

Rotary Actuator

Series *CRB1*

Vane Style/Size: 10, 15, 20, 30

Variations/Size: 10, 15, 20, 30

	Fluid		Air												Page		
	Size		10				15				20, 30						
	Vane style		Single vane (S)		Double vane (D)		Single vane (S)		Double vane (D)		Single vane (S)		Double vane (D)				
	Port location		Body side (-)		Body axis direction (E)		Body side		Axial direction		Body side		Axial direction				
Standard	Angle of rotation	90°		●	●	●	●	●	●	●	●	●	●	●	1.1-3 to 1.1-19		
		100°		●	●	●	●	●	●	●	●	●	●	●			
		180°		●	●	●	●	●	●	●	●	●	●	●		●	
		270°		●	●	●	●	●	●	●	●	●	●	●		●	
	Shaft	Double shaft W		●	●	●	●	●	●	●	●	●	●	●		●	
	Cushion	Rubber bumper		●	●	●	●	●	●	●	●	●	●	●		●	
	Variations	Basic		●	●	●	●	●	●	●	●	●	●	●		●	
		With auto switch		●	●	●	●	●	●	●	●	●	●	●		●	●
		With angle adjuster		●	●	●	●	●	●	●	●	●	●	●		●	●
		With auto switch and angle adjuster		●	●	●	●	●	●	●	●	●	●	●		●	●
Clean specification		10-		●	●	●	●	●	●	●	●	●	●	●	●		
	Copper free	20-		●	●	●	●	●	●	●	●	●	●	●			
Option	Mounting bracket	With flange bracket F		●	●	●	●	●	●	●	●	●	●	●			
Made to Order	Shaft	Double shaft	Long shaft without one chamfering and short shaft with one chamfer J		●	●	●	●	●	●	●	●	●	●	1.1-20 to 1.1-28		
			Double long shaft, same size, both one chamfer Y		●	●	●	●	●	●	●	●	●	●		●	
			Double round shaft K		●	●	●	●	●	●	●	●	●	●		●	●
	Single shaft	One chamfer S	One chamfer S		●	●	●	●	●	●	●	●	●	●		●	
			Single round shaft T		●	●	●	●	●	●	●	●	●	●		●	●
			Shaft patterns		●	●	●	●	●	●	●	●	●	●		●	●
Pattern	Rotation angle patterns		●	●	●	●	●	●	●	●	●	●	●	●			

Rotary Actuator Vane Style

Series CRB1/Size: 10, 15, 20, 30

Rotation angles: 90°, 180°, 270° Up to 270° is possible for the entire series

Through the adoption of specially designed seals and stoppers, a swing angle of 270° has been achieved for the first time in a compact vane style actuator.
(Single vane style)

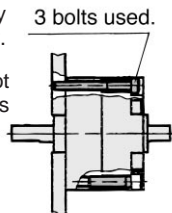
Low pressure operation made possible

The special sealing construction that has been adopted in the body supports a wide operating pressure range and enables the entire series to be used at low pressures.
Min. operating pressure
Size 10 : 0.2MPa
Size 15 to 30: 0.15MPa

Direct mount applications possible

The rotary actuator body can be mounted directly.

*Direct mounting is not possible with unit sizes 10 to 30.



Port positions: body side and axial direction

The positions can be selected for ease of use. (Those that are equipped with various styles of units can only be connected to the body side.)

(On the body side)



(In the axial direction)



(Fittings are sold separately.)

Block-built (units) adopted

Various styles of units that can be housed within the body's outside diameter can easily be retrofitted to the rotary actuator units of the entire series.

Stainless steel shafts and bolts

(Carbon steel for size 30 and double-vane)



High reliability

To support thrust and radial loads, bearings are used throughout the series. In addition, rubber bumpers are used internally (except size 10) to further improve reliability.

Double vane style standard: 90°, 100°

The outside diameter is identical to the single vane construction (except size 10); however, due to the double vane construction, twice the torque of the single vane style can be obtained.

Unrestricted auto switch mounting positions

Because the switch can be moved anywhere along the circumference, it can be mounted in a position that is most appropriate for the application.



CRB1

CRBU

CRA1

CRQ

MRQ

MSQ

MSUB

Basic + Switch unit



Basic + Angle adjusting unit



Basic + Angle adjusting unit + Switch unit



Rotary Actuator

Series *CRB1*

Vane Style/Size: 10, 15, 20, 30

How to Order

Standard

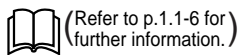


CRB1 **B** **W** **10** — **180** **S** **E**

Mounting

B	Basic
F*	Flange

*Option



Shaft style

W	Double shaft, one chamfer (Standard)
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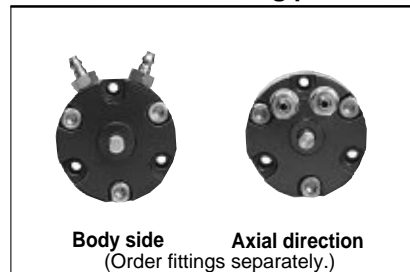
Size

10
15
20
30

Location of connecting port

—	Body side
E	Axial direction

Location of connecting port



Vane style

S	Single vane
D	Double vane

Rotation angle

Application	Symbol	Rotation angle
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Flange Brackets Part No.



(Refer to p.1.1-6 for further information on specifications.)

Model	Ass'y part No.
CRB1FW10	P211070-2
CRB1FW15	P211090-2
CRB1FW20	P211060-2
CRB1FW30	P211080-2

Rotary Actuator/Vane Style Series **CRB1**

Lightweight (single vane 180°)

Size 10...ø29 X 15t (Body part), 26g

Size 20... ø42 X 29t (Body part), 105g

Rotation angle of 270° achieved High reliability

(Bearings are used for supporting the shaft.)

Shaft and bolts made of stainless steel

(Carbon steel for size 30 and the double vane style)

Body can be used as a flange

(Bolts used: sizes 10, 15: M2.5; size 20: M3; size 30: M4)

Two styles of port positions: body side and axial direction

Angle adjustment unit can be mounted

A style that can be housed within the body's outside diameter can perform angle adjustments of 0° to 240°.

(CRB1BW10: 0° to 230°)



Size 15

Single vane



Size 20



Size 10

Double vane

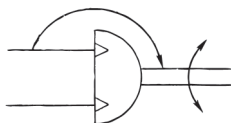


Size 15



P.1.1-20 to 1.2-28

JIS symbol



Single Vane Specifications

Model (Size)	CRB1BW10-□S	CRB1BW15-□S	CRB1BW20-□S	CRB1BW30-□S
Vane style	Single vane			
Rotation angle	90°, 180°, 270°	90°, 180°, 270°	90°, 180°, 270°	
Fluid	Air (Non-lube)			
Proof pressure (MPa)	1.05			1.5
Ambient and fluid temperature	5 to 60°C			
Max. operating press. (MPa)	0.7			1.0
Min. operating press. (MPa)	0.2	0.15		
Speed range ⁽¹⁾ (sec/90°)	0.03 to 0.3			0.04 to 0.3
Allowable kinetic energy ⁽²⁾ (J)	0.00015	0.001	0.003	0.02
(N)		0.00025	0.0004	0.015
Shaft load	15	15	25	30
(N)	10	10	20	25
Bearing	Ball bearing			
Port position	On the body side or in the axial direction			
Size	Body side	M5 X 0.8	M3 X 0.5	M5 X 0.8
	Axial direction	M3 X 0.5		M5 X 0.8
Shaft	Double shaft (One flat chamfering on each shaft)			
Angle adjustable range of the unit	0 to 230°		0 to 240°	
Mounting	Basic, Flange			
Auto switch	Mountable (Port: Only on the body side)			



Note 1) Make sure to operate within the adjustable speed range.

Exceeding the speed control upper limit (0.3 sec/90°) speed control could cause the unit to stick or not operate.

Note 2) In the chart, the upper section indicates the energy factor when the rubber bumper is used (at the end of the rotation); the lower section indicates the energy value when the rubber bumper is not used.

Double Vane Specifications

Model (Size)	CRB1BW10-□D	CRB1BW15-□D	CRB1BW20-□D	CRB1BW30-□D
Vane style	Double vane			
Rotation angle	90°, 100°			
Fluid	Air (Non-lube)			
Proof press (MPa)	1.05			1.5
Ambient and fluid temperature	5 to 60°C			
Max. operating press. (MPa)	0.7			1.0
Min. operating press. (MPa)	0.2	0.15		
Speed range ⁽¹⁾ (sec/90°)	0.03 to 0.3			0.04 to 0.3
Allowable kinetic energy (J)	0.0003	0.0012	0.0033	0.02
Shaft load	15	15	25	30
(N)	10	10	20	25
Bearing	Bearing			
Port position	On the body side or in the axial direction			
Port size (Body side, Axial direction)	M3 X 0.5		M5 X 0.8	
Shaft	Double shaft (One flat chamfering on each shaft)			
Mounting	Basic, Flange			
Auto switch	Mountable (Port: Only on the body side)			



Note 1) Make sure to operate within the adjustable speed range.

Exceeding the speed control upper limit (0.3 sec/90°) could cause the unit to stick or not operate.

Inner Volume

(cm³)

Vane style	Single vane												Double vane							
	CRB1BW10-□S			CRB1BW15-□S			CRB1BW20-□S			CRB1BW30-□S			CRB1BW10-□D		CRB1BW15-□D		CRB1BW20-□D		CRB1BW30-□D	
Rotation angle	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	100°	90°	100°	90°	100°	90°	100°
Inner volume	1 (0.6)	1.2	1.5	1.5 (1.0)	2.9	3.7	4.8 (3.6)	6.1	7.9	11.3 (8.5)	15	20.2	1.0	1.1	2.6	2.7	5.6	5.7	14.4	14.5

*The values in () indicate the internal volume of the air supply side at the time port A is pressurized.

Weights

(g)

Vane style	Single vane												Double vane							
	CRB1BW10-□S			CRB1BW15-□S			CRB1BW20-□S			CRB1BW30-□S			CRB1BW10-□D		CRB1BW15-□D		CRB1BW20-□D		CRB1BW30-□D	
Rotation angle	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	100°	90°	100°	90°	100°	90°	100°
Body of rotary actuator	26.3	26.0	25.7	50	49	48	106	105	103	203	198	193	42	43	57	60	121	144	223	243
Flange bracket ass'y	9			10			19			25			9		10		19		25	
Auto switch unit + 2 switches	30			30			50			60			30		30		50		60	
Angle adjusting unit	30			47			90			150			30		47		90		150	

⚠️ Precautions

Be sure to read before handling.
 Refer to p.0-20 and 0-21 for Safety Instructions and common precautions for the products mentioned in this catalog, and refer to p.1.0-2 to 1.0-4 for precautions on every series.

Units Equipped with Angle Adjustment

⚠️ Caution

① If the rotary actuator body is used for a 90° or 180° application, the maximum angle will be limited by the rotation angle of the rotary actuator body. Make sure to take this into consideration when ordering equipment.

If the rotary actuator body is used for a 90° or 180° application, making an angle adjustment at the maximum angle of 90° or 180°, respectively, is not feasible because the rotation angle of the rotary actuator body is $90^{\circ+4^{\circ}}_0$ (or $180^{\circ+4^{\circ}}_0$), respectively.

Therefore, in the case of the single vane type, use a rotary actuator body for 270°, and in the case of the double vane type, use a rotary actuator body for 100°. Furthermore, the "90°" and "180°" designations of the rotary actuator bodies are approximate; they should be used for angle adjustments within 85° and 175°, respectively.

② All of the connecting port positions are on the body side.

③ The allowable kinetic energy is the same as that of the rotary actuator unit specifications.

Copper Free

20 – CRB1BW **Size** — **Rotation** **Vane style** **Port position**

↓
Copper free

The entire standard series of the vane rotary actuators does not affect color CRTs due to copper ions or fluororesins.

Specification

Vane style	Single, Double			
Size	10	15	20	30
Operating press. range	0.2 to 0.7 MPa	0.15 to 0.7MPa		0.15 to 1.0MPa
Speed adjust. range	0.03 to 0.3s/90°		0.04 to 0.3s/90°	
Port position	On the body side or in the axial direction			
Piping	Screw-in piping			
Mounting style	Basic only			
Variations	Basic style, With auto switch, With angle adjuster			

Clean Series

10 – CRB1BW **Size** — **Rotation** **Vane style** **Port position**

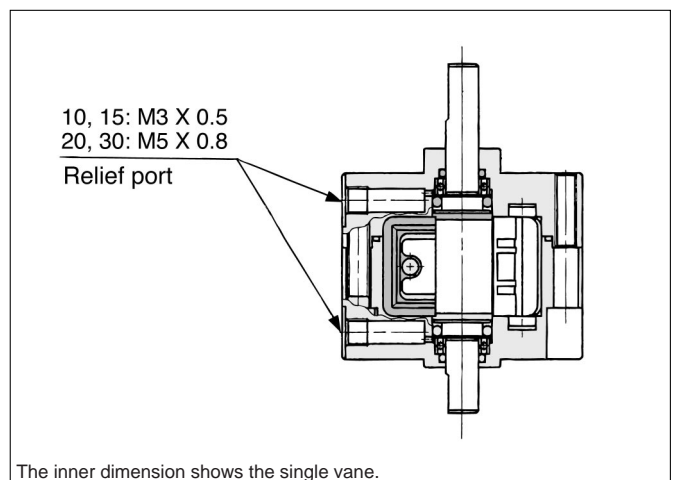
↓
Clean series

This type can be used in a class 100 clean room due to the dual seal construction in the actuator shaft area and the ability to vent directly outside of the clean room through its relief port.

Specification

Vane style	Single	Single, Double		
Size	10	15	20	30
Operating press. range	0.2 to 0.7 MPa	0.15 to 0.7MPa		0.15 to 1.0MPa
Speed range	0.03 to 0.3s/90°		0.04 to 0.3s/90°	
Port position	On the body side or in the axial direction			
Piping	Screw-in piping			
Relief port	M3 X 0.5		M5 X 0.8	
Mounting style	Basic only			
Variations	Basic style, With auto switch			

Construction



Rotary Actuator/Vane Style Series **CRB1**

Option Specifications/Flange Brackets/Size: 10, 15, 20, 30



Basic style	Model			Flange ass'y part No.
	With auto switch	With angle adjuster	With angle adjuster and auto switch	
CRB1FW10	CDRB1FW10	CRB1FWU10	CDRB1FWU10	P211070-2
CRB1FW15	CDRB1FW15	CRB1FWU15	CDRB1FWU15	P211090-2
CRB1FW20	CDRB1FW20	CRB1FWU20	CDRB1FWU20	P211060-2
CRB1FW30	CDRB1FW30	CRB1FWU30	CDRB1FWU30	P211080-2



Notes) No flange metal fittings (with Phillips screw) are mounted when assembled in a factory. The mounting location of flange metal fittings onto the body of rotary actuator can be adjusted at 60-degree intervals.



Basic (Side port) CRB1FW **Size** **Angle**S SCR**B** **Size**, #11 (#1+#11)
 Basic (Axial direction port) CRB1FW **Size** **Angle**SE SCR**B** **Size**, #12 (#3+#12)
 W/ angle adjuster CRB1FWU **Size** **Angle**S SCR**B** **Size**, #13 (#5+#13)
 W/ auto switch CDRB1FW **Size** **Angle**S SCR**B** **Size**, #14 (#7+#14)
 W/ angle adjuster and auto switch CDRB1FWU **Size** **Angle**S SCR**B** **Size**, #15 (#9+#15)

CRB1

CRBU

CRA1

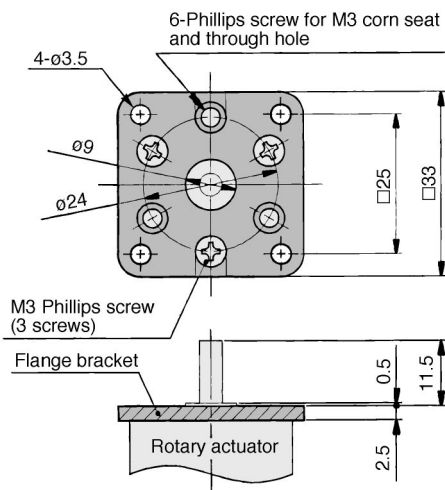
CRQ

MRQ

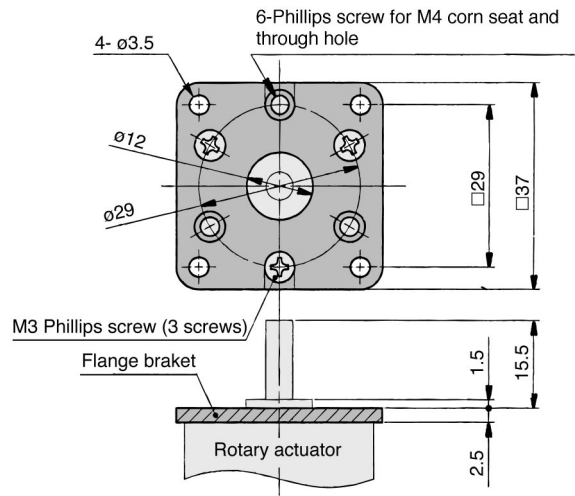
MSQ

MSUB

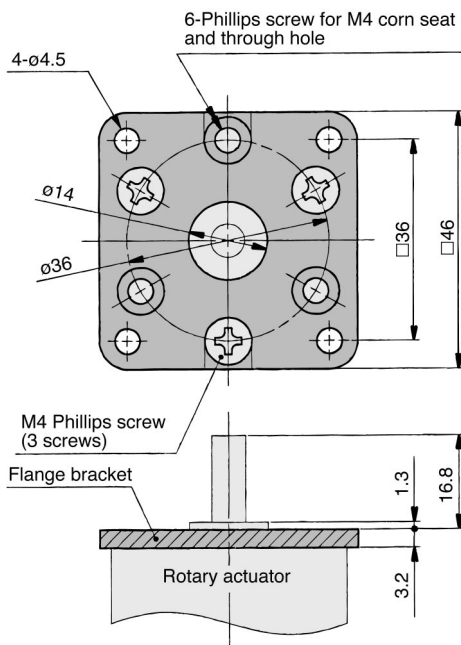
Ass'y Part Number: P211070-2 (For C□RB1FW□10)



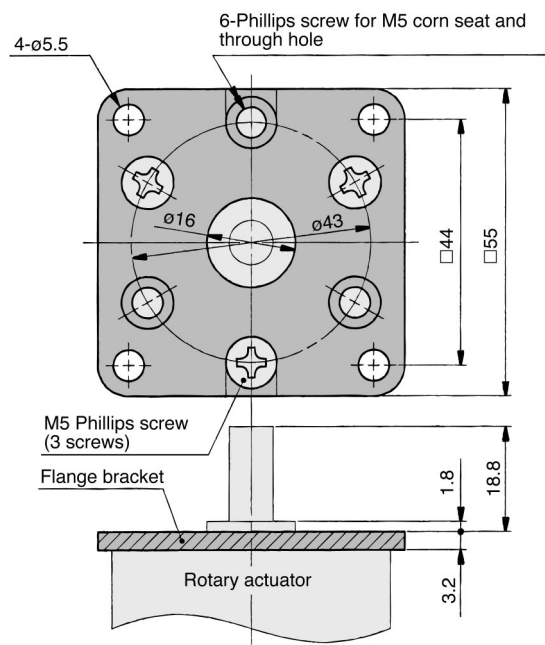
Ass'y Part Number: P211090-2 (For C□RB1FW□15)



Ass'y Part Number: P211060-2 (For C□RB1FW□20)



Ass'y Part Number: P211080-2 (For C□RB1FW□30)

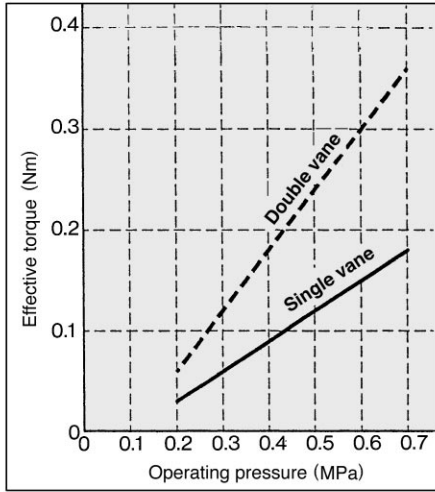


Series CRB1

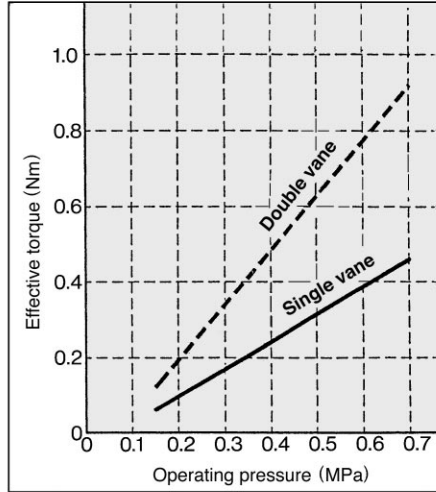
Effective Output

Direct Mounting of Body

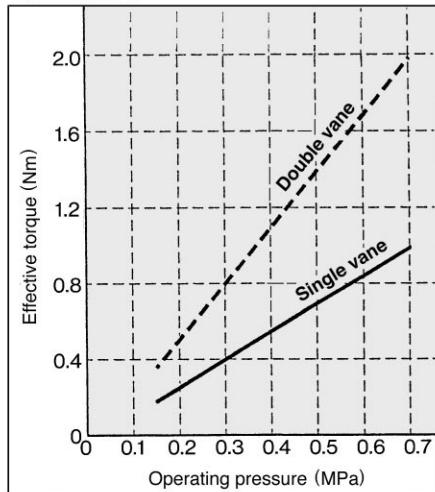
CRB1BW10



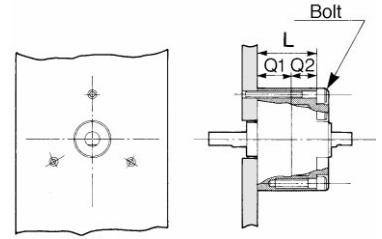
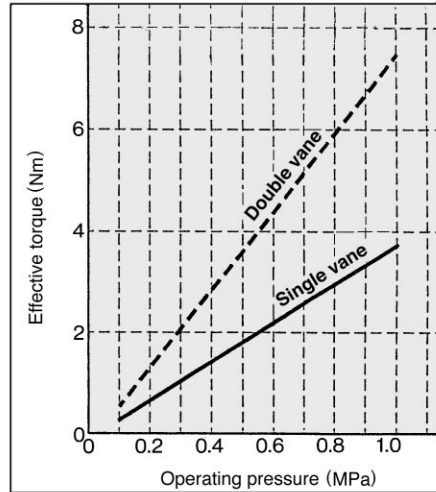
CRB1BW15



CRB1BW20



CRB1BW30



L dimensions of the body are shown below. If hexagonal head cap screws as accordance of JIS standard are used, the head part of the bolt can be fit in the groove on the actuators.

Model	L	Bolt
CRB1BW10	11.5*	M2.5
CRB1BW15	16	M2.5
CRB1BW20	24.5	M3
CRB1BW30	34.5	M4

*Only the ones of size 10 have different types of vanes between single vane and double vane. Length (L) for double vane is 20.5.

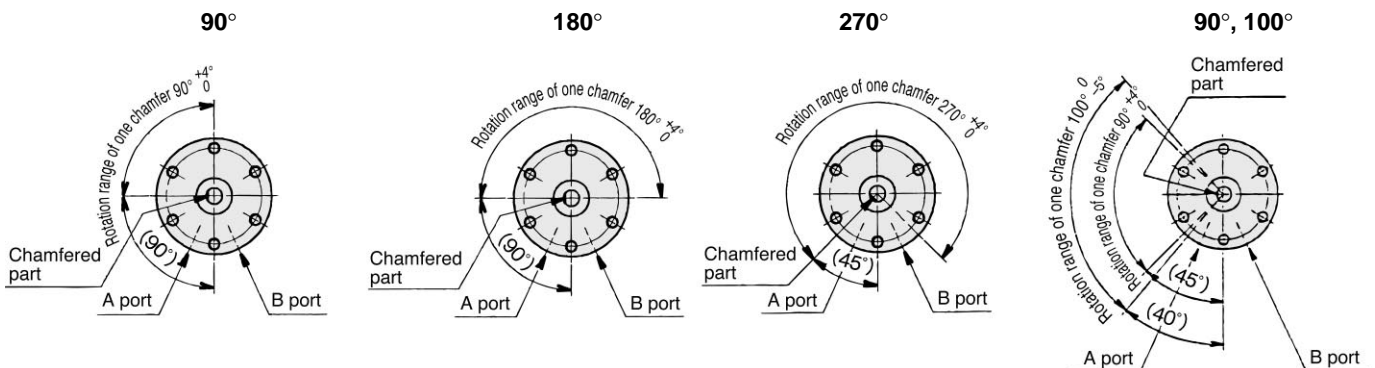
*Refer to p.1.1-9, and 1.1-10 for dimensions of Q1 and Q2.

Rotation Range/From long shaft side.

(The chamfering locations shown below indicate the states when pressurized from B port.)

Single Vane

Double Vane



Note) For single and double vane styles: The cross angle rotation of 90°, 180°, and 270° will be $+5^{\circ}_0$ only for size 10.

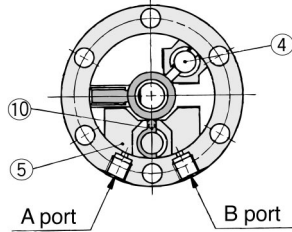
Rotary Actuator/Vane Style Series **CRB1**

Construction/Size: **10, 15, 20, 30**

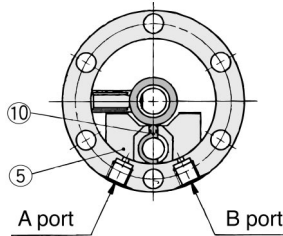
Single vane

- The dimensions below are of size 20.
- Dimensions for 90° and for 180° shows the pressurization to B port, and dimensions for 270° show the location of the ports during rotation.

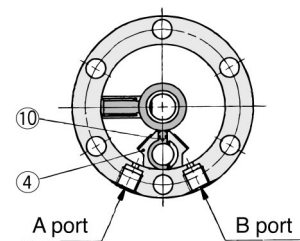
For 90°
(From long shaft side)



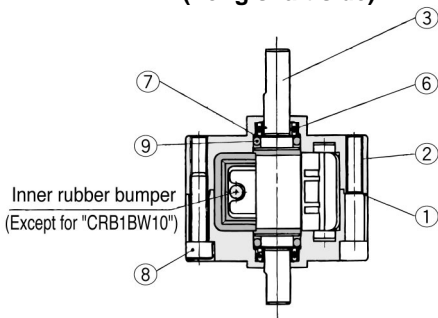
For 80°
(From long shaft side)



For 270°
(From long shaft side)



(Long shaft side)



(Short shaft side)

Component Parts

No.	Description	Material	Note
①	Body (A)	Aluminum alloy	Black
②	Body (B)	Aluminum alloy	Black
③	Vane shaft	Stainless steel*	
④	Stopper	Resin	For 270°
⑤	Stopper	Resin	For 180°
⑥	Bearing	High carbonate chrome steel	
⑦	Back-up ring	Stainless steel	Special bolt
⑧	Hexagon socket head cap screw	Stainless steel	Special packing
⑨	O ring	NBR	
⑩	Stopper packing	NBR	

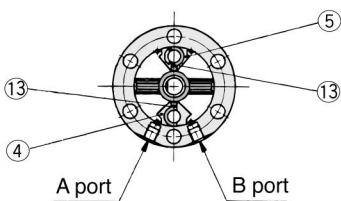
*Carbon steel for CRB1BW30.

Double vane

CRB1BW10-□D/Dimensions below shows the middle locations of pressurization to A port or B port.

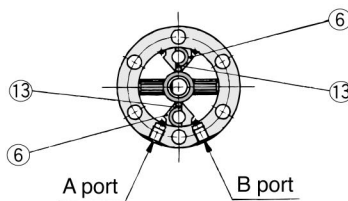
CRB1BW15/20/30-□D/Dimensions below are based on size 20.

