
Coolant Hole
Indexable
1.5D
3D
5D
8D
12D

\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



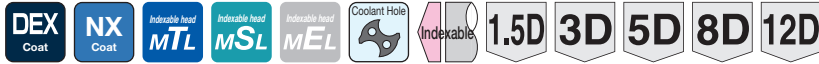
Body ø12.0 to 21.5mm Dimensions with MTL Type / MSL Type / MEL Type Set Dimensions (mm) Parts

| Dia. DC         | Hole Depth (L/D) | Cat. No.      | Stock | Effective Length LU | Overall Length OAL | Shank LS | Flange Dia. DCSFMS | Shank Dia. DCON | Indexable Head | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------|---------------|-------|---------------------|--------------------|----------|--------------------|-----------------|----------------|-----|-------------|--------------|----------|
|                 |                  |               |       |                     |                    |          |                    |                 |                |     |             |              |          |
| 12.0 ≤ D < 12.5 | 1.5              | SMDH 120-1.5D | ●     | 23.0                | 90.5               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 120-3D   | ●     | 42.0                | 107.2              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 120-5D   | ●     | 67.0                | 132.2              | 48       | 20                 | 16              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 120-8D   | ●     | 98.0                | 164.4              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 120-12D  | ●     | 146.0               | 213.3              |          |                    |                 |                | 1   |             |              |          |
| 12.5 ≤ D < 13.0 | 1.5              | SMDH 125-1.5D | ●     | 24.0                | 91.0               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 125-3D   | ●     | 44.0                | 107.3              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 125-5D   | ●     | 69.0                | 132.3              | 48       | 20                 | 16              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 125-8D   | ●     | 102.0               | 170.1              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 125-12D  | ●     | 152.0               | 219.5              |          |                    |                 |                | 1   |             |              |          |
| 13.0 ≤ D < 13.5 | 1.5              | SMDH 130-1.5D | ●     | 25.0                | 92.2               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 130-3D   | ●     | 45.0                | 112.4              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 130-5D   | ●     | 72.0                | 142.4              | 48       | 20                 | 16              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 130-8D   | ●     | 106.0               | 178.4              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 130-12D  | ●     | 158.0               | 225.7              |          |                    |                 |                | 1   |             |              |          |
| 13.5 ≤ D ≤ 14.5 | 1.5              | SMDH 140-1.5D | ●     | 29.0                | 96.3               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 140-3D   | ●     | 51.0                | 119.0              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 140-5D   | ●     | 80.0                | 149.0              | 48       | 20                 | 16              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 140-8D   | ●     | 123.0               | 194.0              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 140-12D  | ●     | 170.0               | 238.5              |          |                    |                 |                | 1   |             |              |          |
| 14.5 < D ≤ 15.5 | 1.5              | SMDH 150-1.5D | ●     | 31.0                | 100.0              |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 150-3D   | ●     | 54.0                | 129.2              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 150-5D   | ●     | 85.0                | 159.2              | 50       | 25                 | 20              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 150-8D   | ●     | 131.0               | 204.2              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 150-12D  | ●     | 182.0               | 253.0              |          |                    |                 |                | 1   |             |              |          |
| 15.5 < D ≤ 16.5 | 1.5              | SMDH 160-1.5D | ●     | 32.0                | 102.7              |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 160-3D   | ●     | 57.0                | 134.4              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 160-5D   | ●     | 90.0                | 169.4              | 50       | 25                 | 20              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 160-8D   | ●     | 140.0               | 214.4              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 160-12D  | ●     | 194.0               | 265.5              |          |                    |                 |                | 1   |             |              |          |
| 16.5 < D ≤ 17.5 | 1.5              | SMDH 170-1.5D | ●     | 34.0                | 104.4              |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 170-3D   | ●     | 60.0                | 139.6              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 170-5D   | ●     | 95.0                | 174.6              | 50       | 25                 | 20              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 170-8D   | ●     | 148.0               | 224.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 170-12D  | ●     | 207.0               | 278.1              |          |                    |                 |                | 1   |             |              |          |
| 17.5 < D ≤ 18.5 | 1.5              | SMDH 180-1.5D | ●     | 36.0                | 107.1              |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 180-3D   | ●     | 63.0                | 144.8              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 180-5D   | ●     | 100.0               | 179.8              | 50       | 25                 | 20              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 180-8D   | ●     | 156.0               | 229.8              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 180-12D  | ●     | 219.0               | 290.5              |          |                    |                 |                | 1   |             |              |          |
| 18.5 < D ≤ 19.5 | 1.5              | SMDH 190-1.5D | ●     | 37.0                | 114.8              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 190-3D   | ●     | 67.0                | 160.0              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 190-5D   | ●     | 106.0               | 195.0              | 56       | 30                 | 25              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 190-8D   | ●     | 164.0               | 255.0              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 190-12D  | ●     | 231.0               | 309.1              |          |                    |                 |                | 1   |             |              |          |
| 19.5 < D ≤ 20.5 | 1.5              | SMDH 200-1.5D | ●     | 39.0                | 117.4              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 200-3D   | ●     | 70.0                | 160.1              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 200-5D   | ●     | 111.0               | 200.1              | 56       | 30                 | 25              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 200-8D   | ●     | 172.0               | 265.1              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 200-12D  | ●     | 243.0               | 321.4              |          |                    |                 |                | 1   |             |              |          |
| 20.5 < D ≤ 21.5 | 1.5              | SMDH 210-1.5D | ●     | 41.0                | 119.1              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 210-3D   | ●     | 73.0                | 160.3              |          |                    |                 | MTL/MSL        | 1   |             |              |          |
|                 | 5                | SMDH 210-5D   | ●     | 116.0               | 200.3              | 56       | 30                 | 25              | MEL            | 1   |             |              |          |
|                 | 8                | SMDH 210-8D   | ●     | 180.0               | 270.3              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 210-12D  | ●     | 255.0               | 333.9              |          |                    |                 |                | 1   |             |              |          |

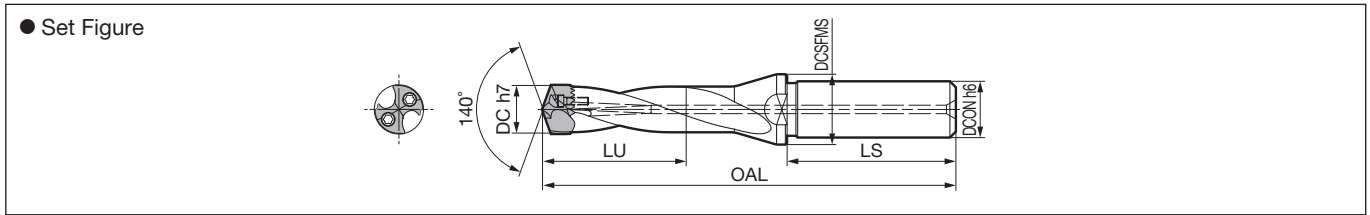
Recommended Cutting Conditions MTL Type Head MSL Type Head MEL Type Head Recommended Tightening Torque (N·m)

● mark: Standard stocked item

|            |                                      |                                     |                            |                            |                      |                      |
|------------|--------------------------------------|-------------------------------------|----------------------------|----------------------------|----------------------|----------------------|
| <b>MTL</b> | Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Tempered Steel             | Hardened Steel up to 65HRC | Cast Iron            | Ductile Cast Iron    |
| <b>MSL</b> | Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Stainless Steel            | Ti Alloy                   | Heat-resistant Steel | Cast Iron            |
| <b>MEL</b> | Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Hardened Steel up to 65HRC | Stainless Steel            | Ti Alloy             | Heat-resistant Steel |



\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



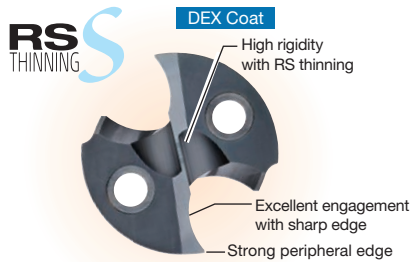
Body ø21.5 to 30.8mm Dimensions with MTL Type / MSL Type / MEL Type Set Dimensions (mm) **Parts**

