

Rotary Actuator Vane Type Series **CRB2** Size: 10, 15, 20, 30, 40

RoHS



How to Order

Without auto switch

CRB2 **B** **S** [] [] - **180** **S** **E** **Z** - [] []

Size	10
	15
	20
	30
	40

With auto switch
Size: 10, 15

CDRB2 **F** **W** [] [] - **180** **S** **Z** - **T99** **L** [] [] - [] []

With auto switch
Size: 20, 30, 40

CDRB2 **B** **W** [] [] - **180** **S** **Z** - **T79** **L** [] [] - [] []

With auto switch
(With auto switch unit and built-in magnet)
* Refer to page 139 when the auto switch unit is needed separately.

Mounting
B Basic type
F Flange type
* F: Except size 40

Size
20
30
40

Vane type
S Single vane
D Double vane

Made to Order
For details, refer to the table below.

Shaft type
S Single shaft *
W Double shaft **
J Simple Specials
K Simple Specials
T Simple Specials
Y Simple Specials

Patterned sequencing order
Nil Standard
P Simple Specials/Made to Order
* For details, refer to pages 67 to 78.

Auto switch
Nil Without auto switch (Built-in magnet)
* For applicable auto switch model, refer to the table below.

Number of auto switches
S 1 pc. *
Nil 2 pcs. **
* S: A right-hand auto switch is shipped.
** Nil: A right-hand switch and a left-hand switch are shipped.

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

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

* Connectors are available only for the R73, R80, T79.
** A right-hand switch and a left-hand switch are shipped.

* Single shaft with single flat (size 10 to 30); Key (size 40)
** Double shaft with single flat (Size 10 to 30)
Long shaft key, Short shaft with single flat (Size 40)
Refer to Page 52 for details of simple specials J, K, T and Y.
Note) When an auto switch is mounted to the rotary actuator, only shaft types W and J are available.

Applicable Auto Switches

Refer to pages 807 to 856 for further information on auto switches.

Applicable size	Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire type	Lead wire length (m) [*]			Pre-wired connector	Applicable load	
						DC	AC	Perpendicular	In-line		0.5 (Nil)	3 (L)	5 (Z)			None (N)
For 10, 15	Solid state auto switch	—	Grommet	No	3-wire (NP)	5 V, 12 V	—	S99V S89	Oilproof heavy-duty vinyl cord	●	●	○	○	IC circuit	Relay, PLC	
					3-wire (PMP)	12 V	—	S99V S9P		●	●	○	○			
	Reed auto switch	—	Grommet	2-wire	24 V	5 V, 12 V, 100 V	5 V, 12 V, 24 V, 100 V	—	90A	●	●	○	○	IC circuit		
					—	—	—	97	●	●	○	○				
For 20, 30, 40	Solid state auto switch	—	Grommet	Yes	3-wire (NP)	5 V, 12 V	—	—	S79	●	●	○	○	IC circuit	Relay, PLC	
					3-wire (PMP)	—	—	—	S7P	●	●	○	○			
					Connector	2-wire	12 V	—	—	T79	●	●	○			○
							100 V	—	—	T79C	●	●	○			○
	Reed auto switch	—	Grommet	2-wire	No	—	100 V	—	R73	●	●	○	○	IC circuit		
						—	—	—	R73C	●	●	○	○			
						48 V, 100 V	100 V	—	R80	●	●	○	○			
						—	24 V or less	—	R80C	●	●	○	○			

* Lead wire length symbols: 0.5 m..... Nil (Example) R73C
3 m..... L (Example) R73CL
5 m..... Z (Example) R73CZ
None..... N (Example) R73CN
* Auto switches are shipped together, (but not assembled).

Flange Assembly Part No.

(For details, refer to page 53.)

Model	Assembly part no.
CRB2F□10	P211070-2
CRB2F□15	P211090-2
CRB2F□20	P211060-2
CRB2F□30	P211080-2

Made to Order

Made to Order
(For details, refer to pages 67 to 71, 77, 78.)

Symbol	Description
XA1 to XA24	Shaft type pattern
XC1	Add connecting ports
XC2	Change threaded hole to through-hole
XC3	Change the screw position
XC4	Change the rotation range
XC5	Change rotation range between 0 to 200°
XC6	Change rotation range between 0 to 110°
XC7	Reversed shaft
XC30	Fluorine grease

The above may not be selected when the product comes with an auto switch or angle adjustment unit.
For details, refer to pages 67, 68, 72, 73, 77.

Single Vane Specifications



Model (Size)	CRB2B□10□S	CRB2B□15□S	CRB2B□20□S	CRB2B□30□S	CRB2B□40□S
Vane type	Single vane				
Rotating angle	90°, 180°, 270°		90°, 180°, 270°		90°, 180°, 270°
Fluid	Air (Non-lube)				
Proof pressure (MPa)	1.05			1.5	
Ambient and fluid temperature	5 to 60°C				
Max. operating pressure (MPa)	0.7				1.0
Min. operating pressure (MPa)	0.2		0.15		
Rotation time adjustment range s/90° ^(Note 1)	0.03 to 0.3		0.04 to 0.3		0.07 to 0.5
Allowable kinetic energy (J) ^(Note 2)	0.00015	0.001	0.003	0.02	0.04
Shaft load (N)	15	15	25	30	60
Allowable radial load (N)	10	10	20	25	40
Allowable thrust load (N)	10	10	20	25	40
Bearing type	Bearing				
Port location	Side ported or Axial ported				
Port size (Side ported, Axial ported)	M3 x 0.5			M5 x 0.8	
Angle adjustable range ^(Note 3)	0 to 230°		0 to 240°		0 to 230°
Mounting	Basic type, Flange type				Basic type
Auto switch	Mountable (Side ported only)				

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 270°. For 90° and 180°, refer to page 63.

Double Vane Specifications

Model (Size)	CRB2B□10□D	CRB2B□15□D	CRB2B□20□D	CRB2B□30□D	CRB2B□40□D
Vane type	Double vane				
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		
Rotation time adjustment range s/90° ^(Note 1)	0.03 to 0.3		0.04 to 0.3		0.07 to 0.5
Allowable kinetic energy (J)	0.0003	0.0012	0.0033	0.02	0.04
Shaft load (N)	15	15	25	30	60
Allowable radial load (N)	10	10	20	25	40
Allowable thrust load (N)	10	10	20	25	40
Bearing type	Bearing				
Port location	Side ported or Axial ported				
Port size (Side ported, Axial ported)	M3 x 0.5			M5 x 0.8	
Angle adjustable range ^(Note 3)	0 to 90°				
Mounting	Basic type, Flange type				Basic type
Auto switch	Mountable (Side ported only)				

Note 1) Make sure to operate within the speed regulation range. Exceeding the maximum speed (0.3 sec/90°) can cause the unit to stick or not operate.

Note 3) Adjustment range in the table is for 100°. For 90°, refer to page 63.

Symbol



Volume

(cm³)

Vane type	Single vane										Double vane																												
Model	CRB2B□10□S	CRB2B□15□S	CRB2B□20□S	CRB2B□30□S	CRB2B□40□S	CRB2B□10□D	CRB2B□15□D	CRB2B□20□D	CRB2B□30□D	CRB2B□40□D	CRB2B□10□S	CRB2B□15□S	CRB2B□20□S	CRB2B□30□S	CRB2B□40□S	CRB2B□10□D	CRB2B□15□D	CRB2B□20□D	CRB2B□30□D	CRB2B□40□D																			
Rotation	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°
Volume	1 (0.6)	1.2	1.5	1.5 (1.0)	2.9	3.7	4.8 (3.6)	6.1	7.9	11.3 (8.5)	15	20.2	25 (18.7)	31.5	41	1.0	1.1	2.6	2.7	5.6	5.7	14.4	14.5	33	34														

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

Weight

(g)

Vane type	Single vane										Double vane																										
Model	CRB2BW10□S	CRB2BW15□S	CRB2BW20□S	CRB2BW30□S	CRB2BW40□S	CRB2BW10□D	CRB2BW15□D	CRB2BW20□D	CRB2BW30□D	CRB2BW40□D	CRB2BW10□S	CRB2BW15□S	CRB2BW20□S	CRB2BW30□S	CRB2BW40□S	CRB2BW10□D	CRB2BW15□D	CRB2BW20□D	CRB2BW30□D	CRB2BW40□D																	
Rotating angle	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	180°	270°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°	90°	100°
Rotary actuator body	27	26.7	26.4	48.4	47.4	46.4	104	103	101	199	194	189	385	374	363	42.7	43.7	55.4	58.4	119	142	219	239	398	444												
Flange assembly	9			10	10		19			25			—			9	10	19	25	—																	
Auto switch unit	15			20	20		28			38			43			15	20	28	38	43																	
Angle adjuster unit	30			47	47		90			150			203			30	47	90	150	203																	

CRB2
-Z
CRB2U
CRB1
MSU
CRJ
CRA1
-Z
CRA1
CRQ2
MSQ
MSZ
CRQ2X
MSQX
MRQ

D-□

Series CRB2

Rotary Actuator: Replaceable Shaft

A shaft can be replaced with a different shaft type, except for standard shaft type.

Without auto switch CRB2B J P Size — Rotating angle Vane type Port location Z — Made to Order

● **Patterned sequencing order**

Nil	Without Made to Order
P	Simple Specials/Made to Order

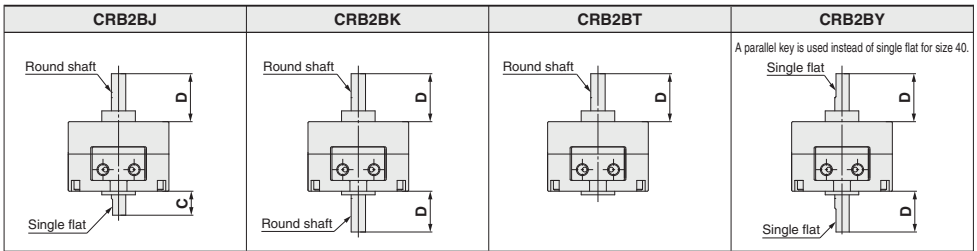
Shaft type ●

Symbol	Shaft type	Shaft-end shape	Size				
			10	15	20	30	40
J	Double shaft	Long shaft without single flat & Short shaft with single flat	●	●	●	●	●
		Long shaft without keyway & Short shaft with single flat	●	●	●	●	●
K	Double shaft	Double round shaft	●	●	●	●	●
T	Single shaft	Single round shaft	●	●	●	●	●
Y	Double shaft	Same length double long shaft with single flat on both shafts	●	●	●	●	●
		Double shaft key					●

● **Made to Order**

Symbol	Description
XA31 to XA58	Shaft type pattern
XC1	Add connecting ports
XC2	Change threaded holes to through-holes
XC3	Change the screw position
XC4	Change the rotation range
XC5	Change rotation range between 0 and 200°
XC6	Change rotation range between 0 and 110°
XC7	Reversed shaft
XC30	Fluorine grease

For details, refer to pages 72 to 78.



