

Rotary Actuator Free Mount Style

Series *CRBU* (Size: 10/15/20/30)

Direct mounting in three directions (Axial, Vertical, & Side) is possible.



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

Variations

		Fluid		Air												Pages		
		Size		10				15				20, 30						
Vane Style		S: Single vane D: Double vane		Single vane (S)		Double vane (D)		Single vane (S)		Double vane (D)		Single vane (S)		Double vane (D)				
Port Location		Body side (-) Body axial direction (E)		Body side	Axial direction													
Standard	Rotation angle	90°		●	●	●	●	●	●	●	●	●	●	●	●			
		100°				●	●			●	●			●	●			
		180°		●	●	●	●	●	●	●	●	●	●	●	●	●		
		270°		●	●	●	●	●	●	●	●	●	●	●	●	●		
	Shaft style	Double shaft		W	●	●	●	●	●	●	●	●	●	●	●			
		Cushion	Rubber bumper		●	●	●	●	●	●	●	●	●	●	●	1.2-4 to 1.2-18		
	Variations	Basic style		●	●	●	●	●	●	●	●	●	●	●	●			
		With auto switch		●	●	●	●	●	●	●	●	●	●	●	●			
		With angle adjuster		●	●	●	●	●	●	●	●	●	●	●	●			
		With auto switch and angle adjuster		●	●	●	●	●	●	●	●	●	●	●	●			
Built-in One-touch fittings		●	●	●	●	●	●	●	●	●	●	●	●					
Copper free		20-	●	●	●	●	●	●	●	●	●	●	●					
Made to order	Shaft style	Double shaft	Long shaft without one chamfer and short shaft with one chamfer		J	●	●	●	●	●	●	●	●	●				
			Double long shaft, same size, one chamfer to both ends		Y	●	●	●	●	●	●	●	●	●	●			
			Double round shaft		K	●	●	●	●	●	●	●	●	●	●	1.2-19 to 1.2-27		
		Single shaft	One chamfer		S	●	●	●	●	●	●	●	●	●	●			
			One round shaft		T	●	●	●	●	●	●	●	●	●	●			
	Patterns	Shaft patterns		●	●	●	●	●	●	●	●	●	●	●				
		Rotation angle patterns		●	●	●	●	●	●	●	●	●	●	●				

Rotary Actuator Vane Style/Free Mount Style

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

Rotation angles: 90°, 80°, 270°
Up to 270° is possible in the entire series

Through the adoption of specially designed seals and stoppers, a rotation 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 enable the entire series to be used at low pressures. Min. operating pressure

- Size 100.2 MPa
- Size 15, 20, 300.15MPa



Stainless steel shafts and bolts

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

High reliability and long life

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 specifications.



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)



(Fittings are sold separately.)

(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.

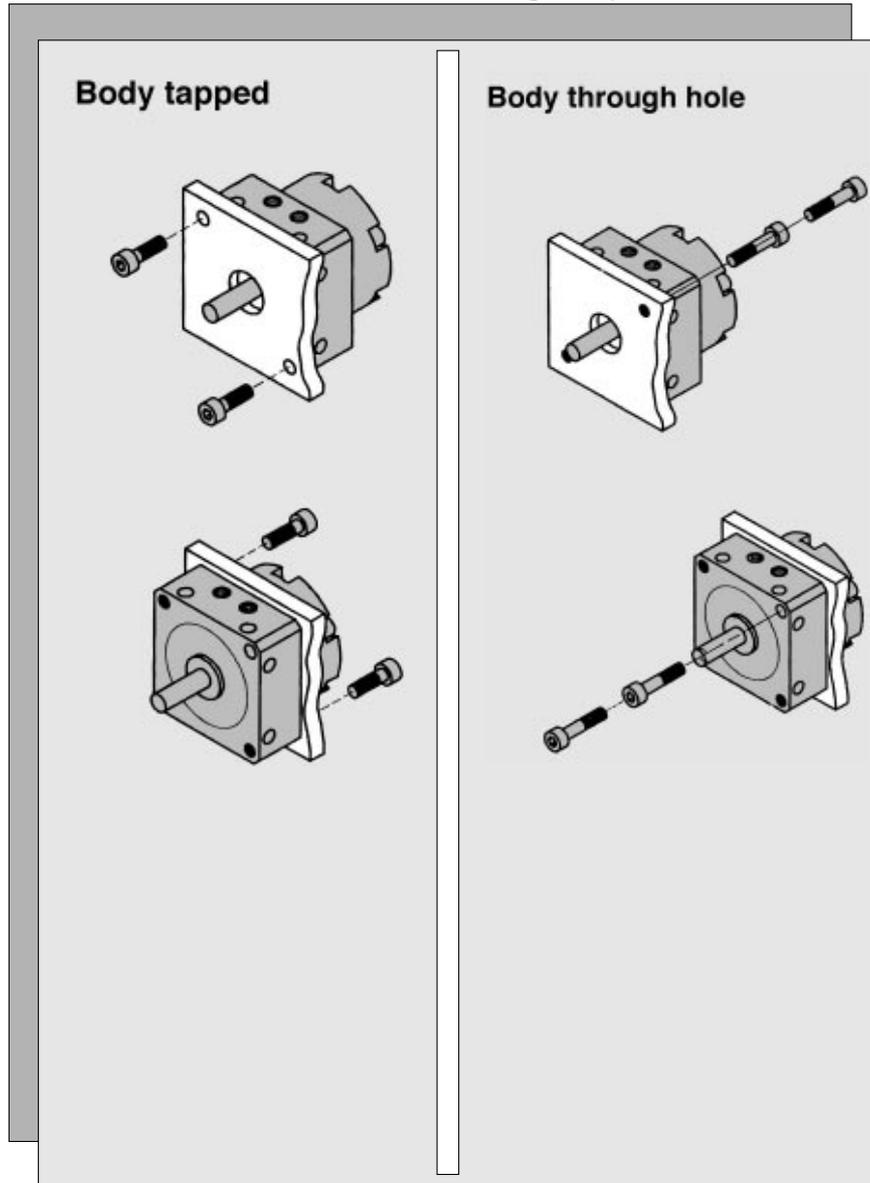
Mountable without a flange even when equipped with a unit.

Basic style + Switch unit	Basic style + Angle adjusting unit	Basic style + Angle adjusting unit + Switch unit

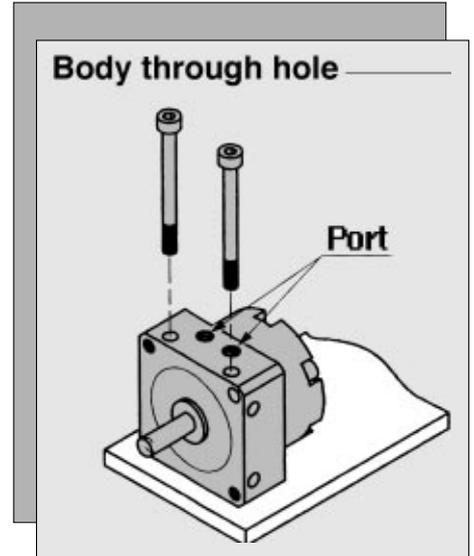
Direct Mounting In Three Directions Possible

Mounting in three directions, axial, vertical and side, is possible.
 Three mounting variations are available in mounting in axial direction.

Axial Direction Mounting Style

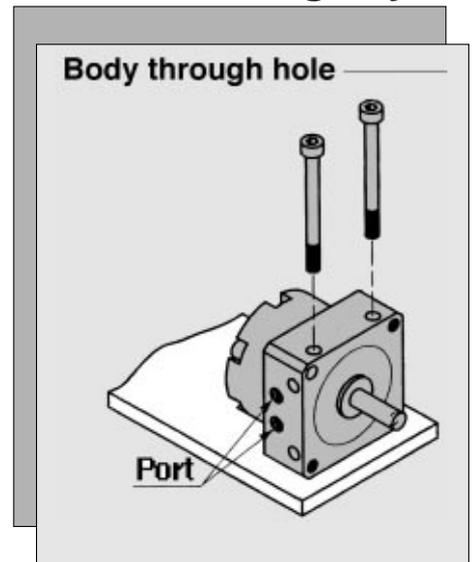


Vertical Mounting Style

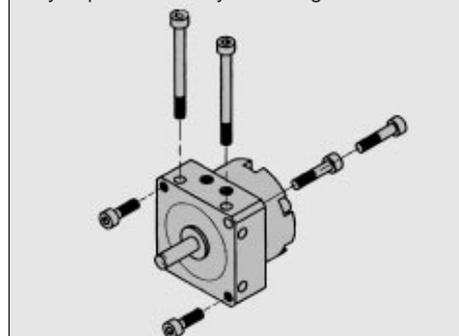


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Side Mounting Style



Simultaneous mounting in three directions is possible. Therefore, it can be utilized in other ways apart from body mounting.



Round Indication Board Adopted

The main diagram shows a round indication board with the text 'CRBUW20-270S' around the perimeter and 'SMC' and 'PORT' in the center. Below it are three smaller circular diagrams showing the board rotated at 90°, 180°, and 270°.

Indication board mounted axially sets the rotation range about the axis (one chamfering processed part) clear, and the indication of connecting port (A/B port) locations prevents wrong wiring.

90° 180° 270°

*The above is an indication board of a single vane style.

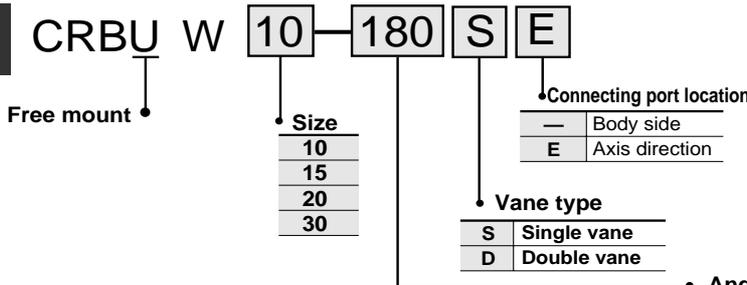
Rotary Actuator Free Mount Style



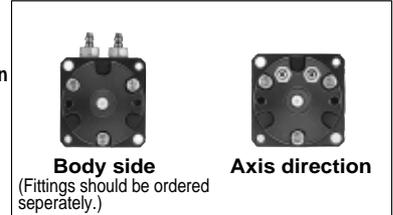
Series CRBU (Size: 10/15/20/30)

How to Order

Standard

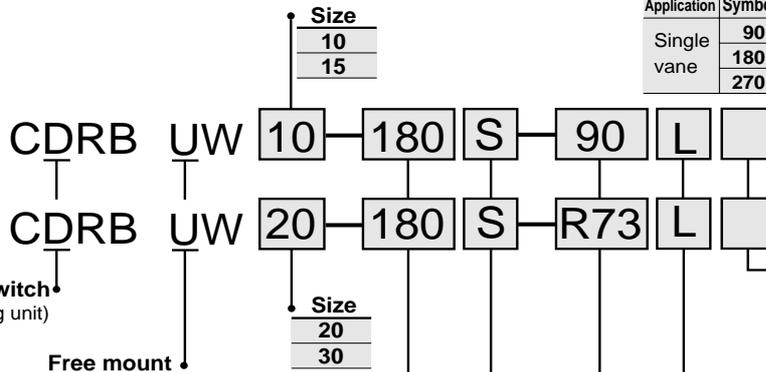


Connecting port locations



With Auto Switch Size 10/15

With Auto Switch Size 20/30



Application	Symbol	Angle of rotation	Application	Symbol	Angle of rotation
Single vane	90	90°	Double vane	90	90°
	180	180°		100	100°
	270	270°			

No. of auto switches

S	1*
—	2

* The one auto switch attached with order symbol "S" is right hand operating type.

Electrical entry and length

—	Grommet, Lead wire: 0.5m
L	Grommet, Lead wire: 3m
C	Connector, Lead wire: 0.5m
CL	Connector, Lead wire: 3m
CN	Connector, Without wires

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

** Part nos. of lead wire with connector

D-LC05: Lead wire 0.5m

D-LC30: Lead wire 3m

D-LC50: Lead wire 5m

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

Applicable size	Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch part no.	Lead wire	Lead wire length* (m)				Applicable loading		
					DC	AC			0.5 (—)	3 (L)	5 (Z)	— (N)			
For 10/15	Reed switch	Grommet	No	2 wire	24V	5V, 12V	5V, 12V, 24V	90	Parallel cord	●	●	●	—	IC	
						5V, 12V, 100V	5V, 12V, 24V, 100V	90A	Cab tire	●	●	●	—		
						—	100V	97	Parallel cord	●	●	●	—		
						12V	—	T99	Cab tire	●	●	—	—		
						—	—	T99V		●	●	—	—		
	Solid state switch	Grommet	Yes	3 wire (NPN)	24V	—	—	—	S99	Cab tire	●	●	—	—	Relay PLC
							5V, 12V	—	S99V		●	●	—	—	
							—	—	S9P		●	●	—	—	
							—	—	S9PV		●	●	—	—	
							—	—	R73		Cab tire	●	●	—	
For 20/30	Reed switch	Grommet	Yes	2 wire	24V	—	100V	R73C	Cab tire	●		●	●	●	IC
						48V, 100V	24V, 48V, 100V	R80		●		●	—	—	
						12V	—	R80C		●		●	●	●	
						—	—	T79		●		●	—	—	
						—	—	T79C		●	●	●	●		
	Solid state switch	Grommet	Yes	3 wire (NPN)	24V	—	5V, 12V	—	S79	Cab tire	●	●	—	—	IC
							—	—	S79		●	●	—	—	
							—	—	S7P		●	●	—	—	
							—	—	—		—	—	—	—	
							—	—	—		—	—	—	—	

* Symbols for lead wire length 0.5m: — Ex.) R73C
3m: L Ex.) R73CL
5m: Z Ex.) R73CZ
—: N Ex.) R73CN

• Operating time — 1.2ms • Operating temperature range — -10° to 60°C

• Shock resistance — 300m/s² (30, 6G) (Reed switch),
1000m/s² (102G) (Solid state switch)

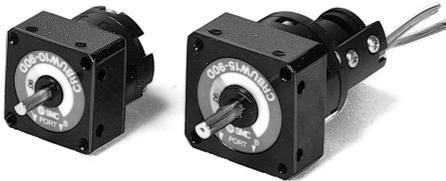
Free Mount Style Rotary Actuator *Series CRBU*

Single vane style specifications

Model	CRBUW10-□S	CRBUW15-□S	CRBUW20-□S	CRBUW30-□S
Rotation angle	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 adjustable 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
		0.00025	0.0004	0.015
Shaft load	Allowable radial load (N)	15	25	30
	Allowable thrust load (N)	10	20	25
Bearing	Ball bearing			
Port position	On the body side or in the axial direction			
Shaft style	Double shaft (With one flat chamfer to each shaft)			
Angle adjustable range of the unit	0 to 230°	0 to 240°		

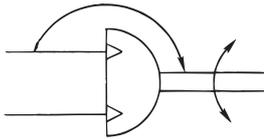


Single vane type



Double vane type

JIS symbol



Order Made P.1.2-19 to P1.2-23

⚠ Caution

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



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

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

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 style

Model	CRBUW10-□D	CRBUW15-□D	CRBUW20-□D	CRBUW30-□D
Rotation angle	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 adjustable 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	Allowable radial load (N)	15	25	30
	Allowable thrust load (N)	10	20	25
Bearing	Bearing			
Port position	On the body side or in the axial direction			
Shaft style	Double shafts (With one flat chamfer to each shaft)			
Angle adjustable range of the unit	0 to 90°			



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

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

Inner volume and Connecting port

Vane style	Model	CRBUW10			CRBUW15			CRBUW20			CRBUW30		
Single vane	Rotation angle	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°
	Inner volume (cm ³)	1 (0.6)	1.2	1.5	1.5 (1.0)	2.9	3.7	4.8 (3.5)	6.1	7.9	11.3 (8.5)	15	20.2
	Connecting port bore size	Body side	M5 X 0.8										
Axial direction		M3 X 0.5						M5 X 0.8					
Double vane	Rotation angle	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°
	Inner volume cm ³ *	1	1.1	2.6	2.7	5.6	5.7	14.4	14.5				
	Connecting port bore size	Body side	M5 X 0.8						M5 X 0.8				
Axial direction		M3 X 0.5											

* Values in () represent inner volume in the SUP side when A port is pressurized. (Rubber cushion is not available for size 10.)

Weight

Vane style	Model	CRBUW10			CRBUW15			CRBUW20			CRBUW30		
Single vane	Rotation angle	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°
	Body of the rotary actuator	47.5	47.1	47	73	72	72	143	142	140	263	258	255
	Auto switch unit + 2 auto switches	30			30			50			60		
	Angle adjusting unit	30			47			90			150		
Double vane	Rotation angle	—	90°	100°	—	90°	100°	—	90°	100°	—	90°	100°
	Body of the rotary actuator	—	62.2	63.2	—	77	81	—	151	158	—	289	308
	Auto switch unit + 2 auto switches	30			30			50			60		
	Angle adjusting unit	30			47			90			150		

Series CRBU

Built-in One-touch Fittings

CRBUW Size F — Rotation angle S
 ↓
Built-in One-touch fittings



A free mount rotary actuator with built-in one-touch fittings. It dramatically reduces the piping process and saves space.

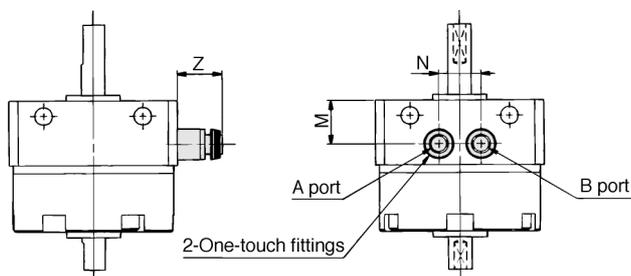
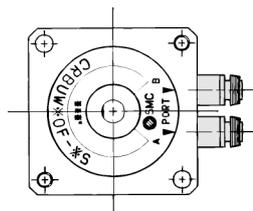
Specifications

Vane style	Single vane	
Size	20	30
Operating pressure MPa	0.15 to 0.7	0.15 to 1.0
Speed adjustable range	0.03 to 0.3s/90°	0.04 to 0.3s/90°
Port position	Only on the body side	
Piping	One-touch fittings installed type	
Mounting	Basic style only	
Variations	Basic style, With switches, With an angle adjuster, With switches and an angle adjuster	

O.D./I.D. of the applicable tube

O.D./I.D. of the applicable tube (mm)	ø4/ø2.5
Material of the applicable tube	Nylon, Soft Nylon, Polyurethane

Dimensions



- Note1) The exterior of the rotary actuator body has a standard configuration.
 Note2) The dimensions are the same for the one-touch fitting of the rotary actuator with auto switch, with angle adjuster, or with auto switch and angle adjuster.

(mm)

Model	M	N	Z
CRBUW20F	11.5	12	11.5
CRBUW30F	12	13	10.5

Copper Free

20-CRBUW Size — Rotation angle Vane type Port position
 ↓
Copper free

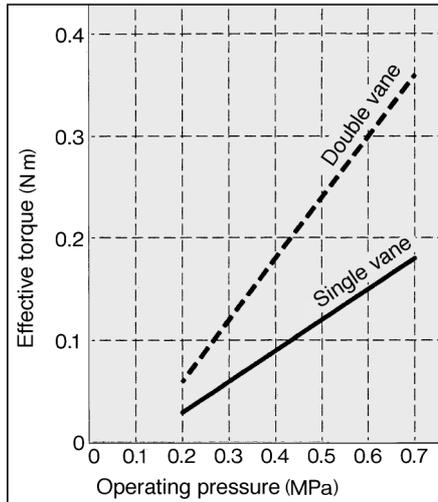
The entire standard series of vane type rotary actuators does not affect color CRTs due to copper ions or fluororesins.

Specifications

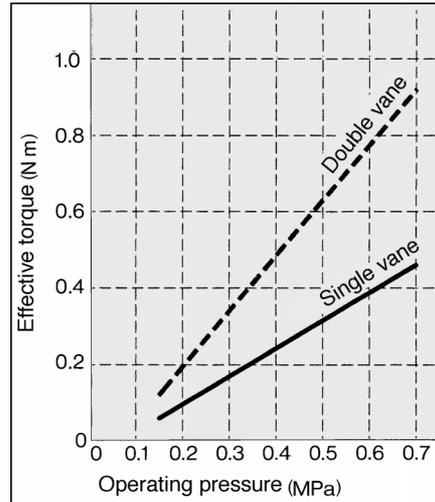
Vane style	Single vane, Double vane			
Size	10	15	20	30
Operating pressure MPa	0.2 to 0.7	0.15 to 0.7		0.15 to 1.0
Speed adjustable range	0.03 to 0.3s/90°			0.04 to 0.3s/90°
Port position	On the body side or in the axial direction			
Shaft style	Double shafts (with one flat chamfer to both ends)			
Auto switch	Mountable			

Output

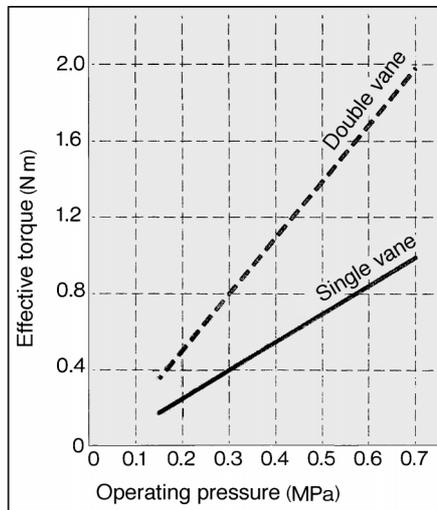
CRBUW10



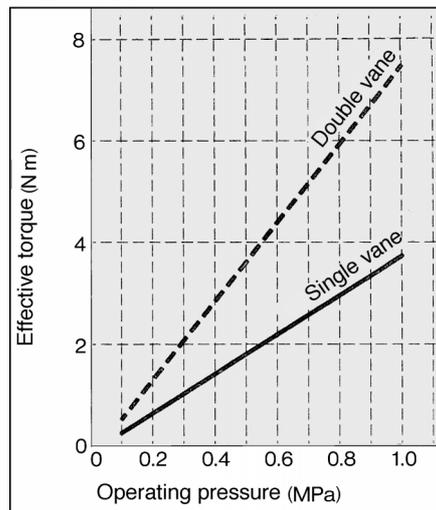
CRBUW15



CRBUW20



CRBUW30

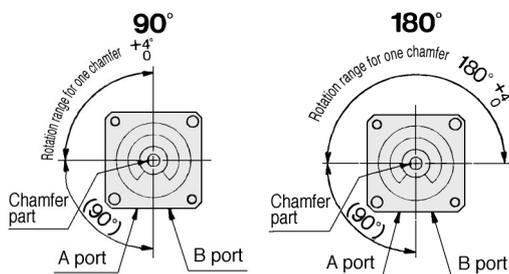


CRB1
CRBU
CRA1
CRQ
MRQ
MSQ
MSUB

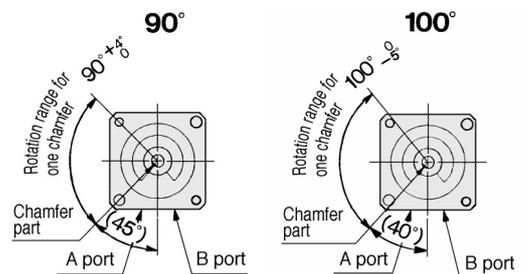
Chamfer positions and rotation range (Viewed from the long shaft side)

The chamfer positions below show the pressurization to the B port.

Single vane style



Double vane type

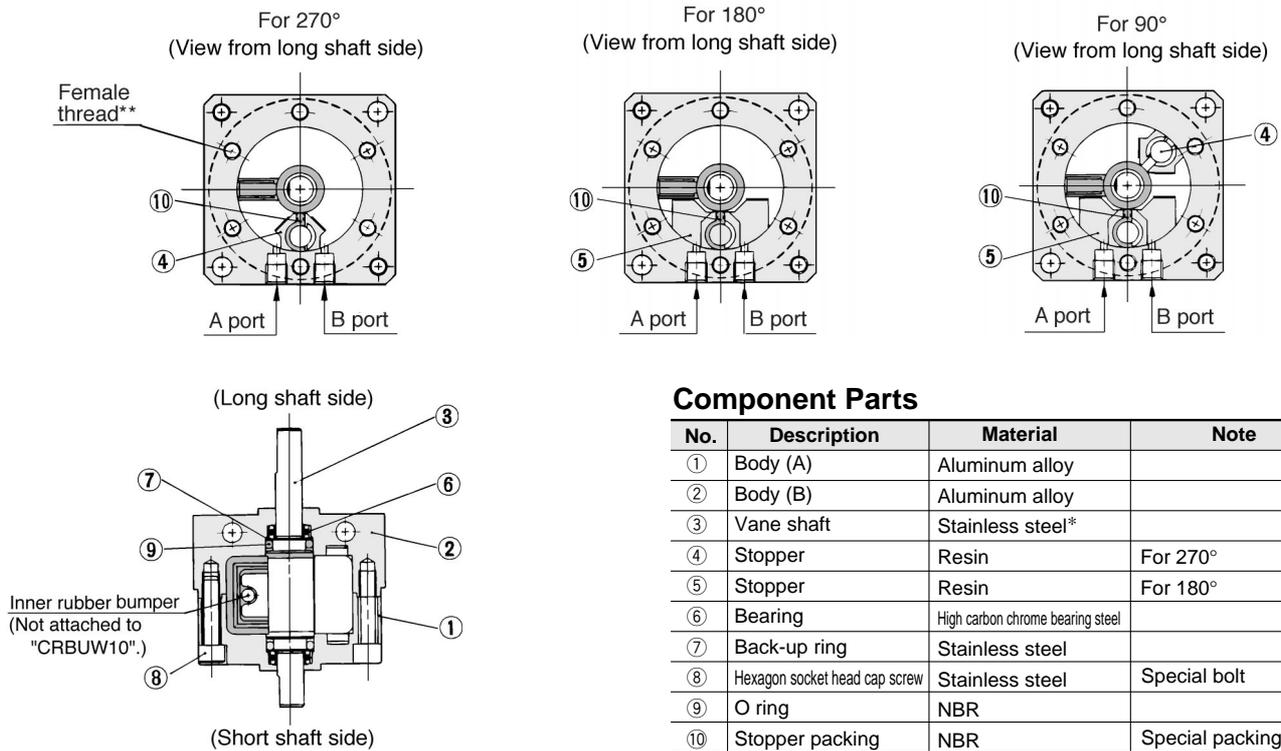


Note) For size 10 of the single vane style, the rotation angle of 90° , 180° and 270° is $+5^\circ_0$.
 For size 10 of the double vane style, the rotation angle of 90° is $+5^\circ_0$.

