

Rotary Cylinder Series MRQ

Size: 32, 40

How to Order

MRQ **B** S **32** — **50** **C** **A** — **J79W** **SO**

B: Basic style

Mounting style
● F: Flange on the rod side



Size/Standard stroke (mm)

32	5, 10, 15, 20, 25, 30, 40, 50, 75, 100
40	

* Refer to pages 11-10-18 to 11-10-19 for middle and long strokes other than standard stroke.

Number of auto switches

Linear motion	Rotation		
	0	1	2
0	—	OS	O2
1	SO	SS	S2
2	2O	2S	Nil

Auto switch

Nil	Without auto switch
-----	---------------------

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

Rotating angle

A	80 to 100°
B	170 to 190°

Air cushion

C	With air cushion on the linear motion parts
N	Without air cushion on the linear motion parts

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 model		Lead wire length (m) *				Pre-wire connector	Applicable load					
					DC	AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)	None (N)		IC circuit	Relay, PLC				
																24 V	5 V, 12 V	—	—
Reed switch	—	Grommet	Yes	3-wire (NPN)	—	5 V	—	A76H	●	●	—	—	—	IC circuit	—				
				—	—	200 V	A72	A72H	●	●	—	—	—	—	Relay, PLC				
	Connector	2-wire		12 V	—	100 V	A73	A73H	●	●	●	—	—						
				—	—	—	A73C	—	●	●	●	●	—						
Diagnostic indicator (2-color)	Grommet	—	—	—	—	—	A79W	—	●	●	—	—	—	—					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	F7NV	F79	●	●	○	—	○	IC circuit	Relay, PLC			
				3-wire (PNP)				F7PV	F7P	●	●	○	—	○					
		Connector		2-wire				12 V	F7BV	J79	●	●	○	—	○				
								—	J79C	—	●	●	●	●	—				
	Diagnostic indicator (2-color)	Grommet		3-wire (NPN)	24 V	5 V, 12 V	—	F7NWV	F79W	●	●	○	—	○	IC circuit				
				3-wire (PNP)				—	F7PW	●	●	○	—	○					
				2-wire				12 V	F7BWV	J79W	●	●	○	—	○				
								—	F7BAV **	F7BA **	—	●	○	—	○				
				Water resistant (2-color)				—	4-wire (NPN)	5 V, 12 V	—	F79F	●	●	○		—	○	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) A73C * Solid state switches marked with "○" are manufactured upon receipt of order.
3 m..... L (Example) A73CL
5 m..... Z (Example) A73CZ
None..... N (Example) A73CN

- Since other auto switches are available other than those listed above, refer to page 11-10-16 for details on other applicable auto switches.
- For F7NWV and F7BWV switch types, refer to Best Pneumatics Vol. 8.



Refer to page 11-11-36 for detailed solid state switches with prewire connectors.

Rotary Cylinder Series MRQ

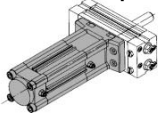
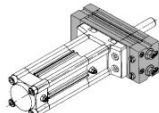


P. 11-10-18 to 11-10-19

Standard Specifications

Fluid	Air (Non-lube)
Max. operating pressure (MPa)	0.7 MPa
Min. operating pressure (MPa)	0.15 MPa
Ambient and fluid temperature	0 to 60°C (No freezing)
Mounting	Basic style, Rod side flange style

Linear Motion Parts, Rotary Motion Parts/Specifications

Linear motion parts	Size	32	40
	Piston speed	50 to 500 mm/s	
	Cushion	With air cushion, Without air cushion	
	Port size	Rc 1/8	
	Rotary motion parts		
	Output torque (At 0.5 MPa)	1 N·m	1.9 N·m
	Rotation time adjustment range	0.2 to 1 s/90°	
	Cushion	None	
	Allowable kinetic energy	23 mJ	28 mJ
	Port size	Rc 1/8, M5 x 0.8 (The port is plugged for delivery.)	
	Backlash	2° or less	



* For detailed explanation of effective output, refer to the description on page 11-10-5.

Linear Motion Parts/Standard Stroke

Size	Standard stroke (mm)
32, 40	5, 10, 15, 20, 25, 30, 40, 50, 75, 100



* Refer to page 11-10-18 for other intermediate strokes.

Weight

Size	Rotating angle	Basic weight (g)	Add'l stroke weight (g/mm)	Flange (g)
32	80 to 100°	1400	4	500
	170 to 190°	1500		
40	80 to 100°	2100	5	500
	170 to 190°	2300		

Calculation: (Example) MRQBS32-50CA

•Basic weight	1400 g
•Stroke additional weight	4 x 50 = 200 g
	Total 1600 g



* For the weight of auto switch alone, refer to page 11-11-1.

Possible to Exchange Basic Style with Flange Style

Specify with the part numbers shown below when ordering flange parts.

