Rotary Actuator: Free Mount Type
Vane Style
Series CRBU2
Size: 10, 15, 20, 30, 40

Series Variations

Standard

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	
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														●	●	●	●
		Same length double long shaft with single flat on both shafts	Y	●	●	●	●	●	●	●	●	●	●	●	●				
		Double shaft key														●	●	●	●
		Double round shaft	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Single shaft type	Single flat	S	●	●	●	●	●	●	●	●	●	●	●	●				
		Single shaft key														●	●	●	●
		Single round shaft	T	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Pattern	Shaft pattern			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Rotation pattern			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Rotary Actuator: Free Mount Type
Vane Style
Series CRBU2
Size: 10, 15, 20, 30, 40

How to Order

Without auto switch — CRBU2 W □ 180 S E

With auto switch Size: 10, 15 — CDRBU2 W □ 180 S 90 L □

With auto switch Size: 20, 30, 40 — CDRBU2 W □ 180 S R73 L □

With auto switch (With switch unit)

Free mount type

Shaft type

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

Size

Size
10
15

Size

Size
20
30
40

Rotating angle

Applicable	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.

Connection port location

Nil	Side ported
E	Axial ported

Side ported

Axial ported

∗ Fittings are sold separately.

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	Grommet/ Lead wire: 0.5 m
CL	Grommet/ Lead wire: 3 m
CN	Grommet/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 11-1-1 for further information on auto switches.

Applicable size	Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire type	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Applicable load	
For 10 and 15	Reed switch	Grommet	No	2-wire	5 V,12 V	5 V,12 V,24 V	**90**	Parallel cord	●	●	●	—	IC circuit	Relay, PLC
					5 V,12 V, 100 V	5 V,12 V, 24 V,100 V	**90A**	Heavy-duty cord	●	●	●	—		
	Solid state switch		Yes		—	—	**97**	Parallel cord	●	●	●	—	—	
						100 V	**93A**	Heavy-duty cord	●	●	●	—		
					—	—	**T99**		●	●	—	—		
							T99V		●	●	—	—		
				3-wire (NPN)	5 V,12 V	—	**S99**		●	●	—	—	IC circuit	
							S99V		●	●	—	—		
				3-wire (PNP)			**S9P**		●	●	—	—		
							S9PV		●	●	—	—		
For 20, 30, and 40	Reed switch	Grommet	Yes	2-wire	24 V	—	100 V	**R73**	Heavy-duty cord	●	●	—	—	—	Relay, PLC
		Connector						**R73C**		●	●	●	●	
		Grommet	No			48 V, 100 V	24 V,48 V, 100 V	**R80**		●	●	—	—	IC circuit
		Connector						**R80C**		●	●	●	●	
	Solid state switch	Grommet	Yes			—	—	**T79**		●	●	—	—	—
		Connector						**T79C**		●	●	●	●	
		Grommet		3-wire (NPN)	5 V,12 V		**S79**		●	●	—	—	IC circuit	
				3-wire (PNP)			**S7P**		●	●	—	—		

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

Single Vane Specifications

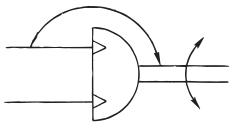
Model (Size)		CRBU2W10-□S	CRBU2W15-□S	CRBU2W20-□S	CRBU2W30-□S	CRBU2W40-□S
Rotating angle		90°, 180°, 270°				
Fluid		Air (Non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5 to 60°C				
Max. operating pressure (MPa)		0.7			1.0	
Min. operating pressure (MPa)		0.2	0.15			
Speed 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)				Double shaft (Long shaft key & Single flat)
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)				Double shaft (Long shaft key & Single flat)
Angle adjustable (3)		0 to 90°				0 to 230°

JIS Symbol



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.

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°	
	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

(g)

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.

Rotary Actuator: Replaceable Shaft

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

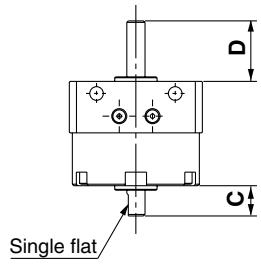
Without auto switch

CRBU2 **J** | **Size** | **Rotating angle** | **Vane type** | **Port location**

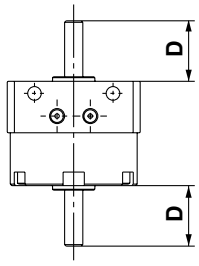
Shaft type

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					●

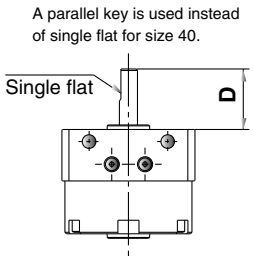
J



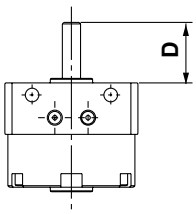
K



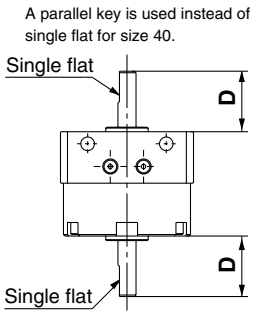
S



T



Y



(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

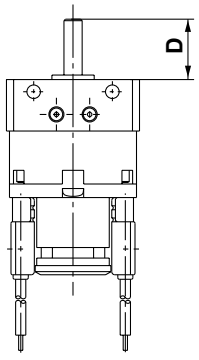
Shaft type

With auto switch

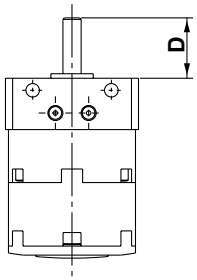
Symbol	Shaft type	Shaft-end shape	Size				
			10	15	20	30	40
J	Double shaft	Long shaft without single flat & with single flat	●	●	●	●	
		Long shaft without keyway & single flat					●

J

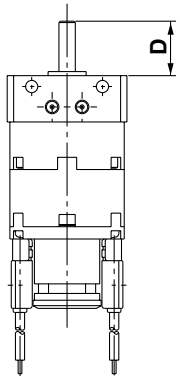
With auto switch



With angle adjuster



With auto switch and angle adjuster



(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				
Size	**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°.

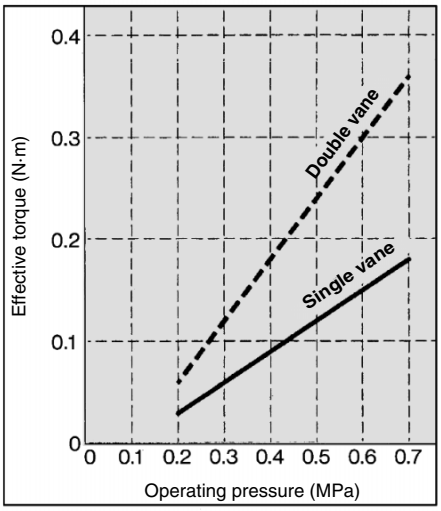
2. Connection ports are side ports only.

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

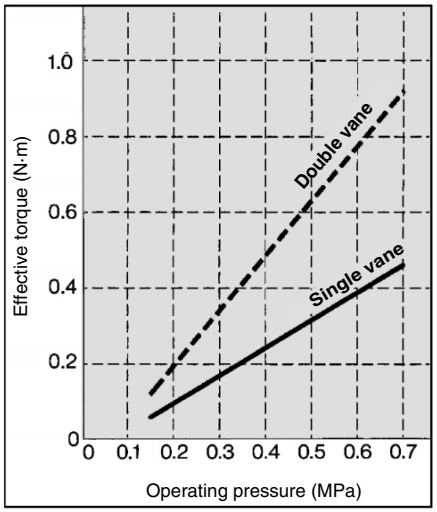
4. Use a 100° rotary actuator if you desire to adjust the angle to 90° using a double vane type.

Effective Output

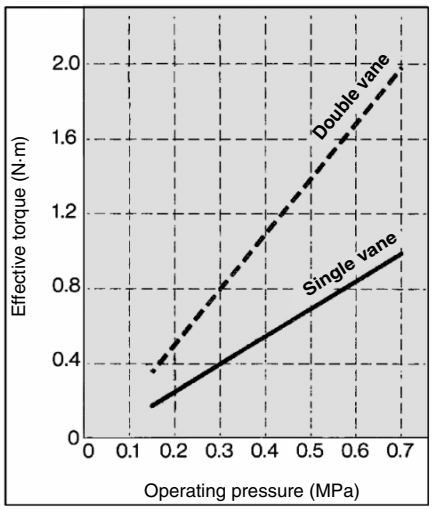
CRBU2W10



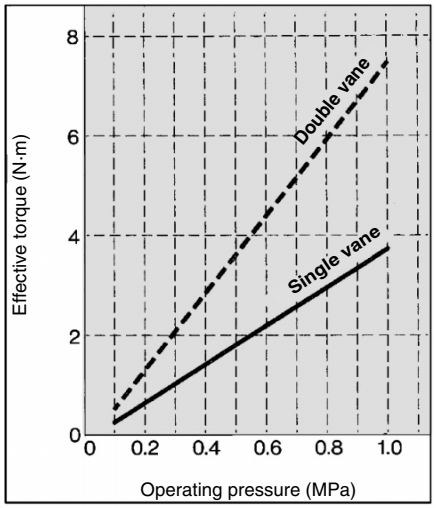
CRBU2W15



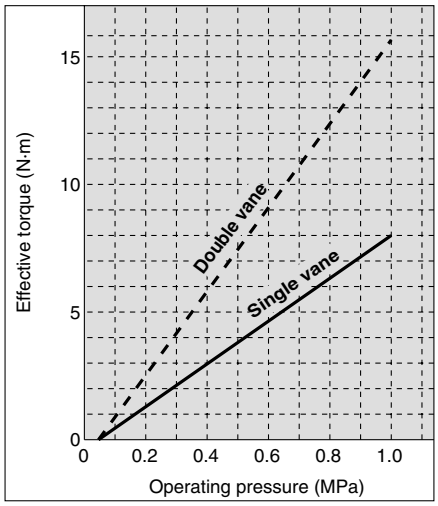
CRBU2W20



CRBU2W30

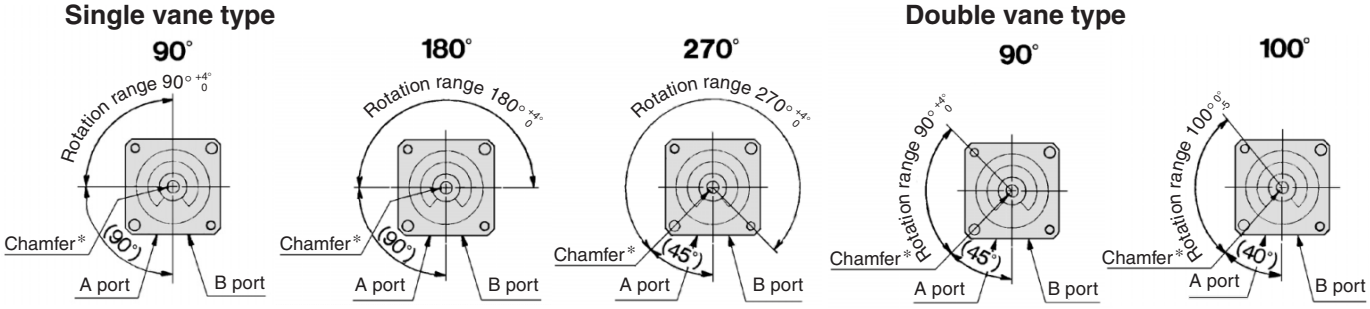


CRBU2W40



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.

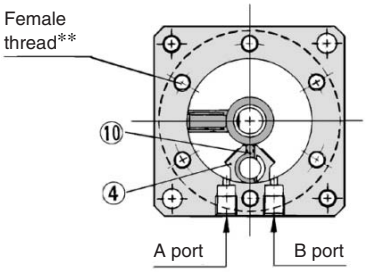
Note) For single vane style, rotation tolerance of 90°, 180°, and 270° actuators $^{+5^\circ}_{0}$ will be for size 10 actuators only.
For double vane style, rotation tolerance of 90° actuators $^{+5^\circ}_{0}$ will be for size 10 actuators only.

