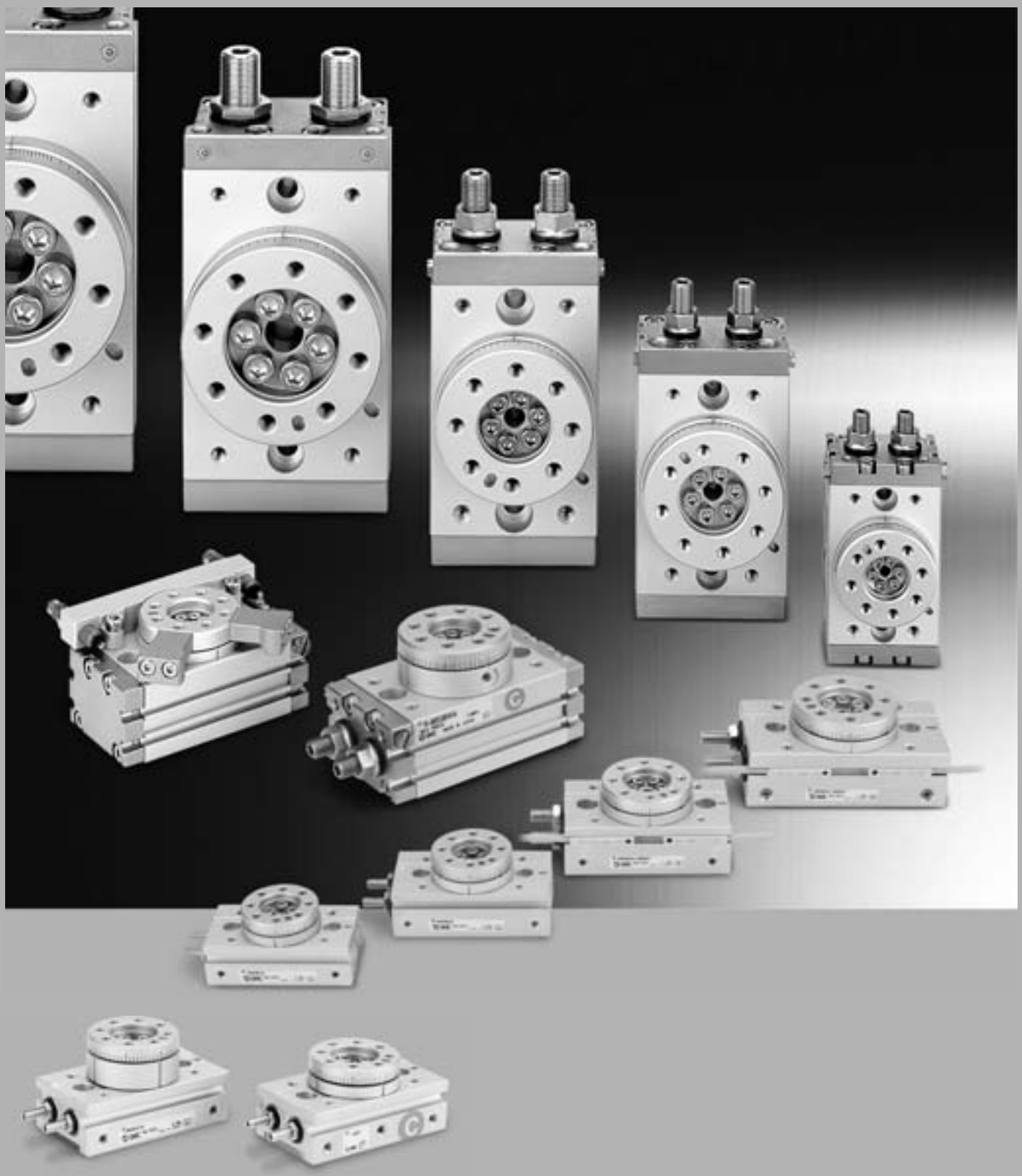
Rotary Table/Rack & Pinion Style

Series MSQ

Size: 1, 2, 3, 7, 10, 20, 30, 50, 70, 100, 200

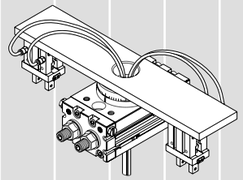


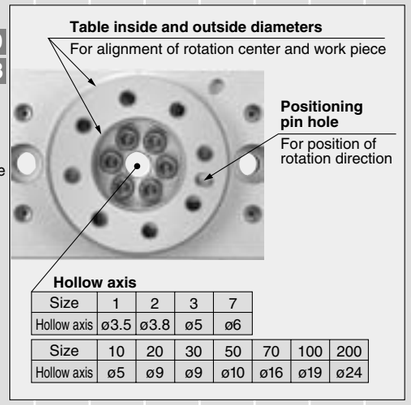
Compact Rotary Table with Low Table Height

Rotary Table
Series MSQ
Rack & Pinion Style

Easy mounting of work piece.

- **Table I.D/O.D tolerances**
  Basic type: **MSQB** H9/h9
  High precision type: **MSQA** H8/h8
- **Positioning pin hole**
- **Hollow axis**
  Accommodates wiring and piping for equipment mounted on the table



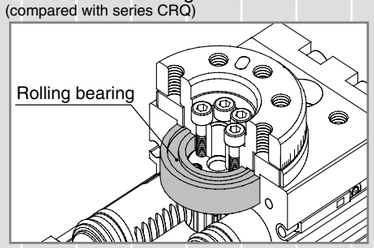


Size	1	2	3	7
Hollow axis	ø3.5	ø3.8	ø5	ø6

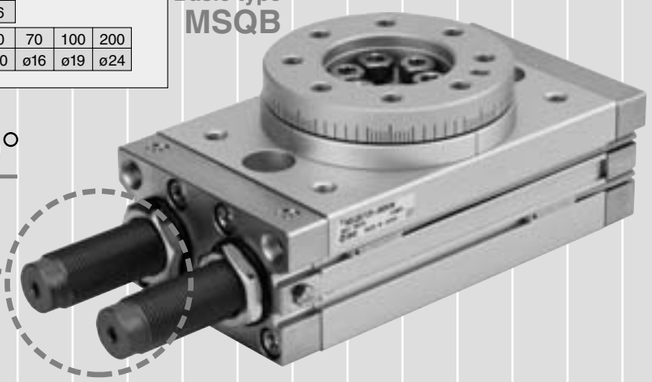
Size	10	20	30	50	70	100	200
Hollow axis	ø5	ø9	ø9	ø10	ø16	ø19	ø24

Large rolling element bearing

3 to 4 times higher axial load
(compared with series CRQ)



Basic type
MSQB



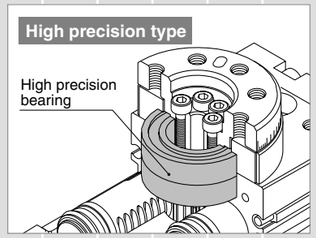
Pivoting angle adjustment range: 0 to 190°

With internal shock absorber

2 to 5 times more kinetic energy
(compared with an adjustment bolt)

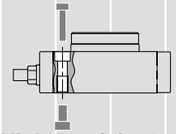
Movement in direction of table's radial thrust: 0.01mm or less

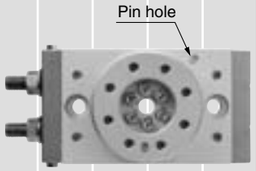
By using high precision bearing, the movement in the direction of table's radial thrust is reduced.

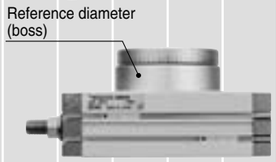


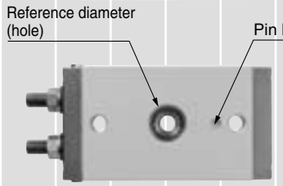
Easy mounting of body

- **Reference dia: Boss, Hole**
- **Positioning pin hole**
- **Mounting from 2 directions**









High precision type
MSQA

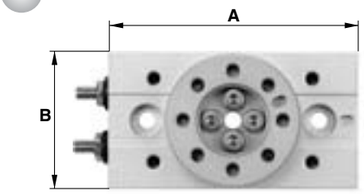
Piping from 2 directions (front and side) is possible

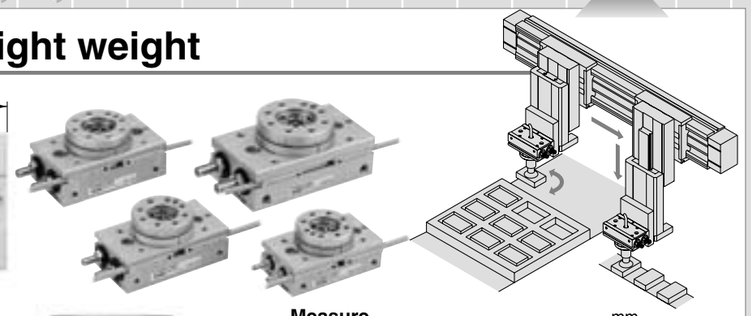
Piping position can be selected
accommodate mounting conditions

SMC

Small sizes 1, 2, 3, and 7

Small size and light weight





Full size (Picture of MSQB1A)

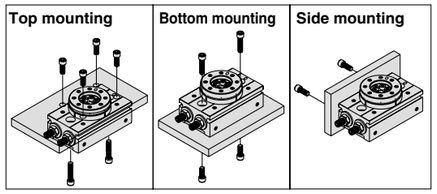
Measure mm

Size	Model	A	B	C	D	Mass (g)
1	MSQB1A	50.5	28	25	16	70
2	MSQB2A	56	30	28	18	105
3	MSQB3A	60	34.5	30.5	20.5	150
7	MSQB7A	73.5	41	34.5	23	250

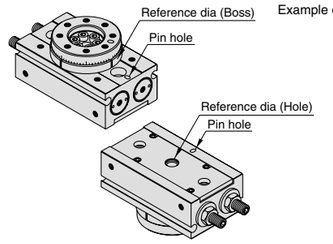
Variety of installation options for space saving

Offers maximum space saving installation by taking advantage of the compact body, space saving wiring and piping.

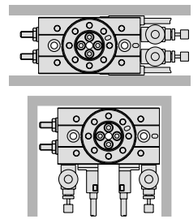
Free mount



Easy center alignment at mounting



Wiring and piping can be selected according to mounting conditions
Example of auto switch and speed controller mounting



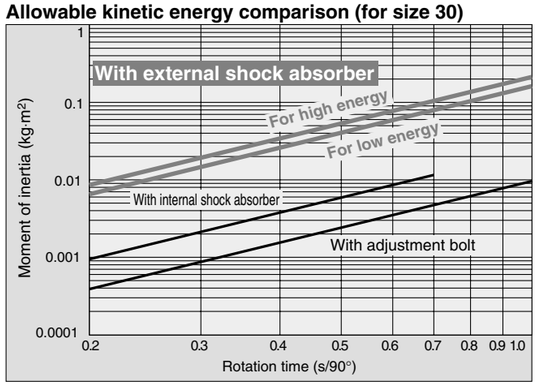
External shock absorber types

4 to 10 times more allowable kinetic energy

(Compared with internal shock absorber type)

2 types of shock absorbers are available, for low energy and high energy.

Allowable kinetic energy comparison (for size 30)



Total length shortened

Longitudinal mounting space is reduced because there is no protrusion from adjustment bolts or internal shock absorbers.

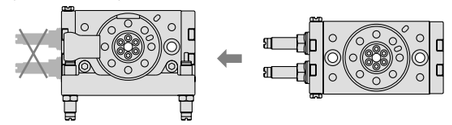
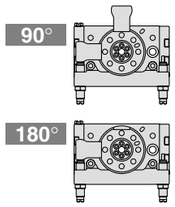
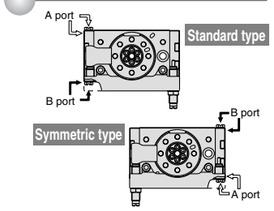


Table height is the same for both types with adjustment bolts or internal shock absorbers.