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

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

With auto switch With angle adjuster unit CDRB2B J U P Size — Rotating angle Vane type Z — Made to Order

● **Patterned sequencing order**

Nil	Without Made to Order
P	Simple Specials/ Made to Order

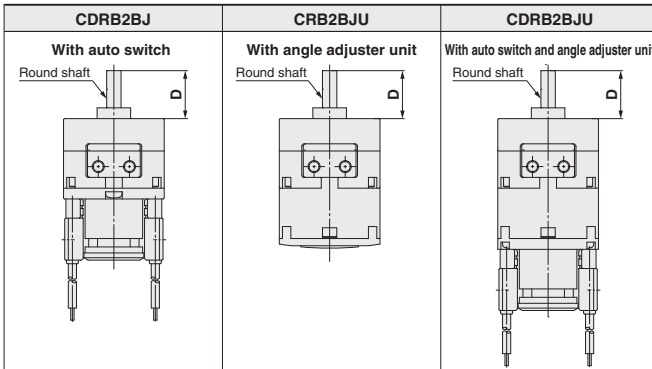
Shaft type ●

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

● **Made to Order**

Symbol	Description
XA31 to XA58	Shaft type pattern
XC1	Add connecting port
XC2	Change threaded hole to through-hole
XC3	Change the screw position
XC4	Change rotation range
XC5	Change rotation range between 0 and 200°
XC6	Change rotation range between 0 and 110°
XC7	Reversed shaft
XC30	Fluorine grease

The above may not be selected when the product comes with an auto switch or angle adjustment unit. For details, refer to pages 72, 73, 77.



	(mm)				
Size	10	15	20	30	40
D	14	18	20	22	30

Note 1) Only side ports are available for connecting port location.
Note 2) Dimensions and tolerance of the shaft and single flat (a parallel key for size 40) are the same as the standard.

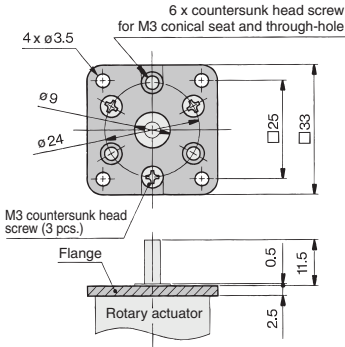
Optional Specifications: Flange (Size: 10, 15, 20, 30)



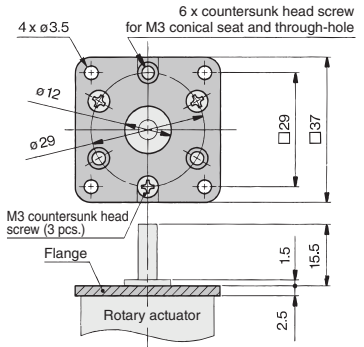
Basic type	Type			Flange assembly part no.
	With auto switch	With angle adjuster	With angle adjuster and auto switch	
CRB2F□10	CDRB2FW10	CRB2FWU10	CDRB2FWU10	P211070-2
CRB2F□15	CDRB2FW15	CRB2FWU15	CDRB2FWU15	P211090-2
CRB2F□20	CDRB2FW20	CRB2FWU20	CDRB2FWU20	P211060-2
CRB2F□30	CDRB2FW30	CRB2FWU30	CDRB2FWU30	P211080-2

Note 1) The flange (with countersunk head screws) is not mounted on the actuator at the time of shipment.
Note 2) The flange can be mounted on the rotary actuator at 60° intervals.

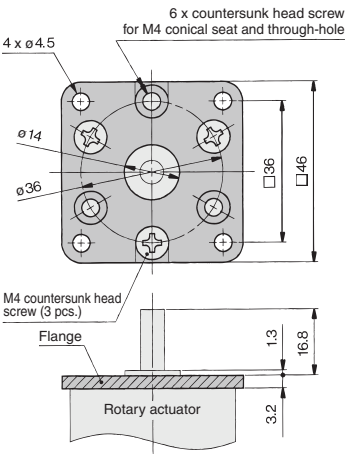
**Assembly Part No.: P211070-2
(for C□RB2F□□10)**



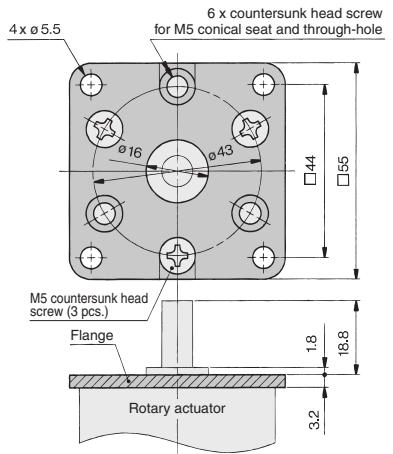
**Assembly Part No.: P211090-2
(for C□RB2F□□15)**



**Assembly Part No.: P211060-2
(for C□RB2F□□20)**



**Assembly Part No.: P211080-2
(for C□RB2F□□30)**

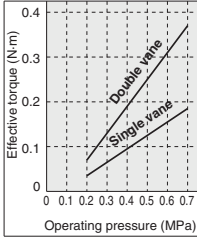


- CRB2-Z
- CRBU2
- CRB1
- MSU
- CRJ
- CRA1-Z
- CRA1
- CRQ2
- MSQ
- MSZ
- CRQ2X
- MSQX
- MRQ

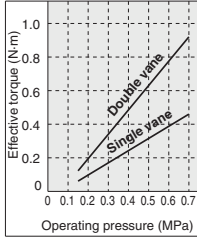
D-□

Effective Output

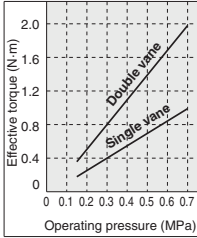
CRB2B□10



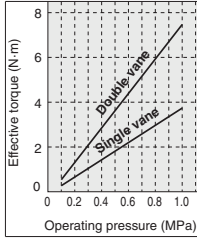
CRB2B□15



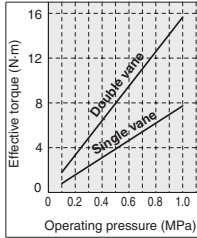
CRB2B□20



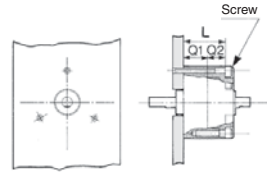
CRB2B□30



CRB2B□40



Direct Mounting of Body



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

Reference screw size

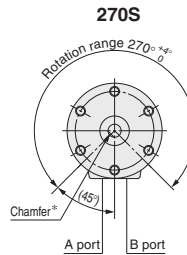
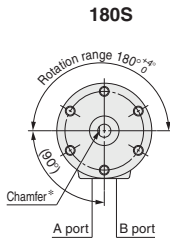
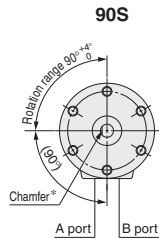
Model	L	Screw
CRB2B□10	11.5*	M2.5
CRB2B□15	16	M2.5
CRB2B□20	24.5	M3
CRB2B□30	34.5	M4
CRB2B□40	39.5	M4

* Only the size 10 actuators have different L dimensions for single and double vane.
Double vane: L = 20.5
* Refer to page 58 for Q1 and Q2 dimensions.

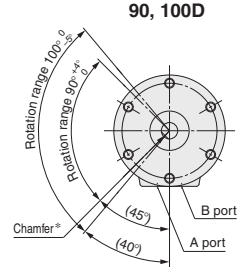
Chamfered Position and Rotation Range: Top View from Long Shaft Side

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

Single vane



Double vane



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

Note 1) For single vane type, the tolerance of rotating angle of 90° , 180° , 270° will be $\pm 0^{\circ}$ for size 10 only.

For double vane type, the tolerance of rotating angle of 90° will be $\pm 0^{\circ}$ for size 10 only.

Note 2) The chamfered position of the double vane type shows the 90° specification position.

Construction

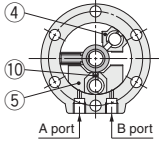
Single vane

- Figures for 90° and 180° show the condition of the actuators when B port is pressurized, and the figure for 270° shows the position of the ports during rotation.

CRB2BS10/15/20/30/40-□SZ

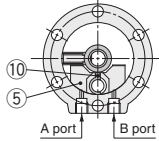
For 90°

(Viewed from the output shaft side)



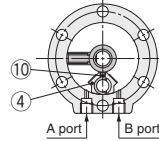
For 180°

(Viewed from the output shaft side)

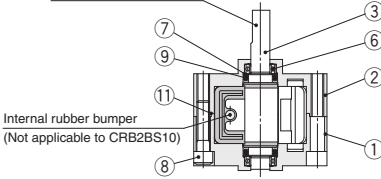


For 270°

(Viewed from the output shaft side)



12 Parallel key for size 40 (Output shaft)



Internal rubber bumper
(Not applicable to CRB2BS10)

Component Parts

No.	Description	Material	Note
1	Body (A)	Aluminum die-casted	Painted
2	Body (B)	Aluminum die-casted	Painted
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	SCM	Special screw
9	O-ring	NBR	
10	Stopper seal	NBR	Special seal
11	O-ring	NBR	Size 40 only
12	Parallel key	Carbon steel	Size 40 only

* The material is carbon steel for size 30 and 40.

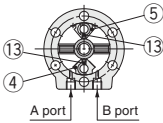
Double vane

- Figures below show the intermediate rotation position when A or B port is pressurized.

CRB2BS10-□DZ

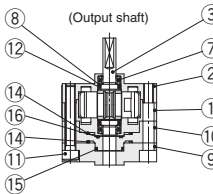
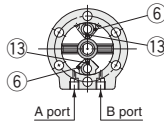
For 90°

(Viewed from the output shaft side)



For 100°

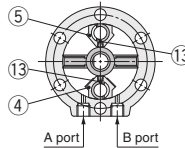
(Viewed from the output shaft side)



CRB2BS15/20/30/40-□DZ

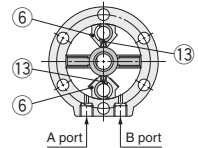
For 90°

(Viewed from the output shaft side)

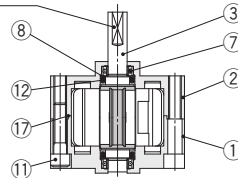


For 100°

(Viewed from the output shaft side)



18 Parallel key for size 40 (Output shaft)



Component Parts

No.	Description	Material	Note
1	Body (A)	Aluminum die-casted	Painted
2	Body (B)	Aluminum die-casted	Painted
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	

* For size 40, material for ④⑥ is die-cast aluminum.

