

The Ultimate in Low-Cost Drilling

# MULTIDRILL SMD Series



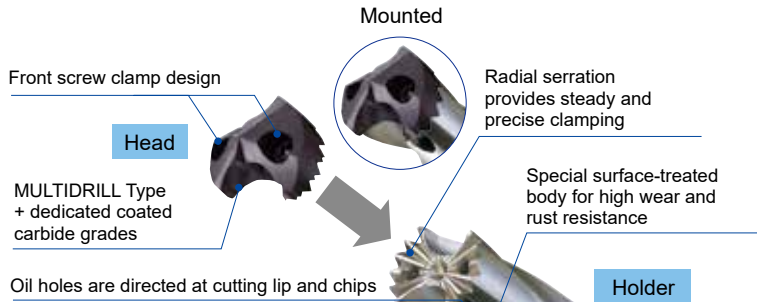
- Flanged holder lineup expanded by 148 items
- New MSLD type head, ideal for mild steel and stainless steel drilling
- New NAL type head, DLC coated for non-ferrous and Aluminum Alloys
- 12xD holder for high overhang lengths
- Cutting edge selectable by application
- Regrindable cutting edge (excluding MFS type)

**Diameter Lineup Drill Heads**

<b>MTL</b> Ø 12,0–Ø 42,5 mm	<b>P M K N S H</b>
<b>MSLD</b> Ø 12,0–Ø 30,5 mm	<b>P M K N S H</b>
<b>MFS</b> Ø 12,0–Ø 30,0 mm	<b>P M K N S H</b>
<b>MB</b> Ø 24,5–Ø 26,7 mm	<b>P M K N S H</b>
<b>NAL</b> Ø 12,0–Ø 30,5 mm	<b>P M K N S H</b>


**NAL Type**

**MSLD 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 1,5 mm to 3 mm makes further tool cost reduction possible. (Regrinding is available only for MTL/MSLD/MEL/MB)

## Tool Life and Cost

### Comparison of Tool Life

Dedicated coating and substrat. With regrinding not required, the tool can be used until maximum wear occurs.

Drill tolerance and tool life are relatively low after regrinding.

### Tool Comparison for Drilling of 1.000 Workpieces

Reduced costs

### Results

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

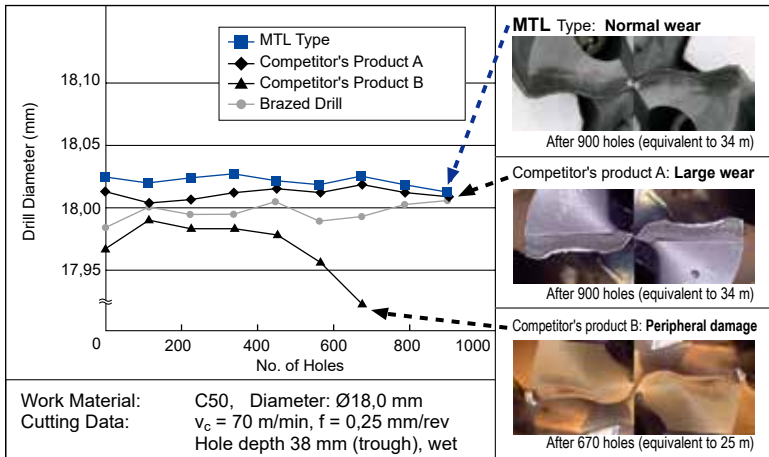
MTL Type offers:  
Double the tool life of brazed drills!  
Shorter tool change time!

### Workpieces Example and Cutting Conditions

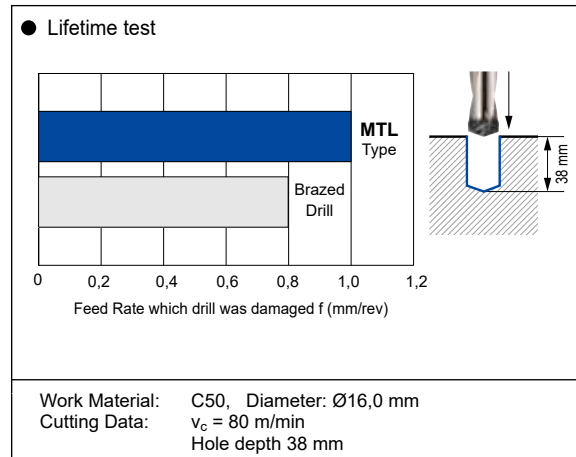
Hole dia.:  $\varnothing 18,0$  mm, depth: 50 mm

MTL Type  
Head: SMDT1800MTL  
Holder: SMDH180M  
Work Material: C50 (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

- SMDH□□□ -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.

$H = \text{Drill diameter} \times 1-1,5 \text{ times the depth}$
- Feed the SMDH□□□ -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 2.000 mm/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.

Stop 1 mm away from the guide hole depth
- Increase spindle speed until the set spindle speed is reached, then start drilling.

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.

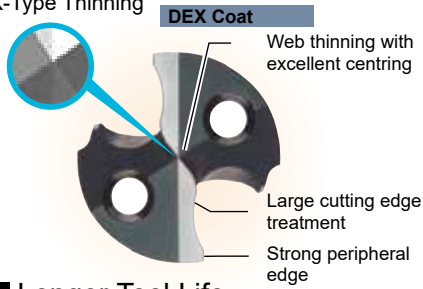
Increase rotation speed
- After drilling, rotation speed is reduced and the drill is retracted from the work material. Spindle speed: 500min<sup>-1</sup>, Feed rate: 1.000 to 2.000 mm/min

Retracting a drill from the work material at a high spindle speed is dangerous as doing so may result in breakage due to runout.

Change rotation speed to 500 min<sup>-1</sup>

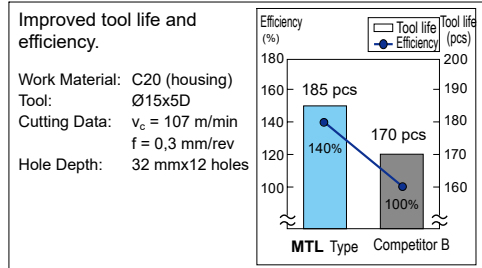
# MTL Type Suitable for high-efficiency drilling of general steel

## 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

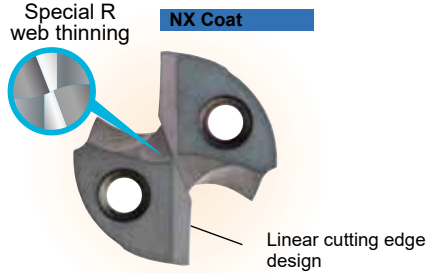


## Drilling Precision



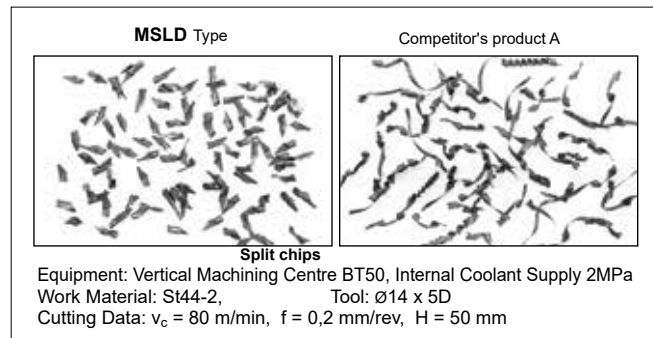
# MSLD Type Stable drilling of mild steel, stainless steel, etc.

## Special R web thinning

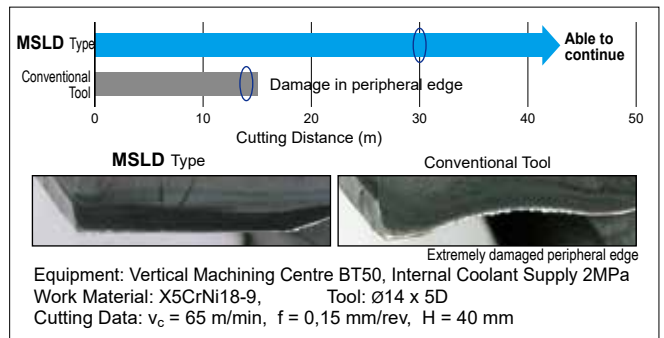


- Overwhelming cutting edge sharpness in mild steel and SUS drilling  
Newly designed linear cutting edge and special R web thinning enable improved chip evacuation and stable drilling.
- Stable long tool life  
NX Coat based on ABSOTECH™ technology for improved fracture resistance and adhesion resistance.

## Chip Control



## Longer Tool Life



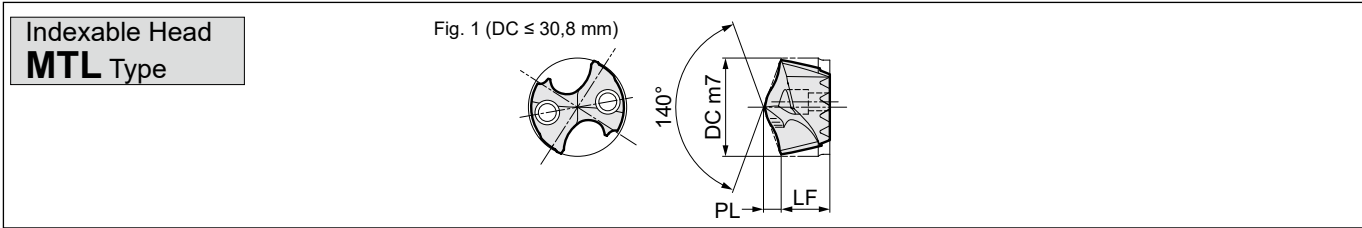
## Recommended Cutting Conditions (MSLD Type / MTL Type)

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

Work Material	Recommended Head	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
		MSLD Type	MTL Type	MSLD Type	MTL Type	MSLD Type	MTL Type / MSLD Type	MTL Type / MSLD Type	(Special Cutting Edge)*	
Ø DC (mm)	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.	
≤ Ø16,0	$v_c$	80-100-120 (50-70-80)	70-100-120 (50-70-80)	70-100-120 (50-70-80)	40-60-90 (30-50-70)	30-50-70 (30-40-50)	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	
≤ Ø20,0	$v_c$	80-100-120 (50-70-80)	70-100-120 (50-70-80)	70-100-120 (50-70-80)	40-60-90 (30-50-70)	30-50-70 (30-40-50)	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	0,10-0,17-0,25	0,20-0,30-0,35	0,20-0,25-0,35	0,35-0,50-0,60	
≤ Ø30,8	$v_c$	80-100-120 (50-70-80)	70-100-120 (50-70-80)	70-100-120 (50-70-80)	40-60-90 (30-50-70)	30-50-70 (30-40-50)	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	0,10-0,17-0,25	0,20-0,30-0,40	0,25-0,30-0,35	0,35-0,50-0,60	
Large Diameter MTL Type (Ø31,0 up)										
Ø31,0-Ø42,5	$v_c$	40-60-120 (30-50-80)	60-80-120 (40-50-80)		40-50-80 (30-40-60)	30-50-70 (30-40-50)	50-70-100 (40-60-90)	50-60-90 (40-50-70)	200-240-260	
	$f$	0,25-0,35-0,45	0,25-0,30-0,40		0,15-0,25-0,30	0,15-0,20-0,25	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 stainless steel, we recommend feed  $f = 0,1$  to  $0,15$  mm/rev for entry to hole depth up to  $0,5xDC$ .  
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.  
The values in blue have been changed.

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



### ■ Diameter Ø 12,0–17,3 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
12,0	●	SMDT 1200 D MTL	6,9	2,2	SMDH120□	1
12,1	●	SMDT 1210 D MTL				1
12,2	●	SMDT 1220 D MTL		1		
12,3	●	SMDT 1230 D MTL		1		
12,4	●	SMDT 1240 D MTL		2,3		1
12,5	●	SMDT 1250 D MTL	7,1	2,3	SMDH125□	1
12,6	●	SMDT 1260 D MTL				1
12,7	●	SMDT 1270 D MTL		1		
12,8	●	SMDT 1280 D MTL		1		
12,9	●	SMDT 1290 D MTL		1		
13,0	●	SMDT 1300 D MTL	7,3	2,4	SMDH130□	1
13,1	●	SMDT 1310 D MTL				1
13,2	●	SMDT 1320 D MTL		1		
13,3	●	SMDT 1330 D MTL		1		
13,4	●	SMDT 1340 D MTL		1		
13,5	●	SMDT 1350 D MTL	7,8	2,5	SMDH140□	1
13,6	●	SMDT 1360 D MTL				1
13,7	●	SMDT 1370 D MTL				1
13,8	●	SMDT 1380 D MTL				1
13,9	●	SMDT 1390 D MTL				1
14,0	●	SMDT 1400 D MTL		1		
14,1	●	SMDT 1410 D MTL		1		
14,2	●	SMDT 1420 D MTL		1		
14,3	●	SMDT 1430 D MTL		2,6		1
14,4	●	SMDT 1440 D MTL		1		
14,5	●	SMDT 1450 D MTL	1			
14,6	●	SMDT 1460 D MTL	8,3	2,7	SMDH150□	1
14,7	●	SMDT 1470 D MTL				1
14,8	●	SMDT 1480 D MTL				1
14,9	●	SMDT 1490 D MTL				1
15,0	●	SMDT 1500 D MTL				1
15,1	●	SMDT 1510 D MTL		1		
15,2	●	SMDT 1520 D MTL		1		
15,3	●	SMDT 1530 D MTL		2,8		1
15,4	●	SMDT 1540 D MTL		1		
15,5	●	SMDT 1550 D MTL		1		
15,6	●	SMDT 1560 D MTL	8,7	2,8	SMDH160□	1
15,7	●	SMDT 1570 D MTL				1
15,8	●	SMDT 1580 D MTL				1
15,9	●	SMDT 1590 D MTL				1
16,0	●	SMDT 1600 D MTL				1
16,1	●	SMDT 1610 D MTL		1		
16,2	●	SMDT 1620 D MTL		1		
16,3	●	SMDT 1630 D MTL		1		
16,4	●	SMDT 1640 D MTL		3,0		1
16,5	●	SMDT 1650 D MTL		1		
16,6	●	SMDT 1660 D MTL	9,2	3,0	SMDH170□	1
16,7	●	SMDT 1670 D MTL				1
16,8	●	SMDT 1680 D MTL				1
16,9	●	SMDT 1690 D MTL				1
17,0	●	SMDT 1700 D MTL				1
17,1	●	SMDT 1710 D MTL		3,1		1
17,2	●	SMDT 1720 D MTL		1		
17,3	●	SMDT 1730 D MTL		1		

Grade: ACX70 (ØDC: 12,0–30,8) ACX80 (ØDC: 30,9–42,5)