Rotation angle: 90°, 180°



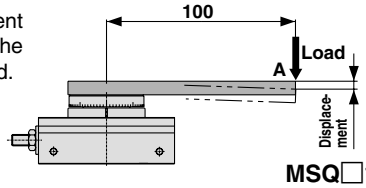
Left / Right symmetric type



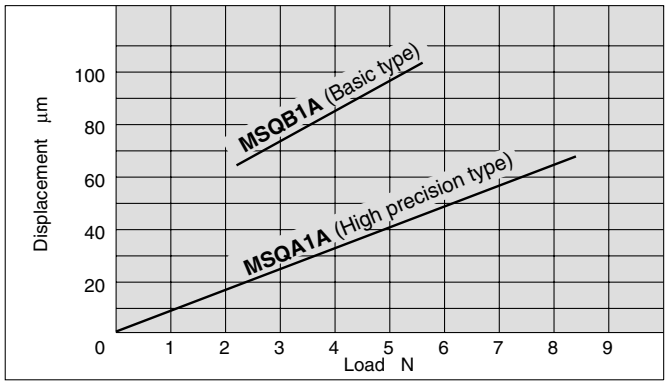
SMC

Table Displacement (Reference values)

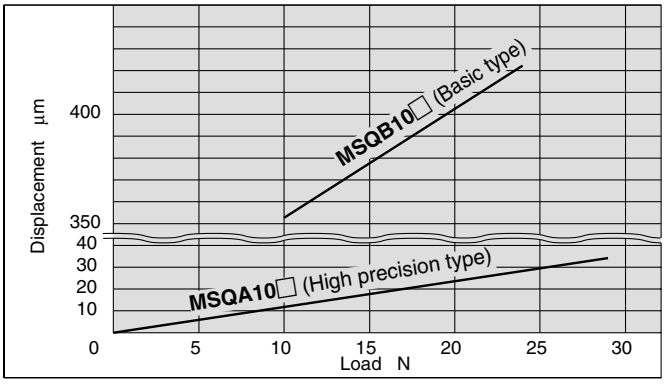
• The following graphs show the displacement at point A, which is 100 mm apart from the center of rotation, where the load is applied.



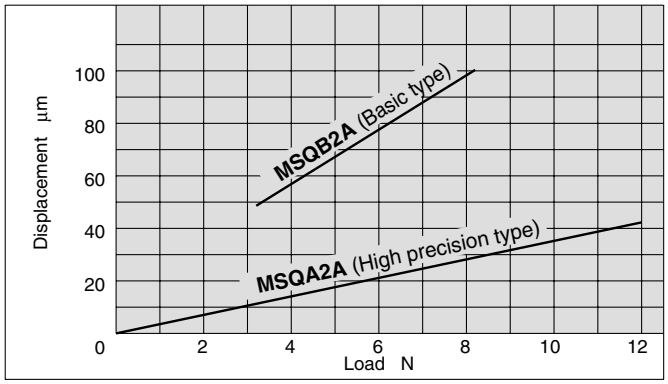
MSQ□1A



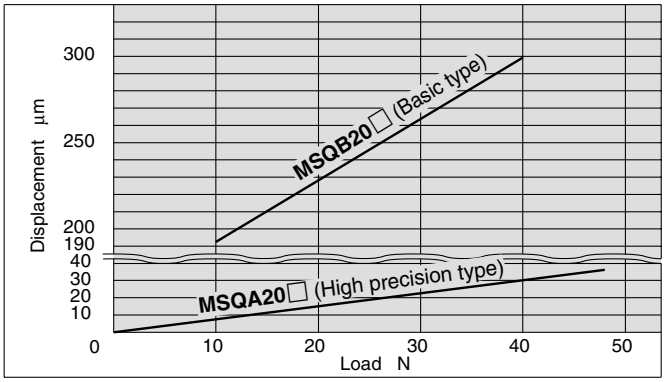
MSQ□10□



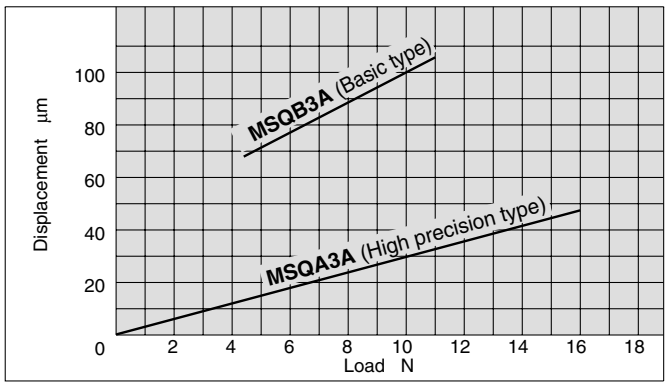
MSQ□2A



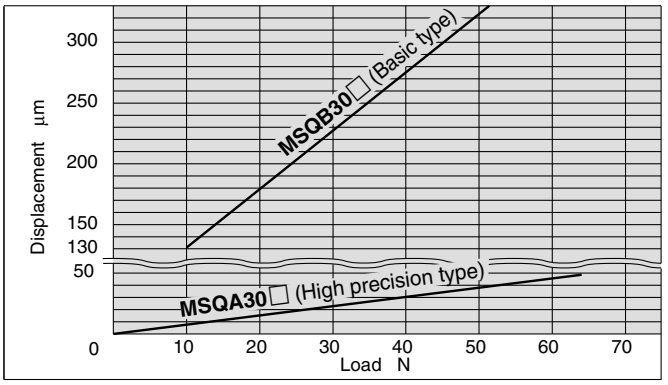
MSQ□20□



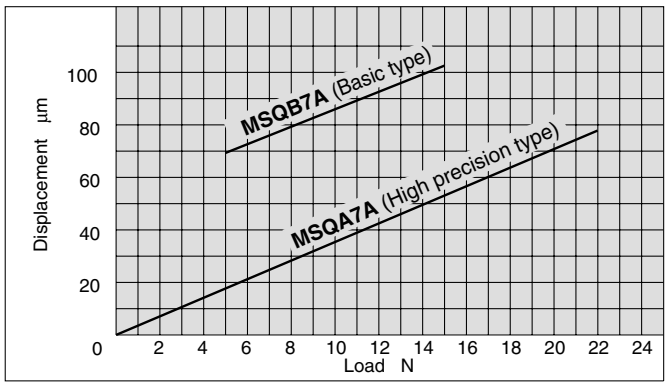
MSQ□3A



MSQ□30□



MSQ□7A



MSQ□50□

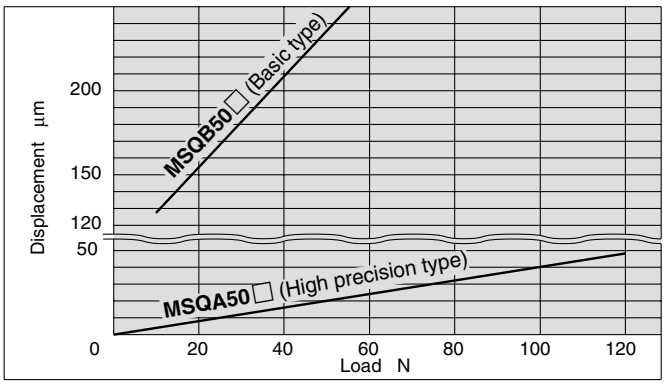
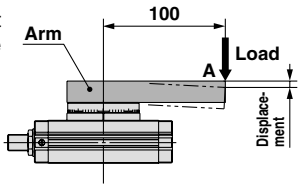
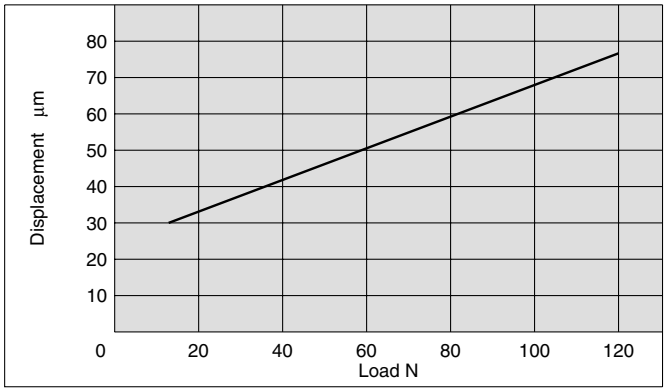


Table Displacement (Reference values)

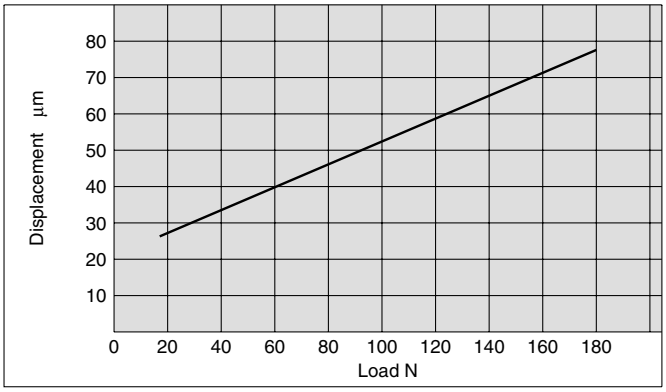
• The following graphs show the displacement at point A, which is 100 mm apart from the center of rotation, where the load is applied.



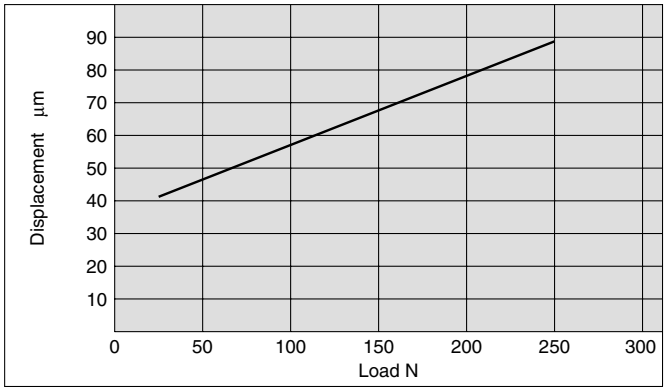
MSQB70□



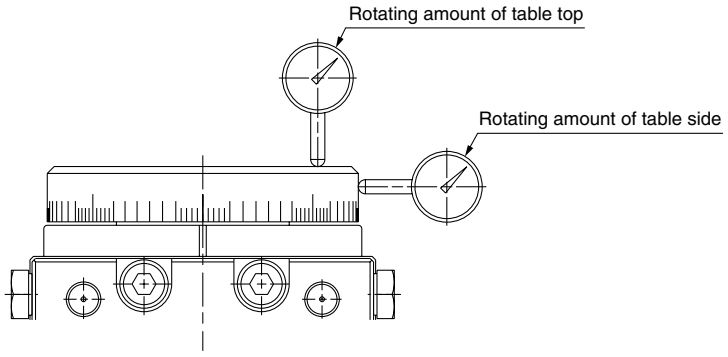
MSQB100□



MSQB200□



Rotation Accuracy: Displacement Values at 180° (Reference values)



mm

Measuring plate	MSQA	MSQB
Rotating amount of table top	0.03	0.1
Rotating amount of table side	0.03	0.1

Values in the table are actual values and not guaranteed values.

Rotary Table/Rack & Pinion Style

Series MSQ

Size: 1, 2, 3, 7

How to Order

High precision type MSQA **1** **A** □ – **M9BW** □

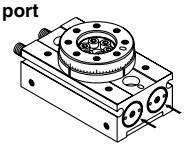
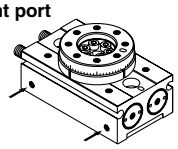
Basic type MSQB **1** **A** □ – **M9BW** □

Size

1
2
3
7

A	With adjustment bolt

Port location

Nil	End port 
E	Front port 

Auto switch type

Nil	Without auto switch (built-in magnet)

∗ Refer to the table below for auto switch types.
∗ The auto switch is included in the package (unmounted).