For 90°
(From long shaft side)

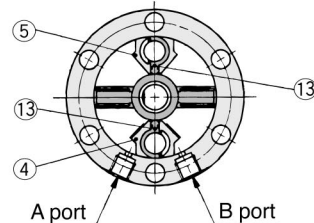


(Long shaft side)

For 100°
(From long shaft side)

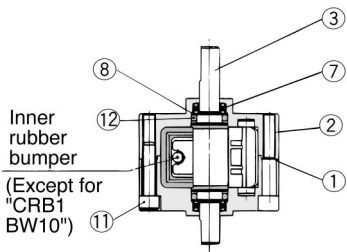
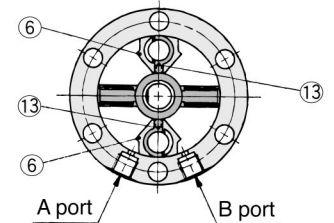


For 90°
(From long shaft side)



(Long shaft side)

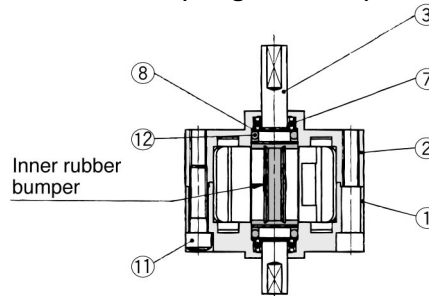
For 100°
(From long shaft side)



(Short shaft side)

Component Parts

No.	Description	Material	Note
①	Body (A)	Aluminum alloy	Black
②	Body (B)	Aluminum alloy	Black
③	Vane shaft	Carbon steel	
④	Stopper	Stainless steel	
⑤	Stopper	Resin	
⑥	Stopper	Stainless steel	
⑦	Bearing	High carbonate chrome steel	
⑧	Back-up ring	Stainless steel	



(Short shaft side)

Component Parts

No.	Description	Material	Note
⑨	Cover	Aluminum alloy	Black
⑩	Plate	Resin	Black
⑪	Hexagon socket head cap screw	Stainless steel	Special bolt
⑫	O ring	NBR	
⑬	Stopper packing	NBR	Special packing
⑭	Gasket	NBR	Special packing
⑮	O ring	NBR	
⑯	O ring	NBR	

CRB1

CRBU

CRA1

CRQ

MRQ

MSQ

MSUB

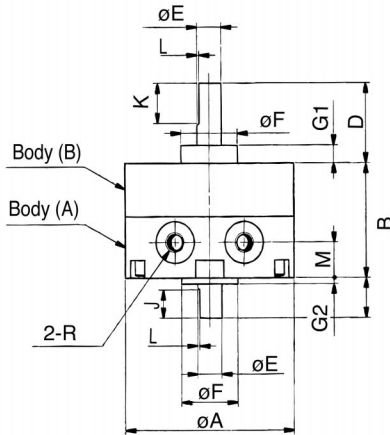
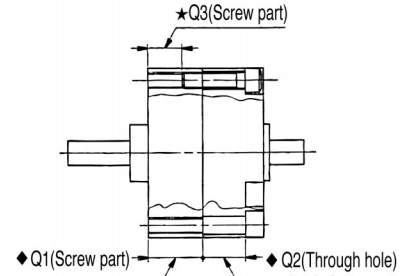
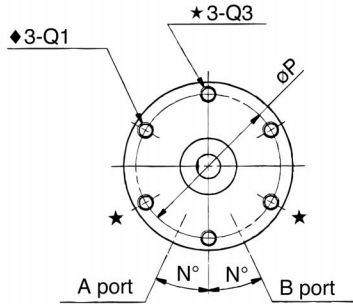
Series CRB1

Size 10, 15, 20, 30

Single vane

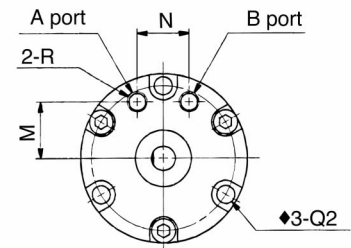
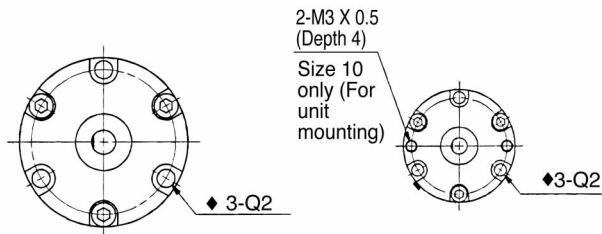


Port locations: Body side/
CRB1BW□-□S



Port locations:
Body side/
CRB1BW10-□S

Port locations:
Axial direction/
CRB1BW□-□SE



The dimensions above show the pressurization state to B port of the one for 90° or 180°. Refer to p.1.1-7 for further information.



Note) Depths of ♦ mark Q1, Q2 indicate that the body(A)/(B) are penetrated respectively.



Note) There are port locations in ★parts for CRB1BW15, 20, 30.

Model	A	B	C	D	E(g6)	F(h9)	G1	G2	J	K	L	M	N	P	♦Q1	♦Q2	★Q3	R		
																		90°	180°	270°
CRB1BW10-□S	29	15	8	14	4 ^{-0.004} _{-0.012}	9 ⁰ _{-0.036}	3	1	5	9	0.5	5	25	24	M3 (6)	3.4 (5.5)	—	M5	M3	
CRB1BW10-□SE												8.5	9.5					M3		
CRB1BW15-□S	34	20	9	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	4	1.5	6	10	0.5	5	25	29	M3 (10)	3.4 (6)	M3 (5)	M5	M3	
CRB1BW15-□SE												11	10					M3		
CRB1BW20-□S	42	29	10	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	4.5	1.5	7	10	0.5	9	25	36	M4 (13.5)	4.5 (11)	M4 (7.5)	M5		
CRB1BW20-□SE												14	13					M5		
CRB1BW30-□S	50	40	13	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	5	2	8	12	1.0	10	25	43	M5 (18)	5.5 (16.5)	M5 (10)	M5		
CRB1BW30-□SE												15.5	14					M5		



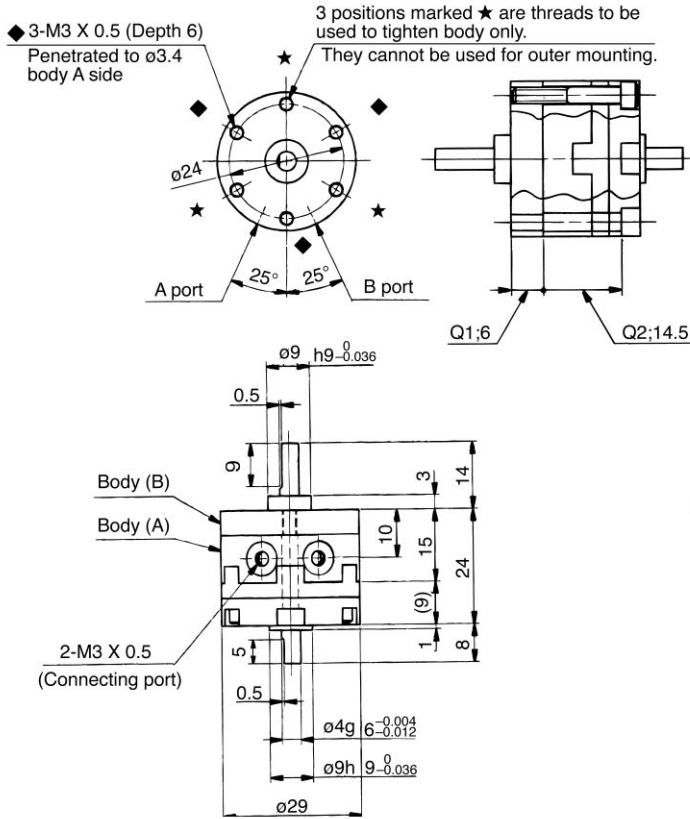
Port location: Body side
CRB1BW [Size] -□S.....SCRB [Size], #1
Port location: Axial direction
CRB1BW [Size] -□SE.....SCRB [Size], #3

Rotary Actuator/Vane Style Series **CRB1**

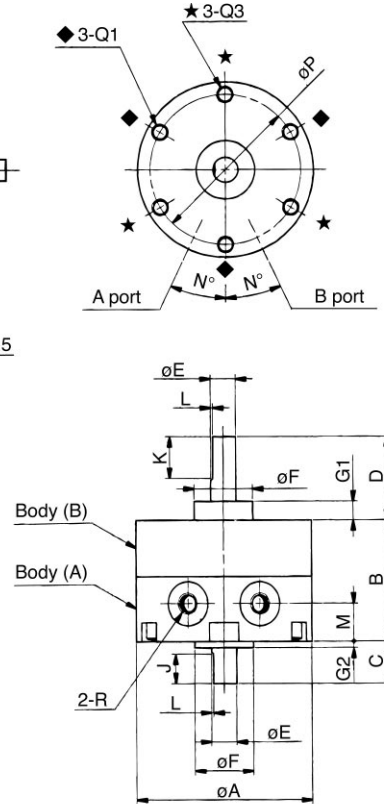


Double vane

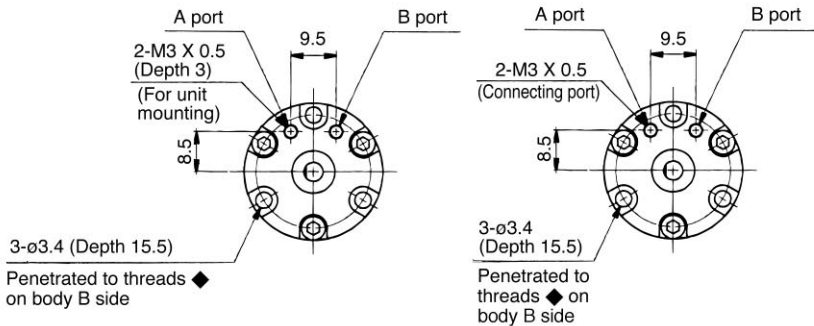
Port locations: Body side/ CRB1BW10-□D



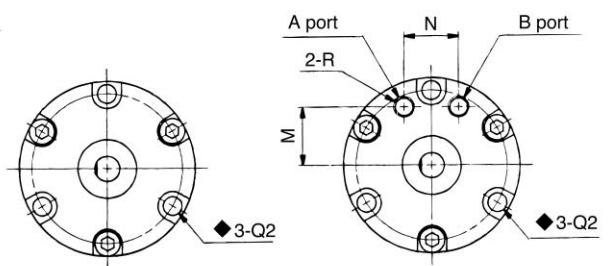
Port locations: Body side/ CRB1BW15, 20, 30-□D



Port direction: Axial direction/ CRB1BW10-□DE



Port direction: Axial direction/ CRB1BW15-20-30-□DE



The dimensions above show the rotation middle position during pressurization to A or B Port.

Model	A	B	C	D	E(g6)	F(h9)	G1	G2	J	K	L	M	N	P	Q (Depth)			R	
															◆Q1	◆Q2	★Q3	90°	100°
CRB1BW15-□D	34	20	9	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	4	1.5	6	10	0.5	5	25	29	M3 (10)	3.4 (6)	M3 (5)	M3	
CRB1BW15-□DE												11	10		M3 (5)				
CRB1BW20-□D	42	29	10	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	4.5	1.5	7	10	0.5	9	25	36	M4 (13.5)	4.5 (11)	M4 (7.5)	M5	
CRB1BW20-□DE												14	13		M4 (7.5)				
CRB1BW30-□D	50	40	13	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	5	2	8	12	1.0	10	25	43	M5 (18)	5.5 (16.5)	M5 (10)	M5	
CRB1BW30-□DE												15.5	14		M5 (10)				

- CRB1
- CRBU
- CRA1
- CRQ
- MRQ
- MSQ
- MSUB

Rotary Actuator with Auto Switch



Series CDRB1

Vane Style/Size: 10, 15, 20, 30

How to Order

With auto switch Size 10, 15

CDRB1 F W 10-180 S-90 L

With auto switch Size 20, 30

CDRB1 B W 20-180 S-R73 L

Mounting

B	Basic
F	Flange

Shaft style

W	Double shaft, one chamfer (standard)
---	--------------------------------------

Rotation

Application	Symbol	Rotation
Single Vane	90	90°
	180	180°
	270	270°
Double Vane	90	90°
	100	100°

Size

10
15

Size

20
30

No. of auto switches mounted

S	1
-	2

Electrical entry/Lead wire length

-	Grommet (Lead wire: 0.5m)
L	Grommet (Lead wire: 3m)
C	Connector (Lead wire: 0.5m)
CL	Connector (Lead wire: 3m)
CN	Connector, without lead wire

Auto switch

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

**Right hand side operation auto switch is attached for the one with 1 auto switch.*

**Connector style is applicable only to "R73", "R80" and T79".*


***Part numbers of lead wire with connector single unit*

D-LC05: Lead wire 0.5m
D-LC30: Lead wire 3m
D-LC50: Lead wire 5m

Vane style

S	Single
D	Double

**Refer to the table below for part numbers of applicable auto switch.*



Auto Switch Specifications/ Refer to p.2.11-1 for further specifications on auto switch single unit.

Applicable size	Style	Electrical entry	Indicator	Wiring (Output)	Load voltage		Auto switch part no.	Lead wire	Lead wire length*				Applicable load									
					DC	AC			0.5 (—)	3 (L)	5 (Z)	— (N)										
For 10/15	Reed switch	Grommet	No	2 wire	24V	5V, 12V	5V, 12V, 24V	90	Parallel cord	●	●	●	—	IC								
						5V, 12V, 100V	5V, 12V, 24V, 100V	90A	Cab tire	●	●	●	—									
						—	—	97	Parallel cord	●	●	●	—									
						—	100V	93A	—	●	●	●	—									
						—	—	T99	—	●	●	—	—									
	Solid state switch					Yes	Grommet	Yes	3 wire (NPN)	24V	—	—	Cab tire	T99V	●	●	—	—	Relay PLC			
														S99V	●	●	—	—				
														S99	●	●	—	—				
														S9P	●	●	—	—				
														S9PV	●	●	—	—				
For 20/30	Reed switch	Grommet	Yes	2 wire	24V	—	100V	Cab tire	R73	●	●	—	—	Relay PLC								
									R73C	●	●	●	●									
									R80	●	●	—	—									
									R80C	●	●	●	●									
									T79	●	●	—	—									
	Solid state switch								Yes	Grommet	Yes	3 wire (NPN)	24V	12V	—	Cab tire	T79C	●	●	●	●	Relay PLC
																	S79	●	●	—	—	
																	S7P	●	●	—	—	
																	—	—	—	—	—	
																	—	—	—	—	—	

*Lead wire length symbols 0.5m..... — Ex.) R73C ● Operating time — 1.2ms ● Operating temperature range — -10°C to 60°C
3m..... L Ex.) R73CL ● Shock resistance — 300m/s² (Reed type), 1000m/s² (Solid state type)
5m..... Z Ex.) R73CZ
Not attached.... N Ex.) R73CN

Rotary Actuator/Vane Style *Series CRB1*



Applicable Auto Switch

Applicable series	Auto switch models	Electrical entry	Page	
CDRB1BW 10 CDRB1BW 15	Reed switch	D-90/90A	Grommet/2 wire style 2.11-12 2.11-14	
		D-97/93A		
	Solid state switch	D-S99/S99V*	Grommet/3 wire style (NPN)	2.11-23
		D-S9P/S9PV*	Grommet/3 wire style (PNP)	
D-T99/T99V		Grommet/2 wire style		
CDRB1BW 20 CDRB1BW 30	Reed switch	D-R73	Grommet/2 wire style	2.11-15
		D-R80	Connector/2 wire style	
	Solid state switch	D-S79*	Grommet/3 wire style (NPN)	2.11-24
		D-S7P*	Grommet/2 wire style (PNP)	
		D-T79	Grommet/2 wire style, Connector/2 wire style	

*No connector style for 3 wire without connecting section style.

CRB1

CRBU

CRA1

CRQ

MRQ

MSQ

MSUB

How to Adjust Auto Switch

Refer to p.1.0-19 and 1.0-20 for further information on auto switch adjusting method.

Units



All units are mountable to series CDRB1. Refer to p.1.0-23 for 1.0-24 further information.

Combinable unit

① Auto switch unit

*Switch block unit (Required when using 3 auto switches.)

② Angle adjusting unit

③ Angle adjusting unit with auto switch

*Joint unit (Required when connecting auto switch to angle adjusting unit.)



Precaution

Be sure to read before handling.

Refer to p.2.11-2 to 2.11-4 for common precautions of auto switch.

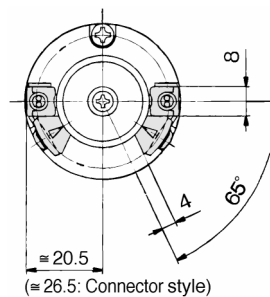
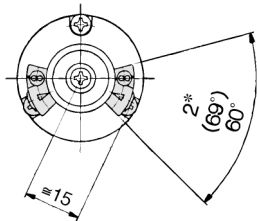
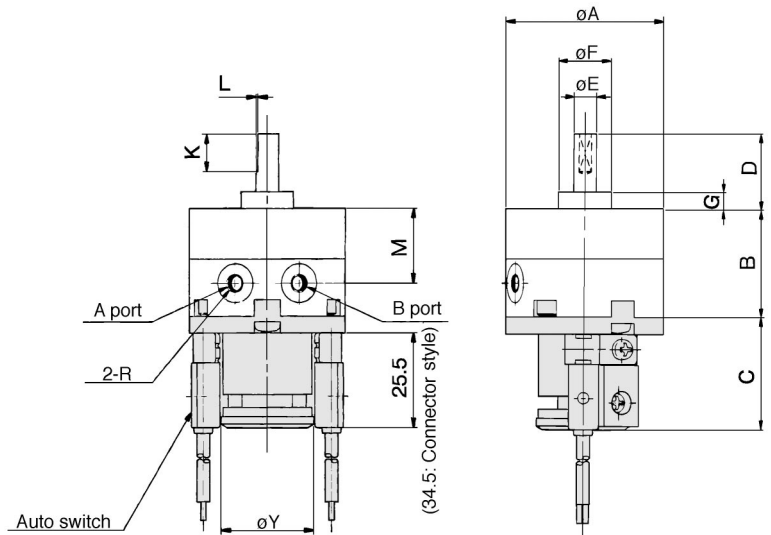
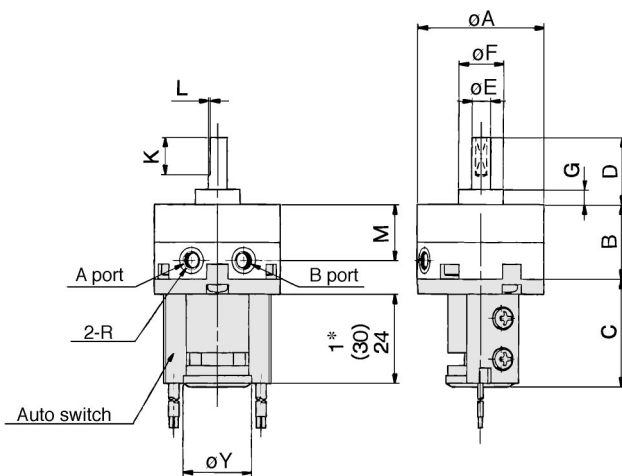
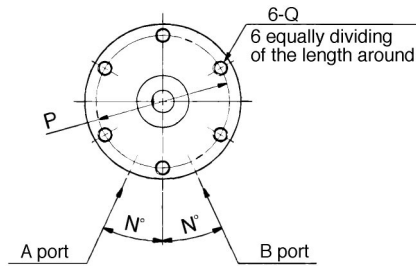
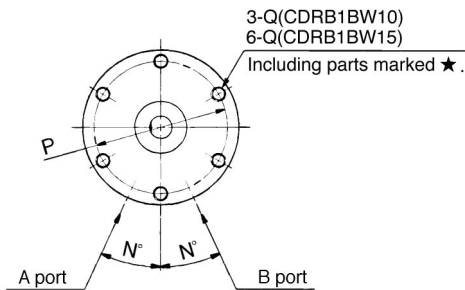
Series CDRB1

Size 10, 15, 20, 30/With auto switch



Single vane
CDRB1BW10/15-□S

Single vane
CDRB1BW20/30-□S



The dimensions above show pressurization to B port for 90° and 180°. Refer to p.1.1-7 for further information.

*1. 24: When auto switches of "D-90", "90A", "S99(V)", "T99(V)", "S9P(V)", styles are being used.

30: When "D-97", "93A" styles are being used.

*2. 60°: When auto switches of "D-90", "90A", "97", "93A" styles are being used.

69°: When auto switches of "D-S99(V)", "T99(V)", "S9P(V)" styles are being used.

Note) For auto switch attached style, positions for connecting ports are on body side.

*The diagrams of outer appearances show the auto switches with 1 right hand operating switch and one left hand operating switch.

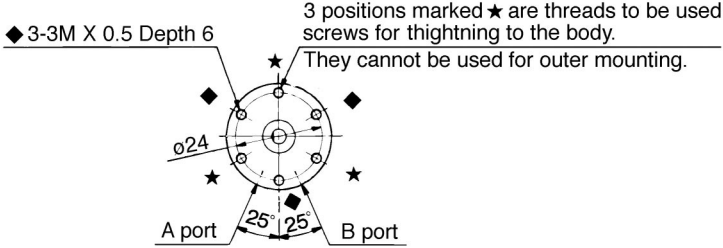
Model	A	B	C	D	E (g6)	F (h9)	G	K	L	M	N	P	Q	R			Y
														90°	180°	270°	
CDRB1BW10-□S	29	15	29	14	4	9	3	9	0.5	10	25	24	M3 X 0.5Depth5	M5 X 0.8	M3 X 0.5	18.5	
CDRB1BW15-□S	34	20	29	18	5	12	4	10	0.5	15	25	29	M3 X 0.5Depth5	M5 X 0.8	M3 X 0.5	18.5	
CDRB1BW20-□S	42	29	30	20	6	14	4.5	10	0.5	20	25	36	M4 X 0.7Depth7	M5 X 0.8		25	
CDRB1BW30-□S	50	40	31	22	8	16	5	12	1	30	25	43	M5 X 0.8Depth10	M5 X 0.8		25	

CAD CDRB1BW [Size] -S-.....SCRB [Size] , #7

Rotary Actuator/Vane Style Series **CRB1**

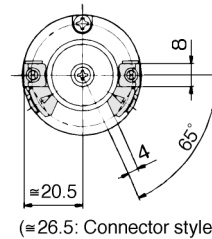
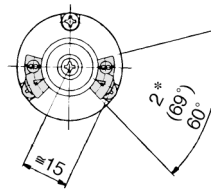
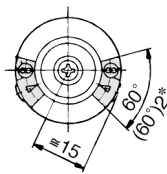
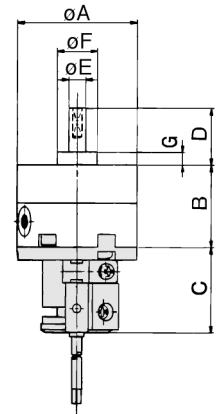
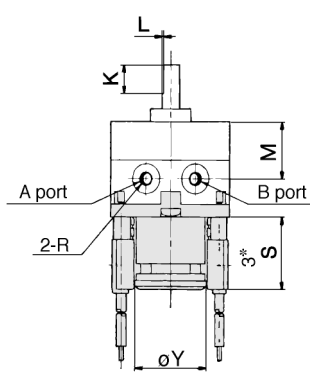
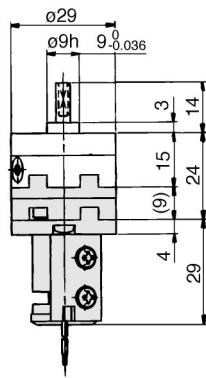
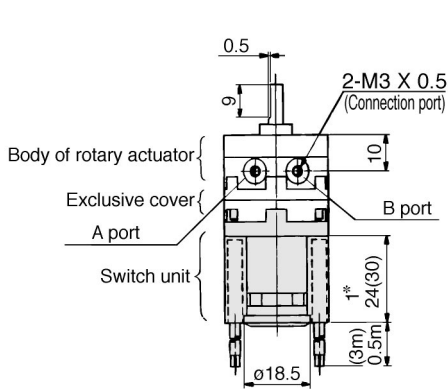
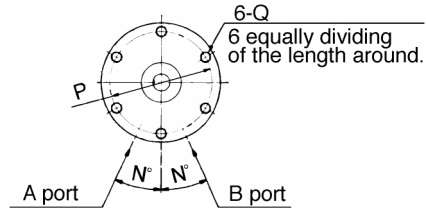


Double vane CDRB1BW10-□D



Double vane CRB1BW15/20/30-□D

(Same size as single vane style.)



CDRB1BW15-□D

CDRB1BW20/30-□D

- CRB1
- CRBU
- CRA1
- CRQ
- MRQ
- MSQ
- MSUB

The dimensions above show the rotation middle position during pressurization to A or B port.

- *1) 24: When auto switches of "D-90", "90A", "S99(V)", "T99(V)", "S9P(V)" styles are being used.
30: When "D-97", "93A", styles are being used.
- *2) 60°: When auto switches of "D-90", "90A", "97", "93A" styles are being used.
69°: When auto switches of "D-S99(V)", "T99(V)", "S9P(V)" styles are being used.
- *3) 25.5: When auto switches grommet "D-R73", "R80", "S79", "T79", and "S7P" styles are being used.
34.5: When auto switches "D-R73", "R80" and "T79" connector styles are being used.

Model	A	B	C	D	E(g6)	F(h9)	G	K	L	M	N	P	Q	R		S		Y
														90°	100°	24* ¹	30* ¹	
CDRB1BW15-□D	34	20	29	18	5	12	4	10	0.5	15	25	29	M3 X 0.5Depth5	M3 X 0.5	24* ¹	30* ¹	18.5	
CDRB1BW20-□D	42	29	30	20	6	14	4.5	10	0.5	20	25	36	M4 X 0.7Depth7	M5 X 0.8	25.5* ³	34.5* ³	25	
CDRB1BW30-□D	50	40	31	22	8	16	5	12	1	30	25	43	M5 X 0.8Depth10	M5 X 0.8	25.5* ³	34.5* ³	25	

Series CDRB1

Construction

- Single vane

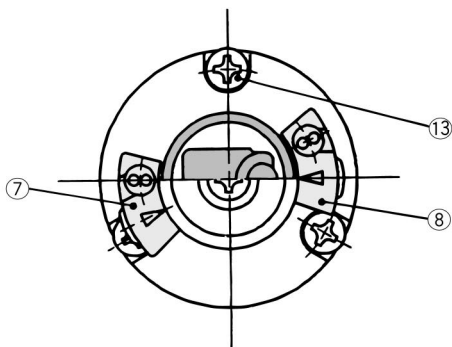
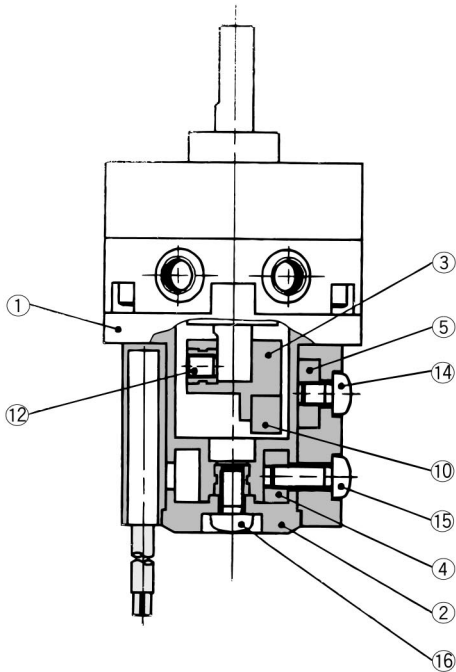
The dimensions below show pressurization to B port of the switches for 90° and 180°.