Recommended Cutting Conditions P3 Applicable Holders P12

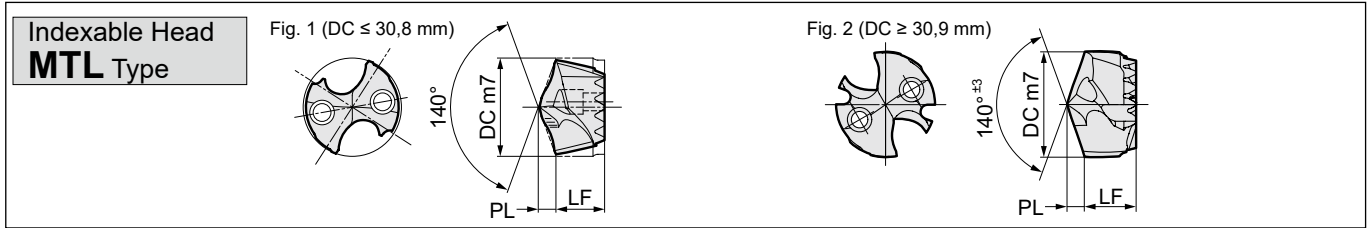
### ■ Diameter Ø 17,4–22,7 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
17,4	●	SMDT 1740 D MTL	9,2	3,2	SMDH170□	1
17,5	●	SMDT 1750 D MTL				1
17,6	●	SMDT 1760 D MTL	9,6	3,2	SMDH180□	1
17,7	●	SMDT 1770 D MTL				1
17,8	●	SMDT 1780 D MTL		1		
17,9	●	SMDT 1790 D MTL		1		
18,0	●	SMDT 1800 D MTL		3,3		1
18,1	●	SMDT 1810 D MTL				1
18,2	●	SMDT 1820 D MTL		1		
18,3	●	SMDT 1830 D MTL		1		
18,4	●	SMDT 1840 D MTL		1		
18,5	●	SMDT 1850 D MTL		3,4		1
18,6	●	SMDT 1860 D MTL	10,1	3,4	SMDH190□	1
18,7	●	SMDT 1870 D MTL				1
18,8	●	SMDT 1880 D MTL		1		
18,9	●	SMDT 1890 D MTL		3,5		1
19,0	●	SMDT 1900 D MTL				1
19,1	●	SMDT 1910 D MTL		1		
19,2	●	SMDT 1920 D MTL		1		
19,3	●	SMDT 1930 D MTL		1		
19,4	●	SMDT 1940 D MTL		1		
19,5	●	SMDT 1950 D MTL		1		
19,6	●	SMDT 1960 D MTL	10,5	3,6	SMDH200□	1
19,7	●	SMDT 1970 D MTL				1
19,8	●	SMDT 1980 D MTL		1		
19,9	●	SMDT 1990 D MTL		3,7		1
20,0	●	SMDT 2000 D MTL				1
20,1	●	SMDT 2010 D MTL		1		
20,2	●	SMDT 2020 D MTL		1		
20,3	●	SMDT 2030 D MTL		1		
20,4	●	SMDT 2040 D MTL		1		
20,5	●	SMDT 2050 D MTL		1		
20,6	●	SMDT 2060 D MTL	11,0	3,7	SMDH210□	1
20,7	●	SMDT 2070 D MTL				1
20,8	●	SMDT 2080 D MTL		1		
20,9	●	SMDT 2090 D MTL		3,8		1
21,0	●	SMDT 2100 D MTL				1
21,1	●	SMDT 2110 D MTL		3,9		1
21,2	●	SMDT 2120 D MTL				1
21,3	●	SMDT 2130 D MTL		1		
21,4	●	SMDT 2140 D MTL		1		
21,5	●	SMDT 2150 D MTL		1		
21,6	●	SMDT 2160 D MTL	11,0	3,9	SMDH220□	1
21,7	●	SMDT 2170 D MTL				1
21,8	●	SMDT 2180 D MTL		4,0		1
21,9	●	SMDT 2190 D MTL				1
22,0	●	SMDT 2200 D MTL		4,1		1
22,1	●	SMDT 2210 D MTL				1
22,2	●	SMDT 2220 D MTL		1		
22,3	●	SMDT 2230 D MTL		1		
22,4	●	SMDT 2240 D MTL		1		
22,5	●	SMDT 2250 D MTL		1		
22,6	●	SMDT 2260 D MTL	1			
22,7	●	SMDT 2270 D MTL	1			

Grade: ACX70 (ØDC: 12,0–30,8) ACX80 (ØDC: 30,9–42,5)

Recommended Cutting Conditions P3 Applicable Holders P12



## ■ Diameter Ø 22,8–28,1 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
22,8	●	SMDT 2280 D MTL	11,0	4,1	SMDH220□	1
22,9		SMDT 2290 D MTL	11,0	4,2	SMDH230□	1
23,0	●	SMDT 2300 D MTL				1
23,1		SMDT 2310 D MTL				1
23,2		SMDT 2320 D MTL				1
23,3		SMDT 2330 D MTL				1
23,4		SMDT 2340 D MTL				1
23,5	●	SMDT 2350 D MTL				1
23,6		SMDT 2360 D MTL				1
23,7		SMDT 2370 D MTL				1
23,8		SMDT 2380 D MTL				1
23,9		SMDT 2390 D MTL	11,0	4,3	SMDH240□	1
24,0		SMDT 2400 D MTL		1		
24,1		SMDT 2410 D MTL		1		
24,2		SMDT 2420 D MTL		1		
24,3		SMDT 2430 D MTL		1		
24,4		SMDT 2440 D MTL		1		
24,5	●	SMDT 2450 D MTL		1		
24,6		SMDT 2460 D MTL		1		
24,7		SMDT 2470 D MTL		1		
24,8		SMDT 2480 D MTL		1		
24,9		SMDT 2490 D MTL	11,3	4,5	SMDH250□	1
25,0	●	SMDT 2500 D MTL		1		
25,1		SMDT 2510 D MTL		1		
25,2		SMDT 2520 D MTL		1		
25,3		SMDT 2530 D MTL		1		
25,4		SMDT 2540 D MTL		1		
25,5	●	SMDT 2550 D MTL		1		
25,6		SMDT 2560 D MTL		1		
25,7		SMDT 2570 D MTL		1		
25,8		SMDT 2580 D MTL		1		
25,9		SMDT 2590 D MTL	11,7	4,7	SMDH260□	1
26,0	●	SMDT 2600 D MTL		1		
26,1		SMDT 2610 D MTL		1		
26,2		SMDT 2620 D MTL		1		
26,3		SMDT 2630 D MTL		1		
26,4		SMDT 2640 D MTL		1		
26,5	●	SMDT 2650 D MTL		1		
26,6		SMDT 2660 D MTL		1		
26,7		SMDT 2670 D MTL		1		
26,8		SMDT 2680 D MTL		1		
26,9		SMDT 2690 D MTL	12,2	4,9	SMDH270□	1
27,0	●	SMDT 2700 D MTL		1		
27,1		SMDT 2710 D MTL		1		
27,2		SMDT 2720 D MTL		1		
27,3		SMDT 2730 D MTL		1		
27,4		SMDT 2740 D MTL		1		
27,5	●	SMDT 2750 D MTL		1		
27,6		SMDT 2760 D MTL		1		
27,7		SMDT 2770 D MTL		1		
27,8		SMDT 2780 D MTL		1		
27,9		SMDT 2790 D MTL	12,6	5,1	SMDH280□	1
28,0	●	SMDT 2800 D MTL		1		
28,1		SMDT 2810 D MTL		1		

Grade: ACX70 (ØDC: 12,0–30,8) ACX80 (ØDC: 30,9–42,5)

Recommended Cutting Conditions P3 Applicable Holders P12

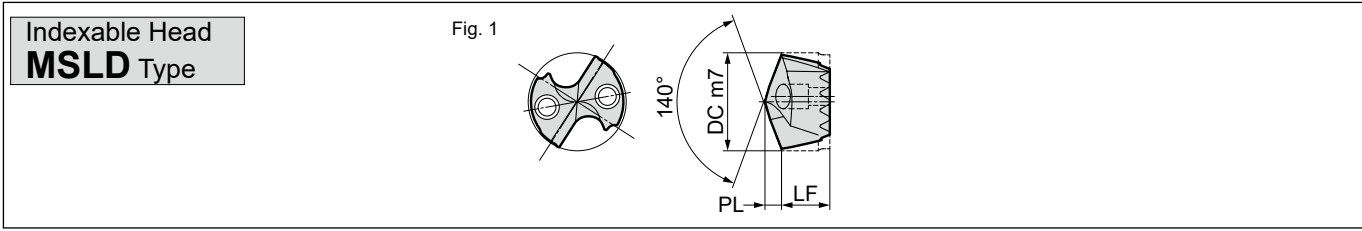
## ■ Diameter Ø 28,2–42,5 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
28,2		SMDT 2820 D MTL	12,6	5,1	SMDH280□	1
28,3		SMDT 2830 D MTL		1		
28,4		SMDT 2840 D MTL		1		
28,5	●	SMDT 2850 D MTL		1		
28,6		SMDT 2860 D MTL		1		
28,7		SMDT 2870 D MTL		1		
28,8		SMDT 2880 D MTL		1		
28,9		SMDT 2890 D MTL		13,1		5,3
29,0		SMDT 2900 D MTL	1			
29,1		SMDT 2910 D MTL	1			
29,2		SMDT 2920 D MTL	1			
29,3		SMDT 2930 D MTL	1			
29,4		SMDT 2940 D MTL	1			
29,5	●	SMDT 2950 D MTL	1			
29,6		SMDT 2960 D MTL	1			
29,7		SMDT 2970 D MTL	1			
29,8		SMDT 2980 D MTL	1			
29,9		SMDT 2990 D MTL	13,5	5,4	SMDH300□	1
30,0	●	SMDT 3000 D MTL		1		
30,1		SMDT 3010 D MTL		1		
30,2		SMDT 3020 D MTL		1		
30,3		SMDT 3030 D MTL		1		
30,4		SMDT 3040 D MTL		1		
30,5	●	SMDT 3050 D MTL		1		
30,6		SMDT 3060 D MTL		1		
30,7		SMDT 3070 D MTL		1		
30,8		SMDT 3080 D MTL		1		
31,0		SMDT 3100 D MTL	15,4	5,6	SMDH320□	2
31,5		SMDT 3150 D MTL	15,3	5,7		2
32,0		SMDT 3200 D MTL	15,2	5,8	SMDH335□	2
32,5		SMDT 3250 D MTL	15,1	5,9		2
33,0		SMDT 3300 D MTL	15,0	6,0	SMDH350□	2
33,5		SMDT 3350 D MTL	14,9	6,1		2
34,0		SMDT 3400 D MTL	16,8	6,2	SMDH365□	2
34,5		SMDT 3450 D MTL	16,7	6,3		2
35,0		SMDT 3500 D MTL	16,6	6,4	SMDH380□	2
35,5		SMDT 3550 D MTL	16,5	6,5		2
36,0		SMDT 3600 D MTL	16,4	6,6	SMDH395□	2
36,5		SMDT 3650 D MTL				2
37,0		SMDT 3700 D MTL	18,3	6,7	SMDH410□	2
37,5		SMDT 3750 D MTL	18,2	6,8		2
38,0		SMDT 3800 D MTL	18,1	6,9	SMDH425□	2
38,5		SMDT 3850 D MTL	18,0	7,0		2
39,0		SMDT 3900 D MTL	17,9	7,1	SMDH440□	2
39,5		SMDT 3950 D MTL	17,8	7,2		2
40,0		SMDT 4000 D MTL	19,7	7,3	SMDH455□	2
40,5		SMDT 4050 D MTL	19,6	7,4		2
41,0		SMDT 4100 D MTL	19,5	7,5	SMDH470□	2
41,5		SMDT 4150 D MTL	19,4	7,6		2
42,0		SMDT 4200 D MTL			2	
42,5		SMDT 4250 D MTL	19,3	7,7	2	

Grade: ACX70 (ØDC: 12,0–30,8) ACX80 (ØDC: 30,9–42,5)

Recommended Cutting Conditions P3 Applicable Holders P12



### ■ Diameter Ø 12,0–17,3 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
12,0	●	SMDT 1200 MSLD	6,9	2,2	SMDH120□	1
12,1	●	SMDT 1210 MSLD				1
12,2	●	SMDT 1220 MSLD				1
12,3	●	SMDT 1230 MSLD				1
12,4	●	SMDT 1240 MSLD				1
12,5	●	SMDT 1250 MSLD	7,1	2,3	SMDH125□	1
12,6	●	SMDT 1260 MSLD				1
12,7	●	SMDT 1270 MSLD				1
12,8	●	SMDT 1280 MSLD				1
12,9	●	SMDT 1290 MSLD				1
13,0	●	SMDT 1300 MSLD	7,3	2,4	SMDH130□	1
13,1	●	SMDT 1310 MSLD				1
13,2	●	SMDT 1320 MSLD				1
13,3	●	SMDT 1330 MSLD				1
13,4	●	SMDT 1340 MSLD				1
13,5	●	SMDT 1350 MSLD	7,8	2,5	SMDH140□	1
13,6	●	SMDT 1360 MSLD				1
13,7	●	SMDT 1370 MSLD				1
13,8	●	SMDT 1380 MSLD				1
13,9	●	SMDT 1390 MSLD				1
14,0	●	SMDT 1400 MSLD		2,6	SMDH140□	1
14,1	●	SMDT 1410 MSLD				1
14,2	●	SMDT 1420 MSLD				1
14,3	●	SMDT 1430 MSLD				1
14,4	●	SMDT 1440 MSLD				1
14,5	●	SMDT 1450 MSLD	8,3	2,7	SMDH150□	1
14,6	●	SMDT 1460 MSLD				1
14,7	●	SMDT 1470 MSLD				1
14,8	●	SMDT 1480 MSLD				1
14,9	●	SMDT 1490 MSLD				1
15,0	●	SMDT 1500 MSLD		2,8	SMDH150□	1
15,1	●	SMDT 1510 MSLD				1
15,2	●	SMDT 1520 MSLD				1
15,3	●	SMDT 1530 MSLD				1
15,4	●	SMDT 1540 MSLD				1
15,5	●	SMDT 1550 MSLD	8,7	2,9	SMDH160□	1
15,6	●	SMDT 1560 MSLD				1
15,7	●	SMDT 1570 MSLD				1
15,8	●	SMDT 1580 MSLD				1
15,9	●	SMDT 1590 MSLD				1
16,0	●	SMDT 1600 MSLD		3,0	SMDH160□	1
16,1	●	SMDT 1610 MSLD				1
16,2	●	SMDT 1620 MSLD				1
16,3	●	SMDT 1630 MSLD				1
16,4	●	SMDT 1640 MSLD				1
16,5	●	SMDT 1650 MSLD	9,2	3,1	SMDH170□	1
16,6	●	SMDT 1660 MSLD				1
16,7	●	SMDT 1670 MSLD				1
16,8	●	SMDT 1680 MSLD				1
16,9	●	SMDT 1690 MSLD				1
17,0	●	SMDT 1700 MSLD		3,1	SMDH170□	1
17,1	●	SMDT 1710 MSLD				1
17,2	●	SMDT 1720 MSLD				1
17,3	●	SMDT 1730 MSLD				1

Grade: ACT100

Recommended Cutting Conditions P3 Applicable Holders P12

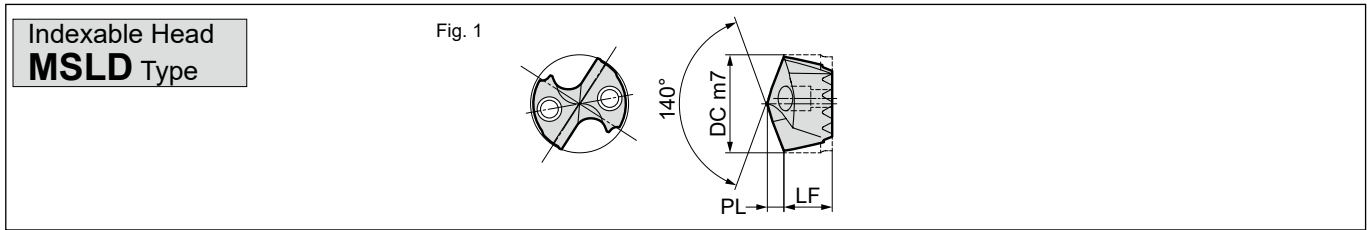
### ■ Diameter Ø 17,4–22,7 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.	
17,4	●	SMDT 1740 MSLD	9,2	3,2	SMDH170□	1	
17,5	●	SMDT 1750 MSLD				1	
17,6	●	SMDT 1760 MSLD	9,6	3,2	SMDH180□	1	
17,7	●	SMDT 1770 MSLD				1	
17,8	●	SMDT 1780 MSLD				1	
17,9	●	SMDT 1790 MSLD				1	
18,0	●	SMDT 1800 MSLD				1	
18,1	●	SMDT 1810 MSLD		3,3		SMDH180□	1
18,2	●	SMDT 1820 MSLD					1
18,3	●	SMDT 1830 MSLD					1
18,4	●	SMDT 1840 MSLD					1
18,5	●	SMDT 1850 MSLD					1
18,6	●	SMDT 1860 MSLD	10,1	3,4	SMDH190□	1	
18,7	●	SMDT 1870 MSLD				1	
18,8	●	SMDT 1880 MSLD				1	
18,9	●	SMDT 1890 MSLD				1	
19,0	●	SMDT 1900 MSLD				3,5	SMDH190□
19,1	●	SMDT 1910 MSLD		1			
19,2	●	SMDT 1920 MSLD		1			
19,3	●	SMDT 1930 MSLD		1			
19,4	●	SMDT 1940 MSLD		1			
19,5	●	SMDT 1950 MSLD		10,5		3,6	SMDH200□
19,6	●	SMDT 1960 MSLD	1				
19,7	●	SMDT 1970 MSLD	1				
19,8	●	SMDT 1980 MSLD	1				
19,9	●	SMDT 1990 MSLD	1				
20,0	●	SMDT 2000 MSLD	3,7		SMDH200□	1	
20,1	●	SMDT 2010 MSLD				1	
20,2	●	SMDT 2020 MSLD				1	
20,3	□	SMDT 2030 MSLD				1	
20,4	□	SMDT 2040 MSLD				1	
20,5	●	SMDT 2050 MSLD	11,0	3,8	SMDH210□	1	
20,6	□	SMDT 2060 MSLD				1	
20,7	□	SMDT 2070 MSLD				1	
20,8	□	SMDT 2080 MSLD				1	
20,9	□	SMDT 2090 MSLD				1	
21,0	●	SMDT 2100 MSLD		3,9		SMDH210□	1
21,1	□	SMDT 2110 MSLD					1
21,2	□	SMDT 2120 MSLD					1
21,3	□	SMDT 2130 MSLD					1
21,4	□	SMDT 2140 MSLD					1
21,5	●	SMDT 2150 MSLD	11,0	4,0	SMDH220□	1	
21,6	□	SMDT 2160 MSLD				1	
21,7	□	SMDT 2170 MSLD				1	
21,8	□	SMDT 2180 MSLD				1	
21,9	□	SMDT 2190 MSLD				1	
22,0	●	SMDT 2200 MSLD		4,1		SMDH220□	1
22,1	□	SMDT 2210 MSLD					1
22,2	□	SMDT 2220 MSLD					1
22,3	□	SMDT 2230 MSLD					1
22,4	□	SMDT 2240 MSLD					1
22,5	●	SMDT 2250 MSLD	4,1	SMDH220□	1		
22,6	□	SMDT 2260 MSLD			1		
22,7	●	SMDT 2270 MSLD			1		

