

Vane Type Rotary Actuator
Series CRB2/CRBU2/CRB1



Vane Type

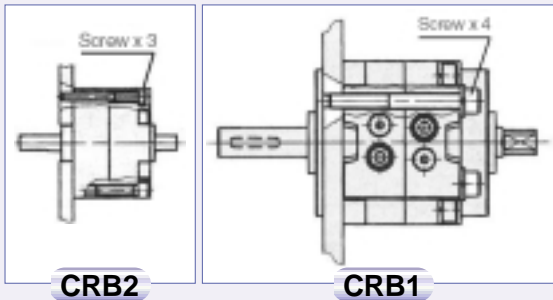
Rotation: 90°, 180°, 270°

All series can rotate up to 270°.

The use of specially designed seals and stoppers now enables our compact vane type rotary actuators to rotate up to 270° (single vane type).

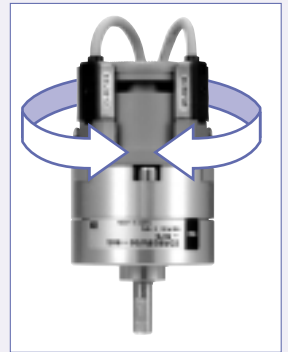
Direct mounting

The body of rotary actuator can be mounted directly.
* Direct mounting is possible for size 10 to 30 rotary actuators with angle adjuster only.



Unrestricted auto switch mounting position

Since the switches can be moved anywhere along the circumference of rotary actuator, they can be mounted at the optimum position according to the rotary actuator's specifications.



Direct mounting from 3 different directions is possible (CRBU2).

Series CRBU2 can be mounted in 3 directions: axial, top-ported, and side-ported. In the axial direction, there are 3 mounting variations.

Excellent reliability and durability

The use of bearings in all series (CRB2/CRBU2/CRB1) to support thrust and radial loads, along with the implementation of an internal rubber bumper (except for size 10), improves reliability and durability.

Two different connecting port positions (side and axial) are available.

The port position can be selected according to the application. (Only side ports are available for actuators with angle adjuster.)

Low pressure operation

Special seal construction allows for a broader operating pressure range and makes operation in low pressure applications possible.

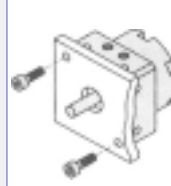
Minimum operating pressure

Size 10: 0.2MPa

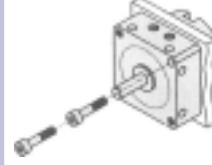
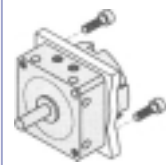
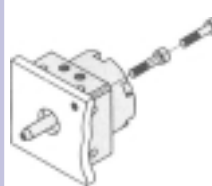
Sizes 15 to 100: 0.15MPa

Axial mounting

Body taps

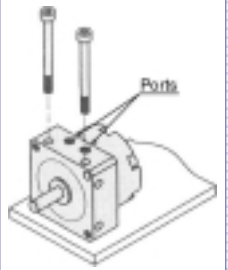


Body through holes



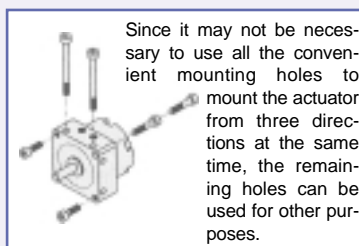
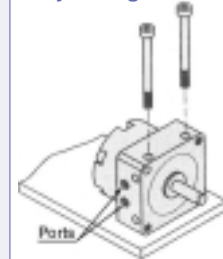
Top-ported mounting

Body through holes



Side-ported mounting

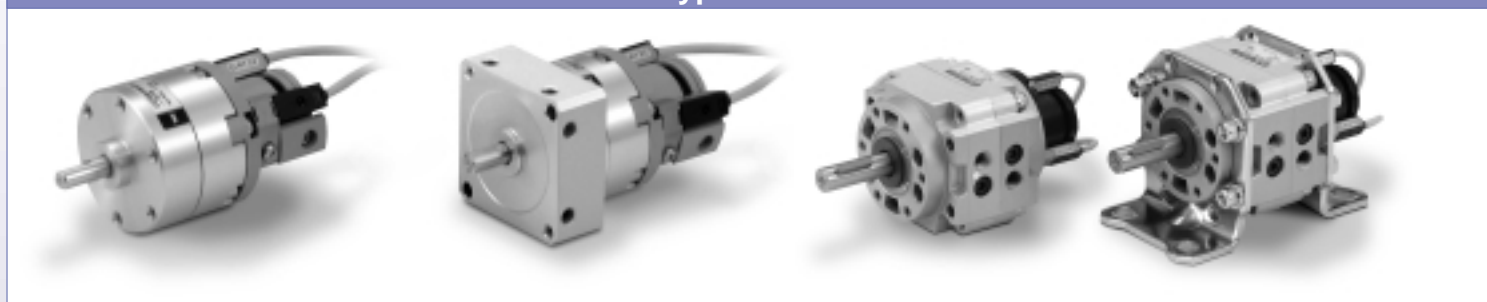
Body through holes



Block (Unit) type construction

Auto switch units and angle adjusters do not protrude beyond the outside diameter of the actuator body, and can be easily retrofitted to any actuator in the series.

Basic type + Switch unit



Rotary Actuator

CRB2

Sizes: 10, 15, 20, 30, 40



Free-mounting type

CRBU2

Sizes: 10, 15, 20, 30, 40



CRB1

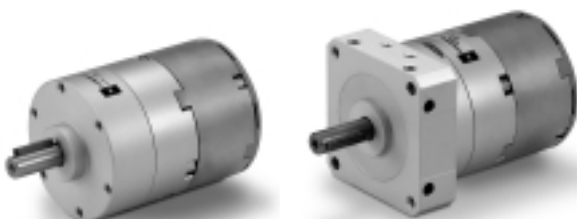
Sizes: 50, 63, 80, 100

Double vane construction is now a standard feature for 90° and 100° rotation type actuators.

Although the outside dimensions of the double vane construction actuators are equivalent to those of the single vane construction type (except for size 10), the double vane construction achieves twice the torque of the single vane type.

Model		Rotations					
		90°	100°	180°	190°	270°	280°
CRB2	Single vane	●		●		●	
	Double vane	●	●	●		●	
CRBU2	Single vane	●		●		●	
	Double vane	●	●	●		●	
CRB1	Single vane	●	●	●	●	●	●
	Double vane	●	●	●		●	

Basic type + Angle adjuster



Basic type + Angle adjuster + Switch unit



CRB2

Free-Mounting Type
CRBU2

CRB1

Simple Specials System

A system designed to respond quickly and easily to your special ordering needs.

Simple
Specials
System

Short lead times

This system enables us to respond to you special needs, such as additional machining, accessory assembly, or modular unit, and deliver such special products as quickly as the standard products.

Repeat orders

As soon as we receive a Simple Specials part number from your previous order, we will process the order, manufacture the product, and deliver it to you.

Simple Specials

-XA1 to -XA47: Shaft Pattern Sequencing

Series CRB2 Page 22

Series CRBU2 Page 54

Series CRB1 Page 77

Rotary Actuator: Vane Type

Series *CRB2*

Sizes: 10, 15, 20, 30, 40

		Fluid	Air																
		Size	10				15				20, 30				40				
		Vane type	S		D		S		D		S		D		S		D		
		Port position	Side ports	Axial ports	Side ports	Axial ports	Side ports	Axial ports	Side ports	Axial ports	Side ports	Axial ports	Side ports	Axial ports	Side ports	Axial ports	Side ports	Axial ports	
Standard	Rotation	90°	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		100°			●	●			●	●			●	●			●	●	
		180°	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●
		270°	●	●			●	●			●	●			●	●			●
	Shaft type	Double shaft	W	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Cushion	Rubber bumper		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Variations	Basic type		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		With auto switch		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		With angle adjuster		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		With auto switch and angle adjuster		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Copper-free		20-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Option	Mounting type	With flange	F	●	●	●	●	●	●	●	●	●	●	●	●	●			
Made to Order	Shaft type	Double shaft	Long shaft without single flat & Short shaft with single flat	J	●	●	●	●	●	●	●	●	●	●	●	●	●		
			Long shaft without keyway & Short shaft with single flat																
		Single shaft	Same length double long shaft with single flat on both shafts	Y	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			Double shaft key																
	Pattern	Double round shaft	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Single flat	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Single shaft key																	
	Single round shaft	T	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
		Shaft pattern		●	●	●	●	●	●	●	●	●	●	●	●	●			
		Rotation pattern		●	●			●	●			●	●			●	●		

CRB2

Free-Mounting Type
CRBU2

CRB1

Rotary Actuator: Vane Type

Series CRB2

Sizes: 10, 15, 20, 30, 40

How to Order

Standard

CRB2 B W [] 180 S E

Size: 10, 15

Connecting port position: Nil (Side ports), E (Axial ports)

Size: 10, 15, 20, 30, 40

With auto switch
Sizes: 10, 15

CDRB2 F W [] 180 S 90 L []

With auto switch
Sizes: 20, 30, 40

CDRB2 B W [] 180 S R73 L []

With auto switch
(with switch unit)

CDRB2 B W [] 180 S R73 L []

Mounting

B	Basic type
F	Flange type

* F: except for size 40

Shaft type

W	Double shaft with single flat (sizes 10 to 30)
	Long shaft key, Short shaft with single flat (size 40)

Rotation

Vane type	Symbol	Rotation
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Vane type

S	Single vane
D	Double vane

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: 0.5m
L	Grommet, Lead wire: 3m
C	Grommet, Lead wire: 0.5m
CL	Grommet, Lead wire: 3m
CN	Grommet, Without lead wire

Notes: • Connectors are available only for auto switch types D-R73, D-R80, D-T79.
• Part numbers for lead wires with connectors, and their respective wire length in (), are: D-LC05 (0.5m); D-LC30 (3m); D-LC50 (5m)

Auto switch type

Nil	Without auto switch
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* Select applicable auto switches from the table below.

Auto switch specifications: Refer to page 91 for detailed auto switch specifications.

Applicable size	Type	Electrical entry	Indicator/light	Wiring (output)	Load voltage		Auto switch part no.	Lead wire type	Lead wire length*				Applicable loads	
					DC	AC			0.5 (Nil)	3 (L)	5 (Z)	None (N)		
For 10 and 15	Reed	Grommet	No	2-wire	24V	5V, 12V	5V, 12V, 24V	90	Parallel cord	●	●	●	—	IC circuit
						5V, 12V, 100V	5V, 12V, 24V, 100V	90A	Heavy-duty cord	●	●	●	—	
						—	—	97	Parallel cord	●	●	●	—	
						—	100V	93A	Heavy-duty cord	●	●	●	—	
	Solid state	Grommet	Yes	2-wire	24V	12V	—	T99	Heavy-duty cord	●	●	—	—	Relay PLC
								T99V	●	●	—	—		
								S99	●	●	—	—		
								S99V	●	●	—	—		
								S9P	●	●	—	—		
								S9PV	●	●	—	—		
For 20, 30, and 40	Reed	Grommet	Yes	2-wire	24V	—	100V	Heavy-duty cord	●	●	—	—	Relay PLC	
							R73	●	●	—	—			
							R73C	●	●	●	●			
							R80	●	●	—	—			
	Solid state	Grommet	No	2-wire	24V	12V	—	R80C	Heavy-duty cord	●	●	●	●	IC circuit
								T79	●	●	—	—		
								T79C	●	●	●	●		
								S79	●	●	—	—		
								S7P	●	●	—	—		
								S79V	●	●	—	—		

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

Flange Assembly Part No.

(Refer to page 6 for detailed specifications.)

Model	Assembly part no.
CRB2FW10	P211070-2
CRB2FW15	P211090-2
CRB2FW20	P211060-2
CRB2FW30	P211080-2



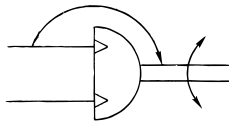
Single Vane Specifications

Model (Size)	CRB2BW10-□S	CRB2BW15-□S	CRB2BW20-□S	CRB2BW30-□S	CRB2BW40-□S	
Vane type	Single vane					
Rotation	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 pressure (MPa)	0.7			1.0		
Min. operating pressure (MPa)	0.2	0.15				
Speed regulation range (sec/90°) ^{Note 1)}	0.03 to 0.3			0.04 to 0.3	0.07 to 0.5	
Allowable kinetic energy (J) ^{Note 2)}	0.00015	0.001	0.003	0.02	0.04	
		0.00025	0.0004	0.015	0.03	
Shaft load	Allowable radial load (N)	15	15	25	30	60
	Allowable thrust load (N)	10	10	20	25	40
Bearing type	Ball bearing					
Port position	Side ports or axial ports					
Size	Side ports	M5 x 0.8	M3 x 0.5	M5 x 0.8	M3 x 0.5	M5 x 0.8
	Axial ports	M3 x 0.5			M5 x 0.8	
Shaft type	Double shaft (with single flat on both shafts)					Double shaft (Long shaft key & single flat)
Adjustable angle range	0° to 230°		0° to 240°		0° to 230°	
Mounting	Basic, Flange				Basic	
Auto switch	Mountable (Side ports only)					

Double Vane Specifications

Model (Size)	CRB2BW10-□D	CRB2BW15-□D	CRB2BW20-□D	CRB2BW30-□D	CRB2BW40-□D	
Vane type	Double vane					
Rotation	90°, 100°					
Fluid	Air (non-lube)					
Proof pressure (MPa)	1.05			1.5		
Ambient and fluid temperature	5° to 60°C					
Max. operating pressure (MPa)	0.7			1.0		
Min. operating pressure (MPa)	0.2	0.15				
Speed regulation range (sec/90°) ^{Note 1)}	0.03 to 0.3			0.04 to 0.3	0.07 to 0.5	
Allowable kinetic energy (J)	0.0003	0.0012	0.0033	0.02	0.04	
Shaft load	Allowable radial load (N)	15	15	25	30	60
	Allowable thrust load (N)	10	10	20	25	40
Bearing type	Ball bearing					
Port position	Side ports or axial ports					
Port size (Side ports, Axial ports)	M3 x 0.5			M5 x 0.8		
Shaft type	Double shaft (double shaft with single flat on both shafts)					
Adjustable angle range	0° to 90°					
Mounting	Basic, Flange					
Auto switch	Mountable (Side ports only)					

JIS symbol



Volume

Vane type	Single vane										Double vane														
	CRB2BW10-□S		CRB2BW15-□S		CRB2BW20-□S		CRB2BW30-□S		CRB2BW40-□S		CRB2BW10-□D		CRB2BW15-□D		CRB2BW20-□D		CRB2BW30-□D		CRB2BW40-□D						
Rotation	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	100°	90°	100°	90°	100°	90°	100°		
Volume (cm ³)	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	25 (18.7)	31.5	41	1.0	1.1	2.6	2.7	5.6	5.7	14.4	14.5	33	34

* Values inside () are volume of the supply side when A port is pressurized.

Weights

Vane type	Single vane										Double vane														
	CRB2BW10-□S		CRB2BW15-□S		CRB2BW20-□S		CRB2BW30-□S		CRB2BW40-□S		CRB2BW10-□D		CRB2BW15-□D		CRB2BW20-□D		CRB2BW30-□D		CRB2BW40-□D						
Rotation	90°	180°	270°	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	387	376	365	42	43	57	60	121	144	223	243	400	446
Flange assembly	9		10		19		25		—		9		10		19		25		—						
Auto switch unit + 2 switches	30		30		50		60		46.5		30		30		50		60		46.5						
Angle adjuster	30		47		90		150		203		30		47		90		150		203						

* The following notes apply to both Single and Double Vane Specification tables above.
 Note 1) Make sure to operate within the speed regulation range.
 Exceeding the maximum speed (0.3 sec/90°) can cause the unit to stick or not operate.
 Note 2) The upper numbers in this section indicate the energy factor when the rubber bumper is used (at the end of the rotation), and the lower numbers indicate the energy factor when the rubber bumper is not used.