- Double vane

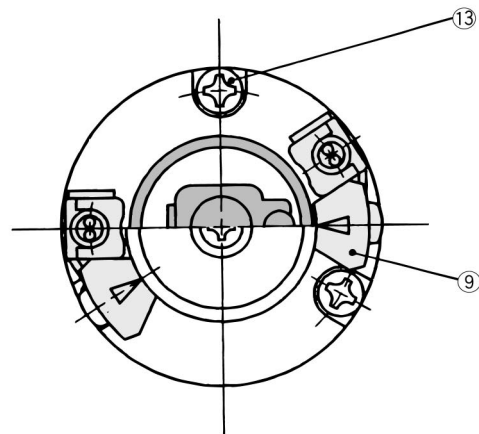
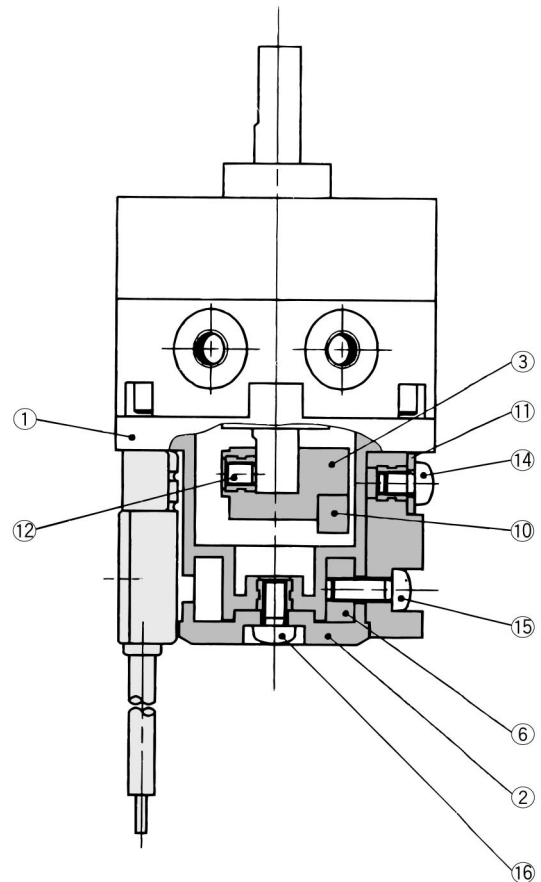
The dimensions below show the rotation middle position during pressurization to A port or B port.

(The unit is common to single vane and double vane styles.)

CDRB1BW10/15-□^S_D



CDRB1BW20/30-□^S_D



Component Parts

No.	Description	Material
①	Cover (A)	Resin
②	Cover (B)	Resin
③	Magnet lever	Resin
④	Fixing block (A)	Aluminum alloy
⑤	Fixing block (B)	Aluminum alloy
⑥	Fixing block	Aluminum alloy
⑦	Switch block (A)	Resin
⑧	Switch block (B)	Resin
⑨	Switch block	Resin
⑩	Magnet	Magnetic substance

No.	Description	Material
⑪	Arm	Stainless steel
⑫	Hexagon socket head cap screw	Stainless steel
⑬	Cross-recessed head cap screw	Stainless steel
⑭	Cross-recessed head cap screw	Stainless steel
⑮	Cross-recessed head cap screw	Stainless steel
⑯	Cross-recessed head cap screw	Stainless steel

*2 cross-recessed head cap screws ⑬ are attached for "CDRB1BW10".

Rotary Actuator with Angle Adjuster



Series CRB1BWU

Vane Style/Size: 10, 15, 20, 30

How to order

Without auto switch

CRB1 **B** WU **10** - **180** **S**

Mounting

B	Basic
F	Flange

Size

10
15
20
30

Vane style

S	Single
D	Double

Rotation angle

Application	Symbol	Rotation angle
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°



With angle adjusting unit

Size

10
15

With auto switch
Size 10, 15

CDRB1 **F** WU **10** - **180** **S** - **90** **L**

With auto switch
Size 20, 30

CDRB1 **B** WU **20** - **180** **S** - **R73** **L**

With auto switch
(With switch unit)

Mounting

B	Basic
F	Flange

Size

20
30

Rotation angle

Application	Symbol	Rotation angle
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Vane style

S	Single
D	Double

Auto switch

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

No. of auto switches mounted

S	1*
-	2

* The auto switch ordered with symbol "S" is right hand side operating type.

Electrical entry/Lead wire length

-	Grommet (Lead wire: 0.5m)
L	Grommet (Lead wire: 3m)
C	Connector (Lead wire: 0.5m)
CL	Connector (Lead wire: 3m)
CN	Connector, without lead wire

*Connector is applicable only to "R73", "R80" and "T79".

** Single unit part number of lead wire with connector:

D-LC05: Lead wire 0.5m

D-LC30: Lead wire 3m

D-LC50: Lead wire 5m



Auto switch Specifications/ Refer to p.2.11-1 for further specifications on single unit of auto switch.

Applicable size	Style	Electrical entry	Indicator	Wiring (Output)	Load voltage		Auto switch part no.	Lead wire	Lead wire length*				Applicable load		
					DC	AC			0.5 (-)	3 (L)	5 (Z)	- (N)			
For 10/15	Reed switch	Grommet	No	2 wire	24V	5V, 12V	≤24V AC	90	Parallel cord	●	●	●	—	IC	
							≤100V AC	90A	Cab tire	●	●	●	—		
							—	97	Parallel cord	●	●	●	—		
							100V	93A	Cab tire	●	●	—	—		
							—	T99		●	●	—	—		
							—	T99V		●	●	—	—		
	Solid state switch	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	—	S99	Cab tire	●	●	—	—	IC
								—	S99V		●	●	—	—	
								—	S9P		●	●	—	—	
								—	S9PV		●	●	—	—	
								—	S9P		●	●	—	—	
								—	S9PV		●	●	—	—	
For 20/30	Reed switch	Grommet	Yes	2 wire	24V	12V	100V	R73	Cab tire	●	●	—	—	IC	
							—	R73C		●	●	●	●		
							5V, 12V	≤100V AC		R80	●	●	—		●
							—	≤24V AC		R80C	●	●	●		—
							—	—		T79	●	●	—		●
							—	—		T79C	●	●	●		—
	Solid state switch	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	—	S79	Cab tire	●	●	—	—	IC
								—	S79		●	●	—	—	
								—	S7P		●	●	—	—	
								—	S7P		●	●	—	—	
								—	S7P		●	●	—	—	
								—	S7P		●	●	—	—	

*Lead wire length symbol 0.5m..... — Ex.) R73C ●Operating time — 1.2ms ●Operating temperature range — -10°C to 60°C
 3m..... L Ex.) R73CL ●Shock resistance — 300m/s² (Reed switch), 1000m/s² (Solid state switch)
 5m..... Z Ex.) R73CZ
 — N Ex.) R73CN

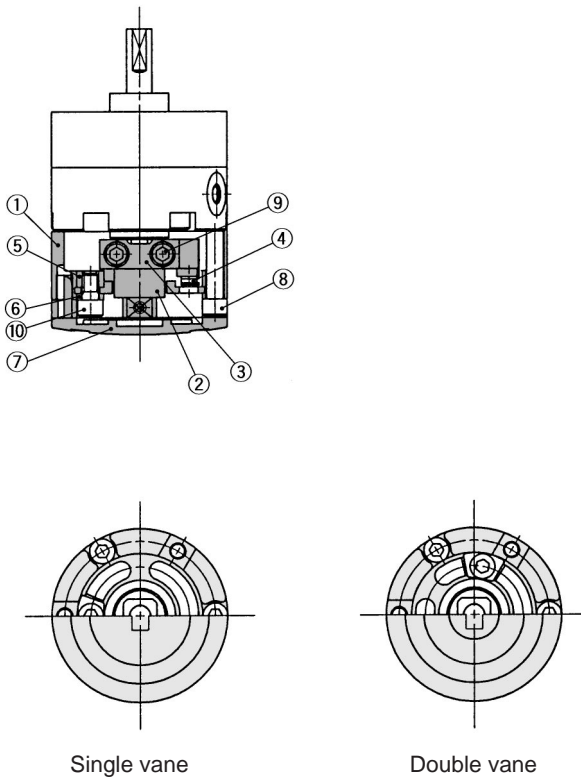
- CRB1
- CRBU
- CRA1
- CRQ
- MRQ
- MSQ
- MSUB

Series CRB1BWU

Construction (Units are common for both the single vane and double vane.)

With angle adjusting unit

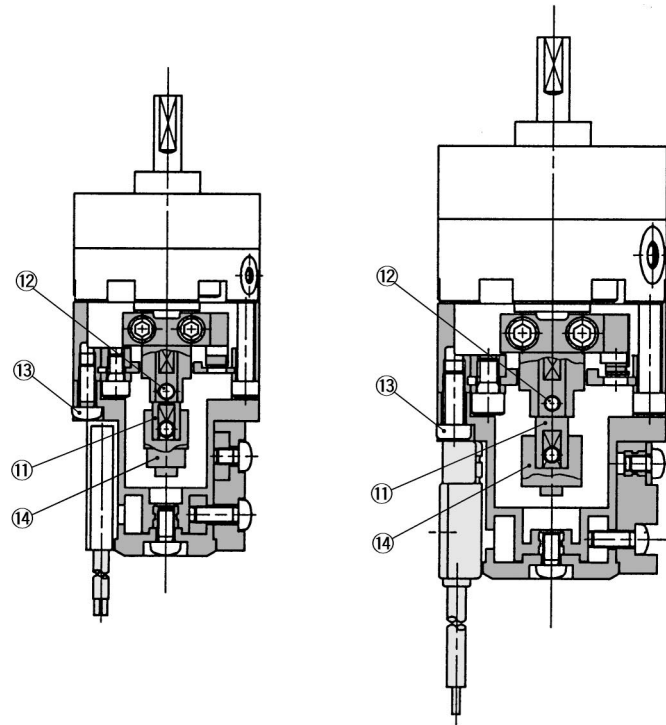
CRB1BWU10/15/20/30-□[§]



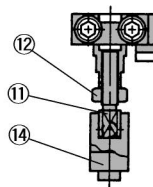
With angle adjusting unit and auto switch

CDRB1BWU10/15/-□[§]

CDRB1BWU20/30/-□[§]



CDRB1BWU10



Component Parts

No.	Description	Material	Notes
①	Stopper ring	Aluminum die casting	
②	Stopper lever	Carbon steel	
③	Lever retainer	Carbon steel	Zinc chromated
④	Rubber bumper	NBR	
⑤	Stopper block	Carbon steel	Zinc chromated
⑥	Block retainer	Carbon steel	Zinc chromated
⑦	Cap	Resin	
⑧	Hexagon socket head cap bolt	Stainless steel	Special bolt
⑨	Hexagon socket head cap bolt	Stainless steel	Special bolt
⑩	Hexagon socket head cap bolt	Stainless steel	Special bolt
⑪	Joint	Aluminum alloy	(1)
⑫	Hexagon socket head cap screw	Stainless steel	Only for CDRBUW10, the part indicated with no. 12 is a hexagon nut.
	Hexagon nut	Stainless steel	
⑬	Cross-recessed head cap screw	Stainless steel	(1)
⑭	Magnet lever	—	(1)



Note 1) Consists of the combination of an auto switch unit and an angle adjustment unit; for detailed specifications, refer to p.1.0-23 and 1.0-24.

⚠ Precautions

Be sure to read before handling.
Refer to p.0-20 and 0-21 for Safety Instructions and common precautions for the products mentioned in this catalog, and refer to p.1.0-2 to 1.0-4 for precautions on every series.

Unit with Angle Adjuster

⚠ Caution

① The maximum angle of the adjustable range of rotation angle will be restricted depending on the rotation angle of the rotary actuator body.

Rotation angle of rotary actuator body	Range of rotation angle
270° ⁺⁴ ₀	0° to 230° (Size: 10) ^{*1}
	0° to 240° (size: 15, 20, 30)
180° ⁺⁴ ₀	0° to 175°
90° ⁺⁴ ₀	0° to 85°

*1 The maximum adjustable angle of the angle adjustment unit for size 10 is 230°.

② All the positions of the connecting ports are on the body side.

③ The allowable kinetic energy is the same as that of the specification of the rotary actuator unit.

④ To make a 90° adjustment on the double vane type, use a rotary actuator for 100°.

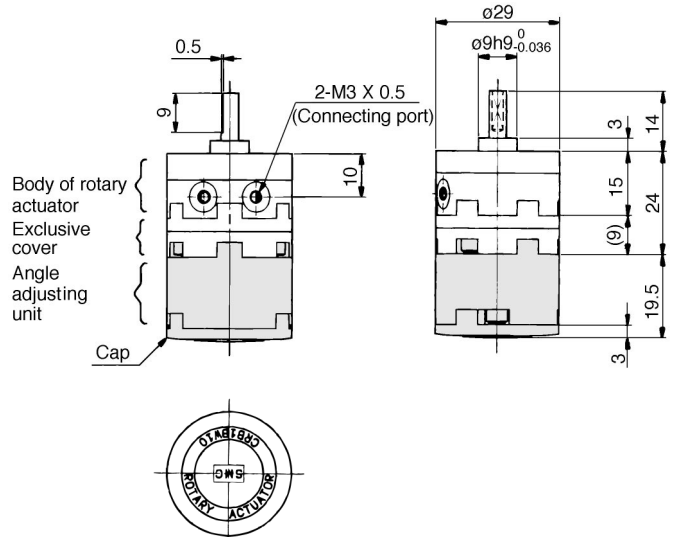
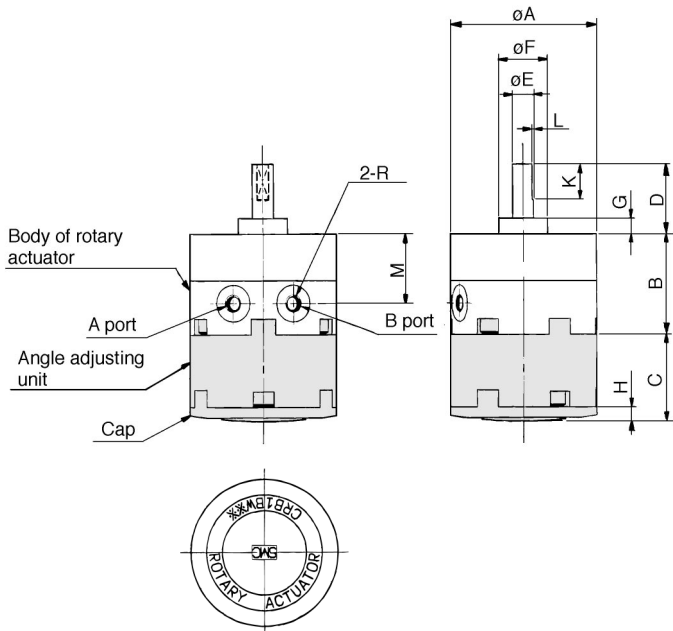
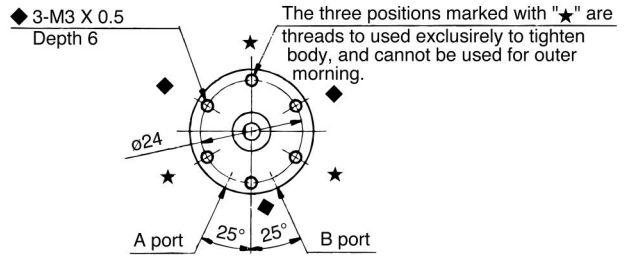
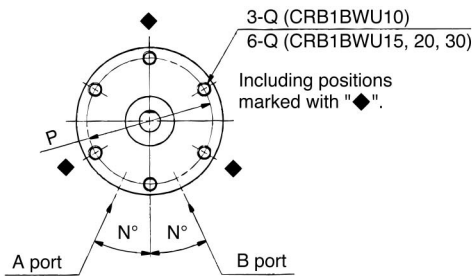
Rotary Actuator/Vane Style Series **CRB1**

Size **10, 15, 20, 30**/With angle adjuster



Single vane
CRB1BWU10/15/20/30-□S

Double vane
CRB1BWU10-□D



Dimensions below show the rotation middle position during pressurization to A port or B port.

Double vane

CRB1BWU15/20/30-□D

Size of double vane style: The outer dimensions of 15, 20, 30 and the sizes shown in the dimension table are same as those of single vane size 15, 20, 30 styles.

Dimensions below show pressurization to A port of the switches for 90°. Refer to p.1.1-7.

Model	A	B	C	D	E (g6)	F (h9)	G	H	K	L	M	N	P	Q
CRB1BWU10-□S	29	15	19.5	14	4	9	3	3	9	0.5	10	25	24	M3 X 0.5 Depth6
CRB1BWU15-□S	34	20	21.2	18	5	12	4	3.2	10	0.5	15	25	29	M3 X 0.5 Depth5
CRB1BWU15-□D														
CRB1BWU20-□S	42	29	25	20	6	14	4.5	4	10	0.5	20	25	36	M4 X 0.7 Depth7
CRB1BWU20-□D														
CRB1BWU30-□S	50	40	29	22	8	16	5	4.5	12	1	30	25	43	M5 X 0.8 Depth10
CRB1BWU30-□D														

Model	R			
	90°	100°	180°	270°
CRB1BWU10-□S	M5 X 0.8	—	M5 X 0.8	M3 X 0.5
CRB1BWU10-□D	Refer to the drawings above.*			
CRB1BWU15-□S	M5 X 0.8	—	M5 X 0.8	M3 X 0.5
CRB1BWU15-□D	M3 X 0.5			
CRB1BWU20-□S	M5 X 0.8	—	M5 X 0.8	
CRB1BWU20-□D	M5 X 0.8			
CRB1BWU30-□S	M5 X 0.8	—	M5 X 0.8	
CRB1BWU30-□D	M5 X 0.8			

CAD CRB1BWU [Size] -SSCRB [Size] , #5

CRB1
CRBU
CRA1
CRQ
MRQ
MSQ
MSUB

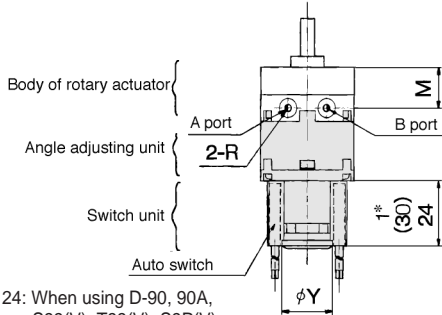
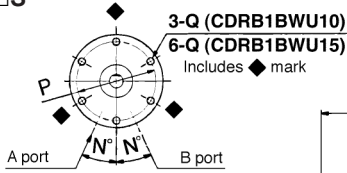
Series CDRB1BWU

Size 10, 15, 20, 30/With angle adjuster and auto switch

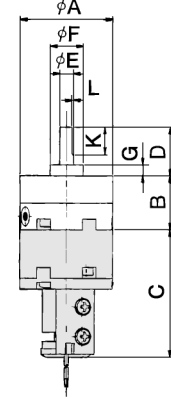
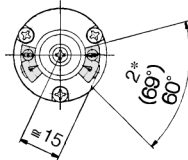


Single vane

CDRB1BWU10/15-□S



- *1. 24: When using D-90, 90A, S99(V), T99(V), S9P(V) type auto switches.
- 30: When using D-97, 93A type.
- *2. 60°: When using D-90, 90A, 97, 93A type auto switches.
- 69°: When using D-S99(V), T99(V), S9P(V) type auto switches.



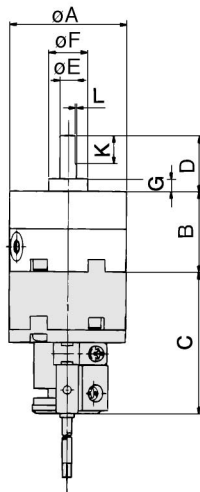
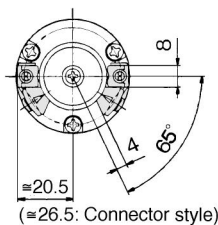
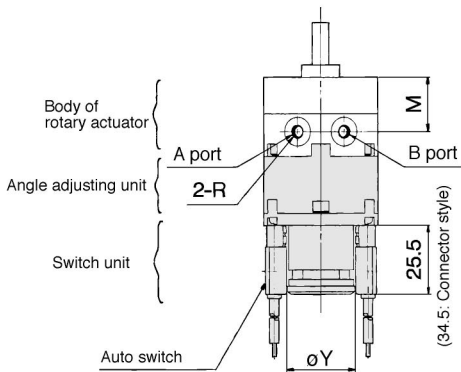
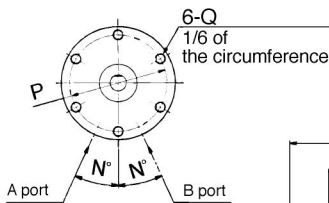
This diagram shows the pressurized state of port A in the actuator for 90° application. For detailed specifications, refer to p.1.1-7.

Note) The connecting port position for those equipped with an auto switch is on the body side.
*The outside drawing indicates on each of the right-hand and left-hand switches.

CDRB1BWU Size -S.....SCRB Size #9

Single vane

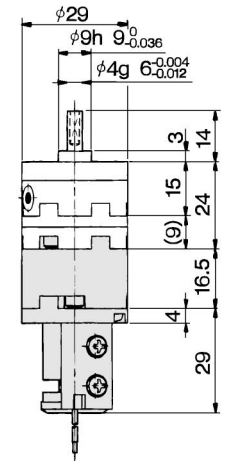
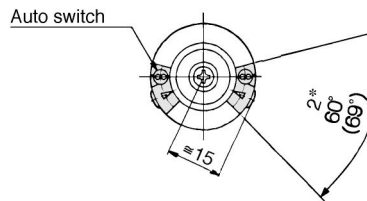
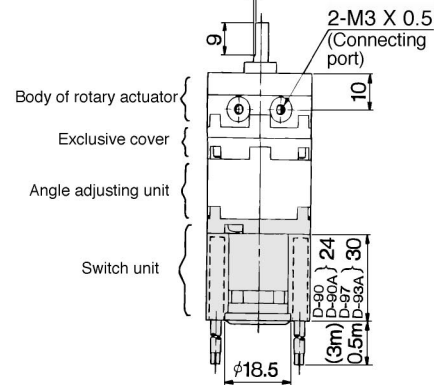
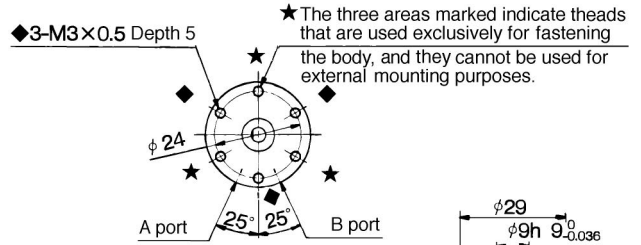
CDRB1BWU20/30-□S



CDRB1BWU Size -S.....SCRB Size #9

Double vane

CDRB1BWU10-□D



This diagram indicates the intermediate swing position when port A or port B is pressurized.

Double vane

CDRB1BWU15/20/30-□D

The outside diameter dimension diagram and dimension table for sizes 15, 20, and 30 of the double vane style provide the same dimensions as those of sizes 15, 20, and 30 of the single vane style.

Model	A	B	C	D	E (g6)	F (h9)	G	K	L	M
CDRB1BWU10-□S	29	15	45.5	14	4	9	3	9	0.5	10
CDRB1BWU15-□S	34	20	47	18	5	12	4	10	0.5	15
CDRB1BWU15-□D										
CDRB1BWU20-□S	42	29	51	20	6	14	4.5	10	0.5	20
CDRB1BWU20-□D										
CDRB1BWU30-□S	50	40	55.5	22	8	16	5	12	1	30
CDRB1BWU30-□D										

Model	N	P	Y	Q	R			
					90°	100°	180°	270°
CDRB1BWU10-□S	25	24	18.5	M3 X 0.5 Depth 6	M5 X 0.8	—	M5 X 0.8	M3 X 0.5
CDRB1BWU10-□D					Refer to the drawings.*			
CDRB1BWU15-□S	25	29	18.5	M3 X 0.5 Depth 5	M5 X 0.8	—	M5 X 0.8	M3 X 0.5
CDRB1BWU15-□D					M3 X 0.5			
CDRB1BWU20-□S	25	36	25	M4 X 0.7 Depth 7	M5 X 0.8	—	M5 X 0.8	—
CDRB1BWU20-□D					M5 X 0.8			
CDRB1BWU30-□S	25	43	25	M5 X 0.8 Depth 10	M5 X 0.8	—	M5 X 0.8	—
CDRB1BWU30-□D					M5 X 0.8			

Note) The connecting port position for those equipped with an angle adjustment unit or auto switch is on the body side.
Note) The outside drawing indicates one each of the right-hand and left-hand switches.

Series CRB1/Size: 10, 15, 20, 30

Made to Order Specifications

Change of Shaft End Shape/-XA1 to XA47

Consult SMC for further information on specifications, dimensions and delivery.

Symbols

-XA1 to XA47

1 Change of shaft end shape

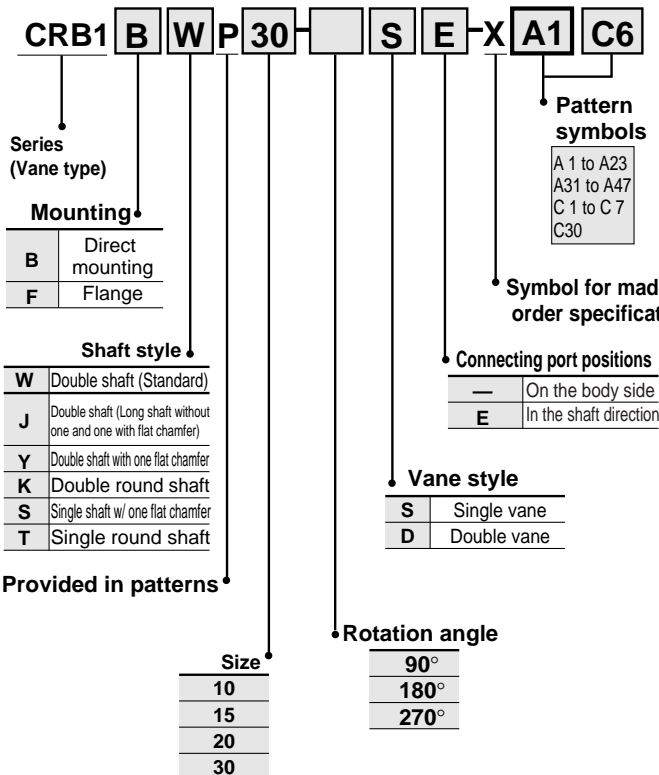
A wide selection of models is now available, as non-standard shaft configurations for the CRB1 series (sizes: 10, 15, 20, and 30) are provided in 46 types of patterns.

Additional reminders

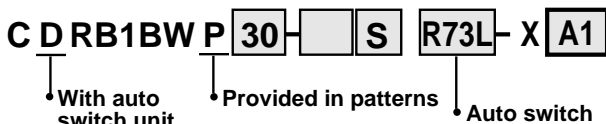
- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensions, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- Unless specified otherwise, the thread pitch is based on coarse metric threads.
P = thread pitch
M3 X 0.5; M4 X 0.7; M5 X 0.8
- Enter the desired values in the □□□□ portion of the diagram.
- To shorten the shaft, use the dimensional charts for patterns A17 to A19 for reference.
- If equipped with an auto switch, the manufacturable patterns are those for shafts J and W.
- Consult SMC for made to order specifications other than those mentioned in "How to Order".
- Individual drawings for specific made to order models may not be available. Consult SMC separately if drawings are needed.

How to Order

Without auto switches 2 patterns (A1, C6)



With auto switches Only for pattern A1



Refer to p.1.1-11 for further information.