Series CRBU

Construction/Single Vane Style

Standard: CRBUW 10, 15, 20, 30-□S (Size 10: Without three positions for three equally divided length of circumference of female thread**)



Component Parts

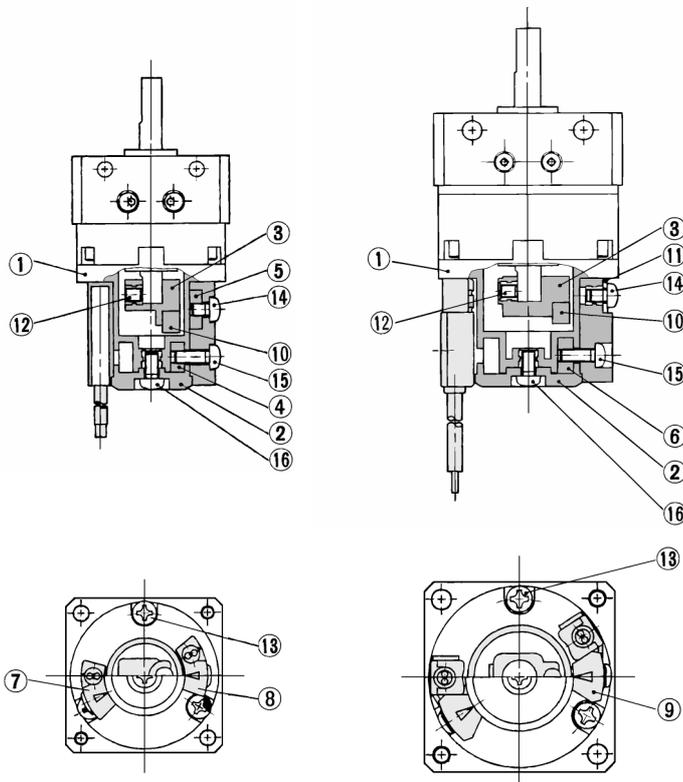
No.	Description	Material	Note
①	Body (A)	Aluminum alloy	
②	Body (B)	Aluminum alloy	
③	Vane shaft	Stainless steel*	
④	Stopper	Resin	For 270°
⑤	Stopper	Resin	For 180°
⑥	Bearing	High carbon chrome bearing steel	
⑦	Back-up ring	Stainless steel	
⑧	Hexagon socket head cap screw	Stainless steel	Special bolt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

* CRBUW30:Carbon steel

With Auto Switch (Units are common for single vane and double vane.)

CDRBUW10/15-□S

CDRBUW20/30-□S



Auto Switch Attached Style/Component Parts

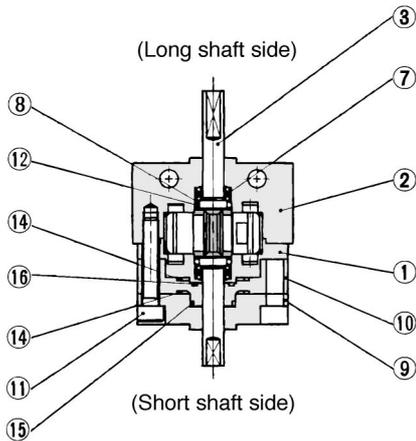
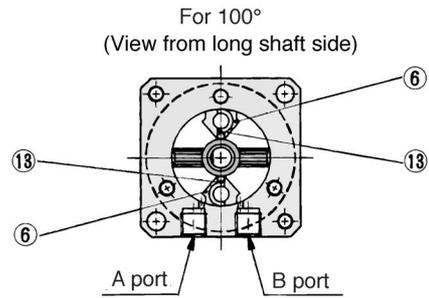
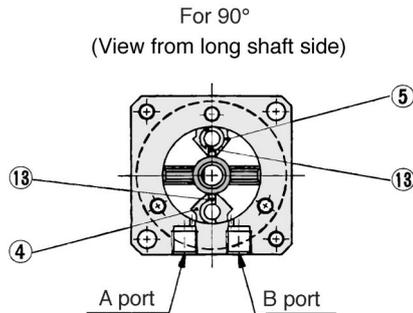
No.	Description	Material
①	Cover (A)	Resin
②	Cover (B)	Resin
③	Magnet lever	Resin
④	Fixation block (A)	Aluminum alloy
⑤	Fixation block (B)	Aluminum alloy
⑥	Fixation block	Aluminum alloy
⑦	Switch block (A)	Resin
⑧	Switch block (B)	Resin
⑨	Switch block	Resin
⑩	Magnet	
⑪	Arm	Steel
⑫	Hexagon socket head cap screw	Steel
⑬	Cross-recessed head cap screw	Steel
⑭	Cross-recessed head cap screw	Steel
⑮	Cross-recessed head cap screw	Steel
⑯	Cross-recessed head cap screw	Steel

* Two cross-recessed head cap screws ⑬ are attached to "CDRBUW10".

Free Mount Style Rotary Actuator *Series CRBU*

Double Vane Style

Standard: **CRBUW10-□D**



Component Parts

No.	Description	Material	Note
①	Body (A)	Aluminum alloy	
②	Body (B)	Aluminum alloy	
③	Vane shaft	Carbon steel	
④	Stopper	Stainless steel	
⑤	Stopper	Resin	
⑥	Stopper	Stainless steel	
⑦	Bearing	High carbon chrome bearing steel	
⑧	Back-up ring	Stainless steel	
⑨	Cover	Aluminum alloy	
⑩	Plate	Resin	
⑪	Hexagon socket head cap screw	Stainless steel	Special bolt
⑫	O ring	NBR	
⑬	Stopper packing	NBR	
⑭	Gasket	NBR	
⑮	O ring	NBR	
⑯	O ring	NBR	

CRB1

CRBU

CRA1

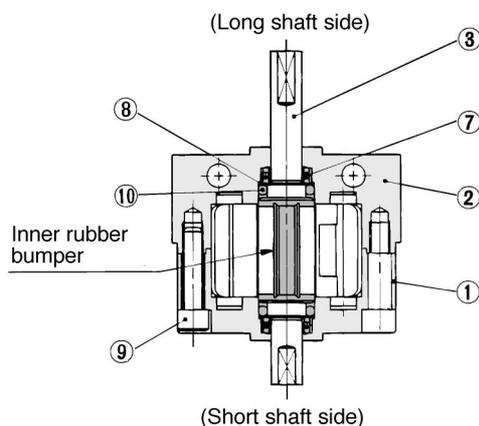
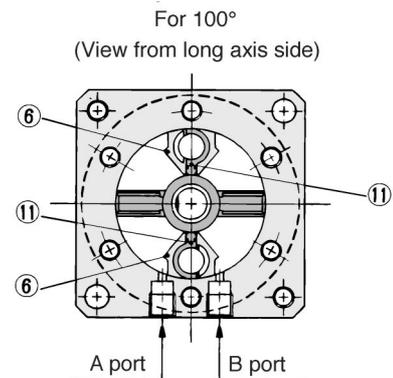
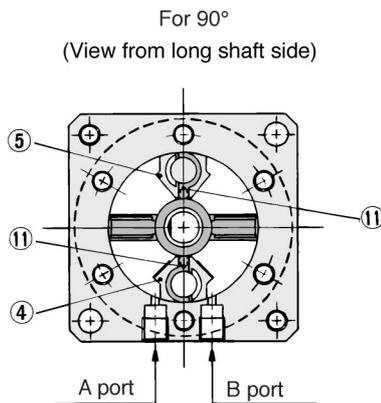
CRQ

MRQ

MSQ

MSUB

Standard: **CRBUW15/20/30-□D**



Component Parts

No.	Description	Material	Note
①	Body (A)	Aluminum alloy	
②	Body (B)	Aluminum alloy	
③	Vane shaft	Carbon steel	
④	Stopper	Stainless steel	
⑤	Stopper	Resin	
⑥	Stopper	Stainless steel	
⑦	Bearing	High carbon chrome bearing steel	
⑧	Back-up ring	Stainless steel	
⑨	Hexagon socket head cap screw	Stainless steel	Special bolt
⑩	O ring	NBR	
⑪	Stopper packing	NBR	

Series CRBU

Standard Style Dimensions/Single Vane Style



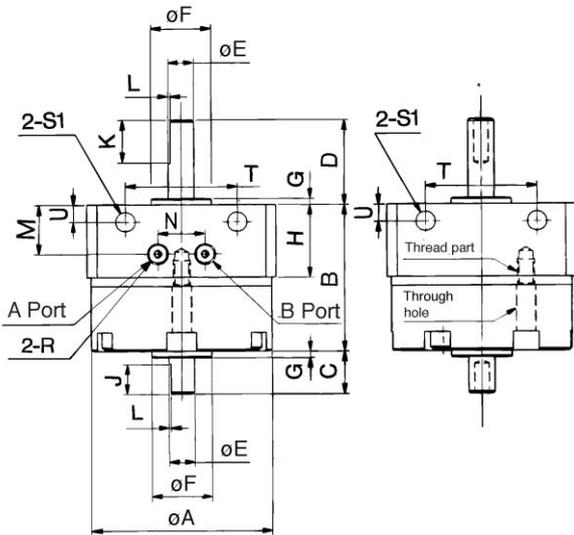
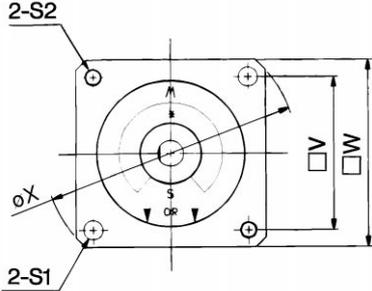
Standard Style



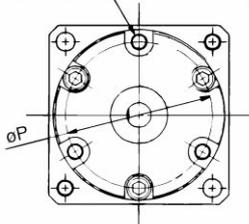
(The dimensions below show pressurization to B port of the actuators for 90° and 180°. Refer to p.1.2-7 for further information.)

Port locations: Body side

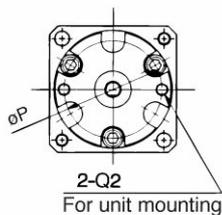
CRBUW□-□S



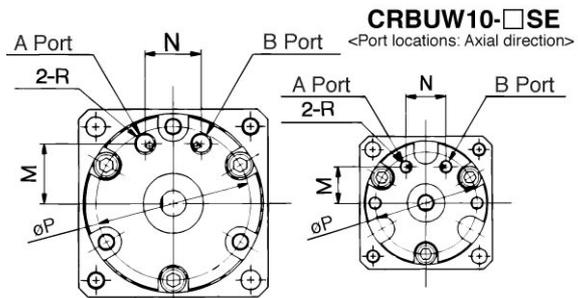
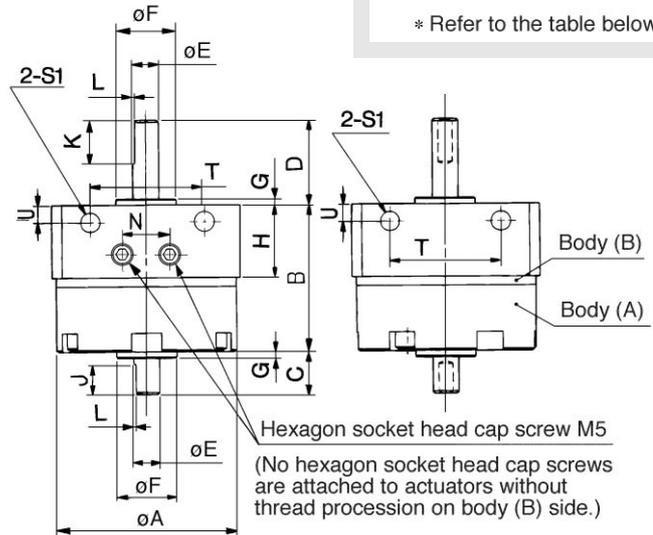
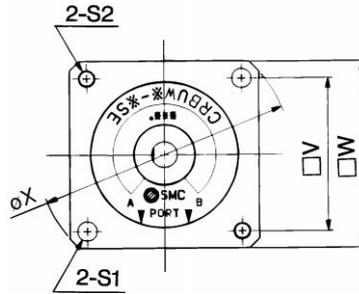
3-Q1
For unit mounting



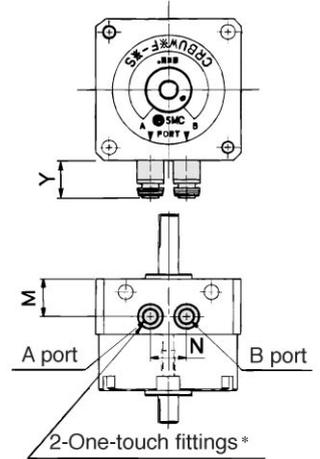
CRBUW10-□S
<Port locations: Body side>



Port locations: Axial direction
CRBUW□-□SE



One-touch fittings: Size 20/30



* Refer to the table below.

Model	A	B	C	D	E(g6)	F(h9)	G	H	J	K	L	M	N	P	Q1	(Depth) Q2	R	S1	S2	T	U	V	W	X
CRBUW10-□S	29	22	8	14	4 ^{-0.004} _{-0.012}	9 ⁰ _{-0.043}	1	15.5	5	9	0.5	10.5	10.5	24	—	M3 (4)	M5 X 0.8	3.5	M3 X 0.5	17	3	25	31	41
CRBUW10-□SE												8.5	9.5				M3 X 0.5							
CRBUW15-□S	34	25	9	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	6	10	0.5	10.5	10.5	29	M3 X 0.5	—	M5 X 0.8	3.5	M3 X 0.5	21	3	29	36	48
CRBUW15-□SE												11	10				M3 X 0.5							
CRBUW20-□S	42	34.5	10	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	7	10	0.5	11.5	11	36	M4 X 0.7	—	M5 X 0.8	4.5	M4 X 0.7	26	4	36	44	59
CRBUW20-□SE												14	13				M5 X 0.8							
CRBUW30-□S	50	47.5	13	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	2	17.5	8	12	1	12	13	43	M5 X 0.8	—	M5 X 0.8	5.5	M5 X 0.8	29	5	42	52	69
CRBUW30-□SE												15.5	14				M5 X 0.8							

With One-touch Fittings

(mm)

Model	Applicable tube O.D.	M	N	Y
CRBUW20F-□S	ø 4	11.2	12	11.5
CRBUW30F-□S	ø 4	12	13	10.5



Port location (Body side)

CRBUW [Size] -S.....SCRB [Size] , #2

Port location (Axial direction)

CRBUW [Size] -SE.....SCRB [Size] , #4

* Applicable tube material: Nylon, Soft nylon, Polyurethane

* Sizes apart from the ones shown above are the same as standard style.

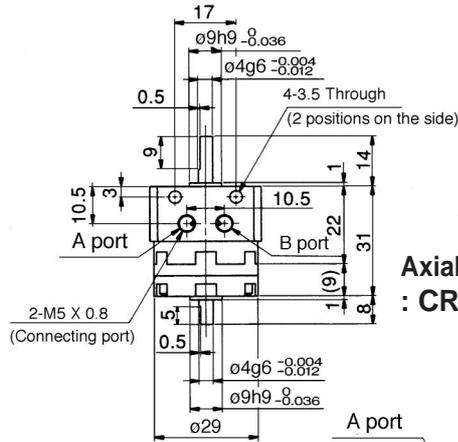
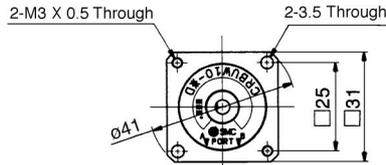
Free Mount Style Rotary Actuator Series CRBU

Standard Style Dimensions/ Double Vane Style

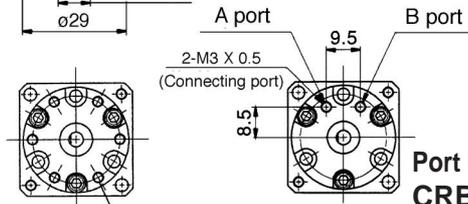
* The dimensions below show rotation at middle point during pressurization to A/B port.



Port locations: Body side CRBUW10-□D

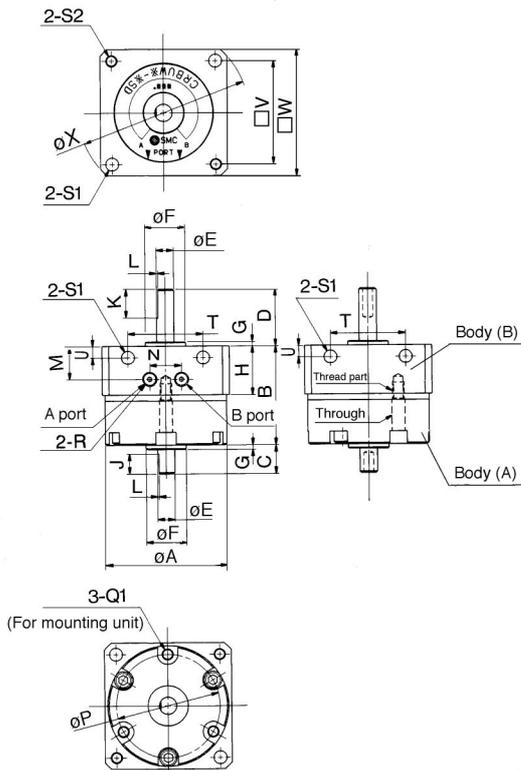


Axial Direction (Port Locations) : CRBUW10-□DE

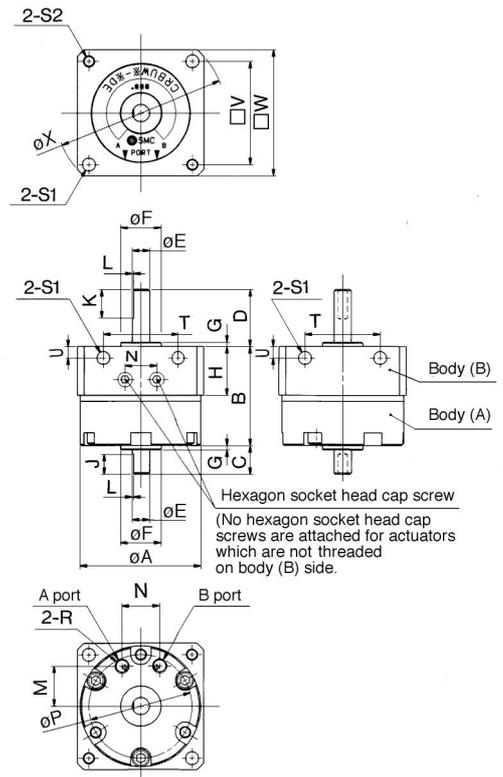


Port locations: Body side CRBUW15/20/30-□D

(The dimensions below are based on size 30.)



Port Locations: Body Axial Direction CRBUW15/20/30-□DE



Model	A	B	C	D	E(g6)	F(h9)	G	H	J	K	L	M	N	P	Q1	R	S1	S2	T	U	V	W	X
CRBUW15-□D	34	25	9	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	6	10	0.5	10.5	10.5	29	M3 X 0.5	M5 X 0.8	3.5	M3 X 0.5	21	3	29	36	48
CRBUW15-□DE												11	10			M3 X 0.5							
CRBUW20-□D	42	34.5	10	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	7	10	0.5	11.5	11	36	M4 X 0.7	M5 X 0.8	4.5	M4 X 0.7	26	4	36	44	59
CRBUW20-□DE												14	13			M5 X 0.8							
CRBUW30-□D	50	47.5	13	22	8 ^{-0.005} _{-0.014}	16 ^{-0.00} _{-0.043}	2	17.5	8	12	1	12	13	43	M5 X 0.8	M5 X 0.8	5.5	M5 X 0.8	29	4.5	42	52	69
CRBUW30-□DE												15.5	14			M5 X 0.8							

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

Series CDRBU Auto Switch Specifications



Refer to p.2.11-1 for further information on auto switch single body.



Applicable Auto Switch

Applicable series	Auto switch part No.	Electrical entry	Page	
CDRBUW10 CDRBUW15	Reed switch	D-90/90A	Grommet	2.11-12, 2.11-14
		D-97/93A		
	Solid state switch	D-S99/S99V*	Grommet/3 wire style (NPN)	2.11-23
		D-S9P/S9PV	Grommet/3 wire style (PNP)	
D-T99/T99V		Grommet/2 wire style		
CDRBUW20 CDRBUW30	Reed switch	D-R 7	Grommet	2.11-15
		D-R 8		
	Solid state switch	D-R 7*	Grommet/3 wire style (NPN)	2.11-24
		D-S7P	Grommet/3 wire style (PNP)	
		D-T 7	Grommet/2 wire type, Connector/2 wiretype	

* No connector type is available for solid state switch 3 wire style.

⚠ Caution

Be sure to read before handling. Refer to p.2.11-2 to 2.11-4 before handling auto switches.

Units



Every kind of unit is mountable to series CDRBU. Refer to p.1.0-23 and 1.0-24 for further information.

• Combinable units:

- | | |
|------------------------|---|
| ① Auto switch unit | ② Switch block unit |
| ③ Angle adjusting unit | ④ Angle adjusting unit with auto switch |
| ⑤ Joint unit | |



Auto switch single unit
D-97/93.....SCRB10,#16
D-97/93.....SCRB15,#16

Free Mount Style Rotary Actuator *Series CDRBU*

With Auto Switch Dimensions / Single Vane Style

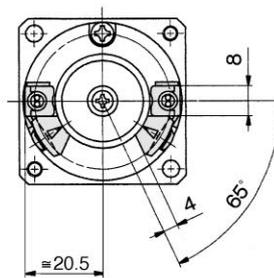
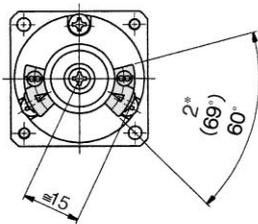
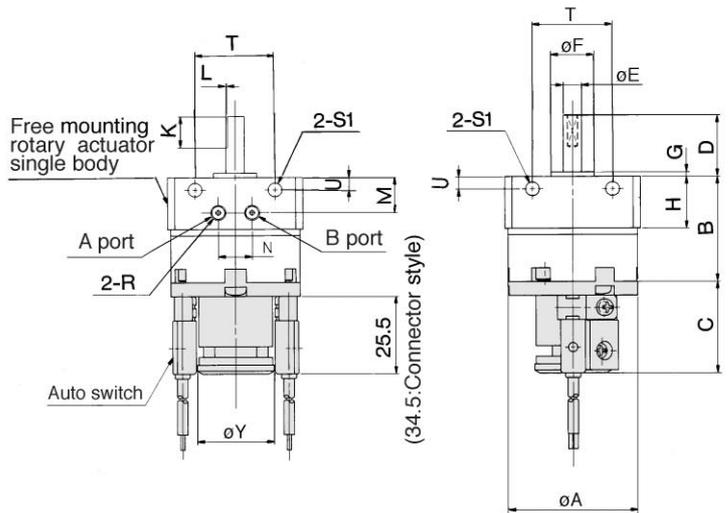
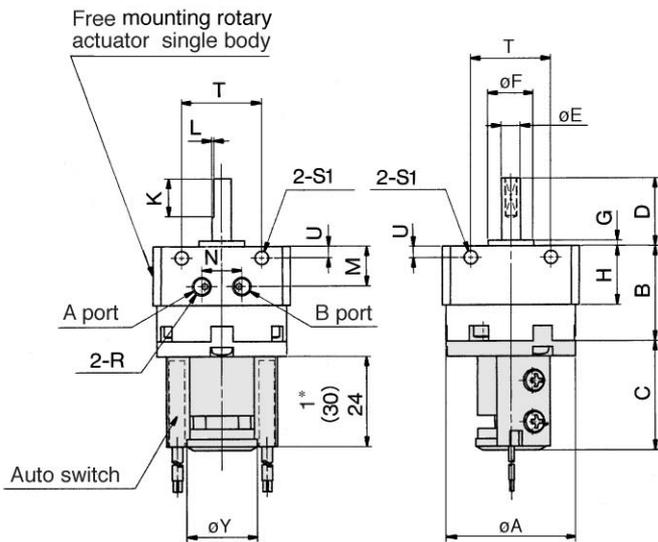
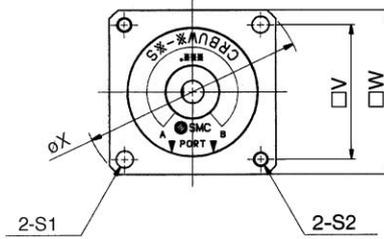
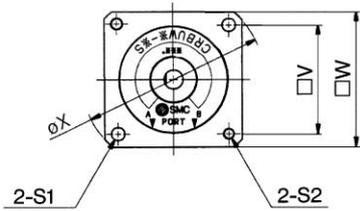


* The dimensions below show pressurization to B port of actuators for 90° and for 180°.

CDRBUW10, 15-□S

Refer to p.1.2-5 for further information.

CDRBUW20, 30-□S



(Approx. 26.5: Connector style)

- * 1) 24: When auto switches "D-90, 90A, S99(V), T99, S9P(V)" types are used.
30: When auto switches "D-97, 93A" types are used.
- * 2) 60: When auto switches "D-90, 90A, 97, 93A" types are used.
69: When auto switches "D-S99(V), T 99, S9P(V)" types are used.



Note) All connecting port locations are on the body side for auto switch attached style.

Note) The dimensions above are of one right hand side operating style attached and one left hand side operating style attached.

Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CDRBUW10-□S	29	22	29	14	4 ^{-0.004} _{-0.012}	9 ⁰ _{-0.036}	1	15.5	9	0.5	10.5	10.5	M5 X 0.8	3.5	M3 X 0.5	17	3	25	31	41	18.5
CDRBUW15-□S	34	25	29	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	10	0.5	10.5	10.5	M5 X 0.8	3.5	M3 X 0.5	21	3	29	36	48	18.5
CDRBUW20-□S	42	34.5	30	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	10	0.5	11.5	11	M5 X 0.8	4.5	M4 X 0.7	26	4	36	44	59	25
CDRBUW30-□S	50	47.5	31	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	2	17.5	12	1	12	13	M5 X 0.8	5.5	M5 X 0.8	29	4.5	42	52	69	25

CDRBUW [Size]-S.....SCRB [Size], #8



Rotary Actuator Free Mount Style with Angle Adjuster



Series CRBUWU (Size: 10/15/20/30)

How to Order

Standard

CRBU W U 10-180 S

Free mount

Angle adjusting unit



With Auto Switch Size 10/15

CDRBU W U 10-180 S-90 L

With auto switch (With switch unit)

Free mounting



With Auto Switch Size 20/30

CDRBU W U 20-180 S-R73 L

With auto switch (With switch unit)

Free mounting



Size

10
15
20
30

Vane style

S	Single vane
D	Double vane

Rotation angle

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

Size

10
15

Rotation angle

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

No. of auto switches

S	1*
-	2

* The one auto switch attached with order symbol "S" is right hand operating type.