CRB2

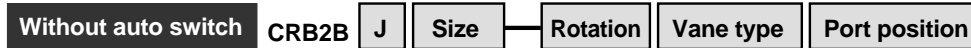
Free-Mounting Type
CRBU2

CRB1

Series CRB2

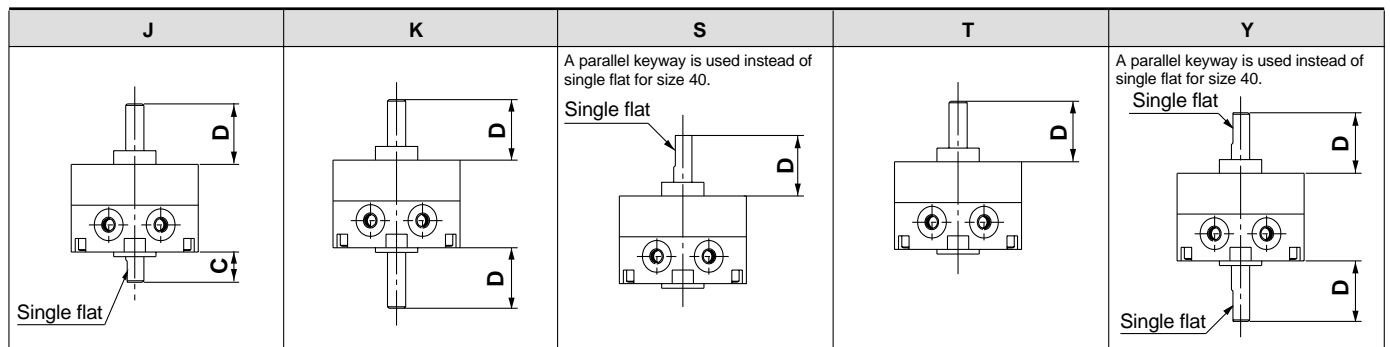
Rotary Actuator: Replaceable Shaft

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



• Shaft type

Symbol	Shaft type	Shaft-end shape	Size				
			10	15	20	30	40
J	Double shaft	Long shaft without single flat & with single flat	●	●	●	●	
		Long shaft without keyway & with single flat					●
K	Double shaft	Double round shaft	●	●	●	●	●
S	Single shaft	Single shaft with single flat	●	●	●	●	
		Single shaft key					●
T	Single shaft	Single round shaft	●	●	●	●	●
Y	Double shaft	Double shaft with single flat	●	●	●	●	
		Double shaft key					●



(mm)

Size	10	15	20	30	40
C	8	9	10	13	15
D	14	18	20	22	30

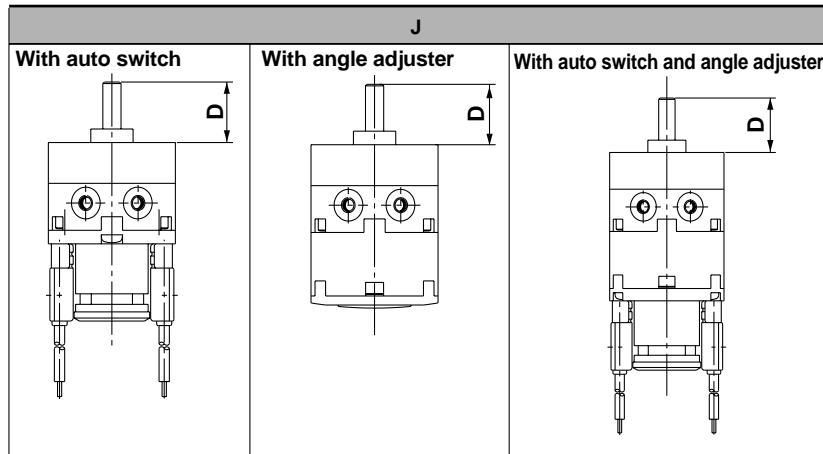
- Notes) • Only side ports are available except for basic type.
 • Dimensions and tolerance of the shaft and single flat (a parallel keyway for size 40) are the same as the standard.



• With angle adjuster
 • Shaft type

Symbol	Shaft type	Shaft-end shape	Size				
			10	15	20	30	40
J	Double shaft	Long shaft without single flat & with single flat	●	●	●	●	
		Long shaft without keyway & with single flat					●

(mm)



Size	10	15	20	30	40
C	8	9	10	13	15
D	14	18	20	22	30

- Notes) • Only side ports are available except for basic type.
 • Dimensions and tolerance of the shaft and single flat (a parallel keyway for size 40) are the same as the standard.

Copper-Free Rotary Actuator

20 – CRB2BW Size Rotation Vane type Port position

↓ Copper-free

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

Specifications

Vane type	Single/Double vane				
	10	15	20	30	40
Operating pressure range (MPa)	0.2 to 0.7	0.15 to 0.7	0.15 to 1.0		
Speed regulation range (s/90°)	0.03 to 0.3		0.04 to 0.3	0.07 to 0.5	
Port position	Side ports or axial ports				
Piping	Screw-in piping				
Mounting	Basic type only				
Variations	Basic type, with auto switch, with angle adjuster				

Specific Product Precautions

Be sure to read before handling.
Refer to pages 104 through 110 for safety instructions, actuator precautions, and auto switch precautions.

Angle Adjuster

Caution

1. In case of a rotary actuator for a 90° or 180° application, the maximum angle will be limited by the rotation of the rotary actuator itself. Make sure to take this into consideration when ordering.

In case of a rotary actuator for a 90° or 180° application, angle adjustment at the maximum angle of 90° or 180°, respectively, is not feasible. This is due to the fact that the rotation of the rotary actuator is limited to 90° +4° or 180° +4°, respectively.

Therefore, for the single vane type, use a rotary actuator with a rotation angle of 270°, and for the double vane type, use a rotary actuator with a rotation of 100°.

When operating a rotary actuator with a rotation of 90° or 180°, the rotation should be adjusted to within 85° and 175°, respectively, as a guide.

2. Connecting ports are side ports only.

3. The allowable kinetic energy is the same as the specifications of the rotary actuator by itself (i.e., without angle adjuster).

Series CRB2

Optional Specifications: Flange (Sizes: 10, 15, 20, 30)



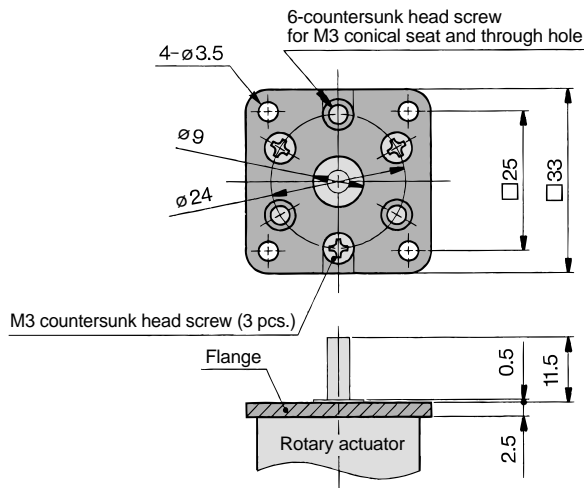
Standard type	Model			Flange assembly part no.
	With auto switch	With angle adjuster	With angle adjuster and auto switch	
CRB2FW10	CDRB2FW10	CRB2FWU10	CDRB2FWU10	P211070-2
CRB2FW15	CDRB2FW15	CRB2FWU15	CDRB2FWU15	P211090-2
CRB2FW20	CDRB2FW20	CRB2FWU20	CDRB2FWU20	P211060-2
CRB2FW30	CDRB2FW30	CRB2FWU30	CDRB2FWU30	P211080-2



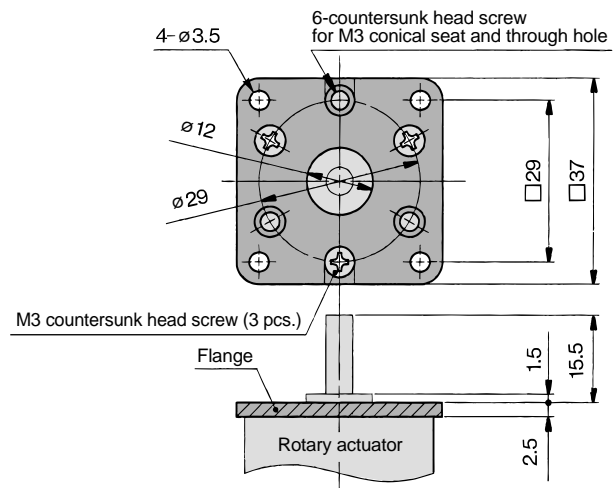
Notes) The flange (with countersunk head screws) is not mounted on the actuator at the time of shipment.

The flange can be mounted on the rotary actuator at 60-degree intervals.

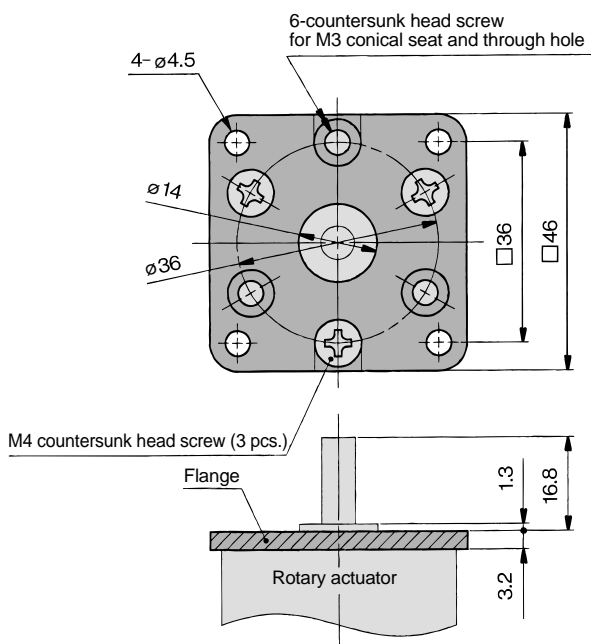
Assembly Part No.: P211070-2 (for C□RB2FW□10)



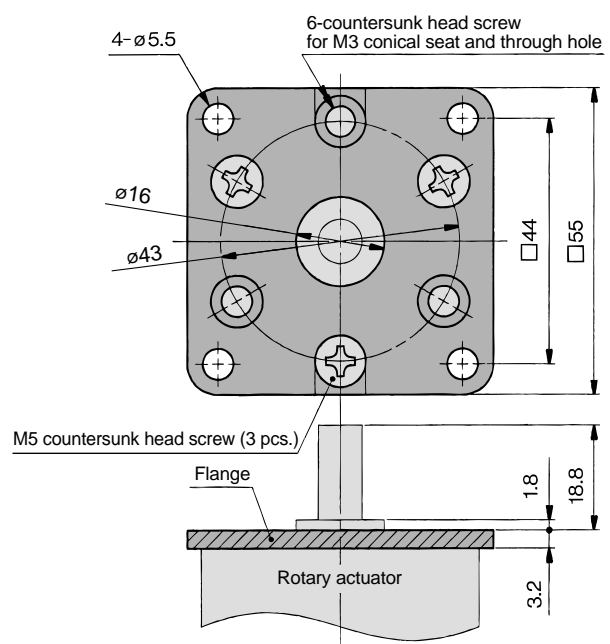
Assembly Part No.: P211090-2 (for C□RB2FW□15)



Assembly Part No.: P211060-2 (for C□RB2FW□20)



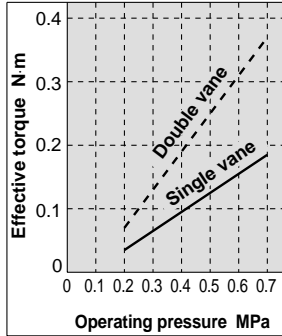
Assembly Part No.: P211080-2 (for C□RB2FW□30)



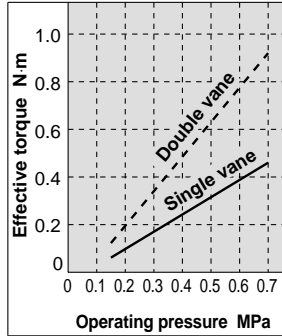
Effective Output

Direct Mounting of Body

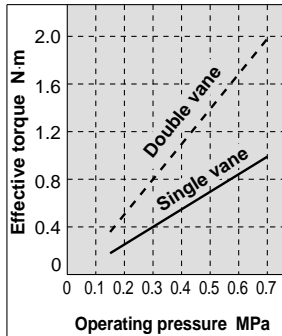
CRB2BW10



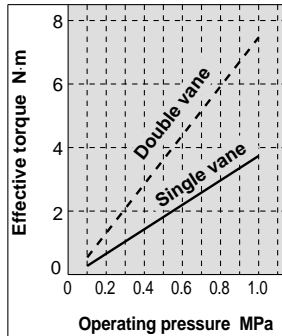
CRB2BW15



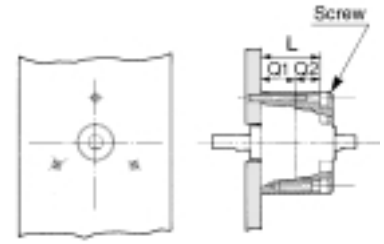
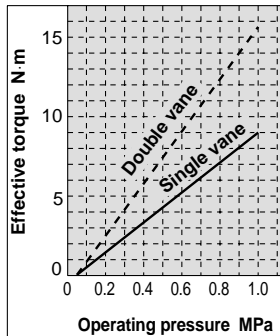
CRB2BW20



CRB2BW30



CRB2BW40



Dimension "L" of the actuators is provided in the table below for JIS standard hexagon socket head cap screws. If these types of screw are used, their heads will fit in the mounting hole.

Type	L	Screw
CRB2BW10	11.5*	M2.5
CRB2BW15	16	M2.5
CRB2BW20	24.5	M3
CRB2BW30	34.5	M4
CRB2BW40	39.5	M4

* Only the size 10 actuators have different L dimensions for single and double vane. L dimension for size 10 double vane actuator is 20.5.

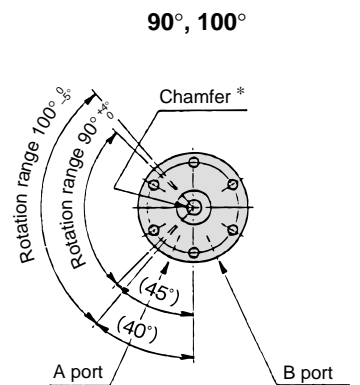
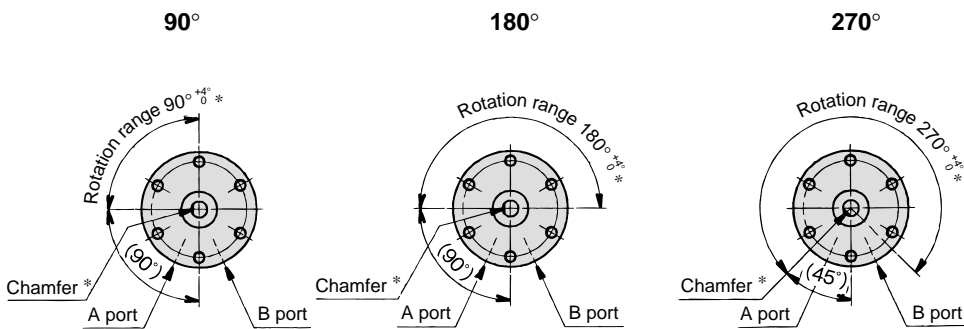
* Refer to pages 10 and 11 for Q1 and Q2 dimensions.

Chamfered Position and Rotation Range: Top View from Long Shaft Side

(Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Single vane type

Double vane type



* For size 40 actuators, a parallel keyway will be used instead of chamfer.
 Note) For single vane type, rotation tolerance of 90°, 180°, and 270° actuators will be $^{+5}_{0}$ for size 10 actuators only.
 For double vane type, rotation tolerance of 90° actuator will be $^{+5}_{0}$ for size 10 actuators only.

CRB2

Free-Mounting Type
CRBU2

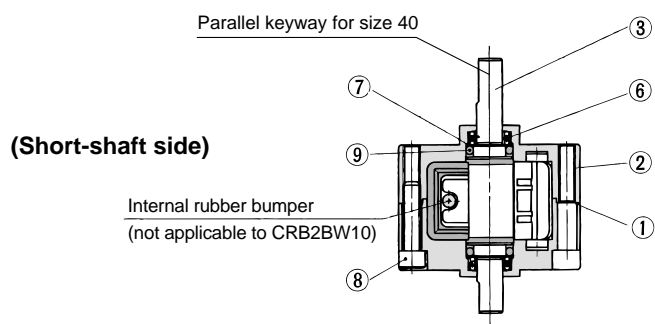
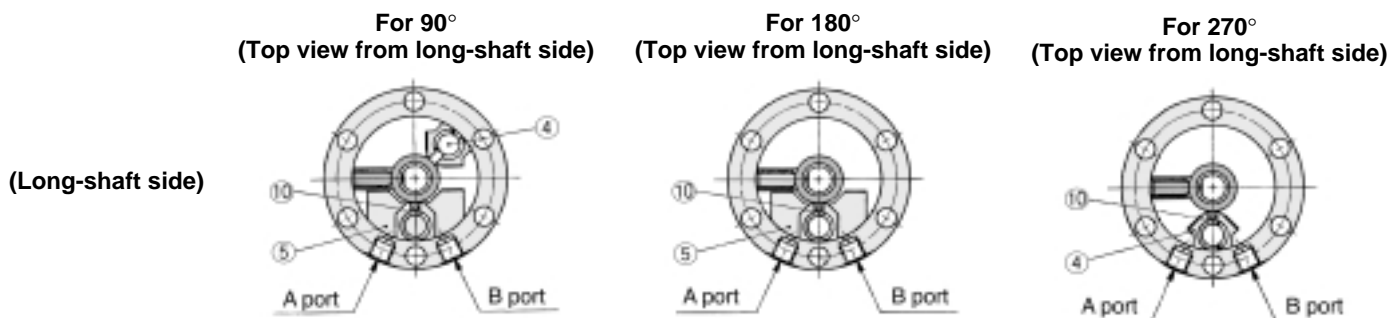
CRB1

Series CRB2

Construction: 10, 15, 20, 30, 40

Single vane type

- Illustrations below show size 20 actuators.
- Illustrations for 90° and 180° show the condition of the actuators when B port is pressurized, and the illustration for 270° shows the position of the ports during rotation.