Number of auto switches

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

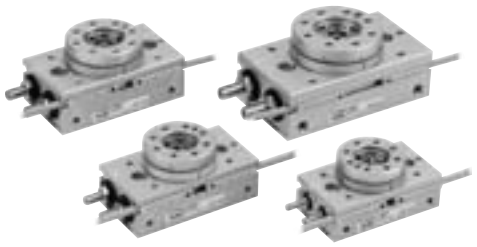
Applicable Auto Switch/Refer to pages 761 to 809 for detailed auto switch specification.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length (m)∗				Pre-wired connector	Applicable load	
					DC		AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**M9NV**	**M9N**	●	●	●	○	○	IC circuit	Relay, PLC
								F8N	—	●	—	●	○	—		
				3-wire (PNP)				**M9PV**	**M9P**	●	●	●	○	○		
								F8P	—	●	—	●	○	—		
				2-wire		12 V		**M9BV**	**M9B**	●	●	●	○	○	—	
								F8B	—	●	—	●	○	—		
	Diagnostic indication (2-color display)			3-wire (NPN)		5 V, 12 V		**M9NWV**	**M9NW**	●	●	●	○	○	IC circuit	
				3-wire (PNP)				**M9PWV**	**M9PW**	●	●	●	○	○		
				2-wire		12 V		**M9BWV**	**M9BW**	●	●	●	○	○	—	
	Water resistant (2-color indication)			3-wire (NPN)		5 V, 12 V		**M9NAV**∗∗	**M9NA**∗∗	○	○	●	○	○	IC circuit	
				3-wire (PNP)				**M9PAV**∗∗	**M9PA**∗∗	○	○	●	○	○		
				2-wire		12 V		**M9BAV**∗∗	**M9BA**∗∗	○	○	●	○	○	—	

∗∗ Although it is possible to mount water resistant type auto switches, note that the rotary actuator itself is not of water resistant construction.
∗ Lead wire length symbols: 0.5 m ····· Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ
∗ Auto switches marked with "○" are made to order specification.

Refer to pages 796 and 797 for the details of solid state auto switch with pre-wired connector.

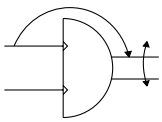
Note 1) When using D-F8□, mount it at a distance of 10 mm or more from magnetic substances such as iron.
∗ Auto switches are shipped together, (but not assembled).



Basic type

High precision type

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 (J)	Rotation time adjustment range for suitable operation (s/90°)
1	0.001	0.2 to 0.7
2	0.0015	
3	0.002	
7	0.006	0.2 to 1.0

Note) If operated where the kinetic energy exceeds the allowable value, this may cause damage to the internal parts and result in product failure. Please pay special attention to the kinetic energy levels when designing and during operation to avoid exceeding the allowable limit.

Mass

(g)

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

Note) Excluding the mass 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

11 – MSQ B 1 A E – M9BW S

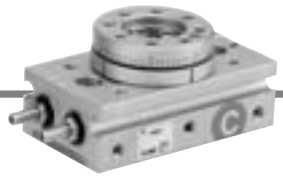
- **11**: Clean Series Vacuum type
- **B**: A – High precision type; B – Basic type
- **1**: Size – 1, 2, 3, 7
- **A**: A – With adjustment bolt
- **E**: Port location – Nil – End port; E – Front port
- **M9BW**: Auto switch
- **S**: Number of auto switches

Specifications

Particle generation grade	Suction flow rate (example)
Grade 1 Note 1)	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.

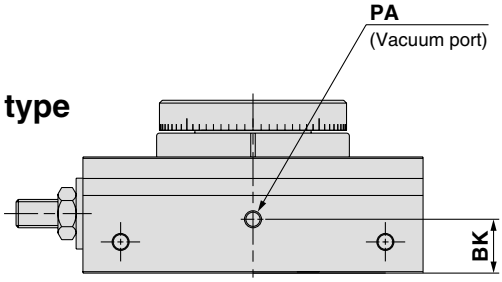


Dimensions

Clean series products do not have a hollow axis.

Basic type
11-MSQB□A

High precision type
11-MSQA□A

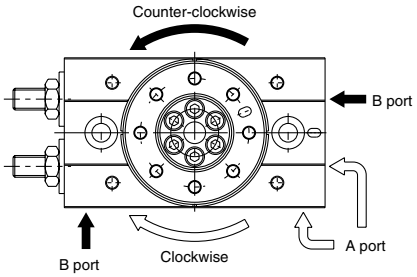


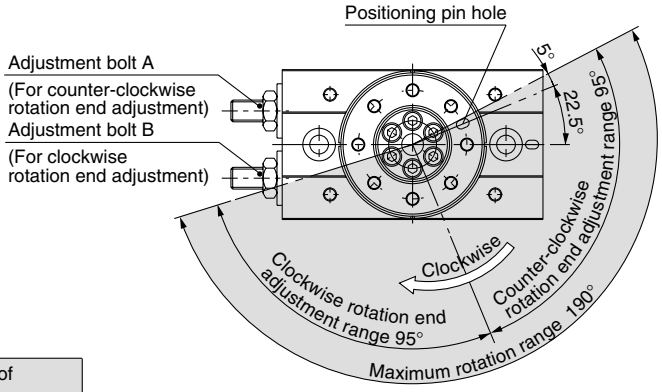
Size	BK	PA
1	5.3	M3 x 0.5
2	7.5	M3 x 0.5
3	9.5	M3 x 0.5
7	7	M5 x 0.8

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 counter-clockwise 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.





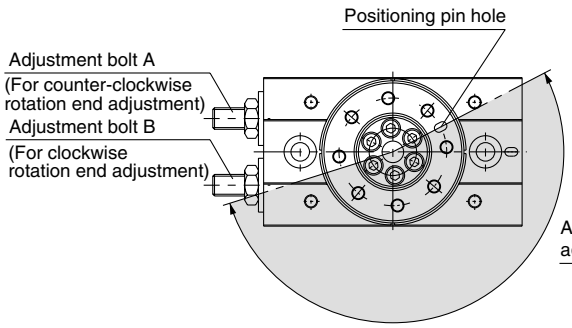
With adjust bolt, internal shock absorber

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

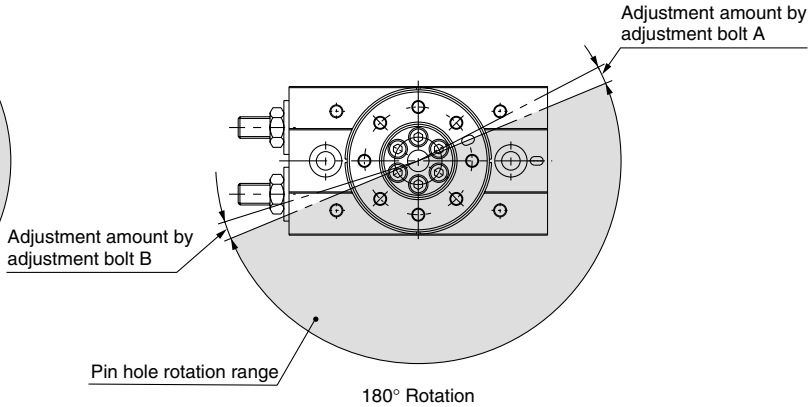
Note) • The drawing shows the rotation range of the positioning pin hole.
• The pin hole position in the drawing shows the counter-clockwise rotation end when the adjustment bolts A and B are tightened equally and the rotation is adjusted 180°.

Rotation Range Example

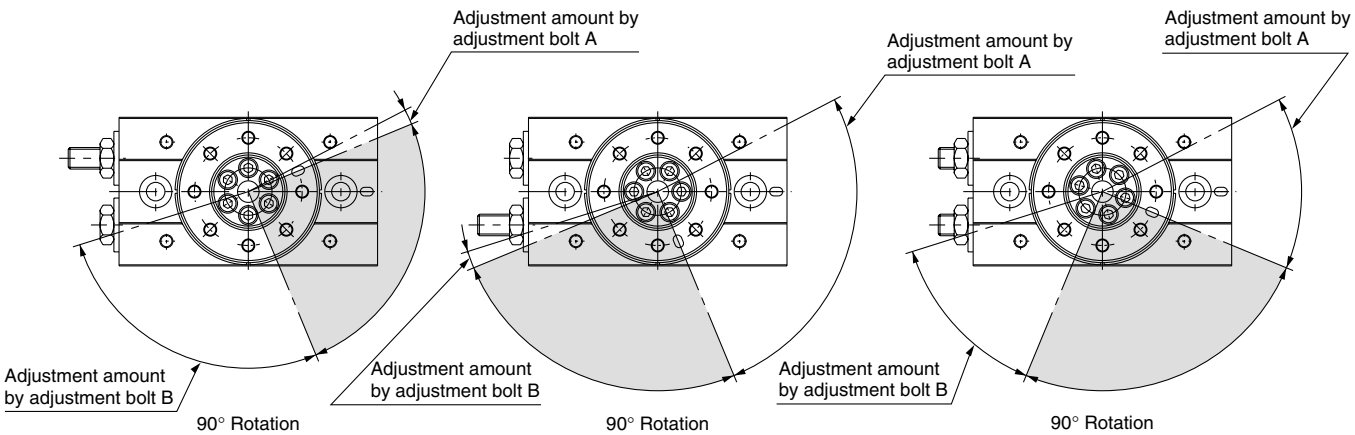
• Various rotation ranges are possible as shown in the drawings below using adjustment bolts A and B.
(The drawings also show the rotation ranges of the positioning pin hole.)



190° (Maximum) Rotation

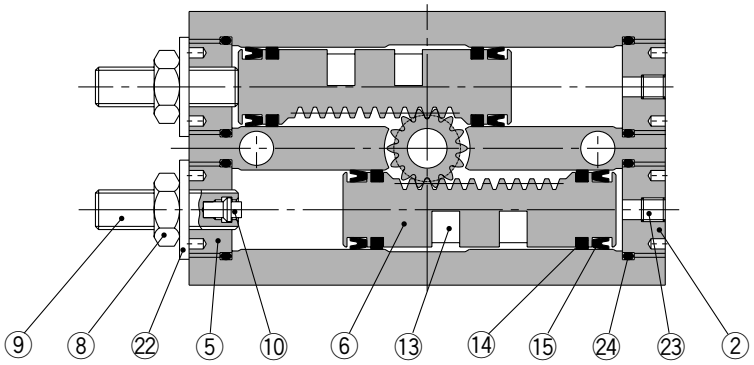


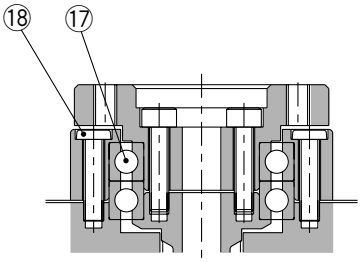
180° Rotation



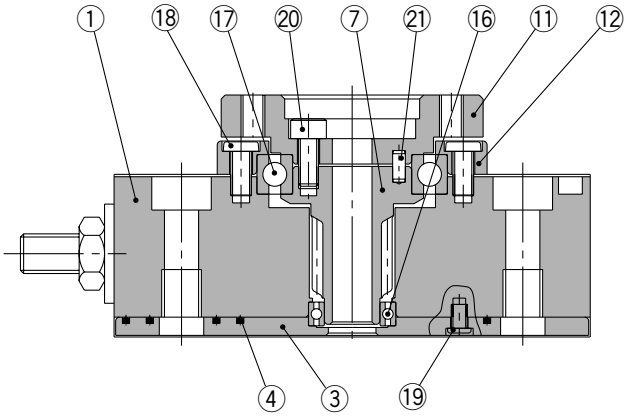
90° Rotation　90° Rotation　90° Rotation

Construction





MSQA□A
(High precision type)



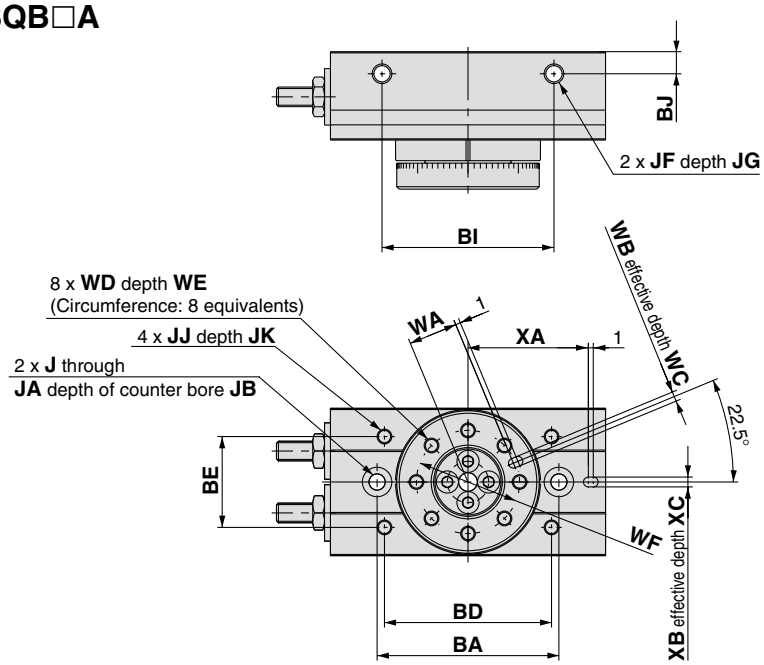
Component Parts

No.	Description			Material	Note
1	**Body**			Aluminium alloy	Anodized
2	**Cover**			Aluminium alloy	Anodized
3	**Plate**			Aluminium alloy	Chromated
4	**Seal**			NBR	
5	**End cover**			Aluminium alloy	Anodized
6	**Piston**			Stainless steel	
7	**Pinion**			Chrome molybdenum steel	
8	**Hexagon nut**			Steel wire	Nickel plated
9	**Adjustment bolt**			Steel wire	Nickel plated
10	**Cushion pad**	**Size: 3, 7**		Rubber material	
11	**Table**			Aluminium alloy	Anodized
12	**Bearing retainer**			Aluminium alloy	Anodized
13	**Magnet**			—	Chromated
14	**Wear ring**			Resin	
15	**Piston seal**			NBR	
16	**Deep groove ball bearing**			Bearing steel	
17	Deep groove ball bearing	**Basic type**		Bearing steel	
	Special bearing	**High precision type**			
18	Round head Philips screw No.0	**Basic type**	**Size: 1 to 3**	Steel wire	Nickel plated
	Round head Philips screw		**Size: 7**		Nickel plated
	Round head Philips screw	**High precision type**			Nickel plated
19	**Round head Philips screw No.0**			Steel wire	Nickel plated
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	

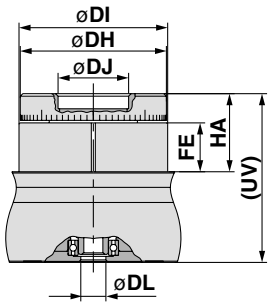
∗23 The hexagon socket head set screws are tightened at different positions depending on the position of the connecting port.

