

Rotary Table: Basic Type/High Precision Type Rack & Pinion Style

Series MSQ

Size: 1, 2, 3, 7

How to Order

High precision type

MSQA 1 A [] M9B []

Basic type

MSQB 1 A [] M9B []

● Size

1
2
3
7

A With adjustment bolt

● Number of auto switches

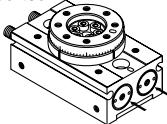
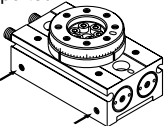
Nil	2 pcs.
S	1 pc.
n	n pcs.

● Auto switch

Nil Without auto switch (Built-in magnet)

* For the applicable auto switch model, refer to the table below.
* Auto switches are shipped together, (but not assembled).

● Port location

Nil	Side ported 
E	Front ported 

Applicable Auto Switch/Refer to page 11-11-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch type		Lead wire length (m)*			Applicable load	
					DC	AC		Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)		
								Perpendicular	In-line					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	12 V	—	F8N	M9N	●	●	○	IC circuit	Relay, PLC
				3-wire (PNP)				F8P	M9P	●	●	○		
				2-wire				F8B	M9B	●	●	○		
	Diagnostic indication (2-color display)			3-wire (NPN)				—	F9NW	●	●	○	IC circuit	
				3-wire (PNP)				—	F9PW	●	●	○		
				2-wire				—	F9BW	●	●	○		

* Lead wire length symbols: 0.5 m Nil (Example) M9N
3 m L (Example) M9NL
5 m Z (Example) M9NZ

* Solid state switches marked "○" are produced upon receipt of order.

Made to Order → Please contact SMC.

- -50 Without indicator light
- -61 Flexible lead wire
- Pre-wire connector

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

20-

Series MSQ

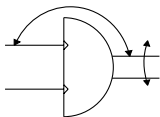


Basic type/MSQB



High precision type/MSQA

JIS Symbol



Specifications

Size	1	2	3	7
Fluid	Air (non-lube)			
Maximum operating pressure	0.7 MPa			
Minimum operating pressure	0.1 MPa			
Ambient and fluid temperature	0 to 60°C (with no freezing)			
Cushion	None		Rubber bumper	
Angle adjustment range	0 to 190°			
Maximum rotation	190°			
Cylinder bore size	ø6	ø8	ø10	ø12
Port size	M3 x 0.5			M5 x 0.8

Allowable Kinetic Energy and Rotation Time Adjustment Range

Size	Allowable kinetic energy (mJ)	Rotation time adjustment range for suitable operation (s/90°)
1	1	0.2 to 0.7
2	1.5	
3	2	
7	6	0.2 to 1.0

Weight

(g)

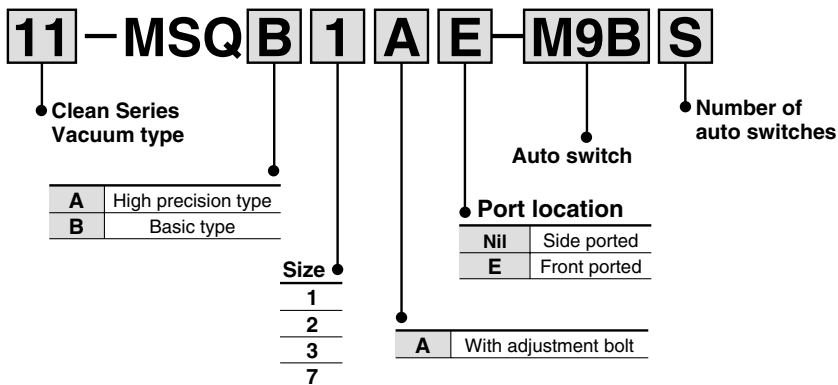
Size	1	2	3	7
Basic type	75	105	150	250
High precision type	80	115	165	265

Note) Excluding the weight of auto switches

Clean Series

Prevents dispersion of the particles generated inside of the product into the clean room by sucking them out of the vacuum port on the body side.

