

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)

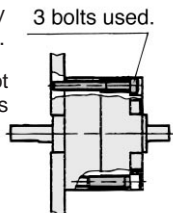
Low pressure operation made possible

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

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

Shaft style

W	Double shaft, one chamfer (Standard)
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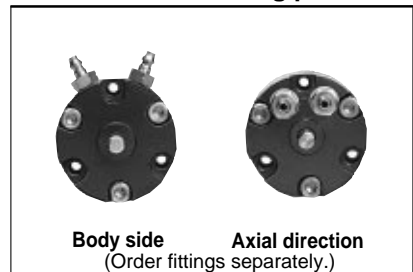
Size

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

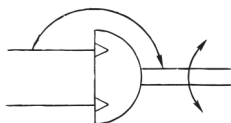


Size 15



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°	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
Shaft load (N)	Allowable radial load	15	15	25
	Allowable thrust load	10	10	20
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 (N)	Allowable radial load	15	15	25
	Allowable thrust load	10	10	20
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 $90^{\circ+4^{\circ}}$ (or $180^{\circ+4^{\circ}}$), 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

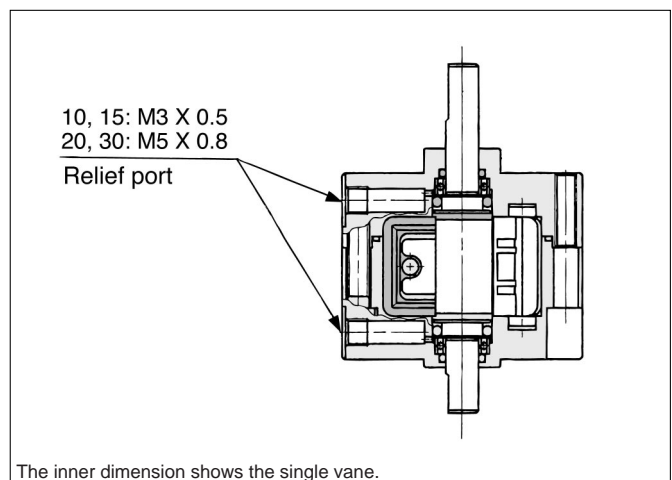
↓ Clean series

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

CRB1

CRBU

CRA1

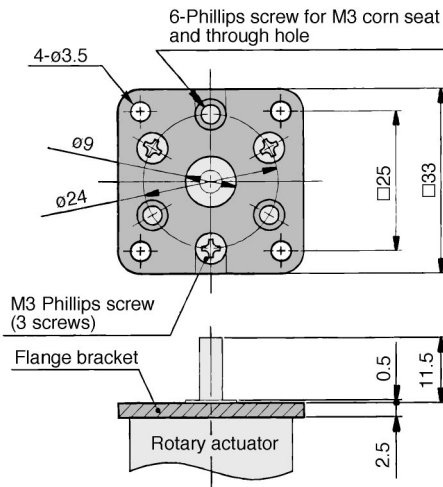
CRQ

MRQ

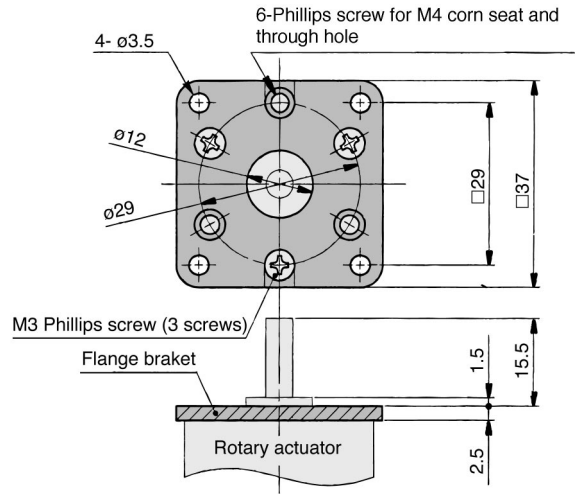
MSQ

MSUB

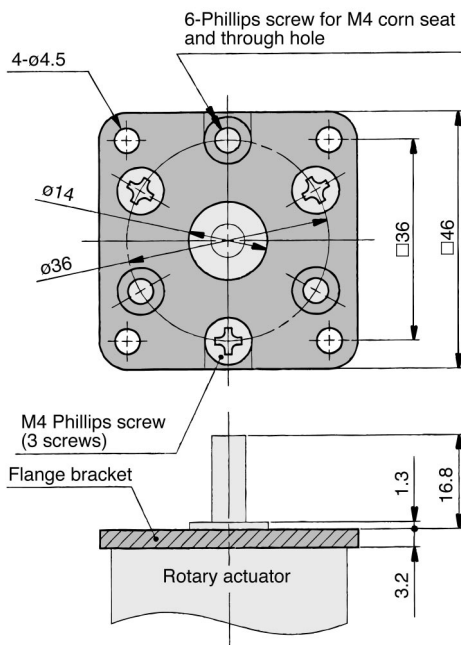
Ass'y Part Number: P211070-2 (For C□RB1FW□10)