Construction: 10, 15, 20, 30, 40

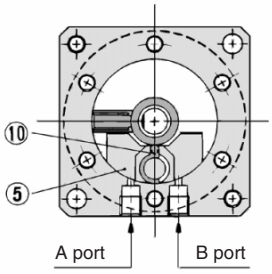
Single vane type

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.)

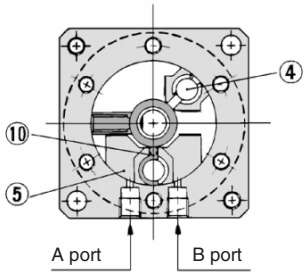
For 270°
(Top view from long shaft side)



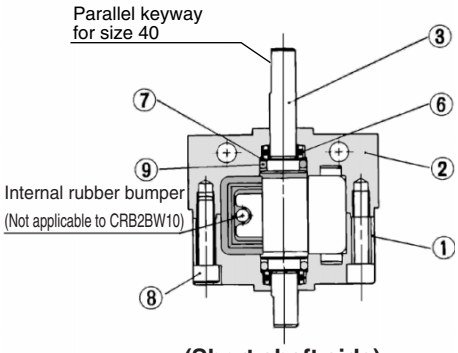
For 180°
(Top view from long shaft side)



For 90°
(Top view from long shaft side)



(Long shaft side)



(Short shaft side)

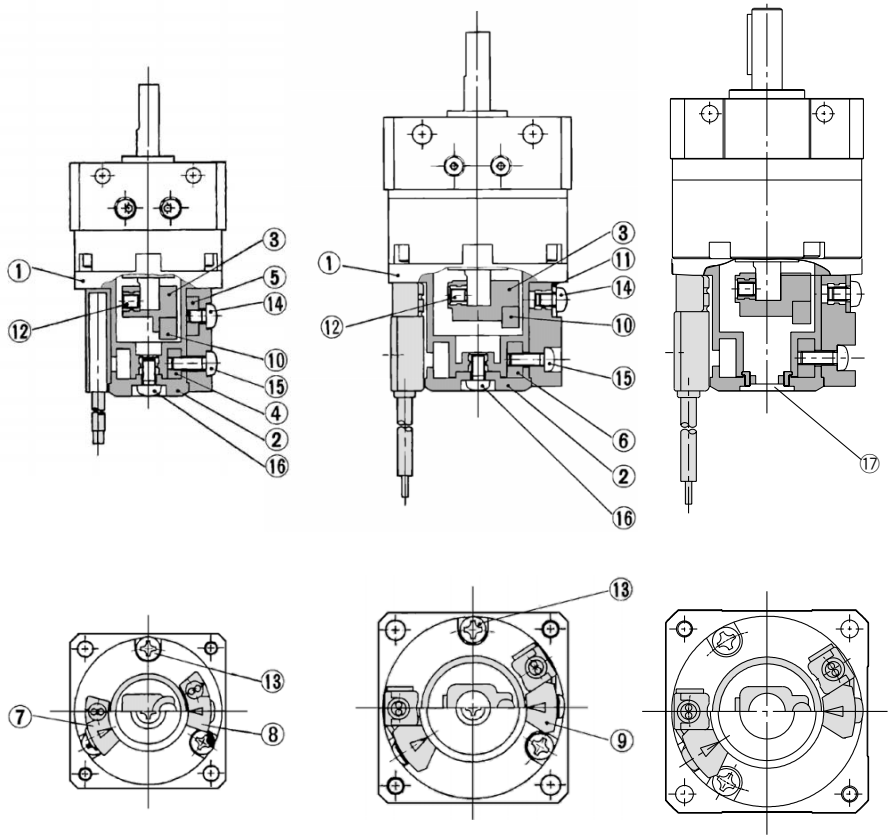
Component Parts

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 screw
⑨	O-ring	NBR	
⑩	Stopper seal	NBR	Special seal

* Carbon steel for CRBU2W30 and CRBU2W40.

With auto switch unit

CDRBU2W10/15-□$^{S}_{D}$ CDRBU2W20/30/40-□$^{S}_{D}$ CDRBU2W40-S/D



Component Parts

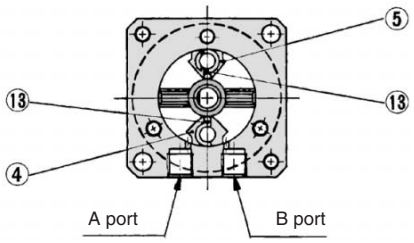
No.	Description	Material
①	Cover (A)	Resin
②	Cover (B)	Resin
③	Magnet lever	Resin
④	Holding block (A)	Aluminum alloy
⑤	Holding block (B)	Aluminum alloy
⑥	Holding block	Aluminum alloy
⑦	Switch block (A)	Resin
⑧	Switch block (B)	Resin
⑨	Switch block	Resin
⑩	Magnet	Magnetic body
⑪	Arm	Stainless steel
⑫	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.

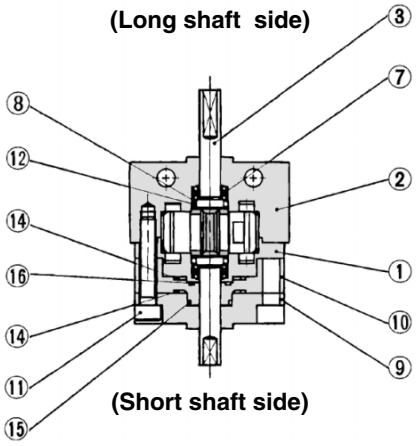
Construction: 10, 15, 20, 30, 40

Double vane type
Standard: CRBU2W10-□D

For 90°
(Top view from long shaft side)

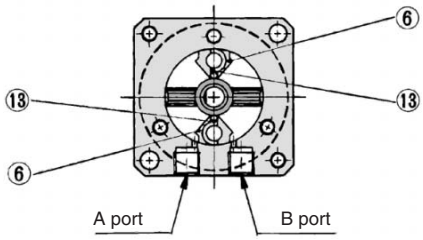


(Long shaft side)



(Short shaft side)

For 100°
(Top view from long shaft side)

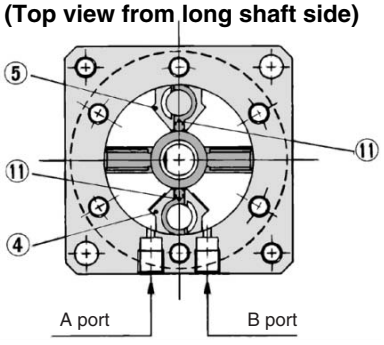


Component Parts

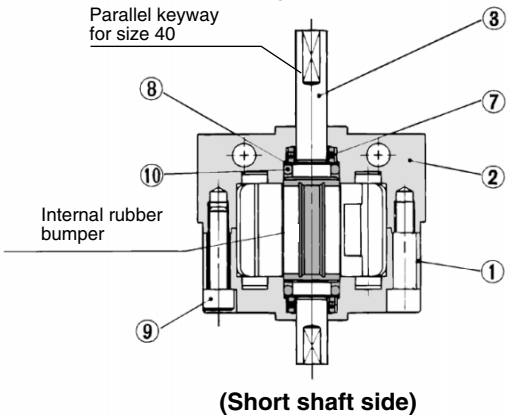
No.	Description	Material	Note
①	Body (A)	Aluminum alloy	
②	Body (B)	Aluminum alloy	
③	Vane shaft	Carbon steel	
④	Stopper	Stainless steel	
⑤	Stopper	Resin	
⑥	Stopper	Stainless steel	
⑦	Bearing	High carbon chrome bearing steel	
⑧	Back-up ring	Stainless steel	
⑨	Cover	Aluminum alloy	
⑩	Plate	Resin	
⑪	Hexagon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

For 90°
(Top view from long shaft side)

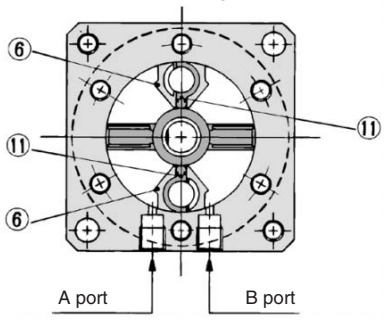


(Long shaft side)



(Short shaft side)

For 100°
(Top view from long shaft side)



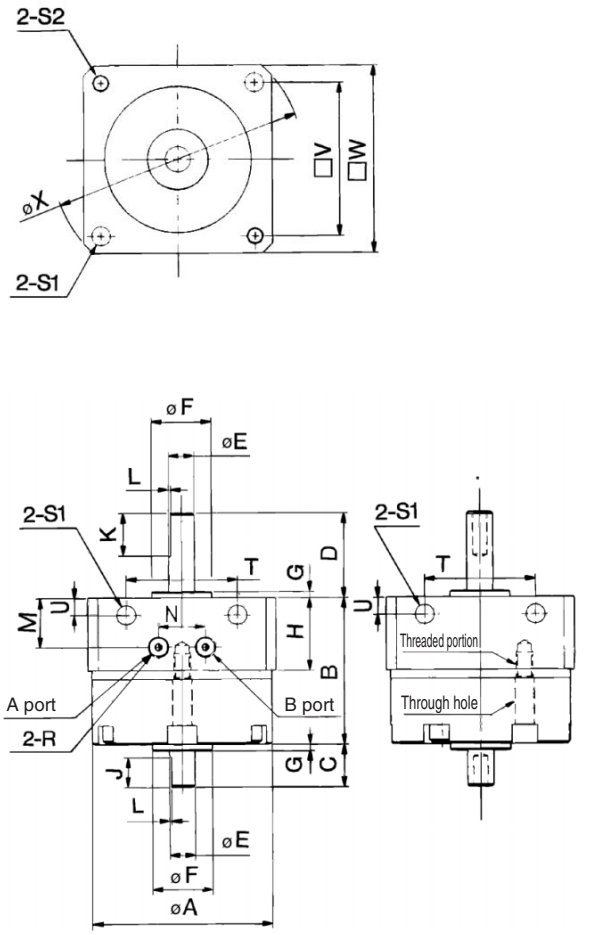
Component Parts

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	

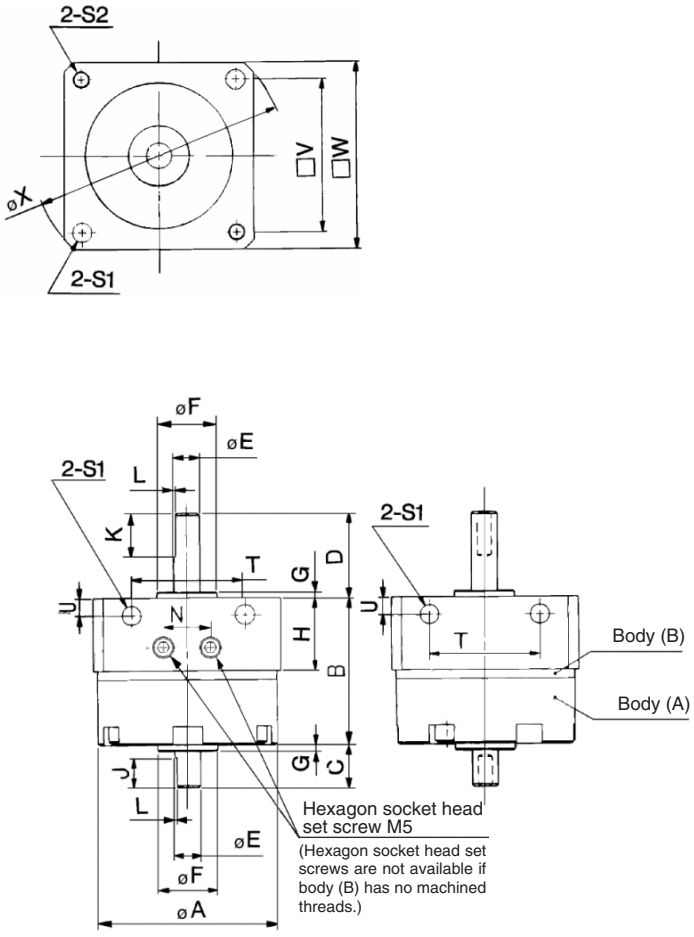
Dimensions: 10, 15, 20, 30

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

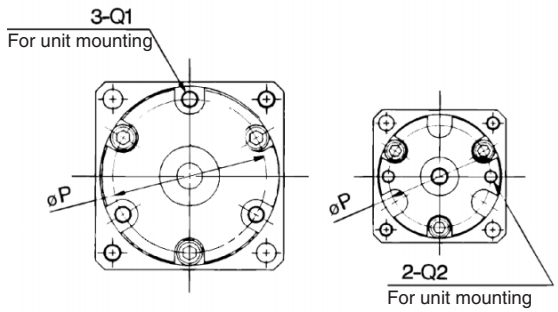
CRBU2W□-□S
<Port location: Side ported>



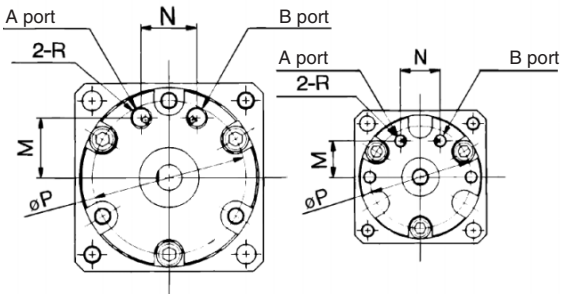
CRBU2W□-□SE
<Port location: Axial ported>



