Rotary Table: Basic Type/High Precision Type
W/ External Shock Absorber, Rack/Pinion Style

Series MSQ

Size: 10, 20, 30, 50

How to Order

MSQ B 10 L 2 — M9B S

A	High precision type
B	Basic type

Size

10
20
30
50

Shock absorber type

L	Shock absorber for low energy
H	Shock absorber for high energy

2	Standard type	180°
3		90°
4	Symmetric type	180°
5		90°

Refer to the table to the right.

Number of auto switch

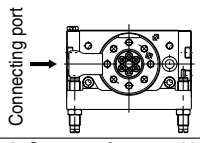
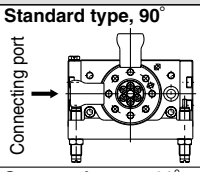
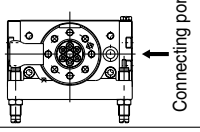
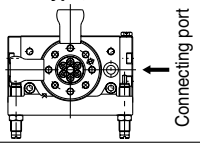
Nil	2 pcs.
S	1 pc.
n	n pcs.

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/Rotation

Connecting port position	Rotation: 180°	Rotation: 90°
Standard type	**2: Standard type, 180°** 	**3: Standard type, 90°** 
Symmetric type	**4: Symmetric type, 180°** 	**5: Symmetric type, 90°** 

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: DC		Load voltage: AC	Auto switch model: Perpendicular	Auto switch model: In-line	Lead wire length (m)∗: 0.5 (Nil)	3 (L)	5 (Z)	Applicable load	
Reed switch	–	Grommet	No	2-wire	24 V	5 V, 12 V	100 V or less	**A90V**	**A90**	●	●	–	IC circuit	Relay, PLC
			Yes	3-wire (NPN equiv.)	–	5 V	–	**A96V**	**A96**	●	●	–		–
				2-wire	24 V	12 V	100 V	**A93V**	**A93**	●	●	–	–	Relay, PLC
Solid state switch	–	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	–	**M9NV**	**M9N**	●	●	○	IC circuit	Relay, PLC
				3-wire (PNP)				**M9PV**	**M9P**	●	●	○		
				2-wire		12 V		**M9BV**	**M9B**	●	●	○	–	
	Diagnostic indication (2-color display)			3-wire (NPN)		5 V, 12 V		**F9NWV**	**F9NW**	●	●	○	IC circuit	
				3-wire (PNP)				**F9PWV**	**F9PW**	●	●	○		
				2-wire		12 V		**F9BWV**	**F9BW**	●	●	○	–	
	Improved water resistance (2-color display)							–	**F9BA**∗∗	–	●	○		

∗∗ Though it is possible to mount water resistant auto switch, the rotary table itself is not water resistance type.
∗ 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.

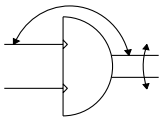
Made to Order → Please contact SMC.

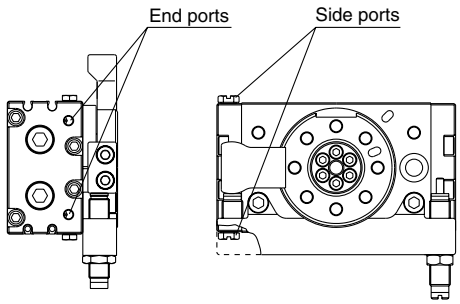
- –50 Without indicator light
- –61 Flexible lead wire
- Pre-wire connector

Specifications

Size		10	20	30	50
Fluid		Air (non-lube)			
Maximum operating pressure		1 MPa			
Minimum operating pressure		0.2 MPa			
Ambient and fluid temperature		0 to 60°C (with no freezing)			
Cushion		Shock absorber			
Shock absorber type	For low energy	RB0805	RB1006		RB1411
	For high energy	RB0806	RB1007		RB1412
Rotation		90°, 180°			
Angle adjusting range		Each rotation end ±3°			
Cylinder bore size		ø15	ø18	ø21	ø25
Port size	End ports	M5 x 0.8		Rc 1/8	
	Side ports	M5 x 0.8			

JIS Symbol





Allowable Kinetic Energy and Rotation Time Adjustment Range

Size	Allowable kinetic energy (mJ)		Rotation time adjustment range for stable operation (s/90°)
	Shock absorber for low energy	Shock absorber for high energy	
10	161	231	0.2 to 1.0 Note)
20	574	1060	
30	805	1210	
50	1310	1820	

Note) Values above indicate the time between the start of rotation and the deceleration caused by the shock absorber. Although the time required by the rotary table to reach the rotation end after deceleration differs depending on the operating conditions (inertial moment of the load, rotation speed and operating pressure), approximately 0.2 to 2 seconds are required. The range of angles within which the shock absorber operates is between the rotation end and the values shown below.