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

CRB2

-Z

CRBU2

CRB1

MSU

CRJ

CRA1

-Z

CRA1

CRQ2

MSQ

MSZ

CRQ2X

MSQX

MRQ

D-□

Series CRB2

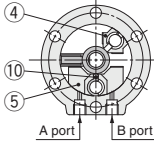
Construction

Single vane

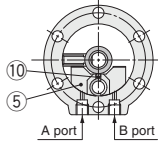
- Figures for 90° and 180° show the condition of the actuators when B port is pressurized, and the figure for 270° shows the position of the ports during rotation.

CRB2BW10/15/20/30/40-□SZ

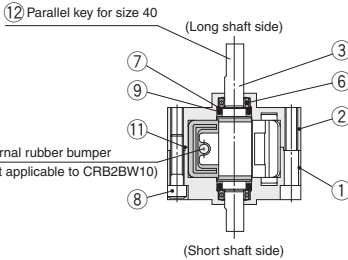
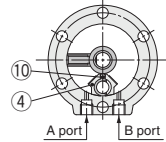
For 90°
(Viewed from the long shaft side)



For 180°
(Viewed from the long shaft side)



For 270°
(Viewed from the long shaft side)



Component Parts

No.	Description	Material	Note
1	Body (A)	Aluminum die-casted	Painted
2	Body (B)	Aluminum die-casted	Painted
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	SCM	Special screw
9	O-ring	NBR	
10	Stopper seal	NBR	Special seal
11	O-ring	NBR	Size 40 only
12	Parallel key	Carbon steel	Size 40 only

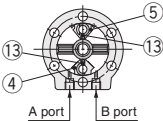
* The material is carbon steel for size 30 and 40.

Double vane

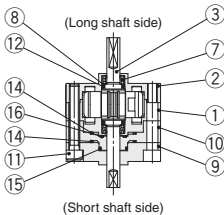
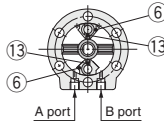
- Figures below show the intermediate rotation position when A or B port is pressurized.

CRB2BW10-□DZ

For 90°
(Viewed from the long shaft side)

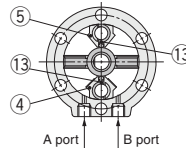


For 100°
(Viewed from the long shaft side)

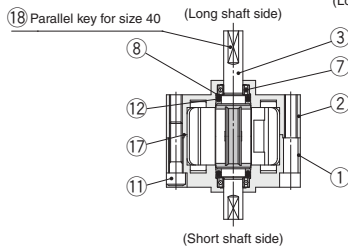
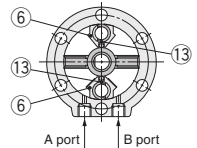


CRB2BW15/20/30/40-□DZ

For 90°
(Viewed from the long shaft side)



For 100°
(Viewed from the long shaft side)



Component Parts

No.	Description	Material	Note
1	Body (A)	Aluminum die-casted	Painted
2	Body (B)	Aluminum die-casted	Painted
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	

* For size 40, material for ④⑥ is die-cast aluminum.

Construction (With auto switch)

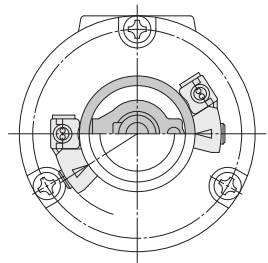
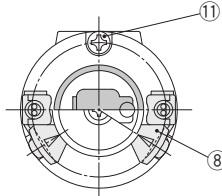
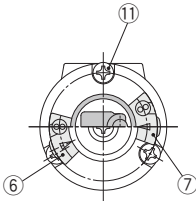
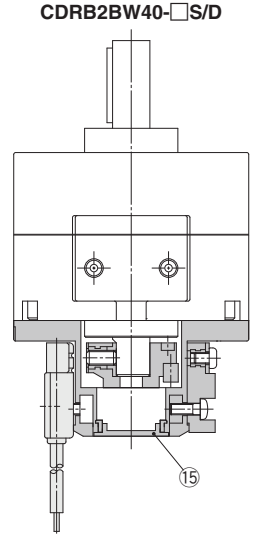
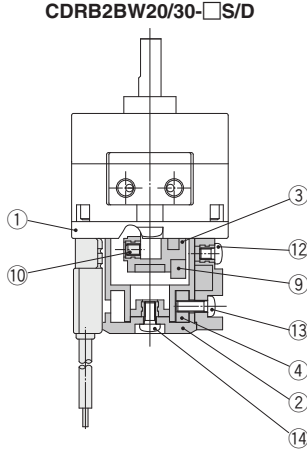
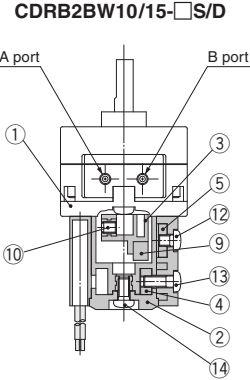
Single vane

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

(The unit is common for single vane type and double vane type.)

Double vane

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



Component Parts

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

No.	Description	Material
10	Hexagon socket head set screw	Stainless steel
11	Cross recessed round head screw	Stainless steel
12	Cross recessed round head screw	Stainless steel
13	Cross recessed round head screw	Stainless steel
14	Cross recessed round head screw	Stainless steel
15	Rubber cap	NBR

* For the CDRB2BW10, 2 cross recessed round head screws ⑪ are required.

CRB2-Z
CRBU2
CRB1
MSU
CRJ
CRA1-Z
CRA1
CRQ2
MSQ
MSZ
CR02X
MSQX
MRQ

D-□

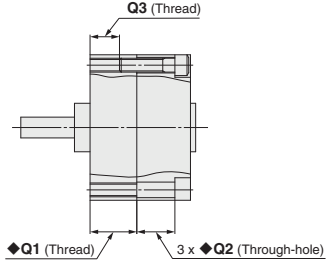
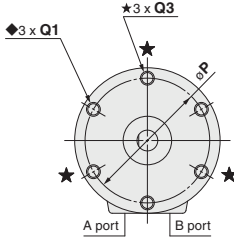
Series CRB2

Dimensions: 10, 15, 20, 30, 40 (The size 10 double vane type is indicated on page 59.)

- For single vane type, the figures below show actuators for 90° and 180° when B port is pressurized.
For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurized.

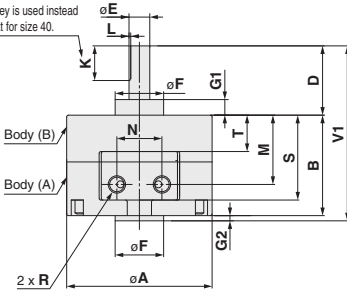
Single shaft/CRB2BS□-□S/D

<Port location: Side ported>

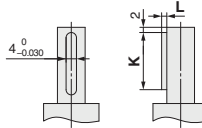


Single shaft

A parallel key is used instead of single flat for size 40.



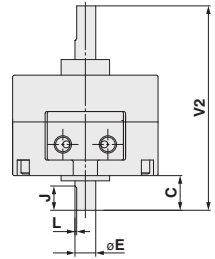
Size 40



Key dimensions	L1	
Model	b (h9)	h (h9)
CRB2B□40	4 ⁰ _{-0.030}	4 ⁰ _{-0.030}
	20	

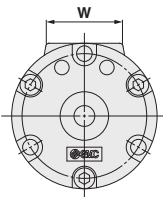
Double shaft/CRB2BW□-□S/D

<Port location: Side ported>

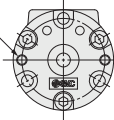


CRB2B□10-□S

<Port location: Side ported>

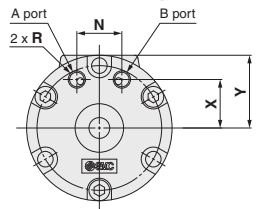


2 x M3 x 0.5 (Depth 4)
Size 10 only
(for mounting unit)



CRB2B□□-□SE/DE

<Port location: Axial ported>



Model	A	B	C	D	E(g7)	F(h9)	G1	G2	J	K	L	M	N	P	Q			R	S	T	V1	V2	W	X	Y
															øQ1	øQ2	★Q3								
CRB2B□10-□S	29	15	8	14	4 ^{-0.004} _{-0.016}	9 ⁰ _{-0.036}	3	1	5	9	0.5	9.5	9.5	24	M3 (6)	6	—	M3	14	3.6	30	37	19.8	8.5	14.5
CRB2B□10-□SE															M3 (10)	6	M3 (5)	M3	19	7.6	39.5	47	21	11	17
CRB2B□15-□□	34	20	9	18	5 ^{-0.004} _{-0.016}	12 ⁰ _{-0.043}	4	1.5	6	10	0.5	14	10	29	M3 (10)	6	M3 (5)	M3	19	7.6	39.5	47	21	11	17
CRB2B□15-□□E															M4 (13.5)	11	M4 (7.5)	M5	24.5	10.5	50.5	59	22	14	21
CRB2B□20-□□	42	29	10	20	6 ^{-0.004} _{-0.016}	14 ⁰ _{-0.043}	4.5	1.5	7	10	0.5	20	13	36	M4 (13.5)	11	M4 (7.5)	M5	24.5	10.5	50.5	59	22	14	21
CRB2B□20-□□E															M5 (18)	16.5	M5 (10)	M5	34.5	14	64	75	24	15.5	25
CRB2B□30-□□	50	40	13	22	8 ^{-0.005} _{-0.020}	16 ⁰ _{-0.043}	5	2	8	12	1.0	26	14	43	M5 (18)	16.5	M5 (10)	M5	34.5	14	64	75	24	15.5	25
CRB2B□30-□□E															M5 (16)	17.5	M5 (10)	M5	39.8	17	79.5	90	30	21	31.6
CRB2B□40-□□	63	45	15	30	10 ^{-0.005} _{-0.020}	25 ⁰ _{-0.052}	6.5	4.5	9	20	1.5	31	20	56	M5 (16)	17.5	M5 (10)	M5	39.8	17	79.5	90	30	21	31.6
CRB2B□40-□□E															M5 (16)	17.5	M5 (10)	M5	39.8	17	79.5	90	30	21	31.6

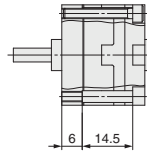
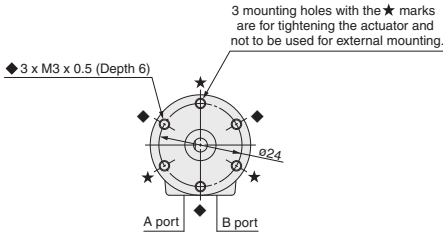
Dimensions: 10

Double vane

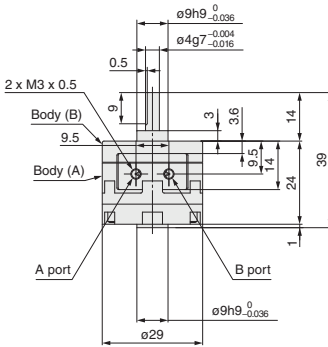
• Following figures show the intermediate rotation position when A or B port is pressurized.

