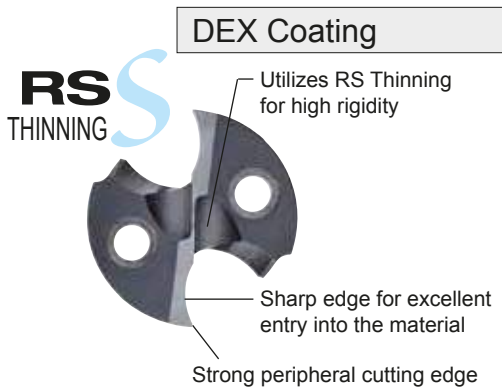




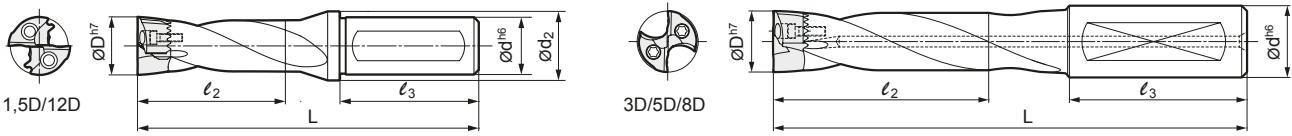
MFS Type Ideal for Drilling in Non-Flat Surfaces and Less Burr



Advantages

- Various Drilling Operations Thanks to a Point Angle of 180°**
 Applicable to high-efficiency spot facing, drilling in 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.

Holder



No flat face for side lock clamping on the shank of 12D holders.

Holder

Dimensions				Cat. No.	Series (1,5D)			Series (3D)			Series (5D)			Series (8D)			Series (12D)			Related Drill Heads MFS			
Drill Head	Shank				Stock	Dimensions		Stock	Dimensions		Stock	Dimensions		Stock	Dimensions		Stock	Dimensions					
Ø D	ℓ ₁	Ø d	ℓ ₃		S	L	ℓ ₂	Ø d ₂	M3	L	ℓ ₂	M5	L	ℓ ₂	M8	L	ℓ ₂	12D	L		ℓ ₂	Ø d ₂	
12,0	2,2	16	48	SMDH 120	91	25,5	20	●	107,2	43,5	●	132,2	68,5								1200~1249		
12,5	2,3			SMDH 125	91	25,5	20	●	107,3	43,5	●	132,3	68,5									1250~1299	
13,0	2,4			SMDH 130	92	27,5	20	●	112,4	46,5	●	142,4	73,5									1300~1349	
14,0	2,5			SMDH 140	96	31,5	20	●	119,0	52,5	●	149,0	81,5	●	194,0	124,5	●	238,5	168,5	20			1350~1450
15,0	2,7	20	50	SMDH 150	100	32,0	25	●	129,2	55,0	●	159,2	86,0	●	204,2	133,0	●	253,0	180,0	25		1451~1550	
16,0	2,9			SMDH 160	103	35,0	25	●	134,4	59,0	●	169,4	92,0	●	214,4	141,0	●	265,5	192,0	25		1551~1650	
17,0	3,1			SMDH 170	105	35,5	25	●	139,6	62,5	●	174,6	97,5	●	224,6	150,5	●	278,1	203,5	25		1651~1750	
18,0	3,3			SMDH 180	107	39,7	25	●	144,8	66,5	●	179,8	103,5	●	229,8	158,5	●	290,5	215,5	25		1751~1850	
19,0	3,5	25	56	SMDH 190	115	40,5	30	●	160,1	69,5	●	195,0	108,5	●	255,0	167,5	●	309,1	228,5	30		1851~1950	
20,0	3,6			SMDH 200	118	43,0	30	●	160,1	73,0	●	200,1	114,0	●	265,1	175,0	●	321,4	240,0	30		1951~2050	
21,0	3,8			SMDH 210	119	44,0	30	●	160,3	76,0	●	200,3	119,0	●	270,3	184,0	●	333,9	252,0	30		2051~2150	
22,0	4,0			SMDH 220	121	47,0	30	●	165,1	80,0	●	205,1	125,0	●	275,1	192,0	●	347,0	264,0	30		2151~2280	
23,0	4,2	32	60	SMDH 230	122	46,5	30	●	164,8	82,5	●	214,8	129,5	●	284,8	200,5	●	359,0	275,5	30		2281~2380	
24,0	4,4			SMDH 240	129	49,5	37	●	174,6	86,5	●	224,6	135,5	●	299,6	208,5	●	376,1	284,5	37		2381~2480	
25,0	4,6			SMDH 250	129	49,0	37	●	174,6	88,0	●	229,6	140,0	●	304,6	217,0	●	388,4	300,0	37		2481~2580	
26,0	4,7			SMDH 260	132	52,0	37	●	179,7	92,0	●	234,7	146,0	●	314,7	225,0							2581~2680
27,0	4,9	32	60	SMDH 270	133	53,0	37	●	179,9	94,0	●	239,9	151,0	●	324,9	234,0						2681~2780	
28,0	5,1			SMDH 280	135	54,5	37	●	185,1	96,5	●	245,1	156,5	●	330,1	241,5							2781~2880
29,0	5,3			SMDH 290	136	55,5	37	●	190,3	99,5	●	250,3	161,5	●	340,3	250,5							2881~2980
30,0	5,5			SMDH 300	139	58,5	37	●	190,5	104,5	●	260,5	167,5	●	350,5	259,5							