Size	10	20	30	50
For low energy	7.1°	6.9°	6.2°	9.6°
For high energy	8.6°	8.0°	7.3°	10.5°

Weight

(g)

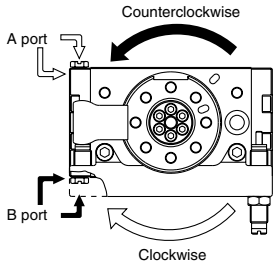
Size		10	20	30	50
Basic type	90° specifications	630	1200	1520	2480
	180° specifications	600	1140	1450	2370
High precision type	90° specifications	700	1390	1750	2810
	180° specifications	670	1340	1680	2690

Note) Values above do not include auto switch weights.

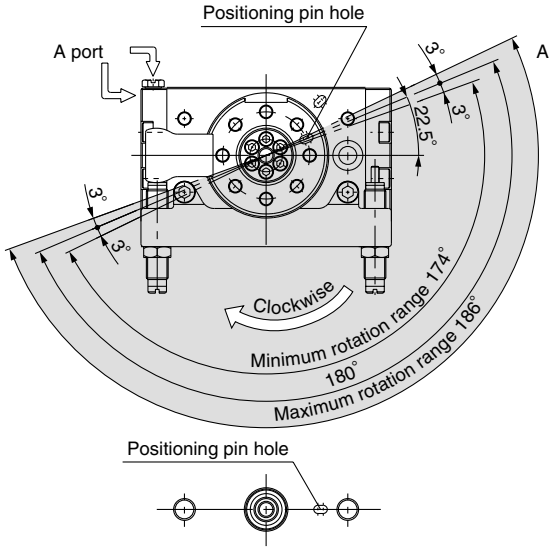
Rotation Direction and Rotation Angle

- The rotary table turns in the clockwise direction where the A port is pressurized, and in the counterclockwise direction when the B port is pressurized.
- By adjusting the shock absorber, the rotation end can be set within the ranges shown in the drawing.