Parts list

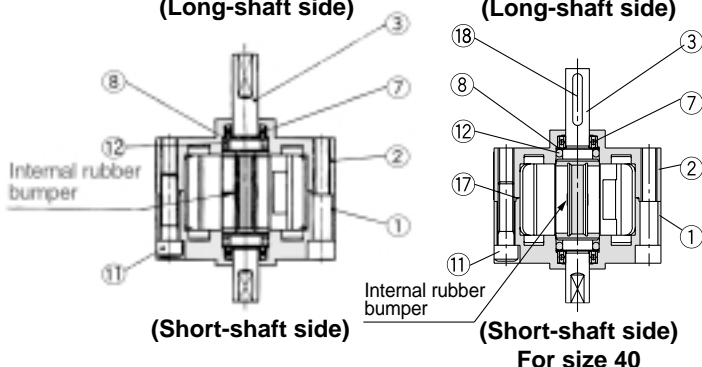
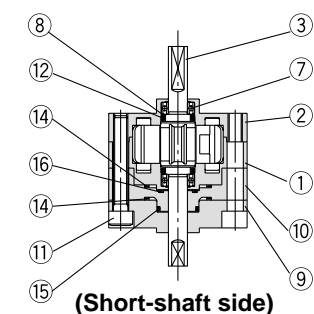
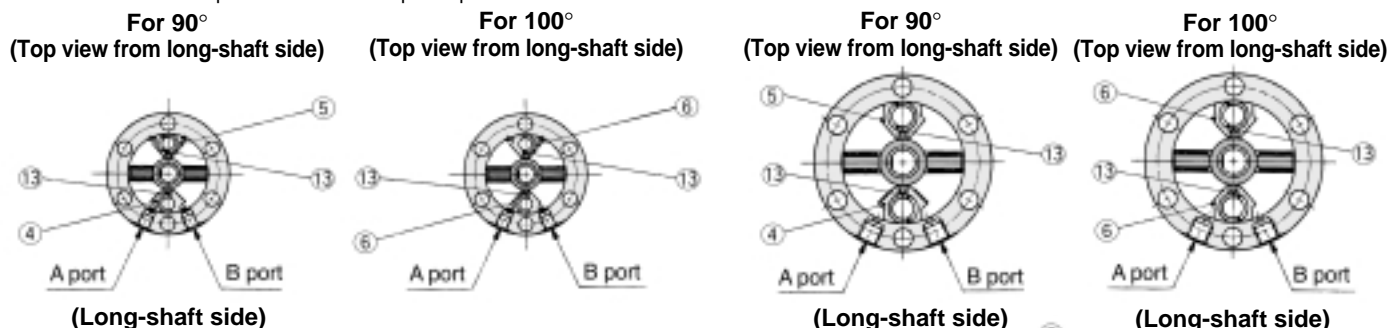
No.	Description	Material	Note
1	Body (A)	Aluminum alloy	White
2	Body (B)	Aluminum alloy	White
3	Vane shaft	Stainless steel*	
4	Stopper	Resin	For 270°
5	Stopper	Resin	For 180°
6	Bearing	High carbon chromium steel	
7	Back-up ring	Stainless steel	
8	Hexagon socket head cap screw	Stainless steel	Special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

* Carbon steel for CRB2BW30 and CRB2BW40.

Double vane type

CRB2BW10-□D • Illustrations below show the intermediate rotation position when A or B port is pressurized.

CRB2BW15, 20, 30, 40-□D • Illustrations below show size 20 actuators.



Parts list

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

Parts list

No.	Description	Material	Note
10	Plate	Resin	White
11	Hexagon socket head cap screw	Stainless steel	Special screw
12	O-ring	NBR	
13	Stopper seal	NBR	Special seal
14	Gasket	NBR	Special seal
15	O-ring	NBR	
16	O-ring	NBR	
17	O-ring	NBR	Double vane only
18	Parallel keyway	Carbon steel	Size 40 only

Construction (with Auto Switch Unit)

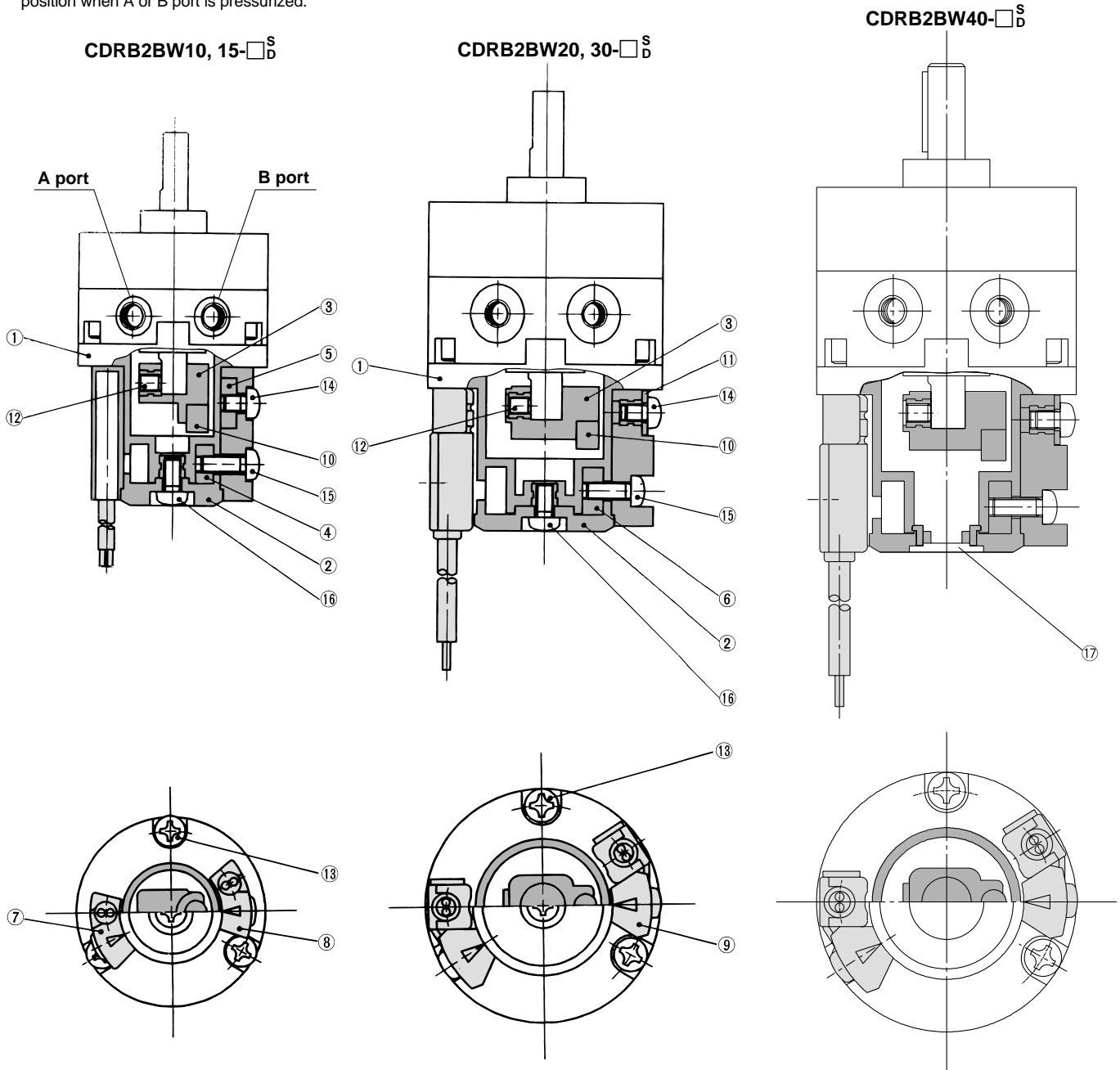
- Single vane type

Following illustrations show actuators for 90° and 180° when B port is pressurized.

(Same switch units are used for both single and double vane types.)

- Double vane type

Following illustrations show the intermediate rotation position when A or B port is pressurized.



Parts list

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

No.	Description	Material
11	Arm	Stainless steel
12	Hexagon socket head set screw	Stainless steel
13	Round head Phillips screw	Stainless steel
14	Round head Phillips screw	Stainless steel
15	Round head Phillips screw	Stainless steel
16	Round head Phillips screw	Stainless steel
17	Rubber cap	NBR

* For CDRB2BW10, 2 round head Phillips screws, ⑬, are required.

Series CRB2

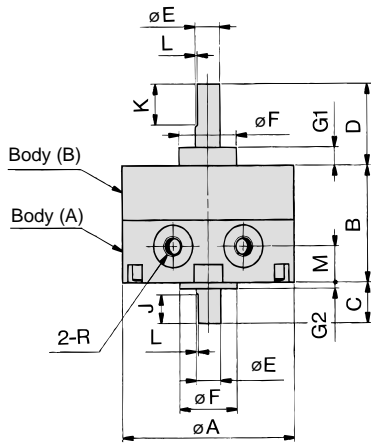
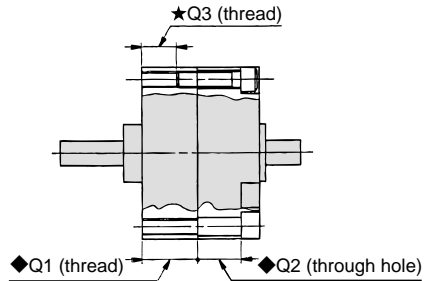
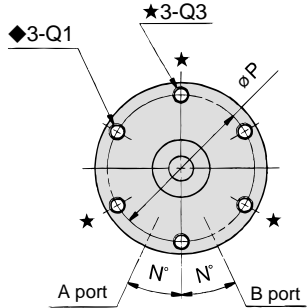
Dimensions: 10, 15, 20, 30

Single vane type

• Following illustrations show actuators for 90° and 180° when B port is pressurized.

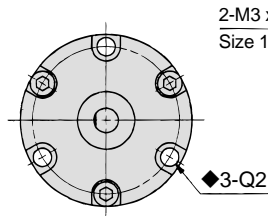
CRB2BW□-□S

<Port position: Side ports>

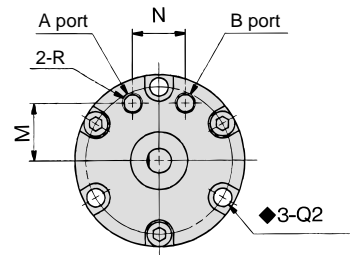
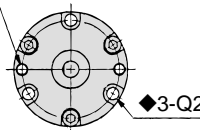


CRB2BW10-□S
<Port position: Side ports>

CRB2BW□-□SE
<Port position: Axial ports>



2-M3 x 0.5 with depth 4
Size 10 only (for mounting unit)



Note) Depths of Q1 and Q2 with the ◆ mark indicate that the holes go through both bodies (A) and (B).



Note) The pre-drilled mounting threads for CRB2BW15, 20, and 30, 3 mounting holes depicted with the ★ marks are for tightening the actuator and not to be used for external mounting.

Model	A	B	C	D	E (g6)	F (h9)	G1	G2	J	K	L	M	N	P	◆Q1	◆Q2	★Q3	R		
																		90°	180°	270°
CRB2BW10-□S	29	15	8	14	4 ^{-0.004} _{-0.012}	9 ⁰ _{-0.036}	3	1	5	9	0.5	5	25	24	M3	3.4	—	M5	M3	
CRB2BW10-□SE												8.5	9.5					M3		
CRB2BW15-□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	3.4	M3	M5	M3	
CRB2BW15-□SE												11	10					M3		
CRB2BW20-□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	4.5	M4	M5	M5	
CRB2BW20-□SE												14	13							(13.5)
CRB2BW30-□S	50	40	13	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	5	2	8	12	1.0	10	25	43	M5	5.5	M5	M5	M5	
CRB2BW30-□SE												15.5	14							(18)

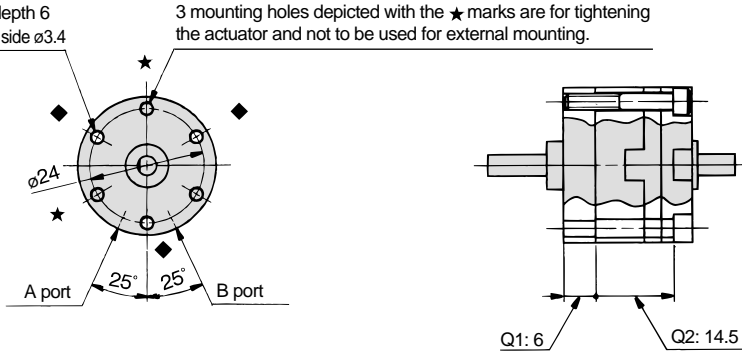
Double vane type • Following illustrations show the intermediate rotation position when A or B port is pressurized.

CRB2BW10-□D

<Port position: Side ports>

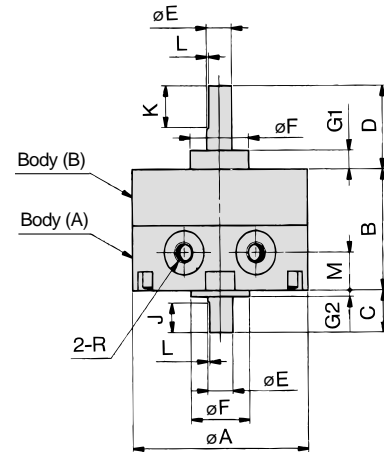
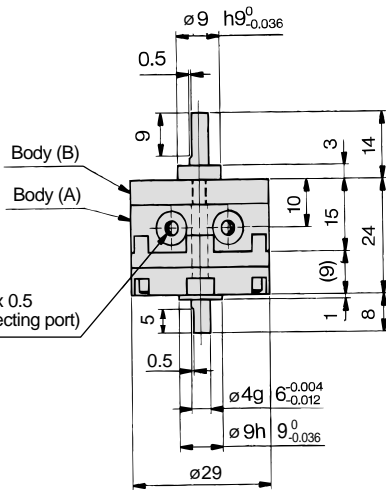
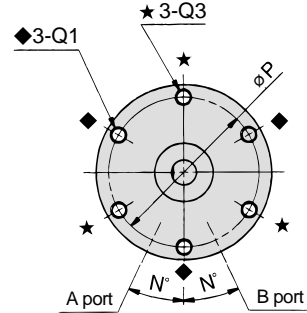
◆ 3-M3 x 0.5 with depth 6
Goes through Body A side ø3.4

3 mounting holes depicted with the ★ marks are for tightening the actuator and not to be used for external mounting.



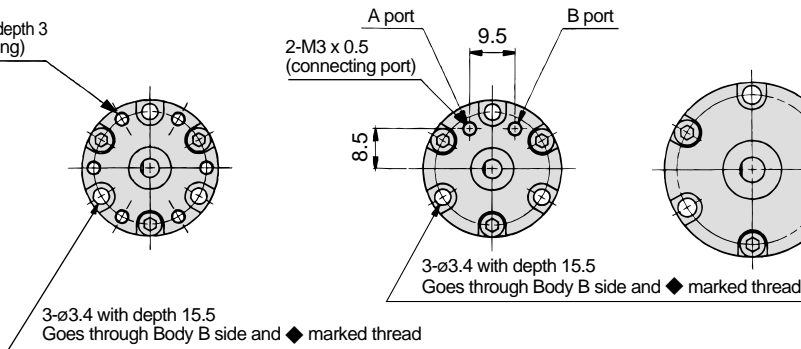
CRB2BW15, 20, 30-□D

<Port position: Side ports>

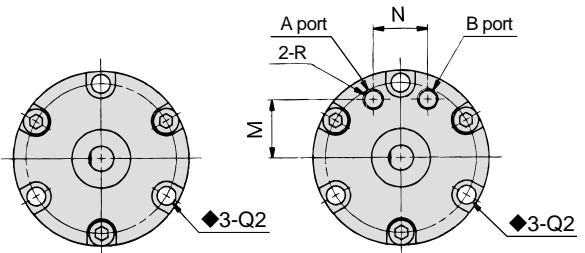


CRB2BW10-□DE
<Port position: Axial ports>

6-M3 x 0.5 with depth 3
(for unit mounting)



CRB2BW15, 20, 30-□DE
<Port position: Axial ports>



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°
CRB2BW15-□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	
CRB2BW15-□DE												11	10						
CRB2BW20-□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	
CRB2BW20-□DE												14	13						
CRB2BW30-□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	
CRB2BW30-□DE												15.5	14						