Dimensions/Size 1, 2, 3, 7

Basic type/MSQB□A

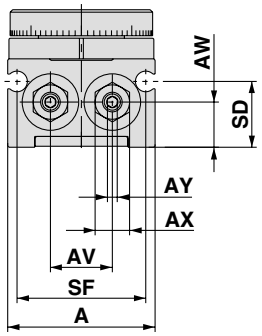


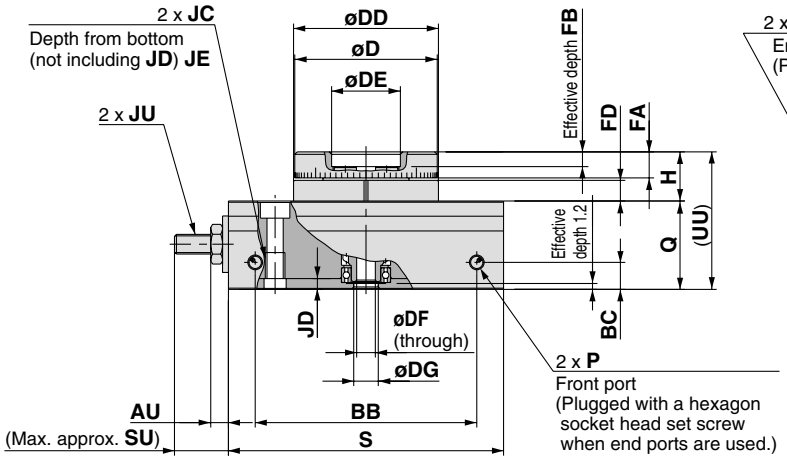
High precision type/ MSQA□A

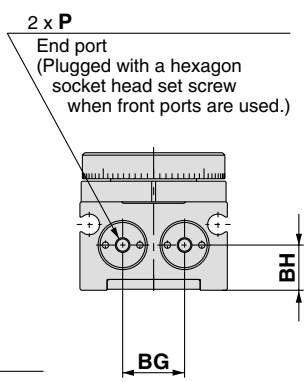


(mm)

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

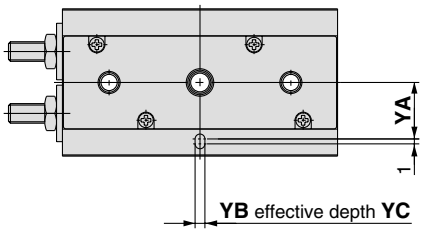






(mm)

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



(mm)

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

(mm)

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

Rotary Table/Rack & Pinion Style

Series MSQ

Size: 10, 20, 30, 50, 70, 100, 200

How to Order

High Precision Type MSQ A 10 A – M9BW □ □

Basic Type MSQ B 10 A – M9BW □ □

Size

10
20
30
50

Size

10
20
30
50
70
100
200

A	With adjustment bolt
R	With internal shock absorber

Thread type

End port type		Size
Nil	M 5	10, 20
Nil	Rc 1/8	30, 50,
-XF	G 1/8	70, 100,
-XN	NPT 1/8	200

∗ Side ports are all M5.

Number of auto switches

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

Auto switch type

Nil	Without auto switch (built-in magnet)

∗ Refer to the table below for auto switch types.

Applicable Auto Switch/Refer to pages 761 to 809 for detailed auto switch specification.

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)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
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		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○		
				2-wire		12 V		M9BWV	M9BW	●	●	●	○	○	—	
	Water resistant (2-color indication)			3-wire (NPN)		5 V, 12 V		M9NAV**	M9NA**	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV**	M9PA**	○	○	●	○	○		
				2-wire		12 V		M9BAV**	M9BA**	○	○	●	○	○	—	
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93V	A93	●	—	●	—	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	IC circuit	

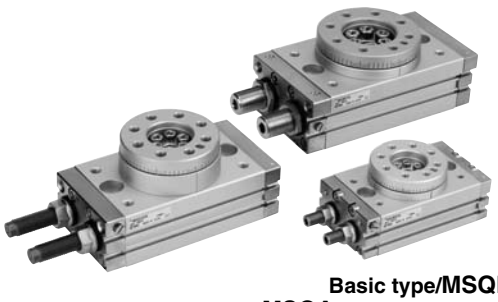
∗∗ Although it is possible to mount water resistant type auto switches, note that the rotary actuator itself is not of water resistant construction.

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

∗ Auto switches are shipped together, (but not assembled).

∗ Auto switches marked with a "○" are produced upon receipt of orders.

Refer to pages 796 and 797 for the details of solid state auto switch with pre-wired connector.



Basic type/MSQB

High precision type/MSQA

Specifications

Size			10	20	30	50	70	100	200
Fluid			Air (non-lube)						
Maximum operating pressure	With adjustment bolt		1 MPa						
	With internal shock absorber		0.6 MPa Note 1)						
Minimum operating pressure	Basic type		0.1 MPa						
	High precision type		0.2 MPa	0.1 MPa			—		
Ambient and fluid temperature			0 to 60°C (with no freezing)						
Cushion	With adjustment bolt		Rubber bumper						
	With internal shock absorber		Shock absorber						
		Shock absorber model	RBA0805 -X692	RBA1006-X692		RBA1411 -X692	RBA2015-X821		RBA2725 -X821
Angle adjustment range			0 to 190° Note 2)						
Maximum rotation			190°						
Cylinder bore size			ø15	ø18	ø21	ø25	ø28	ø32	ø40
Port size	End ports		M5 x 0.8		Rc 1/8, G 1/8, NPT 1/8				
	Side ports		M5 x 0.8						

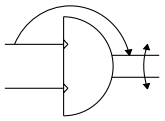
Note 1) The maximum operating pressure of the actuator is restricted by the maximum allowable thrust of the shock absorber.

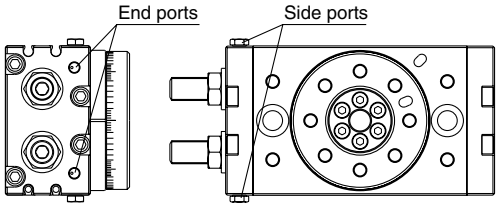
Note 2) Be careful if the rotation angle of a type with internal shock absorber is set below the value in the table below, the piston stroke will be smaller than the shock absorber's effective stroke, resulting in decreased energy absorption ability.

Size	10	20	30	50	70	100	200
Minimum rotation angle that will not allow decrease of energy absorption ability	52°	43°	40°	60°	71°	62°	82°

The service life of the shock absorber may be different from the rotary table body depending on the operating conditions. Refer to Specific Product Precautions for the suitable replacement period.

JIS symbol





Allowable Kinetic Energy and Rotation Time Adjustment Range

Size	Allowable kinetic energy (J) Note 1)		Rotation time adjustment range for stable operation (s/90°)	
	With adjustment bolt	With internal shock absorber	With adjustment bolt	With Note 2) internal shock absorber
10	0.007	0.039	0.2 to 1.0	0.2 to 0.7
20	0.025	0.116		
30	0.048	0.116		
50	0.081	0.294		
70	0.240	1.100	0.2 to 1.5	0.2 to 1.0
100	0.320	1.600	0.2 to 2.0	
200	0.560	2.900	0.2 to 2.5	

Note 1) If operated where the kinetic energy exceeds the allowable value, this may cause damage to the internal parts and result in product failure. Please pay special attention to the kinetic energy levels when designing and during operation to avoid exceeding the allowable limit.

Note 2) When the rotation time of the type with an internal absorber is set longer than the time shown in the table above, energy absorption of the shock absorber greatly decreases.

Mass

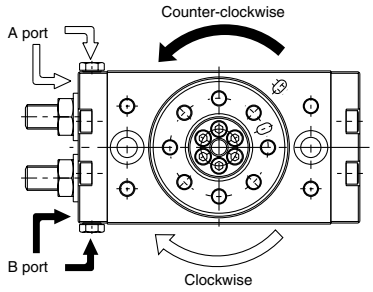
(g)

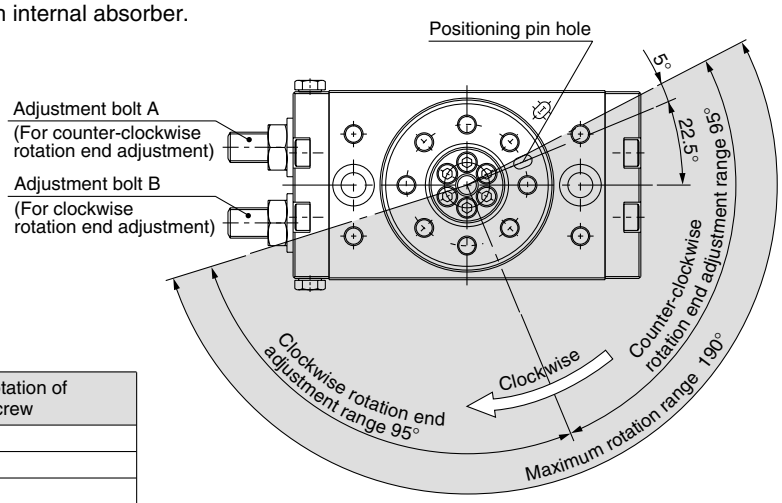
Size		10	20	30	50	70	100	200
Basic type	With adjustment bolt	530	990	1290	2080	2880	4090	7580
	With internal shock absorber	540	990	1290	2100	2890	4100	7650
High precision type	With adjustment bolt	560	1090	1410	2240	—		
	With internal shock absorber	570	1090	1410	2260			

Note) Values above do not include auto switch mass.

Rotation Direction and Rotation Angle

- The rotary table turns in the clockwise direction where the A port is pressurized, and in the counter-clockwise direction when the B port is pressurized.
- By adjusting the adjustment bolt, the rotation end can be set within the ranges shown in the drawing.
- The rotation angle can also be set on a type with internal absorber.