Size	Part no.
32	P317010-7
40	P317020-7

Attached parts: Flange 1 piece
Hexagon socket head cap screw 4 pieces

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

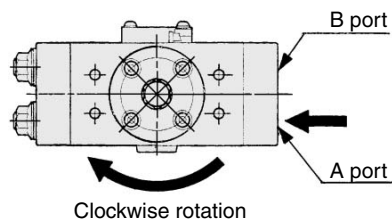
D-

20-

Series MRQ

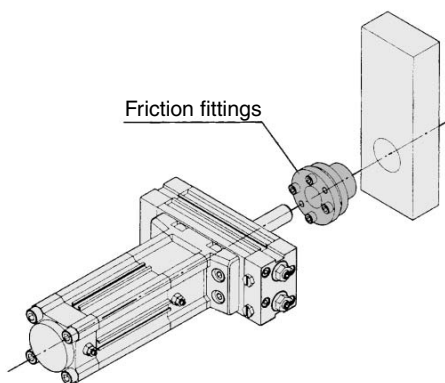
Rotating Direction

When pressure is applied from the arrow-marked side, the rod rotates clockwise.

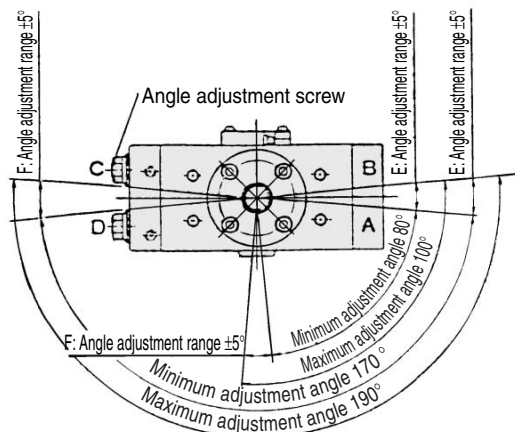


Allowable Lateral Load to the Piston Rod End

Using friction fittings makes it easier to mount the load to the piston rod end.



Rotation Angle Adjustable Range/Rotating Angle



- Note) • The diagram shows the rotation angle with a reference position set at random. Each rotation angle end can be adjusted $\pm 5^\circ$.
 • When the cylinder is pressurized from port B, range E can be adjusted by regulating angle adjustment screw C.
 When the cylinder is pressurized from port A, range F can be adjusted by regulating angle adjustment screw D.

Manufacturers of Friction Fittings/Model

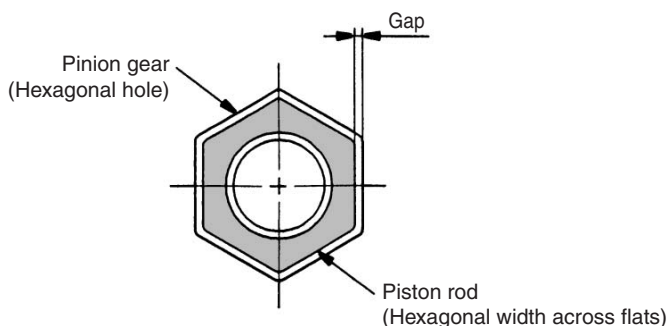
Size	Miki Pully Co., Ltd. (ETP bushing)	ISEL Co., Ltd. (Mechanical lock)	Nabeya Kogyo Co., Ltd. (Clamp lock)
32	ETP-K-12	MA12 x 26	CLH-12 x 18
40	ETP-K-14	MA14 x 28	CLH-14 x 23

* Please consult with manufacturers concerning further information on specifications.

Size	Adjusting angle per 1 rotation of angle adjusting screw
32	5.7°
40	4.8°

Backlash

The rotary motion part has a double-rack construction. The pinion gear has a hexagonal hole, and a slight clearance exists between this hole and the hexagonal flats of the piston rod. This clearance generates a backlash in the rotational direction of the piston rod.



Precautions

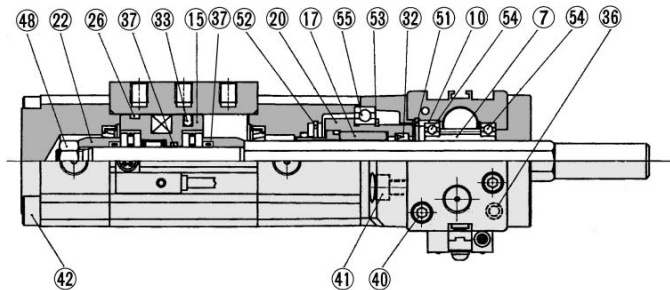
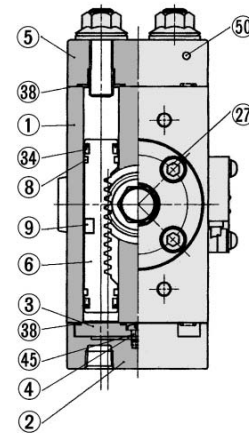
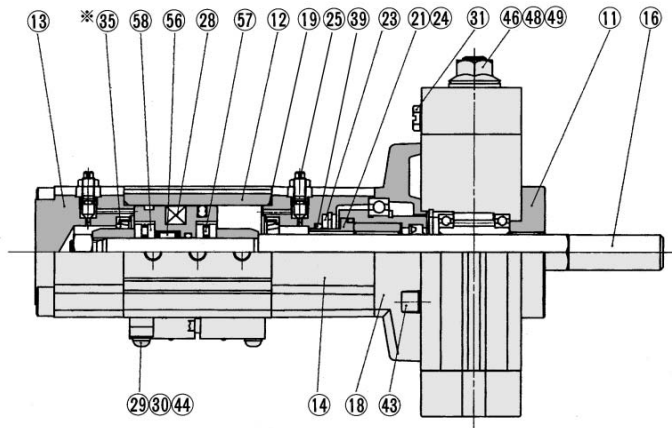
Be sure to read before handling. Refer to pages 11-13-3 and 4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to pages 11-1-4 to 6 for Precautions on every series.