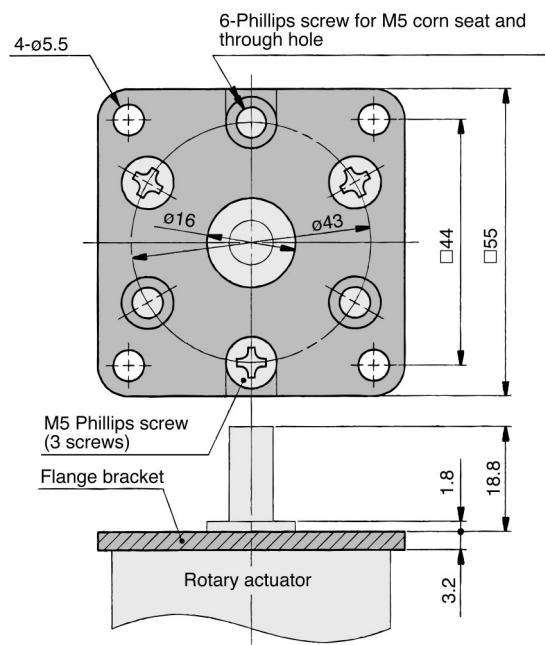
Ass'y Part Number: P211090-2 (For C□RB1FW□15)