Standard type

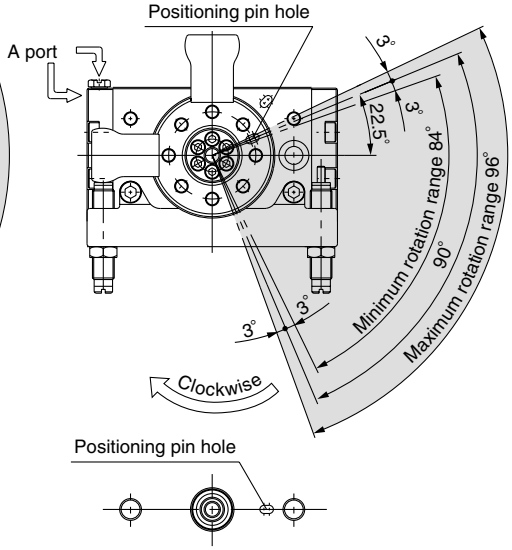


For 180°



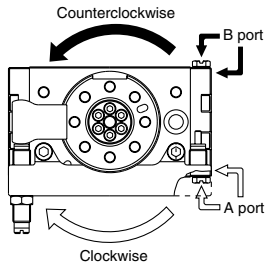
Position of bottom positioning pin hole

For 90°

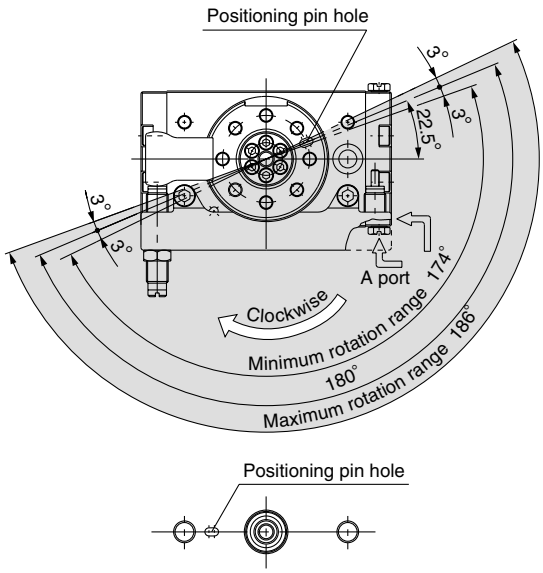


Position of bottom positioning pin hole

Symmetric type

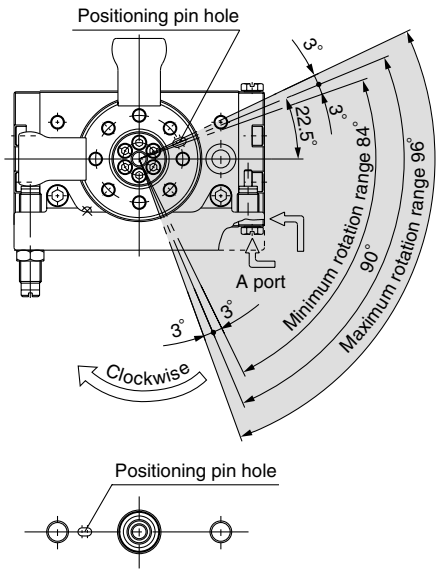


For 180°



Position of bottom positioning pin hole

For 90°



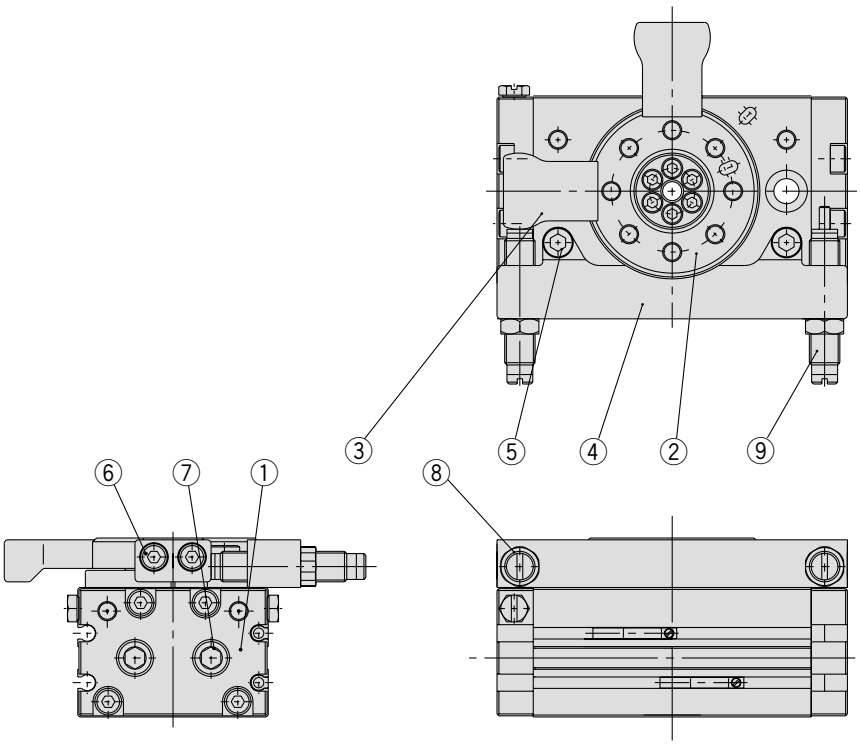
Position of bottom positioning pin hole

With external shock absorber

Size	Adjustment angle per rotation of angle adjustment screw
10	1.4°
20	1.2°
30	1.1°
50	1.3°

Note) · The drawings show the rotation range for the top positioning pin hole of the table.
· The pin hole position in the drawing shows the counterclockwise rotation end when the shock absorbers are tightened equally and the rotation is adjusted to 180° and 90°.

