Compact Rotary Actuator
Rack & Pinion Style
Series CRQ2

How to Order

Without auto switch CRQ2B **S** **20** **90**

With auto switch CDRQ2B **S** **20** **90** **M9BW**

Built-in magnet

Shaft type

S	Single shaft
W	Double shaft

∗ Refer to pages 254 and 255 for the shaft type variations.

Pattern

Nil	Standard
P	Combination of simple specials and Made to Order

∗ Refer to pages 256 to 270 for details.

Size

10
15
20
30
40

Port type

Size	Port type	
10, 15	Nil	M5
20, 30, 40	Nil	Rc 1/8
	TF	G 1/8
	TN	NPT 1/8
	TT	NPTF 1/8

Rotating angle

90	80° to 100°
180	170° to 190°
360	350° to 370°

Suffix symbol

Symbol	Cushion	Size				
		10	15	20	30	40
Nil	Without cushion	—	—	●	●	●
	Rubber bumper	●	●	—	—	—
C	Air cushion	—	—	●	●	●

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Made to order
Refer to page 247 for details.

Applicable Auto Switches/Refer to pages 761 to 809 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)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V,12V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire		12V		M9BV	M9B	●	●	●	○	○	—	
	Diagnostic indication (2-color)			3-wire (NPN)		5V,12V		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○		
				2-wire		12V		M9BWV	M9BW	●	●	●	○	○	—	
	Water resistant (2-color)			3-wire (NPN)		5V,12V		M9NAV**	M9NA**	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PAV**	M9PA**	○	○	●	○	○		
				2-wire		12V		M9BAV**	M9BA**	○	○	●	○	○	—	
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	—	5V	—	A96V	A96	●	—	●	—	—	IC circuit	—
			No	2-wire	24V	12V	100V	A93V	A93	●	—	●	—	—	—	Relay, PLC
							100 V or less	A90V	A90	●	—	●	—	—	IC circuit	

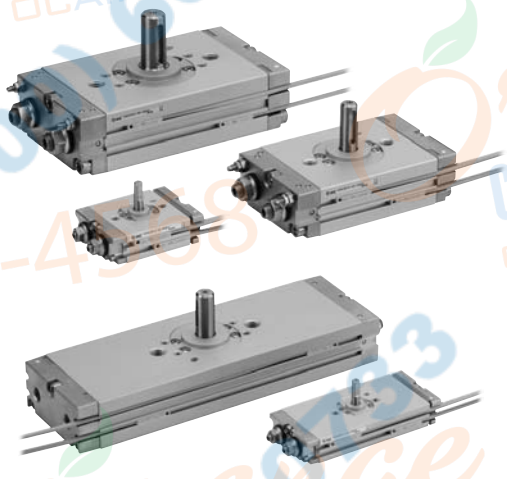
** Although it is possible to mount water resistant type auto switches, note that the rotary actuator itself is not of water resistant construction.

∗ 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

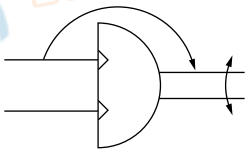
∗ Auto switches are shipped together, (but not assembled).

∗ Auto switches marked with "○" are made to order specification.

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



JIS Symbol



Made to Order

Made to order
Refer to pages 256 to 270 for details.

Symbol	Specifications/Content	Applicable shaft type
—	Shaft type variation	X, Y, Z, T, J, K
XA1 to XA24	Shaft pattern sequencing I	S, W
XA31 to XA59	Shaft pattern sequencing II	X, Y, Z, T, J, K
XC7	Reversed shaft	S, W, X, T, J
XC8 to XC11	Change of rotating range	S, W, Y X*, Z*, T*, J*, K*
XC12 to XC15	Change of angle adjustable range (0° to 100°)	
XC16, XC17	Change of angle adjustable range (90° to 190°)	
XC18, XC19	Change of rotating range	
XC20, XC21	Change of angle adjustable range (90° to 190°)	
XC22	Without inner rubber bumper	S, W, X, Y, Z, T, J, K
XC30	Fluorine grease	
XC69	Fluororubber seal	
X6	Shaft and parallel key made of stainless steel	

∗ Among the symbols XC8 to XC21, only XC12 and XC16 are compatible with shaft types X, Z, T, J and K.

Specifications

Size	10	15	20	30	40
Fluid	Air (Non-lube)				
Max. operating pressure	0.7 MPa		1.0 MPa		
Min. operating pressure	0.15 MPa		0.1 MPa		
Ambient and fluid temperature	0° to 60°C (No freezing)				
Cushion	Rubber bumper		Not attached, Air cushion		
Angle adjustment range	Rotation end ±5°				
Rotation	90°, 180°, 360°				
Port size	M5 x 0.8		Rc 1/8, G 1/8, NPT 1/8, NPTF 1/8		
Output (N·m)*	0.3	0.75	1.8	3.1	5.3

∗ Output under the operating pressure at 0.5 MPa. Refer to page 30 for further information.

Allowable Kinetic Energy and Rotation Time Adjustment Range

Size	Allowable kinetic energy				Stable operational rotation time adjustment range
	Allowable kinetic energy (J)			Cushion angle	
	Without cushion	Rubber bumper	With air cushion*		Rotation time (s/90°)
10	—	0.00025	—	—	0.2 to 0.7
15	—	0.00039	—	—	0.2 to 0.7
20	0.025	—	0.12	40°	0.2 to 1
30	0.048	—	0.25	40°	0.2 to 1
40	0.081	—	0.4	40°	0.2 to 1

∗ Allowable kinetic energy for the bumper equipped type
Maximum absorbed energy under proper adjustment of the cushion needles.

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, adjusting and during operation to avoid exceeding the allowable limit.

Mass

(g)

Size	Standard mass*		
	90°	180°	360°
10	120	150	200
15	220	270	380
20	600	700	1000
30	900	1100	1510
40	1400	1600	2280

∗ Excluding the mass of auto switch.

⚠ Precautions

Be sure to read before handling.
Refer to front matters 38 and 39 for Safety Instructions and pages 4 to 13 for Rotary Actuator and Auto Switch Precautions.

⚠ Caution

(1) The angle adjusting screw (angle adjustment bolt) is set at random within the adjustable rotating range. Therefore, it must be readjusted to obtain the angle that suits your application.