How to Order



Specifications and Allowable Load

Particle generation grade	Grade 1 ^{Note)}
Suction flow rate (example)	1 l/min (ANR)

11-MSQA is identical to the high precision type and 11-MSQB is identical to the basic type.

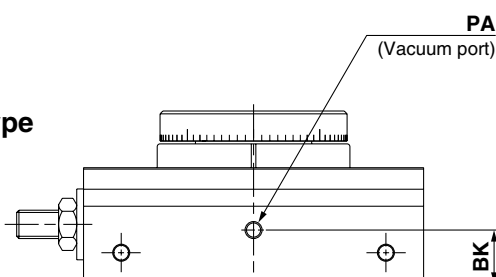
Note) Please refer to "Pneumatic Clean Series" catalog for further details.

Dimensions

Clean series products do not have a hollow axis.

Basic type
11-MSQB□A

High precision type
11-MSQA□A

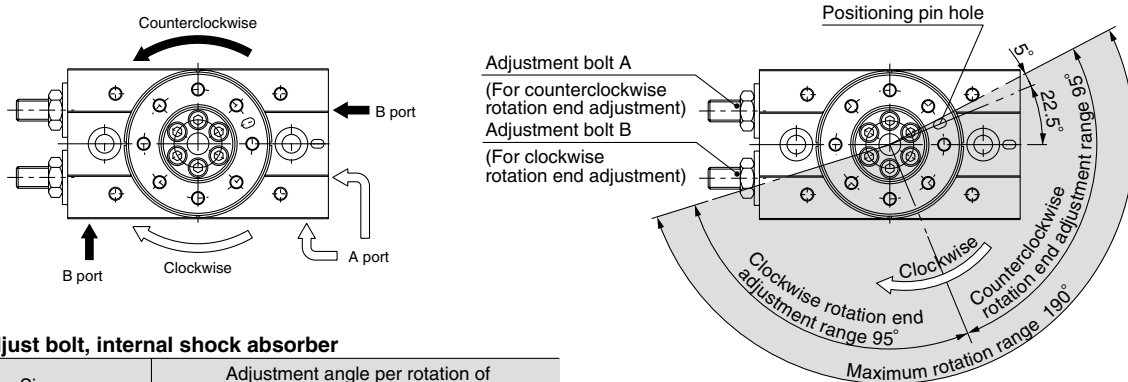


Size	BK	PA
1	5.3	M3 x 0.5
2	7.5	M3 x 0.5
3	9.5	M3 x 0.5
7	7	M5 x 0.8

Dimensions other than above are identical to the basic type and the high precision type.

Rotation Direction and Rotation Angle

- The rotary table turns in the clockwise direction when the A port is pressurized, and in the counterclockwise direction when the B port is pressurized.
- By adjusting the adjustment bolt, the rotation end can be set within the range shown in the drawing for the desired rotation angle.