Caution

The angle adjustment bolt is adjusted to a random position within the adjustable rotating range. Therefore, it must be readjusted to obtain the angle that suits your application.

Construction

* Part unnecessary for models without a cushion.



CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

20-

Component Parts

No.	Description	Material	Note
①	Body	Aluminum alloy	Hard anodized
②	Cover	Aluminum alloy	Black anodized
③	Plate	Aluminum alloy	Chromated
④	Seal	NBR	
⑤	End cover	Aluminum alloy	Black anodized
⑥	Piston	Stainless steel	Nitrided
⑦	Pinion gear	Chrome molybdenum steel	Nitrided
⑧	Wearing	Resin	
⑨	Magnet	Magnetic material	
⑩	Bearing color	Aluminum alloy	Hard anodized
⑪	Steady brace cover	Aluminum alloy	Black anodized
⑫	Tube	Aluminum alloy	Hard anodized
⑬	Head cover	Aluminum alloy	Black anodized
⑭	Rod cover	Aluminum alloy	Platinum silver
⑮	Piston	Aluminum alloy	Chromated
⑯	Piston rod	Stainless steel	Nitrided
⑰	Non-rotating guide	Sintered metallic	Nitrided
⑱	Flange	Aluminum alloy	Platinum silver
⑲	O-ring	NBR	
⑳	Rod packing guide	Aluminum alloy	Hard anodized
㉑	Color	Aluminum alloy	Hard anodized
㉒	Cushion ring	Rolled steel	Electroless nickel plated
㉓	O-ring retainer	Aluminum alloy	Chromated
㉔	O-ring	NBR	
㉕	Cushion valve assembly	Steel wire	
㉖	Wearing	Resin	
㉗	Hexagon socket head cap screw	Chrome molybdenum steel	
㉘	Plastic magnet	Magnetic material	
㉙	Switch mounting nut	Rolled steel	
㉚	Switch spacer	Resin	
㉛	Plug	Brass	Electroless nickel plated
㉜	Rod packing	NBR	
㉝	Piston seal	NBR	

No.	Description	Material	Note
㉞	Piston seal	NBR	
㉟	Cushion seal	NBR	
㊱	O-ring	NBR	
㊲	O-ring	NBR	
㊳	O-ring	NBR	
㊴	Hexagon socket head cap screw	Stainless steel	
㊵	Hexagon socket head cap screw	Stainless steel	
㊶	Hexagon socket head cap screw	Stainless steel	
㊷	Hexagon socket head cap screw	Stainless steel	
㊸	Round head Phillips screw	Steel wire	Nickel plated
㊹	Round head Phillips screw	Steel wire	Zinc chromated
㊺	Hexagon socket head set screw	Steel wire	Electroless nickel plated
㊻	Compact hexagon nut	Stainless steel	
㊼	Hexagon nut with flange	Steel wire	Electroless nickel plated
㊽	Seal washer	Steel wire	
㊾	Steel ball	Steel wire	
㊿	R-shape snap ring	Steel wire	Zinc chromated
1	R-shape snap ring	Steel wire	Zinc chromated
2	R-shape snap ring	Steel wire	Zinc chromated
3	Bearing	Bearing steel	
4	Bearing	Bearing steel	
5	Shell type needle roller bearing	Bearing steel	
6	Thrust needle roller bearing	Bearing steel	
7	Bearing ring	Bearing steel	