| Dia. DC         | Hole Depth (L/D) | Cat. No.      | Stock | Effective Length LU | Overall Length OAL | Shank LS | Flange Dia. DCSFMS | Shank Dia. DCON | Indexable Head     | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------|---------------|-------|---------------------|--------------------|----------|--------------------|-----------------|--------------------|-----|-------------|--------------|----------|
|                 |                  |               |       |                     |                    |          |                    |                 |                    |     |             |              |          |
| 21.5 < D ≤ 22.8 | 1.5              | SMDH 220-1.5D | ●     | 43.0                | 120.9              | 56       | 30                 | 25              | MTL/<br>MSL<br>MEL | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 220-3D   | ●     | 77.0                | 165.1              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 220-5D   | ●     | 123.0               | 205.1              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 220-8D   | ●     | 191.0               | 275.1              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 220-12D  | ●     | 268.0               | 347.0              |          |                    |                 |                    |     |             |              |          |
| 22.8 < D ≤ 23.8 | 1.5              | SMDH 230-1.5D | ●     | 45.0                | 122.0              | 56       | 30                 | 25              | MTL/<br>MSL<br>MEL | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 230-3D   | ●     | 80.0                | 164.7              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 230-5D   | ●     | 128.0               | 214.7              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 230-8D   | ●     | 199.0               | 284.7              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 230-12D  | ●     | 280.0               | 359.0              |          |                    |                 |                    |     |             |              |          |
| 23.8 < D ≤ 24.8 | 1.5              | SMDH 240-1.5D | ●     | 46.0                | 128.4              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 240-3D   | ●     | 83.0                | 174.6              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 240-5D   | ●     | 133.0               | 224.6              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 240-8D   | ●     | 207.0               | 299.6              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 240-12D  | ●     | 292.0               | 376.1              |          |                    |                 |                    |     |             |              |          |
| 24.8 < D ≤ 25.8 | 1.5              | SMDH 250-1.5D | ●     | 48.0                | 128.8              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 250-3D   | ●     | 87.0                | 174.5              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 250-5D   | ●     | 138.0               | 229.5              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 250-8D   | ●     | 216.0               | 304.5              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 250-12D  | ●     | 304.0               | 388.3              |          |                    |                 |                    |     |             |              |          |
| 25.8 < D ≤ 26.8 | 1.5              | SMDH 260-1.5D | ●     | 50.0                | 131.5              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 260-3D   | ●     | 90.0                | 179.7              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 260-5D   | ●     | 143.0               | 234.7              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 260-8D   | ●     | 224.0               | 314.7              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 260-12D  | ●     | 316.0               | 400.8              |          |                    |                 |                    |     |             |              |          |
| 26.8 < D ≤ 27.8 | 1.5              | SMDH 270-1.5D | ●     | 51.0                | 132.2              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 270-3D   | ●     | 93.0                | 179.9              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 270-5D   | ●     | 149.0               | 239.9              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 270-8D   | ●     | 232.0               | 324.9              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 270-12D  | ●     | 328.0               | 413.3              |          |                    |                 |                    |     |             |              |          |
| 27.8 < D ≤ 28.8 | 1.5              | SMDH 280-1.5D | ●     | 53.0                | 133.9              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 280-3D   | ●     | 96.0                | 185.1              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 280-5D   | ●     | 154.0               | 245.1              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 280-8D   | ●     | 240.0               | 330.1              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 280-12D  | ●     | 341.0               | 425.8              |          |                    |                 |                    |     |             |              |          |
| 28.8 < D ≤ 29.8 | 1.5              | SMDH 290-1.5D | ●     | 55.0                | 135.6              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 290-3D   | ●     | 99.0                | 190.3              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 290-5D   | ●     | 159.0               | 250.3              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 290-8D   | ●     | 248.0               | 340.3              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 290-12D  | ●     | 353.0               | 438.4              |          |                    |                 |                    |     |             |              |          |
| 29.8 < D ≤ 30.8 | 1.5              | SMDH 300-1.5D | ●     | 56.0                | 138.3              | 60       | 37                 | 32              | MTL/<br>MSL<br>MEL | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 300-3D   | ●     | 103.0               | 190.5              |          |                    |                 |                    |     |             |              |          |
|                 | 5                | SMDH 300-5D   | ●     | 164.0               | 260.5              |          |                    |                 |                    |     |             |              |          |
|                 | 8                | SMDH 300-8D   | ●     | 257.0               | 350.5              |          |                    |                 |                    |     |             |              |          |
|                 | 12               | SMDH 300-12D  | ●     | 365.0               | 450.8              |          |                    |                 |                    |     |             |              |          |

Recommended Cutting Conditions MTL Type Head MSL Type Head MEL Type Head Recommended Tightening Torque (N-m)

# MFS Type

Ideal for drilling on non-flat surfaces and burr control



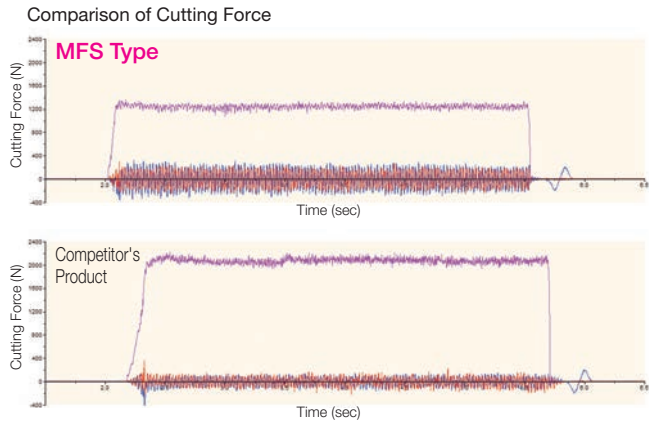
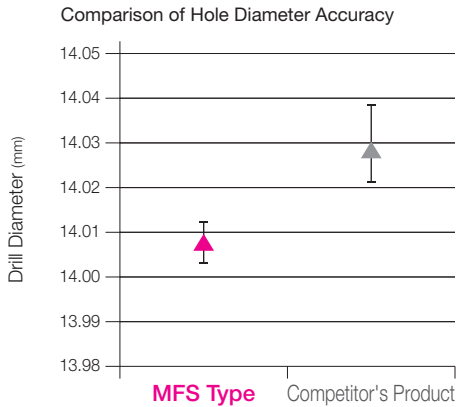
- **Suited to various types of drilling thanks to a point angle of 180°**

Supports high-efficiency spot facing, drilling on non-flat surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.

- **Improves machining stability**

Achieves high rigidity by employing RS thinning, which ensures thick web at the bottom.

## Performance



Tool : SMDH140-1.5DF + SMDT1400MFS  
 Work Material : S50C  
 Cutting Conditions : vc = 100mm/min f = 0.15mm/rev Hole depth 21mm Wet

## Precautions when Using MFS Type Heads

| Application       | No guide hole (direct drilling) |                  | With guide hole           |   | Flat Finishing of Hole Bottom |
|-------------------|---------------------------------|------------------|---------------------------|---|-------------------------------|
|                   | Flat surface                    | Non-flat surface | Guide Holes               |   |                               |
| 1.5D holder       | ○                               | ○                | ○ (guide hole not needed) | ○ | ○                             |
| 3D to 12D holders | ×                               | ×                | ×                         | × | ○                             |

## Recommended Cutting Conditions (MFS Type)

n: Spindle Speed (min<sup>-1</sup>), vc: Cutting Speed (m/min), f: Feed Rate (mm/rev)

| Work Material | Mild Steel (up to 250HB) | General Steel (250 to 320HB) | Hardened Steel (45HRC) | Stainless Steel (up to 200HB) | Gray Cast Iron        | Ductile Cast Iron     | Aluminum Alloy*       |                |
|---------------|--------------------------|------------------------------|------------------------|-------------------------------|-----------------------|-----------------------|-----------------------|----------------|
| Dia. DC (mm)  | Min. - Optimum - Max.    | Min. - Optimum - Max.        | Min. - Optimum - Max.  | Min. - Optimum - Max.         | Min. - Optimum - Max. | Min. - Optimum - Max. | Min. - Optimum - Max. |                |
| ø16.0         | n                        | 2,000                        | 2,000                  | 1,200                         | 1,200                 | 1,400                 | 4,800                 |                |
|               | vc                       | 60-100-120                   | 70-100-120             | 40-60-90                      | 50-60-80              | 50-70-90              | 200-240-260           |                |
|               | f                        | 0.15-0.20-0.35               | 0.15-0.20-0.30         | 0.10-0.15-0.20                | 0.10-0.15-0.20        | 0.20-0.25-0.30        | 0.20-0.25-0.30        | 0.35-0.45-0.55 |
| ø20.0         | n                        | 1,600                        | 1,600                  | 1,000                         | 1,100                 | 1,300                 | 3,800                 |                |
|               | vc                       | 80-100-120                   | 70-100-120             | 40-60-90                      | 60-70-90              | 60-80-100             | 50-70-90              | 200-240-260    |
|               | f                        | 0.15-0.25-0.35               | 0.15-0.25-0.35         | 0.15-0.20-0.25                | 0.15-0.20-0.25        | 0.20-0.30-0.35        | 0.20-0.25-0.35        | 0.35-0.50-0.60 |
| ø30.8         | n                        | 1,000                        | 1,000                  | 600                           | 700                   | 800                   | 2,500                 |                |
|               | vc                       | 80-100-120                   | 70-100-120             | 40-60-90                      | 60-70-90              | 60-80-100             | 50-70-90              | 200-240-260    |
|               | f                        | 0.20-0.30-0.35               | 0.20-0.25-0.35         | 0.15-0.20-0.25                | 0.15-0.20-0.25        | 0.20-0.30-0.40        | 0.25-0.30-0.35        | 0.35-0.50-0.60 |

Note: The recommended hole depth is 2 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces.

The recommended cutting conditions are those for drilling in flat horizontal surfaces.

Adjust the feed rate according to the inclination angle when drilling in an inclined surface. Set the feed rate at 70% or lower when the inclination angle is 30° or less.