With adjust bolt, internal shock absorber

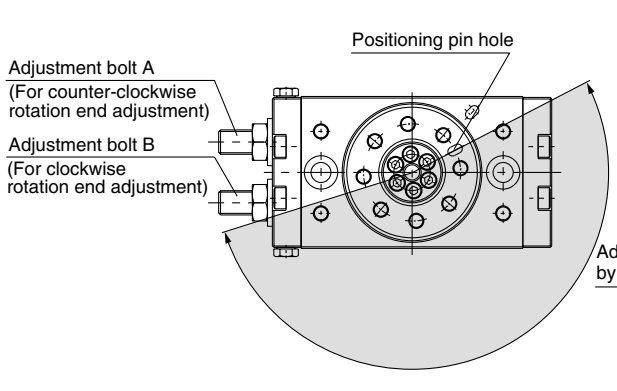
Size	Adjustment angle per rotation of angle adjustment screw
10	10.2°
20	7.2°
30	6.5°
50	8.2°
70	7.0°
100	6.1°
200	4.9°

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

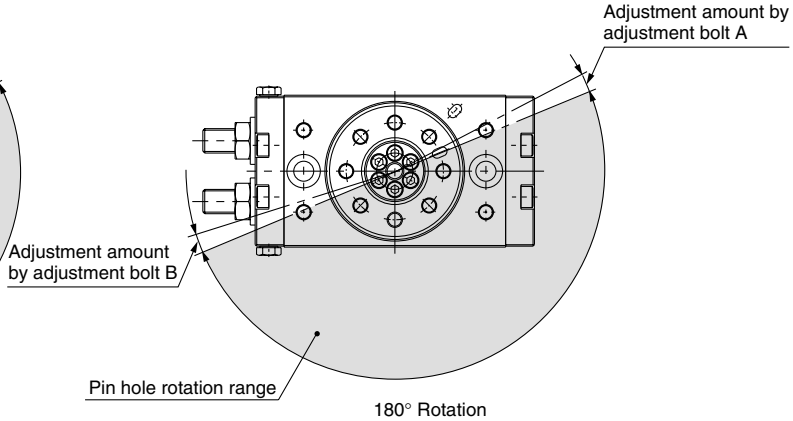
Rotation Range Example

- 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.)

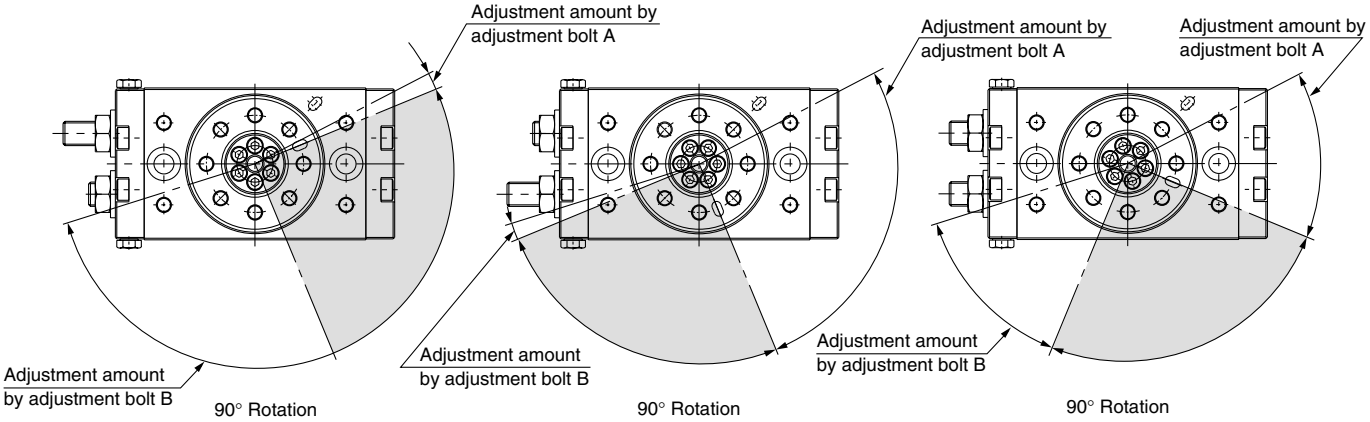
- The rotation angle can also be set on a type with inertial absorber.



190° (Maximum) Rotation



180° Rotation



90° Rotation　90° Rotation　90° Rotation

CRB2
CRBU2
CRB1
MSU
CRJ
CRA1
CRQ2
MSQ
MSZ
CRQ2X
MSQX
MRQ
D-□

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

11 – MSQ B 10 A – A90 S

- **11**: Clean series Vacuum type
- **B**: Vacuum type
  - **A** High precision type
  - **B** Basic type
- **10**: Size
  - **10**, **20**, **30**, **50**
- **A**: Shock absorber
  - **A** With adjustment bolt
  - **R** Shock absorber
- **A90**: Auto switch type
- **S**: Number of auto switches
- Thread type

End port type		Size
Nil	M 5	10, 20
Nil	Rc 1/8	30, 50,
-XF	G 1/8	70, 100,
-XN	NPT 1/8	200

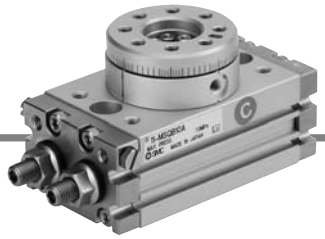
∗ Side ports are all M5.

Specifications

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

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

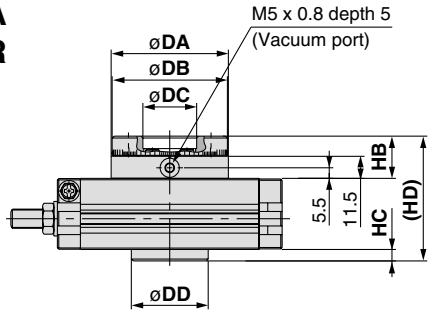
Note) Please refer to "Pneumatic Clean Series" catalog for further details.



Dimensions

Clean series products do not have a hollow axis.

Basic type
11-MSQB□A
11-MSQB□R

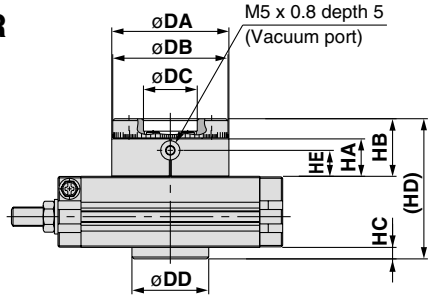


(mm)

Size	**DA**(h9)	**DB**(h9)	**DC**(H9)	**DD**(h9)	**HB**	**HC**	**HD**
10	46	45	20	35	20	5	59
20	61	60	28	40	22	6	65
30	67	65	32	48	22	6	68
50	77	75	35	54	24	7	77

Dimensions other than above are identical to the basic type.

High precision type
11-MSQA□A
11-MSQA□R

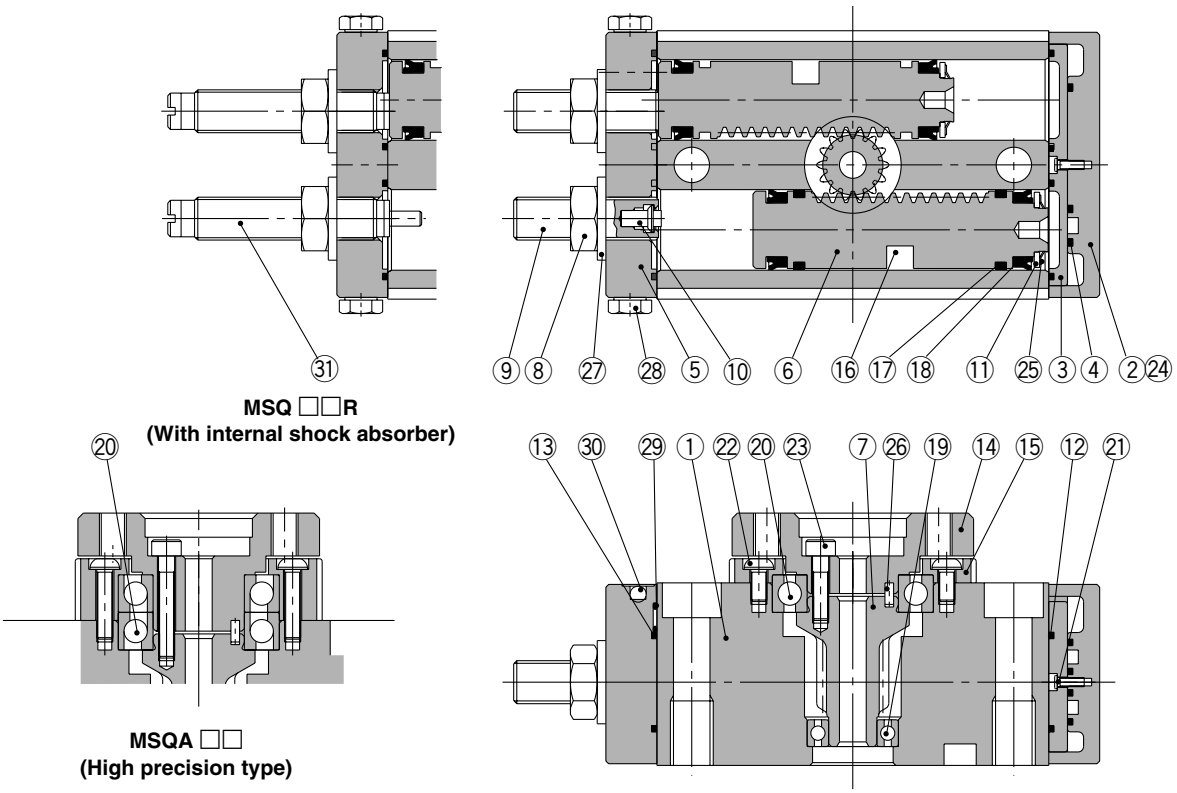


(mm)

Size	**DA**(h8)	**DB**(h8)	**DC**(H8)	**DD**(h8)	**HA**	**HB**	**HC**	**HD**	**HE**
10	46	45	20	35	15.5	24	5	63	9.5
20	61	60	28	40	19.5	30	6	73	13.5
30	67	65	32	48	19.5	30	6	76	13.5
50	77	75	35	54	21.5	34	7	87	15.5

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

Construction



Parts list

No.	Description		Material	Note
1	Body		Aluminium alloy	Anodized
2	Cover	Clean Series	Aluminium alloy	Nickel plated
		Except Clean Series		Plated
3	Plate		Aluminium alloy	Chromated
4	Seal		NBR	
5	End cover	Clean Series	Aluminium alloy	Nickel plated
		Except Clean Series		Plated
6	Piston		Stainless steel	
7	Pinion		Chrome molybdenum steel	
8	Compact hexagon nut	Size: 10 to 50	Steel wire	Chromated
	Hexagon nut	Size: 70 to 200		Nickel plated
9	Adjustment bolt		Chrome molybdenum steel	Chromated
10	Cushion pad		Rubber material	
11	Seal retainer		Aluminium alloy	Chromated
12	Gasket		NBR	
13	Gasket		NBR	
14	Table		Aluminium alloy	Anodized
15	Bearing retainer		Aluminium alloy	Anodized
16	Magnet		—	Chromated
17	Wear ring		Resin	
18	Piston seal		NBR	

No.	Description		Material	Note
19	Deep groove ball bearing	Size: 10 to 50	Bearing steel	
	Needle bearing	Size: 70 to 200		
20	Deep groove ball bearing	Basic type	Bearing steel	
	Angular contact ball bearing	High precision type		
21	Round head philips screw No.0	Size: 20 to 50	Steel wire	Chromated
		Size: 70 to 200	Stainless steel	
22	Round head philips screw	Size: 10	Stainless steel	
	Low head cap screw	Size: 20 to 50	Chrome molybdenum steel	Nickel plated
	Hexagon socket head set bolt	Size: 70 to 200		Nickel plated
23	Hexagon socket head set bolt		Stainless steel	
24	Hexagon socket head set bolt	Size: 10 to 70	Stainless steel	
		Size: 100 to 200	Carbon steel	Nickel plated
25	Type CS retaining ring		Spring steel	
26	Parallel pin	Size: 10 to 50	Carbon steel	
	Parallel key	Size: 70 to 200		
27	Seal washer		NBR	
28	Plug		Steel wire	
29	O-ring	Size: 70 to 200 only	NBR	
30	Steel balls	Size: 70 to 200 only	Stainless steel	
31	Shock absorber		—	