Electrical entry and length

-	Grommet, Lead wire: 0.5m
L	Grommet, Lead wire: 3m
C	Connector, Lead wire: 0.5m
CL	Connector, Lead wire: 0.3m
CN	Connector, Without lead wire

* Connector type is applicable only to R73, R80 and T79.
** Part number for lead wire with connector:
D-LC05: Lead wire 0.5m
D-LC30: Lead wire 3m
D-LC50: Lead wire 5m

Auto switch

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

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

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

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

Applicable size	Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch part no.	Lead wire	Lead wire length* (m)				Applicable loading		
					DC	AC			0.5 (-)	3 (L)	5 (Z)	- (N)			
For 10/15	Reed switch	Grommet	No	2 wire	24V	5V,12V	5V,12V,24V	90	Parallel cord	●	●	●	●	Relay PLC	
						5V,12V,100V	5V,12V,24V,100V	90A	Cab tire	●	●	●	●		
						-	100V	97	Parallel cord	●	●	●	●		
						12V	-	93A	-	●	●	●	●		
						-	-	T99	-	●	●	-	-		
	Solid state switch	Grommet	Yes	3 wire (NPN)	3 wire (PNP)	24V	5V,12V	-	S99V	Cab tire	●	●	-	-	Relay PLC
							-	-	S99V	-	●	●	-	-	
							-	-	S9P	-	●	●	-	-	
							-	-	S9PV	-	●	●	-	-	
							-	-	S9P	-	●	●	-	-	
For 20/30	Reed switch	Grommet Connector	Yes	2 wire	24V	-	100V	R73	-	●	●	-	-	Relay PLC	
						48V,100V	24V,48V,100V	R73C	-	●	●	●	●		
						12V	-	R80	Cab tire	●	●	-	-		
						-	-	R80C	-	●	●	●	●		
						-	-	T79	-	●	●	-	-		
	Solid state switch	Grommet Connector	Yes	3 wire (NPN)	3 wire (PNP)	24V	5V,12V	-	T79C	-	●	●	●	●	Relay PLC
							-	-	S79	-	●	●	-	-	
							-	-	S79C	-	●	●	-	-	
							-	-	S7P	-	●	●	-	-	
							-	-	S7P	-	●	●	-	-	

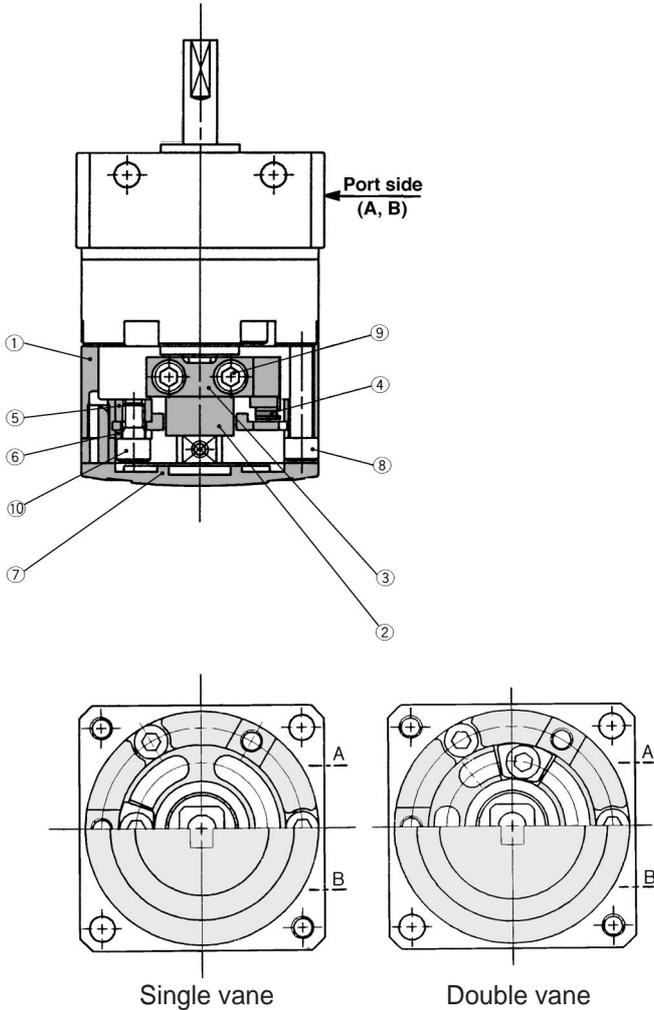
* Symbols for each wire length 0.5m: - Ex.) R73C •Operating time — 1.2ms •Operating temperature range — -10° to 60°
 3m: L EX.) R73CL •Shock resistance — 300m/s² {30.6G} (Reed switch),
 5m: Z EX.) R73CZ 1000m/s² {102G} (Solid state switch)
 -: N EX.) R73CN

Series **C** **D** **RBUWU**

Construction/Single Vane, Double Vane

With angle adjuster

CRBUW10/15/20/30 - □^S_D



Component Parts

No.	Description	Material	Note
①	Stopper ring	Aluminum die cast	
②	Stopper lever	Carbon steel	
③	Lever retainer	Carbon steel	Zinc chromated
④	Rubber damper	NBR	
⑤	Stopper block	Carbon steel	Zinc chromated
⑥	Block retainer	Carbon steel	Zinc chromated
⑦	Cap	Resin	
⑧	Hexagon socket head cap bolt	Stainless steel	Special bolt
⑨	Hexagon socket head cap bolt	Stainless steel	Special bolt
⑩	Hexagon socket head cap bolt	Stainless steel	Special bolt
⑪	Joint	Aluminum alloy	Note)
⑫	Hexagon socket head cap screw	Stainless steel	For CDRBUW10, a hexagon nut is used to the part indicated with no. ⑫.
⑬	Hexagon nut	Stainless steel	
⑬	Round head Phillips screw	Stainless steel	Note)
⑭	Magnet lever	—	Note)

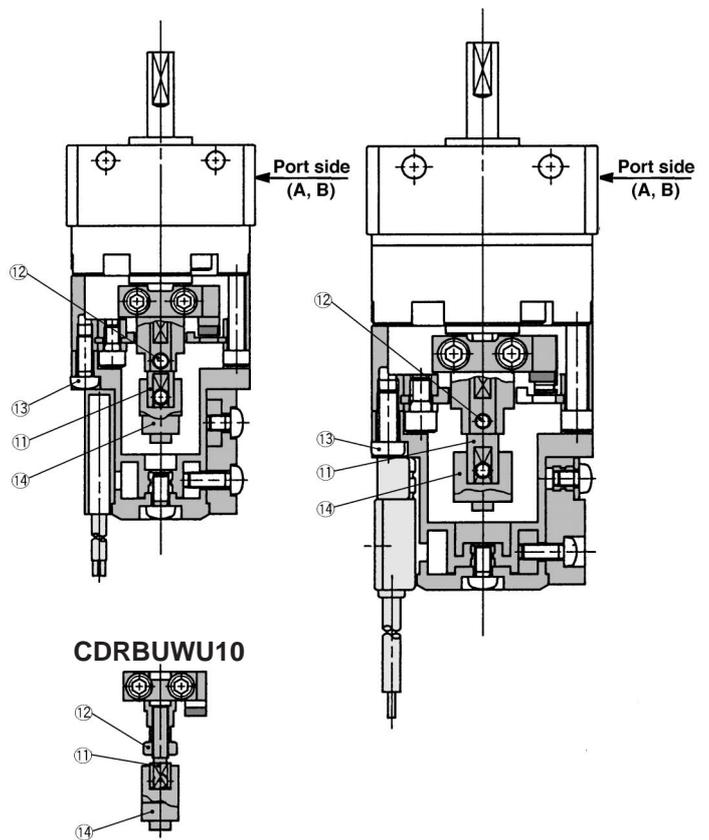
Note) It is consisted of an auto switch unit and an angle adjusting unit. Refer to p.1.0-23 and 1.0-24 for further specifications.



With angle adjuster and auto switch

CDRBUW10/15 - □^S_D

CDRBUWU20/30 - □^S_D



- **Single vane**
This diagram shows the pressurized state of port B in the rotary actuator used for a 90° or 180° application.
- **Double vane**
This diagram shows the intermediate rotation position of the rotary actuator with port A or port B pressurized.

⚠ 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 common precautions for every series.

Unit with An Angle Adjuster

⚠ Caution

- If the rotary actuator body is used for a 90° or 180° application, the maximum angle of the rotation angle adjustment range will be limited by the rotation angle of the rotary actuator body. Make sure to take this into consideration when ordering equipment.
(Refer to the table below)

Rotation angle of the rotary actuator body	Adjustable range of rotating angle
270° ⁺⁴ ₀	0° to 230° (size 10)*1
	0° to 240° (Size 15, 20, 30)
180° ⁺⁴ ₀	0° to 175°
90° ⁺⁴ ₀	0° to 85°

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

- All connecting port positions are on the body side.
- The allowable kinetic energy is the same as the specifications of the rotary actuator unit itself.
- To make a 90° adjustment on the double vane type, use a rotary actuator for a 100° application.

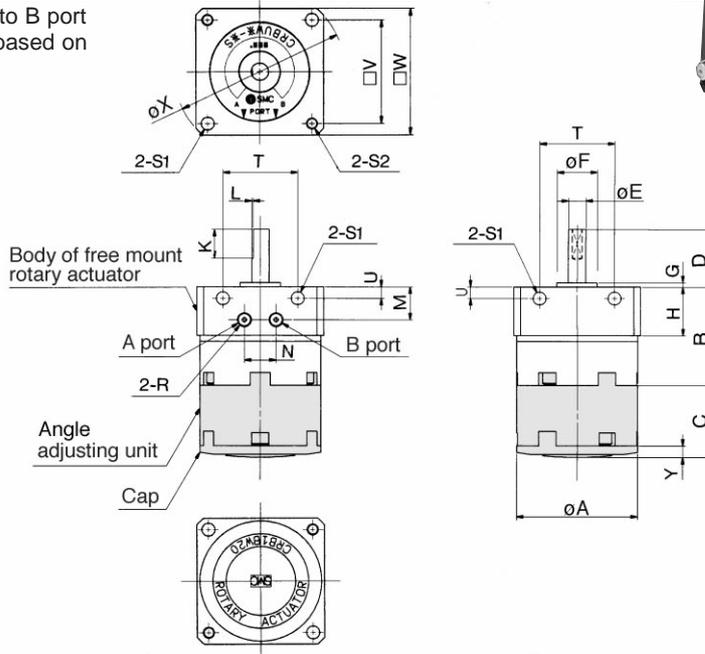
Free Mount Style Rotary Actuator with Angle Adjuster *Series CRBUWU*

With Angle Adjuster Dimensions/Single Vane Style



*The dimensions below show pressurization to B port of actuators for 90° and for 180°. They are based on size 20.

CRBUWU10/15/20/30-□S



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



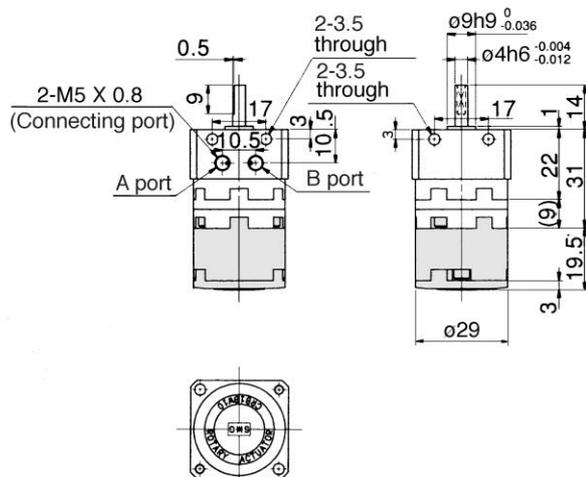
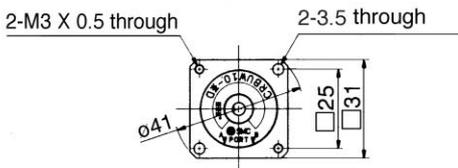
Basic style
CRBUWU [Size] -S.....SCRB [Size] , #6

Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CRBUWU10-□S	29	22	19.5	14	4 ^{-0.004} _{0.012}	9 ⁰ _{-0.036}	1	15.5	9	0.5	10.5	10.5	M5 X 0.8	3.5	M3 X 0.5	17	3	25	31	41	3
CRBUWU15-□S	34	25	21.2	18	5 ^{-0.004} _{0.012}	12 ⁰ _{-0.043}	1.5	15.5	10	0.5	10.5	10.5	M5 X 0.8	3.5	M3 X 0.5	21	3	29	36	48	3.2
CRBUWU20-□S	42	34.5	25	20	6 ^{-0.004} _{0.012}	14 ⁰ _{-0.043}	1.5	17	10	0.5	11.5	11	M5 X 0.8	4.5	M4 X 0.7	26	4	36	44	59	4
CRBUWU30-□S	50	47.5	29	22	8 ^{-0.005} _{0.014}	16 ⁰ _{-0.043}	2	17.5	12	1	12	13	M5 X 0.8	5.5	M5 X 0.8	29	4.5	42	52	69	4.5

With Angle Adjuster Dimensions/Double Vane Style

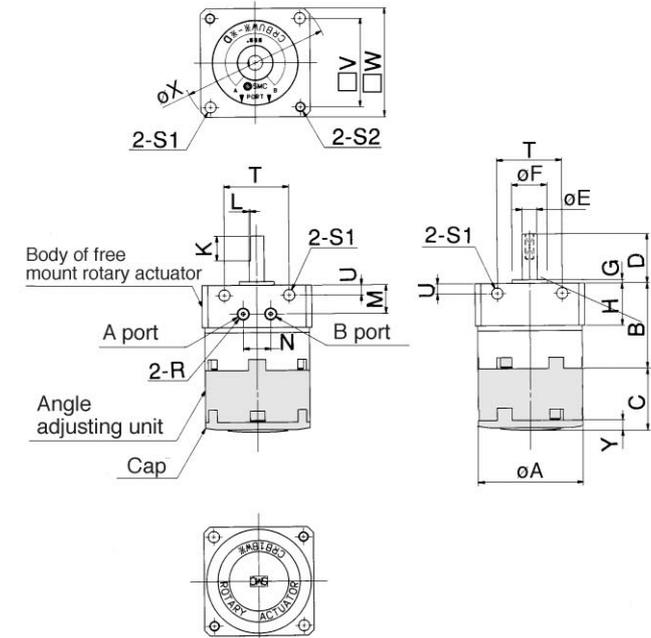
*The dimensions below show rotation middle points during pressurization to A port or B port.

CRBUWU10-□D



CRBUWU15/20/30-□D

The dimensions below are based on size 20.



Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CRBUWU15-□D	34	25	21.2	18	5 ^{-0.004} _{0.012}	12 ⁰ _{-0.043}	1.5	15.5	10	0.5	10.5	10.5	M5 X 0.8	3.5	M3 X 0.5	21	3	29	36	48	3.2
CRBUWU20-□D	42	34.5	25	20	6 ^{-0.004} _{0.012}	14 ⁰ _{-0.043}	1.5	17	10	0.5	11.5	11	M5 X 0.8	4.5	M4 X 0.7	26	4	36	44	59	4
CRBUWU30-□D	50	47.5	29	22	8 ^{-0.005} _{0.014}	16 ⁰ _{-0.043}	2	17.5	12	1	12	13	M5 X 0.8	5.5	M5 X 0.8	29	4.5	42	52	69	4.5

Series CDRBUWU

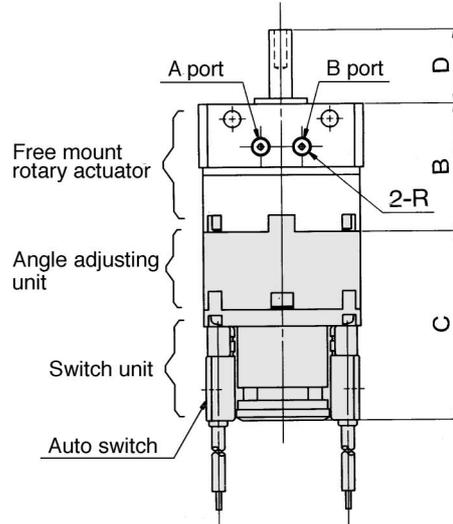
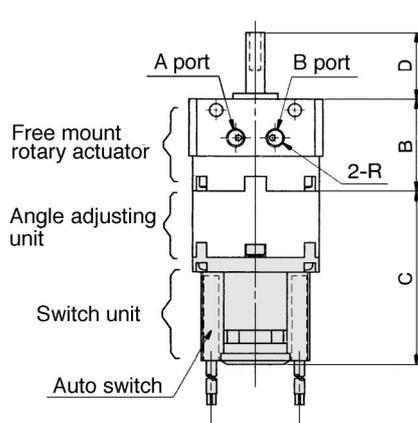
With Angle Adjuster and Auto Switch Dimensions/Single Vane Style



* The dimensions below show pressurization to A port of actuators for 90° and for 180°.

CDRBUWU10/15-□S

CDRBUWU20/30-□S



Model	B	C	D	R
CDRBUWU10-□S	22	45.5	14	M5 X 0.8
CDRBUWU15-□S	25	47	18	M5 X 0.8
CDRBUWU20-□S	34.5	51	20	M5 X 0.8
CDRBUWU30-□S	47.5	55.5	22	M5 X 0.8



Note) All the port locations are on the body side for angle adjuster attached style and auto switch attached style.
 Note) The dimension of switch attached style shows one right side handling switch attached style and one left side handling switch attached style.



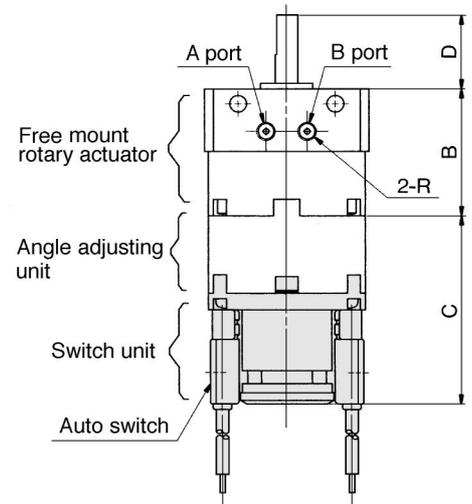
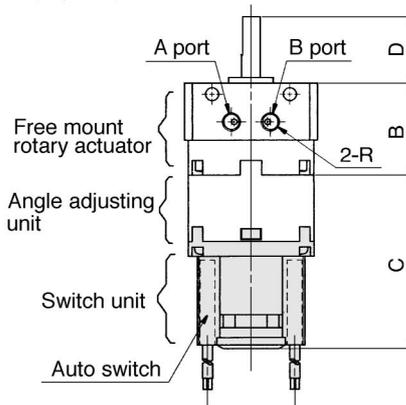
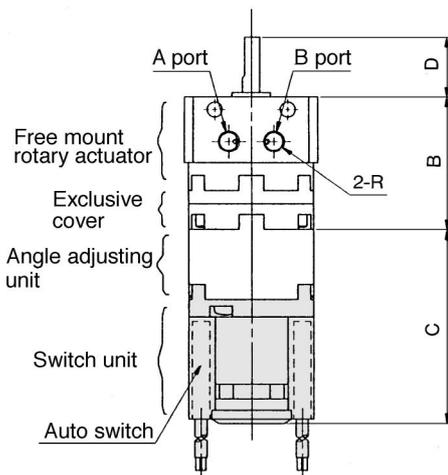
With auto switch
 CDRBUWU-□SizeS.....SCRB□Size, #10

With Angle Adjuster and Auto Switch Dimensions/Double Vane Style

* The dimensions below show rotation middle point during pressurization to A port or B port.

CDRBUWU10/15-□D

CDRBUWU20/30-□D



Model	B	C	D	R
CDRBUWU10-□D	31	45.5	14	M5 X 0.8
CDRBUWU15-□D	25	47	18	M5 X 0.8
CDRBUWU20-□D	34.5	51	20	M5 X 0.8
CDRBUWU30-□D	47.5	55.5	22	M5 X 0.8



Note) All the port locations are on the body side for angle adjuster attached style and auto switch attached style.
 Note) The dimensions of auto switch attached style shows one right side handling switch attached style and one left side handling switch attached style.

Series CRBU

Made to Order Specifications

Change of Shaft End Shape/-XA1 to XA47

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

Symbol

1 Change of shaft end shape -XA1 to XA47

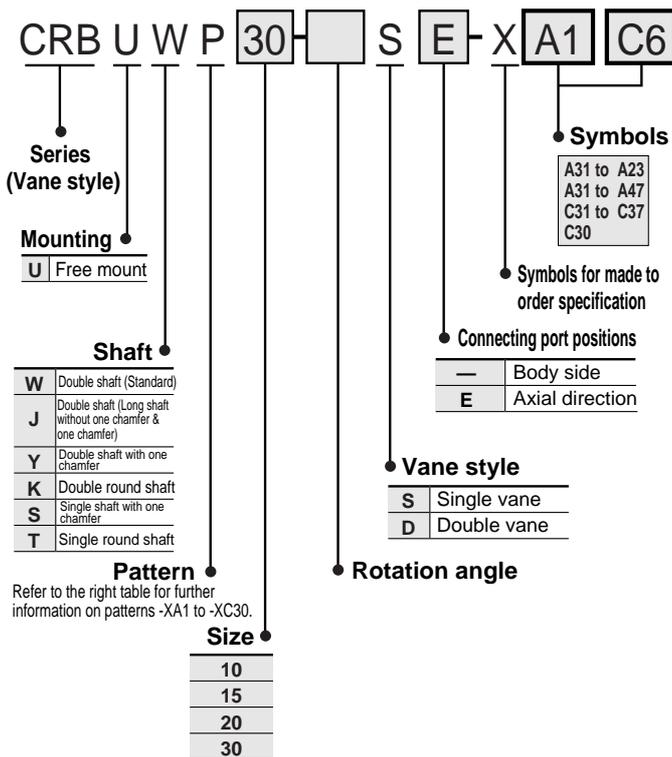
A wide selection of models is now available, as non-standard shaft configurations for the CRB1 Series (Sizes: 50, 80, 100) are provided in 46 types of patterns.

Additional reminders

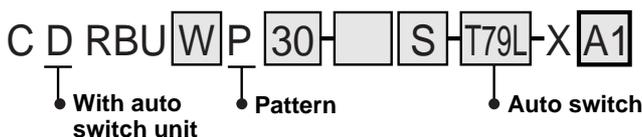
- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensional, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- The thread pitch is based on coarse metric threads.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

How to Order

Without auto switch For 2 patterns (A1, C6)



With auto switch For pattern A1



Refer to p.1.2-4 for further information.

Applicable patterns

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

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

Shaft shape/Double shaft (W): Standard

Symbol	Specification	Shaft direction		Applicable size
		Upward	Downward	
-XA 1	Rod end female thread	●	—	15, 20, 30
-XA 2	Rod end female thread	—	●	
-XA 3	Rod end male thread	●	—	
-XA 4	Rod end male thread	—	●	10
-XA 5	Round shaft with steps	●	—	
-XA 6	Round shaft with steps	—	●	15
-XA 7	Round shaft with steps and male thread	●	—	
-XA 8	Round shaft with steps and male thread	—	●	20
-XA 9	Change in length of the standard product's chamfer part	●	—	
-XA10	Change in length of the standard product's chamfer part	—	●	30
-XA11	2 flat chamfers	●	—	
-XA12	2 flat chamfers	—	●	15
-XA13	Shaft through hole	●	●	
-XA14	Shaft through hole and female thread	●	—	
-XA15	Shaft through hole and female thread	—	●	20
-XA16	Shaft through hole and female thread	●	●	
-XA17	Shaft is shortened	●	—	10
-XA18	Shaft is shortened	—	●	
-XA19	Shaft is shortened	●	●	
-XA20	Reverse mounting of the shaft	●	●	15
-XA21	Round shaft with steps and two flat chamfers	●	—	
-XA22	Round shaft with steps and two flat chamfers	—	●	30
-XA23	Right angled chamfer	●	—	

Shaft shape/J, K, S, T, Y: Made to order

Symbol	Specification	Shaft direction	Applicable shaft type					Applicable size
			J	K	S	T	Y	
-XA31	Rod end female thread	●	—	—	—	—	—	15
-XA32	Rod end female thread	—	●	—	—	—	—	
-XA33	Rod end female thread	●	—	●	—	—	—	
-XA34	Rod end female thread	—	●	●	—	—	—	30
-XA37	Round shaft with steps	●	—	●	—	—	—	
-XA38	Round shaft with steps	—	●	—	—	—	—	10, 15, 20, 30
-XA39	Shaft through hole	●	—	—	—	—	—	
-XA40	Shaft through hole	●	—	—	—	—	—	15
-XA41	Shaft through hole	●	●	—	—	—	—	
-XA42	Shaft through hole and female thread	●	●	—	—	—	—	20
-XA43	Shaft through hole and female thread	●	—	—	—	—	—	
-XA44	Shaft through hole and female thread	●	●	—	—	—	—	30
-XA45	Intermediate chamfer	●	—	●	—	—	—	
-XA46	Intermediate chamfer	—	●	—	—	—	—	10, 15, 20, 30
-XA47	Key groove	●	—	●	—	—	—	
-XC 1	A connecting port is added to the side end of the body (A)	—	—	—	●	●	●	10
-XC 2	2 thread parts of the body (B) are used as through holes	—	—	—	●	●	●	
-XC 3	Position of the tightening bolts are changed	—	—	—	●	●	●	
-XC 4	Rotating range is changed. (90° to the right from the starting point)	—	—	—	●	●	●	15
-XC 5	Rotation angle is changed. (45° to the left from the starting point)	—	—	—	●	●	●	
-XC 6	Rotation angle is changed. (90° to the left from the starting point)	—	—	—	●	●	●	20
-XC 7	Reverse mounting of the shaft	—	—	—	—	—	—	
-XC 30	Fluorine grease	—	—	—	●	●	●	30

Note) Standard style (double shafts: W) is also available for "-XC1" to "XC30".

Series CRBU

Made to Order Specifications

Change of Shaft End Shape/-XA1 to -XA17

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

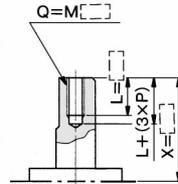
1 Change of shaft end shape

Additional reminders

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

Symbol: A1

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

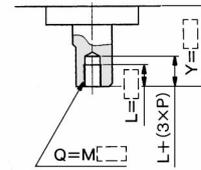


- Size 10mm is not manufacturable.
- L dimension (maximum size) is 2 times as large as the thread size as a rule.

Size	X	Q
15	1.5 to 18	M3
20	1.5 to 20	M3, M4
30	2 to 22	M3, M4, M5

Symbol: A2

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

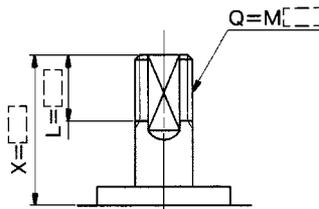


- Size 10mm is not manufacturable.
- L dimension (maximum size) is 2 times as large as the thread size as a rule. Ex.) M3: L = 6mm

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

Symbol: A3

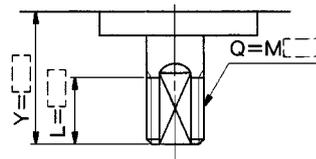
The shaft can be further shortened by machining male threads on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X	Lmax	Q
10	7 to 14	X-3	M4
15	8.5 to 18	X-3.5	M5
20	10 to 20	X-4	M6
30	13 to 22	X-5	M8

Symbol: A4

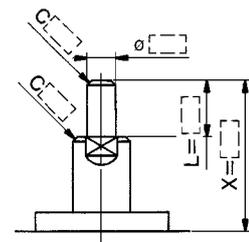
The shaft can be further shortened by machining male threads on the long end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



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

Symbol: A5

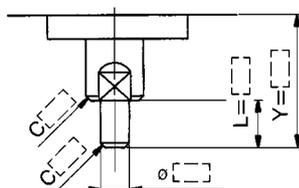
The shaft can be further shortened by machining a round shoulder on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



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

Symbol: A6

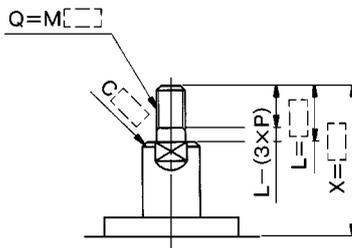
The shaft can be further shortened by machining a round shoulder on the long end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



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

Symbol: A7

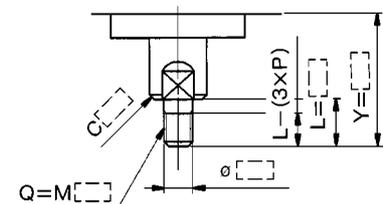
The shaft can be further shortened by machining a round shoulder and machining male threads on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X	Lmax	Q
10	5.5 to 14	X-1	M3
15	7.5 to 18	X-1.5	M3, M4
20	9 to 20	X-1.5	M3, M4, M5
30	11 to 22	X-2	M3, M4, M5, M6

Symbol: A8

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



Size	Y	Lmax	Q
10	5.5 to 8	Y-1	M3
15	7.5 to 9	Y-1.5	M3, M4
20	9.5 to 10	Y-1.5	M3, M4, M5
30	11 to 13	Y-2	M3, M4, M5, M6

Symbol

-XA1 to XA17

CRB1

CRBU

CRA1

CRQ

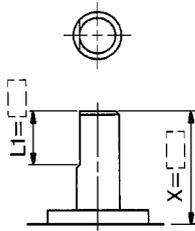
MRQ

MSQ

MSUB

Symbol: A9

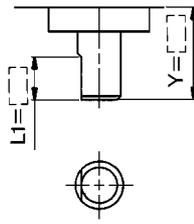
The shaft can be further shortened by changing the length of the standard flat of the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X	L1
10	3 to 14	9 - (14 - X) to (X - 1)
15	5.5 to 18	10 - (18 - X) to (X - 1.5)
20	7 to 20	10 - (20 - X) to (X - 1.5)
30	7 to 22	12 - (22 - X) to (X - 2)

Symbol: A10

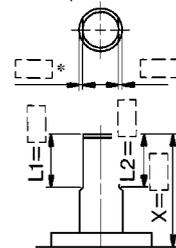
The shaft can be further shortened by changing the length of the standard flat of the short end of the shaft. (If the shaft is not to be shortened, leave the Y dimension blank.)