Construction



Component Parts

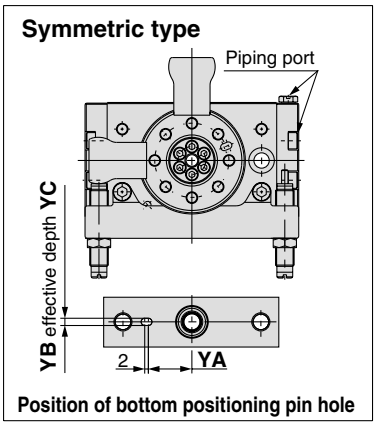
No.	Description	Material
①	End cover	Aluminium alloy
②	Table	Aluminium alloy
③	Arm	Chrome molybdenum steel
④	Shock absorber holder	Aluminium alloy
⑤	Hexagon socket head set bolt	Stainless steel
⑥	Hexagon socket head set bolt	Stainless steel
⑦	Taper plug	Steel wire
⑧	Hexagon nut	Steel wire
⑨	Shock absorber	—

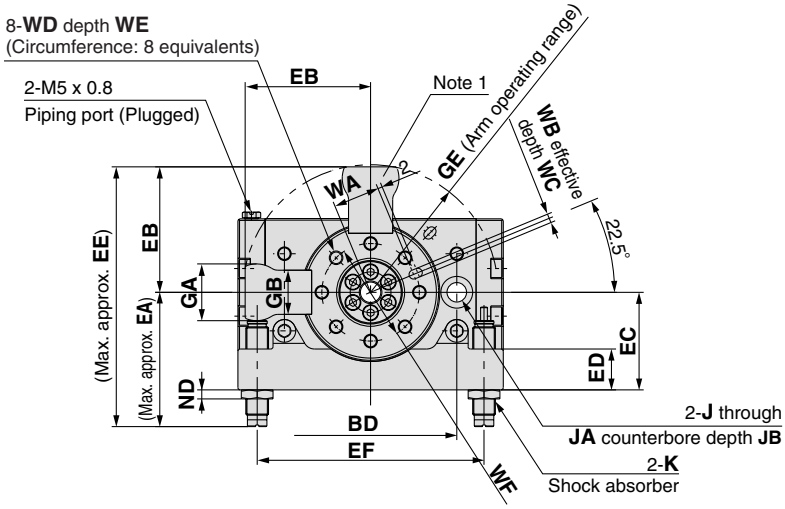
Replacement Parts

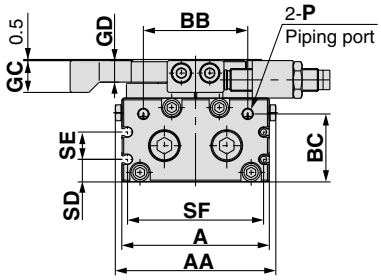
Description	Kit no.				Note
	10	20	30	50	
Seal kit	P523010-6	P523020-6	P523030-6	P523040-6	Seal washer ㉗ is excluded from the kit contents described on page 11-9-20.

Dimensions: With External Shock Absorber Size: 10, 20, 30, 50

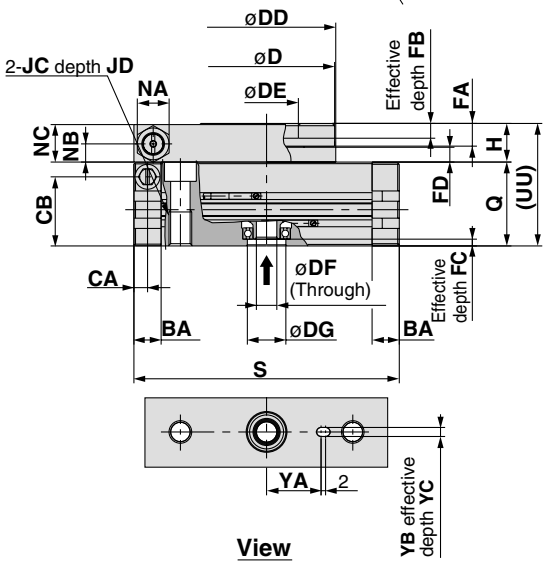
Basic type: MSQB□$^{L}_{H}$□



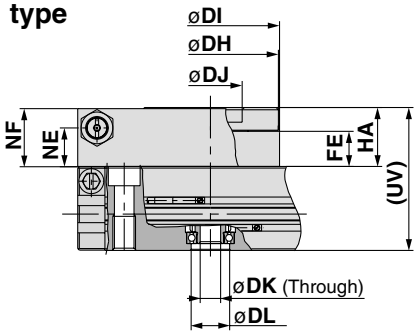




Note 1) This part is not available with 180° specification.