Applicable patterns

Size	10, 15, 20, 30
Patterns	XA 1 to XA23, XA31 to XA34, XA37 to XA47, XC 1 to XC 7, XC30

Applicable shaft/Pattern combination table (Size: 10, 15, 20, 30)

Shaft Type/W: Double shafts (Standard)

Symbol	Description	Shaft direction		Applicable size
		Upper	Lower	
-XA 1	Female thread at the shaft end	●	—	15, 20, 30
-XA 2	Female thread at the shaft end	—	●	
-XA 3	Male thread at the shaft end	●	—	
-XA 4	Male thread at the shaft end	—	●	
-XA 5	Round shaft with steps	●	—	
-XA 6	Round shaft with steps	—	●	
-XA 7	Round shaft with steps and male thread	●	—	
-XA 8	Round shaft with steps and male thread	—	●	
-XA 9	Change in length of std chamfered part	●	—	
-XA10	Change in length of std chamfered part	—	●	
-XA11	2 flats chamfering	●	—	10, 15, 20, 30
-XA12	2 flats chamfering	—	●	
-XA13	Shaft through-hole	●	●	
-XA14	Shaft through-hole, female thread	●	—	
-XA15	Shaft through-hole, female thread	—	●	
-XA16	Shaft through-hole, female thread	●	●	
-XA17	Shortened shaft	●	—	
-XA18	Shortened shaft	—	●	
-XA19	Shortened shaft	●	●	
-XA20	Reverse mounting of the rotation axis	●	●	
-XA21	Round shaft with steps, 2 flats chamfered	●	—	
-XA22	Round shaft with steps, 2 flats chamfered	—	●	
-XA23	Right-angled chamfered	●	—	

Shaft Type/J, K, S, T, Y (Made to order)

Symbol	Specification	Shaft direction		Shaft type					Applicable size
		Upper	Lower	J	K	S	T	Y	
-XA31	Female thread at the shaft end	●	—	—	—	—	—	●	15, 20, 30
-XA32	Female thread at the shaft end	—	●	—	—	—	—	●	
-XA33	Female thread at the shaft end	●	—	●	●	—	—	—	
-XA34	Female thread at the shaft end	—	—	●	●	—	—	—	
-XA37	Round shaft with steps	—	●	—	—	—	—	—	
-XA38	Round shaft with steps	—	●	—	—	—	—	—	
-XA39	Shaft through-hole	●	●	—	—	—	—	—	
-XA40	Shaft through-hole	●	●	—	—	—	—	—	
-XA41	Shaft through-hole	●	●	—	—	—	—	—	
-XA42	Shaft through-hole, female thread	●	●	—	—	—	—	—	
-XA43	Shaft through-hole, female thread	●	●	—	—	—	—	—	
-XA44	Shaft through-hole, female thread	●	●	—	—	—	—	—	
-XA45	Intermediate chamfer	●	—	●	●	—	—	—	
-XA46	Intermediate chamfer	—	●	—	—	—	—	—	
-XA47	Key groove	—	—	●	●	—	—	—	
-XC 1	Connecting port added to the side end of body (A)	—	—	●	●	●	●	●	
-XC 2	Use 2 screw parts on body (B) as through holes	—	—	●	●	●	●	●	
-XC 3	Position change of the tightening bolts on the body	—	—	●	●	●	●	●	
-XC 4	Position change of the rotation range (90° to the right from the starting point)	—	—	●	●	●	●	●	
-XC 5	Change of rotation (45° to the left of start)	—	—	●	●	●	●	●	
-XC 6	Change of rotation (90° to the left of start)	—	—	●	●	●	●	●	
-XC 7	Reverse mounting of the rotation shaft	—	—	●	—	—	—	—	
-XC30	Fluorine grease	—	—	●	●	●	●	●	



Note) Standard (Double rod: W) is also available for -XC1 to -XC30.

CRB1

CRBU

CRA1

CRQ

MRQ

MSQ

MSUB

Series CRB1/Size: 10, 15, 20, 30

Made to Order Specifications

Change of Shaft End Shape/-XA1 to XA8

Consult SMC for further information on specifications, dimensions and delivery.

Symbols

1 Change of shaft end shape

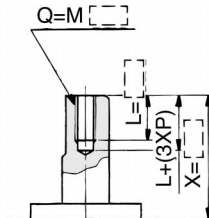
-XA2 to XA8

Additional reminders

- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensions, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- Unless specified otherwise, the thread pitch is based on coarse metric threads.
P = thread pitch
- M3 X 0.5; M4 X 0.7; M5 X 0.8
Enter the desired figures in the [] portion of the diagram.
- To shorten the shaft, use the dimensional tables for patterns A17 to A19 for reference.

Symbol: A1

The shaft can be further shortened by machining female threads into the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



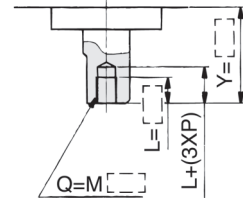
- Size 10mm is not manufacturable.
- L dimension (maximum size) is 2 times as large as the thread size as a rule.

Ex.) M3: L = 6mm (mm)

Size	X	Q
15	4 to 18	M3
20	4.5 to 20	M3, M4
30	5 to 22	M3, M4, M5

Symbol: A2

The shaft can be further shortened by machining female threads into the short end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



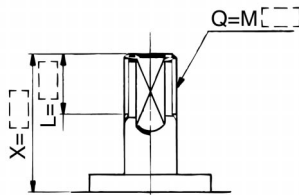
- Size 10mm is not manufacturable.
- L dimension (maximum size) is 2 times as large as the thread size as a rule.

Ex.) M3: L = 6mm (mm)

Size	Y	Q
15	1.5 to 9	M3
20	1.5 to 10	M3, M4
30	2 to 13	M3, M4, M5

Symbol: A3

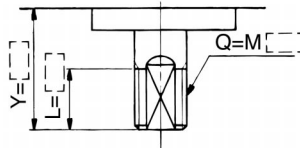
The shaft can be further shortened by machining male threads on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X	Lmax	Q
10	9 to 14	X-5	M4
15	11 to 18	X-6	M5
20	13 to 20	X-7	M6
30	16 to 22	X-8	M8

Symbol: A4

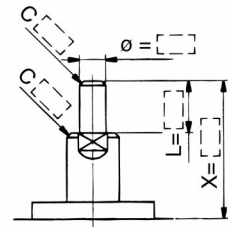
The shaft can be further shortened by machining male threads on the short end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



Size	Y	Lmax	Q
10	7 to 8	Y-3	M4
15	8.5 to 9	Y-3.5	M5
20	10	Y-4	M6
30	13	Y-5	M8

Symbol: A5

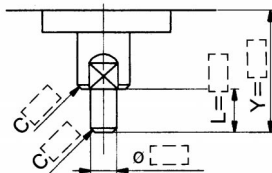
The shaft can be further shortened by machining a round shoulder on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X	Lmax
10	4 to 14	X-3
15	5 to 18	X-4
20	6 to 20	X-4.5
30	6 to 22	X-5

Symbol: A6

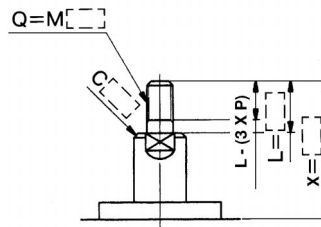
The shaft can be further shortened by machining a round shoulder on the short end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



Size	Y	Lmax
10	2 to 8	Y-1
15	3 to 9	Y-1.5
20	3 to 10	Y-1.5
30	3 to 13	Y-2

Symbol: A7

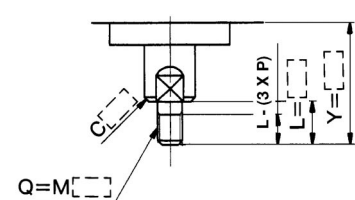
The shaft can be further shortened by machining a round shoulder and machining male threads on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X	Lmax	Q
10	7.5 to 14	X-3	M3
15	10 to 18	X-4	M3, M4
20	12 to 20	X-4.5	M3, M4, M5
30	14 to 22	X-5	M3, M4, M5, M6

Symbol: A8

The shaft can be further shortened by machining a round shoulder and machining male threads on the short end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



Size	Y	Lmax	Q
10	5.5 to 8	Y-1	M3
15	7.5 to 9	Y-1.5	M3, M4
20	9 to 10	Y-1.5	M3, M4, M5
30	11 to 13	Y-2	M3, M4, M5, M6

Series CRB1/Size: 10, 15, 20, 30

Made to Order Specifications

Change of Shaft End Shape/-XA9 to XA17

Consult SMC for further information on specifications, dimensions and delivery.

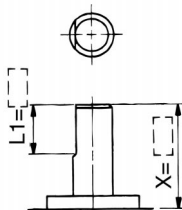
Symbols

1 Change of shaft and shape

-XA9 to XA17

Symbol: A9

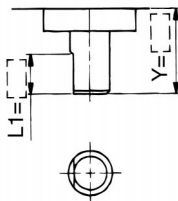
The shaft can be further shortened by changing the length of the standard flat of the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X	L1
10	5 to 14	9-(14-X) to (X-3)
15	8 to 18	10-(18-X) to (X-4)
20	10 to 20	10-(20-X) to (X-4.5)
30	10 to 22	12-(22-X) to (X-5)

Symbol: A10

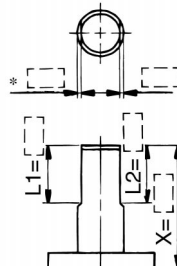
The shaft can be further shortened by changing the length of the standard flat of the short end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



Size	Y	L1
10	3 to 8	5-(8-Y) to (Y-1)
15	3 to 9	6-(9-Y) to (Y-1.5)
20	3 to 10	7-(10-Y) to (Y-1.5)
30	5 to 13	8-(13-Y) to (Y-2)

Symbol: A11

The shaft can be further shortened by milling double flats on the long end of the shaft. (If no changes are to be made to the standard flat, and the shaft is not to be shortened, leave the L1 and X dimensions blank.)



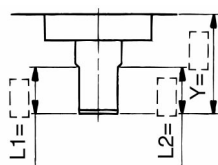
*: 0.5mm or more

L1: Standard chamfering part

Size	X	L1	L2max
10	5 to 14	9-(14-X) to (X-3)	X-3
15	8 to 18	10-(18-X) to (X-4)	X-4
20	10 to 20	10-(20-X) to (X-4.5)	X-4.5
30	10 to 22	12-(22-X) to (X-5)	X-5

Symbol: A12

The shaft can be further shortened by milling double flats on the short end of the shaft. (If no changes are to be made to the standard flat, and the shaft is not to be shortened, leave the L1 and Y dimensions blank.)



*: 0.5mm or more

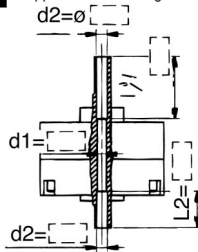
L1: Standard chamfering part

Size	Y	L1	L2max
10	3 to 8	5-(8-Y) to (Y-1)	Y-1
15	3 to 9	6-(9-Y) to (Y-1.5)	Y-1.5
20	3 to 10	7-(10-Y) to (Y-1.5)	Y-1.5
30	5 to 13	8-(13-Y) to (Y-2)	Y-2

Symbol: A13

Applicable to the single vane style only.

Shaft through hole



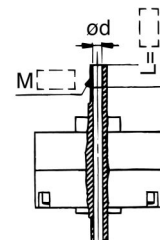
- Size 10mm is not manufacturable.
- For size 15mm, d1 = $\phi 2.5$, L1 = max. 18.
- For size 15mm only, inscribe the L1, L2, and d1 dimensions when = d2 is $\phi 2.6$ or more.
- Sizes 20mm and 30mm are d1 = d2.
- The minimum range of the machinable dimension for the d2 area is 0.1mm.

Size	d1	d2
15	$\phi 2.5$	$\phi 2.5$ to $\phi 3$
20	—	$\phi 2.5$ to $\phi 4$
30	—	$\phi 2.5$ to $\phi 4.5$

Symbol: A14

Applicable to the single vane style only.

Machine a special end (at the long end of the shaft), and machine female threads in the through hole at the long end of the shaft, thus creating a through hole to serve as the pilot.



- Size 10 is not manufacturable.
- The L dimension (maximum), is, as a rule, twice the size of the bolt.

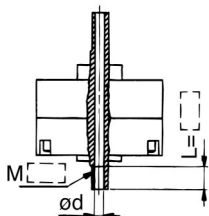
Example: For M3 bolt: L max. = 6mm

Size	15	20	30
M3 X 0.5	$\phi 2.5$	$\phi 2.5$	$\phi 2.5$
M4 X 0.7	—	$\phi 3.3$	$\phi 3.3$
M5 X 0.8	—	—	$\phi 4.2$

Symbol: A15

Applicable to the single vane style only.

Machine a special end (at the short end of the shaft), and machine female threads in the through hole at the short end of the shaft, thus creating a through hole to serve as the pilot.



- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt.

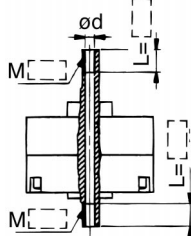
Example: For M4 bolt: L max = 8mm

Size	15	20	30
M3 X 0.5	$\phi 2.5$	$\phi 2.5$	$\phi 2.5$
M4 X 0.7	—	$\phi 3.3$	$\phi 3.3$
M5 X 0.8	—	—	$\phi 4.2$

Symbol: A16

Applicable to the single vane style only.

Machine special ends (at both ends of the shaft), and machine female threads in the through holes at both ends of the shaft, thus creating through holes to serve as pilot.



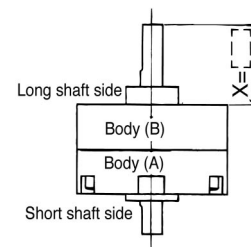
- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt.

Example: For M5 bolt: L max. = 10 mm

Size	15	20	30
M3 X 0.5	$\phi 2.5$	$\phi 2.5$	$\phi 2.5$
M4 X 0.7	—	$\phi 3.3$	$\phi 3.3$
M5 X 0.8	—	—	$\phi 4.2$

Symbol: A17

Shorten the long end of the shaft.



Size	X
10	3 to 14
15	4 to 18
20	4.5 to 20
30	5 to 22

CRB1

CRBU

CRA1

CRQ

MRQ

MSQ

MSUB

Series CRB1/Size: 10, 15, 20, 30

Made to Order Specifications

Change of Shaft End Shape/-XA18 to XA23

Consult SMC for further information on specifications, dimensions and delivery.

Symbols

1 Change of shaft end shape

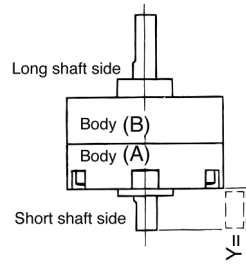
-XA18 to XA23

Additional reminders

- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensions, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- Unless specified otherwise, the thread pitch is based on coarse metric threads.
P = thread pitch
M3 X 0.5; M4 X 0.7; M5 X 0.8
- Enter the desired figures in the □□ portion of the diagram.
- To shorten the shaft, use the dimensional tables for patterns A17 to A19 for reference.

Symbol: A18

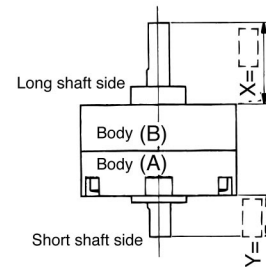
Shorten the short end of the shaft.



(mm)	
Size	Y
10	1 to 8
15	1.5 to 9
20	1.5 to 10
30	2 to 13

Symbol: A19

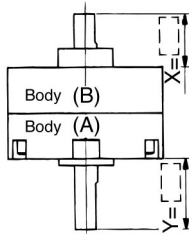
Shorten both the long and the short end of the shaft.



(mm)		
Size	X	Y
10	3 to 14	1 to 8
15	4 to 18	1.5 to 9
20	4.5 to 20	1.5 to 10
30	5 to 22	2 to 13

Symbol: A20

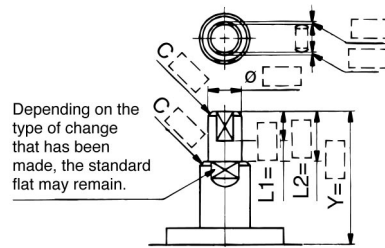
Reverse the assembly of the shaft (thus shortening the long end and the short end of the shaft.)



(mm)		
Size	X	Y
10	3 to 10	1 to 12
15	4 to 11.5	1.5 to 15.5
20	4.5 to 13	1.5 to 17
30	5 to 16	2 to 19

Symbol: A21

The shaft can be further shortened by machining a round shoulder and double flats on the long end of the shaft. (If the shaft is not to be shortened, leave X dimension blank.)

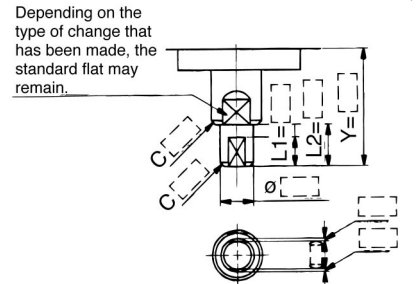


Depending on the type of change that has been made, the standard flat may remain.

(mm)				
Size	X	L1max	L2	
10	6 to 14	X-4.5	L1+1.5	
15	7 to 18	X-5.5	L1+1.5	
20	8 to 20	X-6.5	L1+2	
30	10 to 22	X-8	L1+3	

Symbol: A22

The shaft can be further shortened by machining a round shoulder and double flats on the short end of the shaft. (If the shaft is not to be shortened, leave Y dimension blank.)



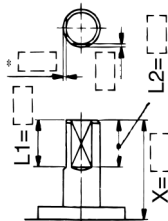
Depending on the type of change that has been made, the standard flat may remain.

(mm)				
Size	Y	L1max	L2	
10	4 to 8	Y-2.5	L1+1.5	
15	4.5 to 9	Y-3	L1+1.5	
20	5 to 10	Y-3.5	L1+2	
30	7 to 13	Y-5	L1+3	

Symbol: A23

The shaft can be further shortened by milling perpendicular double flats on the long end of the shaft. (If no changes are to be made to the standard flat and the shaft is not to be shortened, leave the L1 and X dimensions blank.)

The "*" mark indicates 0.5 minimum.
L1 is the standard flat.



(mm)			
Size	X	L1	L2max
10	5 to 14	9-(14-X) to (X-3)	X-3
15	8 to 18	10-(18-X) to (X-4)	X-4
20	10 to 20	10-(20-X) to (X-4.5)	X-4.5
30	10 to 22	12-(22-X) to (X-5)	X-5

Series CRB1/Size: 10, 15, 20, 30

Made to Order Specifications

Change of Shaft End Shape/-XA31 to XA40

Consult SMC for further information on specifications, dimensions and delivery.

Symbols

2 Change of shaft end shape/Applicable shaft style: Shaft J, K, S, T, Y -XA31 to XA40

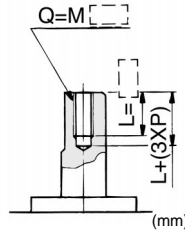
Additional reminders

- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensions, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- Unless specified otherwise, the thread pitch is based on coarse metric threads.
P = thread pitch
M3 X 0.5; M4 X 0.7; M5 X 0.8
- Enter the desired figures in the [] portion of the diagram.
- To shorten the shaft, use the dimensional tables for patterns A17 to A19 for reference.

Symbol: A31

Machine female threads into the long end of the shaft.

- The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M3 bolt: L max. = 6mm)
- Applicable shaft styles — shafts S, Y

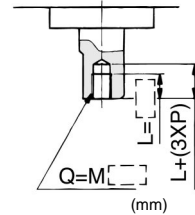


Shaft Size	Q	
	S	Y
10	Not manufacturable	
15	M3	
20	M3, M4	
30	M3, M4, M5	

Symbol: A32

Machine female threads into the short end of the shaft.

- The L dimension (maximum) is, as a rule, twice the size of the bolt. (If M5 only 1.5 times)
(Example: For M4 bolt: L max. = 8mm)
- Applicable shaft styles — shafts S, Y

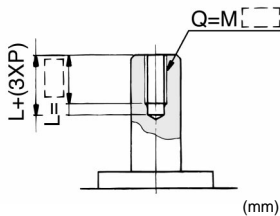


Shaft Size	Q	
	S	Y
10	Not manufacturable	
15	M3	
20	M3, M4	
30	M3, M4, M5	

Symbol: A33

Machine female threads into the long end of the shaft.

- The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M3 bolt: L max. = 6mm)
- Applicable shaft styles — shafts J, K, T

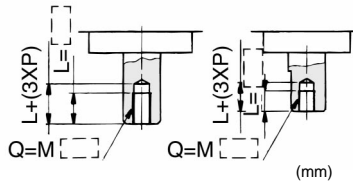


Shaft Size	Q		
	J	K	T
10	Not manufacturable		
15	M3		
20	M3, M4		
30	M3, M4, M5		

Symbol: A34

Machine female threads into the short end of the shaft.

- The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M3 bolt: L max. = 6mm)
However, in the case of the M5 bolt for shaft T, it is 1.5 times the size of the bolt.
- Applicable shaft styles — shafts J, K, T

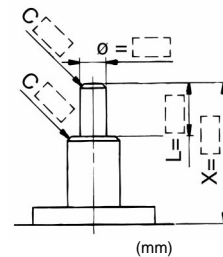


Shaft Size	Q		
	J	K	T
10	Not manufacturable		
15	M3		
20	M3, M4		
30	M3, M4, M5		

Symbol: A37

The shaft can be further shortened by machining a round shoulder on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)

- Applicable shaft styles — shafts J, K, T

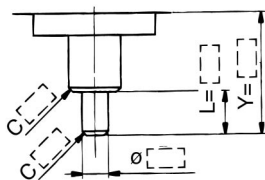


Shaft Size	J	K	T	J	K	T
	X			Lmax		
10	4 to 14			X-3		
15	5 to 18			X-4		
20	6 to 20			X-4.5		
30	6 to 22			X-5		

Symbol: A38

The shaft can be further shortened by machining a round shoulder on the short end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)

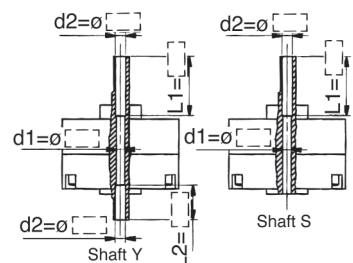
- Applicable shaft styles — shaft K



Shaft Size	Y	Lmax
10	2 to 14	Y-1
15	3 to 18	Y-1.5
20	3 to 20	Y-1.5
30	3 to 22	Y-2

Symbol: A39

Applicable to the single vane type only. Shaft through hole (shafts S, Y additionally machined)

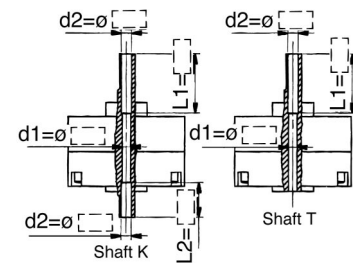


- Size 10 is not manufacturable. For size 15 is $d1 = \phi 2.5$, $L1 = \max. X 18$ The minimum range of the machinable dimension for the $d2$ area is 0.1mm.
- For sizes 20 and 30 are $d1 = d2$.
- With size 15, enter the $L1$, $L2$, and $d1$ dimensions when $d2$ is $\phi 2.6$ or more.
- Applicable shaft styles — shafts S, Y

Shaft Size	S	Y	S	Y
	d1	d2	d1	d2
15	2.5	2.5 to 3	—	—
20	—	2.5 to 4	—	—
30	—	2.5 to 4.5	—	—

Symbol: A40

Applicable to the single vane type only. Shaft through hole (shafts K, T additionally machined)



- Size 10 is not manufacturable. For size 15 is $d1 = \phi 2.5$, $L1 = \max. X 18$ The minimum range of the machinable dimension for the $d2$ area is 0.1mm.
- For sizes 20 and 30 are $d1 = d2$.
- With size 15, enter the $L1$, $L2$, and $d1$ dimensions when $d2$ is $\phi 2.6$ or more.
- Applicable shaft styles — shafts S, Y

Shaft Size	K	T	K	T
	d1	d2	d1	d2
15	2.5	2.5 to 3	—	—
20	—	2.5 to 4	—	—
30	—	2.5 to 4.5	—	—

CRB1

CRBU

CRA1

CRQ

MRQ

MSQ

MSUB

Series CRB1/Size: 10, 15, 20, 30

Made to Order Specifications

Change of Shaft End Shape/-XA41 to XA47

Consult SMC for further information on specifications, dimensions and delivery.

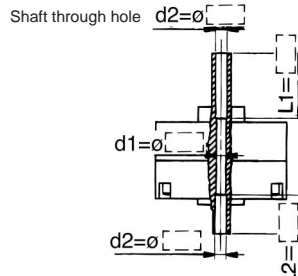
Symbols

2 Change of shaft end shape/Applicable shaft style: Shaft style J, K, S, T, Y-XA41 to XA47

Additional reminders

- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensions, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- Unless specified otherwise, the thread pitch is based on coarse metric threads.
P = thread pitch
M3 X 0.5; M4 X 0.7; M5 X 0.8
- Enter the desired figures in the [] portion of the diagram.
- To shorten the shaft, use the dimensional tables for patterns A17 to A19 for reference.

Symbol: A41 Applicable only to single vane.



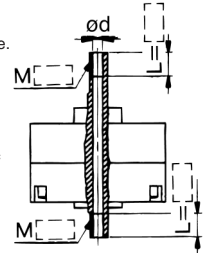
- Size 10 is not manufacturable.
- For size 15 is $d1 = 2.5$, $L1 = \max. 18$ The minimum range of the machinable dimension for the $d2$ area is 0.1mm. Enter the $L1$, $L2$, and $d1$ dimensions when $d2$ is $\phi 2.6$ or more.
- For sizes 20 and 30 are $d1 = d2$.
- Applicable shaft styles — shaft J

Size	d1	d2
15	2.5	2.5 to 3
20	—	2.5 to 4
30	—	2.5 to 4.5

Symbol: A42 Applicable only to single vane.

Machine special ends (at both ends of the shaft), and machine female threads in the through holes at both ends of the shaft, thus creating through holes to serve as the pilot holes.

- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt. (Example: For M5 bolt: L max. = 10mm.) However, for the short end of shaft S: For M5 bolt: L max. = 7.5mm.
- Applicable shaft styles — shafts S, Y

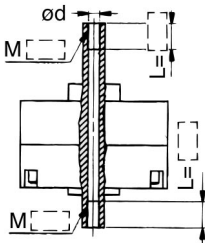


Thread	Size 15		Size 20		Size 30	
	S	Y	S	Y	S	Y
M3 X 0.5	2.5	—	2.5	—	2.5	—
M4 X 0.7	—	—	3.3	—	3.3	—
M5 X 0.8	—	—	—	—	4.2	—

Symbol: A43 Applicable only to single vane.

Machine special ends (at both ends of the shaft), and machine female threads in the through holes at both ends of the shaft, thus creating through holes to serve as the pilot holes.

- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt. (Example: For M5 bolt: L max. = 10mm.) However, for the short end of shaft T: For M5 bolt: L max. = 7.5mm.
- Applicable shaft styles — shafts K, T

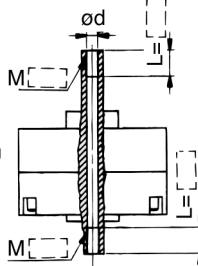


Thread	Size 15		Size 20		Size 30	
	K	T	K	T	K	T
M3 X 0.5	2.5	—	2.5	—	2.5	—
M4 X 0.7	—	—	3.3	—	3.3	—
M5 X 0.8	—	—	—	—	4.2	—

Symbol: A44 Applicable only to single vane.

Machine special ends (at both ends of the shaft), and machine female threads in the through holes at both ends of the shaft, thus creating through holes to serve as the pilot holes.

- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt. (Example: For M5 bolt: L max. = 10mm.)
- Applicable shaft styles — shaft J

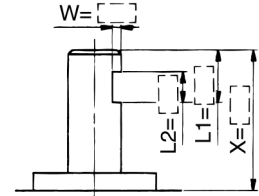


Thread	Size 15		Size 20		Size 30	
	J	T	J	T	J	T
M3 X 0.5	2.5	—	2.5	—	2.5	—
M4 X 0.7	—	—	3.3	—	3.3	—
M5 X 0.8	—	—	—	—	4.2	—

Symbol: A45

The shaft can be further shortened by machining an intermediate flat on the long end of the shaft (the position is that of the standard flat).

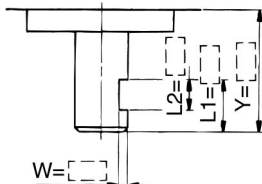
- Applicable shaft styles — shafts J, K, T



Size	X			W			L1max			L2max		
	J	K	T	J	K	T	J	K	T	J	K	T
10	6.5 to 14	—	—	0.5 to 2	—	—	X-3	—	—	L1-1	—	—
15	8 to 18	—	—	0.5 to 2.5	—	—	X-4	—	—	L1-1	—	—
20	9 to 20	—	—	0.5 to 3	—	—	X-4.5	—	—	L1-1	—	—
30	11.5 to 22	—	—	0.5 to 4	—	—	X-5	—	—	L1-2	—	—

Symbol: A46

The shaft can be further shortened by machining an intermediate flat on the short end of the shaft (the position is that of the standard flat).

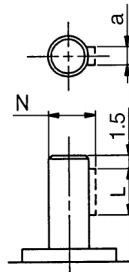


- Applicable shaft styles — shaft K

Size	Y		W		L1max		L2max	
	Y	W	L1max	L2max	Y	W	L1max	L2max
10	4.5 to 14	—	0.5 to 2	—	Y-1	—	L1-1	—
15	5.5 to 18	—	0.5 to 2.5	—	Y-1.5	—	L1-1	—
20	6 to 20	—	0.5 to 3	—	Y-1.5	—	L1-1	—
30	8.5 to 22	—	0.5 to 4	—	Y-2	—	L1-2	—

Symbol: A47

Machining a key groove in the long end of the shaft (the position is that of the standard flat). A key must be ordered separately.