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



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

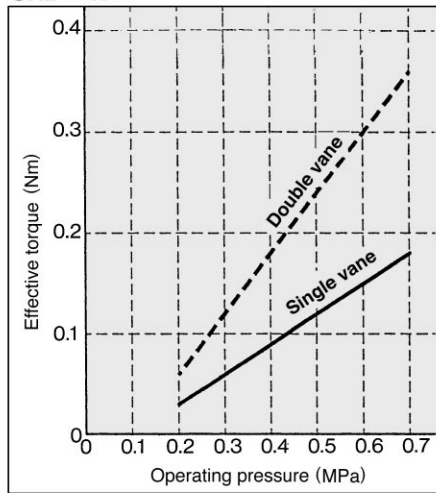


Series CRB1

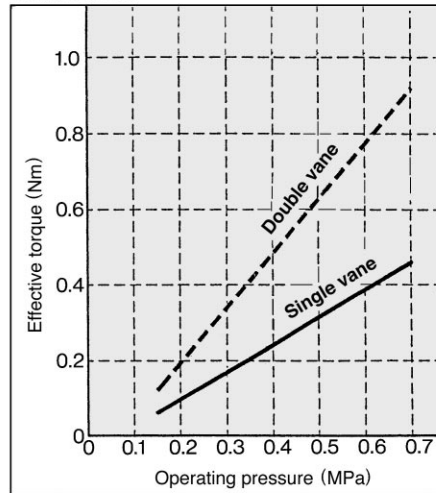
Effective Output

Direct Mounting of Body

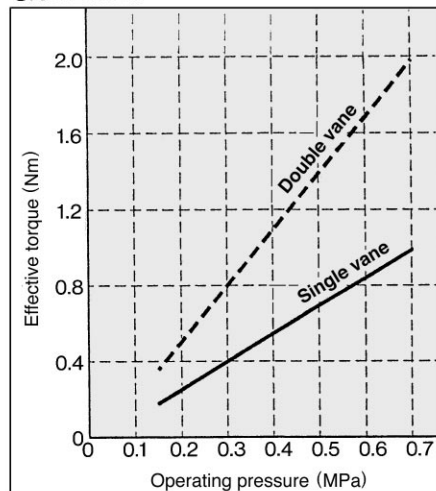
CRB1BW10



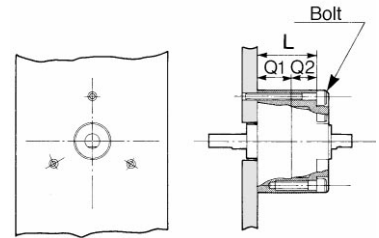
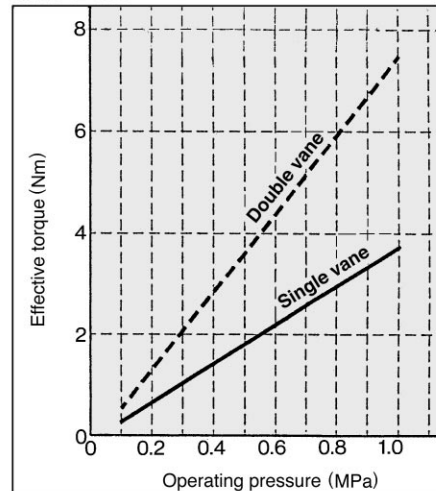
CRB1BW15



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.

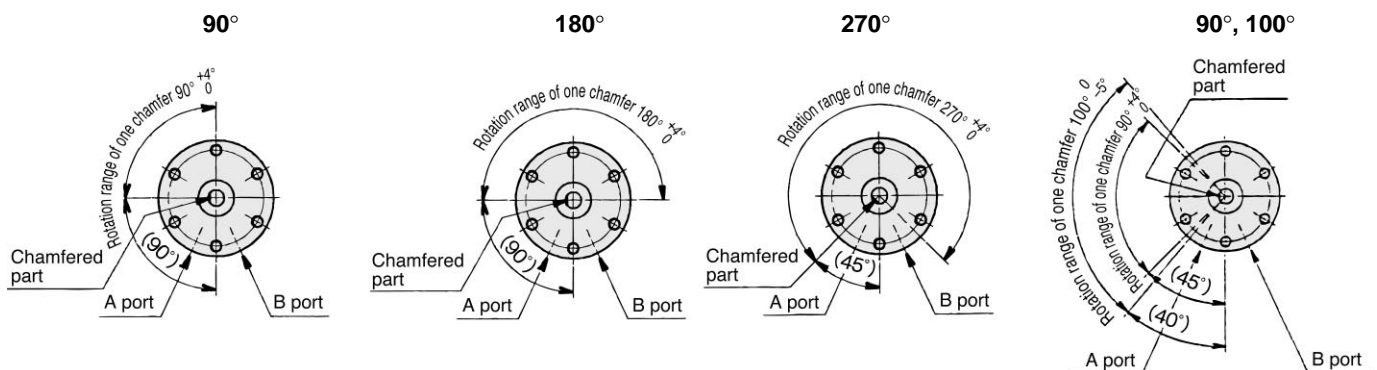
*Refer to p.1.1-9, and 1.1-10 for dimensions of Q1 and Q2.

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.

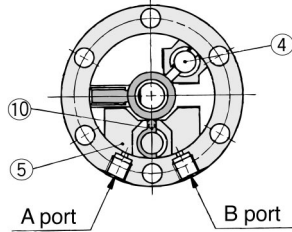
Rotary Actuator/Vane Style Series CRB1

Construction/Size: 10, 15, 20, 30

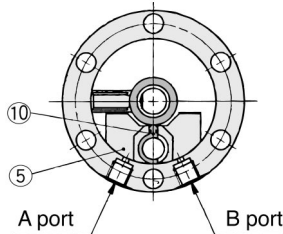
Single vane

- 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.

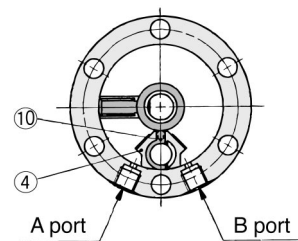
For 90°
(From long shaft side)



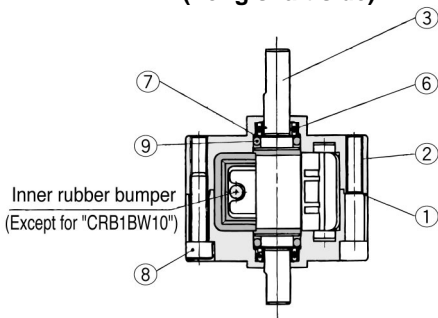
For 80°
(From long shaft side)



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	

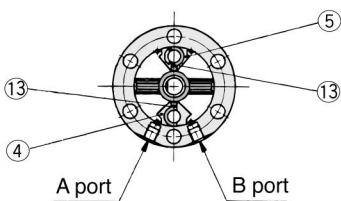
*Carbon steel for CRB1BW30.