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

Symbol: A11

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

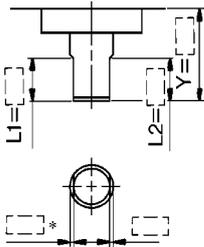


Size	X	L1	L2max
10	3 to 14	9 - (14 - X) to (X - 1)	X - 1
15	3 to 18	10 - (18 - X) to (X - 1.5)	X - 1.5
20	3 to 20	10 - (20 - X) to (X - 1.5)	X - 1.5
30	5 to 22	12 - (22 - X) to (X - 2)	X - 2

The "*" symbol indicates 0.5mm minimum, L1 is the standard flat.

Symbol: A12

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

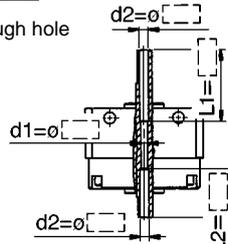


Size	Y	L1	L2max
10	3 to 8	5 - (8 - Y) to (Y - 1)	Y - 1
15	3 to 9	6 - (9 - Y) to (Y - 1.5)	Y - 1.5
20	3 to 10	7 - (10 - Y) to (Y - 1.5)	Y - 1.5
30	5 to 13	8 - (13 - Y) - (Y - 2)	Y - 2

*1.5mm or more, L1: Standard chamfering part

Symbol: A13 Applicable only to single vane.

Shaft through hole

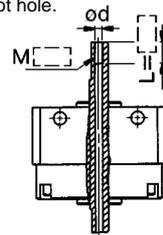


- For size 15mm, d1 = ø2.5, L1 = max. 18.
- For size 15mm only, inscribe the L1, L2, and d1 dimensions when = d2 is 2.6 or more
- Sizes 20mm and 30mm, d1 = d2
- The minimum range of the machinable dimension for the d2 area is 0.1mm.

Size	d1	d2
15	ø2.5	ø2.5 to 3
20	—	ø2.5 to 4
30	—	ø2.5 to 4.5

Symbol: A14 Applicable only to single vane.

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

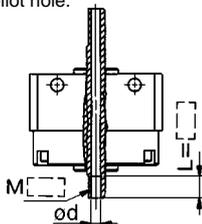


- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt. Example: For M3 bolt: L max. = 6mm

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

Symbol: A15 Applicable only to single vane.

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

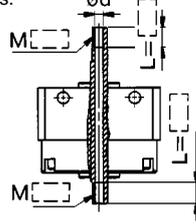


- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt. Example: For M4 bolt: L max. = 8mm

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

Symbol: A16 Applicable only to single vane.

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

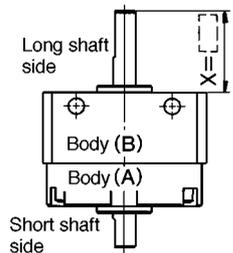


- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt. Example: For M5 bolt: L max. = 10mm

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

Symbol: A17

Shorten the long end of the shaft.



Size	X
10	1 to 14
15	1.5 to 8
20	1.5 to 20
30	2 to 22

Series CRBU

Made to Order Specifications

Change of Shaft End Shape/-XA18 to -XA23

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

Symbol

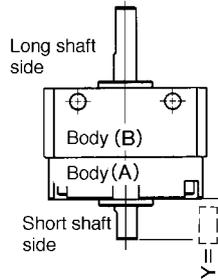
1 Change of shaft end shape -XA18 to XA23

Additional reminders

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

Symbol: A18

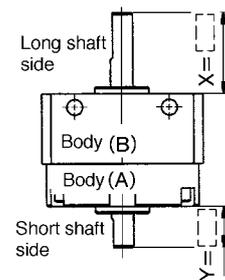
Shorten the short end of the shaft.



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

Symbol: A19

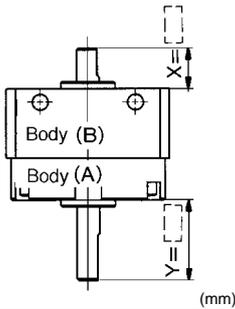
Shorten both the long end and the short end of the shaft.



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

Symbol: A20

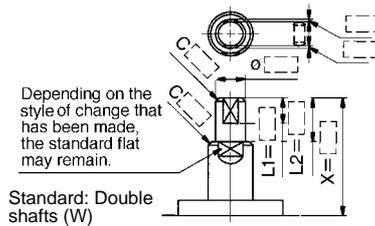
Reverse the assembly of the shaft (thus shortening the long end and the short end of the shaft).



Size	X (mm)	Y (mm)
10	1 to 3	1 to 19
15	1.5 to 6.5	1.5 to 15.5
20	1.5 to 7.5	1.5 to 22.5
30	2 to 8.5	2 to 26.5

Symbol: A21

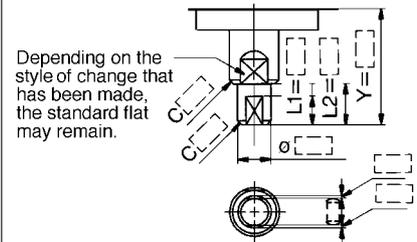
The shaft can be further shortened by machining a round shoulder and double flats on the long end of the shaft. (If the shaft is not to be shortened, leave the X dimension blank.)



Size	X (mm)	L1max (mm)	L2 (mm)
10	4 to 14	X-2.5	L1 + 1.5
15	4.5 to 18	X-3	L1 + 1.5
20	5 to 20	X-3.5	L1 + 2
30	7 to 22	X-5	L1 + 3

Symbol: A22

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

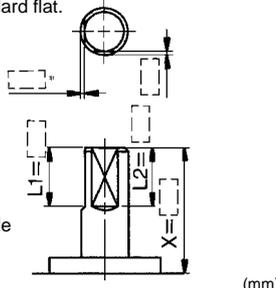


Size	Y (mm)	L1max (mm)	L2 (mm)
10	4 to 8	Y-2.5	L1 + 1.5
15	4.5 to 9	Y-3	L1 + 1.5
20	5 to 10	Y-3.5	L1 + 2
30	7 to 13	Y-5	L1 + 3

Symbol: A23

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

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



Size	X (mm)	L1 (mm)	L2max (mm)
10	3 to 14	9 - (14 - X) to (X - 1)	X - 1
15	3 to 18	10 - (18 - X) to (X - 1.5)	X - 1.5
20	3 to 20	10 - (20 - X) to (X - 1.5)	X - 1.5
30	5 to 22	12 - (22 - X) to (X - 2)	X - 2

Series CRBU

Made to Order Specifications

Change of Shaft End Shape/-XA31 to XA40

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

Symbol

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

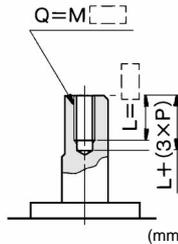
Additional reminders

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

Symbol: A31

Machine female threads into the long end of the shaft.

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

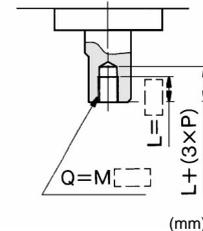


Shaft Size	Q	
	S	Y
10	Not available	
15	M3	
20	M3, M4	
30	M3, M4, M5	

Symbol: A32

Machine female threads into the short end of the shaft.

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

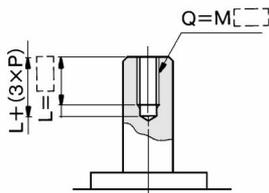


Shaft Size	Q	
	S	Y
10	Not available	
15	M3	
20	M3, M4	
30	M3, M4, M5	

Symbol: A33

Machine female threads into the long end of the shaft.

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

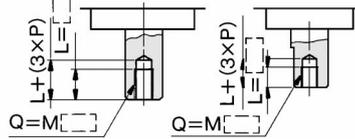


Shaft Size	Q		
	J	K	T
10	Not available		
15	M3		
20	M3, M4		
30	M3, M4, M5		

Symbol: A34

Machine female threads into the short end of the shaft.

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

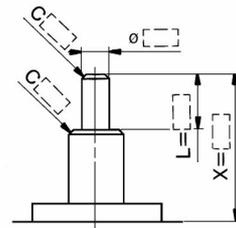


Shaft Size	Q		
	J	K	T
10	Not available		
15	M3		
20	M3, M4		
30	M3, M4, M5		

Symbol: A37

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

- Applicable shaft configurations — shafts J, K, T

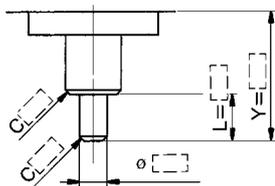


Shaft Size	Shaft form			J	K	T	J	K	T
10	X			2 to 14	X - 1				
15				3 to 18	X - 1.5				
20				3 to 20	X - 1.5				
30				3 to 22	X - 2				

Symbol: A38

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

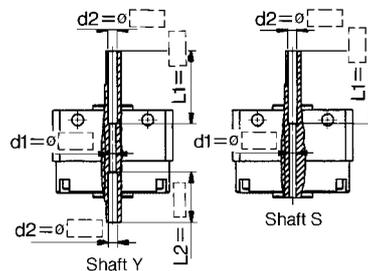
- Applicable shaft configurations — shaft T



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

Symbol: A39 Applicable only to single vane style.

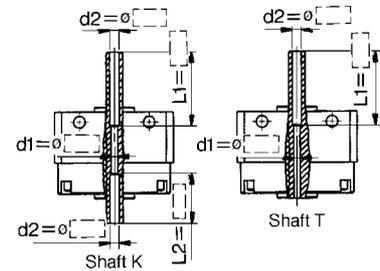
Shaft through hole (Shafts S and Y are machined additionally)



- Size 10 is not manufacturable.
 - For size 15 is $d1 = \phi 2.5$, $L1 = \max. X 18$
 - The minimum range of the machinable dimension for the $d2$ area is 0.1mm.
 - For sizes 20 and 30 are $d1 = d2$.
 - With size 15, enter the $L1$, $L2$, and $d1$ dimensions when $d2$ is $\phi 2.6$ or more.
 - Applicable shaft configurations — shafts S, Y
- | Shaft Size | S | | Y | |
|------------|-----|------------|----|----|
| | d1 | d2 | d1 | d2 |
| 15 | 2.5 | 2.5 to 3 | — | — |
| 20 | — | 2.5 to 4 | — | — |
| 30 | — | 2.5 to 4.5 | — | — |

Symbol: A40 Applicable only to single vane style.

Shaft through hole (Shafts K and T are machined additionally)



- Size 10 is not manufacturable.
 - For size 15 is $d1 = \phi 2.5$, $L1 = \max. X 18$
 - The minimum range of the machinable dimension for the $d2$ area is 0.1mm.
 - For sizes 20 and 30 are $d1 = d2$.
 - With size 15, enter the $L1$, $L2$, and $d1$ dimensions when $d2$ is $\phi 2.6$ or more.
 - Applicable shaft configurations — shafts K, T
- | Shaft Size | K | | T | |
|------------|-----|------------|----|----|
| | d1 | d2 | d1 | d2 |
| 15 | 2.5 | 2.5 to 3 | — | — |
| 20 | — | 2.5 to 4 | — | — |
| 30 | — | 2.5 to 4.5 | — | — |

Series CRBU

Made to Order Specifications

Change of Shaft End Shape/-XA41 to XA47

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

Symbol

2

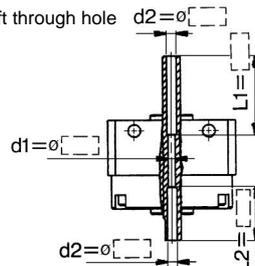
Change of shaft end shape/Applicable shaft style: J, K, S, T, Y

-XA41 to XA47

Additional reminders

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

Symbol: **A41** Applicable only to single vane style.

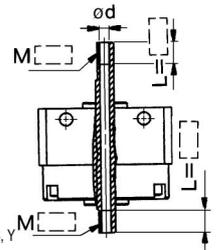


- Size 10 is not manufacturable.
- For size 15 is d1 = 2.5, L1 = max. 18
The minimum range of the machinable dimension for the d2 area is 0.1mm. Enter the L1, L2, and d1 dimensions when d2 is ≥ 2.6 or more.
- For sizes 20 and 30 are d1 = d2.
- Applicable shaft configuration — shaft J

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

Symbol: **A42** Applicable only to single vane style.

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

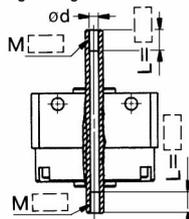


- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M5 bolt: L max. = 10mm.)
However, for the short end of shaft S: For M5 bolt: L max. = 7.5 mm.
- Applicable shaft configurations — shafts S, Y

Thread	Size (mm)					
	15		20		30	
Shaft form	S	Y	S	Y	S	Y
M3 X 0.5	2.5	2.5	2.5	2.5	—	—
M4 X 0.7	—	—	3.3	3.3	—	—
M5 X 0.8	—	—	—	—	4.2	4.2

Symbol: **A43** Applicable only to single vane style.

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

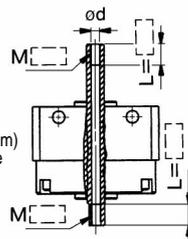


- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M5 bolt: L max. = 10mm.)
However, for the short end of shaft T: For M5 bolt: L max. = 7.5mm.
- Applicable shaft configurations — shafts K, T

Thread	Size (mm)					
	15		20		30	
Shaft form	K	T	K	T	K	T
M3 X 0.5	2.5	2.5	2.5	2.5	—	—
M4 X 0.7	—	—	3.3	3.3	—	—
M5 X 0.8	—	—	—	—	4.2	4.2

Symbol: **A44** Applicable only to single vane style.

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

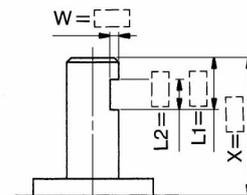


- Size 10 is not manufacturable.
- The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M5 bolt: L max. = 10mm.)
- Applicable shaft configuration — shaft J

Thread	Size	Shaft form (mm)		
		15	20	30
M3 X 0.5	2.5	2.5	2.5	2.5
M4 X 0.7	—	—	3.3	3.3
M5 X 0.8	—	—	—	4.2

Symbol: **A45**

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

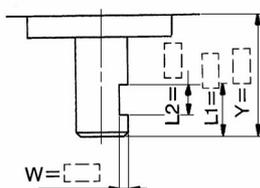


- Applicable shaft configurations — Shaft J, K, T

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

Symbol: **A46**

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

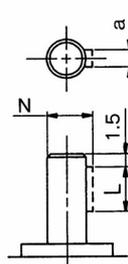


- Applicable shaft configurations — Shaft K

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

Symbol: **A47**

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



- Applicable shaft configurations — Shaft J, K, T

Size	Shaft form (mm)		
	a	L	N
20	2h _{0.025}	10	6.8
30	3h _{0.025}	14	9.2

Caution

Symbols A45, A46, and dimensions W and (L1-L2)

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

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

Series CRBU

Made to Order Specifications

-XC1 to XC4

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

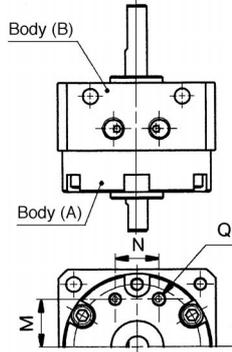
3 **Symbol** Connecting ports are added to the end side of the body(A) **-XC1**

CRBUWP Refer to "How to Order" on p.1.2-19. **-XC1**

Symbol
Connecting ports are added to the end side of the body (A).

*SMC will make appropriate arrangements if no dimensional, tolerance, or finish instructions are indicated.

A connecting port is added to the end side of the body (A). (Aluminum is used, for when the additional machined part is untreated.)



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

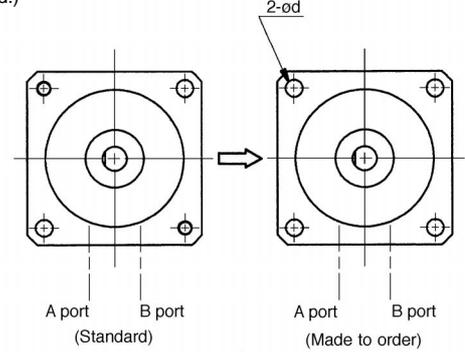
4 **Symbol** 2 thread parts of the body (B) are machined to be through holes **-XC2**

CRBUWP Refer to "How to Order" on p.1.2-19. **-XC2**

Symbol
2 thread parts of the body (B) are machined to be through holes.

*SMC will make appropriate arrangements if no dimensional, tolerance, or finish instructions are indicated.

2 thread parts of the body (B) are used as through holes. (Aluminum is used, for when the additional machined part is untreated.)



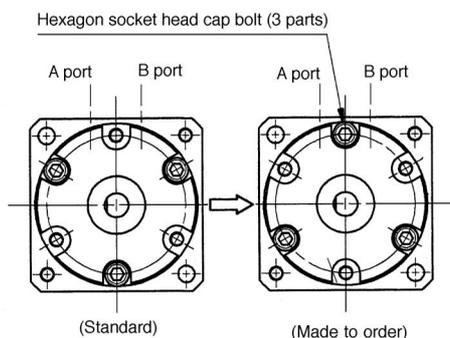
Size	d
10	3.4
15	3.4
20	4.5
30	5.5

5 **Symbol** Positions of the body tightening bolts are changed. **-XC3**

CRBUWP Refer to "How to Order" on p.1.2-19. **-XC3**

Symbol
Positions of the body tightening bolts are changed.

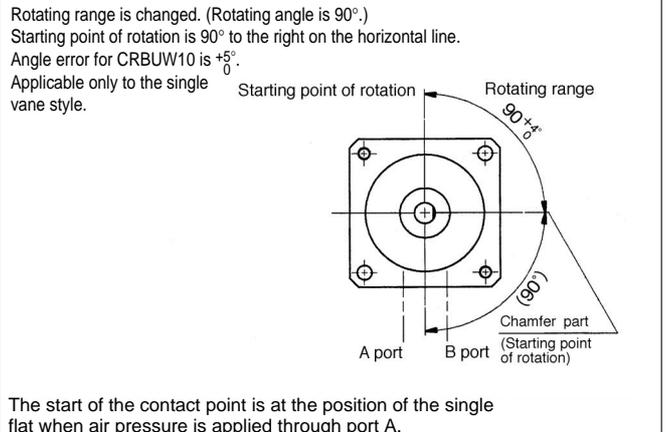
Positions of the body tightening bolts are changed. Size 10 is not available.



6 **Symbol** Rotating range is changed.(90° to the right from the starting point) **-XC4**

CRBUWP Refer to "How to Order" on p.1.2-19. **-XC4**

*SMC will make appropriate arrangements if no dimensional, tolerance, or finish instructions are indicated. **Symbol**
Rotating range is changed. (90° to the right from the starting point)
*There are no standard chamfering parts on shafts S and T.



The start of the contact point is at the position of the single flat when air pressure is applied through port A.

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

Series **CRBU** Made to Order Specifications

Change in Angle of Rotation/-XC5 to XC6

Reverse Mounting of Rotary Shaft/-XC7, Fluorine Grease/-XC30

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

7 Change in Angle of Rotation -XC5 to XC6

(-XC5: At 45° to the left from the starting point.)
(-XC6: At 90° to the left from the starting point.)

CRBUWP Refer to "How to Order" on p.1.2-19. —XC5
—XC6

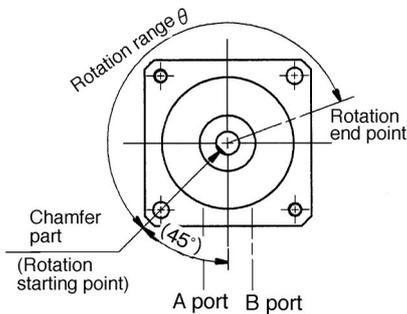
Symbol •

-XC5	At 45° from the starting point.
-XC6	At 90° from the starting point.

- * Write required value in in the diagram below.
- * No basic chamfer position on S and Y shaft.

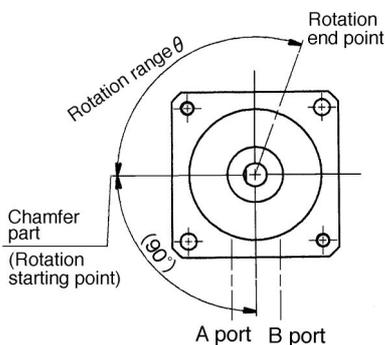
Symbol: **C5** Applicable only to single vane style.

Change in angle of rotation.
Rotation starting point at the angle of 45°.
Error in the angle at from 0° to +5° for "CRBUW10".
 $\theta = \square^{\circ} +4^{\circ}_0$
max.200°



Rotation starting point is on the one chamfering position when pressurized to B port.

Symbol: **C6** Applicable only to single vane style.
Change in angle of rotation
Rotation starting point at the angle of 90°.
Error in the angle at from 0° to +5° for "CRBUW10".
 $\theta = \square^{\circ} +4^{\circ}_0$
max.110°

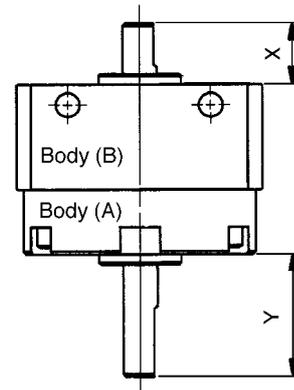


Rotation starting point is on the one chamfering position when pressurized to B port.

8 Reverse Mounting of Rotary Shaft -XC7

CRBUWP Refer to "How to Order" on p.1.2-19. —XC7

Dimensions



Size	Y	X
10	19	3
15	20.5	6.5
20	22.5	7.5
30	26.5	8.5

9 Fluorine Grease -XC30

CRBUWP Refer to "How to Order" on p.1.2-19. —XC30

Fluorine Grease •

Lubricant oil on the seal part of packing and inner wall of the cylinder is changed to fluorine grease.

Series CRBU

Made to Order Specifications

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

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

10 Shaft Variations

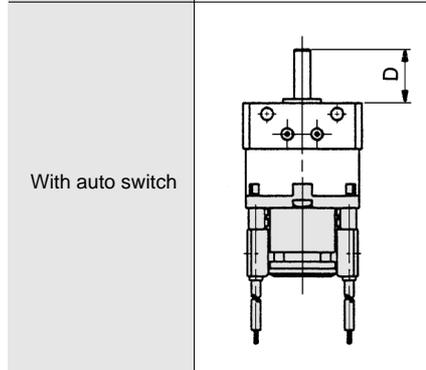
Symbol

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

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

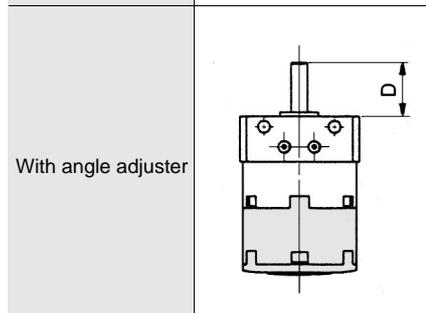
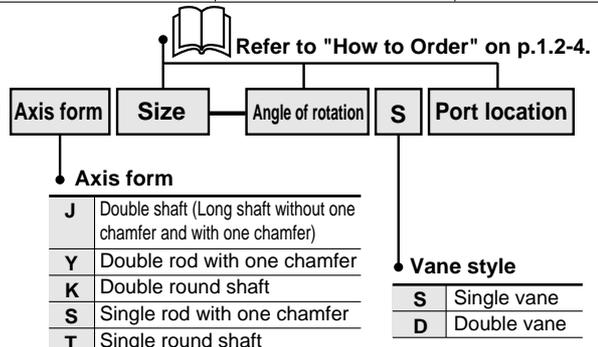
Shaft Style	J	Y	K	S	T
Classification	Double Rod			Single Rod	
Shaft Style	Long axis without one chamfering and with one chamfering	One chamfer	Round shaft	One chamfer	Round shaft
Basic style					

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



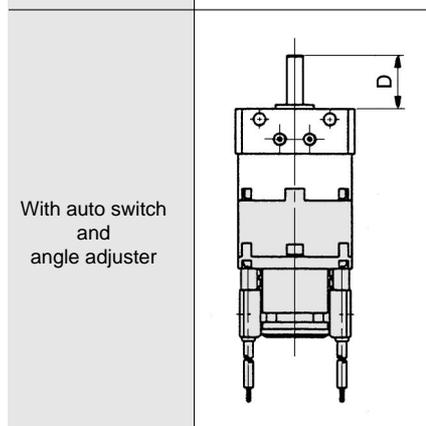
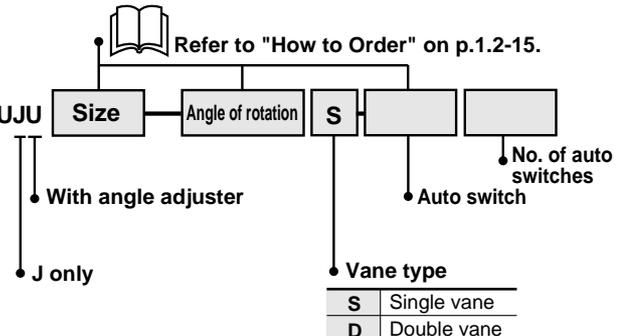
How to Order

Basic Style CRBU



With Unit

CDRBUJU



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

Note 1) Port positions are only on the body side for unit attached style.
 Note 2) Sizes of shaft and one chamfer are the same as sizes and allowance of the standard style. Refer to p.1.2-10.

Rotary Actuator: Free Mount Type Vane Style

Series *CRBU2*

Size: 10, 15, 20, 30, 40

Series Variations

	Fluid		Air																	
	Size		10				15				20, 30				40					
	Vane type	Single vane (S) Double vane (D)	S		D		S		D		S		D		S		D			
Port location	Side ported (Nil) Axial ported (E)	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported	Side ported	Axial ported			
Standard	Rotating angle	90°	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		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-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Made to Order	Shaft type	Double shaft type	Long shaft without single flat & Short shaft with single flat	J	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
				Long shaft without keyway & Short shaft with single flat																
			Single shaft type	Same length double long shaft with single flat on both shafts	Y	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Double shaft key																
Pattern		Double round shaft	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Single flat		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
			Single shaft key	S																
		Single round shaft	T																	
Shaft pattern		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Rotation pattern		●	●			●	●			●	●			●	●					

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

Rotary Actuator: Free Mount Type Vane Style Series CRBU2



Single Vane Specifications

Model (Size)		CRBU2W10-□S	CRBU2W15-□S	CRBU2W20-□S	CRBU2W30-□S	CRBU2W40-□S
Rotating angle		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°) ⁽¹⁾		0.03 to 0.3			0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy ⁽²⁾ (J)		0.00015	0.001	0.003	0.02	0.04
			0.00025	0.0004	0.015	0.033
Shaft load	Allowable radial load (N)	15		25	30	60
	Allowable thrust load (N)	10		20	25	40
Bearing type		Bearing				
Port location		Side ported or Axial ported				
Shaft type		Double shaft (Double shaft with single flat on both shafts) <small>Double shaft (Long shaft key & Single flat)</small>				
Angle adjustable ⁽³⁾		0 to 230°		0 to 240°		0 to 230°

Note 3) Adjustment range in the table is for 270°. For 90° and 180°, refer to page 11-3-5.