Replacement Parts

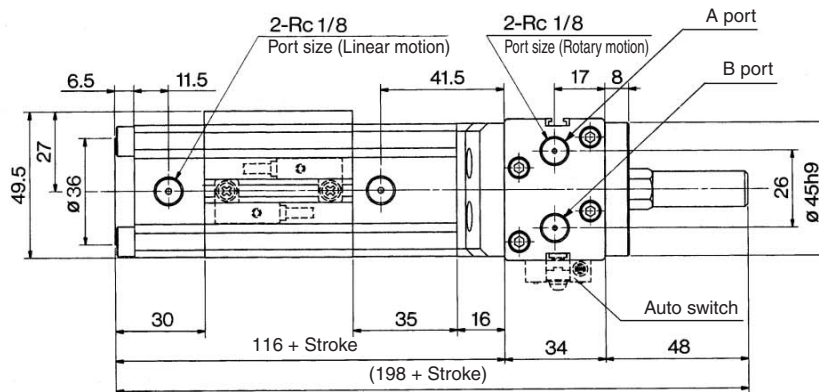
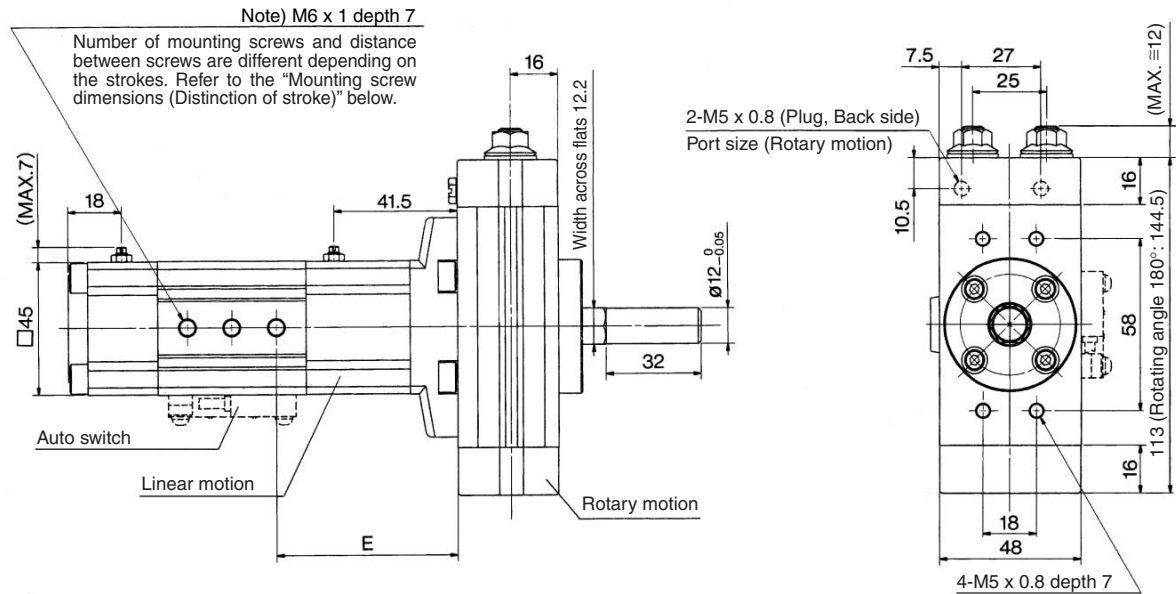
Description	Size	
	32	40
Spare parts assembly	P31701-1	P31702-1
	The parts of the above mentioned numbers ④, ⑧, ⑱, ㉖, ㉓, ㉔, ㉕, ㉖, ㉗, ㉘, ㉙, ㉚, ㉛, ㉜, ㉝	

Series MRQ

Size 32



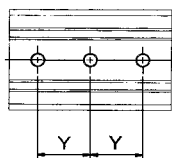
Basic Style: MRQBS32



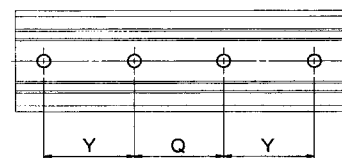
The dimension on the left shows an actuator with a rotation angle of 80° to 100° style with a stroke of 15 mm.

Mounting Screw Dimensions (Distinction of stroke)

Mounting screw 3 pcs.



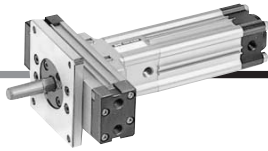
Mounting screw 4 pcs.



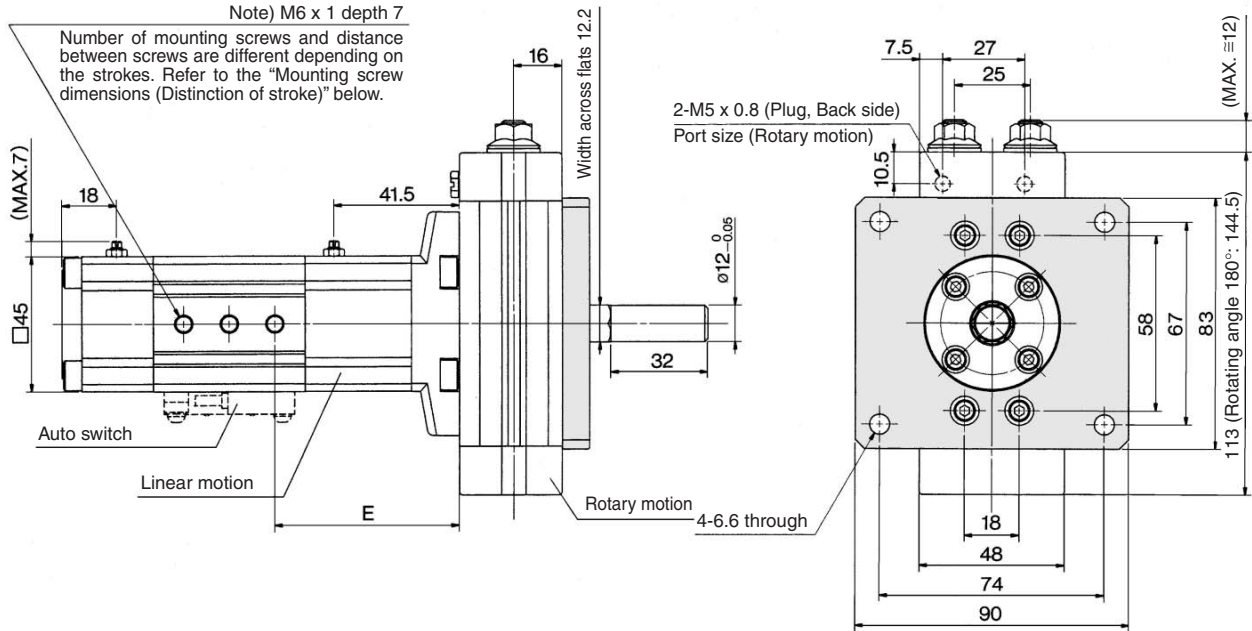
(mm)