Single shaft/CRB2BS□-10D

<Port location: Side ported>

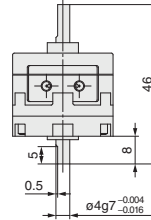


Single shaft

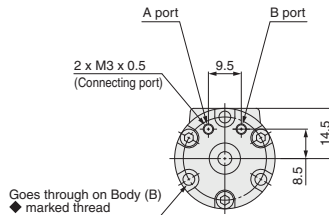
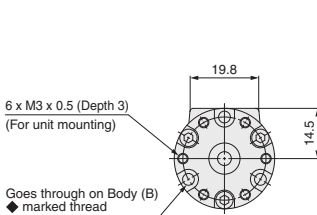


Double shaft/CRB2BW10-D

<Port location: Side ported>



CRB2B□10-□DE
<Port location: Axial ported>



CRB2-Z
CRBU2
CRB1
MSU
CRJ
CRA1-Z
CRA1
CRQ2
MSQ
MSZ
CRQ2X
MSQX
MRQ

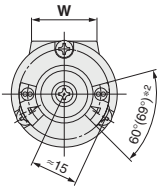
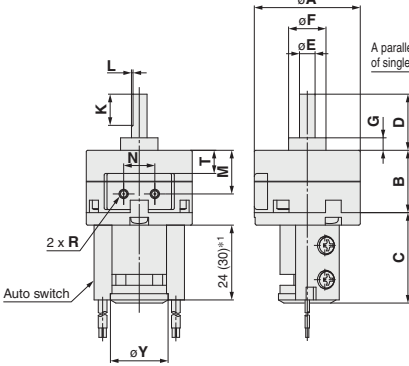
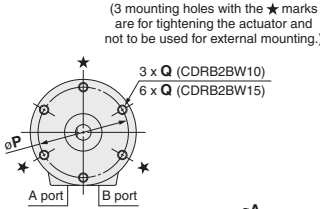
D-□

Series CDRB2

Dimensions: 10, 15, 20, 30, 40 (The size 10 double vane type is indicated on page 61.)

- For single vane type, the figures below show actuators for 90° and 180° when B port is pressurized.
For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurized.

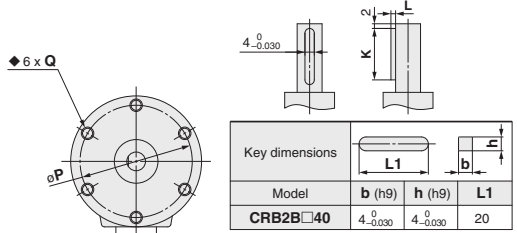
CDRB2BW10/15-□S
CDRB2BW15-□D



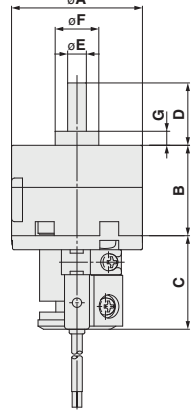
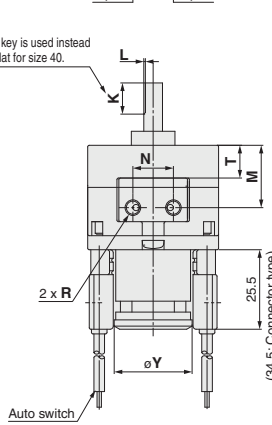
- *1. The length is 24 when any of the following auto switches are used:
D-90/90A/S99(V)/T99(V)/S9P(V)
The length is 30 when any of the following auto switches are used:
D-97/93A
- *2. The angle is 60° when any of the following auto switches are used:
D-90/90A/97/93A
The angle is 69° when any of the following auto switches are used:
D-S99(V)/T99(V)/S9P(V)

CDRB2BW20/30/40-□S/D

Size 40

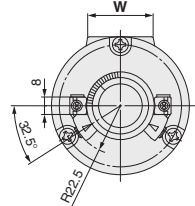
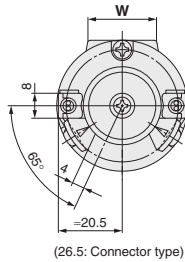


A parallel key is used instead of single flat for size 40.



CDRB2BW20/30-□S/D

CDRB2BW40-□S/D



Model	A	B	C	D	E (g7)	F (h9)	G	K	L	M	N	P	Q	R	T	W	Y
CDRB2BW10-□S	29	15	29	14	4 ^{-0.004} _{-0.016}	9 ⁰ _{-0.036}	3	9	0.5	9.5	9.5	24	M3 x 0.5 depth 6	M3	3.6	19.8	18.5
CDRB2BW15-□S	34	20	29	18	5 ^{-0.004} _{-0.016}	12 ⁰ _{-0.043}	4	10	0.5	14	10	29	M3 x 0.5 depth 5	M3	7.6	21	18.5
CDRB2BW20-□S	42	29	30	20	6 ^{-0.004} _{-0.016}	14 ⁰ _{-0.043}	4.5	10	0.5	20	13	36	M4 x 0.7 depth 7	M5	10.5	22	25
CDRB2BW30-□S	50	40	31	22	8 ^{-0.005} _{-0.020}	16 ⁰ _{-0.043}	5	12	1.0	26	14	43	M5 x 0.8 depth 10	M5	14	24	25
CDRB2BW40-□S	63	45	31	30	10 ^{-0.005} _{-0.020}	25 ⁰ _{-0.052}	6.5	20	1.5	31	20	56	M5 x 0.8 depth 10	M5	17	30	31

Rotary Actuator with Angle Adjuster Vane Type

Series **CRB2BWU**

Size: 10, 15, 20, 30, 40

RoHS



How to Order

Without auto switch
CRB2 **B** WU [] [] - 180 **S** Z [] []

With auto switch
Size: 10, 15
CDRB2 **F** WU [] [] - 180 **S** Z - T99 **L** [] []

With auto switch
Size: 20, 30, 40
CDRB2 **B** WU [] [] - 180 **S** Z - T99 **L** [] []

Mounting
B Basic type
F Flange type
 * F: Except size 40

Vane type
S Single vane
D Double vane

Auto switch
Nil Without auto switch (Built-in magnet)
 * For applicable auto switch model, refer to the table below.

Number of auto switches
S 1 pc. **
Nil 2 pcs. **

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

Patterned sequencing order
Nil Standard
P Simple Specials/Made to Order
 * For details, refer to pages 67 to 78.

Rotating angle

Single vane	90	90°
	180	180°
Double vane	270	270°
	90	90°
	100	100°

Made to Order
 For details, refer to the table below.

* S: A right-hand auto switch is shipped.
 ** Nil: A right-hand switch and a left-hand switch are shipped.

* Connectors are available only for the R73, R80, 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 Switches/Refer to pages 807 to 856 for further information on auto switches.

Applicable size	Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire type	Lead wire length (m)**			Pre-wired connector	Applicable load
						DC	AC	Perpendicular	In-line		0.5 (Nil)	3 (L)	5 (Z)		
For 10, 15	Solid state auto switch	—	Grommet	Yes	3-wire (PN)	5 V, 12 V	—	S99V	S99	Oilproof heavy-duty vinyl cord	●	●	○	—	IC circuit
					3-wire (FP)	12 V	—	S99V	S99		●	●	○	—	
	Reed auto switch	—	Grommet	No	2-wire	5 V, 12 V	5 V, 12 V, 24 V	—	90	Vinyl parallel cord	●	●	●	—	IC circuit
						100 V	100 V	—	90A		●	●	●	—	
	For 20, 30, 40	Solid state auto switch	—	Grommet	Yes	3-wire (PN)	5 V, 12 V	—	S79	Oilproof heavy-duty vinyl cord	●	●	○	—	IC circuit
						3-wire (FP)	12 V	—	S7P		●	●	○	—	
Reed auto switch		—	Grommet	No	2-wire	5 V, 12 V	100 V	—	T79	Oilproof heavy-duty vinyl cord	●	●	●	—	Relay, PLC
						100 V	—	T79C	●		●	●	—		
Connector		—	Grommet	Yes	2-wire	48 V, 100 V	100 V	—	R73	Oilproof heavy-duty vinyl cord	●	●	●	—	IC circuit
						24 V or less	—	R80C	●		●	●	—		

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

* Solid state auto switches marked with "○" are produced upon receipt of order.

* Auto switches are shipped together, (but not assembled).

Made to Order
 (For details, refer to pages 67 to 71, 77, 88.)

Symbol	Description
XA1 to XA24	Shaft type pattern
XC1	Add connecting ports
XC2	Change threaded hole to through-hole
XC3	Change the screw position
XC4	Change the rotation range
XC5	Change rotation range between 0 and 200°
XC6	Change rotation range between 0 and 110°
XC7	Reversed shaft
XC30	Fluorine grease

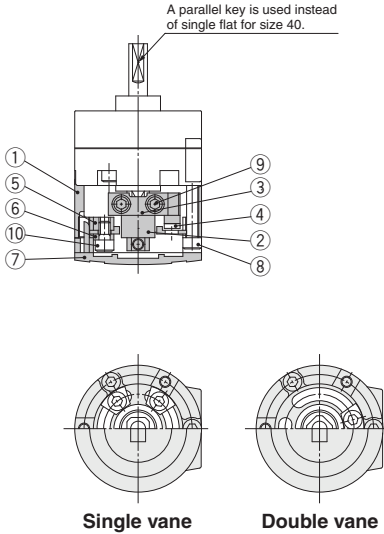
The above may not be selected when the product comes with an auto switch or angle adjuster unit. For details, refer to pages 67, 68, 72, 73 and 77.

Construction: 10, 15, 20, 30, 40

- The unit is common for single vane type and double vane type.

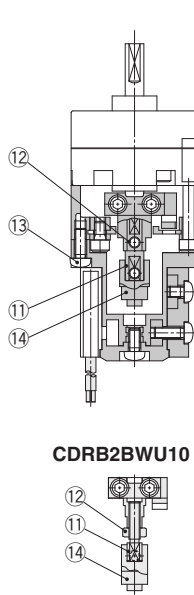
With angle adjuster

CRB2BWU10/15/20/30/40-□S/D

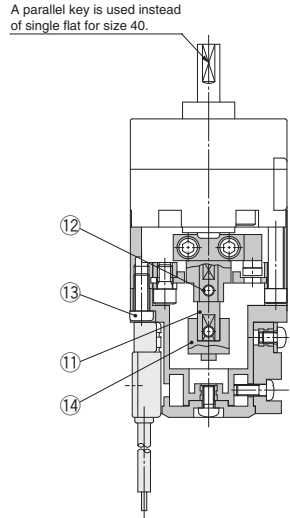


With angle adjuster and auto switch

CDRB2BWU10/15-□S/D



CDRB2BWU20/30/40-□S/D



CRB2-Z
CRBU2
CRB1
MSU
CRJ
CRA1-Z
CRA1
CRQ2
MSQ
MSZ
CRQ2X
MSQX
MRQ

Component Parts

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

⚠ Specific Product Precautions

Be sure to read before handling. Refer to front matter 35 for Safety Instructions, pages 4 to 14 for Rotary Actuator Precautions and Auto Switch Precautions.