Grade: ACT100

Recommended Cutting Conditions P3 Applicable Holders P12



### ■ Diameter Ø 22,8–28,1 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
22,8	□	SMDT 2280 MSLD	11,0	4,1	SMDH220□	1
22,9	□	SMDT 2290 MSLD	11,0	4,2	SMDH230□	1
23,0	●	SMDT 2300 MSLD				1
23,1	□	SMDT 2310 MSLD				1
23,2	□	SMDT 2320 MSLD				1
23,3	□	SMDT 2330 MSLD				1
23,4	□	SMDT 2340 MSLD				1
23,5	●	SMDT 2350 MSLD				1
23,6	□	SMDT 2360 MSLD				1
23,7	□	SMDT 2370 MSLD				1
23,8	□	SMDT 2380 MSLD				1
23,9	□	SMDT 2390 MSLD	11,0	4,3	SMDH240□	1
24,0	●	SMDT 2400 MSLD		1		
24,1	□	SMDT 2410 MSLD		1		
24,2	□	SMDT 2420 MSLD		1		
24,3	□	SMDT 2430 MSLD		1		
24,4	□	SMDT 2440 MSLD		1		
24,5	●	SMDT 2450 MSLD		1		
24,6	□	SMDT 2460 MSLD		1		
24,7	●	SMDT 2470 MSLD		1		
24,8	□	SMDT 2480 MSLD		1		
24,9	□	SMDT 2490 MSLD	11,3	4,5	SMDH250□	1
25,0	●	SMDT 2500 MSLD		1		
25,1	□	SMDT 2510 MSLD		1		
25,2	□	SMDT 2520 MSLD		1		
25,3	□	SMDT 2530 MSLD		1		
25,4	□	SMDT 2540 MSLD		1		
25,5	●	SMDT 2550 MSLD		1		
25,6	□	SMDT 2560 MSLD		1		
25,7	□	SMDT 2570 MSLD		1		
25,8	□	SMDT 2580 MSLD		1		
25,9	□	SMDT 2590 MSLD	11,7	4,6	SMDH260□	1
26,0	●	SMDT 2600 MSLD		1		
26,1	□	SMDT 2610 MSLD		1		
26,2	□	SMDT 2620 MSLD		1		
26,3	□	SMDT 2630 MSLD		1		
26,4	□	SMDT 2640 MSLD		1		
26,5	●	SMDT 2650 MSLD		1		
26,6	□	SMDT 2660 MSLD		1		
26,7	□	SMDT 2670 MSLD		1		
26,8	□	SMDT 2680 MSLD		1		
26,9	□	SMDT 2690 MSLD	12,2	4,7	SMDH270□	1
27,0	●	SMDT 2700 MSLD		1		
27,1	□	SMDT 2710 MSLD		1		
27,2	□	SMDT 2720 MSLD		1		
27,3	□	SMDT 2730 MSLD		1		
27,4	□	SMDT 2740 MSLD		1		
27,5	●	SMDT 2750 MSLD		1		
27,6	□	SMDT 2760 MSLD		1		
27,7	□	SMDT 2770 MSLD		1		
27,8	□	SMDT 2780 MSLD		1		
27,9	□	SMDT 2790 MSLD	12,6	4,9	SMDH280□	1
28,0	●	SMDT 2800 MSLD		5,1		1
28,1	□	SMDT 2810 MSLD		5,1		1

Grade: ACT100

Recommended Cutting Conditions P3 Applicable Holders P12

### ■ Diameter Ø 28,2–30,5 mm

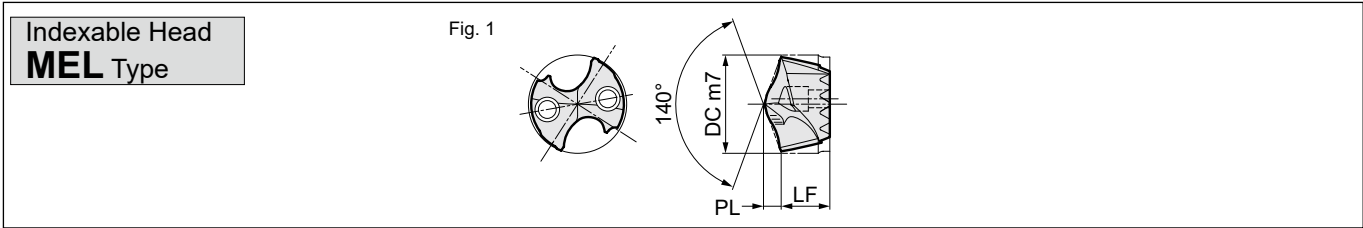
Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
28,2	□	SMDT 2820 MSLD	12,6	5,1	SMDH280□	1
28,3	□	SMDT 2830 MSLD		1		
28,4	□	SMDT 2840 MSLD		1		
28,5	●	SMDT 2850 MSLD		1		
28,6	□	SMDT 2860 MSLD		1		
28,7	□	SMDT 2870 MSLD		1		
28,8	□	SMDT 2880 MSLD		1		
28,9	□	SMDT 2890 MSLD		13,1		5,2
29,0	●	SMDT 2900 MSLD	1			
29,1	□	SMDT 2910 MSLD	1			
29,2	□	SMDT 2920 MSLD	1			
29,3	□	SMDT 2930 MSLD	1			
29,4	□	SMDT 2940 MSLD	1			
29,5	●	SMDT 2950 MSLD	1			
29,6	□	SMDT 2960 MSLD	1			
29,7	□	SMDT 2970 MSLD	1			
29,8	□	SMDT 2980 MSLD	1			
29,9	□	SMDT 2990 MSLD	13,5	5,3	SMDH300□	1
30,0	●	SMDT 3000 MSLD		5,4		1
30,1	□	SMDT 3010 MSLD		5,5		1
30,2	□	SMDT 3020 MSLD		5,6		1
30,3	□	SMDT 3030 MSLD		1		
30,4	□	SMDT 3040 MSLD		1		
30,5	●	SMDT 3050 MSLD		1		

Grade: ACT100

Recommended Cutting Conditions P3 Applicable Holders P12

# SMD Type (Internal Coolant Supply)



## ■ Diameter Ø 12,0–17,3 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.	
12,0	▲	SMDT 1200 D MEL	6,9	2,2	SMDH120□	1	
12,1	▲	SMDT 1210 D MEL				1	
12,2	▲	SMDT 1220 D MEL		1			
12,3	▲	SMDT 1230 D MEL		1			
12,4	▲	SMDT 1240 D MEL		2,3		1	
12,5	▲	SMDT 1250 D MEL	7,1	2,3	SMDH125□	1	
12,6	▲	SMDT 1260 D MEL				1	
12,7	▲	SMDT 1270 D MEL		1			
12,8	▲	SMDT 1280 D MEL		1			
12,9	▲	SMDT 1290 D MEL		1			
13,0	▲	SMDT 1300 D MEL	7,3	2,4	SMDH130□	1	
13,1	▲	SMDT 1310 D MEL				1	
13,2	▲	SMDT 1320 D MEL		1			
13,3	▲	SMDT 1330 D MEL		1			
13,4	▲	SMDT 1340 D MEL		1			
13,5	▲	SMDT 1350 D MEL	7,8	2,5	SMDH140□	1	
13,6	▲	SMDT 1360 D MEL				1	
13,7	▲	SMDT 1370 D MEL				1	
13,8	▲	SMDT 1380 D MEL				1	
13,9	▲	SMDT 1390 D MEL				1	
14,0	▲	SMDT 1400 D MEL		1			
14,1	▲	SMDT 1410 D MEL		2,6		1	
14,2	▲	SMDT 1420 D MEL				1	
14,3	▲	SMDT 1430 D MEL				1	
14,4	▲	SMDT 1440 D MEL				1	
14,5	▲	SMDT 1450 D MEL	1				
14,6	▲	SMDT 1460 D MEL	8,3	2,7	SMDH150□	1	
14,7	▲	SMDT 1470 D MEL				1	
14,8	▲	SMDT 1480 D MEL				1	
14,9	▲	SMDT 1490 D MEL				1	
15,0	▲	SMDT 1500 D MEL				1	
15,1	▲	SMDT 1510 D MEL		1			
15,2	▲	SMDT 1520 D MEL		2,8		1	
15,3	▲	SMDT 1530 D MEL				1	
15,4	▲	SMDT 1540 D MEL				1	
15,5	▲	SMDT 1550 D MEL				1	
15,6	▲	SMDT 1560 D MEL	8,7		2,8	SMDH160□	1
15,7	▲	SMDT 1570 D MEL		1			
15,8	▲	SMDT 1580 D MEL		2,9			1
15,9	▲	SMDT 1590 D MEL					1
16,0	▲	SMDT 1600 D MEL					1
16,1	▲	SMDT 1610 D MEL			1		
16,2	▲	SMDT 1620 D MEL			3,0		1
16,3	▲	SMDT 1630 D MEL		1			
16,4	▲	SMDT 1640 D MEL		1			
16,5	▲	SMDT 1650 D MEL		1			
16,6	▲	SMDT 1660 D MEL	9,2	3,0		SMDH170□	1
16,7	▲	SMDT 1670 D MEL			1		
16,8	▲	SMDT 1680 D MEL			3,1		1
16,9	▲	SMDT 1690 D MEL					1
17,0	▲	SMDT 1700 D MEL					1
17,1	▲	SMDT 1710 D MEL		1			
17,2	▲	SMDT 1720 D MEL		1			
17,3	▲	SMDT 1730 D MEL		1			

Grade: ACX80

Recommended Cutting Conditions P3 Applicable Holders P12

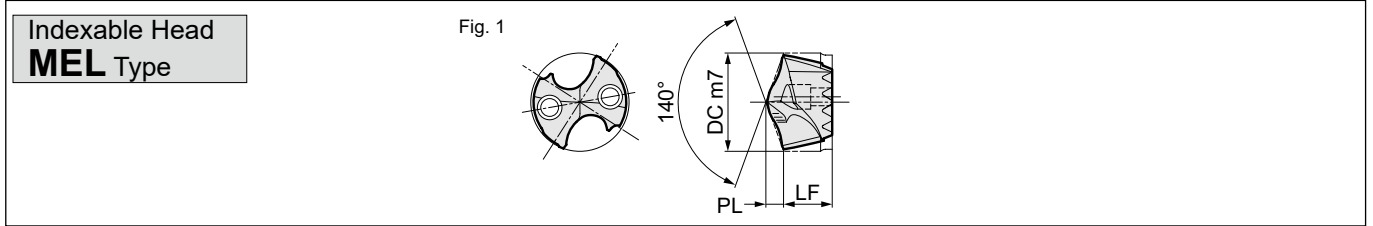
## ■ Diameter Ø 17,4–22,7 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.		
17,4	▲	SMDT 1740 D MEL	9,2	3,2	SMDH170□	1		
17,5	▲	SMDT 1750 D MEL				1		
17,6	▲	SMDT 1760 D MEL	9,6	3,2	SMDH180□	1		
17,7	▲	SMDT 1770 D MEL				1		
17,8	▲	SMDT 1780 D MEL		1				
17,9	▲	SMDT 1790 D MEL		1				
18,0	▲	SMDT 1800 D MEL		3,3		1		
18,1	▲	SMDT 1810 D MEL				1		
18,2	▲	SMDT 1820 D MEL				1		
18,3	▲	SMDT 1830 D MEL				1		
18,4	▲	SMDT 1840 D MEL				1		
18,5	▲	SMDT 1850 D MEL				3,4	1	
18,6	▲	SMDT 1860 D MEL	10,1	3,4	SMDH190□	1		
18,7	▲	SMDT 1870 D MEL				1		
18,8	▲	SMDT 1880 D MEL		3,5		1		
18,9	▲	SMDT 1890 D MEL				1		
19,0	▲	SMDT 1900 D MEL				1		
19,1	▲	SMDT 1910 D MEL				1		
19,2	▲	SMDT 1920 D MEL				1		
19,3	▲	SMDT 1930 D MEL				1		
19,4	▲	SMDT 1940 D MEL				1		
19,5	▲	SMDT 1950 D MEL				1		
19,6	▲	SMDT 1960 D MEL	10,5	3,6	SMDH200□	1		
19,7	▲	SMDT 1970 D MEL				1		
19,8	▲	SMDT 1980 D MEL				1		
19,9	▲	SMDT 1990 D MEL				1		
20,0	▲	SMDT 2000 D MEL				3,7	1	
20,1	▲	SMDT 2010 D MEL		1				
20,2	▲	SMDT 2020 D MEL		1				
20,3	▲	SMDT 2030 D MEL		1				
20,4	▲	SMDT 2040 D MEL		1				
20,5	▲	SMDT 2050 D MEL		11,0		3,8	SMDH210□	1
20,6	▲	SMDT 2060 D MEL	3,7		1			
20,7	▲	SMDT 2070 D MEL			1			
20,8	▲	SMDT 2080 D MEL			3,9			1
20,9	▲	SMDT 2090 D MEL						1
21,0	▲	SMDT 2100 D MEL				3,9		1
21,1	▲	SMDT 2110 D MEL	1					
21,2	▲	SMDT 2120 D MEL	1					
21,3	▲	SMDT 2130 D MEL	1					
21,4	▲	SMDT 2140 D MEL	1					
21,5	▲	SMDT 2150 D MEL	11,0	3,9	SMDH220□	1		
21,6	▲	SMDT 2160 D MEL				4,0	1	
21,7	▲	SMDT 2170 D MEL					1	
21,8	▲	SMDT 2180 D MEL					4,1	1
21,9	▲	SMDT 2190 D MEL						1
22,0	▲	SMDT 2200 D MEL		4,1				1
22,1	▲	SMDT 2210 D MEL				1		
22,2	▲	SMDT 2220 D MEL				1		
22,3	▲	SMDT 2230 D MEL				1		
22,4	▲	SMDT 2240 D MEL				1		
22,5	▲	SMDT 2250 D MEL	4,1	1				
22,6	▲	SMDT 2260 D MEL		1				
22,7	▲	SMDT 2270 D MEL		1				