(mm)

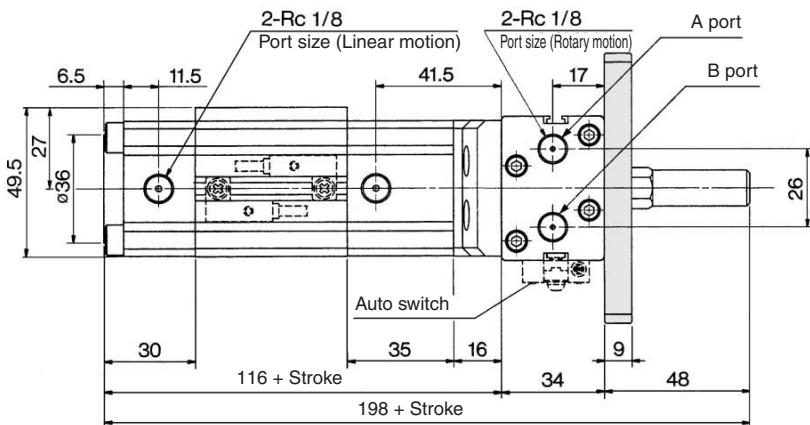
Stroke	5	10	15	20	25	30	40	50	75	100
Y	12.5	12.5	15	15	20	20	15	17.5	25	30
Q	—	—	—	—	—	—	20	20	20	30
E	58.5	61	61	63.5	61	63.5	63.5	66	71	73.5



Flange Style: MRQFS32



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



The dimension on the left shows an actuator with a rotation angle of 80° to 100° style with a stroke of 15 mm.

Mounting Screw Dimensions (Distinction of stroke)

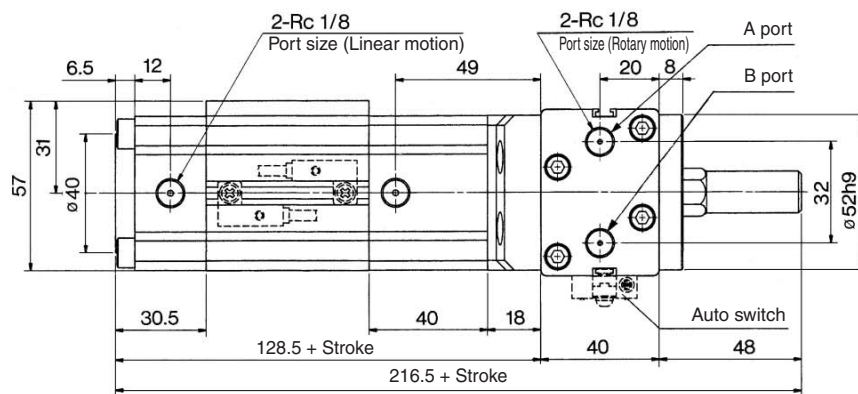
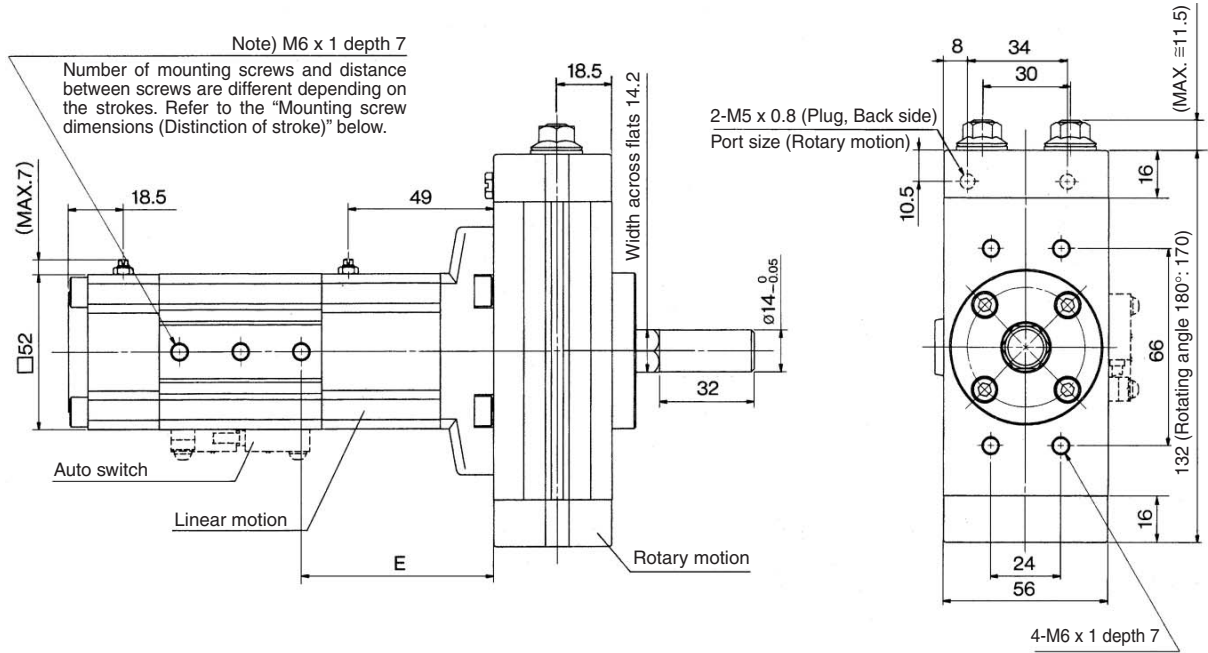
Stroke	Mounting screw 3 pcs.						Mounting screw 4 pcs.			
	Y	Y	Y	Y	Y	Y	Q	Y	Y	Y
5	12.5	12.5	15	15	20	20	15	17.5	25	30
10	—	—	—	—	—	—	20	20	20	30
15	58.5	61	61	63.5	61	63.5	63.5	66	71	73.5
20										
25										
30										
40										
50										
75										
100										