Angle Adjuster Unit

⚠ Caution

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

Rotating angle of rotary actuator	Rotating angle adjustment range
270° ⁺⁴ / ₀	0° to 230° (Size: 10, 40) *1
	0° to 240° (Size: 15, 20, 30)
180° ⁺⁴ / ₀	0° to 175°
90° ⁺⁴ / ₀	0° to 85°

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

- Connecting ports are side ported only.
- The allowable kinetic energy is the same as the specifications of the rotary actuator.
- Use a 100° rotary actuator when you desire to adjust the angle to 90° using a double vane type.

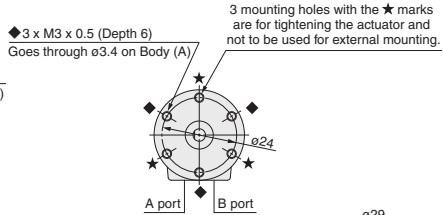
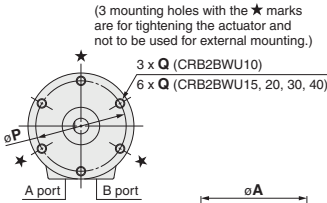
D-□

Series CRB2BWU

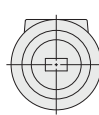
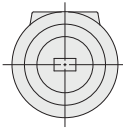
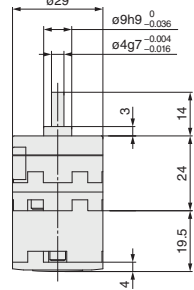
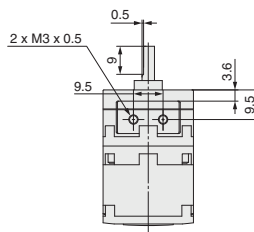
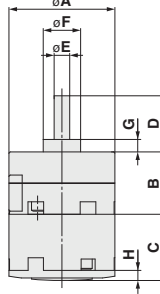
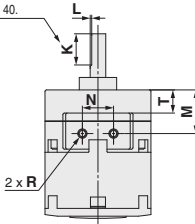
Dimensions: 10, 15, 20, 30, 40

- For single vane type, the figures below show actuators for 90° (without unit) when the B port is pressurized.
For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurized.

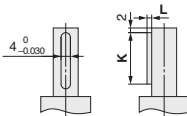
CRB2BWU10/15/20/30/40-□S CRB2BWU15/20/30/40-□D



A parallel key is used instead of single flat for size 40.



Size 40



Key dimensions	L1		L1
	b (h9)	h (h9)	
Model	b (h9)	h (h9)	L1
CRB2BWU40	4 ⁰ / _{-0.030}	4 ⁰ / _{-0.030}	20

Model	A	B	C	D	E (g7)	F (h9)	G	K	L	M	N	P	Q	R	T
CRB2BWU10-□S	29	15	19.5	14	4 ^{-0.004} / _{-0.016}	9 ⁰ / _{-0.036}	3	9	0.5	9.5	9.5	24	M3 x 0.5 depth 6	M3	3.6
CRB2BWU15-□S	34	20	21.2	18	5 ^{-0.004} / _{-0.016}	12 ⁰ / _{-0.043}	4	10	0.5	14	10	29	M3 x 0.5 depth 5	M3	7.6
CRB2BWU20-□S	42	29	25	20	6 ^{-0.004} / _{-0.016}	14 ⁰ / _{-0.043}	4.5	10	0.5	20	13	36	M4 x 0.7 depth 7	M5	10.5
CRB2BWU20-□D	42	29	25	20	6 ^{-0.004} / _{-0.016}	14 ⁰ / _{-0.043}	4.5	10	0.5	20	13	36	M4 x 0.7 depth 7	M5	10.5
CRB2BWU30-□S	50	40	29	22	8 ^{-0.005} / _{-0.020}	16 ⁰ / _{-0.043}	5	12	1.0	26	14	43	M5 x 0.8 depth 10	M5	14
CRB2BWU30-□D	50	40	29	22	8 ^{-0.005} / _{-0.020}	16 ⁰ / _{-0.043}	5	12	1.0	26	14	43	M5 x 0.8 depth 10	M5	14
CRB2BWU40-□S	63	45	36.3	30	10 ^{-0.005} / _{-0.020}	25 ⁰ / _{-0.052}	6.5	20	1.5	31	20	56	M5 x 0.8 depth 10	M5	17
CRB2BWU40-□D	63	45	36.3	30	10 ^{-0.005} / _{-0.020}	25 ⁰ / _{-0.052}	6.5	20	1.5	31	20	56	M5 x 0.8 depth 10	M5	17

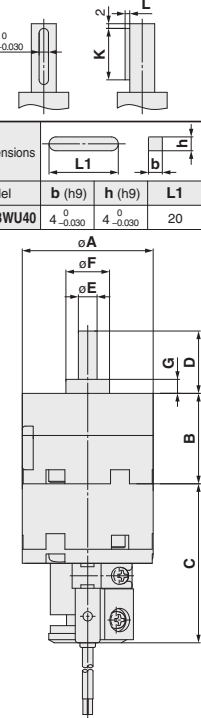
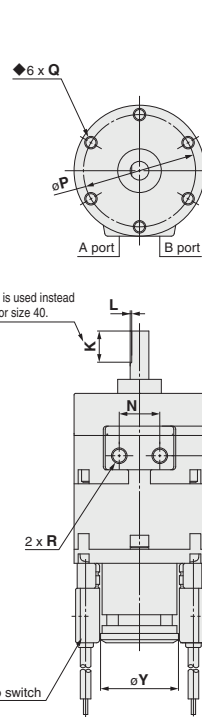
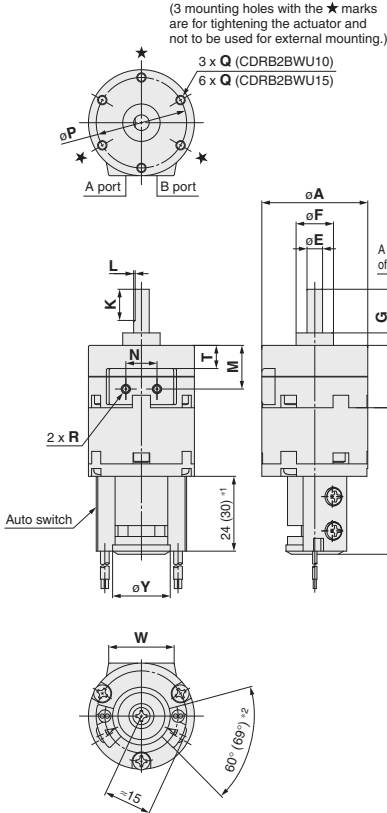
Dimensions: 10, 15, 20, 30, 40 (The size 10 double vane type is indicated on page 66.)

- For single vane type, the figures below show actuators for 90° (without unit) when the B port is pressurized.
For double vane type, the figures below show the intermediate rotation position when the A or B port is pressurized.

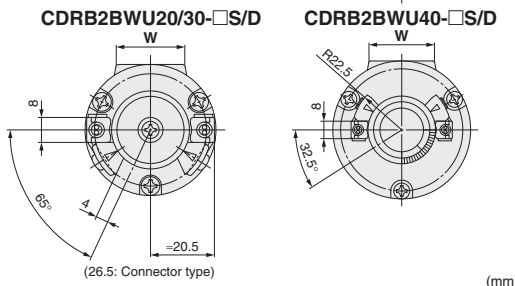
CDRB2BWU10/15-□S
CDRB2BWU15-□D

CDRB2BWU20/30/40-□S/D

Size 40



- *1. The length is 24 when any of the following auto switches are used: D-90/90A/S99(V)/T99(V)/S9P(V)
The length is 30 when any of the following auto switches are used: D-97/93A
- *2. The angle is 60° when any of the following auto switches are used: D-90/90A/97/93A
The angle is 69° when any of the following auto switches are used: D-S99(V)/T99(V)/S9P(V)



Model	A	B	C	D	E(g7)	F(h9)	G	K	L	M	N	P	Q	R	T	W	Y
CDRB2BWU10-□S	29	15	45.5	14	4 ^{-0.004} _{-0.016}	9 ⁰ _{-0.036}	3	9	0.5	9.5	9.5	24	M3 x 0.5 depth 6	M3	3.6	19.8	18.5
CDRB2BWU15-□S	34	20	47	18	5 ^{-0.004} _{-0.016}	12 ⁰ _{-0.043}	4	10	0.5	14	10	29	M3 x 0.5 depth 5	M3	7.6	21	18.5
CDRB2BWU20-□S	42	29	51	20	6 ^{-0.004} _{-0.016}	14 ⁰ _{-0.043}	4.5	10	0.5	20	13	36	M4 x 0.7 depth 7	M5	10.5	22	25
CDRB2BWU20-□D	42	29	51	20	6 ^{-0.004} _{-0.016}	14 ⁰ _{-0.043}	4.5	10	0.5	20	13	36	M4 x 0.7 depth 7	M5	10.5	22	25
CDRB2BWU30-□S	50	40	55.5	22	8 ^{-0.005} _{-0.020}	16 ⁰ _{-0.043}	5	12	1.0	26	14	43	M5 x 0.8 depth 10	M5	14	24	25
CDRB2BWU30-□D	50	40	55.5	22	8 ^{-0.005} _{-0.020}	16 ⁰ _{-0.043}	5	12	1.0	26	14	43	M5 x 0.8 depth 10	M5	14	24	25
CDRB2BWU40-□S	63	45	62.2	30	10 ^{-0.005} _{-0.020}	25 ⁰ _{-0.052}	6.5	20	1.5	31	20	56	M5 x 0.8 depth 10	M5	17	30	31
CDRB2BWU40-□D	63	45	62.2	30	10 ^{-0.005} _{-0.020}	25 ⁰ _{-0.052}	6.5	20	1.5	31	20	56	M5 x 0.8 depth 10	M5	17	30	31

