

# Rotary Actuator

# Series CRA1

Rack & Pinion Type/Size: 50, 63, 80, 100

RoHS



## How to Order

**CRA1 B S 50 - 90 Z -**

**With auto switch CDRA1 B S 50 - 90 Z - M9BW -**

**Built-in magnet**

**Mounting**

<b>B</b>	Basic type
<b>L</b>	Foot type*
<b>F</b>	Flange type

\* For foot bracket and part number, refer to page 2.  
\* Foot bracket is included in the same package, (but not assembled).

**Rotating angle**

<b>90</b>	90°
<b>180</b>	180°
<b>100</b>	100°
<b>190</b>	190°

**Air cushion**

—	None
<b>C</b>	With air cushion

**Port type**

Port type		50, 63	80	100
Size	Rc			
<b>TF</b>	G	1/8	1/4	3/8
<b>TN</b>	NPT			
<b>TT</b>	NPTF			

**Shaft type**

<b>S</b>	Single shaft
<b>W</b>	Double shaft
<b>X</b>	Single shaft with four chamfers
<b>Y</b>	Double shaft with key
<b>Z</b>	Double shaft with four chamfers
<b>T</b>	Single round shaft
<b>J</b>	Double shaft (round shaft, with four chamfers)
<b>K</b>	Double round shaft

\* Flange type is not available for T, J, K.  
\* T, J, K are made to order.

**Size**

<b>50</b>
<b>63</b>
<b>80</b>
<b>100</b>

**Number of auto switches**

—	2 pcs.
<b>S</b>	1 pc.

Note) Up to two auto switches are mountable.

**Auto switch**

—	Without auto switch (Built-in magnet)
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\* For applicable auto switch model, refer to the table below.

**Made to Order**  
Refer to page 2.

## Applicable Auto Switches/Refer to Auto Switch Guide for further information on auto switches.

Applicable Load Switch																	
Note: Refer to the Load Switch Guide 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-wired connector	Applicable load		
					DC		AC	Perpendicular	In-line	0.5 (—)	1 (M)	3 (L)	5 (Z)				
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
	Diagnosis indication (2-colour indication)			3-wire (PNP)		12 V		M9PV	M9P	●	●	●	○	○			
				2-wire		12 V		M9BV	M9B	●	●	●	○	○			
				3-wire (NPN)		5 V, 12 V		M9NWV	M9NW	●	●	●	○	○			
				3-wire (PNP)		12 V		M9PWV	M9PW	●	●	●	○	○			
	Water resistant (2-colour indication)			2-wire		12 V		M9BWV	M9BW	●	●	●	○	○			
				3-wire (NPN)	5 V, 12 V	M9NAV**		M9NA**	○	○	●	○	○				
				3-wire (PNP)	12 V	M9PAV**		M9PA**	○	○	●	○	○				
				2-wire	12 V	M9BAV**		M9BA**	○	○	●	○	○				
	Reed auto switch			—	Grommet	Yes		3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—		●
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..... — (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ

\* Auto switches marked with "○" are produced upon receipt of order.

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

**Made to Order** Refer to Auto Switch Guide for detailed solid state auto switches with pre-wired connectors.

## Specifications



Basic type



Flange type



Foot type

Type	Pneumatic			
Size	50	63	80	100
Fluid	Air (Non-lube)			
Max. operating pressure	1.0 MPa			
Min. operating pressure	0.1 MPa			
Ambient and fluid temperature	0 to 60°C (No freezing)			
Cushion	Not attached, Air cushion			
Backlash	Within 1°			
Tolerance in rotating angle	+4° 0			

## Effective Torque

Size	Operating pressure [MPa]										[N·m]
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
50	1.85	3.71	5.57	7.43	9.27	11.2	13.0	14.9	16.7	18.5	
63	3.44	6.88	10.4	13.8	17.2	20.6	24.0	27.5	31.0	34.4	
80	6.34	12.7	19.0	25.3	31.7	38.0	44.4	50.7	57.0	63.4	
100	14.9	29.7	44.6	59.4	74.3	89.1	104	119	133	149	



**Made to Order**  
(For details, refer to pages 11 to 23.)

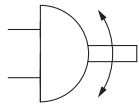
Symbol	Description	Applicable shaft type
XA1 to XA24	Shaft pattern sequencing I	S, W, Y
XA33 to XA59	Shaft pattern sequencing II	X, Z, T, J, K
XC7	Reversed shaft	S, W, X, T, J
XC8 to XC11	Change of rotation range	S, W, Y
XC30	Changed to fluorine grease	S, W, X, Y Z, T, J, K
XC31 to XC36	Change of rotation range and shaft rotation direction	S, W, Y
XC59 to XC61	Change of port location (Mounting location of the cover is changed.)	S, W, X, Y Z, T, J, K

## Allowable Kinetic Energy/Adjustable Range of Rotation Time Safe in Operation

Size	Allowable kinetic energy [J]		Adjustable range of rotation time safe in operation [s/90°]
	Without air cushion	With air cushion*	
50	0.05	0.98	0.2 to 2
63	0.12	1.50	0.2 to 3
80	0.16	2.00	0.2 to 4
100	0.54	2.90	0.2 to 5

\* Allowable kinetic energy of the product with air cushion is the maximum absorbed energy when the cushion valve adjustment is optimised.