- Applicable shaft styles — shafts J, K, T

Size	a		L		N	
	a	L	N	a	L	N
20	2h9-0.025	—	10	—	6.8	—
30	3h9-0.025	—	14	—	9.2	—

Caution

Symbols: A45, A46 and dimensions W and L1-L2

The intermediate flat may interfere with the center hole if dimensions W and (L1-L2) are at the measurements given below.

Size	W	L1-L2
ø10	1 to 2	1 to 3
ø15	1.5 to 2.5	1 to 3
ø20	2 to 3	1 to 3
ø30	3 to 4	2 to 3

Series **CRB1**/Size: 10, 15, 20, 30

Made to Order Specifications

-XC1 to -XC4

Consult SMC for further information on specifications, dimensions and delivery.

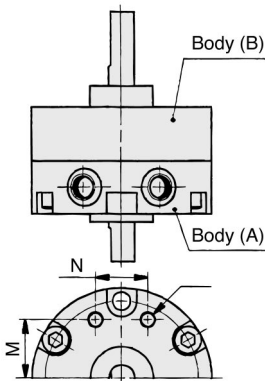
3 Additional connecting port to the end of the body (A) side **-XC1**

CRB1BWP Refer to the "How to Order" on p.1.1-20. **-XC1**

Symbols
Connecting port is added to the body (A) side.

*Not available for models with auto switch.

As the additional process part is not treated, the surface material is white aluminum.



Size	Q	M	N
10	M3	8.5	9.5
15	M3	11	10
20	M5	14	13
30	M5	15.5	14

(mm)

5 Location change of body tightening bolt **-XC3**

CRB1BWP Refer to the "How to Order" on p.1.1-20. **-XC3**

Symbols
Location change of body tightening bolt

Hexagon socket head cap screw (3 parts)

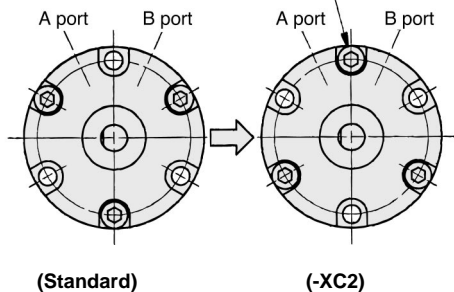


Diagram viewed from the short shaft side

4 Three holes in the body (B) to penetrate screws. **-XC2**

CRB1BWP Refer to the "How to Order" on p.1.1-20. **-XC2**

Symbols
Three holes in screw parts of the body (B) to penetrate screws.

*Not available for models with auto switch.

As the additional process part is not treated, the surface material is white aluminum.

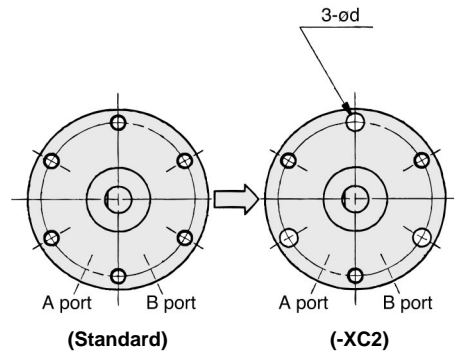


Diagram viewed from the long shaft side.

Size	d
15	3.4
20	4.5
30	5.5

(Except for size 10)

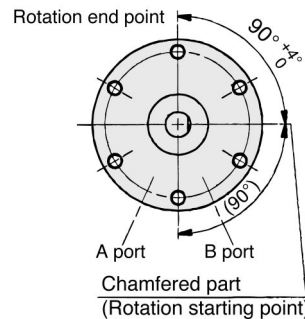
6 Location change of rotation range (Rotation range 90°) **-XC4**

CRB1BWP Refer to the "How to Order" on p.1.1-20. **-XC4**

Symbols
Location change of the rotation range (90° to the right from the starting point)

Applicable only to single vane.

Rotation starting point is located on the horizontal line (90° to the right).
Angle error of "CRB1BW10" is 0° to +5°.



Rotation starting point is one chamfered position during pressurization from A port.

Diagram viewed from the long shaft side

CRB1

CRBU

CRA1

CRQ

MRQ

MSQ

MSUB

Series **CRB1**/Size: 10, 15, 20, 30 Made to Order Specifications

Change in Angle of Rotation/-XC5 to -XC6

Reverse Mounting of Rotation Shaft/-XC7, Fluoride grease/-XC30



Consult SMC for further information on specifications, dimensions and delivery.

7 Change in angle of rotation **-XC5 and XC6**

Symbols

CRB1BWP Refer to "How to Order" on p.1.1-20. — XC5

— XC6

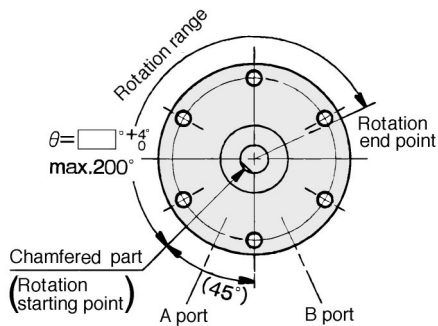
Symbol ↓

-XC5	45°
-XC6	90°

*Write required angle in below.

Symbol: XC5 Applicable only to single vane style.

Rotation starting point is located at the angle of 45°. Angle error of "CRB1BW10" is from 0° to +5°. Port sizes of "CRB1BW10" and "CRB1BW15" are M3.

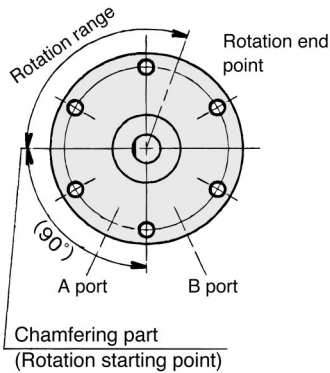


Symbol: XC6 Applicable only to single vane style.

Rotation starting point is located on horizontal line (left at the angle of 90°). Angle error of "CRB1BW10" is from 0° to +5°.

$$\theta = \square^{\circ} + 5^{\circ}_0$$

max. 110°

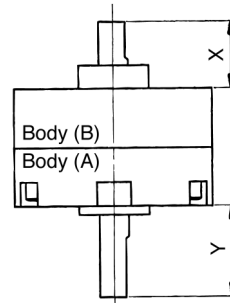


8 Reverse mounting of rotation shaft **-XC7**

Symbol

CRB1BWP Refer to "How to Order" on p.1.1-20. —XC7

Dimensions



Size	Y	X
10	12	10
15	15.5	11.5
20	17	13
30	19	16

mm

9 Fluorine grease **-XC30**

Symbol

CRB1BWP Refer to "How to Order" on p.1.1-20. —XC30

Fluorine grease ●

Fluorine grease is used for lubricant for seal part of packing and inner wall of the actuator.

Series CRB1/Size: 10, 15, 20, 30



Made to Order Specifications

Shaft Variations/Shaft Styles: J, Y, K, S, T

Consult SMC for further information on specifications, dimensions and delivery.

Symbol

10 Shaft Variations

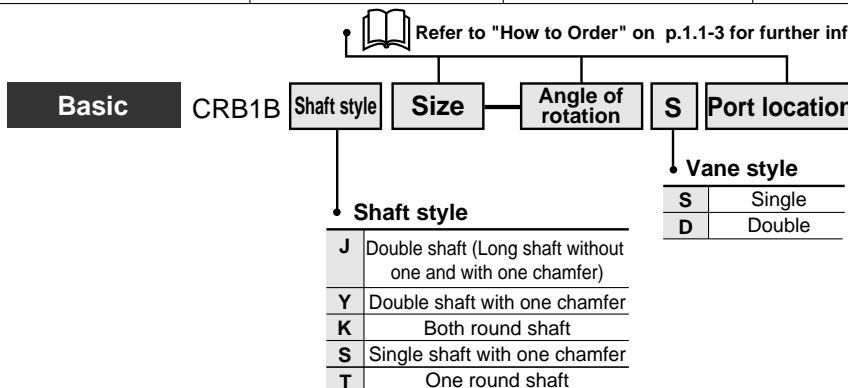
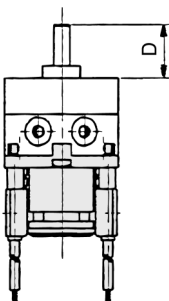
Shaft style: J, Y, K, S, T

Shaft styles of series CRB1 except for standard shaft style (W).

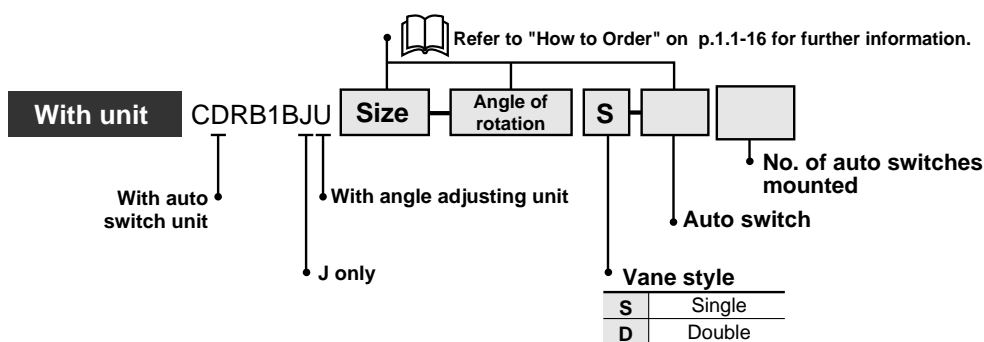
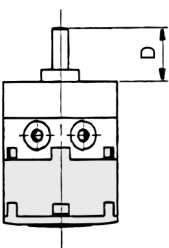
Symbols for shaft styles	J	Y	K	S	T
Shaft classification	Double shaft			Single shaft	
Shaft style variation	Long shaft without one and with one chamfer	One chamfer	Round shaft	One chamfer	Round shaft
Standard					

- CRB1
- CRBU
- CRA1
- CRQ
- MRQ
- MSQ
- MSUB

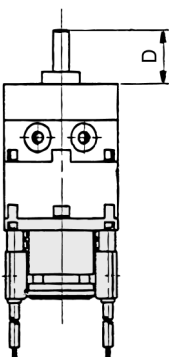
With auto switch



With angle adjusting unit



With auto switch and angle adjusting unit



	(mm)			
Size	10	15	20	30
C	8	9	10	13
D	14	18	20	22

Note 1) For unit attached style, port locations are only on the body side.
 Note 2) Shaft size and one chamfer dimensions are same as that of the standard product. Refer to p.1.1-9 and 1.1-10.

Rotary Actuator Vane Style

Series CRB1

Size: 50, 63, 80, 100

Series Variations

	Fluid		Air																		
	Size		50				63				80				100						
	Vane type		S		D		S		D		S		D		S		D				
	Port location		Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported			
Standard	Rotating angle	90°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
		180°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		270°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		Option	100°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			190°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			280°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Shaft type	Double shaft		W	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Cushion	Rubber bumper		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Variations	Basic type		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	With auto switch		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	With One-touch fittings		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Clean series	10-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Copper-free	20-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Option	Mounting style	With foot bracket		L	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Made to Order	Material	Stainless steel specifications for main parts		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Shaft type	Double shaft type	Double shaft (Long shaft with four chamfers)		J	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
			Double shaft with four chamfers		Z	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			Double shaft key		Y	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Double round shaft		K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Single shaft type	Single shaft key		S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		Single round shaft		T	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		Single shaft with four chamfers		X	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Pattern	Shaft pattern		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		Rotation pattern		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
With solenoid valve		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

20-

Rotary Actuator Vane Style

Series *CRB1*

Size: 50, 63, 80, 100

How to Order

Without auto switch

CRB1 B W 80 90 S

With auto switch

CDRB1 B W 80 90 S R73

With auto switch

Mounting style

B	Basic style
L	Foot style

Refer to Table (1) below if only foot assembly is required separately.

Table (1): Foot Assembly Part No.

Model	Unit part no.
CRB1LW50	P411020-5
CRB1LW63	P411030-5
CRB1LW80	P411040-5
CRB1LW100	P411050-5

Size

50
63
80
100

Number of auto switches

S	1 pc. *
Nil	2 pcs.

* Right-hand auto switch will be used for actuators with 1 auto switch.

Electrical entry/Lead wire length

Nil	Grommet/Lead wire: 0.5 m
L	Grommet/Lead wire: 3 m
C	Connector/Lead wire: 0.5 m
CL	Connector/Lead wire: 3 m
CN	Connector/Without lead wire

* Connectors are available only for auto switch types R73, R80, T79.

** Lead wire with connector part nos.
D-LC05: Lead wire 0.5 m
D-LC30: Lead wire 3 m

Shaft type

W	Double shaft (Long shaft key & Four chamfers)
----------	---

Rotating angle

Classification	Symbol	Single vane	Double vane
Standard	90	90°	90°
	180	180°	—
	270	270°	—
Option	100	100°	100°
	190	190°	—
	280	280°	—

Vane type

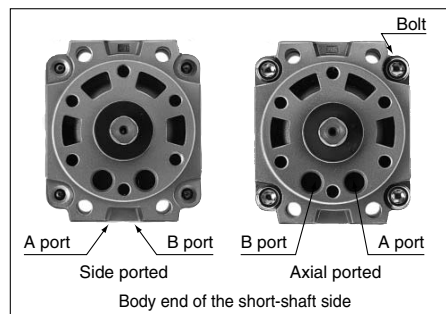
S	Single vane
D	Double vane

Auto switch

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

Connection port location

Nil	Side ported
E	Axial ported



Applicable Auto Switch/Refer to page 11-11-1 for detailed auto switch switches.

Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m) *				Applicable load			
				DC	AC		0.5 (Nil)	3 (L)	5 (Z)	None (N)	IC circuit	Relay, PLC		
Reed switch	Grommet	No	2-wire	24 V	48 V	24 V, 48 V	R80	●	●	—			—	—
	Connector				100 V	100 V	R80C	●	●	●	●			
	Grommet	Yes			—	100 V	R73	●	●	—	—			
	Connector				R73C	●	●	●	●					
Solid state switch	Grommet	Yes	2-wire	24 V	12 V	—	T79	●	●	—	—	—	Relay, PLC	
	Connector				T79C		●	●	●	●				
	Grommet		3-wire (NPN)		5 V, 12 V		S79	●	●	—	—			IC circuit
			3-wire (PNP)		S7P		●	●	—	—				

* Lead wire length symbols:
0.5 m ... Nil (Example) R73C
3 m ... L (Example) R73CL
5 m ... Z (Example) R73CZ
None ... N (Example) R73CN

- **Excellent reliability and durability**
The use of bearings to support thrust and radial loads improves reliability and durability.
- **The body of the rotary actuator can be mounted directly.**
- **Two different port locations**



Specifications

Size	CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100	CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100	
Vane type	Single vane (S)				Double vane (D)				
Rotating angle	Standard	90 ^{o+4} ₀ , 180 ^{o+4} ₀ , 270 ^{o+4} ₀			90 ^{o+4} ₀				
	Option	100 ^{o+4} ₀ , 190 ^{o+4} ₀ , 280 ^{o+4} ₀			100 ^{o+4} ₀				
Fluid	Air (Non-lube)								
Proof pressure	1.5 MPa								
Ambient and fluid temperature	5 to 60°C								
Max. operating pressure	1.0 MPa								
Min. operating pressure	0.15 MPa								
Speed regulation range (s/90°)	0.1 to 1								
Allowable kinetic energy	0.082 J	0.12 J	0.398 J	0.6 J	0.112 J	0.16 J	0.54 J	0.811 J	
Shaft load	Allowable radial load	245 N	390 N	490 N	588 N	245 N	390 N	490 N	588 N
	Allowable thrust load	196 N	340 N	490 N	539 N	196 N	340 N	490 N	539 N
Bearing	Bearing								
Port location	Side ported or Axial ported								
Size	Side ported	Rc 1/8		Rc 1/4		Rc 1/8		Rc 1/4	
	Axial ported	Rc 1/8		Rc 1/4		Rc 1/8		Rc 1/4	
Mounting	Basic style, Foot style								

Volume

Classification	Rotating angle	Single vane (S)				Double vane (D)			
		CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100	CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100
Standard	90°	30	70	88	186	48	98	136	272
	180°	49	94	138	281	—	—	—	—
	270°	66	118	188	376	—	—	—	—
Option	100°	32	73	93	197	52	104	146	294
	190°	51	97	143	292	—	—	—	—
	280°	68	121	193	387	—	—	—	—

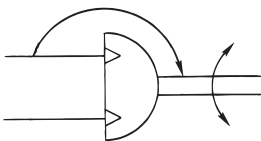
Weight

Model	Rotating angle	Single vane (S)				Double vane (D)			
		CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100	CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100
Main body	90°	810	1365	2070	3990	830	1410	2120	4150
	180°	790	1330	2010	3880	—	—	—	—
	270°	770	1290	1950	3760	—	—	—	—
	100°	808	1360	2065	3980	822	1400	2100	4100
	190°	788	1325	2005	3870	—	—	—	—
	280°	766	1285	1940	3735	—	—	—	—
Auto switch unit + 2 switches		65	85	95	165	65	85	95	165
Foot bracket assembly		384	785	993	1722	384	785	993	1722

⚠ Caution

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

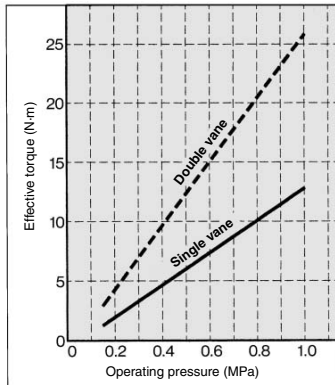
JIS Symbol



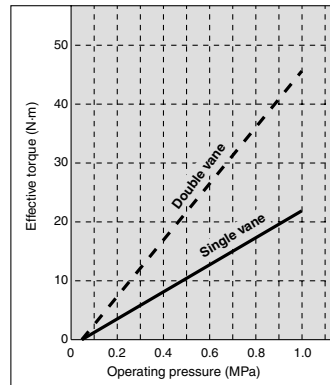
Series CRB1

Effective Output

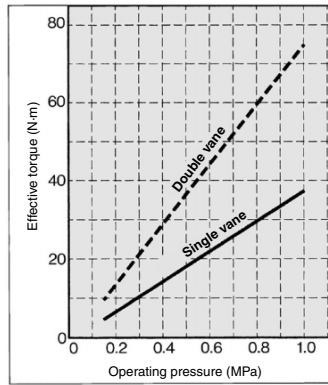
CRB1BW50



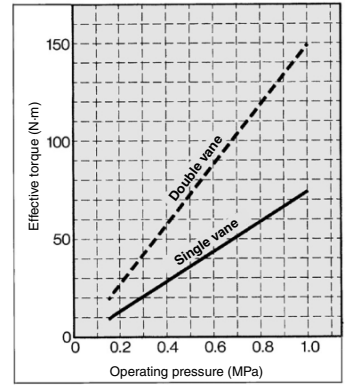
CRB1BW63



CRB1BW80



CRB1BW100



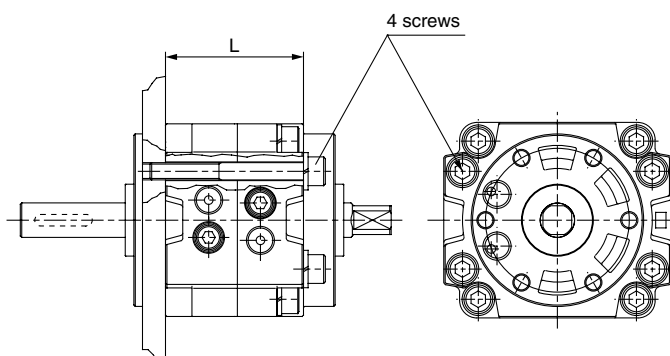
Key Position and Rotation Range

Key positions in the illustrations below show the intermediate rotation position when A or B port is pressurized.

Top View from Long Shaft Side

	Single vane type			Double vane type
	90°	180°	270°	90°
Standard				
Option				

Direct Mounting of Body



Model	L	Screw
CRB1BW50	48	M6
CRB1BW63	52	M8
CRB1BW80	60	M8
CRB1BW100	80	M10

With One-touch Fittings

CRB1 **Mounting** W50F — **Rotating angle** **Vane type** **Port location**

• With One-touch fittings

With One-touch fittings facilitate the piping work and greatly reduce the installation space.

Specifications

Vane type	Single vane	Double vane
Size	50	
Operating pressure range (MPa)	0.15 to 1.0	
Speed regulation range (s/90°)	0.1 to 1	
Port location	Side ported or Axial ported	
Piping	With One-touch fittings	
Mounting	Basic style, Foot style	
Variations	Basic style, With auto switch	

Applicable Tubing and Size

Applicable tubing O.D./I.D (mm)	ø6/ø4
Applicable tubing material	Nylon, Soft nylon, Polyurethane

Refer to page 11-4-8 for construction drawing.
Refer to page 11-4-12 for external dimensions.

Clean Series

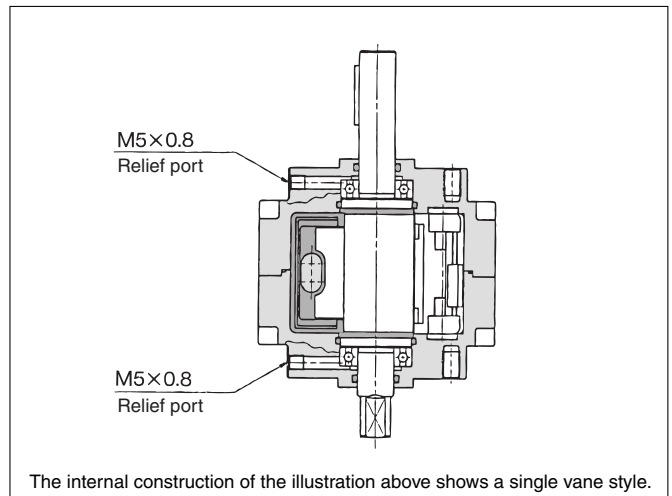
10 — CRB1BW **Size** — **Rotating angle** **Vane type** **Port location**

• Clean Series, With relief port

The double-seal construction of the actuator shaft section of these series to channel exhaust through the relief ports directly to the outside of a clean room environment allows operation of these cylinders in a class 100 clean room.

Specifications

Vane type	Single vane	Double vane
Size	50, 63	
Operating pressure range (MPa)	0.15 to 1.0	
Speed regulation range (s/90°)	0.1 to 1	
Port location	Side ported or Axial ported	
Piping	Screw-in type	
Relief port size	M5 x 0.8	
Mounting	Basic style	
Variations	Basic style, With auto switch	



Copper-free

20 — CRB1 **Mounting** W **Size** — **Rotating angle** **Vane type** **Port location**

• Copper-free

Use the standard vane style rotary actuators in all series to prevent any adverse effects to color CRTs due to copper ions or fluororesin.

Specifications

Vane type	Single vane	Double vane
Size	50, 63, 80, 100	
Operating pressure range (MPa)	0.15 to 1.0	
Speed regulation range (s/90°)	0.1 to 1	
Port location	Side ported or Axial ported	
Piping	Screw-in type	
Mounting	Basic style, Foot style	
Variations	Basic style, With auto switch	

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

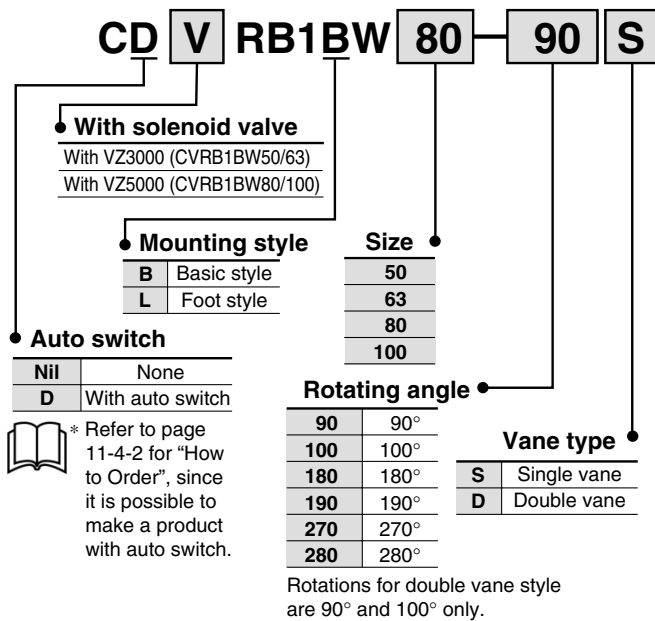
D-

20-

Series CRB1

Rotary Actuator with Solenoid Valve

How to Order



Specifications

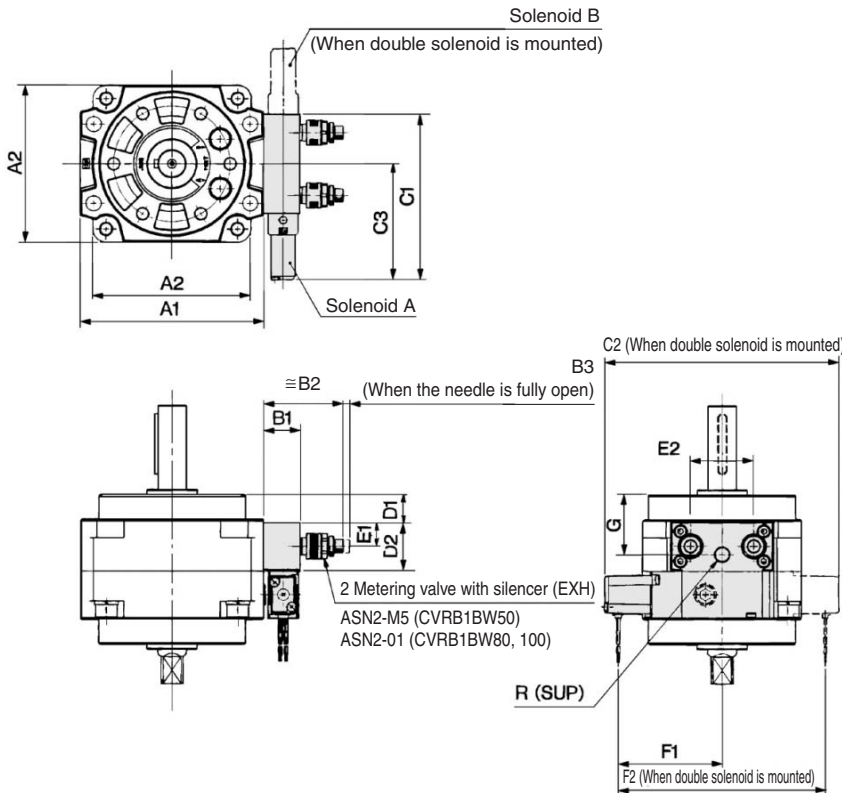
Fluid	Air
Operating pressure (MPa)	0.15 to 0.7
Rotating angle	Standard: 90°, 180°, 270°; Option: 100°, 190°, 280°
Rotation time adjustment range (s/90°)	0.3 to 1.0
Applicable solenoid valve	Size 50, 63: VZ3000, Size 80, 100: VZ5000
Operating voltage	100 VAC, 200 VAC, 24 VDC
Electrical entry	L plug connector, DIN terminal M plug connector

Allowable Kinetic Energy

Size	Vane style	Allowable kinetic energy
50	Single vane	0.082 J
	Double vane	0.112 J
63	Single vane	0.120 J
	Double vane	0.160 J
80	Single vane	0.398 J
	Double vane	0.54 J
100	Single vane	0.6 J
	Double vane	0.811 J

* Speed regulation range: 0.3 to 1 s/90°

Dimensions



- Note 1) Solenoid valve in external appearance is in the case of VZ₃140-1G.
Note 2) Solenoid valve dimensions are for 2 position, and dimensions in () are for 3 position.
Note 3) Make sure to indicate the type of solenoid valve when ordering.