Grade: ACX80

Recommended Cutting Conditions P3 Applicable Holders P12



**■ Diameter Ø 22,8 –28,1 mm** Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
22,8		SMDT 2280 D MEL	11,0	4,1	SMDH220□	1
22,9		SMDT 2290 D MEL	11,0	4,2	SMDH230□	1
23,0	▲	SMDT 2300 D MEL				1
23,1		SMDT 2310 D MEL				1
23,2		SMDT 2320 D MEL				1
23,3		SMDT 2330 D MEL				1
23,4		SMDT 2340 D MEL				1
23,5	▲	SMDT 2350 D MEL				1
23,6		SMDT 2360 D MEL				1
23,7		SMDT 2370 D MEL				1
23,8		SMDT 2380 D MEL				1
23,9		SMDT 2390 D MEL	11,0	4,3	SMDH240□	1
24,0	▲	SMDT 2400 D MEL		1		
24,1		SMDT 2410 D MEL		4,4		1
24,2		SMDT 2420 D MEL				1
24,3		SMDT 2430 D MEL		4,5		1
24,4		SMDT 2440 D MEL				1
24,5	▲	SMDT 2450 D MEL				1
24,6		SMDT 2460 D MEL		1		
24,7		SMDT 2470 D MEL		1		
24,8		SMDT 2480 D MEL		1		
24,9		SMDT 2490 D MEL	11,3	4,5	SMDH250□	1
25,0	▲	SMDT 2500 D MEL		1		
25,1		SMDT 2510 D MEL		4,6		1
25,2		SMDT 2520 D MEL				1
25,3		SMDT 2530 D MEL		4,7		1
25,4		SMDT 2540 D MEL				1
25,5	▲	SMDT 2550 D MEL				1
25,6		SMDT 2560 D MEL		1		
25,7		SMDT 2570 D MEL		1		
25,8		SMDT 2580 D MEL		1		
25,9		SMDT 2590 D MEL	11,7	4,7	SMDH260□	1
26,0	▲	SMDT 2600 D MEL		1		
26,1		SMDT 2610 D MEL		4,8		1
26,2		SMDT 2620 D MEL				1
26,3		SMDT 2630 D MEL		4,9		1
26,4		SMDT 2640 D MEL				1
26,5	▲	SMDT 2650 D MEL				1
26,6		SMDT 2660 D MEL		1		
26,7		SMDT 2670 D MEL		1		
26,8		SMDT 2680 D MEL		1		
26,9		SMDT 2690 D MEL	12,2	4,9	SMDH270□	1
27,0	▲	SMDT 2700 D MEL		1		
27,1		SMDT 2710 D MEL		5,0		1
27,2		SMDT 2720 D MEL				1
27,3		SMDT 2730 D MEL		5,1		1
27,4		SMDT 2740 D MEL				1
27,5	▲	SMDT 2750 D MEL				1
27,6		SMDT 2760 D MEL		1		
27,7		SMDT 2770 D MEL		1		
27,8		SMDT 2780 D MEL		1		
27,9		SMDT 2790 D MEL	12,6	5,1	SMDH280□	1
28,0	▲	SMDT 2800 D MEL		1		
28,1		SMDT 2810 D MEL		1		

Grade: ACX80

Recommended Cutting Conditions P3 Applicable Holders P12

**■ Diameter Ø 28,2–30,8 mm** Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
28,2		SMDT 2820 D MEL	12,6	5,1	SMDH280□	1
28,3		SMDT 2830 D MEL		5,2		1
28,4		SMDT 2840 D MEL				1
28,5	▲	SMDT 2850 D MEL		5,3		1
28,6		SMDT 2860 D MEL				1
28,7		SMDT 2870 D MEL				1
28,8		SMDT 2880 D MEL				1
28,9		SMDT 2890 D MEL		13,1		5,3
29,0	▲	SMDT 2900 D MEL	1			
29,1		SMDT 2910 D MEL	5,4		1	
29,2		SMDT 2920 D MEL			1	
29,3		SMDT 2930 D MEL	5,4		1	
29,4		SMDT 2940 D MEL			1	
29,5	▲	SMDT 2950 D MEL			1	
29,6		SMDT 2960 D MEL	5,5		1	
29,7		SMDT 2970 D MEL			1	
29,8		SMDT 2980 D MEL			1	
29,9		SMDT 2990 D MEL		13,5	5,4	SMDH300□
30,0	▲	SMDT 3000 D MEL	5,5		1	
30,1		SMDT 3010 D MEL			1	
30,2		SMDT 3020 D MEL	5,6		1	
30,3		SMDT 3030 D MEL			1	
30,4		SMDT 3040 D MEL			1	
30,5	▲	SMDT 3050 D MEL	5,6		1	
30,6		SMDT 3060 D MEL			1	
30,7		SMDT 3070 D MEL			1	
30,8		SMDT 3080 D MEL			1	

Grade: ACX80

Recommended Cutting Conditions P3 Applicable Holders P12

## NAL Type DLC Coated for non-ferrous and Aluminum alloys



DLC Aurora coating

High efficiency drilling of non-ferrous materials.

Very sharp cutting edge combined with DLC Aurora coating creates:

Anti-adhesion, low cutting forces and stable chip evacuation.

### Recommended Cutting Conditions - SMDT-NAL

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

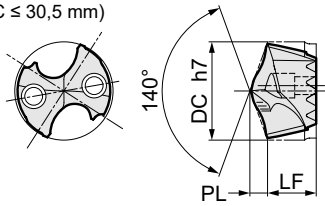
SMD Tip		NAL							
Material		Aluminum Casting		Wrought Aluminum		Aluminum Bronze		Brass	Copper
Ø Drill (mm)		30 HB	180 HB	30 HB	180 HB	100-200 HB	200-250 HB	100 HB	60 HB
12	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,4-0,7-1,0	0,35-0,65-0,9	0,4-0,7-1,0	0,35-0,65-0,9	0,3-0,5-0,7	0,25-0,4-0,55	0,25-0,4-0,55	0,2-0,3-0,4
14	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,4-0,7-1,0	0,35-0,65-0,9	0,4-0,7-1,0	0,35-0,65-0,9	0,3-0,5-0,7	0,25-0,4-0,55	0,25-0,4-0,55	0,2-0,3-0,4
16	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,4-0,7-1,0	0,35-0,65-0,9	0,4-0,7-1,0	0,35-0,65-0,9	0,3-0,5-0,7	0,25-0,4-0,55	0,25-0,4-0,55	0,2-0,3-0,4
18	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,45-0,75-1,05	0,4-0,65-0,95	0,45-0,75-1,05	0,4-0,65-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45
20	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,45-0,75-1,05	0,4-0,65-0,95	0,45-0,75-1,05	0,4-0,65-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45
22	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,45-0,75-1,05	0,4-0,65-0,95	0,45-0,75-1,05	0,4-0,65-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45
24	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,5-0,8-1,1	0,4-0,7-0,95	0,5-0,8-1,1	0,4-0,7-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45
26	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,5-0,8-1,1	0,4-0,7-0,95	0,5-0,8-1,1	0,4-0,7-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45
28	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,5-0,8-1,1	0,4-0,7-0,95	0,5-0,8-1,1	0,4-0,7-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45
30	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,5-0,8-1,1	0,4-0,7-0,95	0,5-0,8-1,1	0,4-0,7-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45
32	$v_c$	180-350	140-260	180-400	180-350	90-150	60-120	140-240	80-180
	f	0,5-0,8-1,1	0,4-0,7-0,95	0,5-0,8-1,1	0,4-0,7-0,95	0,35-0,55-0,75	0,3-0,45-0,6	0,3-0,45-0,6	0,25-0,35-0,45

# SMD Type (Internal Coolant Supply)



**Indexable Head**  
**NAL Type**

Fig. 1 (DC ≤ 30,5 mm)



## ■ Diameter Ø 12,0–30,5 mm

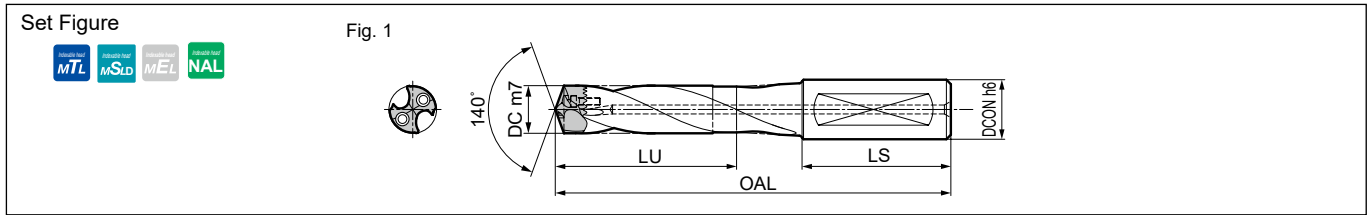
Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
12,0	☐	SMDT 1200 NAL	6,9	2,2	SMDH120☐	1
12,5	☐	SMDT 1250 NAL	7,1	2,3	SMDH125☐	1
13,0	☐	SMDT 1300 NAL	7,3	2,4	SMDH130☐	1
14,0	☐	SMDT 1400 NAL	7,8	2,5	SMDH140☐	1
14,2	☐	SMDT 1420 NAL		2,6		1
14,5	☐	SMDT 1450 NAL	8,3	2,7	SMDH150☐	1
14,7	☐	SMDT 1470 NAL		2,8		1
15,0	☐	SMDT 1500 NAL		2,9		1
15,5	☐	SMDT 1550 NAL	8,7	3,0	SMDH160☐	1
16,0	☐	SMDT 1600 NAL		3,1		1
16,5	☐	SMDT 1650 NAL	9,2	3,2	SMDH170☐	1
17,0	☐	SMDT 1700 NAL		3,3		1
17,5	☐	SMDT 1750 NAL	9,6	3,4	SMDH180☐	1
18,0	☐	SMDT 1800 NAL		3,5		1
18,5	☐	SMDT 1850 NAL	10,1	3,6	SMDH190☐	1
19,0	☐	SMDT 1900 NAL		3,7		1
19,5	☐	SMDT 1950 NAL		3,8		1
20,0	☐	SMDT 2000 NAL	10,5	3,9	SMDH200☐	1
20,5	☐	SMDT 2050 NAL		4,0		1
21,0	☐	SMDT 2100 NAL	11,0	4,1	SMDH210☐	1
21,5	☐	SMDT 2150 NAL		4,2		1
22,0	☐	SMDT 2200 NAL		4,3		1
22,5	☐	SMDT 2250 NAL		4,4		1
23,0	☐	SMDT 2300 NAL		4,5		1
23,5	☐	SMDT 2350 NAL	11,3	4,6	SMDH220☐	1
24,0	☐	SMDT 2400 NAL		4,7		1
24,5	☐	SMDT 2450 NAL		4,8		1
25,0	☐	SMDT 2500 NAL	11,7	4,9	SMDH230☐	1
25,5	☐	SMDT 2550 NAL		5,0		1
26,0	☐	SMDT 2600 NAL	12,2	5,1	SMDH240☐	1
26,5	☐	SMDT 2650 NAL		5,2		1
27,0	☐	SMDT 2700 NAL	12,6	5,3	SMDH250☐	1
27,5	☐	SMDT 2750 NAL		5,4		1
28,0	☐	SMDT 2800 NAL	13,1	5,5	SMDH260☐	1
28,5	☐	SMDT 2850 NAL		5,6		1
29,0	☐	SMDT 2900 NAL	13,5	5,7	SMDH270☐	1
29,5	☐	SMDT 2950 NAL		5,8		1
30,0	☐	SMDT 3000 NAL		5,9		1
30,5	☐	SMDT 3050 NAL	6,0	1		

Grade: DL1500

Applicable Holders P12

<b>MTL</b> Carbon Steel Alloy Steel up to 0.25% Ni Carbon Steel Alloy Steel from 0.25% Ni	<b>MSLD</b> Carbon Steel Alloy Steel up to 0.25% Ni Carbon Steel Alloy Steel from 0.25% Ni	<b>MEL</b> Carbon Steel Alloy Steel up to 0.25% Ni Carbon Steel Alloy Steel from 0.25% Ni	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron	<b>NAL</b> Aluminum Alloy	Non-ferrous Materials	Copper Alloy
Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Ductile Cast Iron	Aluminum Alloy	Ductile Cast Iron	Aluminum Alloy



## Body, Diameter Ø 12,0–29,8 mm

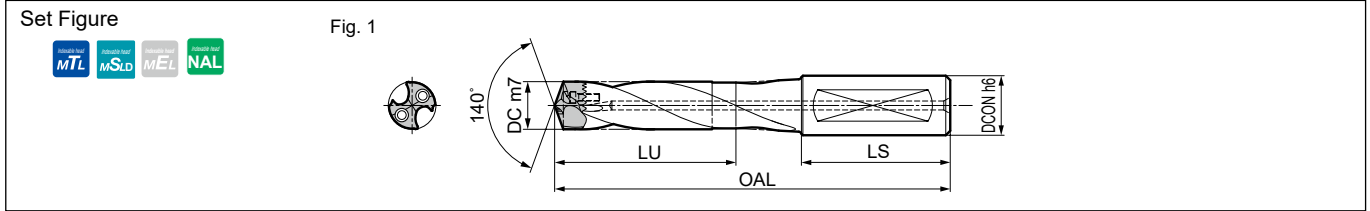
Dimensions (mm)

## Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
12,0 ≤ D < 12,5	3	SMDH 120M3	●	42	107			MTL, MSLD	1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 120M5	●	67	132	48	16	MEL, NAL	1			
12,5 ≤ D < 13,0	3	SMDH 125M3	●	44	107			MTL, MSLD	1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 125M5	●	69	132	48	16	MEL, NAL	1			
13,0 ≤ D < 13,5	3	SMDH 130M3	●	45	112			MTL, MSLD	1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 130M5	●	72	142	48	16	MEL, NAL	1			
13,5 ≤ D ≤ 14,5	3	SMDH 140M3	●	51	119			MTL, MSLD MEL, NAL	1 1 1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 140M5	●	80	149	48	16					
	8	SMDH 140M8	●	123	194							
14,5 < D ≤ 15,5	3	SMDH 150M3	●	54	129			MTL, MSLD MEL, NAL	1 1 1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 150M5	●	85	159	50	20					
	8	SMDH 150M8	●	131	204							
15,5 < D ≤ 16,5	3	SMDH 160M3	●	57	134			MTL, MSLD MEL, NAL	1 1 1	BXD02509IP	0,93–1,24	TRDR10IP
	5	SMDH 160M5	●	90	169	50	20					
	8	SMDH 160M8	●	140	214							
16,5 < D ≤ 17,5	3	SMDH 170M3	●	60	140			MTL, MSLD MEL, NAL	1 1 1	BXD02509IP	0,93–1,24	TRDR10IP
	5	SMDH 170M5	●	95	175	50	20					
	8	SMDH 170M8	●	148	225							
17,5 < D ≤ 18,5	3	SMDH 180M3	●	63	145			MTL, MSLD MEL, NAL	1 1 1	BXD02509IP	0,93–1,24	TRDR10IP
	5	SMDH 180M5	●	100	180	50	20					
	8	SMDH 180M8	●	156	230							
18,5 < D ≤ 19,5	3	SMDH 190M2	●	67	160			MTL, MSLD MEL, NAL	1 1 1	BXD03011IP	1,83–2,44	TRDR15IP
	5	SMDH 190M5	●	106	195	56	25					
	8	SMDH 190M8	●	164	255							
19,5 < D ≤ 20,5	3	SMDH 200M3	●	70	160			MTL, MSLD MEL, NAL	1 1 1	BXD03011IP	1,83–2,44	TRDR15IP
	5	SMDH 200M5	●	111	200	56	25					
	8	SMDH 200M8	●	172	265							
20,5 < D ≤ 21,5	3	SMDH 210M3	●	73	160			MTL, MSLD MEL, NAL	1 1 1	BXD03011IP	1,83–2,44	TRDR15IP
	5	SMDH 210M5	●	116	200	56	25					
	8	SMDH 210M8	●	180	270							
21,5 < D ≤ 22,8	3	SMDH 220M3	●	77	165			MTL, MSLD MEL, NAL	1 1 1	BXD03512IP	2,79–3,72	TRDR15IP
	5	SMDH 220M5	●	123	205	56	25					
	8	SMDH 220M8	●	191	275							
22,8 < D ≤ 23,8	3	SMDH 230M3	●	80	165			MTL, MSLD MEL, NAL	1 1 1	BXD03512IP	2,79–3,72	TRDR15IP
	5	SMDH 230M5	●	128	215	56	25					
	8	SMDH 230M8	●	199	285							
23,8 < D ≤ 24,8	3	SMDH 240M3	●	83	175			MTL, MSLD MEL, NAL	1 1 1	BXD03512IP	2,79–3,72	TRDR15IP
	5	SMDH 240M5	●	133	225	60	32					
	8	SMDH 240M8	●	207	300							
24,8 < D ≤ 25,8	3	SMDH 250M3	●	87	175			MTL, MSLD MEL, NAL	1 1 1	BXD04014IP	4,14–5,52	TRDR20IP
	5	SMDH 250M5	●	138	230	60	32					
	8	SMDH 250M8	●	216	305							
25,8 < D ≤ 26,8	3	SMDH 260M3	●	90	180			MTL, MSLD MEL, NAL	1 1 1	BXD04014IP	4,14–5,52	TRDR20IP
	5	SMDH 260M5	●	143	235	60	32					
	8	SMDH 260M8	●	224	315							
26,8 < D ≤ 27,8	3	SMDH 270M3	●	93	180			MTL, MSLD MEL, NAL	1 1 1	BXD04014IP	4,14–5,52	TRDR20IP
	5	SMDH 270M5	●	149	240	60	32					
	8	SMDH 270M8	●	232	325							
27,8 < D ≤ 28,8	3	SMDH 280M3	●	96	185			MTL, MSLD MEL, NAL	1 1 1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 280M5	●	154	245	60	32					
	8	SMDH 280M8	●	240	330							
28,8 < D ≤ 29,8	3	SMDH 290M3	●	99	190			MTL, MSLD MEL, NAL	1 1 1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 290M5	●	159	250	60	32					
	8	SMDH 290M8	●	248	340							