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



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



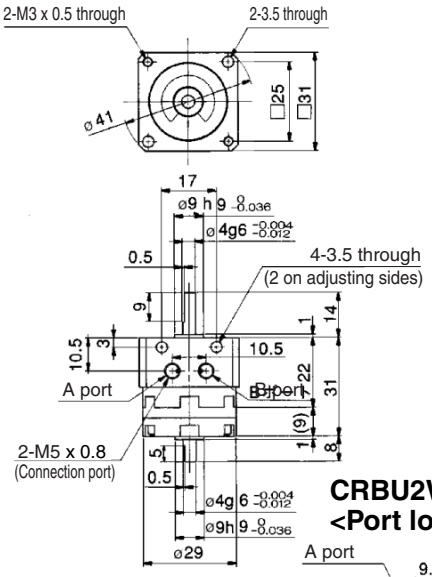
(mm)

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	3.5	M3 x 0.5	17	3	25	31	41
CRBU2W10-□SE												8.5	9.5				M3 x 0.5							
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	3.5	M3 x 0.5	21	3	29	36	48
CRBU2W15-□SE												11	10				M3 x 0.5							
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											

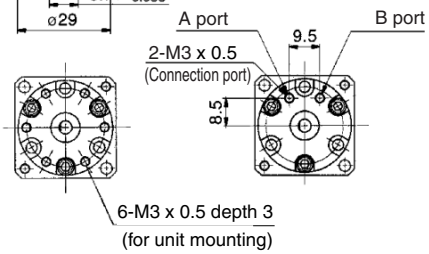
Dimensions: 10, 15, 20, 30

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

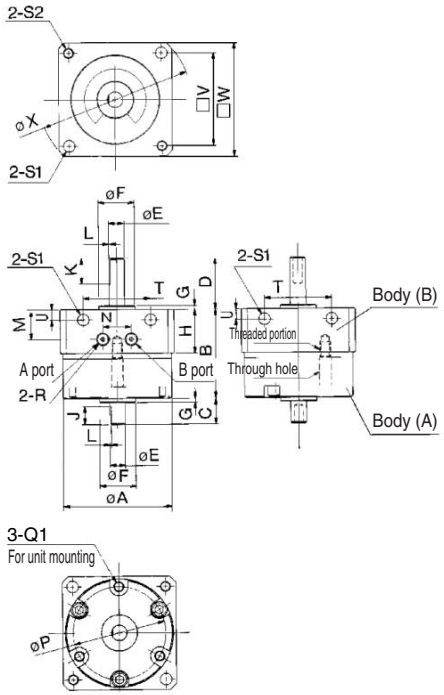
CRBU2W10-□D
<Port location: Side ported>



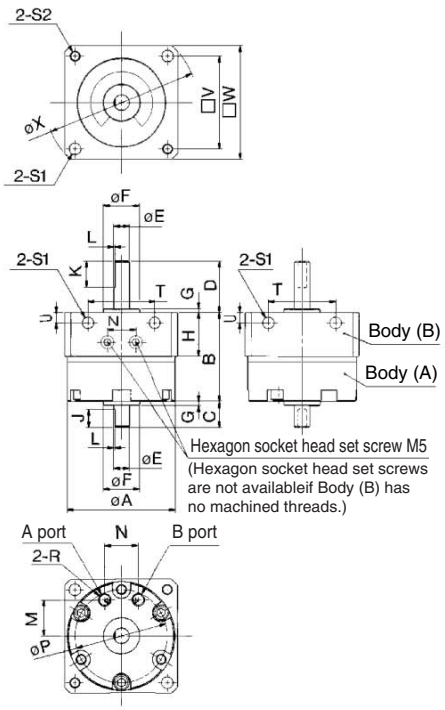
CRBU2W10-□DE
<Port location: Axial ported>



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



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



(mm)

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										
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										

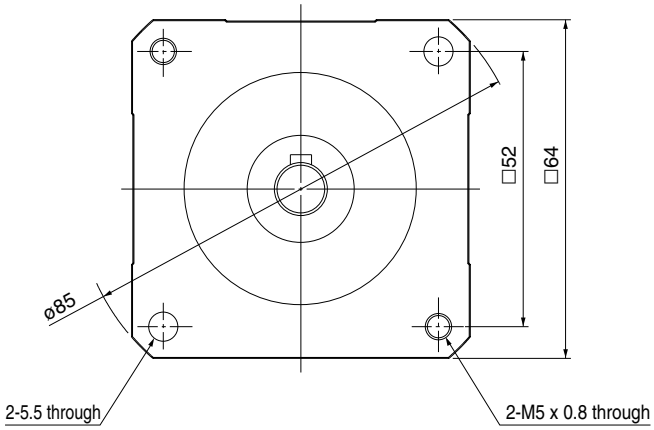
Dimensions: 40

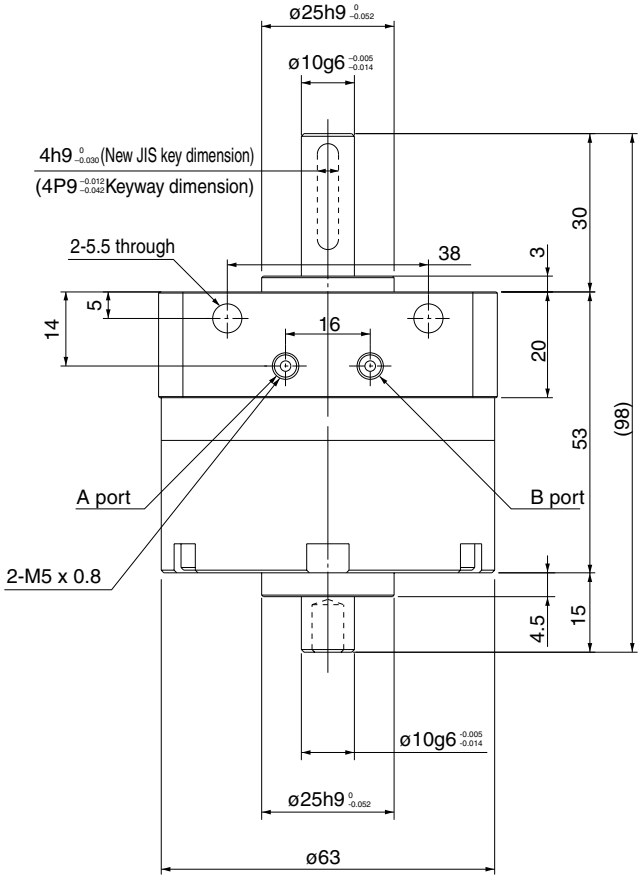
Single vane type/Double vane type
CRBU2W40-□S/D
<Port location: Side ported>

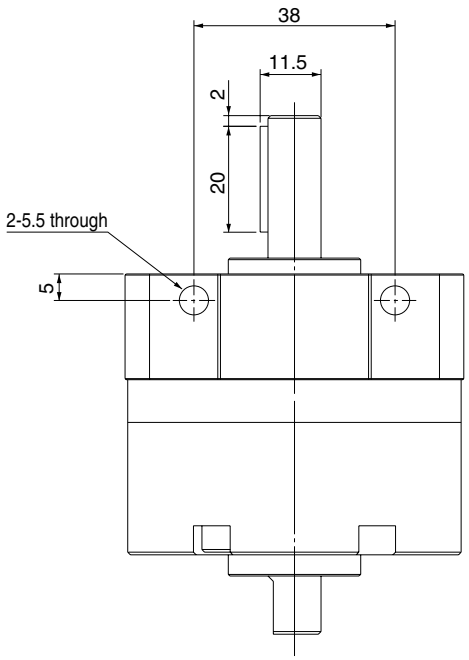
(mm)

Keyway dimensions	ℓ	b	h

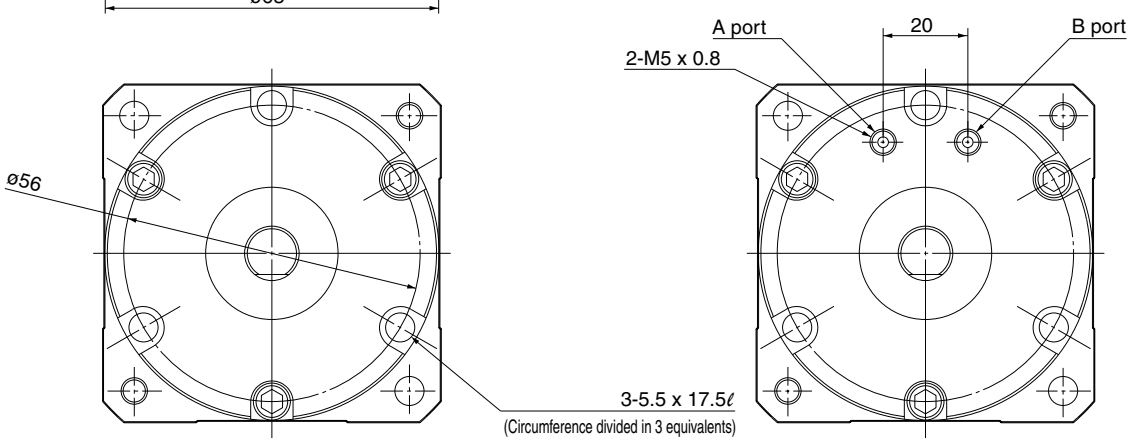
Model	b (h9)	h (h9)	ℓ
CRBU2W40-□□□	$4^{0}_{-0.030}$	$4^{0}_{-0.030}$	20