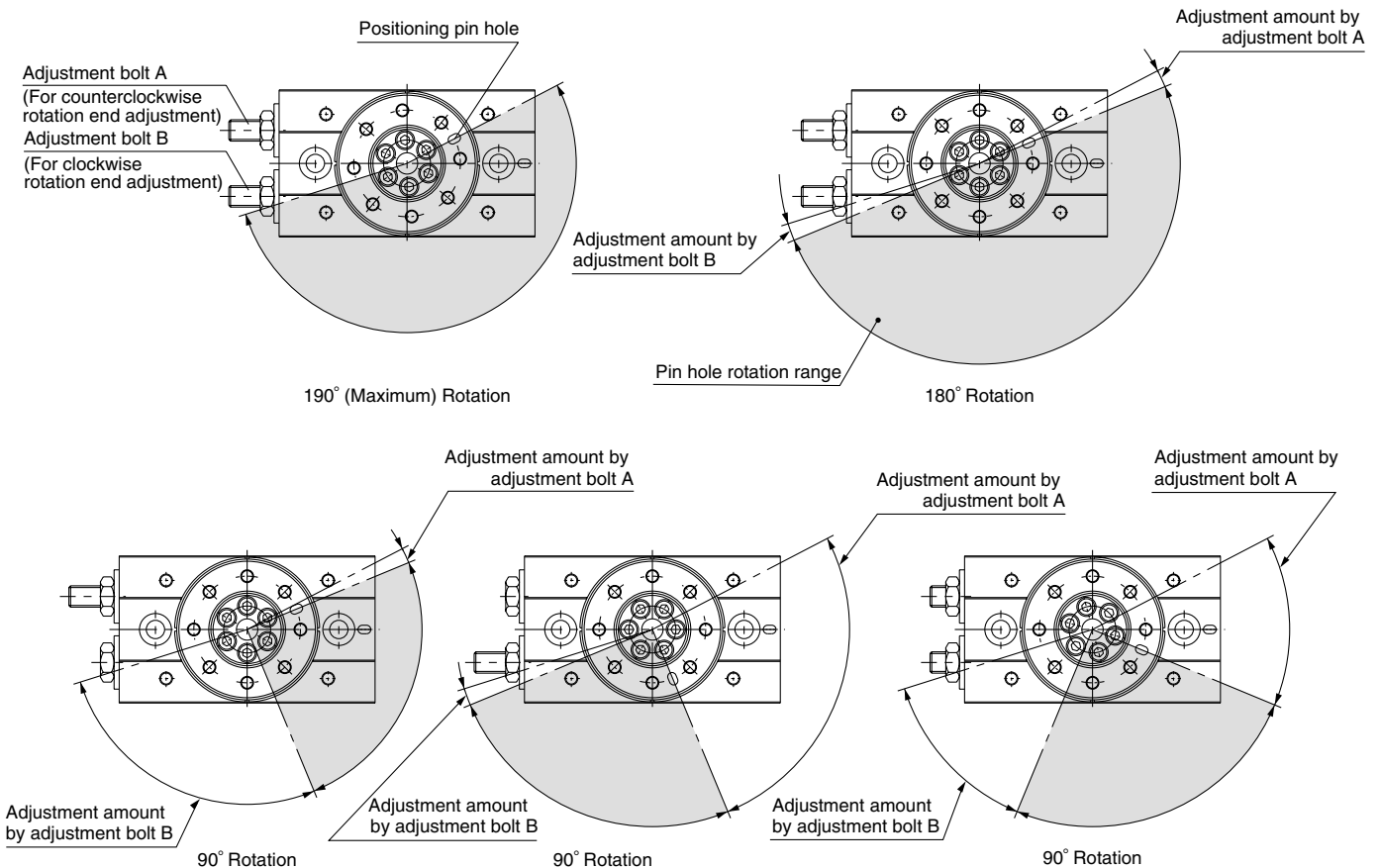
With adjust bolt, internal shock absorber

Size	Adjustment angle per rotation of angle adjustment screw
1	8.2°
2	10.0°
3	10.9°
7	10.2°

- Note) • The drawing shows the rotation range of the positioning pin hole.
 • The pin hole position in the drawing shows the counterclockwise rotation end when the adjustment bolts A and B are tightened equally and the rotation is adjusted 180°.

Rotation Range Example

- Various rotation ranges are possible as shown in the drawings below using adjustment bolts A and B. (The drawings also show the rotation ranges of the positioning pin hole.)



CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

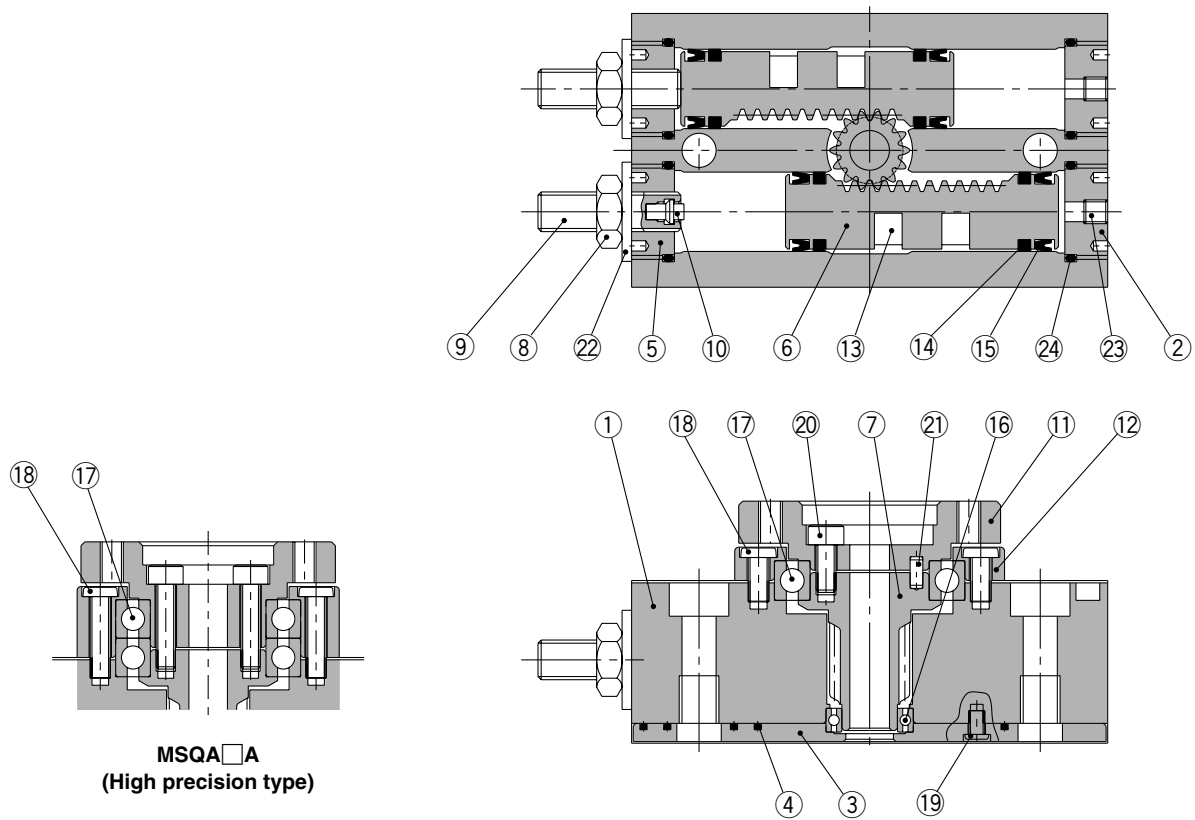
MRQ

D-

20-

Series MSQ

Construction



Component Parts

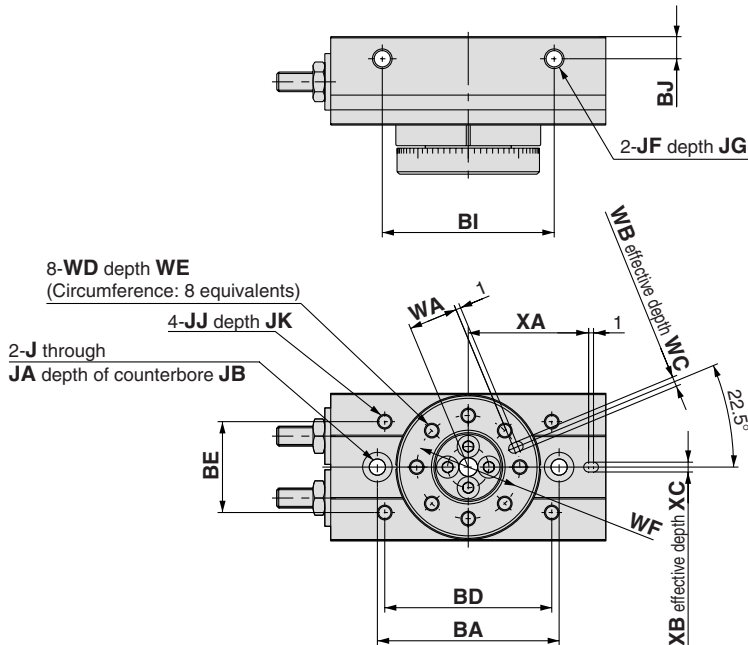
No.	Description	Material
①	Body	Aluminium alloy
②	Cover	Aluminium alloy
③	Plate	Aluminium alloy
④	Seal	NBR
⑤	End cover	Aluminium alloy
⑥	Piston	Stainless steel
⑦	Pinion	Chrome molybdenum steel
⑧	Hexagon nut	Steel wire
⑨	Adjustment bolt	Steel wire
⑩	Cushion pad	Size: 3, 7 Rubber material
⑪	Table	Aluminium alloy
⑫	Bearing retainer	Aluminium alloy
⑬	Magnet	Magnetic material
⑭	Wear ring	Resin

No.	Description	Material
⑮	Piston seal	NBR
⑯	Deep groove ball bearing	Bearing steel
⑰	Basic type	Deep groove ball bearing
	High precision type	Special bearing
⑱	Round head Philips screw No.0	Basic type
	Round head Philips screw	Size: 1 to 3
	Round head Philips screw	High precision type
⑲	Round head Philips screw No.0	Steel wire
⑳	Hexagon socket head set bolt	Stainless steel
㉑	Parallel pin	Carbon steel
㉒	Seal washer	NBR
㉓	Hexagon socket head set screw	Stainless steel
㉔	O-ring	NBR

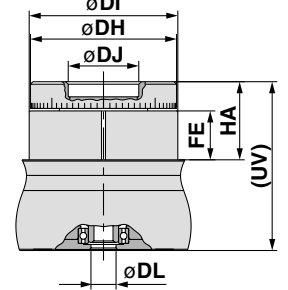
* ㉓ The hexagon socket head set screws are tightened at different positions depending on the position of the connecting port.