Double Vane Specifications

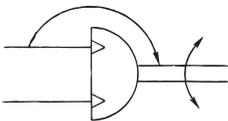
Model (Size)		CRBU2W10-□D	CRBU2W15-□D	CRBU2W20-□D	CRBU2W30-□D	CRBU2W40-□D
Rotating angle		90°, 100°				
Fluid		Air (Non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5 to 60°C				
Max. operating pressure (MPa)		0.7			1.0	
Min. operating pressure (MPa)		0.2	0.15			
Speed regulation range (sec/90°) ⁽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		25	30	60
	Allowable thrust load (N)	10		20	25	40
Bearing type		Bearing				
Port location		Side ported or Axial ported				
Shaft type		Double shaft (Double shaft with single flat on both shafts) <small>Double shaft (Long shaft key & Single flat)</small>				
Angle adjustable ⁽³⁾		0 to 90°				0 to 230°

Note 1) Make sure to operate within the speed regulation range. Exceeding the maximum speeds can cause the unit to stick or not operate.

Note 2) The upper numbers in this section in the table 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.

Note 3) Adjustment range in the table is for 100°. For 90°, refer to page 11-3-5.

JIS Symbol



Inner Volume and Connection Port

Vane type	Model (size)	CRBU2W10			CRBU2W15			CRBU2W20			CRBU2W30		CRBU2W40				
Single vane	Rotating angle	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	
	Volume (cm ³)	1 (0.6)	1.2	1.5	1.5 (1.0)	2.9	3.7	4.8 (3.5)	6.1	7.9	11.3 (8.5)	15	20.2	25	31.5	41	
	Port size	Side ported	M5 x 0.8														
	Axial ported	M3 x 0.5						M5 x 0.8									
Double vane	Rotating angle	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°
	Volume (cm ³) *	1	1.1	2.6	2.7	5.6	5.7	14.4	14.5	33	34						
	Port size	Side ported	M5 x 0.8						M5 x 0.8								
	Axial ported	M3 x 0.5															

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

Weight

Vane type	Model (size)	CRBU2W10			CRBU2W15			CRBU2W20			CRBU2W30		CRBU2W40			
Single vane	Rotating angle	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°
	Body of rotary actuator	47.5	47.1	47	73	72	72	143	142	140	263	258	255	491	480	469
	Auto switch unit + 2 switches	30			30			50			60		46.5			
	Angle adjuster	30			47			90			150		203			
Double vane	Rotating angle	—	90°	100°	—	90°	100°	—	90°	100°	—	90°	100°	—	90°	100°
	Body of rotary actuator	—	62.2	63.2	—	77	81	—	151	158	—	289	308	—	504	550
	Auto switch unit + 2 switches	30			30			50			60		46.5			
	Angle adjuster	30			47			90			150		203			

Caution

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

Series CRBU2

Rotary Actuator: Replaceable Shaft

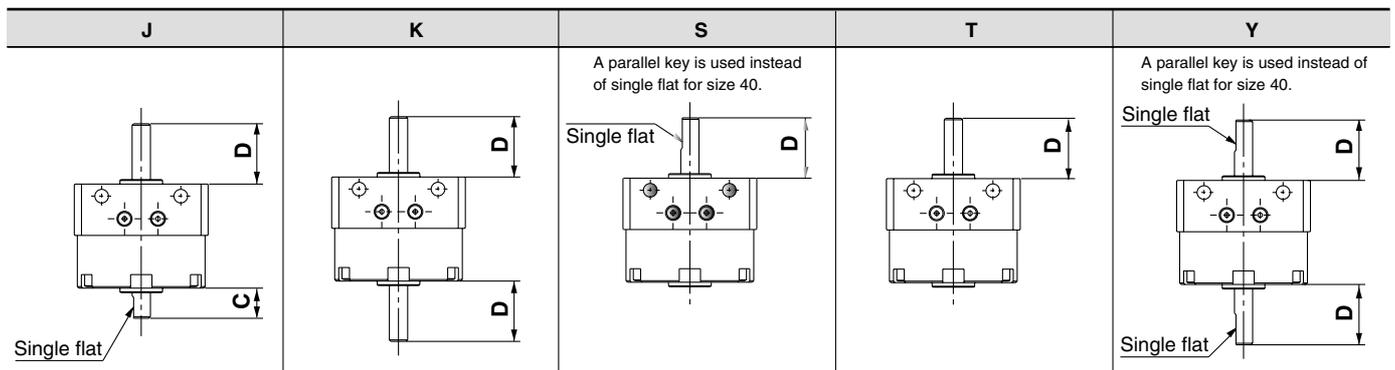
A shaft can be replaced with a different shaft type except standard shaft type (W).

Without auto switch

CRBU2 J Size Rotating angle Vane type Port location

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 & 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

Note 1) Only side ports are available except for basic type.

Note 2) Dimensions and tolerance of the shaft and single flat (a parallel keyway for size 40) are the same as the standard.

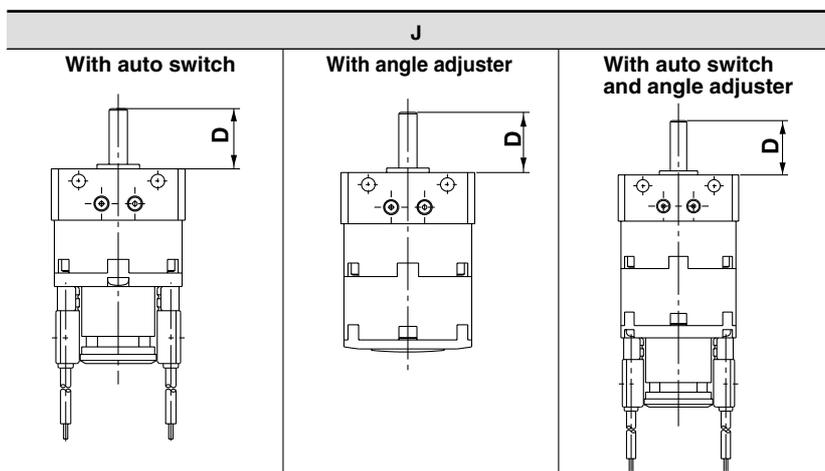
With auto switch
With angle adjuster

CDRBU2 J U Size Rotating angle Vane type Auto switch

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 & single flat					●



(mm)

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

Note 1) Only side ports are available except basic type.
Note 2) Dimensions and tolerance of the shaft and single flat (a parallel keyway for size 40) are the same as the standard.

Copper-free

20 – CRBU2W Size Rotating angle Vane type Port location

- 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 s/90°		0.04 to 0.3 s/90°	0.07 to 0.5 s/90°	
Port location	Side ported or Axial ported				
Shaft type	Double shaft (Shaft with single flat on both shafts)			Long shaft key & Single flat	
Auto switch	Mountable				

⚠ Precautions

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

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.

Rotating angle of the rotary actuator	Rotating angle adjustment range
270° ⁺⁴ ₀	0 to 230° (Size: 10, 40) *
	0 to 240° (Size: 15, 20, 30)
180° ⁺⁴ ₀	0 to 175°
90° ⁺⁴ ₀	0 to 85°

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

2. Connection 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.

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

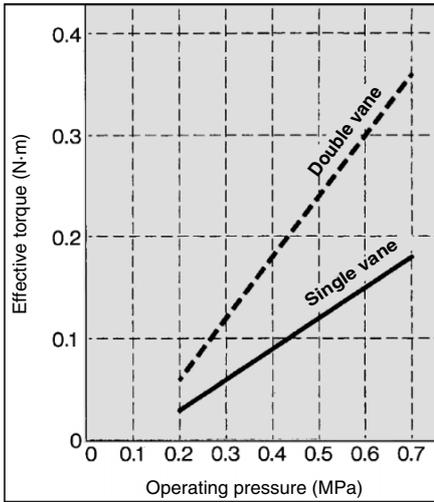
D-

20-

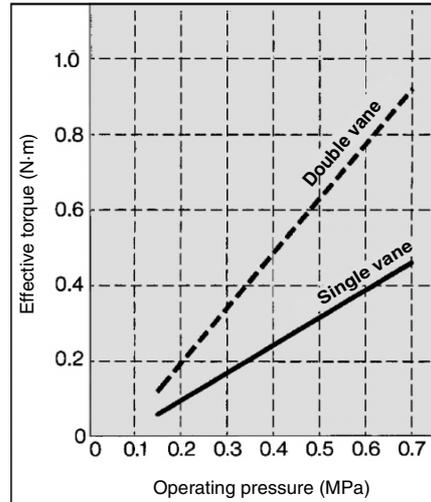
Series CRBU2

Effective Output

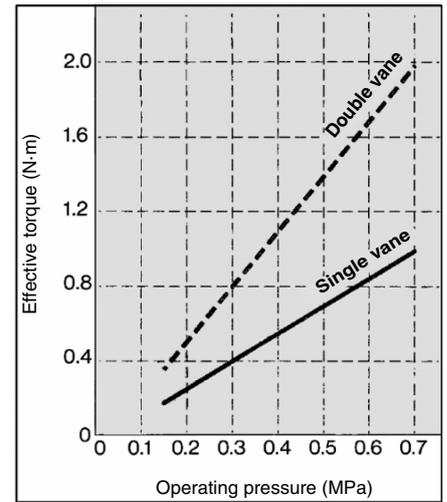
CRBU2W10



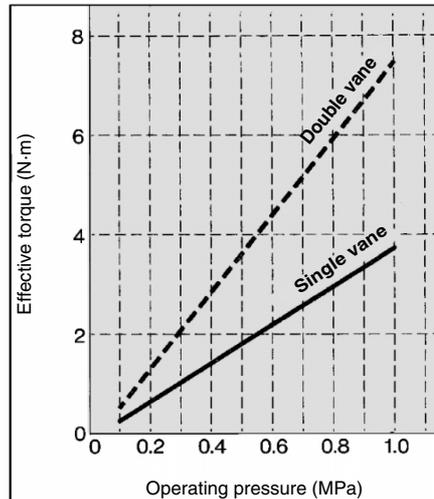
CRBU2W15



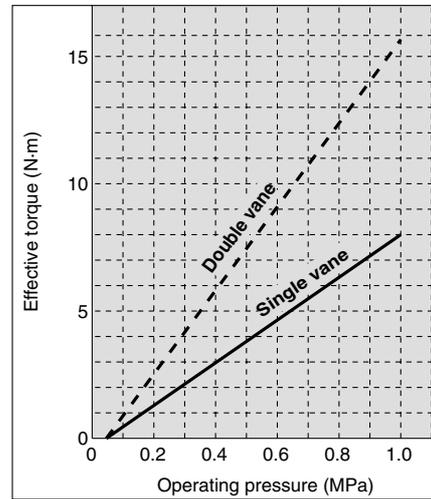
CRBU2W20



CRBU2W30

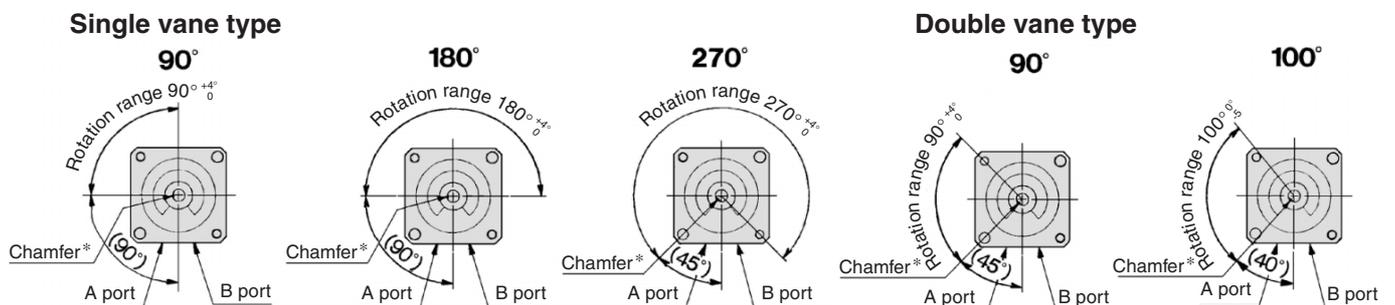


CRBU2W40



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

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



* For size 40 actuators, a parallel keyway will be used instead of chamfer.

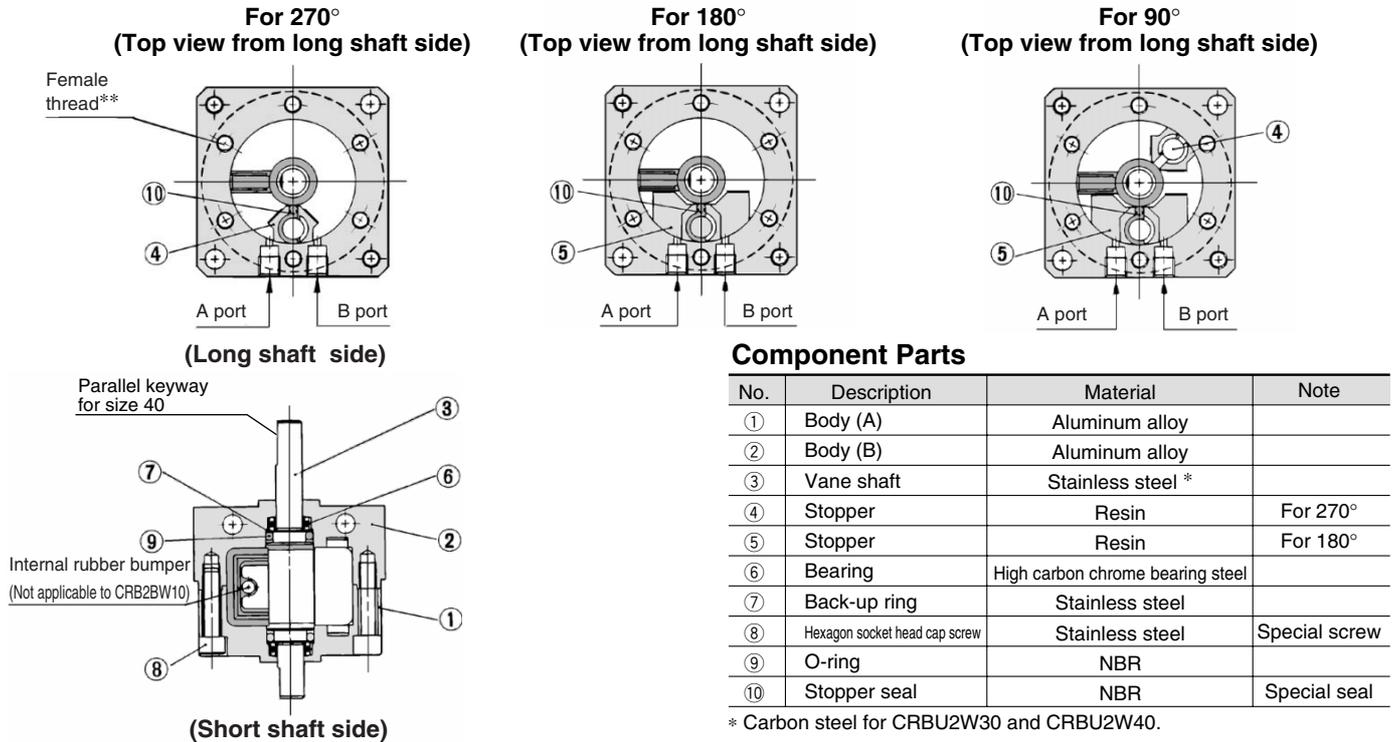
Note) For single vane style, rotation tolerance of 90°, 180°, and 270° actuators $\pm 5^{\circ}$ will be for size 10 actuators only.
For double vane style, rotation tolerance of 90° actuators $\pm 5^{\circ}$ will be for size 10 actuators only.

Rotary Actuator: Free Mount Type Vane Style **Series CRBU2**

Construction: 10, 15, 20, 30, 40

Single vane type

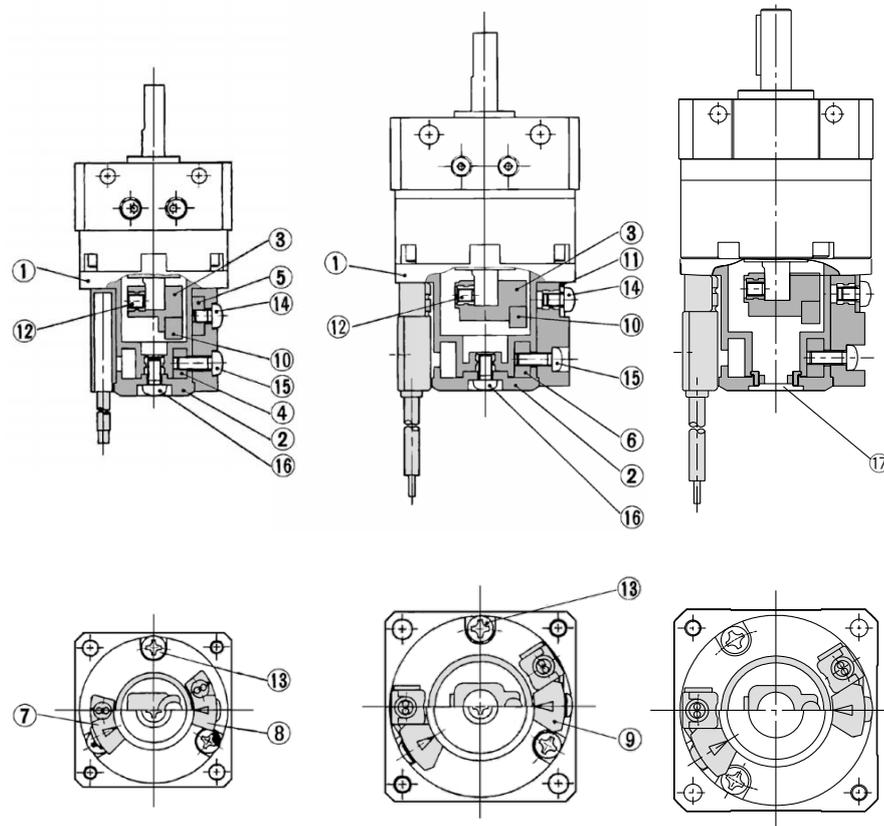
Standard: CRBU2W10/15/20/30/40-□S (3 female threads (one of them is indicated with "**") spaced equally apart in 120° are not available for size 10.)



With auto switch unit CDRBU2W10/15-□^S_D

CDRBU2W20/30/40-□^S_D

CDRBU2W40-S/D



Component Parts

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
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 (size 40 only)

* For CDRBU2W10, two round head Phillips screws ⑬, are required.

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

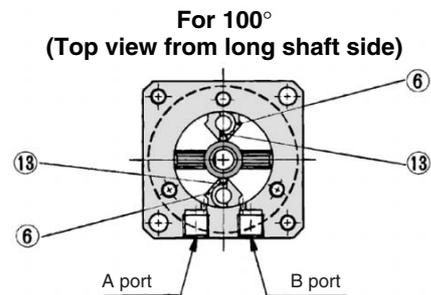
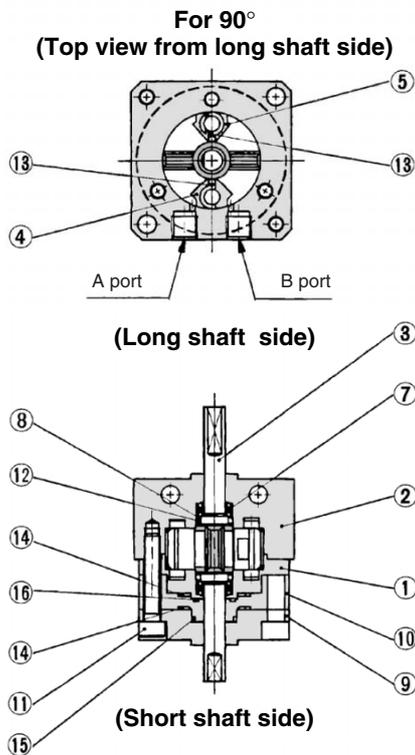
20-

Series CRBU2

Construction: 10, 15, 20, 30, 40

Double vane type

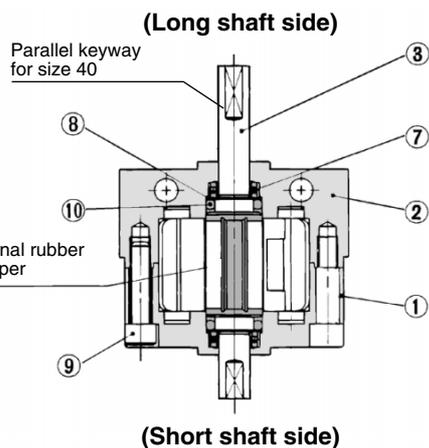
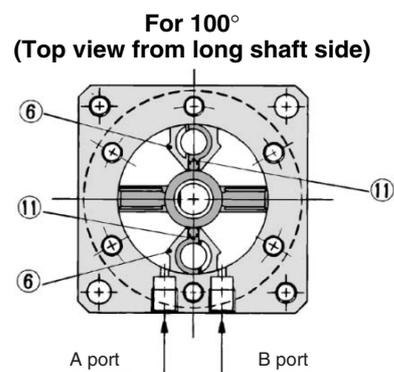
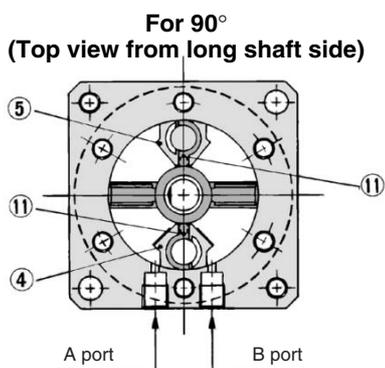
Standard: CRBU2W10-□D



Component Parts

No.	Description	Material	Note
①	Body (A)	Aluminum alloy	
②	Body (B)	Aluminum alloy	
③	Vane shaft	Carbon steel	
④	Stopper	Stainless steel	
⑤	Stopper	Resin	
⑥	Stopper	Stainless steel	
⑦	Bearing	High carbon chrome bearing steel	
⑧	Back-up ring	Stainless steel	
⑨	Cover	Aluminum alloy	
⑩	Plate	Resin	
⑪	Hexagon socket head cap screw	Stainless steel	Special screw
⑫	O-ring	NBR	
⑬	Stopper seal	NBR	
⑭	Gasket	NBR	
⑮	O-ring	NBR	
⑯	O-ring	NBR	

Standard: CRBU2W15/20/30/40-□D



Component Parts

No.	Description	Material	Note
①	Body (A)	Aluminum alloy	
②	Body (B)	Aluminum alloy	
③	Vane shaft	Carbon steel	
④	Stopper	Stainless steel	
⑤	Stopper	Resin	
⑥	Stopper	Stainless steel	
⑦	Bearing	High carbon chrome bearing steel	
⑧	Back-up ring	Stainless steel	
⑨	Hexagon socket head cap screw	Stainless steel	Special screw
⑩	O-ring	NBR	
⑪	Stopper seal	NBR	

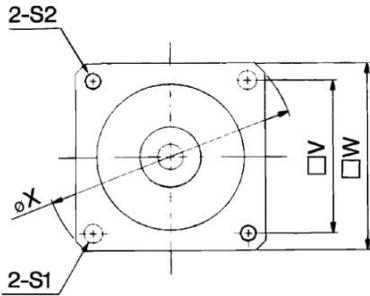
Rotary Actuator: Free Mount Type Vane Style **Series CRBU2**

Dimensions: 10, 15, 20, 30

Single vane type ● Following illustrations show actuators for 90° and 180° when B port is pressurized.

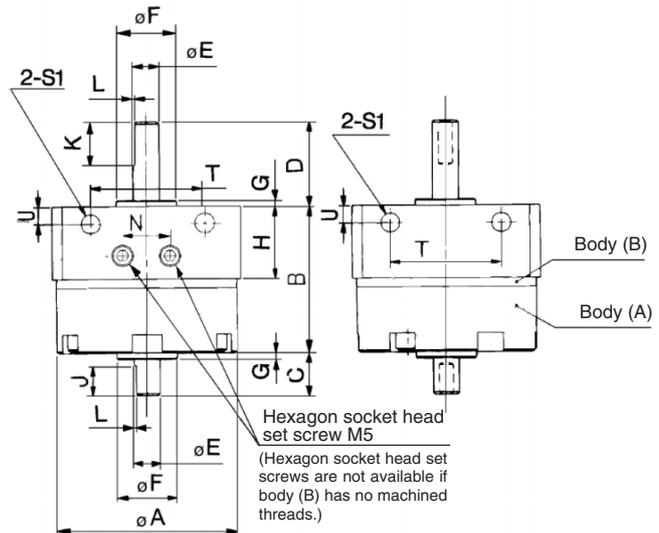
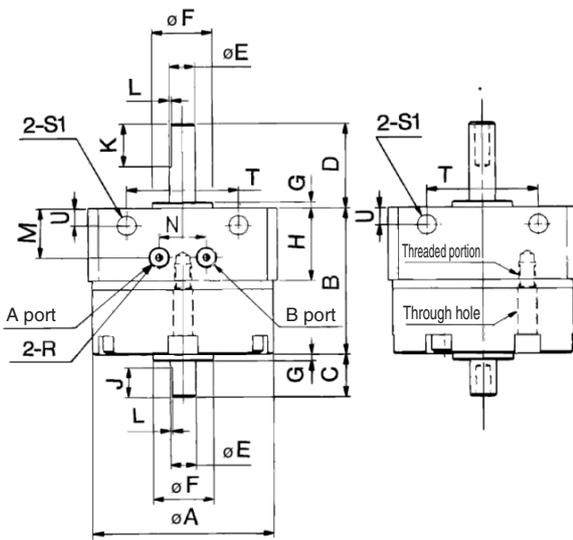
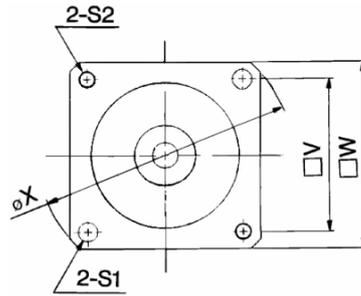
CRBU2W□-□S

<Port location: Side ported>

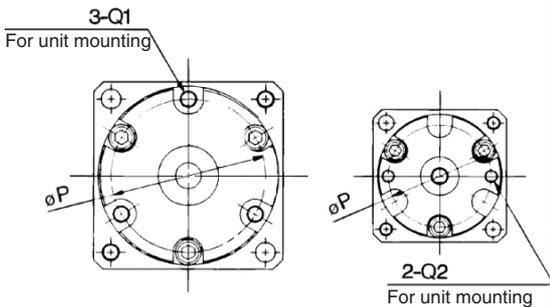


CRBU2W□-□SE

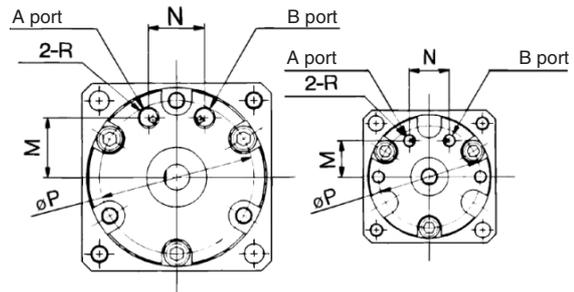
<Port location: Axial ported>



CRBU2W10□-□S <Port location: Side ported>



CRBU2W10□-□SE <Port location: Axial ported>



Model	A	B	C	D	E (g6)	F (h9)	G	H	J	K	L	M	N	P	Q1	(Depth) Q2	R	S1	S2	T	U	V	W	X
CRBU2W10-□S	29	22	8	14	4 ^{-0.004} _{-0.012}	9 ⁰ _{-0.036}	1	15.5	5	9	0.5	10.5	10.5	24	—	M3 (4)	M5 x 0.8 M3 x 0.5	3.5	M3 x 0.5	17	3	25	31	41
CRBU2W10-□SE												8.5	9.5											
CRBU2W15-□S	34	25	9	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	6	10	0.5	10.5	10.5	29	M3 x 0.5	—	M5 x 0.8 M3 x 0.5	3.5	M3 x 0.5	21	3	29	36	48
CRBU2W15-□SE												11	10											
CRBU2W20-□S	42	34.5	10	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	7	10	0.5	11.5	11	36	M4 x 0.7	—	M5 x 0.8	4.5	M4 x 0.7	26	4	36	44	59
CRBU2W20-□SE												14	13											
CRBU2W30-□S	50	47.5	13	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	2	17.5	8	12	1	12	13	43	M5 x 0.8	—	M5 x 0.8	5.5	M5 x 0.8	29	4.5	42	52	69
CRBU2W30-□SE												15.5	14											

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

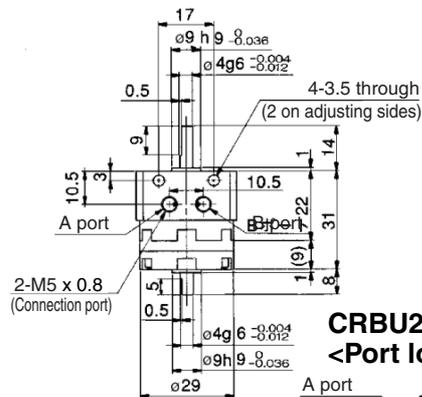
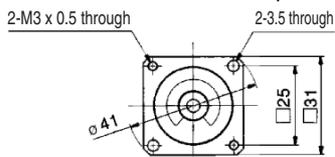
20-

Series CRBU2

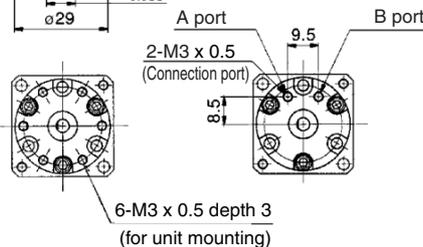
Dimensions: 10, 15, 20, 30

Double vane type ● Illustrations below show the intermediate rotation position when A or B port is pressurized.