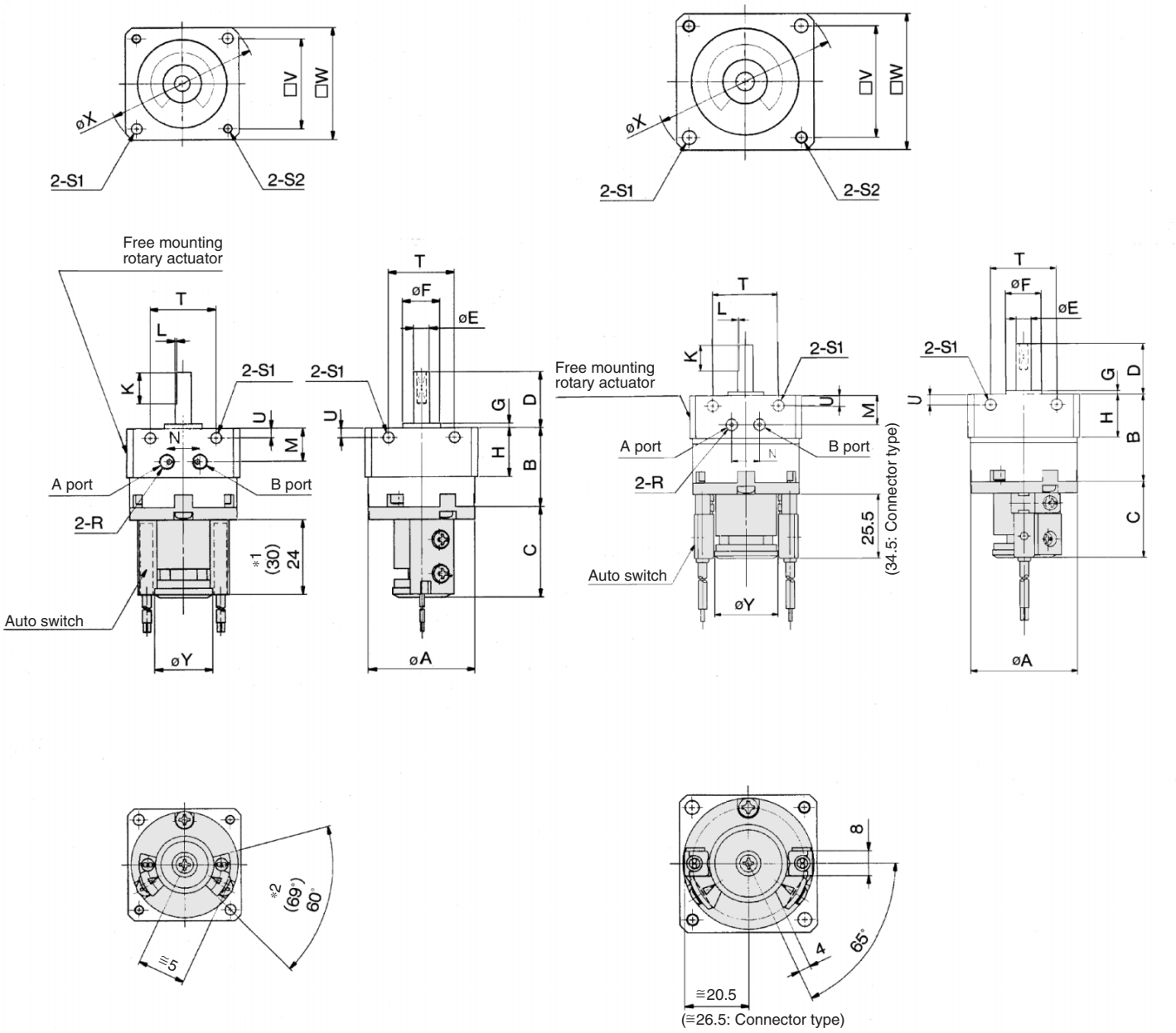
CRBU2W40-□SE/DE
<Port location: Axial ported>



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).

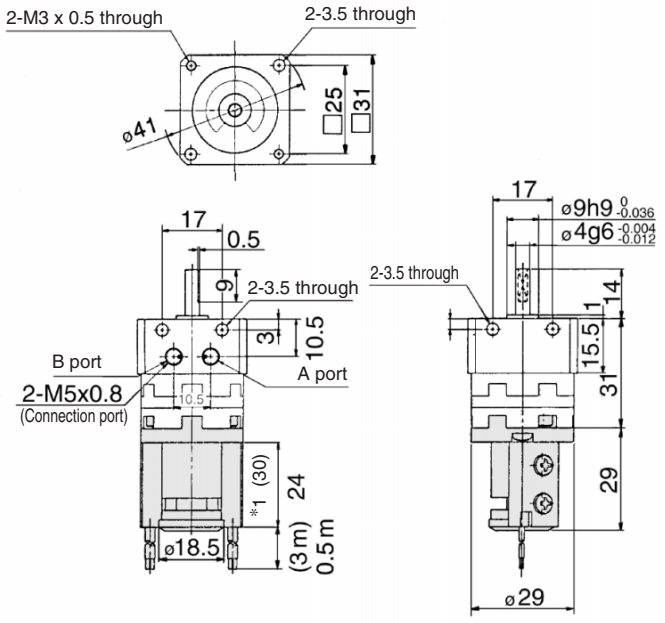
Note)
- For rotary actuators with auto switch unit connection ports are side ports only.
- The above exterior view drawings illustrate rotary actuators with one right-hand and one left-hand

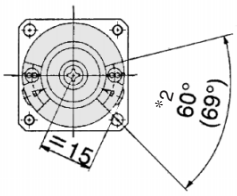
(mm)

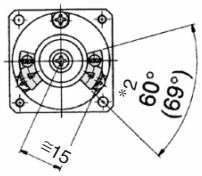
Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CDRBU2W10-□S	29	22	29	14	$4^{-0.004}_{-0.012}$	$9^{0}_{-0.036}$	1	15.5	9	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	17	3	25	31	41	18.5
CDRBU2W15-□S	34	25	29	18	$5^{-0.004}_{-0.012}$	$12^{0}_{-0.043}$	1.5	15.5	10	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	21	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

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

CDRBU2W10-□D



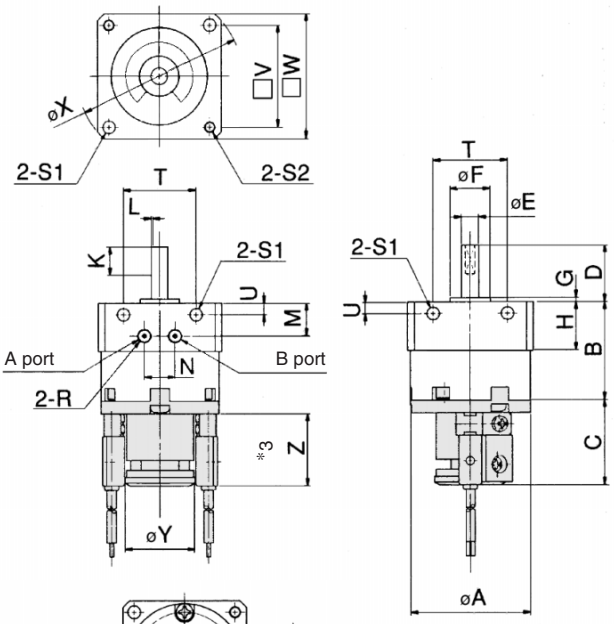


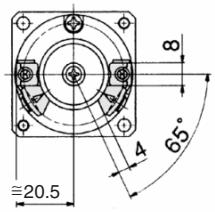


CDRBU2W15-□D

CDRBU2W15/20/30-□D

(Illustrations below show size 20 actuators.)





(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		

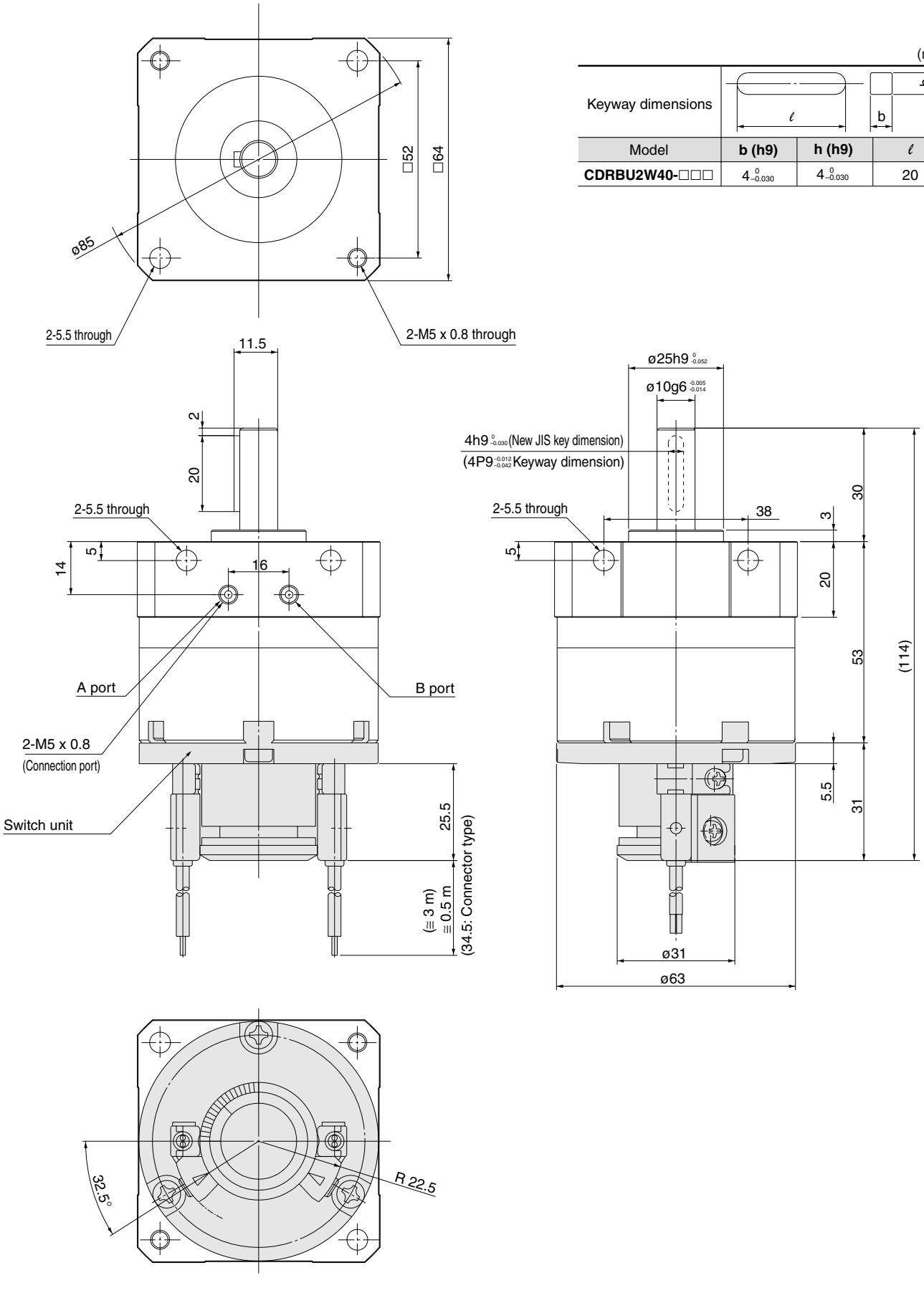
Dimensions: 40 (With auto switch unit)

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

(mm)

Keyway dimensions

Model	b (h9)	h (h9)	ℓ
CDRBU2W40-□□□	$4^{0}_{-0.030}$	$4^{0}_{-0.030}$	20



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 ☐ ☐

With auto switch Size: 20, 30, 40

CDRBU2 W U 20 — 180 S — R73 ☐ ☐

With auto switch
(With switch unit)

Free mount type

With angle adjuster

Size

10
15

20
30
40

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 DC	Load voltage AC	Auto switch model	Lead wire type	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Applicable load	
For 10 and 15	Reed switch	Grommet	No	2-wire	5 V, 12 V	5 V, 12 V, 24 V	**90**	Parallel cord	●	●	●	—	IC circuit	Relay, PLC
					5 V, 12 V, 100 V	5 V, 12 V, 24 V, 1 00 V	**90A**	Heavy-duty cord	●	●	●	—		
			Yes		—	—	**97**	Parallel cord	●	●	●	—	—	
						100 V	**93A**	Heavy-duty cord	●	●	●	—		
	Solid state switch				—	—	**T99**		●	●	—	—		
							T99V		●	●	—	—		
				3-wire (NPN)		—	**S99**		●	●	—	—	IC circuit	
							S99V		●	●	—	—		
				3-wire (PNP)	5 V, 12 V		**S9P**		●	●	—	—		
							S9PV		●	●	—	—		
For 20, 30, and 40	Reed switch	Grommet	Yes	2-wire	—	100 V	**R73**	Heavy-duty cord	●	●	—	—	—	Relay, PLC
		Connector					**R73C**		●	●	●	●		
		Grommet	No		48 V, 100 V	24 V, 48 V, 100 V	**R80**		●	●	—	—	IC circuit	
		Connector					**R80C**		●	●	●	●		
	Solid state switch	Grommet	Yes		—	—	**T79**		●	●	—	—	—	
		Connector					**T79C**		●	●	●	●		
		Grommet		3-wire (NPN)	5 V, 12 V		**S79**		●	●	—	—	IC circuit	
				3-wire (PNP)			**S7P**		●	●	—	—		