Dimensions: Size 1, 2, 3, 7

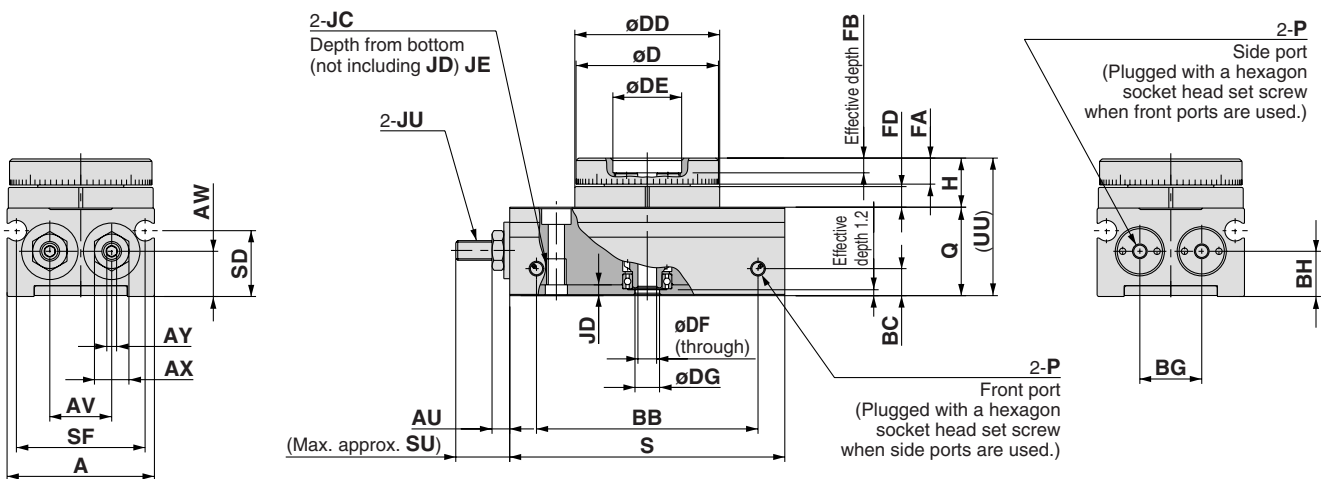
Basic type: MSQB□A



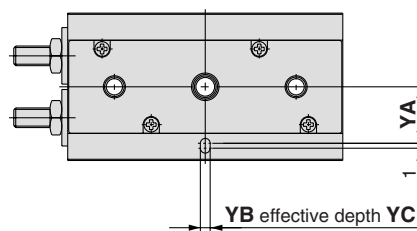
High precision type: MSQA□A



Size	DH	DI	DJ	DL	FE	HA	UV
1	27h8	27.5h8	14H8	4.5H8	8.2	13.5	29.5
2	29h8	29.5h8	14H8	5 H8	9.7	15.5	33.5
3	33h8	34h8	17H8	6 H8	9.7	15.5	36
7	39h8	40h8	20H8	7 H8	9.5	16.5	39.5



Size	A	AU	AV	AW	AX	AY	BA	BB
1	28	2.8	11	8.2	5.5	1.5	35	39.6
2	30	3.6	12.6	9.2	7	2	37	45.1
3	34.5	4.4	15.5	10.5	8	2.5	43	46.7
7	41	4.8	18.4	12.2	10	3	50	59.2



Size	BC	BD	BE	BG	BH	BI	BJ	D	DD	DE	DF	DG	FA	FB	FD	H	J	JA	JB	JC	JD	JE	JF	JG
1	4.5	32	17	11	8.2	30	4.5	27h9	27.5h9	14H9	3.5	4.5H9	4.8	2	3.7	9	3.3	6	3.5	M4 x 0.7	2.2	5.3	M4 x 0.7	4
2	5.5	34	18.5	12.6	9.2	35	4.5	29h9	29.5h9	14H9	3.8	5 H9	5.3	2.5	4.2	10	3.3	6	3.5	M4 x 0.7	2.2	5.3	M4 x 0.7	4
3	5.5	38	23	15.5	10.5	40	4.5	33h9	34 h9	17H9	5	6 H9	5.3	2.5	4.2	10	4.2	7.5	4.5	M5 x 0.8	2.5	6	M4 x 0.7	4
7	5.5	45	30	18.4	12.2	50	5	39h9	40 h9	20H9	6	7 H9	6.5	2.5	4.5	11.5	4.2	7.5	4.5	M5 x 0.8	2.5	6	M5 x 0.8	5

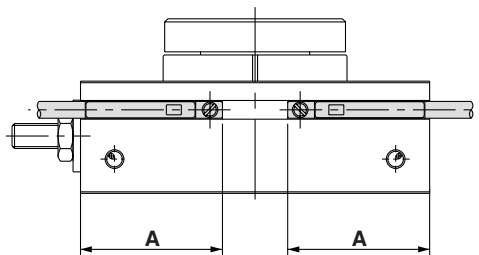
Size	JJ	JK	JU	P	Q	S	SD	SF	SU	UU	WA	WB	WC	WD	WE	WF	XA	XB	XC	YA	YB	YC
1	M3 x 0.5	3.5	M3 x 0.5	M3 x 0.5	16	50.5	10.8	24.4	9.4	25	9.5	2H9	2	M3 x 0.5	4.8	20	22.5	2H9	2	11	2H9	2
2	M3 x 0.5	3.5	M4 x 0.7	M3 x 0.5	18	56	13.4	26.2	11.3	28	10	2H9	2	M3 x 0.5	5.3	21	24.5	2H9	2	11.5	2H9	2
3	M3 x 0.5	3.5	M5 x 0.8	M3 x 0.5	20.5	60	15.2	31	11.8	30.5	12	2H9	2	M3 x 0.5	5.3	25	27	2H9	2	13.5	2H9	2
7	M4 x 0.7	4.5	M6 x 1	M5 x 0.8	23	73.5	15.4	37.4	14.9	34.5	14	3H9	3	M4 x 0.7	6.5	29	32.5	3H9	3	15.5	3H9	3