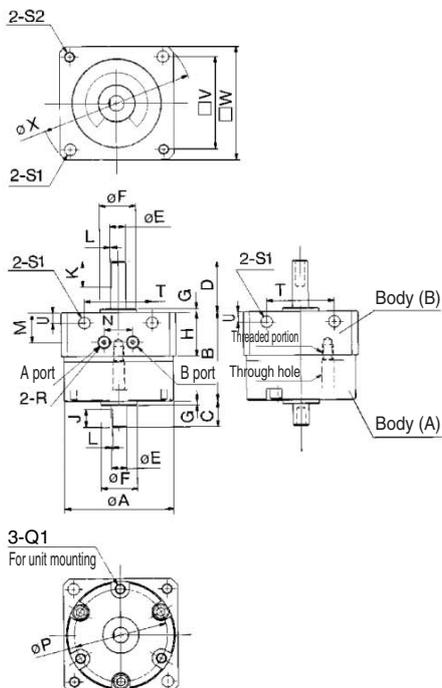
CRBU2W10-□D
<Port location: Side ported>



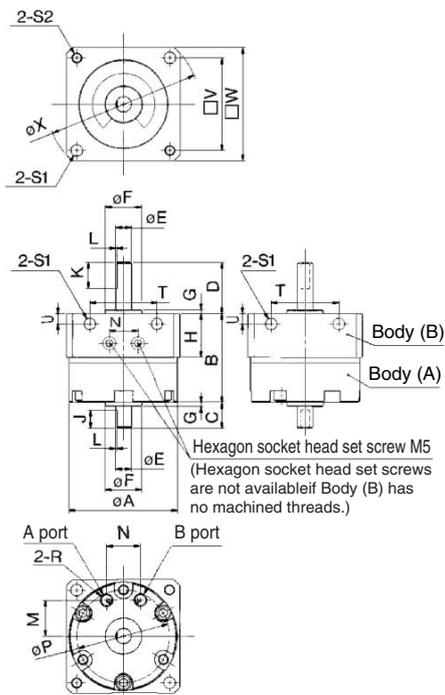
CRBU2W10-□DE
<Port location: Axial ported>



CRBU2W15/20/30-□D
<Port location: Side ported> (Illustrations below show size 30 actuators.)



CRBU2W15/20/30-□DE
<Port location: Axial ported>



Model	A	B	C	D	E(g6)	F(h9)	G	H	J	K	L	M	N	P	Q1	R	S1	S2	T	U	V	W	X
CRBU2W15-□D	34	25	9	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	6	10	0.5	10.5	10.5	29	M3 x 0.5	M5 x 0.8	3.5	M3 x 0.5	21	3	29	36	48
CRBU2W15-□DE												11	10			M3 x 0.5							
CRBU2W20-□D	42	34.5	10	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	7	10	0.5	11.5	11	36	M4 x 0.7	M5 x 0.8	4.5	M4 x 0.7	26	4	36	44	59
CRBU2W20-□DE												14	13			M5 x 0.8							
CRBU2W30-□D	50	47.5	13	22	8 ^{-0.005} _{-0.014}	16 ^{-0.00} _{-0.043}	2	17.5	8	12	1	12	13	43	M5 x 0.8	M5 x 0.8	5.5	M5 x 0.8	29	4.5	42	52	69
CRBU2W30-□DE												15.5	14			M5 x 0.8							

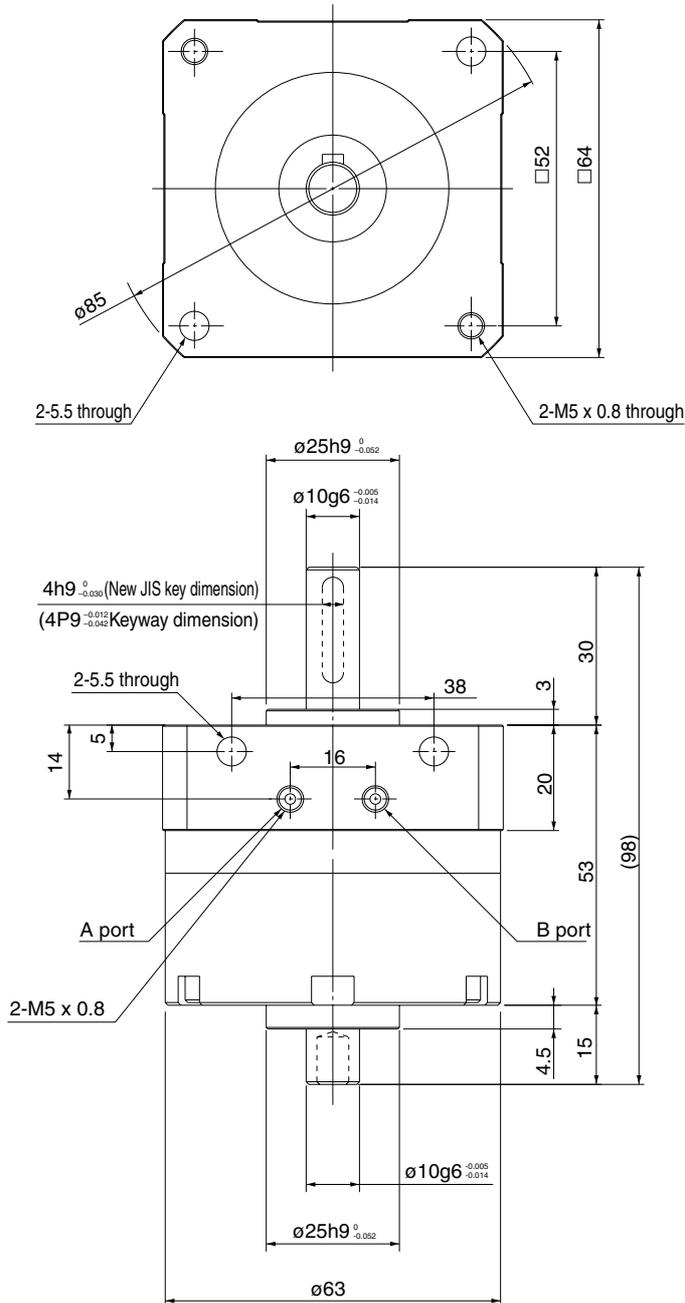
Rotary Actuator: Free Mount Type Vane Style **Series CRBU2**

Dimensions: 40

Single vane type/Double vane type

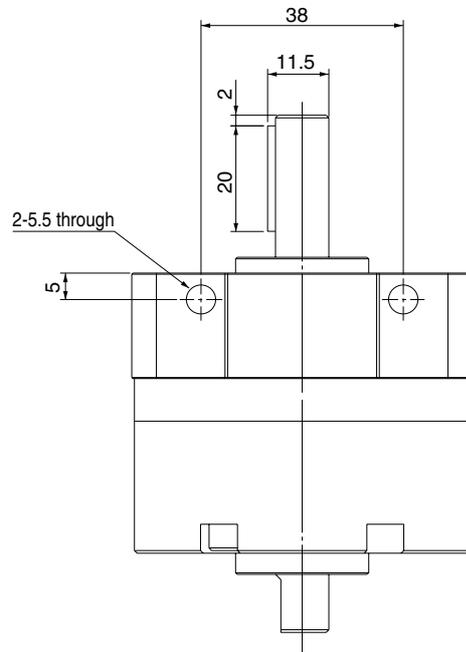
CRBU2W40-□S/D

<Port location: Side ported>

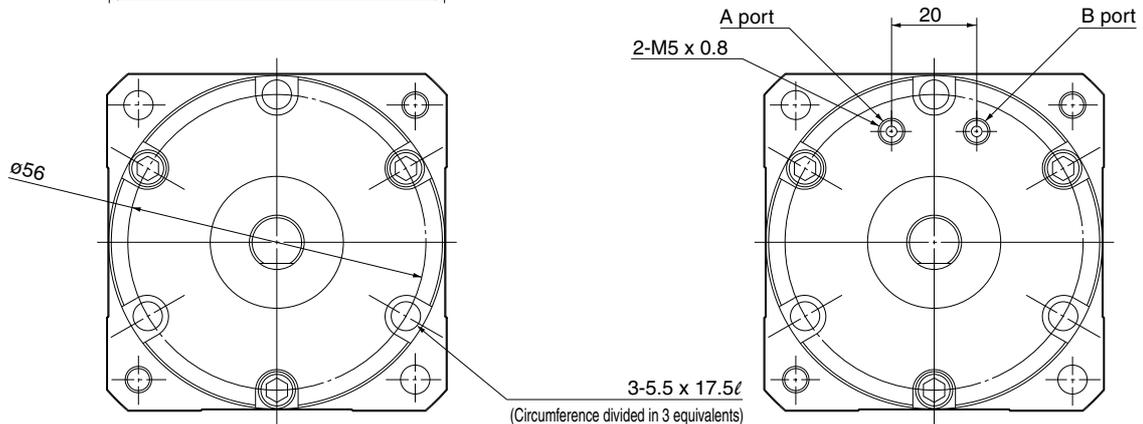


(mm)

Model	Keyway dimensions		
	b (h9)	h (h9)	ℓ
CRBU2W40-□□□	$4^{0/-0.030}$	$4^{0/-0.030}$	20



CRBU2W40-□SE/DE
<Port location: Axial ported>



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

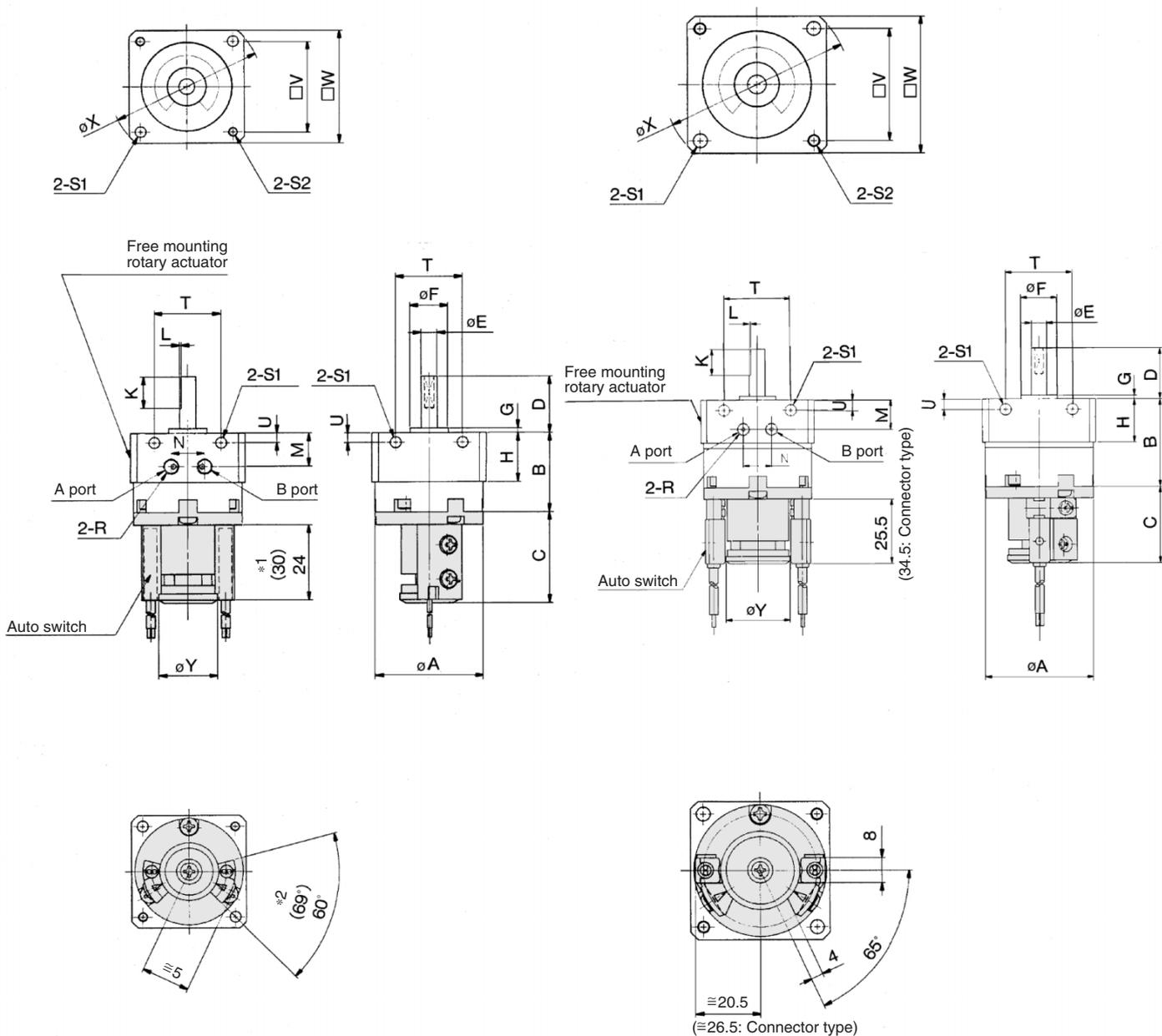
Series CRBU2

Dimensions: 10, 15, 20, 30 (With auto switch unit)

Single vane type ● Following illustrations show actuators for 90° and 180° when B port is pressurized.

CDRBU2W10/15-□S

CDRBU2W20/30-□S



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

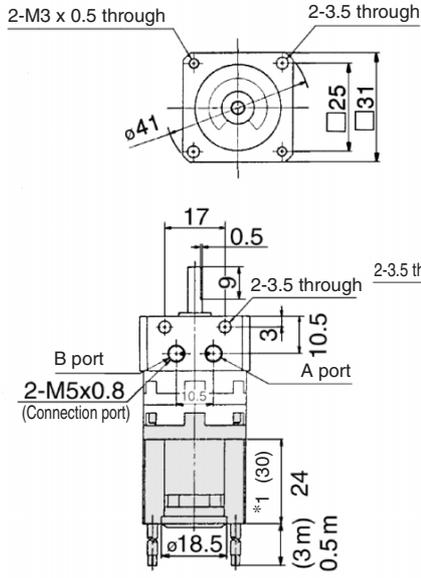
Note ● For rotary actuators with auto switch unit connection ports are side ports only.
● The above exterior view drawings illustrate rotary actuators with one right-hand and one left-hand

Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CDRBU2W10-□S	29	22	29	14	4 ^{-0.004} _{-0.012}	9 ⁰ _{-0.036}	1	15.5	9	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	17	3	25	31	41	18.5
CDRBU2W15-□S	34	25	29	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	10	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	21	3	29	36	48	18.5
CDRBU2W20-□S	42	34.5	30	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	10	0.5	11.5	11	M5 x 0.8	4.5	M4 x 0.7	26	4	36	44	59	25
CDRBU2W30-□S	50	47.5	31	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	2	17.5	12	1	12	13	M5 x 0.8	5.5	M5 x 0.8	29	4.5	42	52	69	25

Rotary Actuator: Free Mount Type Vane Style **Series CRBU2**

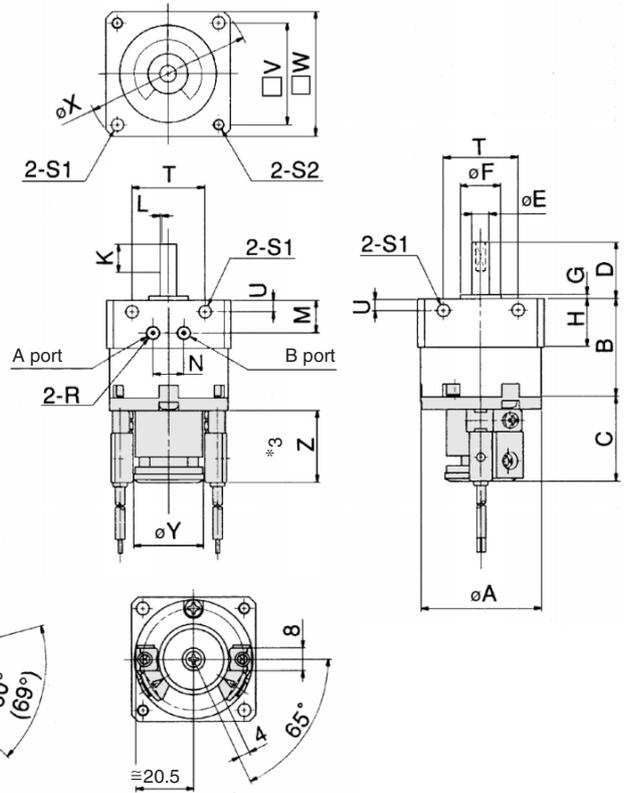
Double vane type ● Illustrations below show the intermediate rotation position when A or B port is pressurized.

CDRBU2W10-□D



CDRBU2W15/20/30-□D

(Illustrations below show size 20 actuators.)



CDRBU2W15-□D

(Approx. 26.5 for connector type)
CDRBU2W20/30-□D

- * 1. The length is 24 when any of the following auto switches are used: D-90, D-90A, D-S99(V), D-T99 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).
- * 3. The length (Dimension S) is 25.5 when any of the following grommet type auto switches are used: D-R73, D-R80, D-S79, D-T79, and D-S7P.
The length (Dimension S) is 34.5 when any of the following connector type auto switches are used: D-R73, D-R80, and D-T79.

(mm)

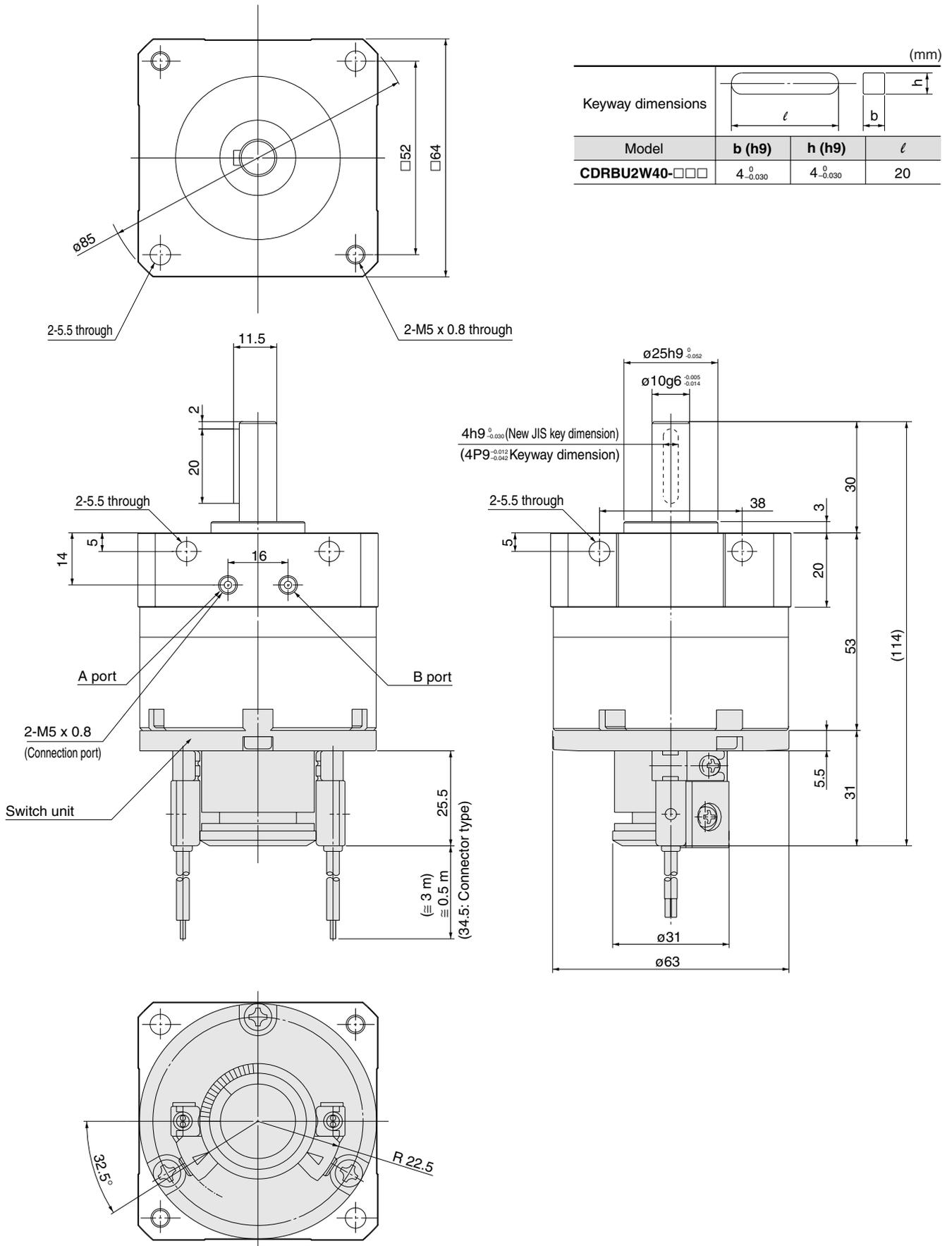
Model	A	B	C	D	E (g6)	F (h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y	Z	
CDRBU2W15-□D	34	25	29	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	10	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	21	3	29	36	48	18.5	24 ^{*1}	30 ^{*1}
CDRBU2W20-□D	42	34.5	30	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	10	0.5	11.5	11	M5 x 0.8	4.5	M4 x 0.7	26	4	36	44	59	25	25.5 ^{*3}	34.5 ^{*3}
CDRBU2W30-□D	50	47.5	31	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	2	17.5	12	1	12	13	M5 x 0.8	5.5	M5 x 0.8	29	4.5	42	52	69	25		

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

Series CRBU2

Dimensions: 40 (With auto switch unit)

Single vane type/Double vane type
CDRBU2W40-□S/D



Rotary Actuator with Angle Adjuster Free Mount Type, Vane Style

Series **CRBU2WU**

Size: 10, 15, 20, 30, 40

How to Order

Without auto switch



CRBU2 W U 10 — 180 S

• Size

10
15
20
30
40

**With auto switch
Size: 10, 15**

CDRBU2 W U 10 — 180 S — 90

• Size

10
15

**With auto switch
Size: 20, 30, 40**

CDRBU2 W U 20 — 180 S — R73

• Size

20
30
40

With auto switch
(With switch unit)

Free mount type

With angle adjuster
Rotating angle

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

Vane type

S	Single vane
D	Double vane

Auto switch

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

* For the applicable auto switch model, refer to 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: 0.5 m
L	Grommet/Lead wire: 3 m
C	Connector/Lead wire: 0.5 m
CL	Grommet/Lead wire: 0.3 m
CN	Connector/without lead wire

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

** Lead wire with connector part nos.

D-LC05: Lead wire 0.5 m

D-LC30: Lead wire 3 m

D-LC50: Lead wire 5 m

Applicable Auto Switch/Refer to page 11-11-1 for further information on auto switches.

Applicable size	Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire type	Lead wire length (m) *				Applicable load																													
					DC	AC			0.5 (Nil)	3 (L)	5 (Z)	None (N)																														
For 10 and 15	Reed switch	Grommet	No	2-wire	24 V	5 V, 12 V	5 V, 12 V, 24 V	90	Parallel cord	●	●	●	—	IC circuit																												
						5 V, 12 V, 100 V	5 V, 12 V, 24 V, 100 V	90A	Heavy-duty cord	●	●	●	—																													
						—	100 V	97	Parallel cord	●	●	●	—																													
						—	—	93A	—	●	●	●	—																													
						—	—	T99	—	●	●	—	—																													
	Solid state switch	Grommet	Yes	3-wire (NPN)	24 V	—	—	—	Heavy-duty cord	—	●	●	—	—	—																											
																3-wire (PNP)	5 V, 12 V	—	—	—	—	—	—	—	—	—																
																											—	—	—	—	—	—	—	—								
																																			—	—	—	—	—	—	—	
																																										—
For 20, 30, and 40	Reed switch	Connector	Yes	2-wire	24 V	—	100 V	—	Heavy-duty cord	●	●	—	—	—																												
															Grommet	No	2-wire	24 V	48 V, 100 V	24 V, 48 V, 100 V	—	—	—	—	—	—	—															
																												—	—	—	—	—	—	—	—							
																																				—	—	—	—	—	—	—
	Solid state switch	Grommet	Yes	3-wire (NPN)	24 V	—	—	—	—	Heavy-duty cord	●	●	—	—	—																											
																3-wire (PNP)	5 V, 12 V	—	—	—	—	—	—	—	—	—	—															
																												—	—	—	—	—	—	—	—							
																																				—	—	—	—	—	—	—

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

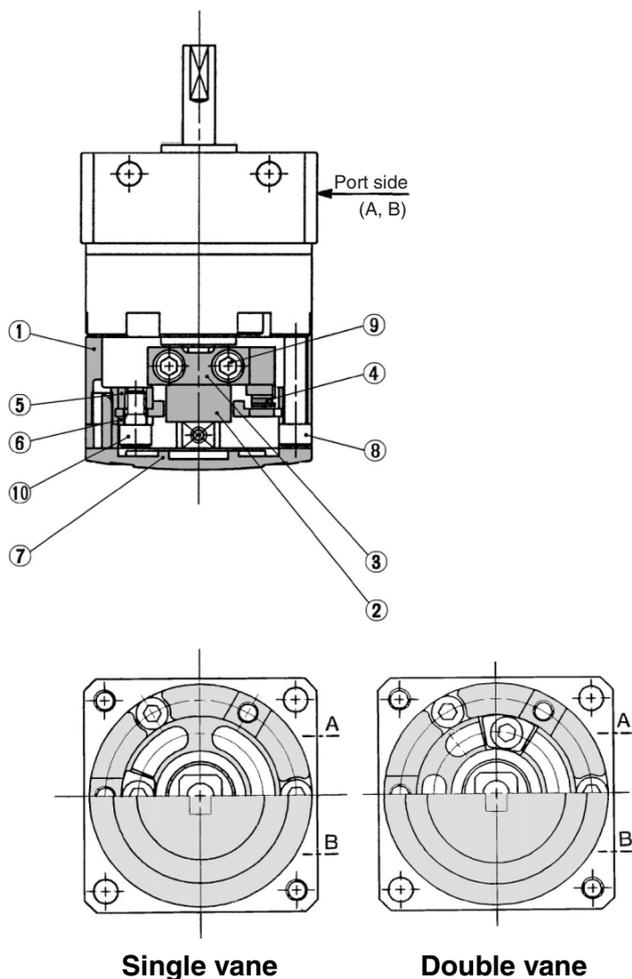
Rotary Actuator with Angle Adjuster Free Mount Type, Vane Style Series CRBU2WU

Construction: 10, 15, 20, 30, 40

Single vane type/Double vane style

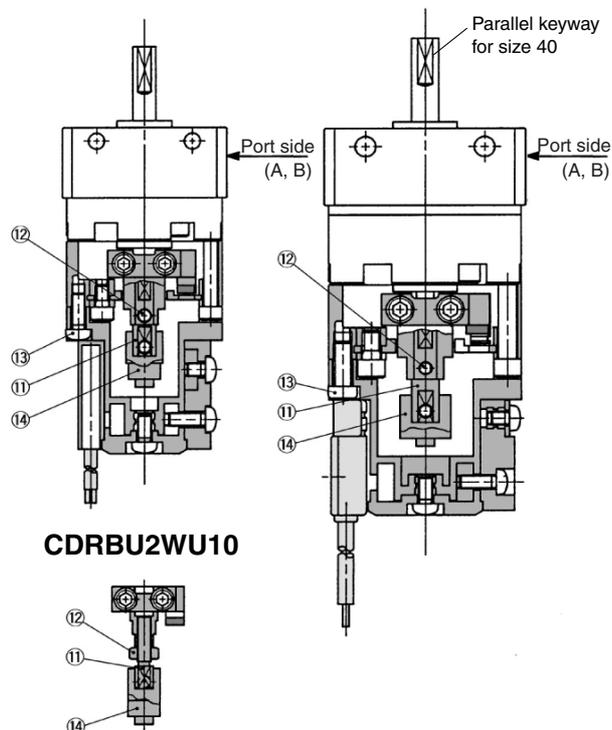
With angle adjuster

CRBU2W10/15/20/30/40-□^S_D



With angle adjuster + Auto switch unit

CDRBU2WU10/15-□^S_D CDRBU2WU20/30/40-□^S_D



- **For single vane type:**
Illustrations above show actuators for 90° and 180° when B port is pressurized.
- **For double vane type:**
Illustrations above show the intermediate rotation position when A or B port is pressurized.