Double vane

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

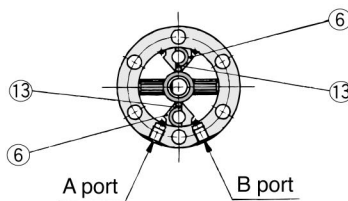
CRB1BW15/20/30-□D/Dimensions below are based on size 20.

For 90°
(From long shaft side)

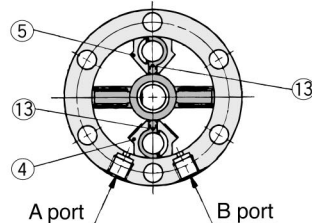


(Long shaft side)

For 100°
(From long shaft side)

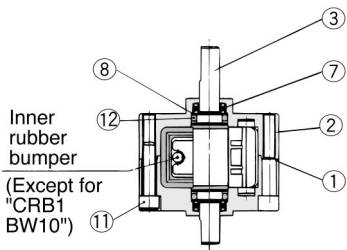
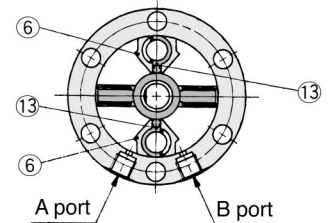


For 90°
(From long shaft side)



(Long shaft side)

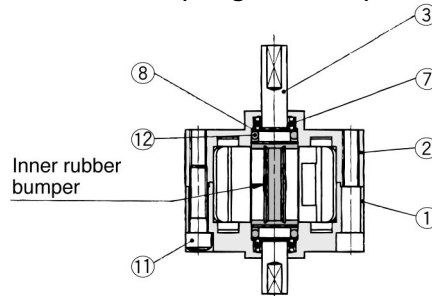
For 100°
(From long shaft side)



(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

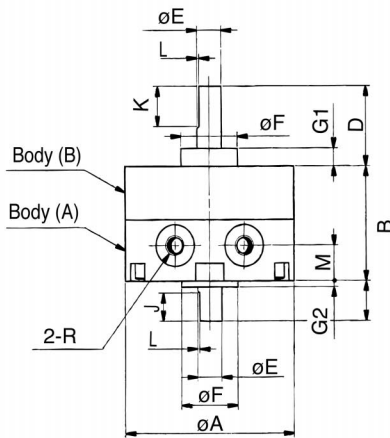
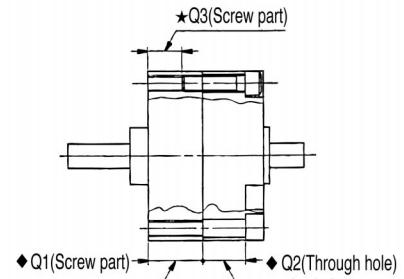
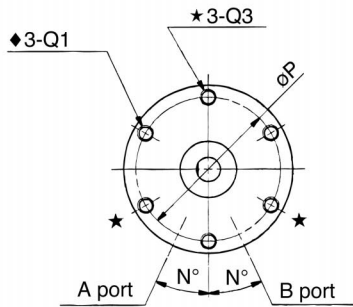
Series CRB1

Size 10, 15, 20, 30

Single vane

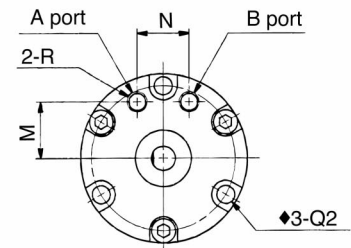
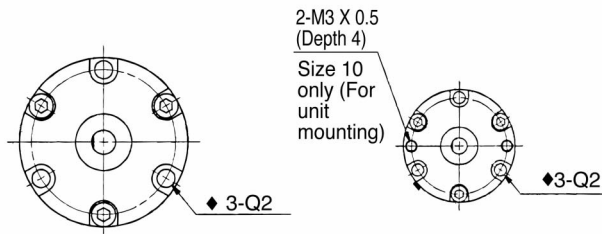