Series CRB2

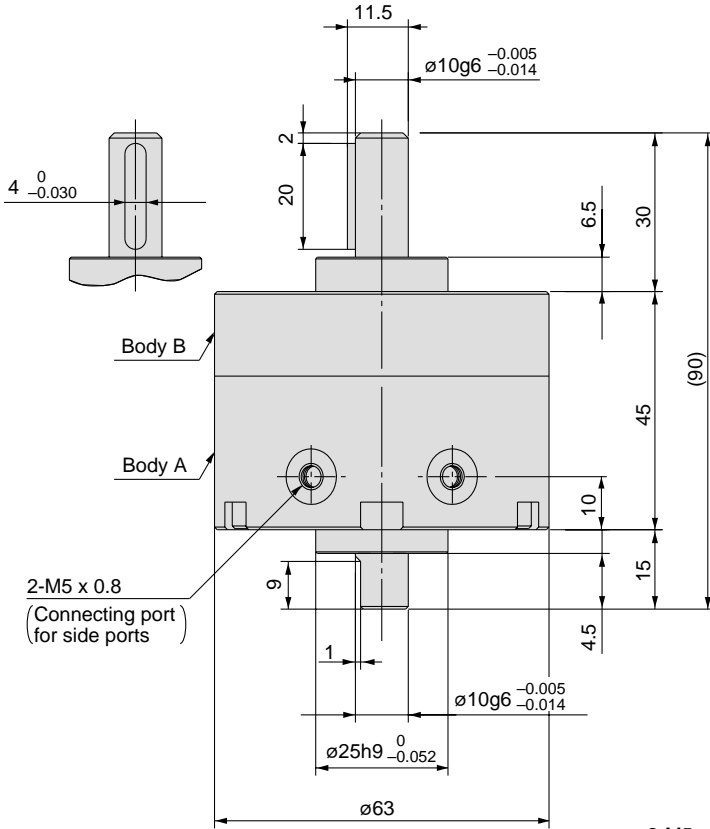
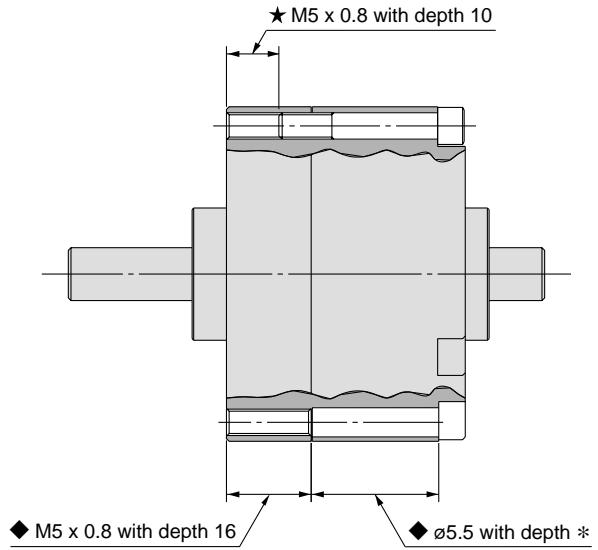
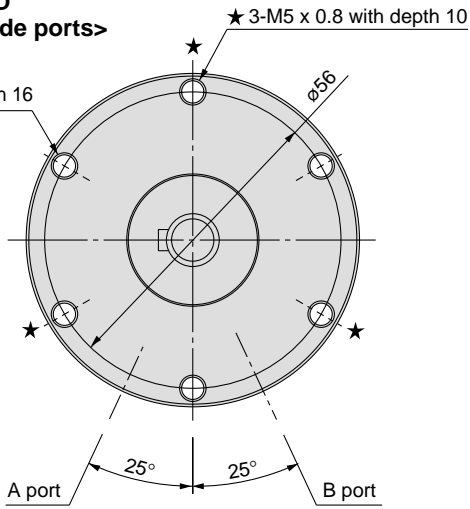
Dimensions: 40

Single vane/Double vane type

CRB2BW40-□S, D

<Port position: Side ports>

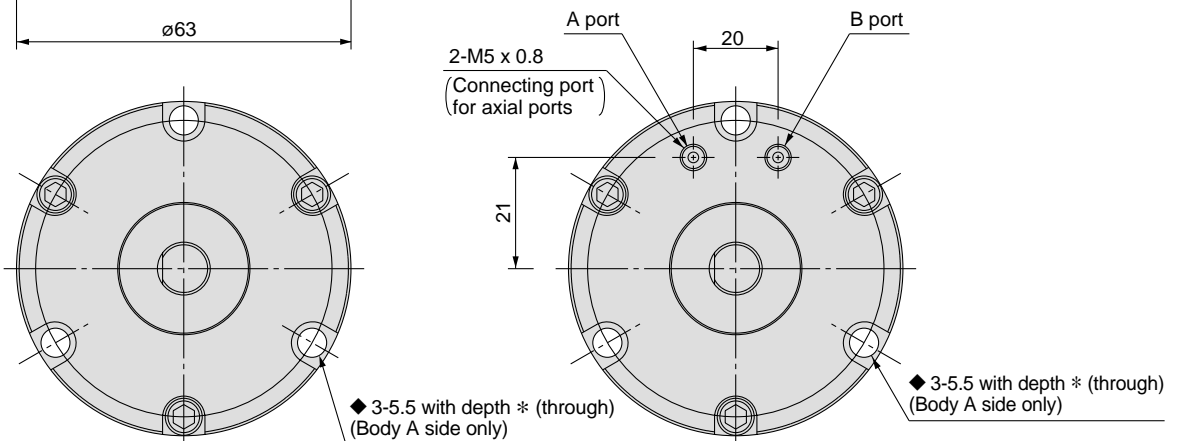
◆ 3-M5 x 0.8 with depth 16



Vane type	*
Single vane	17.5
Double vane	23.5

Keyway dimensions			
	b (h9)	h (h9)	L
Model	4 ⁰ _{-0.030}	4 ⁰ _{-0.030}	20

CRB2BW40-□SE, DE
<Port position: Axial ports>

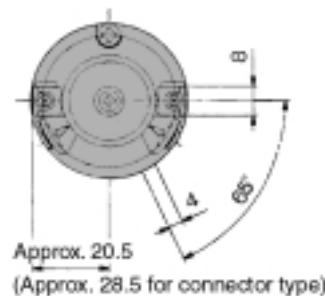
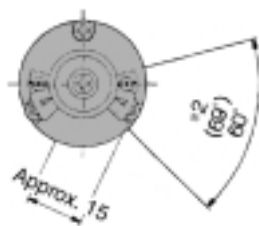
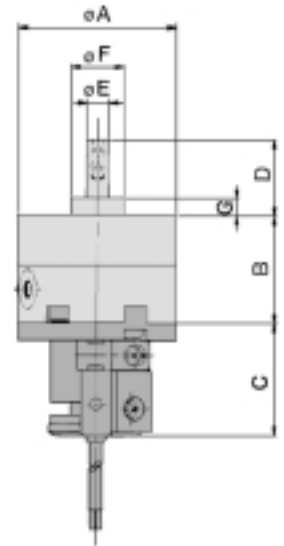
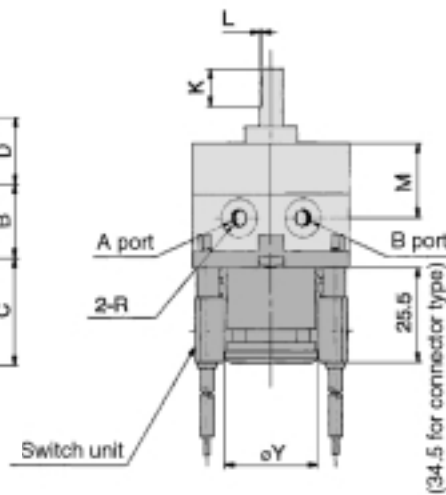
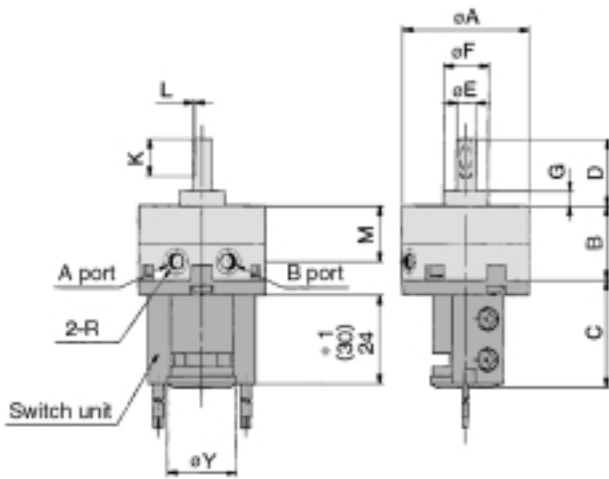
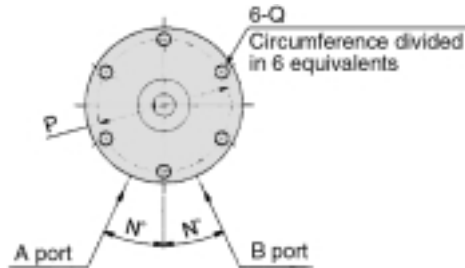
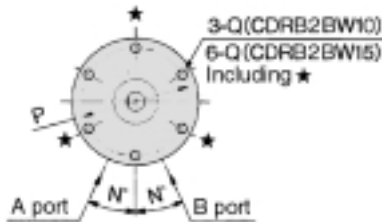


Dimensions: 10, 15, 20, 30 (with Auto Switch Unit)

Single vane type
CDRB2BW10, 15-□S

• Following illustrations show actuators for 90° and 180° when B port is pressurized.

CDRB2BW20, 30-□S



*1 The length is 24 when any of the following auto switches are used: D-90, D-90A, D-S99(V), D-T99(V), and D-S9P(V)
The length is 30 when any of the following auto switches are used: D-97 and D-93A

*2 The angle is 60° when any of the following auto switches are used: D-90, D-90A, D-97, and D-93A.
The angle is 69° when any of the following auto switches are used: D-S99(V), D-T99(V), and D-S9P(V)

Note) • For rotary actuators with auto switch unit, connecting ports are side ports only.

• The above exterior view drawings illustrate rotary actuators with one right-hand and one left-hand switches.

Model	A	B	C	D	E (g6)	F (h9)	G	K	L	M	N	P	Q	R			Y
														90°	180°	270°	
CDRB2BW10-□S	29	15	29	14	4	9	3	9	0.5	10	25	24	M3 X 0.5 with depth 5	M5 X 0.8	M3 X 0.5	18.5	
CDRB2BW15-□S	34	20	29	18	5	12	4	10	0.5	15	25	29	M3 X 0.5 with depth 5	M5 X 0.8	M3 X 0.5	18.5	
CDRB2BW20-□S	42	29	30	20	6	14	4.5	10	0.5	20	25	36	M4 X 0.7 with depth 7	M5 X 0.8		25	
CDRB2BW30-□S	50	40	31	22	8	16	5	12	1	30	25	43	M5 X 0.8 with depth 10	M5 X 0.8		25	

CRB2

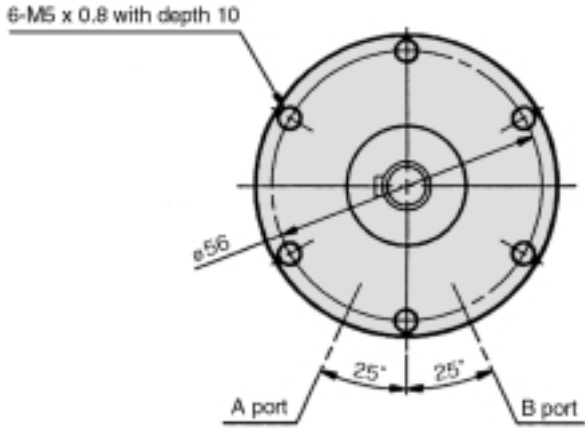
Free-Mounting Type
CRB2

CRB1

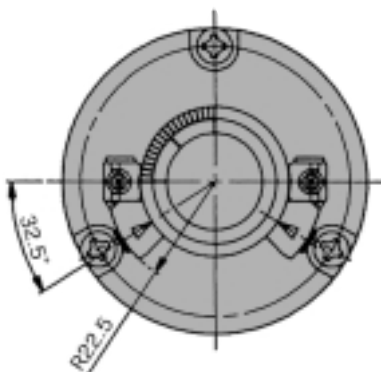
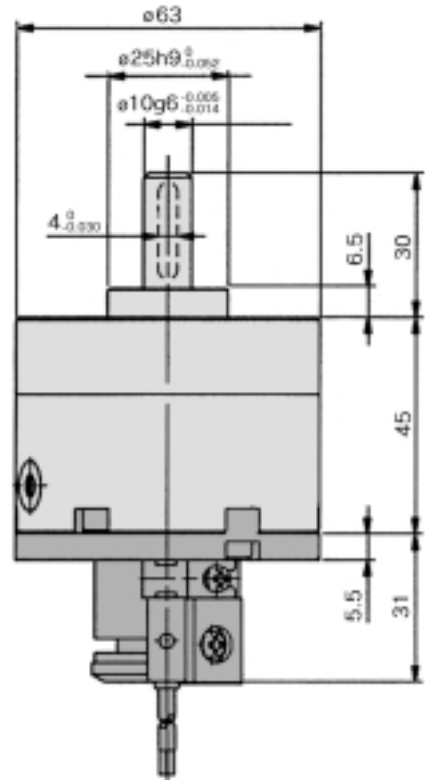
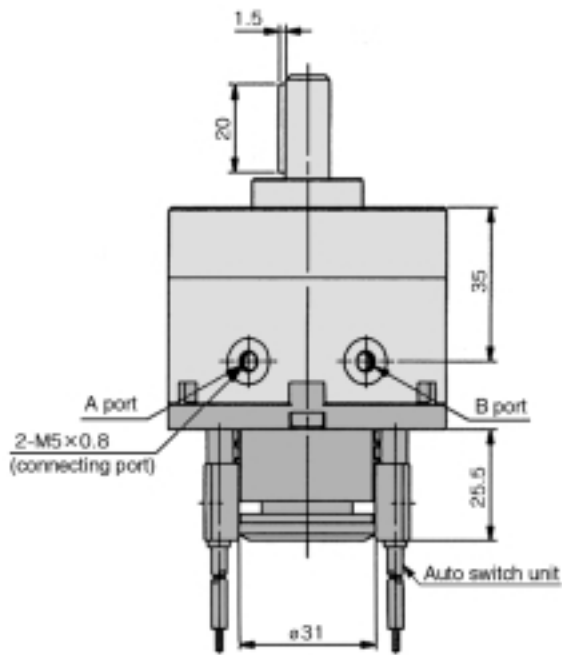
Dimensions: 40 (with Auto Switch Unit)

Single vane/Double vane type

CDRB2BW40-□□S, D



Keyway dimensions			
	b (h9)	h (h9)	L
Model	b (h9)	h (h9)	L
CDRB2BW40-□□□	4 ⁰ _{-0.030}	4 ⁰ _{-0.030}	20



CRB2

Free-Mounting Type
CRBU2

CRB1


Vane Type Rotary Actuator with Angle Adjuster

Series **CRB2BWU**

Sizes: 10, 15, 20, 30, 40

How to Order

Standard



CRB2 **B** WU **10** — **180** **S**

Size: 10, 15, 20, 30, 40

With auto switch
Sizes: 10, 15

CDRB2 **F** WU **10** — **180** **S** — **90** **L**

With auto switch
Sizes: 20, 30, 40

CDRB2 **B** WU **20** — **180** **S** — **R73** **L**

Mounting

B	Basic type
F	Flange type

* F: except for size 40

With angle adjuster

Vane type	Symbol	Rotation
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Vane type

S	Single vane
D	Double vane

Auto switch type

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

* Select applicable auto switches from the table below.

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: 0.5m
L	Grommet, Lead wire: 3m
C	Grommet, Lead wire: 0.5m
CL	Grommet, Lead wire: 3m
CN	Grommet, Without lead wire

Notes) • Connectors are available only for auto switch types D-R73, D-R80, D-T79.
• Part numbers for lead wires with connectors, and their respective wire length in (), are: D-LC05 (0.5m); D-LC30 (3m); D-LC50 (5m)

Auto switch specifications: Refer to page 91 for detailed auto switch specifications.