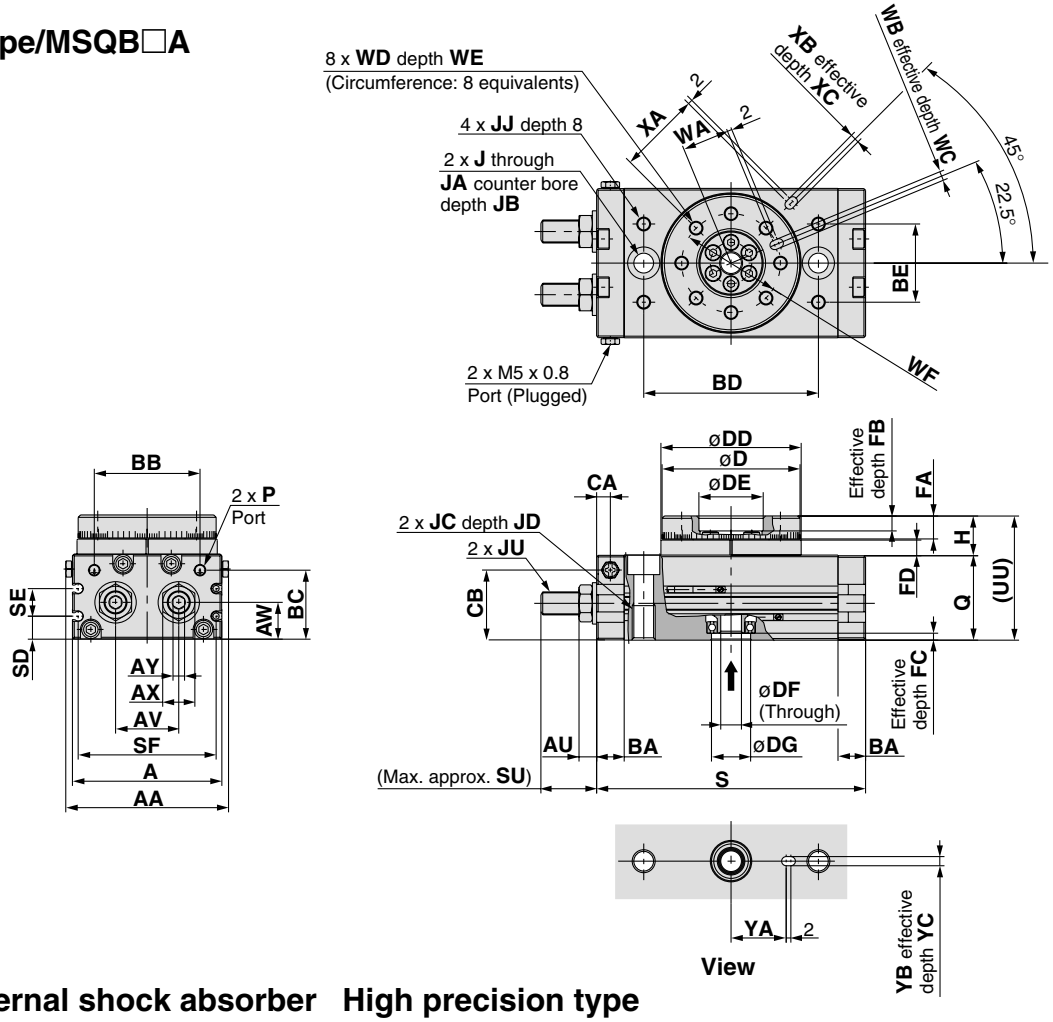
Replacement parts

Description	Size																							
	10			20			30			50			70			100			200					
Seal kit	P523010-5			P523020-5			P523030-5			P523040-5			P391050-5			P391060-5			P391070-5				
Parts included in seal kit	No.	Description	Qty.	No.	Description	Qty.	No.	Description	Qty.	No.	Description	Qty.	No.	Description	Qty.	No.	Description	Qty.	No.	Description	Qty.	No.	Description	Qty.
	4	Seal	1	4	Seal	1	4	Seal	1	4	Seal	1	4	Seal	1	4	Seal	1	4	Seal	1	4	Seal	1
	12	Gasket	1	12	Gasket	1	12	Gasket	1	12	Gasket	1	12	Gasket	4	12	Gasket	4	12	Gasket	4	12	Gasket	4
	13	Gasket	1	13	Gasket	1	13	Gasket	1	13	Gasket	1	17	Wear ring	4	17	Wear ring	4	17	Wear ring	4	17	Wear ring	4
	17	Wear ring	4	17	Wear ring	4	17	Wear ring	4	17	Wear ring	4	18	Piston seal	4	18	Piston seal	4	18	Piston seal	4	18	Piston seal	4
	18	Piston seal	4	18	Piston seal	4	18	Piston seal	4	18	Piston seal	4	27	Seal washer	2	27	Seal washer	2	27	Seal washer	2	27	Seal washer	2
	27	Seal washer	2	27	Seal washer	2	27	Seal washer	2	27	Seal washer	2	29	O-ring	4	29	O-ring	4	29	O-ring	4	29	O-ring	4

A grease pack (10 g) is included. When only a grease pack is needed, order with the following part number.
Grease pack part no: GR-S-010 (10g)

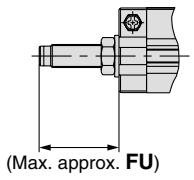
Dimensions/Size 10, 20, 30, 50

Basic type/MSQB□A



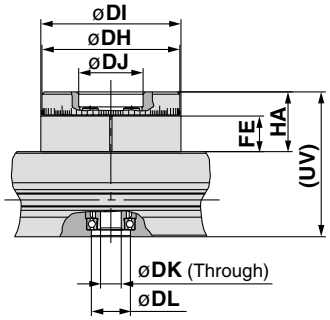
With internal shock absorber
MSQA□R
MSQB□R

High precision type
MSQA□A/With adjustment bolt
MSQA□R/With internal shock absorber



(mm)

Size	FU
10	31.5
20	34.7
30	34.7
50	51.7



(mm)

Size	DH	DI	DJ	DK	DL	FE	HA	UV
10	45h8	46h8	20H8	5	15H8	10	18.5	52.5
20	60h8	61h8	28H8	9	17H8	15.5	26	63
30	65h8	67h8	32H8	9	22H8	16.5	27	67
50	75h8	77h8	35H8	10	26H8	17.5	30	76

(mm)

Size	AA	A	AU	AV	AW	AX	AY	BA	BB	BC	BD	BE	CA	CB	D	DD	DE	DF	DG	FA	FB	FC	FD	H	J	JA	JB
10	55.4	50	6.6	20	15.5	12	4	9.5	34.5	27.8	60	27	4.5	28.5	45h9	46h9	20H9	5	15H9	8	4	3	4.5	13	6.8	11	6.5
20	70.8	65	7.6	27.5	16	14	5	12	46	30	76	34	6	30.5	60h9	61h9	28H9	9	17H9	10	6	2.5	6.5	17	8.6	14	8.5
30	75.4	70	7.6	29	18.5	14	5	12	50	32	84	37	6.5	33.5	65h9	67h9	32H9	9	22H9	10	4.5	3	6.5	17	8.6	14	8.5
50	85.4	80	10	38	22	19	6	15.5	63	37.5	100	50	10	37.5	75h9	77h9	35H9	10	26H9	12	5	3	7.5	20	10.5	18	10.5

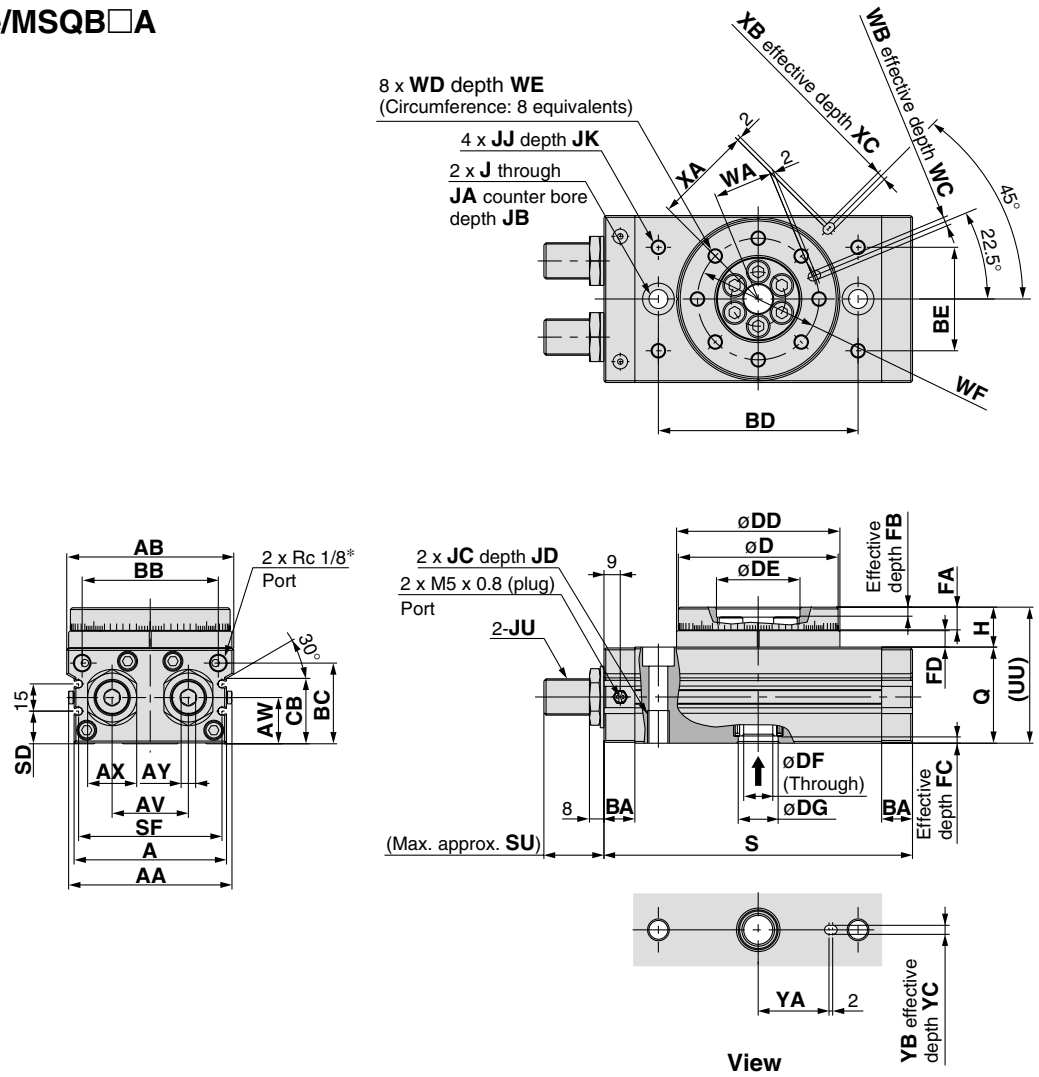
(mm)

Size	JC	JD	JJ	JU	P	Q	S	SD	SE	SF	SU	UU	WA	WB	WC	WD	WE	WF	XA	XB	XC	YA	YB	YC
10	M8 x 1.25	12	M5 x 0.8	M8 x 1	M5 x 0.8	34	92	9	13	45	17.7	47	15	3H9	3.5	M5 x 0.8	8	32	27	3H9	3.5	19	3H9	3.5
20	M10 x 1.5	15	M6 x 1	M10 x 1	M5 x 0.8	37	117	10	12	60	25	54	20.5	4H9	4.5	M6 x 1	10	43	36	4H9	4.5	24	4H9	4.5
30	M10 x 1.5	15	M6 x 1	M10 x 1	Rc 1/8*	40	127	11.5	14	65	25	57	23	4H9	4.5	M6 x 1	10	48	39	4H9	4.5	28	4H9	4.5
50	M12 x 1.75	18	M8 x 1.25	M14 x 1.5	Rc 1/8*	46	152	14.5	15	75	31.4	66	26.5	5H9	5.5	M8 x 1.25	12	55	45	5H9	5.5	33	5H9	5.5

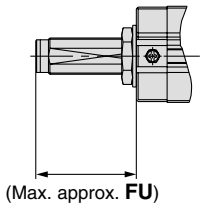
* In addition to Rc 1/ 8, G 1/ 8 and NPT 1/ 8 are also available.

Dimensions/Size 70, 100, 200

Basic type/MSQB□A



With shock absorber MSQB□R



(mm)

Size	FU
70	55.4
100	55.5
200	79.5

(mm)

Size	AA	AB	A	AV	AW	AX	AY	BA	BB	BC	BD	BE	CB	D	DD	DE	DF	DG	FA	FB	FC	FD	H	J	JA	JB
70	90	92	84	42	25.5	27	8	17	75	44.5	110	57	36	88h9	90h9	46H9	16	22H9	12.5	5	3.5	9	22	10.4	17.5	10.5
100	101	102	95	50	29.5	27	8	17	85	50.5	130	66	42	98h9	100h9	56H9	19	24H9	14.5	6	3.5	12	27	10.4	17.5	10.5
200	119	120	113	60	36.5	36	10	24	103	65.5	150	80	57	116h9	118h9	64H9	24	32H9	16.5	9	5.5	15	32	14.2	20	12.5

(mm)

Size	JC	JD	JJ	JK	JU	Q	S	SD	SF	SU	UU	WA	WB	WC	WD	WE	WF	XA	XB	XC	YA	YB	YC
70	M12 x 1.75	18	M8 x 1.25	10	M20 x 1.5	53	170	18	79	34.2	75	32.5	5H9	5.5	M8 x 1.25	12.5	67	54	5H9	3.5	39	5H9	3.5
100	M12 x 1.75	18	M8 x 1.25	10	M20 x 1.5	59	189	22	90	34.3	86	37.5	6H9	6.5	M10 x 1.5	14.5	77	59	6H9	4.5	49	6H9	4.5
200	M16 x 2	25	M12 x 1.75	13	M27 x 1.5	74	240	29	108	40.2	106	44	8H9	8.5	M12 x 1.75	16.5	90	69	8H9	4.5	54	8H9	6.5

* In addition to Rc 1/ 8, G 1/ 8 and NPT 1/ 8 are also available.