Port locations: Body side/
CRB1BW□-□S



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		



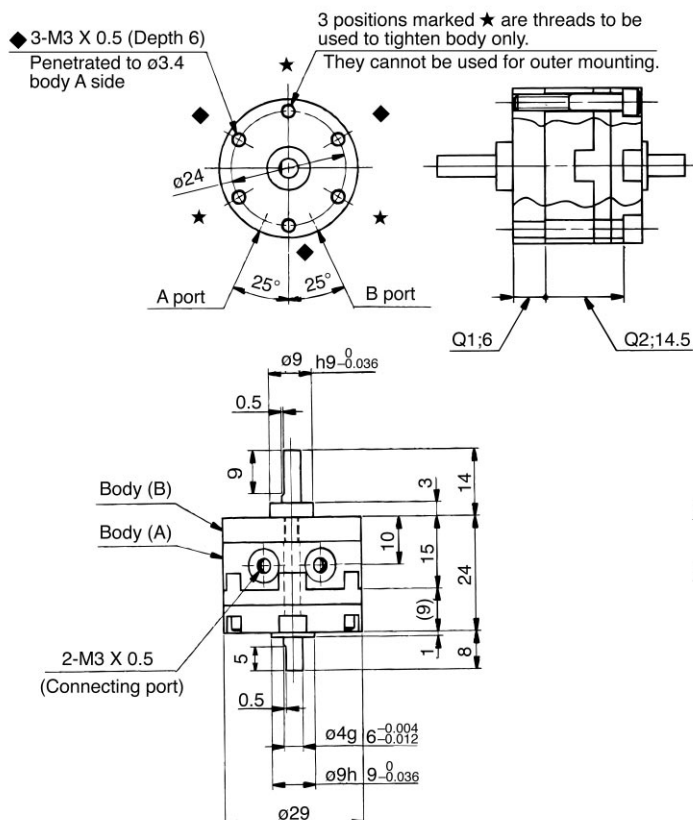
Port location: Body side
CRB1BW [Size] -□S.....SCRB [Size], #1
Port location: Axial direction
CRB1BW [Size] -□SE.....SCRB [Size], #3

Rotary Actuator/Vane Style Series **CRB1**

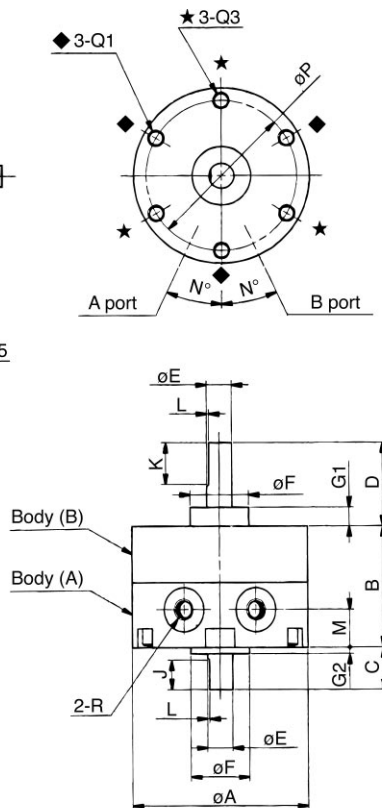


Double vane

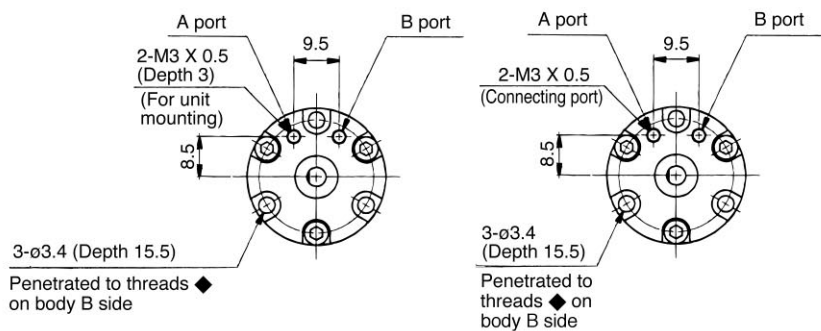
Port locations: Body side/ CRB1BW10-□D



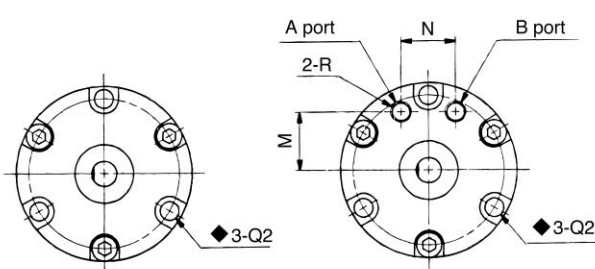
Port locations: Body side/ CRB1BW15, 20, 30-□D



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	$5_{-0.004}$	$12_{-0.043}^0$	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	$6_{-0.004}$	$14_{-0.043}^0$	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	$8_{-0.005}$	$16_{-0.043}^0$	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