Set the feed rate at 50% or lower when the inclination angle is larger than 30°. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

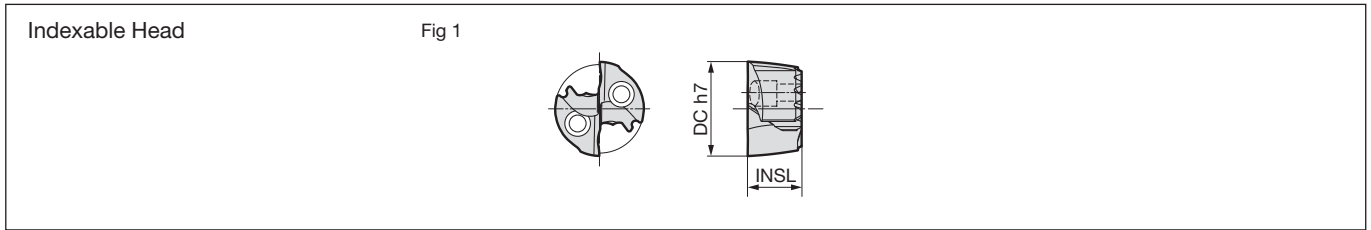
(\*) Inquire if you require special drill heads for aluminum alloy.



# SMD Type (Internal Coolant Supply)



\*For h7 tolerance, refer to Chapter N References in the General Catalogue.



Indexable Head MFS Type Diameter  $\phi$ 12.0 to 21.5mm Dimensions (mm)

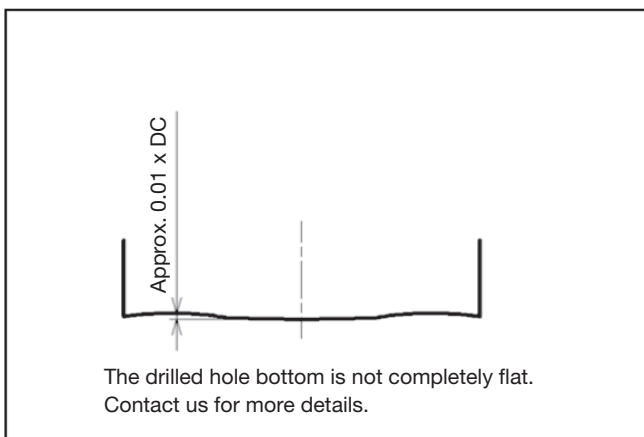
| Dia. DC | Stock | Cat. No.      | Head Length INSL | Applicable Holders | Fig |
|---------|-------|---------------|------------------|--------------------|-----|
| 12.0    | ●     | SMDT 1200 MFS | 7.1              | SMDH120□           | 1   |
| 12.5    | ●     | SMDT 1250 MFS | 7.2              | SMDH125□           | 1   |
| 13.0    | ●     | SMDT 1300 MFS | 7.5              | SMDH130□           | 1   |
| 13.5    | ●     | SMDT 1350 MFS |                  |                    | 1   |
| 14.0    | ●     | SMDT 1400 MFS | 7.9              | SMDH140□           | 1   |
| 14.5    | ●     | SMDT 1450 MFS |                  |                    | 1   |
| 15.0    | ●     | SMDT 1500 MFS |                  |                    | 1   |
| 15.5    | ●     | SMDT 1550 MFS | 8.3              | SMDH150□           | 1   |
| 16.0    | ●     | SMDT 1600 MFS |                  |                    | 1   |
| 16.5    | ●     | SMDT 1650 MFS | 8.8              | SMDH160□           | 1   |
| 17.0    | ●     | SMDT 1700 MFS |                  |                    | 1   |
| 17.5    | ●     | SMDT 1750 MFS | 9.3              | SMDH170□           | 1   |
| 18.0    | ●     | SMDT 1800 MFS |                  |                    | 1   |
| 18.5    | ●     | SMDT 1850 MFS | 9.8              | SMDH180□           | 1   |
| 19.0    | ●     | SMDT 1900 MFS |                  |                    | 1   |
| 19.5    | ●     | SMDT 1950 MFS | 10.2             | SMDH190□           | 1   |
| 20.0    | ●     | SMDT 2000 MFS |                  |                    | 1   |
| 20.5    | ●     | SMDT 2050 MFS | 10.7             | SMDH200□           | 1   |
| 21.0    | ●     | SMDT 2100 MFS |                  |                    | 1   |
| 21.5    | ●     | SMDT 2150 MFS | 11.2             | SMDH210□           | 1   |

Grade: ACX70 Recommended Cutting Conditions **P16** Applicable Holders **P18**

Indexable Head MFS Type Diameter  $\phi$ 22.0 to 30.0mm Dimensions (mm)

| Dia. DC | Stock | Cat. No.      | Head Length INSL | Applicable Holders | Fig |
|---------|-------|---------------|------------------|--------------------|-----|
| 22.0    | ●     | SMDT 2200 MFS |                  |                    | 1   |
| 22.5    | ●     | SMDT 2250 MFS | 11.2             | SMDH220□           | 1   |
| 23.0    | ●     | SMDT 2300 MFS |                  |                    | 1   |
| 23.5    | ●     | SMDT 2350 MFS | 11.2             | SMDH230□           | 1   |
| 24.0    | ●     | SMDT 2400 MFS |                  |                    | 1   |
| 24.5    | ●     | SMDT 2450 MFS | 11.3             | SMDH240□           | 1   |
| 25.0    | ●     | SMDT 2500 MFS |                  |                    | 1   |
| 25.5    | ●     | SMDT 2550 MFS | 11.7             | SMDH250□           | 1   |
| 26.0    | ●     | SMDT 2600 MFS |                  |                    | 1   |
| 26.5    | ●     | SMDT 2650 MFS | 12.2             | SMDH260□           | 1   |
| 27.0    | ●     | SMDT 2700 MFS |                  |                    | 1   |
| 27.5    | ●     | SMDT 2750 MFS | 12.7             | SMDH270□           | 1   |
| 28.0    | ●     | SMDT 2800 MFS |                  |                    | 1   |
| 28.5    | ●     | SMDT 2850 MFS | 13.2             | SMDH280□           | 1   |
| 29.0    | ●     | SMDT 2900 MFS |                  |                    | 1   |
| 29.5    | ●     | SMDT 2950 MFS | 13.6             | SMDH290□           | 1   |
| 30.0    | ●     | SMDT 3000 MFS | 14.1             | SMDH300□           | 1   |

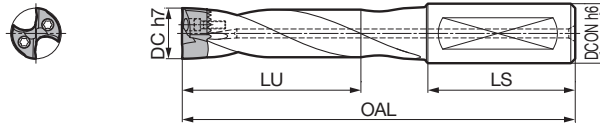
Grade: ACX70 Recommended Cutting Conditions **P16** Applicable Holders **P18**





\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.

● Set Figure



■ Body ø12.0 to 29.8mm Dimensions with MFS Type Set

Dimensions (mm)