Component Parts

No.	Description	Material	Note
①	Stopper ring	Aluminum die-casted	
②	Stopper lever	Carbon steel	Zinc chromated
③	Lever retainer	Carbon steel	Zinc chromated
④	Rubber bumper	NBR	Zinc chromated
⑤	Stopper block	Carbon steel	
⑥	Block retainer	Carbon steel	Special screw
⑦	Cap	Resin	Special screw
⑧	Hexagon socket head cap screw	Stainless steel	Special screw
⑨	Hexagon socket head cap screw	Stainless steel	
⑩	Hexagon socket head cap screw	Stainless steel	
⑪	Joint	Aluminum alloy	Note)
⑫	Hexagon socket head set screw	Stainless steel	Hexagon nut will be used for CDRBU2W10 only.
	Hexagon nut	Stainless steel	
⑬	Round head Phillips screw	Stainless steel	Note)
⑭	Magnet lever	—	Note)

Note) These items (no. 11, 13, and 14) consist of auto switch unit and angle adjuster. Refer to page 11-4-20 to 11-4-27 for detailed specifications. Stainless steel is used for size 10 only.

⚠ Precautions

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

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.

Rotating angle of the rotary actuator	Rotating angle adjustment range
270° ⁺⁴ ₀	0 to 230° (Size: 10, 40) *
	0 to 240° (Size: 15, 20, 30)
180° ⁺⁴ ₀	0 to 175°
90° ⁺⁴ ₀	0 to 85°

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

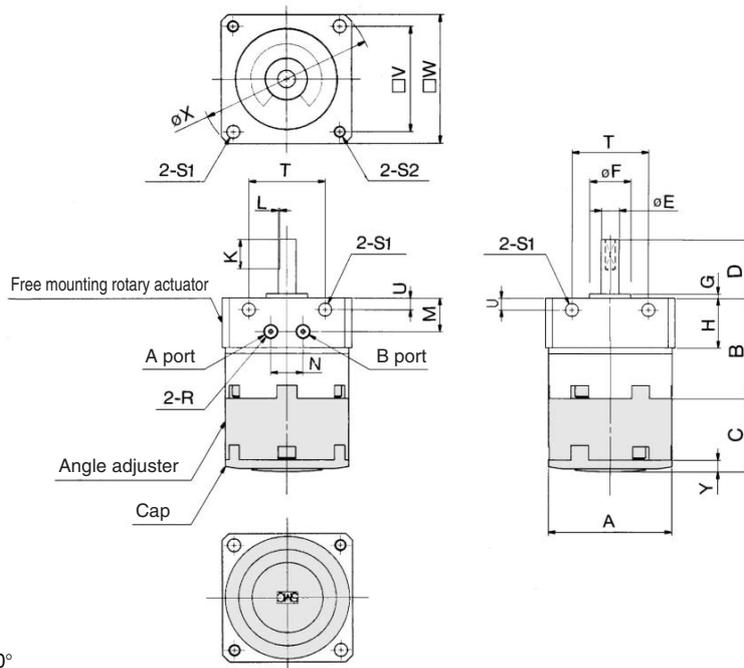
2. Connection ports are side ports only.
3. The allowable kinetic energy is the same as the specifications of the rotary actuator by itself.
4. Use a 100° rotary actuator if you desire to adjust the angle to 90° using a double vane type.

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

Series CRBU2WU

Dimensions: 10, 15, 20, 30 (With angle adjuster)

Single vane type CRBU2WU10/15/20/30-□S

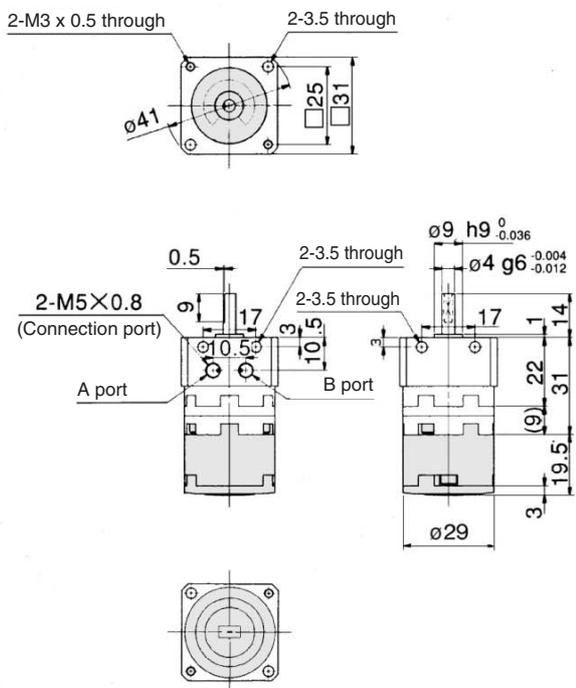


* Illustrations above show actuators for 90° and 180° when B port is pressurized, and they show size 20 actuators.

(mm)

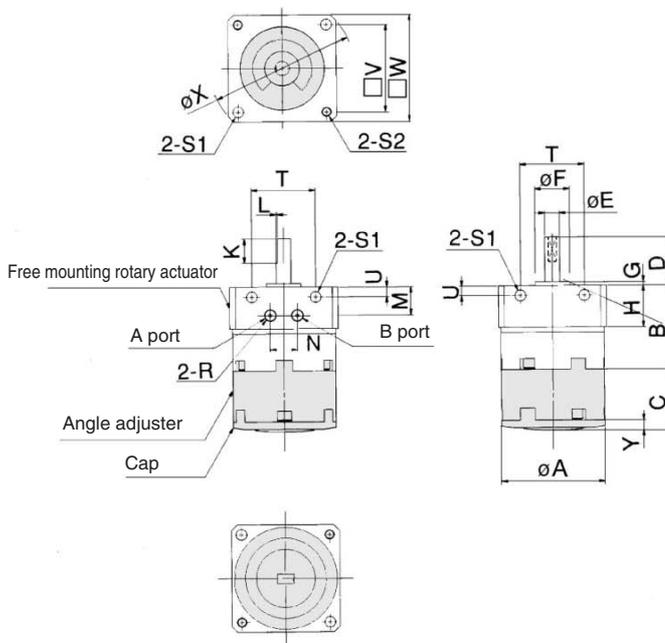
Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CRBU2WU10-□S	29	22	19.5	14	4 ^{-0.004} _{-0.012}	9 ⁰ _{-0.036}	1	15.5	9	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	17	3	25	31	41	3
CRBU2WU15-□S	34	25	21.2	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	10	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	21	3	29	36	48	3.2
CRBU2WU20-□S	42	34.5	25	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	10	0.5	11.5	11	M5 x 0.8	4.5	M4 x 0.7	26	4	36	44	59	4
CRBU2WU30-□S	50	47.5	29	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	2	17.5	12	1	12	13	M5 x 0.8	5.5	M5 x 0.8	29	4.5	42	52	69	4.5

Double vane type CRBU2WU10-□D



CRBU2WU15/20/30-□D

Illustrations below show size 20 actuators.



* Illustrations above show the intermediate rotation position when A or B port is pressurized.

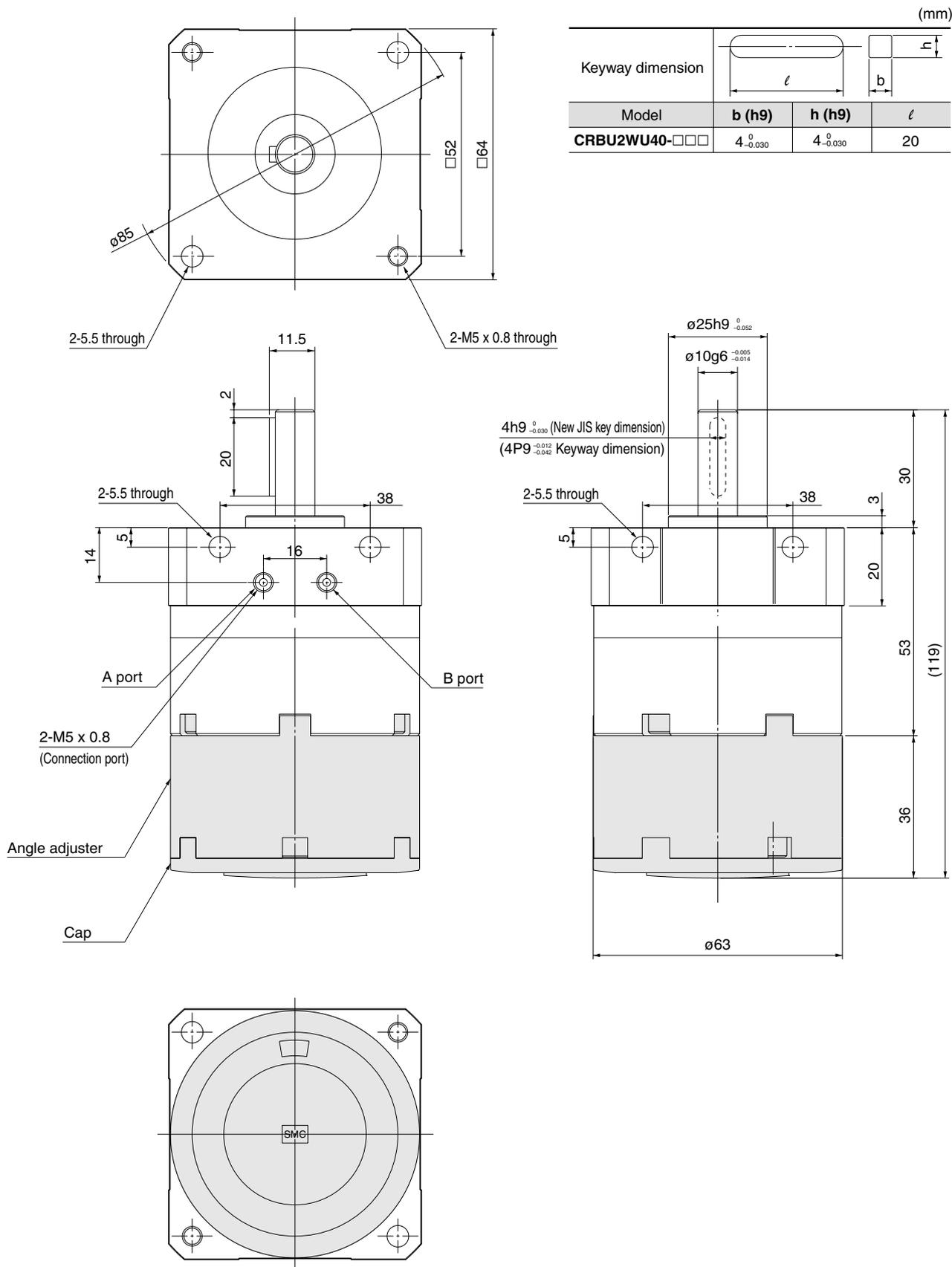
(mm)

Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CRBU2WU15-□D	34	25	21.2	18	5 ^{-0.004} _{-0.012}	12 ⁰ _{-0.043}	1.5	15.5	10	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	21	3	29	36	48	3.2
CRBU2WU20-□D	42	34.5	25	20	6 ^{-0.004} _{-0.012}	14 ⁰ _{-0.043}	1.5	17	10	0.5	11.5	11	M5 x 0.8	4.5	M4 x 0.7	26	4	36	44	59	4
CRBU2WU30-□D	50	47.5	29	22	8 ^{-0.005} _{-0.014}	16 ⁰ _{-0.043}	2	17.5	12	1	12	13	M5 x 0.8	5.5	M5 x 0.8	29	4.5	42	52	69	4.5

Rotary Actuator with Angle Adjuster Free Mount Type, Vane Style **Series CRBU2WU**

Dimensions: 40 (With angle adjuster)

Single vane type/Double vane type
CRBU2WU40-□□/S/D



CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

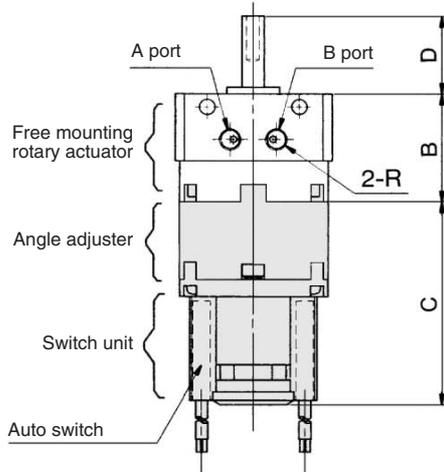
20-

Series CRBU2WU

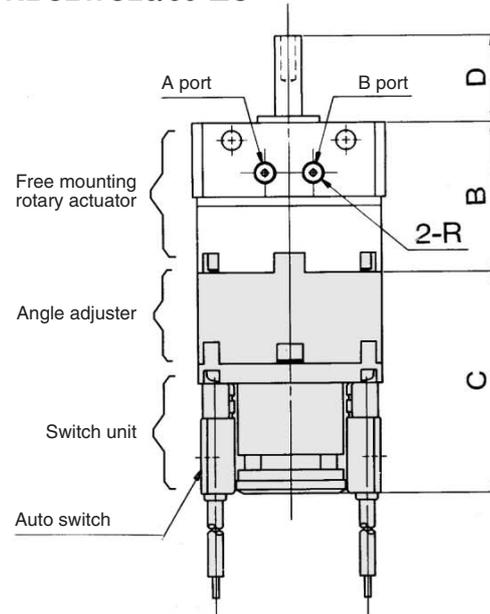
Dimensions: 10, 15, 20, 30 (With angle adjuster and auto switch unit)

Single vane type

CDRBU2WU10/15-□S



CDRBU2WU20/30-□S



(mm)

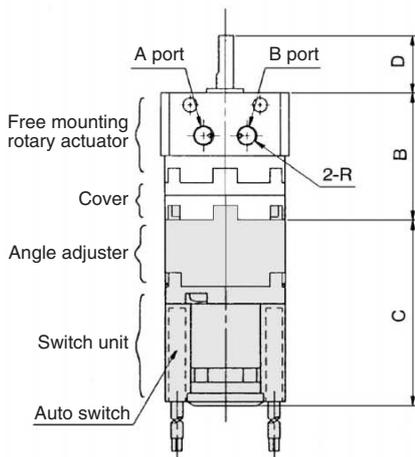
Model	B	C	D	R
CDRBU2WU10-□S	22	45.5	14	M5 x 0.8
CDRBU2WU15-□S	25	47	18	M5 x 0.8
CDRBU2WU20-□S	34.5	51	20	M5 x 0.8
CDRBU2WU30-□S	47.5	55.5	22	M5 x 0.8



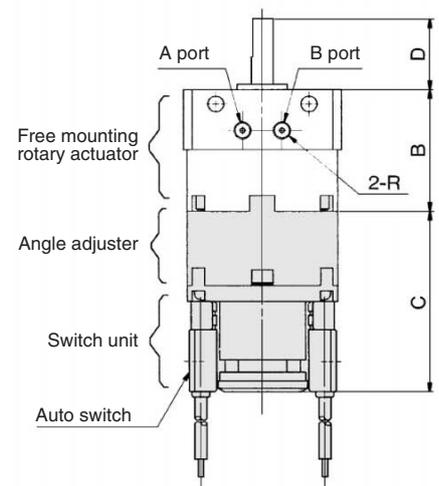
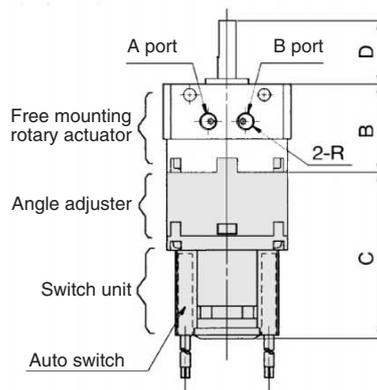
- * Following illustrations show actuators for 90° and 180° when A port is pressurized.
 Note) • For rotary actuators with angle adjuster and auto switch unit, connection ports are side ports only.
 • The above exterior view drawings illustrate the rotary actuator equipped with one right-hand and one left-hand switches.

Double vane type

CDRBU2WU10/15-□D



CDRBU2WU20/30-□D



(mm)

Model	B	C	D	R
CDRBU2WU10-□D	31	45.5	14	M5 x 0.8
CDRBU2WU15-□D	25	47	18	M5 x 0.8
CDRBU2WU20-□D	34.5	51	20	M5 x 0.8
CDRBU2WU30-□D	47.5	55.5	22	M5 x 0.8



- * Illustrations above show the intermediate rotation position when A or B port is pressurized.
 Note) • For rotary actuators with angle adjuster and auto switch unit, connection ports are side ports only.
 • The above exterior view drawings illustrate the rotary actuator equipped with one right-hand and one left-hand switches.

Series CRBU2 (Size: 10, 15, 20, 30, 40)

Simple Specials:

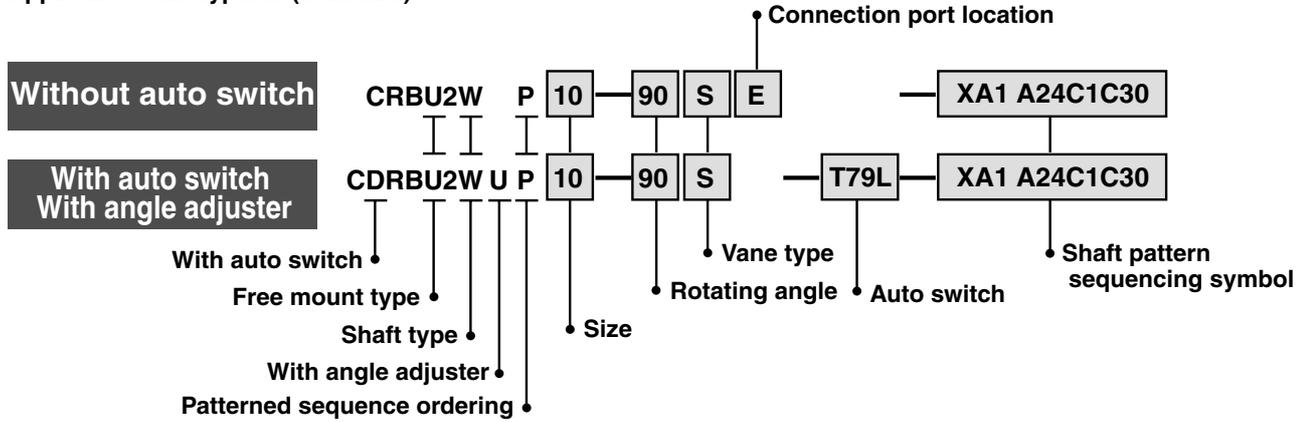
-XA1 to -XA24: Shaft Pattern Sequencing I

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

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

Shaft Pattern Sequencing I -XA1 to XA24

Applicable shaft type: W (Standard)



Shaft Pattern Sequencing Symbol

● Axial: Top (Long shaft side)

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

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

● Axial: Bottom (Short shaft side)

Symbol	Description	Applicable size				
		10	15	20	30	40
XA2*	Shaft-end female thread		●	●	●	●
XA4*	Shaft-end male thread	●	●	●	●	●
XA6*	Stepped round shaft	●	●	●	●	●
XA8*	Stepped round shaft with male thread	●	●	●	●	●
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 size				
		10	15	20	30	40
XA13*	Shaft through-hole		●	●	●	●
XA16*	Shaft through-hole + Double shaft-end female thread		●	●	●	●
XA19*	Shortened shaft	●	●	●	●	
XA20*	Reversed shaft	●	●	●	●	●

Combination

XA□ Combination

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	—	—	—	—	—	—	—	—	—	—	—	●	XA13														
XA14	—	—	—	—	—	—	—	—	—	—	—	●	—	XA14													
XA15	—	—	—	—	—	—	—	—	—	—	—	●	—	—	XA15												
XA16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XA16											
XA17	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	XA17										
XA18	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	XA18									
XA19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XA19									
XA20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XA20								
XA21	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	XA21						
XA22	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	XA22	
XA23	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	XA23
XA24	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	—	●	XA24

A combination of up to two XA□s are available.
Example: -XA1 A24

XA□, XC□ Combination

Combination other than -XA□, such as Made to Order (-XC□), is also available.
Refer to pages 11-3-31 to 11-3-32 for details of made-to-order specifications.

Symbol	Description	Applicable size	Combination
			XA1 to XA24
XC1 *	Change connection port location	10, 15, 20, 30, 40	●
XC2 *	Change threaded holes to through-holes	15, 20, 30, 40	●
XC3 *	Change the screw position	Size: 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: -XA1A24C1C30
-XA2C1C4C30

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

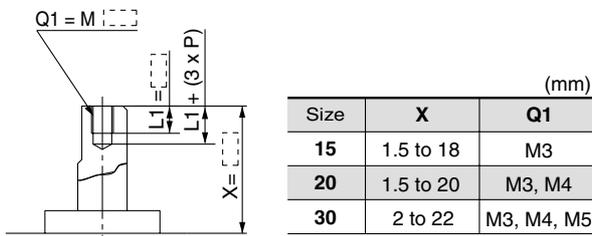
20-

Series CRBU2

Axial: Top (Long shaft side)

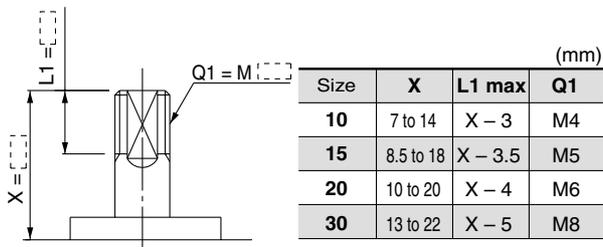
Symbol: A1 The long shaft can be further shortened by machining female threads into it.

- (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 = 6 mm
- Applicable shaft type: W



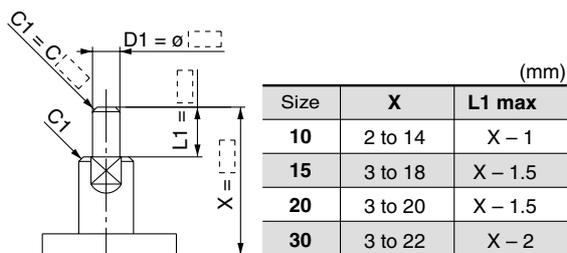
Symbol: A3 The long shaft can be further shortened by machining male threads into it.

- (If shortening the shaft is not required, indicate "*" for dimension X.)
- Applicable shaft type: W



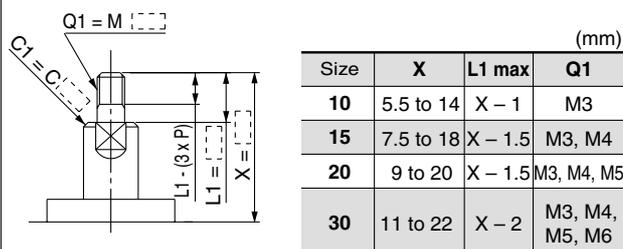
Symbol: A5 The long shaft can be further shortened by machining it into a stepped round shaft.

- (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.

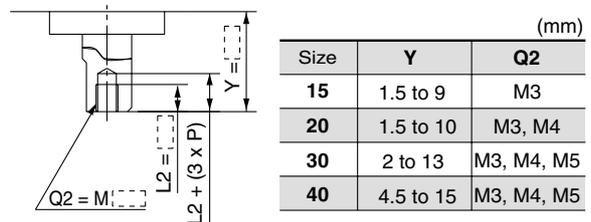
- (If shortening the shaft is not required, indicate "*" for dimension X.)
- Applicable shaft type: W
 - Equal dimensions are indicated by the same marker.
- (If not specifying dimension C1, indicate "*" instead.)



Axial: Bottom (Short shaft side)

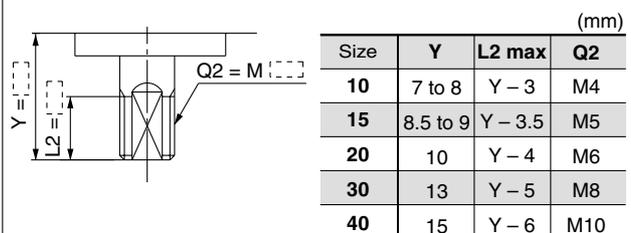
Symbol: A2 The long shaft can be further shortened by machining female threads into it.

- (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 = 6 mm
- Applicable shaft type: W



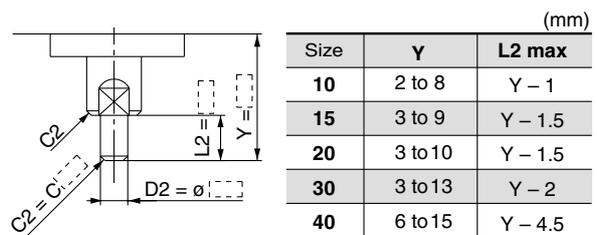
Symbol: A4 The short shaft can be further shortened by machining male threads into it.

- (If shortening the shaft is not required, indicate "*" for dimension Y.)
- Applicable shaft type: W



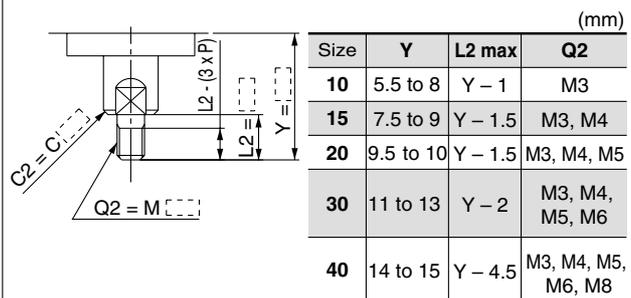
Symbol: A6 The short shaft can be further shortened by machining it into a stepped round shaft.