Applicable size	Type	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch part no.	Lead wire type	Lead wire length*				Applicable loads	
					DC	AC			0.5 (Nil)	3 (L)	5 (Z)	None (N)		
For 10 and 15	Reed	Grommet	No	2-wire	24V	5V, 12V	24V or less	90	Parallel cord	●	●	●	—	Relay PLC
						100V or less	90A	Heavy-duty cord	●	●	●	—		
						12V	—	97	Parallel cord	●	●	●	—	
						100V	—	93A	Heavy-duty cord	●	●	—	—	
	Solid state	Grommet	Yes	3-wire (NPN)	24V	—	—	T99	Heavy-duty cord	●	●	—	—	Relay PLC
								T99V	Heavy-duty cord	●	●	—	—	
								S99	Heavy-duty cord	●	●	—	—	
								S99V	Heavy-duty cord	●	●	—	—	
								S9P	Heavy-duty cord	●	●	—	—	
								S9PV	Heavy-duty cord	●	●	—	—	
For 20, 30, and 40	Reed	Grommet	Yes	2-wire	24V	12V	100V	R73	Heavy-duty cord	●	●	—	—	Relay PLC
						—	—	R73C	Heavy-duty cord	●	●	●	●	
						5V, 12V	100V or less	R80	Heavy-duty cord	●	●	—	●	
						24V or less	R80C	Heavy-duty cord	●	●	●	—		
	Solid state	Grommet	Yes	3-wire (NPN)	24V	—	—	T79	Heavy-duty cord	●	●	—	●	Relay PLC
								T79C	Heavy-duty cord	●	●	●	—	
								S79	Heavy-duty cord	●	●	—	—	
								S79C	Heavy-duty cord	●	●	—	—	
								S7P	Heavy-duty cord	●	●	—	—	
								S7PC	Heavy-duty cord	●	●	—	—	

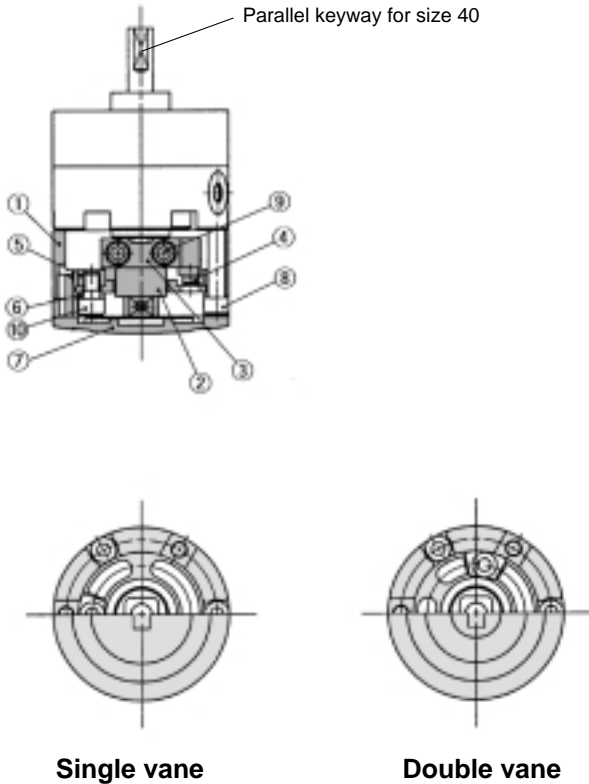
* Lead wire length symbol
 0.5m Nil (Example) R73C
 3m L (Example) R73CL
 5m Z (Example) R73CZ
 None N (Example) R73CN

Construction

(Same switch units are used for both single and double vane type.)

With angle adjuster

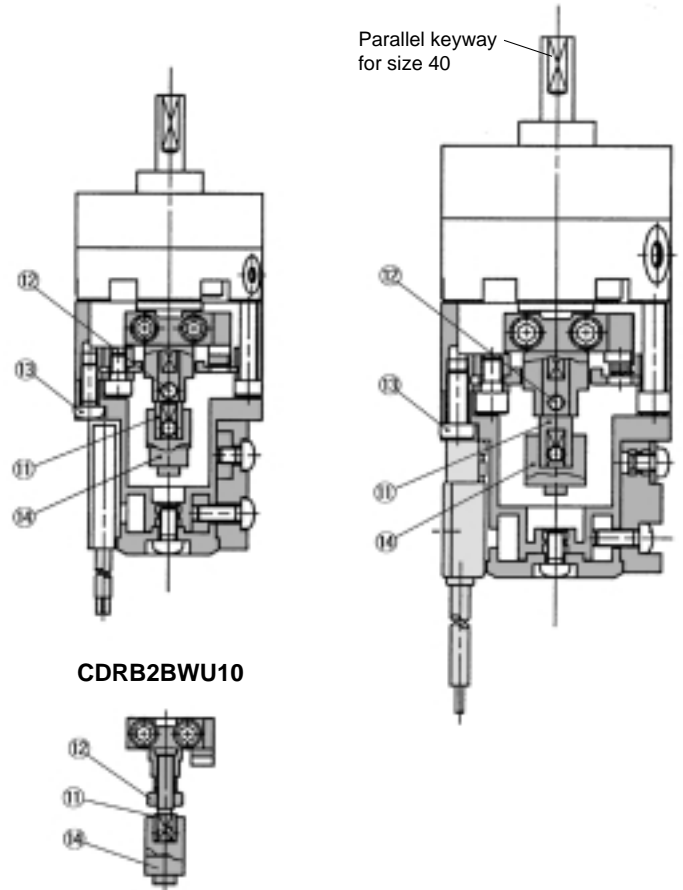
CRB2BWU10, 15, 20, 30, 40-□^S_D



With angle adjuster + Auto switch unit

CDRB2BWU10, 15-□^S_D

CDRB2BWU20, 30, 40-□^S_D



Parts list

No.	Description	Material	Note
1	Stopper ring	Die-cast aluminum	
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 screw	Stainless steel	Special screw
9	Hexagon socket head cap screw	Stainless steel	Special screw
10	Hexagon socket head cap screw	Stainless steel	Special screw
11	Joint	Aluminum alloy	See note below.
12	Hexagon socket head set screw	Stainless steel	Hexagon nut will be used for size 10 only.
	Hexagon nut	Stainless steel	
13	Round head Phillips screw	Stainless steel	See note below.
14	Magnet lever	—	See note below.

Note) These items (No. 11, 13, and 14) consist of auto switch unit and angle adjuster. Refer to pages 84 and 85 for detailed specifications.

⚠ Specific Product Precautions

Be sure to read before handling.
Refer to pages 104 through 110 for safety precautions, actuator precautions, and auto switch precautions.

Angle Adjuster

⚠ Caution

1. Since the maximum angle of the rotation adjustment range will be limited by the rotation of the rotary actuator itself, make sure to take this into consideration when ordering.

Rotation of the rotary actuator	Rotation adjustment range
270° ⁺⁰	0° to 230° (Sizes: 10, 40)* 0° to 240° (Sizes: 15, 20, 30)
180° ⁺⁰	0° to 175°
90° ⁺⁰	0° to 85°

* The maximum adjustment angle of the angle adjuster for size 10 and 40 is 230°.

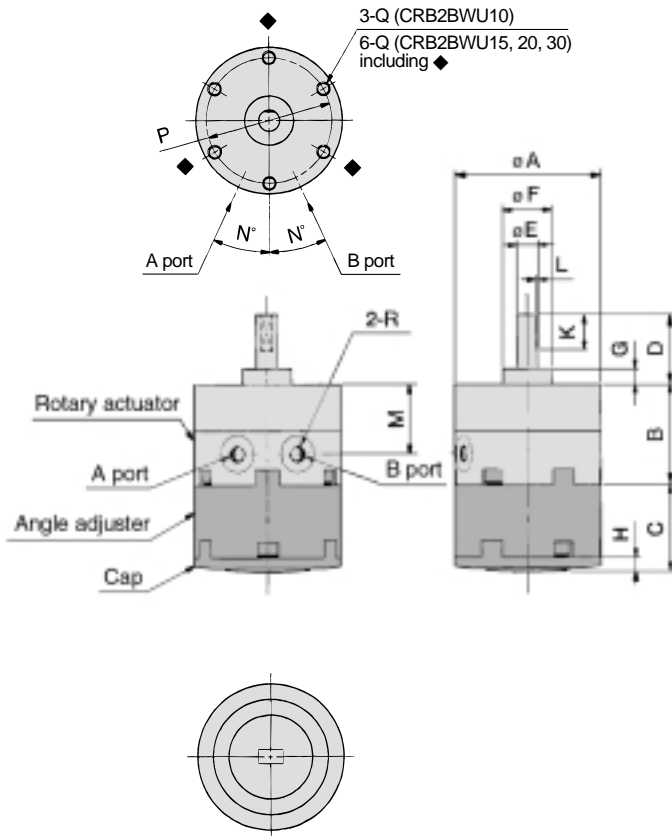
2. Connecting ports are side ports only.
3. The allowable kinetic energy is the same as the specifications of the rotary actuator by itself (i.e., without angle adjuster).
4. Use a 100° rotary actuator if you desire to adjust the angle to 90° using a double vane type.

Series CRB2BWU

Dimensions: 10, 15, 20, 30 (with Angle Adjuster)

Single vane type

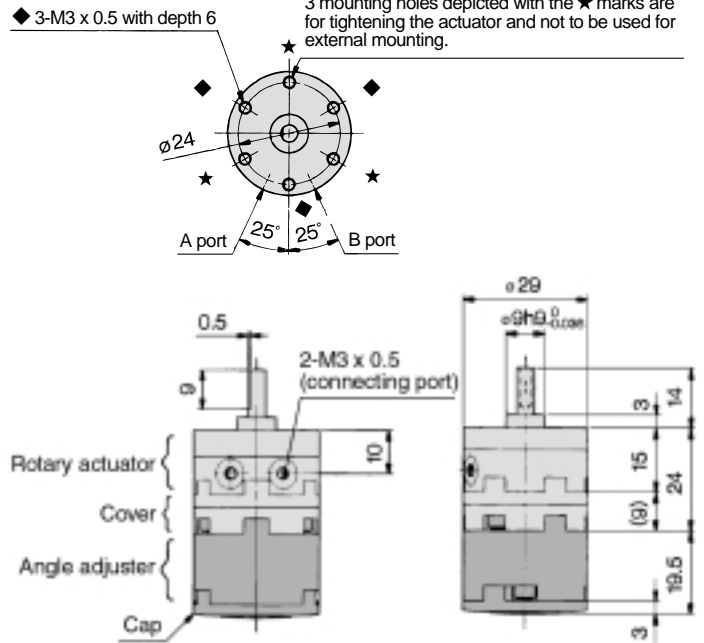
CRB2BWU10, 15, 20, 30-□S • Following illustrations show actuator for 90° when A port is pressurized.



Double vane type

CRB2BWU10-□D

• Following illustrations show the intermediate rotation position when A or B port is pressurized.



Double vane type

CRB2BWU15, 20, 30-□D

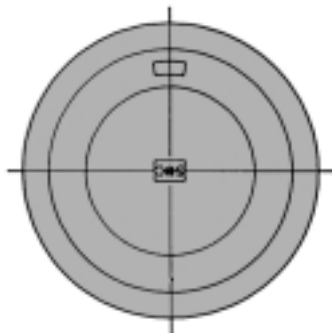
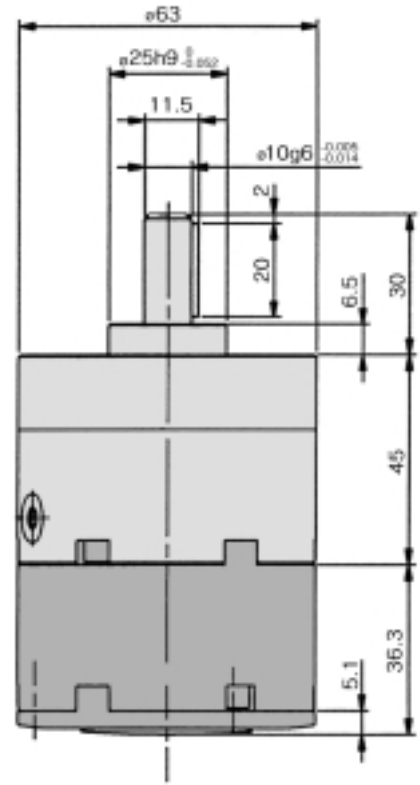
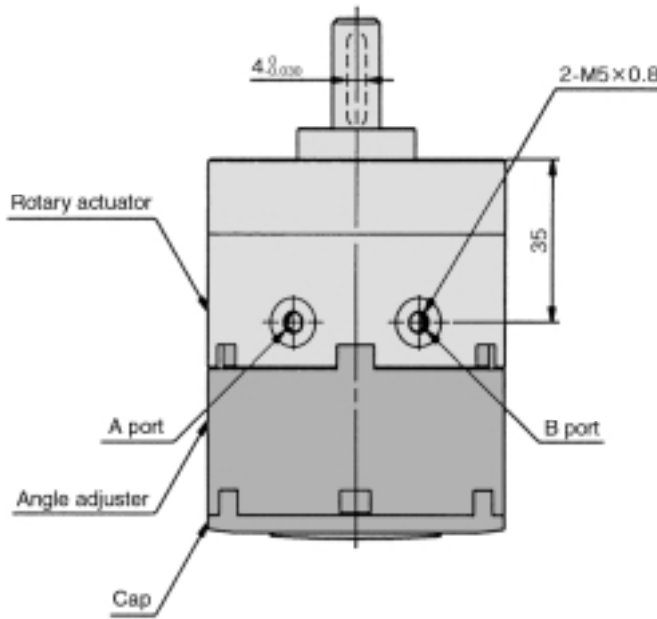
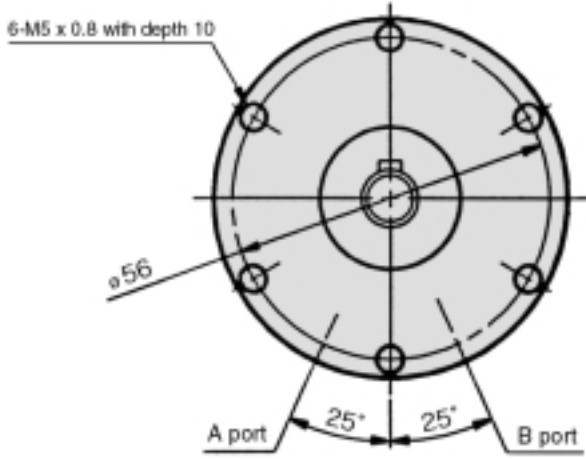
Dimensions for double vane type sizes 15, 20, and 30 are the same as those of single type.

Model	A	B	C	D	E (g6)	F (h9)	G	H	K	L	M	N	P	Q
CRB2BWU10-□S	29	15	19.5	14	4	9	3	3	9	0.5	10	25	24	M3 x 0.5 with depth 6
CRB2BWU15-□S	34	20	21.2	18	5	12	4	3.2	10	0.5	15	25	29	M3 x 0.5 with depth 5
CRB2BWU15-□D														
CRB2BWU20-□S	42	29	25	20	6	14	4.5	4	10	0.5	20	25	36	M4 x 0.7 with depth 7
CRB2BWU20-□D														
CRB2BWU30-□S	50	40	29	22	8	16	5	4.5	12	1	30	25	43	M5 x 0.8 with depth 10
CRB2BWU30-□D														

Model	R			
	90°	100°	180°	270°
CRB2BWU10-□S	M5 x 0.8	—	M5 x 0.8	M3 x 0.5
CRB2BWU10-□D	M3 x 0.5		—	
CRB2BWU15-□S	M5 x 0.8	—	M5 x 0.8	M3 x 0.5
CRB2BWU15-□D	M3 x 0.5		—	
CRB2BWU20-□S	M5 x 0.8	—	M5 x 0.8	
CRB2BWU20-□D	M5 x 0.8		—	
CRB2BWU30-□S	M5 x 0.8	—	M5 x 0.8	
CRB2BWU30-□D	M5 x 0.8		—	

Dimensions: 40 (with Angle Adjuster)

Single vane/Double vane type
CRB2BWU40-□□S, D



Model	Keyway dimensions		
	b (h9)	h (h9)	L
CRB2BWU40-□□□	4 $_{-0.030}^0$	4 $_{-0.030}^0$	20

CRB2

Free-Mounting Type
CRBU2

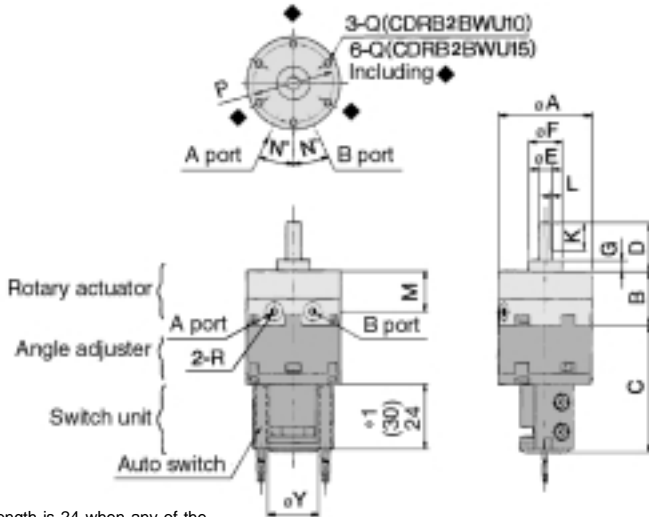
CRB1

Series CDRB2BWU

Dimensions: 10, 15, 20, 30 (with Angle Adjuster and Auto Switch Unit)

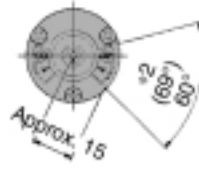
Single vane type CDRB2BWU10, 15-□S

- Following illustrations show actuator for 90° when A port is pressurized.



