

# Rotary Actuator

# CRA1 Series

RoHS

Rack & Pinion Type/Size: 30, 50, 63, 80, 100

## 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> (Note)	Flange type

\* For foot bracket and part number, refer to page 189.  
\* Foot bracket is included in the same package, (but not assembled).  
Note) Except size 30

**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.

**Type**

<b>Nil</b>	Pneumatic
<b>H*</b>	Air-hydro

\* Except size 30. Refer to page 232 for handling precautions.

**Size**

<b>30</b>
<b>50</b>
<b>63</b>
<b>80</b>
<b>100</b>

**Air cushion**

<b>Nil</b>	None
<b>C*</b>	With air cushion

\* Except air-hydro type

**Rotating angle**

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

\* Except size 30

**Number of auto switches**

<b>Nil</b>	2 pcs.
<b>S</b>	1 pc.

\* Up to two auto switches are mountable.

**Auto switch**

<b>Nil</b>	Without auto switch (Built-in magnet)
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\* For applicable auto switch model, refer to the table below.

**Port type**

Size	30	50	63	80	100
<b>Nil</b>	M thread	M5	—	—	—
<b>TF</b>	Rc	—	—	—	—
<b>TN</b>	G	—	1/8	1/8	1/4
<b>TT</b>	NPT	—	—	—	3/8
	NPTF	—	—	—	—

**Made to Order**  
Refer to page 189.

## Applicable Auto Switches/Refer to pages 797 to 850 for further information on auto switches.

Appendix 4: Auto switches (continued)																
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 auto switch	Diagnosis indication (2-color indicator)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○			
				2-wire				M9BV	M9B	●	●	●	○			
				3-wire (NPN)				M9NVW	M9NW	●	●	●	○			
	Water resistant (2-color indicator)			3-wire (PNP)	M9PWV	M9PW		●	●	●	○	—	IC circuit			
				2-wire	M9BWV	M9BW		●	●	●	○					
				3-wire (NPN)	M9NAV <sup>*1</sup>	M9NA <sup>*1</sup>		○	○	●	○					
				3-wire (PNP)	M9PAV <sup>*1</sup>	M9PA <sup>*1</sup>		○	○	●	○					
		2-wire	M9BAV <sup>*1</sup>	M9BA <sup>*1</sup>	○	○	●	○								
		2-wire	M9BAV <sup>*1</sup>	M9BA <sup>*1</sup>	○	○	●	○								
Real auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
				2-wire				A93V <sup>*2</sup>	A93	●	●	●	—			
Real auto switch	—	Grommet	No	2-wire	24 V	12 V	100 V or less	A90V	A90	●	—	●	—	—	IC circuit	Relay, PLC
				2-wire				A90V	A90	●	—	●	—			

\*1 Although it is possible to mount water resistant type auto switches, note that the rotary actuator itself is not of water resistant construction.

\*2 1 m type lead wire is only applicable to D-A93.

\* 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 produced upon receipt of order.

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

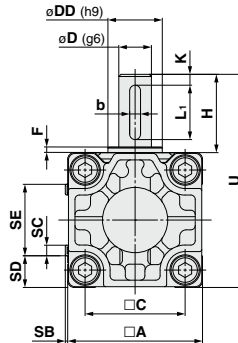
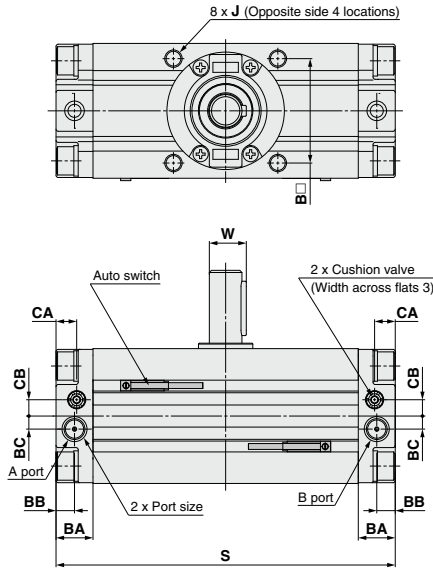
\* Refer to pages 837 and 838 for detailed solid state auto switches with pre-wired connectors.



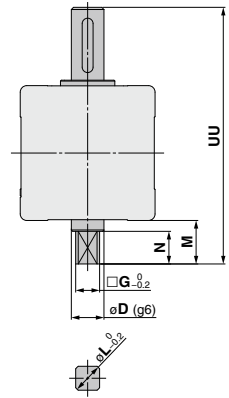
## Dimensions/Basic Type: C□RA1BS

Size: 50/63/80/100

Single shaft: C□RA1BS



## Double shaft: C□RA1BW



øD is the shaft dimension.