Model (size)	A1	A2	B1	B2	B3	C1	C2	C3	D1	D2	E1	E2	F1	F2	G	R
CVRB1BW50	78	67	18	36	2.8	82.5	120 (136.5)	60 (61)	12	24	11.5	30	52 (53)	104 (120.5)	25	1/8
CVRB1BW63	98	82	18	36	2.8	82.5	102 (136.5)	60 (61)	16	24	11.5	30	52 (53)	104 (120.5)	27.5	1/8
CVRB1BW80	110	95	22	48	4	100	140 (155)	70 (71)	17	29	14	38	62 (63)	124 (139)	36	1/8
CVRB1BW100	140	125	22	48	4	100	140 (155)	70 (71)	23.5	29	14	38	62 (63)	124 (139)	42.5	1/8



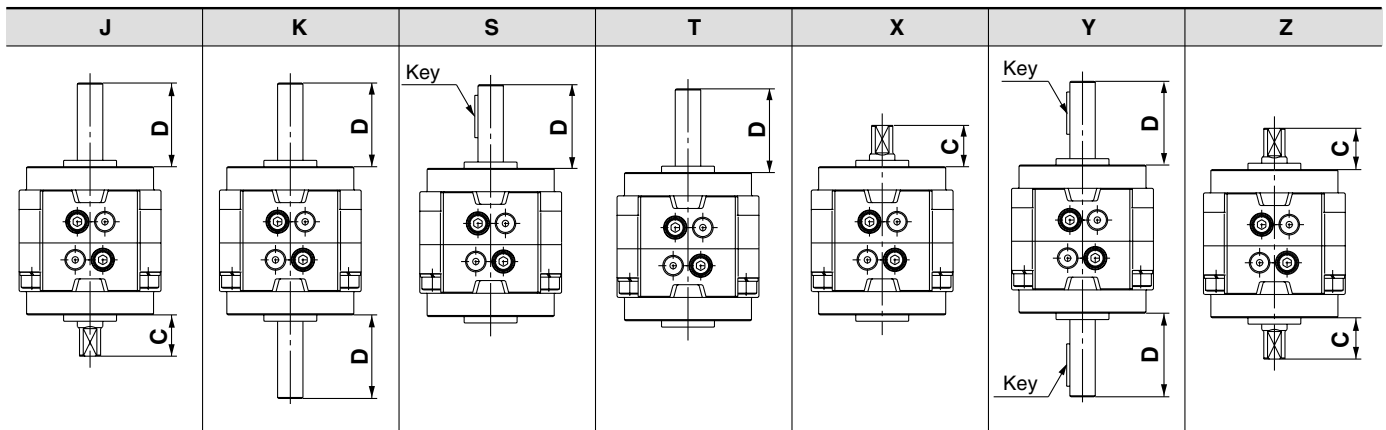
Rotary Actuator: Replaceable Shaft

A shaft can be replaced with a different shaft type except for standard shaft type (W).

Without auto switch **CRB1B** **J** Size — Rotating angle Vane type Port location

Shaft type

J	Double shaft (Long shaft without keyway & Four chamfers)
K	Double round shaft
S	Single shaft key
T	Single round shaft
X	Single shaft with four chamfers
Y	Double shaft key
Z	Double shaft with four chamfers



(mm)

Nominal size	C	D
50	19.5	39.5
63	21	45
80	23.5	53.5
100	30	65

Note) Dimensions and tolerance of the shaft and keyway are the same as the standard.

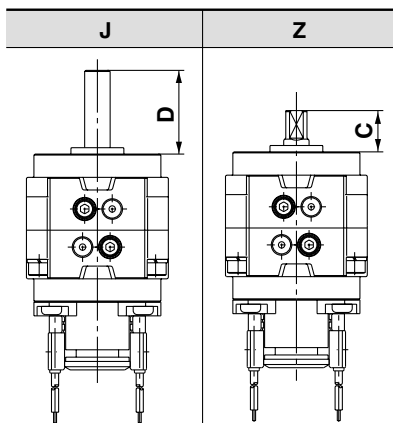
With auto switch **CDRB1B** **J** Size — Rotating angle Vane type Port location — Auto switch

With auto switch

Shaft type

J	Double shaft (Long shaft without keyway & Four chamfers)
Z	Double shaft with four chamfers

(mm)



Nominal size	C	D
50	19.5	39.5
63	21	45
80	23.5	53.5
100	30	65

Note) Dimensions and tolerance of the shaft and keyway are the same as the standard.

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

20-

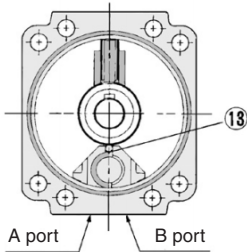
Series CRB1

Construction

Standard (Keys in the illustrations below show the intermediate rotation position.)

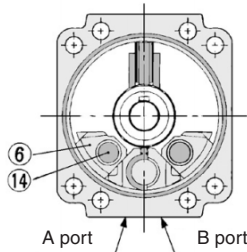
For 270° (Top view
from long shaft side)

Single vane



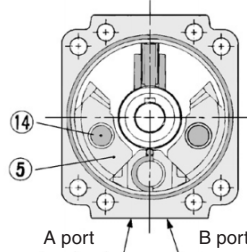
For 180° (Top view
from long shaft side)

Single vane



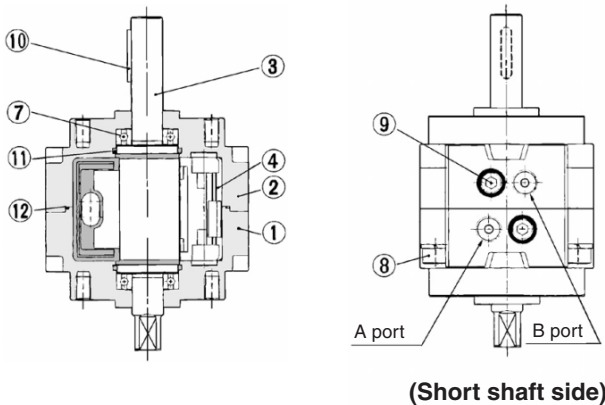
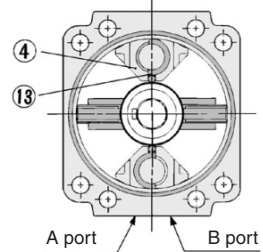
For 90° (Top view
from long shaft side)

Single vane



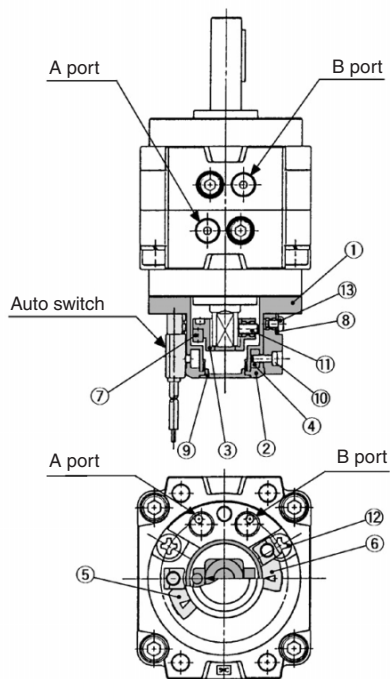
For 90° (Top view
from long shaft side)

Double vane



With auto switch

(Keys in the illustrations below show the actuator for 180° when A port is pressurized.)



Component Parts

No.	Description	Material	Note
①	Body (A)	Aluminum die-casted	CRB1BW50/63/80, painted
		Cast aluminum	CRB1BW100, painted
②	Body (B)	Aluminum die-casted	CRB1BW50/63/80, painted
		Cast aluminum	CRB1BW100, painted
③	Vane shaft	Carbon steel	
④	Stopper	Aluminum die-casted	
⑤	Stopper	Resin	For 90°
⑥	Stopper	Resin	For 180°
⑦	Bearing	High carbon chrome bearing steel	
⑧	Hexagon socket (with washer)	Carbon steel	
⑨	Fuji lock bolt	Carbon steel	
⑩	Parallel keyway	Carbon steel	
⑪	O-ring	NBR	
⑫	O-ring	NBR	Special O-ring
⑬	Stopper seal	NBR	Special seal
⑭	Holding rubber	NBR	

Component Parts

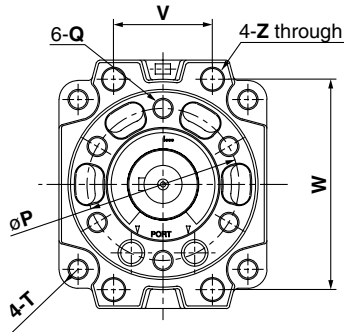
No.	Description	Material	Note
①	Cover (A)	Resin	
②	Cover (B)	Resin	
③	Magnet lever	Resin	
④	Holding block	Aluminum alloy	
⑤	Switch block (A)	Resin	
⑥	Switch block (B)	Resin	
⑦	Magnet	Magnetic body	
⑧	Arm	Stainless steel	
⑨	Rubber cap	NBR	
⑩	Round head Phillips screw	Stainless steel	
⑪	Hexagon socket head set screw	Stainless steel	
	Round head Phillips screw	Carbon steel	For CDRB1BW50/63/80
⑫	Hexagon socket head cap screw	Carbon steel	For CDRB1BW100
	Round head Phillips screw	Stainless steel	
⑬	Round head Phillips screw	Stainless steel	

Dimensions: 50, 63, 80, 100

Single vane type/Double vane type

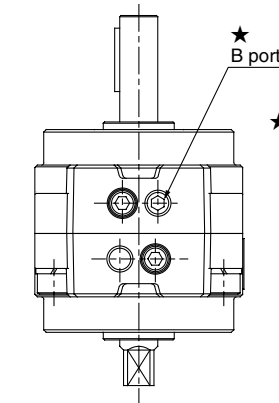
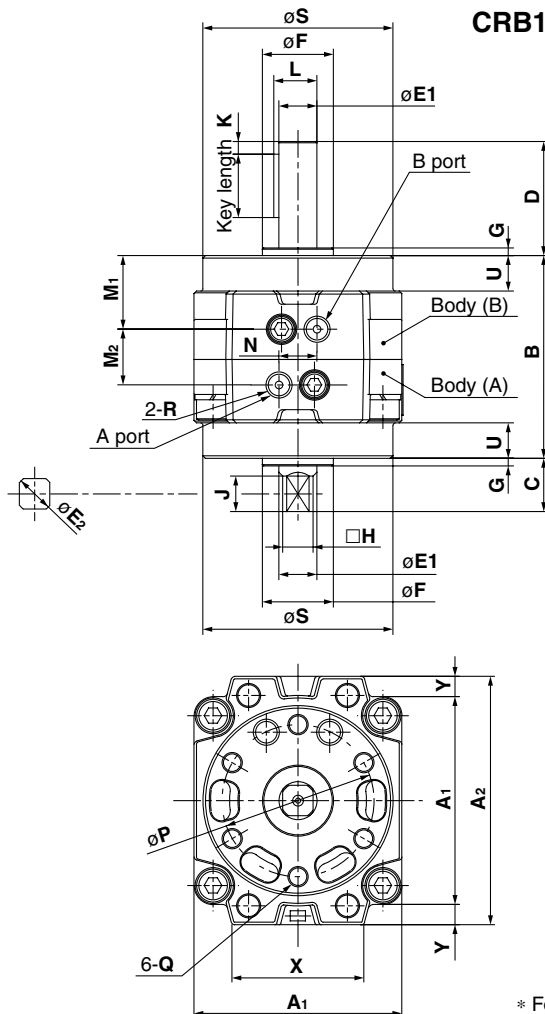
CDRB1BW□-□S/D

<Port location: Side ported>

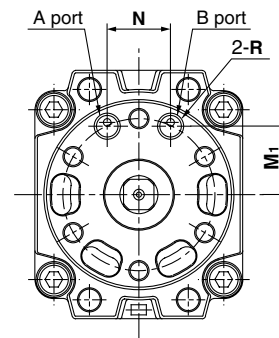


Model	Keyway dimension (mm)		
	b (h9)	h (h9)	ℓ
CRB1BW50-□□□	4 ⁰ _{-0.030}	4 ⁰ _{-0.030}	20
CRB1BW63-□□□	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}	25
CRB1BW80-□□□	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}	36
CRB1BW100-□□□	7 ⁰ _{-0.036}	7 ⁰ _{-0.036}	40

CRB1BW□-□SE, CRB1BW□-□DE <Port location: Axial ported>



★ If B port of Body (B) is machined, the port is plugged with Rc 1/8.



* For single vane: Above illustrations show actuators for 180° when B port is pressurized.

Model	A ₁	A ₂	B	C	D	E ₁ (g6)	E ₂ (h9)	F (h9)	G	H	J	K	L	M ₁	M ₂	N	P	Q	R (Rc)	S	T	U	V	W	X	Y	Z
CRB1BW50-□□	67	78	70	19.5	39.5	12 ^{-0.006} _{-0.017}	11.9 ⁰ _{-0.043}	25 ⁰ _{-0.052}	3	10	13	5	13.5	26	18	14	50	M6 x 1 depth 9	1/8	60	R ₆	11	34	66	46	5.5	6.5
CRB1BW50-□□E														21	—	18											
CRB1BW63-□□	82	98	80	21	45	15 ^{-0.006} _{-0.017}	14.9 ⁰ _{-0.043}	28 ⁰ _{-0.052}	3	12	14	5	17	29	22	15	60	M8 x 1.25 depth 10	1/8	75	R _{7.5}	14	39	83	52	8	9
CRB1BW63-□□E														27	—	25											
CRB1BW80-□□	95	110	90	23.5	53.5	17 ^{-0.006} _{-0.017}	16.9 ⁰ _{-0.043}	30 ⁰ _{-0.052}	3	13	16	5	19	30	30	20	70	M8 x 1.25 depth 12	1/4	88	R ₈	15	48	94	63	7.5	9
CRB1BW80-□□E														29	—	30											
CRB1BW100-□□	125	140	103	30	65	25 ^{-0.007} _{-0.020}	24.9 ⁰ _{-0.052}	45 ⁰ _{-0.062}	4	19	22	5	28	35.5	32	24	80	M10 x 1.5 depth 13	1/4	108	R ₁₁	11.5	60	120	78	7.5	11
CRB1BW100-□□E														38	—	38											



* For single vane: Above illustrations show actuators for 180° when B port is pressurized.

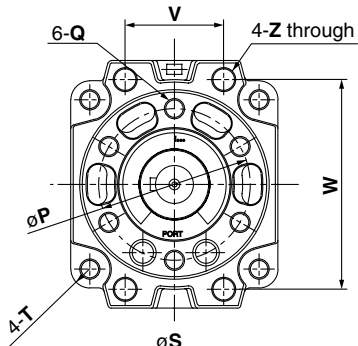
Series CRB1

Dimensions: 50, 63, 80, 100 (With auto switch unit)

Single vane type/Double vane type

CDRB1BW□-□S/D

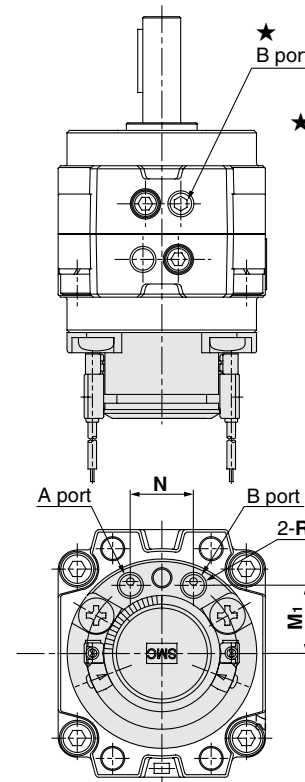
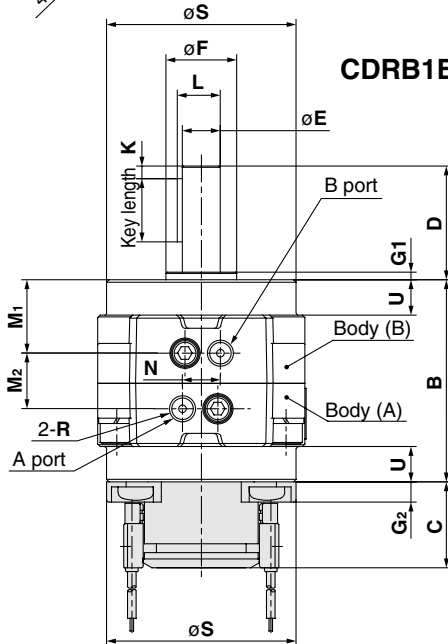
<Port location: Side ported>



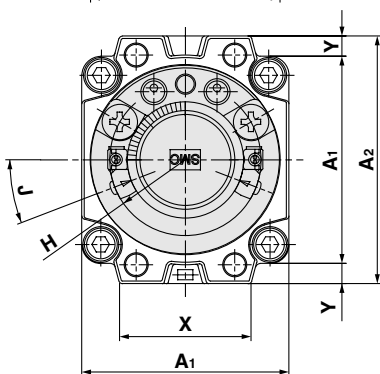
(mm)

Model	Keyway dimension		
	b (h9)	h (h9)	ℓ
CDRB1BW50-□□□	4 ⁰ _{-0.030}	4 ⁰ _{-0.030}	20
CDRB1BW63-□□□	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}	25
CDRB1BW80-□□□	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}	36
CDRB1BW100-□□□	7 ⁰ _{-0.036}	7 ⁰ _{-0.036}	40

CDRB1BW□-□SE, CDRB1BW□-□DE <Port location: Axial ported>



★ If B port of Body (B) is machined, the port is plugged with Rc 1/8.



* For single vane: Above illustrations show actuators for 180° when B port is pressurized.

(mm)

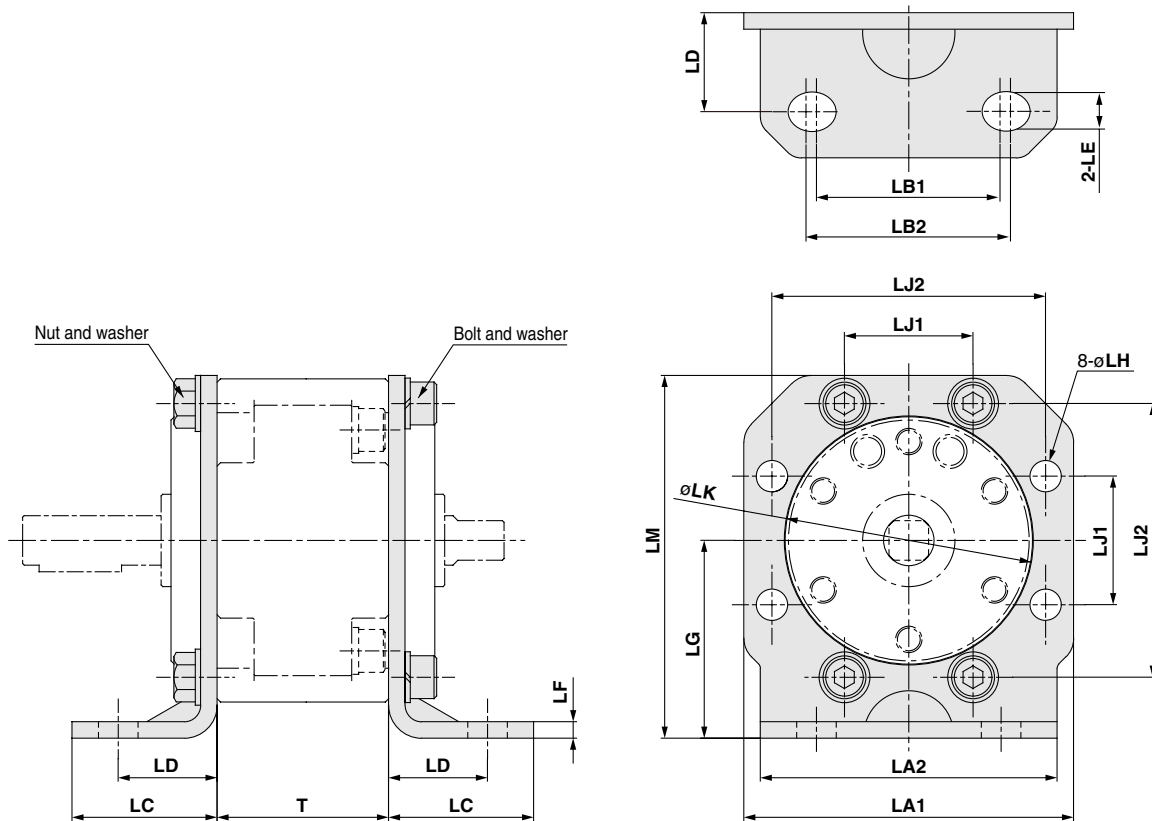
Model	A1	A2	B	C	D	E (g6)	F (h9)	G1	G2	H (R)	J	K	L	M1	M2	N	P	Q	R (Rc)	S	T	U	V	W	X	Y	Z
CDRB1BW50-□□	67	78	70	32	39.5	12 ^{-0.006} _{-0.017}	25 ⁰ _{-0.052}	3	6.5	R22.5	32.5	5	13.5	26	18	14	50	M6 x 1 depth 9	1/8	60	R6	11	34	66	46	5.5	6.5
CDRB1BW50-□□E																											
CDRB1BW63-□□	82	98	80	34	45	15 ^{-0.006} _{-0.017}	28 ⁰ _{-0.052}	3	8	R30	21	5	17	29	22	15	60	M8 x 1.25 depth 10	1/8	75	R7.5	14	39	83	52	8	9
CDRB1BW63-□□E																											
CDRB1BW80-□□	95	110	90	34	53.5	17 ^{-0.006} _{-0.017}	30 ⁰ _{-0.052}	3	8	R30	21	5	19	30	30	20	70	M8 x 1.25 depth 12	1/4	88	R8	15	48	94	63	7.5	9
CDRB1BW80-□□E																											
CDRB1BW100-□□	125	140	103	39	65	25 ^{-0.007} _{-0.020}	45 ⁰ _{-0.062}	4	13	R30	21	5	28	35.5	32	24	80	M10 x 1.5 depth 13	1/4	108	R11	11.5	60	120	78	7.5	11
CDRB1BW100-□□E																											



* For single vane: Above illustrations show actuators for 180° when B port is pressurized.

Dimensions

Option: Foot bracket



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

Applicable size	Foot bracket assembly no.	LA1	LA2	LB1	LB2	LC	LD	LE	LF	LG	LH	LJ1	LJ2	LK	LM	T
50	P411020-5	78	70	45	50	36	25.5	10	4.5	45	7.5	34	66	60.5	84	48
63	P411030-5	100	90	56		44	30	ø12	5	60	9.5	39	83	75.5	110	52
80	P411040-5	111	100	63		46	32	ø12	6	65	9.5	48	94	88.5	120.5	60
100	P411050-5	141	126	80		55	39.5	ø14	6	80	11.5	60	120	108.5	150.5	80



Note 1) The foot bracket (with bolt, nut, and washer) is not mounted on the actuator at the time of shipment.

Note 2) The foot bracket can be mounted on the rotary actuator bracket 90° intervals.

Note 3) Refer to the foot bracket assembly part no. in the table at right when foot bracket assembly is required separately.

Model		Foot bracket assembly no.
Standard	With auto switch	
CRB1LW50	CDRB1LW50	P411020-5
CRB1LW63	CDRB1LW63	P411030-5
CRB1LW80	CDRB1LW80	P411040-5
CRB1LW100	CDRB1LW100	P411050-5

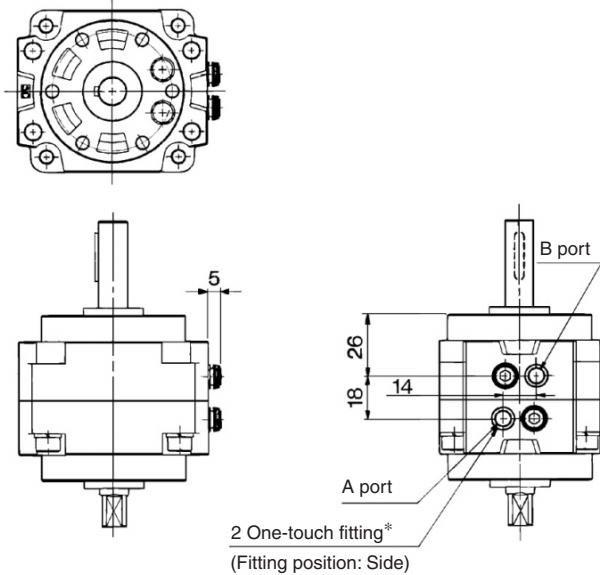
Series CRB1

With One-touch Fittings: 50

Standard

CRB1□W50F-□□

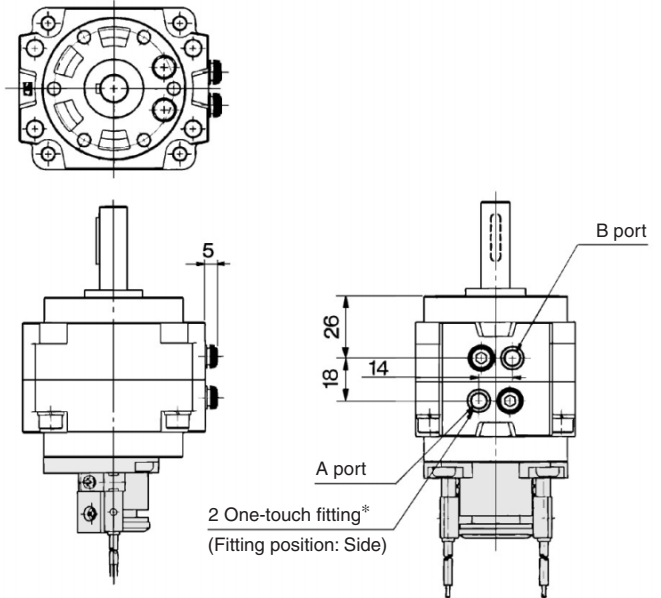
<Port location: Side ported>



With auto switch

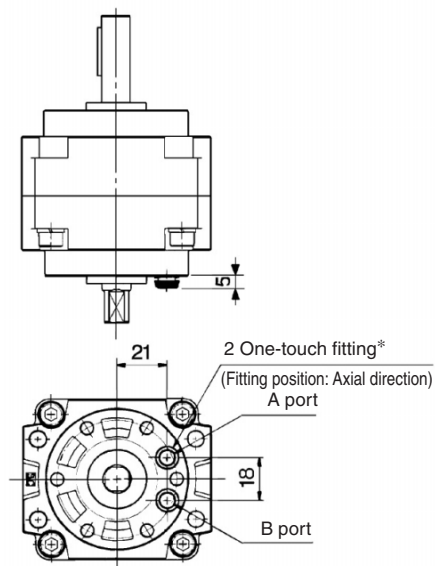
CDRB1□W50F-□□-□

<Port location: Side ported>



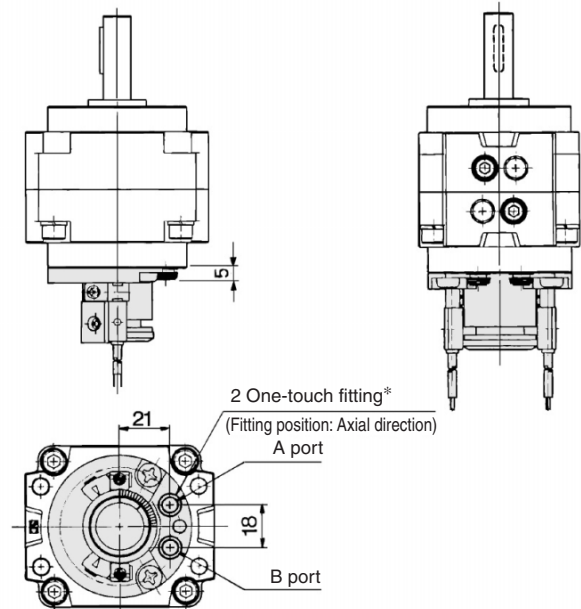
CRB1□W50F-□□E

<Port location: Axial ported>



CDRB1□W50F-□□E-□

<Port location: Axial ported>



Applicable Tubing and O.D./I.D

Applicable tubing O.D./I.D (mm)	ø6/ø4
Applicable tubing material	Nylon, Soft nylon, Polyurethane



* Dimensions not indicated in the above illustrations are the same as size 50 actuator. Refer to pages 11-4-9 to 11-4-10.

* Keys in the illustrations above show the intermediate rotation position for single vane type.