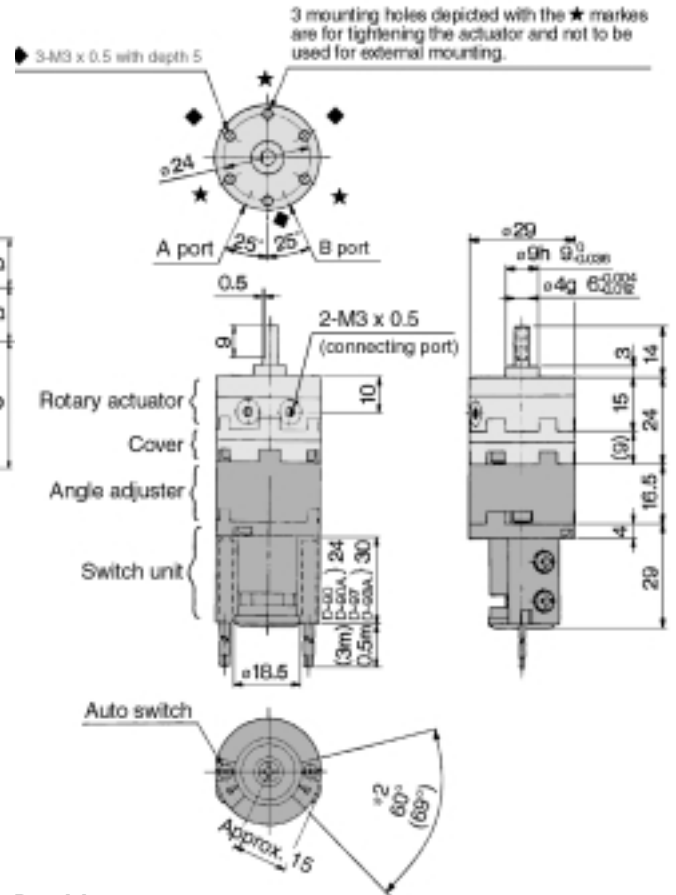
- *1. The length is 24 when any of the following auto switches are used: D-90, D90A, D-S99(V), D-T99(V), and D-S9P(V)
The length is 30 when any of the following auto switches are used: D-97 and D-93A

- *2. The angle is 60° when any of the following auto switches are used: D-90, D-90A, D-97, and D-93A.
The angle is 69° when any of the following auto switches are used: D-S99(V), D-T99(V), and D-S9P(V)

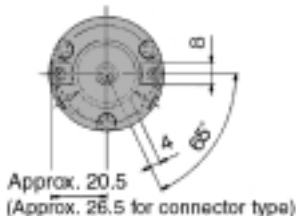
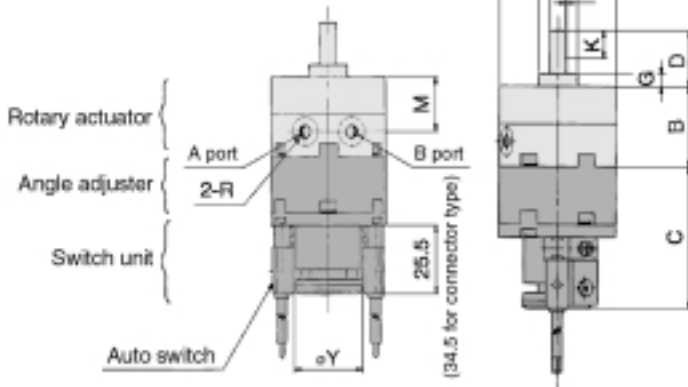


Double vane type CDRB2BWU10-□D

- Following illustrations show the intermediate rotation position when A or B port is pressurized.



Single vane type CDRB2BWU20, 30-□S



Double vane type CDRB2BWU15, 20, 30-□D

Dimensions for double vane type sizes 15, 20, and 30 are the same as those of single type.

Model	A	B	C	D	E (g6)	F (h9)	G	K	L	M
CDRB2BWU10-□S	29	15	45.5	14	4	9	3	9	0.5	10
CDRB2BWU15-□S	34	20	47	18	5	12	4	10	0.5	15
CDRB2BWU15-□D										
CDRB2BWU20-□S	42	29	51	20	6	14	4.5	10	0.5	20
CDRB2BWU20-□D										
CDRB2BWU30-□S	50	40	55.5	22	8	16	5	12	1	30
CDRB2BWU30-□D										

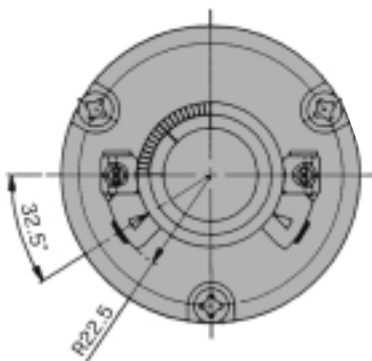
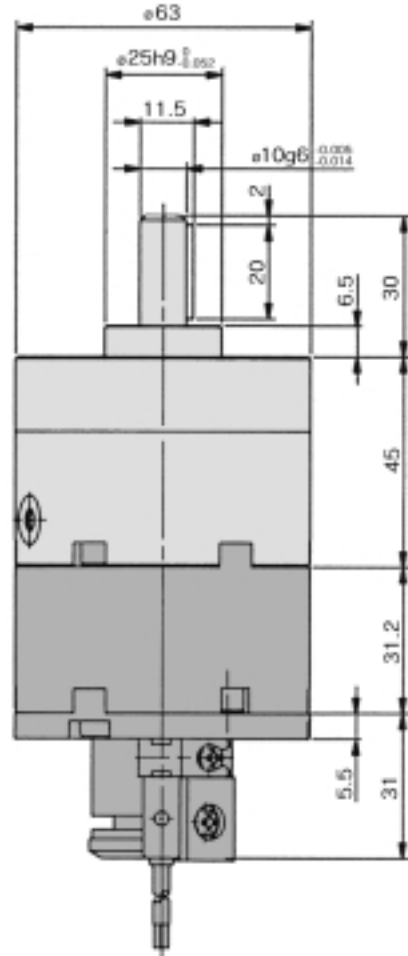
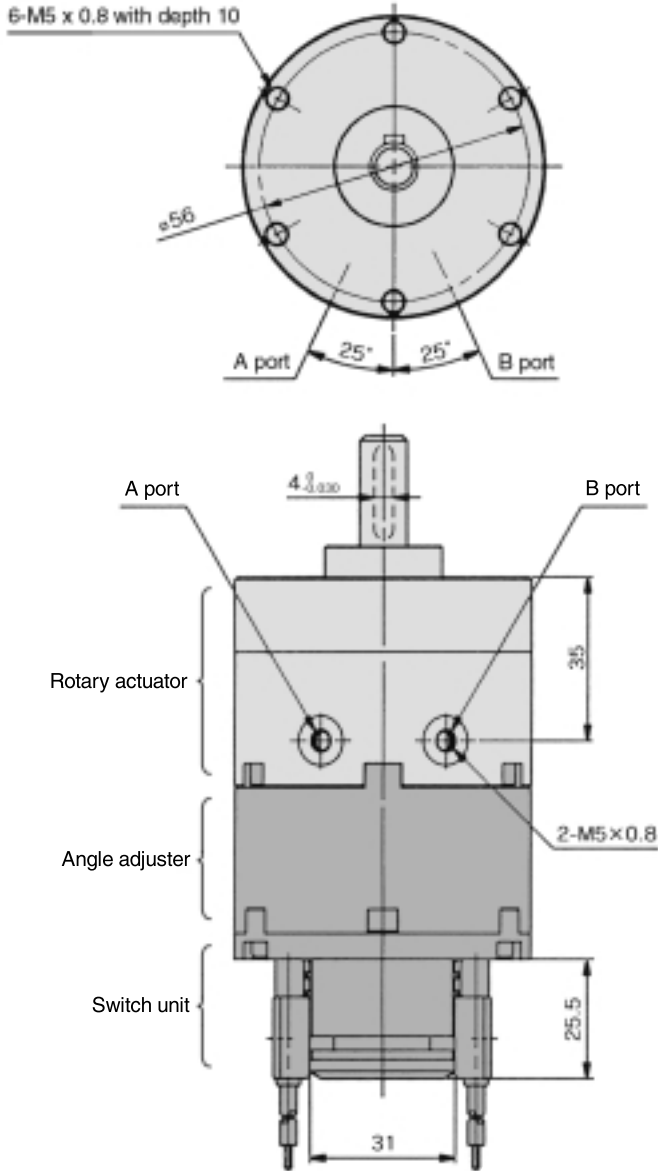
Model	N	P	Y	Q	R		
					90°	100°	180° 270°
CDRB2BWU10-□S	25	24	18.5	M3 x 0.5 with depth 5	M5 x 0.8	—	M5 x 0.8/M3 x 0.5
CDRB2BWU10-□D					M3 x 0.5	—	—
CDRB2BWU15-□S	25	29	18.5	M3 x 0.5 with depth 5	M5 x 0.8	—	M5 x 0.8/M3 x 0.5
CDRB2BWU15-□D					M3 x 0.5	—	—
CDRB2BWU20-□S	25	36	25	M4 x 0.7 with depth 7	M5 x 0.8	—	M5 x 0.8
CDRB2BWU20-□D					M5 x 0.8	—	—
CDRB2BWU30-□S	25	43	25	M5 x 0.8 with depth 10	M5 x 0.8	—	M5 x 0.8
CDRB2BWU30-□D					M5 x 0.8	—	—

- For rotary actuators with angle adjuster and auto switch unit, connecting ports are side ports only.
- The above exterior view drawings illustrate the rotary actuator equipped with one right-hand and one left-hand switches.

Dimensions: 40 (with Angle Adjuster and Auto Switch Unit)

Single vane/Double vane type

CDRB2BWU40-□S, D



Keyway dimensions			L
	b (h9)	h (h9)	
Model	4 _{-0.030}	4 _{-0.030}	20

CRB2

Free-Mounting Type
CRBU2

CRB1

Series CRB2 (Sizes: 10, 15, 20, 30, 40)

Simple Specials

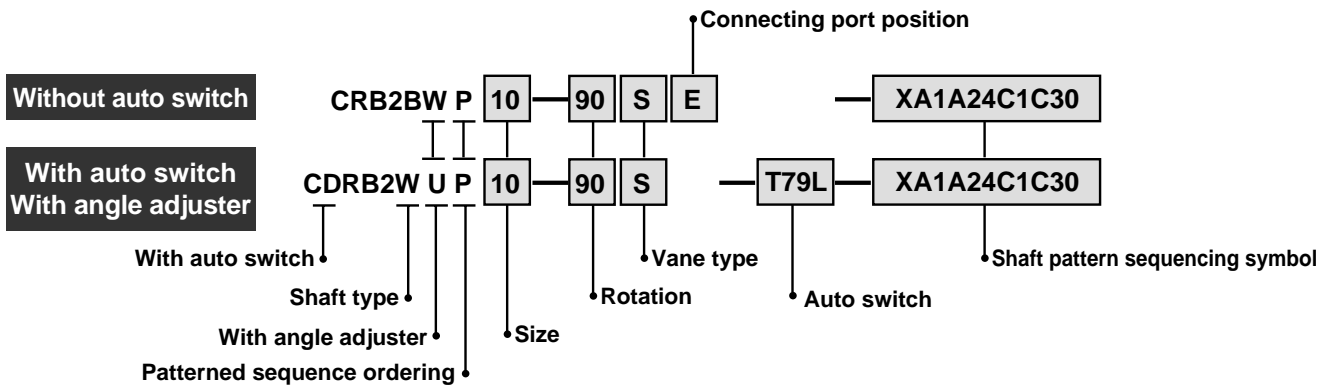
-XA1 to -XA24: Shaft Pattern Sequencing 1

Simple Specials System (a system for Made to Order) will be used for Shaft Pattern Sequencing (for ordering). (Refer to Features 3.) Please contact P/A for a specification sheet when placing an order.

Shaft Pattern Sequencing 1

-XA1 to XA24

Applicable shaft type: W (Standard)



Shaft Pattern Sequencing Symbols

• Axial: Top (long-shaft side)

Symbol	Description	Applicable sizes				
		10	15	20	30	40
XA1	Shaft-end female threads	●	●	●		
XA3	Shaft-end male threads	●	●	●	●	
XA5	Stepped round shaft	●	●	●	●	
XA7	Stepped round shaft with female threads	●	●	●	●	
XA9	Modified length of standard chamfer	●	●	●	●	
XA11	Double-sided chamfer	●				●
XA14*	Shaft through hole + Shaft-end female threads		●	●	●	●
XA17	Shortened shaft	●	●	●	●	
XA21	Round shaft with steps and double-sided chamfer	●	●	●	●	
XA23	Right-angle chamfer	●	●	●	●	
XA24	Double key					●

* This pattern is not available for rotary actuators with auto switch unit and angle adjuster.

• Axial: Bottom (short-shaft side)

Symbol	Description	Applicable sizes				
		10	15	20	30	40
XA2*	Shaft-end female threads		●	●	●	●
XA4*	Shaft-end male threads	●	●	●	●	●
XA6*	Stepped round shaft	●	●	●	●	●
XA8*	Stepped round shaft with female threads	●	●	●	●	●
XA10*	Modified length of standard chamfer	●	●	●	●	●
XA12*	Two-sided chamfer	●	●	●	●	●
XA15*	Shaft through hole + Shaft-end female thread		●	●	●	●
XA18*	Shortened shaft	●	●	●	●	●
XA22*	Stepped round shaft with double-sided chamfer	●	●	●	●	●

• Double shaft

Symbol	Description	Applicable sizes				
		10	15	20	30	40
XA13*	Shaft through hole		●	●	●	●
XA16*	Shaft through hole + Double shaft-end female threads		●	●	●	●
XA19	Shortened shaft	●	●	●	●	
XA20	Reversed shaft	●	●	●	●	●

Combinations

XA□ combinations


Symbol	Combination																								
XA1	XA1																								
XA2	●	XA2																							
XA3	—	●	XA3																						
XA4	●	—	●	XA4																					
XA5	—	●	—	●	XA5																				
XA6	●	—	●	—	●	XA6																			
XA7	—	●	—	●	—	●	XA7																		
XA8	●	—	●	—	●	—	●	XA8																	
XA9	—	●	—	●	—	●	—	●	XA9																
XA10	●	—	●	—	●	—	●	—	●	XA10															
XA11	—	●	—	●	—	●	—	●	—	●	XA11														
XA12	●	—	●	—	●	—	●	—	●	—	●	XA12													
XA13	—	—	—	—	—	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	—	—	—
XA14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA17	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—
XA18	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●
XA19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA21	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—
XA22	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●
XA23	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—
XA24	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—

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 31 and 32 for detailed description of Made to Order.

Symbol	Description	Applicable sizes	Combination
			XA1 to XA24
XC1*	Add connecting port	10, 15, 20, 30, 40	●
XC2*	Change threads to through hole	15, 20, 30, 40	●
XC3*	Change a screw position	10, 15, 20, 30, 40	●
XC4	Change rotation range		●
XC5	Change rotation range between 0° to 200°		●
XC6	Change rotation range between 0° to 110°		●
XC7*	Reversed shaft		—
XC30	Fluorine grease		●

 * These specifications are not available for rotary actuators with auto switch unit and angle adjuster.
A total of four XA□ and XC□ combinations is available.
Examples: -XA1A24C1C30
 -XA2C1C4C30

CRB2

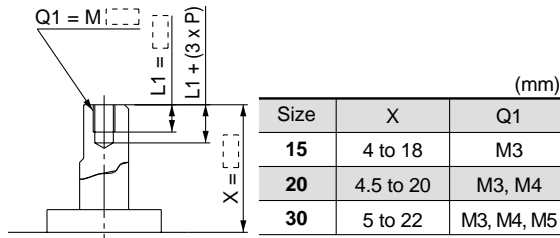
Free-Mounting Type
CRBU2

CRB1

Axial: Top (Long-shaft side)

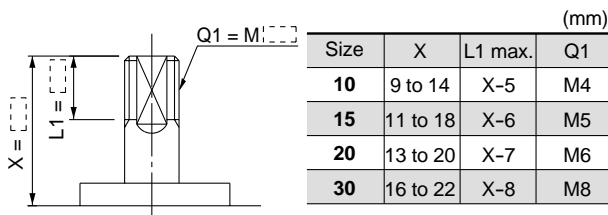
Symbol: A1 The long shaft can be further shortened by machining female threads into it. (If shortening the shaft is not required, indicate "*" for dimension X.)

- Not available for size 10.
- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6mm
- Applicable shaft type: W



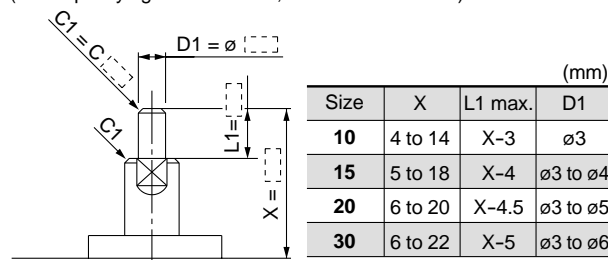
Symbol: A3 The long shaft can be further shortened by machining male threads into it. (If shortening the shaft is not required, indicate "*" for dimension X.)

- Applicable shaft type: W



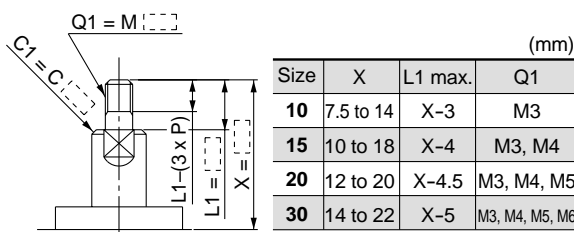
Symbol: A5 The long shaft can be further shortened by machining it into a stepped round shaft. (If shortening the shaft is not required, indicate "*" for dimension X.)

- Applicable shaft type: W
- Equal dimensions are indicated by the same marker. (If not specifying dimension C1, indicate "*" instead.)



Symbol: A7 The long shaft can be further shortened by machining it into a stepped round shaft with male threads. (If shortening the shaft is not required, indicate "*" for dimension X.)