Recommended Cutting Conditions P3 MTL Type Head P4 MSLD Type Head P6 MEL Type Head P8 NAL Type Head P10

<b>MTL</b>	Carbon Steel Alloy Steel up to 0.25%	Carbon Steel Alloy Steel from 0.25%	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron	<b>NAL</b>	Aluminum Alloy	Non-ferrous Materials	Copper Alloy
<b>MSLD</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	Ductile Cast Iron	Aluminum Alloy		
<b>MEL</b>	Carbon Steel Alloy Steel up to 0.25%	Carbon Steel Alloy Steel from 0.25%	Hardened Steel up to 45HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	



Body, Diameter Ø 29,8–42,5 mm

Dimensions (mm)

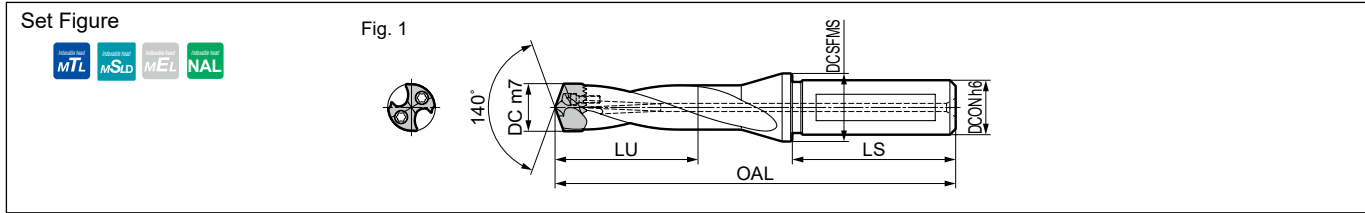
Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
29,8 < D ≤ 30,8	3	SMDH 300M3	●	103	190			MTL, MSLD MEL, NAL	1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 300M5	●	164	260	60	32		1			
	8	SMDH 300M8	●	257	350				1			
30,8 < D ≤ 32,0	3	SMDH 320M3		106	201			MTL	1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 320M5		170	266	60	32		1			
	8	SMDH 320M8		266	361				1			
32,0 < D ≤ 33,5	3	SMDH 335M3		111	206			MTL	1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 335M5		178	276	60	32		1			
	8	SMDH 335M8		279	376				1			
33,5 < D ≤ 35,0	3	SMDH 350M3		116	221			MTL	1	BX0515	7,2	HD040
	5	SMDH 350M5		186	296	70	40		1			
	8	SMDH 350M8		291	401				1			
35,0 < D ≤ 36,5	3	SMDH 365M3		121	227			MTL	1	BX0515	7,2	HD040
	5	SMDH 365M5		194	302	70	40		1			
	8	SMDH 365M8		303	412				1			
36,5 < D ≤ 38,0	3	SMDH 380M3		125	232			MTL	1	BX0515	7,2	HD040
	5	SMDH 380M5		201	312	70	40		1			
	8	SMDH 380M8		315	427				1			
38,0 < D ≤ 39,5	3	SMDH 395M3		130	237			MTL	1	BX0515	7,2	HD040
	5	SMDH 395M5		209	322	70	40		1			
	8	SMDH 395M8		328	437				1			
39,5 < D ≤ 41,0	3	SMDH 410M3		135	252			MTL	1	BX0515	7,2	HD040
	5	SMDH 410M5		217	332	70	40		1			
	8	SMDH 410M8		340	457				1			
41,0 < D ≤ 42,5	3	SMDH 425M3		140	258			MTL	1	BX0515	7,2	HD040
	5	SMDH 425M5		225	343	70	40		1			
	8	SMDH 425M8		352	468				1			

Recommended Cutting Conditions P3 MTL Type Head P4 MSLD Type Head P6 MEL Type Head P8 NAL Type Head P10

# SMD Type (Internal Coolant Supply) Side Lock Flat / Flange

<b>MTL</b> Carbon Steel Alloy Steel up to 1.2% Ni Tempered Steel Hardened Steel up to 45HRC	<b>MSLD</b> Carbon Steel Alloy Steel up to 0.2% Ni Alloy Steel Heat treated Stainless Steel Ti Alloy	<b>MEL</b> Carbon Steel Alloy Steel up to 0.2% Ni Alloy Steel Heat treated Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron	<b>NAL</b> Aluminum Alloy	Aluminum Alloy	Non-ferrous Materials	Copper Alloy
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## Body, Diameter Ø 12,0–24,8 mm

Dimensions (mm)

## Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
												N·m	
12,0 ≤ D < 12,5	1,5	SMDH 120-1.5DF	●	23	91				MTL, MSLD, MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 120-3DF	○	42	107	48	20	16		1			
	5	SMDH 120-5DF	○	67	132					1			
	8	SMDH 120-8DF	○	98	164					1			
12,5 ≤ D < 13,0	1,5	SMDH 125-1.5DF	●	24	91				MTL, MSLD, MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 125-3DF	○	44	107	48	20	16		1			
	5	SMDH 125-5DF	○	69	132					1			
	8	SMDH 125-8DF	○	102	170					1			
13,0 ≤ D < 13,5	1,5	SMDH 130-1.5DF	●	25	92				MTL, MSLD, MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 130-3DF	○	45	112	48	20	16		1			
	5	SMDH 130-5DF	○	72	142					1			
	8	SMDH 130-8DF	○	106	178					1			
13,5 ≤ D ≤ 14,5	1,5	SMDH 140-1.5DF	●	29	96				MTL, MSLD, MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 140-3DF	○	51	119	48	20	16		1			
	5	SMDH 140-5DF	○	80	149					1			
	8	SMDH 140-8DF	○	123	194					1			
14,5 < D ≤ 15,5	1,5	SMDH 150-1.5DF	●	31	100				MTL, MSLD, MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 150-3DF	○	54	129	50	25	20		1			
	5	SMDH 150-5DF	○	85	159					1			
	8	SMDH 150-8DF	○	131	204					1			
15,5 < D ≤ 16,5	1,5	SMDH 160-1.5DF	●	32	103				MTL, MSLD, MEL, NAL	1	BXD02509IPC	0,93–1,24	TRDR10IP
	3	SMDH 160-3DF	○	57	134	50	25	20		1			
	5	SMDH 160-5DF	○	90	169					1			
	8	SMDH 160-8DF	○	140	214					1			
16,5 < D ≤ 17,5	1,5	SMDH 170-1.5DF	●	34	104				MTL, MSLD, MEL, NAL	1	BXD02509IPC	0,93–1,24	TRDR10IP
	3	SMDH 170-3DF	○	60	140	50	25	20		1			
	5	SMDH 170-5DF	○	95	175					1			
	8	SMDH 170-8DF	○	148	225					1			
17,5 < D ≤ 18,5	1,5	SMDH 180-1.5DF	●	36	107				MTL, MSLD, MEL, NAL	1	BXD02509IPC	0,93–1,24	TRDR10IP
	3	SMDH 180-3DF	○	63	145	50	25	20		1			
	5	SMDH 180-5DF	○	100	180					1			
	8	SMDH 180-8DF	○	156	230					1			
18,5 < D ≤ 19,5	1,5	SMDH 190-1.5DF	●	37	115				MTL, MSLD, MEL, NAL	1	BXD03011IPC	1,83–2,44	TRDR15IP
	3	SMDH 190-3DF	○	67	160	56	30	25		1			
	5	SMDH 190-5DF	○	106	195					1			
	8	SMDH 190-8DF	○	164	255					1			
19,5 < D ≤ 20,5	1,5	SMDH 200-1.5DF	●	39	118				MTL, MSLD, MEL, NAL	1	BXD03011IPC	1,83–2,44	TRDR15IP
	3	SMDH 200-3DF	○	70	160	56	30	25		1			
	5	SMDH 200-5DF	○	111	200					1			
	8	SMDH 200-8DF	○	172	265					1			
20,5 < D ≤ 21,5	1,5	SMDH 210-1.5DF	●	41	119				MTL, MSLD, MEL, NAL	1	BXD03011IPC	1,83–2,44	TRDR15IP
	3	SMDH 210-3DF	○	73	160	56	30	25		1			
	5	SMDH 210-5DF	○	116	200					1			
	8	SMDH 210-8DF	○	180	270					1			
21,5 < D ≤ 22,8	1,5	SMDH 220-1.5DF	●	43	121				MTL, MSLD, MEL, NAL	1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 220-3DF	○	77	165	56	30	25		1			
	5	SMDH 220-5DF	○	123	205					1			
	8	SMDH 220-8DF	○	191	275					1			
22,8 < D ≤ 23,8	1,5	SMDH 230-1.5DF	●	45	122				MTL, MSLD, MEL, NAL	1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 230-3DF	○	80	165	56	30	25		1			
	5	SMDH 230-5DF	○	128	215					1			
	8	SMDH 230-8DF	○	199	285					1			
23,8 < D ≤ 24,8	1,5	SMDH 240-1.5DF	●	46	129				MTL, MSLD, MEL, NAL	1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 240-3DF	○	83	175	60	37	32		1			
	5	SMDH 240-5DF	○	133	225					1			
	8	SMDH 240-8DF	○	207	300					1			

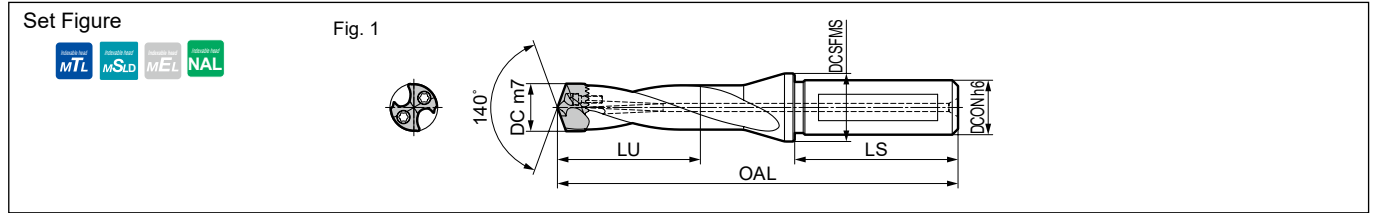
Recommended Cutting Conditions P3 MTL Type Head P4 MSLD Type Head P6 MEL Type Head P8 NAL Type Head P10

\*The SMDH□□□S Holder Cat. No. has been changed to SMDH□□□-1.5DF. The specifications have not changed.

● = Euro stock

○ = Japan stock

<b>MTL</b>	Carbon Steel Alloy Steel up to 0.25%	Carbon Steel Alloy Steel up to 0.25%	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron	<b>NAL</b>	Aluminum Alloy	Non-ferrous Materials	Copper Alloy
<b>MSLD</b>	Carbon Steel Alloy Steel up to 0.25%	Carbon Steel Alloy Steel up to 0.25%	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy		
<b>MEL</b>	Carbon Steel Alloy Steel up to 0.25%	Carbon Steel Alloy Steel up to 0.25%	Hardened Steel up to 45HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	



Body, Diameter Ø 24,8 to 30,8 mm

Dimensions (mm)

Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
24,8 < D ≤ 25,8	1,5	SMDH 250-1.5DF	●	48	129	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04014IPC	4,14-5,52	TRDR20IP
	3	SMDH 250-3DF	○	87	175								
	5	SMDH 250-5DF	○	138	230								
	8	SMDH 250-8DF	○	216	305								
25,8 < D ≤ 26,8	1,5	SMDH 260-1.5DF	●	50	132	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04014IPC	4,14-5,52	TRDR20IP
	3	SMDH 260-3DF	○	90	180								
	5	SMDH 260-5DF	○	143	235								
	8	SMDH 260-8DF	○	224	315								
26,8 < D ≤ 27,8	1,5	SMDH 270-1.5DF	●	51	133	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04014IPC	4,14-5,52	TRDR20IP
	3	SMDH 270-3DF	○	93	180								
	5	SMDH 270-5DF	○	149	240								
	8	SMDH 270-8DF	○	232	325								
27,8 < D ≤ 28,8	1,5	SMDH 280-1.5DF	●	53	134	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04515IPC	4,98-6,64	TRDR25IP
	3	SMDH 280-3DF	○	96	185								
	5	SMDH 280-5DF	○	154	245								
	8	SMDH 280-8DF	○	240	330								
28,8 < D ≤ 29,8	1,5	SMDH 290-1.5DF	●	55	136	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04515IPC	4,98-6,64	TRDR25IP
	3	SMDH 290-3DF	○	99	190								
	5	SMDH 290-5DF	○	159	250								
	8	SMDH 290-8DF	○	248	340								
29,8 < D ≤ 30,8	1,5	SMDH 300-1.5DF	●	56	139	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04515IPC	4,98-6,64	TRDR25IP
	3	SMDH 300-3DF	○	103	190								
	5	SMDH 300-5DF	○	164	260								
	8	SMDH 300-8DF	○	257	350								

Recommended Cutting Conditions P3 MTL Type Head P4 MSLD Type Head P6 MEL Type Head P8 NAL Type Head P10

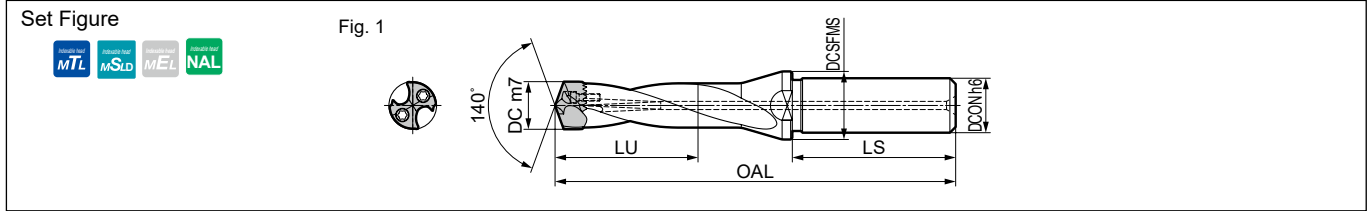
\*The SMDH□□□S Holder Cat. No. has been changed to SMDH□□□-1.5DF. The specifications have not changed.

Conversion Chart of New and Old Cat. Numbers

Old Cat. No.	New Cat. No.
SMDH 120S	SMDH 120-1.5DF
SMDH 125S	SMDH 125-1.5DF
SMDH 130S	SMDH 130-1.5DF
SMDH 140S	SMDH 140-1.5DF
SMDH 150S	SMDH 150-1.5DF
SMDH 160S	SMDH 160-1.5DF
SMDH 170S	SMDH 170-1.5DF
SMDH 180S	SMDH 180-1.5DF
SMDH 190S	SMDH 190-1.5DF
SMDH 200S	SMDH 200-1.5DF
SMDH 210S	SMDH 210-1.5DF
SMDH 220S	SMDH 220-1.5DF
SMDH 230S	SMDH 230-1.5DF
SMDH 240S	SMDH 240-1.5DF
SMDH 250S	SMDH 250-1.5DF
SMDH 260S	SMDH 260-1.5DF
SMDH 270S	SMDH 270-1.5DF
SMDH 280S	SMDH 280-1.5DF
SMDH 290S	SMDH 290-1.5DF
SMDH 300S	SMDH 300-1.5DF

\*Either BXD□□□□□IPC (with anti-loosening coating) or the old Cat. No. BXD□□□□□IP can be used as the cap screw.