Series MRQ



Size 40

Basic Style: MRQBS40



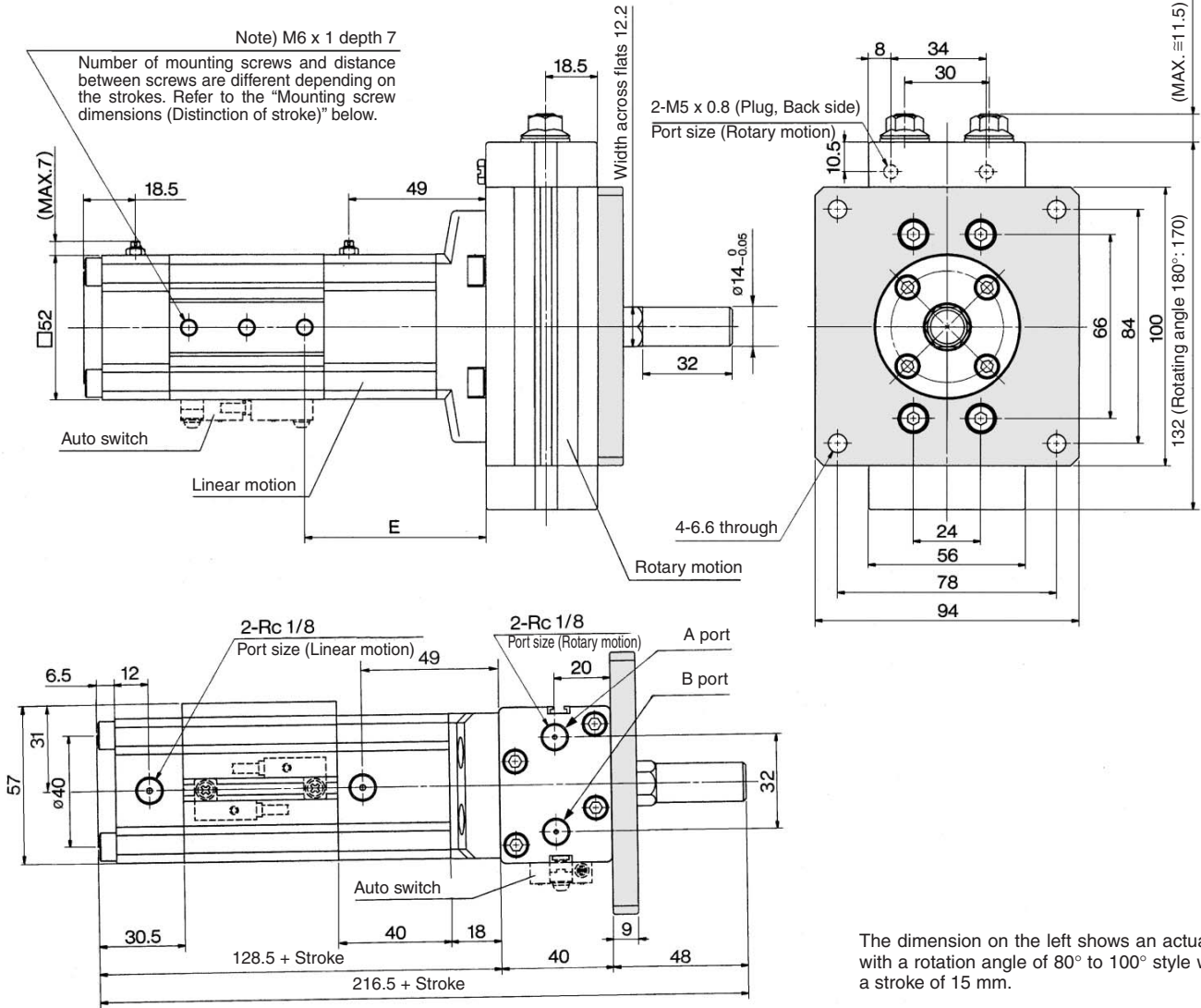
The dimension on the left shows an actuator with a rotation angle of 80° to 100° style with a stroke of 15 mm.