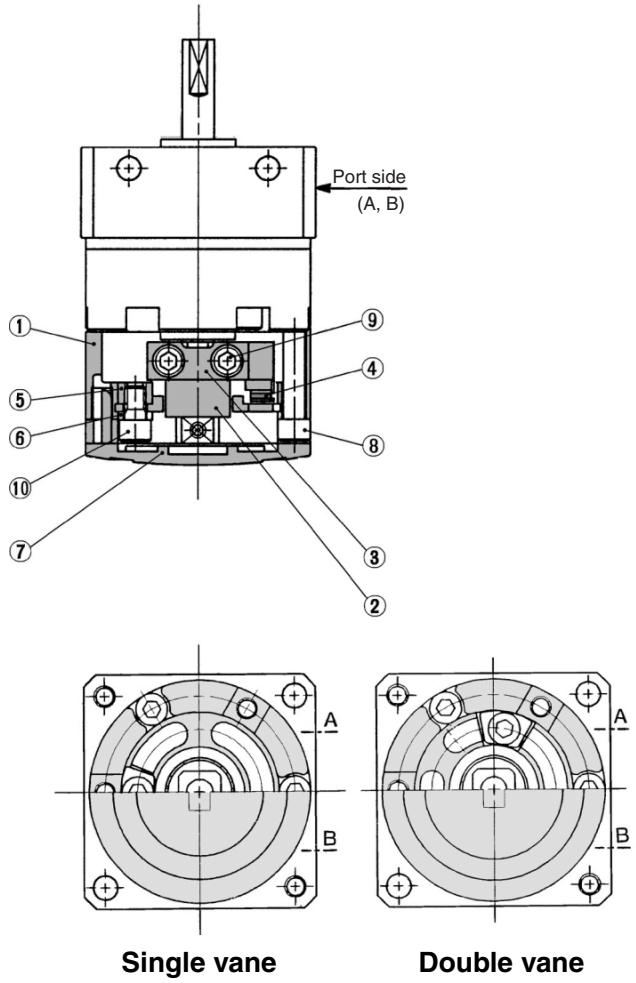
∗ Lead wire length symbols: 0.5 m ····· Nil (Example) R73C
3 m ····· L (Example) R73CL
5 m ····· Z (Example) R73CZ
None ···· N (Example) R73CN

Construction: 10, 15, 20, 30, 40

Single vane type/Double vane style

With angle adjuster

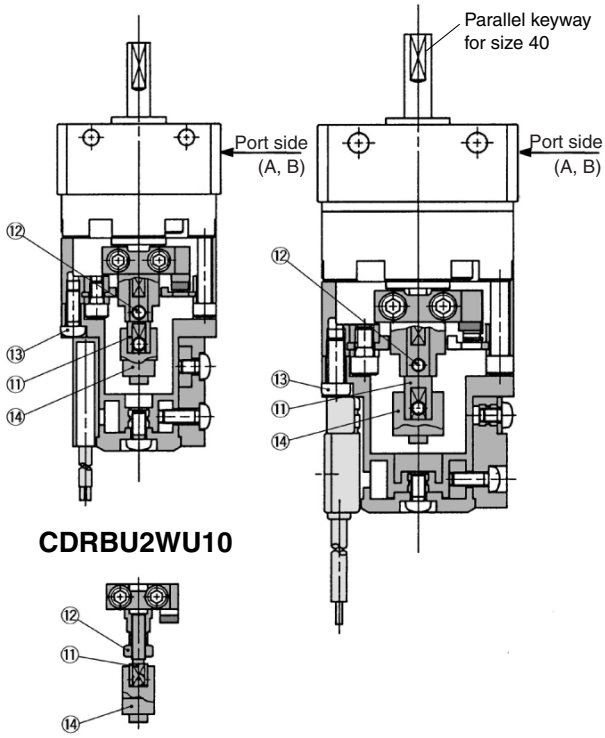
CRBU2W10/15/20/30/40-□$^{S}_{D}$



Single vane **Double vane**

With angle adjuster + Auto switch unit

CDRBU2WU10/15-□$^{S}_{D}$ **CDRBU2WU20/30/40-□$^{S}_{D}$**



CDRBU2WU10

- **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.

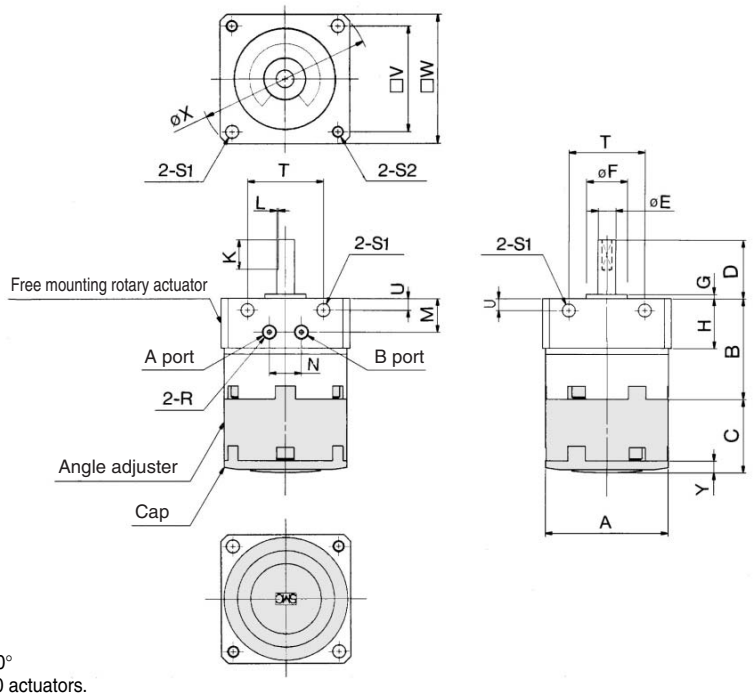
Rotating angle of the rotary actuator	Rotating angle adjustment range
$270^{\circ}{}^{+4}_{0}$	0 to 230° (Size: 10, 40) *
	0 to 240° (Size: 15, 20, 30)
$180^{\circ}{}^{+4}_{0}$	0 to 175°
$90^{\circ}{}^{+4}_{0}$	0 to 85°

* 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.

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

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

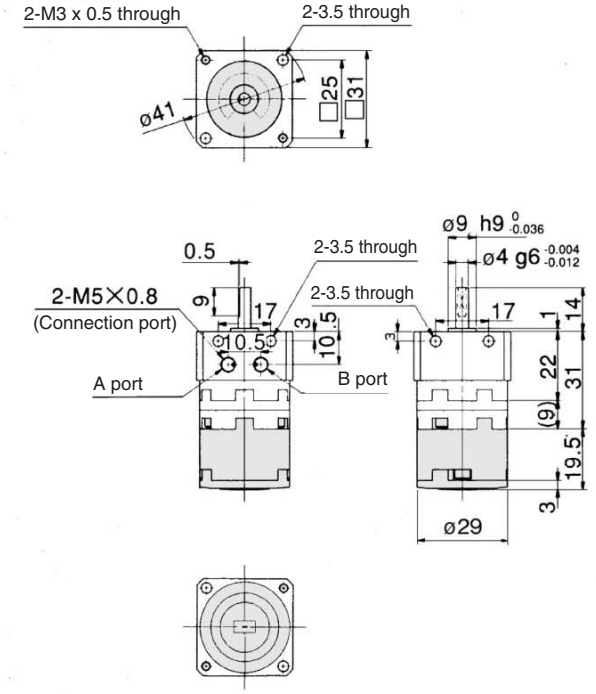


∗ Illustrations above show actuators for 90° and 180° when B port is pressurized,and they show size 20 actuators.

(mm)

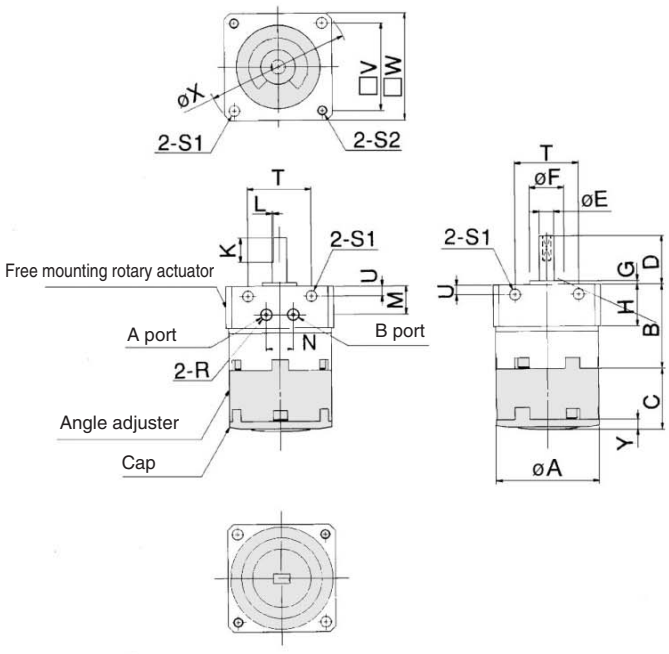
Model	A	B	C	D	E(g6)	F(h9)	G	H	K	L	M	N	R	S1	S2	T	U	V	W	X	Y
CRBU2WU10-□S	29	22	19.5	14	$4^{-0.004}_{-0.012}$	$9^{0}_{-0.036}$	1	15.5	9	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	17	3	25	31	41	3
CRBU2WU15-□S	34	25	21.2	18	$5^{-0.004}_{-0.012}$	$12^{0}_{-0.043}$	1.5	15.5	10	0.5	10.5	10.5	M5 x 0.8	3.5	M3 x 0.5	21	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

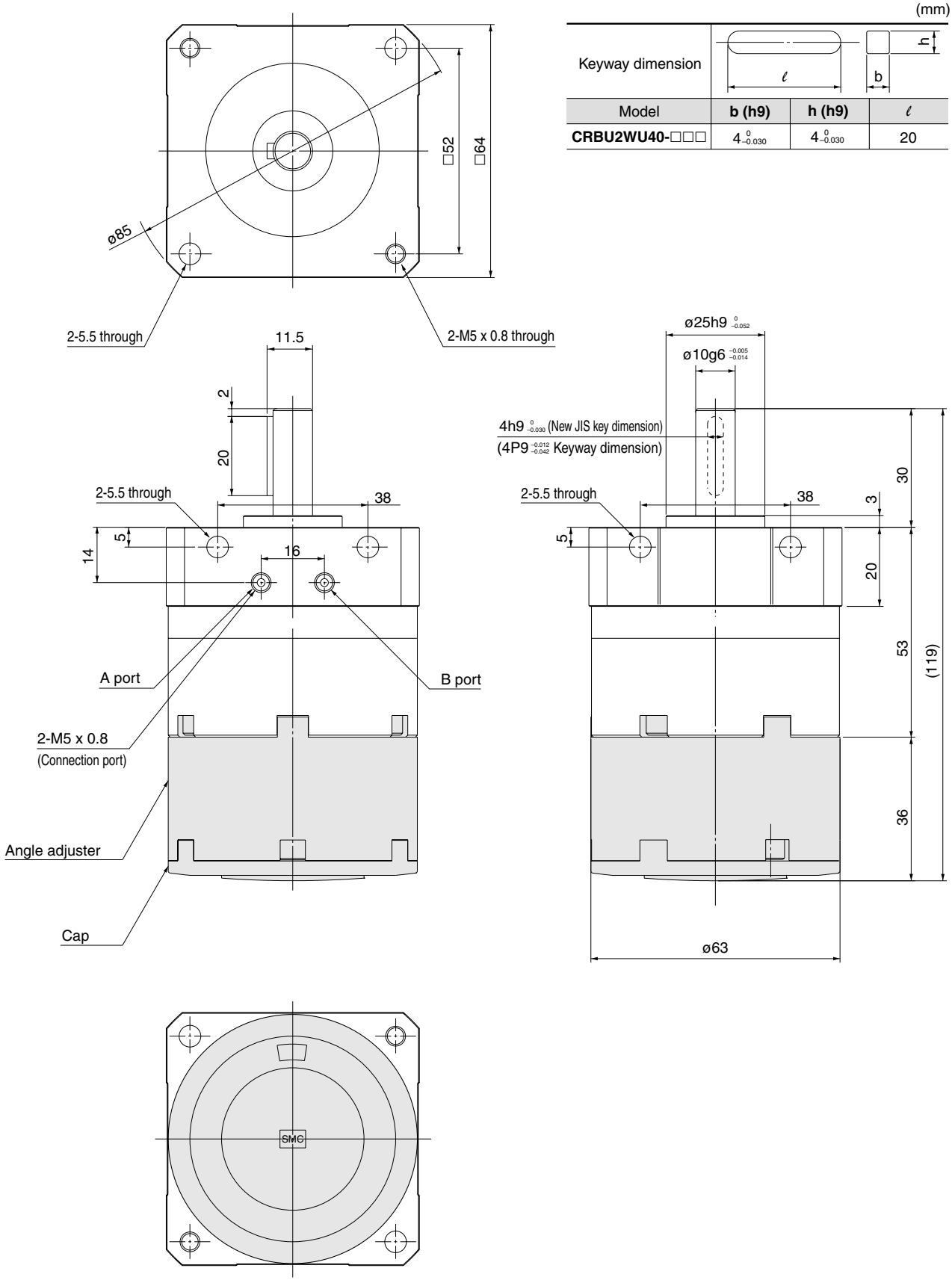
Dimensions: 40 (With angle adjuster)