<b>MTL</b> Carbon Steel Alloy Steel up to 1.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni	<b>MSLD</b> Carbon Steel Alloy Steel up to 1.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni	<b>MEL</b> Carbon Steel Alloy Steel up to 1.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni Carbon Steel Alloy Steel up to 0.2% Ni	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron	<b>NAL</b> Aluminum Alloy	Aluminum Alloy	Non-ferrous Materials	Copper Alloy
Stainless Steel	Stainless Steel	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Aluminum Alloy		
				Hardened Steel up to 45HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy



Body, Diameter Ø 12,0–21,5 mm

Dimensions (mm)

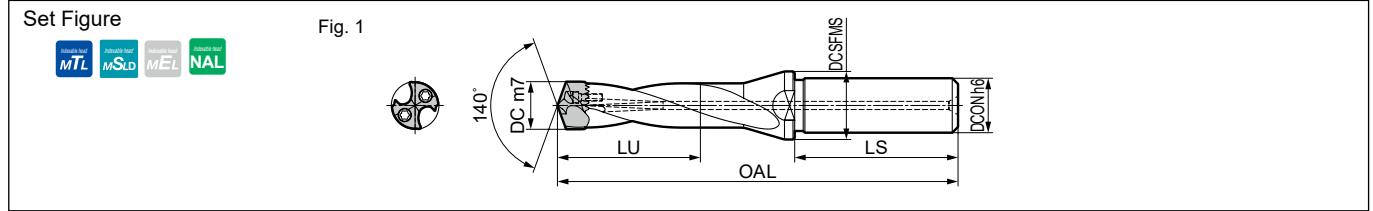
Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
12,0 ≤ D < 12,5	1,5	SMDH 120-1.5D	○	23	91					1			
	3	SMDH 120-3D	○	42	107				MTL, MSLD	1			
	5	SMDH 120-5D	○	67	132	48	20	16	MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 120-8D	○	98	164					1			
	12	SMDH 120-12D	○	146	213					1			
12,5 ≤ D < 13,0	1,5	SMDH 125-1.5D	○	24	91					1			
	3	SMDH 125-3D	○	44	107				MTL, MSLD	1			
	5	SMDH 125-5D	○	69	132	48	20	16	MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 125-8D	○	102	170					1			
13,0 ≤ D < 13,5	1,5	SMDH 130-1.5D	○	25	92					1			
	3	SMDH 130-3D	○	45	112				MTL, MSLD	1			
	5	SMDH 130-5D	○	72	142	48	20	16	MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 130-8D	○	106	178					1			
13,5 ≤ D ≤ 14,5	1,5	SMDH 140-1.5D	○	29	96					1			
	3	SMDH 140-3D	○	51	119				MTL, MSLD	1			
	5	SMDH 140-5D	○	80	149	48	20	16	MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 140-8D	○	123	194					1			
14,5 < D ≤ 15,5	1,5	SMDH 150-1.5D	○	31	100					1			
	3	SMDH 150-3D	○	54	129				MTL, MSLD	1			
	5	SMDH 150-5D	○	85	159	50	25	20	MEL, NAL	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 150-8D	○	131	204					1			
15,5 < D ≤ 16,5	1,5	SMDH 160-1.5D	○	32	103					1			
	3	SMDH 160-3D	○	57	134				MTL, MSLD	1			
	5	SMDH 160-5D	○	90	169	50	25	20	MEL, NAL	1	BXD02509IPC	0,93–1,24	TRDR10IP
	8	SMDH 160-8D	○	140	214					1			
16,5 < D ≤ 17,5	1,5	SMDH 170-1.5D	○	34	104					1			
	3	SMDH 170-3D	○	60	140				MTL, MSLD	1			
	5	SMDH 170-5D	○	95	175	50	25	20	MEL, NAL	1	BXD02509IPC	0,93–1,24	TRDR10IP
	8	SMDH 170-8D	○	148	225					1			
17,5 < D ≤ 18,5	1,5	SMDH 180-1.5D	○	36	107					1			
	3	SMDH 180-3D	○	63	145				MTL, MSLD	1			
	5	SMDH 180-5D	○	100	180	50	25	20	MEL, NAL	1	BXD02509IPC	0,93–1,24	TRDR10IP
	8	SMDH 180-8D	○	156	230					1			
18,5 < D ≤ 19,5	1,5	SMDH 190-1.5D	○	37	115					1			
	3	SMDH 190-3D	○	67	160				MTL, MSLD	1			
	5	SMDH 190-5D	○	106	195	56	30	25	MEL, NAL	1	BXD03011IPC	1,83–2,44	TRDR15IP
	8	SMDH 190-8D	○	164	255					1			
19,5 < D ≤ 20,5	1,5	SMDH 200-1.5D	○	39	118					1			
	3	SMDH 200-3D	○	70	160				MTL, MSLD	1			
	5	SMDH 200-5D	○	111	200	56	30	25	MEL, NAL	1	BXD03011IPC	1,83–2,44	TRDR15IP
	8	SMDH 200-8D	○	172	265					1			
20,5 < D ≤ 21,5	1,5	SMDH 210-1.5D	○	41	119					1			
	3	SMDH 210-3D	○	73	160				MTL, MSLD	1			
	5	SMDH 210-5D	○	116	200	56	30	25	MEL, NAL	1	BXD03011IPC	1,83–2,44	TRDR15IP
	8	SMDH 210-8D	○	180	270					1			
21,5 < D ≤ 22,5	12	SMDH 210-12D	●	255	334					1			

Recommended Cutting Conditions P3 MTL Type Head P4 MSLD Type Head P6 MEL Type Head P8 NAL Type Head P10

\*The SMDH□□□S Holder Cat. No. has been changed to SMDH□□□-1.5DF. The specifications have not changed.

<b>MTL</b> Carbon Steel Alloy Steel up to 0.25%	<b>MSLD</b> Carbon Steel Alloy Steel Heat 2.25%	<b>MEL</b> Carbon Steel Alloy Steel up to 0.25%	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron	<b>NAL</b> Aluminum Alloy	Non-ferrous Materials	Copper Alloy
Carbon Steel Alloy Steel up to 0.25%	Carbon Steel Alloy Steel Heat 2.25%	Carbon Steel Alloy Steel up to 0.25%	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	
Carbon Steel Alloy Steel up to 0.25%	Carbon Steel Alloy Steel up to 0.25%	Hardened Steel up to 45HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	



Body, Diameter Ø 21,5–30,8 mm

Dimensions (mm)

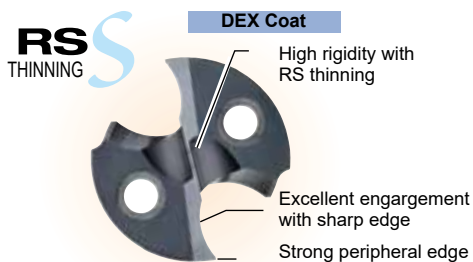
Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
21,5 < D ≤ 22,8	1,5	SMDH 220-1.5D	○	43	121	56	30	25	MTL, MSLD, MEL, NAL	1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 220-3D	○	77	165								
	5	SMDH 220-5D	○	123	205								
	8	SMDH 220-8D	○	191	275								
	12	SMDH 220-12D	●	268	347								
22,8 < D ≤ 23,8	1,5	SMDH 230-1.5D	○	45	122	56	30	25	MTL, MSLD, MEL, NAL	1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 230-3D	○	80	165								
	5	SMDH 230-5D	○	128	215								
	8	SMDH 230-8D	○	199	285								
	12	SMDH 230-12D	●	280	359								
23,8 < D ≤ 24,8	1,5	SMDH 240-1.5D	○	46	129	60	37	32	MTL, MSLD, MEL, NAL	1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 240-3D	○	83	175								
	5	SMDH 240-5D	○	133	225								
	8	SMDH 240-8D	○	207	300								
	12	SMDH 240-12D	●	292	376								
24,8 < D ≤ 25,8	1,5	SMDH 250-1.5D	○	48	129	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 250-3D	○	87	175								
	5	SMDH 250-5D	○	138	230								
	8	SMDH 250-8D	○	216	305								
	12	SMDH 250-12D	●	304	388								
25,8 < D ≤ 26,8	1,5	SMDH 260-1.5D	○	50	132	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 260-3D	○	90	180								
	5	SMDH 260-5D	○	143	235								
	8	SMDH 260-8D	○	224	315								
	12	SMDH 260-12D	○	316	401								
26,8 < D ≤ 27,8	1,5	SMDH 270-1.5D	○	51	133	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 270-3D	○	93	180								
	5	SMDH 270-5D	○	149	240								
	8	SMDH 270-8D	○	232	325								
	12	SMDH 270-12D	○	329	413								
27,8 < D ≤ 28,8	1,5	SMDH 280-1.5D	○	53	134	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 280-3D	○	96	185								
	5	SMDH 280-5D	○	154	245								
	8	SMDH 280-8D	○	240	330								
	12	SMDH 280-12D	○	341	426								
28,8 < D ≤ 29,8	1,5	SMDH 290-1.5D	○	55	136	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 290-3D	○	99	190								
	5	SMDH 290-5D	○	159	250								
	8	SMDH 290-8D	○	248	340								
	12	SMDH 290-12D	○	353	438								
29,8 < D ≤ 30,8	1,5	SMDH 300-1.5D	○	56	139	60	37	32	MTL, MSLD, MEL, NAL	1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 300-3D	○	103	190								
	5	SMDH 300-5D	○	164	260								
	8	SMDH 300-8D	○	257	350								
	12	SMDH 300-12D	○	365	451								

Recommended Cutting Conditions P3 MTL Type Head P4 MSLD Type Head P6 MEL Type Head P8 NAL Type Head P10

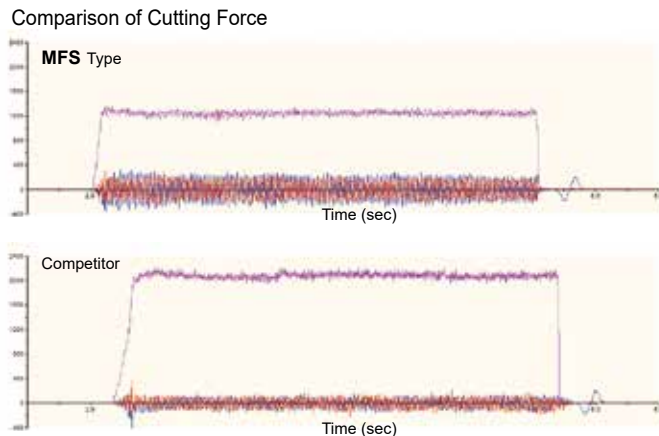
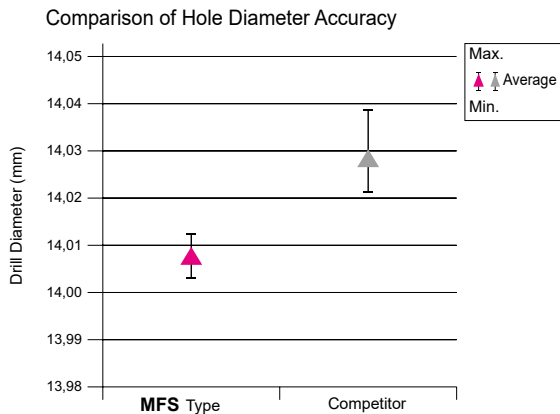
\*The SMDH□□□□ Holder Cat. No. has been changed to SMDH□□□□-1.5DF. The specifications have not changed.

# 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 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: C50  
Cutting Data:  $v_c = 100$  mm/min,  $f = 0,15$  mm/rev, hole depth 21 mm, 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 holders	○	○	○ (guide hole not needed)	○	○
3D-12D holders	×	×	×	×	○

## Recommended Cutting Conditions (MFS Type)

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

Work Material	Cutting Conditions	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*
		Min.-Optimum-Max.	Min.-Optimum-Max.	Min.-Optimum-Max.	Min.-Optimum-Max.	Min. - Optimum - Max.	Min. - Optimum - Max.	Min. - Optimum - Max.
Ø16,0	$v_c$	60-100-120	70-100-120	40-60-90	50-60-80	50-70-90	50-60-80	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	$v_c$	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	$v_c$	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

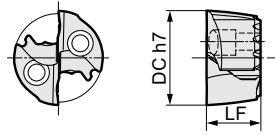
Note: The recommended hole depth is 2 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces. The recommended cutting conditions are those for drilling in flat horizontal surfaces.  
Adjust the feed rate according to the inclination angle when drilling in an 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.



**Indexable Head  
MFS Type**

Fig. 1



### ■ Diameter Ø 12,0–21,5 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	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

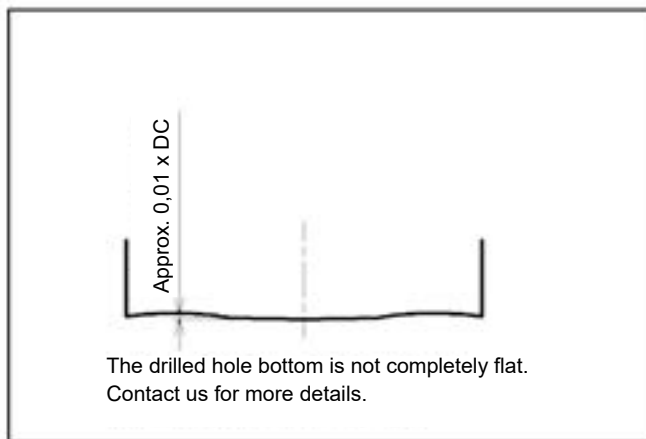
Grade: ACX70 Recommended Cutting Conditions P16 Applicable Holders P18

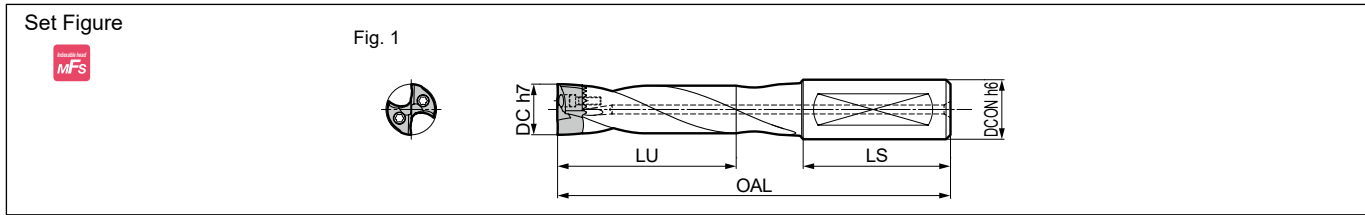
### ■ Diameter Ø 22,0–30,0 mm

Dimensions (mm)

Ø DC	Stock	Cat. No.	LF	Applicable Holders	Fig.
22,0	●	SMDT 2200 MFS	11,2	SMDH220□	1
22,5	●	SMDT 2250 MFS			1
23,0	●	SMDT 2300 MFS	11,2	SMDH230□	1
23,5	●	SMDT 2350 MFS			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





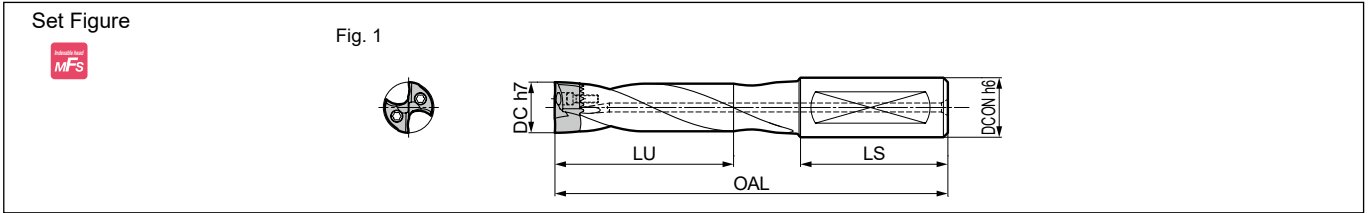
Body, Diameter Ø 12,0–29,8 mm

Dimensions (mm)

Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
12,0 ≤ D < 12,5	3	SMDH 120M3	●	40	105				1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 120M5	●	65	130	48	16	MFS	1			
12,5 ≤ D < 13,0	3	SMDH 125M3	●	41	105				1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 125M5	●	67	130	48	16	MFS	1			
13,0 ≤ D < 13,5	3	SMDH 130M3	●	43	110				1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 130M5	●	70	140	48	16	MFS	1			
13,5 ≤ D ≤ 14,5	3	SMDH 140M3	●	48	117				1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 140M5	●	77	147	48	16	MFS	1			
	8	SMDH 140M8	●	121	192				1			
14,5 < D ≤ 15,5	3	SMDH 150M3	●	51	127				1	BXD02208IP	0,75–1,00	TRDR08IP
	5	SMDH 150M5	●	82	157	50	20	MFS	1			
	8	SMDH 150M8	●	129	202				1			
15,5 < D ≤ 16,5	3	SMDH 160M3	●	54	132				1	BXD02509IP	0,93–1,24	TRDR10IP
	5	SMDH 160M5	●	87	167	50	20	MFS	1			
	8	SMDH 160M8	●	137	212				1			
16,5 < D ≤ 17,5	3	SMDH 170M3	●	57	137				1	BXD02509IP	0,93–1,24	TRDR10IP
	5	SMDH 170M5	●	92	172	50	20	MFS	1			
	8	SMDH 170M8	●	145	222				1			
17,5 < D ≤ 18,5	3	SMDH 180M3	●	60	142				1	BXD02509IP	0,93–1,24	TRDR10IP
	5	SMDH 180M5	●	97	177	50	20	MFS	1			
	8	SMDH 180M8	●	153	227				1			
18,5 < D ≤ 19,5	3	SMDH 190M3	●	63	157				1	BXD03011IP	1,83–2,44	TRDR15IP
	5	SMDH 190M5	●	102	192	56	25	MFS	1			
	8	SMDH 190M8	●	161	252				1			
19,5 < D ≤ 20,5	3	SMDH 200M3	●	66	157				1	BXD03011IP	1,83–2,44	TRDR15IP
	5	SMDH 200M5	●	107	197	56	25	MFS	1			
	8	SMDH 200M8	●	169	262				1			
20,5 < D ≤ 21,5	3	SMDH 210M3	●	69	157				1	BXD03011IP	1,83–2,44	TRDR15IP
	5	SMDH 210M5	●	112	197	56	25	MFS	1			
	8	SMDH 210M8	●	177	267				1			
21,5 < D ≤ 22,8	3	SMDH 220M3	●	73	161				1	BXD03512IP	2,79–3,72	TRDR15IP
	5	SMDH 220M5	●	119	201	56	25	MFS	1			
	8	SMDH 220M8	●	187	271				1			
22,8 < D ≤ 23,8	3	SMDH 230M3	●	76	161				1	BXD03512IP	2,79–3,72	TRDR15IP
	5	SMDH 230M5	●	124	211	56	25	MFS	1			
	8	SMDH 230M8	●	195	281				1			
23,8 < D ≤ 24,8	3	SMDH 240M3	●	79	170				1	BXD03512IP	2,79–3,72	TRDR15IP
	5	SMDH 240M5	●	129	220	60	32	MFS	1			
	8	SMDH 240M8	●	203	295				1			
24,8 < D ≤ 25,8	3	SMDH 250M3	●	82	170				1	BXD04014IP	4,14–5,52	TRDR20IP
	5	SMDH 250M5	●	134	225	60	32	MFS	1			
	8	SMDH 250M8	●	211	300				1			
25,8 < D ≤ 26,8	3	SMDH 260M3	●	85	175				1	BXD04014IP	4,14–5,52	TRDR20IP
	5	SMDH 260M5	●	139	230	60	32	MFS	1			
	8	SMDH 260M8	●	219	310				1			
26,8 < D ≤ 27,8	3	SMDH 270M3	●	88	175				1	BXD04014IP	4,14–5,52	TRDR20IP
	5	SMDH 270M5	●	144	235	60	32	MFS	1			
	8	SMDH 270M8	●	227	320				1			
27,8 < D ≤ 28,8	3	SMDH 280M3	●	91	180				1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 280M5	●	149	240	60	32	MFS	1			
	8	SMDH 280M8	●	235	325				1			
28,8 < D ≤ 29,8	3	SMDH 290M3	●	94	185				1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 290M5	●	154	245	60	32	MFS	1			
	8	SMDH 290M8	●	243	335				1			

Recommended Cutting Conditions P16 MFS Type Head P17



## Body, Diameter Ø 29,8–30,8 mm

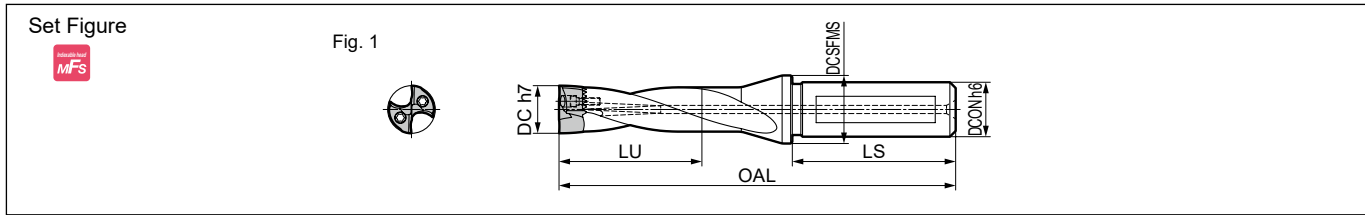
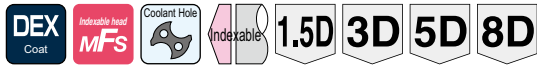
Dimensions (mm)

## Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
29,8 < D ≤ 30,8	3	SMDH 300M3	●	97	185				1	BXD04515IP	4,98–6,64	TRDR25IP
	5	SMDH 300M5	●	159	255	60	32	MFS	1			
	8	SMDH 300M8	●	251	345				1			

Recommended Cutting Conditions P16 MFS Type Head P17

Recommended Tightening Torque (N·m)



## Body, Diameter Ø 12,0–24,8 mm

Dimensions (mm)

## Parts

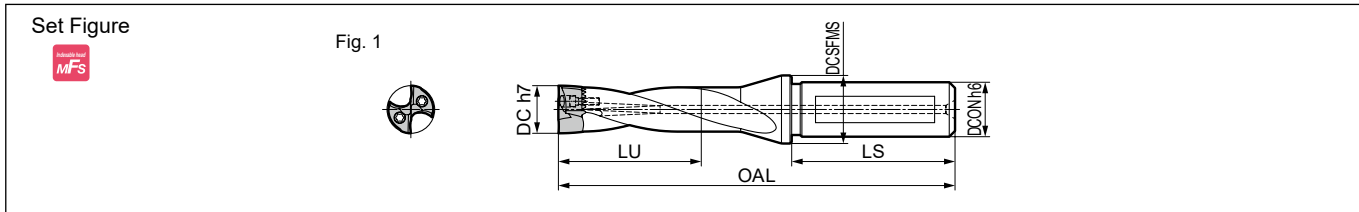
Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
12,0 ≤ D < 12,5	1,5	SMDH 120-1.5DF	●	21	89					1			
	3	SMDH 120-3DF	○	40	105					1			
	5	SMDH 120-5DF	○	65	130	48	20	16	MFS	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 120-8DF	○	96	162					1			
12,5 ≤ D < 13,0	1,5	SMDH 125-1.5DF	●	22	89					1			
	3	SMDH 125-3DF	○	41	105					1			
	5	SMDH 125-5DF	○	67	130	48	20	16	MFS	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 125-8DF	○	100	168					1			
13,0 ≤ D < 13,5	1,5	SMDH 130-1.5DF	●	23	90					1			
	3	SMDH 130-3DF	○	43	110					1			
	5	SMDH 130-5DF	○	70	140	48	20	16	MFS	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 130-8DF	○	104	176					1			
13,5 ≤ D ≤ 14,5	1,5	SMDH 140-1.5DF	●	26	94					1			
	3	SMDH 140-3DF	○	48	117					1			
	5	SMDH 140-5DF	○	77	147	48	20	16	MFS	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 140-8DF	○	121	192					1			
14,5 < D ≤ 15,5	1,5	SMDH 150-1.5DF	●	28	97					1			
	3	SMDH 150-3DF	○	51	127					1			
	5	SMDH 150-5DF	○	82	157	50	25	20	MFS	1	BXD02208IPC	0,75–1,00	TRDR08IP
	8	SMDH 150-8DF	○	129	202					1			
15,5 < D ≤ 16,5	1,5	SMDH 160-1.5DF	●	29	100					1			
	3	SMDH 160-3DF	○	54	132					1			
	5	SMDH 160-5DF	○	87	167	50	25	20	MFS	1	BXD02509IPC	0,93–1,24	TRDR10IP
	8	SMDH 160-8DF	○	137	212					1			
16,5 < D ≤ 17,5	1,5	SMDH 170-1.5DF	●	31	101					1			
	3	SMDH 170-3DF	○	57	137					1			
	5	SMDH 170-5DF	○	92	172	50	25	20	MFS	1	BXD02509IPC	0,93–1,24	TRDR10IP
	8	SMDH 170-8DF	○	145	222					1			
17,5 < D ≤ 18,5	1,5	SMDH 180-1.5DF	●	32	104					1			
	3	SMDH 180-3DF	○	60	142					1			
	5	SMDH 180-5DF	○	97	177	50	25	20	MFS	1	BXD02509IPC	0,93–1,24	TRDR10IP
	8	SMDH 180-8DF	○	153	227					1			
18,5 < D ≤ 19,5	1,5	SMDH 190-1.5DF	●	34	111					1			
	3	SMDH 190-3DF	○	63	157					1			
	5	SMDH 190-5DF	○	102	192	56	30	25	MFS	1	BXD03011IPC	1,83–2,44	TRDR15IP
	8	SMDH 190-8DF	○	161	252					1			
19,5 < D ≤ 20,5	1,5	SMDH 200-1.5DF	●	35	114					1			
	3	SMDH 200-3DF	○	66	157					1			
	5	SMDH 200-5DF	○	107	197	56	30	25	MFS	1	BXD03011IPC	1,83–2,44	TRDR15IP
	8	SMDH 200-8DF	○	169	262					1			
20,5 < D ≤ 21,5	1,5	SMDH 210-1.5DF	●	37	116					1			
	3	SMDH 210-3DF	○	69	157					1			
	5	SMDH 210-5DF	○	112	197	56	30	25	MFS	1	BXD03011IPC	1,83–2,44	TRDR15IP
	8	SMDH 210-8DF	○	177	267					1			
21,5 < D ≤ 22,8	1,5	SMDH 220-1.5DF	●	39	117					1			
	3	SMDH 220-3DF	○	73	161					1			
	5	SMDH 220-5DF	○	119	201	56	30	25	MFS	1	BXD03512IPC	2,79–3,72	TRDR15IP
	8	SMDH 220-8DF	○	187	271					1			
22,8 < D ≤ 23,8	1,5	SMDH 230-1.5DF	●	40	118					1			
	3	SMDH 230-3DF	○	76	161					1			
	5	SMDH 230-5DF	○	124	211	56	30	25	MFS	1	BXD03512IPC	2,79–3,72	TRDR15IP
	8	SMDH 230-8DF	○	195	281					1			
23,8 < D ≤ 24,8	1,5	SMDH 240-1.5DF	●	42	124					1			
	3	SMDH 240-3DF	○	79	170					1			
	5	SMDH 240-5DF	○	129	220	60	37	32	MFS	1	BXD03512IPC	2,79–3,72	TRDR15IP
	8	SMDH 240-8DF	○	203	295					1			

Recommended Cutting Conditions P16 MFS Type Head P17

\*The SMDH□□□S Holder Cat. No. has been changed to SMDH□□□-1.5DF. The specifications have not changed.

● = Euro stock

○ = Japan stock



## Body, Diameter Ø 24,8–30,8 mm

Dimensions (mm)

## Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
24,8 < D ≤ 25,8	1,5	SMDH 250-1.5DF	●	43	125					1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 250-3DF	○	82	170					1			
	5	SMDH 250-5DF	○	134	225	60	37	32	MFS	1			
	8	SMDH 250-8DF	○	211	300					1			
25,8 < D ≤ 26,8	1,5	SMDH 260-1.5DF	●	45	127					1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 260-3DF	○	85	175					1			
	5	SMDH 260-5DF	○	139	230	60	37	32	MFS	1			
	8	SMDH 260-8DF	○	219	310					1			
26,8 < D ≤ 27,8	1,5	SMDH 270-1.5DF	●	46	128					1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 270-3DF	○	88	175					1			
	5	SMDH 270-5DF	○	144	235	60	37	32	MFS	1			
	8	SMDH 270-8DF	○	227	320					1			
27,8 < D ≤ 28,8	1,5	SMDH 280-1.5DF	●	48	129					1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 280-3DF	○	91	180					1			
	5	SMDH 280-5DF	○	149	240	60	37	32	MFS	1			
	8	SMDH 280-8DF	○	235	325					1			
28,8 < D ≤ 29,8	1,5	SMDH 290-1.5DF	●	49	131					1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 290-3DF	○	94	185					1			
	5	SMDH 290-5DF	○	154	245	60	37	32	MFS	1			
	8	SMDH 290-8DF	○	243	335					1			
29,8 < D ≤ 30,8	1,5	SMDH 300-1.5DF	●	51	133					1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 300-3DF	○	97	185					1			
	5	SMDH 300-5DF	○	159	255	60	37	32	MFS	1			
	8	SMDH 300-8DF	○	251	345					1			

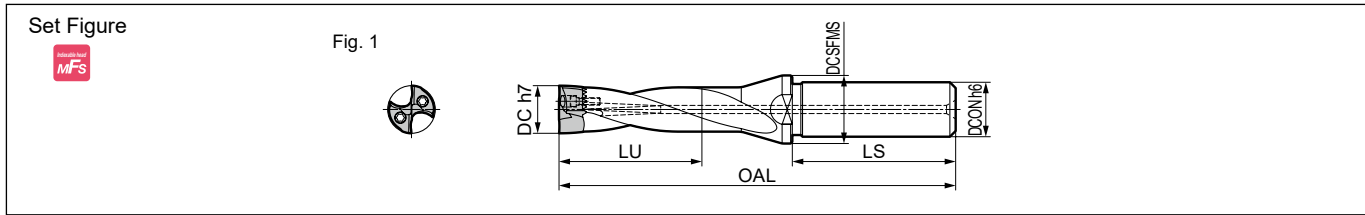
Recommended Cutting Conditions P16 MFS Type Head P17

\*The SMDH□□□S Holder Cat. No. has been changed to SMDH□□□-1.5DF. The specifications have not changed.

## Conversion Chart of New and Old Cat. Numbers

Old Cat. No.	New Cat. No.
SMDH 120S	SMDH 120-1.5DF
SMDH 125S	SMDH 125-1.5DF
SMDH 130S	SMDH 130-1.5DF
SMDH 140S	SMDH 140-1.5DF
SMDH 150S	SMDH 150-1.5DF
SMDH 160S	SMDH 160-1.5DF
SMDH 170S	SMDH 170-1.5DF
SMDH 180S	SMDH 180-1.5DF
SMDH 190S	SMDH 190-1.5DF
SMDH 200S	SMDH 200-1.5DF
SMDH 210S	SMDH 210-1.5DF
SMDH 220S	SMDH 220-1.5DF
SMDH 230S	SMDH 230-1.5DF
SMDH 240S	SMDH 240-1.5DF
SMDH 250S	SMDH 250-1.5DF
SMDH 260S	SMDH 260-1.5DF
SMDH 270S	SMDH 270-1.5DF
SMDH 280S	SMDH 280-1.5DF
SMDH 290S	SMDH 290-1.5DF
SMDH 300S	SMDH 300-1.5DF

\*Either BXD□□□□□IPC (with anti-loosening coating) or the old Cat. No. BXD□□□□□IP can be used as the cap screw.