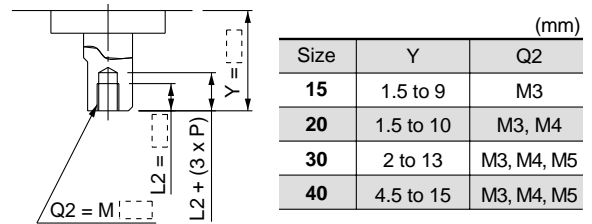
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker. (If not specifying dimension C1, indicate "*" instead.)



Axial: Bottom (Short-shaft side)

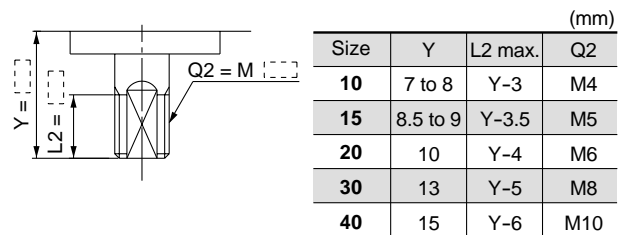
Symbol: A2 The short shaft can be further shortened by machining female threads into it. (If shortening the shaft is not required, indicate "*" for dimension Y.)

- Not available for size 10.
- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M3: L2 = 6mm
- Applicable shaft type: W



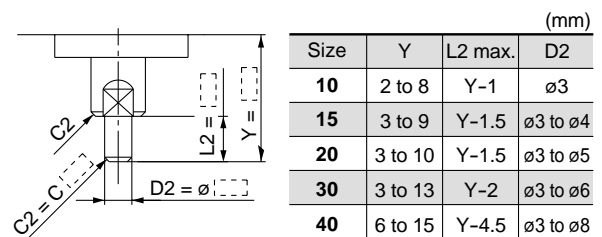
Symbol: A4 The short shaft can be further shortened by machining male threads into it. (If shortening the shaft is not required, indicate "*" for dimension Y.)

- Applicable shaft type: W



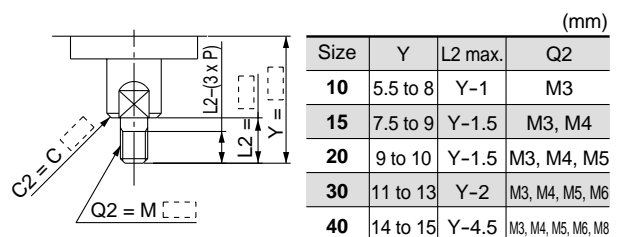
Symbol: A6 The short shaft can be further shortened by machining it into a stepped round shaft. (If shortening the shaft is not required, indicate "*" for dimension Y.)

- Applicable shaft type: W
- Equal dimensions are indicated by the same marker. (If not specifying dimension C2, indicate "*" instead.)



Symbol: A8 The short shaft can be further shortened by machining it into a stepped round shaft with male threads. (If shortening the shaft is not required, indicate "*" for dimension Y.)

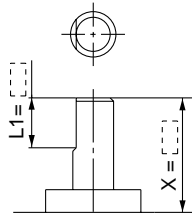
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker. (If not specifying dimension C2, indicate "*" instead.)



Axial: Top (Long-shaft side)

Symbol: A9 The long shaft can be further shortened by changing the length of the standard chamfer on the long shaft side. (If shortening the shaft is not required, indicate "*" for dimension X.)

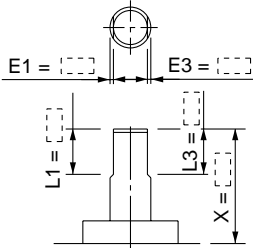
- Applicable shaft type: W



Size	X	L1 (mm)
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: A11 The long shaft can be further shortened by machining a double-sided chamfer onto it. (If altering the standard chamfer and shortening the shaft are not required, indicate "*" for both the L1 and X dimensions.)

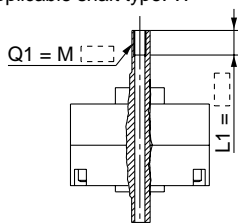
- Since L1 is a standard chamfer, dimension E1 is 0.5mm or more, and 1mm or more with a shaft bore size of $\phi 30$.
- Applicable shaft type: W



Size	X	L1	L3 max.
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: 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 hole, whose diameter is equivalent to the pilot hole diameter.

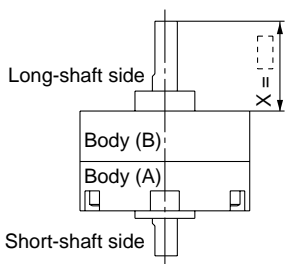
- Not available for size 10.
- The maximum L1 dimension is, as a rule, twice the thread size. (Example) For M3: L1 = 6mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W



Size Thread	15	20	30	40
M3 x 0.5	$\phi 2.5$	$\phi 2.5$	$\phi 2.5$	$\phi 2.5$
M4 x 0.7	—	$\phi 3.3$	$\phi 3.3$	—
M5 x 0.8	—	—	$\phi 4.2$	—

Symbol: A17 Shorten the long shaft.

- Applicable shaft type: W

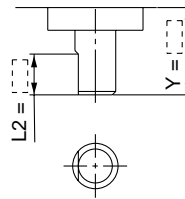


Size	X (mm)
10	3 to 14
15	4 to 18
20	4.5 to 20
30	5 to 22

Axial: Bottom (Short-shaft side)

Symbol: A10 The short shaft can be further shortened by changing the length of the standard chamfer. (If shortening the shaft is not required, indicate "*" for dimension Y.)

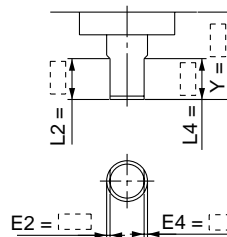
- Applicable shaft type: W



Size	Y	L2 (mm)
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)
40	7 to 15	9-(15-Y) to (Y-2)

Symbol: A12 The short shaft can be further shortened by machining a double-sided chamfer onto it. (If altering the standard chamfer and shortening the shaft are not required, indicate "*" for both the L2 and Y dimensions.)

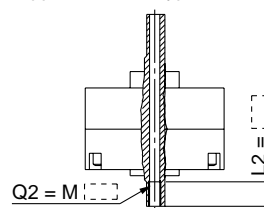
- Since L2 is a standard chamfer, dimension E2 is 0.5mm or more, and 1mm or more with shaft bore sizes of $\phi 30$ or $\phi 40$.
- Applicable shaft type: W



Size	Y	L2	L4 max.
10	3 to 8	5-(8-Y) to (Y-1)	Y-1
15	3 to 9	6-(2-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
40	7 to 15	9-(15-Y) to (Y-4.5)	Y-4.5

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.

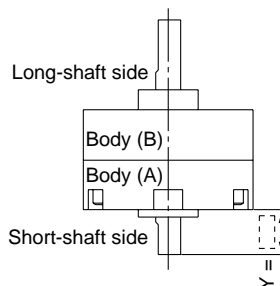
- Not available for size 10.
- The maximum L2 dimension is, as a rule, twice the thread size. (Example) For M4: L2 = 8mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W



Size Thread	15	20	30	40
M3 x 0.5	$\phi 2.5$	$\phi 2.5$	$\phi 2.5$	$\phi 2.5$
M4 x 0.7	—	$\phi 3.3$	$\phi 3.3$	—
M5 x 0.8	—	—	$\phi 4.2$	—

Symbol: A18 Shorten the short shaft.

- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W



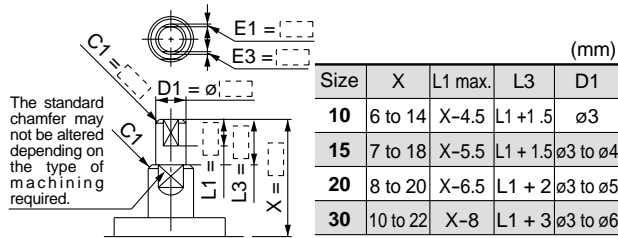
Size	Y (mm)
10	1 to 8
15	1.5 to 9
20	1.5 to 10
30	2 to 13
40	4.5 to 15

Series CRB2

Axial: Top (Long-shaft side)

Symbol: A21 The long shaft can be further shortened by machining it into a stepped round shaft with a double-sided chamfer. (If shortening the shaft is not required, indicate "*" for dimension X.)

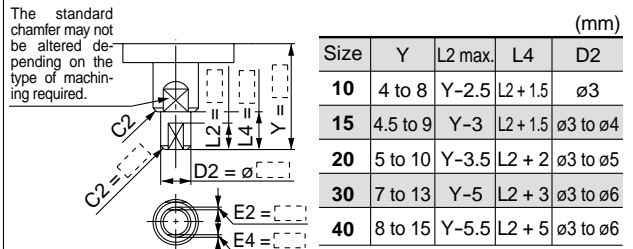
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker. (If not specifying dimension C1, indicate "*" instead.)



Axial: Bottom (Short-shaft side)

Symbol: A22 The short shaft can be further shortened by machining it into a stepped round shaft with a double-sided chamfer. (If shortening the shaft is not required, indicate "*" for dimension Y.)

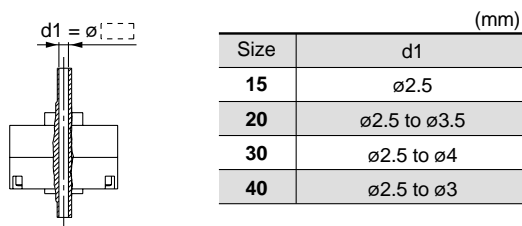
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker. (If not specifying dimension C2, indicate "*" instead.)



Double shaft

Symbol: A13 Applicable to single vane type only

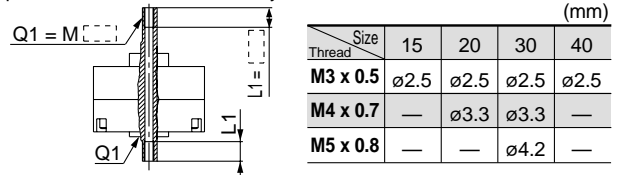
- Shaft with through hole
- Not available for size 10.
 - Minimum machining diameter for d1 is 0.1mm.
 - A parallel keyway is used on the long shaft for size 40.
 - Applicable shaft type: W



Symbol: A16 Applicable to single vane type only

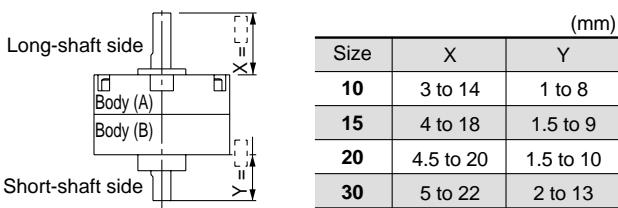
A special end is machined onto both the long and short shafts, and a through hole is drilled into both shafts. Female threads are machined into the through holes, whose diameter is equivalent to the diameter of the pilot holes.

- Not available for size 10.
- The maximum L1 dimension is, as a rule, twice the thread size. (Example) For M5: L1 = 10mm (max.)
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.



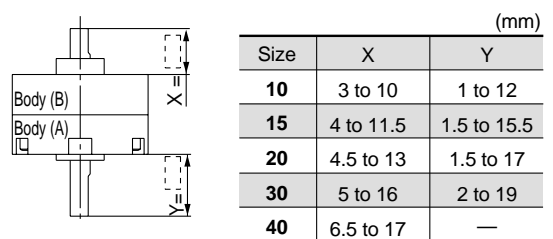
Symbol: A19 Both the long shaft and short shaft are shortened.

- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W



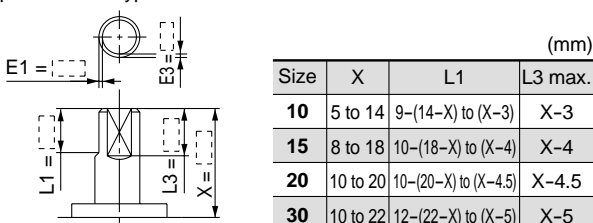
Symbol: A20 The rotation axis is reversed.

- (The long shaft and short shaft are shortened.)
- A parallel keyway is used on the long shaft for size 40.
 - Applicable shaft type: W



Symbol: A23 The long shaft can be further shortened by machining right-angle double-sided chamfer onto it. (If altering the standard chamfer and shortening the shaft are not required, indicate "*" for both the L1 and X dimensions.)

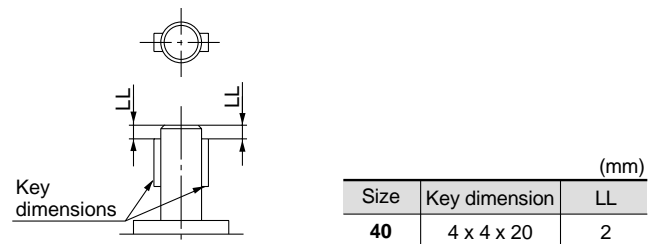
- Since L1 is a standard chamfer, dimension E1 is 0.5mm or more, and 1mm or more with a shaft bore sizes of ø30 or ø40.
- Applicable shaft type: W



Symbol: A24 Double key

Keys and keyways are machined at 180° from the standard position.

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



Series CRB2 (Sizes: 10, 15, 20, 30, 40)

Simple Specials

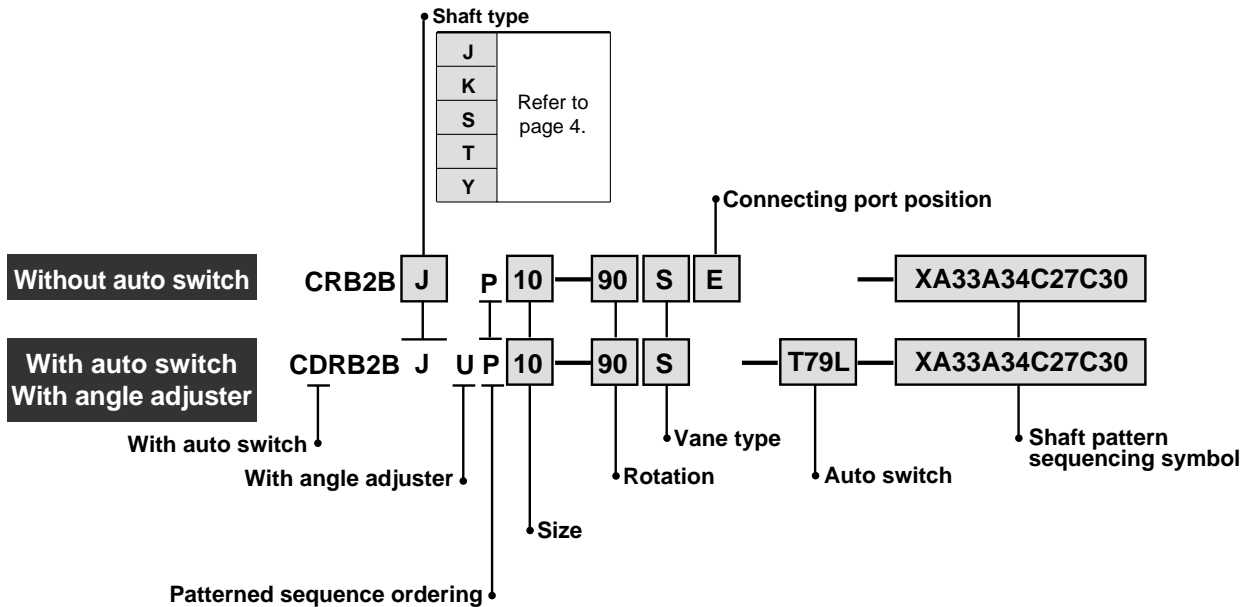
-XA31 to -XA47: Shaft Pattern Sequencing 2

Simple Specials System (a system for Made to Order) will be used for Shaft Pattern Sequencing (for ordering). (Refer to Features 3.) Please contact P/A for a specification sheet when placing an order.

Shaft Pattern Sequencing 2

-XA31 to XA47

Applicable shaft types: J, K, S, T, Y



Shaft Pattern Sequencing Symbols

• Axial: Top (long-shaft side)

Symbol	Description	Shaft types	Applicable sizes				
			10	15	20	30	40
XA31	Shaft-end female threads	S, Y	●	●	●	●	●
XA33	Shaft-end female threads	J, K, T	●	●	●	●	●
XA37	Stepped round shaft	J, K, T	●	●	●	●	●
XA45	Middle-cut chamfer	J, K, T	●	●	●	●	●
XA47	Machined keyway	J, K, T	●	●	●	●	●

• Axial: Bottom (short-shaft side)

Symbol	Description	Shaft types	Applicable sizes				
			10	15	20	30	40
XA32*	Shaft-end female threads	S, Y	●	●	●	●	●
XA34*	Shaft-end female threads	J, K, T	●	●	●	●	●
XA38*	Stepped round shaft	K	●	●	●	●	●
XA46*	Middle-cut chamfer	K	●	●	●	●	●

• Double shaft

Symbol	Description	Shaft types	Applicable sizes				
			10	15	20	30	40
XA39*	Shaft through hole	S, Y	●	●	●	●	●
XA40*	Shaft through hole	K, T	●	●	●	●	●
XA41*	Shaft through hole	J	●	●	●	●	●
XA42*	Shaft through hole + Shaft-end female threads	S, Y	●	●	●	●	●
XA43*	Shaft through hole + Shaft-end female threads	K, T	●	●	●	●	●
XA44*	Shaft through hole + Shaft-end female threads	J	●	●	●	●	●



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

Combinations

XA□ combinations

Symbol	Combination					
XA31	XA31					
XA32	SY	XA32				
XA33	—	JKT	XA33			
XA34	—	—	JKT	XA34		
XA37	—	—	—	JKT	XA37	
XA38	—	—	K	—	K	XA38

A combination of up to two XA□s are available.
Example: -XA31A32

XA□, XC□ combinations

Combination other than -XA□, such as Made to Order (-XC□), is also available. Refer to pages 31 and 32 for detailed description of Made to Order.