Mounting Screw Dimensions (Distinction of stroke)

Mounting screw 3 pcs.						Mounting screw 4 pcs.				
Stroke	5	10	15	20	25	30	40	50	75	100
Y	12.5	15	15	20	20	15	17.5	17.5	25	30
Q	—	—	—	—	—	20	20	20	20	30
E	68	68	70.5	68	70.5	68	70.5	75.5	80.5	83



Flange Style: MRQFS40



The dimension on the left shows an actuator with a rotation angle of 80° to 100° style with a stroke of 15 mm.

Mounting Screw Dimensions (Distinction of stroke)

Stroke	Mounting screw 3 pcs.					Mounting screw 4 pcs.				
	Y	Y	Y	Y	Y	Y	Q	Y	Y	Y
5	12.5	15	15	20	20	15	17.5	17.5	25	30
10	12.5	15	15	20	20	15	17.5	17.5	25	30
15	12.5	15	15	20	20	15	17.5	17.5	25	30
20	12.5	15	15	20	20	15	17.5	17.5	25	30
25	12.5	15	15	20	20	15	17.5	17.5	25	30
30	12.5	15	15	20	20	15	17.5	17.5	25	30
40	12.5	15	15	20	20	15	17.5	17.5	25	30
50	12.5	15	15	20	20	15	17.5	17.5	25	30
75	12.5	15	15	20	20	15	17.5	17.5	25	30
100	12.5	15	15	20	20	15	17.5	17.5	25	30

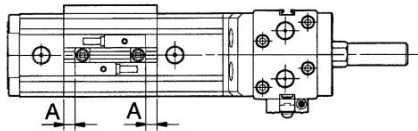
- CRB2
- CRBU2
- CRB1
- MSU
- CRJ
- CRA1
- CRQ2
- MSQ
- MRQ**
- D-
- 20-

Series MRQ With Auto Switch

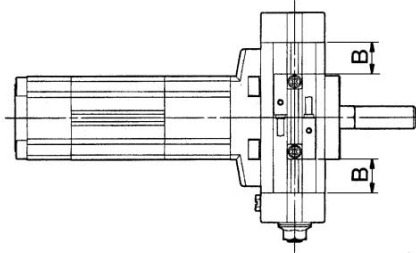


Operating Range/Hysteresis/Proper Mounting Positions of Auto Switch

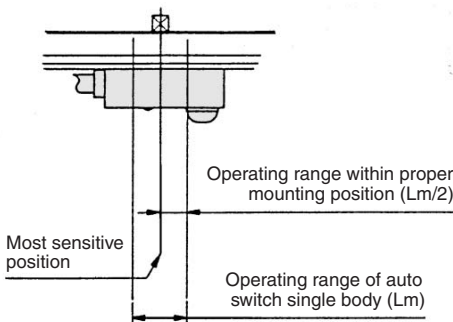
Linear motion parts



Rotary motion parts



Hysteresis



Operating angle θ_m : The value of the individual auto switch's movement range L_m converted into the shaft's rotation angle

Hysteresis angle : The value of the auto switch's hysteresis as represented by an angle

Linear motion parts		Size	D-A7/A8	D-F7□/F7□V/J79/J79C/F7□W/ F7□WV/J79W/F7BAL/F7BAVL	D-F79F
Linear motion parts	Operating range (mm)	32	12	6	8
		40	11		7
	Hysteresis (mm)	32	2	1	1
40					
Proper mounting position A (mm)	32	8.5(9)	9	9	
	40	11(11.5)	11.5	11.5	

Rotary motion parts		Size	Rotating angle	D-A7/A8	D-F7□/F7□V/J79/J79C/F7□W/ F7□WV/J79W/F7BAL/F7BAVL	D-F79F	
Rotary motion parts	Operating range (q m)	32	—	55	28	40	
		40		46	27	32	
	Hysteresis angle (Degree)	32		10	4	7	
		40		7	3	4	
	Proper mounting position B (mm)	32		80 to 100°	24.5 (25)	25	29
				170 to 190°	32 (32.5)	32.5	36.5
40		80 to 100°	31.5 (32)	32	36		
		170 to 190°	41 (41.5)	41.5	45.5		

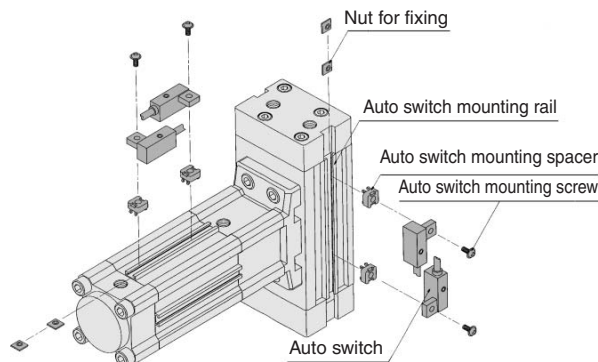
The values in (parentheses) are of D-A72, A7□H, A80H

Mounting and Moving Method of Auto Switch

Auto switch mounting bracket part no.