CRB2-Z
CRBU2
CRB1
MSU
CRJ
CRA1-Z
CRA1
CRQ2
MSQ
MSZ
CRQ2X
MSQX
MRQ



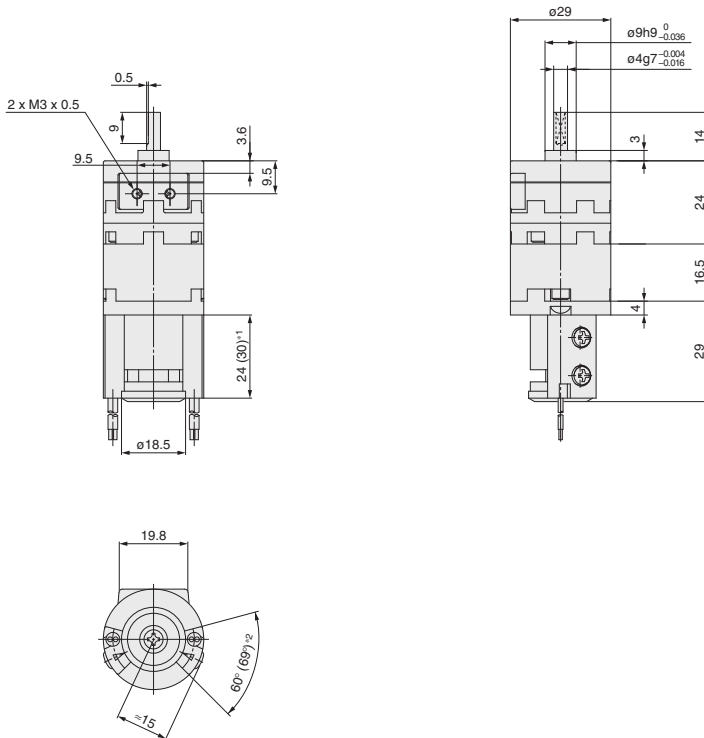
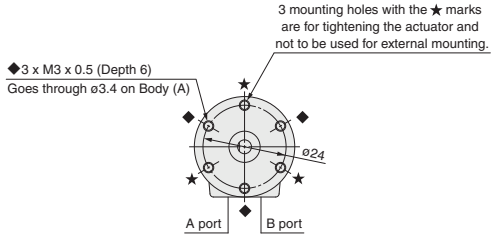
Series CRB2BWU

Dimensions: 10

Double vane

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

CDRB2BWU10-□□



*1. The length is 24 when any of the following auto switches are used: D-90/90A/S99(V)/T99(V)/S9P(V)

The length is 30 when any of the following auto switches are used: D-97/93A

*2. The angle is 60° when any of the following auto switches are used: D-90/90A/97/93A

The angle is 69° when any of the following auto switches are used: D-S99(V)/T99(V)/S9P(V)

Series CRB2 (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. (Refer to front matter 32)

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

Symbol

-XA1 to -XA24

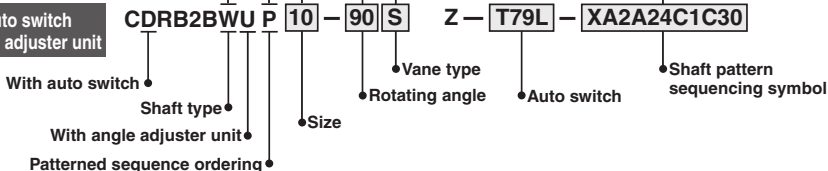
Shaft Pattern Sequencing I

Applicable shaft type: W (Standard)

Without auto switch



With auto switch
With angle adjuster unit



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	Double-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 and/or with angle adjuster unit.

●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*	Double-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	●	●	●	●	●

CRB2

-Z

CRBU2

CRB1

MSU

CRJ

CRA1

-Z

CRA1

CRQ2

MSQ

MSZ

CRQ2X

MSQX

MRQ

D-□

Combination

XA□ Combination

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

A combination of up to two XA□s are available.
Example: -XA2A24

XA□, XC□ Combination

Combination other than -XA□, such as Made to Order (-XC□), is also available.
Refer to pages 77 and 78 for details on the Made-to-Order specifications.

Symbol	Description	Applicable size	Combination
			XA1 to XA24
XC1*	Add connecting port	10, 15, 20, 30, 40	●
XC2*	Change threaded holes to through-holes	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 and/or with angle adjuster unit.

A total of four XA□ and XC□ combinations is available.

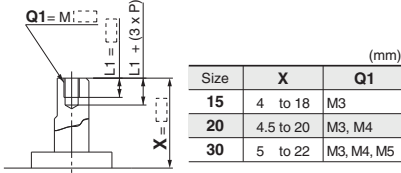
Example: -XA2A24C1C30
-XA2C1C4C30

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.)

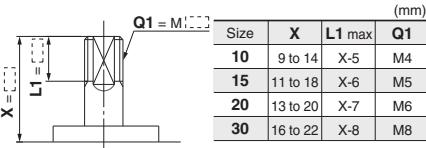
- Not available for size 10.
- The maximum dimension L1 is, as a rule, twice the thread size.
- (Example) For M3: L1 = 6 mm
- Applicable shaft type: W



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

(If shortening the shaft is not required, indicate "*" for dimension X.)

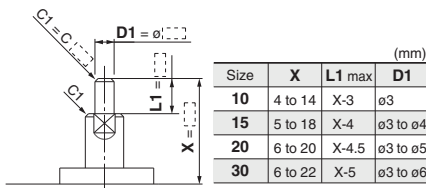
- Applicable shaft type: W



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

(If shortening the shaft is not required, indicate "*" for dimension X.)

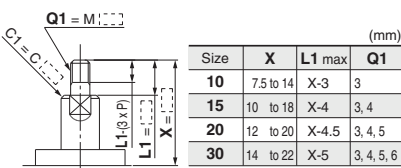
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.
- (If not specifying dimension C1, indicate "*" instead.)



Symbol: A7 The long shaft can be further shortened by machining it into a stepped round shaft with male threads.

(If shortening the shaft is not required, indicate "*" for dimension X.)

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

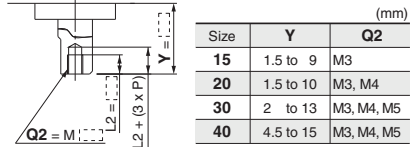


Axial: Bottom (Short shaft side)

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

(If shortening the shaft is not required, indicate "*" for dimension Y.)

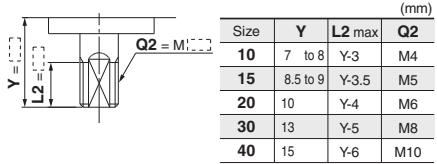
- Not available for size 10.
- The maximum dimension L2 is, as a rule, twice the thread size.
- (Example) For M3: L2 = 6 mm
- Applicable shaft type: W



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.)

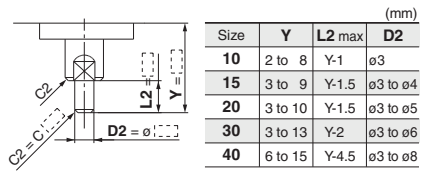
- Applicable shaft type: W



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.)

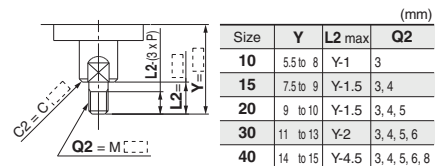
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.
- (If not specifying dimension C2, indicate "*" instead.)



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.)



CRB2-Z

CRBU2

CRB1

MSU

CRJ

CRA1-Z

CRA1

CRQ2

MSQ

MSZ

CRQ2X

MSQX

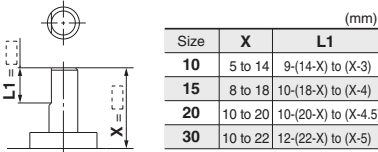
MRQ

D-□

Series CRB2

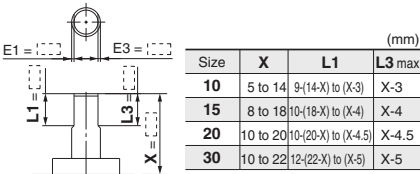
Axial: Top (Long shaft side)

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



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.)

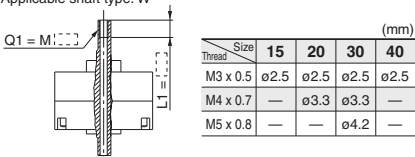
- Since L1 is a standard chamfer, dimension E1 is 0.5 mm or more, and 1 mm or more with a shaft bore size of ø30.
- Applicable shaft type: W



Symbol: A14 Applicable to single vane type only

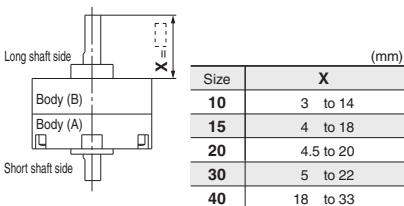
A special end is machined onto the long shaft, and a through-hole is drilled into it. Female threads are machined into the through-hole, whose diameter is equivalent to the pilot hole diameter.

- 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 key is used on the long shaft for size 40.
- Applicable shaft type: W



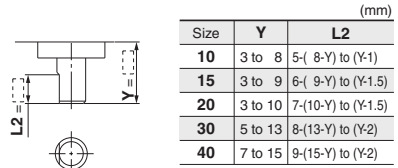
Symbol: A17 The long shaft is shortened.

- Applicable shaft type: W



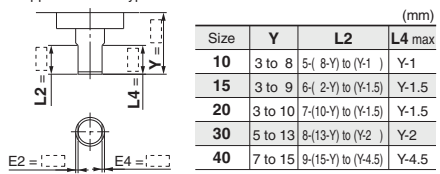
Axial: Bottom (Short shaft side)

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



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.)

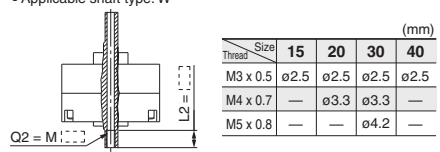
- Since L2 is a standard chamfer, dimension E2 is 0.5 mm or more, and 1 mm or more with shaft bore size of ø30 and ø40.
- Applicable shaft type: W



Symbol: A15 Applicable to single vane type only

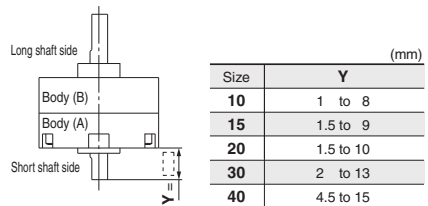
A special end is machined onto the short shaft, and a through-hole is drilled into it. Female threads are machined into the through-hole, whose diameter is equivalent to the pilot hole diameter.

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



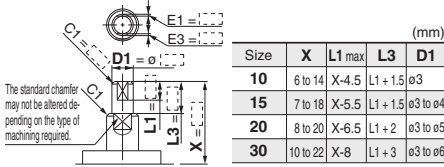
Symbol: A18 The short shaft is shortened.

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



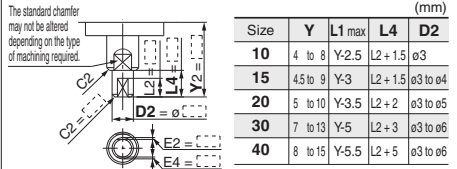
Axial: Top (Long shaft side)

- 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.)