■ Parts

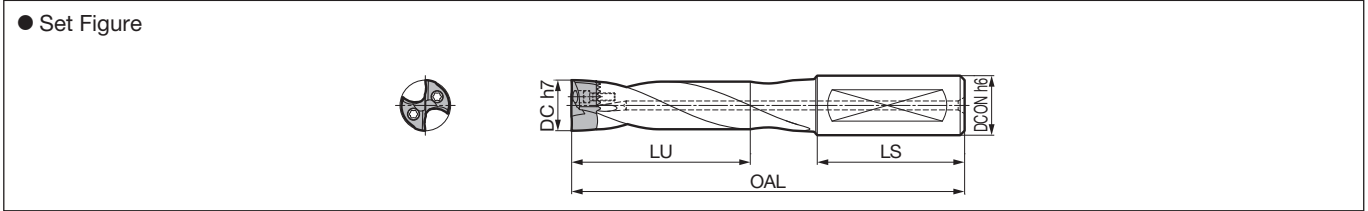
| Dia. DC         | Hole Depth (L/D) | Cat. No.  | Stock | Effective Length LU | Overall Length OAL | Shank LS | Shank Dia. DCON | Indexable Head | Fig | Cap Screw  |              | Wrench   |
|-----------------|------------------|-----------|-------|---------------------|--------------------|----------|-----------------|----------------|-----|------------|--------------|----------|
|                 |                  |           |       |                     |                    |          |                 |                |     |            |              |          |
| 12.0 ≤ D < 12.5 | 3                | SMDH 120M | ●     | 40.0                | 105.2              | 48       | 16              | MFS            | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | SMDH 120L | ●     | 65.0                | 130.2              |          |                 |                |     |            |              |          |
| 12.5 ≤ D < 13.0 | 3                | SMDH 125M | ●     | 41.0                | 105.1              | 48       | 16              | MFS            | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | SMDH 125L | ●     | 67.0                | 130.1              |          |                 |                |     |            |              |          |
| 13.0 ≤ D < 13.5 | 3                | SMDH 130M | ●     | 43.0                | 110.2              | 48       | 16              | MFS            | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | SMDH 130L | ●     | 70.0                | 140.2              |          |                 |                |     |            |              |          |
| 13.5 ≤ D ≤ 14.5 | 3                | SMDH 140M | ●     | 48.0                | 116.6              | 48       | 16              | MFS            | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | SMDH 140L | ●     | 77.0                | 146.6              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 140D | ●     | 121.0               | 191.6              |          |                 |                |     |            |              |          |
| 14.5 < D ≤ 15.5 | 3                | SMDH 150M | ●     | 51.0                | 126.6              | 50       | 20              | MFS            | 1   | BXD02208IP | 0.75 to 1.00 | TRDR08IP |
|                 | 5                | SMDH 150L | ●     | 82.0                | 156.6              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 150D | ●     | 129.0               | 201.6              |          |                 |                |     |            |              |          |
| 15.5 < D ≤ 16.5 | 3                | SMDH 160M | ●     | 54.0                | 131.6              | 50       | 20              | MFS            | 1   | BXD02509IP | 0.93 to 1.24 | TRDR10IP |
|                 | 5                | SMDH 160L | ●     | 87.0                | 166.6              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 160D | ●     | 137.0               | 211.6              |          |                 |                |     |            |              |          |
| 16.5 < D ≤ 17.5 | 3                | SMDH 170M | ●     | 57.0                | 136.6              | 50       | 20              | MFS            | 1   | BXD02509IP | 0.93 to 1.24 | TRDR10IP |
|                 | 5                | SMDH 170L | ●     | 92.0                | 171.6              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 170D | ●     | 145.0               | 221.6              |          |                 |                |     |            |              |          |
| 17.5 < D ≤ 18.5 | 3                | SMDH 180M | ●     | 60.0                | 141.7              | 50       | 20              | MFS            | 1   | BXD02509IP | 0.93 to 1.24 | TRDR10IP |
|                 | 5                | SMDH 180L | ●     | 97.0                | 176.7              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 180D | ●     | 153.0               | 226.7              |          |                 |                |     |            |              |          |
| 18.5 < D ≤ 19.5 | 3                | SMDH 190M | ●     | 63.0                | 156.6              | 56       | 25              | MFS            | 1   | BXD03011IP | 1.83 to 2.44 | TRDR15IP |
|                 | 5                | SMDH 190L | ●     | 102.0               | 191.6              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 190D | ●     | 161.0               | 251.6              |          |                 |                |     |            |              |          |
| 19.5 < D ≤ 20.5 | 3                | SMDH 200M | ●     | 66.0                | 156.7              | 56       | 25              | MFS            | 1   | BXD03011IP | 1.83 to 2.44 | TRDR15IP |
|                 | 5                | SMDH 200L | ●     | 107.0               | 196.7              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 200D | ●     | 169.0               | 261.7              |          |                 |                |     |            |              |          |
| 20.5 < D ≤ 21.5 | 3                | SMDH 210M | ●     | 69.0                | 156.7              | 56       | 25              | MFS            | 1   | BXD03011IP | 1.83 to 2.44 | TRDR15IP |
|                 | 5                | SMDH 210L | ●     | 112.0               | 196.7              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 210D | ●     | 177.0               | 266.7              |          |                 |                |     |            |              |          |
| 21.5 < D ≤ 22.8 | 3                | SMDH 220M | ●     | 73.0                | 161.3              | 56       | 25              | MFS            | 1   | BXD03512IP | 2.79 to 3.72 | TRDR15IP |
|                 | 5                | SMDH 220L | ●     | 119.0               | 201.3              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 220D | ●     | 187.0               | 271.3              |          |                 |                |     |            |              |          |
| 22.8 < D ≤ 23.8 | 3                | SMDH 230M | ●     | 76.0                | 160.7              | 56       | 25              | MFS            | 1   | BXD03512IP | 2.79 to 3.72 | TRDR15IP |
|                 | 5                | SMDH 230L | ●     | 124.0               | 210.7              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 230D | ●     | 195.0               | 280.7              |          |                 |                |     |            |              |          |
| 23.8 < D ≤ 24.8 | 3                | SMDH 240M | ●     | 79.0                | 170.5              | 60       | 32              | MFS            | 1   | BXD03512IP | 2.79 to 3.72 | TRDR15IP |
|                 | 5                | SMDH 240L | ●     | 129.0               | 220.5              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 240D | ●     | 203.0               | 295.5              |          |                 |                |     |            |              |          |
| 24.8 < D ≤ 25.8 | 3                | SMDH 250M | ●     | 82.0                | 170.4              | 60       | 32              | MFS            | 1   | BXD04014IP | 4.14 to 5.52 | TRDR20IP |
|                 | 5                | SMDH 250L | ●     | 134.0               | 225.4              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 250D | ●     | 211.0               | 300.4              |          |                 |                |     |            |              |          |
| 25.8 < D ≤ 26.8 | 3                | SMDH 260M | ●     | 85.0                | 175.5              | 60       | 32              | MFS            | 1   | BXD04014IP | 4.14 to 5.52 | TRDR20IP |
|                 | 5                | SMDH 260L | ●     | 139.0               | 230.5              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 260D | ●     | 219.0               | 310.5              |          |                 |                |     |            |              |          |
| 26.8 < D ≤ 27.8 | 3                | SMDH 270M | ●     | 88.0                | 175.5              | 60       | 32              | MFS            | 1   | BXD04014IP | 4.14 to 5.52 | TRDR20IP |
|                 | 5                | SMDH 270L | ●     | 144.0               | 235.5              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 270D | ●     | 227.0               | 320.5              |          |                 |                |     |            |              |          |
| 27.8 < D ≤ 28.8 | 3                | SMDH 280M | ●     | 91.0                | 180.6              | 60       | 32              | MFS            | 1   | BXD04515IP | 4.98 to 6.64 | TRDR25IP |
|                 | 5                | SMDH 280L | ●     | 149.0               | 240.6              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 280D | ●     | 235.0               | 325.6              |          |                 |                |     |            |              |          |
| 28.8 < D ≤ 29.8 | 3                | SMDH 290M | ●     | 94.0                | 185.4              | 60       | 32              | MFS            | 1   | BXD04515IP | 4.98 to 6.64 | TRDR25IP |
|                 | 5                | SMDH 290L | ●     | 154.0               | 245.4              |          |                 |                |     |            |              |          |
|                 | 8                | SMDH 290D | ●     | 243.0               | 335.4              |          |                 |                |     |            |              |          |

Recommended Cutting Conditions MFS Type Head

Recommended Tightening Torque (N·m)



\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



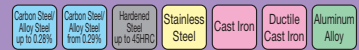
**Body ø29.8 to 30.8mm Dimensions with MFS Type Set** Dimensions (mm) **Parts**

| Dia.<br>DC      | Hole Depth<br>(L/D) | Cat. No.         | Stock | Effective Length<br>LU | Overall Length<br>OAL | Shank<br>LS | Shank Dia.<br>DCON | Indexable Head | Fig | Cap Screw |  | Wrench |
|-----------------|---------------------|------------------|-------|------------------------|-----------------------|-------------|--------------------|----------------|-----|-----------|--|--------|
|                 |                     |                  |       |                        |                       |             |                    |                |     |           |  |        |
| 29.8 < D ≤ 30.8 | 3                   | <b>SMDH 300M</b> | ●     | <b>97.0</b>            | <b>185.6</b>          | 60          | 32                 | MFS            | 1   |           |  |        |
|                 | 5                   | <b>SMDH 300L</b> | ●     | <b>159.0</b>           | <b>255.6</b>          |             |                    |                |     |           |  |        |
|                 | 8                   | <b>SMDH 300D</b> | ●     | <b>251.0</b>           | <b>345.6</b>          |             |                    |                |     |           |  |        |

Recommended Cutting Conditions **P16** MFS Type Head **P17**

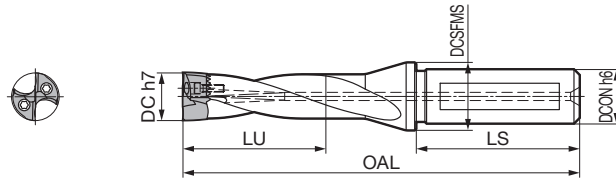
Recommended Tightening Torque (N·m)

**4.98 to 6.64**



\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.