- (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.)

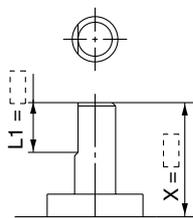


Axial: Top (Long shaft side)

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

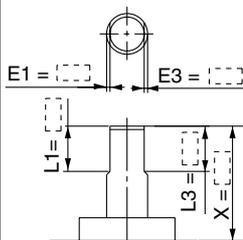


Size	X	L1
10	3 to 14	9 - (14 - X) to (X - 1)
15	5.5 to 18	10 - (18 - X) to (X - 1.5)
20	7 to 20	10 - (20 - X) to (X - 1.5)
30	7 to 22	10 - (22 - X) to (X - 1.5)

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 0.5 mm or more.
- Applicable shaft type: W

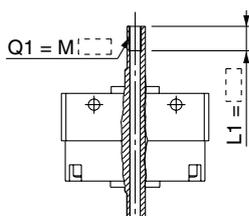


Size	X	L1	L3 max
10	3 to 14	9 - (14 - X) to (X - 1)	X - 1
15	3 to 18	10 - (18 - X) to (X - 1.5)	X - 1.5
20	3 to 20	10 - (20 - X) to (X - 1.5)	X - 1.5
30	5 to 22	12 - (22 - X) to (X - 2)	X - 2

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.

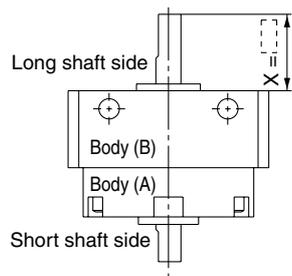
- Not available for size 10.
- The maximum dimension L1 is, as a rule, twice the thread size. (Example) for M3: L1 max. = 6 mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W



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

Symbol: A17 Shorten the long shaft.

- Applicable shaft type: W



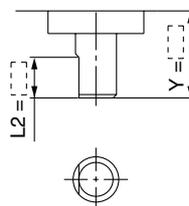
Size	X
10	1 to 14
15	1.5 to 18
20	1.5 to 20
30	2 to 22

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

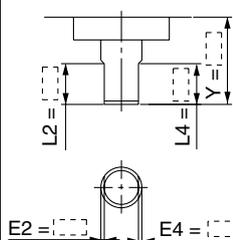


Size	Y	L2
10	3 to 8	5 - (8 - Y) to (Y - 1)
15	3 to 9	6 - (9 - Y) to (Y - 1.5)
20	3 to 10	7 - (10 - Y) to (Y - 1.5)
30	5 to 13	8 - (13 - Y) to (Y - 2)
40	7 to 15	9 - (15 - Y) to (Y - 4.5)

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 0.5 mm or more, and 1 mm or more with shaft bore sizes of ø30 or ø40.
- Applicable shaft type: W

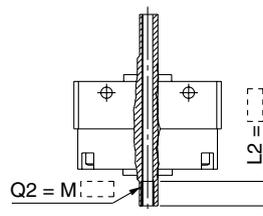


Size	Y	L2	L2 max
10	3 to 8	5 - (8 - Y) to (Y - 1)	Y - 1
15	3 to 9	6 - (9 - Y) to (Y - 1.5)	Y - 1.5
20	3 to 10	7 - (10 - Y) to (Y - 1.5)	Y - 1.5
30	5 to 13	8 - (13 - Y) to (Y - 2)	Y - 2
40	7 to 15	9 - (15 - Y) to (Y - 4.5)	Y - 4.5

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.

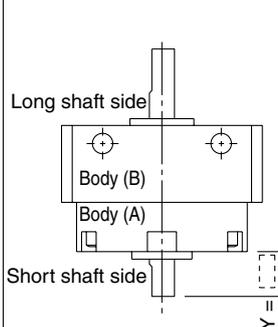
- Not available for size 10.
- The maximum dimension L2 is, as a rule, twice the thread size. (Example) for M4: L2 max. = 8 mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W



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

Symbol: A18 Shorten the short shaft.

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



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

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

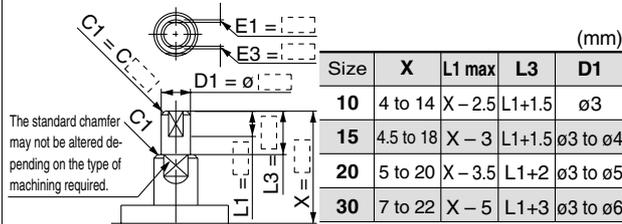
20-

Series CRBU2

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.

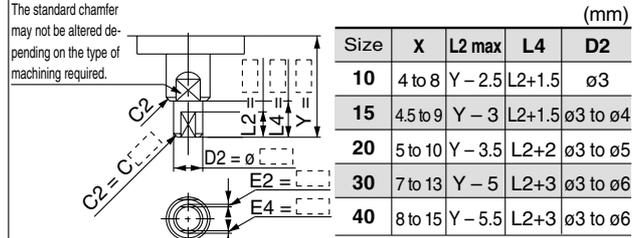
- (If shortening the shaft is not required, indicate "*" for dimension X.)
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.
- (If not specifying dimension C1, indicate "*" instead.)



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.

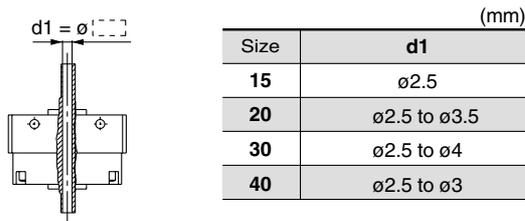
- (If shortening the shaft is not required, indicate "*" for dimension Y.)
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.
- (If not specifying dimension C2, indicate "*" instead.)



Double Shaft

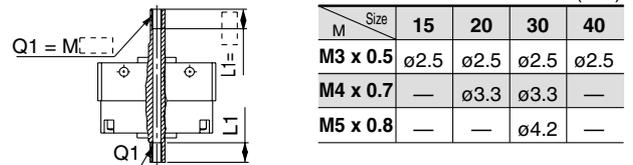
Symbol: A13 Applicable to single vane type only

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



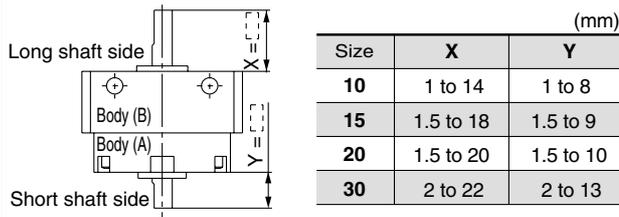
Symbol: A16 Applicable to single vane type only

- 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 dimension L1 is, as a rule, twice the thread size. (Example) for M5: L1 max = 10 mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.



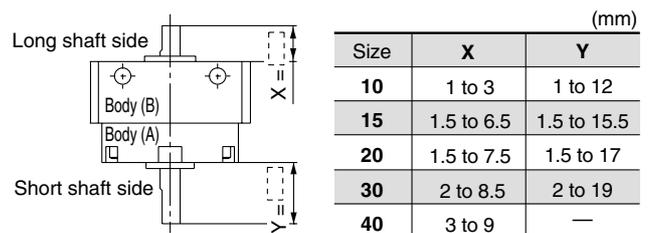
Symbol: A19 Both the long shaft and short shaft are shortened.

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



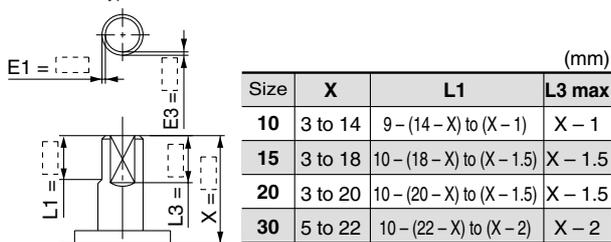
Symbol: A20 The rotation axis is reversed.

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



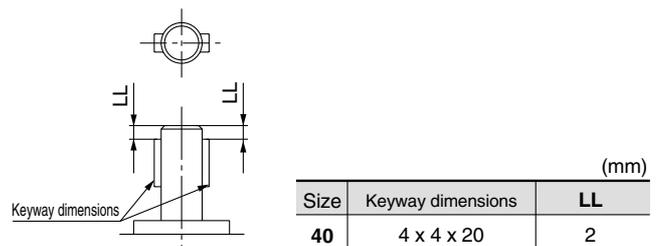
Symbol: A23 The long shaft can be further shortened by machining right-angle double-sided chamfer onto it.

- (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 0.5 mm or more, and 1 mm 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 CRBU2 (Size: 10, 15, 20, 30, 40)

Simple Specials:

-XA31 to -XA47: Shaft Pattern Sequencing II

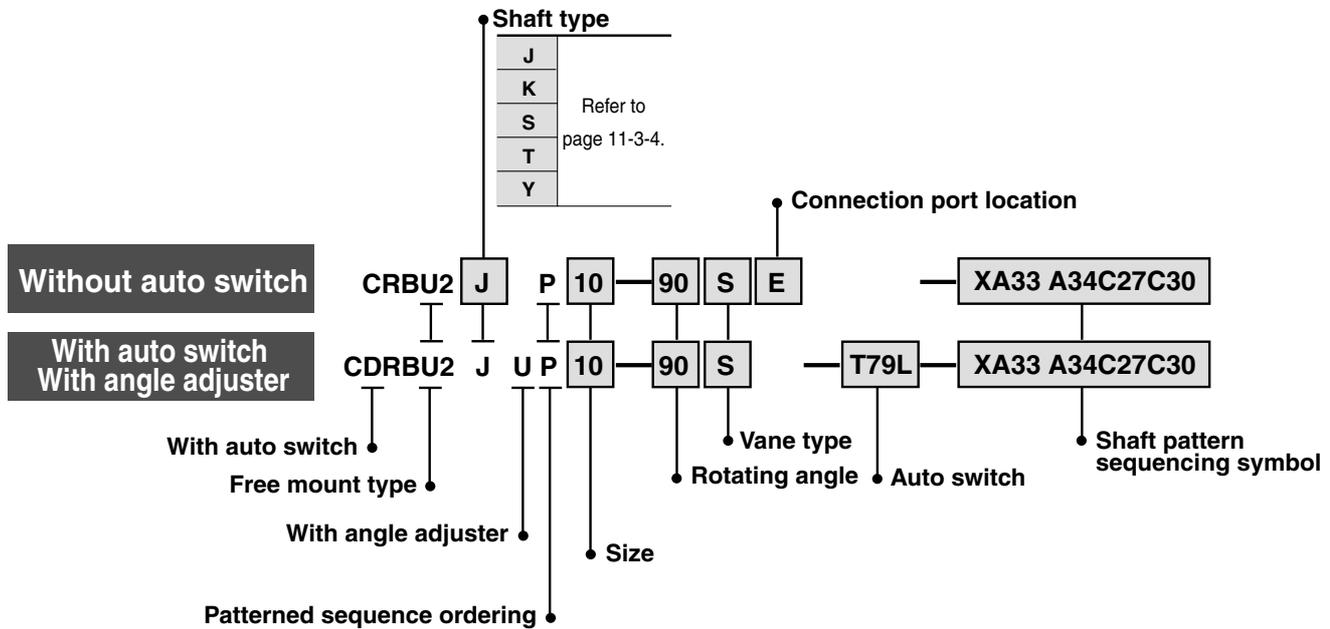
Shaft shape pattern is dealt with simple made-to-order system.

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

Shaft Pattern Sequencing II

-XA31 to XA47

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



Shaft Pattern Sequencing Symbol

● Axial: Top (Long shaft side)

Symbol	Description	Shaft type	Applicable size				
			10	15	20	30	40
XA31	Shaft-end female thread	S, Y	●	●	●	●	●
XA33	Shaft-end female thread	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 type	Applicable size				
			10	15	20	30	40
XA32 *	Shaft-end female thread	S, Y	●	●	●	●	●
XA34 *	Shaft-end female thread	J, K, T	●	●	●	●	●
XA38 *	Stepped round shaft	K	●	●	●	●	●
XA46 *	Middle-cut chamfer	K	●	●	●	●	●

● Double Shaft

Symbol	Description	Shaft type	Applicable size				
			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 thread	S, Y	●	●	●	●	●
XA43 *	Shaft through-hole + Shaft-end female thread	K, T	●	●	●	●	●
XA44 *	Shaft through-hole + Shaft-end female thread	J	●	●	●	●	●

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

Combination

XA□ Combination

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: -XA31 A32

XA□, XC□ Combination

Combination other than -XA□, such as Made to Order (-XC□), is also available. Refer to pages 11-3-31 to 11-3-32 for details of made-to-order specifications.

Symbol	Description	Applicable size	Combination XA31 to XA47
XC1	Change connection port location	10, 15, 20, 30, 40	●
XC2	Change threaded hole to through-hole	15, 20, 30, 40	●
XC3	Change the screw position		●
XC4	Change rotation range		●
XC5	Change rotation range between 0 to 200°	10, 15, 20, 30, 40	●
XC6	Change rotation range between 0 to 110°		●
XC7	Reversed shaft		—
XC30	Fluorine grease		●

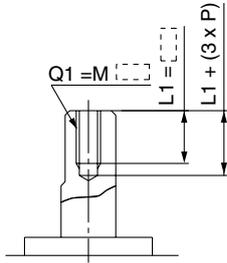
* These specifications are not available for rotary actuators with auto switch unit and angle adjuster. A total of four XA□ and XC□ combinations is available. Example: -XA33 A34C27C3C

Series CRBU2

Axial: Top (Long shaft side)

Symbol: A31 Machine female threads into the long shaft.

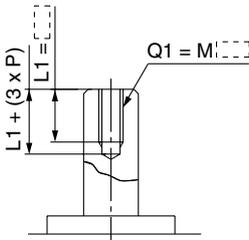
- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6 mm
- Applicable shaft types: S, Y



Size	Q1	
	Shaft type S	Shaft type Y
10	Not available	
15	M3	
20	M3, M4	
30	M3, M4, M5	

Symbol: A33 Machine female threads into the long shaft.

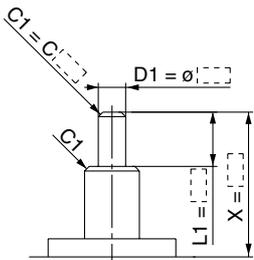
- The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M3: L1 = 6 mm
- Applicable shaft types: J, K, T



Size	Q1		
	Shaft type J	Shaft type K	Shaft type T
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.

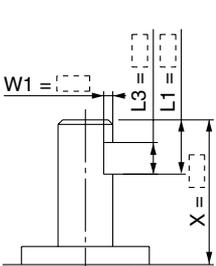
- (If shortening the shaft is not required, indicate "*" for dimension X.)
- Applicable shaft types: J, K, T
- Equal dimensions are indicated by the same marker. (If not specifying dimension C1, indicate "*" instead.)



Size	X	L1 max	D1
15	3 to 18	X - 1.5	ø3 to ø4.9
20	3 to 20	X - 1.5	ø3 to ø5.9
30	3 to 22	X - 2	ø3 to ø7.9
40	4 to 30	X - 3	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

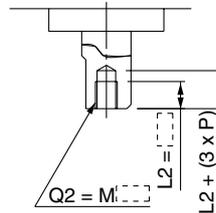


Size	X			W1			L1 max			L3 max		
	Shaft type J	Shaft type K	Shaft type T	Shaft type J	Shaft type K	Shaft type T	Shaft type J	Shaft type K	Shaft type T	Shaft type J	Shaft type K	Shaft type T
10	6.5 to 14	0.5 to 2	X - 3	L1 - 1								
15	8 to 18	0.5 to 2.5	X - 4	L1 - 1								
20	9 to 20	0.5 to 3	X - 4.5	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.

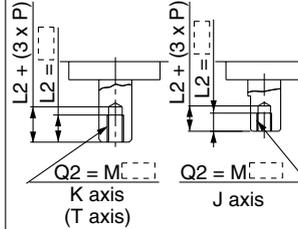
- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M4: L2 = 8 mm
- However, for M5 with S shaft, the maximum dimension L2 is 1.5 times the thread size.
- Applicable shaft types: S, Y



Size	Q2	
	Shaft type S	Shaft type Y
10	Not available	
15	M3	
20	M3, M4	
30	M3, M4, M5	

Symbol: A34 Machine female threads into the short shaft.

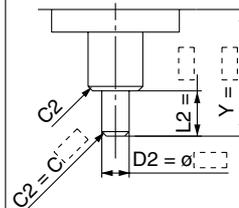
- The maximum dimension L2 is, as a rule, twice the thread size. (Example) For M3: L2 = 6 mm
- However, for M5 with T shaft, the maximum dimension L2 is 1.5 times the thread size.
- Applicable shaft types: J, K, T



Size	Q2		
	Shaft type J	Shaft type K	Shaft type T
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.

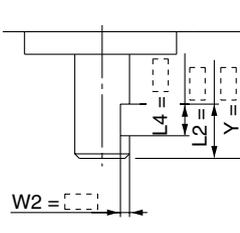
- (If shortening the shaft is not required, indicate "*" for dimension Y.)
- Applicable shaft type: K
- Equal dimensions are indicated by the same marker. (If not specifying dimension C2, indicate "*" instead.)



Size	Y	L2 max	D2
15	3 to 18	Y - 1.5	ø3 to ø4.9
20	3 to 20	Y - 1.5	ø3 to ø5.9
30	6 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

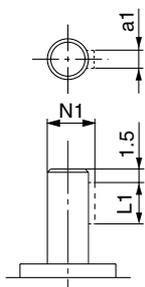


Size	Y	W2	L2 max	L4 max
15	5.5 to 18	0.5 to 2.5	Y - 1.5	L2 - 1
20	6 to 20	0.5 to 3	Y - 1.5	L2 - 1
30	8.5 to 22	0.5 to 4	Y - 2	L2 - 2
40	13.5 to 30	0.5 to 5	Y - 4.5	L2 - 2

Axial: Top (Long shaft side)

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

- Applicable shaft types: J, K, T



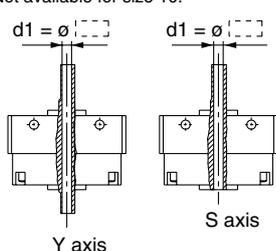
Size	a1	L1	N
20	2h9 ⁰ _{-0.025}	10	6.8
30	3h9 ⁰ _{-0.025}	14	9.2

Double Shaft

Symbol: A39 Applicable to single vane type only

Shaft with through-hole (Additional machining of S, Y shaft)

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

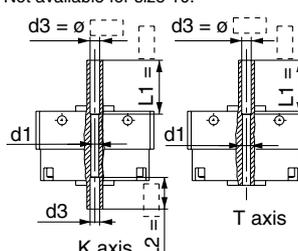


Size	Shaft type	
	S	Y
15	ø2.5	
20	ø2.5 to ø3.5	
30	ø2.5 to ø4	
40	ø2.5 to ø5	

Symbol: A40 Applicable to single vane type only

Shaft with through-hole (Additional machining of K, T shaft)

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

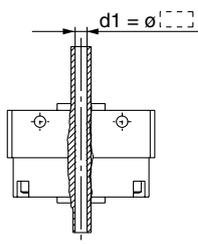


Size	Shaft type	
	K	T
15	ø2.5	ø2.5 to ø3
20	—	ø2.5 to ø4
30	—	ø2.5 to ø4.5
40	—	ø2.5 to ø5

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.

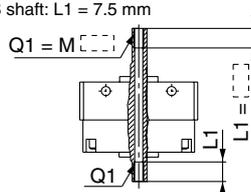


Size	d1
15	ø2.5
20	ø2.5 to ø3.5
30	ø2.5 to ø4
40	ø2.5 to ø4.5

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 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 dimension L1 is, as a rule, twice the thread size. (Example) For M5: L1 max. = 10 mm
- However, for M5 on the short shaft of S shaft: L1 = 7.5 mm
- 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.

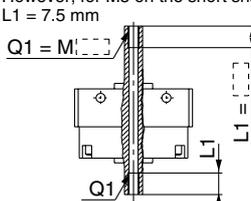


Size	Shaft type							
	S		Y		S		Y	
Thread	15	20	30	40				
M3 x 0.5	ø2.5	ø2.5	ø2.5	ø2.5				
M4 x 0.7	—	ø3.3	ø3.3	—				
M5 x 0.8	—	—	ø4.2	—				

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, in principle, twice the thread size. (Example) For M5: L1 max. = 10 mm
- However, for M5 on the short shaft of T shaft: L1 = 7.5 mm
- Applicable shaft types: K, T
- Equal dimensions are indicated by the same marker.

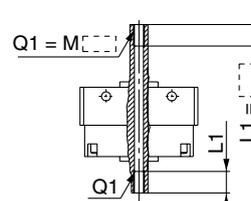


Size	Shaft type							
	K		T		K		T	
Thread	15	20	30	40				
M3 x 0.5	ø2.5	ø2.5	ø2.5	ø2.5				
M4 x 0.7	—	ø3.3	ø3.3	ø3.3				
M5 x 0.8	—	—	ø4.2	ø4.2				

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 dimension L1 is, as a rule, twice the thread size. (Example) For M5: L1 max. = 10 mm
- A parallel keyway is used on the long shaft for size 40.
- Applicable shaft type: J
- Equal dimensions are indicated by the same marker.



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

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

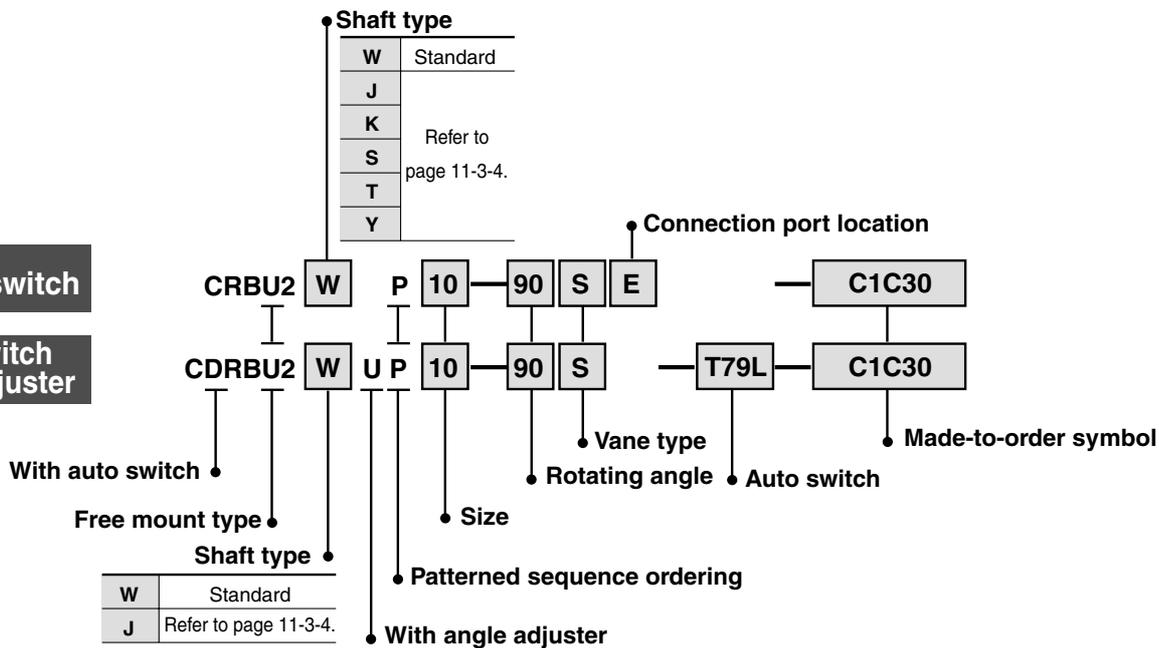
20-

Series CRBU2 (Size: 10, 15, 20, 30, 40)

Made to Order Specifications: -XC1, 2, 3, 4, 5, 6, 7, 30

Without auto switch

With auto switch
With angle adjuster



Made to Order Symbol

Symbol	Description	Applicable shaft type	Applicable size
		W, J, K, S, T, Y	
XC1 *	Add connection port	●	10
XC2 *	Change threaded hole to through-hole	●	
XC3 *	Change the screw position	●	
XC4	Change of rotation range and direction	●	
XC5	Change of rotation range and direction	●	
XC6	Change of rotation 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.

Combination

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

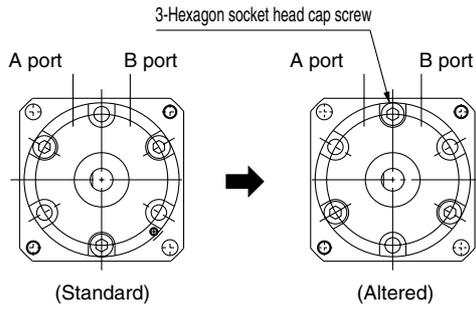
Symbol: **C2** Change 2 threaded holes on Body (B) into through holes
(An additionally machined port will have an aluminum surface since it will be left unfinished.)

	(mm)	
Size	d	
10	3.4	
15	3.4	
20	4.5	
30	5.5	
40	5.5	

Symbol: C3

Change the position of the screws for tightening the actuator body.

- Not available for size 10.

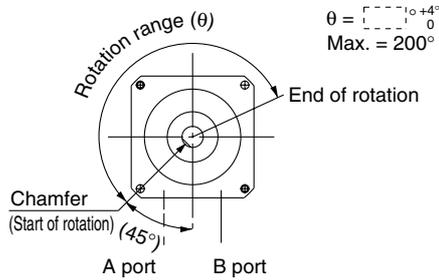


Symbol: C5

Applicable to single vane style only

Start of rotation is 45° up from the bottom of the vertical line to the left side.

- Rotation tolerance for CRBU2W10 is $^{+5}_{0}$.
- A parallel keyway is used instead of chamfer for size 40.

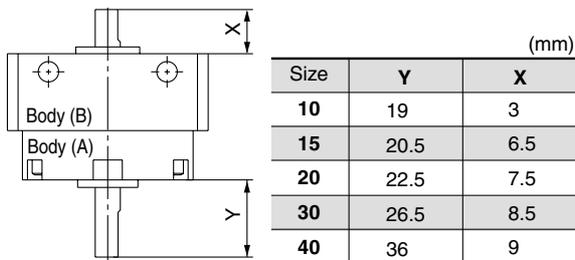


Start of rotation is the position of the chamfer (keyway) when B port is pressurized.

Symbol: C7

The shafts are reversed.

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

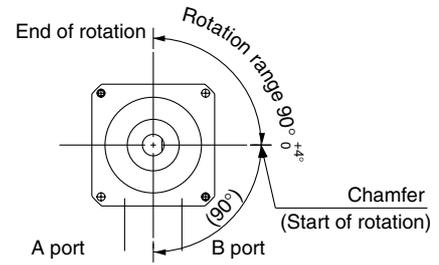


Symbol: C4

Applicable to single vane style only

Rotation starts from the horizontal line (90° down from the top to the right side)

- Rotation tolerance for CRBU2W10 is $^{+5}_{0}$.
- A parallel keyway is used instead of chamfer for size 40.



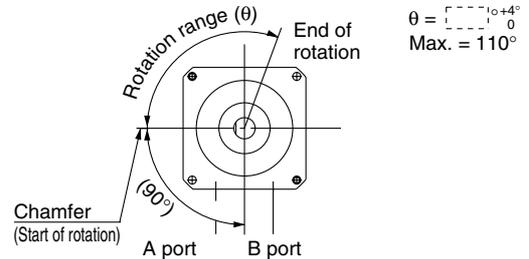
Start of rotation is the position of the chamfer (keyway) when A port is pressurized.

Symbol: C6

Applicable to single vane style only

Start of rotation is 45° up from the bottom of the vertical line to the left side.

- Rotation tolerance for CRBU2W10 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.

Symbol: C30

Change the standard grease to fluoro grease (Not for low-speed specifications.)

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

D-

20-