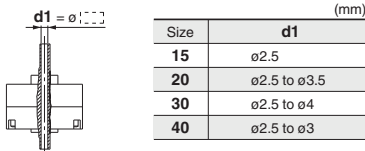
Axial: Bottom (Short shaft side)

- 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.)

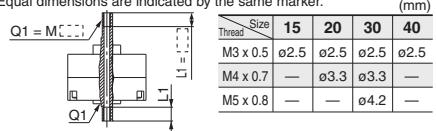


Double Shaft

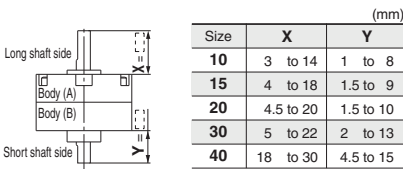
- Symbol: A13** Applicable to single vane type only
- Shaft with through-hole
- Not available for size 10.
 - Minimum machining diameter for d1 is 0.1 mm.
 - A parallel key is used on the long shaft for size 40.
 - Applicable shaft type: W



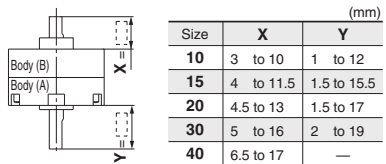
- Symbol: A16** Applicable to single vane type only
- A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.
- Not available for size 10.
 - The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M5: L1 max. = 10 mm
 - A parallel key is used on the long shaft for size 40.
 - Applicable shaft type: W
 - Equal dimensions are indicated by the same marker.



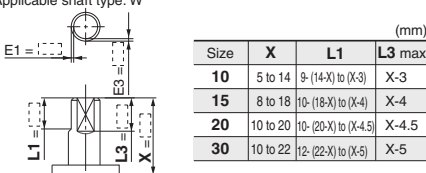
- Symbol: A19** Both the long shaft and short shaft are shortened.
- A parallel key is used on the long shaft for size 40.
 - Applicable shaft type: W



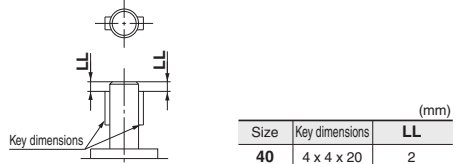
- Symbol: A20** The shafts are reversed.
- (Both the long shaft and the short shaft are shortened.)
- A parallel key is used on the long shaft for size 40.
 - Applicable shaft type: W



- 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 size of ∅30 and ∅40.
 - Applicable shaft type: W



- Symbol: A24** Double key
- Keys and keyways are machined additionally at 180° from the standard position.
- Applicable shaft type: W
 - Equal dimensions are indicated by the same marker.



CRB2

-Z

CRB2U

CRB1

MSU

CRJ

CRA1

-Z

CRA1

CRQ2

MSQ

MSZ

CRQ2X

MSQX

MRQ

D-□

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

Simple Specials

-XA31 to -XA58: Shaft Pattern Sequencing II

Shaft shape pattern is dealt with simple made-to-order system. (Refer to front matter 32)

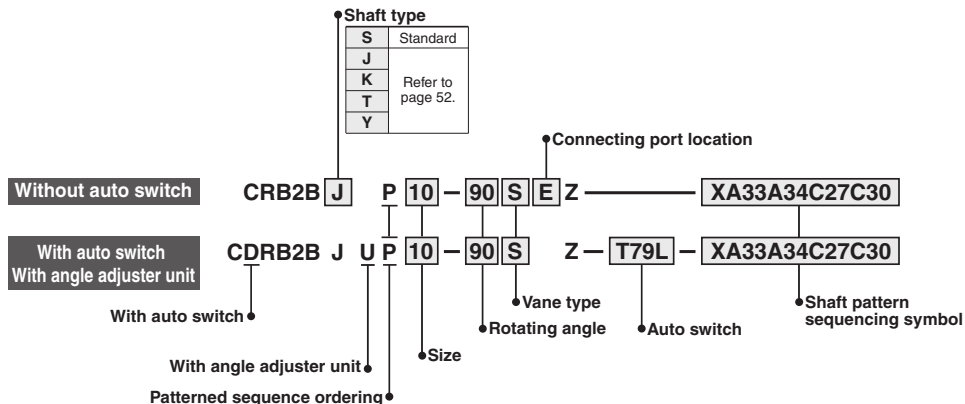
Please contact SMC for a specification sheet when placing an order.

Symbol

Shaft Pattern Sequencing II

-XA31 to -XA58

Applicable shaft type: S, J, K, 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	●	●	●	●	●
XA48	Change of long shaft length	S, Y	●	●	●	●	●
XA51	Change of long shaft length	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	●	●	●	●	●
XA49	Change of short shaft length	Y	●	●	●	●	●
XA52	Change of short shaft length	K	●	●	●	●	●
XA55	Change of short shaft length	J	●	●	●	●	●

● Double Shaft

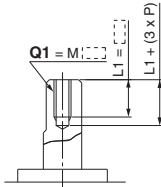
Symbol	Description	Shaft type	Applicable size				
			10	15	20	30	40
XA39*	Shaft through-hole	S, Y	●	●	●	●	●
XA40*	Shaft through-hole	K, T	●	●	●	●	●
XA41*	Shaft through-hole	J	●	●	●	●	●
XA42*	Shaft through-hole + Shaft-end female thread	S, Y	●	●	●	●	●
XA43*	Shaft through-hole + Shaft-end female thread	K, T	●	●	●	●	●
XA44*	Shaft through-hole + Shaft-end female thread	J	●	●	●	●	●
XA50*	Change of double shaft length	Y	●	●	●	●	●
XA53*	Change of double shaft length	K	●	●	●	●	●
XA57*	Change of double shaft length	J	●	●	●	●	●
XA58*	Reversed shaft, Change of double shaft length	J	●	●	●	●	●

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

Axial: Top (Long shaft side)

Symbol: A31 Female threads are machined into the long shaft.

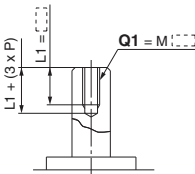
- The maximum dimension L1 is, as a rule, twice the thread size.
(Example) For M3: L1 = 6 mm
- Applicable shaft type: S, Y



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

Symbol: A33 Female threads are machined into the long shaft.

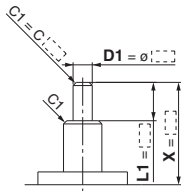
- The maximum dimension L1 is, as a rule, twice the thread size.
(Example) For M3: L1 = 6 mm
- Applicable shaft type: J, K, T



		Q1 (mm)		
Size	Shaft type	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.

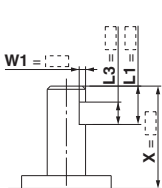
- (If shortening the shaft is not required, indicate "*" for dimension X.)
- Applicable shaft type: J, K, T
- Equal dimensions are indicated by the same marker.
(If not specifying dimension C1, indicate "*" instead.)



		D1 (mm)			
Size	X	L1max	D1		
10	4 to 14	X-3	ø3 to ø3.9		
15	5 to 18	X-4	ø3 to ø4.9		
20	6 to 20	X-4.5	ø3 to ø5.9		
30	6 to 22	X-5	ø3 to ø7.9		
40	8 to 30	X-6.5	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 model.)

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

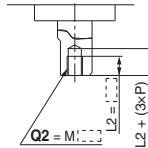


		L3max (mm)									
Size	Shaft type	X			W1			L1max			
		J	K	T	J	K	T	J	K	T	
10		6.5 to 14			0.5 to 2			X-3		L1-1	
15		8 to 18			0.5 to 2.5			X-4		L1-1	
20		9 to 20			0.5 to 3			X-4.5		L1-1	
30		11.5 to 22			0.5 to 4			X-5		L1-2	
40		15.5 to 30			0.5 to 5			X-5.5		L1-2	

Axial: Bottom (Short shaft side)

Symbol: A32 Female threads are machined into the short shaft.

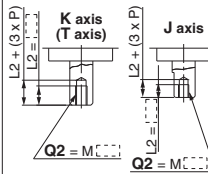
- The maximum dimension L2 is, as a rule, twice the thread size.
(Example) For M4: L2 = 8 mm
- However, for M5 with S shaft, the maximum dimension L2 is 1.5 times the thread size.
- Applicable shaft type: S, Y



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

Symbol: A34 Female threads are machined into the short shaft.

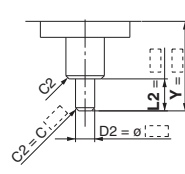
- The maximum dimension L2 is, as a rule, twice the thread size.
(Example) For M3: L2 = 6 mm
- However, for M5 with T shaft, the maximum dimension L2 is 1.5 times the thread size.
- Applicable shaft type: J, K, T



		Q2 (mm)		
Size	Shaft type	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.

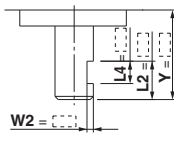
- (If shortening the shaft is not required, indicate "*" for dimension Y.)
- Applicable shaft type: K
- Equal dimensions are indicated by the same marker.
(If not specifying dimension C2, indicate "*" instead.)



		Q2 (mm)		
Size	Y	L2max	Q2	
10	2 to 14	Y-1	ø3 to ø3.9	
15	3 to 18	Y-1.5	ø3 to ø4.9	
20	3 to 20	Y-1.5	ø3 to ø5.9	
30	3 to 22	Y-2	ø3 to ø7.9	
40	6 to 30	Y-4.5	ø5 to ø9.9	

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

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

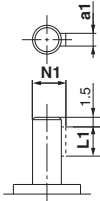


		L4max (mm)			
Size	Shaft type	Y		W2	
		L2max	L4max	Y	L2
10		4.5 to 14		0.5 to 2	
15		5.5 to 18		0.5 to 2.5	
20		6 to 20		0.5 to 3	
30		8.5 to 22		0.5 to 4	
40		13.5 to 30		0.5 to 5	

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 model.) The key must be ordered separately.

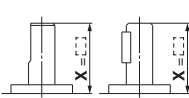
- Applicable shaft type: J, K, T



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

Symbol: A48 The long shaft is shortened.

- Applicable shaft type: S, Y

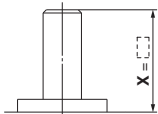


Size 10 to 30 Size 40

Size	X
10	3 to 14
15	4 to 18
20	4.5 to 20
30	5 to 22
40	18 to 30

Symbol: A51 The long shaft is shortened.

- Applicable shaft type: J, K, T

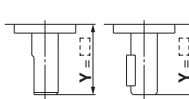


Size	X
10	3 to 14
15	4 to 18
20	4.5 to 20
30	5 to 22
40	6.5 to 30

Axial: Bottom (Short shaft side)

Symbol: A49 The short shaft is shortened.

- Applicable shaft type: Y

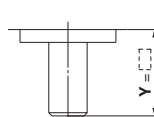


Size 10 to 30 Size 40

Size	Y
10	1 to 14
15	1.5 to 18
20	1.5 to 20
30	2 to 22
40	18 to 30

Symbol: A52 The short shaft is shortened.