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

(mm)

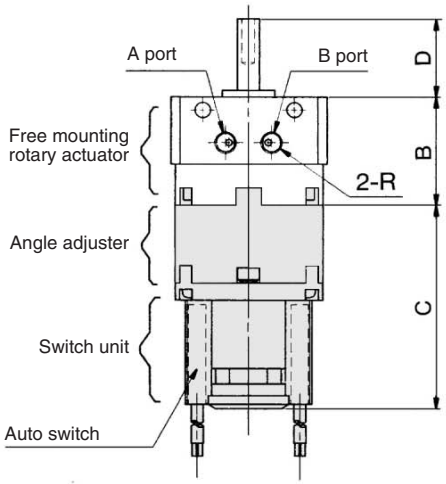
Keyway dimension	ℓ	b	h

Model	b (h9)	h (h9)	ℓ
CRBU2WU40-□□□	$4^{0}_{-0.030}$	$4^{0}_{-0.030}$	20

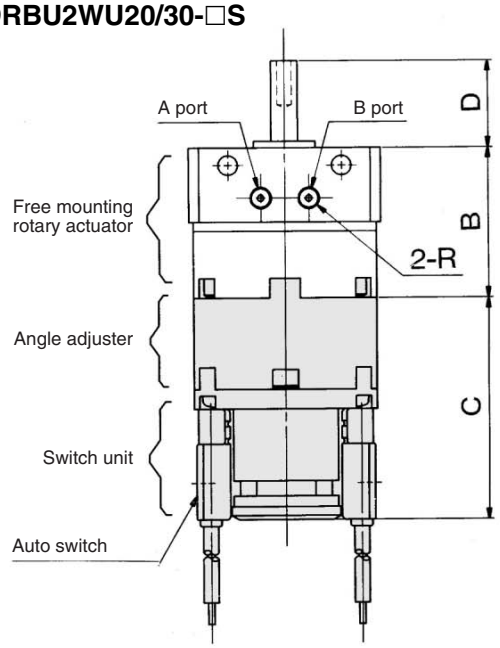


Dimensions: 10, 15, 20, 30 (With angle adjuster and auto switch unit)

Single vane type
CDRBU2WU10/15-□S



CDRBU2WU20/30-□S

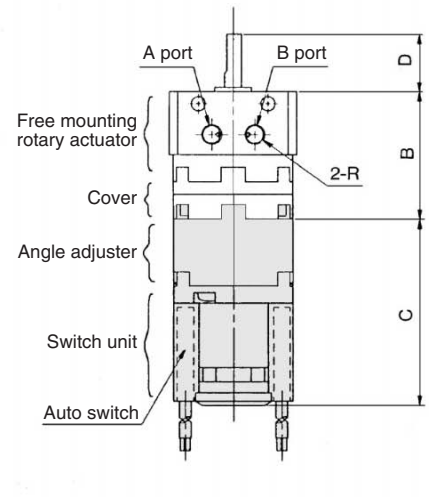


(mm)

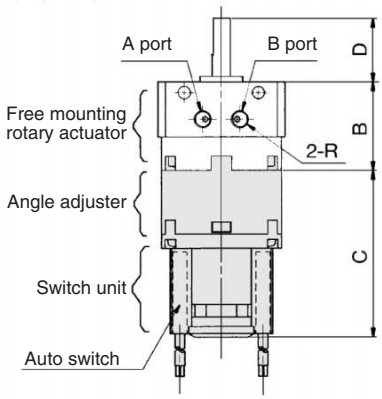
Model	B	C	D	R
CDRBU2WU10-□S	22	45.5	14	M5 x 0.8
CDRBU2WU15-□S	25	47	18	M5 x 0.8
CDRBU2WU20-□S	34.5	51	20	M5 x 0.8
CDRBU2WU30-□S	47.5	55.5	22	M5 x 0.8

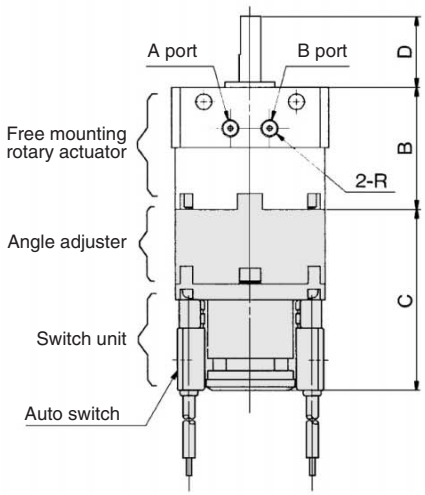
∗ Following illustrations show actuators for 90° and 180° when A port is pressrized.
Note) • For rotary actuators with angle adjuster and auto switch unit, connection ports are side ports only.
• The above exterior view drawings illustrate the rotary actuator equipped with one right-hand and one left-hand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

Double vane type
CDRBU2WU10/15-□D



CDRBU2WU20/30-□D





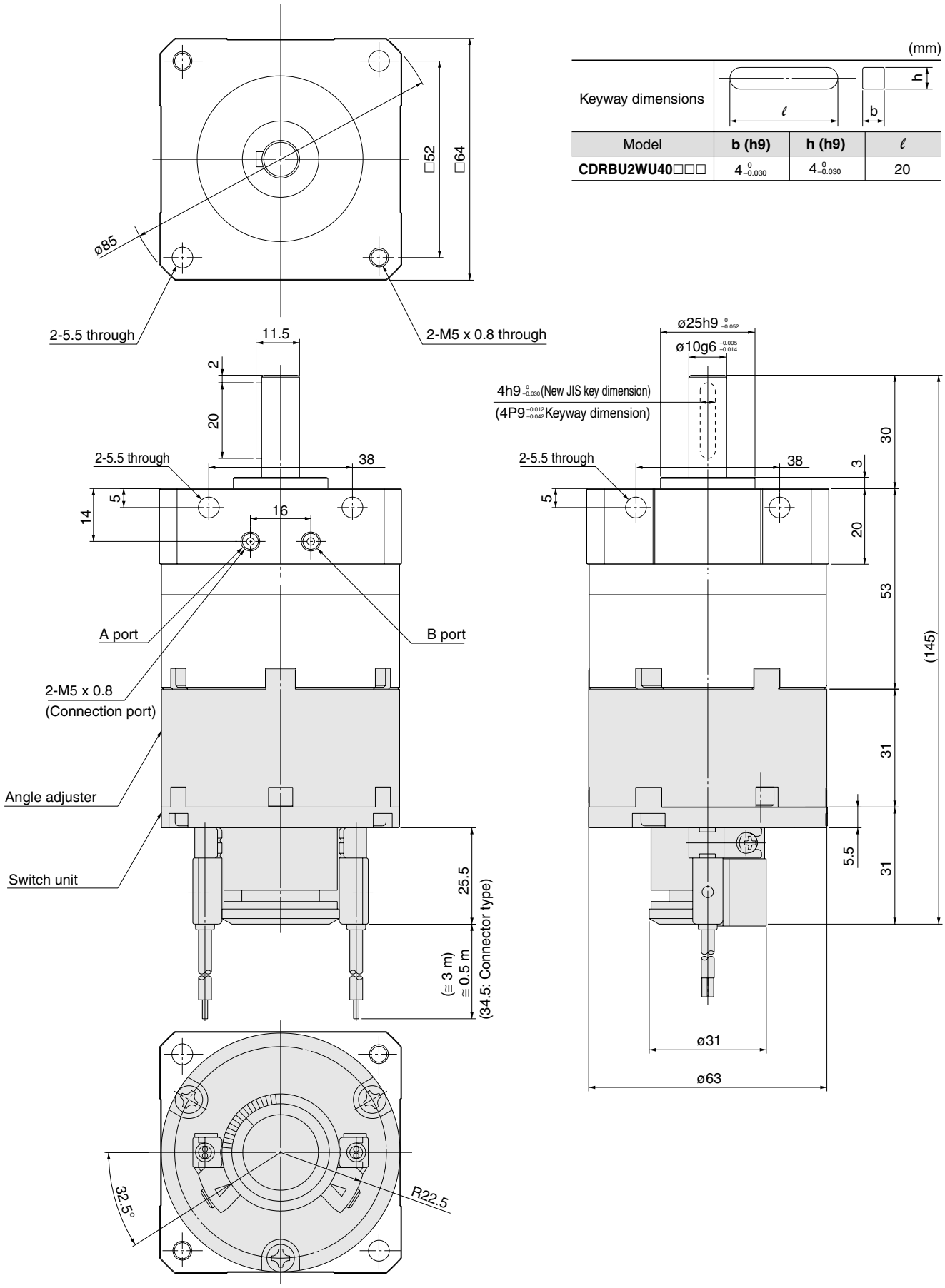
(mm)

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.

Dimensions: 40 (With angle adjuster and auto switch unit)

Single vane type/Double vane type
CDRBU2WU40-□S/D



(mm)

Keyway dimensions	ℓ	b	h

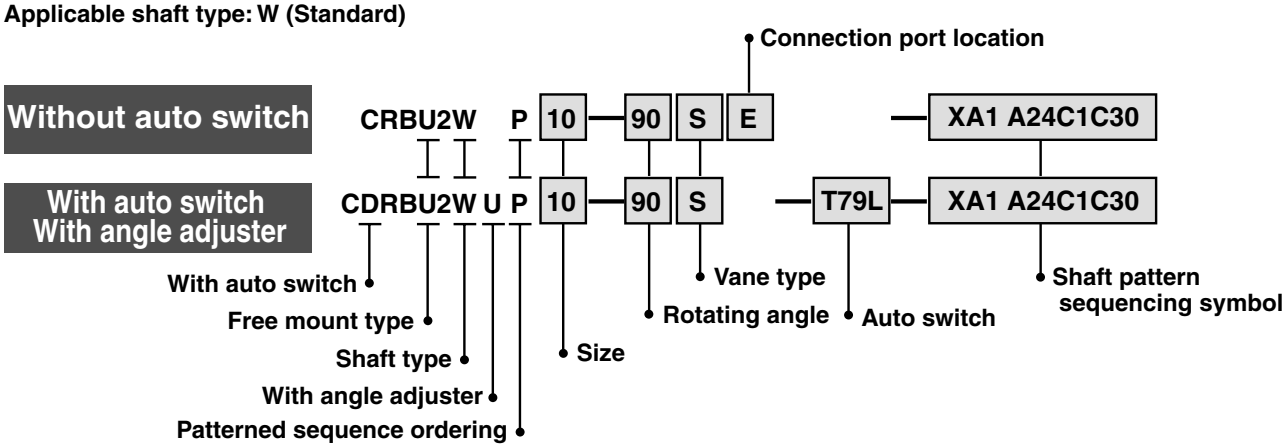
Model	b (h9)	h (h9)	ℓ
CDRBU2WU40□□□	$4^{0}_{-0.030}$	$4^{0}_{-0.030}$	20

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	—	●	—	●	—	●	—	●	—	●	—	●	—	—	—	—	—	●	—	—	—	●	—

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		●

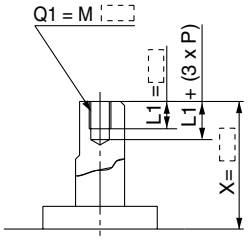
* These specifications are not available for rotary actuators with auto switch unit and angle adjuster.
A total of four XA□ and XC□ combinations is available.
Example: -XA1A24C1C30
-XA2C1C4C30

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



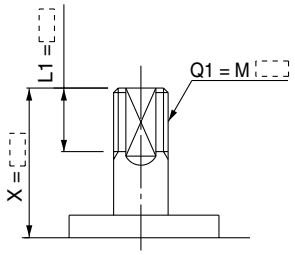
(mm)

Size	X	Q1
15	1.5 to 18	M3
20	1.5 to 20	M3, M4
30	2 to 22	M3, M4, M5

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



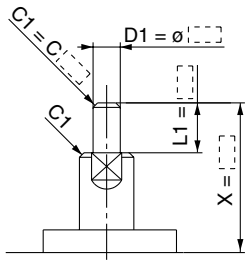
(mm)

Size	X	L1 max	Q1
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: 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.)