Rotary Table/Rack & Pinion Style
Series MSQ
With External Shock Absorber
Size: 10, 20, 30, 50

How to Order

MSQ [B] [10] [L] [2] – [M9BW] [S] [ ]

[B] Basic type

A	High precision type
B	Basic type

[10] Size

10
20
30
50

[L] Shock absorber type

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

[2] Port location/Rotation

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

Refer to the table to the right.

[M9BW] Auto switch type

Nil	Without auto switch (Built-in magnet)

∗Refer to the table below for auto switch types.

[S] Number of auto switch

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

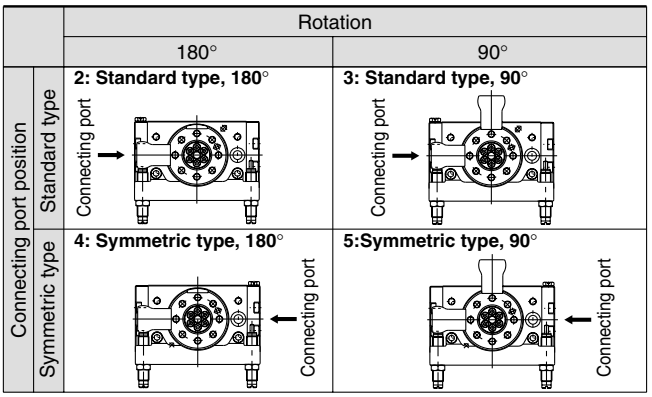
[ ] Thread type

End port type		Size
Nil	M 5	10, 20
Nil	Rc 1/8	30, 50
-XF	G 1/8	
-XN	NPT 1/8	

∗ Side ports are all M5.

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 pages 761 to 809 for detailed auto switch specification.

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)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
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		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○		
				2-wire		12 V		M9BWV	M9BW	●	●	●	○	○	—	
	Water resistant (2-color indication)			3-wire (NPN)		5 V, 12 V		M9NAV**	M9NA**	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV**	M9PA**	○	○	●	○	○		
				2-wire		12 V		M9BAV**	M9BA**	○	○	●	○	○	—	
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V	A93V	A93	●	—	●	—	—	—	Relay, PLC
			No				100 V or less	A90V	A90	●	—	●	—	—	IC circuit	

** Although it is possible to mount water resistant type auto switches, note that the rotary actuator itself is not of water resistant construction.

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

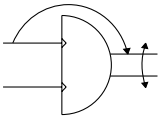
∗ Auto switches marked with a "○" are produced upon receipt of orders.

∗ Auto switches are shipped together, (but not assembled).

Refer to pages 796 and 797 for the details of solid state auto switch with pre-wired connector.

SMC

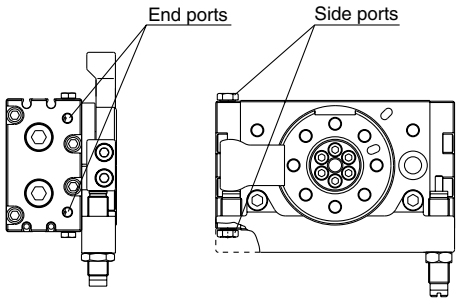
JIS symbol



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, G 1/8, NPT 1/8	
	Side ports	M5 x 0.8			

The service life of the shock absorber may be different from the rotary table body depending on the operating conditions. Refer to Specific Product Precautions for the suitable replacement period.



Allowable Kinetic Energy and Rotation Time Adjustment Range

Size	Allowable kinetic energy (J) Note 1)		Rotation time adjustment range for stable operation (s/90°)
	Shock absorber for low energy	Shock absorber for high energy	
10	0.161	0.231	0.2 to 1.0 Note 2)
20	0.574	1.060	
30	0.805	1.210	
50	1.310	1.820	

Note 1) If operated where the kinetic energy exceeds the allowable value, this may cause damage to the internal parts and result in product failure. Please pay special attention to the kinetic energy levels when designing and during operation to avoid exceeding the allowable limit.

Note 2) 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°

Mass

(g)

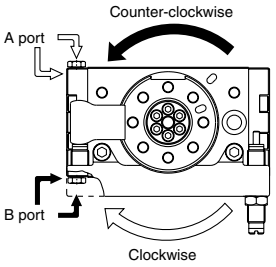
Size		10	20	30	50
Basic type	90° specification	630	1200	1520	2480
	180° specification	600	1140	1450	2370
High precision type	90° specification	700	1390	1750	2810
	180° specification	670	1340	1680	2690

Note) Values above do not include auto switch mass.

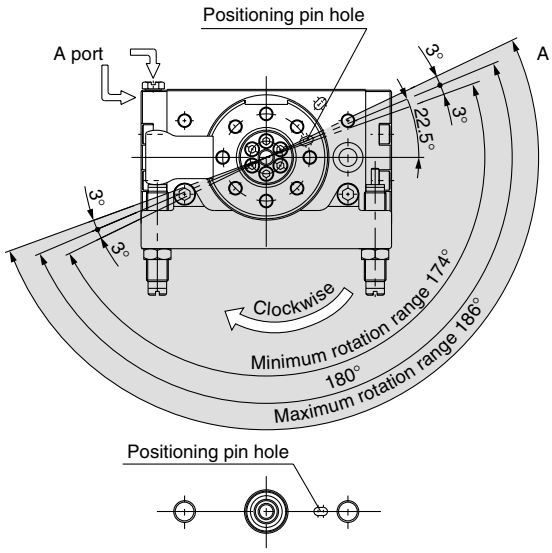
Rotation Direction and Rotation Angle

- The rotary table turns in the clockwise direction where the A port is pressurized, and in the counter-clockwise 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

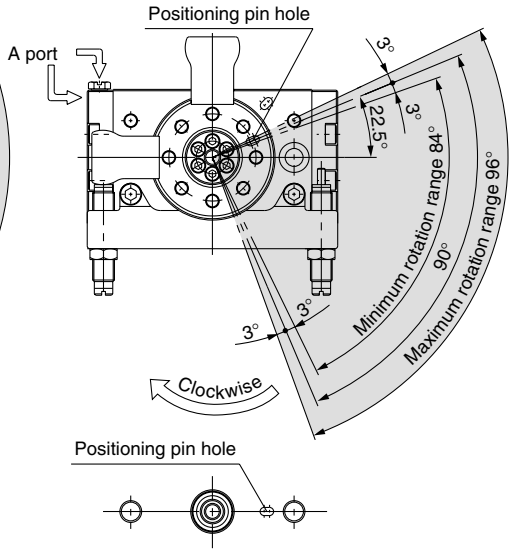


For 180°



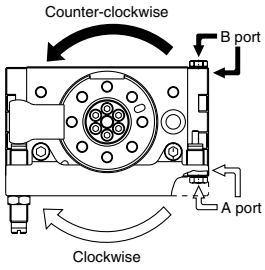
Position of bottom positioning pin hole

For 90°

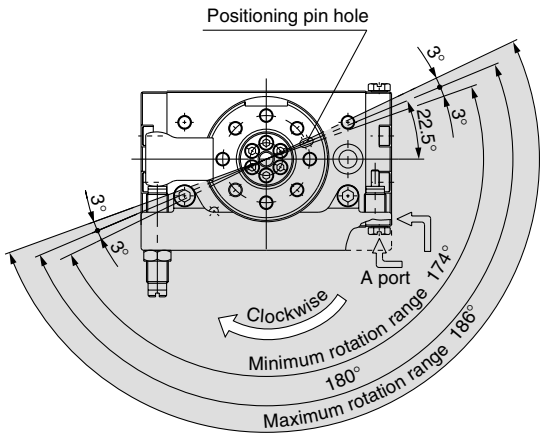


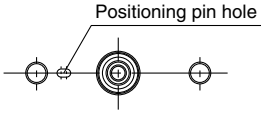
Position of bottom positioning pin hole

Symmetric type



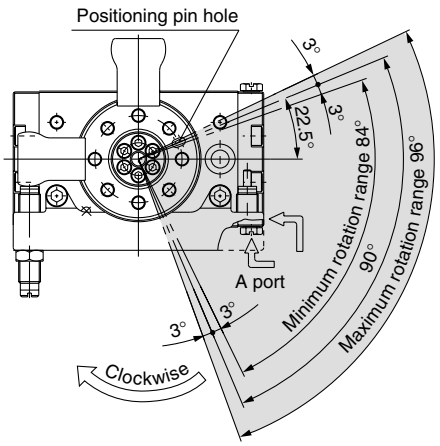
For 180°

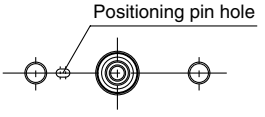




Position of bottom positioning pin hole

For 90°





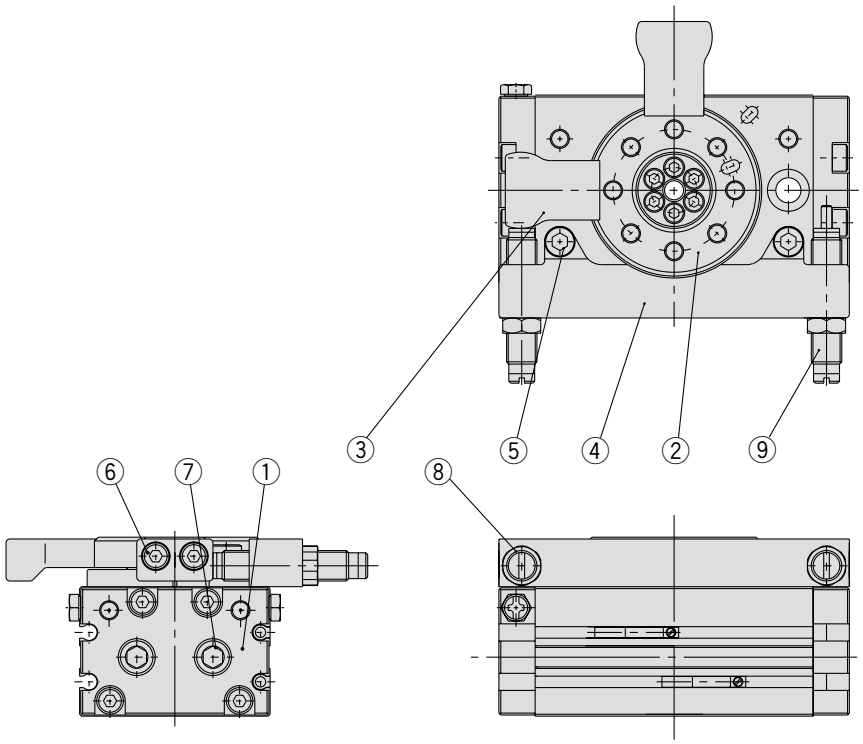
Position of bottom positioning pin hole

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 counter-clockwise rotation end when the shock absorbers are tightened equally and the rotation is adjusted to 180° and 90°.