Body, Diameter Ø 12,0–21,5 mm

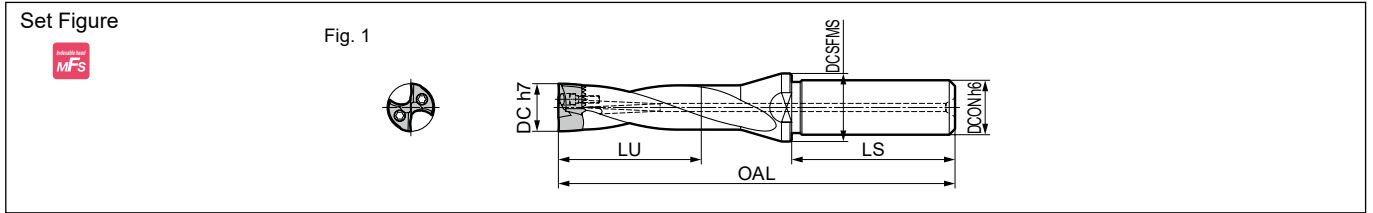
Dimensions (mm)

Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
12,0 ≤ D < 12,5	1,5	SMDH 120-1.5D	○	21	89					1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 120-3D	○	40	105					1			
	5	SMDH 120-5D	○	65	130	48	20	16	MFS	1			
	8	SMDH 120-8D	○	96	162					1			
	12	SMDH 120-12D	○	144	211					1			
12,5 ≤ D < 13,0	1,5	SMDH 125-1.5D	○	22	89					1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 125-3D	○	41	105					1			
	5	SMDH 125-5D	○	67	130	48	20	16	MFS	1			
	8	SMDH 125-8D	○	100	168					1			
	12	SMDH 125-12D	○	150	217					1			
13,0 ≤ D < 13,5	1,5	SMDH 130-1.5D	○	23	90					1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 130-3D	○	43	110					1			
	5	SMDH 130-5D	○	70	140	48	20	16	MFS	1			
	8	SMDH 130-8D	○	104	176					1			
	12	SMDH 130-12D	○	156	223					1			
13,5 ≤ D ≤ 14,5	1,5	SMDH 140-1.5D	○	26	94					1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 140-3D	○	48	117					1			
	5	SMDH 140-5D	○	77	147	48	20	16	MFS	1			
	8	SMDH 140-8D	○	121	192					1			
	12	SMDH 140-12D	●	168	236					1			
14,5 < D ≤ 15,5	1,5	SMDH 150-1.5D	○	28	97					1	BXD02208IPC	0,75–1,00	TRDR08IP
	3	SMDH 150-3D	○	51	127					1			
	5	SMDH 150-5D	○	82	157	50	25	20	MFS	1			
	8	SMDH 150-8D	○	129	202					1			
	12	SMDH 150-12D	●	180	250					1			
15,5 < D ≤ 16,5	1,5	SMDH 160-1.5D	○	29	100					1	BXD02509IPC	0,93–1,24	TRDR10IP
	3	SMDH 160-3D	○	54	132					1			
	5	SMDH 160-5D	○	87	167	50	25	20	MFS	1			
	8	SMDH 160-8D	○	137	212					1			
	12	SMDH 160-12D	●	192	263					1			
16,5 < D ≤ 17,5	1,5	SMDH 170-1.5D	○	31	101					1	BXD02509IPC	0,93–1,24	TRDR10IP
	3	SMDH 170-3D	○	57	137					1			
	5	SMDH 170-5D	○	92	172	50	25	20	MFS	1			
	8	SMDH 170-8D	○	145	222					1			
	12	SMDH 170-12D	●	204	275					1			
17,5 < D ≤ 18,5	1,5	SMDH 180-1.5D	○	32	104					1	BXD02509IPC	0,93–1,24	TRDR10IP
	3	SMDH 180-3D	○	60	142					1			
	5	SMDH 180-5D	○	97	177	50	25	20	MFS	1			
	8	SMDH 180-8D	○	153	227					1			
	12	SMDH 180-12D	●	216	287					1			
18,5 < D ≤ 19,5	1,5	SMDH 190-1.5D	○	34	111					1	BXD03011IPC	1,83–2,44	TRDR15IP
	3	SMDH 190-3D	○	63	157					1			
	5	SMDH 190-5D	○	102	192	56	30	25	MFS	1			
	8	SMDH 190-8D	○	161	252					1			
	12	SMDH 190-12D	●	228	306					1			
19,5 < D ≤ 20,5	1,5	SMDH 200-1.5D	○	35	114					1	BXD03011IPC	1,83–2,44	TRDR15IP
	3	SMDH 200-3D	○	66	157					1			
	5	SMDH 200-5D	○	107	197	56	30	25	MFS	1			
	8	SMDH 200-8D	○	169	262					1			
	12	SMDH 200-12D	●	240	318					1			
20,5 < D ≤ 21,5	1,5	SMDH 210-1.5D	○	37	116					1	BXD03011IPC	1,83–2,44	TRDR15IP
	3	SMDH 210-3D	○	69	157					1			
	5	SMDH 210-5D	○	112	197	56	30	25	MFS	1			
	8	SMDH 210-8D	○	177	267					1			
	12	SMDH 210-12D	●	252	330					1			

Recommended Cutting Conditions P16 MFS Type Head P17

\*The SMDH□□□S Holder Cat. No. has been changed to SMDH□□□-1.5DF. The specifications have not changed.



Body, Diameter Ø 21,5–30,8 mm

Dimensions (mm)

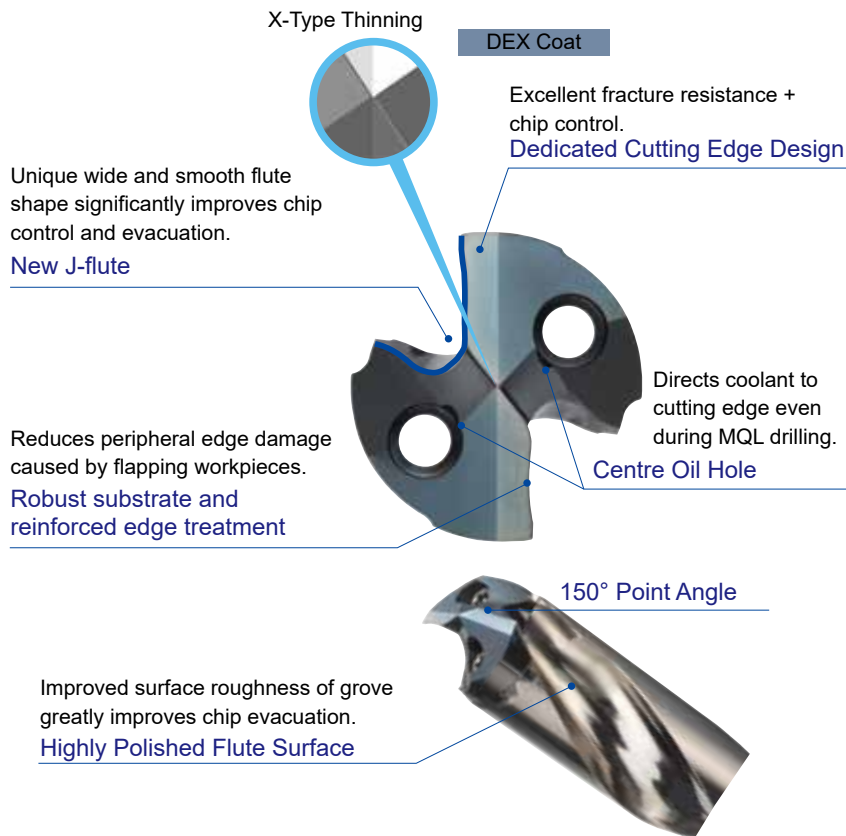
Parts

Ø DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCSFMS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
21,5 < D ≤ 22,8	1,5	SMDH 220-1.5D	○	39	117					1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 220-3D	○	73	161					1			
	5	SMDH 220-5D	○	119	201	56	30	25	MFS	1			
	8	SMDH 220-8D	○	187	271					1			
	12	SMDH 220-12D	●	264	343					1			
22,8 < D ≤ 23,8	1,5	SMDH 230-1.5D	○	40	118					1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 230-3D	○	76	161					1			
	5	SMDH 230-5D	○	124	211	56	30	25	MFS	1			
	8	SMDH 230-8D	○	195	281					1			
	12	SMDH 230-12D	●	276	355					1			
23,8 < D ≤ 24,8	1,5	SMDH 240-1.5D	○	42	124					1	BXD03512IPC	2,79–3,72	TRDR15IP
	3	SMDH 240-3D	○	79	170					1			
	5	SMDH 240-5D	○	129	220	60	37	32	MFS	1			
	8	SMDH 240-8D	○	203	295					1			
	12	SMDH 240-12D	●	288	372					1			
24,8 < D ≤ 25,8	1,5	SMDH 250-1.5D	○	43	125					1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 250-3D	○	82	170					1			
	5	SMDH 250-5D	○	134	225	60	37	32	MFS	1			
	8	SMDH 250-8D	○	211	300					1			
	12	SMDH 250-12D	●	300	384					1			
25,8 < D ≤ 26,8	1,5	SMDH 260-1.5D	○	45	127					1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 260-3D	○	85	175					1			
	5	SMDH 260-5D	○	139	230	60	37	32	MFS	1			
	8	SMDH 260-8D	○	219	310					1			
	12	SMDH 260-12D	○	312	396					1			
26,8 < D ≤ 27,8	1,5	SMDH 270-1.5D	○	46	128					1	BXD04014IPC	4,14–5,52	TRDR20IP
	3	SMDH 270-3D	○	88	175					1			
	5	SMDH 270-5D	○	144	235	60	37	32	MFS	1			
	8	SMDH 270-8D	○	227	320					1			
	12	SMDH 270-12D	○	324	408					1			
27,8 < D ≤ 28,8	1,5	SMDH 280-1.5D	○	48	129					1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 280-3D	○	91	180					1			
	5	SMDH 280-5D	○	149	240	60	37	32	MFS	1			
	8	SMDH 280-8D	○	235	325					1			
	12	SMDH 280-12D	○	336	421					1			
28,8 < D ≤ 29,8	1,5	SMDH 290-1.5D	○	49	131					1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 290-3D	○	94	185					1			
	5	SMDH 290-5D	○	154	245	60	37	32	MFS	1			
	8	SMDH 290-8D	○	243	335					1			
	12	SMDH 290-12D	○	348	433					1			
29,8 < D ≤ 30,8	1,5	SMDH 300-1.5D	○	51	133					1	BXD04515IPC	4,98–6,64	TRDR25IP
	3	SMDH 300-3D	○	97	185					1			
	5	SMDH 300-5D	○	159	255	60	37	32	MFS	1			
	8	SMDH 300-8D	○	251	345					1			
	12	SMDH 300-12D	○	360	445					1			

Recommended Cutting Conditions P16 MFS Type Head P17

\*The SMDH□□□S Holder Cat. No. has been changed to SMDH□□□-1.5DF. The specifications have not changed.

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



### Chip Evacuation



### Cutting Length Comparison for MB Type

Case	Current Tool	Tool Life Comparison (Cutting Length)		Cutting Conditions
1	Comp's A Indexable Head Drill	MB Type 42 m	Comp's A 17m 2,5x Tool life	$v_c = 46$ m/min $f = 0,35$ mm/rev Coolant: MQL
2	Comp's B Indexable Head Drill	MB Type 87m	Comp's B 50 m 1,7x Tool life	$v_c = 56$ m/min $f = 0,30$ mm/rev Coolant: MQL
3	Comp's C Brazed Drill	MB Type 95 m	Comp's C 32 m 3,0x Tool life	$v_c = 54$ m/min $f = 0,30$ mm/rev Coolant: MQL
4	Comp's D Indexable Head Drill	MB Type 120 m	Comp's D 70 m 1,7x Tool life	$v_c = 60$ m/min $f = 0,30$ mm/rev Coolant: MQL

1,7 to 3 times  
the current tool life

↓

Tool Cost  
Major Potential Savings

### Recommended Cutting Conditions (MB Type)

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

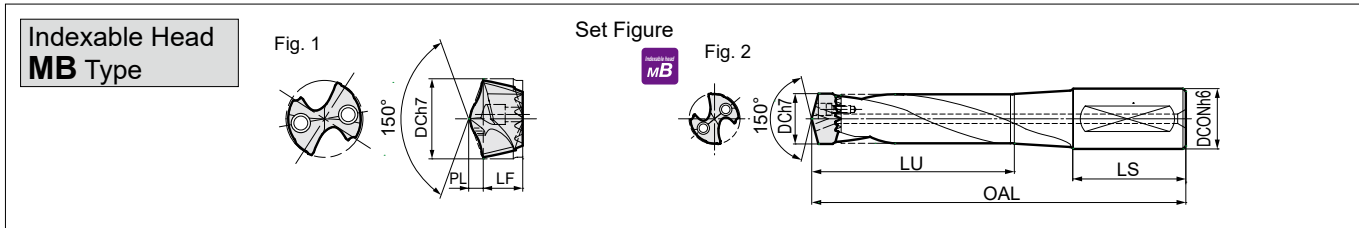
Work Material		Rolled Steel for Welded Structures S144-2	Rolled Steel for Welded Structures SM490	Rolled Steel for Welded Structures SM520	Rolled Steel for Welded Structures SM570
$\varnothing$ DC (mm)	Cutting Conditions	Min. - Optimum - Max.	Min. - Optimum - Max.	Min. - Optimum - Max.	Min. - Optimum - Max.
$\varnothing 24,5$ - $\varnothing 26,7$	$v_c$	60-70-80	55-65-75	55-65-75	55-65-75
	$f$	0,20-0,30-0,40	0,20-0,30-0,40	0,20-0,25-0,35	0,20-0,25-0,35

# SMD Type for Bridge (Internal Coolant Supply)

Carbon Steel Alloy Steel up to 0.28%  
Carbon Steel Alloy Steel from 0.29%



Only use the special MB type head with a B3 type holder.



## ■ Diameter Ø 24,5/24,7 mm

DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
24,5	○	SMDT 2450 MB	10,8	3,3	SMDH 240B3	1
24,7	○	SMDT 2470 MB				1

Grade: ACX80

## ■ Diameter Ø 26,5/26,7 mm

DC	Stock	Cat. No.	LF	PL	Applicable Holders	Fig.
26,5	○	SMDT 2650 MB	11,7	3,6	SMDH 260B3	1
26,7	○	SMDT 2670 MB				1

Grade: ACX80

## ■ Body, B3 type, Diameter Ø 23,8–26,8 mm

Dimensions (mm)

## ■ Parts

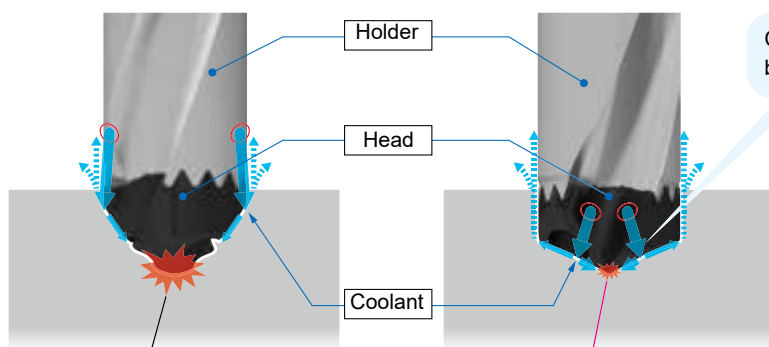
DC	Hole Depth (L/D)	Cat. No.	Stock	LU	OAL	LS	DCON	Indexable Head	Fig.	Cap Screw		Wrench
										Fig.	N·m	
23,8 < D ≤ 24,8	3	SMDH 240B3	○	84	173			MB	2	BXD03512IP	2,79–3,72	TRDR15IP
25,8 < D ≤ 26,8	3	SMDH 260B3	○	90	179	60	32	MB	2	BXD04014IP	4,14–5,52	TRDR20IP

Inquire about production of holders not listed in stock.

## ■ Coolant for Greater Lubricity

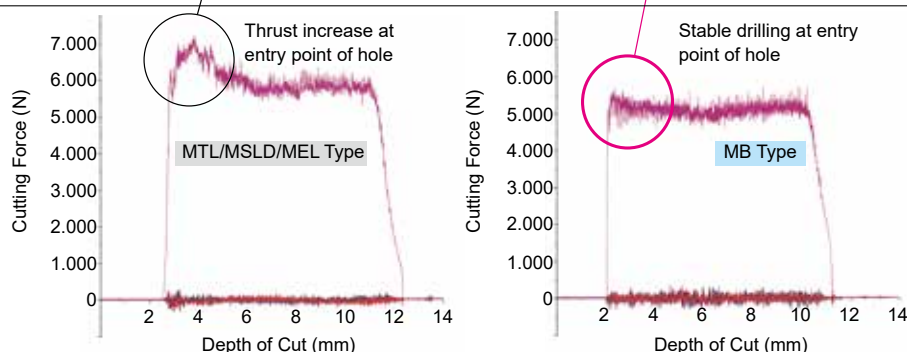
MTL Type / MSLD Type / MEL Type

MB Type



Coolant supply to the drill tip has been improved.

### Comparison of Curring Resistance(Thrust Force)



Work Material: SS400, Diameter: Ø 24,7 mm  
Cutting Data:  $v_c = 70$  m/min,  $f = 0,35$  mm/rev  
Coolant: MQL

Due to the difference in oil hole positions and flute shapes, MTL type / MSLD type / MEL type drill heads are not compatible to use with B3 type drill holders (for bridge) are similarly, MB type drill heads (for bridge) are not compatible for use with -1,5D (F) to 12D type / M3 type/ M5 type / M8 type drill holders.

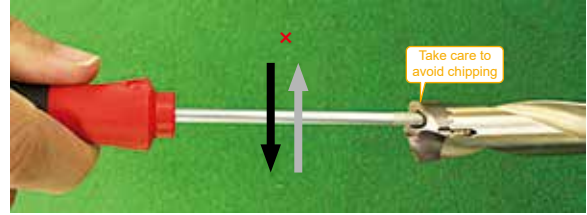
## ■ Head Replacement Instructions



(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 / MSLD 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.



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