● Set Figure



Body ø12.0 to 24.8mm Dimensions with MFS Type Set

Dimensions (mm)

Parts

| Dia. DC         | Hole Depth (L/D) | Cat. No.       | Stock | Effective Length LU | Overall Length OAL | Shank LS | Flange Dia. DCSFMS | Shank Dia. DCON | Indexable Head | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------|----------------|-------|---------------------|--------------------|----------|--------------------|-----------------|----------------|-----|-------------|--------------|----------|
|                 |                  |                |       |                     |                    |          |                    |                 |                |     |             |              |          |
| 12.0 ≤ D < 12.5 | 1.5              | SMDH 120-1.5DF | ●     | 21.0                | 88.5               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 120-3DF   | ●     | 40.0                | 105.2              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 120-5DF   | ●     | 65.0                | 130.2              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 120-8DF   | ●     | 96.0                | 162.4              |          |                    |                 |                | 1   |             |              |          |
| 12.5 ≤ D < 13.0 | 1.5              | SMDH 125-1.5DF | ●     | 22.0                | 88.8               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 125-3DF   | ●     | 41.0                | 105.1              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 125-5DF   | ●     | 67.0                | 130.1              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 125-8DF   | ●     | 100.0               | 167.9              |          |                    |                 |                | 1   |             |              |          |
| 13.0 ≤ D < 13.5 | 1.5              | SMDH 130-1.5DF | ●     | 23.0                | 90.0               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 130-3DF   | ●     | 43.0                | 110.2              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 130-5DF   | ●     | 70.0                | 140.2              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 130-8DF   | ●     | 104.0               | 176.2              |          |                    |                 |                | 1   |             |              |          |
| 13.5 ≤ D ≤ 14.5 | 1.5              | SMDH 140-1.5DF | ●     | 26.0                | 93.9               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 140-3DF   | ●     | 48.0                | 116.6              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 140-5DF   | ●     | 77.0                | 146.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 140-8DF   | ●     | 121.0               | 191.6              |          |                    |                 |                | 1   |             |              |          |
| 14.5 < D ≤ 15.5 | 1.5              | SMDH 150-1.5DF | ●     | 28.0                | 97.3               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 150-3DF   | ●     | 51.0                | 126.6              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 150-5DF   | ●     | 82.0                | 156.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 150-8DF   | ●     | 129.0               | 201.6              |          |                    |                 |                | 1   |             |              |          |
| 15.5 < D ≤ 16.5 | 1.5              | SMDH 160-1.5DF | ●     | 29.0                | 99.9               |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 160-3DF   | ●     | 54.0                | 131.6              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 160-5DF   | ●     | 87.0                | 166.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 160-8DF   | ●     | 137.0               | 211.6              |          |                    |                 |                | 1   |             |              |          |
| 16.5 < D ≤ 17.5 | 1.5              | SMDH 170-1.5DF | ●     | 31.0                | 101.4              |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 170-3DF   | ●     | 57.0                | 136.6              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 170-5DF   | ●     | 92.0                | 171.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 170-8DF   | ●     | 145.0               | 221.6              |          |                    |                 |                | 1   |             |              |          |
| 17.5 < D ≤ 18.5 | 1.5              | SMDH 180-1.5DF | ●     | 32.0                | 104.0              |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 180-3DF   | ●     | 60.0                | 141.7              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 180-5DF   | ●     | 97.0                | 176.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 180-8DF   | ●     | 153.0               | 226.7              |          |                    |                 |                | 1   |             |              |          |
| 18.5 < D ≤ 19.5 | 1.5              | SMDH 190-1.5DF | ●     | 34.0                | 111.4              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 190-3DF   | ●     | 63.0                | 156.6              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 190-5DF   | ●     | 102.0               | 191.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 190-8DF   | ●     | 161.0               | 251.6              |          |                    |                 |                | 1   |             |              |          |
| 19.5 < D ≤ 20.5 | 1.5              | SMDH 200-1.5DF | ●     | 35.0                | 114.0              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 200-3DF   | ●     | 66.0                | 156.7              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 200-5DF   | ●     | 107.0               | 196.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 200-8DF   | ●     | 169.0               | 261.7              |          |                    |                 |                | 1   |             |              |          |
| 20.5 < D ≤ 21.5 | 1.5              | SMDH 210-1.5DF | ●     | 37.0                | 115.5              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 210-3DF   | ●     | 69.0                | 156.7              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 210-5DF   | ●     | 112.0               | 196.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 210-8DF   | ●     | 177.0               | 266.7              |          |                    |                 |                | 1   |             |              |          |
| 21.5 < D ≤ 22.8 | 1.5              | SMDH 220-1.5DF | ●     | 39.0                | 117.1              |          |                    |                 |                | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 220-3DF   | ●     | 73.0                | 161.3              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 220-5DF   | ●     | 119.0               | 201.3              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 220-8DF   | ●     | 187.0               | 271.3              |          |                    |                 |                | 1   |             |              |          |
| 22.8 < D ≤ 23.8 | 1.5              | SMDH 230-1.5DF | ●     | 40.0                | 118.0              |          |                    |                 |                | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 230-3DF   | ●     | 76.0                | 160.7              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 230-5DF   | ●     | 124.0               | 210.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 230-8DF   | ●     | 195.0               | 280.7              |          |                    |                 |                | 1   |             |              |          |
| 23.8 < D ≤ 24.8 | 1.5              | SMDH 240-1.5DF | ●     | 42.0                | 124.3              |          |                    |                 |                | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 240-3DF   | ●     | 79.0                | 170.5              | 60       | 37                 | 32              | MFS            | 1   |             |              |          |
|                 | 5                | SMDH 240-5DF   | ●     | 129.0               | 220.5              |          |                    |                 |                | 1   |             |              |          |
|                 | 8                | SMDH 240-8DF   | ●     | 203.0               | 295.5              |          |                    |                 |                | 1   |             |              |          |

Recommended Cutting Conditions MFS Type Head

Recommended Tightening Torque (N·m)

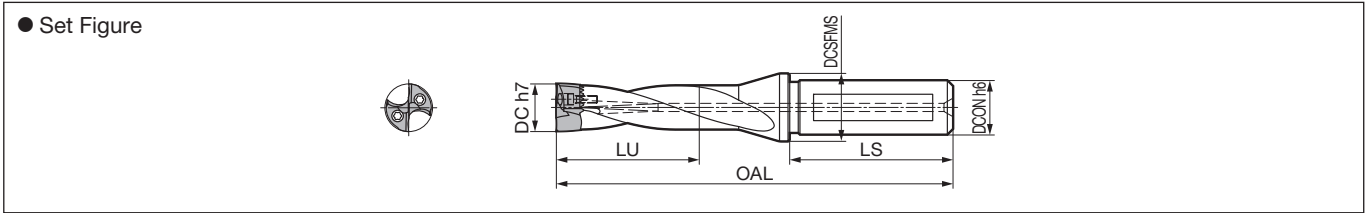
\*The SMDH000S Holder Cat. No. has been changed to SMDH000-1.5DF. The specifications have not changed.

● mark: Standard stocked item





\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



## Body ø24.8 to 30.8mm Dimensions with MFS Type Set

Dimensions (mm)

## Parts

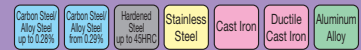
| Dia.<br>DC      | Hole<br>Depth<br>(L/D) | Cat. No.       | Stock | Effective<br>Length<br>LU | Overall<br>Length<br>OAL | Shank<br>LS | Flange Dia.<br>DCSFMS | Shank Dia.<br>DCON | Indexable<br>Head | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------------|----------------|-------|---------------------------|--------------------------|-------------|-----------------------|--------------------|-------------------|-----|-------------|--------------|----------|
|                 |                        |                |       |                           |                          |             |                       |                    |                   |     |             |              |          |
| 24.8 < D ≤ 25.8 | 1.5                    | SMDH 250-1.5DF | ●     | 43.0                      | 124.7                    | 60          | 37                    | 32                 | MFS               | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                      | SMDH 250-3DF   | ●     | 82.0                      | 170.4                    |             |                       |                    |                   |     |             |              |          |
|                 | 5                      | SMDH 250-5DF   | ●     | 134.0                     | 225.4                    |             |                       |                    |                   |     |             |              |          |
|                 | 8                      | SMDH 250-8DF   | ●     | 211.0                     | 300.4                    |             |                       |                    |                   |     |             |              |          |
| 25.8 < D ≤ 26.8 | 1.5                    | SMDH 260-1.5DF | ●     | 45.0                      | 127.3                    | 60          | 37                    | 32                 | MFS               | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                      | SMDH 260-3DF   | ●     | 85.0                      | 175.5                    |             |                       |                    |                   |     |             |              |          |
|                 | 5                      | SMDH 260-5DF   | ●     | 139.0                     | 230.5                    |             |                       |                    |                   |     |             |              |          |
|                 | 8                      | SMDH 260-8DF   | ●     | 219.0                     | 310.5                    |             |                       |                    |                   |     |             |              |          |
| 26.8 < D ≤ 27.8 | 1.5                    | SMDH 270-1.5DF | ●     | 46.0                      | 127.8                    | 60          | 37                    | 32                 | MFS               | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                      | SMDH 270-3DF   | ●     | 88.0                      | 175.5                    |             |                       |                    |                   |     |             |              |          |
|                 | 5                      | SMDH 270-5DF   | ●     | 144.0                     | 235.5                    |             |                       |                    |                   |     |             |              |          |
|                 | 8                      | SMDH 270-8DF   | ●     | 227.0                     | 320.5                    |             |                       |                    |                   |     |             |              |          |
| 27.8 < D ≤ 28.8 | 1.5                    | SMDH 280-1.5DF | ●     | 48.0                      | 129.4                    | 60          | 37                    | 32                 | MFS               | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                      | SMDH 280-3DF   | ●     | 91.0                      | 180.6                    |             |                       |                    |                   |     |             |              |          |
|                 | 5                      | SMDH 280-5DF   | ●     | 149.0                     | 240.6                    |             |                       |                    |                   |     |             |              |          |
|                 | 8                      | SMDH 280-8DF   | ●     | 235.0                     | 325.6                    |             |                       |                    |                   |     |             |              |          |
| 28.8 < D ≤ 29.8 | 1.5                    | SMDH 290-1.5DF | ●     | 49.0                      | 130.8                    | 60          | 37                    | 32                 | MFS               | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                      | SMDH 290-3DF   | ●     | 94.0                      | 185.4                    |             |                       |                    |                   |     |             |              |          |
|                 | 5                      | SMDH 290-5DF   | ●     | 154.0                     | 245.4                    |             |                       |                    |                   |     |             |              |          |
|                 | 8                      | SMDH 290-8DF   | ●     | 243.0                     | 335.4                    |             |                       |                    |                   |     |             |              |          |
| 29.8 < D ≤ 30.8 | 1.5                    | SMDH 300-1.5DF | ●     | 51.0                      | 133.4                    | 60          | 37                    | 32                 | MFS               | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                      | SMDH 300-3DF   | ●     | 97.0                      | 185.6                    |             |                       |                    |                   |     |             |              |          |
|                 | 5                      | SMDH 300-5DF   | ●     | 159.0                     | 255.6                    |             |                       |                    |                   |     |             |              |          |
|                 | 8                      | SMDH 300-8DF   | ●     | 251.0                     | 345.6                    |             |                       |                    |                   |     |             |              |          |