Construction



Component parts

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

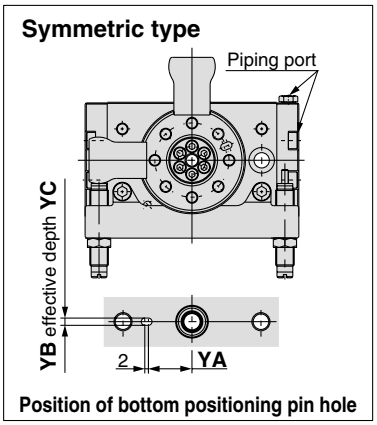
Replacement parts

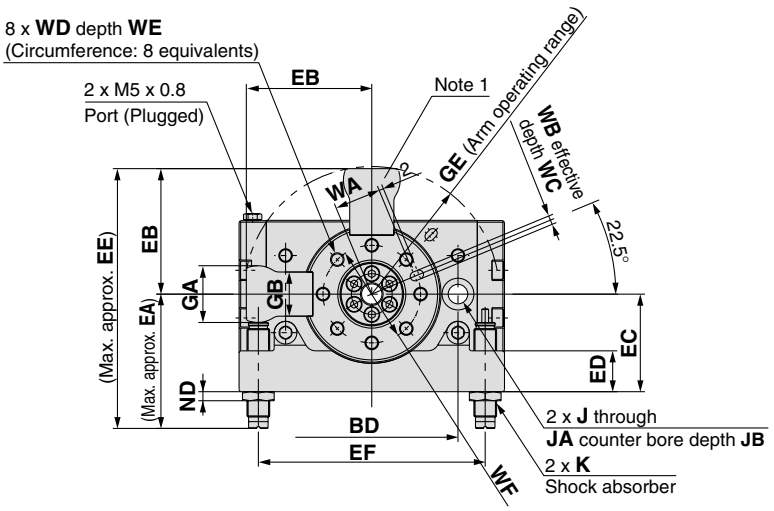
Description	Kit no.				Note
	10	**20**	**30**	**50**	
Seal kit	P523010-6	P523020-6	P523030-6	P523040-6	Seal washer ㉗ is excluded from the kit contents described on page 285.

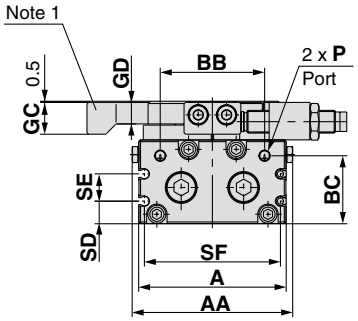
A grease pack (10 g) is included. When only a grease pack is needed, order with the following part number.
Grease pack part no: GR-S-010 (10g)

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

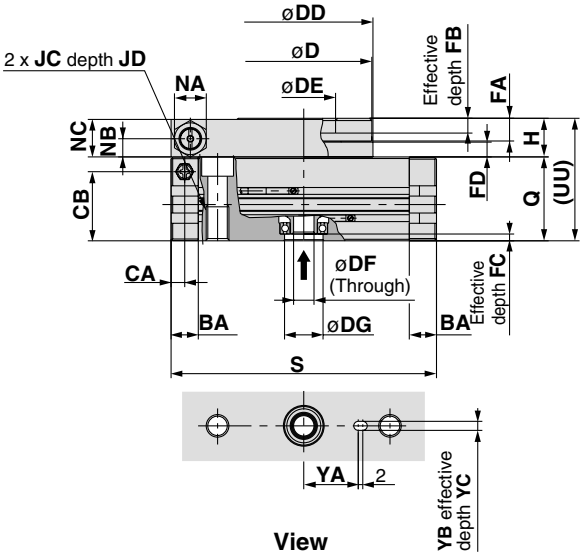
Basic type/MSQB□$^{L}_{H}$□



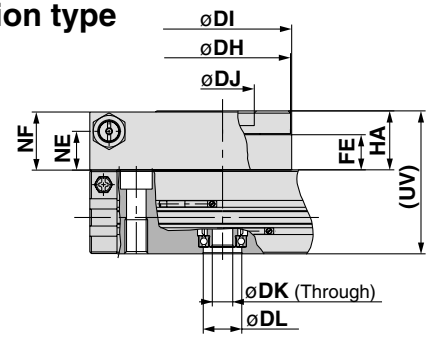




Note 1) This part is not available with 180° specification.



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

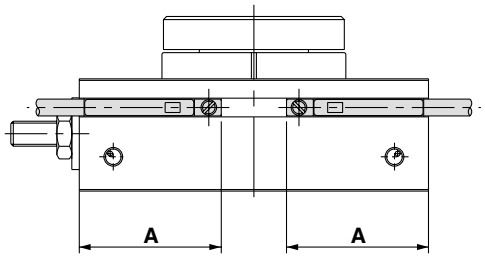
(mm)

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

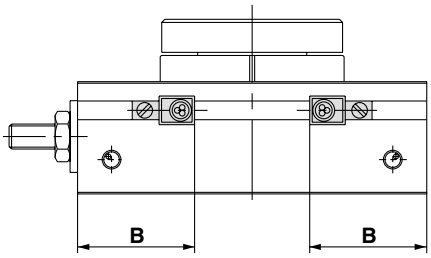
* In addition to Rc 1/ 8, G 1/ 8 and NPT 1/ 8 are also available.

Proper Auto Switch Mounting Position at Rotation End

• Size: 1 to 7



When D-M9 is used

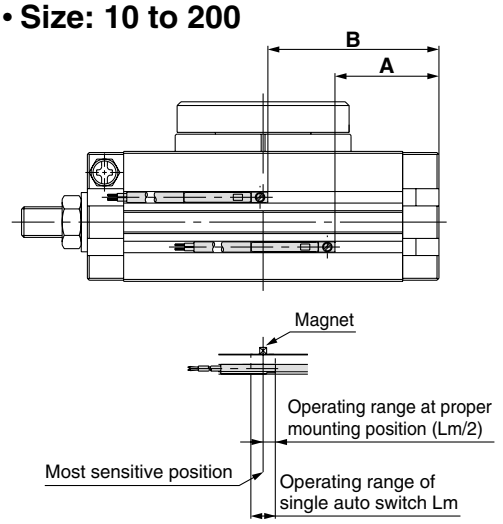


When D-F8 is used

Size	Rotation	Solid state auto switch					
		D-M9□(V), D-M9□W(V)			D-F8□		
		A	Operating angle θ m	Hysteresis angle	B	Operating angle θ m	Hysteresis angle
1	190°	20.9	49°	10°	16.9	20°	10°
2	190°	22.8	50°	10°	18.8	20°	10°
3	190°	24.4	47°	10°	20.4	15°	10°
7	190°	28.7	31°	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.
Note) Since the above values are only provided as a guideline, they are not guaranteed.
In the actual setting, adjust them after confirming the auto switch operating condition.

• Size: 10 to 200



Size	Rotation	Reed auto switch				Solid state auto switch			
		D-A9□, D-A9□V				D-M9□(V), D-M9□W(V)			
		A	B	Operating angle θ m	Hysteresis angle	A	B	Operating angle θ m	Hysteresis angle
10	190°	27	45	90°	10°	31	49	42°	10°
20	190°	35	62	80°	10°	39	66	35°	10°
30	190°	39	68	65°	10°	43	72	30°	10°
50	190°	49	83	50°	10°	53	87	24°	10°
70	190°	54	95	45°	10°	58	99	22°	10°
100	190°	61	108	40°	10°	65	112	19°	10°
200	190°	81	139	35°	10°	85	143	14°	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.
Note) Since the above values are only provided as a guideline, they are not guaranteed.
In the actual setting, adjust them after confirming the auto switch operating condition.

Series MSQ
Rotary Table
Specific Product Precautions 1

Be sure to read before handling.

Speed Adjustment

⚠Warning

1. Perform speed adjustment gradually from the low speed side.

Speed adjustment from the high speed side can cause product damage leading to human injury and damage to equipment and machinery.

⚠Caution

1. When operating at high speed with a large load weight, a large amount of energy is applied to the actuator and can cause damage.

Refer to the model selection on page 20 to find the proper operating time.

2. Do not machine the fixed orifice of the port to enlarge its size. If the fixed orifice size is enlarged, the actuator operating speed and impact force will increase and cause damage.

Lubrication

⚠Caution

1. Use the product without lubrication.

This product is lubricated with grease at the factory, and further lubrication will result in a failure to meet the product's specifications.

Rotation Adjustment

⚠Caution

1. As a standard feature, the rotary table is equipped with a rotation adjustment screw (adjustment bolt or shock absorber) that can be used to adjust the rotation. The table below shows the rotation adjustment per single rotation of the rotation adjustment screw.

Please refer to following pages for the rotation direction, rotation angle and rotation angle range.

MSQ size1 to 7 → page 278
MSQ size10 to 200 → page 283
MSQ with external shock absorber → page 290

With adjustment bolt, With external shock absorber

Size	Rotation adjustment per single rotation of rotation adjustment screw
1	8.2°
2	10.0°
3	10.9°
7	10.2°
10	10.2°
20	7.2°
30	6.5°
50	8.2°
70	7.0°
100	6.1°
200	4.9°

With external shock absorber

Size	Rotation adjustment per single rotation of rotation adjustment screw
10	1.4°
20	1.2°
30	1.1°
50	1.3°

The rotation adjustment range for the external shock absorber is ±3° at each rotation end. When adjusted beyond this range, note that the shock absorber's durability may decrease.

Rotation Adjustment

⚠Caution

2. Series MSQ is equipped with a rubber bumper or shock absorber. Therefore, perform rotation adjustment in the pressurized condition (minimum operation pressure: 0.1 MPa or more for adjustment bolt and internal shock absorber types, and 0.2 MPa or more for external shock absorber type.)

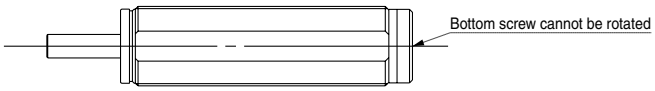
Shock Absorber

⚠Caution

1. Refer to the table below for tightening torques of the shock absorber setting nut.

Size	10	20	30	50	70	100	200
Tightening torque N · m	1.67	3.14		10.8	23.5		62.8

2. Never rotate the bottom screw of the shock absorber. (It is not an adjustment screw.) This may cause oil leakage.



3. When rotation of the rotary table with internal shock absorber is set at a value smaller than the table below, the piston stroke becomes smaller than the shock absorber's effective stroke and energy absorption capacity decreases.

Size	10	20	30	50	70	100	200
Minimum rotation without energy absorption capacity decrease	52°	43°	40°	60°	71°	62°	82°

4. Products with shock absorber are not designed to smooth stop but to absorb the kinetic energy of the load. If the load has to be stopped smoothly, a shock absorber of the optimum size meeting the operating conditions must be installed external to the equipment.

5. Shock absorbers are consumable parts. When a decrease in energy absorption capacity is noticed, it must be replaced.

With internal shock absorber

Size	Shock absorber model
10	RBA0805-X692
20	RBA1006-X692
30	
50	RBA1411-X692
70	RBA2015-X821
100	
200	RBA2725-X821

With external shock absorber

Size	Type	Shock absorber model
10	For low energy	RB0805
	For high energy	RB0806
20	For low energy	RB1006
	For high energy	RB1007
30	For low energy	RB1006
	For high energy	RB1007
50	For low energy	RB1411
	For high energy	RB1412

Series MSQ
Rotary Table
Specific Product Precautions 2

Be sure to read before handling.

Service Life and Replacement Period of Shock Absorber

⚠Caution

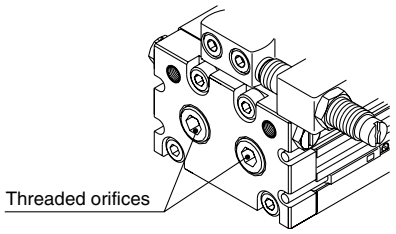
1. Allowable operation time under the specifications set in this catalog is 1 million.

Note) Specified service life (suitable replacement period) is the value at room temperature (20 to 25°C). The period may vary depending on the temperature and other conditions. In some cases the absorber may need to be replaced before the allowable operation time above.

External Shock Absorber

⚠Caution

The threaded orifices shown below are not connecting ports. Never remove the plugs as this will cause malfunction.



Speed Controller and Fittings

⚠Caution

Size 1, 2, and 3 use M3 x 0.5 piping ports. When connecting a speed controller or fittings directly, use the following series.

- ●Speed controller
  AS12□1F/Elbow type
  AS13□1F/Universal type
- ●One-touch fitting
  One-touch miniature fittings Series KJ
- ●Miniature fittings Series M3

Auto switch

⚠Caution

In case of sizes 1, 2, 3 and 7, when 2 pieces of auto switches are installed in one switch groove, the minimum detectable rotation angles are as follows.

Size	Minimum detectable rotation
1	25°
2	25°
3	20°
7	20°

Maintenance and Inspection

⚠Caution

Since sizes 1, 2, 3 and 7 require special tools, they cannot be disassembled.
Since sizes 10, 20, 30 and 50 have the table press fit into an angular type bearing, they cannot be disassembled.