Series **CRB1** (Size: 50, 63, 80, 100)

Simple Specials:

-XA1 to -XA24: Shaft Pattern Sequencing I

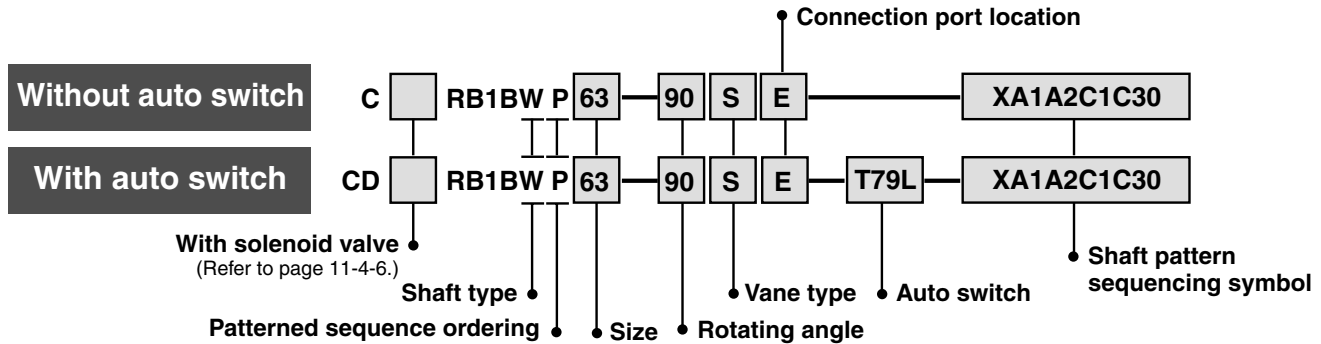
Shaft shape pattern is dealt with simple made-to-order system.

Please contact SMC for a specification sheet when placing an order.

Shaft Pattern Sequencing I

-XA1 to XA24

Applicable shaft type: W (Standard)



Shaft Pattern Sequencing Symbol

● Axial: Top (Long shaft side)

Symbol	Description	Applicable size
XA1	Shaft-end female thread	
XA14 *	Shaft through-hole + Shaft-end female thread	50, 63, 80, 100
XA24	Double key	

● Axial: Bottom (Short shaft side)

Symbol	Description	Applicable size
XA2 *	Shaft-end female thread	
XA15 *	Shaft through-hole + Shaft-end female thread	50, 63, 80, 100

● Double Shaft

Symbol	Description	Applicable size
XA13 *	Shaft through-hole	
XA16 *	Shaft through-hole + Double shaft-end female threads	50, 63, 80, 100

* These specifications are not available for rotary actuators with auto switch unit.

Combination

XA□ Combination

Symbol	Combination	
	XA1	XA24
XA1		
XA2	●	●
XA13	●	●
XA14	—	●
XA15	—	●
XA16	—	●
XA24	—	—

A combination of up to two XA□s are available.
Example: -XA1A2

XA□, XC□ Combination

Combination other than -XA□, such as Made to Order (-XC□), is also available. Refer to pages 11-4-18 to 11-4-19 for details of made-to-order specifications.

Symbol	Description	Applicable size	XA1, XA2 XA13 to 16, 24
XC1	Add connection port		●
XC4	Change of rotation range and direction		●
XC5	Change of rotation range and direction		●
XC6	Change of rotation range and direction		●
XC7	Reversed shaft		—
XC26	Change of rotation range and direction	50, 63 80, 100	●
XC27	Change of rotation range and direction		●
XC30	Fluorine grease		●

A total of four XA□and XC□ combinations is available.
Example: -XA1A2C1C30

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

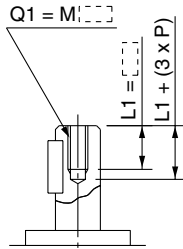
20-

Series CRB1

Axial: Top (Long shaft side)

Symbol: A1 Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6 mm
- Applicable shaft type: W

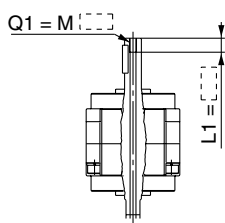


Size	Q1
50	M3, M4, M5
63	M4, M5, M6
80	M4, M5, M6
100	M5, M6, M8

Symbol: A14 Applicable to single vane type only

A special end is machined onto the long shaft, and a through-hole is drilled into it. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.

- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M5: L1 = 10 mm
- Applicable shaft type: W

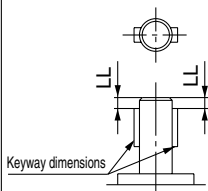


Size	50	63	80	100
Thread				
M5 x 0.8	ø4.2	ø4.2	ø4.2	—
M6 x 1	—	ø5	ø5	ø5
M8 x 1.25	—	—	—	ø6.8

Symbol: A24 Double key

Keys and keyways are machined at 180° of standard position.

- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.

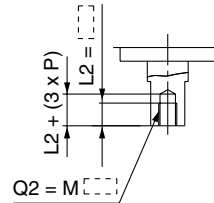


Size	Keyway dimension	LL
50	4 x 4 x 20	5
63	5 x 5 x 25	
80	5 x 5 x 36	
100	7 x 7 x 40	

Axial: Bottom (Short shaft side)

Symbol: A2 Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M4: L2 = 8 mm
- Applicable shaft type: W

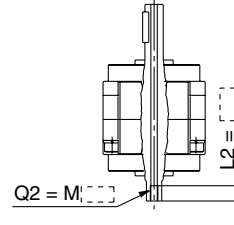


Size	Q2
50	M3, M4, M5
63	M4, M5, M6
80	M4, M5, M6
100	M5, M6, M8

Symbol: A15 Applicable to single vane type only

A special end is machined onto the short shaft, and a through hole is drilled into it. Female threads are machined into the through-hole, whose diameter is equivalent to the pilot hole diameter.

- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M4: L2 = 8 mm
- Applicable shaft type: W

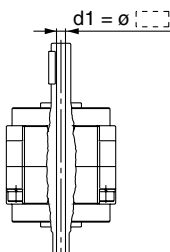


Size	50	63	80	100
Thread				
M5 x 0.8	ø4.2	ø4.2	ø4.2	—
M6 x 1	—	ø5	ø5	ø5
M8 x 1.25	—	—	—	ø6.8

Double Shaft

Symbol: A13 Applicable to single vane type only

- Shaft with through-hole
- Minimum machining diameter for d1 is 0.1 mm.
- Applicable shaft type: W

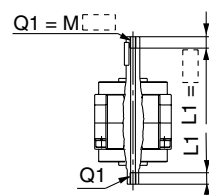


Size	d1
50	ø4 to ø5
63	ø4 to ø6
80	ø4 to ø6.5
100	ø5 to ø8

Symbol: A16 Applicable to single vane type only

A special end is machined onto both the long and short shafts, and a through hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.

- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M5: L1 = 10 mm
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.



Size	50	63	80	100
Thread				
M5 x 0.8	ø4.2	ø4.2	ø4.2	—
M6 x 1	—	ø5	ø5	ø5
M8 x 1.25	—	—	—	ø6.8

Series CRB1 (Size: 50, 63, 80, 100)

Simple Specials:

-XA31 to -XA46: Shaft Pattern Sequencing II

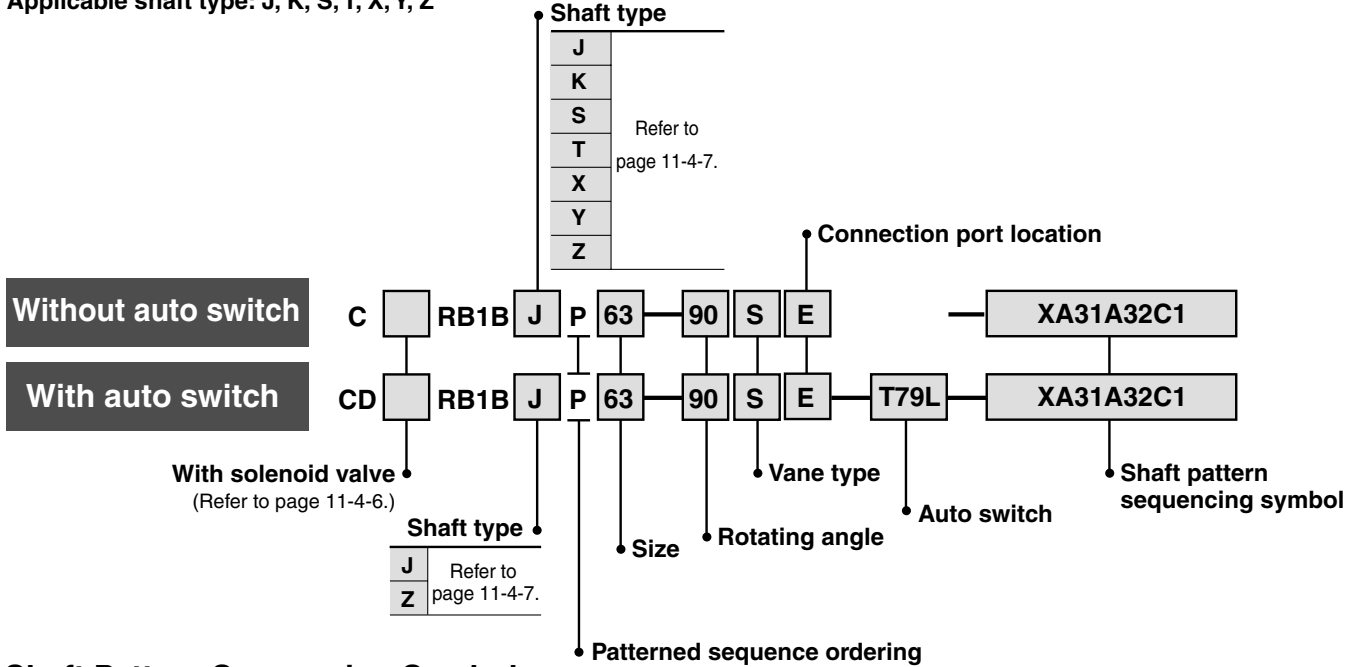
Shaft shape pattern is dealt with simple made-to-order system.

Please contact SMC for a specification sheet when placing an order.

Shaft Pattern Sequencing II

-XA31 to XA46

Applicable shaft type: J, K, S, T, X, Y, Z



Shaft Pattern Sequencing Symbol

● Axial: Top (Long shaft side)

Symbol	Description	Shaft type	Applicable size
XA31	Shaft-end female thread	S, Y	50,
XA33	Shaft-end female thread	J, K, T	63,
XA35	Shaft-end female thread	X, Z	80,
XA37	Stepped round shaft	J, K, T	100
XA45	Middle-cut chamfer	J, K, T	

● Axial: Bottom (Short shaft side)

Symbol	Description	Shaft type	Applicable size
XA32 *	Shaft-end female thread	S, Y	50,
XA34 *	Shaft-end female thread	K, T	63,
XA36 *	Shaft-end female thread	J, X, Z	80,
XA38 *	Stepped round shaft	K	100
XA46 *	Middle-cut chamfer	K	

● Double Shaft

Symbol	Description	Shaft type	Applicable size
XA39 *	Shaft through-hole	S, Y	50
XA40 *	Shaft through-hole	K, T	63
XA41 *	Shaft through-hole	J, X, Z	80
XA42 *	Shaft through-hole + Shaft-end female thread	S, Y	80
XA43 *	Shaft through-hole + Shaft-end female thread	K, T	100
XA44 *	Shaft through-hole + Shaft-end female thread	J, X, Z	

* This specification is not available for rotary actuators with auto switch.

Combination

XA□ Combination

Symbol	Combination			
XA31	XA31	* These are shaft types that can be combined.		
XA32	●			
XA33	—	XA33		
XA34	—	●	XA34	
XA35	—	—	XA35	
XA36	—	J *	K, T *	X, Z *
XA37	—	—	—	J *
XA38	—	K *	K, T *	—
XA45	—	—	—	J *
XA46	—	●	—	—

Combinations of XA39 to XA44 with others are not available.
A combination of up to two XA□s are available.
Example: -XA1A24

XA□, XC□ Combinations

Combination other than -XA□, such as made-to order (-XC□), is also available. Refer to pages 11-4-18 to 11-4-19 for details of made-to-order specifications.

Symbol	Description	Shaft type	XA31 to XA46
		J, K, S, T, X, Y, Z	
XC1	Add connection port	●	●
XC4	Change of rotation range and direction	●	●
XC5	Change of rotation range and direction	●	●
XC6	Change of rotation range and direction	●	●
XC7	Reversed shaft	J, S, T, X	—
XC26	Change of rotation range and direction	●	●
XC27	Change of rotation range and direction	●	●
XC30	Fluorine grease	●	●

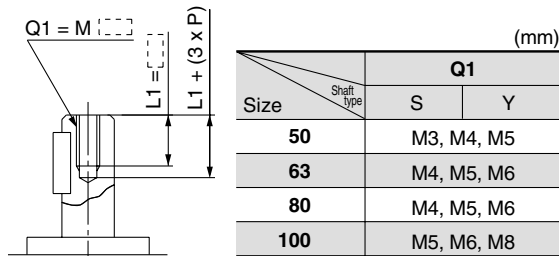
* These specifications are not available for rotary actuators with auto switch unit.
A total of four XA□ and XC□ combinations is available.
Example: -XA1A2C1C30
-XA2C1C4C30

Series CRB1

Axial: Top (Long shaft side)

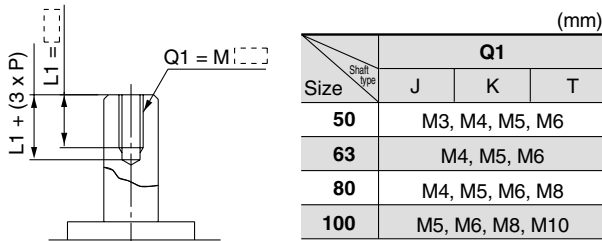
Symbol: A31 Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6 mm
- Applicable shaft types: S, Y



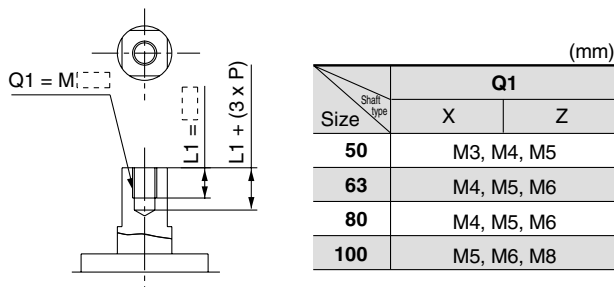
Symbol: A33 Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6 mm
- Applicable shaft types: J, K, T



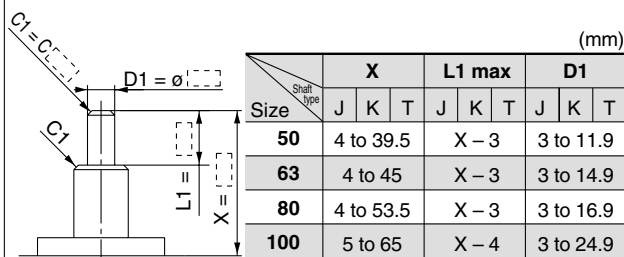
Symbol: A35 Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6 mm
- Applicable shaft types: X, Z



Symbol: A37 The long shaft can be further shortened by machining it into a stepped round shaft.

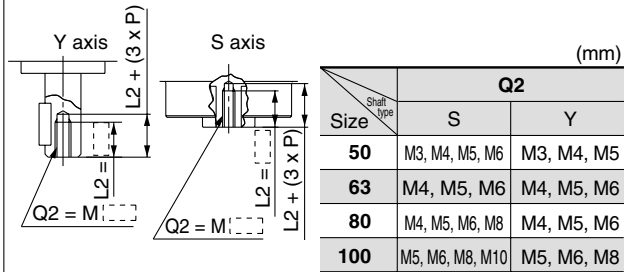
- (If shortening the shaft is not required, indicate "*" for dimension X.)
- (If not specifying dimension C1, indicate "*" instead.)
- Equal dimensions are indicated by the same marker.
- Applicable shaft types: J, K, T



Axial: Bottom (Short shaft side)

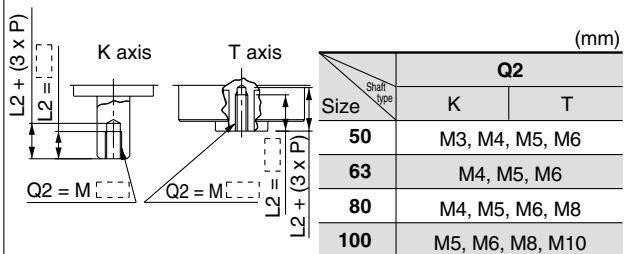
Symbol: A32 Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M4: L2 = 8 mm
- Applicable shaft types: S, Y



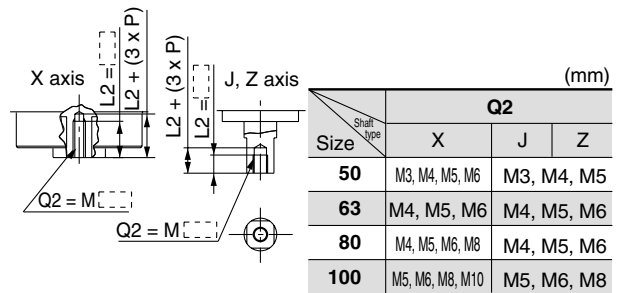
Symbol: A34 Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M3: L2 = 6 mm
- Applicable shaft types: K, T



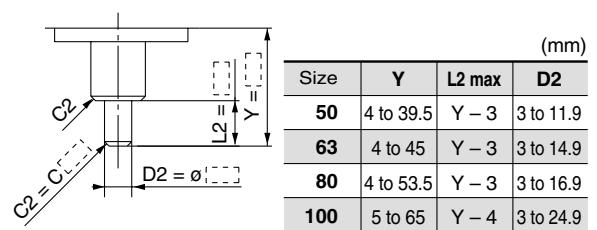
Symbol: A36 Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M3: L2 = 6 mm
- Applicable shaft types: J, X, Z



Symbol: A38 The short shaft can be further shortened by machining it into a stepped round shaft.

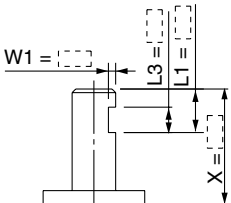
- (If shortening the shaft is not required, indicate "*" for dimension Y.)
- (If not specifying dimension C2, indicate "*" instead.)
- Equal dimensions are indicated by the same marker.
- Applicable shaft type: K



Axial: Top (Long shaft side)

Symbol: A45 The long shaft can be further shortened by machining a middle-cut chamfer into it.
(The position of the chamfer is same as the standard one.)

(If shortening the shaft is not required, indicate "*" for dimension X.)
• Minimum machining dimension is 0.1 mm. • Applicable shaft types: J, K, T



Size	X			W1			L1 max			L3 max		
	J	K	T	J	K	T	J	K	T	J	K	T
50	11.5 to 39.5	1 to 6	X-3	L1-2								
63	12.5 to 45	1 to 7.5	X-3	L1-2								
80	13.5 to 53.5	1 to 8.5	X-3	L1-2								
100	18.5 to 65	1 to 12.5	X-4	L1-2								

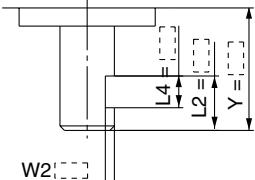
Caution

For the shaft patterns A45 and A46, a middle-cut chamfer may interfere with the center hole if the W1/W2 dimensions and (L1 - L3), (L2 - L4) dimensions are less than what are shown in the tables at right.

Axial: Bottom (Short shaft side)

Symbol: A46 The short shaft can be further shortened by machining a middle-cut chamfer into it.
(The position of the chamfer is same as the standard one.)

(If shortening the shaft is not required, indicate "*" for dimension X.)
• Minimum machining dimension is 0.1 mm.
• Applicable shaft type: K



Size	Y			W2			L2 max			L4 max		
	50	11.5 to 39.5	1 to 6	Y-3	L2-2							
63	12.5 to 45	1 to 7.5	Y-3	L2-2								
80	13.5 to 53.5	1 to 8.5	Y-3	L2-2								
100	18.5 to 65	1 to 12.5	Y-4	L2-2								

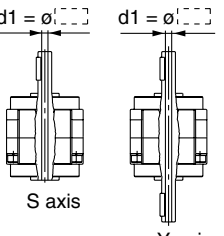
Size	W1, W2	L1 - L3, L2 - L4
50	4.5 to 6	2 to 5.5
63	6 to 7.5	2 to 3

Size	W1, W2	L1 - L3, L2 - L4
80	6.5 to 8.5	2 to 6.5
100	10.5 to 12.5	2 to 6.5

Double Shaft

Symbol: A39 Applicable to single vane type only

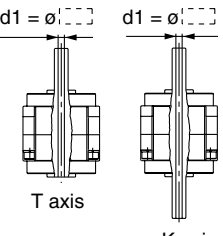
Shaft with through-hole
• Minimum machining diameter for d1 is 0.1 mm.
• Applicable shaft types: S, Y



Size	d1	
	S	Y
50	ø4 to ø5	
63	ø4 to ø6	
80	ø4 to ø6.5	
100	ø5 to ø8	

Symbol: A40 Applicable to single vane type only

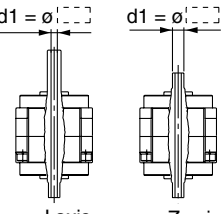
Shaft with through-hole
• Minimum machining diameter for d1 is 0.1 mm.
• Applicable shaft types: K, T



Size	d1	
	K	T
50	ø4 to ø5.5	
63	ø4 to ø6	
80	ø4 to ø7.5	
100	ø5 to ø10	

Symbol: A41 Applicable to single vane type only

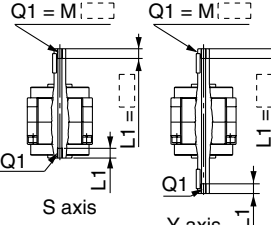
Shaft with through-hole
• Minimum machining diameter for d1 is 0.1 mm.
• Applicable shaft types: J, X, Z



Size	d1		
	J	X	Z
50	ø4 to ø5		
63	ø4 to ø6		
80	ø4 to ø6.5		
100	ø5 to ø8		

Symbol: A42 Applicable to single vane type only

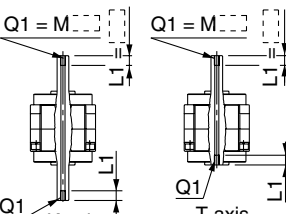
A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.
• The maximum dimension L1 is, as a rule, twice the thread size.
• Applicable shaft types: S, Y • Equal dimensions are indicated by the same marker.



Size	50		63		80		100	
	S	Y	S	Y	S	Y	S	Y
M5 x 0.8	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2
M6 x 1	—	ø5	ø5	ø5	ø5	—	—	—
M8 x 1.25	—	—	—	—	—	—	—	ø6.8

Symbol: A43 Applicable to single vane type only

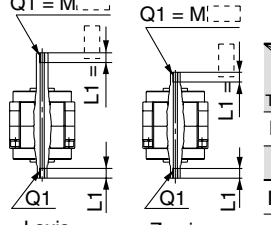
A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through holes, whose diameter is equivalent to the diameter of the pilot holes.
• The maximum dimension L1 is, as a rule, twice the thread size.
• Applicable shaft types: K, T • Equal dimensions are indicated by the same marker.



Size	50		63		80		100	
	K	T	K	T	K	T	K	T
M5 x 0.8	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2
M6 x 1	ø5	ø5	ø5	ø5	ø5	—	—	—
M8 x 1.25	—	—	—	—	ø6.8	ø6.8	—	—
M10 x 1.5	—	—	—	—	—	—	—	ø8.6

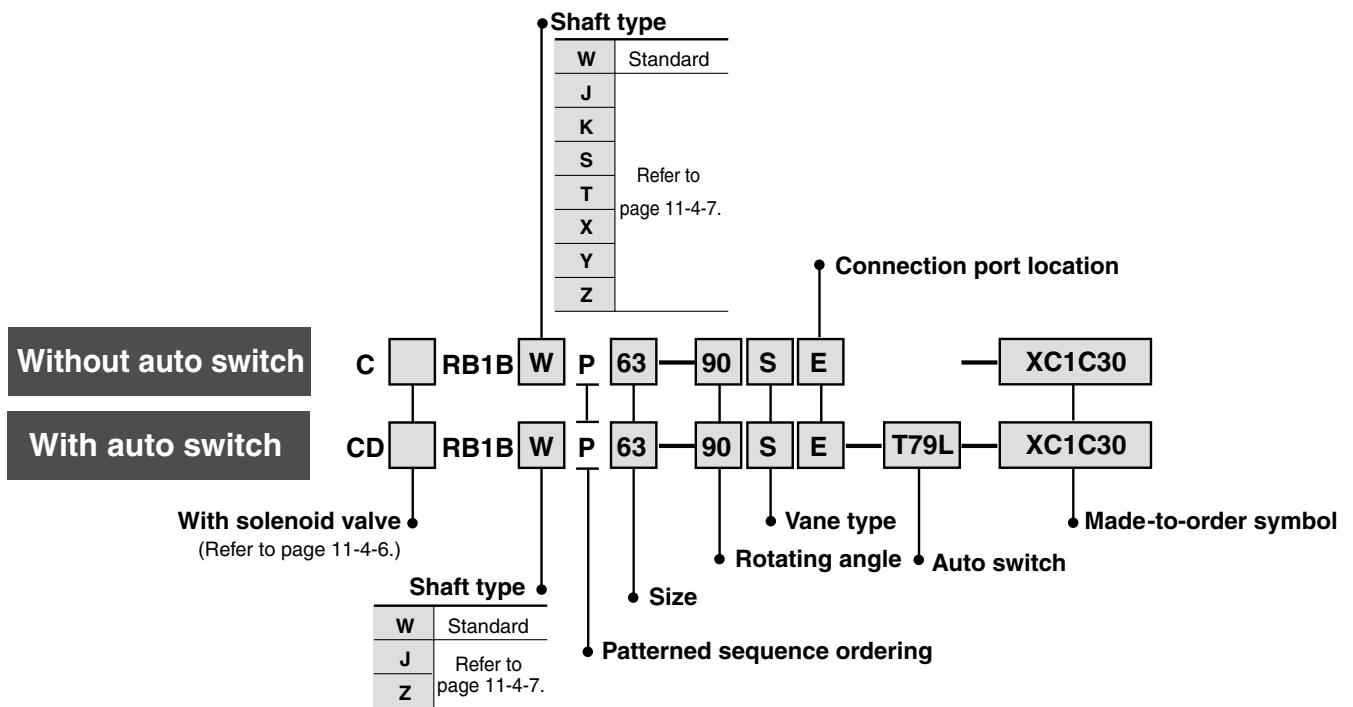
Symbol: A44 Applicable to single vane type only

A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.
• The maximum dimension L1 is, as a rule, twice the thread size.
• Applicable shaft types: J, X, Z • Equal dimensions are indicated by the same marker.



Size	50			63			80			100		
	J	X	Z	J	X	Z	J	X	Z	J	X	Z
M5 x 0.8	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2	ø4.2
M6 x 1	—	ø5	ø5	ø5	ø5	—	—	—	—	—	—	—
M8 x 1.25	—	—	—	—	—	—	—	—	—	—	—	ø6.8

Series **CRB1** (Size: 50, 63, 80, 100) Made to Order Specifications: -XC1, 4, 5, 6, 7, 26, 27, 30



Made-to-Order Symbol

Symbol	Description	Applicable shaft type	Applicable size
		W, J, K, S, T, X, Y, Z	
XC1	Add connection port	●	50, 63, 80, 100
XC4	Change of rotation range and direction	●	
XC5	Change of rotation range and direction	●	
XC6	Change of rotation range and direction	●	
XC7*	Reversed shaft	●	
XC26	Change of rotation range and direction	●	
XC27	Change of rotation range and direction	●	
XC30	Fluoro grease	●	

* This specification is not available for rotary actuators with auto switch unit.

Combination

Symbol	Combination	
	XC1	XC30
XC1	—	●
XC4	●	●
XC5	●	●
XC6	●	●
XC7	●	●
XC26	●	●
XC27	●	●
XC30	●	—

Symbol: C1 Add connection ports on Body (A).
(An additionally machined port will have an aluminum surface since it will be left unfinished.)

Size	Q	M	N
50	Rc 1/8	21	18
63	Rc 1/8	27	25
80	Rc 1/4	29	30
100	Rc 1/4	38	38

Symbol: C4 Change of rotation. (Applicable to single vane type only)
Rotation starts from the horizontal line (90° down from the top to the right side).

