# **Rotary Table/Rack & Pinion Type MSQ** Series Size: 1, 2, 3, 7



### Applicable Auto Switches/Refer to pages 797 to 850 for detailed auto switch specification.

			۲.	Minin -	Load voltage			Auto swit	ch model	Lead v	vire le	ngth (i	m)*							
Туре	Special function	entry	Indica	(Output)	DC		AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	connector	Applica	ble load				
				2 wire (NDNI)				M9NV	M9N	٠	•	٠	0	0						
itch				3-WIE (INFIN)		EV 10V		F8N		۲	-	•	0	—	IC					
				2 wire (DND)		5 V, 12 V		M9PV	M9P	٠	•	•	0	0	circuit					
										3-wile (FINF)				F8P	-	٠	-	•	0	-
NS O											2 wire		12 V		M9BV	M9B	۲	•	•	0
auto		Crommot	Vaa	2-wire	24.14	12 V		F8B	-	٠	-	•	0	—		Relay,				
ate		on	res	3-wire (NPN) 3-wire (PNP)	24 V	5 V 12 V	_	M9NWV	M9NW	٠	•	•	0	0	IC	PLC				
dist	Diagnostic indication				5 V, 12 V	5 V, 12 V	5 0, 12 0	M9PWV	M9PW	٠	•	•	0	0	circuit —					
Soli	(2 00101 maleator)			2-wire		12 V		M9BWV	M9BW	٠	•	•	0	0						
						3-wire (NPN)		- 1 40.1		M9NAV**	M9NA**	0	0	•	0	0	IC			
	Water resistant (2-color indicator)			3-wire (PNP)		5 V, 12 V		M9PAV**	M9PA**	0	0	•	0	0	circuit					
	(2 #idiodioi)			2-wire		12 V		M9BAV**	M9BA**	0	0	٠	0	0	_					

\*\* Although it is possible to mount water resistant type auto switches, note that the rotary actuator itself is not of water resistant construction. \* Auto switches marked with "O" are made to order specification. \* Lead wire length symbols: 0.5 m ····· Nil (Example) M9NW

1 m ····· M (Example) M9NWM

\* Refer to pages 837 and 838 for the details of solid

3 m ..... L (Example) M9NWL

state auto switch with pre-wired connector. 5 m ······ Z (Example) M9NWZ Note 1) When using D-F8D, mount it at a distance of 10 mm or more from magnetic substances such as iron.

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

SMC



Basic type



High precision type

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	9	Rubber bumper								
Angle adjustment range		0 to 190°									
Maximum rotation		19	10°								
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	
2	0.0015	0.2 to 0.7
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.

### Weight

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

Note) Excluding the weight of auto switches

### **Clean Series**

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



### Specifications

Cleanliness class (ISO class)	Suction flow rate (example)								
Class 3 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 1) Please refer to "Pneumatic Clean Series (CAT.E02-23)" catalog for further details.

### Dimensions

Clean series products do not have a hollow axis.



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.

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D-🗆

CRA1

CRQ2 MSO

MSZ CRQ2X MSQX

MRQ

# MSQ Series

### **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 adjustment 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.)



### Construction



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MSQA□A (High precision type)

#### Component Parts

			<b>M4 1 1 1</b>	NUM	
No.	Descri	iption	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		
9	Adjustment bolt		Steel wire		
10	Cushion pad	Size: 3, 7	Rubber material		
11	Table		Aluminium alloy	Anodized	
12	Bearing retainer		Aluminium alloy	Anodized	
13	Magnet		—		
14	Wear ring		Resin		
15	Piston seal			NBR	
16	Deep groove ball bearing	3		Bearing steel	
17	Deep groove ball bearing	Basic type		Bearing steel	
17	Special bearing	High precisio	n type	Bearing steel	
	Round head Philips screw No.0	Basis turns	Size: 1 to 3		
18	Round head Philips screw	Basic type	Size: 7	Steel wire	
	Round head Philips screw	High precisio	n type		
19	Round head Philips scre	w No.0	Steel wire		
20	Hexagon socket head se	t bolt	Stainless steel		
21	Parallel pin		Carbon steel		
22	Seal washer			NBR	
23	Hexagon socket head se	t 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. \* The component parts cannot be shipped individually.

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CRB🗆2 CRB1 MSU

CRJ

CRA1 CRQ2

MSQ

MSZ

CRQ2X MSQX MRQ

# **MSQ** Series

### Dimensions/Size 1, 2, 3, 7





																						(11111)
Size	JJ	JK	JU	Р	Q	S	SD	SF	SU	UU	WA	WB	WC	WD	WE	WF	XA	ΧВ	XC	YA	YΒ	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