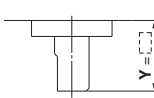
- Applicable shaft type: K



Size	Y
10	1 to 14
15	1.5 to 18
20	1.5 to 20
30	2 to 22
40	4.5 to 30

Symbol: A55 The short shaft is shortened.

- Applicable shaft type: J

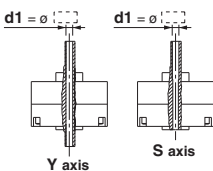


Size	Y
10	1 to 8
15	1.5 to 9
20	1.5 to 10
30	2 to 13
40	4.5 to 15

Double Shaft

Symbol: A39 Applicable to single vane type only

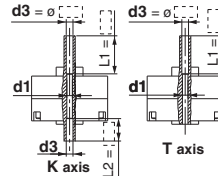
- Shaft with through-hole (Additional machining of S, Y shaft)
- Applicable shaft type: S, Y
- A parallel key is used on the long shaft for size 40.
- Equal dimensions are indicated by the same marker.
- Minimum machining diameter for d1 is 0.1 mm.
- Not available for size 10.



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

Symbol: A40 Applicable to single vane type only

- Shaft with through-hole (Additional machining of K, T shaft)
- Applicable shaft type: K, T
- Equal dimensions are indicated by the same marker.
- Not available for size 10.
- d1 = d3 for size 20 to 40.

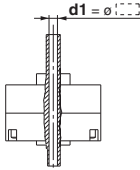


Size	Shaft type			
	K	T	K	T
15	d1	d1	d3	d3
20	—	—	d3	d3
30	—	—	d3	d3
40	—	—	d3	d3

Series CRB2

Symbol: A41 Applicable to single vane type only

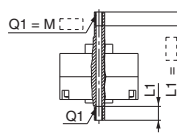
- Shaft with through-hole
- Not available for size 10.
- Applicable shaft type: J
- Equal dimensions are indicated by the same marker.



Size	d1 (mm)
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

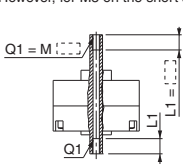
- A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.
- Not available for size 10.
- The maximum dimension L1 is, as a rule, twice the thread size.
- (Example) For M5: L1 max. = 10 mm
- However, for M5 on the short shaft of S shaft: L1 max. = 7.5 mm
- A parallel key is used on the long shaft for size 40.
- Applicable shaft type: S, Y
- Equal dimensions are indicated by the same marker.



Size	15	20	30	40
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

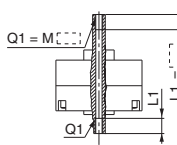
- A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.
- Not available for size 10.
- The maximum dimension L1 is, as a rule, twice the thread size.
- (Example) For M5: L1 max. = 10 mm
- However, for M5 on the short shaft of T shaft: L1 max. = 7.5 mm
- Applicable shaft type: K, T
- Equal dimensions are indicated by the same marker.



Size	15	20	30	40
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

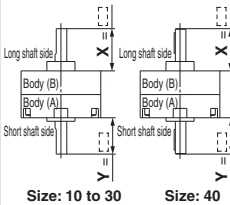
- A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.
- Not available for size 10.
- The maximum dimension L1 is, as a rule, twice the thread size.
- (Example) For M5: L1 max. = 10 mm
- Applicable shaft type: J
- Equal dimensions are indicated by the same marker.



Size	15	20	30	40
Thread	J	J	J	J
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: A50 Both the long shaft and the short shaft are shortened.

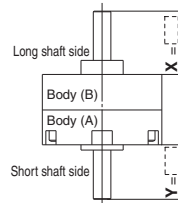
- Applicable shaft type: Y



Size	X (mm)	Y (mm)
10	3 to 14	1 to 14
15	4 to 18	1.5 to 18
20	4.5 to 20	1.5 to 20
30	5 to 22	2 to 22
40	18 to 30	18 to 30

Symbol: A53 Both the long shaft and the short shaft are shortened.

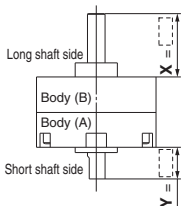
- Applicable shaft type: K



Size	X (mm)	Y (mm)
10	3 to 14	1 to 14
15	4 to 18	1.5 to 18
20	4.5 to 20	1.5 to 20
30	5 to 22	2 to 22
40	6.5 to 30	4.5 to 30

Symbol: A57 Both the long shaft and the short shaft are shortened.

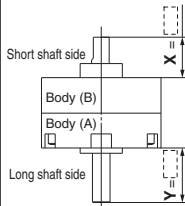
- Applicable shaft type: J



Size	X (mm)	Y (mm)
10	3 to 14	1 to 14
15	4 to 18	1.5 to 18
20	4.5 to 20	1.5 to 20
30	5 to 22	2 to 22
40	6.5 to 30	4.5 to 30

Symbol: A58 The shafts are reversed. Additionally, both the long shaft and the short shaft are shortened.

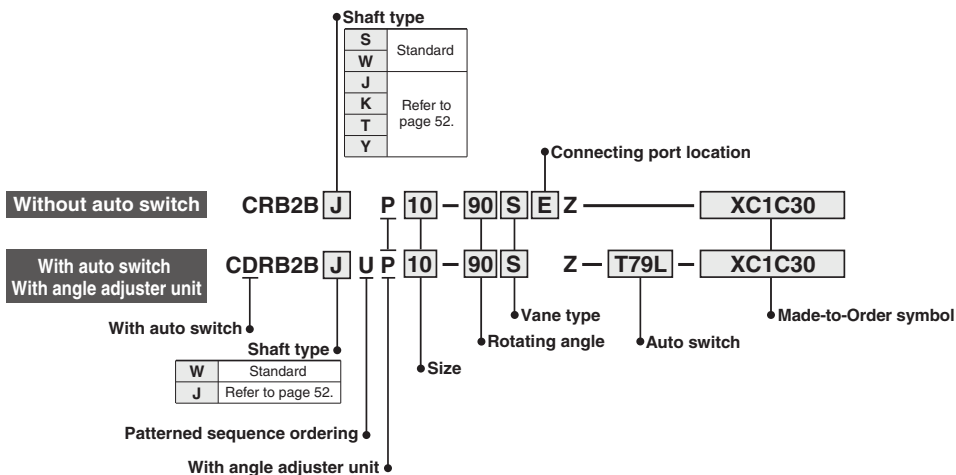
- (If shortening the shaft is not required, indicate "*" for dimension X, Y.)
- Applicable shaft type: J



Size	X (mm)	Y (mm)
10	3 to 10.5	1 to 12
15	4 to 11.5	1.5 to 15.5
20	4.5 to 13	1.5 to 17
30	5 to 16	2 to 19
40	6.5 to 17	4.5 to 28

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

How to Order



CRB2
-Z
CRBU2
CRB1
MSU
CRJ
CRA1
-Z
CRA1
CRQ2
MSQ
MSZ
CRQ2X
MSQX
MRQ

Made to Order Symbol

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

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

Combination

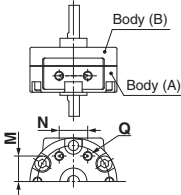
Symbol	Combination						
XC1	XC1						
XC2	●	XC2					
XC3	●	—	XC3				
XC4	●	●	●	XC4			
XC5	●	●	●	—	XC5		
XC6	●	●	●	—	—	XC6	
XC7	●	●	●	●	●	—	XC7
XC30	●	●	●	●	●	●	●

D-□

Series CRB2

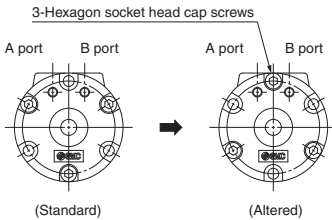
Symbol: C1 The connecting ports are added on the Body (A) end surface. (It will have an aluminum surface since the additional machining will be left unfinished.)

- A parallel key is used instead of chamfer on the long shaft for size 40.
- Not available for the rotary actuator with auto switch.



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

Symbol: C3 The position of the screws for tightening the actuator body is changed.

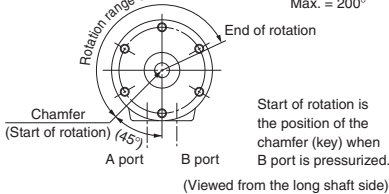


(Viewed from the short shaft side)

Symbol: C5 Applicable to single vane type only

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

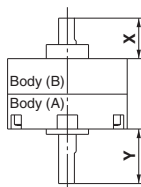
- Rotation tolerance for CRB2BW10 is $+5^{\circ}_0$.
- Port size for CRB2BW10, 15 is M3.
- A parallel key is used instead of chamfer for size 40. $\theta = \begin{matrix} \square \\ \square \end{matrix}^{\circ} +4^{\circ}_0$
Max. = 200°



(Viewed from the long shaft side)

Symbol: C7 The shafts are reversed.

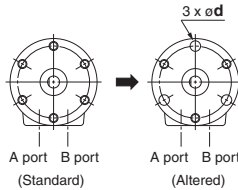
- A parallel key is used instead of chamfer on the long shaft for size 40.



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

Symbol: C2 The threaded holes on the Body (B) are changed to through-holes. (It will have an aluminum surface since the additional machining will be left unfinished.)

- Not available for the rotary actuator with auto switch.



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

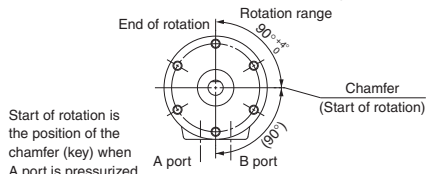
(Viewed from the long shaft side)

Symbol: C4 Applicable to single vane type only

The rotation range is changed. Rotating angle 90°.

Starts of rotation is the horizontal line (90° down from the top to the right side).

- Rotation tolerance for CRB2BW10 is $+5^{\circ}_0$.
- A parallel key is used instead of chamfer on the long shaft for size 40.

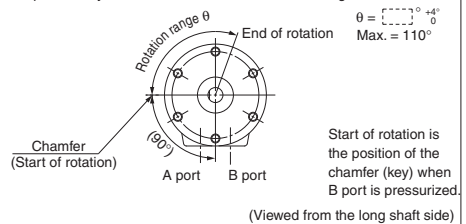


(Viewed from the long shaft side)

Symbol: C6 Applicable to single vane type only

Start of rotation is horizontal line (90° down from the top to the left side).

- Rotation tolerance for CRB2BW10 is $+5^{\circ}_0$.
- A parallel key is used instead of chamfer on the long shaft for size 40. $\theta = \begin{matrix} \square \\ \square \end{matrix}^{\circ} +4^{\circ}_0$
Max. = 110°



(Viewed from the long shaft side)

Symbol: C30 The standard grease is changed to fluovine grease. (Not for low-speed specification.)