Drill order description example: SMDH210M3, drill heads → K63

Recommended Torque

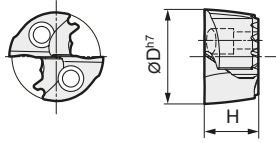
Screw		Applicable Insert
	(N·m)	
BXD 02208 IP	0,8 ~ 1,0	SMDT 1200 ~ 1550 MFS
BXD 02509 IP	0,9 ~ 1,2	SMDT 1551 ~ 1850 MFS
BXD 03011 IP	1,8 ~ 2,4	SMDT 1851 ~ 2150 MFS
BXD 03512 IP	2,8 ~ 3,7	SMDT 2151 ~ 2480 MFS
BXD 04014 IP	4,1 ~ 5,5	SMDT 2481 ~ 2780 MFS
BXD 04515 IP	5,0 ~ 6,6	SMDT 2781 ~ 3050 MFS

Spare Parts

Screw	Wrench	Applicable Holder
BXD 02208 IP	TRDR 08 IP	SMDH 120 ~ 150 □□
BXD 02509 IP	TRDR 10 IP	SMDH 160 ~ 180 □□
BXD 03011 IP	TRDR 15 IP	SMDH 190 ~ 210 □□
BXD 03512 IP	TRDR 15 IP	SMDH 220 ~ 240 □□
BXD 04014 IP	TRDR 20 IP	SMDH 250 ~ 270 □□
BXD 04515 IP	TRDR 25 IP	SMDH 280 ~ 300 □□



Type MFS



PVD coated grade: **ACX70**

■ Drill Head (Insert)

● $\varnothing D$: 12,0~21,5mm

$\varnothing D$ (mm)	Cat. No.	Stock	H (mm)	Applicable Holders
12,0	SMDT 1200 MFS	○	7,1	SMDH120 □□
12,5	SMDT 1250 MFS	○	7,2	SMDH125 □□
13,0	SMDT 1300 MFS	○	7,5	SMDH130 □□
13,5	SMDT 1350 MFS	○		
14,0	SMDT 1400 MFS	○	7,9	SMDH140 □□
14,5	SMDT 1450 MFS	○		
15,0	SMDT 1500 MFS	○	8,3	SMDH150 □□
15,5	SMDT 1550 MFS	○		
16,0	SMDT 1600 MFS	○	8,8	SMDH160 □□
16,5	SMDT 1650 MFS	○		
17,0	SMDT 1700 MFS	○	9,3	SMDH170 □□
17,5	SMDT 1750 MFS	○		
18,0	SMDT 1800 MFS	○	9,8	SMDH180 □□
18,5	SMDT 1850 MFS	○		
19,0	SMDT 1900 MFS	○	10,2	SMDH190 □□
19,5	SMDT 1950 MFS	○		
20,0	SMDT 2000 MFS	○	10,7	SMDH200 □□
20,5	SMDT 2050 MFS	○		
21,0	SMDT 2100 MFS	○	11,2	SMDH210 □□
21,5	SMDT 2150 MFS	○		

● $\varnothing D$: 22,0~30,0mm

$\varnothing D$ (mm)	Cat. No.	Stock	H (mm)	Applicable Holders
22,0	SMDT 2200 MFS	○	11,2	SMDH220 □□
22,5	SMDT 2250 MFS	○		
23,0	SMDT 2300 MFS	○	11,2	SMDH230 □□
23,5	SMDT 2350 MFS	○		
24,0	SMDT 2400 MFS	○	11,3	SMDH240 □□
24,5	SMDT 2450 MFS	○		
25,0	SMDT 2500 MFS	○	11,7	SMDH250 □□
25,5	SMDT 2550 MFS	○		
26,0	SMDT 2600 MFS	○	12,2	SMDH260 □□
26,5	SMDT 2650 MFS	○		
27,0	SMDT 2700 MFS	○	12,7	SMDH270 □□
27,5	SMDT 2750 MFS	○		
28,0	SMDT 2800 MFS	○	13,2	SMDH280 □□
28,5	SMDT 2850 MFS	○		
29,0	SMDT 2900 MFS	○	13,6	SMDH290 □□
29,5	SMDT 2950 MFS	○		
30,0	SMDT 3000 MFS	○	14,1	SMDH300 □□

■ MFS Type Head Important Notes

Application	No Guide Hole (Solid Workpiece Hole Drilling)	With Guide Hole	Flat Finishing of Hole Bottom
	<p>Flat Surface Non-Flat Surface</p>	<p>Guide Holes</p>	
1,5D Holder	○	○ (Guide Hole not required)	○
3D ~ 12D Holder	X	X	○

■ Recommended Cutting Conditions

v_c : Cutting speed (m/min)
f: Feed rate (mm/rev)

Work Material		Soft 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 (*)
Drill Diameter 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.
Up to $\varnothing 16,0$	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
Up to $\varnothing 20,0$	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
Up to $\varnothing 30,8$	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 2xDC. The depth is measured from the highest point of the hole when drilling on inclined surfaces. The recommended cutting conditions above are for drilling on flat horizontal surfaces. Adjust the feed rate according to the inclination angle when drilling on an inclined surface. Set the feed rate at 70% of lower when 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 or helical milling.

(*) Inquire about drills specifically for aluminum alloy.