BQ-2

* Common for MRQ32 and 40

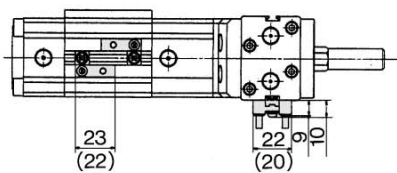


- Slide the auto switch mounting spacer and place it on the auto switch mounting position of the body. (At this time, verify that the auto switch mounting nut that is inserted in the auto switch mounting rail is placed simultaneously in the auto switch mounting position.)
- Engage the tongue portion of the auto switch mounting arm into the groove portion of the auto switch mounting spacer.
- Lightly screw the auto switch mounting screw into the auto switch mounting nut, via the hole in the auto switch mounting arm.
- After verifying the detection position, tighten the mounting screw to secure the auto switch in place. (The tightening torque of the M3 screw is approximately 0.5 N·m.)
- The detection position can be changed under the conditions described in step ③.

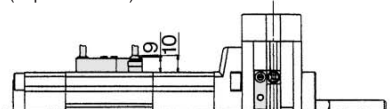
Auto Switch Mounting Dimensions

Reed switch

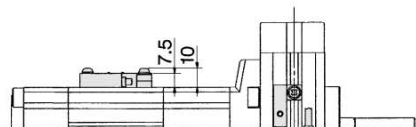
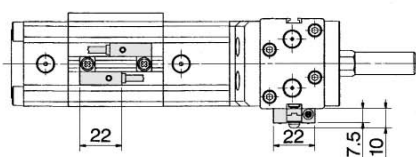
D-A7□/A80



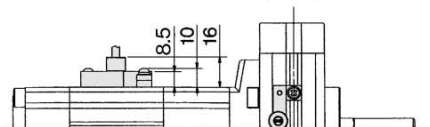
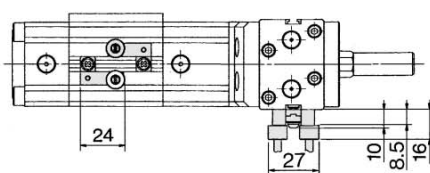
(In parentheses) are the dimensions of "A72".



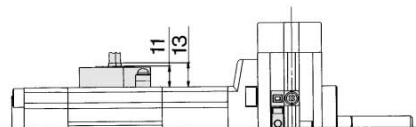
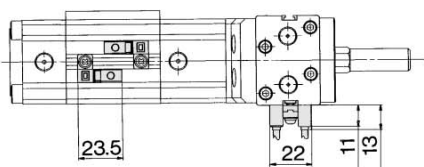
D-A7□H



D-A73C/A80C

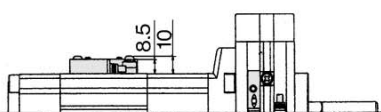
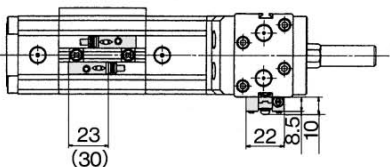


D-A79W

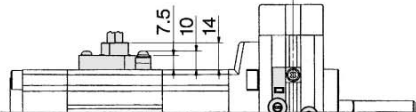
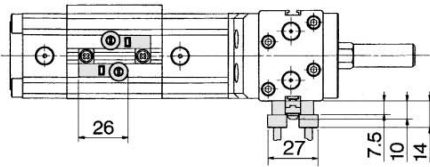


Solid state switch

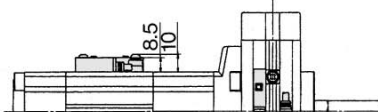
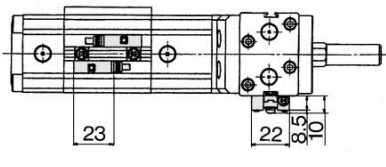
D-F7□/F7□F/F7BAL,
F7NTL/J79



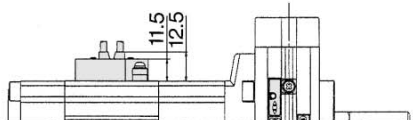
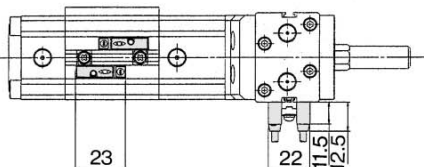
D-J79C



D-F7□W/J79W



D-F7□V



CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

20-

⚠ Caution

Be sure to read before handling.
Refer to pages 11-11-1 when using auto switches.