Size	Rotation range θ (mm)
50	45 ^{°+8°} ₀ , 90 ^{°+8°} ₀ , 135 ^{°+6°} ₀
63	
80	
100	

Start of rotation is the position of the key when A port is pressurized.
(Top view from long shaft side)

Symbol: C5 Change of rotation. (Applicable to single vane type only)
Rotation starts from the horizontal line (45° down from the top to the left side).

Size	Rotation range (θ)
50	
63	$45^{\circ+8^{\circ}}_0, 90^{\circ+6^{\circ}}_0, 135^{\circ+6^{\circ}}_0$
80	$180^{\circ+4^{\circ}}_0, 225^{\circ+4^{\circ}}_0$
100	

Start of rotation is the position of the key when B port is pressurized.
(Top view from long shaft side)

Symbol: C7 The shafts are reversed.

Size	Y	X
50	39.5	19.5
63	45	21
80	53.5	23.5
100	56	30

Symbol: C27 Change of rotation. (Applicable to double vane type only)
Rotation: 90° Rotation starts from the horizontal line (45° down from the top to the right side).

Start of rotation is the position of the key when A port is pressurized.
(Top view from long shaft side)

Symbol: C6 Change of rotation. (Applicable to single vane type only)
Rotation starts from the horizontal line (90° down from the top to the left side).

Size	Rotation range (θ)
50	
63	$45^{\circ+8^{\circ}}_0, 90^{\circ+8^{\circ}}_0, 135^{\circ+6^{\circ}}_0$
80	
100	

Start of rotation is the position of the key when B port is pressurized.
(Top view from long shaft side)

Symbol: C26 Change of rotation. (Applicable to single vane type only)
Rotation starts from the horizontal line (45° down from the top to the right side).

Size	Rotation range (θ)
50	
63	$45^{\circ+8^{\circ}}_0, 90^{\circ+6^{\circ}}_0, 135^{\circ+6^{\circ}}_0$
80	$180^{\circ+4^{\circ}}_0, 225^{\circ+4^{\circ}}_0$
100	

Start of rotation is the position of the key when A port is pressurized.
(Top view from long shaft side)

Symbol: C30 Change the standard grease to fluoro grease
(Not for low-speed specification.)

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

Component Unit Series CRB2/CRBU2/CRB1

1 Auto Switch Unit Part No.

Each unit can be retrofitted to the rotary actuator.

Series	Model	Vane type	Unit part no.
Series CRB2	CDRB2BW10	Single/Double type	P611070-1
	CDRB2BW15		P611090-1
	CDRB2BW20		P611060-1
	CDRB2BW30		P611080-1
	CDRB2BW40	Single type	P612010-1
		Double type	P611010-1
Free mount type Series CRBU2	CDRBU2W10	Single/Double type	P611070-1
	CDRBU2W15		P611090-1
	CDRBU2W20		P611060-1
	CDRBU2W30		P611080-1
	CDRBU2W40		P612010-1
Series CRB1	CDRB1BW50	Single/Double type	P411020-1
	CDRB1BW63		P411030-1
	CDRB1BW80		P411040-1
	CDRB1BW100		P411050-1

* Auto switch unit can be ordered separately if the rotary actuator with auto switch unit is required after the product being delivered. Auto switch itself will not be included. Please order separately.

2 Switch Block Unit Part No.

Auto switch unit comes with one right-hand and one left-hand switch blocks that are used for addition or when the switch block is damaged.

Series	Model	Unit part no.	
Series CRB2	CDRB2BW10, 15	Right-handed	P611070-8
		Left-handed	P611070-9
	CDRB2BW20, 30	Right-handed	P611060-8
		Left-handed	
	CDRB2BW40	Right-handed	P611010-8
		Left-handed	P611010-9
Free mount type Series CRBU2	CDRBU2W10, 15	Right-handed	P611070-8
		Left-handed	P611070-9
	CDRBU2W20, 30	Right-handed	P611060-8
		Left-handed	
	CDRBU2W40	Right-handed	P611010-8
		Left-handed	P611010-9
Series CRB1	CDRB1BW50	Right-handed	P411020-8
		Left-handed	P411020-9
	CDRB1BW63, 80, 100	Right-handed	P411040-8
		Left-handed	P411040-9

* Solid state switch for size 10 and 15 requires no switch block, therefore the unit part no. will be P611070-13.

3 Angle Adjuster Part No.

Each unit can be retrofitted to the rotary actuator.

Series	Model	Vane type	Unit part no.
Series CRB2	CRB2BWU10	Single/Double type	P611070-3
	CRB2BWU15		P611090-3
	CRB2BWU20		P611060-3
	CRB2BWU30		P611080-3
	CRB2BWU40	Single type	P612010-3
		Double type	P611010-3
Free mount type Series CRBU2	CRBU2WU10	Single/Double type	P611070-3
	CRBU2WU15		P611090-3
	CRBU2WU20		P611060-3
	CRBU2WU30		P611080-3
	CRBU2WU40		P612010-3

4 Auto Switch Angle Adjuster Part No.

Each unit can be retrofitted to the rotary actuator.

Series	Model	Vane type	Unit part no.
Series CRB2	CDRB2BWU10	Single/Double type	P611070-4
	CDRB2BWU15		P611090-4
	CDRB2BWU20		P611060-4
	CDRB2BWU30		P611080-4
	CDRB2BWU40	Single type	P612010-4
		Double type	P611010-4
Free-mount type Series CRBU2	CDRBU2WU10	Single/Double type	P611070-4
	CDRBU2WU15		P611090-4
	CDRBU2WU20		P611060-4
	CDRBU2WU30		P611080-4
	CDRBU2WU40		P612010-4

5 Joint Unit Part No.

Joint unit is a unit required to retrofit the angle adjuster to a rotary actuator with a switch unit or to retrofit the switch unit to a rotary actuator with angle adjuster.

Series	Model	Vane type	Unit part no.
Series CRB2	CDRB2BWU10	Single/Double type	P211070-10
	CDRB2BWU15		P211090-10
	CDRB2BWU20		P211060-10
	CDRB2BWU30		P211080-10
	CDRB2BWU40		P211010-10
Free mount type Series CRBU2	CDRBU2WU10	Single/Double type	P211070-10
	CDRBU2WU15		P211090-10
	CDRBU2WU20		P211060-10
	CDRBU2WU30		P211080-10
	CDRBU2WU40		P211010-10

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

20-

Series CDRB2/CDRBU2/CRB1 With Auto Switch

Applicable Auto Switch

Applicable series	Auto switch model		Electrical entry
CDRB2BW10/15 CDRBU2W10/15	Reed switch	D-90, D-90A	Grommet, 2-wire
		D-97, D-93A	
	Solid state switch	D-S99, D-S99V *	Grommet, 3-wire (NPN)
		D-S9P, D-S9PV *	Grommet, 3-wire (PNP)
D-T99, D-T99V		Grommet, 2-wire	
CDRB2BW20/30/40 CDRBU2W20/30/40 CRB1BW50/63/80/100	Reed switch	D-R73	Grommet, 2-wire
		D-R80	Connector, 2-wire
	Solid state switch	D-S79 *	Grommet, 3-wire (NPN)
		D-S7P *	Grommet, 3-wire (PNP)
		D-T79	Grommet, 2-wire; Connector, 2-wire

* Solid state switch with 3-wire type has no connector type.

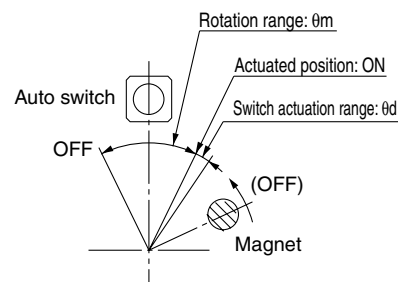
Operating Range and Hysteresis

* Operating range: θ_m

The range between the position where the auto switch turns ON as the magnet inside the auto switch unit moves and the position where the switch turns OFF as the magnet travels the same direction.

* Hysteresis range: θ_d

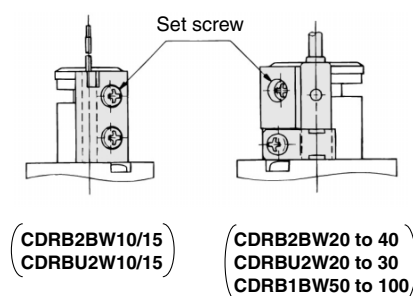
The range between the position where the auto switch turns ON as the magnet inside the auto switch unit moves and the position where the switch turns OFF as the magnet travels the opposite direction.



Model	Operating range: θ_m	Switch actuation range: θ_d
CDRB2BW10/15	110°	10°
CDRBU2W10/15		
CDRB2BW20/30	90°	8°
CDRBU2W20/30		
CDRB2BW40	52°	7°
CDRBU2W40		
CDRB1BW50	38°	7°
CDRB1BW63 to 100		

How to Change the Detecting Position of Auto Switch

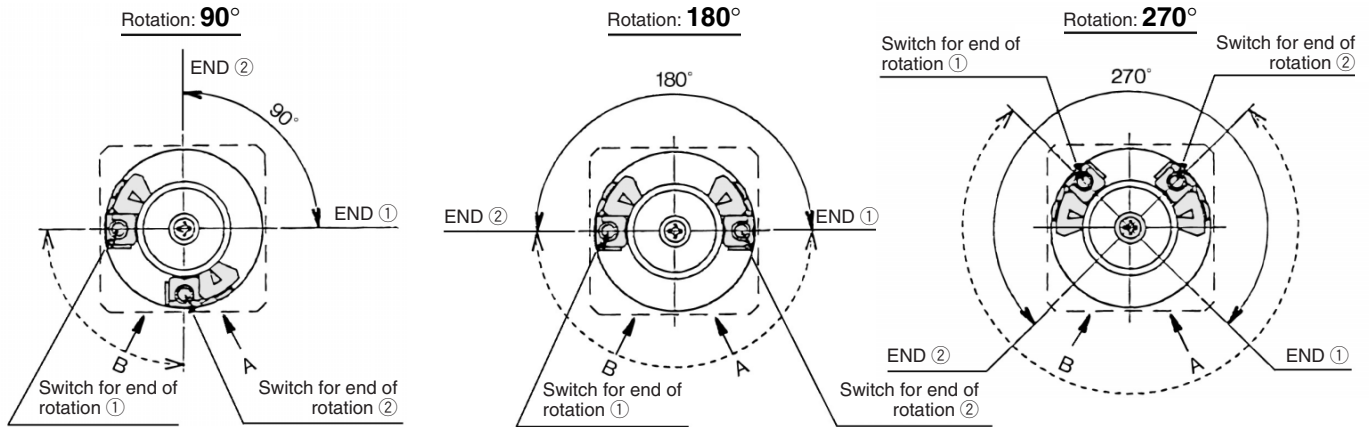
* When setting the detection location, loosen the tightening screw a bit and move a switch to the preferred location and then tighten again and fix it. At this time, if tightened too much, screw can become damaged and unable to fix location. Be sure to set the tightening torque around 0.49 N·m.



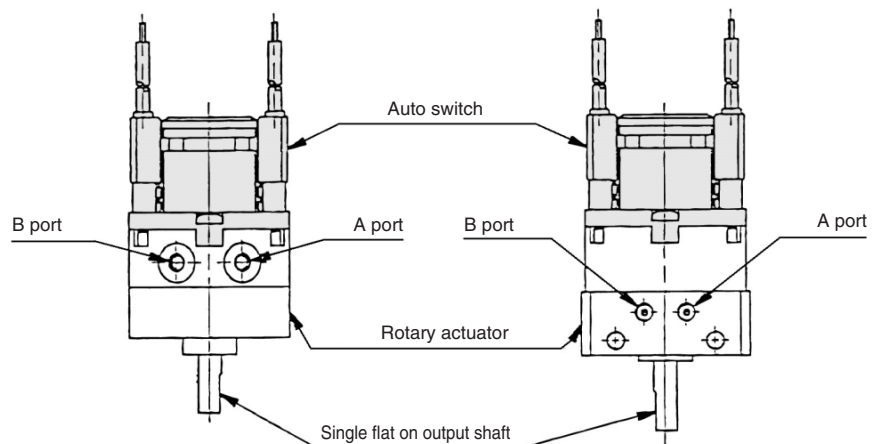
Adjustment of Auto Switch

Rotation range of the output shaft with single flat (key for size 40 only) and auto switch mounting position
 Size: 10, 15, 20, 30, 40

<Single vane>



- * Solid-lined curves indicate the rotation range of the output shaft with single flat (key). When the single flat (key) is pointing to end of rotation ①, the switch for end of rotation ① will operate, and when the single flat (key) is pointing to end of rotation ②, the switch for end of rotation ② will operate.
- * Broken-lined curves indicate the rotation range of the built-in magnet. Rotation range of the switch can be decreased by either moving the switch for end of rotation ① clockwise or moving the switch for end of rotation ② counter-clockwise. Auto switch in the illustrations above is at the most sensitive position.
- * Each auto switch unit comes with one right-hand and one left-hand switch.



(CDRB2BW10 to 40)

(CDRBU2W10 to 40)

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

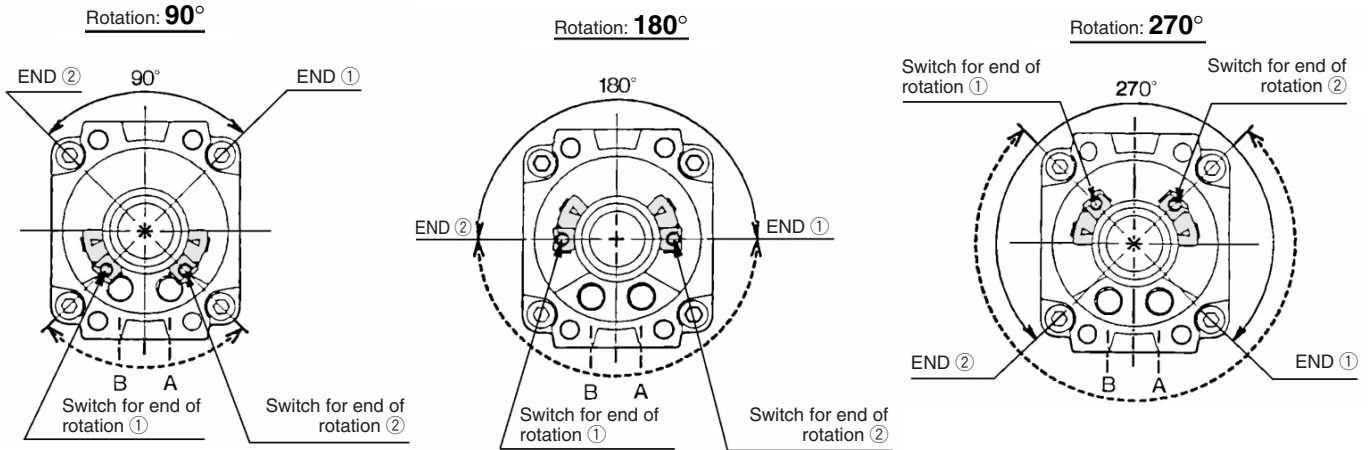
Series CDRB2/CDRBU2/CRB1

Adjustment of Auto Switch

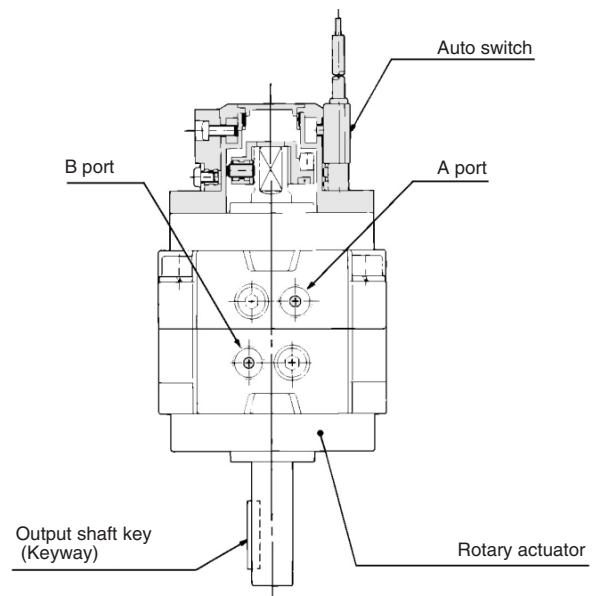
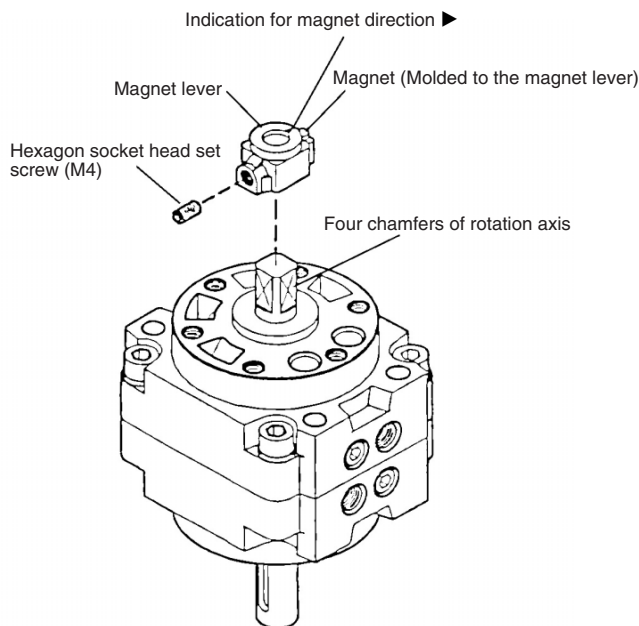
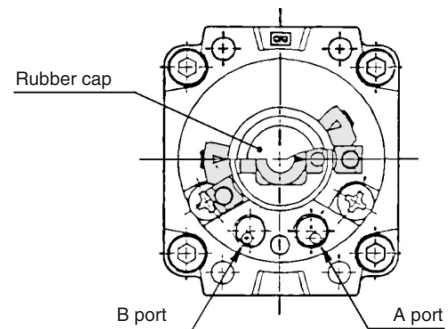
Rotation range of the output key (keyway) and auto switch mounting position

Size: 50, 63, 80, 100

<Single vane>




- * Solid-lined curves indicate the rotation range of the output key (keyway). When the key is pointing to end of rotation ①, the switch for end of rotation ① will operate, and when the key is pointing to end of rotation ②, the switch for end of rotation ② will operate.
- * Broken-lined curves indicate the rotation range of the built-in magnet. Rotation range of the switch can be decreased by either moving the switch for end of rotation ② clockwise or moving the switch for end of rotation ② counterclockwise. Auto switch in the illustrations above is at the most sensitive position.
- * Each auto switch unit comes with one right-hand and one left-hand switch.
- * The magnet position can be checked with a convenient ► indication by removing a rubber cap when adjusting the auto switch position.
- * Since four chamfers are machined into the axis of rotation, a magnet position can be readjusted at 90° intervals.







Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO 4414 ^{Note 1)}, JIS B 8370 ^{Note 2)} and other safety practices.

 **Caution** : Operator error could result in injury or equipment damage.

 **Warning** : Operator error could result in serious injury or loss of life.

 **Danger** : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power--General rules relating to systems.

Note 2) JIS B 8370: General Rules for Pneumatic Equipment

Warning

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driver objects have been confirmed.
2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is restarted, take measures to prevent shooting-out of cylinder piston rod, etc.

4. Contact SMC if the product is to be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.



Common Precautions

Be sure to read before handling.

For detailed precautions on every series, refer to main text.

Selection

Warning

1. Confirm the specifications.

Products represented in this catalog are designed for use in compressed air applications only (including vacuum), unless otherwise indicated.

Do not use the product outside their design parameters.

Please contact SMC when using the products in applications other than compressed air (including vacuum).

Mounting

Warning

1. Instruction manual

Install the products and operate them only after reading the instruction manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

2. Securing the space for maintenance

When installing the products, please allow access for maintenance.

3. Tightening torque

When installing the products, please follow the listed torque specifications.

Piping

Caution

1. Before piping

Make sure that all debris, cutting oil, dust, etc. are removed from the piping.

2. Wrapping of pipe tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not get inside the piping. Also, when the pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

Air Supply

Warning

1. Operating fluid

Please consult with SMC when using the product in applications other than compressed air (including vacuum).

Regarding products for general fluid, please ask SMC about applicable fluids.

2. Install an air dryer, aftercooler, etc.

Excessive condensate in a compressed air system may cause valves and other pneumatic equipment to malfunction.

Installation of an air dryer, after cooler etc. is recommended.

3. Drain flushing

If condensate in the drain bowl is not emptied on a regular basis, the bowl will over flow and allow the condensate to enter the compressed air lines.

If the drain bowl is difficult to check and remove, it is recommended that a drain bowl with the auto-drain option be installed.

For compressed air quality, refer to "Air Preparation Equipment" catalog.

4. Use clean air

If the compressed air supply is contaminated with chemicals, synthetic materials, corrosive gas, etc., it may lead to break down or malfunction.

Operating Environment

Warning

1. Do not use in environments where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.

2. Do not expose the product to direct sunlight for an extended period of time.

3. Do not use in a place subject to heavy vibrations and/or shocks.

4. Do not mount the product in locations where it is exposed to radiant heat.

Maintenance

Warning

1. Maintenance procedures are outlined in the operation manual.

Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.

2. Maintenance work

If handled improperly, compressed air can be dangerous.

Assembly, handling and repair of pneumatic systems should be performed by qualified personnel only.

3. Drain flushing

Remove drainage from air filters regularly. (Refer to the specifications.)

4. Shut-down before maintenance

Before attempting any kind of maintenance make sure the supply pressure is shut of and all residual air pressure is released from the system to be worked on.

5. Start-up after maintenance and inspection

Apply operating pressure and power to the equipment and check for proper operation and possible air leaks. If operation is abnormal, please verify product set-up parameters.

6. Do not make any modifications to be product.

Do not take the product apart.

Quality Assurance Information (ISO 9001, ISO 14001)

Reliable quality of products in the global market

To enable our customers throughout the world to use our products with even greater confidence, SMC has obtained certification for international standards “ISO 9001” and “ISO 14001”, and created a complete structure for quality assurance and environmental controls. SMC products pursue to meet its customers’ expectations while also considering company’s contribution in society.

Quality management system ISO 9001

This is an international standard for quality control and quality assurance. SMC has obtained a large number of certifications in Japan and overseas, providing assurance to our customers throughout the world.



Environmental management system ISO 14001

This is an international standard related to environmental management systems and environmental inspections. While promoting environmentally friendly automation technology, SMC is also making diligent efforts to preserve the environment.



SMC’s quality control system



Quality policies



Quality control activities

SMC Product Conforming to Inter

SMC products complying with EN/ISO, CSA/UL standards are supporting



The CE mark indicates that machines and components meet essential requirements of all the EC Directives applied.

It has been obligatory to apply CE marks indicating conformity with EC Directives when machines and components are exported to the member Nations of the EU.

Once "A manufacturer himself" declares a product to be safe by means of CE marking (declaration of conformity by manufacturer), free distribution inside the member Nations of the EU is permissible.

■ CE Mark

SMC provides CE marking to products to which EMC and Low Voltage Directives have been applied, in accordance with CETOP (European hydraulics and pneumatics committee) guide lines.

■ As of February 1998, the following 18 countries will be obliged to conform to CE mark legislation

Iceland, Ireland, United Kingdom, Italy, Austria, Netherlands, Greece, Liechtenstein, Sweden, Spain, Denmark, Germany, Norway, Finland, France, Belgium, Portugal, Luxembourg

■ EC Directives and Pneumatic Components

• Machinery Directive

The Machinery Directive contains essential health and safety requirements for machinery, as applied to industrial machines e.g. machine tools, injection molding machines and automatic machines. Pneumatic equipment is not specified in Machinery Directive. However, the use of SMC products that are certified as conforming to EN Standards, allows customers to simplify preparation work of the Technical Construction File required for a Declaration of Conformity.

• Electromagnetic Compatibility (EMC) Directive

The EMC Directive specifies electromagnetic compatibility. Equipment which may generate electromagnetic interference or whose function may be compromised by electromagnetic interference is required to be immune to electromagnetic affects (EMS/immunity) without emitting excessive electromagnetic affects (EMI/emission).

• Low Voltage Directive

This directive is applied to products, which operate above 50 VAC to 1000 VAC and 75 VDC to 1500 VDC operating voltage, and require electrical safety measures to be introduced.

• Simple Pressure Vessels Directive

This directive is applied to welded vessels whose maximum operating pressure (PS) and volume of vessel (V) exceed 50 bar/L. Such vessels require EC type examination and then CE marking.

national Standards

you to comply with EC directives and CSA/UL standards.



■ CSA Standards & UL Standards

UL and CSA standards have been applied in North America (U.S.A. and Canada) symbolizing safety of electric products, and are defined to mainly prevent danger from electric shock or fire, resulting from trouble with electric products. Both UL and CSA standards are acknowledged in North America as the first class certifying body. They have a long experience and ability for issuing product safety certificate. Products approved by CSA or UL standards are accepted in most states and governments beyond question.

Since CSA is a test certifying body as the National Recognized Testing Laboratory (NRTL) within the jurisdiction of Occupational Safety and Health Administration (OSHA), SMC was tested for compliance with CSA Standards and UL Standards at the same time and was approved for compliance with the two Standards. The above CSA NRTL/C logo is described on a product label in order to indicate that the product is approved by CSA and UL Standards.

■ TSSA (MCCR) Registration Products

TSSA is the regulation in Ontario State, Canada. The products that the operating pressure is more than 5 psi (0.03 MPa) and the piping size is bigger than 1 inch. fall into the scope of TSSA regulation.

Products conforming to CE Standard

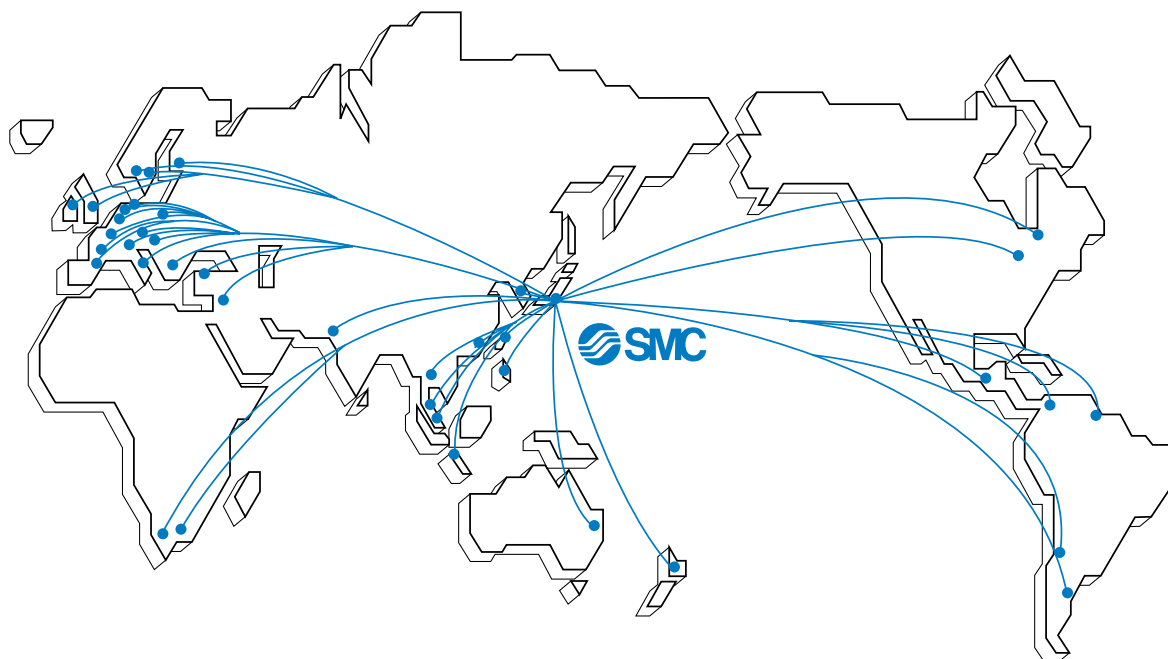


With CE symbol for simple visual recognition

In this catalog each accredited product series is indicated with a CE mark symbol. However, in some cases, every available models may not meet CE compliance. Please visit our web site for the latest selection of available models with CE mark.

<http://www.smcworld.com>

SMC's Global Service Network



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