Note) Other dimensions are the same as the single shaft type.

Size	D (g6)	G	M	N	UU	L
50	15	11	20	15	118	14
63	17	13	22	17	139	16
80	20	15	25	20	167	19
100	25	19	30	25	202	24

- Drawing shows the appearance for rotation of 90° and 100°.
- Dimensions show pressurization to B port.
- Drawing shows the auto switch mounted on the port side.
- \* ( ) are the dimensions for rotation of 180° and 190°.

( ) are the dimensions for rotation of 180° and 190°. [mm]

Size	Note 1) 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	★ CB	Key dimensions Note 2)	
											S	SB	SC	SD	SE	S								b	L1
50	Rc1/8	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 <sub>-0.030</sub> <sup>0</sup>	25
63	Rc1/8	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 <sub>-0.030</sub> <sup>0</sup>	30
80	Rc1/4	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 <sub>-0.030</sub> <sup>0</sup>	40
100	Rc3/8	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 <sub>-0.036</sub> <sup>0</sup>	45

Note 1) In addition to Rc, G, NPT and NPTF are also available.

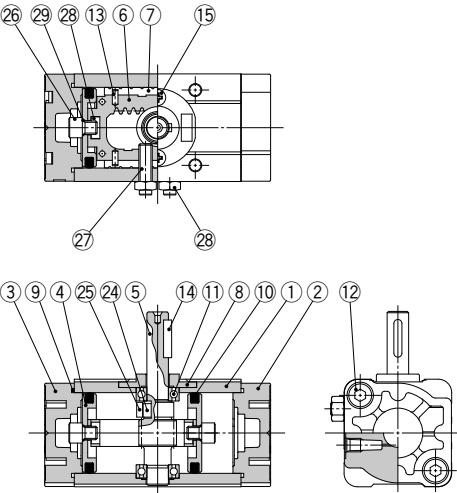
Note 2) A parallel key is included in the same package, (but not assembled).

★ For model with air cushion

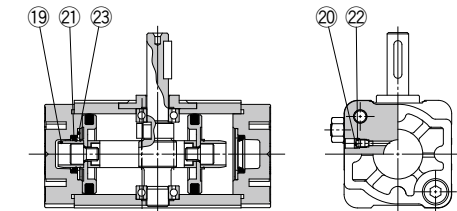
# CRA1 Series

## Construction: Size 30

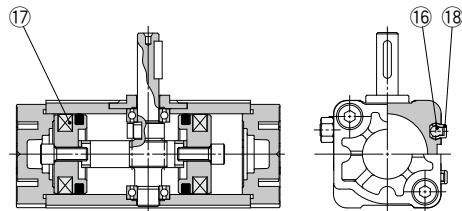
### Without air cushion



### With air cushion



### Without air cushion With auto switch



### Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Right cover	Aluminum alloy	Metallic coating
3	Left cover	Aluminum alloy	Metallic coating
4	Piston	Aluminum alloy	
5	Shaft	Alloy steel	
6	Rack	Carbon steel	Nitrided
7	Slider	Resin	
8	Bearing retainer	Zinc alloy	Chromated
9	Tube gasket	NBR	
10	Piston seal	NBR	
11	Bearing	High carbon chrome bearing steel	
12	Hexagon socket head cap screw with washer	Alloy steel	Zinc chromated
13	Spring pin	Steel	Zinc chromated
14	Parallel key	Carbon steel	
15	Cross-recessed pan head tapping screw	Steel	Zinc chromated
16	Auto switch	—	
17	Magnet	—	
18	Switch spacer	Resin	
19	Cushion ring	Aluminum alloy	Anodized
20	Cushion valve	Steel	Nickel plated
21	Cushion seal	Urethane	
22	O-ring	NBR	

No.	Description	Material	Note
23	Seal retainer	Steel	
24	Parallel key	Carbon steel	
25	Stopper	Alloy steel	
26	Piston holding bolt	Alloy steel	Zinc chromated
27	Hexagon socket head set screw	Alloy steel	Zinc chromated
28	Hexagon nut	Steel	Zinc chromated
29	O-ring	NBR	

### Replacement Parts

Size	Part no.		
	Without air cushion	With air cushion	Air-hydro
Note 2) 90°	P694010-20	P694010-22	—
30 180°	P694010-21	P694010-23	—
Corresponding parts	⑦, ⑨, ⑩, ⑬ are included as a set.		

Note 1) When ordering replacement parts, write "1" for one set of the parts per actuator.  
Note 2) Replacement parts for different rotation angles are set.  
A grease pack (10 g) is included.  
If an additional grease pack is needed, order with the following part number.  
**Grease pack part number: GR-S-010 (10 g)**