- CRB2
- CRBU2
- CRB1
- MSU
- CRJ
- CRA1
- CRQ2
- MSQ
- MRQ
- D-
- 20-

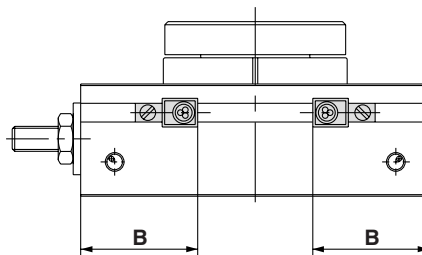
Series MSQ

Proper Auto Switch Mounting Position at Rotation End

• Size: 1 to 7



When D-F9 and M9 are used



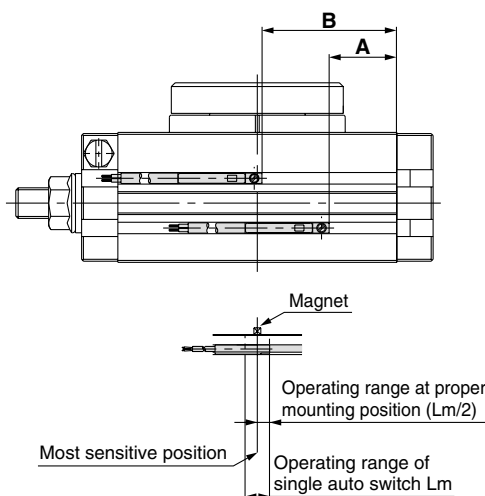
When D-F8 is used

Size	Rotation	Solid state switch								
		D-F9□W			D-M9□			D-F8□		
		A	Operating angle θ m	Hysteresis angle	A	Operating angle θ m	Hysteresis angle	B	Operating angle θ m	Hysteresis angle
1	190°	20.9	40°	10°	20.9	55°	10°	16.9	20°	10°
2	190°	22.8	35°	10°	22.8	45°	10°	18.8	20°	10°
3	190°	24.4	30°	10°	24.4	40°	10°	20.4	15°	10°
7	190°	28.7	25°	10°	28.7	40°	10°	24.7	15°	10°

Operating angle θ m: Value of the operating range Lm of a single auto switch converted to an axial rotation angle.

Hysteresis angle : Value of auto switch hysteresis converted to an angle.

• Size: 10 to 200



Size	Rotation	Reed switch				Solid state switch							
		D-A9□, D-A9□V				D-M9□V, D-F9□W, D-F9□WV, D-F9BAL				D-M9□			
		A	B	Operating angle θ m	Hysteresis angle	A	B	Operating angle θ m	Hysteresis angle	A	B	Operating angle θ m	Hysteresis angle
10	190°	17	36	90°	10°	21	40	90°	10°	21	40	60°	10°
20	190°	23	50	80°	10°	27	54	80°	10°	27	54	50°	10°
30	190°	27	66	65°	10°	31	60	65°	10°	31	60	50°	10°
50	190°	33	68	50°	10°	37	72	50°	10°	37	72	40°	10°
70	190°	37	78	45°	10°	41	82	45°	10°	41	82	40°	10°
100	190°	44	91	40°	10°	48	95	40°	10°	48	95	30°	10°
200	190°	57	115	35°	10°	61	119	35°	10°	61	119	20°	10°

Operating angle θ m: Value of the operating range Lm of a single auto switch converted to an axial rotation angle.

Hysteresis angle: Value of auto switch hysteresis converted to an angle.