Recommended Cutting Conditions P16

MFS Type Head P17

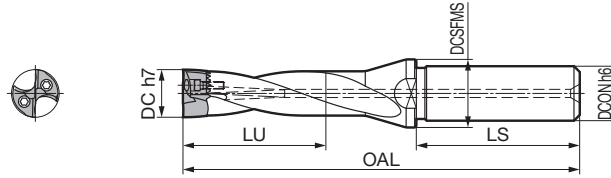
Recommended Tightening Torque (N·m)

\*The SMDH000S Holder Cat. No. has been changed to SMDH000-1.5DF. The specifications have not changed.



\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.

● Set Figure



Body ø12.0 to 21.5mm Dimensions with MFS Type Set

Dimensions (mm)

Parts

| Dia. DC         | Hole Depth (L/D) | Cat. No.      | Stock | Effective Length LU | Overall Length OAL | Shank LS | Flange Dia. DCSFMS | Shank Dia. DCON | Indexable Head | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------|---------------|-------|---------------------|--------------------|----------|--------------------|-----------------|----------------|-----|-------------|--------------|----------|
|                 |                  |               |       |                     |                    |          |                    |                 |                |     |             |              |          |
| 12.0 ≤ D < 12.5 | 1.5              | SMDH 120-1.5D | ●     | 21.0                | 88.5               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 120-3D   | ●     | 40.0                | 105.2              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 120-5D   | ●     | 65.0                | 130.2              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 120-8D   | ●     | 96.0                | 162.4              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 120-12D  | ●     | 144.0               | 211.3              |          |                    |                 |                | 1   |             |              |          |
| 12.5 ≤ D < 13.0 | 1.5              | SMDH 125-1.5D | ●     | 22.0                | 88.8               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 125-3D   | ●     | 41.0                | 105.1              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 125-5D   | ●     | 67.0                | 130.1              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 125-8D   | ●     | 100.0               | 167.9              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 125-12D  | ●     | 150.0               | 217.3              |          |                    |                 |                | 1   |             |              |          |
| 13.0 ≤ D < 13.5 | 1.5              | SMDH 130-1.5D | ●     | 23.0                | 90.0               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 130-3D   | ●     | 43.0                | 110.2              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 130-5D   | ●     | 70.0                | 140.2              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 130-8D   | ●     | 104.0               | 176.2              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 130-12D  | ●     | 156.0               | 223.5              |          |                    |                 |                | 1   |             |              |          |
| 13.5 ≤ D ≤ 14.5 | 1.5              | SMDH 140-1.5D | ●     | 26.0                | 93.9               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 140-3D   | ●     | 48.0                | 116.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 140-5D   | ●     | 77.0                | 146.6              | 48       | 20                 | 16              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 140-8D   | ●     | 121.0               | 191.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 140-12D  | ●     | 168.0               | 236.1              |          |                    |                 |                | 1   |             |              |          |
| 14.5 < D ≤ 15.5 | 1.5              | SMDH 150-1.5D | ●     | 28.0                | 97.3               |          |                    |                 |                | 1   | BXD02208IPC | 0.75 to 1.00 | TRDR08IP |
|                 | 3                | SMDH 150-3D   | ●     | 51.0                | 126.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 150-5D   | ●     | 82.0                | 156.6              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 150-8D   | ●     | 129.0               | 201.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 150-12D  | ●     | 180.0               | 250.4              |          |                    |                 |                | 1   |             |              |          |
| 15.5 < D ≤ 16.5 | 1.5              | SMDH 160-1.5D | ●     | 29.0                | 99.9               |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 160-3D   | ●     | 54.0                | 131.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 160-5D   | ●     | 87.0                | 166.6              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 160-8D   | ●     | 137.0               | 211.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 160-12D  | ●     | 192.0               | 262.7              |          |                    |                 |                | 1   |             |              |          |
| 16.5 < D ≤ 17.5 | 1.5              | SMDH 170-1.5D | ●     | 31.0                | 101.4              |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 170-3D   | ●     | 57.0                | 136.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 170-5D   | ●     | 92.0                | 171.6              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 170-8D   | ●     | 145.0               | 221.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 170-12D  | ●     | 204.0               | 275.1              |          |                    |                 |                | 1   |             |              |          |
| 17.5 < D ≤ 18.5 | 1.5              | SMDH 180-1.5D | ●     | 32.0                | 104.0              |          |                    |                 |                | 1   | BXD02509IPC | 0.93 to 1.24 | TRDR10IP |
|                 | 3                | SMDH 180-3D   | ●     | 60.0                | 141.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 180-5D   | ●     | 97.0                | 176.7              | 50       | 25                 | 20              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 180-8D   | ●     | 153.0               | 226.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 180-12D  | ●     | 216.0               | 287.4              |          |                    |                 |                | 1   |             |              |          |
| 18.5 < D ≤ 19.5 | 1.5              | SMDH 190-1.5D | ●     | 34.0                | 111.4              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 190-3D   | ●     | 63.0                | 156.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 190-5D   | ●     | 102.0               | 191.6              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 190-8D   | ●     | 161.0               | 251.6              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 190-12D  | ●     | 228.0               | 305.7              |          |                    |                 |                | 1   |             |              |          |
| 19.5 < D ≤ 20.5 | 1.5              | SMDH 200-1.5D | ●     | 35.0                | 114.0              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 200-3D   | ●     | 66.0                | 156.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 200-5D   | ●     | 107.0               | 196.7              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 200-8D   | ●     | 169.0               | 261.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 200-12D  | ●     | 240.0               | 318.0              |          |                    |                 |                | 1   |             |              |          |
| 20.5 < D ≤ 21.5 | 1.5              | SMDH 210-1.5D | ●     | 37.0                | 115.5              |          |                    |                 |                | 1   | BXD03011IPC | 1.83 to 2.44 | TRDR15IP |
|                 | 3                | SMDH 210-3D   | ●     | 69.0                | 156.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 5                | SMDH 210-5D   | ●     | 112.0               | 196.7              | 56       | 30                 | 25              | MFS            | 1   |             |              |          |
|                 | 8                | SMDH 210-8D   | ●     | 177.0               | 266.7              |          |                    |                 |                | 1   |             |              |          |
|                 | 12               | SMDH 210-12D  | ●     | 252.0               | 330.3              |          |                    |                 |                | 1   |             |              |          |

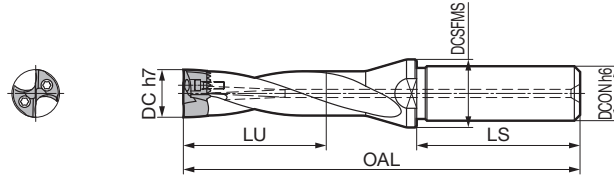
Recommended Cutting Conditions MFS Type Head

Recommended Tightening Torque (N·m)



\*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.