High precision type MSQA□$^{L}_{H}$□



(mm)

Size	DH	DI	DJ	DK	DL	FE	HA	NE	NF	UV
10	45	46	20H8	5	15H8	10	18.5	11	18	52.5
20	60	61	28H8	9	17H8	15.5	26	17	25.5	63
30	65	67	32H8	9	22H8	16.5	27	18	26.5	67
50	75	77	35H8	10	26H8	17.5	30	18.5	29.5	76

(mm)

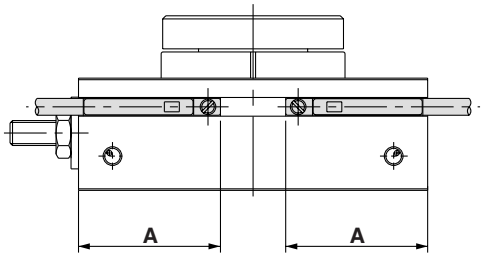
Size	AA	A	BA	BB	BC	BD	CA	CB	D	DD	DE	DF	DG	EA	EB	EC	ED	EE	EF	FA	FB	FC	FD	GA	GB	GC	GD	GE	H
10	55.4	50	9.5	34.5	27.8	60	4.5	28.5	45	46	20H9	5	15H9	52.9	44.3	33.5	14	97.2	80	8	4	3	4.5	20	15.6	11	7.5	45.2	13
20	70.8	65	12	46	30	76	6	30.5	60	61	28H9	9	17H9	61.8	55.3	43	18	117.1	100	10	6	2.5	6.5	25	19.5	14	9.5	56.4	17
30	75.4	70	12	50	32	84	6.5	33.5	65	67	32H9	9	22H9	63.1	60.3	46	19.5	123.4	110	10	4.5	3	6.5	27	21.5	14	9.5	61.5	17
50	85.4	80	15.5	63	37.5	100	10	37.5	75	77	35H9	10	26H9	86.7	71.4	56	22	158.1	130	12	5	3	7.5	32	28	18	11.5	72.9	20

(mm)

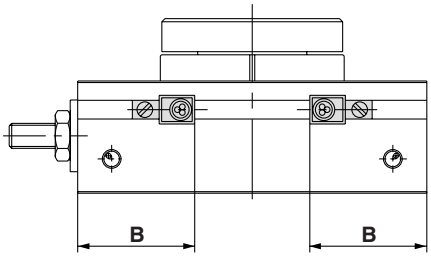
Size	J	JA	JB	JC	JD	K	NA	NB	NC	ND	P	Q	S	SD	SE	SF	UU	WA	WB	WC	WD	WE	WF	YA	YB	YC
10	6.8	11	6.5	M8 x 1.25	12	M8 x 1	10	5.5	12.5	4	M5 x 0.8	34	92	9	13	45	47	15	3H9	3.5	M5 x 0.8	8	32	19	3H9	3.5
20	8.6	14	8.5	M10 x 1.5	15	M10 x 1	14	8	16.5	4	M5 x 0.8	37	117	10	12	60	54	20.5	4H9	4.5	M6 x 1	10	43	24	4H9	4.5
30	8.6	14	8.5	M10 x 1.5	15	M10 x 1	14	8	16.5	4	Rc 1/8	40	127	11.5	14	65	57	23	4H9	4.5	M6 x 1	10	48	28	4H9	4.5
50	10.5	18	10.5	M12 x 1.75	18	M14 x 1.5	19	8.5	19.5	6	Rc 1/8	46	152	14.5	15	75	66	26.5	5H9	5.5	M8 x 1.25	12	55	33	5H9	5.5

Proper Auto Switch Mounting Position at Rotation End

• Size: 1 to 7



When D-F9 and M9 are used

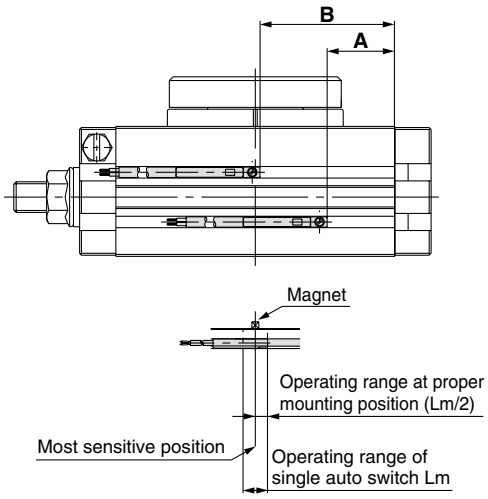


When D-F8 is used

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	19	35°	10°	61	19	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.