## JIS Symbol



## Weights

Size	Standard weight		Additional weight			[kg]
	90°	180°	With auto switch*	Foot bracket	Flange bracket	
50	1.3	1.5	0.2	0.3	0.5	
63	2.2	2.6	0.4	0.5	0.9	
80	3.9	4.4	0.6	0.9	1.5	
100	7.3	8.3	0.9	1.2	2.0	

\* With 2 auto switches

## Foot Bracket/Part No.

Size	Foot bracket	Contents	Mounting screw size included in foot bracket
50	CRA1L50-Y-1Z	Foot bracket: 2 pcs. Mounting screw: 4 pcs. Collar: 4 pcs.	M8 x 1.25 x 35
63	CRA1L63-Y-1Z		M10 x 1.5 x 40
80	CRA1L80-Y-1Z		M12 x 1.75 x 50
100	CRA1L100-Y-1Z		M12 x 1.75 x 50

# Series CDRA1

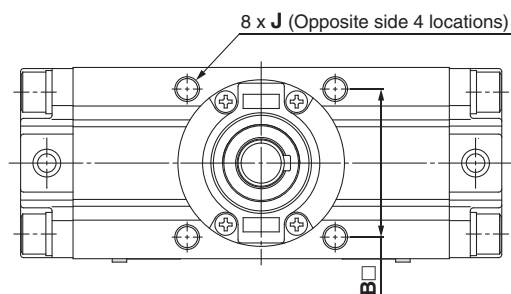
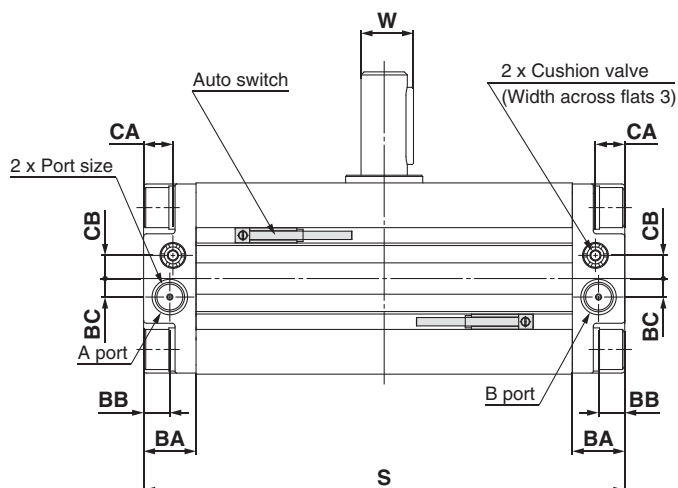
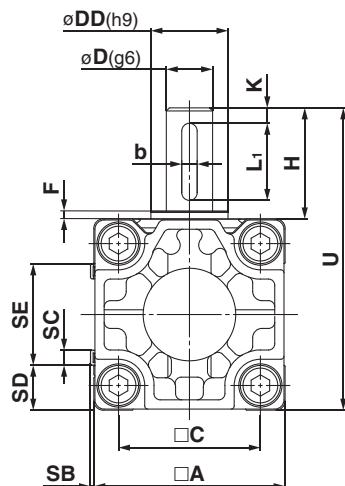
## Dimensions/Basic Type: C□RA1B□

Size: 50/63/80/100

Single shaft: C□RA1BS



### Single shaft



- The dimensions above show pressurisation to B port.
- Drawing shows the auto switch mounted on the port side.
- \* ( ) are the dimensions for rotation of 180° and 190°.

Model	Port size	A	B	C	D (g6)	DD (h9)	F	H	J	K	With auto switch					Without auto switch	U	W	BA	BB	BC	CA <sup>*</sup>	CB <sup>*</sup>	Key dimensions <small>(Note)</small>	
											S	SB	SC	SD	SE	S								b	L <sub>1</sub>
C□RA1BS50	1/8	62	48	46	15	25	2.5	36	M8 x 1.25 depth 8	5	156 (189)	1.5	5	14.5	33	144 (177)	98	17	17	8.5	6	9.5	7.5	5 <sup>0</sup> <sub>-0.030</sub>	25
C□RA1BS63	1/8	76	60	57	17	30	2.5	41	M10 x 1.5 depth 12	5	175 (213.5)	1.5	5	21.5	33	163 (201.5)	117	19.5	20	10	7	11	8	6 <sup>0</sup> <sub>-0.030</sub>	30
C□RA1BS80	1/4	92	72	70	20	35	3	50	M12 x 1.75 depth 13	5	199 (243)	1.5	5	29.5	33	186 (230)	142	22.5	23.5	12	8	13	9	6 <sup>0</sup> <sub>-0.030</sub>	40
C□RA1BS100	3/8	112	85	85	25	40	4	60	M12 x 1.75 depth 14	5	259 (325)	1.5	5	39.5	33	245 (311)	172	28	25	12.5	8	14	10	8 <sup>0</sup> <sub>-0.036</sub>	45

Note) A parallel key is included in the same package, (but not assembled).

\* For model with air cushion