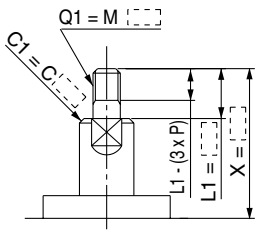
(mm)

Size	X	L1 max
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: 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.)



(mm)

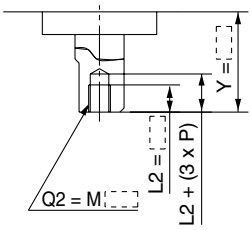
Size	X	L1 max	Q1
10	5.5 to 14	X – 1	M3
15	7.5 to 18	X – 1.5	M3, M4
20	9 to 20	X – 1.5	M3, M4, M5
30	11 to 22	X – 2	M3, M4, M5, M6

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



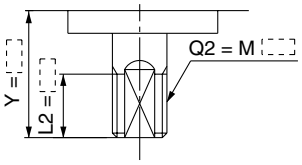
(mm)

Size	Y	Q2
15	1.5 to 9	M3
20	1.5 to 10	M3, M4
30	2 to 13	M3, M4, M5
40	4.5 to 15	M3, M4, M5

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



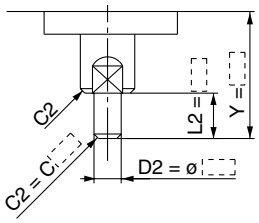
(mm)

Size	Y	L2 max	Q2
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
40	15	Y – 6	M10

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.)



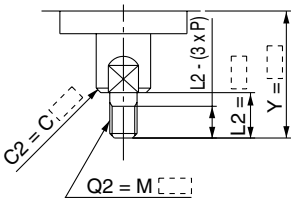
(mm)

Size	Y	L2 max
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
40	6 to 15	Y – 4.5

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.)



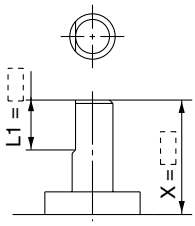
(mm)

Size	Y	L2 max	Q2
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
40	14 to 15	Y – 4.5	M3, M4, M5, M6, M8

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

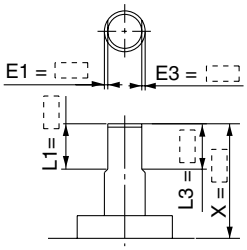


(mm)

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

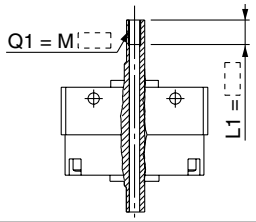


(mm)

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

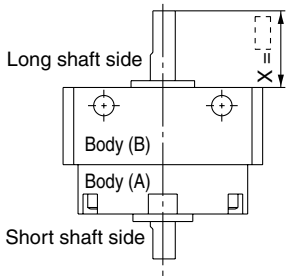


(mm)

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



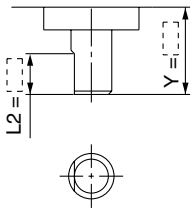
(mm)

Size	X
10	1 to14
15	1.5 to18
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

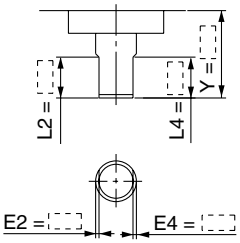


(mm)

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

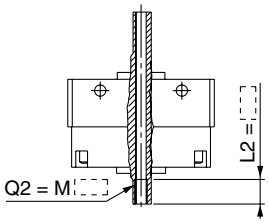


(mm)

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

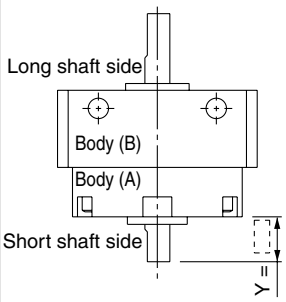


(mm)

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



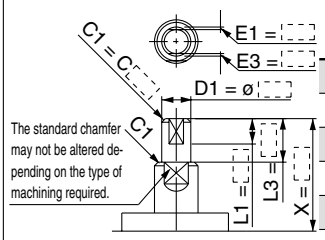
(mm)

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

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.)



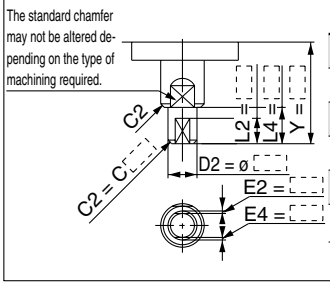
(mm)

Size	X	L1 max	L3	D1
10	4 to 14	X – 2.5	L1+1.5	ø3
15	4.5 to 18	X – 3	L1+1.5	ø3 to ø4
20	5 to 20	X – 3.5	L1+2	ø3 to ø5
30	7 to 22	X – 5	L1+3	ø3 to ø6

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.)



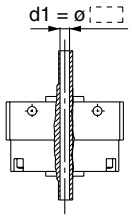
(mm)

Size	X	L2 max	L4	D2
10	4 to 8	Y – 2.5	L2+1.5	ø3
15	4.5 to 9	Y – 3	L2+1.5	ø3 to ø4
20	5 to 10	Y – 3.5	L2+2	ø3 to ø5
30	7 to 13	Y – 5	L2+3	ø3 to ø6
40	8 to 15	Y – 5.5	L2+3	ø3 to ø6

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.

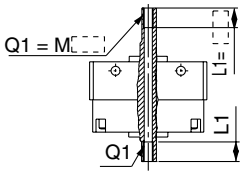


(mm)

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

Symbol: A16 Applicable to single vane type only

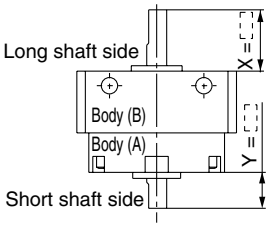
A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.
- Not available for size 10.
- The maximum dimension L1 is, as a rule, twice 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.



(mm)

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: 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

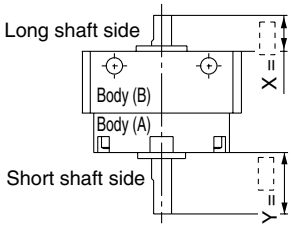


(mm)

Size	X	Y
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 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

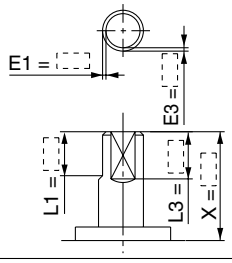


(mm)

Size	X	Y
10	1 to 3	1 to 12
15	1.5 to 6.5	1.5 to 15.5
20	1.5 to 7.5	1.5 to 17
30	2 to 8.5	2 to 19
40	3 to 9	—

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

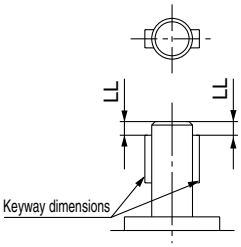


(mm)

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	10 – (22 – X) to (X – 2)	X – 2

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.



(mm)

Size	Keyway dimensions	LL
40	4 x 4 x 20	2

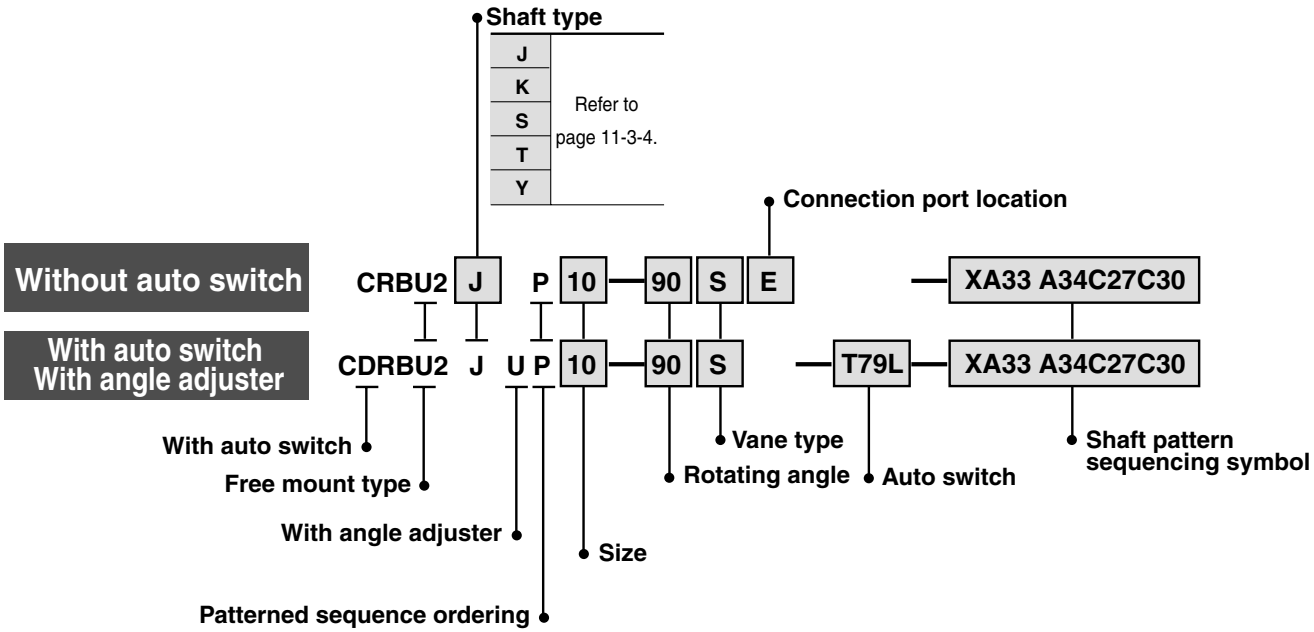
Series CRBU2 (Size: 10, 15, 20, 30, 40)

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	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		●

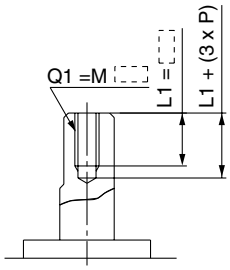
* These specifications are not available for rotary actuators with auto switch unit and angle adjuster. A total of four XA□ and XC□ combinations is available. Example: -XA33 A34C27C3C

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



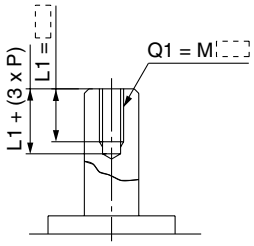
(mm)

Size \ Shaft type	Q1	
	S	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



(mm)

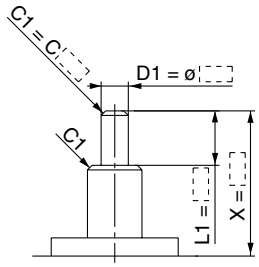
Size \ Shaft type	Q1		
	J	K	T
10	Not available		
15	M3		
20	M3, M4		
30	M3, M4, M5		
40	M3, M4, M5		

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.)