● Set Figure



■ Body ø21.5 to 30.8mm Dimensions with MFS Type Set

Dimensions (mm)

■ Parts

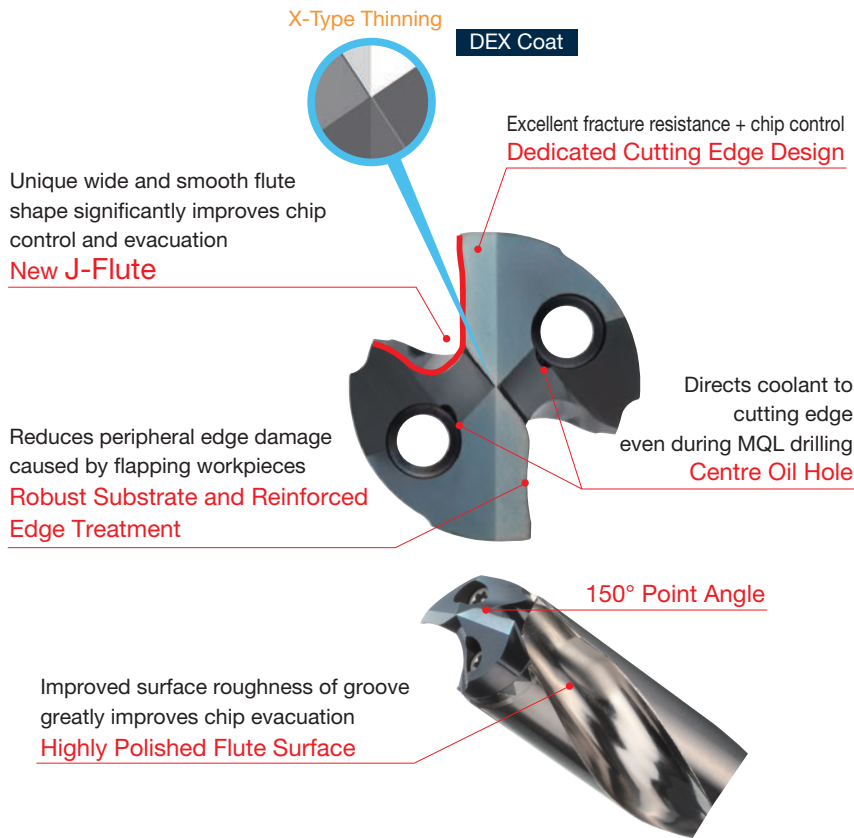
| Dia. DC         | Hole Depth (L/D) | Cat. No.      | Stock | Effective Length LU | Overall Length OAL | Shank LS | Flange Dia. DCSFMS | Shank Dia. DCON | Indexable Head | Fig | Cap Screw   |              | Wrench   |
|-----------------|------------------|---------------|-------|---------------------|--------------------|----------|--------------------|-----------------|----------------|-----|-------------|--------------|----------|
|                 |                  |               |       |                     |                    |          |                    |                 |                |     |             |              |          |
| 21.5 < D ≤ 22.8 | 1.5              | SMDH 220-1.5D | ●     | 39.0                | 117.1              | 56       | 30                 | 25              | MFS            | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 220-3D   | ●     | 73.0                | 161.3              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 220-5D   | ●     | 119.0               | 201.3              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 220-8D   | ●     | 187.0               | 271.3              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 220-12D  | ●     | 264.0               | 343.2              |          |                    |                 |                |     |             |              |          |
| 22.8 < D ≤ 23.8 | 1.5              | SMDH 230-1.5D | ●     | 40.0                | 118.0              | 56       | 30                 | 25              | MFS            | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 230-3D   | ●     | 76.0                | 160.7              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 230-5D   | ●     | 124.0               | 210.7              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 230-8D   | ●     | 195.0               | 280.7              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 230-12D  | ●     | 276.0               | 355.0              |          |                    |                 |                |     |             |              |          |
| 23.8 < D ≤ 24.8 | 1.5              | SMDH 240-1.5D | ●     | 42.0                | 124.3              | 60       | 37                 | 32              | MFS            | 1   | BXD03512IPC | 2.79 to 3.72 | TRDR15IP |
|                 | 3                | SMDH 240-3D   | ●     | 79.0                | 170.5              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 240-5D   | ●     | 129.0               | 220.5              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 240-8D   | ●     | 203.0               | 295.5              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 240-12D  | ●     | 288.0               | 372.0              |          |                    |                 |                |     |             |              |          |
| 24.8 < D ≤ 25.8 | 1.5              | SMDH 250-1.5D | ●     | 43.0                | 124.7              | 60       | 37                 | 32              | MFS            | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 250-3D   | ●     | 82.0                | 170.4              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 250-5D   | ●     | 134.0               | 225.4              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 250-8D   | ●     | 211.0               | 300.4              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 250-12D  | ●     | 300.0               | 384.2              |          |                    |                 |                |     |             |              |          |
| 25.8 < D ≤ 26.8 | 1.5              | SMDH 260-1.5D | ●     | 45.0                | 127.3              | 60       | 37                 | 32              | MFS            | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 260-3D   | ●     | 85.0                | 175.5              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 260-5D   | ●     | 139.0               | 230.5              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 260-8D   | ●     | 219.0               | 310.5              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 260-12D  | ●     | 312.0               | 396.6              |          |                    |                 |                |     |             |              |          |
| 26.8 < D ≤ 27.8 | 1.5              | SMDH 270-1.5D | ●     | 46.0                | 127.8              | 60       | 37                 | 32              | MFS            | 1   | BXD04014IPC | 4.14 to 5.52 | TRDR20IP |
|                 | 3                | SMDH 270-3D   | ●     | 88.0                | 175.5              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 270-5D   | ●     | 144.0               | 235.5              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 270-8D   | ●     | 227.0               | 320.5              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 270-12D  | ●     | 324.0               | 408.9              |          |                    |                 |                |     |             |              |          |
| 27.8 < D ≤ 28.8 | 1.5              | SMDH 280-1.5D | ●     | 48.0                | 129.4              | 60       | 37                 | 32              | MFS            | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 280-3D   | ●     | 91.0                | 180.6              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 280-5D   | ●     | 149.0               | 240.6              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 280-8D   | ●     | 235.0               | 325.6              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 280-12D  | ●     | 336.0               | 421.3              |          |                    |                 |                |     |             |              |          |
| 28.8 < D ≤ 29.8 | 1.5              | SMDH 290-1.5D | ●     | 49.0                | 130.8              | 60       | 37                 | 32              | MFS            | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 290-3D   | ●     | 94.0                | 185.4              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 290-5D   | ●     | 154.0               | 245.4              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 290-8D   | ●     | 243.0               | 335.4              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 290-12D  | ●     | 348.0               | 433.5              |          |                    |                 |                |     |             |              |          |
| 29.8 < D ≤ 30.8 | 1.5              | SMDH 300-1.5D | ●     | 51.0                | 133.4              | 60       | 37                 | 32              | MFS            | 1   | BXD04515IPC | 4.98 to 6.64 | TRDR25IP |
|                 | 3                | SMDH 300-3D   | ●     | 97.0                | 185.6              |          |                    |                 |                |     |             |              |          |
|                 | 5                | SMDH 300-5D   | ●     | 159.0               | 255.6              |          |                    |                 |                |     |             |              |          |
|                 | 8                | SMDH 300-8D   | ●     | 251.0               | 345.6              |          |                    |                 |                |     |             |              |          |
|                 | 12               | SMDH 300-12D  | ●     | 360.0               | 445.9              |          |                    |                 |                |     |             |              |          |

Recommended Cutting Conditions MFS Type Head

Recommended Tightening Torque (N·m)

● mark: Standard stocked item

## MB Type Ideal for drilling rolled steels for welded structures for bridge (single layer and stacked)



### Chip Evacuation

#### MB Type for Bridge Good chip control



Work Material: SM490YB  
Cutting Conditions:  $v_c=87\text{m/min}$ ,  $f=0.29\text{mm/rev}$

#### Competitor's Product Elongated chips



Work Material: SM490YB  
Cutting Conditions:  $v_c=87\text{m/min}$ ,  $f=0.29\text{mm/rev}$

### Cutting Length Comparison for MB Type

| Case | Current Tool                  | Tool Life Comparison (Cutting Length) |              | Cutting Conditions  |
|------|-------------------------------|---------------------------------------|--------------|---|
| 1    | Comp's A Indexable Head Drill | <b>MB Type</b> 42m                    | Comp's A 17m | $v_c = 46\text{m/min}$<br>$f = 0.35\text{mm/rev}$<br>Coolant: MQL |
|      |                               | <b>2.5x tool life</b>                 |              |   |
| 2    | Comp's B Indexable Head Drill | <b>MB Type</b> 87m                    | Comp's B 50m | $v_c = 56\text{m/min}$<br>$f = 0.30\text{mm/rev}$<br>Coolant: MQL |
|      |                               | <b>1.7x tool life</b>                 |              |   |
| 3    | Comp's C Brazed Drill         | <b>MB Type</b> 95m                    | Comp's C 32m | $v_c = 54\text{m/min}$<br>$f = 0.30\text{mm/rev}$<br>Coolant: MQL |
|      |                               | <b>3.0x tool life</b>                 |              |   |
| 4    | Comp's D Indexable Head Drill | <b>MB Type</b> 120m                   | Comp's D 70m | $v_c = 60\text{m/min}$<br>$f = 0.30\text{mm/rev}$<br>Coolant: MQL |
|      |                               | <b>1.7x tool life</b>                 |              |   |

**1.7 to 3 times**

the current tool life

Tool Cost

**Major Potential Savings**

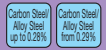
### Recommended Cutting Conditions (MB Type)

n: Spindle Speed ( $\text{min}^{-1}$ ),  $v_c$ : Cutting Speed (m/min), f: Feed Rate (mm/rev)