Symbol	Description	Applicable sizes	Combination XA31 to XA47
XC1*	Add connecting port	10, 15, 20, 30, 40	●
XC2*	Change threads to through hole	15, 20, 30, 40	●
XC3*	Change a screw position	10, 15, 20, 30, 40	●
XC4	Change rotation range		●
XC5	Change rotation range between 0° to 200°		●
XC6	Change rotation range between 0° to 110°		●
XC7*	Reversed shaft		—
XC30	Fluorine grease		●

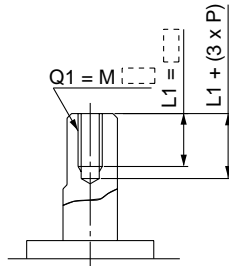


* These specifications are not available for rotary actuators with auto switch unit and angle adjuster.
A total of four XA□ and XC□ combinations is available.
Example: -XA33A34C27C30

Axial: Top (Long-shaft side)

Symbol: A31 Machine female threads into the long shaft.

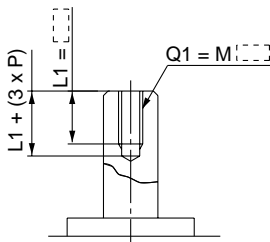
- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6mm
- Applicable shaft types: S, Y



Size	Q1	
	Shaft type	
10	S	Y
15	Not available	
20	M3	
30	M3, M4	

Symbol: A33 Machine female threads into the long shaft.

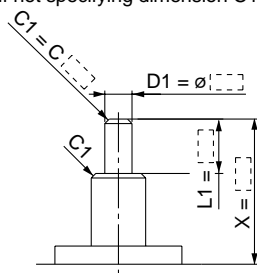
- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6mm
- Applicable shaft types: J, K, T



Size	Q1		
	Shaft type	J	K
10	Not available		
15	M3		
20	M3, M4		
30	M3, M4, M5		
40	M3, M4, M5		

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.)

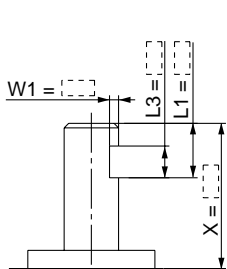
- Applicable shaft types: J, K, T
- Equal dimensions are indicated by the same marker. (If not specifying dimension C1, indicate "*" instead.)



Size	X			L1 max.	D1
	J	K	T		
10	4 to 14	X-3	ø3 to ø3.9		
15	5 to 18	X-4	ø3 to ø4.9		
20	6 to 20	X-4.5	ø3 to ø5.9		
30	6 to 22	X-5	ø3 to ø7.9		
40	8 to 30	X-6.5s	ø3 to ø9.9		

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.)

- Applicable shaft types: J, K, T

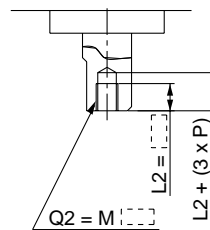


Size	X			W1	L1 max.	L3 max.
	J	K	T			
10	6.5 to 14	0.5 to 2	X-3	L1-1		
15	8 to 18	0.5 to 2.5	X-4	L1-1		
20	9 to 20	0.5 to 3	X-4.5	L1-1		
30	11.5 to 22	0.5 to 4	X-5	L1-2		
40	15.5 to 30	0.5 to 5	X-5.5	L1-2		

Axial: Bottom (Short-shaft side)

Symbol: A32 Machine female threads into the short shaft.

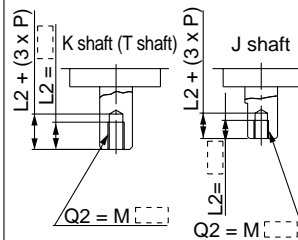
- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M4: L2 = 8mm. However, for M5 with S shaft, the maximum dimension L2 is 1.5 times the thread size.
- Applicable shaft types: S, Y



Size	Q2	
	Shaft type	
10	S	Y
15	Not available	
20	M3	
30	M3, M4	

Symbol: A34 Machine female threads into the short shaft.

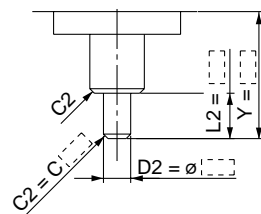
- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M3: L2 = 6mm. However, for M5 with T shaft, the maximum dimension L2 is 1.5 times the thread size.
- Applicable shaft types: J, K, T



Size	Q2		
	Shaft type	J	K
10	Not available		
15	M3		
20	M3, M4		
30	M3, M4, M5		
40	M3, M4, M5		

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.)

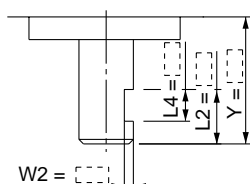
- Applicable shaft type: K
- Equal dimensions are indicated by the same marker. (If not specifying dimension C2, indicate "*" instead.)



Size	Y			L2 max.	Q2
	J	K	T		
10	2 to 14	Y-1	ø3 to ø3.9		
15	3 to 18	Y-1.5	ø3 to ø4.9		
20	3 to 20	Y-1.5	ø3 to ø5.9		
30	3 to 22	Y-2	ø3 to ø7.9		
40	6 to 30	Y-4.5	ø5 to ø9.9		

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 Y.)

- Applicable shaft type: K



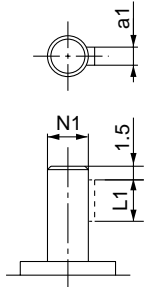
Size	Y			W2	L2 max.	L4 max.
	J	K	T			
10	4.5 to 14	0.5 to 2	Y-1	L2-1		
15	5.5 to 18	0.5 to 2.5	Y-1.5	L2-1		
20	6 to 20	0.5 to 3	Y-1.5	L2-1		
30	8.5 to 22	0.5 to 4	Y-2	L2-2		
40	13.5 to 30	0.5 to 5	Y-4.5	L2-2		

Series CRB2

Axial: Top (Long-shaft side)

Symbol: A47 Machine a keyway into the long shaft. (The position of the keyway is same as the standard one.)
The key must be ordered separately.

- Applicable shaft types: J, K, T



Size	a1	L1	N1
20	2h9 _{-0.025} ⁰	10	6.8
30	3h9 _{-0.025} ⁰	14	9.2

Double shaft

Symbol: A39 Applicable to single vane type only
Shaft with through hole (Additional machining of S, Y shaft)

- Not available for size 10.
- Minimum machining diameter for d1 is 0.1mm.
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft types: S, Y
- Equal dimensions are indicated by the same marker.

Size	Shaft type	
	S	Y
15	d1	
20	d1	
30	d1	
40	d1	

Symbol: A40 Applicable to single vane type only
Shaft with through hole (Additional machining of K, T shaft)

- Not available for size 10.
- d1 = ø2.5, L1 = 18 (max.) for size 15; minimum machining diameter for d1 is 0.1mm.
- d1 = d3 for sizes 20 to 40.
- Applicable shaft types: K, T

Size	Shaft type	
	K	T
15	d1	d3
20	—	d3
30	—	d3
40	—	d3

Symbol: A41 Applicable to single vane type only
Shaft with through hole

- Not available for size 10.
- Applicable shaft type: J
- Equal dimensions are indicated by the same marker.

Size	d1
15	ø2.5
20	ø2.5 to ø3.5
30	ø2.5 to ø4
40	ø2.5 to ø4.5

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. Female threads are machined into the through holes, whose diameter is equivalent to the diameter of the pilot holes.

- Not available for size 10.
- The maximum L1 dimension is, as a rule, twice the thread size. (Example) For M5: L1 = 10mm
- However, for M5 on the short shaft of S shaft: L1 = 7.5mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft types: S, Y
- Equal dimensions are indicated by the same marker.

Thread	Size 15		Size 20		Size 30		Size 40	
	S	Y	S	Y	S	Y	S	Y
M3 x 0.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5
M4 x 0.7	—	ø3.3	ø3.3	—	—	—	—	—
M5 x 0.8	—	—	ø4.2	—	—	—	—	—

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.

- Not available for size 10.
- The maximum L1 dimension is, as a rule, twice the thread size. (Example) For M5: L1 = 10mm
- However, for M5 on the short shaft of T shaft: L1 = 7.5mm
- Applicable shaft types: K, T
- Equal dimensions are indicated by the same marker.

Thread	Size 15		Size 20		Size 30		Size 40	
	K	T	K	T	K	T	K	T
M3 x 0.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5	ø2.5
M4 x 0.7	—	ø3.3	ø3.3	—	—	—	—	—
M5 x 0.8	—	—	ø4.2	—	—	—	—	—

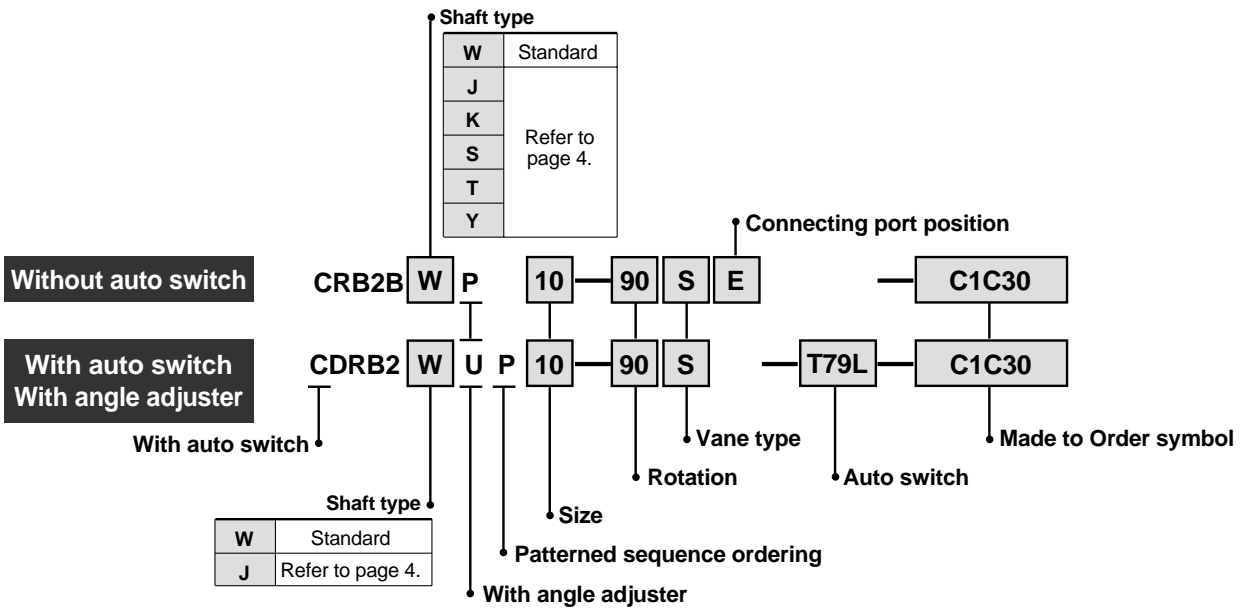
Symbol: A44 Applicable to single vane type only
A special end is machined onto both the long and short shafts, and a through hole is drilled into both shafts. Female threads are machined into the through holes, whose diameter is equivalent to the diameter of the pilot holes.

- Not available for size 10.
- The maximum L1 dimension is, as a rule, twice the thread size. (Example) For M5: L1 = 10mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: J
- Equal dimensions are indicated by the same marker.

Thread	Size 15	Size 20	Size 30	Size 40
	M3 x 0.5	ø2.5	ø2.5	ø2.5
M4 x 0.7	—	ø3.3	ø3.3	ø3.3
M5 x 0.8	—	—	ø4.2	ø4.2

Series CRB2 (Sizes: 10, 15, 20, 30, 40) Made to Order XC1, 2, 3, 4, 5, 6, 7, 30

XC1 to XC7, XC30



Made to Order Symbols

Symbol	Description	Applicable shaft types	Applicable sizes
		W, J, K, S, T, Y	
XC1*	Add connecting port	●	10,
XC2*	Change threaded holes to through holes	●	
XC3*	Change the screw position	●	
XC4	Change rotation range and direction	●	15,
XC5	Change rotation between 0° to 200° range and direction	●	20,
XC6	Change rotation between 0° to 110° range and direction	●	30,
XC7*	Reversed shaft	W, J	40
XC30	Fluorine grease	●	

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

Combinations

Symbol	Combination						
XC1	XC1						
XC2	●	XC2					
XC3	●	—	XC3				
XC4	●	●	●	XC4			
XC5	●	●	●	—	XC5		
XC6	●	●	●	—	—	XC6	
XC7	●	●	●	●	●	—	XC7
XC30	●	●	●	●	●	●	●

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

- Parallel keyway is used on the long shaft for size 40.
- This specification is not available for the rotary actuator with auto switch unit.

	(mm)		
Size	Q	M	N
10	M3	8.5	9.5
15	M3	11	10
20	M5	14	13
30	M5	15.5	14
40	M5	21	20

Symbol: C2 Change 3 threaded holes on Body (B) into through holes. (An additionally machined port will have an aluminum surface since it will be left unfinished.)

- This specification is not available for the rotary actuator with auto switch unit.

	(mm)	
Size	d	
15	3.4	
20	4.5	
30	5.5	
40	5.5	

(Top view from long-shaft side)

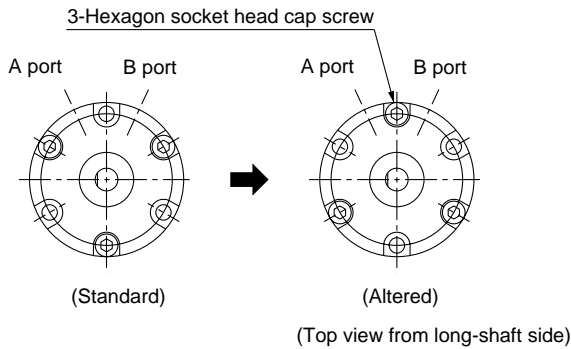
CRB2

Free-Mounting Type
CRBU2

CRB1

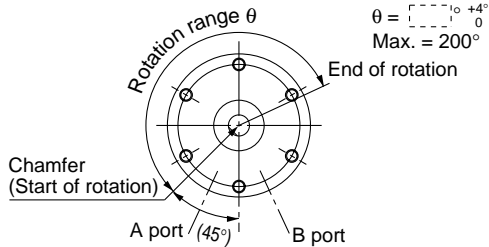
Series CRB2

Symbol: C3 Change the position of the screws for tightening the actuator body.



Symbol: C5 Applicable to single vane type only
Start of rotation is 45° up from the bottom of the vertical line to the left side.

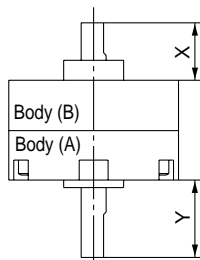
- Rotation tolerance for CRB2BW10 is $^{+5}_{0}$ °.
- Port size for CRB2BW10, 15 is M3.
- A parallel keyway is used instead of chamfer for size 40.



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

Symbol: C7 The shafts are reversed.

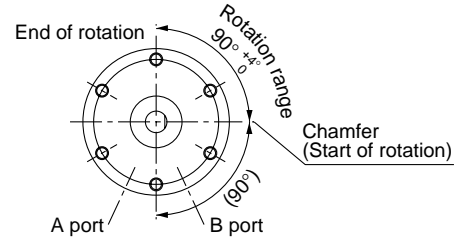
- A parallel keyway is used instead of chamfer for size 40.



Size	Y	X
10	12	10
15	15.5	11.5
20	17	13
30	19	16
40	28	17

Symbol: C4 Applicable to single vane type only

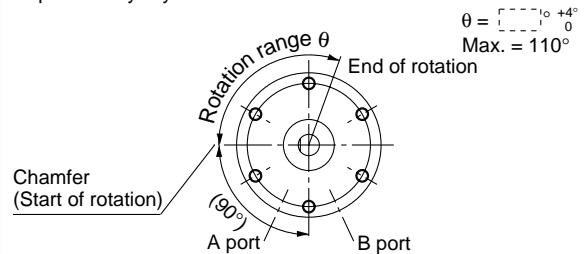
- Change rotation range to 90°.
Start of rotation is horizontal line (90° down from the top to the right side).
- Rotation tolerance for CRB2BW10 is $^{+5}_{0}$ °.
 - A parallel keyway is used instead of chamfer for size 40.



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

Symbol: C6 Applicable to single vane type only

- Start of rotation is horizontal line (90° down from the top to the left side).
- Rotation tolerance for CRB2BW10 is $^{+5}_{0}$ °.
 - A parallel keyway is used instead of chamfer for size 40.



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

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