(mm)

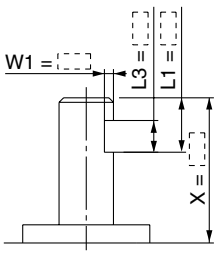
Size	X	L1 max	D1
10	2 to 14	X – 1	ø3 to ø3.9
15	3 to 18	X – 1.5	ø3 to ø4.9
20	3 to 20	X – 1.5	ø3 to ø5.9
30	3 to 22	X – 2	ø3 to ø7.9
40	4 to 30	X – 3	ø3 to ø9.9

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



(mm)

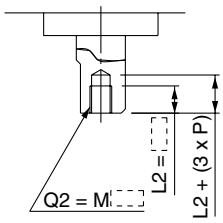
Size \ Shaft type	X			W1			L1 max			L3 max		
	J	K	T	J	K	T	J	K	T	J	K	T
10	6.5 to 14			0.5 to 2			X – 3			L1 – 1		
15	8 to 18			0.5 to 2.5			X – 4			L1 – 1		
20	9 to 20			0.5 to 3			X – 4.5			L1 – 1		
30	11.5 to 22			0.5 to 4			X – 5			L1 – 2		
40	15.5 to 30			0.5 to 5			X – 5.5			L1 – 2		

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



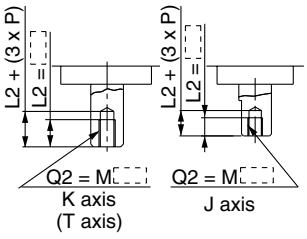
(mm)

Size \ Shaft type	Q2	
	S	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



(mm)

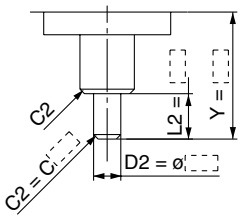
Size \ Shaft type	Q2		
	J	K	T
10	Not available		
15	M3		
20	M3, M4		
30	M3, M4, M5		
40	M3, M4, M5		

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.)



(mm)

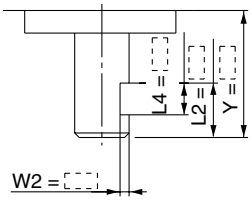
Size	Y	L2 max	D2
10	2 to 14	Y – 1	ø3 to ø3.9
15	3 to 18	Y – 1.5	ø3 to ø4.9
20	3 to 20	Y – 1.5	ø3 to ø5.9
30	6 to 22	Y – 2	ø3 to ø7.9
40	6 to 30	Y – 4.5	ø5 to ø9.9

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



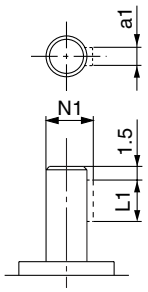
(mm)

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

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



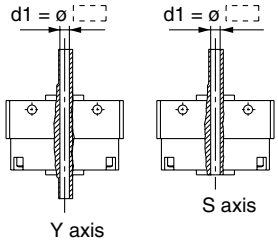
(mm)

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.

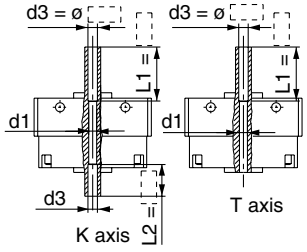


(mm)

Size \ Shaft type	S	Y
	d1	
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.

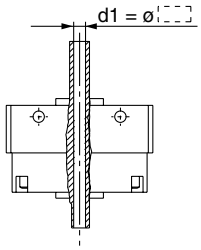


(mm)

Size \ Shaft type	K	T	K	T
	d1		d3	
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.

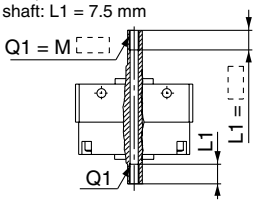


(mm)

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.

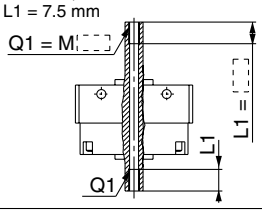


(mm)

Size	15		20		30		40	
Shaft type / Thread	S	Y	S	Y	S	Y	S	Y
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.

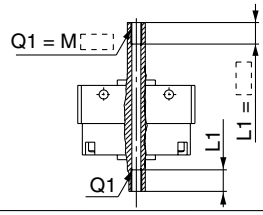


(mm)

Size	15		20		30		40	
Shaft type / Thread	K	T	K	T	K	T	K	T
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.

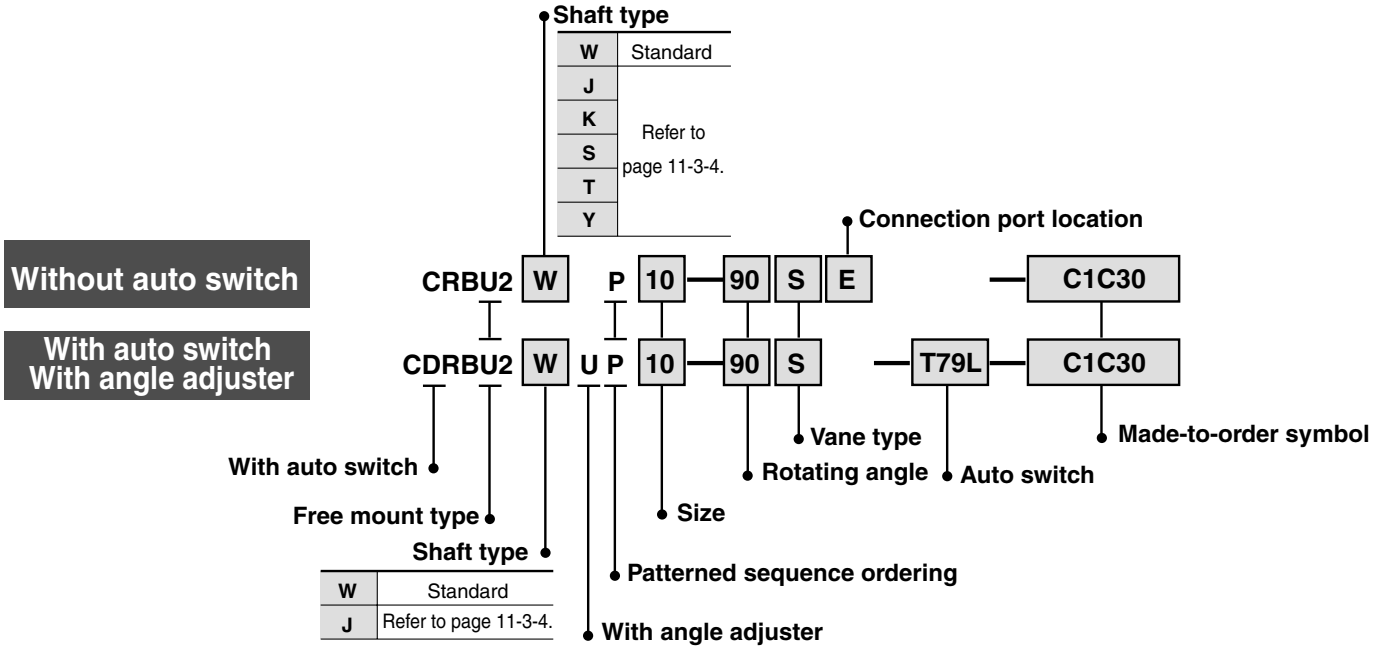


Size / Thread	15	20	30	40
M3 x 0.5	ø2.5	ø2.5	ø2.5	ø2.5
M4 x 0.7	—	ø3.3	ø3.3	ø3.3
M5 x 0.8	—	—	ø4.2	ø4.2

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 W, J, K, S, T, Y	Applicable size
XC1 *	Add connection port	●	10, 15, 20, 30, 40
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	●	
XC7 *	Reversed shaft	W, J	
XC30	Fluorine grease	●	

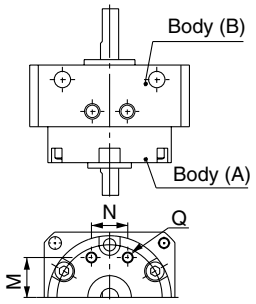
* These specifications are not available for rotary actuators with auto switch unit and angle adjuster.

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.)

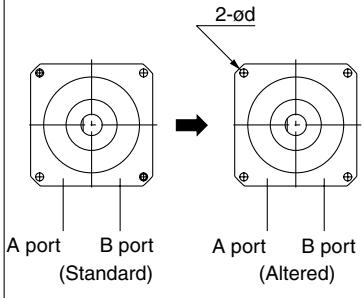
- Parallel keyway is used on the long shaft for size 40.
- This specification is not available for the rotary actuator with auto switch unit.



(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.)

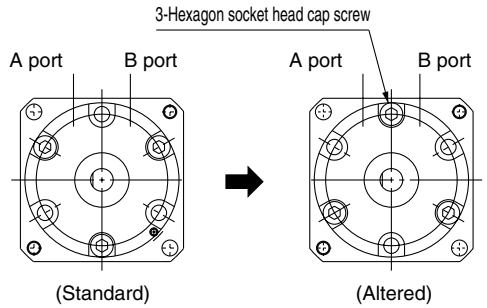


(mm)

Size	d
10	3.4
15	3.4
20	4.5
30	5.5
40	5.5

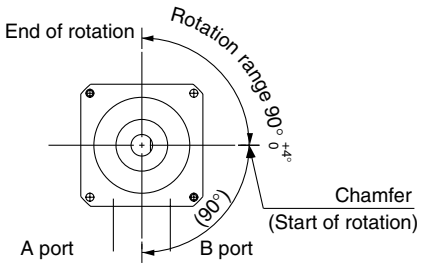
Symbol: C3 Change the position of the screws for tightening the actuator body.

• Not available for size 10.



Symbol: C4 Applicable to single vane style only

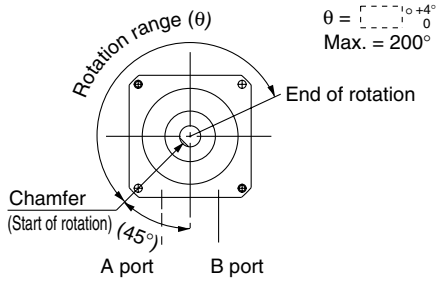
Rotation starts from the horizontal line (90° down from the top to the right side)
• Rotation tolerance for CRBU2W10 is $^{+5°}_{0}$.
• A parallel keyway is used instead $^{+5°}_{0}$ of chamfer for size 40.



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

Symbol: C5 Applicable to single vane style only

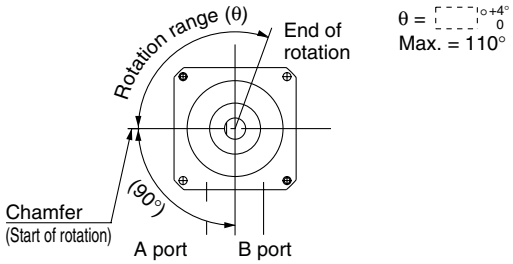
Start of rotation is 45° up from the bottom of the vertical line to the left side.
• Rotation tolerance for CRBU2W10 is $^{+5°}_{0}$.
• A parallel keyway is used instead of chamfer for size 40.



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

Symbol: C6 Applicable to single vane style only

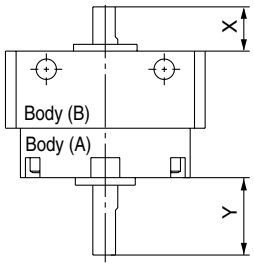
Start of rotation is 45° up from the bottom of the vertical line to the left side.
• Rotation tolerance for CRBU2W10 is $^{+5°}_{0}$.
• A parallel keyway is used instead of chamfer for size 40.



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

Symbol: C7 The shafts are reversed.

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



(mm)

Size	Y	X
10	19	3
15	20.5	6.5
20	22.5	7.5
30	26.5	8.5
40	36	9

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