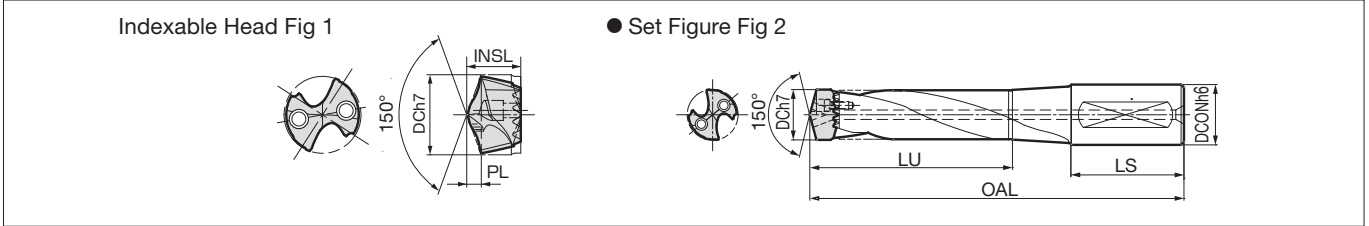
| Work Material |                    | Rolled Steel for Welded Structures SS400 | Rolled Steel for Welded Structures SM490 | Rolled Steel for Welded Structures SM520 | Rolled Steel for Welded Structures SM570 |
|---------------|--------------------|--|--|--|--|
| Dia. DC (mm)  | Cutting Conditions | Min. - Optimum - Max.                    | Min. - Optimum - Max.                    | Min. - Optimum - Max.                    | Min. - Optimum - Max.                    |
| ø24.7         | n                  | 900                                      | 840                                      | 700                                      | 700                                      |
|               | $v_c$              | 60-70-80                                 | 55-65-75                                 | 45-55-65                                 | 45-55-65                                 |
|               | f                  | 0.20-0.30-0.40                           | 0.20-0.30-0.40                           | 0.20-0.25-0.30                           | 0.20-0.25-0.30                           |
| ø26.7         | n                  | 830                                      | 770                                      | 650                                      | 650                                      |
|               | $v_c$              | 60-70-80                                 | 55-65-75                                 | 45-55-65                                 | 45-55-65                                 |
|               | f                  | 0.20-0.30-0.40                           | 0.20-0.30-0.40                           | 0.20-0.25-0.30                           | 0.20-0.25-0.30                           |



# SMD Type for Bridge (Internal Coolant Supply)



Only use the special MB type head with a B3 type holder. \*For h6 and h7 tolerances, refer to Chapter N References in the General Catalogue.



### Indexable Head MB Type Diameter $\phi 24.5/24.7$ mm Dimensions (mm)

| Dia. DC | Stock | Cat. No.     | Head Length INSL | Tip PL | Applicable Holders | Fig |
|---------|-------|--------------|------------------|--------|--------------------|-----|
| 24.5    | ●     | SMDT 2450 MB | 14.1             | 3.3    | SMDH 240B3         | 1   |
| 24.7    | ●     | SMDT 2470 MB |                  |        |                    | 1   |

Grade: ACX80

### Indexable Head MB Type Diameter $\phi 26.5/26.7$ mm Dimensions (mm)

| Dia. DC | Stock | Cat. No.     | Head Length INSL | Tip PL | Applicable Holders | Fig |
|---------|-------|--------------|------------------|--------|--------------------|-----|
| 26.5    | ●     | SMDT 2650 MB | 15.3             | 3.6    | SMDH 260B3         | 1   |
| 26.7    | ●     | SMDT 2670 MB |                  |        |                    | 1   |

Grade: ACX80

### Body $\phi 23.8$ to $26.8$ mm Dimensions with MB Type Set Dimensions (mm)

| Dia. DC         | Hole Depth (L/D) | Cat. No.   | Stock | Effective Length LU | Overall Length OAL | Shank LS | Shank Dia. DCON | Indexable Head | Fig | Parts      |              |          |
|-----------------|------------------|------------|-------|---------------------|--------------------|----------|-----------------|----------------|-----|------------|--------------|----------|
|                 |                  |            |       |                     |                    |          |                 |                |     | Cap Screw  | Wrench       |          |
| 23.8 < D ≤ 24.8 | 3                | SMDH 240B3 | ●     | 90.3                | 173.3              | 60       | 32              | MB             | 2   | BXD03512IP | 2.79 to 3.72 | TRDR15IP |
| 25.8 < D ≤ 26.8 | 3                | SMDH 260B3 | ●     | 95.6                | 178.6              |          |                 |                | 2   | BXD04014IP | 4.14 to 5.52 | TRDR20IP |

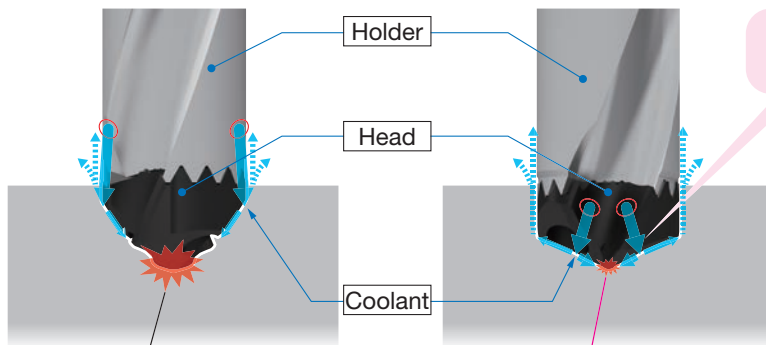
Inquire about production of holders not listed in stock.

Recommended Tightening Torque (N·m)

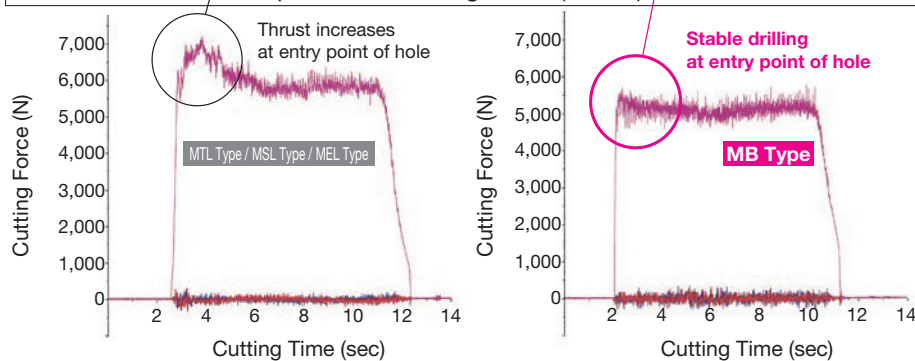
### Coolant for Greater Lubricity

MTL Type / MSL Type / MEL Type

**MB Type**



Comparison of Cutting Force (Thrust)



Work Material: SS400 Diameter:  $\phi 24.7$ mm Cutting Conditions:  $v_c=70$ m/min  $f=0.35$ mm/rev Coolant: MQL

\*Due to the difference in oil hole positions and flute shapes, MTL Type / MSL Type / MEL Type drill heads are not compatible to use with B3 Type drill holders (for bridge) and similarly, MB Type drill heads (for bridge) are not compatible for use with -1.5D(F) to -12D Type / M Type / L Type / D Type drill holders.

● mark: Standard stocked item

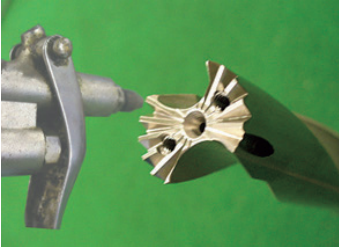
# MEMO

A large grid of dotted lines for writing a memo. The grid consists of 20 columns and 30 rows of small squares, providing a structured space for text entry.

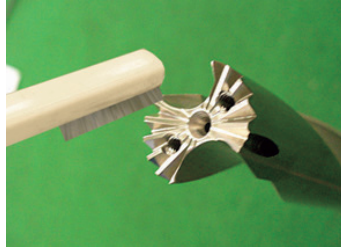
# MEMO

A large grid of dotted lines for writing a memo. The grid consists of 20 columns and 30 rows of small squares, providing a structured space for notes.

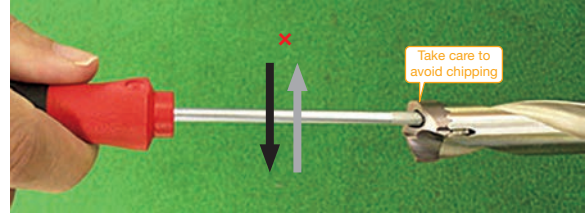
## ■ Head Replacement Instructions



(1) Remove the used head and remove any foreign matter from the serrated part on the holder using an air blower.



(2) Use a wire brush to remove any foreign matter that could not be removed with the air blower.



- (3) Take care when tightening the head, as the area around the hole may be chipped if the wrench wavers.
- (4) Screws should be replaced before they start to show signs of marked wear or shape deformation.
- (5) Use the recommended tightening torque as a guide for tightening force.

### ⚠️ Precautions for Use

- When the drill will be out of use for long periods, we recommend storing the head and holder separately.
- Due to the difference in oil hole positions and flute shapes, MTL Type / MSL Type / MEL Type drill heads are not compatible to use with B3 Type drill holders and similarly, MB Type drill heads are not compatible for use with -1.5D(F) to -12D Type / M Type / L Type / D Type drill holders.

\* The S Type name has been changed to -1.5DF Type.

### < SAFETY NOTES >



- 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.

- 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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